

Model 9000A

SMARTSINE™ CALIBRATION DRIVER

Benefits

- Acceleration, velocity, displacement, and acoustic readout units
- Battery-powered unit is self-contained solution
- Compact and integrated sinusoidal source, ICP inputs, and meter system
- Offers sinusoidal calibration closed loop control over a 0.5 Hz to 20 kHz frequency range
- Portable by design with heavy duty case

Applications

- Accelerometer or velocity sensor calibration
- Large sensor verification (Geophones, Vibration Switches, Seismoprobes, etc.)
- Acoustic calibration: drive acoustic couplers for “back-to-back” calibration of array microphones
- Testing of Electronic devices with embedded vibration measurement capability

Drive Shakers and Create Calibration Certificates

The **SmartSine™ Calibration Driver Model 9000A** is a battery-powered sinusoidal signal source used to drive shaker systems to predefined vibration levels and frequencies to calibrate individual sensors, vibration switches and data collectors. The 9000A can also be used to drive an acoustic coupler for calibration of array microphones.

Model 9000A offers two sensor input channels and one output channel. The output channel provides signal input to drive shaker systems and other excitation sources over a wide amplitude and adjustable frequency range. Built-in CALROUTE functionality adds semi-automation capability with pre-programmed frequency and amplitude points using Microsoft Excel®.

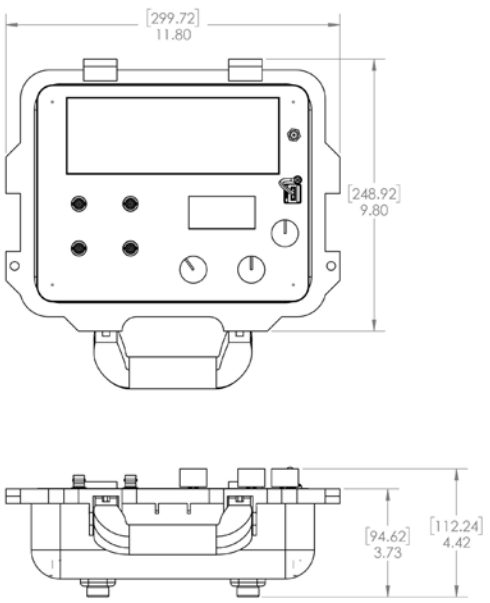
The 9000A displays test sensor sensitivity on the readout screen in real-time by comparing output against a known reference sensor. Both channels feature ICP® (IEPE) inputs for common piezoelectric accelerometer and microphone signal conditioning. In addition, users can save up to 500 calibration records directly to the unit's internal memory. Records are transferrable via the unit's USB port to a flash drive and imported as an Excel spreadsheet, allowing the creation of ISO 17025-compliant customizable calibration certificate on a computer.





SMARTSINE™ CALIBRATION DRIVER SPECIFICATIONS

Performance	Specification		
Test Sensor In			
Sensor Type	Voltage or ICP® (IEPE) ^[1]		
Input Voltage (Max)	5 V pk ^[2]		
Reference Sensor In			
Sensor Type	ICP® (IEPE) ^[1] ONLY		
Input Voltage (Max)	1 V pk ^[2]		
Reference Sensitivity	Single point or curve (up to 60 points)		
Bias Fault Indication (ICP® Sensors)	Yes		
Source Out	Sine wave form of 1 V RMS amplitude Max ^[3]		
Monitor Reference Out	Buffered reference output		
Electrical Connector (Input/Output)	BNC Jack		
Operating Range ^[4]	0.5 Hz–20 kHz (30–1200k CPM)		
Maximum Testing Amplitudes			
Ref Sensitivity	Vibration	Ref Sensitivity	Sound Pressure Level
(mV/g)	g pk in/s pk mils pk-pk m/s ² pk mm/s pk μm pk-pk	(mV/Pa)	dB ^[5]
10	100 61.45 195.59 981 1561 4968	12.5	130
100	10 6.14 19.56 98 156 497	50	115
Units of Readout			
Acceleration (pk or RMS)	[g], [m/s ²]		
Velocity (pk or RMS)	[in/s], [mm/s]		
Displacement (pk to pk)	[mils], [μm]		
Sound Pressure Level ^[5]	[dB]		
Frequency	Hz (CPM)		
Test Sensor Sensitivity	mV/EU ^[6]		
Shaker Displacement Limit Setting (Max) ^[7]	10 in pk-pk (254 mm pk-pk)		
Storage	Up to 500 calibration records		
Points Per Record	30 calibration data points		
Sensor Information	Model number, serial number, mounting orientation (x, y, z), and user notes		
Export File Format	Export calibration records to USB flash drive (FAT 32) in CSV (comma-separated values) format		
AC Power (for recharging battery)	110 V–240 V, 50 Hz–60 Hz		
Input Power Rating from Charger	18 VDC, 1 A		
Internal Battery (Li-ion)	11.1 VDC, 2200 mAh		
Operating Battery Life ^[8]	16 hours		
Physical	Specification		
Dimensions (H x W x D)	4.7 x 9.8 x 11.8 in (12 x 25 x 30 cm)		
Weight	7.8 lb (3.56 kg)		
Operating Temperature	32 °F to 122 °F (0 °C to 50 °C)		



Model 9000A

Technical Drawing
Dimensions in inches [mm]

Supplied Accessories

- Accessory Pouch Containing:
- USB Flash Drive with Calibration Report Generation Worksheet
 - Universal Power Supply (Power Charger) with interchangeable plug adaptors

[1] 5 mA constant current excitation to ICP® (IEPE) reference sensor
 [2] Recommended SUT voltage > 20 mV pk; REF-voltage > 4 mV pk
 [3] 47 kΩ output impedance
 [4] Or limited to frequency range of reference sensitivity curve input
 [5] Reference 20 μPa
 [6] EU: [g], [m/s²], [in/s], [mm/s], [mils], [μm], or [Pa] for acoustics
 [7] Actual Max. amplitude may be limited by exciter specifications and amplifier gain
 [8] As shipped from factory in new condition



MTS SYSTEMS CORPORATION

www.modalshop.com

3149 E. Kemper Rd, Cincinnati, OH 45241 USA

Phone: +1 513.351.9919 | Email: info@modalshop.com

© 2018 PCB Piezotronics, Inc. In the interest of constant product improvement, specifications are subject to change without notice. PCB®, ICP®, Swiveler®, Modally Tuned®, and IMI® with associated logo are registered trademarks of PCB Piezotronics, Inc. in the United States. ICP® is a registered trademark of PCB Piezotronics Europe GmbH in Germany and other countries. SensorLineSM is a servicemark of PCB Piezotronics, Inc.

Hochwertige Messtechnik und Beratung aus einer Hand



PCB Synotech GmbH
 Porschestra. 20 – 30 • 41836 Hückelhoven
 Tel.: +49 (0) 24 33/44 44 40 – 0

E-Mail: info@synotech.de • www.synotech.de