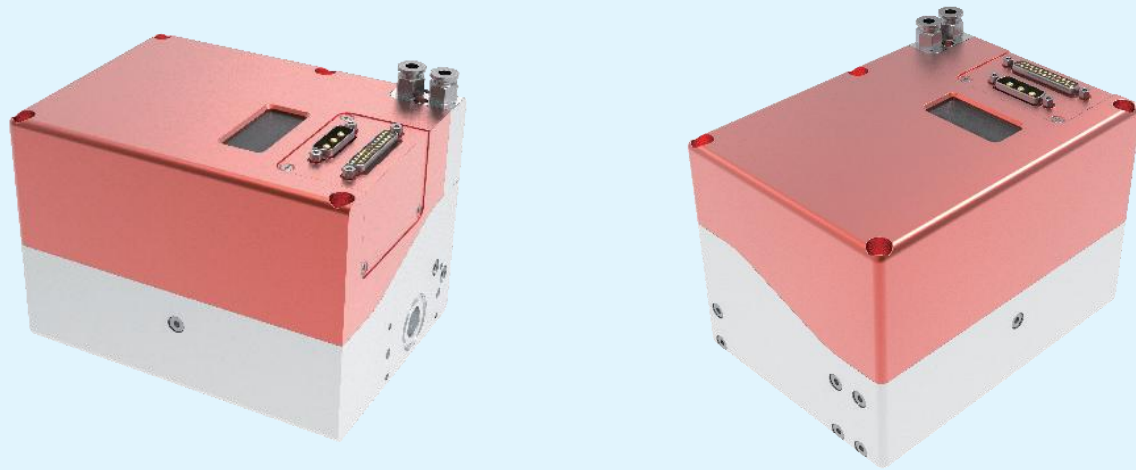


High-Speed Galvanometer Scanner

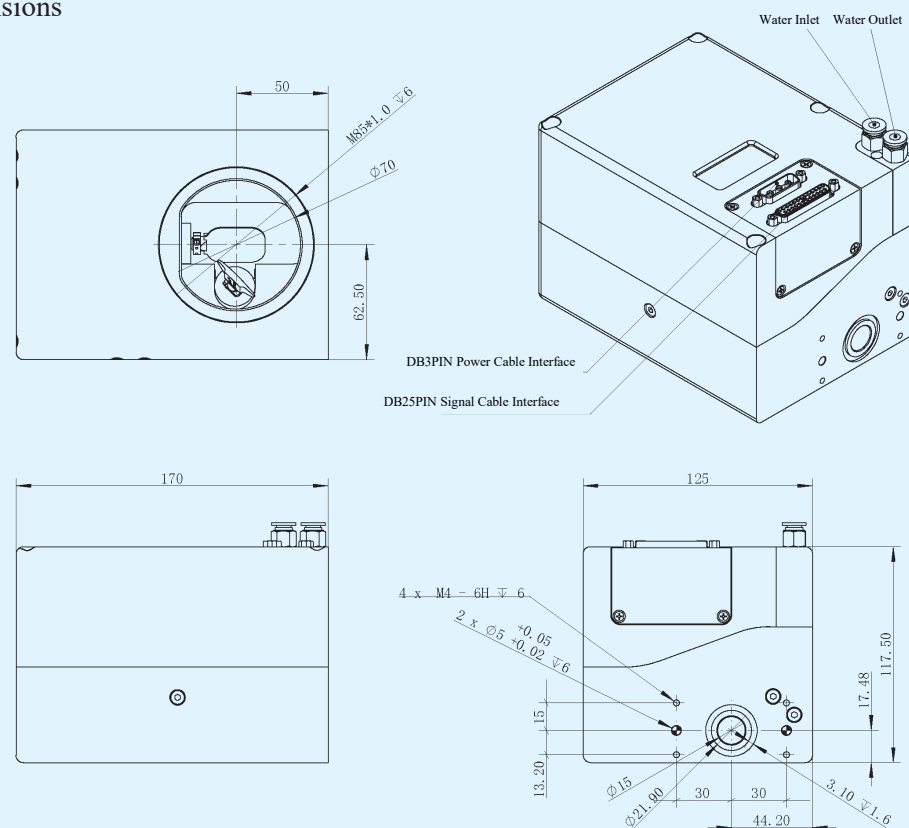
Industrial Applications



Product Features

- ◆ Ultra-fast processing speed (≥ 56 m/s with F254 field lens), significantly enhancing processing efficiency and reducing operational costs;
- ◆ Ultra-high processing accuracy ($\leq \pm 10$ μm with F254 field lens), meeting the processing requirements for new energy battery and photovoltaic wafer applications;
- ◆ High-precision control with digital drive system, featuring position and status feedback;
- ◆ High Laser-Induced Damage Threshold optics with multiple substrate options, accommodating various beam size requirements across different operating conditions.

Product Dimensions

High-Speed Galvanometer
Scanner

Industrial Applications

Product Specifications

Product Specifications	Product Model		GS153
	Product Name		High-Speed Galvanometer Scanner
	Clear Aperture		φ15 mm
	Laser Power		3 kW @1064nm CW (GS153)
	Weight		approx. 3.2 kg
	Dimensions (L×W×H)		170.0×125.0×117.5 mm
General Specifications	Power Supply	Voltage	±24V DC
		Current (RMS)	2 A RMS
		Current (max.)	max. 10 A
		Ripple/Noise	max. 200 mVpp@ 30 MHz
	Ambient Temperature		+15°C to +35°C
	Storage Temperature		-10°C to +60°C
	Humidity		≤ 80% no condensation
	Protection Rating		IP64
	Communication Protocol		XY2-100
	Typical Optical Deflection Angle		±0.35 rad (±20°)
	Resolution XY2-100 16-Bit		12 μrad
	Repeatability (RMS)		< 2.0 μrad
	Position Noise (RMS)		< 4.5 μrad
	Temperature Drift	Maximum Gain Drift ¹	15 ppm/K
		Maximum Position Drift ¹	10 μrad/K
	8-Hour Long-Term Stability, without Water Cooling ¹		< 60 μrad
8-Hour Long-Term Stability, with Water Cooling ^{1,2}		< 40 μrad	
Dynamic Parameters	Processing Speed ³		220 rad/s
	Positioning Speed ³		220 rad/s
	Tracking Error ⁴		0.25 ms
	1% Full-Scale Step Response Time ⁵		0.65 ms

Remarks:

1. Optical angle drift per axis after 30-minute warm-up under stable ambient temperature and processing load conditions.
2. Change in processing load after 30-minute warm-up, maintaining cooling water flow ≥ 2 l/min and water temperature at 22°C.
3. Refer to "Speed Calculation".
4. Calculated acceleration time is approximately $2.3 \times$ tracking error.
5. Settling to 1/5,000 of full scale.

Speed Calculation:

$$\text{Field Velocity} = F\text{-Theta Field Lens Focal Length} \times \text{Positioning Speed}$$

Example 1: If F-Theta field lens focal length = 254 mm, positioning speed = 200 rad/s; then $V = 254/1,000 \times 200 = 50.8$ m/s.

Example 2: If F-Theta field lens focal length = 330 mm, positioning speed = 220 rad/s; then $V = 330/1,000 \times 260 = 72.6$ m/s.

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