

eS528L Sound Level Meter

User Manual



Sound Level Meter ennoLogic eS528L

Made in China

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<https://ennologic.com>

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1. Overview

Thank you for purchasing the ennoLogic eS528L sound level meter. This meter is a precision instrument designed to measure and display sound levels in decibel (dB) from 30 to 130 dB. Special features include data logging, frequency weighting (A & C), response time selection (Fast & Slow), manual and auto ranging, data hold and MAX/MIN capture. Data logging is one the meter's most distinguishing features which allows you to record data to its internal memory for later upload and review via the meter's USB interface.

Each unit is fully tested and calibrated at the factory. But you can also calibrate it yourself following the instructions provided in this manual.

The eS528L meets standards IEC61672-1: 2013 Class 2 and ANSI S1.4 Type 2. With proper use, it will provide years of reliable service.

1.1 Important Safety Notes – Please Read



Please read the following safety instructions and user manual carefully before you use this instrument:

- Do not remove the mesh cover on the microphone as this will cause damage and affect the accuracy.
- Protect the instrument from impact. Do not drop it and avoid rough handling.
- Always keep the instrument away from water, dust, extreme temperatures, high humidity and direct sunlight.
- Salt air, Sulphur fumes, gases and chemicals can all damage the delicate microphone and sensitive electronics.
- Remove the battery when the instrument is not in use for long periods to avoid damage from a leaking battery.
- Only clean the instrument with a soft, dry cloth or, if necessary, with a cloth lightly moistened with water. Do not use solvents, abrasives, alcohol or cleaning agents.

1.2 Meter Description

1. Foam Windshield Ball

2. 1/2-inch Microphone

3. LCD Display

4. Power Button

5. MAX/MIN Button

6. A/C frequency Weighting Button

7. Range Selector Button

8. Backlight Button

9. Fast/Low Response Time Button

10. Data Hold Button

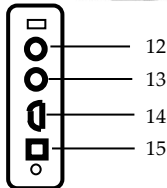
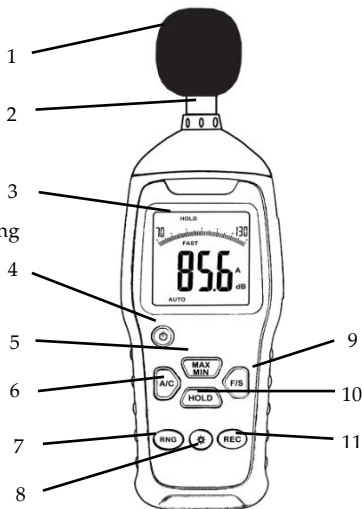
11. Record Button

12. AC Analog Output Jack

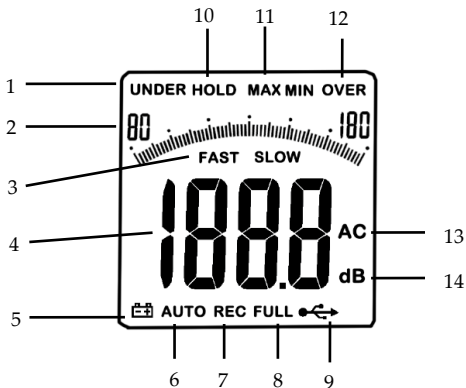
13. DC Analog Output Jack

14. Micro USB jack

15. External DC 9V Power Jack



1.3 LCD Display



1. Under-range indicator: reading is below the selected range.
Switch to a lower range or set to auto-range.
2. Analog bar-graph and range indication
3. Fast/Slow response time indicator
4. Reading of sound level
5. Low battery indicator
6. Auto ranging indicator

7. Data recording icon
8. Memory-full indicator
9. Meter connected to PC via USB indicator
10. Data hold indicator
11. MAX/MIN mode indicator
12. Over-range indicator: reading exceed the selected range. Switch to a higher range or set to auto-range.
13. A/C Frequency weighting indicator
14. Sound level unit (decibel)

1.4 Battery Installation and Replacement

To install the battery open the battery compartment located on the back of the meter. To do this you will need to unscrew the single screw at the top of the battery compartment cover. Be careful not to lose the screw. Attach the 9V battery to the wired clip inside the compartment. Carefully place the battery and wire inside the compartment. To close the compartment slide the cover back into place and hold firmly while securing the screw.

When the battery power is low, the low battery indicator




will appear on the bottom left of the LCD. Replace the 9V battery following the instructions above.

Disposal: Check with your local waste disposal and recycling authorities for responsible environmentally sound disposal or recycling of batteries. In the event you need to dispose of your instrument please do not place it in household waste. Contact your local e-waste recycling center instead. Please act responsibly and recycle e-Waste properly.



2. How to Use Your Sound Level Meter

2.1 Taking a Measurement

- 1) Press the power button  to turn on the instrument.
- 2) Press the A / C button to select the desired frequency weighting. "A" or "C" indicator will appear on the LCD.

A weighting is commonly used for measuring general noise levels. It emulates the response of the human ear.

C weighting is typically used for peak measurements and more accurately characterizes low frequency noise.

- 3) Press the F/S button to select the desired response time.

“FAST” or “SLOW” indicator will appear on the LCD.

FAST sampling: once every 125 milliseconds.

SLOW sampling: once per second.

To measure a short sound burst or record a peak sound level, use the FAST response time. For general sound level measurements, use the SLOW response time.

- 4) Hold the instrument away from your body or mount it to a tripod. Point the microphone at the sound source.
- 5) The LCD displays the current sound level reading. It is updated twice per second.

Note: When using the instrument in windy conditions (greater than 20 mph) use the windshield ball to avoid inaccurate readings.

2.2 Selecting Decibel Ranges

This sound level meter has three manual ranges as well as auto-range mode. It defaults to auto-ranging on power-up with a range of 30-130dB. The manual ranges are: 30–90dB, 50–110dB, and 70–130dB. Use the RANG button to select the preferred range. The selected range will display in the top left and right of the LCD. When in auto-ranging mode, the AUTO indicator will appear on the bottom left. When selecting your range, watch for indicators UNDER and OVER in the top of the LCD to help guide you in selecting the best range. UNDER means you should select a lower range. OVER means you need to select a higher range. Ideally, the analog bar graph should be reading near the middle of the range. When in doubt, use auto-range mode.

2.3 Maximum and Minimum Level Capture


To capture maximum sound levels, press the MAX/MIN button once, the MAX indicator will appear on the LCD. Now, only the maximum sound level will be captured and displayed. The

displayed value will not update until a higher sound level value is detected. However, the analog bar graph will continue to reflect the instantaneous readings. To capture minimum sound levels, press the MAX/MIN button again, the MIN indicator will appear on the LCD. Now, only the minimum sound level will be captured and displayed. Press the button one more time to exit the MAX/MIN measurement mode.

2.4 Data Hold

Press the HOLD button once to freeze the current reading. Press it again to return to normal measurement mode.

2.5 Backlight

Press the  button to turn the backlight on and off.

2.6 Data Recording and Software Installation

This sound level meter is able to record data in its internal memory. Before you can record data, you need to install the SmartLogger software on your PC. The latest version of this software and detailed instructions on how to install and use it can be found at <https://ennoLogic.com/eS528L>. A CD with the software is included for your convenience, but we recommend downloading the latest version at the ennoLogic website.

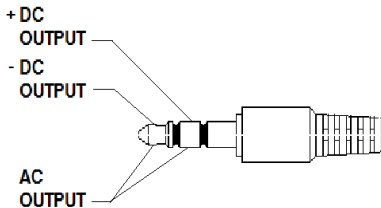
To setup for a recording, connect the meter to a PC via the Micro USB port located on the right side of the unit, behind a protective cover which opens at the top. Then setup the instrument using the SmartLogger software.

To reduce power consumption while data is being logged, if the backlight is on it will turn off automatically after 2 minutes without a button press.

When the memory is full or reaches the specified number of samples, the meter will automatically turn off. The “FULL” indicator will be displayed when the memory is full.

2.7 Analog Output

The meter can output AC and DC voltage signals proportional to the measured values for other recorders or devices. A 3.5mm stereo mini plug is required for the outputs.



AC Output

An AC signal corresponding to the frequency-weighted signal is available at this connector.

Output voltage: $4V_{rms} \pm 100mV_{rms}$ (at full-scale of range)

Output impedance: $1k\Omega$

Load impedance: $\geq 1M\Omega$

DC Output

Output voltage: $10\text{mv} \pm 0.1\text{mv/dB}$ (e.g. $94\text{dB} = 0.94\text{V}$)

Output impedance: $1\text{k}\Omega$

Load impedance: $\geq 1\text{M}\Omega$

2.8 External Power

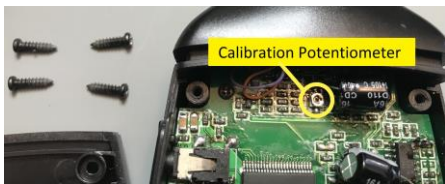
The eS528L sound level meter can be powered by an external 9V DC supply or via its Micro USB port. The power jack for the external 9V supply is located on the right side of the unit, below the Micro USB port. When the meter is powered by an external supply, the internal battery is automatically disconnected. Please make sure that the polarity is correct when connecting an external 9V DC power supply, otherwise the meter and/or external power supply may be damaged.



DC 9V

2.9 Calibration

The sound level meter calibration requires a standard acoustic calibrator (94dB, 1kHz sine wave). Remove the back cover of the meter by unscrewing the four screws at the corners. Keep the battery compartment closed and the battery connected. Locate the calibration potentiometer near the top of the circuit board.



Turn on the sound level meter and set it to A weighting, Fast response, and a range of 70 ~ 130dB. Carefully insert the microphone into the 1/2 inch hole of the calibrator set to 94dB @ 1kHz. Adjust the calibration potentiometer with a small screw driver. Reattach the back cover.

Note: The instrument has been calibrated before shipment. The recommended calibration interval is one year.

3. TECHNICAL SPECIFICATIONS

Applicable standards	IEC61672-1: 2013 Class 2
Measurement range	Auto: 30 to 130 dB, Manual: 30–90 dB, 50–110 dB, and 70–130 dB
Microphone	1/2 inch polarized condenser microphone
Frequency range	31.5Hz ~ 8000 Hz
Accuracy	±1.5 dB (at reference condition of 94 dB and 1 kHz)
Resolution	0.1 dB
Data update rate	500 ms
Frequency weighting	A and C
Response time	FAST: 125 ms, SLOW: 1 sec
Standard calibrator	1 KHz sine wave @ 94 or 114 dB
Display	3-1/2 digit LCD with analog bar graph
Out of range indication	“OVER” and “UNDER” indicators on LCD

Outputs	AC and DC signal output from earphone jack: AC=4Vrms±100mVrms at full-scale, DC=10 mV/dB
Data output	Micro-USB
Auto power off	After 20 minutes of idle
Power	One 9V battery (6LR61 or 6F22)
Memory	32000 data points
Operating condition	32 ~ 122 °F (0 ~ 50 °C), 10 ~ 90% RH (non-condensing)
Storage condition	-4 ~ 140 °F (-20 ~ 60 °C), 10 ~ 90% RH (non-condensing)
Dimensions	8.5" x 2.5" x 1.25" (215 mm * 65 mm * 32 mm)
Weight	8.8oz 250g (including battery)
Accessories	Manual, 9V battery, windshield ball USB cable, 3.5mm earphone plug, software CD

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