



**9353-413  
DIGITAL SOUND LEVEL METER  
(ADVANCED TYPE)  
OPERATION MANUAL**

PLEASE SCAN QR CODE TO  
WATCH THE OPERATION  
VIDEO OF PRODUCTS.



## Precaution

- ◆ Use the unit only as described in this manual.
- ◆ Don't touch any parts of the unit other than necessary for operation.
- ◆ Don't disassemble or not modify the unit.
- ◆ In case of malfunction, don't attempt any repairs.
- ◆ Note the condition of the unit clearly and contact the supplier.
- ◆ The unit should be protected from shocks and vibration.
- ◆ Load the batteries with correct polarity. If the unit is not to be used for an extended period of time, be sure to remove the batteries in order to avoid possible damage to the unit from electrolyte leakage.
- ◆ For storing or operating the unit. Avoid locations which:
  1. may be subject to adverse influences such as from high temperature or high humidity, air with high salt or sculpture content or gases from chemicals
  2. may be subject to splashes of water or direct sunlight, excessive dust or dirt accumulation.
- ◆ When use the unit in the condition of high temperature or in direct sunlight, protect it from heat with suitable methods.

## Introduction

Model 9353-413 digital sound level meter is digital and modular sound level meter with multifunction meeting IEC 61672-1:2013 class 2, and the sensitivity to radio frequency fields belongs to group X.

The meter adopts advanced digital detection technology and has advantages of reliable and steady performance, wide automatic range, and on need of range conversion etc.

## Specification

- (1) Microphone: pre-polarization condenser microphone.  
Outer diameter: 12.7mm (1/2"). Nominal Sensitivity: 30mV/Pa.  
Frequency range: 20Hz ~12.5 kHz. See nominal free sound field response at the reference incidence direction in the appendix A.
- (2) Measurement Range(1kHz): 40dB~130 dB(A)(ref. 20  $\mu$ Pa).
- (3) Frequency Range: 20 Hz~12.5kHz.
- (4) Frequency Weighting: A. See the response in free sound field in the appendix B  
Note: 9353-413 doesn't have C or Z weighting
- (5) Time Weighting: F(125ms), S(1s).
- (6) Reference Direction: axial of condenser microphone
- (7) Accuracy: meets IEC 61672:2013 class 2
- (8) Display screen: 128×64 LCD

(9) Calibration: use model AWA6221B sound level calibrator meeting IEC 60942 Class 2.

(10) Power supply: 4×1.5V AAA batteries

(11) Dimensions (H×W×D): 210× 68× 27mm

(12) Weight: 240g

(13) Operation environment:

Air temperature: 0°C ~ +50 °C

Relative humidity: 25% ~ 90%

Air pressure: 65kPa ~ 108kPa

### Structure features and function

The outline of the Sound Level Meter is shown in figure 1. It consists of microphone, preamplifier and main unit. During normal operation, the microphone and the preamplifier are installed on head of the main unit which can be taken off from the main unit through knurled nut. The outline of the sound level meter is sharp to reduce the reflection of the sound wave. The nominal influence of the reflection caused by the shell of sound level meter and the indication features of the sound level meter at different incidence directions are mentioned in Annex C. The shell is mould with ABS plastic, the batteries are put in battery box, and it is very convenient to replace the batteries through turning down the battery cover plate. All switches are button switches which are located in the central of the obverse side. Sensitivity adjustment is on the lower left side of the instrument. Overload indicator light is located on front top.



Figure 1

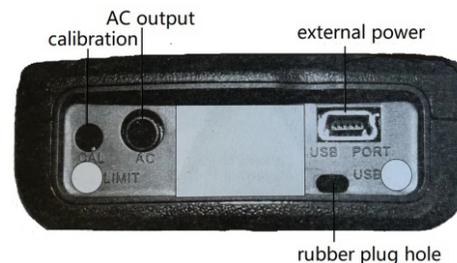


Figure 2

## Operation

### ◆ 1 Preparation before using.

- 1) Check whether the microphone has been installed correctly.
- 2) Check whether battery has been put in.
- 3) If necessary, calibrate it with a sound calibrator. Regulate method is in chapter 5.
- 4) The meter should be tested by relative department fixedly (such as one year), so as to ensure its accuracy.

### ◆ 2 Measurement of sound pressure level Lp

Press the start button for about 1s, All LCD screens will be on. After another 1s, the instrument can be used normally. If the display is abnormal, press the "ON/Reset" key again. At this time, the value displayed on the instrument is A weighted sound pressure level Lp. The LCD screen is refreshed once every second, and the sound pressure level actually refersto the maximum upgrade in one second. If the measured value changes greatly, press the "F/S" key to display "S" on the lower left of the LCD,increase the average time to reduce the change of indication.Press the "F/S"key again, and the lower left part of the LCD shows that "S" becomes "F".

### ◆ 3 Measurement of Lmax

To measure the Lmax, just press the "Lp/Lmax" key, display "HOLD" on the left side of the LCD, the reading is the Lmax value and keep the value.The new maximum value is displayed only when the sound level exceeds this value.Press the "Lp/Lmax" key again,make hold disappear and return to the Lp measurement.

### ◆ 4 Overload indication

When the measured sound level exceeds the upper limit of the maximum measurement range, the sound level meter will be overloaded, the overload indicator light above the LCD will be lit.the measurement result is inaccurate, but the instrument will not be damaged.

### ◆ 5 Setting of time weighting

There are two options for time weighting: F(fast) and S(slow),press the "F/S" key to switch between F gear and S gear. When the user's measured sound level fluctuates greatly, the time counter weight can be set to "S" gear.

### ◆ 6 Use of windscreen

If windy, you may use a windscreen to reduce the influence of wind noise. There are different models for you to choose. Windscreen of  $\phi 35 \times 60$  size can reduce noise about 10dB~15dB. See appendix D the influence of free-field responses for a meter with a windscreen when there are no wind.

### ◆ 7 External power supply

The Sound Level Meter can be connected with external power through the  $\phi 1.1$  external power socket at the lower right of the instrument. At this time, the inner battery will be cut-off automatically. The voltage range of the external power supply is 4.5V~9V. The shell of plug is the cathode and the core of plug is the anode. When the Sound Level Meter is used for long time continuously, it is recommended to use external power supply.

◆ 8 Check and change of battery

While operating, the meter will check battery power automatically, if it is low, the undervoltage indicator on will be lighted, which reminds to change battery. After you change the battery, the meter will operate normal again.

Calibration

Usually, the meter needn't be calibrated because it had been calibrated before sale. But if it hasn't been used for a long time, or microphone is changed or overhauled, you'd calibrate it again.

Match the sound calibrator with a 1/2 inch adapter into microphone, open the meter power and let it on "F", "Lp" state. Preheat for 30 seconds and press the power button of sound calibrator, the meter should indicate 93.8 dB. If not so, adjust the "calibration potentiometer" on right side with a little screwdriver.

If the sound pressure level of the calibrator is not 94 dB, deduct 0.2 dB from the normal sound pressure level of the calibrator as calibrating sound pressure level.

Information for testing

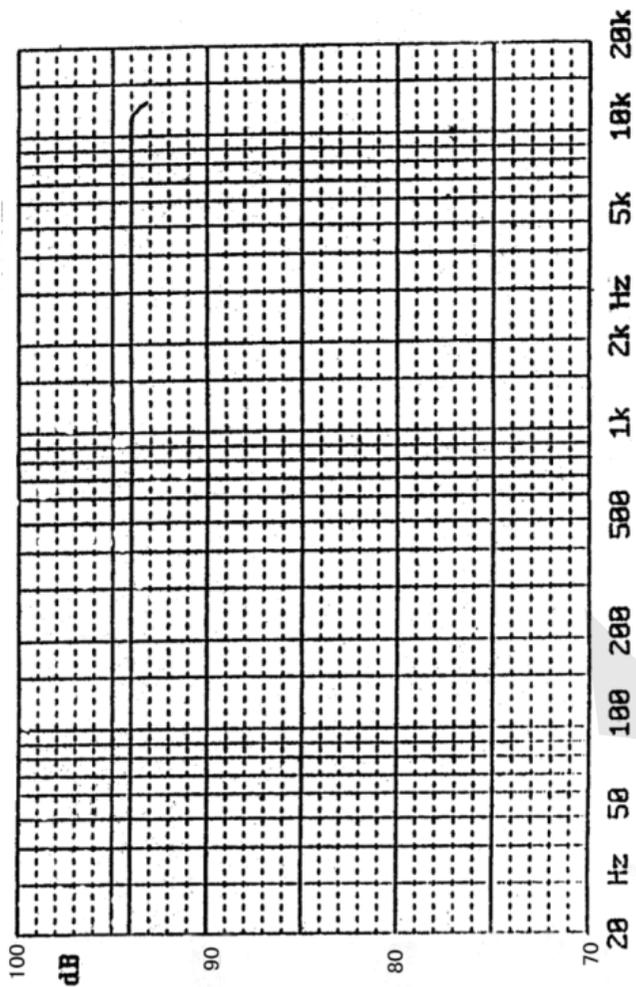
- (1) Reference sound pressure level: 94dB
- (2) Reference incident direction: Axial of microphone
- (3) Reference point: Diaphragm center of microphone
- (4) Adjustment data to obtain A-weighting sound levels equivalent to response to free-field response to plane sinusoidal sound waves incident from the reference direction.

Frequency (Hz)	1k	1.25k	1.6k	2k	2.5k	3.15k
Adjustment data (dB)	0.2	0.3	0.4	0.5	0.6	0.8
Frequency (Hz)	4k	5k	6.3k	8k	10k	12.5k
Adjustment data (dB)	1.0	1.55	2.1	3.2	4.5	6.2

- (5) Nominal free-field response of the meter on reference incidence under approximate reference conditions. See appendix B
- (6) Electrical input equipment: 20pF condenser, insulation resistance is more than 1 GΩ
- (7) Highest self-generated noise level: 25dB (electrical noise level is not higher than 23dB)
- (8) Allowed highest sound pressure level on microphone: 135dB
- (9) Maximum input peak voltage of electrical input equipment: 2Vp-p
- (10) Working voltage range at which the sound level meter conforms to specifications: 4.5V~9V
- (11) The typical time interval needed to stabilize after changes in environment condition, at least 12 hours to be steady under reference requirement, or at least 19 hours in other ambient conditions.

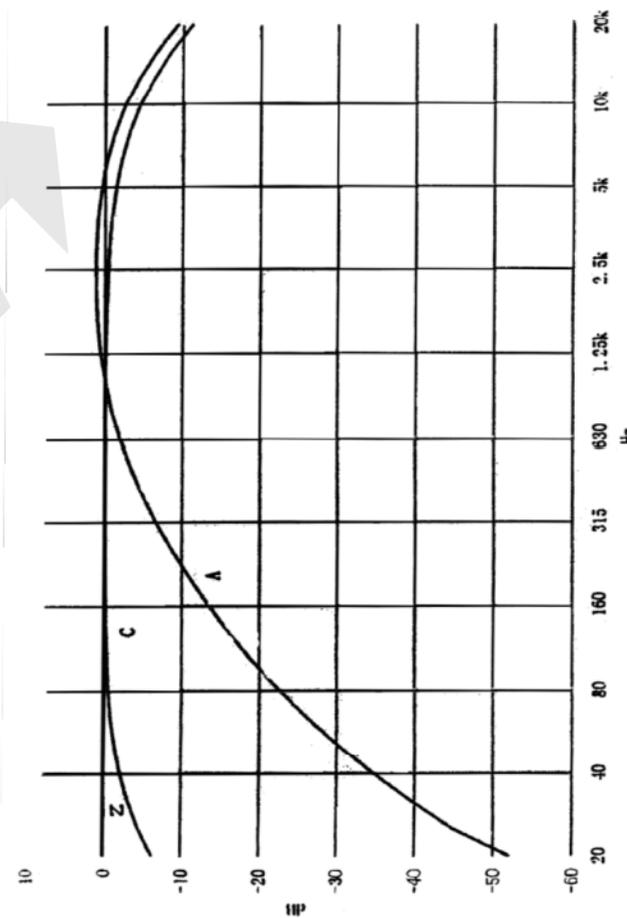
Appendix A

The reference direction of nominal free response of test electret capacitor microphone model AWA14421.



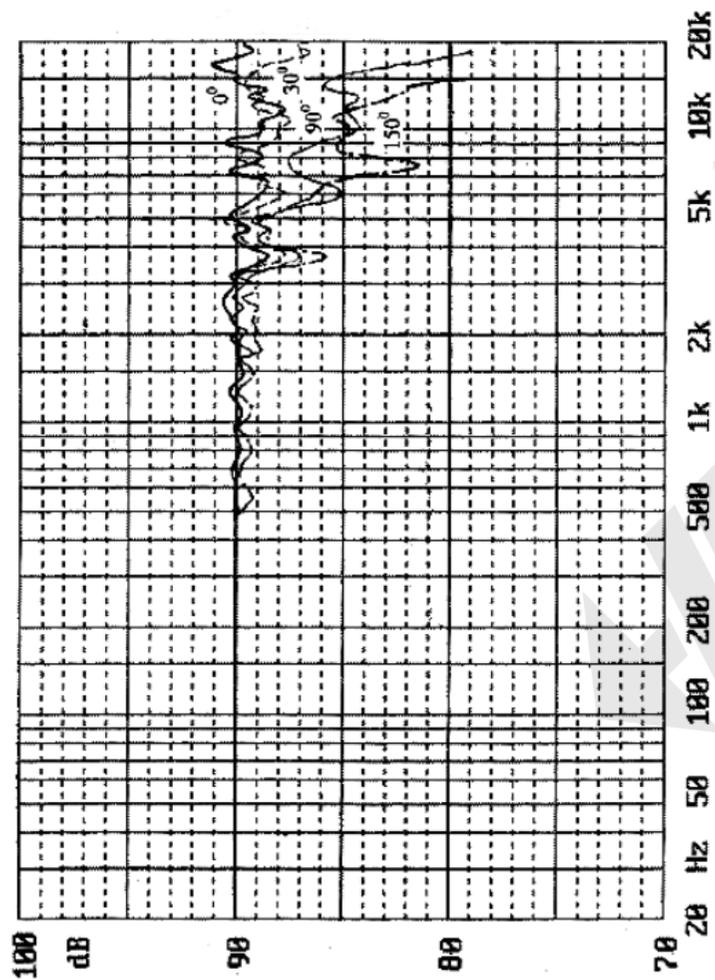
Appendix B

On the reference direction of nominal free response of sound level meter in approximate reference environment



Appendix C

Directional response



Appendix D

The free field response of sound level meter in different directions under no wind condition and installed  $\phi 35 \times 60$  windscreen

