Sound level meter

DB22-600N

When you purchase this precision timer, it signifies your advancement in the field of precise measurement. This device is a computer-based testing tool; if operated correctly, its durability can last for many years. Before use, please read this manual carefully and store it in a place where it is easily accessible.

graph 1

3.4 Panel Buttons
3.4.1 [Fast/Slow] Button: Select between fast (F) and slow (S) time weighting.
3.4.2 [Lmax] Button: Maximum sound level measurement.
3.4.3 [POWER] Button: Power switch.

3.5 Potentiometer
Adjusts sensitivity during sound calibration.

3.6 Battery Compartment
Accommodates 4*1.5v AAA batteries.

1. Overview
The DB22 - 600N sound level meter is an intelligent noise measurement instrument for measuring A - weighted sound pressure levels. Adopting advanced digital detection technology and controlled by a high - performance single - chip microcomputer for calculation, it features automatic range switching, good reliability, high stability, and a wide dynamic range. Its performance complies with the requirements for Class 2 sound level meters in GB/T 3785 and GB/T 15952. It can be widely applied to the monitoring of environmental noise, noise evaluation for labor protection and industrial hygiene, as well as the measurement and analysis of industrial noise from various machines, vehicles, ships, electrical appliances, etc.

2. Main Technical Performance
2.1 Measurement Range
A-weighted Sound Level: 40 dB-130 dB

2.2 Frequency Range
20 Hz-8 kHz

2.3 Frequency Weighting
A weighting

2.4 Time Weighting
F (Fast), S (Slow).

2.6 Automatic Measurement Display
Automatic measurement of LA and 4-digit LCD digital display.

2.7 Microphone
Φ12.7 mm pre-polarized test condenser microphone
- Nominal sensitivity: -32 dB/Pa
- Frequency range: 20 Hz-12.5 kHz

2.8 Calibration
Calibrated with a Class 2 sound level calibrator (1000 Hz, 94 dB).

2.9 Power Supply
4*1.5v AAA batteries, power consumption about 25 mA, can work continuously for more than 24 hours.

2.10 Dimensions
Length × Width × Height: 230 mm × 77 mm × 33 mm

2.11 Mass
160 g

2.12 Operating Conditions
- Temperature: 0℃-+50℃
- Relative humidity: 25%-90%
- Air pressure: 65 kPa-108 kPa

3. Structural Principle
The appearance of the sound level meter is shown in Figure 1.
3. 1. Transmitter: converts acoustic signal into electrical signal and

connects to preamplifier through screw thread.
3.2 Preamplifier Built-in type, serving as an impedance transformer.

3.3 LCD
Liquid Crystal Display.

4. Usage Instructions
4.1 Pre-use Checks
4.1.1 Verify that the measuring microphone is securely installed.
4.1.2 Check if the batteries are properly placed.
4.1.3 Perform sound calibration on the sound level meter when necessary.
4.1.4 The sound level meter should be periodically sent to the metrology authority for verification to ensure accuracy.
4.1.5 Note: The measuring microphone is a precision component. Do not remove the protective cover during use, and avoid dropping it to prevent damage.

4.2 Measurement of Instantaneous Sound Level LA
- Press the [POWER] button to turn on the device. The LCD will display "XX.X", which indicates the A-weighted sound pressure level. The meter is ready for use after 5 seconds.
- The device defaults to F (Fast) time weighting mode upon startup, with the LA value refreshing every second.
- If the measured noise fluctuates significantly, causing unstable readings, press the [Fast/Slow] button to switch to S (Slow) time weighting mode (indicated by "S" on the display). The slow mode averages readings over a longer period to reduce fluctuations.

4.3 Measurement of Maximum Sound Level Lmax
- During measurement, press the [Lmax] button to activate the Lmax indicator. The displayed "XX.X" value will represent the maximum sound level.

4.4 Overload Indication
- If the sound pressure level exceeds the meter's linear operating range during measurement, the "Over" symbol will appear on the LCD. The symbol disappears when the overload condition is resolved.

4.5 Wind Screen Usage
- Use the wind screen in windy environments to reduce wind noise, which can decrease wind-induced noise by approximately 10 dB to 15 dB.

4.6 Battery Check and Replacement
- The sound level meter automatically detects low battery status. When battery power is insufficient, "LOBAT" will appear in the upper-left corner of the LCD as a reminder to replace the batteries.
- Open the battery compartment, remove the old batteries, insert new ones, and reattach the cover to resume normal operation.

5. Sound Calibration
The sound level meter is calibrated and verified before leaving the factory, and regular calibration is generally unnecessary. However, calibration is required if the meter remains unused for an extended period, the microphone is replaced, or maintenance is performed.

Calibration typically refers to sound calibration, which should be conducted using a Class 2 (1 kHz, 94 dB) sound calibrator. The procedure is as follows:
1. Attach the sound calibrator over the microphone.
2. Power on the sound level meter and set it to F (Fast) mode for LA instantaneous value measurement.
3. After approximately 5 seconds, press the button of the sound calibrator. The meter should display 93.8 dB.
4. If the reading deviates from 93.8 dB, remove the battery cover and adjust the calibration potentiometer with a watchmaker's screwdriver.

Note: Due to the meter's exclusive A-weighted frequency response, do not use sound calibrators with frequencies other than 1 kHz for calibration.

6. Information Specified for Metrological Purposes

6.1 Reference sound pressure level: 94 dB.

6.2 Reference incident direction: Axial direction of the microphone.

6.3 Microphone reference point: Center of the microphone diaphragm.

6.4 Correction data from sound pressure response to free-field response (reference incident direction).

Frequency (Hz)	1k	1. 25k	1. 6k
Correction value dB	0. 2	0. 3	0. 4
Frequency (Hz)	2k	2. 5k	3. 15k
Correction value dB	0. 5	0. 6	0. 8

Frequency (Hz)	4k	5k	6. 3k
Correction value dB	1. 0	1. 55	2. 1
Frequency (Hz)	8k	10k	12. 5k
Correction value dB	3. 2	4. 5	6. 2

6.5 Electrical Input Device

An equivalent resistive impedance can replace the microphone for electrical signal testing. The equivalent resistive impedance has a capacitance of 20 pF and an insulation resistance greater than 1 GΩ. During use, screw the shielded cylinder with the equivalent resistive impedance onto the preamplifier.

6.6 Maximum Intrinsic Noise

When the sound level meter is placed in a low sound level sound field and the above-mentioned adapter replaces the microphone and is short-circuited, the maximum intrinsic noise shall not exceed 34 dB.

6.7 Maximum Allowable Sound Pressure Level on Microphone

135 dB.

6.8 Maximum Peak Input Voltage of Electrical Input Device

3 Vp-p (3 volts peak-to-peak).

6.9 Operating Voltage Range When Sound Level Meter Meets Technical Requirements

2.2 V～3.3 V.