



EAOS04
Optical Analog Galvanometer
Scanner
User Manual



Preface

HMME(Hongming Electromechanical Co., Ltd.) is a company dedicated to the field of digital galvanometer scanners and galvanometer motors. The company boasts a professional research and development team as well as a production team.

Our main products include digital galvanometer scanners and galvanometer motors, which are widely used in industries such as laser imaging, marking machines, laser welding machines, metal 3D printing, scientific research, and medical fields. With multiple patented technologies related to digital galvanometer scanners and galvanometer motors, the company continuously provides customers with high-quality, high-performance products, and solutions through constant technological innovation and product upgrades.

Hongming Electromechanical is committed to providing professional technical support and after-sales service to customers, constantly enhancing customer satisfaction and brand influence through the establishment of a sound quality management system and after-sales service system.

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Document Version Description

Version	Date	Modifier	Note
V1.0	2024.05	Chen Mingwei	

Chapter 1: Overview

Our galvanometer motors are designed with a dynamic magnetic structure, combined with the industry's mature photoelectric sensing technology and analog control mode developed.

EAOS04 galvanometer has good operation stability, lightweight and compact size, which can be applied to fiber lasers, ultraviolet lasers and CO2 lasers.

The specific characteristics of the galvanometer are as follows:

- Fast response speed and stable operation.
- Lightweight and compact, can be used in consumer field.
- Default XY2-100 industry standard interface communication protocol.
- Suitable for applications: handheld mobile processing, medical cosmetology, service trade jewelry processing.
- The whole system adopts volume optimization design, small volume, light weight and compact structure.

Chapter 2: Safety Precautions

1, please ensure that it is completely clean, such as dust and other pollutants, may cause damage to the lens.

2, before starting, ensure that the personnel leave the galvanometer working area, and wear eye protection glasses.

Special reminder: Please pay attention to the cleaning of the reflector lens, because it is a wearing part and consumable, so it is not within the scope of product warranty.

Chapter 3: Performance Specifications

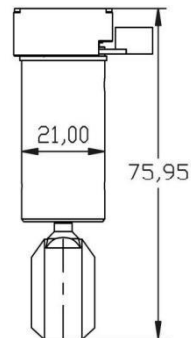
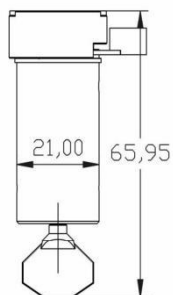
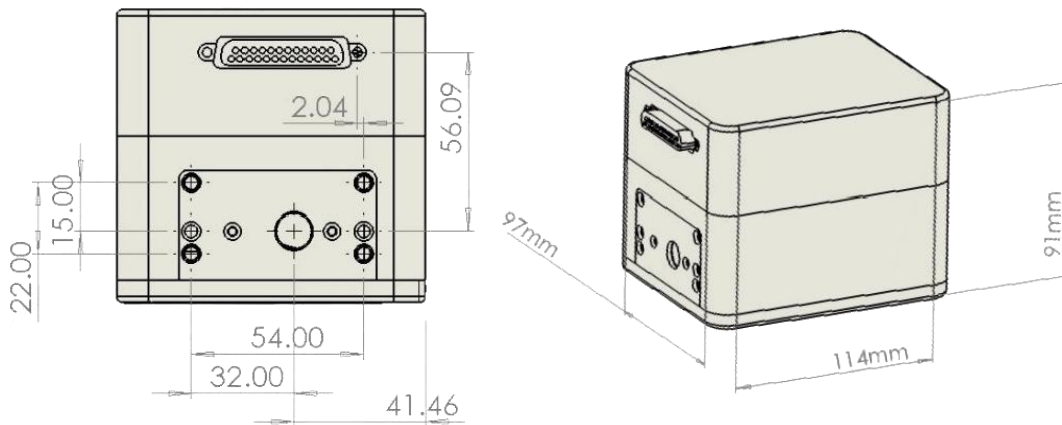
Accuracy & Error	
Input aperture	10mm
Marking speed(f=160mm)	2000mm/s
Positioning speed(f=160mm)	7000mm/s
Running angular velocity	12.5 rad/s
Step response time (1% of full scale)	350 μ s
Tracking error	$\leq 116\mu$ s
Repeatability	< 8 μ Rad
linearity	99.9%
Moment of inertia g*Cm ² $\pm 10\%$	0.25
Long time drift (8 hours of continuous operation)	< 0.5mRad
Moment constant,dyne.cm/amp, $\pm 10\%$	0.7*10 ⁵
Gain drift	< 50PPM/ $^{\circ}$ C
Zero drift	< 15 μ Rad/ $^{\circ}$ C
Laser Package	
Maximum pulsed laser power	100W
Lens reflective wavelength	1064nm/355nm/10.64um/532nm
Power & Signal	
Input voltage	± 15 VDC
Rated current	2A
Peak current	10A
Maximum average operating current (single axis)	0.5A
Interface protocol	XY2 -100
Mechanical scanning angle	$\pm 12.5^{\circ}$
Temperature, Size	
Operating temperature	10 $^{\circ}$ C ~35 $^{\circ}$ C
Size of galvanometer (L \times W \times H)	97 \times 114 \times 91mm
Weight	About 0.7kg

Chapter 4: Structure and Wiring

4.1 Appearance & Adapter Cable



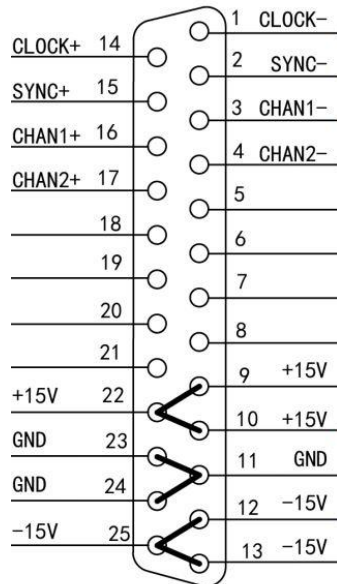
4.2 Dimensions



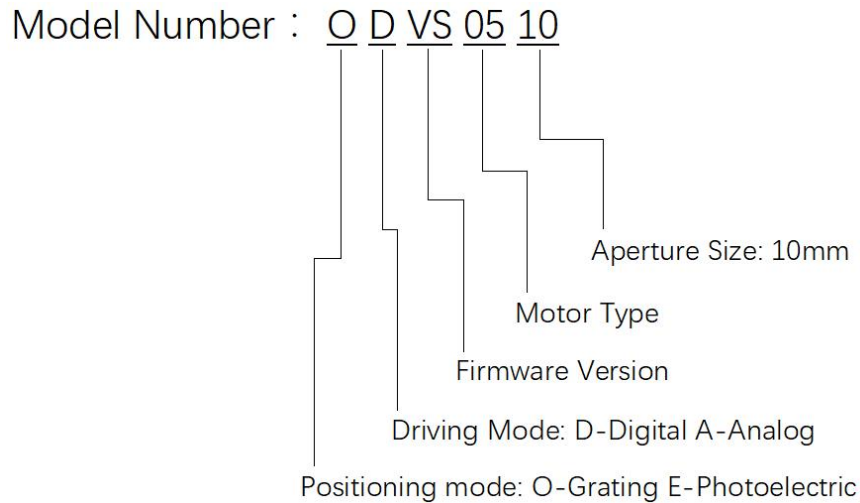
4.4 External Interfaces

4.4.1 XY2-100 Interface

EAOS04 defaults to the XY2-100 protocol interface. This protocol is currently the mainstream communication protocol, with a resolution of 16 bits. The XY2-100 interface can be connected to mainstream control cards in the industry via the XY2-100 scanning mirror data cable. The pin signals on the ODVS05 interface are as follows:



Chapter 5: Specifications and Models



Chapter 6: Startup Inspection and Common Fault Analysis

Before powering on, it is essential to check the entire system for loose plugs, misinsertions, collisions between mirrors, incorrect drive signals, and power input errors. Only after confirming that everything is in order should the power be turned on.

Symptoms of Malfunction	Causes	Solutions
The system shows no response.	The power supply is not connected or the switch is not turned on.	Check the power supply connection.
After startup, the red light is constantly on accompanied by a clicking sound.	Limit protection activated.	Check if the input signal amplitude is too high. If the input signal is normal, please contact our company.
After startup, the scanning motor keeps vibrating slightly.	The interference is too strong or the input signal is floating.	Check the source of interference and input signal lines.

<p>After startup, the motor whines, and both the drive board and motor heat up.</p>	<p>Check if the drive board is properly connected to the motor / whether the connector or mirror is loose</p>	<p>Check the wiring / check the mirrors and clips</p>
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Special Note:

1. Before powering on, please carefully check whether the wiring sequence of the external connection lines of the scanning mirror is correct, otherwise it may affect the normal operation of the mirror or cause damage.
2. The two motors must be connected to the corresponding sockets on the drive board according to the matching sequence number. They cannot be interchanged, otherwise self-excitation may occur.
3. Do not adjust the hardware configuration such as the potentiometer on the board without authorization, and do not disassemble the scanning mirror components without authorization.



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