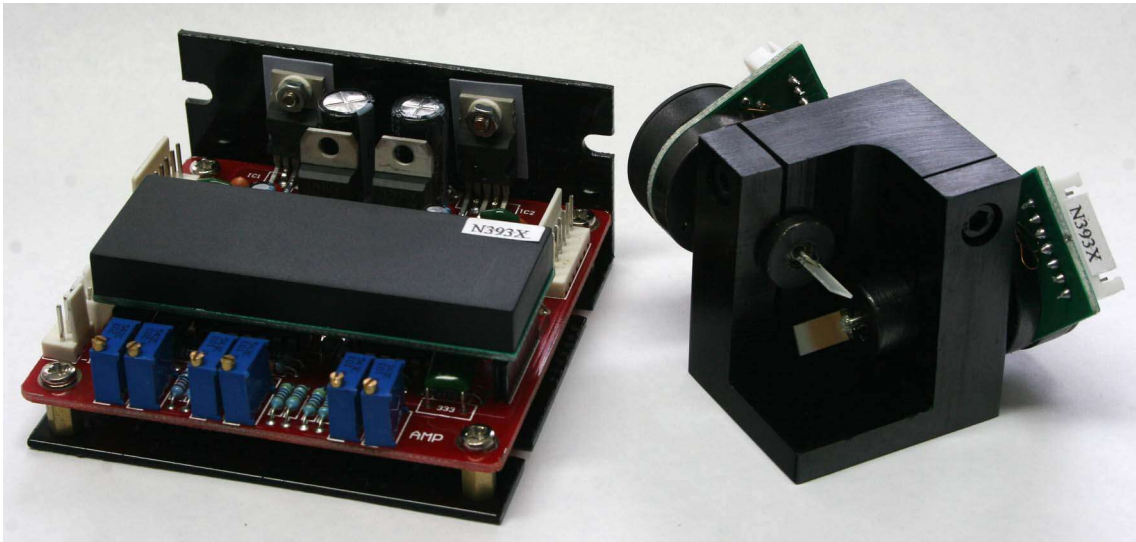


# **Lowcost Galvanometerscanner K12N**

## **Users Manual**



Published by:

Mueller Elektronik, Hauptstrasse 86, D-78549 Spaichingen, Germany, [www.jmlaser.com](http://www.jmlaser.com)

Mueller Elektronik reserves the right not to be responsible for the correctness, completeness or quality of the information provided.

Liability claims regarding damage caused by the use of any information provided, including any kind of information which is incomplete or incorrect, will therefore be rejected. Specifications are subject to change without notice.

Content on this manual, whether in part or full, may not be copied, reproduced or redistributed in any form without the authors agreement.

© 2006 Mueller Elektronik. All rights reserved.

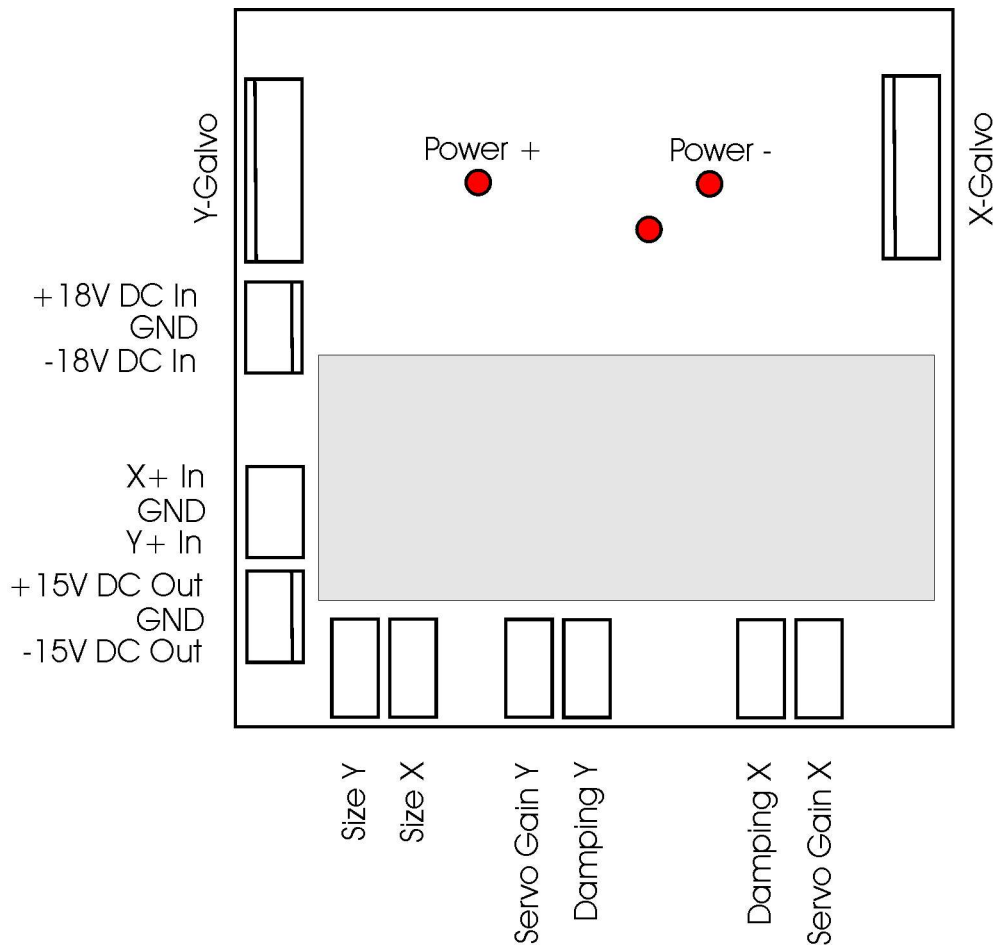


Fig. 1 Boardlayout and connections

### Important

It is necessary to mount the metal part of the driver to an additional heatsink (cooler, metal housing, ground plate, optical table)!  
Without additional cooling, the driver will overheat during operation.

### Operation conditions and warranty

The scanner is specified for an output speed of maximum 12Kpps at 40 degrees optical angle. Scanspeed may be varied from 8Kpps to 15Kpps depending on frame, scanangle and used software. The operating temperature of the galvos should NOT exceed 50 degrees C. The manufacturer will not repair or replace any overheated galvos or drivers even during warranty period. When the coil of the galvo is burned (smells burned) or open-circuit or shorted inside the galvo, or if the magnet is demagnetized, this is a consequence of overpower and overtemperature. Liability claims regarding damage caused by overpower or overtemperature, will be rejected.

## Getting started

The scanner requires a dual powersupply of +/- 18V DC at +/-1A

Connect the 3 pins +18V DC In, GND and -18V DC In to your powersupply. Do not switch it on!

Connect the 2 galvos to the connectors X-Galvo and Y-Galvo. Each Galvo is marked if it is X or Y.

If you change the galvos, a readjustment of the driver will be necessary.

Connect your signal source (ILDA-signal) to the connector X+ In, GND and Y+ In.

**Important:** This scanner uses single ended signal inputs.

To connect symmetrical ILDA signals from our EasyLase USB board, connect the signals X+ (pin1), Y+(pin2) and GND (pin25) of the DB25 ILDA-connector to the K12N driver..

Pins X- (pin14) and Y-(pin15) should be connected to GND (pin25) of the DB25 ILDA-connector or connected to GND by use of 2K2 resistors.

Please refer to Page 11 of the EasyLase Users Manual.

Power on your signalsource (for example EasyLase USB) and your software.

Select a testframe and set pointspeed at about 5000 pps. Set framesize to 50%, if possible.

Switch on the scanner and naturally the laser. **Caution!** Laser emission!

The scanner should now display the frame.

Increase output size of the frame by software to maximum and watch that the scanangle is not more than 40 degrees optical. Galvos should not bump against their mechanical stoppers.

If scanangle is too large, reduce angle by adjusting „Size“ at the driver.

It should not be possible to overdrive scanangle by software output, otherwise, the galvos can be damaged.

If projection is same size in X and Y, pointspeed can be increased to about 10Kpps.

## Driver adjustments

All scannerdrivers are preset to a good output quality.

In some cases, settings can be deadjusted (for example after replacement of a galvo).

Project a simple testframe, for example 3 squares of different size.

If there are visible overshoots or undershoots of projection, try to adjust the edges with „Damping“.

If the overshoots are strong, do not project a testpattern at full scanangle. Use 50% scanangle.

If the corner of the testframe is too round at 10Kpps (galvo too slow), increase Servo Gain.

Reduce overshoot with Damping.

Repeat adjustment with Servo Gain / Damping, until you have a good looking corners and straight lines at all parts of the testframe. Try to match both galvos X and Y to same speed as good as possible.

The slowest galvo always sets the speed of the system. If a galvo is at the maximum possible speed, reduce speed (Servo Gain) of the faster galvo to match the speed of the slower one.

## Overcurrent protection

When the total current consumption of the scanner is about 1A, the driver will be shut down.