SMART SENSOR®

MODEL: AR844

Sound Level Meter
Instruction Manual

Version: SZ844-0

Precauction

- Thank you for pruchasing our Digital sound level meter.
- This manual provides relative information on how to use the unit and warnings in operation.
- To make the best use of this product's functions, read this manual thoroughly before use. Please keep this manual for quick reference.
- Please make some simple test measurement to ensure proper performance of the unit.

Maintenance and warranty

1). Maintenance

- Replacement and maintenance of battery:

a.Remove the battery from the unit if it is not required for extended periods of time in order to avoid damage to the battery compartment and the electrode resulting from a leaking battery.

b.After power on, if a symbol appears on the LCD, you need to replace the batteries immediately. Open the battery door, take out the old battery install new batteries, (note the battery polarity), then close the battery door, for details please refer figures and contents on page 10 of this manual.

- Cleaning the casing:

Never use alcohol or thinner to clean the unit casing that will especially erode the LCD surface; just clean the unit lightly as needed with little clean water.

2). Warranty

- About relative warranties please read provided warranty card.
- We disclaim any liability due to: transportation damages; incorrect use or operation; manipulation, alterations or repair attempts; without warranty card, invoice.

Specific Declarations

a. We reserve the rights of the update and amendment of the product design and the manual which are subject to change without further notification.

b. Dispose of battery should in accordance with local laws and regulations.

IntelliSafe CE

3. Other items

Familiar trouble shooting

The following is a list of actions to be taken if the unit is not working properly:

1). Screen is Blank:
Check the batteries are installed correctly. Open the battery door on rear of the unit. The + and - symbols on the battery should match the corresponding + and - symbols marked in the battery compartment.

2). If the unit can not connect to PC normally, please check if the USB cable is OK, if the cable can not be used formally, please replace it for a new one.

Attentions

1). Environment conditions on operation:
Indoor use; 2000 meters high below;
Temperature:0~40℃;
Relative humidity: ≤80%RH

2). Do not store or use the unit in following conditions:
a. Splashes of water or high levels of dust.
b. Air with high salt or sulphur content.
c. Air with other gases or chemical materials.
c. High temperature or humidity or direct sunlight.

3). Never impact the unit or used on humidity conditions.

Contents

1. Before use notice

Check-up

Carefully unpack your kit after you purchased this product and ensure that you have the following items. In the event that any item is missing or if you find any mismatch or damage or the manual appearing to lack page, etc. Seriously influencing the reading, promptly contact your dealer.

- Sound level meter 1PCS
- Sponge ball 1PCS
- Computer software disc 1PCS
- USB connection cable 1PCS
- AC output wire 1PCS
- 1.5V battery (AA) 4PCS
- EN user's manual 1PCS
- Warranty card 1PCS
- PP packing box 1PCS

7). Download of recorded data:
Click the Import Data in File menu bar or Import Data button on tool column will popup following picture as shown in figure 32:

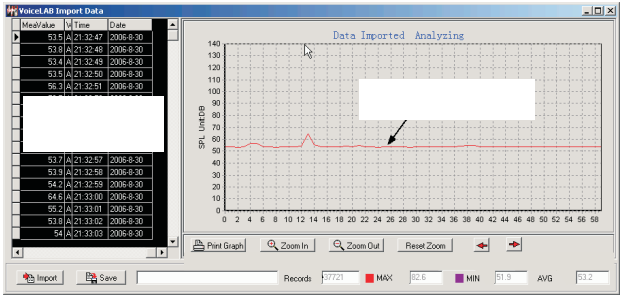


Figure 32

Button instructions:

Button	Function
Import	Click to download measuring data from the unit. In download process, please don't switch between windows to avoid a alert "Over Time".
Save	Click to save real-time measuring data, input file name in popup window, click to save (Document format is Lab.)
Print Graph	Click to print curve diagram
Zoom In	Zoom out curve diagram
Zoom Out	Zoom in curve diagram
Reset Zoom	Reset zoom, resume to defaulted value
	Move curve diagram to left or right

This software supports to print measuring data curve diagram, for details please refer to HELP content.

6) On line measurement:

➢ Click Real Time Measure in File menu bar or Real Time Measure button in tool column will enter into the window as shown in figure 31:

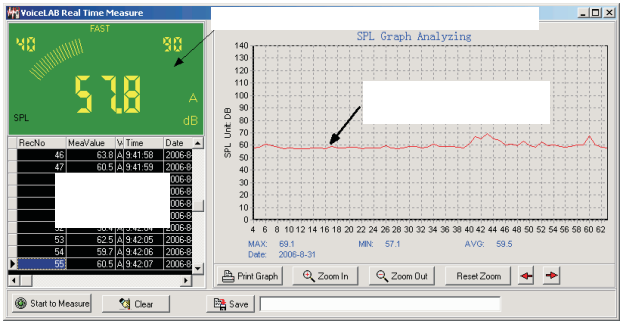


Figure 31

➢ Button instructions:

Button	Function
Start to Measure	Click to start real-time measurement
Stop Measure	Click to stop real-time measurement
Clear	Click to clear all the measuring data
Save	Click to store real-time measuring data, input file name in popup window, click to save the document format of Lab.
Print Graph	Click to print curve diagram
Zoom In	Zoom in curve diagram
Zoom Out	Zoom out curve diagram
Reset Zoom	Reset zoom, resume to defaulted value
◀ ▶	Move curve diagram to left or right

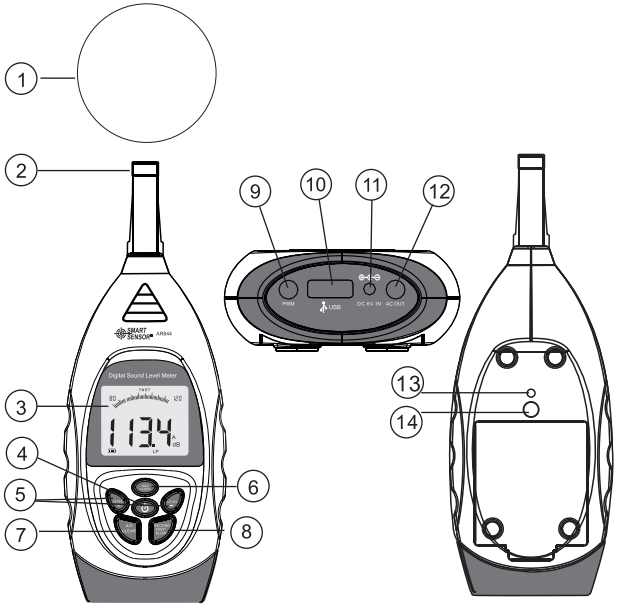
Introduction

This unit has been designed to meet the measurement requirement of noise engineers, noise quality control and health prevention in various environments. Such as noise measurement in factory, office, traffic road, family and all other noise measurement applications.

Features

➢ This unit was designed according to following standards:
  a. International electrician committee standard:
     IEC PUB 651 TYPE2
  b. US national standard: ANSI S1.4 TYPE2
➢ Accuracy up to +/-1.5dB
➢ Measurement range is 30 to 130dB
➢ High/low speed rate selection
➢ The maximum value holding function
➢ Auto power off 10 minutes
➢ Both AC and PWM signal output are available
➢ Calendar function
➢ 4700 data record function
➢ Connect with the PC through USB, provides data record downloading, real-time data sampling analysis, and printing graph&data functions.

Diagram of the unit



1. Sponge ball (when outdoor use please put on, prevent wind blowing noise disturbing the unit reading)
2. Capacitance microphone
3. LCD display
4. ⏻ Power on switch, press once to power on, again to power off.

5. LEVEL + LEVEL - Level position switching and calendar setting key.

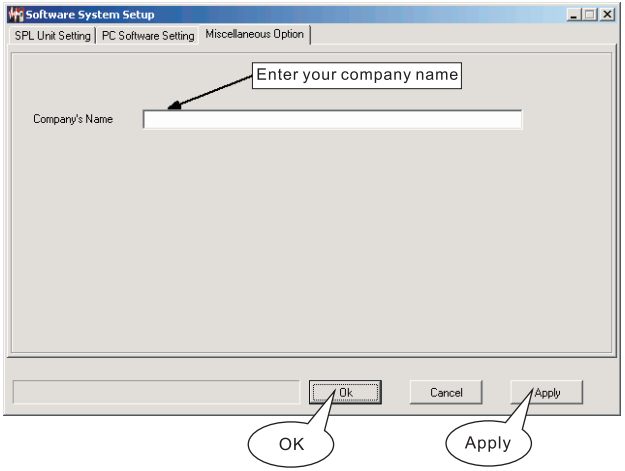


Figure 30

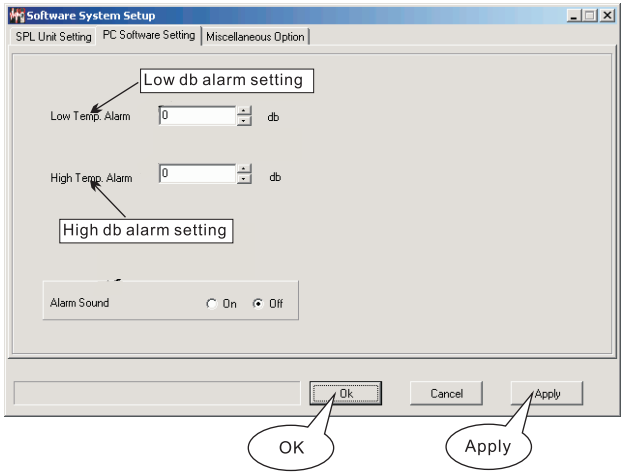


Figure 29

➢ Click option page Miscellaneous Option will enter into the window as shown in figure 30:
(Click Apply or OK to confirm)

6. MAX CLOCK The maximum value holding and calendar setting key.
7. A/C CLEAR Frequency weighting selection and record data deletion key, the default value is A, press once turn to be C, press down until on the LCD appears the symbol CLA will delete all the record data.

A: Weighting for general sound level measurements.
C: Weighting for checking the low-frequency content of noise.

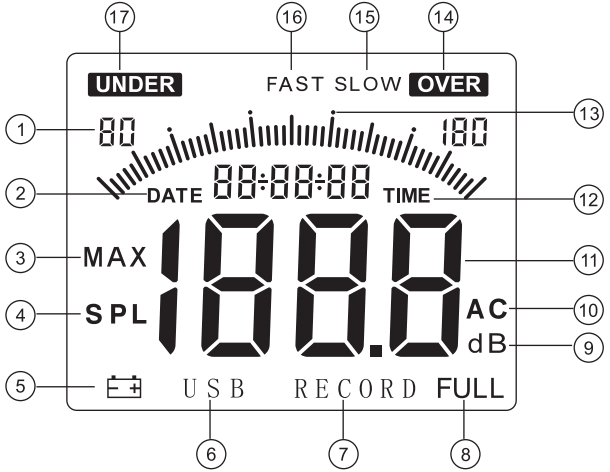
8. RECORD FAST/ SLOW Time weighting selection and data recording key, the default value is FAST, press once turn to be SLOW, press down until on the LCD appears the symbol RECORD will enter data recording mode, press again to exit to this mode.

FAST: Displaying current instantaneous dB value
SLOW: Displaying current average dB value in 1 second.

9. PWM Pulse Width Modulation output jack
10. USB USB jack
11. DC 6V IN DC 6V input jack (outside positive inside negative)
12. AC OUT AC analogy signal output jack
13. Calibration knob
14. Tripod fixed screw aperture

Note:
Above key functions descriptions just are simple introduction, please read operation instructions part in this manual for details.

LCD Display



System setting:

➢ Click System Setup in Option menu bar or System Option button in tool column will enter into defaulted option page SPL Unit Setting, as shown in figure 28:
(Click Apply or OK to confirm)

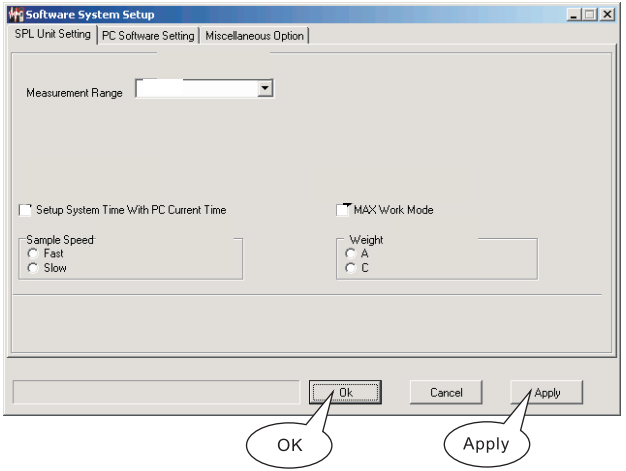


Figure 28

➢ Click option page PC Software Setting will enter into the windw as following picture as shown in figure 29:
(Click Apply or OK to confirm)

4) Connection with PC:

- Insert one end of USB wire into the USB socket on the unit, as shown in figure 26:

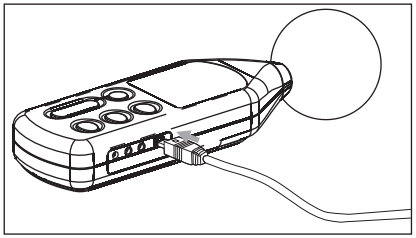
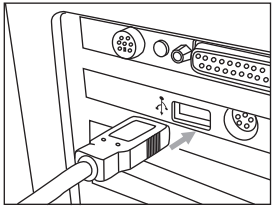


Figure 26

- Plug another end of USB wire into the interface port on PC, as shown in figure 27:

Figure 27



Note:

- Once the connection is done, an USB icon appears on the LCD of the unit indicates a success connection, otherwise, the connection fails.

- In connection with PC, the PC could supply the power to the unit directly, in absence of 4 *AA batteries. When disconnect with the PC, the unit will auto turn off.

1.Level range

2. **DATE** calendar date (year, month, day)
3. MAX The maximum value icon
4. **SPL** Sound pressure level icon
5. Low battery indication
6. USB USB communication icon
7. RECORD Data recording icon
8. FULL Data recording full indication
9. dB Measurement unit
10. **AC** frequency weighting A and C
11. Reading displaying area
12. **TIME** Calendar clock (hour, minute, second)
13. Bar graph (1dB/1 bar graph)
14. **OVER** Alarm symbol, if the reading is over the maximum range, this symbol will display.
15. SLOW Slow speed (refers to respond speed)
16. FAST Fast speed (refers to respond speed)
17. **UNDER** Alarm symbol, if the reading is under the minimum range, this symbol will display.

Specifications

Calibration sound source	94dB@1KHz
Measurement range	30~130dBA、35~130dBC
Accuracy	±1.5dB (reference sound pressure standard , 94dB@1KHz)
Frequency response	31.5Hz~8.5KHz
Resolution	0.1dB
Measuring level	30 to 80 , 50 to 100, 60 to 110, 80 to 130, 30 to 130
Dynamic range	50dB/100dB
Overload indication	OVER / UNDER
Frequency weighting characteristic	A and C
Digital display	4 digits
Analogy bar graph	1dB/1 bar graph
Sampling rate	20times/second
AC signal output	4Vrms/ full bar graph, output impedance is about 600 ohm
PWM signal output	Duty cycle = $\frac{0.01X \text{ db value}}{3.3}$ x 100%
Dynamic characteristic	FAST(high speed)/SLOW(low speed)
Calendar accuracy	±30seconds/day
Data storage quantity	4700
The maximum value holding	MAX
Auto power off	(after no operation for 10 minutes)
Microphone	1/2inch polarization capacitance microphone
Operating voltage	6V
Product dimensions	67x30x183mm
Product net weight	147.5G(not include battery)
Battery life	20H continuous use

Command	Function
Real time measure	Real-time data measurement, the measured data at real time will be displayed on computer screen
Open	Open measuring data file in Lab format
save	Save real-time measurement data
Import Data	Download the measurement data
Export Data	Export the measuring data into excel fomat
Printer Setup	Printer setting
Print Data Sheet	Print data sheet
System Setup	System setting
Language	Language selection of software contact interface

➢ Tool column instruction as shown in following diagram:

Button	Function
	Real-time data measurement, the measured data in real time will be displayed on computer screen
	Download the data stored in the sound level meter to computer
	Open measuring data file that is saved as Lab format
	Save real-time measurement data
	Save the measured data as Excel document
	Print data sheet
	System setting
	Help
	System information
	Close this software

3) Software instruction

➢ The software window as shown in figure 24:

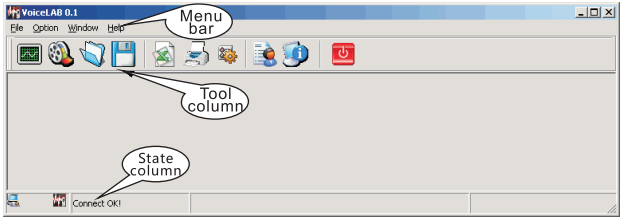
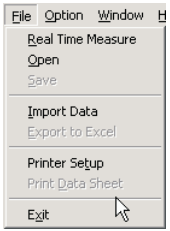


Figure 24

➢ Menu instruction as shown in figure 25:

File menu bar:



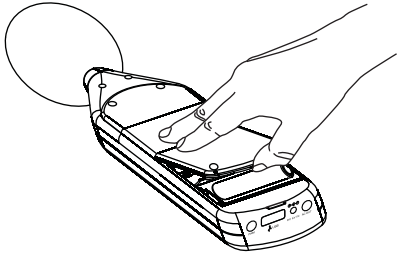
Option menu bar:

Figure 25

Note:
Check if this unit is connected well with the computer on state column:
Connect OK: Connect successful;
Disconnect: failed to connect.

Calibration

➢ Open battery door and insert the batteries into the battery compartment properly.
Show as the figure below:



Please use 94dB@1KHZ standard calibration instrument

- Setting on sound level meter:
  Frequency weighting is A;
  Time weighting is FAST;
  Level range is 60 to 110dB

- Insert the microphone head into the standard calibration jack, set the standard source as 94dB@1KHZ, use a small - screwdriver adjusts the calibration knob at the round hole in battery compartment until LCD display 94.0, as shown in figure 3:

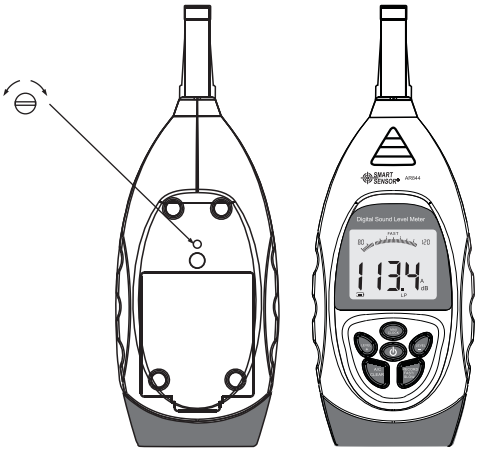


Figure 3

Note:
This unit has been calibrated before leaving factory, one year calibration cycle is recommended.

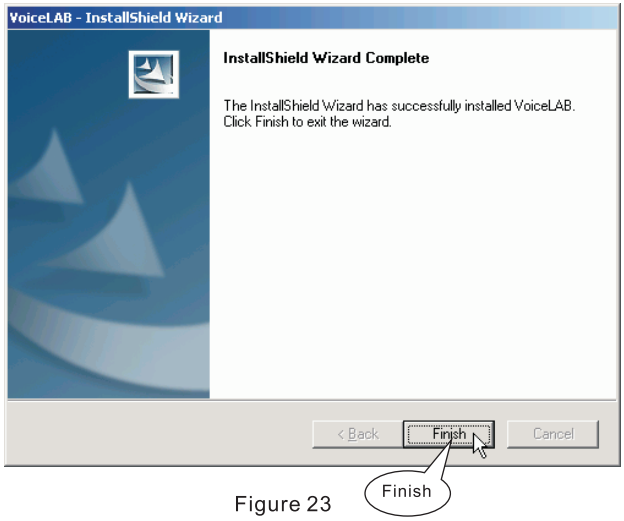


Figure 23

Note:
If you want delete this software, please open the "control panel", then open the "add/delete program" to select VoiceLAB in the list, click the uninstall button to remove the software.

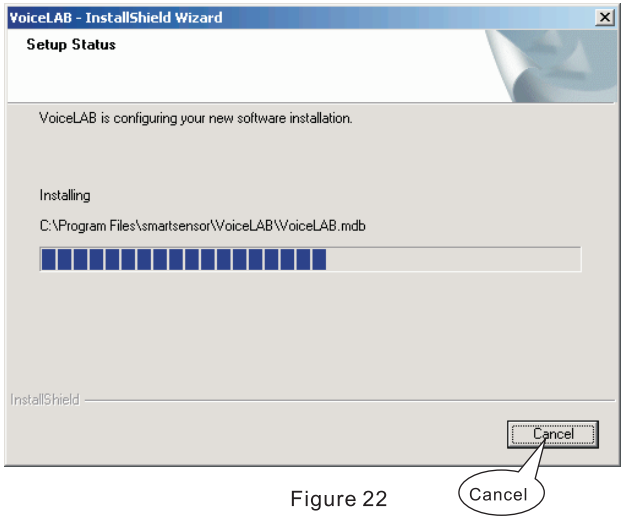


Figure 22

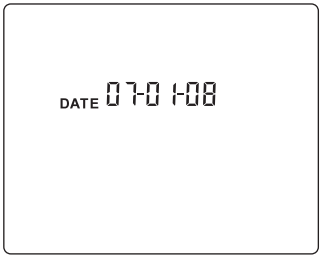
➢ If appears following picture, click Finish, the quick way of starting software will produce automatically on the desktop, the icon name is VoiceLAB, as shown in figure 23:

Calendar setting

➢ 1.Setting date and clock with button:

When the unit in power-off condition press (MAX CLOCK) key and the (⏻) key to turn on, the LCD screen flashes the first digit of calendar year, as shown in figure 4:

Figure 4



at this time you can release the (MAX CLOCK) key, press the LEVEL ▲ or ▼ key to adjust the digital of year, month and day, after adjust the first digit, press the (MAX CLOCK) key turn to adjust second digit, follow such steps, when you press down this key at sixth time, you can start the adjustment of hour and minute, after minute adjustment finished press down (MAX CLOCK) key once again to withdraw from calendar adjustment mode.

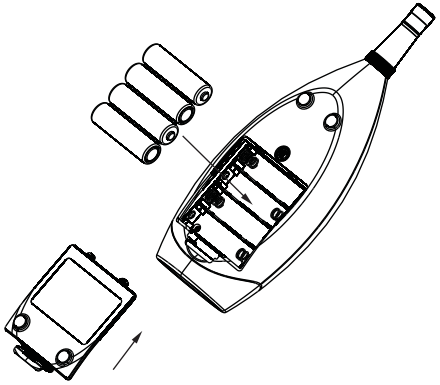
➢ 2. Setting date and time with PC connection:
Click OPTION>SYSTEM SETUP, select SYSTEM SETUP TIME WITH PC CURRENT TIME, then click ENTER, on the computer displayed time will be downloaded into this unit.

2. Operation instructions

Battery installment

➢ Open the batter door insert the 4PCS 1.5V batteries into compartment properly, (note the battery polarity), as shown in figure 5:

Figure 5



Then close the battery door firmly.

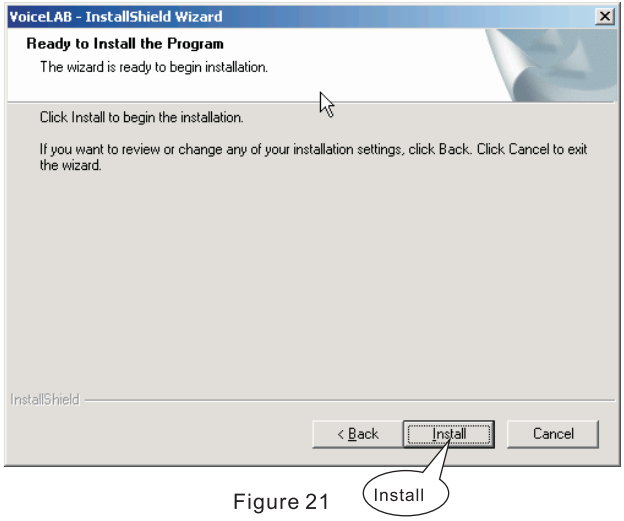


Figure 21

➢ In program installation process, if want stop it, please click the Cancel button, as shown in figure 22:

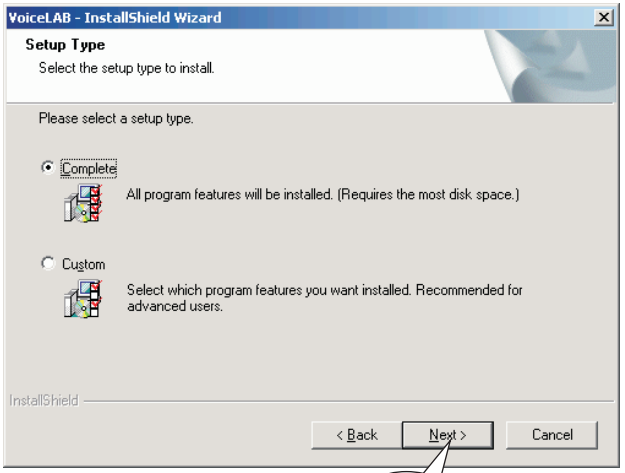


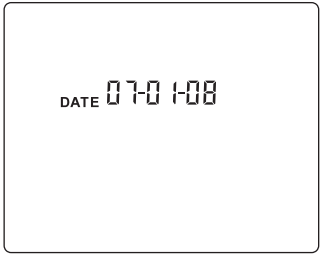
Figure 20

➢ Click the Install button to install the program into your PC, as shown in figure 21:

Selecting measurement level

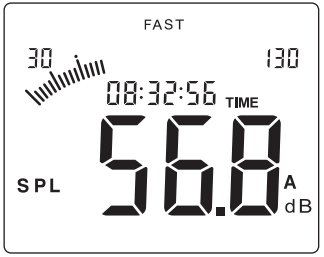
➢ Press the ⏻ key to turn on the unit, after the LCD entire screen displays for 2 seconds will display the year, month and date. As shown in figure 6:

Figure 6



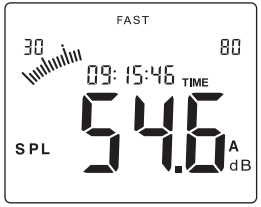
➢ After 3 seconds it enters default measurement mode, as shown in figure 7:

Figure 7

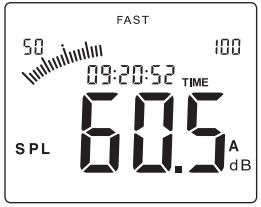


➢ Press the LEVEL + or - key, select your desired measuring level: 30 to 80, 50 to 100,60 to110, 30 to 130(auto) the LCD screen displays as follows:

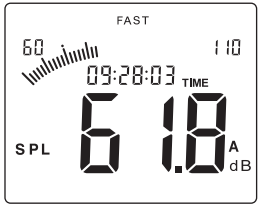
30 to 80:



50 to 100:



60 to 110:



➢ Enter the user name and company name, click NEXT to enter Next step, as shown in figure 19:

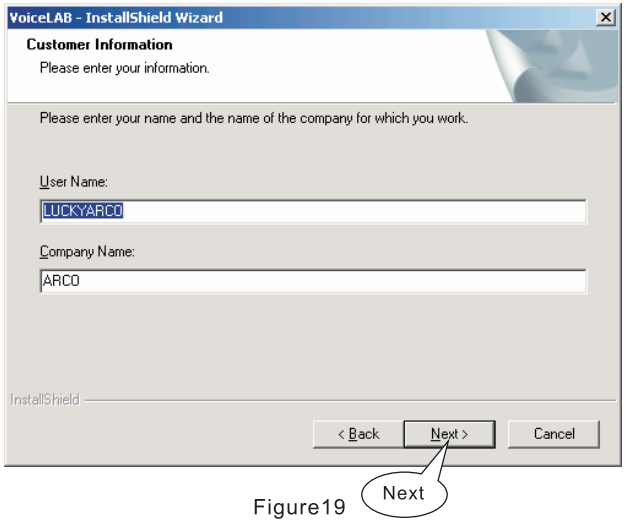


Figure19

➢ Setup type selection, select the defaulted setup (Complete) type, click NEXT to enter Next step, as shown in figure 20:

Connection with PC

1). Requirements of computer configuration:

- CPU: PentiumIII 600MHZ or above;
- One free available USB connecting interface:
- The lowest screen resolution of monitor is 800*600 (or much higher), true color;
- At least 8MB available memory;
- At least 50MB available disk memory;

Operation system: MICROSOFT WINDOWS 98/ME/2000 /XP HOME/XP Professional 32Bit

2). Installing the data collecting software:

- Place the software disc in your disc driver, open the disc driver file, double-click the Setup.exe program icon to enter program installation contact interface, click NEXT to enter Next step, as shown in figure 18:

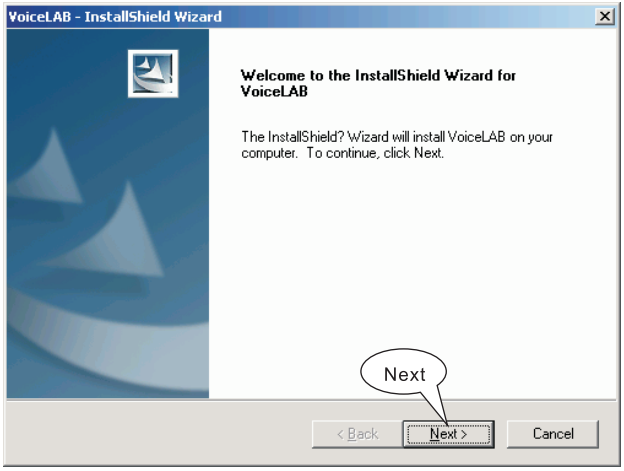
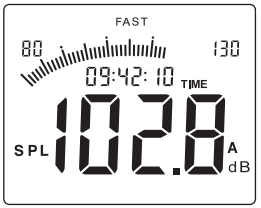
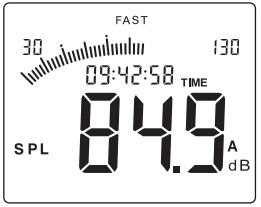


Figure18

80 to130:

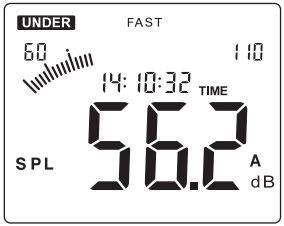


30 to 130:



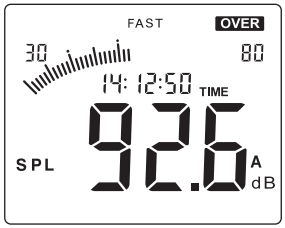
➢ If your set measuring level is higher than the environment level, for example level 60~110 is set, and current actual sound level is lower than 60dB, the LCD screen will display the icon UNDER , please press ▼ key to lower the level until the icon UNDER disappears.
As shown in figure 8:

Figure 8



➢ If your set measuring level is lower than the environment level, for example level 30~80 is set, and current actual sound level is higher than 80dB, the LCD screen will display the icon OVER , please press ▲ key to lower the level until the icon OVER disappears.
As shown in figure 9:

Figure 9



Note:
a.If the measuring level is set as 80~130, the LCD still display the icon OVER , that indicates the current noise level is exceeding the measuring range of this unit;
b.If the level is set 30~130, the unit can auto switch level.

Data clearance

➢ Press down the A/C CLEAR key until the LCD screen displays the symbol CLR, then all recorded data will be deleted, LCD displays as in figure 17:

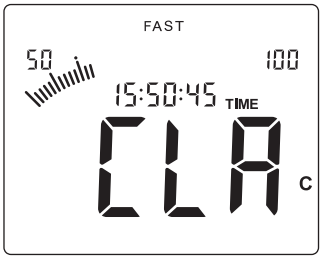
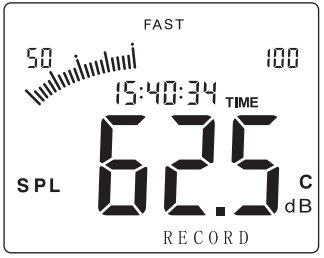


Figure 17

Data storage

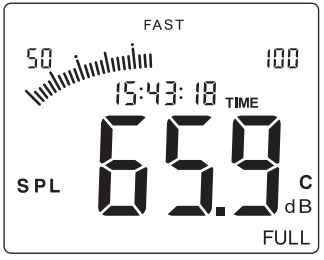
➢ Press down the FAST SLOW RECORD key until the LCD screen appears the symbol 1, then press LEVEL + or - to adjust the record interval, finally press FAST SLOW RECORD to enter into the data storage mode, LCD screen displays as in figure 15:

Figure 15



➢ The memory capacity is 4700, after long period of recording, the LCD screen will appear the symbol FULL, as shown in figure 16:

Figure 16

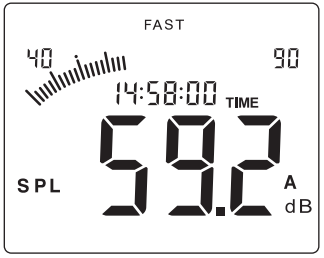


In data storage process or recording memory is full, press FAST SLOW RECORD key again to exit the record mode, the flashing symbol RECORD will disappears.

Time weighting selection

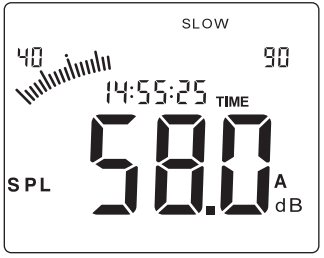
It is defaulted as FAST (high speed) after power on, the LCD screen displays as in figure 10:

Figure 10



Press the FAST SLOW RECORD key it turns into SLOW (low speed), the LCD screen displays as in figure 11:

Figure 11

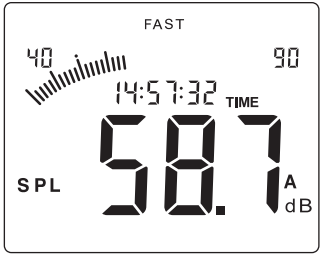


Note:
a.Selecting FAST is to pick up the current reading;
b.Selecting SLOW is to pick up the reading of average within 1 second.

Frequency weighting selection

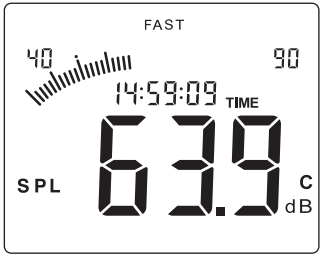
The default frequency weighting is A after power on, the LCD screen displays as in figure 12:

Figure12



Press once the A/C CLEAR key the frequency weighing will turn into C, the LCD displays as in figure 13:

Figure13

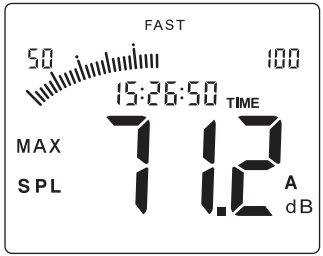


Note:
A-Weighting for general sound level measurements.
C-Weighting for checking the low-frequency content of sounds.

The maximum value measurement

➢ During measurement process, press the MAX CLOCK key to lock up the maximum reading,
the LCD displays as in figure 14:

Figure14



➢ Press it once again to exit the maximum value measurement and return normal measurement mode.