

MODEL 407750
Digital Sound Level Meter

- Auto/Manual Ranging
- A/C weighting & Fast/Slow response
- Background noise absorption
- RS-232 PC Interface
- The frequency spectral curves of this high resolution (0.1dB) meter meet ANSI and IEC-651 Type II standards

**1. INTRODUCTION**

Congratulations on your purchase of the Extech Model 407750 Digital Sound Level Meter. This professional meter with proper care will provide years of safe reliable service.

2. SPECIFICATIONS

Display	Backlit Super Large 3-1/2 digit (1999 count) LCD with 0.8" digits plus analog bargraph and multifunction displays
Display update rate	Main LCD: 0.5 seconds; Bargraph: 50mS
Analog Bargraph	1dB steps with 50dB display range
Microphone	Electret condenser (6mm diameter)
Measurement Bandwidth	31.5Hz to 8KHz
Measurement Range	A weighting: 30 to 130dB; C weighting: 35 to 130dB 6 ranges in 10 dB steps: 30 to 80dB, 40 to 90dB, 50 to 100dB, 60 to 110dB, 70 to 120dB, 80 to 130dB
Accuracy / Resolution	± 1.5dB / 0.1dB
Time response selections	Fast/Slow
Analog output	0.707Vac rms at full scale; 10mVdc/dB
Power	9V Battery (006P or 6F22)
Dimensions/weight	80x256x38mm / 240g

3. METER DESCRIPTION

1. LCD Display
2. Microphone
3. ON/OFF key
4. REC (Record) key
5. MAXHLD (Max Hold) key
6. C/A Weighting Select key
7. BA (Background Absorber) key
8. F/S Fast / Slow Response select key
9. DOWN
10. Backlit (LCD backlighting) key
11. UPPER
12. AC adaptor jack
13. Calibration screw adjust
14. AC analog output jack
15. DC analog output jack
16. RS-232 output jack
17. Battery Compartment (not pictured)
18. Threaded Tripod mount access (not pictured)



4. METER OPERATION

4.1 Quick Start

1. Power the meter by pressing the ON/OFF key. The meter's LCD will count down to zero (99.9, 88.8, 77.7 etc.) and then begin measuring sound levels. If the LCD does not display after pressing the ON/KEY check the 9V battery (see section 5).
2. Place the meter on a tripod via the tripod mount on the rear of the meter or hold the meter in hand to take noise measurements.
3. Point the microphone toward the source of the sound level to be measured and view the reading on the meter's LCD.

4.2 'A' and 'C' Weighting. Select 'A' or 'C' Weighting via the C/A key. The LCD will reflect which weighting mode is currently selected. Use 'A' weighting to have the meter respond as the human ear would with regard to frequency response (the human ear boosts and cuts amplitude over the frequency spectrum therefore it is not 'flat' responding). 'A' weighting is used for environmental measurements, OSHA regulatory testing, law enforcement, and workplace design. Select 'C' weighting for flat response

measurements (no amplitude boost or cut across the frequency spectrum). 'C' weighting is suitable for the sound level analysis of machines, engines, etc.

4.3 FAST/SLOW Response Time. Select either FAST or SLOW measurement response mode via the F/S key. The LCD will reflect the currently selected mode. Selection of Fast or Slow is determined by the application and any directives or standards related to that application. For example, most hearing conservation or OSHA related testing is done using SLOW and A weighting.

4.4 MAX HOLD. The meter is capable of taking continuous measurements and only updating the LCD when a higher reading, than the one presently on the display, is detected. The bargraph display continues to change while the main LCD waits for a higher reading however. Press the MAXHLD key to activate the MAX HOLD mode. The LCD will reflect the MAX HOLD function. Press the MAXHLD key again to return to normal mode.

4.5 Record (REC) Function. To Record the Maximum and Minimum sound level measurements over a programmable period of time, press the REC key. The REC indicator will appear on the LCD. Once the REC key is pressed, the meter begins keeping track of the highest (MAX) and lowest (MIN) readings. Press the REC again and the MIN indicator will appear on the LCD next to the REC along with the lowest sound level reading since the REC key was pressed. Press the REC again and the MAX indicator will appear along with the highest reading the meter has encountered since the REC key was first pressed. Press and hold the REC until the REC indicator extinguishes to exit the RECORD mode.

4.6 BA (Background Noise Absorber) Mode. The Background Noise Absorber function provides the capability to accurately measure equipment noise even in the presence of a high background noise. The Sound Level Meter permits the user to initially store the background noise level as a reference level and then run a machine or other device measuring its sound level referenced to the stored background noise value. To operate the meter in BA mode, follow these steps:

1. Power the meter.
2. Press the MAXHLD key and the MAX HOLD icon will appear on the LCD.
3. Press the BA key and an 'F' will appear to left of the SPL display icon.
4. Press the MAX HOLD key again and the MAX HOLD icon will reappear on the LCD.
5. The meter is now displaying the background, reference noise.
6. Power the device under test and note the new sound level meter reading.
7. If the reading changes, the new reading is the sound level of the device. If the reading does not change, the noise produced from the device is either equal to or less than the background noise.
8. Press the BA key again to return to the normal mode of operation.

4.7 Auto and Manual Ranging. The meter powers up in the Auto Range mode, meaning that the display will automatically find the most correct range for a specific measurement display in order to produce the best accuracy. However, if it is desired to set the range manually, follow these steps:

1. Power the meter
2. Notice the two (2) digit number to the immediate left of the analog bargraph. This number informs the user as to the *low end* of the presently selected range (see the specifications for the range listings).
3. To change the range press the UP key to raise the range or press the DOWN key to lower the range. The two digit number on the left of the bargraph will change with each keypress.
4. An advantage of Manual mode is that it takes less time for the meter to take a reading. In Auto Range mode the meter must first hunt for the correct range before displaying a measurement. Auto Range is certainly more convenient but it depends on the application at hand to determine which mode to use.

4.8 LCD Backlighting. Press the BACKLIT key to illuminate the LCD for a period of 5 seconds. This is handy in dimly lit or dark measurement areas. The automatic backlight extinguishing preserves battery life.

4.9 Auto Power Off

This meter includes an automatic power down feature which preserves battery life. If the unit is not used for approximately 20 minutes, the meter shuts off automatically. To override this function, follow these steps:

1. From a power OFF condition, press and hold the ON/OFF and MIN/MAX keys simultaneously.
2. When 'n' appears on the display release first the MIN/MAX and then the ON/OFF keys.
3. The Auto Power Off feature is now disabled. The Auto Power Off feature is re-activated the next time the meter is powered down.

4.10 Analog Outputs. The meter includes an AC and a DC analog retransmitted output for use with chart recorders, dataloggers, etc. The AC output is 0.707V rms full scale and the DC output is 10mV per dB. The 3.6mm output mini-plugs are located and labeled on the bottom of the instrument.

4.11 RS-232 Output. The meter includes an RS-232 PC interface jack. The interface permits the capture of sound level data on a PC. The cable and software for data acquisition can be purchased separately and includes instructions.

5. BATTERY REPLACEMENT

When the low battery message appears on the LCD, the 9V battery has fallen to a critically low voltage level and should be replaced as soon as possible. The battery compartment cover resides at the rear of the meter. Remove the rear battery compartment screw and remove the battery compartment cover, change the battery, and replace the compartment cover.

6. CALIBRATION

The meter includes a Calibration Screw Adjustment labeled on the bottom of the meter. A calibrator device that fits over the microphone must be used. Extech can supply these. Once the Calibrator is affixed on the microphone, adjust the calibration screw for the proper reading.

7. REPAIR AND CALIBRATION SERVICES

Extech offers complete repair and calibration services for all of the products we sell. For periodic calibration, NIST certification or repair of any Extech product, call customer service for details on services available. Extech recommends that calibration be performed on an annual basis to insure calibration integrity.

8. WARRANTY

EXTECH INSTRUMENTS CORPORATION warrants the basic instrument to be free of defects in parts and workmanship for one year from date of shipment (a six month limited warranty applies on sensors and cables). If it should become necessary to return the instrument for service during or beyond the warranty period, contact the Customer Service Department at (781) 890-7440 for authorization. **A Return Authorization (RA) number must be issued before any product is returned to Extech.** The sender is responsible for shipping charges, freight, insurance and proper packaging to prevent damage in transit. This warranty does not apply to defects resulting from action of the user such as misuse, improper wiring, operation outside of specification, improper maintenance or repair, or unauthorized modification. Extech specifically disclaims any implied warranties or merchantability or fitness for a specific purpose and will not be liable for any direct, indirect, incidental or consequential damages. Extech's total liability is limited to repair or replacement of the product. The warranty set forth above is inclusive and no other warranty, whether written or oral, is expressed or implied.