WarpCube E10 Scanhead

Users Manual

Table Of Contents

1 Copyright

2 Warranty

WarpCube E10 scanheads are manufactured by Laser Control Systems. Thus warranty and repair is done via the manufacturer directly. For details please refer to http://lasercontrols.com/customer-support/ or contact HALaser Systems.

3 History

Date	Changes in document
04/2017	Recommended working temperature added
01/2017	Power supply information extended
12/2015	Type name updated
08/2015	Technical data extended
07/2015	Mechanical drawings corrected
06/2015	Initial version

4 Safety

The hardware described within this document is designed to control a laser scanner system. Laser radiation may effect a person's health or may otherwise cause damage. Prior to installation and operation compliance with all relevant safety regulations including additional hardware-controlled safety measures has to be secured. The client shall solely be responsible to strictly comply with all applicable and relevant safety regulations regarding installation and operation of the system at any time.

The hardware described here is shipped without prefabricated equipment for electric installation. It is intended to be integrated in machines or other equipment. It is not for use "as is". Prior to operation compliance with all relevant electric / electromagnetic safety regulations including additional hardware-controlled safety measures has to be secured. The client shall solely be responsible to strictly comply with all applicable and relevant regulations regarding installation and operation of the system at any time.

5 Overview

This document describes the WarpCube E10 digital scanhead, its characteristics and usage.

6 Features and Technical Data

WarpCube E10 scanhead offers the following functions and features:

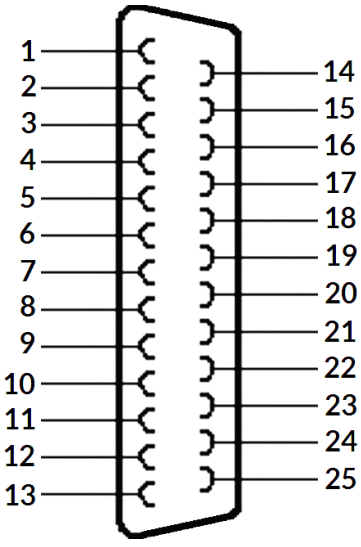
Type	fully digital, self tuning
Interface	two-channel XY2/100 (2D)
Power supply requirements	+-24 V / 4 A
Idle power consumption (no galvo movements)	< 10 W
Mirror size	10 mm
Maximum Laser Power	50 W (special mirrors required for higher power values [1)])
Screw thread for optics	M 85 x1
Positioning speed	up to 20 m/sec
Marking speed	up to 6 m/sec
Precision writing	500 cps
High quality writing	1000 cps
Resolution	10 µrad
Scanner Lag (Tracking error)	0,13 msec
1% step response setting to 0,1% fs	0,28 msec
Scale drift	<40 ppm/°C
Zero drift	<10 µrad/°C
Linearity	99,9%
Short term repeatability	<8 µrad
Protection class	IP55
Weight	2,2 kg
Ambient temperature	10 .. 40°C [2)]

[1)] at 1064 nm, requires precise central justification of the laser and utilisation of full available mirror surface; customer has to take care the laser does not hit the mounting points oft he mirrors, this would lead to damage of the scanhead together with a loss of any kind of warranty. Depending on used pulses and frequency additional cooling of the head may be necessary.

[2)] Depending on used pulses, frequency and laser power, additional cooling of the head may be necessary also when operated under recommended temperature conditions.

7 Electrical Connections

The scanhead is compatible with the industry standard XY2/100 data interface that is available on several industry-grade scanner controller cards (like E1701D controller). The pin out and voltage supply connections are shown below and require a male D-SUB25 connector:



1 – CLK-
2 – SYNC-
3 – X-
4 – Y-
6 – Status-
14 – CLK+
15 – SYNC+
16 – X+
17 – Y+
19 – Status+
9, 10, 22 - +24 V
11, 23, 24 – GND
12, 13, 25 - -24 V

The power supply needs to support up to 4 A current drain and needs to be a balanced +/- 24 V (+/- 0.25 V tolerance). In case the supply drops below +/- 18 V, the circuits will shut down. Typical idle currents are 130 mA for the –Ve rail and 260 mA for the +Ve rail. The current draw will only exceed 1.0 A average under very heavy driving conditions.

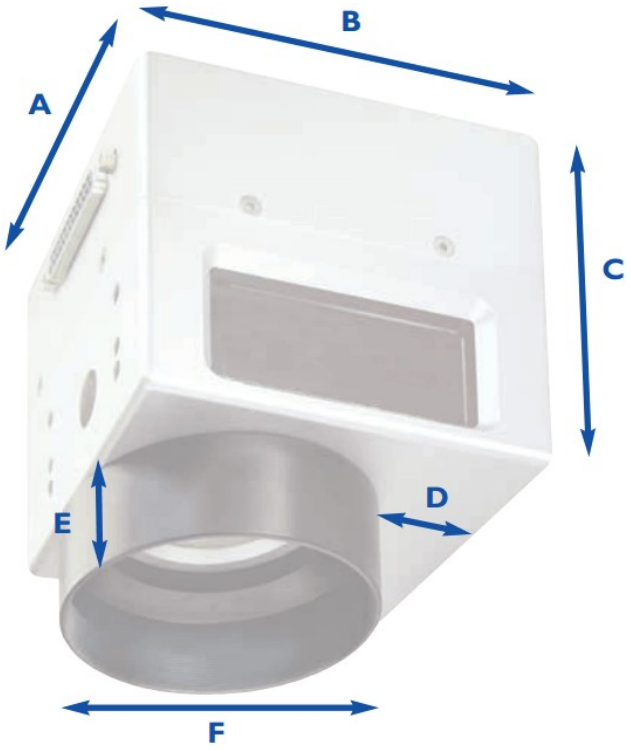
ATTENTION: Power has to be feed into scanhead only but never into connected controller card!

ATTENTION: During operation it has to be ensured the symmetric power with + 24 V and – 24 V is available all the time. Switching off one of both or unplugging the D-SUB25 connector during operation may damage electronics and – as follow up – the mirrors too.

On power up the galvos will be checked by the internal digital signal processors to find the correct tuning parameters required for optimum performance. This sequence can take up to 30 seconds. Afterward the head will be ready for use and will respond to the XY2/100 inputs as required.
If either of the galvos deflect outside of their maximum marking field, or if the RMS current rises above 2.5 A, or any other illegal operation condition appears, the head will shut down to avoid damages. In this case the X or Y status LED will change from green to red. Normally the operation can be resumed by cycling the power off and on.

8 Mechanical Specifications

Dimensions:



A – 97 mm

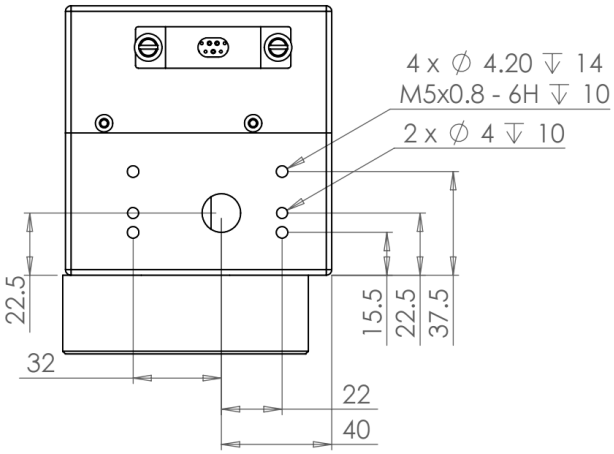
B – 115 mm

C – 97 mm

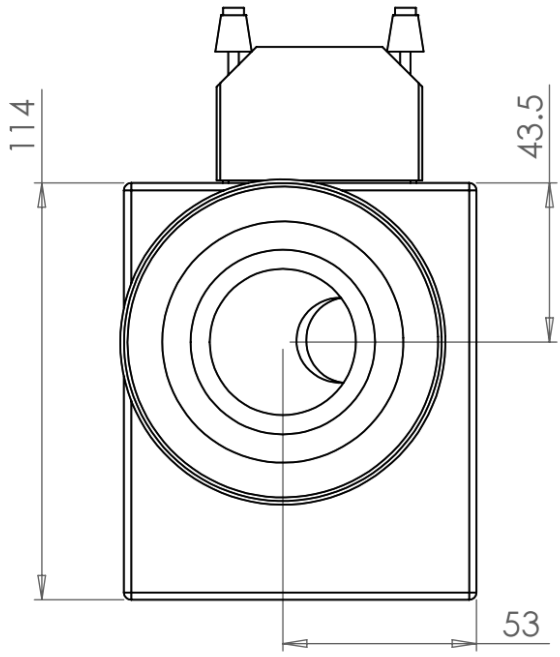
D – 15 mm

E - 30 mm

F – 90 mm



Drawing Beam Entrance Side



Drawing Beam Exit Side

Alphabetical Index