

# Portable vibration calibrator

## Model 28959G



### Key features

- Ideal tool for field validation of vibration sensors
- Completely self-contained system includes:
  - Built-in vibration exciter
  - Signal generator
  - Computer-controlled amplifier/servo mechanism
  - Reference accelerometer
  - USB interface
  - Touch screen display
  - Sensor signal conditioners
- Designed for multiple accelerometer types:
  - Charge mode piezoelectric (PE)
  - Voltage mode piezoelectric (IEPE)
  - Piezoresistive (PR)
  - Variable capacitance (VC)
- Calculates and displays sensor sensitivity in real time
- Configured and operated with touch screen user interface

### Advanced features

- Pre loaded Sensor Library
- PDF report generation
- USB interface
- Sensor simulation
- Automatic test mode
- Auto mass load correction
- Programmable sensor current
- Programmable sensor voltage
- Universal AC input power
- Battery-powered with built in charger
- Custom sensor profile software

### Description

The Endeveco® model 28959G portable calibrator is designed to provide precision calibration for various types of accelerometers in the field. It is a self-contained system which includes a built-in vibration exciter, signal generator, computer-controlled amplifier/servo mechanism, reference accelerometer, a USB interface, touch screen display, signal conditioners and all necessary connectors and mounting accessories.

The model 28959G is designed to accept IEPE (Isotron) Accelerometers, charge-mode piezoelectric accelerometers, piezo resistive accelerometers and variable capacitance accelerometers directly. Test amplitude is adjustable up to 20 g's over the frequency range of 7 Hz to 10 kHz. An internal reference accelerometer traceable to NIST serves as the comparison standard. Internal RAM memory stores over 10,000 test results. Sensitivity is supplied in English or metric engineering units.

The unit features an automatic test mode to calibrate accelerometers with little user interaction. Sensor types can be selected from the built in sensor library and the 28959G will sweep through the specified accelerometer frequency range. The deviation is plotted in real time on the color LCD screen. Results are saved in PDF format and can be saved to a USB storage device for printing.

The 28959G also includes software that allows for the generation of custom sensor profiles that can be loaded into internal memory.

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### PRIMARY FUNCTIONS

#### 1 SHAKE MODE

To shake or excite a transducer under test (DUT). In shake mode, the 28959G can be used as a variable frequency, variable amplitude shaker. In this mode, the user sets the frequency and amplitude manually.

#### 2 SENSITIVITY

To calculate transducer sensitivity. By comparing signals sent to the reference accelerometer by the signal generation board and the signals returned by the transducer under test, the 28959G can automatically determine the test transducer's sensitivity to a high level of accuracy.

#### 3 SIGNALS

To simulate a transducer using a precision signal generator (function generator). The 28959G is capable of producing signals over a wide amplitude and frequency using its built in amplifiers to simulate a variety of signals. This allows the user to simulate a working transducer and is the ideal tool for electronics testing, troubleshooting, or calibrating signal conditioners, analyzers and condition-monitoring systems.

#### 4 CALIBRATION

To produce a NIST traceable calibration certificate. Once the sensitivity has been calculated and saved across the test transducers frequency range, the 28959G will produce a NIST traceable certificate and graph in PDF format. This certificate is stored into the 28959G's memory, and can be recalled and exported anytime to USB.

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### User interface

- A** Dual USB port for data transfer and accessory power.
- B** AC power receptacle (120 – 240 VAC, 50-60 Hz) for power cord supplied with the unit.
- C** A spring terminal provides power and signal connections between a piezoresistive and/or a variable capacitance accelerometer and the 28959G.
- D** Shaker head/sensor mounting location for the device under test (DUT).
- E** Color, resistive LCD touch screen.
- F** Push button On/Off switch.
- G** BNC sensor input for sensitivity test of Charge and IEPE (Isotron) accelerometers.
- H** Custom sensor In/Out
- I** BNC sensor simulator output. Simulates a variety of preset transducer types. Data is provided from the built-in sensor library.
- J** Knob for amplitude adjustment in test mode. This knob can also be used for screen navigation – push to go back.
- K** Knob for frequency adjustment in test mode. This knob can also be used for screen navigation. Rotate to scroll, push to select.



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### Specifications

#### General

Frequency Range (100 gram payload)	7 Hz to 10 kHz
Amplitude (max, 100 Hz, no payload)	20 g pk (196 m/s <sup>2</sup> pk)
Sensor test method	Auto sweep or manual operations
Maximum Payload	750 grams

#### Accuracy

Acceleration (30 Hz to 2 kHz)	±3%
Acceleration (7 Hz to 10 kHz)	±12%
Velocity (10 Hz to 1000 Hz)	±3%
Displacement (30 Hz to 150 Hz)	±3%
Amplitude Linearity (100 gram payload, 100 Hz)	< 1% up to 10 g pk
Waveform Distortion (100 gram payload, 30 Hz to 2 kHz)	< 5% THD (typical) up to 5 g pk

#### Readout

Acceleration	g pk, g RMS, m/s pk, m/s RMS
Velocity	mm/s pk, mm/s RMS, in/s pk, in/s RMS
Displacement (peak to peak)	mils p-p, μm p-p
Frequency	Hz, CPM

#### Input/Output

Sensor inputs	Charge mode piezoelectric (PE) Voltage mode piezoelectric (IEPE) Piezoresistive (PR) Variable capacitance (VC)
Sensor simulation output	PE, IEPE bias and signal
Monitor reference out	10 mV/G (nominal), internal reference

#### Power

Internal battery	12 V DC, 6 amp hours
AC Power (battery recharging)	100-240 V, 50-60 Hz
Operating battery life	
100 gram payload, 100 Hz @ 1g pk	12 hours
100 gram payload, 100 Hz @ 10G pk	1-2 hours

#### Physical

Sensor connectors	BNC, DIN, Terminal strip
Display	4.3 inch LED touchscreen
Controls	2 Dials, touchscreen
Dimensions (H x W x D)	10 in x 11.5 in x 7 in
Weight	13 lbs (5.9kg)
Sensor mounting platform thread size	1/4-28
Operating temperature	32°F to 122°F (0°C to 50°C)

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### Accessories

Part number	Description	28959G
PWR-01	Power cord, North America (IEC C13 to NEMA 5-15P)	Included
ACC-100	Wrench	Included
MNT-106	¼-28 to 2-56 Adapter	Included
MNT-11	¼-28 to 10-32 Adapter	Included
MNT-104	¼-28 to ¼-28 Stud	Included
MNT-107	¼-28 to 6-32 Adapter	Included
MNT-105	¼-28 to 10-32 Stud	Included
DIN-8P	DIN Plug	Included
MNT-114	¼-28 to flat plate for adhesive mounting	Included
MNT-113	Universal accelerometer adapter Disc	Included
PL-4-06	PR/VC connector for terminals	Included
	USB Stick, loaded with instruction manual, Sensor Profile software and sensor database	Included
ED857	28959G Calibration Certificate	Included
2270M8	Transfer standard accelerometer for calibration of standards built into shakers.	Optional
3090CM12-12	Low noise cable assembly, 10-32 to BNC, 1 foot	Optional
30279	PR/VC mounting fixture	Optional

### Ordering information

1. Maintain high levels of precision and accuracy using Meggitt's factory calibration services. Call Meggitt's inside sales force at 866-ENDEVCO for recommended intervals, pricing and turn-around time for these services as well as for quotations on our standard products.