Model 9110D

Portable Vibration Calibrator

- Create Calibration Certificates for Vibration Instrumentation
- Calibrate Vibration Analyzers & Meters In-House
- Confirm Critical Vibration Shutdown Alarms & Logic
- Detect Sensor Drift & Amplified Outputs at Key Frequencies
- Prevent Early or Late Shutdowns Due to Proximity Probe Errors
- Compliance to API 670 & ISO 9001

Typical Applications

- In-House Calibration of Vibration Instrumentation
- Safety Instrumented Systems (SIS)
- Loop Checks & System Troubleshooting, DCS & PLC
- Proximity Probe Testing and Checks for Mismatched Systems
- On-Turbine Vibration Sensors & Charge Amplifiers

Lab Accuracy to the Field

The 9110D Portable Vibration Calibrator is the ideal tool for checking accelerometers, velocity transducers, and proximity probes over a wide operating frequency and amplitude range. The unit is a compact, battery-powered, and completely self-contained vibration reference source, which can be conveniently used to calibrate individual sensors, vibration switches, and data collectors, as well as to validate the entire measurement channel of a condition monitoring or recording system. An integral precision quartz reference accelerometer and closed-loop level control gives the 9110D enhanced stability and superior vibration calibration over an extended 5 Hz to 10 kHz frequency range. Packaged in a rugged Pelican® Storm case, the 9110D is always ready for travel to test sites, bringing laboratory accuracy to the field.

Additional features include an ICP®, voltage, charge mode or modulated current test sensor input for direct connection and readout of the most common types of accelerometers and velocity transducers. The test sensor sensitivity is calculated and displayed on the screen in real time. The unit’s internal memory capability can store up to 500 calibration records, and data can be easily transferred to a computer through a USB flash drive. This allows for the creation and printing of ISO 17025-compliant, customizable calibration certificates and reports using the supplied Excel® workbook template. The workbook is also used to program repetitive tests into the calibrator along with pass/fail tolerances for each data point.

New CALROUTE firmware allows technicians to program repetitive calibration test points and pass/fail tolerances. Once programmed via supplied Microsoft Excel® workbook, technicians can perform calibrations rapidly and receive instant pass/fail feedback. No additional software is needed to program the calibrator or create reports.
### Specifications

#### Performance

**Frequency Range (operating)** (1) 5 Hz to 10 kHz  300 to 600k CPM  
**Maximum Amplitude** (50 Hz, 10-gram payload) 20 g pk  196 m/s² pk  20 in/s pk  500 mm/s pk  150 mils pk-pk  3.8 mm pk-pk  
**Maximum Amplitude** (50 Hz, 500-gram payload) 2.5 g pk  24.5 m/s² pk  3.5 in/s pk  90 mm/s pk  
**Maximum Payload** (2) 800 grams  
**Test Operation** Manual (Closed Loop) or Semi-Automatic  
**Auto-Payload Calculation** Controlled via Reference Accelerometer, No User Entry Required  
**Memory** Stores 500 Calibration Records; Stores 30 Data Points Per Calibration Record; Stores Model Number, Serial Number, Mounting Orientation & Notes for each Record; Stores Semi-Automated Test Routine  
**Non-Volatile Memory** Up to 30 Test Points per Routine with Pass/Fail Upper & Lower Bound Tolerances  
**Programmability** Up to 30 Test Points per Routine with Pass/Fail Upper & Lower Bound Tolerances. Flexible Pass/Fail Based Upon Deviation from Sensitivity at Reference Frequency or Hard Values and Supports Asymmetric Tolerances.  
**Accuracy of Readout** (3)  
- Acceleration (10 Hz to 1 kHz) ±3 % (4)  
- Acceleration (5 Hz to 10 Hz) ±5 % (4)  
- Velocity (10 Hz to 1000 Hz) ±3 %  
- Displacement (30 Hz to 150 Hz) ±3 %  
**Accuracy Verification Test** Field Drift Test Procedure Provided (5)  
**Units of Readout**  
- Acceleration (pk and RMS) g m/s²  
- Velocity (pk and RMS) in/s mm/s  
- Displacement (pk to pk) mils µm  
- Frequency Hz CPM  

#### Physical

**Sensor Under Test Sensitivity** mV/EU, mA/EU, µA/EU or pC/EU  
**AC Power (for recharging battery)** 110–240 VAC, 50–60 Hz  
**Operating Battery Life** (3) 18 hours  
**Industry Reference** ICP, Voltage, Modulated Current, Charge (7)  
**Monitor Reference Out** 10 mV/Vg (nominal) Quartz Reference Accelerometer, BNC Jack Output  
**USB Port** Export Calibration Records to Flash Drive (FAT 32), Used for Loading Semi-Automated Test Routines (Model CALCROUTE) & provides power for external power supplies  
**Dimensions (H x W x D)** 8.5 x 12 x 10 in  22 x 30.5 x 28 cm  
**Weight** 18 lb  8.2 kg  
**Sensor Mounting Platform** ¼-28 Thread Size  
**Export File Format** CSV (comma-separated values)  
**Operating Temperature** 32 °F–122 °F  0 °C–50 °C  

#### Optional Accessories (6)

- **9100-PPASH** Proximity probe adaptor kit for testing probes mounted inside a probe holder  
- **9155-MNT93** ¼-20 F to ¼-28 F Mounting  
- **9155-MNT43** ¼” NPT F Mounting Adaptor to ¼-28 M  
- **9100-PP401** Proximity probe adaptor kit for probes with 5 mm or 8 mm tip diameter (9)  
- **9100-HHTHRGKIT** High-temp charge mode accell calibration accessory kit  

Meets API 670 requirements for all required test points in acceleration or velocity from 10 Hz to 1000 Hz & payloads to 800 grams.

(1) 100-gram payload  
(2) Operating range reduced at higher payloads. Reference manual for full details.  
(3) Measured with 10-gram quartz reference accelerometer  
(4) Calculated by measuring the % difference between the known sensitivity of a reference accelerometer as calibrated by laser primary system per ISO 16063-11 and the measured sensitivity of same reference accelerometer when tested at the same points  
(5) Test is conducted independently of product firmware with calibrated voltmeter  
(6) As shipped from factory in new condition  
(7) External Charge Amplifier Required  
(8) For a comprehensive list of available accessories, see Product Spec Sheet or call  
(9) For metric unit micrometers, use Model 9100-MP901  
(10) Mounting plates support sensors listed. Multi-hole mounting plates are convenient but not optimized for the best calibration results. The Modal Shop offers a full line of customized mounting pads validated in our calibration lab for precise results. Contact us for more information.

**B&K:** 8324  
**CEC:** 4-123, 4-125, 4-126, 4-128, 4-130, 4-137, 4-138, 4-170, 4-171  
**CA 280, CE 281, CA 303, CA 134, CE 134, CA 132, CE 132, CA 020, CE 020, CA 280, CE 281, CA 303, CA 306, CE 311**  
**Matrix:** 5485C, SA6350  
**PCB Piezotronics:** 357 & EX600B series, EX615442 and EX619A11  
**Dytran:** 6500 series, 3085C and 3235 series  
**Endevco:** 6233C, 6222M, 6225S, and 6240 Series  

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**The Modal Shop**

10310 Aerohub Boulevard, Cincinnati, OH 45215 USA  
modalshop.com  |  info@modalshop.com  |  800 860 4867  |  +1 513 351 9919

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