Piezo Stages

VenusLab Sensing & Control Series

Nano Closed-loop Control & Precision Feedback Hub

- Digital Intelligence:24-bit DSP with linearization/waveform algorithms – eliminates piezo hysteresis/nonlinearity.
- Extreme Sensing:≤0.1nm capacitive sensors (ultra-slim probes) – solves narrow-gap measurements.

One Platform Many Possibilities

Contact Us sales@venuslabtech.com

Overview

Smart Drive, Nano Perception

The VL-S/C series is the core component that endows precision machinery with "intelligence" and "vision". This series perfectly integrates high-bandwidth digital piezoelectric controllers with sub-nanometer non-contact sensors, constructing a complete closed-loop ecosystem ranging from microvolt-level voltage driving to picometer-level displacement detection. Whether it is high-speed dynamic scanning or long-term static holding, VL-S/C can ensure the system's precision remains consistent.

Applications

- Leveling of lithography machine workpiece stage and detection of wafer surface profile.
- AFM/STM probe scanning control and image reconstruction.
- Analysis of rotational error of air spindle and testing of hard disk head flying height.
- Providing real-time position monitoring for various types of piezoelectric nano-displacement stages.

Technical Specifications

VenusLab Sensing & Control (VL-S/C) Product Detailed Parameter Summary Table

Model	Product Name	Core Specs / Remarks
Controller Series		
VL-Pzo-Amp-2B	Bipolar Piezo Amplifier	1-Ch, Open-Loop Amplification, -20V~120V Output
VL-Pzo-Ctrl-Ana-1Ch	Analog Piezo Controller	1-Ch, PID Closed-Loop Control, Analog Interface
VL-Pzo-Ctrl-Dig-3Ch	Digital Piezo Controller	3-Ch, 24-bit Precision, USB/RS232, Waveform Generation
VL-IM-Ctrl-1Ch	Inertial Motor Controller	1-Ch, Stick-Slip Drive (Sawtooth Wave), Joystick Support
VL-Pzo-Ctrl-DSP-3Ch	DSP Piezo Controller	3-Ch, High-Speed DSP Processing, Real-time Trajectory Tracking
VL-Pzo-Ctrl-DS-3Ch	Digital Servo Controller	3-Ch, Digital Servo Algorithm, High Dynamic Response
Industrial Capacitive Sensors	(Ind Series)	Standard Package, High Cost-Performance
VL-Cap-Ind-D08-20	Industrial Capacitive Sensor	8mm Cylindrical Probe, Range 20µm
VL-Cap-Ind-D08-100	Industrial Capacitive Sensor	8mm Cylindrical Probe, Range 100µm
VL-Cap-Ind-D08-200	Industrial Capacitive Sensor	8mm Cylindrical Probe, Range 200µm
VL-Cap-Ind-D10-20	Industrial Capacitive Sensor	10mm Cylindrical Probe, Range 20µm
VL-Cap-Ind-D10-100	Industrial Capacitive Sensor	10mm Cylindrical Probe, Range 100µm
VL-Cap-Ind-D10-200	Industrial Capacitive Sensor	10mm Cylindrical Probe, Range 200µm
VL-Cap-Ind-D10-400	Industrial Capacitive Sensor	10mm Cylindrical Probe, Range 400µm
VL-Cap-Ind-D06L-20	Industrial Capacitive Sensor	6mm Flat Probe, Range 20µm
VL-Cap-Ind-D06L-100	Industrial Capacitive Sensor	6mm Flat Probe, Range 100µm
VL-Cap-Ind-D06L-200	Industrial Capacitive Sensor	6mm Flat Probe, Range 200µm
VL-Cap-Ind-D14-20	Industrial Capacitive Sensor	14mm Cylindrical Probe, Range 20µm
VL-Cap-Ind-D14-100	Industrial Capacitive Sensor	14mm Cylindrical Probe, Range 100µm
VL-Cap-Ind-D14-200	Industrial Capacitive Sensor	14mm Cylindrical Probe, Range 200µm
VL-Cap-Ind-D14-400	Industrial Capacitive Sensor	14mm Cylindrical Probe, Range 400µm
VL-Cap-Ind-D10L-20	Industrial Capacitive Sensor	10mm Flat Probe, Range 20µm
VL-Cap-Ind-D10L-100	Industrial Capacitive Sensor	10mm Flat Probe, Range 100µm
VL-Cap-Ind-D10L-200	Industrial Capacitive Sensor	10mm Flat Probe, Range 200µm
VL-Cap-Ind-D10L-400	Industrial Capacitive Sensor	10mm Flat Probe, Range 400µm
VL-Cap-Ind-D20L-20	Industrial Capacitive Sensor	20mm Flat Probe, Range 20µm
VL-Cap-Ind-D20L-100	Industrial Capacitive Sensor	20mm Flat Probe, Range 100µm
VL-Cap-Ind-D20L-200	Industrial Capacitive Sensor	20mm Flat Probe, Range 200µm
VL-Cap-Ind-D20L-400	Industrial Capacitive Sensor	20mm Flat Probe, Range 400µm

Scientific Capacitive Sensors	(Sci Series)	Ultra-Low Drift, Vacuum Compatible, High Resolution
VL-Cap-Sci-D08-20	Scientific Capacitive Sensor	8mm High-Precision Cylindrical, Range 20µm
VL-Cap-Sci-D08-100	Scientific Capacitive Sensor	8mm High-Precision Cylindrical, Range 100µm
VL-Cap-Sci-D08-200	Scientific Capacitive Sensor	8mm High-Precision Cylindrical, Range 200µm
VL-Cap-Sci-D10-20	Scientific Capacitive Sensor	10mm High-Precision Cylindrical, Range 20µm
VL-Cap-Sci-D10-100	Scientific Capacitive Sensor	10mm High-Precision Cylindrical, Range 100µm
VL-Cap-Sci-D10-200	Scientific Capacitive Sensor	10mm High-Precision Cylindrical, Range 200µm
VL-Cap-Sci-D10-400	Scientific Capacitive Sensor	10mm High-Precision Cylindrical, Range 400µm
VL-Cap-Sci-D14-20	Scientific Capacitive Sensor	14mm High-Precision Cylindrical, Range 20µm
VL-Cap-Sci-D14-100	Scientific Capacitive Sensor	14mm High-Precision Cylindrical, Range 100µm
VL-Cap-Sci-D14-200	Scientific Capacitive Sensor	14mm High-Precision Cylindrical, Range 200µm
VL-Cap-Sci-D14-400	Scientific Capacitive Sensor	14mm High-Precision Cylindrical, Range 400µm
VL-Cap-Sci-D06L-20	Scientific Capacitive Sensor	6mm High-Precision Flat, Range 20µm
VL-Cap-Sci-D06L-100	Scientific Capacitive Sensor	6mm High-Precision Flat, Range 100µm
VL-Cap-Sci-D06L-200	Scientific Capacitive Sensor	6mm High-Precision Flat, Range 200µm
VL-Cap-Sci-D10L-20	Scientific Capacitive Sensor	10mm High-Precision Flat, Range 20µm
VL-Cap-Sci-D10L-100	Scientific Capacitive Sensor	10mm High-Precision Flat, Range 100µm
VL-Cap-Sci-D10L-200	Scientific Capacitive Sensor	10mm High-Precision Flat, Range 200µm
VL-Cap-Sci-D10L-400	Scientific Capacitive Sensor	10mm High-Precision Flat, Range 400µm
VL-Cap-Sci-D20L-20	Scientific Capacitive Sensor	20mm High-Precision Flat, Range 20µm
VL-Cap-Sci-D20L-100	Scientific Capacitive Sensor	20mm High-Precision Flat, Range 100µm
VL-Cap-Sci-D20L-200	Scientific Capacitive Sensor	20mm High-Precision Flat, Range 200µm
VL-Cap-Sci-D20L-400	Scientific Capacitive Sensor	20mm High-Precision Flat, Range 400µm
Other Measuring Instruments		
VL-LVDT-D1	Inductive Micrometer (LVDT)	Contact Measurement, ±1mm Range, High Repeatability
VL-Laser-D1	Laser Displacement Sensor	Non-Contact, 2/10/50mm, Spectral Confocal/ Triangulation
VL-Strain-Gauge	Piezo Strain Sensor	Integrated Resistive Strain Gauge, for Feedback

Serivce & 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	Channel Count	Core Spec
VL-Pzo-Ctrl-Dig-3Ch	3 Channels (XYZ Sync)	24-bit Resolution
VL-Cap-Sci-D06L	1 Channel (Single Probe)	<0.1nm Resolution
VL-IM-Ctrl-1Ch	1 Channel (Single Axis)	Adjustable Frequency/Step

📩 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 moves cience forward—faster ands marter.