

# 1986 Omnidirectional Sound-Level Calibrator

- Capable of testing all the basic characteristics of virtually any acoustic instrument or system
- Multi-level and multi-frequency outputs
- Calibrated tone bursts
- Portable battery-operated

The 1986 is designed to permit checking nearly all the characteristics of a sound-level meter as specified by IEC and ANSI standards. With its supplied and optional microphone cavity adaptors, it can be used with all types and sizes of commonly used measurement microphones.

The calibrator includes tones at six different frequencies, from 125 Hz to 4000 Hz in octave steps, and five different sound-pressure levels, from 74 to 114 dB in 10-dB steps. This allows a sensitivity check of an acoustic instrument near the specific frequency and level of each measurement being made.

The frequency response of an overall sound-measuring system, weighting network or filter may also be checked.

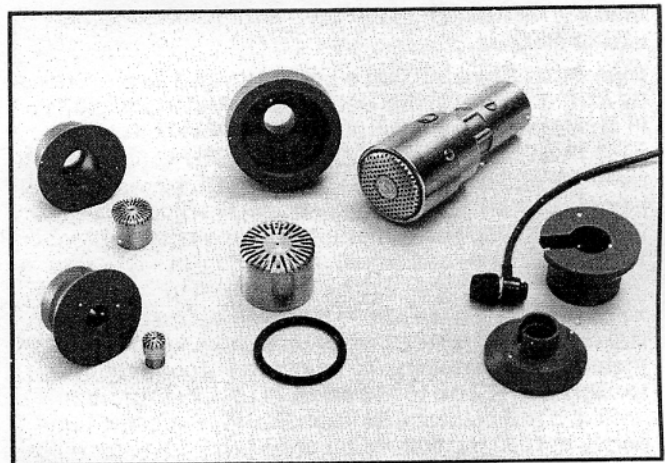
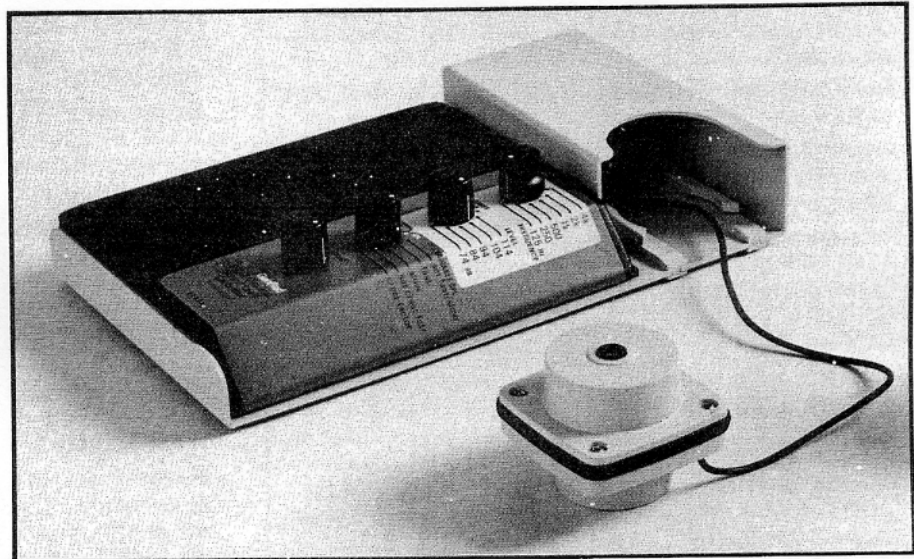
The two sources of linearity error in a sound-measuring instrument are easily checked with the 1986. One source is the indicator scale (meter or digital display) and the other is the level-range control. The multi-level output of the 1986 allows selection of different levels on a sound-measuring system and a check of the instrument's response at each level.

Standards require that Fast detector response be tested by applying a sinusoidal signal having a frequency of 1000 Hz and a duration of 200 ms. Slow detector response is tested by applying a sinusoidal signal having a frequency of 1000 Hz and a duration of 500 ms. The 1986's tone-burst mode allows checking to the above requirements by automatically presenting a 1000-Hz sinusoidal signal of either 200-ms or 500-ms duration.

The 1986 permits a check of rms accuracy and crest-factor capability by presenting repeated tone bursts with a high crest factor.

The transducer on the 1986 is resiliently mounted to protect against damage from the accidental bumps and drops often encountered in field calibration situations. The entire assembly, except for the test cavity, is enclosed in a molded plastic case that is tightly sealed against dust and moisture.

The cavity of the 1986 is designed to fit GenRad 1-inch microphones, the WE 640AA and Tokyo Riko MR 130. An adaptor is included to accommodate GenRad 1/2-inch microphones. An optional adaptor set allows you to use the 1986 on instruments with Bruel & Kjaer 1-inch, 1/2-inch and 1/4-inch microphones, the Shure Brothers 1 1/8-inch microphone, and the 3/8-inch microphone on GenRad's 1954 Noise Dosimeter.



Adaptors accommodate commonly used microphones.



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## SPECIFICATIONS

**Output Sound-Pressure Levels:** 74, 84, 94, 104, or 114 dB re 20  $\mu$ Pa.

**Nominal Output Frequencies:** 125, 250, 500, 1000, 2000 or 4000 Hz.

**Actual Output Frequencies:** Preferred per ANSI S1.6-1960 and ISO R266: 125.9, 251.2, 501.2, 1000, 1995 or 3981 Hz  $\pm$  3%.

**Reference Conditions:** TEMPERATURE: 20° C (68° F). ATMOSPHERIC PRESSURE: 1013 mbar† (760 mm of Hg) (30 in. of Hg). RELATIVE HUMIDITY: 65%. MICROPHONE EFFECTIVE VOLUME: 0.5 cm<sup>3</sup> (0.03 in.<sup>3</sup>) (nominal for GenRad 1961 Electret-Condenser Microphone\*).

**Accuracy of Sound-Pressure Level:** Under stated reference environmental conditions, at 114-dB SPL and at all frequencies except 4000 Hz:  $\pm$  0.25 dB for cavity alone or when used with any adaptor (except 1 1/8-in. adaptor:  $\pm$  0.5 dB at 1000 Hz only); at 114-dB SPL and 4000 Hz:  $\pm$  0.5 dB. At output levels other than 114-dB SPL, tolerance is increased by  $\pm$  0.1 dB.

**Temperature Coefficient of Sound-Pressure Level:** Less than  $\pm$  0.02 dB/° C ( $\pm$  0.01 dB/° F) for all frequencies except 4000 Hz.

**Tone-Burst Signals:** Test signals provided as prescribed by ANSI S1.4-1971; IEC Sound-Level Meter Standard 651. In tone-burst modes, output can be either continuous (SET FAST/SLOW or SET CREST FACTOR) or a series of bursts (FAST, SLOW or CREST FACTOR), as selected. Level is uncalibrated and continuously adjustable. In FAST or SLOW, peak amplitude of tone-burst is identical to that of continuous signal. In CREST FACTOR, rms value of tone-burst sequence is identical to that of continuous signal. FAST: Repeated tone bursts at 1000 Hz, 200-ms duration every 2's, for measuring sound-level-meter FAST rise response; amplitude is continuously variable from 72 dB to 118 dB re 20  $\mu$ Pa; background level is 20 dB below burst level. SLOW: Repeated tone bursts at 1000 Hz, 500-ms duration every 10 s, for measuring sound-level meter SLOW rise response; amplitude is continuously variable from 72 to 118 dB re 20  $\mu$ Pa; background level is 20 dB below burst level. CREST FACTOR: Repeated tone bursts at 2000 Hz, 5.5-ms duration, 40-Hz repetition rate, crest factor X3, for measuring rms detector-indicator accuracy and amplifier crest-factor capacity; rms amplitude is continuously variable from 75 to 111 dB re 20  $\mu$ Pa.

**Variable Sound-Pressure-Level Control:** Enabled only in tone-burst modes. Provides 11 dB of adjustment.

**Electrical Output:** Output provided from nominal 600- $\Omega$  shuntable source. Voltage proportional to sound pressure; 230-mV-rms nominal output corresponding to 114-dB SPL.

**Distortion:** Less than 1% THD acoustical or electrical.

**Battery Test:** Internal circuitry checks condition of battery continuously. Automatic instrument shutdown when battery voltage falls below acceptable range.

National stock numbers are listed before the Index.

**Microphone Coupling:** Transducer cavity accommodates following 1-in. microphones: GR1961 electret condenser\*, GR1971 ceramic, Western Electric 640AA and Tokyo Riko MR103.

**Environment:** TEMPERATURE: -10 to + 50° C (+ 14 to + 122° F), operating; -40 to + 70° C (-40 to + 140° F), storage with battery removed. HUMIDITY: 0 to 90% RH, operating.

**Accessories Supplied:** Coupler-adaptor to accommodate GR1962 1/2-in. electret-condenser microphone\* and GR1983 Sound-Level Meter microphone; 3 spare desiccant kits; battery; instruction manual.

**Accessories Available:** Adaptor set that includes coupler-adaptor for 3/8-in. GR1954 Noise Dosimeter microphone; coupler-adaptors and "0" ring for 1-in., 1/2-in. and 1/4-in. B & K microphones, and coupler-adaptor for 1 1/8-in. Shure Brother microphone. Carrying case.

**Power:** Powered by 9-V alkaline battery, Mallory MN1604 or Eveready 522 recommended. Battery provides at least 8-h continuous operation.

**Mechanical:** DIMENSIONS (wxhxd): approximately 280x67x165 mm (11x2.5/8x6 1/2 in.). WEIGHT: Approximately 1 kg (2.2 lb).

†In the international system of units (SI), the unit of pressure is the pascal (Pa), 1 Pa = 1 N/m<sup>2</sup> = 10 dynes/cm<sup>2</sup> = 10<sup>-2</sup> mbar REF "The International System of Units (SI)," U.S. Dept. of Commerce, National Bureau of Standards, NBS Special Publication 330. SD Cat. No. C13. 10:330/2, U.S. GPO, Wash., D.C., 20402.

\*U.S. Patent 4,070,741

Description	Catalog Number
1986 Omnical Sound-Level Calibrator	1986-9700
Carrying Case	1986-9600
Calibrator Adaptor Set, adapts 1986 to: 3/8-in. microphone on GR1954 Noise Dosimeter, B & K 1-, 1/2-, 1/4-in., and Shure Brothers 1 1/8-in. microphones.	1987-9600
Battery, spare (1 required)	8410-3400



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