

Model Number

9110D

# PORTABLE VIBRATION CALIBRATOR

Revision: 1

ECN#:

## GENERAL

Frequency Range (operating) <sup>[1]</sup>	5 Hz–10 kHz	300–600 k CPM
Maximum Amplitude (50 Hz, 10-gram payload)	20 g pk 20 in/s pk 150 mils pk-pk	196 m/s <sup>2</sup> pk 500 mm/s pk 3.8 mm pk-pk
Maximum Amplitude (50 Hz, 500-gram payload)	2.5 g pk 3.5 in/s pk	24.5 m/s <sup>2</sup> pk 90 mm/s pk
Maximum Payload <sup>[2]</sup>	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 Programmability	Storage of Calibration Settings for Accuracy Up to 30 Test Points per Routine with Pass/Fail Upper & Lower Bound Tolerances	

## ACCURACY OF READOUT <sup>[3]</sup>

Acceleration (10 Hz to 10 kHz)	± 3% <sup>[4]</sup>
Acceleration (5 Hz to 10 Hz)	± 5% <sup>[4]</sup>
Velocity (10 Hz to 1000 Hz)	± 3%
Displacement (30 Hz to 150 Hz)	± 3%
Amplitude Linearity (100 Hz) <sup>[1]</sup>	< 1% up to 10 g pk
Waveform Distortion (30 Hz to 2 kHz) <sup>[1]</sup>	< 5% THD (typical) up to 5 g pk
Accuracy Verification Test	Field Drift Test Procedure Provided <sup>[5]</sup>

## UNITS OF READOUT

Acceleration (pk and RMS)	g	m/s <sup>2</sup>
Velocity (pk and RMS)	in/s	mm/s
Displacement (pk to pk)	mils	µm
Frequency	Hz	CPM
Internal Battery (sealed solid gel lead acid)	12 VDC, 4 amp-hours	
Sensor Under Test Sensitivity	mV/EU, mA/EU, µA/EU or pC/EU	
AC Power (for recharging battery)	110–240 VAC, 50–60 Hz	
Input Power Rating from Charger	18 VDC, 1 A	
Operating Battery Life <sup>[6]</sup>		
100 Hz, 1 g pk <sup>[1]</sup>	18 hours	
100 Hz, 10 g pk <sup>[1]</sup>	1 hour	

## INPUT/OUTPUT

Sensor Under Test Input	ICP, Voltage, Modulated Current, Charge, Differential Charge, Single-ended Charge <sup>[8]</sup>
External Source In (Max)	1 VAC RMS
Bias Fault Indication (ICP®)	Yes
Monitor Reference Out	10 mV/g (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 CALROUTE) <sup>[7]</sup>
Export File Format	CSV (comma-separated values)

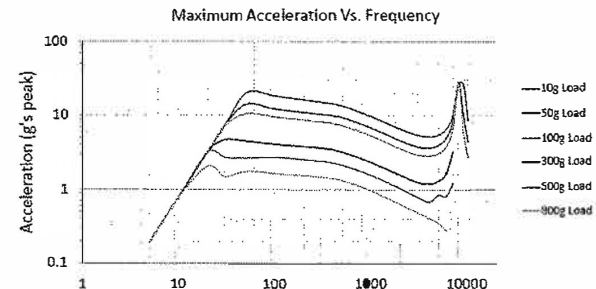
## PHYSICAL

Dimensions (H x W x D)	8.5 x 12 x 10 in	22 x 30.5 x 28 cm
Weight	18 lb	8.2kg
Operating Temperature	32 °F–122 °F	0 °C–50 °C
Sensor Mounting Platform	¼-28 Thread Size	

### NOTES:

- [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] & provides power for optional external power supplies
- [8] External Charge Amplifier Required

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



All specifications are at room temperature unless otherwise specified.  
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In the interest of constant product improvement, specifications may change without notice.



Project Engineer:

NMA

Date: 4/2/19

Product Manager:

MRS

Date: 4/2/19

SAM Team Leader:

CAO

Date: 4/2/19

Spec Number:

PS-0102

Page 1 of 2

**THE MODAL SHOP**  
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SAM-F020 revB 05/17/18

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## SUPPLIED ACCESSORIES

- Mounting Wrench Model PD-1320-01
- Power Supply and Plug Adaptors Model 9100-PS01
- 1/4-28 to 1/4-28 Mounting Stud Model 081B20
- 10-32 to 1/4-28 Mounting Stud Model 081A08
- M8 x 1.25 M to 1/4-28 M Mounting Stud Model M081A63
- M8 x 1.25 F Thru Hole Mounting Pad Model PVC-MNT01
- M8 x 1 M to 1/4-28 M Mounting Stud Model 081M165
- M8 x 1 F Thru Hole Mounting Pad Model PVC-MNT02
- Mounting Plate, 3- & 4-Hole High-Temp Vibration Sensors [9] Model PVC-HTMNT01
- Mounting Plate, 3- & 4-Hole High-Temp Vibration Sensors [9] Model PVC-HTMNT02
- NIST Traceable Certificate of Calibration, Metric & English Units, Accredited to ISO 17025 by A2LA, 18-point Certificate of Calibration, Published Uncertainties on www.a2la.org, Reference Accelerometer Calibrated via ISO 16063-11 Laser Primary Method Model 9100-CAL01
- Technical Support: Training Webinars [10], 24/7 Video Library
- USB Flash Memory Drive: Loaded with Microsoft Excel® Macro-Enabled Calibration Report Generation & CALROUTE Semi-Automated Test Programming Workbook Model 9110-USB
- Accessory Pouch
- Quick Start Guide: Avail. in English, Chinese, Polish, Japanese, Russian, French & German
- Warranty: 2 Years, Inclusive of Drift/Accuracy

## CALIBRATION REPORT GENERATION WORKBOOK

- Certificates Generated Via 9110D Memory: Frequency Response & Linearity for AC Voltage Output Transducers such as accelerometers, proximity probes, moving coil vibration sensors, and dynamic velocity sensors.
- Certificates Generated Via User-Input: Vibration analyzer/meter linearity & frequency response accuracy, linearity for 4-20 mA vibration transmitters, proximity probe curves (gap vs. DC voltage)

## OPTIONAL ACCESSORIES

### PROXIMITY PROBE CALIBRATION

- Proximity probe adaptor kit for probes with 5 mm or 8 mm tip diameter. Includes Mitutoyo micrometer scaled in mils and 4140 steel calibration target. Model 9100-PPA01
- Proximity probe adaptor kit for probes with 5 mm or 8 mm tip diameter. Includes Mitutoyo micrometer scaled in microns and 4140 steel calibration target. Model 9100-MPPA01
- Proximity probe adaptor kit for probes with 11 mm tip diameter. Model 9100-PPA05
- Proximity probe adaptor kit for testing probes mounted inside a probe holder. Includes digital micrometer scaled in mils or microns. Fine adjustment via positional micrometer. Model 9100-PPASH

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## MOUNTING

- 1/2-20 F to 1/4-28 F Mounting Pad Model 9155-MNT93
- 1/4" NPT F Mounting Adaptor to 1/4-28 M Model 9155-MNT43
- 3/8-24 M to 1/4-28 M Mounting Stud Model 9155-MNT73

## POWER / CHARGE-MODE

- 24 VDC Power Supply for testing 4-20 mA Loop-Powered Vibration Transmitters, Non-ICP 24 VDC Velocity Sensors & Modulated Current Output Vibration Sensors and Charge Amplifiers. USB Powered. Model 9100-PS02
- 3-socket MIL cable used with 9100-PS02 for testing GE/Bently Nevada® 3-pin MIL case mounted vibration sensors. Spade Lug terminations & BNC output for signal. Model 9100-PS02-CBL01
- 5 VDC Power Supply for testing GE/Bently Nevada® Trendmaster® Vibration Sensors. USB powered. Integral 5-pin Mating Cable. Plug & Play. BNC Output. Model 9100-PS04-TM
- 15 VDC Power Supply for Testing Pruftechnik CLD Vibration Sensors & Other Modulated Current Sensors with Same Power Scheme. USB Powered. TNC Input. Plug & Play. BNC Output. Model 9100-PS07-PT
- High-temp charge mode accelerometer calibration accessories kit. Includes 7/16-27 2-socket MIL cable 2 ft. BNC plug termination, 10 mV/pC charge amplifier, BNC M to BNC M cable 3 ft, 10-32 plug to BNC jack scope input adaptor. Model 9100-HTCHRGKIT

## TRAINING

On-Site Seminars Available Upon Request Model 9100-TRAINING

### NOTES:

[9] Mounting plates support sensors listed. Multi-hole mounting plates are convenient but not optimized for the best calibration results. 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
- Bently Nevada: 330450, 330750, 350900
- CEC: 4-123, 4-125, 4-126, 4-128, 4-130, 4-137, 4-138, 4-170, 4-171
- Dytran: 3085C and 3235 series
- Endevco: 6233C, 6222M, 6222S and 6240 Series
- Metrix: 5485C, SA6350
- PCB Piezotronics: 357 & EX600B series, EX615A42 and EX619A11
- Vibro-Meter: CA 134, CE 134, CA 202, CA 280, CE 281, CA 303, CA 306, CE 311

[10] Available upon request

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