

1982 Precision Sound-Level Meter and Analyzer

- a versatile, all-purpose instrument precision sound-level meter peak and impulse noise meter octave-band analyzer
- ideal for OSHA and a broad variety of noise measurements
- digital and analog displays for error-free reading
- compact and lightweight (3 lb) for easy handling
- approved by MSHA and NIOSH

The 1982 Precision Sound-Level Meter and Analyzer combines measurement versatility with simplicity of operation to give you a practical, economical solution to a variety of noise measurements.

Now you can use a single instrument, without plug-in filters or other add-on accessories, to make A-, B-, or C-weighted sound-level measurements from 30 to 140 dB, octave-band analyses from 31.5 Hz to 16 kHz, and peak or impulse noise measurements.

The 1982 satisfies many noise-measurement requirements In a typical industrial facility, a company safety engineer, noise-control specialist or hired consultant may be required to make several types of noise measurements in a single day. With the GenRad 1982, the following measurements can be made without the need for any accessories or additional instrumentation.

1. A-weighted sound-level measurements to locate noise-hazard areas.
2. Peak and impulse measurements of short-duration noises caused by punch presses, metal-stamping equipment, riveting machines, etc.
3. Octave-band analyses required for:
 - a. Ear protector selection
 - b. Noise-barrier material selection
 - c. Noise-source identification for engineering-control programs
 - d. Audiometric booth-site surveys

Beyond its many uses in industrial safety and hearing-conservation programs, the 1982 has broad application in:

1. General noise measurements made by acoustic consultants.
2. Environmental noise programs at the federal, state, and community levels.

Alternatives to the single-instrument 1982 solution are separate instruments for each measurement function or sound-level meters with cumbersome plug-in or add-on accessories. The combined cost of separate instruments and accessories usually exceeds the cost of the 1982. Also, these alternatives require operating knowledge of different instruments and increase the chances for confusion and measurement errors.

The 1982 is easy to use With all of its versatility, the 1982 is extremely easy to use and does not require special technical training. Switching its operating mode from sound-level measurement to octave-band analysis, to peak or impulse measurement requires only the push of a slide switch or turn of a knob.



Precision sound-level measurement The 1982's conformance to ANSI Type 1 and IEC Sound-Level Meter Standard 651, Type 1, is your assurance of the most accurate performance offered in a sound-level meter. To make a measurement you simply switch to the weighting and meter response (fast or slow) you desire, switch on the meter and set the attenuator to the range that gives you an on-scale reading. Then you read the measured levels from either the digital display or analog meter.

Octave-band analysis The octave-band filters in the 1982 are the most accurate offered in a portable instrument. This assures a high degree of confidence in your octave-band measurements. In addition, the 1982 eliminates the often confusing two-attenuator system used in other instruments. The 1982 features a single attenuator which allows you to set the range desired, switch on the instrument, and read the measured level from either display. Should the range level be set too low, an overload light on the meter face alerts you to change to a higher level, thus avoiding incorrect readings.

Peak and impulse measurement The 1982's peak detector is the fastest available for measuring impact-or impulse-type noise. With a 50-microsecond rise time, the detector ensures reading the true peak of the signal, up to 140 dB.

An accessory 10-dB microphone attenuator extends this range to 150 dB. An impulse detector which meets IEC 651 is also built-in.

A significant feature of the 1982 allows you to capture and hold the peak or rms reading on the digital display without inhibiting successive readings on the analog meter. This lets you take ambient level readings immediately after the impact occurs without losing the peak reading. Also, in this mode it is not necessary to wait for the peak detector to decay before reading a lower level peak. A press of the capture button resets the long decay time of the peak detector allowing you to read a lower peak immediately following the previous measurement. This is especially useful when making measurements of forging hammers, metal stamping, and similar operations.

Easy, accurate reading The digital display allows quick, accurate, error-free reading with a resolution of 0.1 dB. Set the display mode to continuous and the digital display tracks the analog meter. Other operating modes allow you to "capture and hold" a reading on the digital display. You can automatically capture and hold the highest level measured during a measurement period or push a button to capture the level at a specific moment during the period. In either of these modes, the analog meter continues to track the ambient level.

You will find the analog meter easy to read, also. It is calibrated linearly in 1-dB increments and the dB levels are clearly visible on the meter face.

Accessories available The 1982 and a calibrator will satisfy most measurement requirements. For those contemplating noise measurements where a remote microphone location is required, a calibrator, carrying case, tripod and extension cable should be ordered to provide a complete system.

SPECIFICATIONS

Standards: Meets the following (use 1986 or 1987 Sound-Level Calibrator): ANSI Standard specifications for sound-level meters S1.4-1971, Type 1 (Precision); IEC Sound-Level Meter Standard 651, Type 1; ANSI standard specification for Octave, Half-octave, and Third-octave Band Filter Sets S1.11-1966, Type O, Class II; IEC Recommendation Publication 225-1966, Octave, Half-octave, and Third-octave Band Filters for the Analysis of Sounds and Vibrations.

Level Range: 30-130 dB re 20 μ Pa rms (140-dB PEAK). May be extended to 140-dB rms (150-dB PEAK) using 10-dB microphone attenuator (1962-3200) supplied. Typical minimum measurable level, 34 dBA; lower in octave bands. Noise floor at least 5 dB below minimum measurable levels.

Frequency Response: A, B, and C weighting; 10 octave-band filters ranging in center frequency from 31.5 Hz to 16 kHz; a FLAT response (+ 0.5, -3 dB from 10 Hz to 20 kHz).

Detector Characteristics: DETECTOR RESPONSE*: Fast, Slow, Impulse (per IEC 651), and Absolute Peak (<50 μ s rise time), switch selected. Precise rms detection



A typical 1982 sound analysis system

for signals with crest factors as high as 20 dB to 120dB** (10 dB at 130 dB). OVERLOAD: Signal peaks monitored at two critical points to provide positive panel lamp warning of overload.

Display: ANALOG: Meter with 3-inch scale marked in 1-dB increments, four ranges; 30-80 dB, 50-100 dB, 70-120 dB, 90-140 dB. DIGITAL: 4-digit LED display with 0.1-dB resolution. Direct reading on all ranges. DIGITAL DISPLAY MODES: OFF, for minimum battery drain; CONTINUOUS, like meter except present reading can be "captured" by pushbutton; MAXIMUM, automatically holds highest level in measurement interval, until reset by pushbutton.

Microphone: TYPE: 1/2-inch Electret-Condenser Microphone with flat random (-9700) or perpendicular (-9710) incidence response. MOUNTING: Mounted with detachable preamplifier (1981-4000) that plugs into nose of instrument, or may be remotored with 10-foot cable (1933-0220) supplied or 60-foot cable (1933-9601) available. INPUT IMPEDANCE: Approximately 2 G Ω / <3 pF.

Outputs: AC OUTPUT: 0.4 V rms nominal behind 5 K Ω , corresponding to full-scale deflection, any load permissible. DC OUTPUT: 3V behind 30K Ω corresponding to full-scale meter deflection. Output is linear in dB at 60 mv/dB over 70-dB range (50-dB display range plus 20-dB crest-factor allowance). Any load permissible.

Calibration: FACTORY: Fully tested and calibrated to all specifications; acoustical response and sensitivity are measured in a free field by comparison with a Western Electric Type 640AA Laboratory Standard Microphone whose calibration is traceable to the U.S. National Bureau of Standards. FIELD: GR 1986 or 1987 Sound-Level Calibrators are available for making an overall pressure calibration.

Environment: TEMPERATURE: -10 to + 50° C operating, -40 to + 60° C storage with batteries removed, 15 to 50° C during battery charging. HUMIDITY: 0-90% RH operating.

Supplied: Battery pack assembly; battery charger; microphone extension cable (10-foot); 10-dB microphone

* U.S. Patent No. 3,681,618.

**10 dB higher when 10-dB microphone attenuator is used.

attenuator; calibration screwdriver; wrist strap; miniature phone plug(2); instruction manual; microphone wind-screen.

Available: Carrying Case (includes space for calibrator, cable, tripod, misc. access.); battery pack assembly; microphone extension cables (10- and 60-foot); calibrators, 1986 and 1987; dummy microphones, 22 and 35 pF with BNC female input; tripod—will mount either 1982 or preamplifier; windscreen (package of 4); adaptor cables for connection to outputs, all 3 feet (0.9 mm) long; 1560-9619 Audiometer Calibration Accessory Kit.

Power: Removable battery pack containing 3 AA-size nickel-cadmium rechargeable cells with charger interlock. Battery life between charges 3 to 4.5 hours depending on digital display usage. Battery charger supplied operates on 115/220 volts ac 50-60 Hz; full recharge accomplished in about 4 hours. Three AA-size alkaline cells (not rechargeable) may be used in place of the battery pack.

Mechanical: DIMENSIONS: (wxhxd): 3.9x16.8x2.3 in. (99x425x59 mm). WEIGHT: 3 lb (1.36 kg) net; 6 lb (2.8 kg) shipping.

Description	Catalog Number
1982 Precision Sound-Level Meter and Analyzer (supplied with ½" flat random-incidence response electret condenser microphone)*	1982-9700
1982 Precision Sound-Level Meter and Analyzer (supplied with ½" flat perpendicular-incidence response electret condenser microphone)**	1982-9710
1986 Omnical Sound-Level Calibrator	1986-9700
1987 Minical Sound-Level Calibrator	1987-9700
1560-9619 Audiometer Calibration Accessory Kit	1560-9619
Microphone Extension Cable (10 ft)	1933-9600
Microphone Extension Cable (60 ft)	1933-9601
1933 Vibration Integration System	1933-9610
Dummy Microphone	1962-9620
Rechargeable Battery Pack	1981-2050
Carrying Case (for 1982, calibrator, tripod)	1982-9630
Tripod	1560-9590
Windscreen (package of 4)	1560-9522

* Conforms to ANSI S1.4 Type 1 and IEC 651

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