Portable vibration calibrator
Model 28959G

Description
The Endevco® 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.

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
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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.
## Specifications

### General
- **Frequency Range (100 gram payload):** 7 Hz to 10 kHz
- **Amplitude (max, 100 Hz, no payload):** 20 g pk (196 m/s² pk)
- **Sensor test method:** Auto sweep or manual operations
- **Maximum Payload:** 750 grams

### Accuracy
<table>
<thead>
<tr>
<th>Metric</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceleration (30 Hz to 2 kHz)</td>
<td>±3%</td>
</tr>
<tr>
<td>Acceleration (7 Hz to 10 kHz)</td>
<td>±12%</td>
</tr>
<tr>
<td>Velocity (10 Hz to 1000 Hz)</td>
<td>±3%</td>
</tr>
<tr>
<td>Displacement (30 Hz to 150 Hz)</td>
<td>±3%</td>
</tr>
<tr>
<td>Amplitude Linearity (100 gram payload, 100 Hz)</td>
<td>&lt; 1% up to 10 g pk</td>
</tr>
<tr>
<td>Waveform Distortion (100 gram payload, 30 Hz to 2 kHz)</td>
<td>&lt; 5% THD (typical) up to 5 g pk</td>
</tr>
</tbody>
</table>

### 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 @ 1 g 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

<table>
<thead>
<tr>
<th>Part number</th>
<th>Description</th>
<th>28959G</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWR-01</td>
<td>Power cord, North America (IEC C13 to NEMA 5-15P)</td>
<td>Included</td>
</tr>
<tr>
<td>ACC-100</td>
<td>Wrench</td>
<td>Included</td>
</tr>
<tr>
<td>MNT-106</td>
<td>1/4-28 to 2-56 Adapter</td>
<td>Included</td>
</tr>
<tr>
<td>MNT-11</td>
<td>1/4-28 to 10-32 Adapter</td>
<td>Included</td>
</tr>
<tr>
<td>MNT-104</td>
<td>1/4-28 to 1/4-28 Stud</td>
<td>Included</td>
</tr>
<tr>
<td>MNT-107</td>
<td>1/4-28 to 6-32 Adapter</td>
<td>Included</td>
</tr>
<tr>
<td>MNT-105</td>
<td>1/4-28 to 10-32 Stud</td>
<td>Included</td>
</tr>
<tr>
<td>DIN-0P</td>
<td>DIN Plug</td>
<td>Included</td>
</tr>
<tr>
<td>MNT-114</td>
<td>1/4-28 to flat plate for adhesive mounting</td>
<td>Included</td>
</tr>
<tr>
<td>MNT-113</td>
<td>Universal accelerometer adapter Disc</td>
<td>Included</td>
</tr>
<tr>
<td>PL-4-06</td>
<td>PR/VC connector for terminals</td>
<td>Included</td>
</tr>
<tr>
<td>USB Stick</td>
<td>USB Stick, loaded with instruction manual, Sensor Profile software and sensor database</td>
<td>Included</td>
</tr>
<tr>
<td>ED857</td>
<td>28959G Calibration Certificate</td>
<td>Included</td>
</tr>
<tr>
<td>2270M8</td>
<td>Transfer standard accelerometer for calibration of standards built into shakers.</td>
<td>Optional</td>
</tr>
<tr>
<td>3090CM12-12</td>
<td>Low noise cable assembly, 10-32 to BNC, 1 foot</td>
<td>Optional</td>
</tr>
<tr>
<td>30279</td>
<td>PR/VC mounting fixture</td>
<td>Optional</td>
</tr>
</tbody>
</table>

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.

Continued product improvement necessitates that Meggitt reserve the right to modify these specifications without notice. Meggitt maintains a program of constant surveillance over all products to ensure a high level of reliability. This program includes attention to reliability factors during product design, the support of stringent Quality Control requirements, and compulsory corrective action procedures. These measures, together with conservative specifications have made the name Endevco synonymous with reliability. 030419