

Data Logger SI352

SOUND LEVEL METER

CE



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1. SAFETY INFORMATION

Read the following safety information carefully before attempting to operate or service the meter.

Use the meter only as specified in this manual; otherwise, the protection provided by the meter may be impaired.

Environment conditions

- Altitude up to 2000 meters
- Relatively humidity 90% max.
- Operation Ambient 0 ~ 40°C

Maintenance & Clearing

- Repairs or servicing not covered in this manual should only be performed by qualified personnel.
- Periodically wipe the case with a dry cloth. Do not use abrasives or solvents on this instrument.

Safety symbols



When servicing, use only specified replacement parts.

2. GENERAL DESCRIPTION

Thank you for using our Data Logger Sound Level Meter. To ensure that you can get the most from it, we recommend that you read and follow the manual carefully before use.

Measurement settings and results (level values and bar graph) are shown on the backlit LCD panel.

Data can be stored in the meter or directly saved on a computer through USB interface. Recorded data can be further processed on a computer.

3. FEATURE

- Complies with IEC 61672-1 class 2 standard
- 64,000 Records Data Logger
- USB Interface
- With Windows software
- AC/DC signal output

4. SPECIFICATIONS

Standard applied: IEC61672-1 Class 2, ANSI S1.4 Type2.

Frequency range: 20Hz ~ 8KHz

Measuring level range: 30 ~ 130dB

Frequency weighting: A / C

Microphone: 1/2 inch electret condenser microphone

Display: Liquid Crystal Display

Digital display: 4 digits

Resolution: 0.1dB

Display Update: 0.5 sec.

Analog display: 30 segment bargraph

Resolution: 2dB

Display Update: 50 mS

Time weighting: FAST , SLOW

Level ranges: Lo : 30 – 90 dB

Med : 50 – 110 dB

Hi : 70 – 130 dB

Auto : 30 – 130 dB

Accuracy: ± 1.4 dB (under reference conditions @ 94dB, 1KHz)

Dynamic range: 60 dB

Alarm function: “OVER” is when input is more than upper limit of range.

“ UNDER ” is when input is Less than lower limit of range.

Data logging Capacity: 64,000 records

AC output: 1 Vrms at FS (full scale)

(**FS** : means the upper limit of each level range.)

DC output: 10mV / dB

Power supply: 4 AAA,NEDA 24A, IEC LR03 batteries

Power life: About 24hrs (alkaline battery)

Power consumption: Approx. 0.2W

External power supply: 5 VDC (micro USB plug)

Operation temperature: 0 to 40°C (32 to 104°F)

Operation humidity: 10 to 90%RH

Storage temperature: -10 to 60°C (14 to 140°F)

Storage humidity: 10 to 75%RH

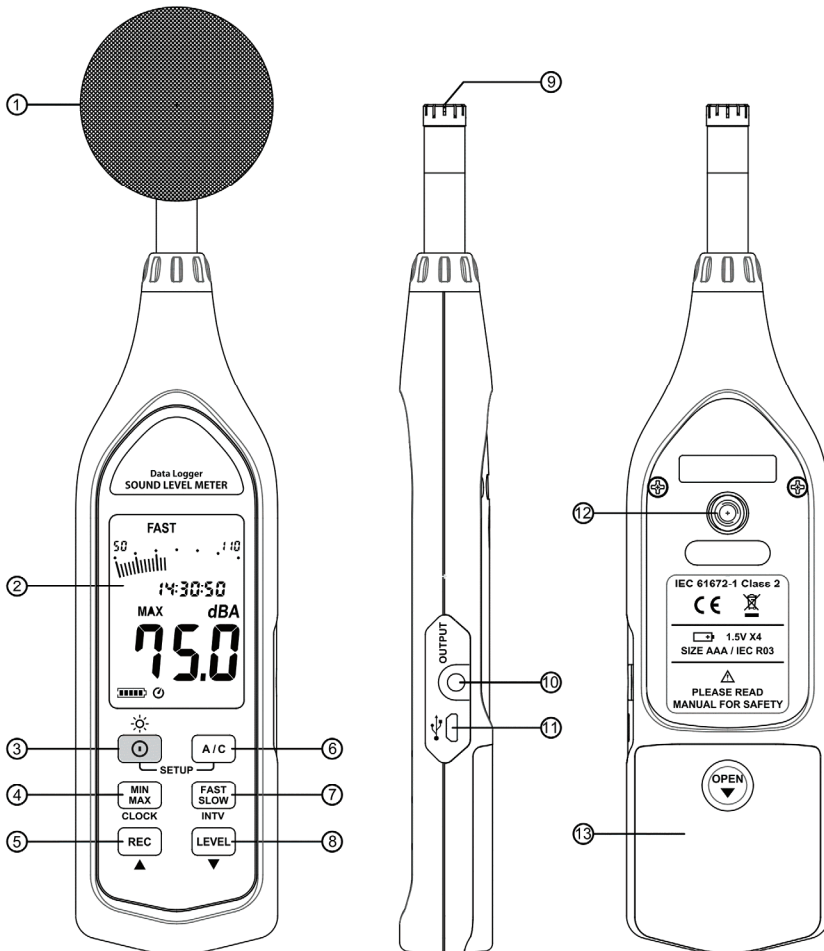
Dimensions: 264(L)×63(W)×29(H)mm; 10.4(L)×2.5(W)×1.1(H)inch

Weight: 245g (including battery)

Accessories: 1.5V battery X 4pcs, carrying case, Instruction manual,
Windscreen, 3.5φ plug, software, USB Cable.

Option: Microphone Extension Cables (5m or 10m length).

5. NAME AND FUNCTIONS



Display Screen:**SYMBOL****FUNCTION**

Battery capacity indicator



Auto power off indicator

MIN MAX

Maximum/Minimum indicator

FAST SLOW

Time weighting indicator

30-130

Level range indicator



Bar graph

88:88:88

Time

dBA/dBC

Frequency weighting indicator

188.8

Level reading

88-88-88

Date

OVER

Over-range signal indicator

FULL

Memory full

REC

Recording datalogger indicator

UNDER

Under-range signal indicator

① **Windscreen:**

When making outdoor measurements in windy weather or when measuring air conditioning equipment or similar, wind noise at the microphone can cause measurement errors. Such effects can be reduced by using the windscreen.

② **Display screen.**

③ **Power button:**

Press the  button to turn the meter on. To turn the unit off, press and hold  button down until the screen shows “**OFF 3, 2, 1,**” then the LCD screen goes off.

▪ **LCD backlight on/off:**

Press  to turn on the LCD backlight. This makes it easier to read in dark environment. Press  again to turn off backlight. The meter can also turn the backlight off automatically after 30 seconds to save battery power.

▪ **Auto power off.**

To save battery life, by default, when the unit is powered on, it is under auto power off mode.

The unit will power itself off after 30 minutes if no key operation.

Auto power off will be disable under the following 2 circumstances.

(1) When connecting to PC.

(2) When recording function is on process.

▪ **Disabled auto power off.**

One may press and hold  button and then power on the meter and the  will not show up to indicate that auto power off is disable.

Note: When the user powers it on, the LCD will show how much internal memory space is available to use.

④ **MAX/MIN button:**

Press button to enter the maximum and minimum recording mode.

Under this mode, the maximum value and minimum value will be stored and automatically updated in the memory simultaneously.

Pressing the  button will display the “**MAX**” symbol and the Maximum value on the display. Pressing  button again will display the

“ **MIN** ” symbol indicator and the Minimum value on the display.

Pressing **MIN MAX** button again will cause the maximum and minimum indicators to blink together. Which means the meter is under maximum and minimum recording mode. The value displays on the screen is the present value.

To exit the maximum and minimum mode, press and hold **MIN MAX** button down until the “ **MAXMIN** ” symbol is disappears.

⑤ **REC REC button:**

When press the button, the unit will start recording, and the “ **REC** ” symbol display. To stop recording press again **REC** button.

⑥ **A/C A/C button:**

Sets frequency weighting to A or C.

⑦ **FAST SLOW FAST/SLOW button:**

Sets the time weighting to Fast or Slow.

⑧ **LEVEL Range control button**

Each time you press **LEVEL** button, the level range will change between “**Lo**” level, “**Med**” level, “**Hi**” level and “**Auto**” level in the circular.

⑨ **Microphone:**

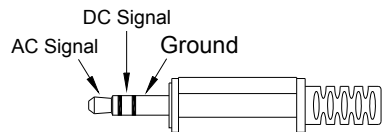
1/2 inch Electret Condenser microphone.

⑩ **AC/DC signal output jack:**

AC : 1 Vrms Corresponding to each range step. (with frequency weighting)

Output impedance $\approx 100\Omega$

Output signal by standard 3.5mm coaxial socket signal on pin.



Note: At “Auto” level range, output signal is Auto select on “Lo” or “Med” or “Hi” level range.

DC: Output: 10mV/dB

⑪ **USB Interface**

Connection to a Computer or external power supply input.

⑫ Tripod mounting thread:

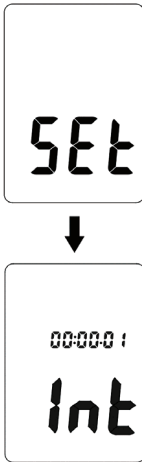
For long-term measurements, the unit can be mounted on a camera tripod. Proceed carefully, to avoid dropping the unit.

⑬ Battery compartment.

6. DATA LOGGER & INTERVAL SETUP

How to store data in memory.

Auto store Interval time setup:



(1) Press and hold “**A/C**” button and then power on the meter.

(2) Press **INTV**(**FAST**/**SLOW**) button, “**Int**” appears for interval, as well as a flashing second display.

(3) Now set the desired recording interval in minutes and seconds. Press **▲**(**REC**) or **▼**(**LEVEL**) to increase or decrease number, Max 1 minute can be set. The minimum value is limited to “00:01”(=1s). After setting has been performed, actuate the press **INTV**(**FAST**/**SLOW**) button once, to get back to the display of the instantaneously measured values. If you want abort during a setup process, press **⏏** button to cancel.

6.1 Auto store:

Auto store Interval time setup:

When one presses the **REC** button starts saving the measured values. The values are stored in a memory location. Press **REC** button again will stop recording.

Note: During recording period, most of the buttons such as the **A/C**, **FAST**/**SLOW**, **LEVEL** are inoperative. All other settings must be made before starting the record operation.

LCD will show FULL symbol when 64,000 recorders are stored in memory.

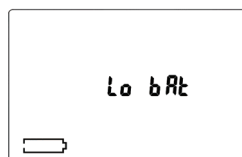
6.2 Clearing Stored Data :



If you want to clear the memory, power off the unit, then press and hold **REC** button and then press  button and hold at least 5 seconds, then LCD will show "CLr" and "SURE" to clear the memory.

Note:

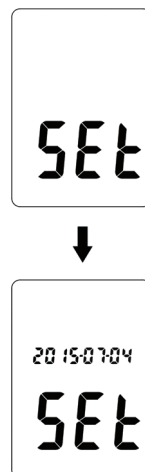
The battery indicator "" shows the remaining battery power. The number of black bar decreases as the battery running out. When the power is almost empty, "" will disappear. Press **REC** button, LCD display will show "Lo bat" warning indication. If the meter is under record mode, it will stop.



7. SETTING THE DATE AND TIME

The unit incorporates a clock so that the data logger function can also record the data and time along with the measurement value in the memory.

- (1) Turn off the unit.
- (2) Enter SETUP mode by pressing and holding **A/C** button and then press  power button to turn on the unit. "SEt" blinks on the LCD screen.
- (3) Press **CLOCK**() button to set clock.
- (4) Press  (**REC**) or  (**LEVEL**) to adjust year, press **CLOCK**() button to adjust next value (month → date → hour → minute → second).
- (5) When finish, press **CLOCK**() button to exit SETUP mode.



Note:

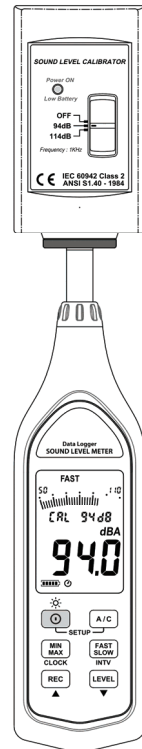
- (1) To abort during the process, press power button to exit SETUP mode.
- (2) An internal rechargeable backup battery keeps the clock of the unit running

when the power is turned off the backup battery is recharged by the main batteries. The clock will keep running for 30 minutes on the backup battery alone. If the unit is not to be used for an extended period, the main batteries should be taken out to prevent possible damage due to battery fluid leakage. After reinserting the batteries, be sure to set the date and time.

8. CALIBRATION PROCEDURES

- (1) Press and hold **MIN MAX** button and then power on the meter, LCD display “CAL 94dB” symbol.
- (2) Insert the microphone housing carefully into the insertion hole of the calibrator.
- (3) Press **▲(REC)** or **▼(LEVEL)** button to increase or decrease number.
- (4) Press **MIN MAX** button to finish. If you want abort during a setup process, press power button to cancel.

※ Our products are all well calibrated before shipment.
Recommended Recalibration cycle: 1 year.



9. MEASUREMENT PREPARATION

- (1) Battery Loading:



Remove the battery cover on the back and put in four (1.5V,size AAA)Batteries, paying attention to the polarity as indicated in the compartment.

Note:

It is possible to use size AAA rechargeable batteries, but a separate charger must be provided for such batteries, since the unit is not designed to recharge batteries.

(2) Battery capacity indicator:

When operating the unit on batteries, periodically check this indicator to determine the remaining battery capacity.



(3) External power supply:

When the AC/DC adapter is used, insert the plugs of the adapter into the DC5V connector.

Note: When the AC/DC adapter is connected, the unit will be powered from the adapter, also when batteries are inserted.(The AC/DC adapter has priority)

10. OPERATING PRECAUTIONS

(1) Wind blowing across the microphone would bring additional extraneous noise.

When using the instrument in the presence of wind, it is a must to mount the windscreen to not pick up undesirable signals.

(2) Calibrate the instrument before operation if the instrument was not in use for a long time or operated in bad environment.

(3) Do not store or operate the instrument at high temperature and high humidity environment.

(4) Keep microphone dry and avoid severe vibration.

(5) Please take out the battery and keep the instrument in low humidity environment when not in use.

11. MEASUREMENT

(1) Turn power on and select the desired response Time and frequency Weighting. If the sound source consists of short bursts or only catching sound peak, set response to FAST. To measure average sound level, use the SLOW setting. Select A-weighting for general noise sound level and C-weighting for measuring sound level of acoustic material.

(2) Hold the instrument comfortably in hand or fix on tripod and point the microphone at the suspected noise source, the sound pressure level will be displayed.

(3) When MAX MIN (maximum, minimum hold) mode is chosen. The instrument captures and holds the maximum and minimum noise level for a long period using any of the time weightings.

Press the  button 2 seconds to clear the maximum and minimum reading, " MAX MIN " symbol disappears.

12. SETUP SE-323 (Sound Level Meter)—USB interface software:

- **The SE-323 package contains:**
 1. Installation CD.
 2. Micro USB cable .
- **System Required:**
Windows XP / VISTA / 7 / 8.
- **Minimum Hardware Required:**
PC or NoteBook with CD-ROM ;
At least 50 MB byte hard disk space available to install SE323.

Install SE-323:

(1) Insert setup CD disk to CD disk drive, Windows will run the setup.exe automatically.

(2) If the Windows fail to run the setup.exe automatically, choose the Start button on the Taskbar and select Run. Type E:\SETUP and choose OK.

(3) Follow the instruction to finish the installation.

(4) It will copy SE323.exe (executable file) and help file to your hard disk (default is c:\program files\SE323).

For detailed other operation instruction, please refer to the online help while

executing SE323.

Main Menu:

File | Open- Retrieve files

Save - Save the active window (when the caption bar is highlighted) data to file.

Print - Print the graph of the active window.

Printer Setup - Select printer.

File | **Exit**: Terminates SE323 program.

View | **Control Panel**: By opening the Panel Window, the user can control meter via the button in this window.

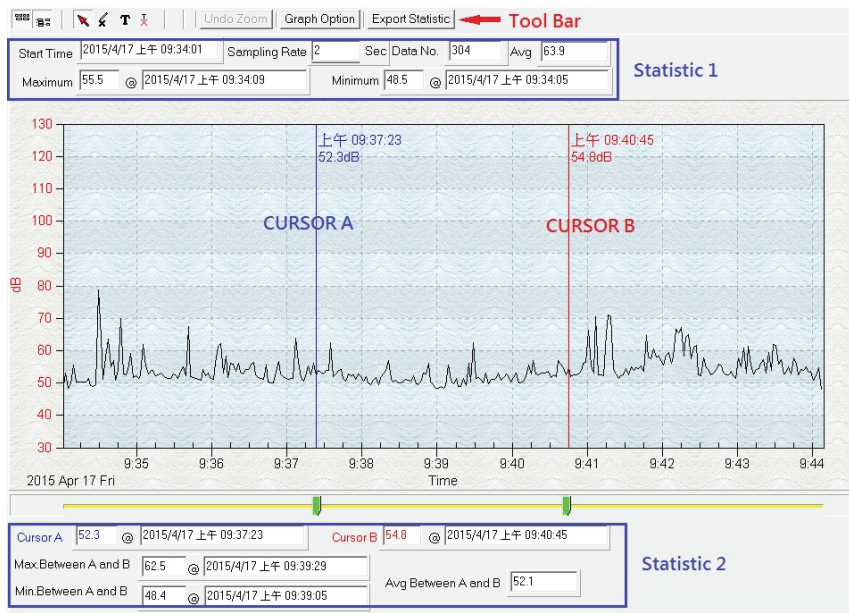
View | **Real-Time Graph**: Open Real-Time Graph display to graph the present data.

Real Time Data | **Run** - Start collecting real time data.

Stop - Stop collecting real time data.

DataLogger: By opening the DataLogger Window, the user can load recorded data of meter to PC in this window.

Graph



Tool Bar



- Display or hide Statistic1.



- Display or hide Statistic2.



- Normal cursor.



- When selected, the mouse cursor will become a cross sign when moving to the graph, click on the graph to mark a cross sign on the graph.



- When selected, the mouse cursor will become a "I" sign when moving to the graph, click on the graph to annotate.

You can choose a rectangle area on the graph to zoom in for detail.

There are two vertical line (CURSOR A and CURSOR B) in the graph. There are time and value display on top and right side of each cursor. You can move mouse cursor over cursor A or B and click to drag cursor to move left or right. Right below cursor A and B is a slider. You can also click and drag slider to move cursor A or B. Below the slider is the statistic, it displays start time, sampling rate, data number, maximum and minimum of the graph. The statistic also displays the maximum, minimum and average between cursor A and B and these data will update automatically when cursor A or B is moving.

You can double click the graph to call the option dialog. In option dialog, it is allowed to customize your graph style.

You can Zoom this graph by using mouse:

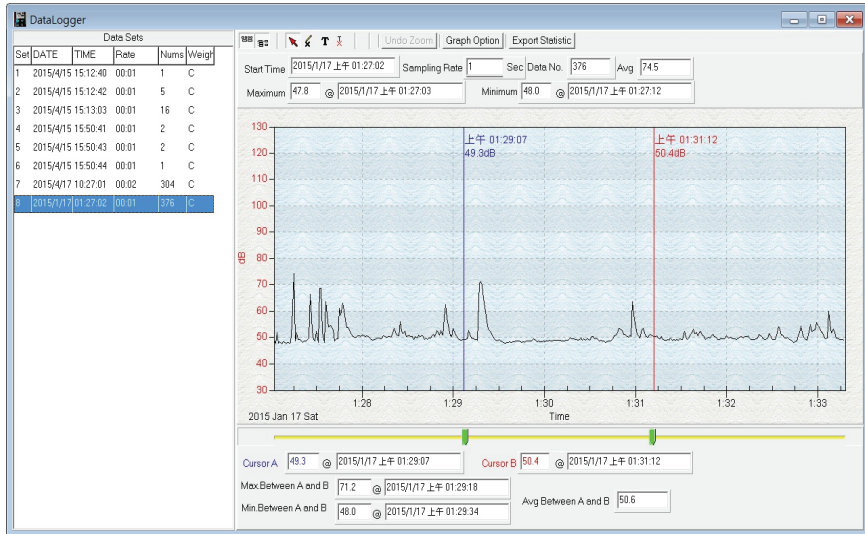
To Zoom:

(1) Press the left mouse button and drag the cursor to select the new extents.

(2) Release the mouse button.

To Undo the Zoom - Right click on the graph, there will be a pop-up menu, select Undo Zoom.

DataLogger



for examples:

When you have Sound Level DATA LOGGER meter connected to PC and select "DataLogger" from main menu or click  from tool bar to load recorded data from the meter and there will be a progress indicator to show the loading progress, if error occurs, just click "DataLogger" again.

After the data was loaded, the left hand side will show how many data sets were loaded and detail information for each data set (start data, start time, recording rate and record numbers).

Set	DATE	TIME	Rate	Nums	Weight
1	2015/4/15	15:12:40	00:01	1	C
2	2015/4/15	15:12:42	00:01	5	C
3	2015/4/15	15:13:03	00:01	16	C
4	2015/4/15	15:50:41	00:01	2	C
5	2015/4/15	15:50:43	00:01	2	C
6	2015/4/15	15:50:44	00:01	1	C
7	2015/4/17	10:27:01	00:02	304	C
8	2015/1/17	01:27:02	00:01	376	C

It will transfer first data set to graph and tabular on the right hand side every time after you load recorded data from the Sound Level Meter and you can click at any data set to change the set for graph.

On the right hand side sets the waveform graph and statistic information of the data set you choose as refer to the graph.

Tutorial - Quick Start to Use SE323:

(1) Recording real time data in waveform.

(a) Power on the Sound Level Meter first and connect it to a PC USB port with the cable.

(b) Start SE323 program.

(c) If the connection is successful, the panel will display the same value as the Sound Level Meter. If fail to connect the meter with PC, it will display "No Connection" on the panel window in SE323.

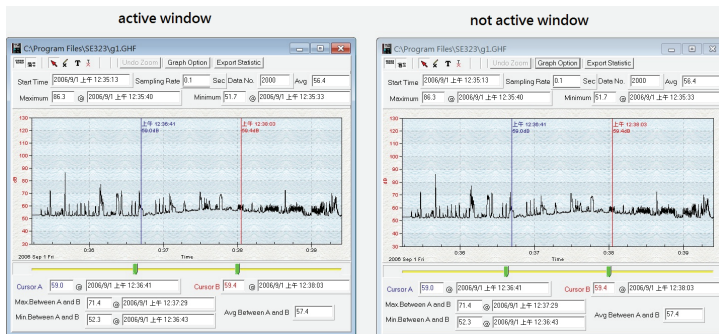


(d) When the connection is successful, click  to start recording real time data and there will be a waveform on the Real Time Graph Window.

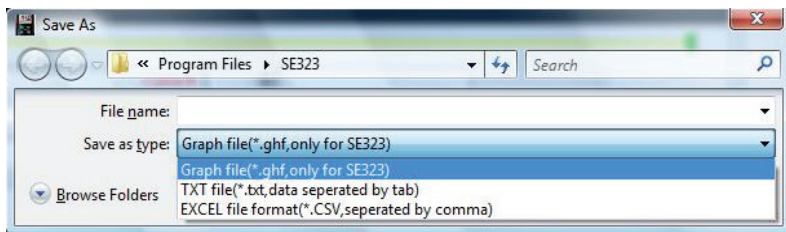
(e) Click  to start recording.

(2) How to save the recorded real time data to a file?

(a) Click the graph window you want to save and the graph window will become active, then choose File | Save from main menu or click  from the tool bar.



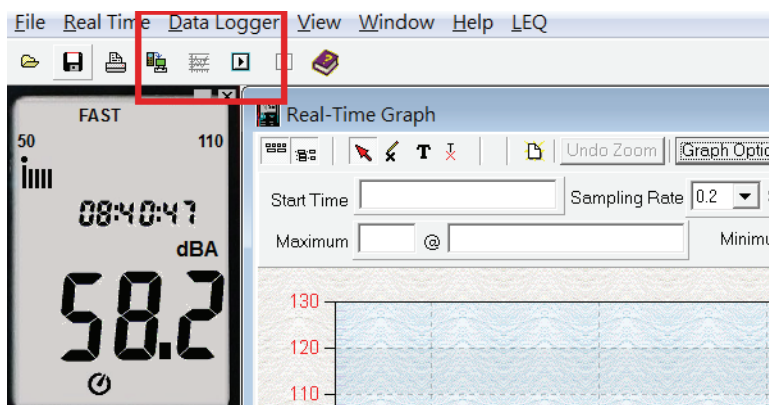
(b) There will be a save dialog window for you to choose the file name and file type to save. There are three types of file name you can choose, binary file(*.ghf), text file(*.txt) and EXCEL format file(*.csv). The *.ghf file use much fewer disk space to save the data than the other two file format, but it can only be used in SE323. Text file can be opened by SE323 and any other word processor program like word, notepad etc. EXCEL format file can be opened by SE323 and Microsoft EXCEL.



(3) How to load the recorded data from the memory of Sound Level Meter and save it to a file?

(Only for the model with Data Logger)

- Power on the Sound Level Meter.
- Press the REC button of the meter to start recording data.
- After a while, press REC button again to stop recording data.
- Connect the Sound Level Meter to PC
- Start SE323 program.
- Choose Data Logger from main menu or click  from tool bar.



(g) In reference to Data Logger, see DataLogger.

Frequently Asked Question:

(1) How can I save the graph to a file which can be used in EXCEL?

Answer: When you save a graph to a file, the default file format is "*.ghf" and you can select *.csv to save files. CSV is an EXCEL file format. You can open it in EXCEL.

(2) How to uninstall SE323?

Answer: Uninstall SE323 by launching the Add/Remove Programs applet out of the Control Panel, highlighting the SE323, and clicking on the Add/Remove... push button, then it will remove the SE323 folder and files from your computer.

(3) How to zoom the graph?

Answer: Press the left mouse button and drag the cursor to select the new extents, and then release the mouse button.

(4) When I setup the real time sampling with a fast rate, some of the sampling data might be lost.

Answer: This might be caused by slow response time of the PC.