THE MODAL SHOP
AN AMPHENOL COMPANY

MODEL **9155D-575**

LASER PRIMARY ACCELEROMETER CALIBRATION

- Provides both primary and secondary calibrations, for accurate NIST and/or PTB traceable calibrations
- Direct demodulation of doppler laser signal assures low measurement uncertainty
- Dual beam, dual pass laser allows for increased efficiency and accuracy
- Setup tests, acquire data, save results, and print reports quickly with precision and automation
- Define multiple pass/fail criteria for each test and automatically recall them from the internal database
- Printed certificates comply with ISO 17025
- Automates calibration procedures
- Customizable system fits any application or need
- Calibrates up to 200 frequencies

WORLD CLASS UNCERTAINTY

The Accelerometer Calibration Workstation with Model 9155D-575 Laser Primary option allows the metrologist to perform primary calibration of vibration sensors with extremely low measurement uncertainty, meeting the performance requirements specified in ISO 16063-11. The system seamlessly integrates with the Model 9155D Accelerometer Calibration Workstation, allowing for both primary calibrations using laser interferometer and secondary calibrations using the system's reference standard accelerometer in a back-to-back comparison configuration, as specified in ISO 16063-21.

The system employs a Michelson interferometer to measure the displacement of the calibration platform. The signal is directly demodulated from the in-phase and quadrature-phase components of the laser doppler signal. The result is a primary calibration based upon a physical constant, the wavelength of a He-Ne laser.

When selecting the 9155D-575 Laser Primary option, the 9155D-831 Air Bearing Shaker option is required. This option configures the 9155 system to include the K394B31 Air Bearing Shaker System, providing superior calibration performance compared to traditional flexure-based electromechanical calibration shakers. Using this Air Bearing Shaker, calibrations can be performed up to 20 kHz and transverse motion can be effectively eliminated meeting the recommendations specified in ISO 16063-11 and 16063-21, greatly reducing measurement uncertainties.

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SPECIFICATIONS

Performance		
Frequency Range	0.1 Hz to 20 kHz	
Expanded Measurement Uncertainty Using Low Frequency Shaker [2] [3]	0.1 Hz ≤ *f* < 0.5 Hz	0.9% [1]
	0.5 Hz ≤ *f* ≤ 10 Hz	0.3%
Expanded Measurement Uncertainty Using High Frequency Shaker [2] [3]	5 Hz	1.0%
	(5 < *f* < 100) Hz	0.5%
	100 Hz, 159 Hz	0.2%
	(159 < *f* ≤ 1000) Hz	0.5%
	(1000 < *f* ≤ 5000) Hz	0.7%
	(5000 < *f* ≤ 15 000) Hz	1.5%
	(15 000 < *f* ≤ 20 000) Hz	2.0%
Calibration Method	Primary, per ISO 16063-11 method 3 Secondary, back-to-back, per ISO 16063-21	
Laser Interferometer	He-Ne, dual pass, homodyne plain mirror Michelson interferometer	
Spot Diameter (Approximate)	3 mm	
Measurements	Sensitivty magnitude, phase	
Accelerometer Types Supported [4]	ICP®, Charge, Voltage, Capacitive [4], Piezoresistive [4]	
Sensors Type Supported	Acceleration, Velocity [5]	
Excitation Type	Sine, Stepped Sine	
Acceleration Levels [6]	0.1 to 10 g	
Calibration Data Management	Yes	
Automatic Pass/Fail Classification	Yes	
Measurement Units	English, Metric	
Main Voltage Supply	115 volts - optional 220 volts	

Required 9155D System Options	
9155D	Base Accelerometer Calibration Workstation
9155D-831	K394B31 Air Bearing Shaker System, includes precision air bearing shaker, integral Quartz reference accelerometer and power amplifier

Supplied Accessories
9155D Calibration Software
Data Acquisition Hardware
Microsoft Office Software Suite
Reference Accelerometer with Paired ICP® Signal Conditioner
System Verification Sensor
Various Mounting Adaptors & Cables
PC with Keyboard, Mouse, and Monitor
Printer

Other System Options	
9155D-100	**19" Rack Integration.** Approx. 36.5"H x 21.75"W x 26"D [93 cm x 55 cm x 66 cm]. Integrates components in 19" rack.
9155D-120	**Shaker Mount.** Provides wood pedestal to support calibration shaker. Requires user to fill with sand (not included).
9155D-160	**Tool Kit.** Includes torque wrench, screwdrivers, crescent wrenches, toolbox, etc.
9155D-350	**Calibration Label Printing.** Provides automatic calibration label printing using a Zebra thermal transfer label printer.
9155D-400	**TEDS Sensor Support.** Provides for automatic update of TEDS sensors. Requires 9155D-443 option.
9155D-442	**Basic ICP Signal Conditioning.** Adds signal conditioner for ICP and charge mode sensors.
9155D-443	**Dual-mode Charge Amplifier.** Computer control and automated switching between ICP and charge mode sensors.
9155D-445	**Capacitive Sensor Signal Conditioning.** Adds signal conditioner for capacitive sensors.
9155D-478	**Piezoresistive Signal Conditioning.** Adds support for piezoresistive sensors. Includes PCB 478A30 signal conditioner.
9155D-525	**Shock Calibration.** Provides for verification of shock accelerometers from 20 g to 10 000 g.
9155D-501	**Linearity.** Provides for multipoint sensor linearity checks via sinusoidal vibration up to 40 g.
9155D-550	**Resonance Check.** Provides for resonance check of accelerometers up to 50 kHz.
9155D-600	**Velocity Sensor Calibration.** Allows calibration of velocity sensors. Reports data in velocity units.
9155D-771	**Low Frequency (0.5 Hz–500 Hz).** Long stroke shaker with SmartStroke™ technology and accelerometer reference sensor.
9155D-779	**Low Frequency (0.1 Hz–500 Hz).** Long stroke shaker with SmartStroke™ technology, accelerometer and optical reference sensors.
9155D-830	**K394B30 Air Bearing Shaker.** Adds precision air-bearing shaker 5 Hz – 15 kHz.
9155D-831	**K394B31 Air Bearing Shaker.** Adds precision high-frequency air bearing shaker 5 Hz – 20 kHz.
9155D-913	**Impulse Calibration.** Allows dynamic impulse calibration of pressure transducers from 200 to 15 000 psi.
9155D-961	**Hammer Calibration.** Allows calibration of instrumented impact hammers, includes 9961C cal fixture.

[1] Unaudited.
[2] Typical, determined using k=2 coverage factor for a 95% confidence interval.
[3] Phase uncertainty available.
[4] Optional features add dedicated signal conditioning units to support accelerometer type.
[5] Optional software feature supports velocity units and constant velocity sweep.
[6] Low frequency acceleration levels are stroke limited (10 mm for K394B31, 255 mm for 2129E025).

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