

Sound Meter Type 1

840015

Instruction Manual

SPER
SCIENTIFIC

Environmental Measurement Instruments

Sound Meter Type 1 - 840015

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INTRODUCTION

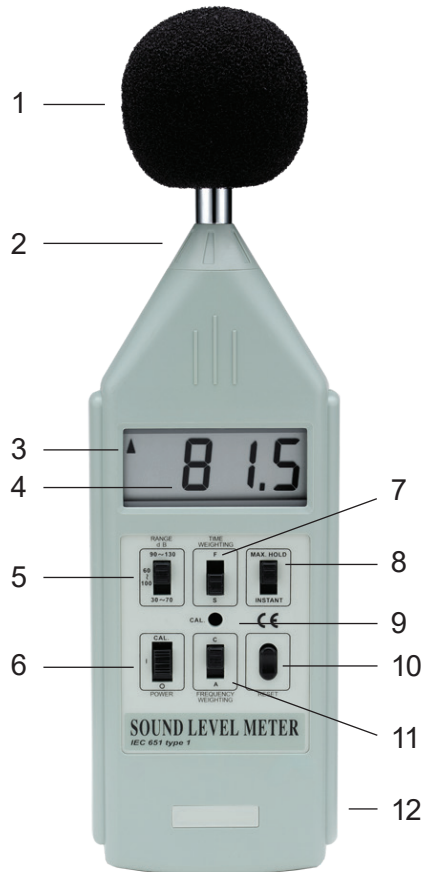
Your new instrument meets IEC 61672-1:2013 Class 1 and ANSI S1.4:2014 Type 1 requirements for sound meters. It covers the 30 to 130 dB range in both the A and C decibel frequency weighting scales, with 0.1 dB resolution and an accuracy of ± 0.7 dB (63 Hz to 4 kHz).

This meter can be acoustically calibrated in compliance with OSHA, using Sper Scientific's Acoustical Calibrator 850016 (or equivalent). Features include a built-in calibration adjustment, easy to read LCD display, fast or slow time weightings, maximum hold function, low battery indicator, AC output and a reset button. CE compliant.

Accessories include a windscreen, calibration tool, a carrying case, instruction manual and batteries.

PANEL DESCRIPTION

1. Microphone
(shown with windscreen)
2. Threaded Microphone Cap
3. Overload indicator
4. Display
5. Range selector
6. Power/Calibration selector
7. Time Weighting selector
8. Max Hold/Instant selector
9. Calibration Adjustment
10. Reset button
11. Frequency Weighting selector
12. Signal Output Terminal



OPERATING INSTRUCTIONS

Measurement Procedures

1. Slide the **POWER** selector to the “I” (on) position.
2. For general applications, slide the **MAX HOLD / INSTANT** selector to the INSTANT position.
3. To freeze the displayed reading, slide the **MAX HOLD / INSTANT** selector to the MAX HOLD position.
4. Press the **RESET** button once to reset maximum hold to the current reading.
5. Slide the **FREQUENCY WEIGHTING** selector to the “A” or “C” position. The “A” frequency weighting simulates human ear response. During an environmental sound level measurement, select the “A” weighting. The “C” weighting approximates a flat response. Typically, “C” is used to check the noise of machinery where the target sound level is already known.
(See Frequency Weighting Characteristics, page 6.)
6. Slide the **TIME WEIGHTING** selector to the “F” (fast) or “S” (slow) position. For general applications, select “F” which simulates the human ear’s response time. The “S” setting is used to obtain an average of vibrating sound levels.
7. Find the appropriate measuring range using the **RANGE** selector. If the **OVERLOAD INDICATOR** appears in the upper-left display, slide the **RANGE** selector to another setting.
8. Point the microphone at the sound source. The sound level will be displayed in decibels (dB).
9. When finished, slide the **POWER** selector to the “O” (off) position.

General Application Settings

1. Set **POWER / CALIBRATION** selector to “I” (on).
2. Set **TIME WEIGHTING** to “F”.
3. Set **MAX HOLD / INSTANT** selector to INSTANT.
4. Set **FREQUENCY WEIGHTING** to “A”.
5. Set **RANGE** selector to the appropriate range.

Signal Output

The 3.5 mm diameter SIGNAL OUTPUT terminal may be used to connect the unit to an external device (analyzer, recorder, controller, etc).

Precautions

- Do not store or operate the unit in high temperatures or in a high humidity environment for long periods.
- Keep the microphone dry and avoid intense vibrations.

CALIBRATION

The meter's **CALIBRATION ADJUSTMENT** is located on the front panel. The meter has a built-in internal standard of 94 dB/1 KHz. Use the following procedures to calibrate the instrument before operating for the first time, or when the meter has not been in use for awhile.

Internal Calibration

1. Slide the **POWER** selector to the CAL. Position.
2. Slide the **RANGE** selector to the 60 to 100 dB position.
3. Slide the **TIME WEIGHTING** selector to "F".
4. Slide the **FREQUENCY WEIGHTING** selector to "A".
5. Use the calibration screw driver to turn the **CALIBRATION ADJUSTMENT** until the display reads 94.0.

External Calibration

Use Sper Scientifics' Acoustical Calibrator 850016 (or equivalent) to calibrate the unit, including the microphone, in compliance with OSHA.

1. Slide **POWER** selector to the "I" (on).
2. Turn on the acoustical calibrator and place it onto the Sound Level Meter's **MICROPHONE**.
3. Slide the **RANGE** selector to the 60 to 100 dB position.
4. Slide the **TIME WEIGHTING** selector to "F".

5. Slide the FREQUENCY WEIGHTING selector to “A”.
6. Use the calibration screw driver to turn the CALIBRATION ADJUSTMENT until the display reads 94.0.

BATTERY REPLACEMENT

Replace the batteries when “BAT” is displayed. Accurate measurements may be made for several hours after the low battery indicator appears. Replace the batteries with 2 new heavy duty 9V batteries.

TIME WEIGHTING (FAST & SLOW) CHARACTERISTICS

Time Weighting	Tolerance (IEC 61672 Type 1)
F (Fast)	+0.7 dB
S (Slow)	±0.7 dB
Tested with signal on 1000 Hz/94 dB	

SPECIFICATIONS

Display	18 mm (0.7") LCD 3¼ digits
Function	dB (A and C Frequency weighting), Time weighting (Fast, Slow), Max. hold, AC Output
Measurement Range	30 to 70 dB, 60 to 100 dB, and 90 to 130 dB 40 dB on each step, with overload indicator.
Resolution	0.1 dB
Accuracy @ 73 ±9°F (23 ±5°C)	±0.7 dB
Frequency	31.5 Hz to 16 kHz
Microphone	1/2" standard size electric condenser microphone. Threaded microphone cap unscrews for microphone replacement.
Time weighting (Fast/Slow)	Fast (F): t = 125 ms
	Slow (S): t = 1000 ms
Internal Calibration	Built-in internal calibration on front panel. Calibrated via internal 94 dB/1kHz square wave generator.
Output Signal	AC 750 mVrms corresponding to each range step.
Output Terminal	3.5 mm diameter jack
Operating Env.	32° to 122°F (0° to 50°C) and less than 80%RH
Power Supply	DC 9V battery x 2PCs, 0006P, MN1604 (PP3) or equivalent, heavy duty or alkaline type.
Power Consumption	Approximately DC 17mA
Dimension	10½" × 3½" × 1½" (267 × 89 × 38 mm)
Weight	16.1 oz (454 g)

WARRANTY

Sper Scientific warrants this product against defects in materials and workmanship for a period of **five (5) years** from the date of purchase, and agrees to repair or replace any defective unit without charge. If your model has since been discontinued, an equivalent Sper Scientific product will be substituted if available. This warranty does not cover probes, batteries, battery leakage, or damage resulting from accident, tampering, misuse, or abuse of the product. Opening the meter to expose its electronics will void the warranty.

To obtain warranty service, ship the unit postage prepaid to:

SPER SCIENTIFIC LTD.

8281 East Evans Road, Suite #103
Scottsdale, AZ 85260

The defective unit must be accompanied by a description of the problem and your return address. Register your product online at www.sperwarranty.com within 10 days of purchase.

Please note: The most current version of the manual can always be found at www.sperdirect.com