

CENTER[®] 392

INTEGRATING SOUND LEVEL METER



Instruction Manual

SE-392

**INTEGRATING
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 & Cleaning

- 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

 Comply with EMC

When servicing, use only specified replacement parts.

2. GENERAL DESCRIPTION

Thank you for selecting our Integrating 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 the requirements of IEC 61672-1 class 2 standard
- Fast, Slow time weighting settings
- A and C frequency weighting settings
- Storage of up to 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: 50 segment bargraph

Resolution: 2dB

Display Update: 50 mS

Time weighting: FAST (125mS), SLOW (1 sec.)

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

Dynamic range: 100 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

MAX/MIN hold: Hold readings of the maximum and minimum value.

AC output: 1 Vrms at FS (full scale).

DC output: 10mV / dB

Power supply: Four IEC LR6 (AA-size) batteries

Power life: About 60hrs (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

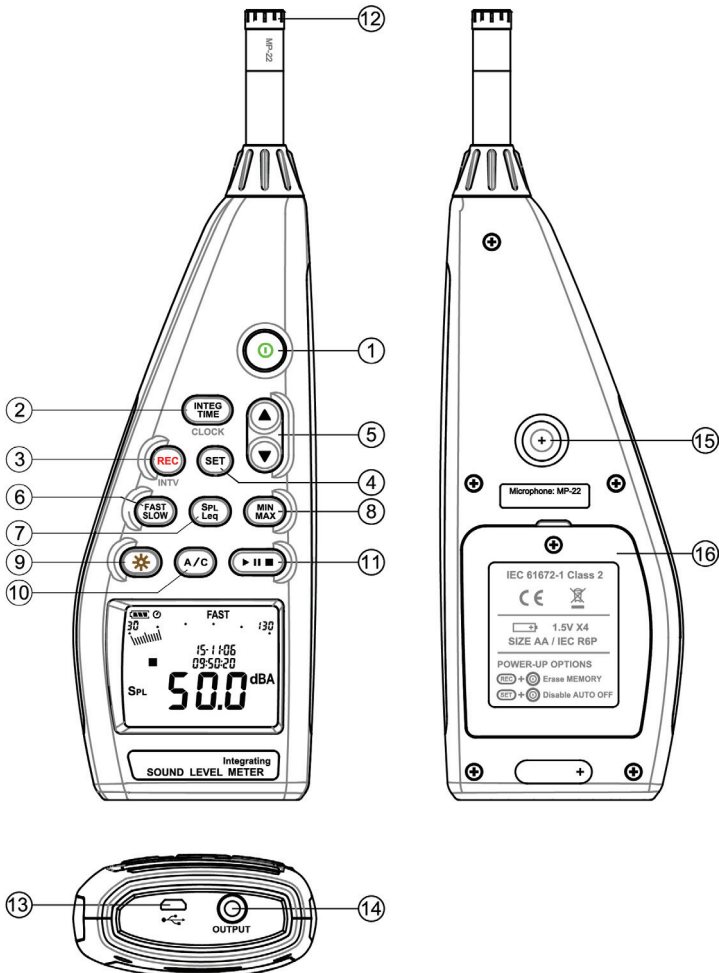
Dimensions: 272(L)×83(W)×42(H)mm; 10.7(L)×3.3(W)×1.6(H)inch

Weight: 390g (including battery)

Accessories: 1.5V battery X 4pcs, carrying case, instruction manual, windscreen, 3.5φ plug, software, micro USB cable.

Option: Microphone extension cable (5m or 10m length).

5. NAME AND FUNCTIONS



Display Screen:

SYMBOLFUNCTION

Battery capacity indicator



Auto power off indicator

MIN MAX

Maximum/Minimum indicator

FAST SLOW

Fast/Slow time weighting indicator

30-130

Sound level range indicator



Bar graph

SPL

Time-weighted sound level reading sound pressure level

Leq

Equivalent continuous sound level reading

88:88:88

Time and elapsed time indicator

(hour:minute:second)



Start/pause/stop integrating sound level measurements

88^m_{sh}

The integrating time

dBA/dBC

A or C frequency weighting indicator

188.8

Sound level reading (30.0-130.0dB)

88-88-88

Date and elapsed time indicator(year-month-day)

OVER

Over-range signal indicator

FULL

Recording memory bank full

REC

Data recording is in process


UNDER

Under-range signal indicator

Timer

The integrating time counting indicator

① **Power button:**

Press the  button to turn on. Press and hold the button for 3 seconds to turn off.

▪ **Auto Power Off:**




When the unit is powered on, it is under auto power off mode by default.

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:**

Press and hold the  button and then power on the unit. Keep holding  button until the meter starts function. Make sure the auto power off  symbol disappears from the display screen.


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

② **Integrating time button:**

Press the button to set the integrating time.



③ **REC button:**

Press the button to start recording, and the “**REC**”symbol will display.



Press  button again to stop record.

④ **SET button:**

To set calendar / clock / Interval time.

- (1) Press the **CLOCK**() button to set the date and time.
- (2) Press the **INTV**() button to set interval time.

⑤ **UP/DOWN button:**

Press  or  to increase or decrease number.

⑥ **FAST/SLOW button:**

Press the button to set the time weighting to Fast or Slow.



⑦ **Leq/SPL button.**


Press the button to Select Leq or SPL mode.


⑧  **MAX/MIN button:**

Press the button to enter the maximum and minimum recording mode.

Under this mode, the maximum 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 the  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  button until the “ **MINMAX** ” symbol is disappeared.

⑨  **Back light button:**

Press it to turn on the LCD backlight, which is making it easier to read in the dark environment.

Press it again to turn off backlight. The backlight will turn itself off automatically after 30 seconds.

⑩  **A/C button:**

Press the button to set the frequency weighting to A or C.

⑪  **Start/Pause/Stop button:**

Press the button to set the Leq measurement to continuance, pause or stop.

⑫ **Microphone:**

1/2 inch electret condenser microphone.

⑬ **USB Interface:**

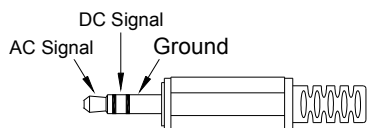
Connect to a computer or external power supply input.

⑭ **AC/DC signal output jack:**

Connect the AC/DC output on the bottom of the unit to the level recorder.

AC: 1 Vrms Corresponding to 130dB. (with frequency weighting)

DC: Output: 10mV/dB



15 Tripod mounting thread:

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

16 Battery Compartment.**6. DATA LOGGER & INTERVAL SETUP****6.1 Recording Data:**

Press the **(REC)** button to start recording the measured values. The values are stored in a memory location. Press **(REC)** button again to stop recording.

Note:

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

LCD will show FULL symbol when 64000 recorders are stored in memory.

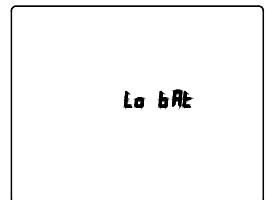
6.2 Recording Interval Setup:



(1) Press the **(SET)** button and then press the **INTV(REC)** button, the “Int ” appears for interval, as well as a flashing second display.

(2) Now set the desired recording interval in minutes and seconds. Use the **(▲)** or **(▼)** button to increase or decrease number. Max 1 minute can be set. The minimum value is limited to “00:01”(=1s). Press **INTV(REC)** to store the setting and exit this mode. If you want to abort during a setup process, press **(⊙)** button to cancel.

6.3 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 "CLr" symbol will appear on the display indicating that the data have been erased.

**Note:**

The battery indicator “” shows the remaining battery power. When battery power is extremely low() , recording function cannot be performed.

Press **(REC)** button, LCD display will show “ **Lo bat** ”warning indication. If the meter is under the record mode, it will stop automatically.

7. Leq & INTEGRATING SETUP

7.1 Setting The Integrating Measurement Time :

- (1) Press the **(INTEG TIME)** button to enter time setup.
- (2) Press the **(▲)** or **(▼)** button to select **10sec, 1min, 5min, 10min, 20min, 30min, 1hr, 2hr, 4hr, 8hr, 16hr, 24hr** setting.
- (3) Press **(INTEG TIME)** button again to finish setting.
- (4) Press **(○)** button to exit setting anytime.

7.2 Equivalent Continuous Sound level(Leq) Measurement:

Press the **(SPL Leq)** button to select Leq or SPL.

Under Leq measurement, “Leq” symbol is displayed.





- (1) Press the **(▶ || ■)** button to start, the “ ▶ ” symbol and the elapsed measurement time are displayed.
- (2) When the Leq measurement time is up, it will automatically terminate and the “ ■ ” symbol is displayed.
- (3) During the Leq measurement, the **(▶ || ■)** button can be pressed to pause, stop or restart. During the pause period, the Leq measuring values are not evaluated.
- (4) During the pause, the pause symbol “ || ” is displayed.
- (5) To stop the measurement, press the **(▶ || ■)** button for 2 seconds.
- (6) If an under or over range condition occurs during Leq measurement, the **OVER** or **UNDER** symbol will be kept on the display.
- (7) During this procedure, **(SET)** / **(FAST SLOW)** / **(A/C)** buttons are inoperative.

8. SETTING THE DATE AND TIME

The unit is equipped with a clock to stamp the measuring date / time.





Date / Time setting Sequence: Year - Month - Day– Hour : Minute : Second

- (1) Press the **(SET)** button and then press the **CLOCK**(**(INTEG TIME)**) button to enter the date and time setting mode.
- (2) Press **CLOCK**(**(INTEG TIME)**) button to select **year, month, day, hour, minute, second** setup.

- (3) Press  or  to increase or decrease number to adjust Date / Time.
- (4) Press **CLOCK**() button to finish setting.
- (5) Press  button to exit setting anytime.

Note: There is an internal rechargeable backup battery to run the clock. When the power is turned off, the backup battery can be recharged by the AA batteries or DC adapter power source. The clock running can be kept for 30 hours if there is no any power source installed. If the unit will not be used for a long time, the AA batteries shall be removed to prevent the damage by the battery fluid leakage. Be sure to set the date and time after reinstalling the batteries.

9. CALIBRATION PROCEDURES

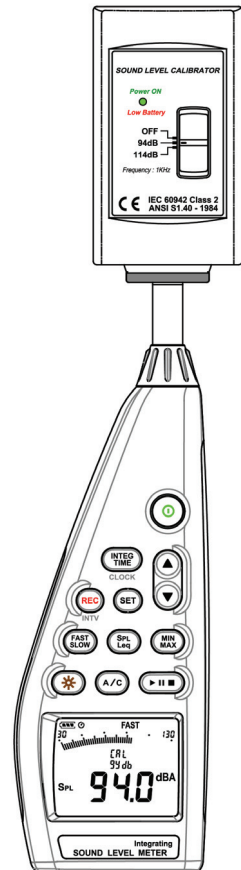
- (1) Press and hold MIN MAX button and then power on the meter, LCD displays “ **CAL 94dB** ” symbol.
- (2) Insert the microphone housing carefully into the insertion hole of the calibrator.
- (3) Press  or  button to increase or decrease number.
- (4) Press  button to finish calibration.
- (5) Press  button to exit calibration.

Note:

Our products are all well calibrated before shipment.

Recommended recalibration cycle: 1 year.

**Using a standard Acoustic Calibrator
(94dB, 1KHz Sine wave)**



10. MEASUREMENT PREPARATION

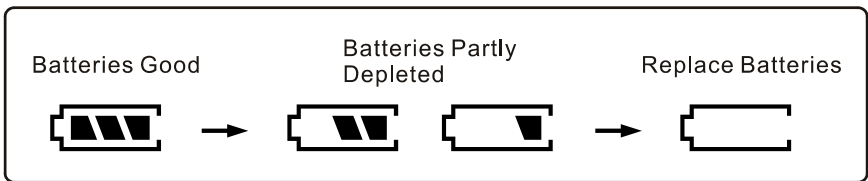
(1) Battery Loading:

- (a) Back out the screw at the top of the battery cover and lift the cover away from the unit.
- (b) Insert the four AA batteries, observing proper polarity as depicted on the bottom of the battery compartment.
- (c) Replace the battery cover and tighten the screw.

Note: It is possible to use size AA rechargeable batteries, but the unit does not recharge batteries.

(2) Battery capacity indicator:

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



(3) DC Adapter Connection:

When the DC adapter is used, insert the plugs of the adapter into the DC5V connector on the bottom panel.

Note: When the DC adapter is connected, the unit will be powered from the adapter, even if the batteries are inserted (The DC adapter is priority power source).

11. 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.

12. 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 for 2 seconds to clear the maximum and minimum reading, “**MAX MIN**” symbol disappears.

(4) Turn off the instrument.

13. SETUP TestLink SE-392 (Sound Level Meter) — USB interface software:

- **The SE-392 package contains:**
 1. 80mm CD.
 2. Micro USB cable.
- **System Required:**
Windows XP / VISTA / 7 / 8 / 10.
- **Minimum Hardware Required:**
PC or NoteBook with CD-ROM ;
At least 50 MB byte hard disk space available to install SE392.

Install SE-392:

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 SE392.exe (executable file) and help file to your hard disk (default is c:\program files\SE392).
- For detailed other operation instruction, please refer to the online help while executing SE392.

▪ 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 | **E**xit: Terminates SE392 program.

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

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

ReaL Time Data | **R**un - Start collecting real time data.

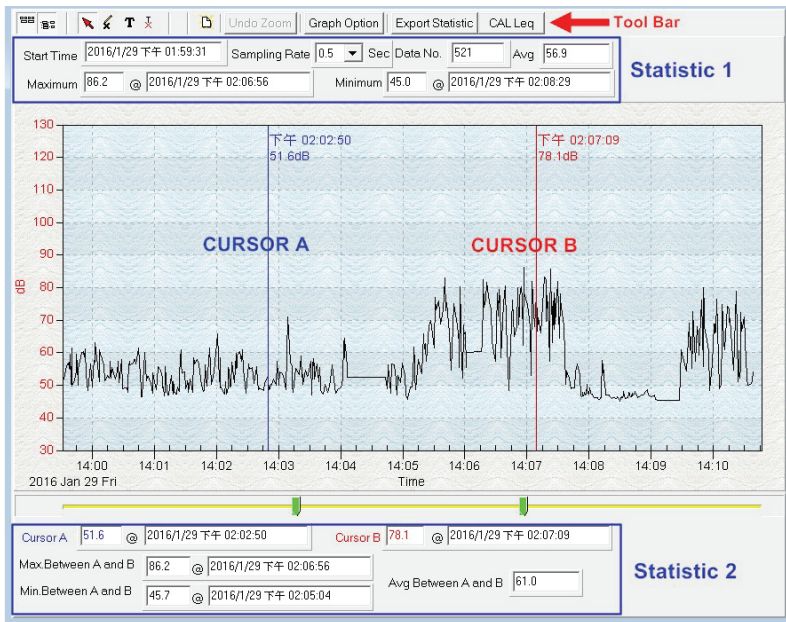
Stop - Stop collecting real time data.

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

Erase Memory: Delete measurement series stored in the instrument memory.

LEQ: Perform LEQ calculation from online data.

Graph



Tool Bar



- Display or hide Statistic1.



- Display or hide Statistic2.



- Normal cursor.



- When selected, the mouse cursor will become a cross 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.

And you can right click the graph (real time graph is not allowed) to call out the pop-up menu.

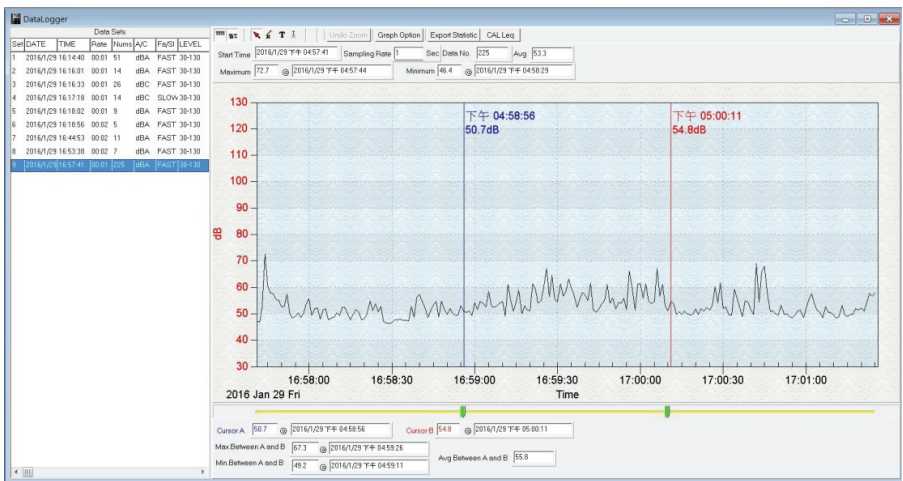
You can Zoom this graph by using mouse:


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



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).

for examples:

Data Sets							
Set	DATE	TIME	Rate	Nums	A/C	Fa/SI	LEVEL
1	2016/1/29	16:14:40	00:01	51	dBA	FAST	30-130
2	2016/1/29	16:16:01	00:01	14	dBA	FAST	30-130
3	2016/1/29	16:16:33	00:01	26	dBC	FAST	30-130
4	2016/1/29	16:17:18	00:01	14	dBC	SLOW	30-130
5	2016/1/29	16:18:02	00:01	9	dBA	FAST	30-130
6	2016/1/29	16:18:56	00:02	5	dBA	FAST	30-130
7	2016/1/29	16:44:53	00:02	11	dBA	FAST	30-130
8	2016/1/29	16:53:38	00:02	7	dBA	FAST	30-130
9	2016/1/29	16:57:41	00:01	225	dBA	FAST	30-130

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 SE392

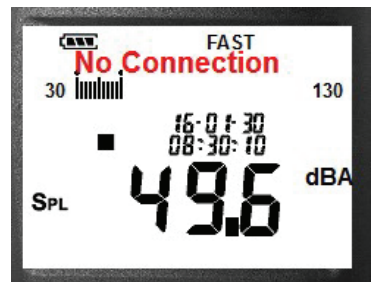
(1) Recording real time data in waveform.


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

(b) Start SE392 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 SE392.

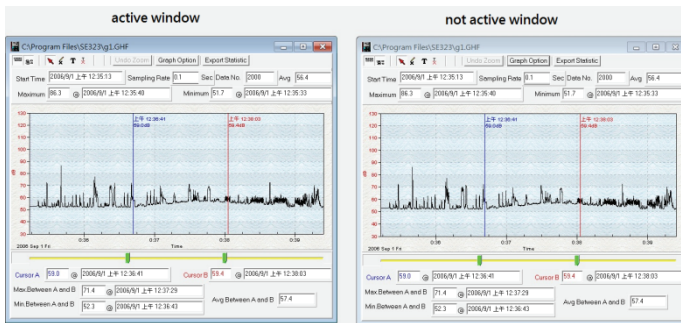
(d) When the connection is successful, click  to start recording real time data and there will be a waveform on the Real Time Graph Window.



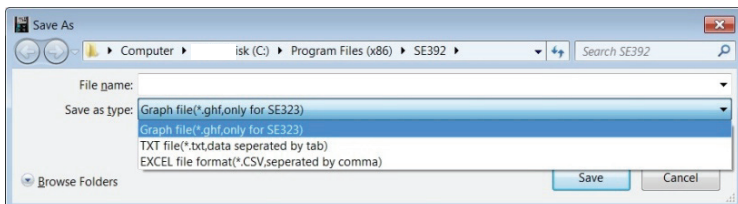
(e) Click  to start recording.

(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 SE392. Text file can be opened by SE392 and any other word processor program like word, notepad etc. EXCEL format file can be opened by SE392 and Microsoft EXCEL.

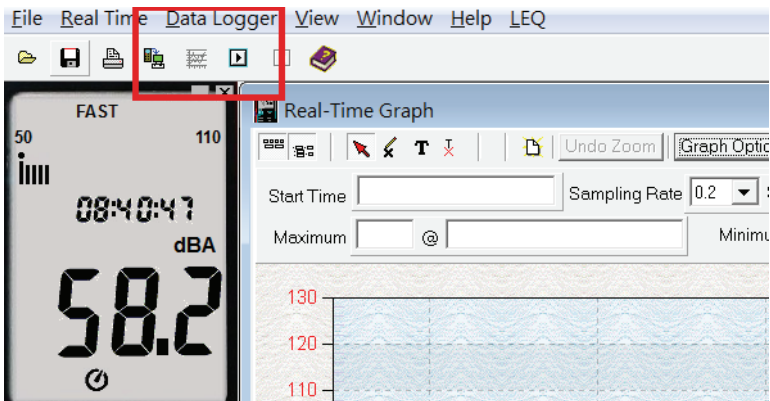


(3) How to load the recorded data from the memory of Sound Level Meter and save it to a file?

(Only for the model with Data Logger)

(a) Power on the Sound Level Meter.

- (b) Press the REC button of the meter to start recording data.
- (c) After a while, press REC button again to stop recording data.
- (d) Connect the Sound Level Meter to PC.
- (e) Start SE392 program.
- (f) 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 SE392?

Answer: Uninstall SE392 by launching the Add/Remove Programs applet out of the Control Panel, highlighting the SE392, and clicking on the Add/Remove... push button, then it will remove the SE392 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.

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