

# OPERATION MANUAL

## Digital Sound Level Meter



Model: ■ 8921

■ 8922

## **INTRODUCTION**

Your digital sound level meter provides automatic or manual ranging in six measurement ranges from 30 to 130dB. The unit meets ANSI S1.4 and IEC 651 Type 2 standards, and features 0.1dB resolution.

A background noise absorber permits you to measure sound levels accurately even in the presence of high background noise.

The meter allows you to select between fast and slow response times and A and C weighting. A maximum hold function is provided.

Jacks on the meter provide both AC and DC analog output, while an RS-232 interface allows you to use an optional cable to capture sound level data on a PC.

## **FUNCTIONS:**

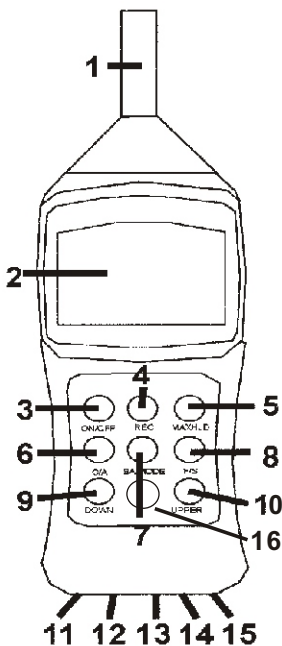
1. Selecting A & C weighting.
2. Selecting the response time.
3. Freezing the maximum sound level reading.
4. Recording the maximum and minimum measurements.
5. Using the background noise absorber.
6. Selecting Automatic and manual ranging.
7. Automatic shut off.
8. Easy to replace battery.

## FRONT PANEL DESCRIPTION

- 1》 **MICROPHONE**
- 2 **LCD DISPLAY**
- 3 **ON/OFF** - Power button
- 4 **REC** - Records sound level readings
- 5 **MAXHLD** - Freezes the maximum sound level digital reading
- 6 **C/A** - A/C frequency weighting selector
- 7 **BA MODE** - Background noise absorber
- 8 **F/S** - Fast/Slow response selector
- 9 **DOWN** - Adjusts the measurement range
- 10 **UPPER** - Adjusts the measurement range
- 11 **DC 9V** - DC adapter jack
- 12 **CAL** - Calibration screw
- 13 **AC OUT** - AC analog output jack
- 14 **DC OUT** - DC analog output jack
- 15 **RS232** - RS-232 output jack
- 16 **BACKLIT** - Back light  
(Model 8922 only)

The meter will display all segments when it is first turned on. Though you might see SEL, Leq, DOSE, PEAK.... These are not available for the meter you purchased, please contact the store or the place you purchased for further models with these additional functions.

# FRONT PANEL DIAGRAM



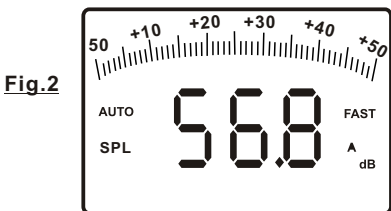
## MEASURING SOUND LEVELS

Sound levels are displayed both digitally and in a bar graph. The digital display is updated every 160ms, while the bar graph is updated every 40ms.

Press the **ON/OFF** key to turn the meter on. The unit will first display the full screen and then count down to zero. (See Fig. 1)



The meter will now begin measuring the current sound levels. (See Fig.2)



***Point the microphone toward the source of the sound to be measured.***

## SELECTING A AND C WEIGHTING

When you turn the meter on, it will be in A weighting mode.

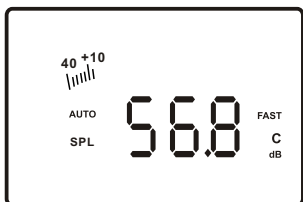
- A** weighting enables the meter to respond in the same manner as the human ear, which increases and decreases amplitude over the frequency spectrum.

Applications for A weighting include OSHA regulatory testing, environmental measurement, workplace design, and law enforcement.

- C** weighting is suitable for flat response measurements with no increase or decrease of amplitude over the frequency spectrum. Applications for C weighting include the sound level analysis of engines and machinery.

***Press the C/A key to toggle between A and C weighting. A small A or C will be displayed on the right side of the screen to indicate the current mode.***

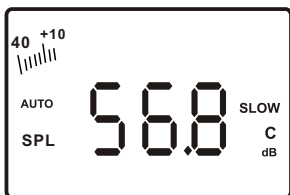
**Fig.3**



## SELECTING THE RESPONSE TIME

You can select fast or slow response time to suit different applications and standards. For example, most OSHA-related testing is done using slow response time and A weighting. When you turn the meter on, it will be in **FAST** response mode. Press the **F/S** key to toggle between FAST and SLOW response. A small **SLOW** will be displayed on the right side of the screen to indicate the current mode. (See Fig.4)

**Fig.4**



## FREEZING THE MAXIMUM SOUND LEVEL READING

- 1》 Press the **ON/OFF** key to turn the meter on.
- 2》 When measuring sound levels, press the **MAXHLD** key to freeze the maximum reading. **MAX HOLD** will be displayed. (See Fig.5) The digital display will remain unchanged until a higher reading is detected. Note that the bar graph will continue to record the current reading.
- 3》 Press the **MAXHLD** key again to exit maximum hold mode.

**Fig.5**



## RECORDING THE MAXIMUM AND MINIMUM MEASUREMENTS

- 1》 Press the **ON/OFF** key to turn the meter on.
- 2》 Press the **REC** key. **REC** will be displayed on the bottom of the screen(See Fig.6) . The meter will begin tracking the maximum and minimum sound level measurements.

**Fig.6**



- 3》 Press the **REC** key again. **MIN** will appear on the bottom of the screen (See Fig.7) and the mini. sound level measurement will be displayed. The unit isn't recording at this time, but the bar graph will continue to show the current reading.

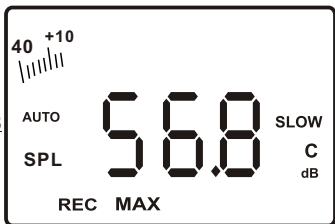
**Fig.7**





- 4》 Press the **REC** key again. **MAX** will appear on the bottom of the screen and the maximum sound level measurement will be displayed. The unit is not recording at this time, but the bar graph will continue to show the current reading.

**Fig.8**



- 5》 Press the **REC** key again to resume recording and repeat the process.
- 6》 Press and hold the **REC** key until the **REC** indicator disappears to exit recording mode.

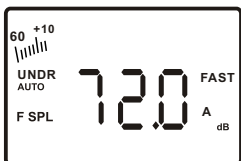
## USING THE BACKGROUND NOISE ABSORBER

This feature allows you to measure equipment noise accurately, even in the presence of high background noise.

- 1》 Press the **ON/OFF** key to turn the meter on.
- 2 Press the **MAXHLD** key. **MAX HOLD** will be displayed. (See Fig.5)

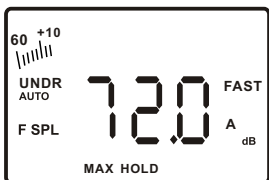
- 3 Press the **BA MODE** key. **F** will be displayed to the left of the **SPL** (sound pressure level) icon. The digital display will show the background noise level. **MAX HOLD** will be disappeared now. (See Fig.9)

Fig.9



- 4 Press the **MAXHLD** key again and **MAXHOLD** will be displayed. (See Fig.10) The meter is now ready to measure the actual machine noise.

Fig.10



- 5 Turn on the machine you want to measure and note the new sound level reading. This number represents the sound level of the device without the background noise. If there is no change in the reading, the background noise is greater than the noise of the device.
- 6 Press the **MAXHLD** key and then the **BA MODE** key to exit background noise absorber mode.

## BACKLIT KEY (8922 only)

Offer a light for approximate 5 seconds to make it easier to see the display in the dark.

## SELECTING AUTOMATIC AND MANUAL RANGING

**The meter features six measurement ranges in 10dB steps:**

**30~80dB, 40~90dB, 50~100dB,  
60~110dB, 70~120dB, 80~130dB.**

When you turn the meter on, it will be in automatic range mode and a small AUTO will be displayed on the left side of the screen (See Fig.11) . In this mode, the meter will adjust the measurement range automatically for accuracy. The two digit number to the left of the bar graph on the LCD will show the low end of the current range.

You can also set the range manually. This is helpful when you know the measurement range in advance. The meter will be able to take readings more quickly, because the unit does not need to first establish the range before displaying the measurement.



**Fig.11**



**Fig.12**

## TO ADJUST THE RANGE MANUALLY:

- 1》 When measuring sound levels, press the **DOWN** and **UPPER** keys as needed to adjust the measurement range. **MANU** will appear on the display (See Fig.12) .Note that the two digit number to the left of the bar graph will change to reflect the low of the newly selected range.

If the meter is operating in manual range and UNDR is displayed (See Fig.13) , the sound is too low or the range. If UPER is displayed (See Fig.14) ,the sound is too loud. In either case, you must adjust the measurement range or your readings will be incaccurate.

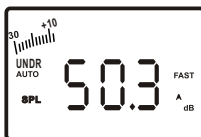


Fig.13



Fig.14

- 2 Press and hold the **DOWN** or **UPPER** key to switch back to automatic ranging.(See Fig.11)

## AUTOMATIC SHUTOFF

The meter will turn off automatically after 20 minutes to preserve the battery.

### To override the Auto Shut Off feature:

- 1》 Make sure the unit is turned off.
- 2 Press the **ON/OFF** and **MAXHLD** buttons simultaneously.
- 3 When the full display appears, release the **MAXHLD** button **first**.  
"n" will appear on the screen in one second (See Fig.15) , then enter the power on mode ; i.e. count down from:

99.9 → 88.8 → 77.7 → 66.6 → 55.5  
44.4 → 33.3 → 22.2 → 11.1 → 00.0

and then a current sound level measurement is started.

Fig.15



- 4 Release the **ON/OFF** key. The meter will remain on until the **ON/OFF** button is pressed again.

**The automatic shutoff feature will resume the next time the meter is turned on.**

### REPLACING THE BATTERY

When the entire display flashes, the 9V battery has fallen to a critically low voltage level and should be replaced as soon as possible. Use a screwdriver to unscrew the back battery compartment cover. Insert a fresh 9V battery and replace the cover.

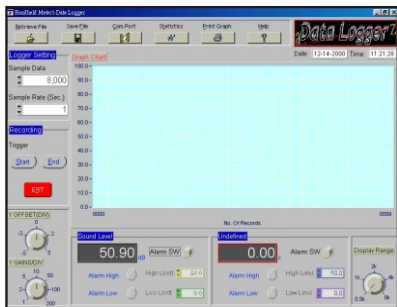
<b>SPECIFICATIONS</b>	
<b>Applicable Standards</b>	IEC 651 Type 2, ANSI S1.4 Type 2
<b>Measurement Frequency Range Accuracy</b>	31.5Hz~8KHz $\pm 1.5\text{dB}$ (Under reference conditions)
<b>Measurement Level A Weighting</b>	30dB~130dB
<b>Measurement Level C Weighting</b>	35dB~130dB
<b>Measurement Level Range</b>	6 ranges in 10dB steps: 30~80dB, 40~90dB, 50~100dB, 60~110dB, 70~120dB, 80~130dB
<b>Automatic Range</b>	30~130dB
<b>Time Weighting</b>	Fast and slow
<b>Segment Range</b>	50dB
<b>Digital Display</b>	3 1/2 digit LCD, 0.1dB resolution updated every 0.5 seconds
<b>Quasi-Analog Bar Indicator</b>	1dB display steps, 50dB display range, updated every 50ms
<b>Microphone</b>	6mm diameter Electret condenser microphone
<b>Analog Output</b>	AC: 0.707Vrms (at full scale), DC: 10mVDC/dB
<b>Size</b>	80mm x 256mm x 38mm (3" x 11" x 1.5")
<b>Weight</b>	240g(10.3oz)
<b>Operating Temperature</b>	4~50°C, 10~90% Relative Humidity
<b>Storage Temperature</b>	-20~60°C
<b>Battery</b>	9V Battery

## RS232 OUTPUT:

The meter can link with personal computer to capture on-line datas , display presure records with real-time output, you can retrieve file, save the datas for operating data analysis, records statistic, multi-files display in the screen,....versatile functions for your choice.

Connection procedures:

1. Plug the optional accessory RS232 cable onto the DC jack port ( at the right side of the meter)
2. Instert the D-sub 9P type connector onto computer's Com.1 or 2 port or....
3. Start to set up RS232 software by inserting the CD-ROM or Floppy diskette.
4. When installing the RS232 software, please follow the operation manual procedure in the software package.



## **MATERIAL SUPPLIED**

This standard package contains:

1. The meter x 1
2. Battery x 1 (9.0 volt)
3. Operation manual x 1
4. Buffer x 1
5. Hard Carrying case x 1

Optional accessory:

- a) RS232 software CD-R.
- b) D-sub connector.

## **CE CERTIFICATION**

The meter conforms to the following standards:

EN 50081-1/1992 : EN 55022  
EN 50082-1/1997 :  
(EN 61000-4-2/-3/-8, ENV 50204)

The meter complies with the essential protection requirements of Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

## **RETURN AUTHORIZATION**

Authorization must be obtained from the supplier before returning items for any reason . When requiring a RA ( Return Authorization) , please include data regarding the defective reason, the meters are to be returned along with good packing to prevent any damage in shipment and insured against possible damage or loss .



## **WARRANTY**

The meter is warranted to be free from defects in material and workmanship for a period of one year from the date of purchase. This warranty covers normal operation and does not cover battery , misuse , abuse , alteration , tampering , neglect , improper maintenance , or damage resulting from leaking batteries . Proof of purchase is required for warranty repairs . Warranty is void if the meter has been opened .

## **Accuracy, the Zenith of Measuring / Testing Instruments !**

- ▲ Hygrometer**
- ▲ Thermometer**
- ▲ Anemometer**
- ▲ Sound Level Meter**
- ▲ Air Flow meter**
- ▲ Infrared Thermometer**
- ▲ K type Thermometer**
- ▲ K.J.T. type Thermometer**
- ▲ K.J.T.R.S.E. type Thermometer**
- ▲ pH Meter**
- ▲ Conductivity Meter**
- ▲ T.D.S. Meter**
- ▲ D.O. Meter**
- ▲ Saccharimeter**
- ▲ Manometer**
- ▲ Tacho Meter**
- ▲ Lux / Light Meter**
- ▲ Moisture Meter**
- ▲ Data logger**
- ▲ Temp./ RH transmitter**
- ▲ Wireless Transmitter .....**

**More products available !**  
**<http://www.az-instrument.com.tw>**