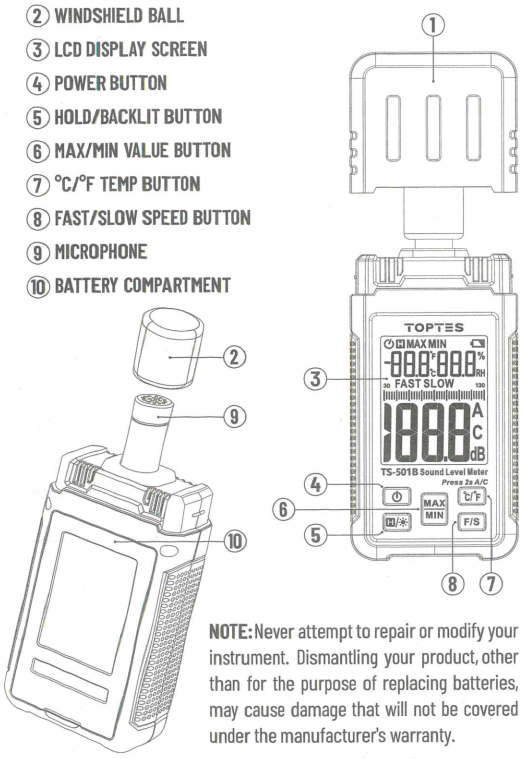
PRODUCT OVERVIEW

Sound level meters are useful for measuring, monitoring, and controlling noise levels. A decibel meter is a sound pressure measuring instrument for standardized measurements that uses the decibel scale. For this reason, the decibel meter is also known as a sound pressure level (SPL) meter. Other common names or this instrumentation include noise meter and sound level meter.

Product Detail

① PROTECTION COVER
② WINDSHIELD BALL
③ LCD DISPLAY SCREEN
④ POWER BUTTON
⑤ HOLD/BACKLIT BUTTON
⑥ MAX/MIN VALUE BUTTON
⑦ °C/°F TEMP BUTTON
⑧ FAST/SLOW SPEED BUTTON
⑨ MICROPHONE
⑩ BATTERY COMPARTMENT

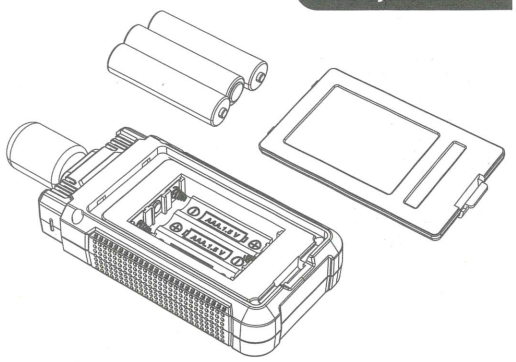


NOTE: Never attempt to repair or modify your instrument. Dismantling your product, other than for the purpose of replacing batteries, may cause damage that will not be covered under the manufacturer's warranty.

For service on this or any other TopTes products or information on other TopTes products, please contact us at ***support@toptestools.com***

OPERATION

Battery Installation

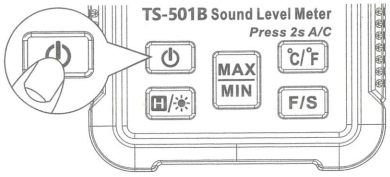


Step 1. Look for a small groove on the battery cover. Press gently on the groove while pushing towards the bottom of the product to open the battery cover.

Step 2. Install 3 AAA batteries (included in the box) into the cartridge, according to the positive and negative marks inside the battery compartment.

Step 3. Align the notch and snap on the battery cover.

Power On/Off



Press the power button ⏻ for 1 second to turn the tester on, and enter the measurement mode. Press the button ⏻ again to turn off the tester.

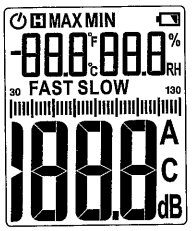
SPECIFICATIONS

The TopTes **TS-501B** Decibel Meter also known as a "sound pressure level (SPL) meter" is portable and run on batteries. It is easy to use, providing you accurate readings on a 2.25-inch screen that measure the sound level from 30 to 130 dB at an accuracy of +/-1.5 dB with a 0.1 dB resolution.

Microphone	1/2-inch electric condenser
Screen Type	LCD
*Frequency Weighting	A, C
Sound Measuring Range	30~130dBA 30~130dBC
Frequency	30~8,000Hz
Response Time	0.5 second
Time Weighting	Fast/Slow (125ms and 1s)
Temperature Measuring Range	-20.0~60.0°C (-4.0~140.0°F)
Temperature Measuring Accuracy	0.0~45.0°C (32~113°F): ±1.0°C/2.0°F Others: ±1.5°C/3.0°F
Humidity Measuring Range	0.0%~99.9%RH
Humidity Measuring Accuracy	20%~80%: ±5.0% RH Others: ±6.0% RH
Operating Conditions	0~50°C, <80%RH
Storage Conditions *(remove the battery)*	-10~50°C, <80%RH
Product Certifications	CE, RoHs
Dimensions	5.51" x 2.17" x 0.98" (140 x 55 x 25 mm)
Weight *(battery included)*	5.29 oz. (150 g)
Power Source	3 x 1.5V alkaline batteries

Display Description

The following definitions describe what the symbols and values displayed on the sound meter screen represent.



The TS-501B has a measurement range of 30 to 130 decibels (dB). When the measured sound level falls below 30dB, the screen will display the symbol "UL".

	Auto Power-Off Indicator
H	Data hold Indicator
MAX	Maximum Value Indicator
MIN	Minimum Value Indicator
	Low-Battery Indicator
°C	Centigrade Unit Indicator
°F	Fahrenheit Unit Indicator
RH%	Humidity Indicator
FAST	Fast Weighted Indicator
SLOW	Slow Weighted Indicator
	Analog Bar Display *(40 bars in total)*
A	A Frequency Weighting Indicator
C	C Frequency Weighting Indicator
dB	Measured dB Value

** A frequency-weighting mode is for measuring the sound level within the human audible range, while the test range is 30-130 dBA. This accounts for the relative loudness perceived by the human ear. The reading value of the meter will fluctuate according to different distances and sound sources.*

CONTENTS

Thank you for purchasing your TopTes TS-501B Sound Level Meter. Please read the following instructions carefully before using your instrument. By following the steps outlined in this manual, you will be provided years of reliable service by your meter.

USER MANUAL
TS-501 B

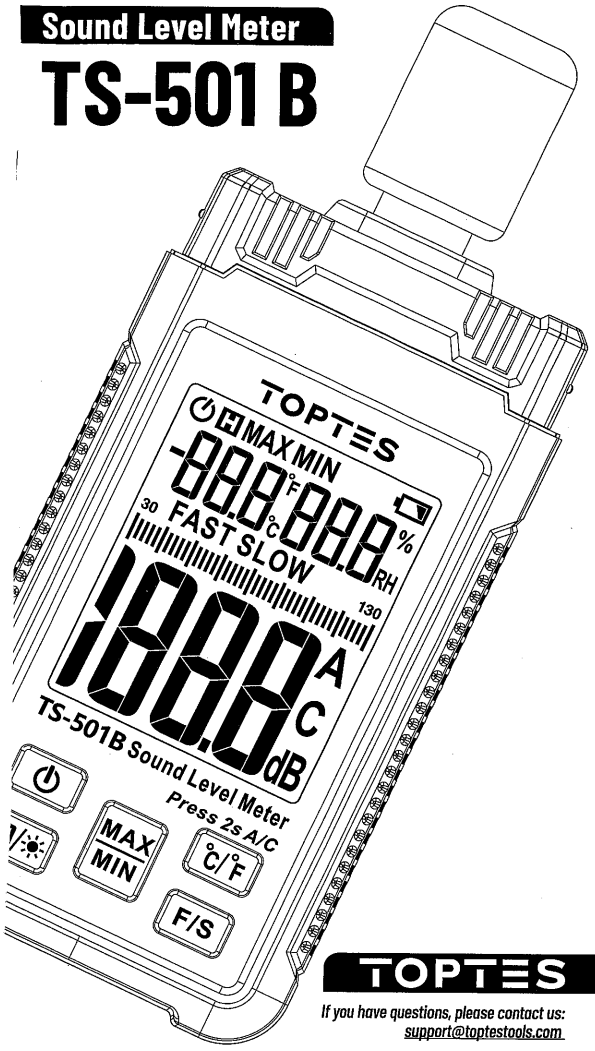
TOPTES

USER MANUAL

Please read this manual before operating the product, and keep it properly for future use.

Sound Level Meter

TS-501 B



TOPTES

If you have questions, please contact us:
support@toptestools.com

Testing

Common Sources of Noise and Decibel Levels
Sound is measured in decibels (dB). A whisper is about 30 dB, normal conversation is about 60 dB, and a motorcycle engine running is about 95 dB. Noise above 70 dB over a prolonged period of time may start to damage your hearing. Loud noise above 120 dB can cause immediate harm to your ears.

How Do We Know the Sound Level is Safe?
The effect of lower noise levels over long periods is the same as louder noise levels over a shorter period. You can use the TopTes sound level meter (SLM) TS-501B to measure the noise around you.
The table below shows dB levels and how noise from everyday sources can affect our hearing.

Everyday Sounds and Noises	Average Sound Level *(measured in decibels)*	Typical Response
Normal breathing	0	Silence
Ticking watch	10	Silence
Soft whisper	20	Quiet
Refrigerator hum	30	Whispering
Normal conversation	40	Normal
air conditioner	60	Noise
Washing machine, dishwasher	70	Noise
City traffic (inside the car)	80-85	Very Noisy
Gas-powered lawnmowers and leaf blowers	80-85	Damage to hearing possible after 2 hours of exposure
Motorcycle	95	Damage to hearing after about 50 minutes of exposure
Approaching subway train, car horn at 16 feet (5 meters)	100	Hearing loss possible after 15 minutes
The maximum volume level for personal listening devices	105-110	Hearing loss possible in less than 5 minutes
Shouting or barking in the ear	110 -120	Hearing loss possible in less than 2 minutes

** The time estimates listed in the "Typical Response" column are based on the NIOSH exchange rate of 3 dB. For more information, visit NIOSH's website.*

MAINTENANCE

Cleaning

Ensure the tester is turned off and wipe with a clean, dry lint-free cloth. Do not use aggressive cleaning products or solvents.

Storage

- Remove the batteries when the meter is not in use for a prolonged period of time.
- Do not expose to high temperatures or humidity.
- After a period of storage in extreme conditions exceeding the limits mentioned in the Specifications section, allow the meter to return to normal operating conditions before use.

Disposal / Recycle

Do **NOT** place equipment and its accessories in the trash. Items must be properly disposed of in accordance with local regulations. Please see ***www.epa.gov*** or ***www.erecycle.org*** for additional information.

USER SAFETY

The TopTes **TS-501B** sound level meter accumulates sound level data for noise dosimetry and can be used as a noise monitor to test sound intensity to find noise pollution, or to avoid the risk of hearing damage.

Working Area

- **Relative Humidity:** 20~80% RH non-condensing
- **Operating Temp:** 32° to 122°F (0° to 50°C)

Friendly Reminders

- Do **NOT** use the meter in hot, humid environment.
- Do **NOT** store or operate the instrument in high areas.
- Wind blowing across the microphone increases the noise measurement. When measuring noise outside, please use the supplied windscreen on the head of the microphone.
- Normally, you do **NOT** need to calibrate the instrument, since it has been calibrated at the factory. If the meter has not been used for a long period of time, it requires a primary standard sound source and acoustic environment to calibrate, and we recommend it be calibrated by a professional engineer, a third testing facility, or a reputable laboratory.
- Please do **NOT** vibrate or shake the meter strongly during use to avoid a false signal on the instrument screen.
- Measurements will also depend on your distance from the sound source. It will deliver a reading of the overall sound level around the user. To put this quantitatively, the sound level drops by 6 dB each time you double your distance from the source.
- When measuring sound with a meter, the position of the microphone will also influence the sound level reading. Pointing it toward the source of the noise will give you a higher reading than placing the mic toward you.
- If the meter is **NOT** to be used for a long time, remove the batteries to avoid electrolyte leakage damaging the instrument.

Average Sound Exposure Levels Needed to Reach the Maximum Allowable Daily Dose of 100%

Time to reach 100% noise dose	*Exposure level per NIOSH REL*
8 hours	85 dB (A)
4 hours	88 dB (A)
2 hours	91 dB (A)
60 minutes	94 dB (A)
30 minutes	97 dB (A)
15 minutes	100 dB (A)

The U.S. Environmental Protection Agency (EPA) and the World Health Organization (WHO) recommend maintaining environmental noises below 70 dBA over 24 hours (75 dBA over 8-hours) to prevent noise-induced hearing loss.

The EPA also specified limits for speech interference and annoyance at 55 dBA for outdoor activities and 45 dBA for indoor activities.

More details about this topic can be found on the NIOSH Science Blog —Understanding Noise Exposure Limits:

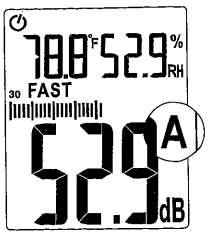
Occupational vs. General Environmental Noise.
(https://www.cdc.gov/niosh/topics/noise/preventhearingloss/hearlosspreventprograms.html)

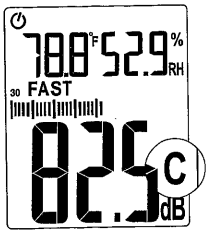
Most noise-induced hearing loss is a result of accumulated damage from repeated exposures to hazardous noise. In addition, the risk of noise damage depends on several factors: how loud the noise is, for how long you listen to it, how much rest your ears get between exposures, and your individual susceptibility to noise.

How loud something sounds to you is not the same as the actual intensity of that sound. Sound intensity is the amount of sound energy in a confined space. It is measured in decibels (dB). The decibel scale is logarithmic, which means that loudness is not directly proportional to sound intensity. Instead, the intensity of a sound grows very quickly. This means that a sound at 20 dB is 10 times more intense than a sound at 10 dB.

A/C Frequency Weighting Switching

Press the button [°C/°F] to select the Frequency Weighting. The default is **A** frequency weighting; when the meter is turned on, **"A"** appears on display. **"A"** Weighting for a general noise sound level. Long press [°C/°F] button
to set **"C"** Weighting for measuring high-level noise. **"C"** Weighting is a standard weighting of the audible frequencies commonly used to measure Peak Sound Pressure levels.

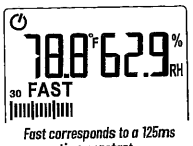




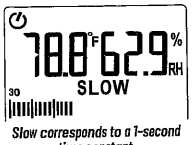
If the **"C"** Weighted level is much higher than the **"A"** Weighted level,

Fast/Slow Time Weighted

Press the [F/S] button switch the desired response time. The default is FAST response. If the sound source consists of short bursts, set the response to FAST (125ms), **"FAST"** appears on the display. To measure average sound levels, select SLOW (1s), **"SLOW"** appears on the display. Most applications can set the response to FAST for detection.



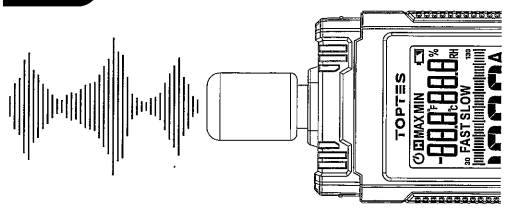
Fast corresponds to a 125ms time constant.



Slow corresponds to a 1-second time constant.

Under **FAST**, the reading will move quickly to show fast varying noise, while under **SLOW**, the reading will be dampened to smooth the noise out and be easier to read.

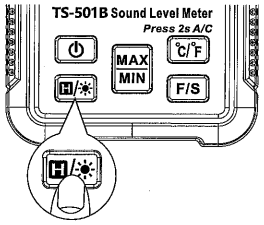
Testing

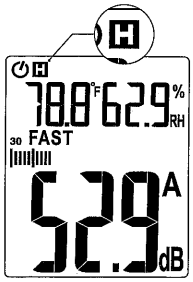


Hold the sound level meter comfortably in one hand *(away from your body)* or place it on a flat object for long-term monitoring. Power on the sound level meter, then pointing the microphone toward the noise source will give you a higher reading than placing the mic toward you, and the sound pressure level reading will be displayed on the screen.

NOTE: The position of the microphone or device will change the sound level meter reading. Pointing the microphone toward the source of the noise will give you a higher reading than placing the mic toward you.

Data Hold

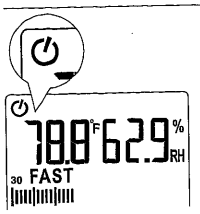




Press the Data Hold Button [H/☀] for 1 second to turn on the data hold function, and capture the measurement reading/data. The icon **H** will appear on the screen, then press the button again for 1 second to return to normal measurement function.

NOTE: The sound level meter comes with the a function to hold its value when it is in MAX and MIN value modes, so there is no need to press the Hold button again.

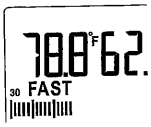
Automatic Power Off



When the meter is turned on, the icon appears in the upper left of the LCD screen. The automatic shutdown function is turned on by default. If there is no operation for 10 minutes, the meter will automatically shut down.

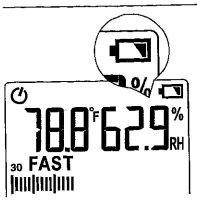
Cancel Automatic Shutdown

Press and hold the button before turning on the meter, then press the power button to turn on the power of the meter. The icon will now **NOT** appear in the upper left of the LCD, so the user needs to manually turn off the power.



NOTE: Restart the meter after shutdown to restore the automatic shutdown function.

Low-Battery Indication



When the battery voltage is lower than the working voltage, the icon appears in the upper right of the LCD screen. This means it's time to put in 3 fresh 1.5V batteries.

The low battery indicator will appear when the voltage drops below the working voltage (approximately 3.5V). Please replace the battery promptly.

NOTE: Measurements will still remain valid for several times after the icon first appears.

Battery Replacement

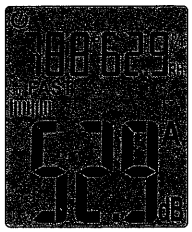
To replace the battery, turn the meter over and open the battery compartment by using a Phillips screwdriver to remove the screw. Install 3 new AAA batteries into the cartridge, noting proper polarity. Place the battery cover back and tighten the screw.

⚠ WARNING

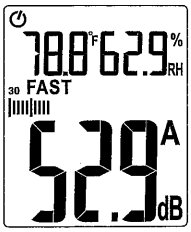
Remove the batteries when the tester is not in use for a prolonged period of time. Do not expose to high temperatures or humidity.

Turn On/Off Backlight

Long press the Backlight Button for >2 seconds to turn on/off the backlight.



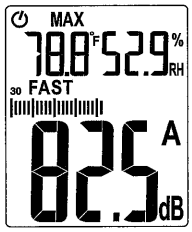
Screen without backlight on

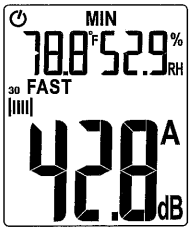


Screen with backlight on

MAX/MIN Value

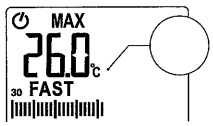
Press the button for 1 second to display the maximum and minimum values. While in this mode, the meter will only refresh the reading when a higher/lower measurement than the one currently displayed is detected. Press the button again for 2 seconds to exit and resume normal operation.

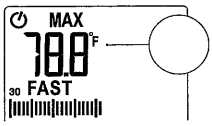




Temperature Unit Switching

Press the **°C** or **°F** button to switch the temperature unit between **°C** or **°F**. Once the temperature unit is switched, it will save for the next time.





SUPPORT

Three-Year Warranty

TopTes provide a 36-Month after-sale service and lifetime technical support.

For further details on warranty coverage and warranty repair information, contact us on our official website:
www.toptestools.com/pages/warranty

Or

Contact us at: *support@toptestools.com*