

VM Series

Moving Magnet Optical Scanners



- Moving magnet motor with patent pending capacitive position feedback for uncompromised performance.
- Available with 4 mm - 15 mm aperture laser grade mirrors.
- Optional Thermal Control for maximum stability.
- Configured for use with MiniSax or DSP based Intelligent Servo Driver (ISD) servo controllers.



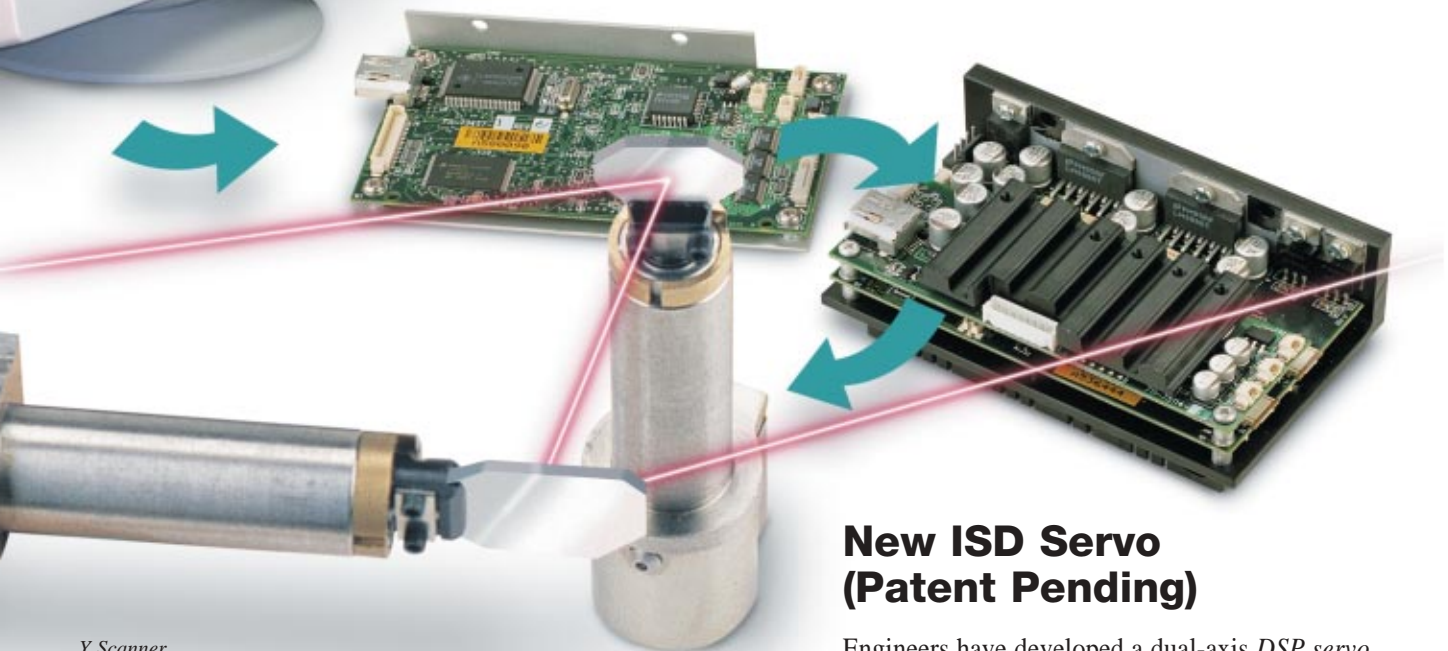
VM Series optical scanners

*When a trade-off between accuracy
and speed is not an option.*

The *VM series* optical scanners are engineered for no-compromise performance. Whether your application requires more characters per second, higher line scan rates, or faster step times, the *VM series* optical scanners deliver premium performance unmatched by any other galvanometers.

The Complete Solution

GSI Group offers complete single and multi-axis line scan engine packages that include laser quality mirrors, servo controllers, and computer interface hardware and software for turnkey operation. All *VM series* galvanometers are offered with optional thermal control for maximum thermal stability.

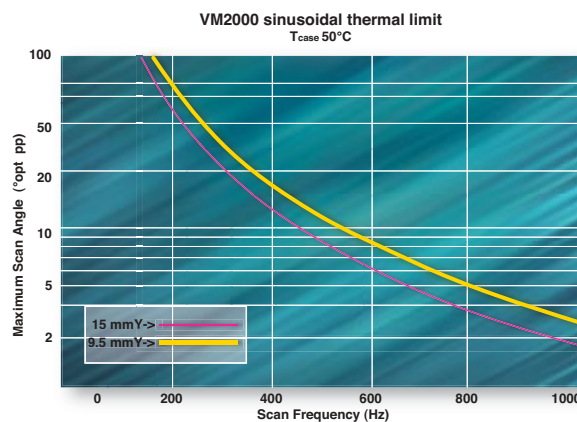
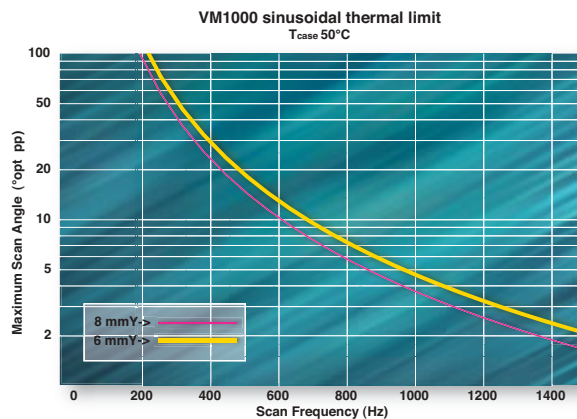
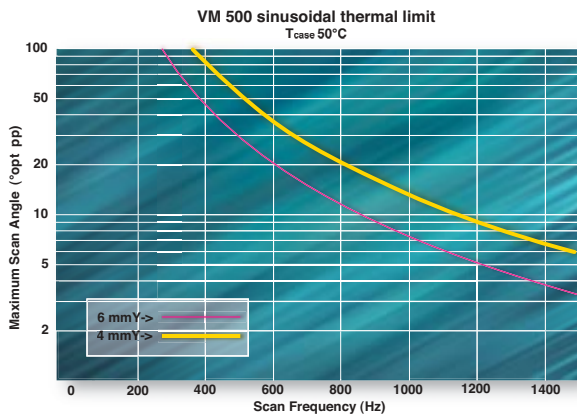


Y Scanner

X Scanner

New ISD Servo (Patent Pending)

Engineers have developed a dual-axis *DSP servo* for small-footprint *VM scanners* that deliver unprecedented speed beyond that of existing analog servos.



*Graphs are for reference only.
Performance may vary with application*

Direct Worldwide Support

Only GSI Group provides the level of service, support, and technical expertise you and your application demand. Our three worldwide centers offer direct customer service and technical support throughout the Americas, Europe, and Asia/Pacific. The experienced staff in our electro-optical-mechanical development team can assist customers in meeting their requirements.

The VM Series

The VM500, VM1000 and VM2000 Optical Scanners are the first in GSI Group's family of optical scanners to offer a small footprint. Designed to position mirrors from 4 mm to 15 mm clear aperture, the VM Series offers the superior accuracy found with larger galvos, but in a miniature package. The VM Series provide instrument quality scanning at a very attractive price point.

The Intelligent Servo Driver (ISD) Advantage.

Our newly designed ISD Servo (Patent Pending) is available for use with VM Series optical scanners for unprecedented speed beyond that of existing analog servos in a compact, dual axis package. DSP servo technology provides functionality not possible with analog servo.

Some features and benefits of the ISD Servo are:

- Two-axis control in a very small package allows for compact and cost-effective scan head design
- More than 50% higher bandwidth than comparable analog servo
- Servo settings can be changed on the fly via sync inputs for optimal performance
- Error limiter for large jump stability
- Tune by wire for fast and easy servo adjustment, no matter where the servo is located
- Servo Query for temperature and operational status



For over 30 years, GSI Group has led the market by providing original, fully engineered solutions to difficult optical scanning problems. We offer a wide range of technologies including; flexures, resonant scanners, DSP and analog servos, and multi-axis subsystems. This technology allows for unprecedented flexibility in developing the right solution for your needs.

The VM500 and VM1000 are available either connectorized or with flex cable.

VM 500/1000/2000 Specifications

Parameter	Units	VM500	VM1000	VM2000
<i>Dynamic Specifications:</i>				
Optimal mirror size	mm, clear aperture	4-6	6-9	9-15
Max Scan Angle	degrees, optical	±50°	±45°	±25°
Non-linearity (max)	% over ±20° optical	0.08	0.08	0.08
Offset Drift ¹ (max)	μ radians/°C	50	50	30 (10) ³
Gain Drift ¹ (max)	ppm/°C	50	50	100 (20) ³
Operating Temperature	°C	0-50	0-50	0-50
Bandwidth ² (typical)	Hz	>3500	>3000	>2500
Small Step Time ² (typical)	μS	<175	<250	<300
Full Step Time ²	ms	<0.8	<1.0	<1.5

Motor Specifications:

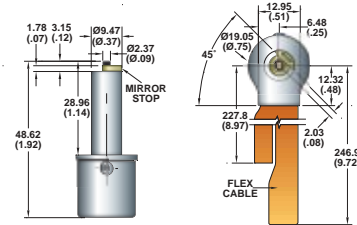
Torque Constant	Nm/A	0.004	0.01	0.025
Coil Resistance (@ 60°C)	Ohms	3.5	3.0	3.4
Coil Inductance (@1 KHz)	mHy	0.23	0.22	0.6
Rotor Inertia	g*cm ²	0.028	0.29	1.5
Thermal Impedance (Coil to Case)	°C/W	2.7	2.0	0.6

1. Drift characteristics may vary between servo models and can be reduced by optional temperature control, available with all VM series galvanometers.

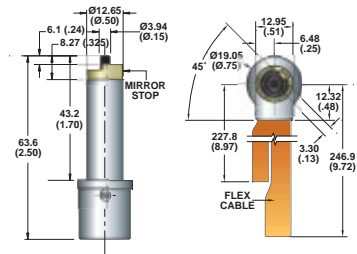
2. Dynamic specifications will vary depending on mirror inertia, command waveform, servo type and adjustment.

3. Applies to VM2000 with Thermal Control.

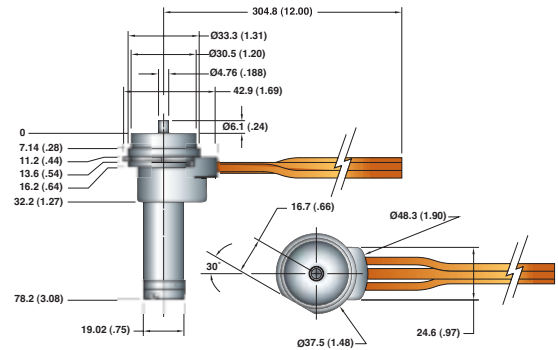
VM500



VM1000



VM2000



Dimensions in mm (inches)
Flex cable shown for reference. Option available w/o flex cable

Specifications are subject to change. Consult GSI Group for details.

www.gsig.com/scanners



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