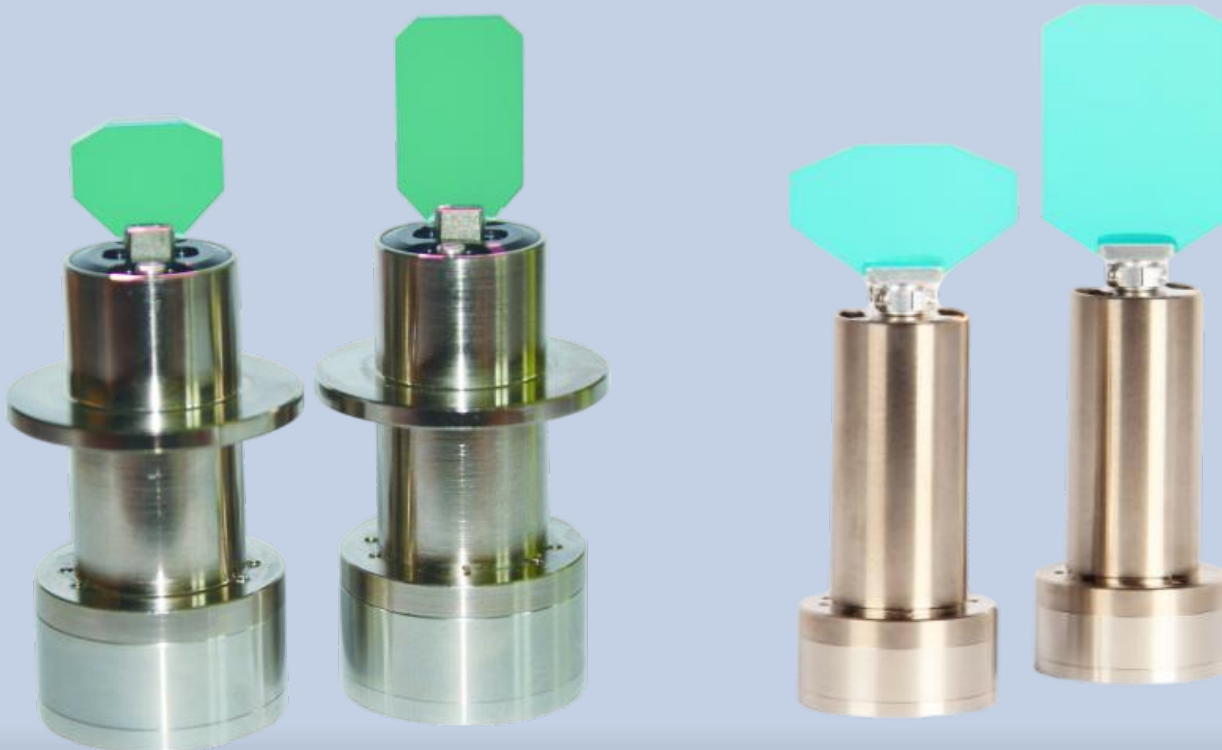


High-Performance Galvanometer Scanner



One Platform Many Possibilities

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VenusLab™ Galvo Series: Setting New Standards for Precision Beam Steering

The VenusLab™ High-Performance Galvo Series is engineered to meet the most demanding beam steering requirements.

The series is divided into two camps: **Type-S (Speed)** for 3-7mm small apertures, pursuing 0.1ms extreme speed, ideal for laser display and bio-imaging; **Type-P (Power)** for 10-20mm large apertures, optimized for motor torque and thermal design, capable of driving large mirrors under high-power laser loads while maintaining dynamic performance.

Core Highlights & Positioning

A universal galvanometer scanner series covering scenarios from microscopic imaging to high-power welding. Offers a full range of aperture options from 3mm to 20mm, combining rapid response with industrial-grade load stability.

- **Full Range Coverage:** Apertures support 3mm - 20mm, perfectly matching Confocal, OCT, and Laser Cutting systems.
- **Micro-Radian Precision:** Utilizing high-precision photoelectric sensors, achieving linearity of 99.90% and repeatability $<8 \mu\text{Rad}$.
- **Ultra-Low Drift Technology:** Scale drift $<50 \text{ PPM}/^\circ\text{C}$ ensures the reliability of long-term experimental data.
- **Rapid Response:** Imaging-grade models feature step response as fast as 0.13ms; heavy-duty models offer superior torque capacity.

Applications in Detail

1. Laser Scanning Confocal Microscopy (LSCM): With VenusLab-9215's 0.13ms ultra-fast response, the system supports high-frame-rate real-time cell imaging. High linearity (99.90%) ensures distortion-free edges in scanned images, perfectly reconstructing the microstructure of biological samples.

2. OCT & Ophthalmic Diagnosis: Designed with low-drift characteristics for fundus scanning. During long-duration retinal tomography, the zero drift of $<10 \mu\text{Rad}/^\circ\text{C}$ ensures absolute stability of the imaging beam, eliminating image artifacts caused by thermal effects.

3. Optogenetics & Optical Tweezers: Leveraging the galvanometer's precise positioning, researchers can accurately direct laser beams to stimulate specific neurons with millisecond precision, or non-contact capture and manipulate single cells/particles at the microscopic scale.

4. Laser Cleaning & Rust Removal: The powerful motor torque of VenusLab-9230 drives large mirrors for high-speed raster scanning. It rapidly strips oxidation layers, paint, or contaminants from metal surfaces while maintaining high energy density, without damaging the substrate.

5.Precision Laser Welding: Supports complex Wobble welding paths (e.g., spiral, sine wave). The highly dynamic oscillating beam stirs the molten pool, significantly reducing porosity and spatter, making it ideal for EV battery busbars or sealing precision electronic components.

6.Marking-on-the-Fly: For assembly line production, VenusLab-9310 offers exceptional dynamic tracking performance. Even with high-speed conveyor movement, it performs synchronized vector marking of QR codes and serial numbers with sharp, clear character edges.

Interfaces & Compatibility

Driver Protocol: All series support analog $\pm 5V$ or $\pm 10V$ input, compatible with standard XY2-100 protocol. **Power Requirements:** Recommended $\pm 15V$ for Type-S, and $\pm 24V$ for Type-P for optimal torque output.

Technical Specifications

Group A: High-Speed Imaging Models (3mm - 7mm)

Parameter	VenusLab-8107	VenusLab-9215
Best For	Cost-Effective Imaging	High-End Scanning
Aperture	3 / 5 / 7 mm	3 / 5 / 7 mm
Step Response (0.1°)	0.14 ms	< 0.13 ms (Faster)
Tracking Error	0.1 ms	0.09 ms
Linearity	99.90%	99.90%
Repeatability	< 8 μ Rad	< 8 μ Rad
Operating Voltage	$\pm 15V$ / $\pm 24V$	$\pm 15V$ / $\pm 24V$
Average Current	2.0 A (Max)	3.4 A (Max)
Scan Angle	$\pm 20^\circ$	$\pm 20^\circ$

Group B: High-Load Industrial Models (10mm - 20mm)

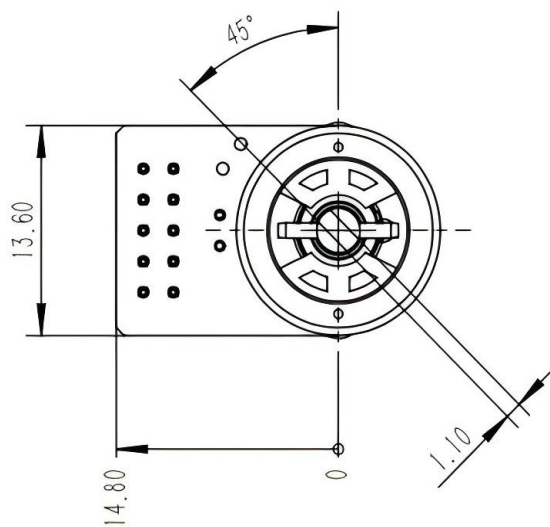
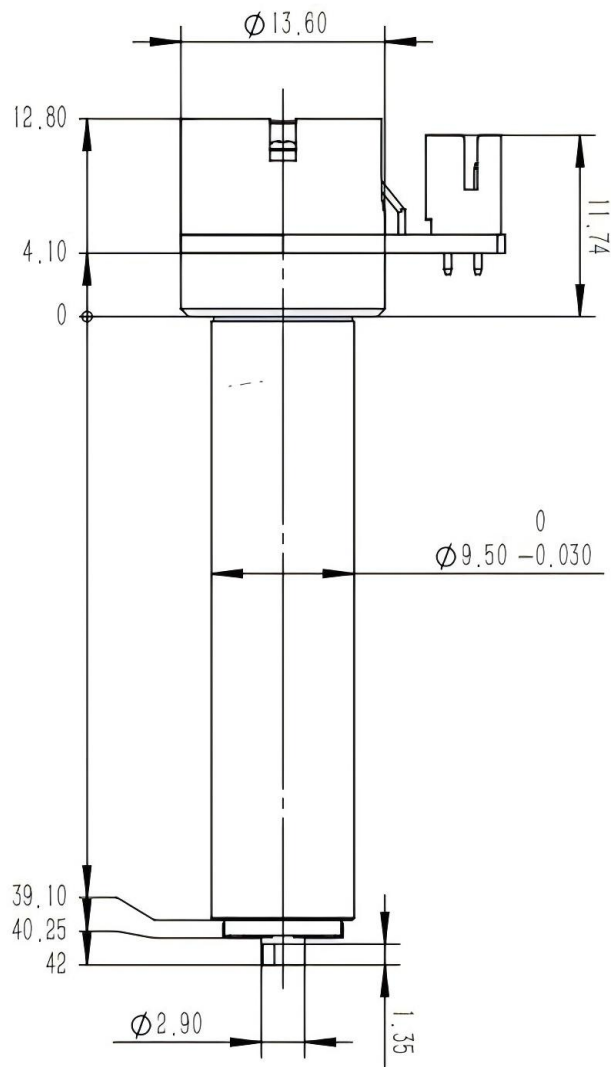
Parameter	VenusLab-9310	VenusLab-9230
Best For	Precision Marking	Welding & Cleaning
Aperture	10 mm	15 / 20 mm
Step Response (0.1°)	< 0.2 ms	< 0.35 ms
Torque Constant	-	High Torque Optimized
Linearity	99.90%	99.90%
Scale Drift	< 50 PPM/°C	< 50 PPM/°C
Signal Scale Factor	0.5 V/°	5.5 V/° (Special)
Peak Current	20 A	20 A
Operating Voltage	$\pm 15V$ / $\pm 24V$	$\pm 24V$ Recommended

Mechanical Dimensions

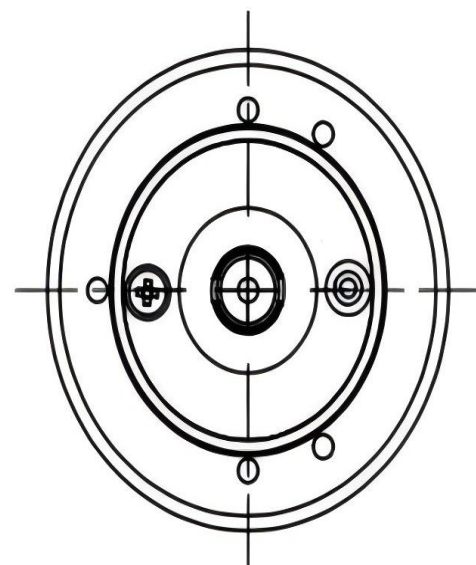
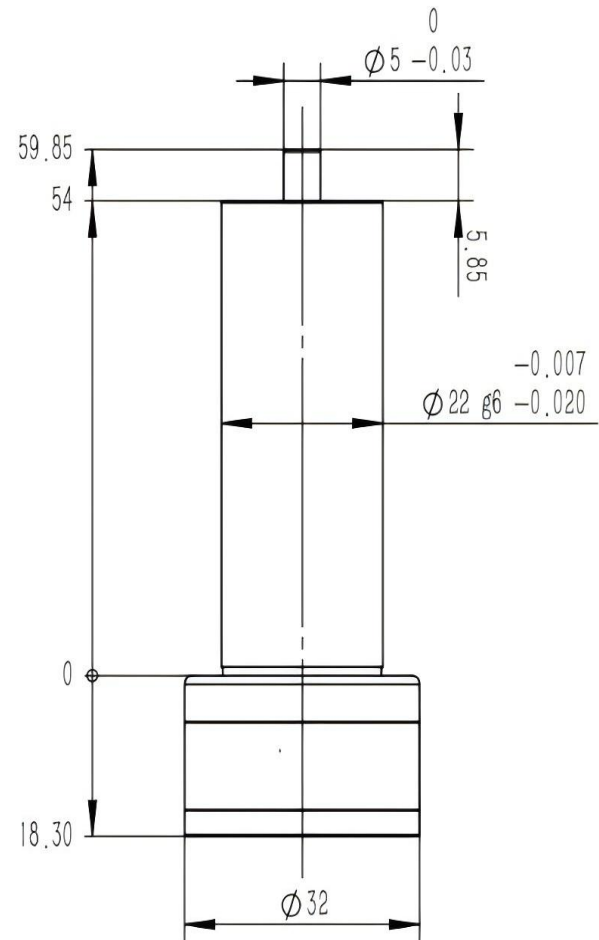
Electrical connection diagram for the drive board

Diagram of the mounting dimensions for the drive board

9215Motor dimensions diagram



9230Motor dimensions diagram



Service & Support

We are dedicated to delivering exceptional optoelectronic solutions to every client. From precision manufacturing and secure delivery to full-lifecycle technical support, we are here to ensure a seamless and reliable experience at every step.

1. Warranty Policy

Quality First, Worry-Free Operation

Warranty Period: We offer a **two-year** warranty service for all of our core optoelectronic products, effective from the date of shipment.

Coverage: We provide free repair or replacement services for malfunctions caused by material defects or workmanship errors under normal operating conditions.

Rapid Response: Upon receiving a warranty claim, we guarantee to initiate the assessment process within **24 hours** to minimize your equipment downtime.

2. Technical Support

Expert Team, Full-Process Guidance

Technical Consultation: Our team of senior optical engineers provides **24/7 online support** to assist with installation, commissioning, optical path alignment, and parameter optimization.

Scheduled Maintenance: We offer full-lifecycle maintenance recommendations, including firmware upgrades, optical component cleaning guidelines, and precision calibration services.

Training Services: We provide customized remote or on-site operational and safety training to ensure your team can operate the equipment efficiently and safely.

3. Logistics & Delivery

Precision Packaging, Global Reach

Professional Packaging: Given the fragile nature of optical instruments, we utilize industrial-grade shockproof, anti-static, and moisture-proof vacuum packaging to ensure zero damage during transit.

Logistics Partners: We partner with top-tier global logistics providers (**DHL / FedEx / UPS / SF Express**) to offer reliable shipping with real-time tracking.

Shipping Insurance: All shipments are fully insured to eliminate logistics risks.

4. Compliance & Certification


Strict Standards, Total Compliance

Quality Certification: Our manufacturing process is **ISO 9001 certified**, and our products comply with international standards such as **CE** and **RoHS**.

Export Compliance: "Committed to environmental responsibility, all our products comply with **RoHS 2.0** and **REACH** standards, ensuring safety and global compliance."

Explore Series

Model	Linearity	Step Response (0.1°)	Aperture
VenusLab-8107	99.90%	0.14 ms	3 / 5 / 7 mm
VenusLab-9215	99.90%	< 0.13 ms (Faster)	3 / 5 / 7 mm
VenusLab-9310	99.90%	< 0.2 ms	10 mm
VenusLab-9230	99.90%	< 0.35 ms	15 / 20 mm

 Get in touch with our team to explore configurations, request a quote, or learn more about customized solutions tailored to your needs.

Let us help you move science forward — faster and smarter.

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