

Sound Level Meter
TYPE 6236

Instruction Manual

ACO Co.,Ltd.

Components of this Instruction Manual

This instruction manual refers to the functions of, and operating instructions for, Sound Level Meter TYPE 6236 (abbreviated to “this equipment” in what follows)

This instruction manual consists of following chapters.

Outline

The components, characteristics, block diagram of this equipment are described.

Locations and their functions

The names and functions of keys and terminals are briefly described.

Liquid crystal screen

The symbols displayed on the screen are described.

Preparation

The power supply, check before use, installation of this equipment, connection of cables and various key setting are described.

Measurement

Basic idea of measurement method is described.

Recording

How to save or recall data is described.

Output terminal

Output terminal of this equipment is described.

Specification

The specification of this equipment is described.

Safety precautions

To prevent bodily injury or damage to property, the following safety precautions must be observed. This manual contains important safety and operating instructions for this equipment.

Read all instructions, before using the instrument.

After reading all instructions, keep this manual for quick reference

1. Expressions of safety instructions

WARNING

Calls attention to a procedure, practice, or condition that could possibly cause death or bodily injury.

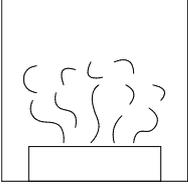
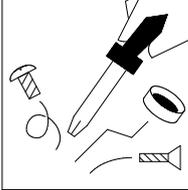
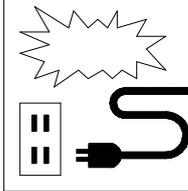
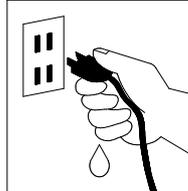
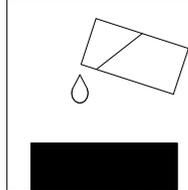
CAUTION

Calls attention to a procedure, practice, or condition that could possibly cause bodily injury or damage to instrument.

NOTE

It is an advisory explanation to use this equipment correctly. (It is not a safety instruction)

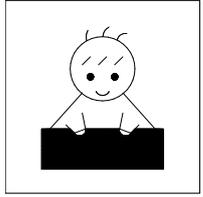
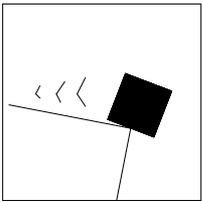
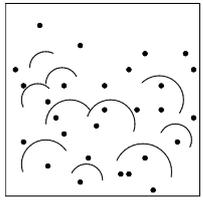
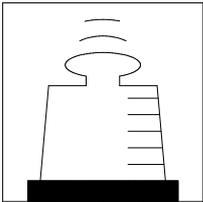
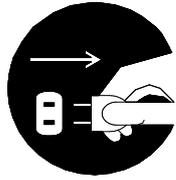
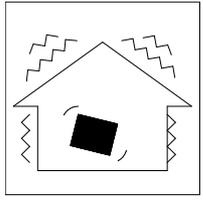
2. Important safety instructions

 WARNING	
<p>Stop using the instrument, when producing smoke, bad smell or noise. It causes fire or shock hazard. Turn off the POWER switch and unplug the AC adaptor (optional) from outlet as soon as possible. To reduce risk of injury, take it to a qualified serviceman when service or repair is required. Please contact ACO co. or the dealer when service or repair is required.</p>	
<p>Do not substitute parts or modify instrument. It causes bodily injury, fire or shock hazard.</p>	
<p>Do not use the AC power adaptor except the optional AC-1026. Other type of adaptor may cause damage to the instrument.</p>	
<p>Do not touch the plug of AC adaptor with wet hands. It causes shock hazard.</p>	
<p>Stop using the instrument, when an object or liquid falls/spills into the instrument. It causes fire or shock hazard. Turn off the POWER switch and unplug AC adaptor (optional) from outlet as soon as possible. To reduce risk of injury, take it to a qualified serviceman when service or repair is required. Please contact ACO co. or the dealer when service or repair is required.</p>	

3. Cautions for usage

This equipment is assembled with precision parts.

To prevent bodily injury or damage to the instrument, the following cautions must be observed.

 CAUTION	
Keep the instrument away from the children. If the instrument falls down, it is very dangerous.	
Do not place it on an unstable place (shaky table or sloping place). If the instrument falls down, it is very dangerous.	
Do not expose the instrument to moisture or dust. It causes fire or shock hazard.	
Do not put heavy objects on the instrument. It causes damage to the instrument.	
Connect cable properly, it is instructed in this manual. Wrong connection causes fire hazard.	
Before you move the instrument to other place, turn off the POWER switch and remove all wiring.	
Do not put the instrument on the vibrating place. If the instrument falls down, it is very dangerous.	
For avoiding liquid spill, remove alkaline dry batteries when you don't use for long period of time. It is recommended to remove alkaline dry batteries after each use.	

Disclaimer in usage of the software product

When this software is used, it is assumed that the customer has accepted all the following items.

- (1)The customer is permitted to use this software product based on the agreement of use conditions, not to transfer or sell to the third party.
In case the customer cannot accept the following items, the product cannot be cleared to use, either.
- (2)The software product, together with attached documents such as instruction manuals, belongs to Aco Ltd. and is protected by the Copyright Law., etc.
The customer is not permitted either to copy, modify, alter this software product, or remove the product label.
The customer is not permitted to create any similar products, or have the third party do these actions.
- (3)Please do try hard to keep every user or users scheduled about the items above before the use of this product.
As would be realized, the customer may be considered to have acted against the agreement when the user of this product acted against it.

Disclaimer in usage of the SD card

- (1)To see the data saved in the memory card (SD card) using PC, a card reader compatible with 8G or higher is required. Please check in advance that environment to recognize the memory card (SD card) is secured.
- (2)The folder / file in the memory card (SD card) please do not perform a change (addition and deletion) or a format from PC.
When I changed it, normalcy does not work.
- (3)When I delete a data file in the memory card (SD card), please carry out deletion by using the main body of TYPE 6236.

< Contents of the memory card (SD card) >

STD.....The folder of the data file of the normal measurement

001.csv	}	The data file (File name: 001.csv~999.csv)
.		
.		
nnn.csv		

TM5.....Power average value of the maximum sound pressure level in a given interval

001.csv	}	The data file (File name: 001.csv~999.csv)
.		
.		
nnn.csv		

The Quantifier form of International standard and JIS (Japanese Industrial Standards).

The Quantifier is excerpted from ISO 1996, 3891, IEC 60804, JIS Z 8202, 8731.

Notation of TYPE6236		Name	Frequency weighting characteristics	ISO	IEC	JIS		
L_A		A-weighted sound pressure level	A-weighted	L_{pA}	—	L_{pA}		
L_C		C-weighted sound pressure level	C-weighted	—	—	—		
L_P		Z-weighted sound pressure level	Z-weighted	L_P	—	L_P		
L_{Aeq}		Equivalent continuous A-weighted sound pressure level	A-weighted	$L_{Aeq, T}$	$L_{Aeq, T}$	$L_{Aeq, T}$		
L_{Ceq}		Equivalent continuous sound pressure level	C-weighted	—	$L_{Ceq, T}$	—		
L_{peq}		Equivalent continuous sound pressure level	Z-weighted	—	—	—		
L_{AE}		Sound exposure level	A-weighted	L_{AE}	L_{AE}	L_{AE}		
L_{ce}			C-weighted	—	—	—		
L_{pe}			Z-weighted	—	—	—		
L_{AN}	L_{A05}	5% of the percentile sound pressure level	A-weighted	$L_{AN, T}$	$L_{A5, T}$	—	$L_{AN, T}$	$L_{A5, T}$
	L_{A10}	10% of the percentile sound pressure level			$L_{A10, T}$	—		$L_{A10, T}$
	L_{A50}	50% of the percentile sound pressure level			$L_{A50, T}$	—		$L_{A50, T}$
	L_{A90}	90% of the percentile sound pressure level			$L_{A90, T}$	—		$L_{A90, T}$
	L_{A95}	95% of the percentile sound pressure level			$L_{A95, T}$	—		$L_{A95, T}$
L_{Amax}		Maximum sound pressure level	A-weighted	—	—	—		
L_{Amin}		Minimum sound pressure level	A-weighted	—	—	—		
L_{Cpeak}		Peak sound pressure level	C-weighted	—	L_{Cpeak}	—		

Guarantee

Our product is guaranteed for twelve months from the date of delivery.

In the event of failure of the product during operation in the mutually-understood manner within the above-mentioned period, we will provide repair free of charge.

Repairs of a failure caused by other factors will be provided at cost.

NOTE

To make measurement with this instrument, either one of Memory Card, 1/1-1/3 Octave Real-time Analysis Card, FFT Analysis Card, or RSR Card shall be installed. Otherwise “No Card Error” will be indicated on the screen and measurement cannot be made.

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Overview

This specification refers to the Sound Level Meter TYPE6236. It covers most measurands corresponding to JIS and –ISO. TYPE 6236, provided with many functions usually mounted in equivalent products, has been realized at an extremely low price.

Measurement of most measurands, such as Equivalent continuous A-weighted sound pressure level (L_{Aeq}), Sound exposure level (L_{AE}), A-weighted sound pressure level (L_A), etc., is possible.

The 6236 was developed to keep comfortable sound environment as well as safe and healthy life of people, both to be realized by the evaluation of environmental noise such as traffic noise or industrial equipment noise, or by better understanding of the labor health environment at offices, factories, etc.

The impressive design of 6236 symbolizes satisfactory operations and many performances related to JIS and/or IEC. It sure is a highly efficient and highly reliable sound level meter, to be supported by the next generation.

Features

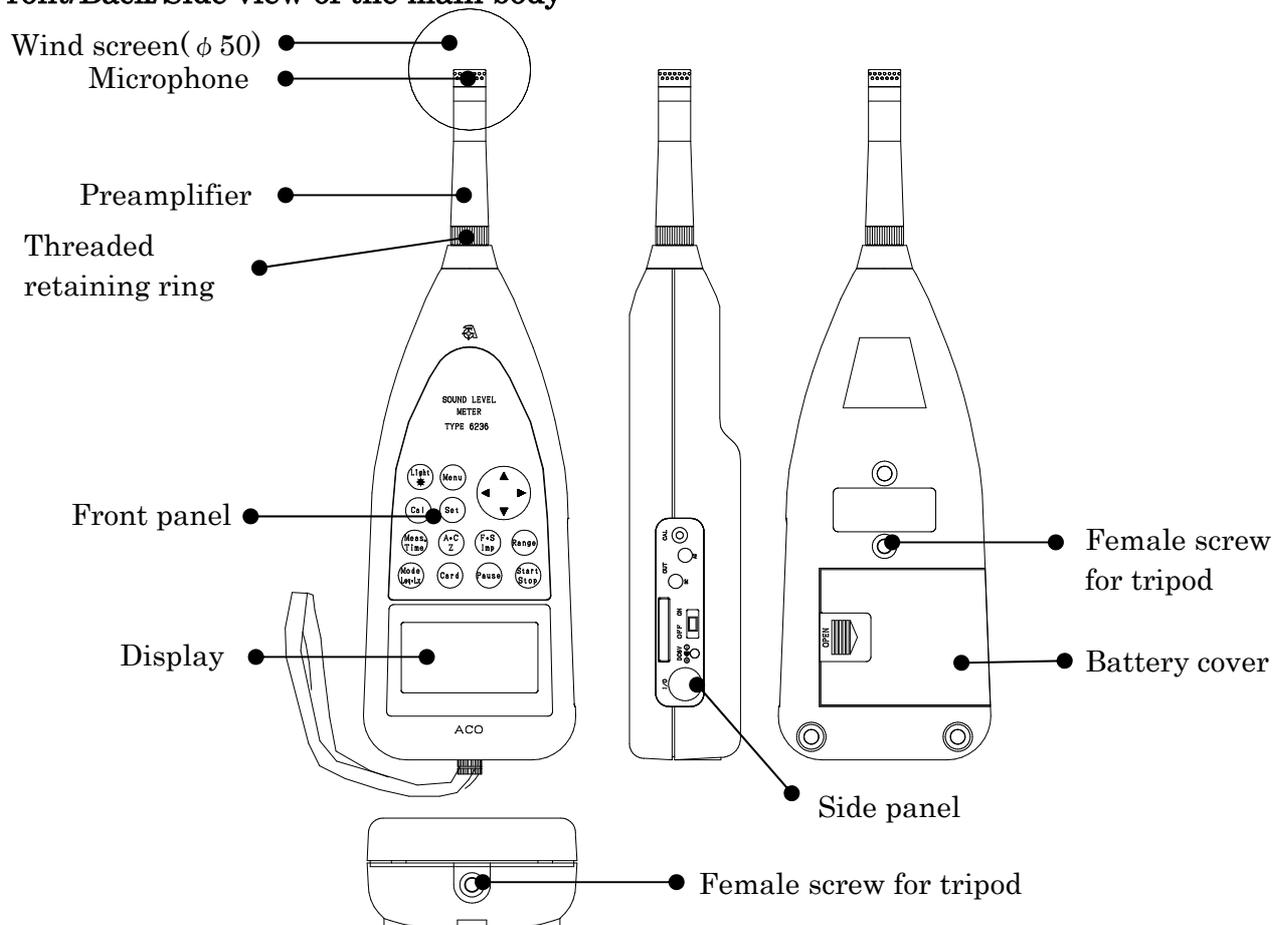
- Excellent cost/performance : covers most measurands in current criteria
- Percentile sound pressure level (L_N) : any 5 selectable values is available
- Measurement of Equivalent continuous A-weighted sound pressure level (L_{Aeq}) : Measurement of environmental noise required to secure occupational health
- Wide linearity range of 100dB over : Covers wide range of 20~130dB
- Equipped with an USB Ver2.0 function : allows data processing for PC
- Equipped with a memory function : recording to memory card(SD card)
- Backlight LCD screen for high : visibility and easy-on-the eye display
- Timer function : measurement can be paused or restarted at any point of time by installing the function.
- Abundant program cards : 1/1and 1/3-octave Real-time analysis card, FFT Analysis Card **【Option】** , RSR card (Real sound recording Card) **【Option】** , etc.

Configuration

1) Sound Level Meter	TYPE6236	1
2) Memory Card (SD Card)		1
3) 1/1 and 1/3-octave Real-time Analysis Card	NA-0038	1
4) Windscreen(ϕ 50)	NA-0304	1
5) Hand strap		1
6) Instruction Manual		1
7) Guide(TYPE6236, 1/1and 1/3-octave Real-time analysis card)		Each 1
8) Carrying case		1
9) Option		
• FFT Analysis Card	NA-0038F	
• RSR Card (Real Sound Recording Card)	NA-0038R	
• Data management software	NA-0038X	
• AC adapter	AC-1026	
• BNC pin cord	BC-0071	
• USB interface cable	BC-0038PC	
• Interface cable	BC-0026PC	
• Extension cable(2m~)	BC-0046-2~	
• Tripod exclusively for sound level meter	NA-0333	
• Sound calibrator	TYPE2127	
• 220~240V-100V Conversion Transformer	WT-51E	

Locations and their functions

Front/Back/Side view of the main body



Front

Microphone Preamplifier

The microphone and the preamplifier are comprised as one body.

They can be placed apart from the main body and connected to it with the optional extension cable

Display

It is a liquid crystal display with backlight. The sound level is displayed here with numerical value or bar graph. The operation condition of the sound level meter, setting condition of the measurement mode, various alerts, etc. are also displayed.

Windscreen(ϕ 50)

The measurement error may be caused in the windy outdoor site or noise measurement of ventilator, since the wind drives against the microphone generating the wind noise.

Under such conditions, it is possible to reduce the wind noise by attaching the ϕ 50 windscreen to the microphone

Hand Strap

Used to prevent unexpected drop of the main body. Please put it through your wrist when you measure with the body in hand.

Back

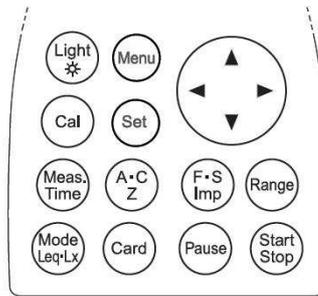
Female screw for tripod

It is possible to mount the main body to this tripod for the camera with screw.

Batteries case

Put four LR6 type Alkali dry batteries.

Operating Portion



Light key

The backlight illuminates the display in darkness, which goes out automatically 30 seconds later or by pushing the key again.

Menu key

It is pushed to set up the measurement condition, when the display is adjusted to 1/3 page of the menu panel.

The item is selected with cursor key $\blacktriangle\blacktriangledown$, and input starts with \blacktriangleright , as well as the alteration with $\blacktriangle\blacktriangledown$. To go back to the measurement setting screen, push [Set] key again.

Cal key

When the calibration or level setting with the equipment connected, this key is used.

Set key

The key to be used to fix the input.

Meas. Time key

The key to set the measurement period (interval time terminated with a pair of Star/Stop). It changes on pushing the key as: key is pushed again.

1s, 3s, 5s, 10s, 1m, 5m, 10m, 15m, 30m, and 1h, 8h, 12h, 24h, and * * * (Forever: Until Stop).

A·C, Z key

The key to select frequency weighting A, C, and Z (FLAT)

F·S, Imp key

The key to select time-weighting Fast, Slow, and Imp

Range key

Range setting key which enables the following 6 ranges:

20~80, 20~90, 20~100, 20~110, 30~120, 40~130

Mode/Leq·Lx key

The key to display the calculation results. Each push gives various calculation results selected on the Menu screen.

Card key

The key to use various option cards

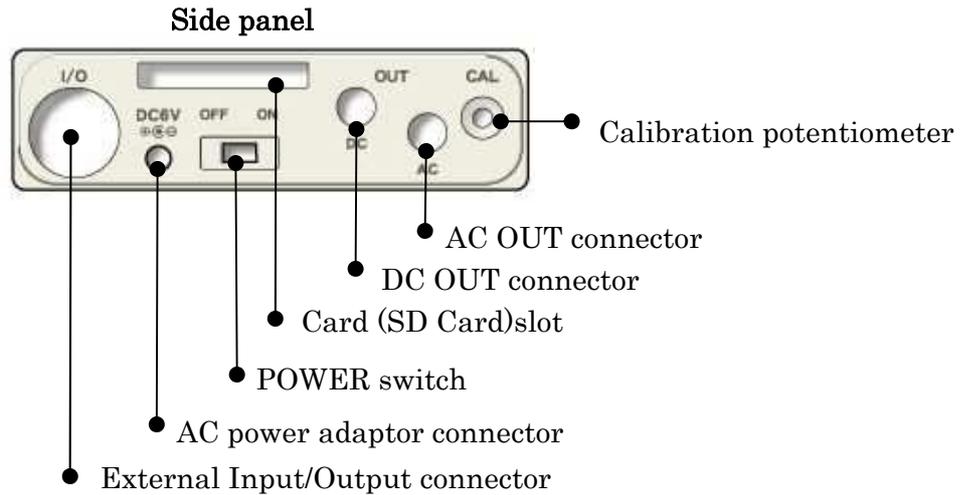
Pause key

By pushing the key, the measurement is paused to eliminate any unexpected noise or anomaly during the measurement. It is resumed by pushing the key again. By using the data elimination function, it is possible to exclude the data 3 or 5 seconds before the key is pushed.

Start/Stop key

The key to start the measurement of various mode or to terminate it.

Side view of the main body



AC power adaptor connector

By using the optional AC adaptor, AC100V is available for the measurement.

Please do not use any other power supplies than specified AC adaptor. It may cause breakdown or malfunction.

AC/DC out connector

AC: outputs frequency-weighted AC signal.

DC: outputs DC level signal .

External Input/Output connector

Input or output terminal for control signal or measurement data, which can be connected to a printer, level recorder, or personal computer.

Card(SD Card) slot

The slot for memory card(SD card) or optional program card.

NOTE

Please watch out for the card slot portion when you have it in hand. The card may jump out.

Inserting and detaching the card

1. Insert the card into the card slot on the side panel.

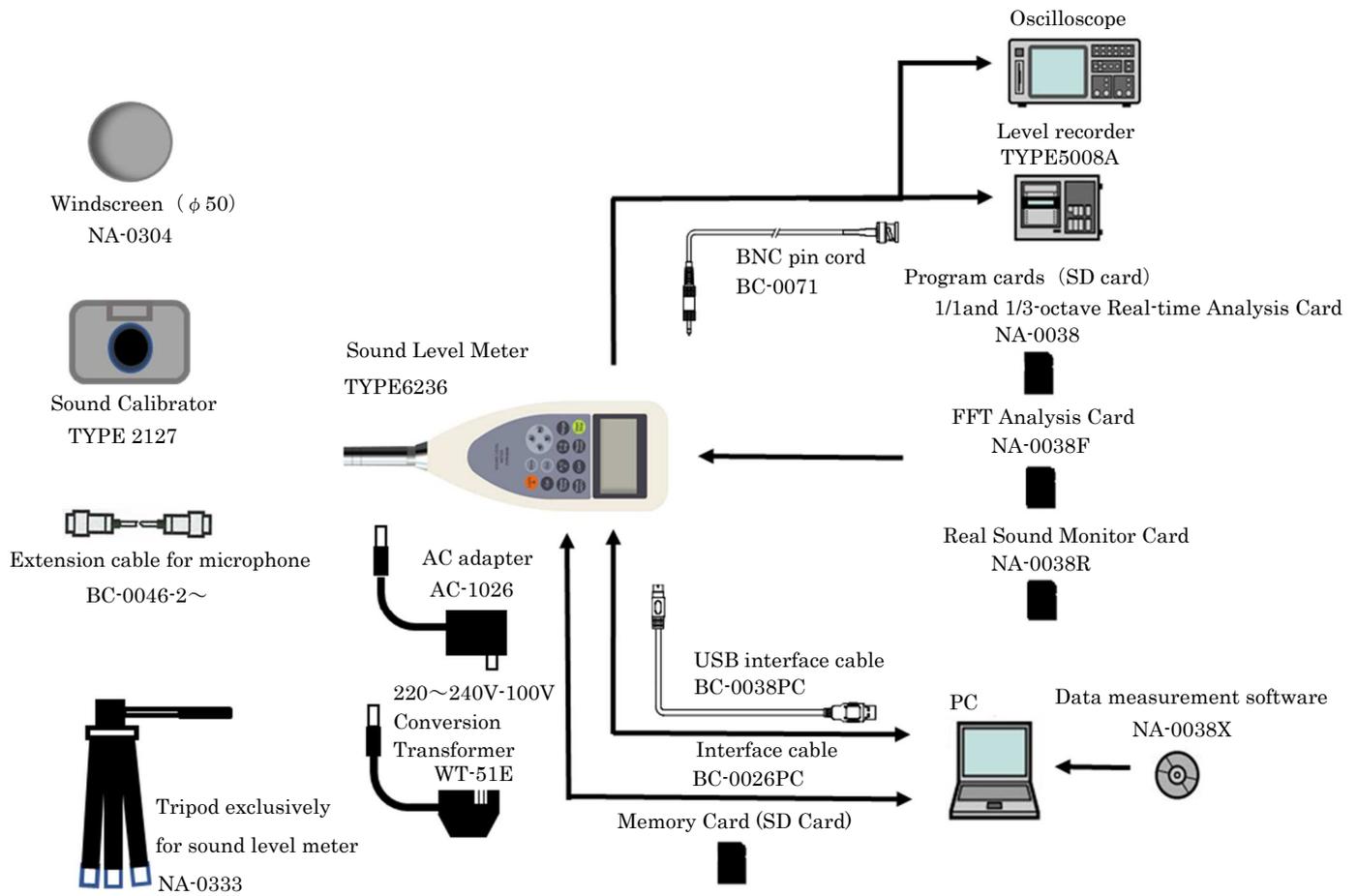
Press softly the card into the slot until it comes to the end, watching for the direction of the card.



2. Press the card again for detaching it. The card comes off by itself.

Example of system configuration

※The function can be extended by the connecting various option measuring instruments.

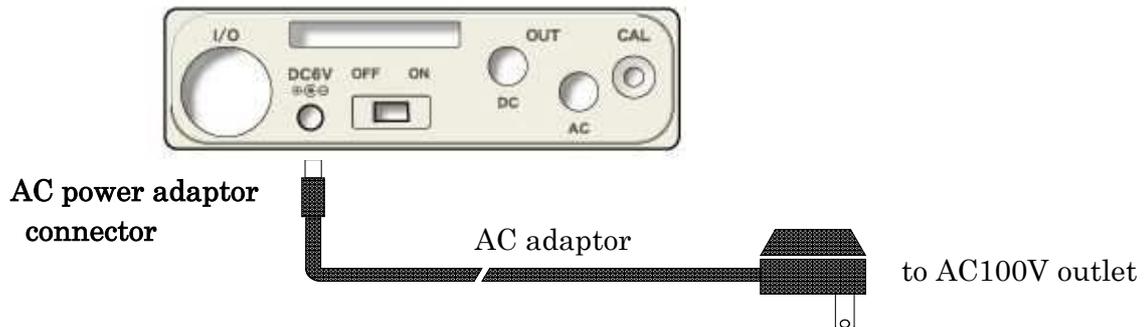


AC adaptor

- 1) Turn off the power switch.
- 2) Connect the AC adaptor to the AC adaptor terminal.
- 3) Insert the AC plug of the AC adaptor to the AC100V outlet.

NOTE

Please do not use any other power supplies than specified AC adaptor. It may cause breakdown or malfunction.



Mounting on the tripod

It is possible to mount this equipment on the Tripod exclusively for sound level meter in lengthy measurement. Please be careful enough not to drop the equipment or fell the tripod.

Memory card (SD card) and program card

The measurement results can be stored in Memory card(SD card) (SD card) to reedit it on personal computer

Moreover, option program cards enable to set up the conditions of 1/1 or 1/3 octave filter card, FFT analysis card 【Option】 , and RSR card (Real sound recording card) 【Option】 .

Extension cable

Please make sure to switch off the power when connecting or disconnecting the microphone extension cable.

To avoid the influence of diffraction effect of the sound level meter body, or of the existence of the measuring person, microphone can be placed away from the main body.

* Certification by the Measurement Act is applied up to 3 m length for the extension cable. If the extension cable of over 3 m is used, then it is not subject to certification by the Measurement Act.

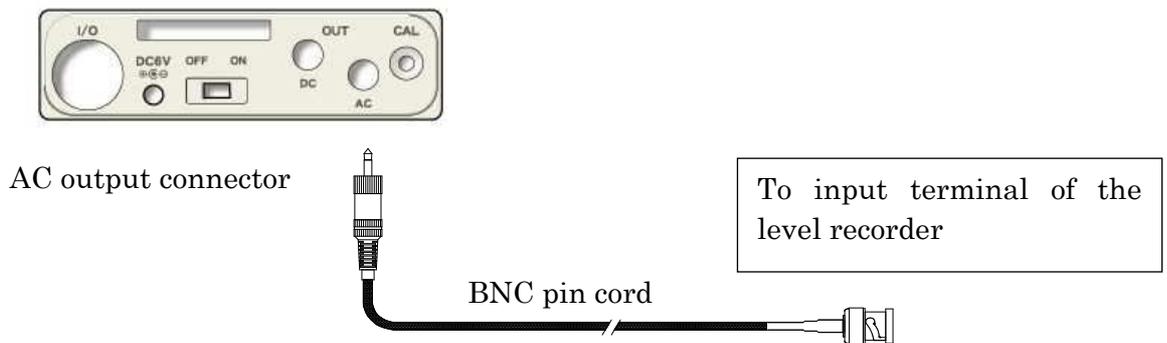
Please refer to “Pin Connections and How to Connect Extension cable” in P55 for further information.

NOTE
Never separate the microphone from the preamplifier, which may cause breakdown or malfunction

Connection with level recorder

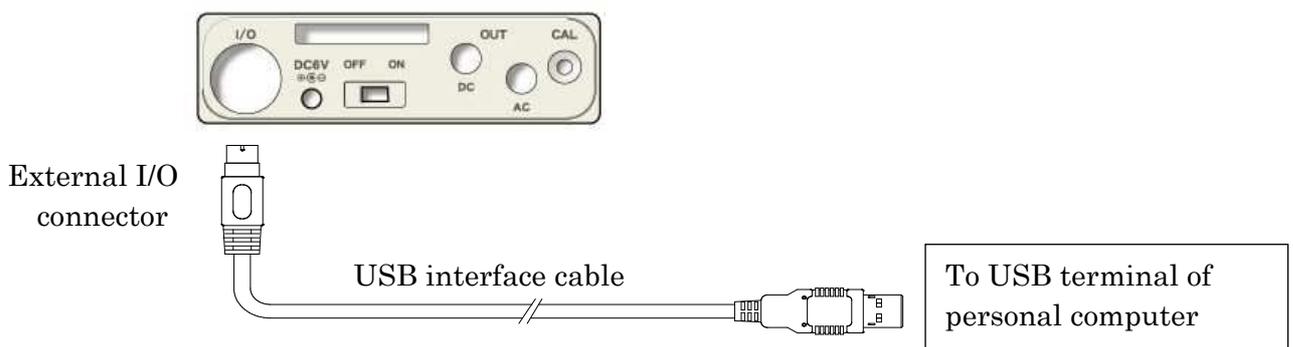
How to record the sound pressure level

Connect AC output connector on the side panel to level recorder with BNC pin cord as shown in the following figure.



Connection with personal computer

External connect I/O on the side panel to USB terminal of personal computer with the USB interface cable.

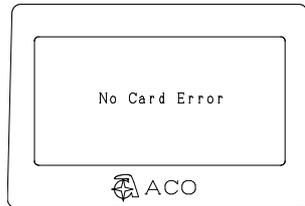


Preparation

About No Card Error

If either one of Memory Card, 1/1-1/3 Octave Real-time Analysis Card, FFT Analysis Card, or RSR Card is not installed to this instrument, "No Card Error" will be indicated on the screen key operation will become impossible. Please insert either one of above mentioned cards as necessary before use.

<Indication on the screen when any card is not inserted>



Battery installation

When LCD display tells low battery, install new batteries.

For long-term measurement, install new batteries in advance.

The following displays tell you the condition of the batteries.

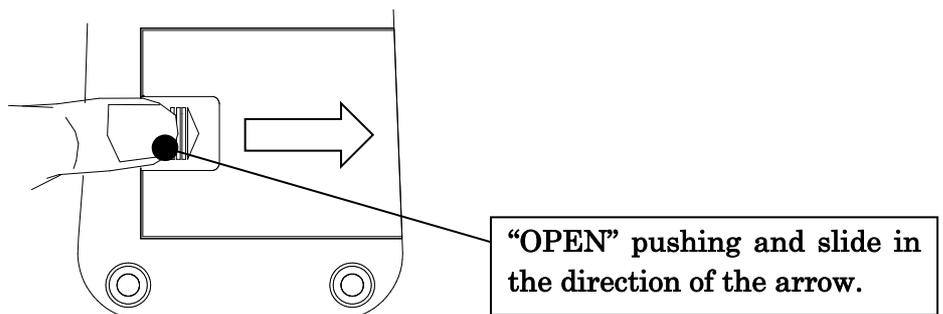
The battery residual quantity display are the 5 stages like the following.



It will blink, if "ENPTY" is displayed, and a power supply is shut off.

To install new batteries:

- 1) Turn off the POWER switch.
- 2) The slide is done while pushing the battery lid by the thumb. (Refer to the figure below) Put the new batteries in the case, then shut the cover. The inside of the case shows you the direction of the batteries.



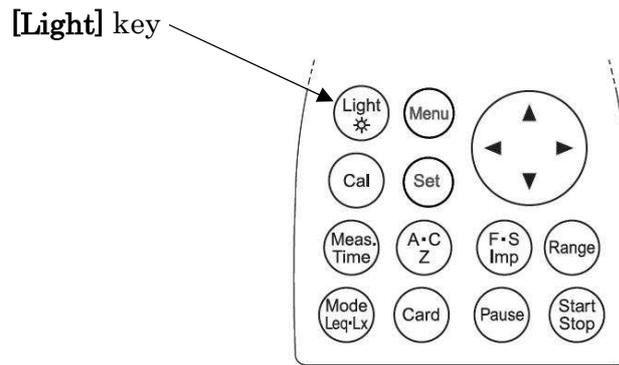
NOTE

Do not put the batteries in the wrong direction. These four batteries should be replaced at the same time.

- Battery life is approximately:
9hours (Alkaline batteries, continuous operation)
- Use of LCD back-light shortens the life of the batteries (approximately 1/3).
- Please prepare the AC adaptor AC-1026(option) in advance when it is used for a long period of time.

LCD back-light

You can use LCD back-light, when your measurement is carried out in the dark situations.

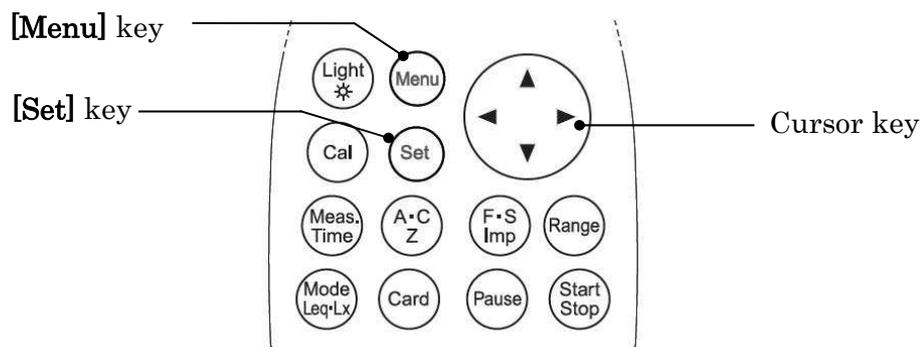


- 1) Press **[Light]** key, LCD back-light goes on.
- 2) If you press **[Light]** key again, LCD back-light goes out.
The light automatically goes out in about 30 seconds after the light goes on.
- 3) When the batteries are low, LCD back-light dims.

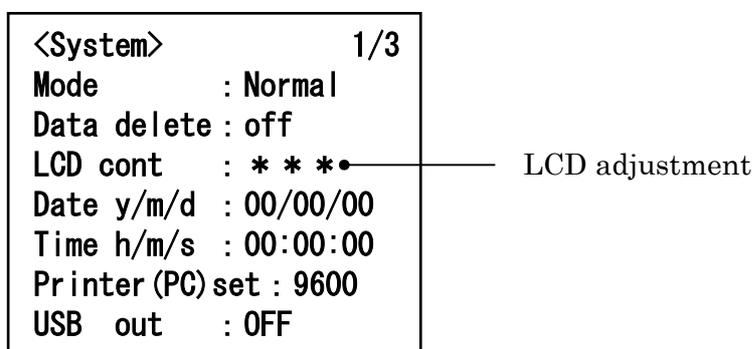
LCD adjustment

You can adjust LCD contrast, when the batteries were low, or when the new batteries were installed.

The procedure is as follows.



1) When you press the **[Menu]** key, the following screen appears.



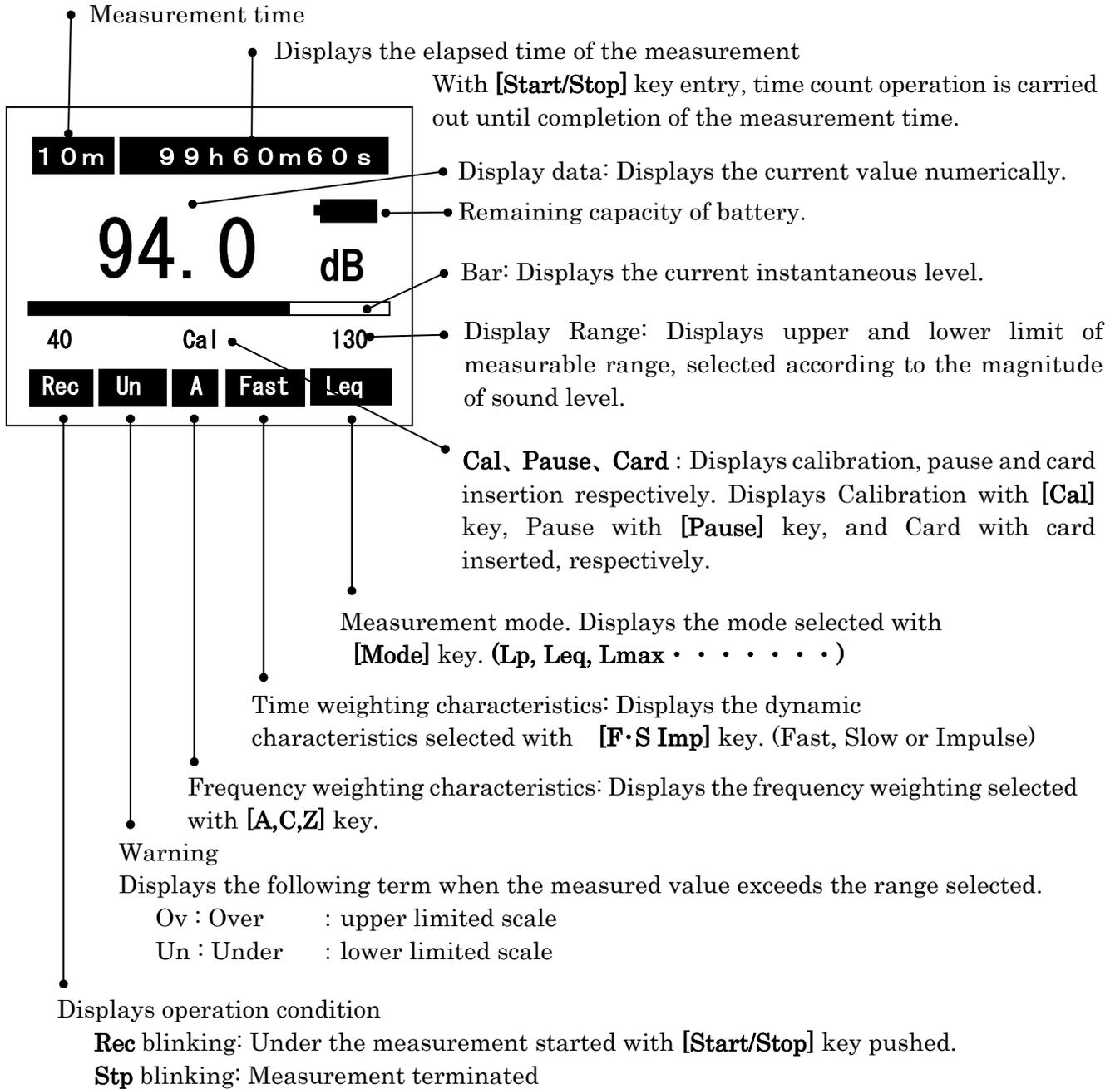
2) Select LCD cont with Cursor key ▼, then move the cursor rightward with ► key.

3) Adjust the LCD contrast with ▲▼ key, then press **[Set]** key to save the setting.
After pressing **[Set]** key, the cursor moves to leftward.

4) If you want to go back to measurement mode, press **[Set]** key.

Display (Explanation of measurement screen)

Measurement screen



Measurement time

The measurement time is displayed, which is one of the following :

1s, 3s, 5s, 10s, 1m, 5m, 10m, 15m, 30m, 1h, 8h, 12h, 24h, * * * (Forever: Until **[Start/Stop]** key entry)

Pause (Temporary interruption mark)

Blinks when the calculation or data saving to memory is canceled, where displayed level is not updated

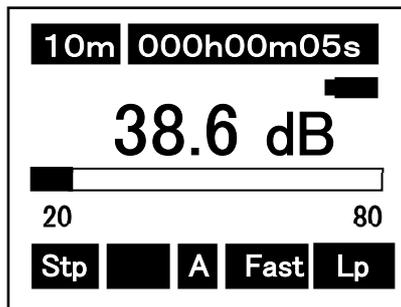
Frequency characteristic and Calculation function

Style		A	C	Z
Sound pressure level		L_A	L_C	L_p
Equivalent continuous sound pressure level		L_{Aeq}	L_{Ceq}	L_{eq}
Sound exposure level		L_{AE}	L_{CE}	L_E
Maximum sound pressure level		L_{Amax}	L_{Cmax}	L_{Pmax}
Minimum sound pressure level		L_{Amin}	L_{Cmin}	L_{Pmin}
Percentile sound pressure level (L_{AN})	Percentile (5%) sound pressure level	L_{A05}	L_{C05}	L_{P05}
	Percentile (10%) sound pressure level	L_{A10}	L_{C10}	L_{P10}
	Percentile (50%) sound pressure level	L_{A50}	L_{C50}	L_{P50}
	Percentile (90%) sound pressure level	L_{A90}	L_{C90}	L_{P90}
	Percentile (95%) sound pressure level	L_{A95}	L_{C95}	L_{P95}
Peak sound pressure level		—	L_{Cpeak}	L_{peak}
Power average of maximum sound pressure level in a given interval		L_{Atm5}	—	—
Impulse sound pressure level		L_{AI}	(L_{CI})	(L_{PI})
Impulse equivalent continuous sound pressure level		L_{AIeq}	(L_{CIEq})	(L_{PIeq})

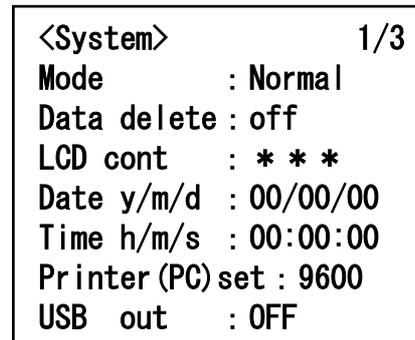
※ About the quantity of measurement in (), I can display it operationally, but am quantity it is not generally used, or not to be suitable for an evaluation.

Display example

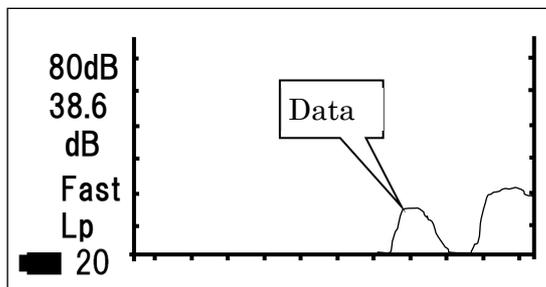
<Measurement screen>



<Menu screen>



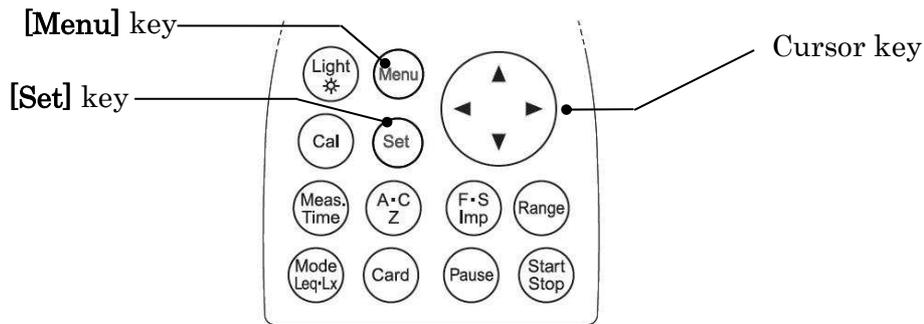
<Example of T-L (time level) display>



Calendar adjustment

To adjust the calendar (time), operate as follows.

You can adjust calendar in the Menu mode in the same way as LCD adjustment.



When you press the **[Menu]** key, the following screen appears

<System>	1/3	
Mode	: Normal	
Data delete	: off	
LCD cont	: * * *	
Date y/m/d	: 00/00/00	● Date adjustment
Time h/m/s	: 00:00:00	● Time adjustment
Printer (PC) set	: 9600	
USB out	: OFF	

【Calendar adjustment】

- (1) Select date y/m/d with Cursor key ▼, then move the cursor rightward with ► key.
- (2) Set the year/month/day with ▲▼ key, then press **[Set]** key to save the setting.
After pressing **[Set]** key, the cursor moves to leftward.
- (3) If you want to go back to the measurement mode, press **[Set]** key.

【Time adjustment】

- (1) Select **time** with Cursor key ▼, then move the cursor rightward with ► key.
- (2) Set the hour:minute:second with ▲▼ key, then press **[Set]** key to save the setting.
After pressing **[Set]** key, the cursor moves leftward.
- (3) If you want to go back to the measurement mode, press **[Set]** key.

NOTE

Be sure to enter the date (date y/m/d) in the order of “year → month → day.”

Input any figure of : y(year): 00 – 99, m(month):01 – 12, and d(day): 01 – 31.

Ex.) For November 30, 2003

Correct) 03/11/30

Incorrect) 11/30/03 30 has been entered for m(month). Input any figure of 01 through 12.

Be sure to enter the time in the order of “hour → minute → second.”

Input any figure of : h(hour): 00 – 24, m(minute): 00 – 59, s (second) 00 – 59.

Ex.) For 23:58:32

Correct) 23/58/32

Incorrect) 32/58/23 32 has been entered for h(hour). Input any figure of 00 through 24.

NOTE

You are recommended to set the built-in IC timer right before measurement, since it could show the wrong time.

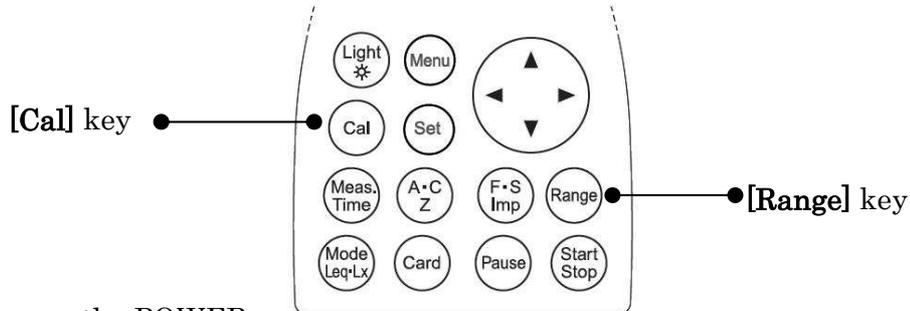
Calibration

You need to calibrate the instrument regularly before you start taking measurements.

There are two types of calibration. One is the way using the internal generator, the other is the way using the sound calibrator. Note that calibration is disabled when “Peak measurement” is selected

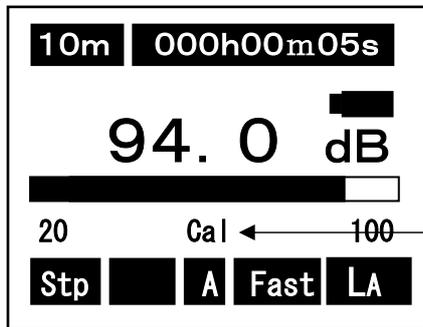
Calibration using internal generator

You can calibrate the instrument using the internal generator (1kHz, sine wave)



- 1) Turn on the POWER.
- 2) Press [Cal] key.
- 3) Press [Range] key, and choose '100dB' by cursor keys ▲▼, and press [Range] key again to register.
- 4) Adjust the calibration potentiometer on the side panel until the display shows 94dB.
- 5) If [Cal] key is pressed once again, the calibration is completed.

< Calibration display >



Cal flashes on and off

< Side panel >

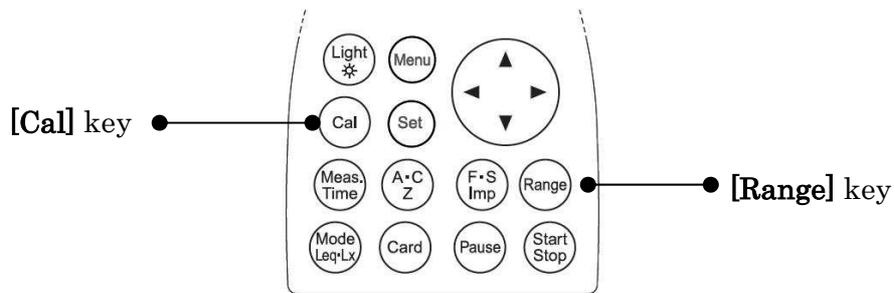


Calibration potentiometer

< Reference > Full scale range and Cal(the display shows)

Full scale range (dB)	CAL (dB)	OUTPUT(V)	
		AC OUT	DC OUT
80	74.0	0.500	2.350
90	84.0	0.500	2.350
100	94.0	0.500	2.350
110	104.0	0.500	2.350
120	114.0	0.500	2.350
130	124.0	0.500	2.350

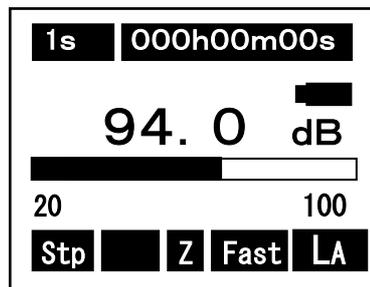
Calibration using Sound Calibrator (TYPE 2127)



- 1) Turn off the POWER of Sound Calibrator (TYPE 2127).
- 2) Turn on the POWER of this equipment
- 3) For the Sound Calibrator, Set the frequency weighting to Z with Frequency weighting key, set the time weighting to Fast with Time weighting key and set the range to 20~100dB with **[Range]** key.
- 4) Insert microphone of this equipment to Sound Calibrator (TYPE 2127).
- 5) Switch on the Sound Calibrator (TYPE 2127).
- 6) Adjust the calibration potentiometer on the side panel until the display shows a output level of the sound Calibration (standard value is 94.0dB).

For the detail of Sound Calibrator output level, please each see shipping inspection data sheet.

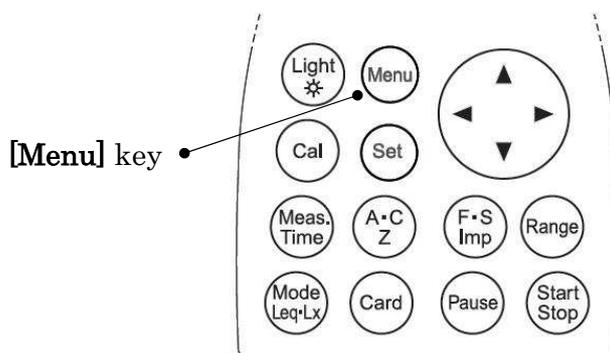
< Sound Calibrator in use >



NOTE

Insertion and extraction of the microphone to/from the sound calibrator should be made slowly and softly. Rapid insertion and extraction may cause strong force to the diaphragm of the microphone due the air pressure change, which may then give a severe damage to the microphone.

Menu screen



With **[Menu]** key pressed, the following Menu screen appears. (Under the situation with **[Start/Stop]** key not pressed).

<System> 1/3 → <Memory> 2/3 → <View Mode> 3/3 → <System> 1/3 → <Memory> 2/3 . . .

Each **[Menu]** key pressed, you can select one of three screens as above, and return to the measurement setting screen.

Select an item with cursor keys ▲ ▼, start the input with ►, and fix the change with **[Set]** key. Move to the item to change and return to the measurement setting screen with **[Set]** key again.

In the use of option card (filter card), additional setting screen appears.

Please refer to the manual of each option card for the details .

<System> 1/3	
Mode	: Normal
Data delete	: off
LCD cont	: * * *
Date y/m/d	: 00/00/00
Time h/m/s	: 00:00:00
Printer (PC) set	: 9600
USB out	: OFF

<Memory> 2/3	
Mode	: Normal
Interval	: Single

<View Mode> 3/3	
Lp	: INST
(A) view	LA05 : OFF
LAeq	: ON LA10 : OFF
LAE	: OFF LA50 : OFF
L Amin	: ON LA90 : OFF
L Amax	: ON LA95 : OFF

Each change made with various key operations are registered and reproduced on next Power ON operation.

<System> (1/3)

<System>	1/3
Mode	: Normal
Data delete	: off
LCD cont	: * * *
Date y/m/d	: 00/00/00
Time h/m/s	: 00:00:00
Printer (PC) set	: 9600
USB out	: OFF

<u>Item</u>	<u>Default</u>	<u>Contents</u>
● Meas Mode	: Normal	: Normal : Normal measurement Print : Print PC out : Data management Memory Call : Display recorded data L _{Atm5} : Tact-max sound pressure level (STD card) Remote U : Communicate mode(USB) Remote R : Communicate mode(RS-232C)
● Data delete	: off	: Data deletion mode setting off : Date deletion is disabled. Fixed to off in Peak mode 3sec : Data in past 3 sec is deleted when [Pause] key is pressed during the measurement. 5sec : Data in past 5 sec is deleted when [Pause] key is pressed during the measurement . ※The function is disabled for Meas.Time 1, 3 or 5 sec,.
● LCD cont	: *****	: Adjustment of LCD contrast See “LCD adjustment” section for the details.
● Date y/m/d	: 00/01/01	: Calendar setting (date: 2000/01/01) See “Calendar adjustment” for the details.
● Time h/m/s	: 00:00:00	: Time setting See the “Calendar adjustment” for the details.
● Printer(PC) set	: 9600	: Baud rate setting USB Communicate : 9600/19200 RS-232C Communicate: 9600/19200/38400
● USB out	: OFF	: Digital data output setting OFF → L _p → L _{pB} → Wave (Outputs data from USB out in parallel with the measurement.) OFF : USB output is disabled. L _p : Outputs instantaneous value in every second L _{pB} : Outputs level data in each band when the octave filter is used. Wave : Outputs level data in each band at sampling rate 48kHz when the octave filter is used.

<Memory> (2/3)

```

<Memory>                2/3
Mode      : Normal
Interval  : Single
    
```

Select to
Mode:Auto



```

<Memory>                2/3
Mode      : Auto
Interval  : Single
I/O       : OFF
Level     : 65dB
Samp Time : MeasTime
Sta       : 08/10/10 18:16:00
Stp       : 08/10/12 20:16:00
    
```



Select to
Mode:Start

```

<Memory>                2/3
Mode      : Start
Interval  : Repeat
I/O out   : 232C
    
```

<u>Items</u>	<u>Default</u>	<u>Contents</u>
• Mode	: Normal	: Normal : Basic setting Auto : Automatic measurement, where the following items are available. Start : Start of power supply ON automatic measuring system. (It records on the memory card simultaneously)
• Interval	: Single	: Measuring interval setting Single : The measurement starts with [Start/Stop] key and is terminated at Meas.Time selected . Repeat : The measurement starts with [Start/Stop] key and is repeated in every Meas.Time selected until [Start/Stop] key is pressed.

【When Mode : Auto is selected, the following items can be specified】

- I/O : OFF : External output setting
OFF : Default (Data output is disabled).
ON : Outputs data for one second when the data memory mode is active.
- Level : 65dB : 65dB : Threshold level is registered (when the level exceeds it, recording starts), within the range 20-130dB at resolution 1dB
- Samp Time : Meas.Time : Meas.Time : sampled at interval equal to Meas.time.
100ms : sampled at interval 100ms (0.1s).
200ms : sampled at interval 200ms (0.2s).
1s : sampled at interval 1s
Meas.Time is time set with [Meas.Time] key (1s~····).

Fixed to Mease Time, when when RSR card is installed.

- * Select 10s or more in L_{Atm5} measurement.
- Sta : Registers the starting time for recording (YY/MM/DD HH/MM/SS)
(Year/Month/Date, date time/minute/second)
- Stp : Registers the stop time for recording (YY/MM/DD HH/MM/SS)
(Year/Month/Date, date time/minute/second)

NOTE

Measurement starts when the selected level is exceeded after the time specified with [Sta Time], In the following example :

: When the level exceeds 65dB after 18:16 October 10,
Recording starts and the measurement is made once during
the time specified with [Meas.Time].
Recording is continued, in Interval Repeat mode, until the
level falls or until 20:16 October 12.,
Data is shown according to System Mode.

【When Mode:Start is selected, the following items can be specified】

- I/O : 232C : Selection of interface
232C : RS-232C
USB : USB

※Following items are fixed and cannot be changed.

<p><System> 1/3</p> <p>Mode : Normal</p> <p>Data delete : off</p> <p>LCD cont : * * *</p> <p>Date y/m/d : 00/00/00</p> <p>Time h/m/s : 00:00:00</p> <p>Printer (PC) set : 9600</p> <p>USB out : OFF</p>

← Fixed

← Fixed

← Fixed

<p><Memory> 2/3</p> <p>Mode : Normal</p> <p>Interval : Repeat</p> <p>I/O out : 232C</p>

← Fixed

<p><View Mode> 3/3</p> <p>Lp : INST</p> <p>(A) view LA05 : ON</p> <p>LAeq : ON LA10 : ON</p> <p>LAE : ON LA50 : ON</p> <p>L Amin : ON LA90 : ON</p> <p>L Amax : ON LA95 : ON</p>
--

} Fixed

- Level Range : 20~100dB (Fixed)
- Time weighting : Fast (Fixed)
- Frequency weighting : A weighting (Fixed)

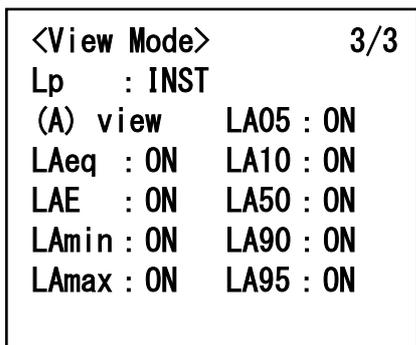
NOTE

- At the time of selection of Start, measurement is started when [Start/Stop] key is pressed or when the power switch of the main body is turned ON.
- At the time of selection of Start, calculation results are recorded to the Memory card(SD card) at each time setting of **Meas.Time**.
- At the time of selection Start, any card other than the Memory card(SD card) cannot be used. To use other card, other mode than the Start shall be selected.
- If the Memory card(SD card) becomes FULL during the measurement, recording to the card is stopped at that time but RS-232C/USB output is continued. In such case, data in the Memory card(SD card) shall be once transferred or copied to PC, etc., and perform deletion of data file from the Memory card(SD card) using the data clear function

<View Mode> 3/3

Select the category of displayed data.

The data registered here is displayed in the standard screen, one by one with [Mode] key pressed on the main body.



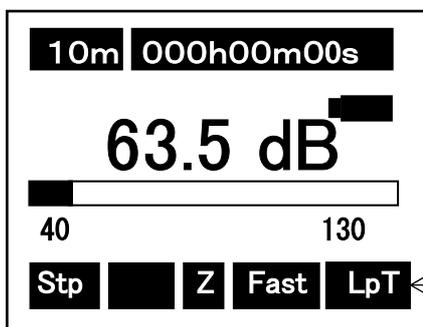
Items	Default	Explanation
• Lp	:INST	:INST :Data is displayed in every second TACT :The maximum level is displayed in one second. (TACT MAX)

- Lp :Instantaneous sound pressure level
- Leq :Equivalent continuous A-weighted sound pressure level
- LE :Single event sound exposure level
- Lmin :Minimum sound pressure level
- Lmax :Maximum sound pressure level
- Lpeak :Peak sound pressure level

In each [Mode] key pushed in the measurement screen, display changes as follows :

- LA→Leq→LE→Lmin→Lmax→L05→L10→L50→L90→L95
- When TACT is selected for Lp, [LaT] is displayed in display mode.

<Display> When Lp is TACT



Display mode

In the case of Lp : TACT

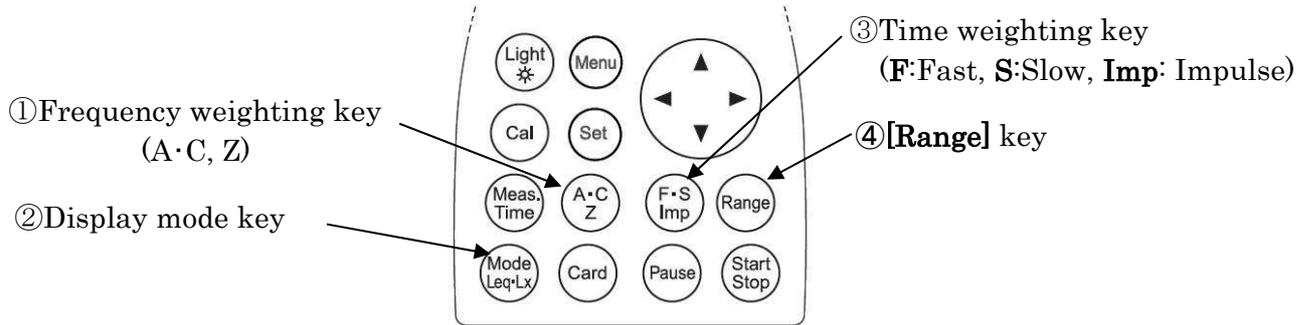
Z : LpT

A : LA T

C : LcT

Measurement Procedure

Sound pressure level ($L_A/L_c/L_p$) measurement: Frequency weighting key A,C,Z



< Parameter setting >

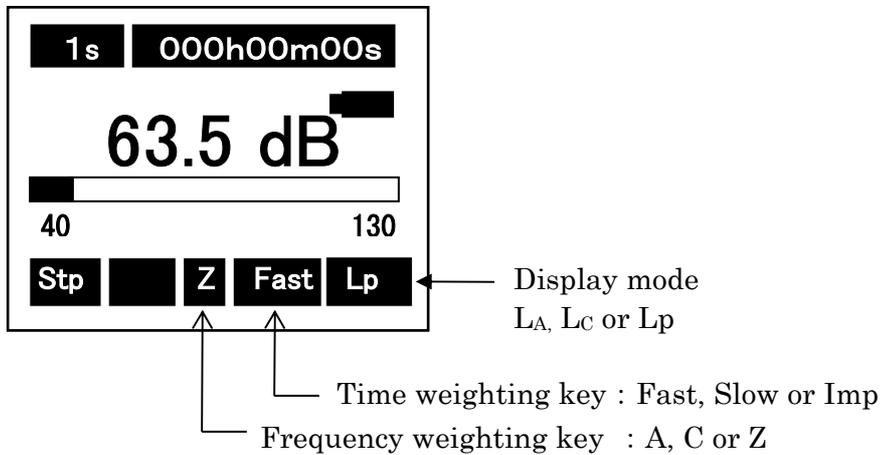
Measurement is made according to the following procedure.

- ① Frequency weighting key : A, C or Z
- ② Display mode key : L_A , L_c or L_p
- ③ Time weighting key : F, S or Imp
- ④ Range key : Select a range where the bar graph indicates approximately 2/3 of the full scale.

【Method of selecting Range Key】

Press [**Range**] key, and choose by cursor keys \blacktriangle \blacktriangledown , and press [**Range**] key again to register.

< Display >



NOTE

To make measurement with this instrument, either one of Memory Card, 1/1-1/3 Octave Real-time Analysis Card, FFT Analysis Card, or RSR Card shall be installed. Otherwise “No Card Error” will be indicated on the screen and measurement cannot be made.

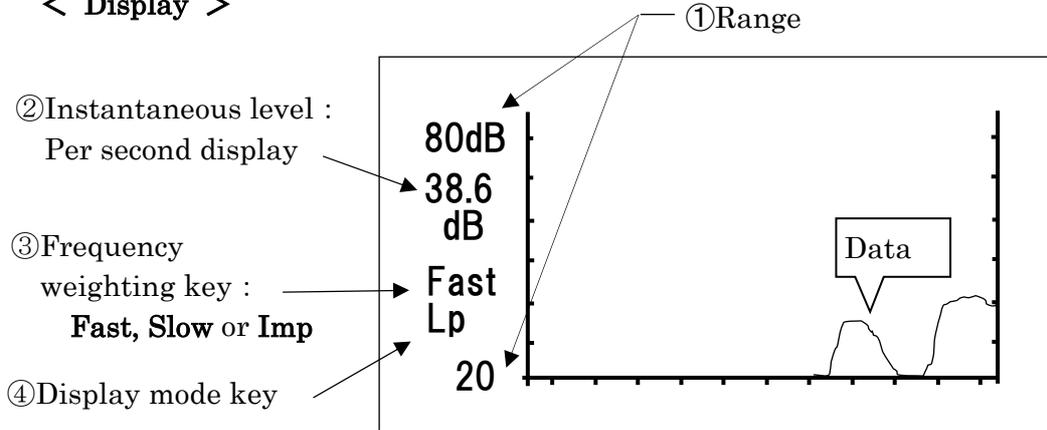
Time level display of Sound pressure level ($L_A/L_c/L_p$) measurement

< Parameter setting > :

The time level is displayed at each contiguous push (1.5s) of **[Mode]** key as follows, returning to the standard display screen when the key is pushed again.

The key operation is similar to the measurement of sound pressure level ($L_A/L_c/L_p$).

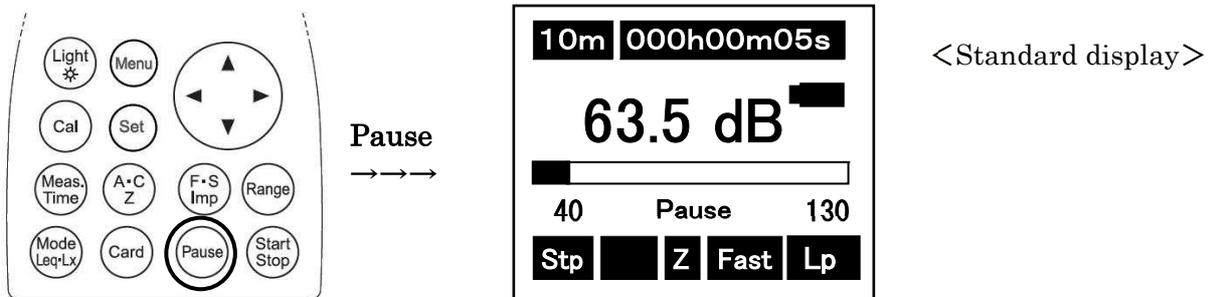
< Display >



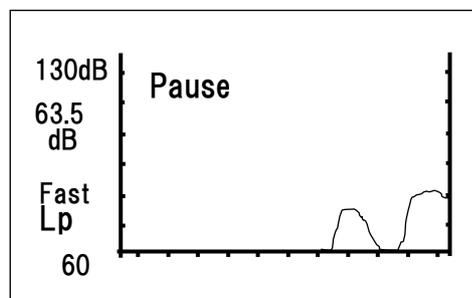
The instantaneous level is displayed at each about 300ms from right to left.

Data hold

By pushing the **[Pause]** key, the blinking letter "Pause" is displayed at the center of the bar graph, displaying the present instantaneous level. Note that the bar graph itself doesn't pause.

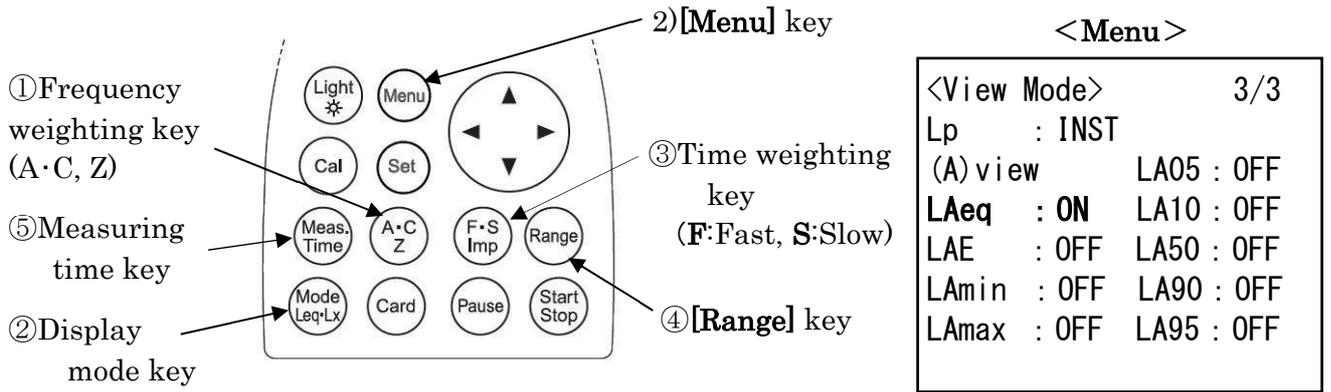


<Time level display>



• By pushing the **[Pause]** key is pushed again, it is released.

Equivalent continuous sound pressure level (LAeq) measurement



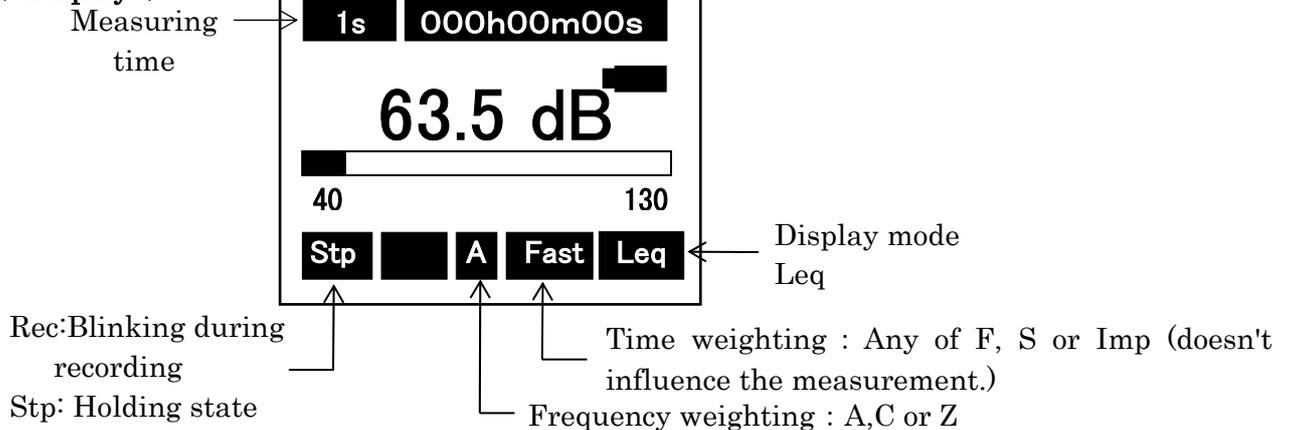
< Parameter setting >

- The key operation is similar to the measurement of A-weighted sound pressure level (LA) except that it needs [Start/Stop] key input for starting the measurement (automatic calculation).
- To display the value LAeq, keep the "LAeq" key ON in advance in the <View Mode> 3/3 screen.
 - Frequency weighting key : A,C or Z
 - Display mode key : LAeq
 - Time weighting key : F or S (Imp)
 - Range key : Select a range where the bar graph indicates approximately 2/3 of the full scale.

[Method of selecting [Range] Key]
Press [Range] key, and choose by cursor keys▲▼, and press [Range] key again to register.

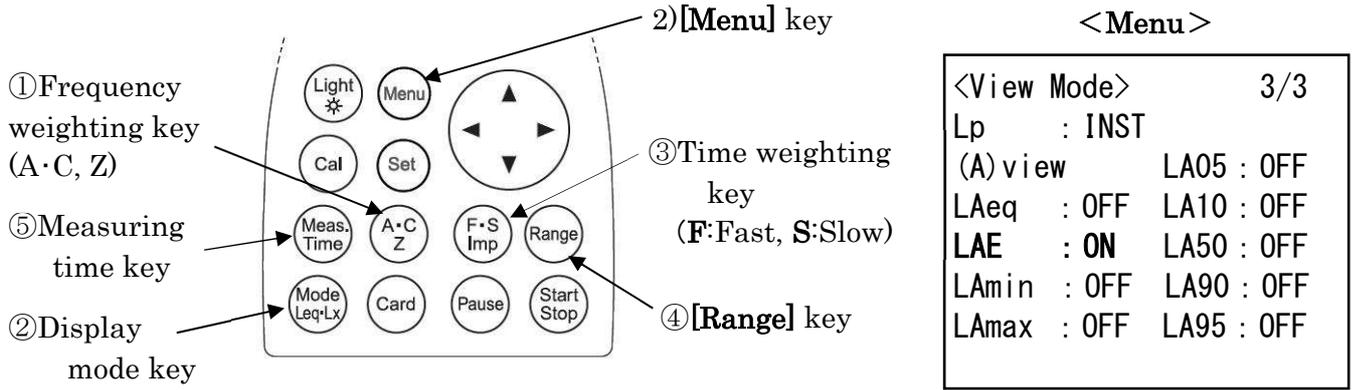
 - Measuring time key : 1s, 3s, 5s, 10s, 1m, 5m, 10m, 15m, 30m, 1h, 8h, 24h and *** (until the [Start/Stop] key pushed again)
- The measurement starts with [Start/Stop] key.

< Display >



- Measurement starts with [Start/Stop] key pushed, and ends up automatically at the Measuring time. Digital display indicates the halfway result at the current point of time. (Display "Rec" blinks while the measurement.)
- When Interval is set to Repeat in <Memory> 2/3 screen, the measurement is repeated in every Measuring time. (This is used when continuous measurement is needed.)
- By pushing [Start/Stop] key in course of the measurement, calculation is done using the data so far.
- By pushing [Pause] key in course of the measurement, the calculation can be done without using the data in the latest 3 or 5 seconds.
 - ※This function can be set in the Data delete in the <System> 1/3 screen.
- When *** is selected, the final data is calculated and displayed only when [Start/Stop] key is pushed or 199 hours have gone through.
- All the keys do not respond during the measurement : [Start/Stop], [Mode], [Light]

Single event sound exposure level (L_{AE}) measurement



< Parameter setting >

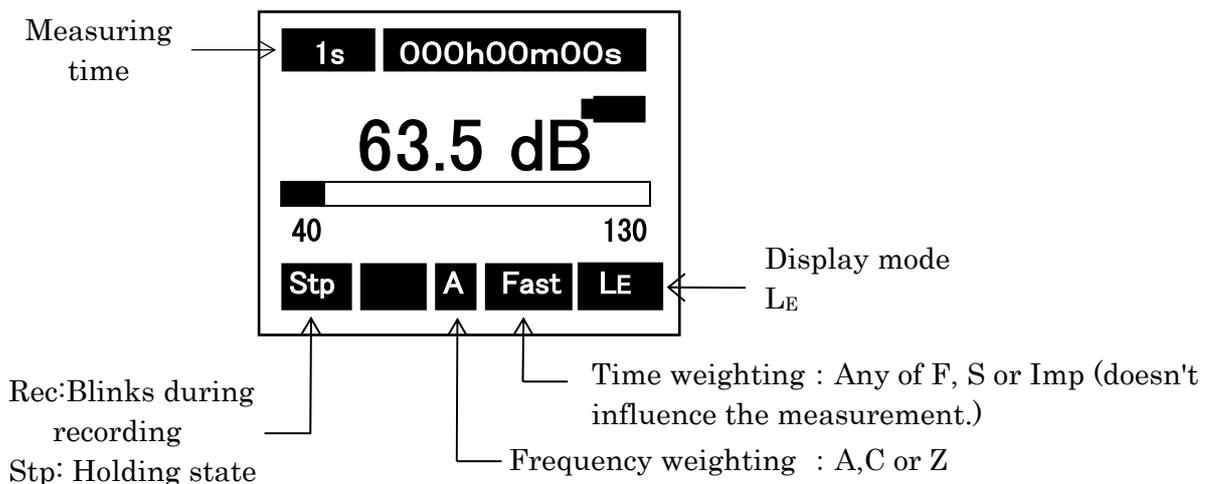
- 1) The key operation is similar to the measurement of A-weighted sound pressure level (L_A) except that it needs [Start/Stop] key input for starting the measurement (automatic calculation).
- 2) To display the value L_E, keep the "LAE" key ON in advance in the <View Mode> 3/3
 - ① Frequency weighting key : A, C or Z
 - ② Display mode key : L_E
 - ③ Time weighting key : Any of F, S or Imp (doesn't influence the measurement)
 - ④ [Range] key : Select a range where the bar graph indicates approximately 2/3 of the full scale.

[Method of selecting [Range] key]

Press [Range] key, and choose by cursor keys ▲▼, and press [Range] key again to register.

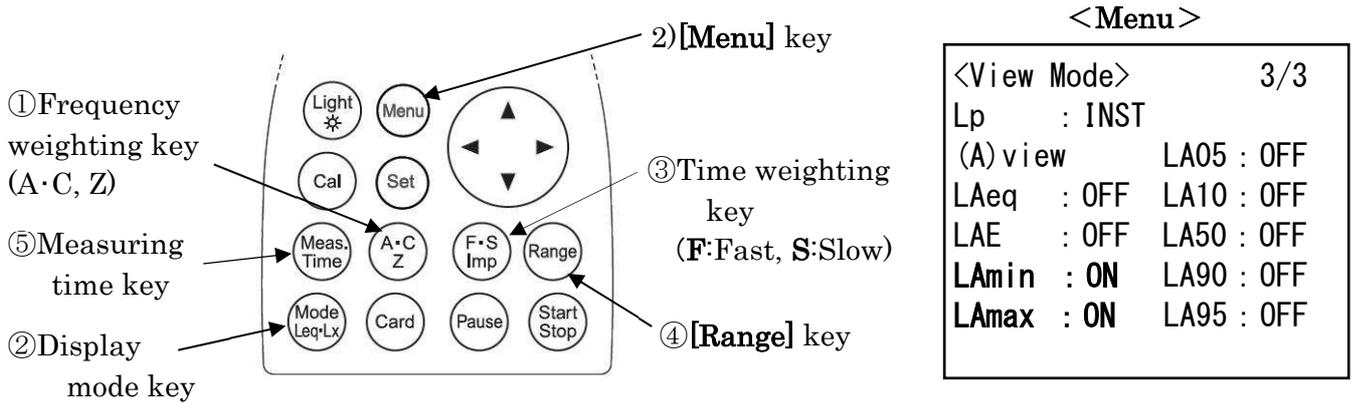
- ⑤ Measuring time key : 1s, 3s, 5s, 10s, 1m, 5m, 10m, 15m, 30m, 1h, 8h, 24h and *** (to the [Start/Stop] key)
- 3) The measurement starts with [Start/Stop] key.

< Display >



- The measurement is similar to the equivalent continuous A-weighted sound pressure level.

Maximum/Minimum sound pressure Level (L_{Amax}/L_{Amin}) measurement



< Parameter setting >

- 1) The key operation is similar to the measurement of A-weighted sound pressure level (L_{Aeq})
- 2) To display the value L_{max} , keep the "L_{Amax}" key ON in advance in the <View Mode> 3/3 (similar in L_{min} measurement.)

- ① Frequency weighting key : A, C or Z
- ② Display mode key : L_{max} or L_{min}
- ③ Time weighting key : Fast or Slow (Imp)
- ④ [Range] key : Select a range where the bar graph indicates approximately 2/3 of the full scale.

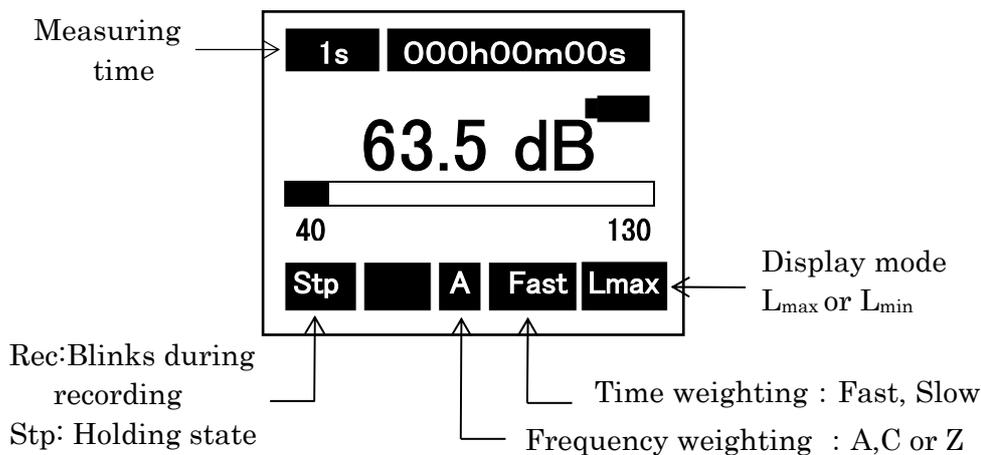
【Method of selecting [Range] key】

Press [Range] key, and choose by cursor keys ▲▼, and press [Range] key again to register.

- ⑤ Measuring time key : 1s, 3s, 5s, 10s, 1m, 5m, 10m, 15m, 30m, 1h, 8h, 24h and *** (to the [Start/Stop] key)

- 3) The measurement starts with [Start/Stop] key.

< Display >



Percentile level (L_{AN}) measurement

< Menu >

<View Mode>	3/3
Lp :INST	
(A)view	LA05 : ON
LAeq : OFF	LA10 : ON
LAE : OFF	LA50 : ON
L Amin : OFF	LA90 : ON
L Amax : OFF	LA95 : ON

< Parameter setting >

- 1) The key operation is similar to the measurement of A-weighted sound pressure level (LAeq)
- 2) To display the value L_{max}, keep the "LA05 ,LA10 ,LA50 ,LA90 ,LA95" key ON in advance in the <View Mode> 3/3 screen.

- ① Frequency weighting key : A, C or Z
- ② Display mode key : L_N (To display the percentile level (L_N) Measurement.)
- ③ Time weighting key : Fast or Slow (Imp)
- ④ Range key : Select a range where the bar graph indicates approximately 2/3 of the full scale.

[Method of selecting [Range] Key]

Press [Range] key, and choose by cursor keys ▲▼, and press [Range] key again to register.

- ⑤ Measuring time key : 1s, 3s, 5s, 10s, 1m, 5m, 10m, 15m, 30m, 1h, 8h, 24h and * * * (input to the [Start/Stop] key)
- 3) The measurement starts with [Start/Stop] key.

< Display >

NOTE

The L_N computation is made at sampling rate 100msec, which tends to influence the accuracy in the condition of measuring time less than 10sec.

Display mode
L05, L10, L50, L90, L95

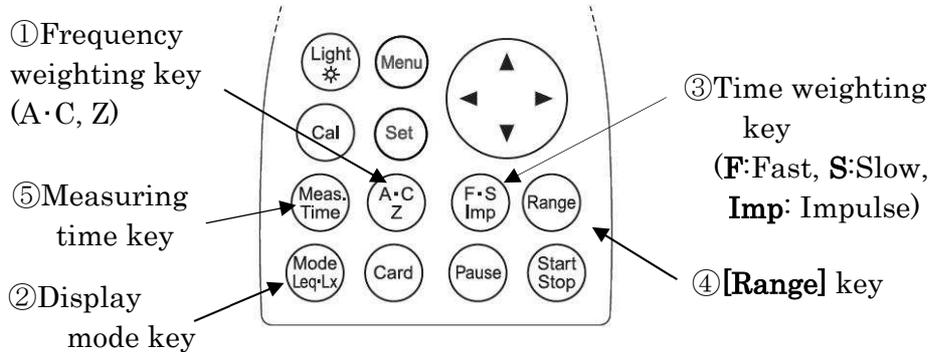
Rec: Blinks during recording
Stp: Halting state

Time weighting : Fast, Slow
Frequency weighting : A, C or Z

Z-weighted peak sound pressure level (L_{peak}) measurement

The peak sound pressure level is peak sound pressure level of the sound wave before smoothed with the time weighting characteristics.

L_{peak} is wavy peak level of Z characteristic.



< Parameter setting >

Measurement is made according to the following procedure.

- ① Frequency weighting key : Z
- ② Display mode key : Peak
- ③ Time weighting key : F, S or Imp
- ④ Range key : Select a range where the bar graph indicates approximately 2/3 of the full scale.

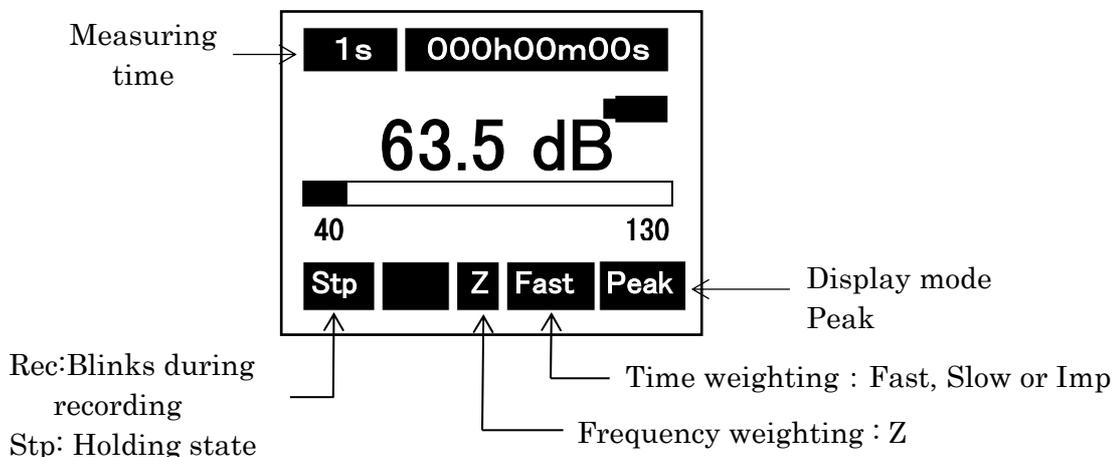
[Method of selecting [Range] key]

Press [Range] key, and choose by cursor keys ▲▼, and press [Range] key again to register.

- ⑤ Measuring time key : 1s, 3s, 5s, 10s, 1m, 5m, 10m, 15m, 30m, 1h, 8h, 24h and * * *(input to the [Start/Stop] key)

The measurement starts with [Start/Stop] key.

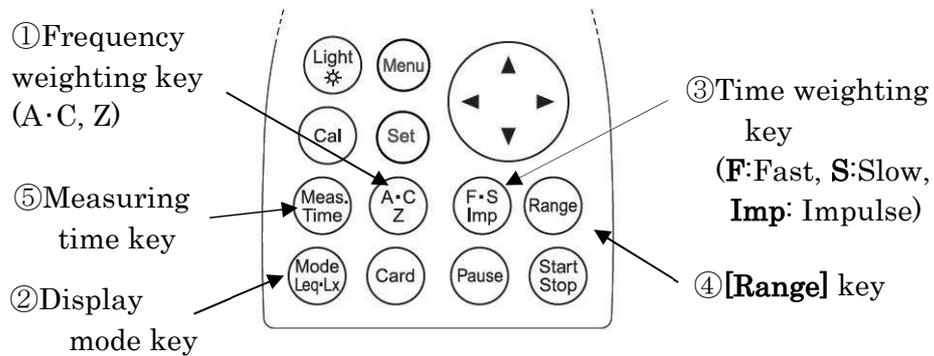
< Display >



C-weighted peak sound pressure level (L_{Cpeak}) measurement

The peak sound level is peak sound pressure level before smoothed with the time weighting characteristics.

L_{Cpeak} is wavy peak level of C characteristic.



< Parameter setting >

Measurement is made according to the following procedure

- ① Frequency weighting key : C
- ② Display mode key : Peak
- ③ Time weighting key : Any of F, S or Imp (doesn't influence the measurement.)
- ④ Range key : Select a range where the bar graph indicates approximately 2/3 of the full scale.

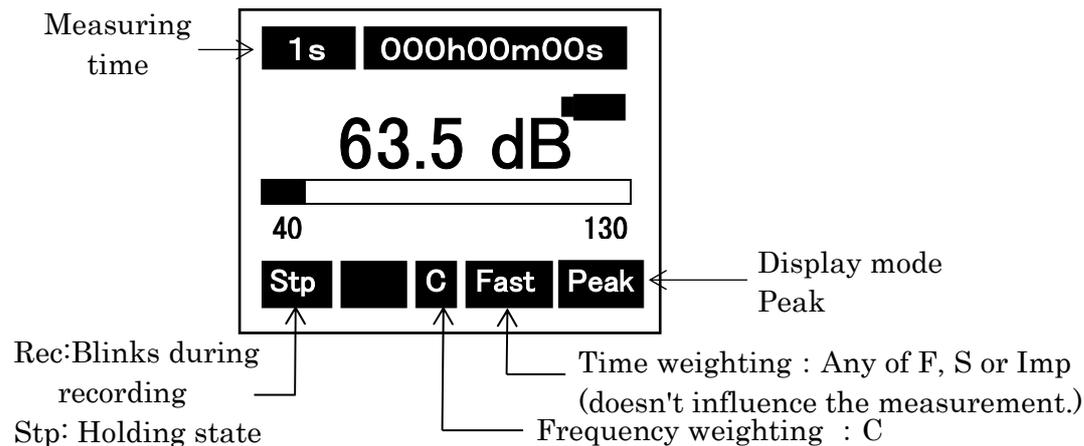
[Method of selecting [Range] key]

Press [Range] key, and choose by cursor keys ▲▼, and press [Range] key again to register.

- ⑤ Measuring time key : 1s, 3s, 5s, 10s, 1m, 5m, 10m, 15m, 30m, 1h, 8h, 24h and * * * (input to the [Start/Stop] key)

The measurement starts with [Start/Stop] key.

< Display >



- Measurement starts with [Start/Stop] key pushed, and ends up automatically at the Measuring time.
- Digital display indicates the halfway result at the current point of time. (Display "Rec" blinks while the measurement)
- By pushing [Start/Stop] key in course of the measurement, calculation is done using the data so far.
- When * * * is selected, the final data is calculated and displayed only when [Start/Stop] key is pushed or 199 hours have gone through.

Power average value of the maximum sound pressure level in a given interval (L_{Atm5}) measurement

Power average value of the maximum sound pressure level in a given interval (L_{Atm5}) is power average of the maximum value of A-weighted sound pressure level in successive 5-sec intervals. It can be measured only when A characteristics is selected in the standard screen.

< Parameter setting >

Mode: Normal in < System>1/3 is changed to Mode: L_{Atm5} with the $\blacktriangle\blacktriangledown$ key in Menu screen. The screen for power average of the maximum value appears when the change is fixed and resisted with Set key.

【Method of selecting [Range] key】

Press [Range] key, and choose by cursor keys $\blacktriangle\blacktriangledown$, and press [Range] key again to register.

Measurement is made according to the following procedure

- ① Frequency weighting key : A
- ② Display mode key : L_A or $tm5$
- ③ Time weighting key : F or S
- ④ Range key : Select a range where the bar graph indicates approximately 2/3 of the full scale.
- ⑤ Measuring time key : 1s, 3s, 5s, 10s, 1m, 5m, 10m, 15m, 30m, 1h, 8h, 24h and *** (input to the [Start/Stop] key)

The measurement starts with [Start/Stop] key.

< Display >

Measurement time 10s (second) display
00h00m00s
00h00m01s
00h00m02s
.
00h00m09s ← End in 10seconds
00h00m00s ← The following measurement

* When Menu Intr:Single is measured, it becomes Repeat continuous work as the measurement time display.

Bar: Displays the current instantaneous level.
 L_A or $tm5$

Time weighting : F, S

Press [Start/Stop] key

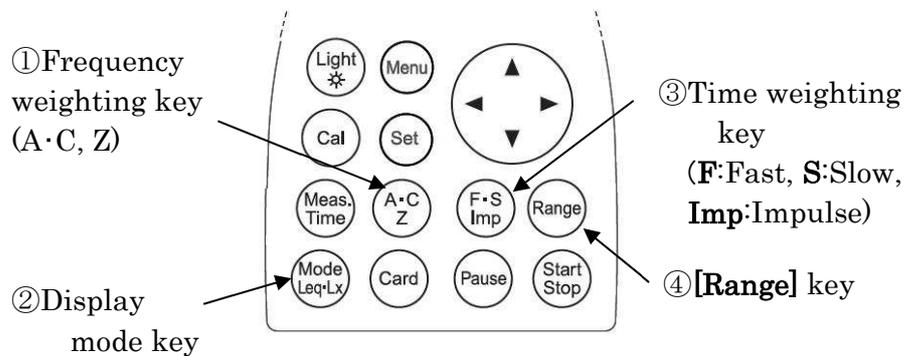
- ← Count-up timer for the measurement
- ← Starts with display — . — when the measurement mode is $tm5$.
Measurement value is displayed every 5 second.
- ← The bar displays the instantaneous level in every 0.1 second.
- ← L_A and $tm5$ can be changed.
Current level is displayed with L_A selected value.

The Rec blinks with [Start/Stop] key input

Impulse sound pressure level(L_{AI}) measurement

Impulse sound pressure level (L_{AI}) is A-weighted sound pressure level with time weighting characteristics, 'Impulse'.

It can be used only when A characteristics is selected in the default screen.



< Parameter setting >

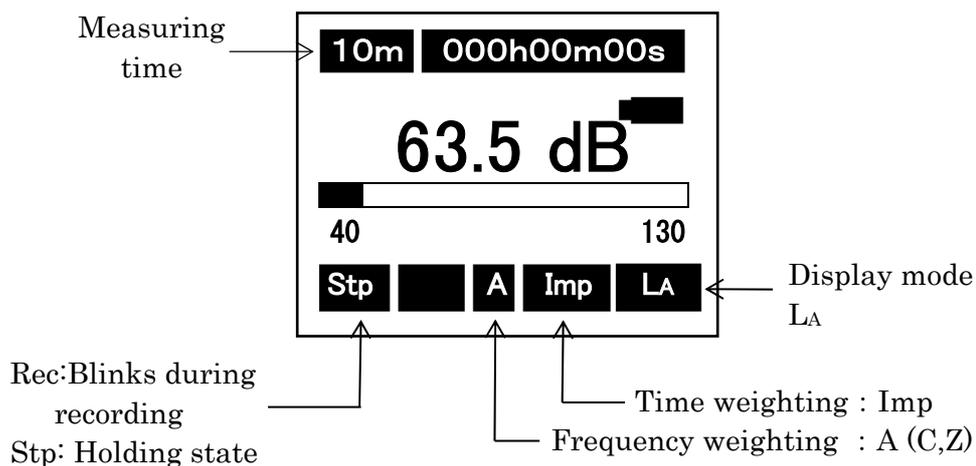
Measurement is made according to the following procedure.

- ① Frequency weighting key : A (C or Z)
- ② Display mode key : L_A (L_C or L_p)
- ③ Time weighting key : Imp
- ④ Range key : Select a range where the bar graph indicates approximately 2/3 of the full scale.

【Method of selecting [Range] key】

Press [Range] key, and choose by cursor keys▲▼, and press [Range] key again to register.

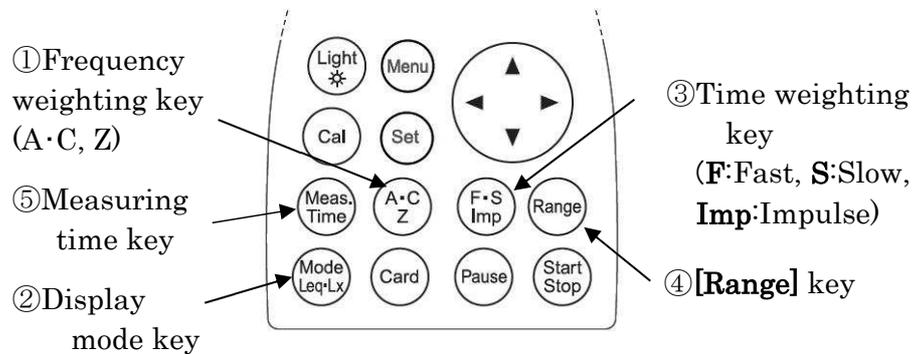
< Display >



Impulse equivalent continuous A-weighted sound pressure level ($L_{A\text{Leq}}$) measurement

Impulse equivalent continuous A-weighted sound pressure level ($L_{A\text{Leq}}$) is equivalent continuous sound pressure level with time weighting characteristics, 'Impulse'.

It can be used only when A characteristics is selected in the default screen.



< Parameter setting >

Measurement is made according to the following procedure

- ① Frequency weighting key : A (C or Z)
- ② Display mode key : Leq
- ③ Time weighting key : Imp
- ④ Range key : Select a range where the bar graph indicates approximately 2/3 of the full scale.

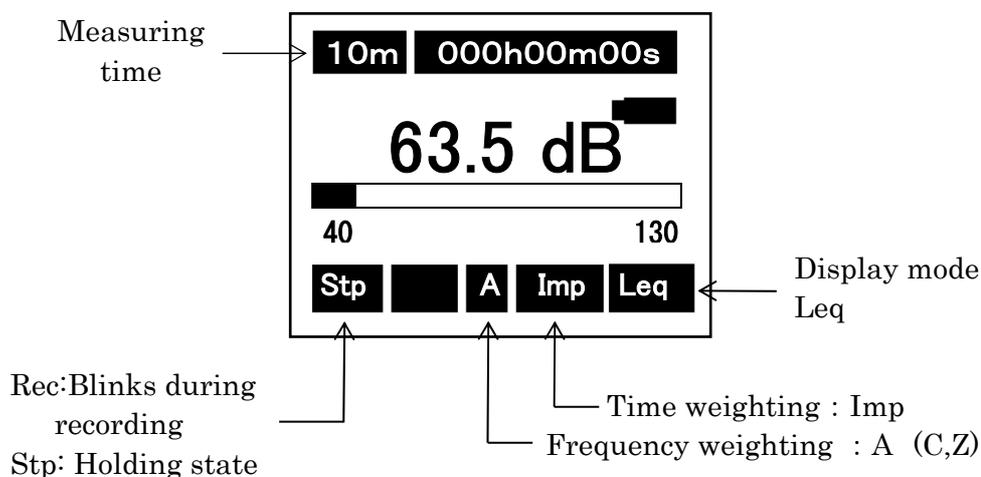
[Method of selecting [Range] key]

Press [Range] key, and choose by cursor keys▲▼, and press [Range] key again to register.

- ⑤ Measuring time key : 1s, 3s, 5s, 10s, 1m, 5m, 10m, 15m, 30m, 1h, 8h, 24h and *** (input to the [Start/Stop] key)

The measurement starts with [Start/Stop] key.

< Display >



Memory function

Record of memory

【Normal】 mode

<Memory>	2/3
Mode	: Normal
Interval	: Single

Mode : Normal : Normal measurement

Interval : Single : Measuring interval setting

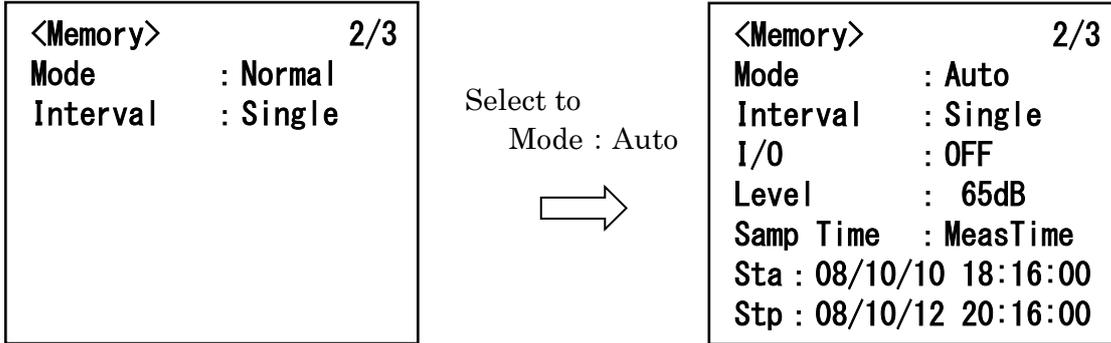
Single : The measurement starts with **[Start/Stop]** key and is terminated at Meas.Time selected .

Repeat : The measurement starts with **[Start/Stop]** key and is repeated in every Meas.Time selected until [Stop] key is pressed.

【Auto】 mode

< Operation >

By changing Mode: Normal in < Memory>2/3 of [Menu] screen to Mode: Auto with the ▲▼key, and fixing it with [Set] key, the following screen appears:



- Mode : Auto : Automatic measurement, where the following items are available.
- Interval : Single : Measuring interval setting
 - Single : The measurement starts with [Start/Stop] key and is terminated at Meas.Time selected.
 - Repeat : The measurement starts with [Start/Stop] key and is repeated in every Meas.Time selected until [Start/Stop] key is pressed.
- I/O : External output setting
 - ON : Outputs data for one second when the data memory mode is active.
 - OFF : Default (Data output is disabled)
- Level : Threshold level is registered.
- Samp Time : Sampled at interval equal to Meas.time.
 - 100ms : sampled at interval 100ms (0.1s).
 - 200ms : sampled at interval 200ms (0.2s).
 - 1s : sampled at interval 1s
 - Meas.Time : is time set with [Meas.Time] key (1s~····).

Fixed to Meas.Time, when when RSR card is installed

※Select 10s or more in L_{Atm5} measurement.

- Sta : Registers the starting time for recording (YY/MM/DD HH/MM/SS)
- Stp : Registers the stop time for recording (YY/MM/DD HH/MM/SS)

< Record contents of Memory Card(SD Card) >

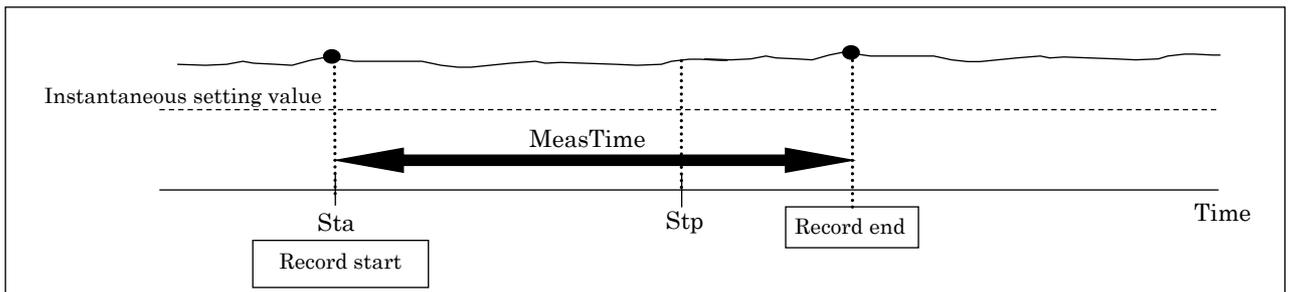
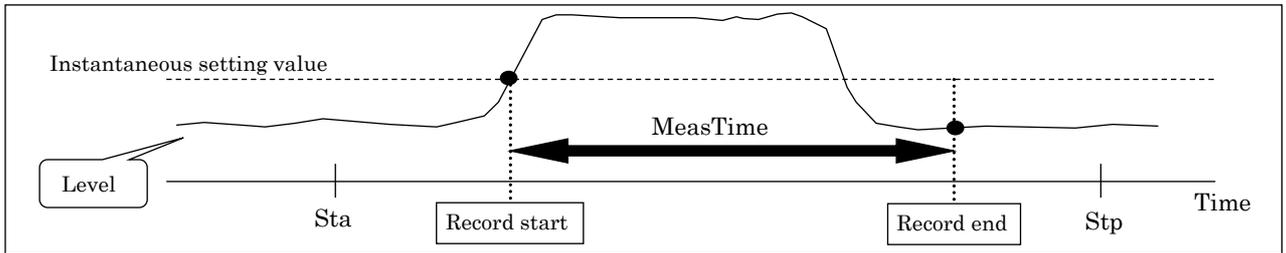
Set value of Samp Time	Style	A	C	Z	
100ms 200ms 1s	Sound pressure level	—	L _C	L _p	
	A-weighted sound level	L _A	—	—	
Meas.Time	Time-average sound level	—	L _{Ceq}	L _{peq}	
	A-weighted time-average sound level	L _{Aeq}	—	—	
	Sound exposure level	L _{AE}	L _{CE}	L _{PE}	
	Maximum sound pressure level	L _{Amax}	L _{Cmax}	L _{Pmax}	
	Minimum sound pressure level	L _{Amin}	L _{Cmin}	L _{Pmin}	
	Percentile sound pressure level (L _{AN})	Percentile (5%) sound pressure level	L _{A05}	L _{C05}	L _{P05}
		Percentile (10%) sound pressure level	L _{A10}	L _{C10}	L _{P10}
		Percentile (50%) sound pressure level	L _{A50}	L _{C50}	L _{P50}
Percentile (90%) sound pressure level		L _{A90}	L _{C90}	L _{P90}	
Percentile (95%) sound pressure level		L _{A95}	L _{C95}	L _{P95}	
Peak sound pressure level	—	L _{Cpeak}	L _{peak}		

«Interval : Single at time of setting»

●Samp Time : Meas.Time at time of setting

After progress of registered record start time (Sta), when instantaneous value is beyond a set point, for once of “Meas.Time”.

The record end doesn't relate at setting level and record stop time (Stp) of the registered instantaneous value.

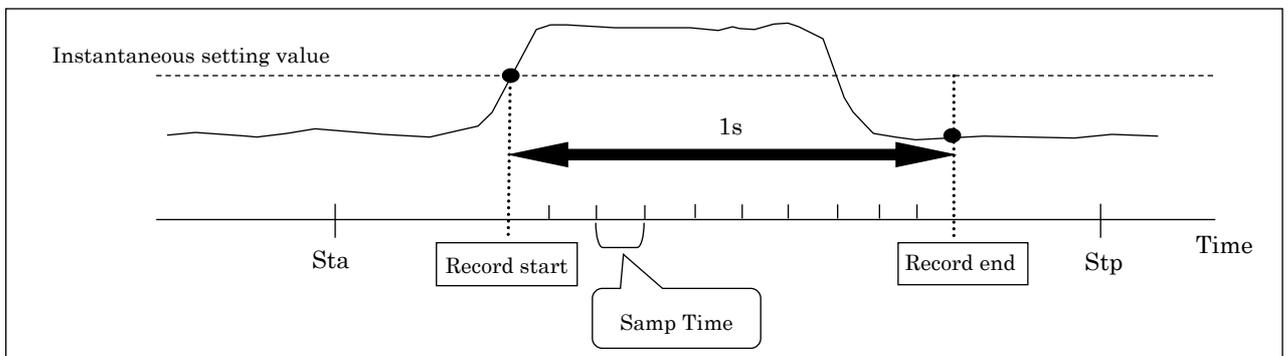


●Samp Time :(100ms / 200ms / 1s) at time of setting

After progress of registered record start time (Sta), if instantaneous value is beyond a setting level, record it during one second by setting time of Samp Time (100ms / 200ms / 1s).

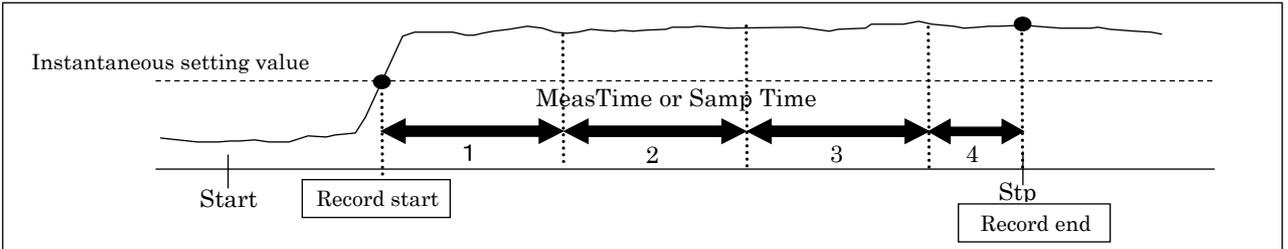
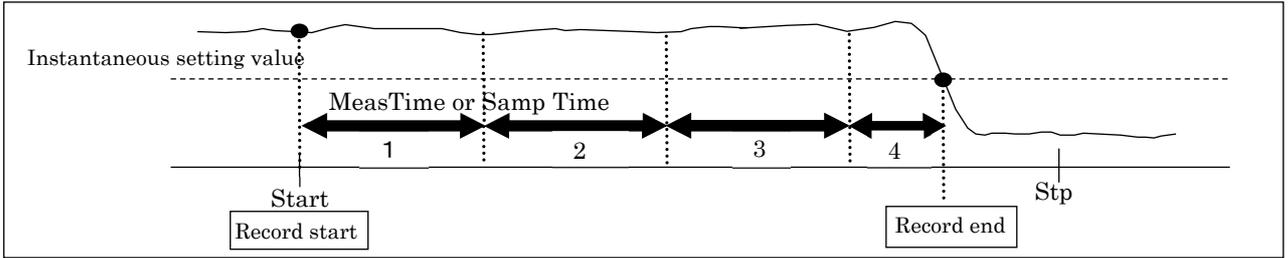
When there is no memory card(SD card) : One data at the measurement time for the sampling duration of the setting.

When there is a memory card (SD card) : The numbers of sampling time is recoded at during of 1s.

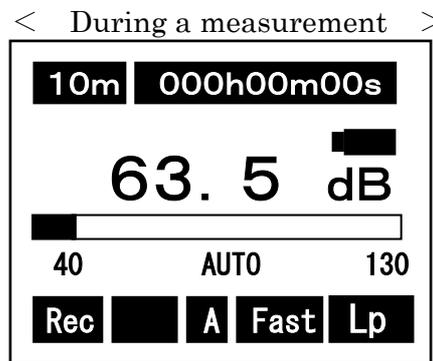
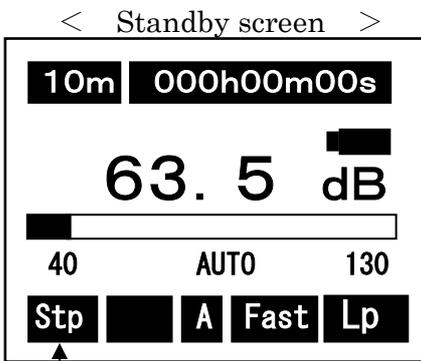


«Interval : Repeat At time of setting»

After progress of registered record start time (Sta), if instantaneous value is beyond a setting level, record it during one second by setting time.
 It records Meas.Time or Samp Time intervals repeatedly.
 Level of instantaneous value is less than a setting level or records it until record stop time.



【※CAUTION】
 The record doesn't stop until the [Start/Stop] key is pushed by "Interval:Single", "Samp Time:Meas.Time", and "Meas.Time:****".

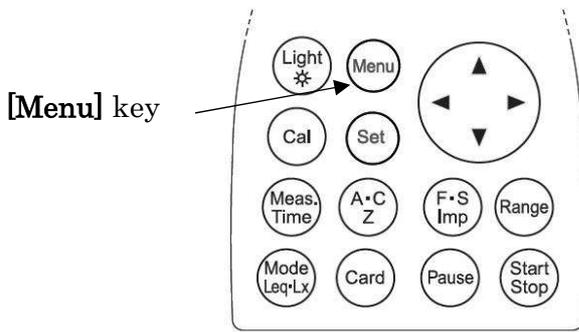


↑
Default screen

The Stp blinks when [Start/Stop] Key is pressed to confirm the stand-by state.

Data recall from the memory

< Operation >

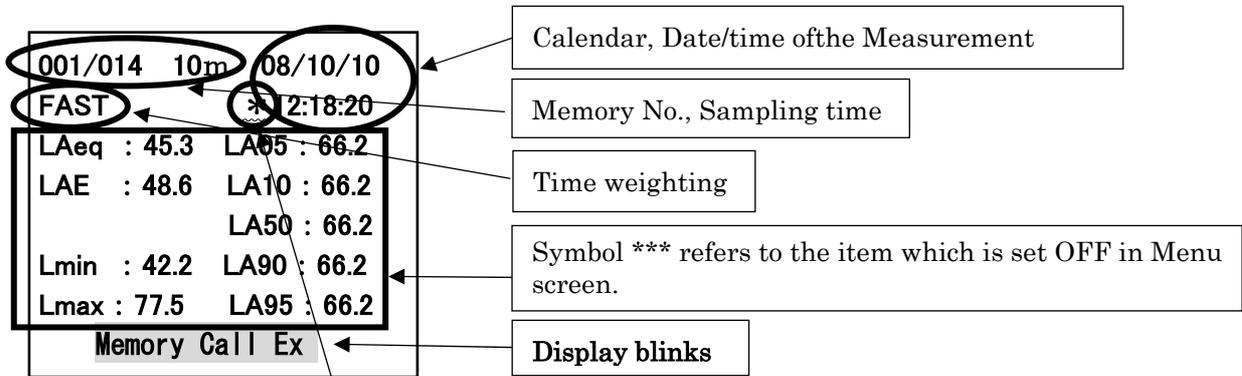


<System>	1/3
Mode	: Mem call
Data delete	: off
LCD cont	: * * *
Date y/m/d	: 01/01/01
Time	: 00:00:00
Printer(PC)set	: 9600
USB out	: OFF

The [Mode: Normal] in <system>1/3 of [Menu] screen is changed to [Mode: Mem call] with ▲▼ key, which then leads to the memory display screen by pressing [Set] key. .

< Indication screen >

【external Memory Card (SD card)】



"*" is displayed in Repeat measurement.
 The first data of Repeat data are displayed.
 Each data is displayed with ◀▶ key at Repeat.

< Data Operation >

Select the data with ▲▼ key, accelerating by keeping on pushing the cursor.
 On pressing Card key in the state of Memory Call, it changes to Memory Call Ex and the data in the Card is displayed

[Start/Stop] key pressed starts data communication displayed data.

※To return to the default screen, change Mode: Memory call in < System>1/3 of Menu screen to Mode :Normal with ▲▼ key.

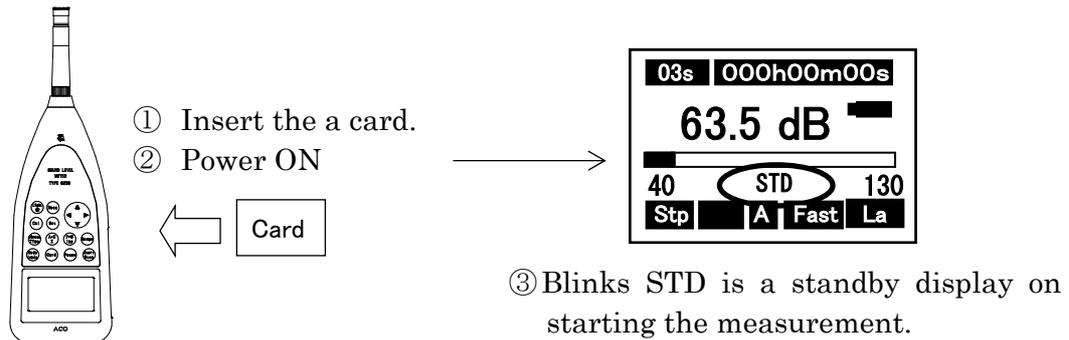
Note
When the repeat measurement is selected, data is saved each the Start/Stop key pressed.

How to use the Memory Card (SD Card -Standard-)

The measured data can be stored on the memory card (SD card) to be processed by personal computer.

The memory card (SD card) is recognized automatically, blinks STD is a standby display on starting the measurement if the power switch is turned on with the memory card (SD card) inserted.

Card Installation



Measurement

Acquired data to be stored in CSV format.

< Example >

【Single】

Measurement day	Measurement time	Time-weight	Level Range	Time setting	LAeq	LAE	Lmin	...
2009/04/13	18:17:10	F	80dB	000h00m03s	49.8	54.6	40	...

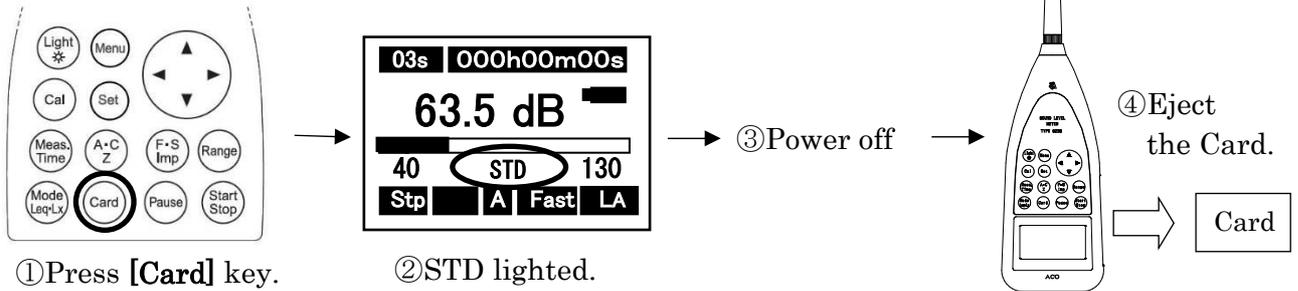
【Repeat】

Measurement day	Measurement time	Time-weight	Level Range	Time setting	LAeq	LAE	Lmin	...
2009/04/13	18:17:10	F	80dB	000h00m03s	49.8	54.6	40.0	...
2009/04/13	18:17:13	F	80dB	000h00m03s	56.6	61.3	47.4	...
2009/04/13	18:17:16	F	80dB	000h00m03s	66.0	70.7	51.9	...
.
.
.

NOTE

To make measurement with this instrument, either one of Memory Card, 1/1-1/3 Octave Real-time Analysis Card, FFT Analysis Card, or RSR Card shall be installed. Otherwise “No Card Error” will be indicated on the screen and measurement cannot be made.

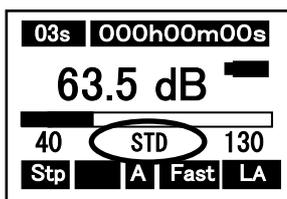
Eject the card



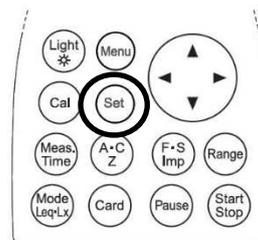
CAUTION

After "STD" lighting, please take out a card in a few minutes. There is the case that "No Card Error" is displayed. In that case, the file might be damaged.

Delete the card data



① Confirm STD blinking.



② Keep **[Set]** Key pushed for a few seconds in the situation with the card installed.

Data all Clear
STD
Yes=Start
No =Set



ALL CLEAR OK?
Yes=Start
No =Set

③ Delete all the data along the displayed flow of operation, then to return to the former window.

Example of file creation

The file is created as follows. :

● When A characteristics (Time constant F or S) is selected:

• Single

001.csv ← : Whenever **[Start/Stop]** key is pushed, this single data line is made.
(a single data since the mode is Single.)

002.csv

•

•

Meas...day/Meas...time/Time-weight/Level Range/Time setting/LAeq/Lmin...../LA95
2009/03/2 9:54:52 F 80dB 000h...03s 48.9 42.3.....43.9

• Repeat

001.csv ← : Whenever **[Start/Stop]** key is pushed, this data line is made. (two or more data/file)

002.csv

•

•

Meas...day/Meas...time/Time-weight/Level Range/Time setting/LAeq/Lmin...../LA95
2009/03/2 9:54:52 F 80dB 000h...03s 48.9 42.3..... 43.9
2009/03/2 9:54:55 F 80dB 000h...03s 48.9 42.3..... 43.9
2009/03/2 9:54:58 F 80dB 000h...03s 48.9 42.3..... 43.9
•
•
< as many data lines as indicated by Repeat >
2009/03/2 9:55:52 F 80dB 000h...03s 48.9 42.3.....43.9

Eventually, in the card, Single and Repeat data files are created at random.

< Example >

001.csv ← : File made in single mode (1 data/ 1file)

002.csv ← : File made in single mode (1 data/ 1file)

003.csv ← : File made in repeat mode (two or more data/file)

004.csv ← : File made in single mode (1 data/ 1file)

005.csv ← : File made in repeat mode (two or more data/file)

•

•

↑ At most 999 CSV files can be made, where **[Start/Stop]** key is pressed 999 times.

● When A characteristics (Time constant Imp) is selected:

Only LAIeq is made.

Meas...day /Meas...time/Time weight/Level Range/Time sett/LAIeq
2009/03/2 9:54:52 I 80dB 000h...10s 52.3
2009/03/2 9:54:52 I 80dB 000h...10s 52.3
2009/03/2 9:54:52 I 80dB 000h...10s 52.3
•
•
< as many data lines as indicated by Repeat >
2009/03/2 9:54:52 I 80dB 000h...10s 52.3

Saving Data to PC

This equipment is provided with data saving function using the specified data management software.

Data management with USB port

<pre> <System> 1/3 Mode : PC out Data delete : off LCD cont : * * * Date y/m/d : 00/00/00 Time h/m/s : 00:00:00 Printer (PC) set : 9600 USB out : OFF </pre>	← Set Mode to PC out display
---	------------------------------

<Operation>

Select PC out in [Menu] key, < System > 1/3 screen and press [Set] key.

<Display>

<p style="text-align: center;">A-weighting</p> <table border="1" style="border-collapse: collapse; width: 100%;"> <tr> <td style="padding: 2px;">001/014</td> <td style="padding: 2px;">10m</td> <td style="padding: 2px;">08/10/10</td> </tr> <tr> <td colspan="2" style="padding: 2px;">FAST</td> <td style="padding: 2px;">12:18:20</td> </tr> <tr> <td style="padding: 2px;">LAeq : 45.3</td> <td style="padding: 2px;">LA05 : ***.*</td> <td></td> </tr> <tr> <td style="padding: 2px;">LAE : 48.6</td> <td style="padding: 2px;">LA10 : 66.2</td> <td></td> </tr> <tr> <td></td> <td style="padding: 2px;">LA50 : ***.*</td> <td></td> </tr> <tr> <td style="padding: 2px;">Lmin : 42.2</td> <td style="padding: 2px;">LA90 : ***.*</td> <td></td> </tr> <tr> <td style="padding: 2px;">Lmax : 70.5</td> <td style="padding: 2px;">LA95 : ***.*</td> <td></td> </tr> <tr> <td colspan="3" style="padding: 2px; text-align: center;">■ PC out Ex</td> </tr> </table>	001/014	10m	08/10/10	FAST		12:18:20	LAeq : 45.3	LA05 : ***.*		LAE : 48.6	LA10 : 66.2			LA50 : ***.*		Lmin : 42.2	LA90 : ***.*		Lmax : 70.5	LA95 : ***.*		■ PC out Ex			<p style="text-align: center;">C-weighting</p> <table border="1" style="border-collapse: collapse; width: 100%;"> <tr> <td style="padding: 2px;">001/014</td> <td style="padding: 2px;">10m</td> <td style="padding: 2px;">08/10/10</td> </tr> <tr> <td colspan="2" style="padding: 2px;">FAST</td> <td style="padding: 2px;">12:18:20</td> </tr> <tr> <td style="padding: 2px;">Lceq : 63.3</td> <td style="padding: 2px;">LC05 : 66.2</td> <td></td> </tr> <tr> <td style="padding: 2px;">Lce : 66.6</td> <td style="padding: 2px;">LC10 : 66.2</td> <td></td> </tr> <tr> <td style="padding: 2px;">Lcpeak : 71.3</td> <td style="padding: 2px;">LC50 : 66.2</td> <td></td> </tr> <tr> <td style="padding: 2px;">Lmin : 42.2</td> <td style="padding: 2px;">LC90 : 66.2</td> <td></td> </tr> <tr> <td style="padding: 2px;">Lmax : 70.5</td> <td style="padding: 2px;">LC95 : 66.2</td> <td></td> </tr> <tr> <td colspan="3" style="padding: 2px; text-align: center;">■ PC out Ex</td> </tr> </table>	001/014	10m	08/10/10	FAST		12:18:20	Lceq : 63.3	LC05 : 66.2		Lce : 66.6	LC10 : 66.2		Lcpeak : 71.3	LC50 : 66.2		Lmin : 42.2	LC90 : 66.2		Lmax : 70.5	LC95 : 66.2		■ PC out Ex			<p style="text-align: center;">Z-weighting</p> <table border="1" style="border-collapse: collapse; width: 100%;"> <tr> <td style="padding: 2px;">001/014</td> <td style="padding: 2px;">10m</td> <td style="padding: 2px;">08/10/10</td> </tr> <tr> <td colspan="2" style="padding: 2px;">FAST</td> <td style="padding: 2px;">12:18:20</td> </tr> <tr> <td style="padding: 2px;">Lpeq : 63.3</td> <td style="padding: 2px;">LP05 : 66.2</td> <td></td> </tr> <tr> <td style="padding: 2px;">Lpe : 66.6</td> <td style="padding: 2px;">LP10 : 66.2</td> <td></td> </tr> <tr> <td style="padding: 2px;">Lpeak : 72.9</td> <td style="padding: 2px;">LP50 : 66.2</td> <td></td> </tr> <tr> <td style="padding: 2px;">Lmin : 42.2</td> <td style="padding: 2px;">LP90 : 66.2</td> <td></td> </tr> <tr> <td style="padding: 2px;">Lmax : 70.5</td> <td style="padding: 2px;">LP95 : 66.2</td> <td></td> </tr> <tr> <td colspan="3" style="padding: 2px; text-align: center;">■ PC out Ex</td> </tr> </table>	001/014	10m	08/10/10	FAST		12:18:20	Lpeq : 63.3	LP05 : 66.2		Lpe : 66.6	LP10 : 66.2		Lpeak : 72.9	LP50 : 66.2		Lmin : 42.2	LP90 : 66.2		Lmax : 70.5	LP95 : 66.2		■ PC out Ex		
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Display blinks

<Manner of operation of data>

- Select the data with ▲▼ key, accelerating by keeping on pushing the cursor On pressing [Card] key in the state of PC out, it changes to PC out Ex and the data in the Card is displayed.
- Date communication starts with the top of the data by pushing [Start/Stop] key.
- PC out can be paused with [Pause] key and restarted by pressing it again from the current data line.
- The PC out is canceled by pressing [Start/Stop] key and stands by at the top data display screen.

Output terminal

AC、DC Output

AC Output

The AC Output is the frequency-weighted signal.

Output: 1V_{rms} (FS), Output impedance: 600 Ω, Load impedance > 10k Ω

DC Output

The DC Output is the frequency-weighted, root-mean-square-detected, and then logarithmic converted signal.

Output: 2.5V (FS), 0.25V/10dB, Output impedance: 50 Ω, Load impedance > 10k Ω

Relation between the display value of each range, and output voltage

DISPLAY VALUE (dB)						OUTPUT VOLTAGE (V)	
RANGE						AC OUT	DC OUT
40~130	30~120	20~110	20~100	20~90	20~80		
130	120	110	100	90	80	1.00000	2.50000
120	110	100	90	80	70	0.31623	2.25000
110	100	90	80	70	60	0.10000	2.00000
100	90	80	70	60	50	0.03162	1.75000
90	80	70	60	50	40	0.01000	1.50000
80	70	60	50	40	30	0.00316	1.25000
70	60	50	40	30	20	0.00100	1.00000
60	50	40	30	20	—	0.00032	0.75000
50	40	30	20	—	—	0.00010	0.50000
40	30	20	—	—	—	0.00003	0.25000

Specifications

- | | |
|----------------------------|---|
| 1) Type | : TYPE 6236 |
| 2) Description | : Sound Level Meter |
| 3) Applicable Standards | : JIS C1516:2014 Class 1
JIS C1509-1 : 2017 Class 2, IEC 61672-1 : 2013 Class II |
| 4) Frequency Range | : 20Hz~8kHz |
| 5) Microphone(Sensitivity) | : TYPE 7052NR(-33dB, Stand-alone-31dB) |
| 6) Level Range Control | : 10dB 6step
20~80dB, 20~90dB, 20~100dB, 20~110dB, 30~120dB
40~130dB |
| 7) Measurement Level | A : 28~130dB
C : 37~130dB
Z : 39~130dB
C _{peak} : 55~141dB
Z _{peak} : 60~141dB |
| 8) Self-noise level | A : ≦ 22dB
C : ≦ 30dB
Z : ≦ 32dB |
| 9) Linearity Range | : 100dB |
| 10) Time weighting | : Fast, Slow, Impulse |
| 11) Frequency weighting | : A, C, Z |
| 12) Measurement items | : Sound pressure level (L _A /L _C /L _p)
Time level display of sound pressure level (L _A /L _C /L _p)
Equivalent continuous sound pressure level (Leq)
Single event sound exposure level (L _E)
Maximum Sound pressure Level (L _{max})
Minimum Sound pressure Level (L _{min})
Percentile level(L _N)
Z-weighted peak sound pressure level (L _{peak})
C-weighted peak sound pressure level (L _{Cpeak})
Power average value of the maximum sound pressure level in a given interval (L _{Atm5})
Impulse sound pressure level(L _{AI})
Impulse equivalent continuous A-weighted sound pressure level (L _{AIeq}) |
| 13) Measurement time | : 1s, 3s, 5s, 10s, 1min, 5min, 10min, 15min, 30min, 1h, 8h, 12h, 24h, Manual(Max. 199h59m59s) |
| 14) Sampling Time | : 20.8μs (L _{eq} , L _{max} , L _{min}), 100ms(L _N) |
| 15) Data clear function | : Pause, and a function that deletes preceding 3s or 5s data. |
| 16) Timer function | : A marker can be set to start and stop the measurement at any specified moments. |
| 17) Display | : Liquid crystal and Backlight(128×64 points) |
| Display range | : 4digits |
| Display cycle | : 1s |
| Bar display | : display Period: 0.1s |
| Warning | : Over : upper limited scale
Under : lower limited scale |
| Battery display | : 5steps display |
| Date | : year/month/day/ hour : minute : second
(Equivalent to +/- 1 minute monthly difference) |
| 18) Calibration signal | : Acoustic calibration by TYPE2127(1kHz,94dB)
Electric calibration with internal oscillator(1kHz sine wave) |

• **FFT Analysis Card 【Option】**

Frequency span : 2kHz, 5kHz, 10kHz, 20kHz

Time window : Rectangular, Hanning

Analysis line : 400

Zoom : $\times 1$, $\times 2$, $\times 4$

Processing : Instantaneous sound pressure level, Linear average value, Max,

Level Range Control : 10dB 6step

10~80dB, 20~90dB, 30~100dB, 40~110dB, 50~120dB

60~130dB

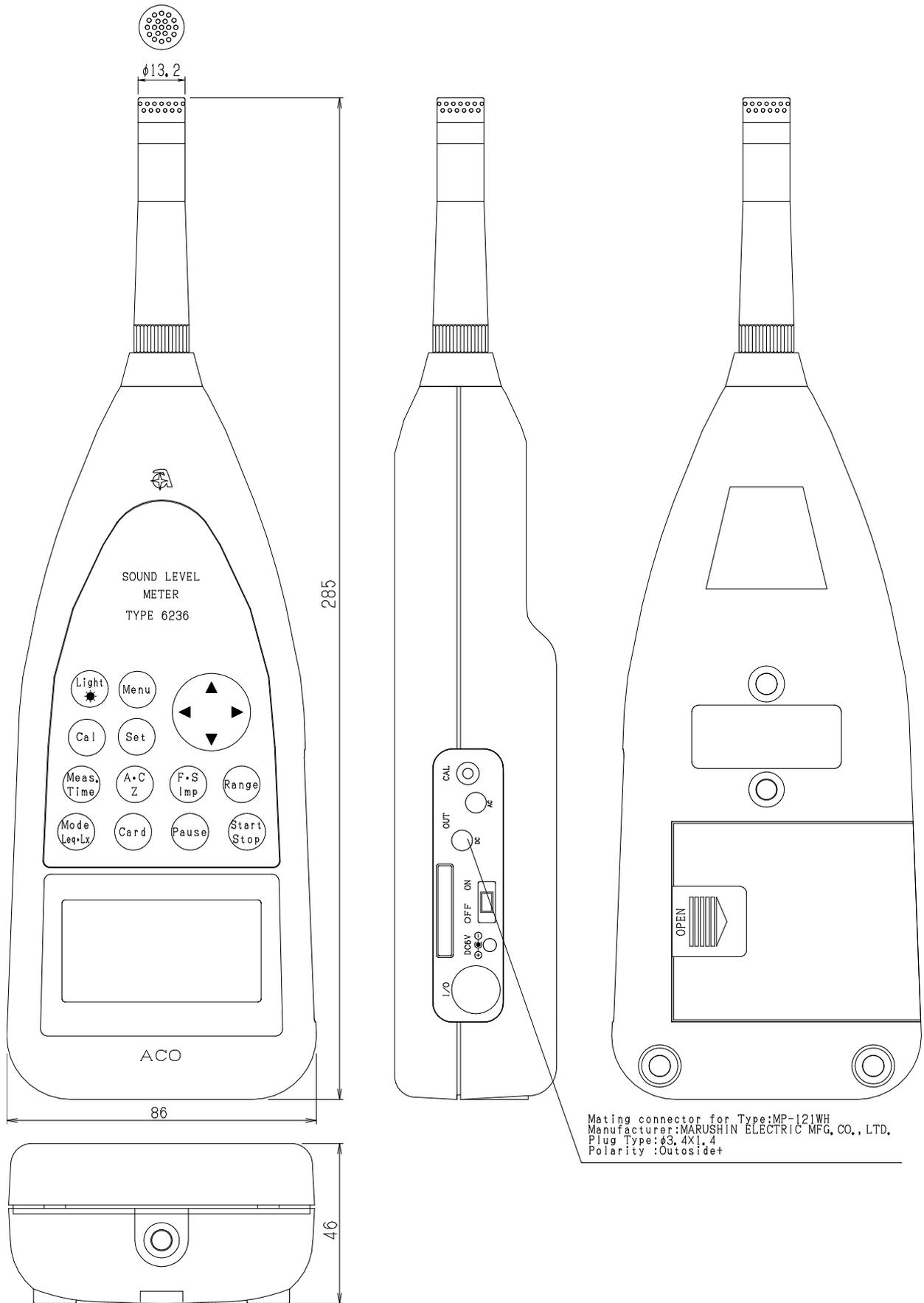
• **RSR card (Real sound recording card) 【Option】**

This card enables automatic recording with specified level and time, namely adding the function of recording real wave data.

The data is recorded in WAVE file format (48kHz 16bit Mono), easily corresponding to most common application software of acoustic analysis, as well as displaying its greatest force in all kinds of acoustic analysis.

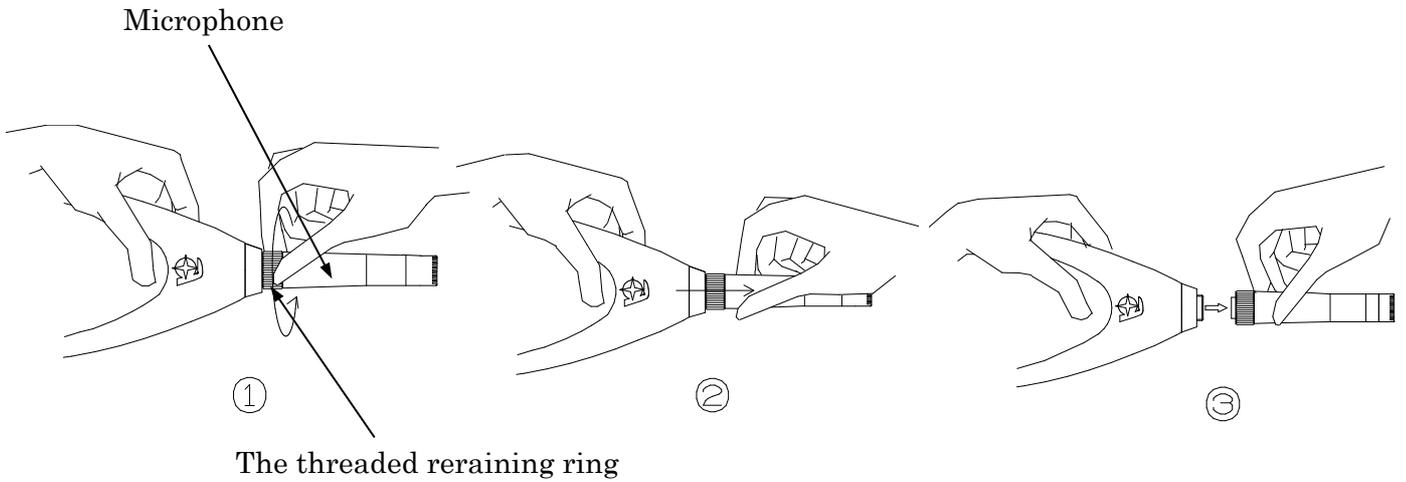
Time for continuous record : Approx.6 hours

Appearance diagram of Sound Level Meter TYPE 6236



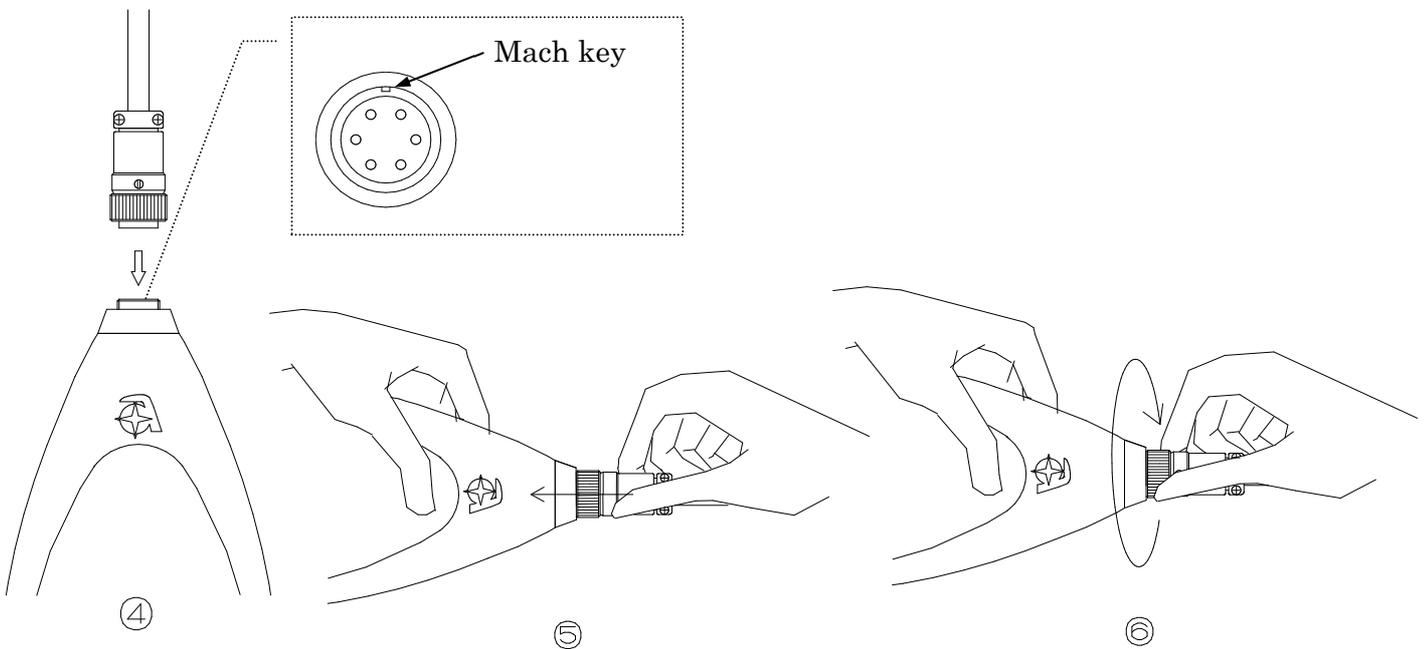
Pin Connections and How to Connect the Extension cable

1) Detach microphone from the body of the meter.



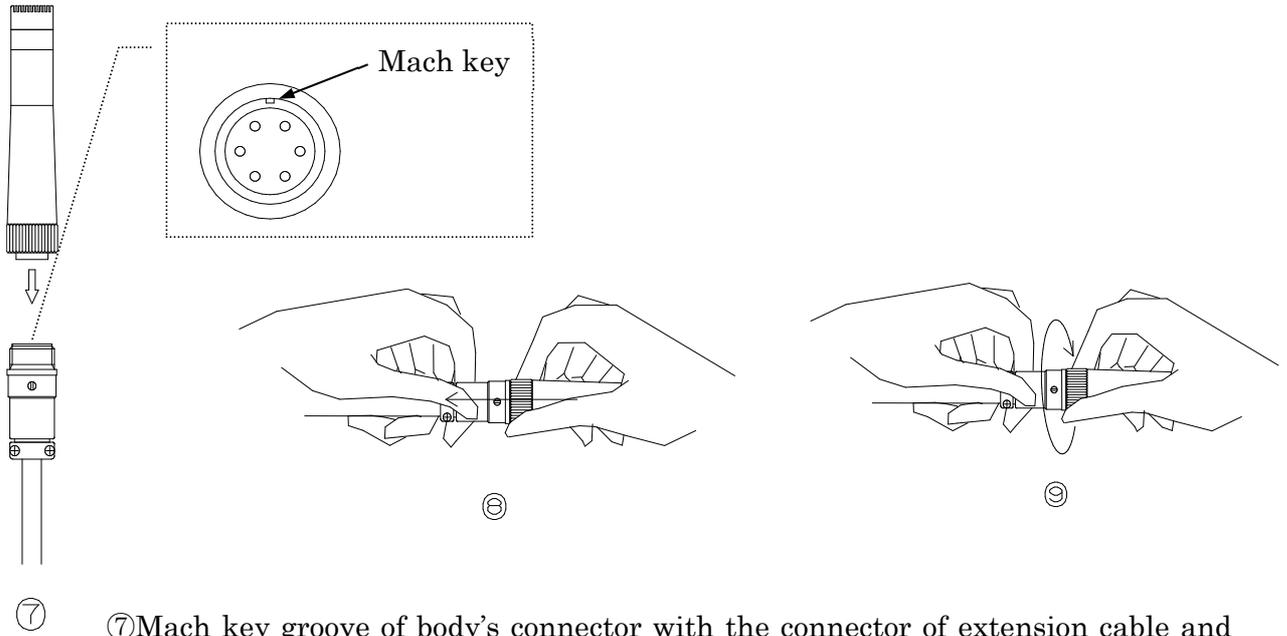
- ① Turn the threaded retaining ring a little to the left.
- ② Pull out microphone as shown.
- ③ Repeat ① turn a left and ② pull out a little 5-8 times and you can separate.

2) Then plug the male connector of extension cable into the connector of the body.



- ④ Mach key groove of body's connector with the connector of extension cable and insert.
- ⑤ Push the connector of extension cable.
- ⑥ Turn the threaded retaining ring a little as shown repeat ⑤ and ⑥ 5-8 times and you can connect.

3) Attach microphone to the female connector of extension cable.



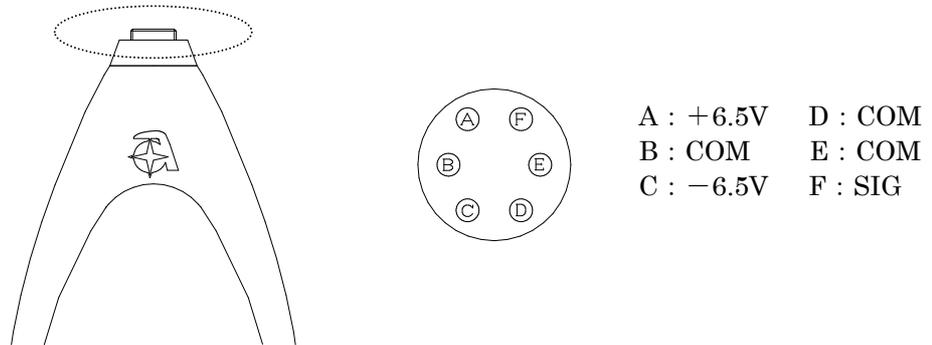
⑦ Mach key groove of body's connector with the connector of extension cable and insert.

⑧ Push the connector of extension cable.

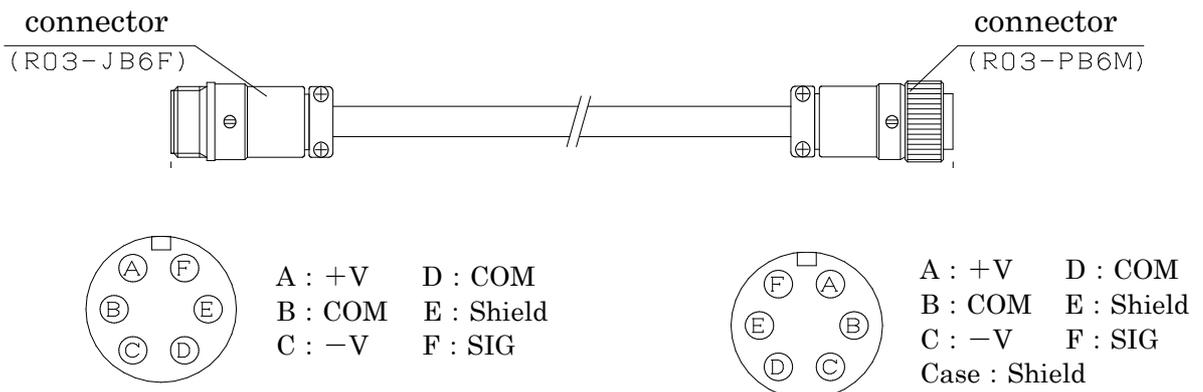
⑨ Turn the threaded retaining ring a little as shown repeat ⑧ and ⑨ 5-8 times and you can connect.

※ Note : Do not turn only the threaded retaining ring connecting.
It causes damage to the connector.

【Wiring diagram of Main body side connector】



【Wiring diagram of Extension cable】



Communication Command

Interface

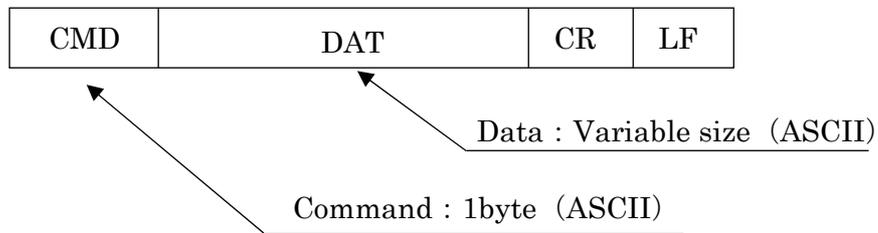
USB : (IC : FT245)

Transfer Speed : 9600~921600bps
Data size : 8bit
Stop bit : 1bit
Parity check : non

RS-232C :

Transfer Speed : 9600, 19200, 38400bps
Data size : 8bit
Stop bit : 1bit
Parity check : non

Format



Command table (CMD)

Capital letters pertain to PC command / Small letters pertain to 6236 command

Normal Command : Normal Sound Level Meter MODE

No.	Function Item	6236 ↑ PC	PC ↑ 6236	Function Outline
1	Time and date setting request	T		Calendar registration
	Time and date setting completed		t	
2	Configuration file transfer	F		Measurement condition setting
	Configuration file completed		f	
3	Set confirmation	I		Set reading
	Set forwarding		DATA	Set content collection
4	Start measurement	S		Measurement beginning command
	Start measurement		s	
5	Stop measurement	E		Measurement stop command
	Stop measurement		e	
6	Data acquired		r	Data has been secured
7	Data request	D		Data request command
	Data transfer		DATA	Acquisition data collection
8	Calibration	C		Calibration mode command
			c	Only the display
9	Back light	L		LED lighting command
			l	
10	Independent range setting	R		The return is not only in specification.
			r	
11	Filter setting	A		The return is not only in specification.
			a	
12	Lp-value acquisition	P		Data transfer
13	Latm5 Start command	M		Beginning of power value at the maximum noise level in section
			m	
14	L _{Aleq} Start command	Q		Beginning of impulse equivalent noise level
			q	
15	Wave data exhaust command	W		Wave data exhaust beginning (USB Only)
			DATA	
16	Version acquisition	V		
			DATA	

Filter command: When Filter card is installed, An additional receipt is done by a usual sound level meter command.

No.	Function Item	6236 ↑ PC	PC ↑ 6236	Function Outline
1	Filter mode	O		Filter mode setting
			o	
2	LB Exhausting special command	B		Filter ber data exhaust beginning (USB Only)
	LB exhaust		DATA	

【Option】

FFT Command: When FFT card is installed, An additional receipt is done by a usual sound level meter command.

No.	Function Item	6236 ↑ PC	PC ↑ 6236	Function Outline
1	Frequency span	G		Frequency span setting
			g	
2	Maes Time	H		Measurement time
			h	
3	Window function	J		Window function setting
			j	
4	Mode	K		Addition average or MAX
			k	
5	Filter Lp-value acquisition	N		(USB Only)
			DATA	

Detail of Command

Normal Command : Normal Sound Level Meter MODE

CMD	Function Item	Data Item	Function Outline
T	Time and data setting request	ASCII(13)	YYMMDDHHMMSS
t	Time and data setting completed		Data division note
F	Transfer configuration file	ASCII(5)	<u>A B C D E</u> A : Meas. Time select(1) 0: * * * 1: 1s 2: 3s 3: 5s 4: 10s 5: 1m 6: 5m 7: 10m 8: 15m 9: 30m A: 1h B: 8h C: 12h D: 24h B : Range setting(1) 0: 130dB 1: 120dB 2: 110dB 3: 100dB 4: 90dB 5: 80dB C : Filter setting(1) 0: A 1: C 2: Z D : Time constant(1) 0: FAST 1: Slow 2: Imp E : Interval(1) 0 : single 1: repeat
f			Data division none
I	Set confirmation command		Data division none
	Set forwarding	ASCII(5)	Conforming of configuration file
S	Start measurement		Data division none
s	Start measurement		
E	Stop measurement		Data division none
e			
r	Data acquisition		Data division none
D	Data request		Data division none
	Data transfer	ASCII(*)	
C	CAL		Data division none
	Operation		CAL (It stop again by C or E)
L	Data request		Data division none
	Operation		It turns it off by E
R	Range single specification	ASCII(1)	0: 130 1: 120.....5: 80
	Operation		Data division none
A	Filter specification	ASCII(1)	0: A 1: C 2: F
	Operation		Data division none
P	Lp-value acquisition		Data division none
	Data transfer	ASCII(5)	
M	L _{atm5} start		Data division none
m			Data acquisition after "r" command is received
Q	L _{Aleq} start		Data division none
q	Measurement start		Data acquisition after "r" command is received

V	Version request		Data division none
	Data transfer		
W	Wave out request		Data division none
	Data transfer		

Filter command: At Filter Card setting, it is usually added to a Sound level meter command

CMD	Function Item	Data Item	Function Outline
O	Filter setting	ASCII(1)	0:1/1 1:1/3
o			Data division none
B	LB exhaust command		Data division none (It stops again by E)
	Data transfer	ASCII(*)	

【Option】

FFT command: At FFT Card setting, it is usually added to a Sound level meter command

CMD	Function Item	Data Item	Function Outline
G	Frequency span	ASCII(1)	0:20kHz 1:10kHz 2:5kHz 3:2kHz
g			Data division none
H	Mease Time	ASCII(3)	010~999
h			Data division none
J	Window function	ASCII(1)	0:Hann 1:Rect
j			Data division none
K	FFT Mode	ASCII(1)	0:LIN 1:MAX
k			Data division none
N	FFT Lp-value		Data division none
n		ASCII(*)	

Preparation (To Remote Mode)

1. Main body side setting and screen
Select Remote Mode manually.

<USB Communicate>

<System>	1/3
Mode	: Remote U
Data delete	: off
LCD cont	: ****
Date y/m/d	: 00/00/00
Time h/m/s	: 00:00:00
Printer (PC) set	: 9600
USB out	: OFF

<RS-232C Communicate>

<System>	1/3
Mode	: Remote R
Data delete	: off
LCD cont	: ****
Date y/m/d	: 00/00/00
Time h/m/s	: 00:00:00
Printer (PC) set	: 9600
USB out	: OFF

【Normal Screen】

10m	000h00m05s
63.5 dB	
40	130
Stp	Z Fast Lp

Do not recording to memory card.

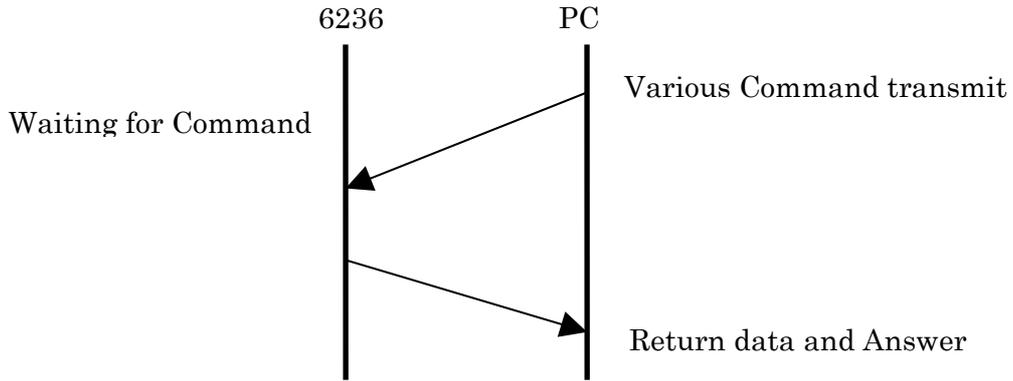
※Display changes int “STD-Remote”
Inhibiting any other key access than Menu.

Next time you power on, it starts with [Remote].

To cancel it, [Menu] key pressed and select [Normal] in [Mode].

2. Communication timing

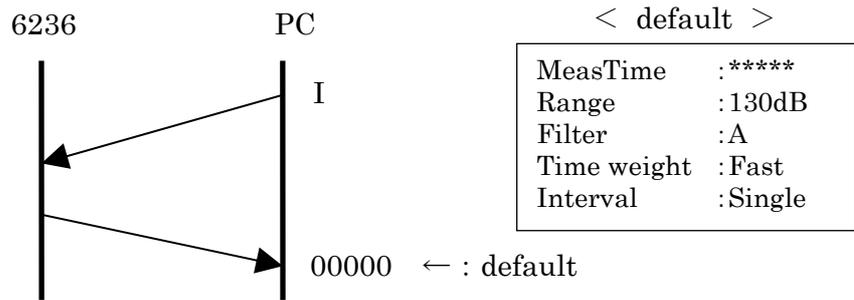
After Power ON



Communication timing of Various measurement

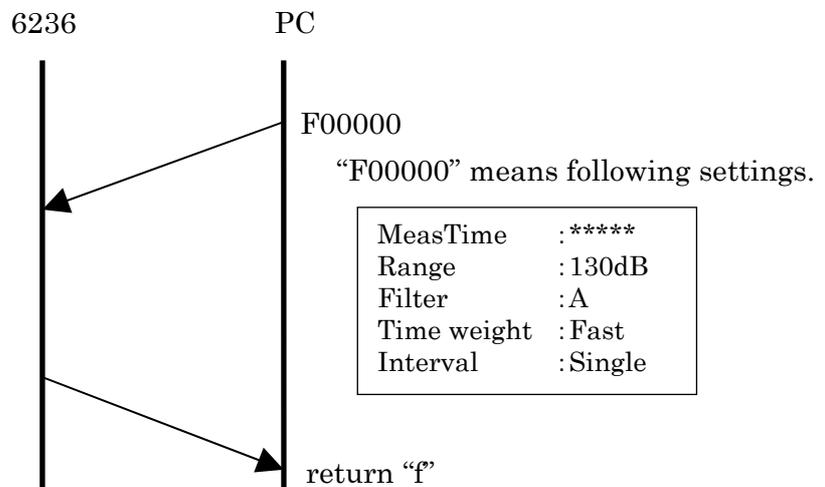
Normal measurement

1) Setting check : I (accept the current setting)

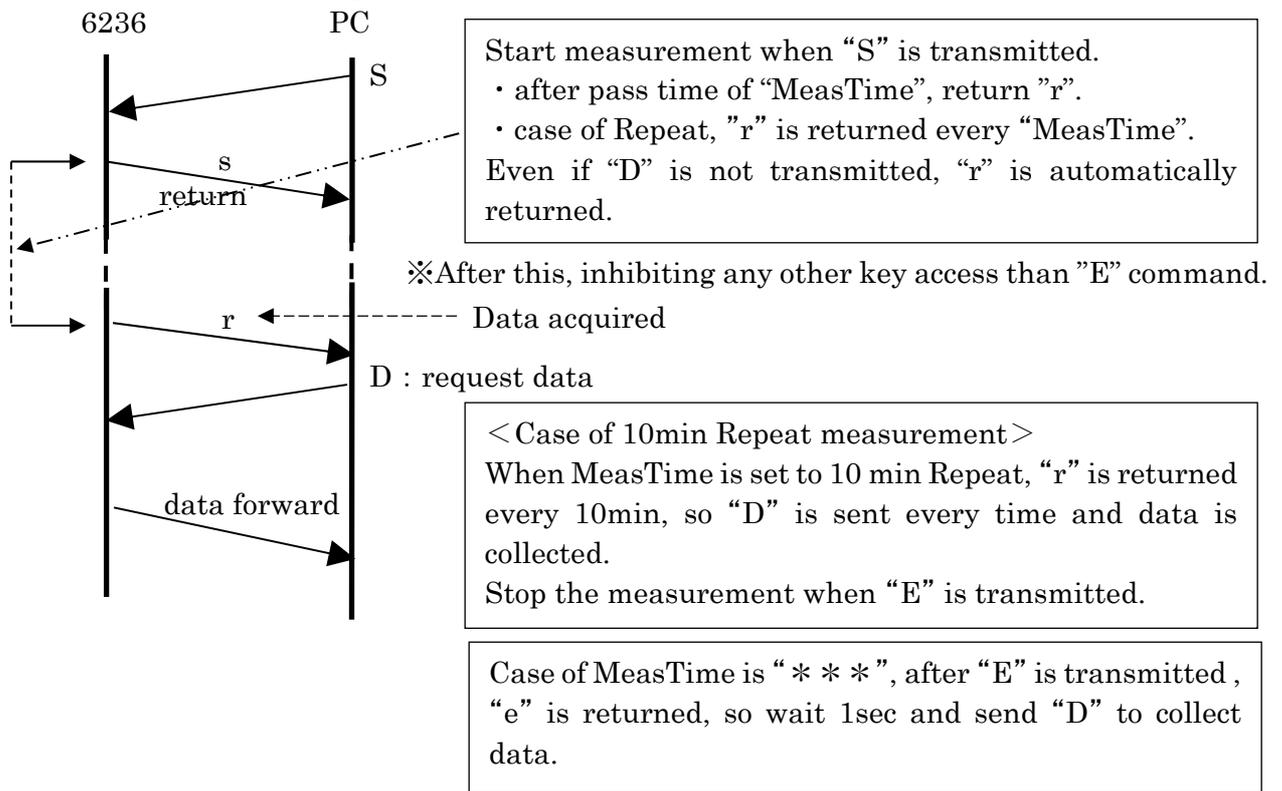


※The contents change depending on the setting command

2) Setting forward : F (Common for program card)



3) Start/Data collection/Stop :S/E



< Data Contents >

【A-weighted】

```
00/01/05 02:15:16 F 130dB+CR+LF
000h00m10s+CR+LF
LAeq 130.0 LA05:130.0+CR+LF
LAE 130.0 LA10:130.0+CR+LF
AAAAAAAAAAAAAAAA LA50:130.0+CR+LF
Lmin 130.0 LA90:130.0+CR+LF
Lmax 130.0 LA95:130.0+CR+LF
```

□	: space	(20)
+CR	: new line	(0D)
+LF	: line feed	(0A)

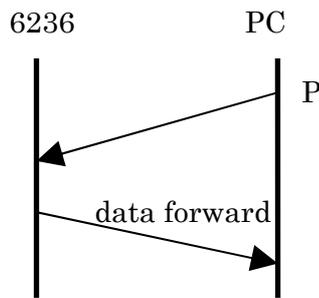
【C-weighted】

```
00/01/05 02:15:16 F 130dB+CR+LF
000h00m10s+CR+LF
Lceq 130.0 LA05:130.0+CR+LF
Lce 130.0 LA10:130.0+CR+LF
Lcpeak:130.0 LA50:130.0+CR+LF
Lmin 130.0 LA90:130.0+CR+LF
Lmax 130.0 LA95:130.0+CR+LF
```

【Z-weighted】

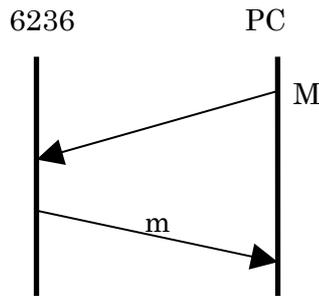
```
00/01/05 02:15:16 F 130dB+CR+LF
000h00m10s+CR+LF
Lpeq 130.0 LA05:130.0+CR+LF
Lpe 130.0 LA10:130.0+CR+LF
Lpeak:130.0 LA50:130.0+CR+LF
Lmin 130.0 LA90:130.0+CR+LF
Lmax 130.0 LA95:130.0+CR+LF
```

4) Getting instantaneous value :P



< Date contents > ex. 43.0dB
 5Byte+CR
 20 34 33 2E 30 0D (43.0+CR)

5) Measurement of L_{Atm5} :M

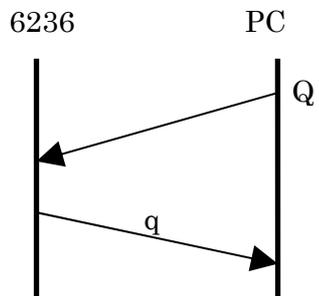


Frequency weighting characteristic is fixed to A, another it is the same as the section 3).

※ After this, inhibiting any other key access than "E" command.
 · After time of MeasTime is passed , transmits date for 5s from the start.

< Date contents >
 00/01/05□02:15:16□F□130dB+CR+LF
 000h00m10s+CR+LF
 LAtm5□:□130.0+CR+LF

6) Measurement of L_{Aleq} :Q



Fixed to frequency weighting characteristic is A and time weighting characteristic is I, another it is the same as the section 3).

※ After this, inhibiting any other key access than "E" command.

7) Output Waveform data :W ※Only 「Remote U」 is supported.

W: transmit → data forward

16-bit binary A/D value output.
 "E" command ends measurement.

< Data Contents >

The waveform of every 48kHz (sampling 20.8us) is continuously transmitted.

0000~FFFF : 0000 Negative maximum (8000/7FFF : center)
 : FFFF Positive maximum

As a result of A/D, "FFFF" has a range of +8 dB, so the maximum in the 100 dB range is 108dB.

8)Other (Common for program card)

①Calibration

“C” : transmit → reply : ”c”

Calibration ※Stop is command “E”

②Back Light

“L” : transmit → reply : ”l”

LED backlight lighting ※Turn off is command “E”

③Range setting

“R0” : transmit → no reply

Range setting
 R0 : 130dB, R1 : 120dB, R2 : 110dB,
 R3 : 100dB, R4 : 90dB, R5 : 80dB,

④Filter setting

“A0” : transmit → no reply

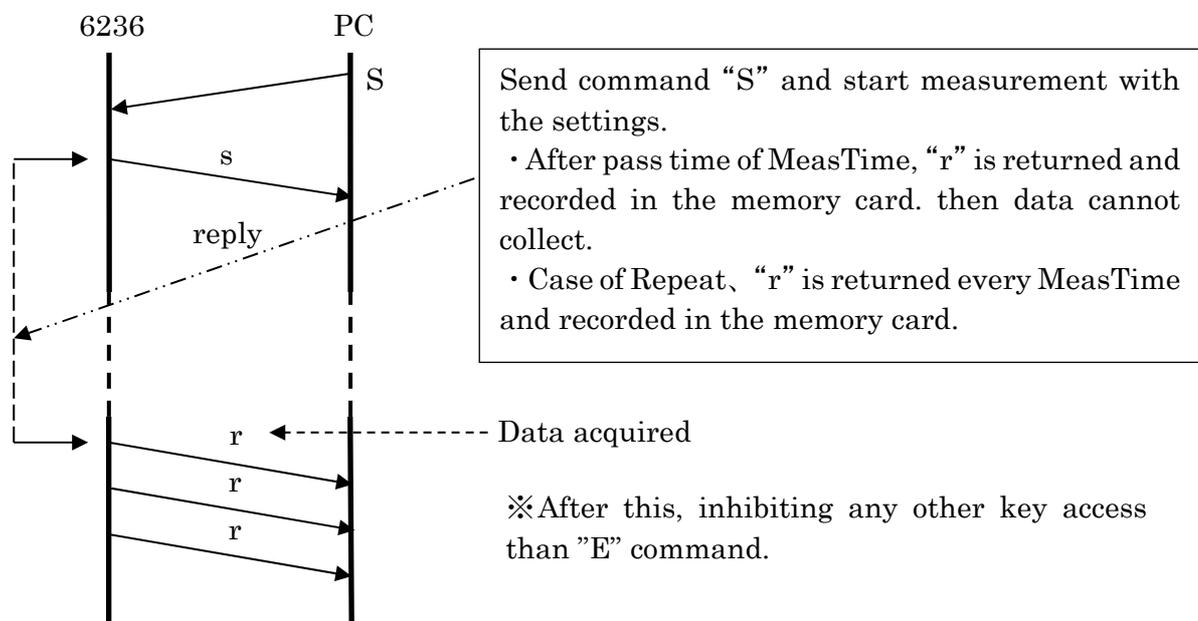
Filter setting
 A0:A-weighted A1:C-weighted A2:Z-weighted

9)Setting confirmation command (Operation to recall the current settings)

Check the range and frequency weighting characteristics in the same way as in normal measurement.

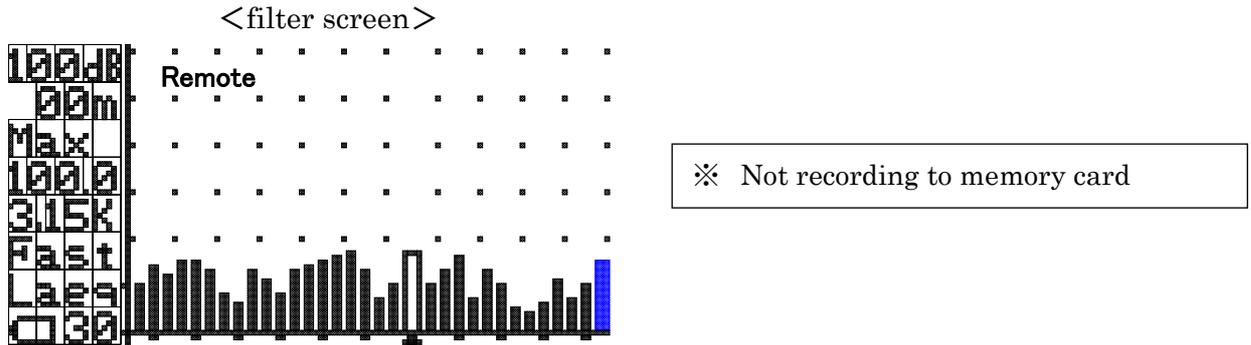
Change the setting with command “F” if necessary.

10)Start/Data collect/Stop



1/1 and 1/3-octave Real-time Analysis

As a condition, it is necessary to recognize the filter card in advance (filter screen) and then set Remote mode in Menu.



1) Setting confirmation command (Operation to recall the current settings)

Check the range and frequency weighting characteristics in the same way as in normal measurement.

Change the setting with command “F” if necessary.

2) Filter setting

“00” : transmit → reply : ”o”

Filter setting
O0 : 1/1-octave O1 : 1/3-octave

3) Start/Data collect/Stop

Same as normal measurement. The data becomes the filter data.

< Data Contents > ※Transfer the following filter data

```
00/01/05 02:15:16 F 130dB+CR+LF
000h00m10s 1_3 Filter+CR+LF ← other 1_1 Filter
LAeq LAe Lmax+CR+LF
130.0 130.0 130.0+CR+LF ←12.5Hz
130.0 130.0 130.0+CR+LF ←16Hz
.
.
.
130.0 130.0 130.0+CR+LF ←All pass
130.0 130.0 130.0+CR+LF ←Over all
```

} Total 34 data

□ : space (20) /+CR : new line code (0D) /+LF : line feed (0A)

Case of 1/1-octave, data is “1_1 Filter” and number of data is 16Hz~8kHz+All Pass+Over all.

4)Filter instantaneous value :B

“B” : transmit → reply : data

Send filter band data every 8msec

※After this, inhibiting any other key access than "E" command.

< Data Contents > ※Case of 1/3-octave

130.0+CR+LF	←12.5Hz	} Total 34 data
130.0+CR+LF	←16Hz	
.		
.		
.		
130.0+CR+LF	←All pass	
130.0+CR+LF	←Over all	
+CR+LF	←Brake code	
130.0+CR+LF	←Next data (12.5Hz)	

< Reference > Required baud rate

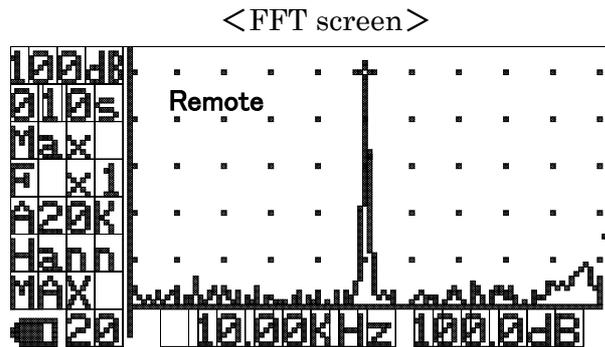
$5 + 2\text{Byte} \times 34 = 238 \text{ Byte} \rightarrow 1904\text{Bit}$

$1904 \times 125 = 238000 \text{ bps} \dots \text{Required}$

Corresponding bps is 460800 or 921600

FFT Analysis 【option】

As a condition, it is necessary to recognize the FFT card in advance and then set Remote mode in Menu.



※ Not recording to memory card

1) Setting confirmation command (Operation to recall the current settings)

Check the range and frequency weighting characteristics in the same way as in normal measurement.

Change the setting with command “F” if necessary.

2) Frequency span setting: G

“G0” : transmit → reply : ”g”

G0 : 20kHz, G1 : 10kHz, G2 : 5kHz, G3 : 2kHz

3) Measurement time setting: H

“H010” : transmit → reply : ”h”

H010 ~H999: specified in seconds

4) Window function setting: J

“J0” : transmit → reply : ”j”

J0 : Hann , J1 : Rect

5) Mode setting: K

“K0” : transmit → reply : ”k”

K0 : LIN(arithmetic mean) , K1 : Max

※The “G” to “K” commands return the current value when sending without a data part.

(ex) G:transmit → reply : ”g2” ← Case of frequency span sets at 5kHz.

6) Instantaneous value output : N

“N” : transmit → reply : ”n”

400 data + All Pass + Over all corresponding to the frequency span.

< Data Contents >

130.0+CR+LF	←First data	} Total 402 data
130.0+CR+LF		
.		
.		
130.0+CR+LF	←All pass	
130.0+CR+LF	←Over all	
+CR+LF	←Brake code	
130.0+CR+LF	←Next data	

Frequency resolution: Case of frequency span is 20kHz: 50 to 20kHz (50Hz step)
Case of frequency span is 10kHz: 25 to 10kHz (25Hz step)
Case of frequency span is 5kHz: 12.5 to 5kHz (12.5Hz step)
Case of frequency span is 2kHz: 5 to 2kHz (5Hz step)

7)Start/Data collect/Stop

Same as normal measurement. The data becomes the FFT data.

< Data Contents > ※Transfer the following FFT data

```
00/01/05□02:15:16□F□130dB+CR+LF
000h00m10s
000dB□Z□20kHz□020s□Hann+CR+LF
Hz□LIN□Max+CR+LF
50□□□□130.0□130.0+CR+LF
100□□□□130.0□130.0+CR+LF
.
.
.
20000□130.0□130.0+CR+LF
AP□130.0□130.0+CR+LF
OA□130.0□130.0+CR+LF
```

USB output (digital data output at any time) Detailed description

1. How to set (in Menu <System> (1/3))

```

<System>          1/3
Mode              : Normal
Data delete      : off
LCD cont         : *****
Date y/m/d       : 00/00/00
Time h/m/s       : 00:00:00
Printer (PC) set : 9600
USB out          : OFF
```

OFF → Lp → LpB → Wave → OFF

- OFF : USB out(digital data output) OFF
- Lp : Instantaneous values are output every second.
- LpB : When using the octave filter, the level numerical data of each band is outputted every 8msec.
Necessary the 1/1 and 1/3-octave Real-time Analysis Card(NA-0038)
- Wave : A/D values are outputted every 48kHz

※ Output value is started/stopped at the same time as measurement by [Start/Stop] key input.
It is output at any time regardless of Interval and MeasTime.

2. Using interface

- 1) USB : IC chip (FT245)
- 2) Transfer speed : 9600~921600bps
- 3) Data length : 8bit
- 4) Stop bit : 1bit
- 5) Parity check : none

3. Output details

3-1 Lp(Instantaneous values every second)

- 1) Required baud rate : 9600bps
- 2) Data Contents : 5Byte+CR <ex. 43.0dB→20 34 33 2E 30 0D (43.0+CR)>

3-2 LpB(Level value for every 8msec in each band)

- 1) Required baud rate : 460800bps or 921600bps
- 2) Data Contents : Case of 1/3-octave

130.0+CR+LF	←12.5Hz	}	Total 34 data
130.0+CR+LF	←16Hz		
.			
.			
130.0+CR+LF	←All pass		
130.0+CR+LF	←Over all		
+CR+LF	←Brake code		
130.0+CR+LF	←Next data (12.5Hz)		

3-3 Wave (16Bit binaryA/D waveform data)

- 1) Required baud rate : 921600bps
- 2) Data Contents : Continuous output of waveform every 48kHz (20.8us)
0000~FFFF (0000→Negative max,8000/7FFF→center, FFFF→Positive max)

RSR Card (Real Sound Recording Card) Detailed description

1. Waveform data details

Value of every 2byte Signed integer (little endian)

0x0000~0x8000 : Positive integer

0x8001~0xFFFF : Negative integer

ex : 63 04 EE 00 73 FD . . .

↓ ↓ ↓
 0x0463 0x00EE 0xFD73 (Hexadecimal)

↓ ↓ ↓
 1123 238 -653 (Decimal number)

Hex	Dec
0x8000	32768
.	.
.	.
0x0000	0
.	.
.	.
0x8001	-32768

2. Waveform data construction

WAV files are created in Windows standard RIFF format.

Sound Level Meter
TYPE 6236

Instruction guide

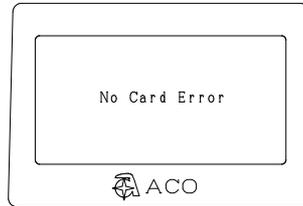
ACO Co.,Ltd.

Measurement Procedure

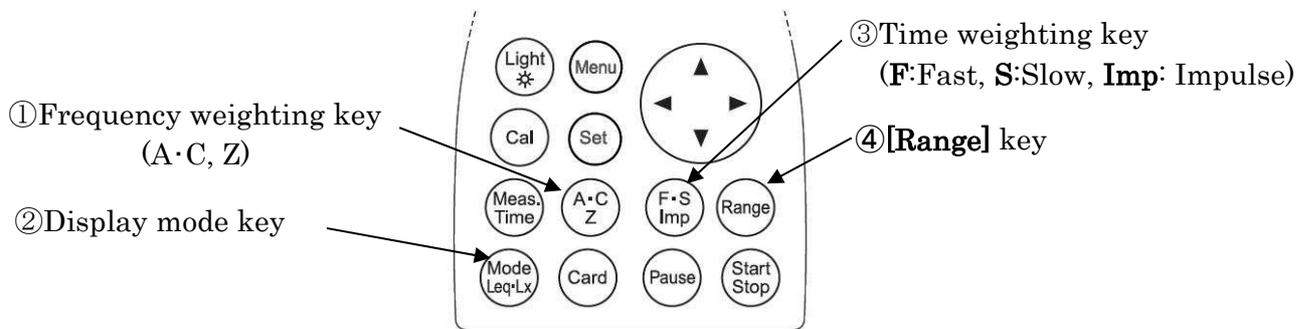
About No Card Error

If either one of Memory Card, 1/1-1/3 Octave Real-time Analysis Card, FFT Analysis Card, or RSR Card is not installed to this instrument, “No Card Error” will be indicated on the screen key operation will become impossible. Please insert either one of above mentioned cards as necessary before use.

<Indication on the screen when any card is not inserted>



Sound pressure level ($L_A/L_c/L_p$) measurement: Frequency weighting key A,C,Z



< Parameter setting >

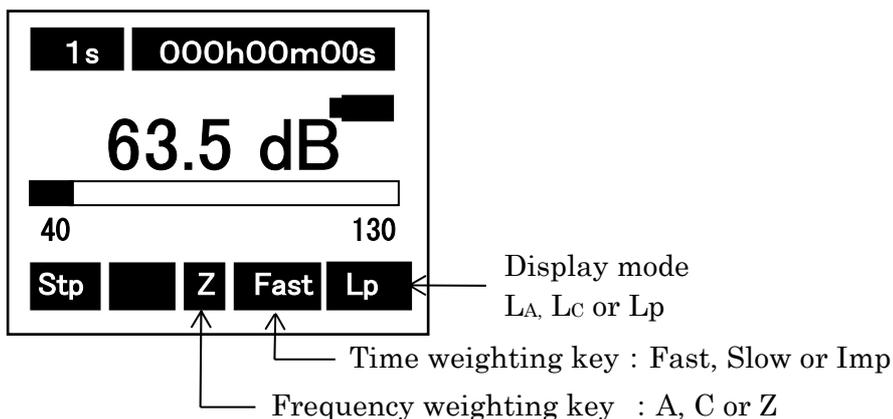
Measurement is made according to the following procedure.

- ① Frequency weighting key : A, C or Z
- ② Display mode key : L_A , L_c or L_p
- ③ Time weighting key : F, S or Imp
- ④ Range key : Select a range where the bar graph indicates approximately 2/3 of the full scale.

【Method of selecting RangeKey】

Press [**Range**] key, and choose by cursor keys \blacktriangle \blacktriangledown , and press [**Range**] key again to register.

< Display >



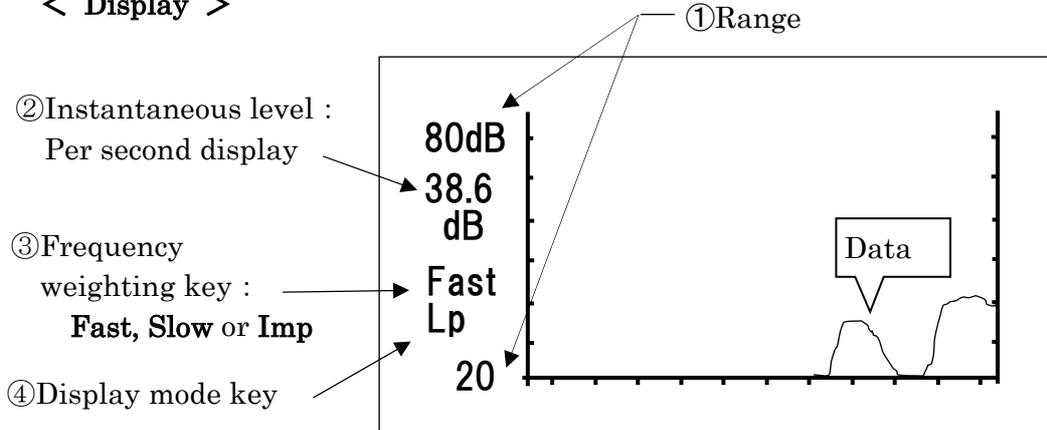
Time level display of Sound pressure level (L_A/L_c/L_p) measurement

< Parameter setting > :

The time level is displayed at each contiguous push (1.5s) of [Mode] key as follows, returning to the standard display screen when the key is pushed again.

The key operation is similar to the measurement of sound pressure level (L_A/L_c/L_p).

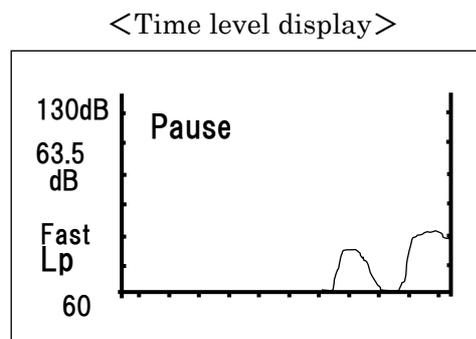
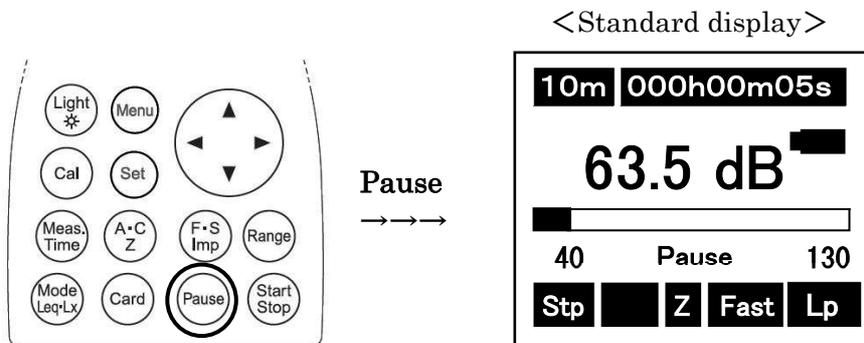
< Display >



The instantaneous level is displayed at each about 300ms from right to left.

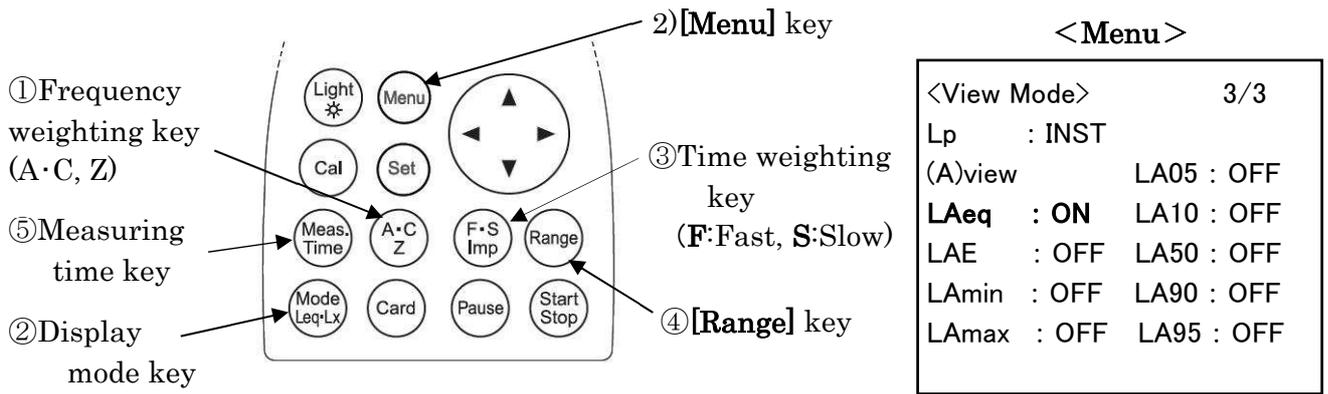
Data hold

By pushing the [Pause] key, the blinking letter "Pause" is displayed at the center of the bar graph, displaying the present instantaneous level. Note that the bar graph itself doesn't pause.



· By pushing the [Pause] key is pushed again, it is released.

Equivalent continuous sound pressure level (LAeq) measurement

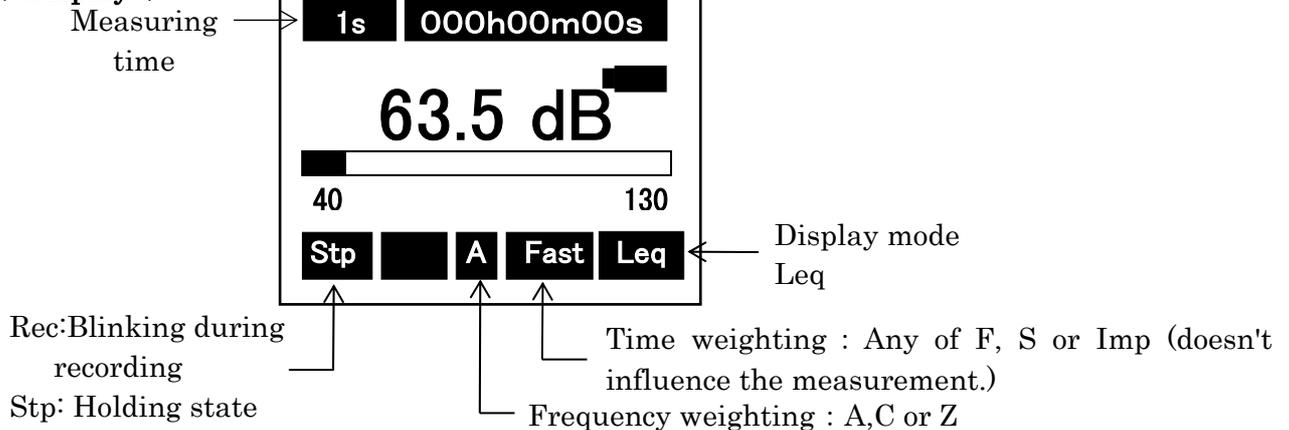


< Parameter setting >

- 1) The key operation is similar to the measurement of A-weighted sound pressure level (LA) except that it needs [Start/Stop] key input for starting the measurement (automatic calculation).
- 2) To display the value Leq, keep the "LAeq" key ON in advance in the <View Mode> 3/3 screen.
 - ① Frequency weighting key : A,C or Z
 - ② Display mode key : Leq
 - ③ Time weighting key : F or S (Imp)
 - ④ Range key : Select a range where the bar graph indicates approximately 2/3 of the full scale.

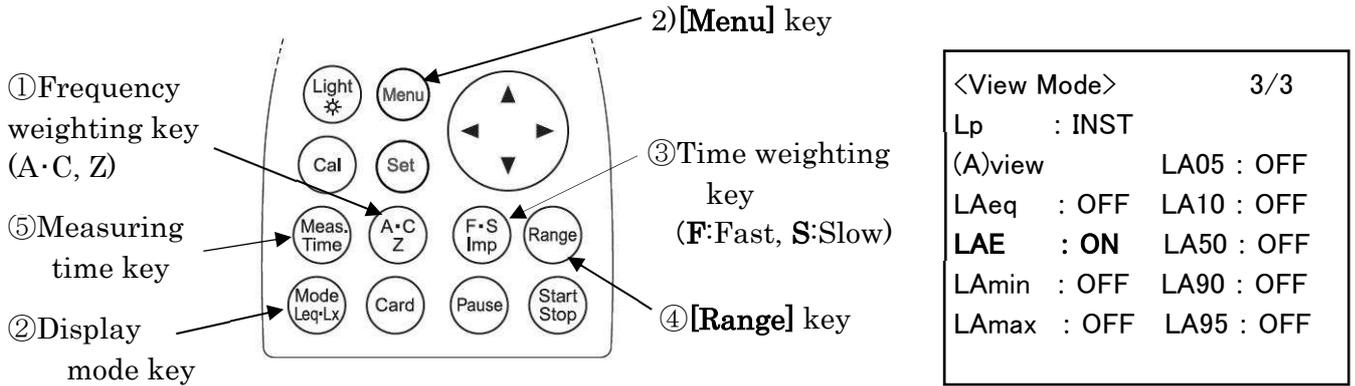
[Method of selecting [Range] Key]
Press [Range] key, and choose by cursor keys▲▼, and press [Range] key again to register.
- ⑤ Measuring time key : 1s, 3s, 5s, 10s, 1m, 5m, 10m, 15m, 30m, 1h, 8h, 24h and *** (until the [Start/Stop] key pushed again)
- 3) The measurement starts with [Start/Stop] key.

< Display >



- Measurement starts with [Start/Stop] key pushed, and ends up automatically at the Measuring time. Digital display indicates the halfway result at the current point of time. (Display "Rec" blinks while the measurement.)
- When Interval is set to Repeat in <Memory> 2/3 screen, the measurement is repeated in every Measuring time. (This is used when continuous measurement is needed.)
- By pushing [Start/Stop] key in course of the measurement, calculation is done using the data so far.
- By pushing [Pause] key in course of the measurement, the calculation can be done without using the data in the latest 3 or 5 seconds.
 - ※This function can be set in the Data delete in the <System> 1/3 screen.
- When *** is selected, the final data is calculated and displayed only when [Start/Stop] key is pushed or 199 hours have gone through.
- All the keys do not respond during the measurement : [Start/Stop], [Mode], [Light]

Single event sound exposure level (L_{AE}) measurement



< Parameter setting >

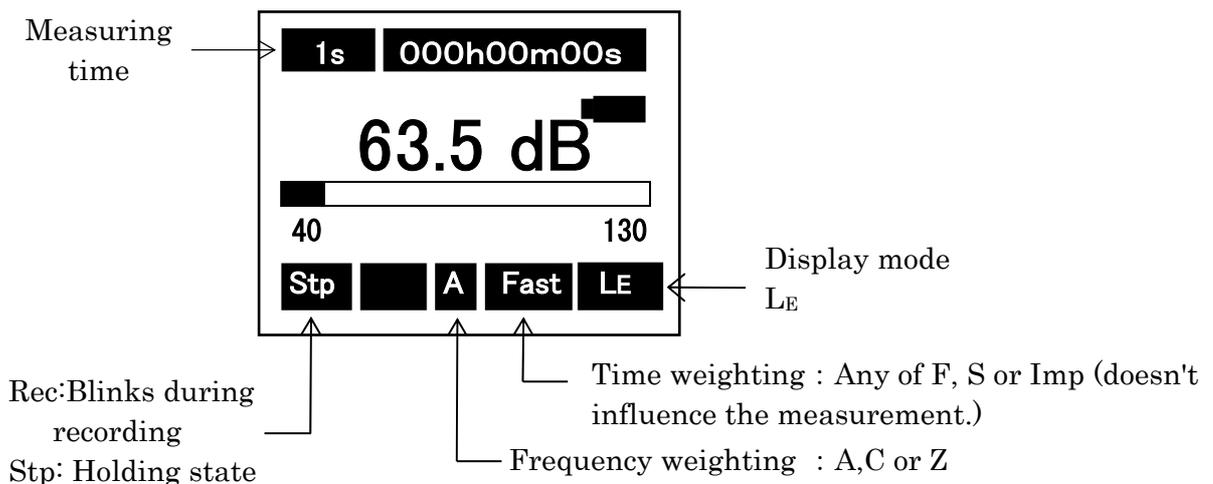
- 1) The key operation is similar to the measurement of A-weighted sound pressure level (L_A) except that it needs **[Start/Stop]** key input for starting the measurement (automatic calculation).
- 2) To display the value L_E , keep the "LAE" key ON in advance in the **<View Mode> 3/3**
 - ① Frequency weighting key : A, C or Z
 - ② Display mode key : L_E
 - ③ Time weighting key : Any of F, S or Imp (doesn't influence the measurement)
 - ④ [Range] key : Select a range where the bar graph indicates approximately 2/3 of the full scale.

【Method of selecting [Range] key】

Press **[Range]** key, and choose by cursor keys **▲▼**, and press **[Range]** key again to register.

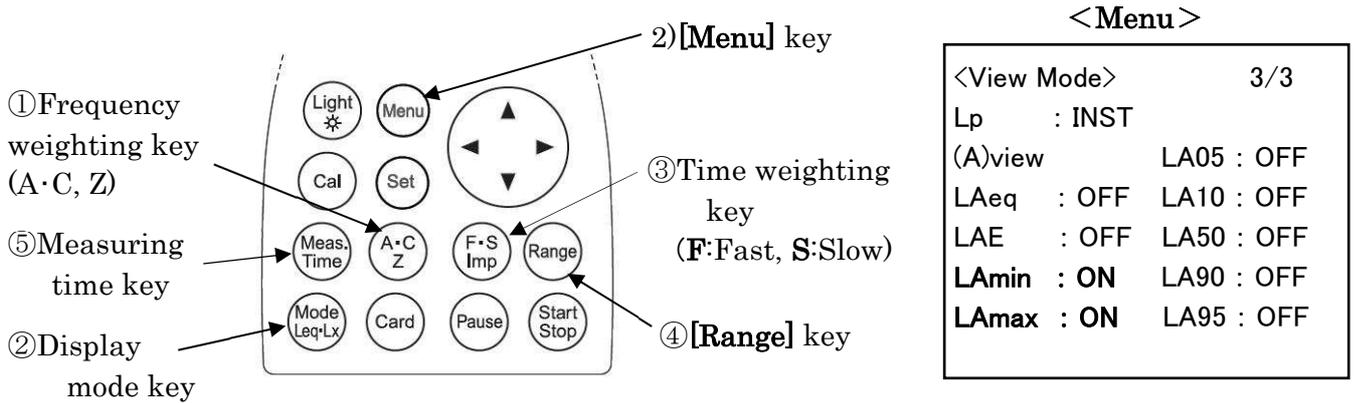
- ⑤ Measuring time key : 1s, 3s, 5s, 10s, 1m, 5m, 10m, 15m, 30m, 1h, 8h, 24h and * * * (to the **[Start/Stop]** key)
- 3) The measurement starts with **[Start/Stop]** key.

< Display >



• The measurement is similar to the equivalent continuous A-weighted sound pressure level.

Maximum/Minimum sound pressure Level (L_{Amax}/L_{Amin}) measurement



< Parameter setting >

- 1) The key operation is similar to the measurement of A-weighted sound pressure level (L_{Aeq})
- 2) To display the value L_{max} , keep the "L_{Amax}" key ON in advance in the <View Mode> 3/3 (similar in L_{min} measurement.)

- ① Frequency weighting key : A, C or Z
- ② Display mode key : L_{max} or L_{min}
- ③ Time weighting key : Fast or Slow (Imp)
- ④ [Range] key : Select a range where the bar graph indicates approximately 2/3 of the full scale.

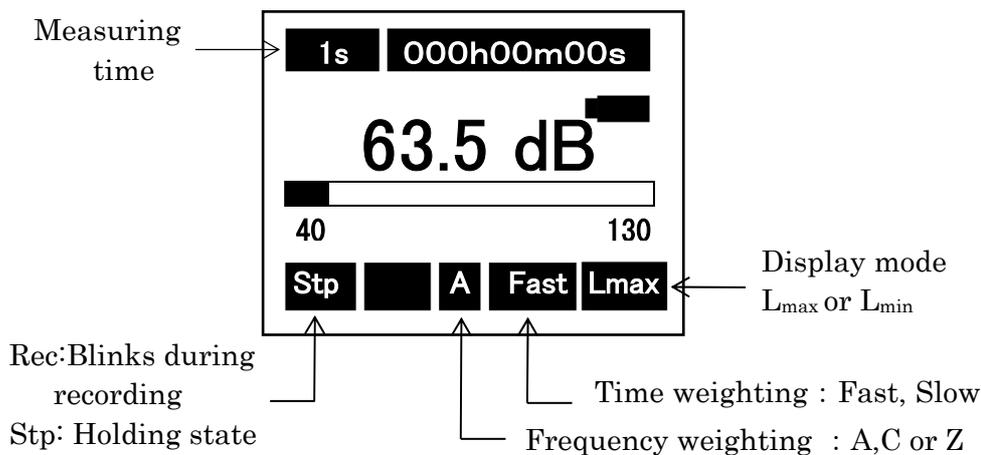
[Method of selecting [Range] key]

Press [Range] key, and choose by cursor keys ▲▼, and press [Range] key again to register.

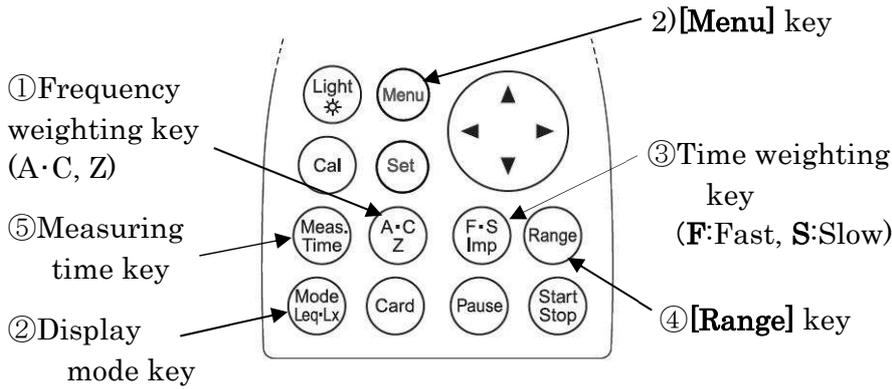
- ⑤ Measuring time key : 1s, 3s, 5s, 10s, 1m, 5m, 10m, 15m, 30m, 1h, 8h, 24h and * * * (to the [Start/Stop] key)

- 3) The measurement starts with [Start/Stop] key.

< Display >



Percentile level (L_{AN}) measurement



<View Mode>	3/3
Lp	:INST
(A)view	LA05 : ON
LAeq	: OFF LA10 : ON
LAE	: OFF LA50 : ON
L Amin	: OFF LA90 : ON
L Amax	: OFF LA95 : ON

< Parameter setting >

- 1) The key operation is similar to the measurement of A-weighted sound pressure level (LAeq)
- 2) To display the value L_{max}, keep the "LA05 ,LA10 ,LA50 ,LA90 ,LA95" key ON in advance in the <View Mode> 3/3 screen.

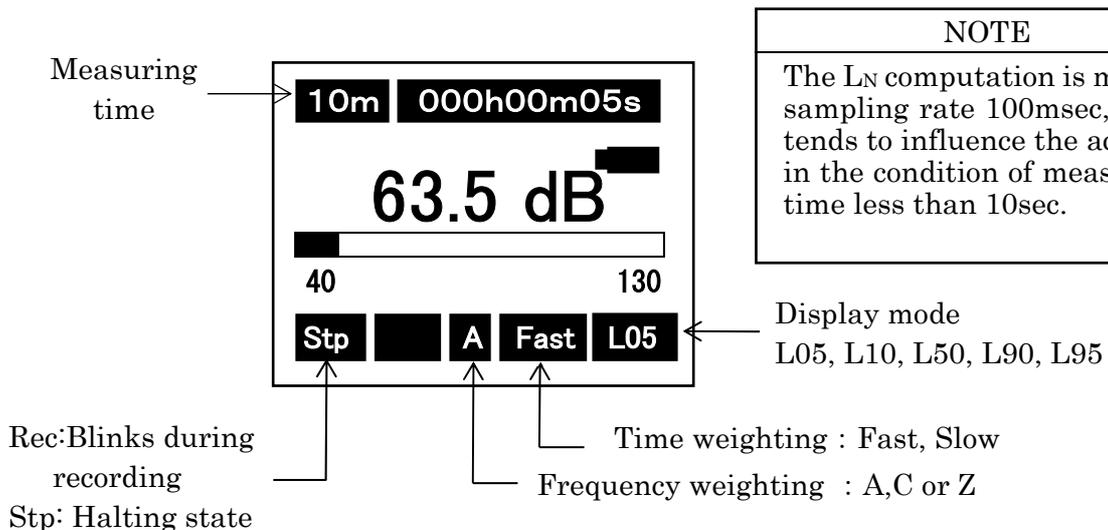
- ① Frequency weighting key : A, C or Z
- ② Display mode key : L_N (To display the percentile level (L_N) Measurement.)
- ③ Time weighting key : Fast or Slow (Imp)
- ④ Range key : Select a range where the bar graph indicates approximately 2/3 of the full scale.

[Method of selecting [Range] Key]

Press [Range] key, and choose by cursor keys ▲▼, and press [Range] key again to register.

- ⑤ Measuring time key : 1s, 3s, 5s, 10s, 1m, 5m, 10m, 15m, 30m, 1h, 8h, 24h and * * * (input to the [Start/Stop] key)
- 3) The measurement starts with [Start/Stop] key.

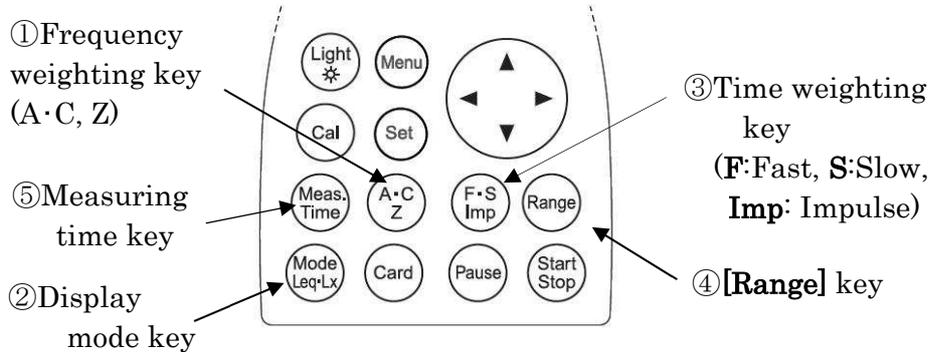
< Display >



Z-weighted peak sound pressure level (L_{peak}) measurement

The peak sound pressure level is peak sound pressure level of the sound wave before smoothed with the time weighting characteristics.

L_{peak} is wavy peak level of Z characteristic.



< Parameter setting >

Measurement is made according to the following procedure.

- ① Frequency weighting key : Z
- ② Display mode key : Peak
- ③ Time weighting key : F, S or Imp
- ④ Range key : Select a range where the bar graph indicates approximately 2/3 of the full scale.

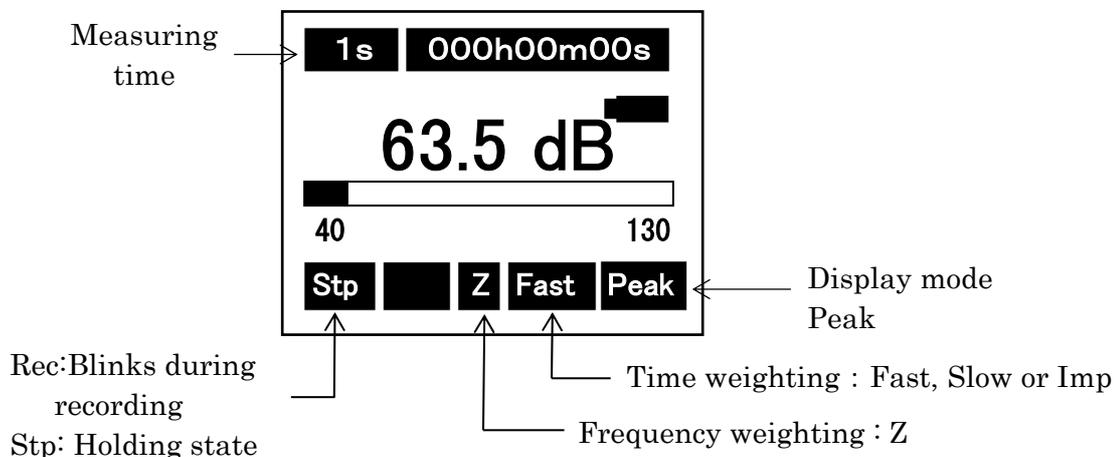
[Method of selecting [Range] key]

Press [Range] key, and choose by cursor keys ▲▼, and press [Range] key again to register.

- ⑤ Measuring time key : 1s, 3s, 5s, 10s, 1m, 5m, 10m, 15m, 30m, 1h, 8h, 24h and * * * (input to the [Start/Stop] key)

The measurement starts with [Start/Stop] key.

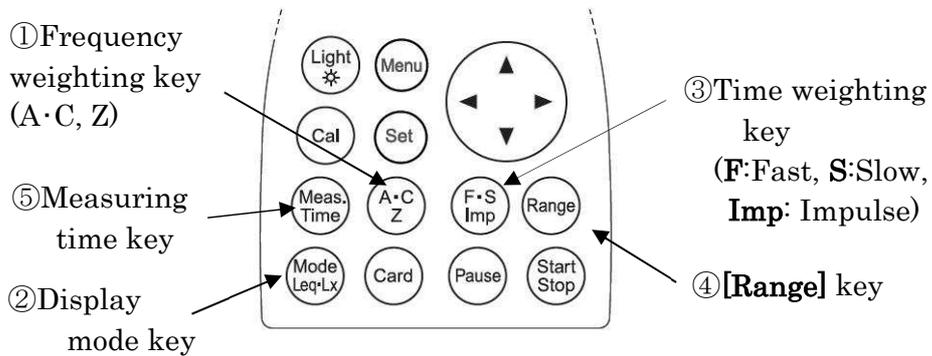
< Display >



C-weighted peak sound pressure level (L_{Cpeak}) measurement

The peak sound level is peak sound pressure level before smoothed with the time weighting characteristics.

L_{Cpeak} is wavy peak level of C characteristic.



< Parameter setting >

Measurement is made according to the following procedure

- ① Frequency weighting key : C
- ② Display mode key : Peak
- ③ Time weighting key : Any of F, S or Imp (doesn't influence the measurement.)
- ④ Range key : Select a range where the bar graph indicates approximately 2/3 of the full scale.

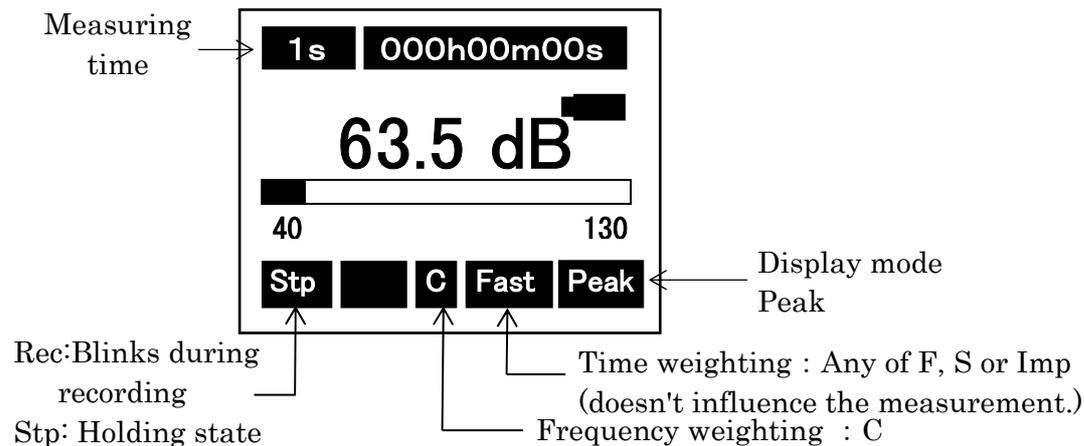
[Method of selecting [Range] key]

Press [Range] key, and choose by cursor keys▲▼, and press [Range] key again to register.

- ⑤ Measuring time key : 1s, 3s, 5s, 10s, 1m, 5m, 10m, 15m, 30m, 1h, 8h, 24h and * * * (input to the [Start/Stop] key)

The measurement starts with [Start/Stop] key.

< Display >



- Measurement starts with [Start/Stop] key pushed, and ends up automatically at the Measuring time.
- Digital display indicates the halfway result at the current point of time.
(Display " Rec " blinks while the measurement)
- By pushing [Start/Stop] key in course of the measurement, calculation is done using the data so far.
- When *** is selected, the final data is calculated and displayed only when [Start/Stop] key is pushed or 199 hours have gone through.

Power average value of the maximum sound pressure level in a given interval (L_{Atm5}) measurement

Power average value of the maximum sound pressure level in a given interval (L_{Atm5}) is power average of the maximum value of A-weighted sound pressure level in successive 5-sec intervals. It can be measured only when A characteristics is selected in the standard screen.

① Frequency weighting key (A·C, Z)

② Display mode key

③ Time weighting key (F:Fast, S:Slow, Imp:Impulse)

④ [Range] key

⑤ Measuring time key

<Menu>

<System> 1/3

Mode :LAtm5

Data delete :off

LCD cont : * * *

Date y/m/d :01/01/01

Time h/m/s :00:00:00

Printer(PC)set :9600

USB out :OFF

< Parameter setting >

Mode: Normal in < System>1/3 is changed to Mode:L_{Atm5} with the ▲▼ key in Menu screen. The screen for power average of the maximum value appears when the change is fixed and resisted with Set key.

【Method of selecting [Range] key】

Press [Range] key, and choose by cursor keys ▲▼, and press [Range] key again to register.

Measurement is made according to the following procedure

- ① Frequency weighting key : A
- ② Display mode key : L_A or tm₅
- ③ Time weighting key : F or S
- ④ Range key : Select a range where the bar graph indicates approximately 2/3 of the full scale.
- ⑤ Measuring time key : 1s, 3s, 5s, 10s, 1m, 5m, 10m, 15m, 30m, 1h, 8h, 24h and * * * (input to the [Start/Stop] key)

The measurement starts with [Start/Stop] key.

< Display >

Measurement time 10s (second) display

00h00m00s
00h00m01s
00h00m02s
.
00h00m09s ← End in 10seconds
00h00m00s ← The following measurement

* When Menu Intr:Single is measured, it becomes Repeat continuous work as the measurement time display.

Bar: Displays the current instantaneous level.
L_A or tm₅

Time weighting : F, S

Press [Start/Stop] key

← Count-up timer for the measurement

← Starts with display — . — when the measurement mode is tm₅.
Measurement value is displayed every 5 second.

← The bar displays the instantaneous level in every 0.1 second.

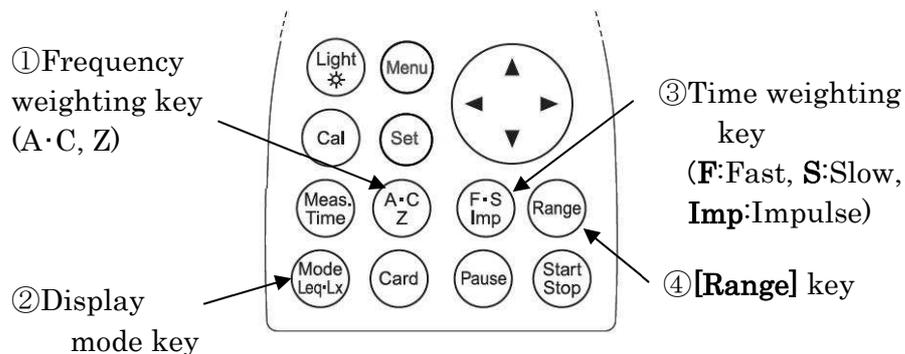
← L_A and tm₅ can be changed.
Current level is displayed with L_A selected value.

The Rec blinks with [Start/Stop] key input

Impulse sound pressure level(L_{AI}) measurement

Impulse sound pressure level (L_{AI}) is A-weighted sound pressure level with time weighting characteristics, 'Impulse'.

It can be used only when A characteristics is selected in the default screen.



< Parameter setting >

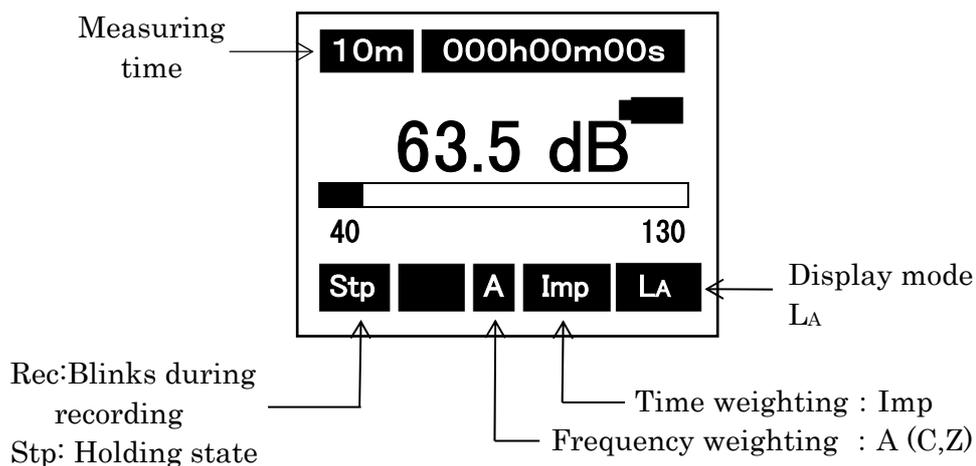
Measurement is made according to the following procedure.

- ① Frequency weighting key : A (C or Z)
- ② Display mode key : L_A (L_C or L_p)
- ③ Time weighting key : Imp
- ④ Range key : Select a range where the bar graph indicates approximately 2/3 of the full scale.

【Method of selecting [Range] key】

Press [Range] key, and choose by cursor keys▲▼, and press [Range] key again to register.

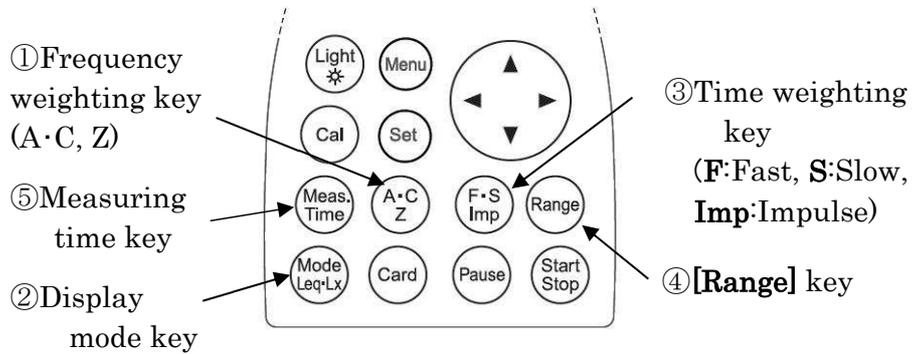
< Display >



Impulse equivalent continuous A-weighted sound pressure level (L_{Aeq}) measurement

Impulse equivalent continuous A-weighted sound pressure level (L_{Aeq}) is equivalent continuous sound pressure level with time weighting characteristics, 'Impulse'.

It can be used only when A characteristics is selected in the default screen.



< Parameter setting >

Measurement is made according to the following procedure

- ① Frequency weighting key : A (C or Z)
- ② Display mode key : Leq
- ③ Time weighting key : Imp
- ④ Range key : Select a range where the bar graph indicates approximately 2/3 of the full scale.

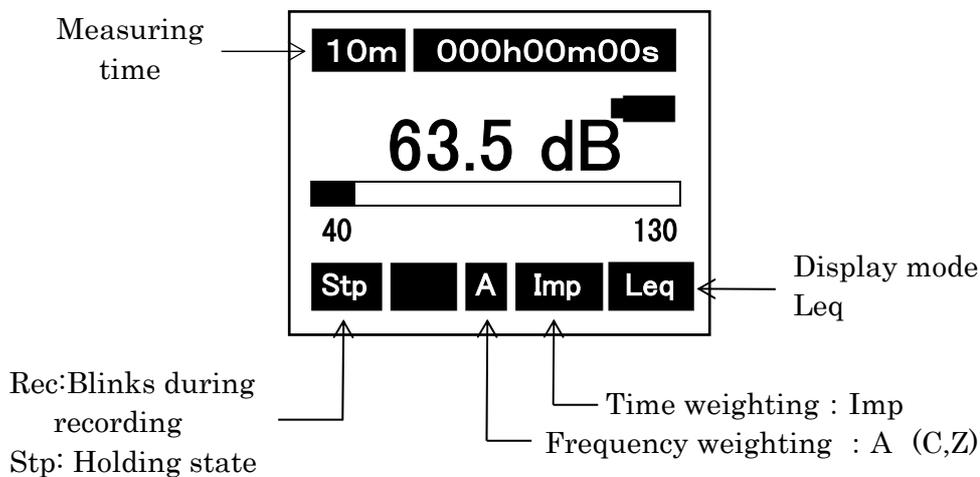
[Method of selecting [Range] key]

Press [Range] key, and choose by cursor keys▲▼, and press [Range] key again to register.

- ⑤ Measuring time key : 1s, 3s, 5s, 10s, 1m, 5m, 10m, 15m, 30m, 1h, 8h, 24h and * * * (input to the [Start/Stop] key)

The measurement starts with [Start/Stop] key.

< Display >



Sound level meter
TYPE 6236
Precision Sound level meter
TYPE 6238

How to use the Recording Card (RSR)
Instruction guide

This instruction manual refers to the Optional software for, Sound Level Meter TYPE 6236 / Precision Sound Level meter TYPE 6238(abbreviated to “this equipment” in what follows).

Disclaimer in usage of the software product

When this software is used, it is assumed that the customer has accepted all the following items.

- 1) The customer is permitted to use this software product based on the agreement of use conditions, not to transfer or sell to the third party. In case the customer cannot accept the following items, the product cannot be cleared to use, either.
- 2) The software product, together with attached documents such as instruction manuals, belongs to Aco Ltd. and is protected by the Copyright Law., etc.
The customer is not permitted either to copy, modify, alter this software product, or remove the product label.
The customer is not permitted to create any similar products, or have the third party do these actions.
- 3) Please do try hard to keep every user or users scheduled about the items above before the use of this product.
As would be realized, the customer may be considered to have acted against the agreement when the user of this product acted against it.

Disclaimer in usage of the SD card

- (1) To see the data saved in the memory card (SD card) using PC, a card reader compatible with 8G or higher is required. Please check in advance that environment to recognize the memory card (SD card) is secured.
- (2) The folder / file in the RSR card please do not perform a change (addition and deletion) or a format from PC. When I changed it, normalcy does not work.
In that case, it becomes a repair for a fee.
- (3) When I delete a data file in the RSR card, please carry out deletion by using the main body of TYPE 6236/6238.
- (4) Only when the production number for the card is the same as the production number for the main body of TYPE 6236/6238, RSR card can be used.

<Content of RSR card(NA-0038R) >

<Content of RSR Card (NA-0038R) >

RSR.....Folder of RSR data file

00001.txt	}	Data file txt & wav file is made by the pair (File name: 00001.txt~99999.txt/ 00001.wav~99999.wav)
00001.wav		
.		
.		
nnnnn.txt		
nnnnn.wav		

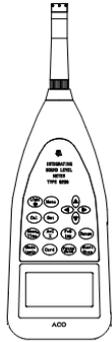
6238rsr.sys.....System file for RSR (hidden file)

RSR.CFG.....Configuration file for RSR

How to use the Recording Card (RSR) -Option-

-Option-

Card Installation



Insert the card.

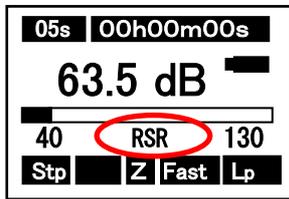


(Card)

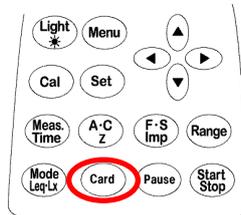
When RSR card is used
Frequency Range: Z
Meas. Time: 5s or more
Please solve and note becoming.

The continuous record time is six hours or less.

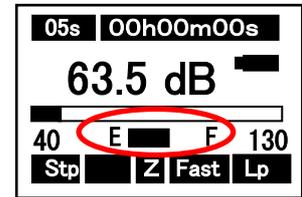
Start up



① RSR lighting.

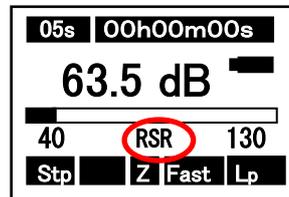


② Press [Card] key.



③ The remaining card capacity displayed.

After 3s



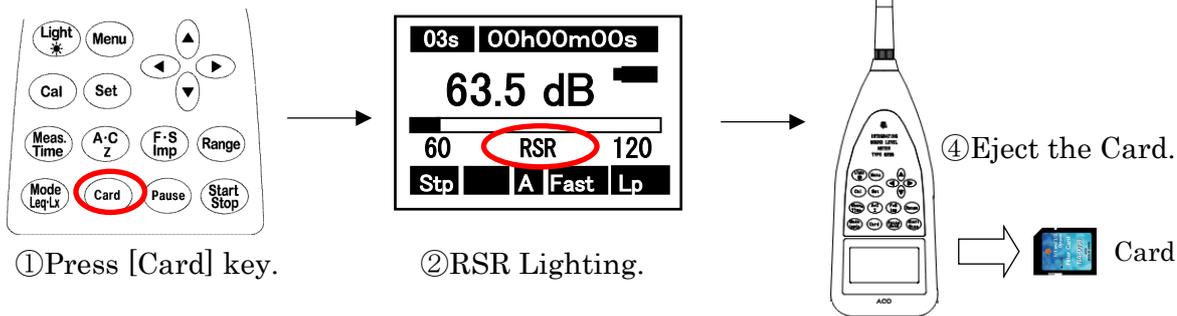
④ Blinked RSR is a standby display on starting the measurement.

【When you do power supply ON with the card inserted】

The card is recognized automatically, it becomes RSR screen if the power switch is turned on with the RSR card inserted, and it enters the state that can be used.

It enters the state of the measurement condition when use ends last time.

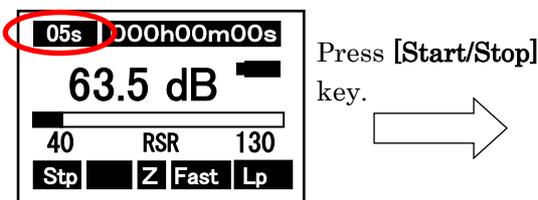
Eject the card



【※CAUTION】

After "RSR" lighting, please take out a card after a little.
There is the case that "Card ERR" is displayed. In that case, the file might be damaged.

Measurement



The time recorded with Meas Time is selected.

※1s and 3s cannot be selected.

※ The wav file can be reproduced with Windows Media Player etc.

※It is recorded in file (txt&wav) every measurement time (Meas Time).

<E.g. Acquired data to be stored in WAV format>

```
00001.txt ← : Setup item file
00001.wav← : Data file

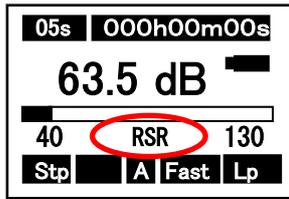
      < Created in pairs each time. >

      .
      .
```

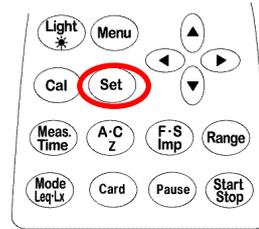
< Example of printing text file >

```
Measurement day, Measurement time, Frequency-weight, Level Range, Time setting
09/01/14, 00:00:00, Z, 80dB, 000h00m05s
```

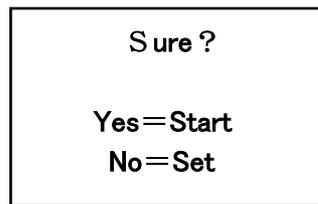
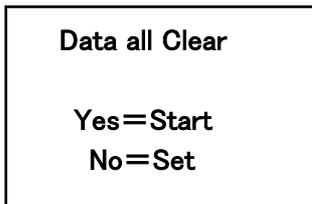
Delete the card data



① Confirm RSR blinking.



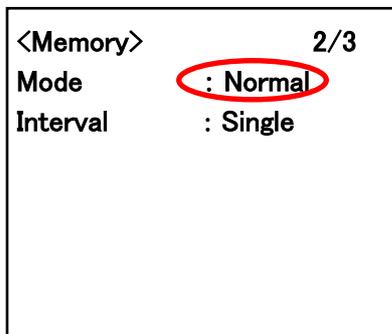
② Keep **[Set]** key pushed for a few seconds in the situation with the card installed.



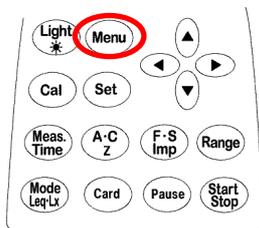
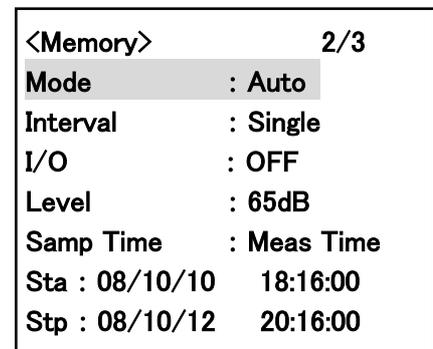
③ Delete all the data along the displayed flow of operation, then to return to the former window.

Record of Auto mode

Auto mode (automatic measuring system) is set.



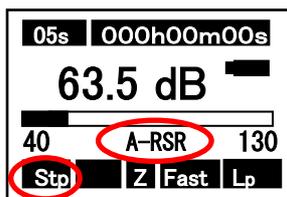
Mode: After selecting
Auto



① The **[Menu]** key is pushed twice, and <Memory>2/3 is displayed.

② The value is changed with the ▲▼key after ► key is input with Mode and the **[Set]** key is pushed.

It returns to the measurement screen with the **[Set]** key.



③ A-RSR blinks.

If the Start key is pushed, "Stp" blinks, and it becomes a stand-by state.

It changes into blinking "Stp"→"Rec" when the record is begun.

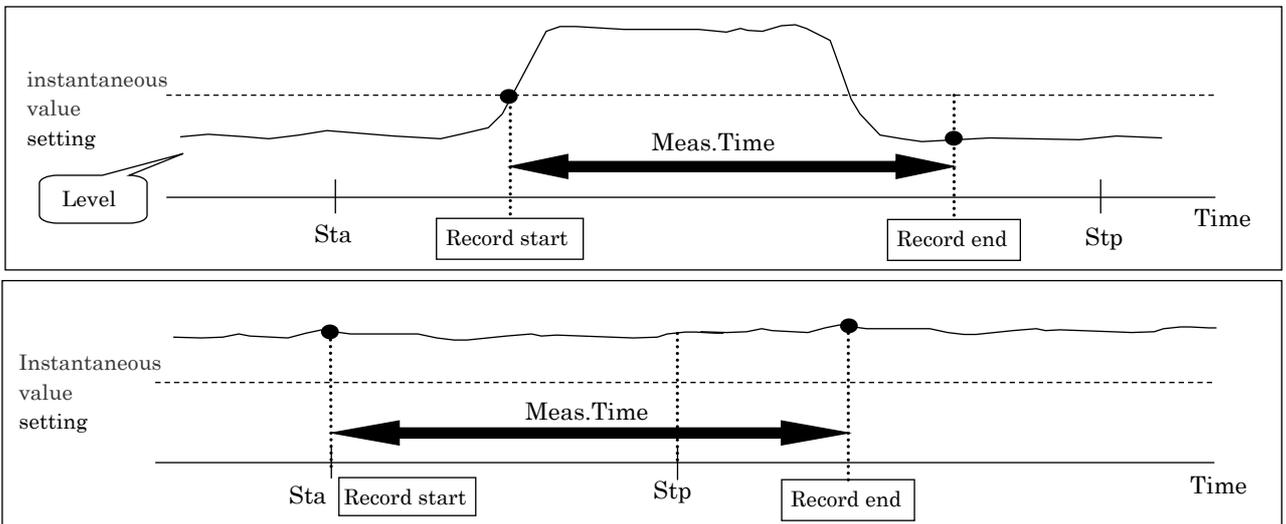
It changes into lighting "Rec"→"Stp" when the record ends.

Setting of **【Auto】** mode

- Mode : Auto : Automatic measurement, where the following items are available.
- Interval : Measuring interval setting
 - Single : The measurement starts with **[Start/Stop]** key and is terminated at **Meas Time** selected.
 - Repeat : The measurement starts with **[Start/Stop]** key and is repeated in every **Meas Time** selected until **[Start/Stop]** key is pressed.
- I/O : External output setting
 - OFF : Default (Data output is disabled).
 - ON : Outputs data for one second when the data mory mode is active.
- Level : Threshold level is registered.
- Samp Time : Mese Time (Fixation)
- Sta : Registers the starting time for recording (YY/MM/DD HH/MM/SS)
(Year/Month/Date, date time/minute/second).
- Stp : Registers the stop time for recording (YY/MM/DD HH/MM/SS)
(Year/Month/Date, date time/minute/second)

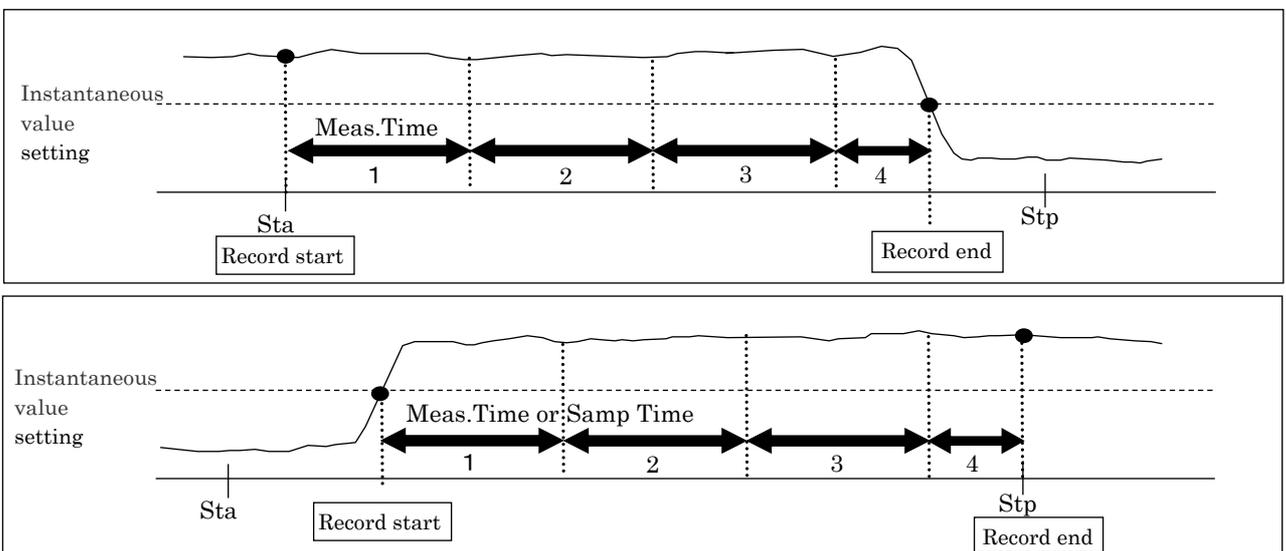
«Interval : Single At time of setting»

After progress of registered record start time (Sta), if instantaneous value is beyond a set point, I record for once of “Meas Time”.
The record end doesn't relate at setting level and record stop time (Stp) of the registered instantaneous value.



«Interval : Repeat At time of setting»

After progress of registered record start time (Sta), if instantaneous value is beyond a setting level, record it during one second by setting time.
It records Meas.Time or Samp Time intervals repeatedly.
Level of instantaneous value is less than a setting level or records it until record stop time.



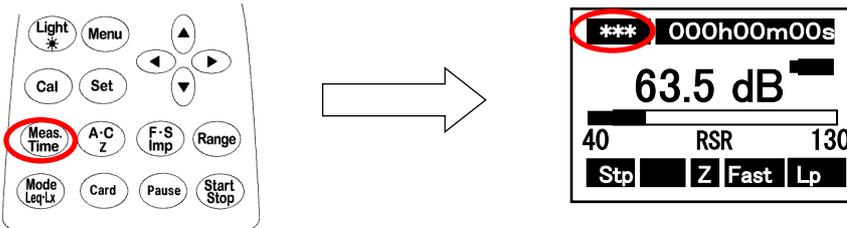
【※CAUTION】

The record doesn't stop until the [Start/Stop] key is pushed by "Interval:Single", "Samp Time:Meas.Time", and "Meas.Time:***".

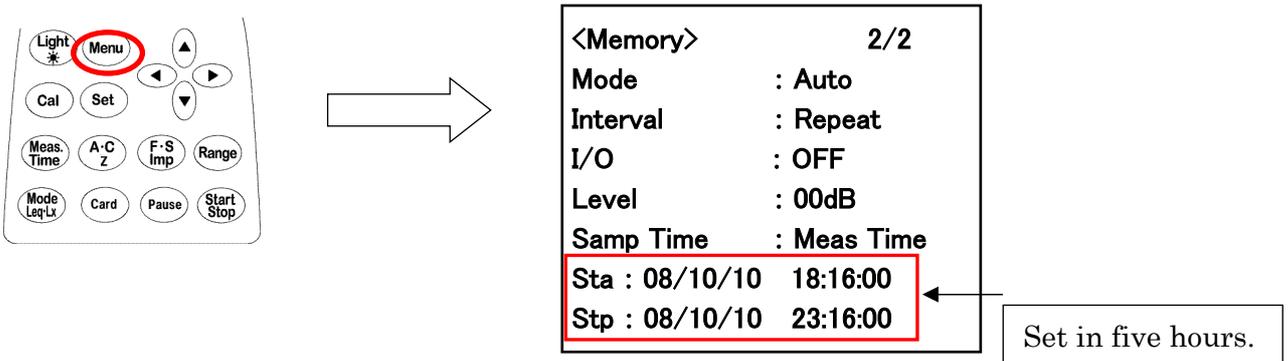
Setting method when there is no setting at time that records in Meas.Time

The example : When you record five hours.

- ① Meas.Time is set of "***" with the Meas.Time key.



- ② The [Menu] key is pushed twice, and it sets it to the Auto mode on <Memory> 2/3 screen as follows..



Please refer to P.4 "Record of the Auto mode" for the setting of the Auto mode.

Sound Level Meter
TYPE 6236

Instruction Manual for
Data Management Software
NA-0038M

ACO Co., Ltd.

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1. Notes before usage

1.1 General

TYPE 6236 Sound Level Meter can be used not only as a standard sound level meter but also for various acoustic analysis purposes by inserting optional program cards (1/1 – 1/3 Octave Real-time Analysis Card, FFT Analysis Card, Real Sound Recording Card).

Data Management Software NA-0038M enables management, display and analysis for a number of data files measured by TYPE 6236 Sound Level Meter.

1.2 Operation Environment

Conditions required for the operation of the software are as shown in the Table 1.

Table 1 Required environments

OS	Windows XP (SP2 or higher) / Vista/7
CPU	Pentium 4, 1GHz min.
Memory	256 MB min.
HDD	Free space 100 MB min.
USB	USB 1.1 port ×1
Display	SVGA (800 x 600 dots, 256 colors) min. is recommended.
Others	.NET Framework 3.5 SP1 or higher Windows Media Player 9 or higher

In the case of versions of Windows XP SP1 or earlier, it shall be updated to bring it to Windows XP SP2 or higher. Similarly, in the case of versions of Windows Media Player 8 or earlier, it shall be updated to Windows Media Player 9 or higher.

<Note>

When the Data Management Software is installed, “NET Framework3.5 SP1” will not be uninstalled. When uninstalling the NET Framework 3.5 SP1, care should be taken since it may affect the operation of other applications.

1.3 Installation of the Data Management Software

Before installation of the Data Management Software, log-in to the Windows XP (SP2 or higher), Vista, or 7, by the account that has “administrative rights” or “Administrator”.

If the Data Management Software was previously installed, it shall be uninstalled before the new installation. Explanation as shown below is for the case of Windows XP.

1.3.1 Content of CD-ROM

Following files are stored in the CD-ROM for the Data Management Software.

CDM 2.06.00 WHQL Certified ----- 【USB Driver】 folders

- ├── amd64
- ├── i386
- ├── CMD 2 06 00 Release Info.rtf
- ├── ftd2xx.h
- ├── ftdibus.cat
- ├── ftdibus.inf
- ├── ftdiport.cat
- ├── ftdiport.inf
- └── LogoVerificationReport.pdf

NA-0038M ----- 【TYPE 6236 Data Management Software】 folders

- ├── DotNetFX35
- ├── Windows Installer 3_1
- ├── setup.exe
- └── Type6236AssSetup.msi

Instruction Manual for Data Management Software NA-0038M.pdf

aco_auth.lic -----【Authentication File 】

(only when the software is purchased through correct route)

1.3.2 Installation of the Data Management Software

In the case if any application is running, exit out of such application.

Insert CD-ROM to the CD drive and execute [setup.exe] in the [NA-0038M] folder.

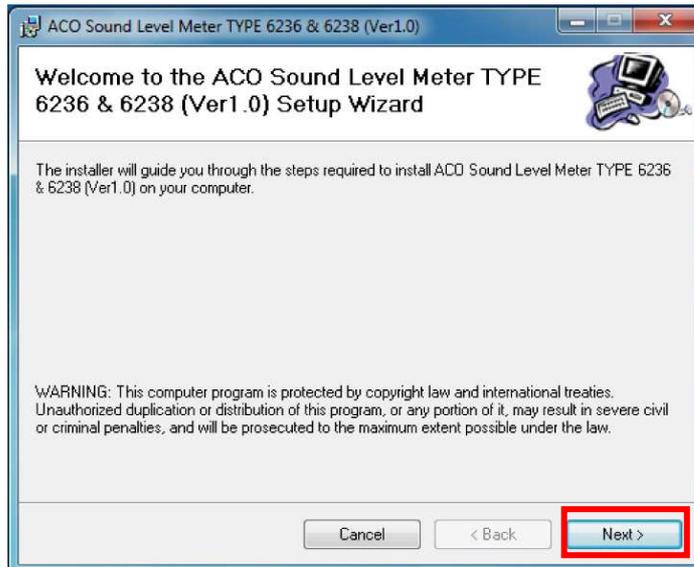
If NET Framework 3.5 SP1 is not installed, it will be installed at the same time.

After completion of the installation of the NET Framework 3.5 SP1, there is a possibility that reboot of the PC is required.

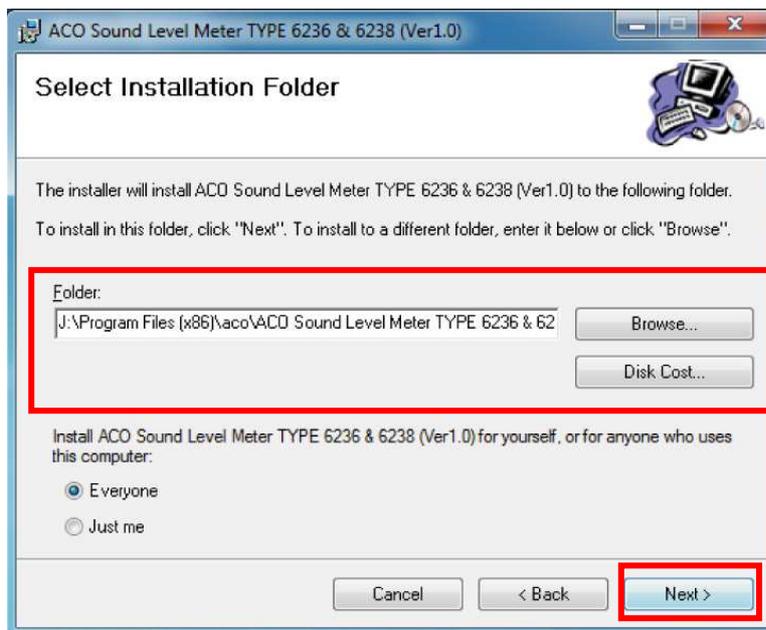
Install per following procedure.

- In the case if the NET Framework 3.5 SP1 is already installed

1. Click **【Next】**



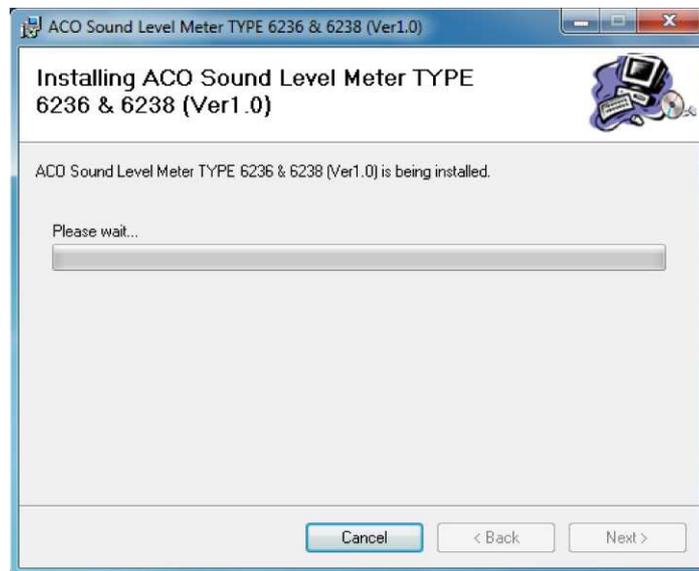
2. Select folder for installation and click **【Next】**.



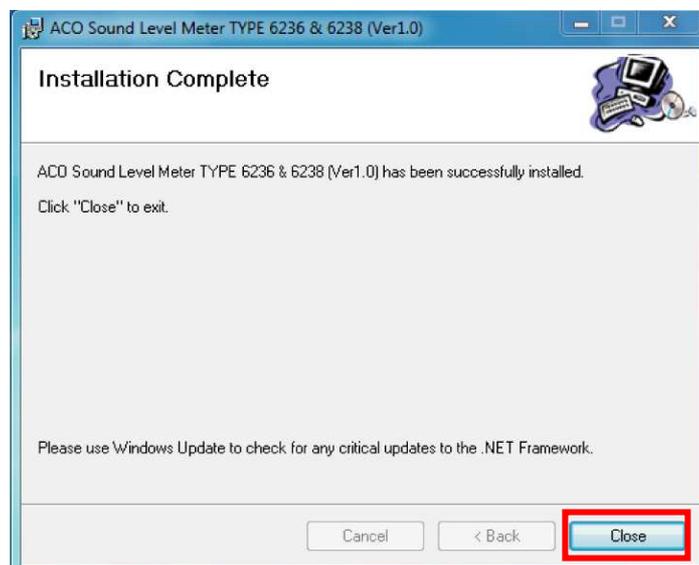
3. After completion of preparation, installation can be started by clicking **Next**.



4. Screen will show installing status display. Wait until the completion of installation.

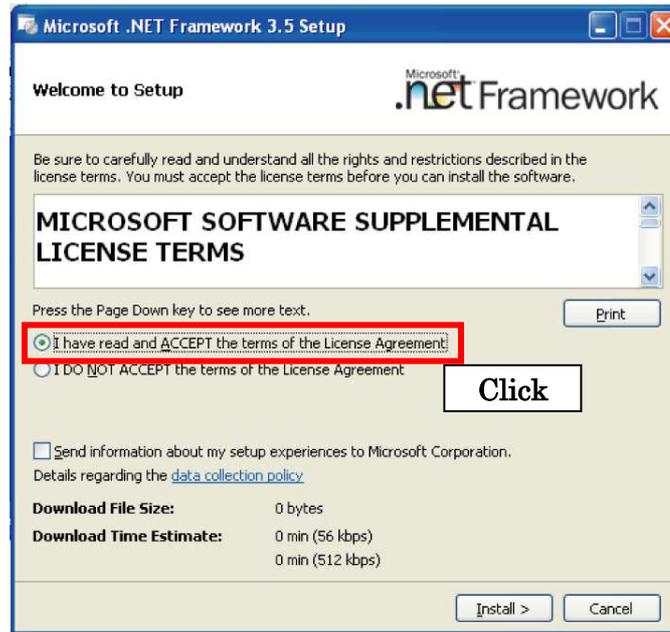


5. After the completion of the installation, click **Close**.

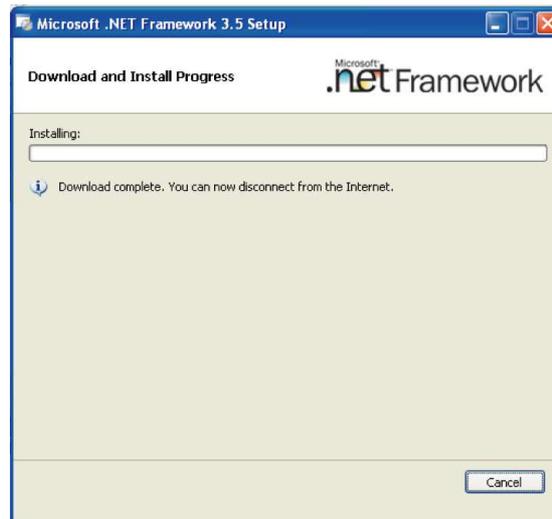


● In the case if the .NET Framework 3.5 SP1 is not installed or only partially installed.

1. Read carefully license terms of the .NET Framework 3.5 SP1 and if it is acceptable, click **[Accept]**.



2. Installation of the .NET Framework 3.5 SP1 will be started and the screen will show installing status display.



3. After the completion of the installation of the .NET Framework 3.5 SP1, reboot of the PC may be required. In such case, reboot the PC in accordance with the direction of the PC.

***After this step, follow procedure for installation shown in previous pages 6 and 7.**



1.3.3 Installation of USB driver

To remotely control the TYPE 6236 or to certify the Data Management Software, USB driver is required. If “FT245R USB FIFO” is detected as a new hardware a, USB driver shall be installed after turning on the power of the TYPE 6236 and connect the TYPE 6236 and PC using USB interface cable



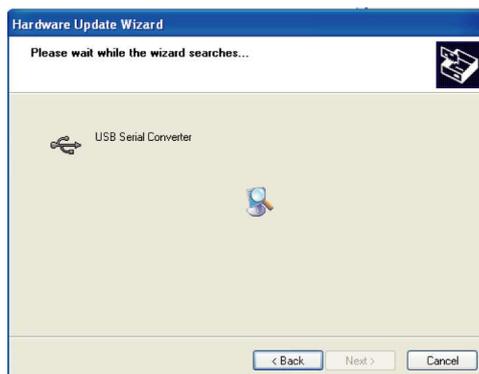
If the USB driver is already installed, it is not detected as a new hardware. In such case it is not necessary to perform USB driver installation procedure.

Installation procedure for the USB driver is as follows.

1. "FT245R USB FIFO" will be detected as a new hardware. Insert CD for the Data Management Software into the CD-ROM drive. Select **【Install the software automatically (recommended)】** and click **【Next】**.



2. Installation of the driver will be started and the screen will show installation status display.



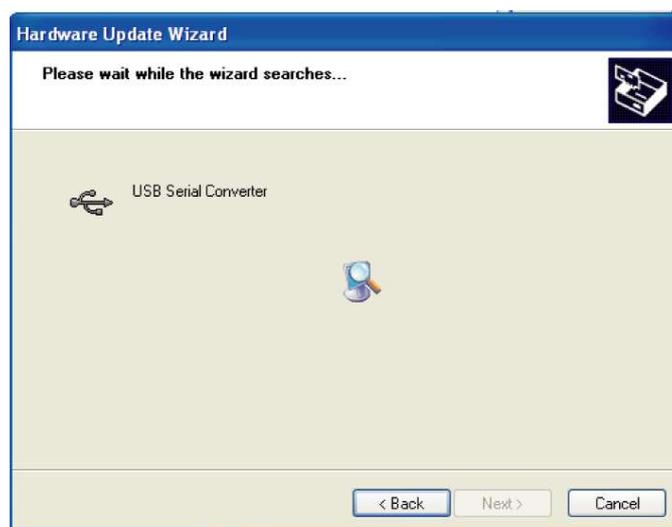
3. After the completion of the installation, click **Finish**.



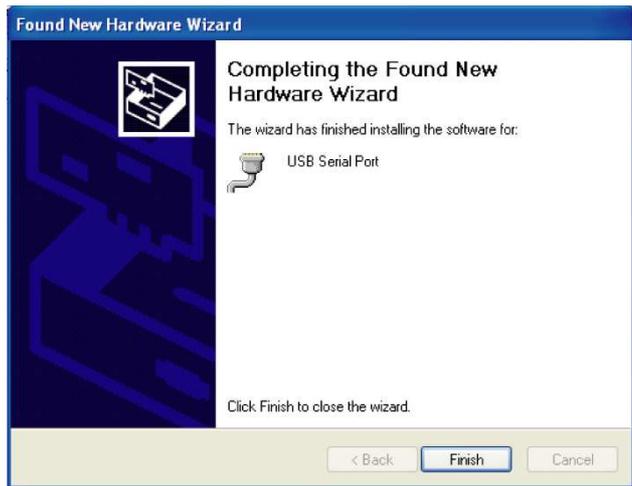
4. "USB Serial Port" will be detected as a new hardware. Select **Install the software automatically (recommended)** and click **Next**.



5. Installation of the driver will be started and the screen will show installation status display.



6. After the completion of the installation of the USB driver, click **【Finish】**.



1.4 Uninstallation of the Data Management Software

For uninstalling the Data Management Software, go to [Control Panel] → [Programs] → [Programs and Features] and select [ACO TYPE 6236/6238 Sound Level Meter Ver1.0]. Then click **【Uninstall】**.



Even if the Data Management Software is uninstalled, ".NET Framework 3.5 SP1" will not be uninstalled. For uninstalling the NET Framework 3.5 SP1, delete it by the same procedure as above, go to [Control Panel] → [Programs] → [Programs and Features].

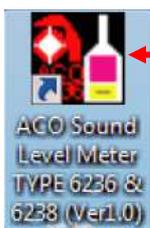
Care should be taken for uninstallation of the .NET Framework 3.5 SP1 since it may affect the operation of other applications.



1.5 Starting the Data Management Software

Click shortcut icon "ACO TYPE 6236/6238 Sound Level Meter Ver1.0", or start from Start button and go to [All programs] → [ACO] and select [ACO TYPE 6236/6238 Sound Level Meter Ver1.0]

【Start from icon】



Click

【Start from Start button】



[Start button]→[All programs]→[ACO] and select [ACO TYPE 6236/6238 Sound Level Meter Ver1.0]

2. Authentication of Data Management Software

Trial usage period for the Data Management Software is 30 days.

To use the software beyond 30 days, authentication of the Data Management Software is needed.

2.1 Authentication file

Authentication file (aco_auth.lic) is provided.

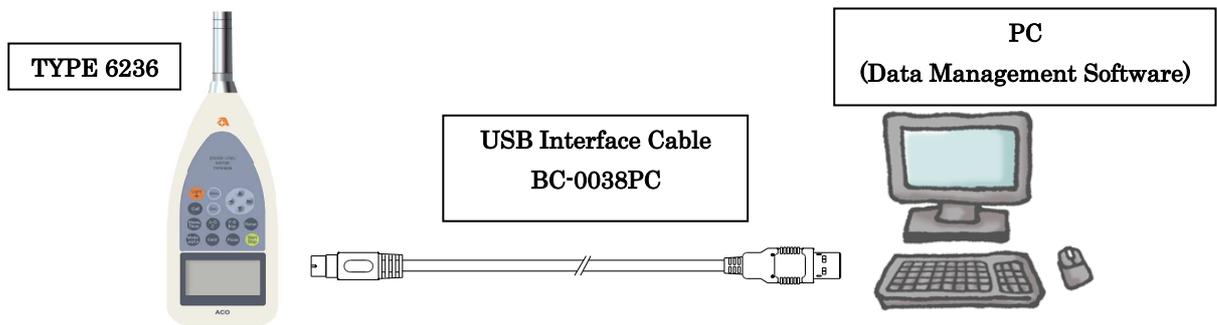
Using the authentication file, perform authentication of the Data Management Software.

2.2 Authentication procedure

Perform authentication with following procedure.

1. Start the Data Management Software
2. Connect the software to TYPE 6236 by remote control

Set TYPE 6236 to communication mode (Remote) and connect TYPE 6236 with PC using USB interface cable included in the software as shown below.



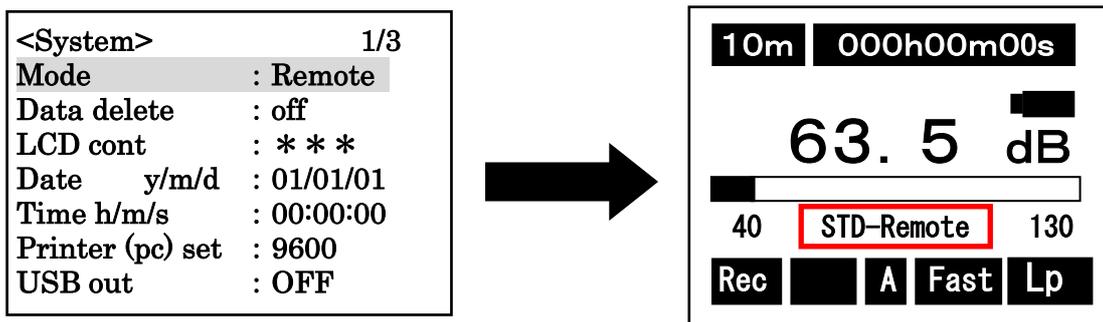
Connection procedure is as follows.

2-2-1. Turn on the power of TYPE 6236.

2-2-2. Set TYPE 6236 to communication mode (Remote)

At the [Menu] <System> 1/3 screen, change the [Mode : Normal] to [Mode : Remote] using ▲ ▼ keys.

Register the setup by pressing the [Set] key and the screen will return to measurement screen.



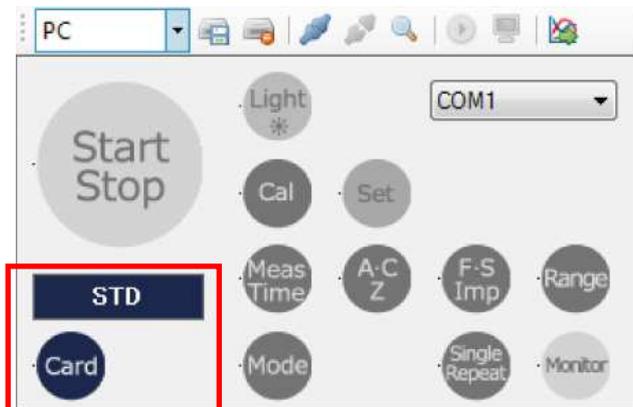
Name of the optional card inserted at the time will blink.

- 2-3. Connect TYPE 6236 with the PC using the USB Interface Cable included in the Data Management Software.

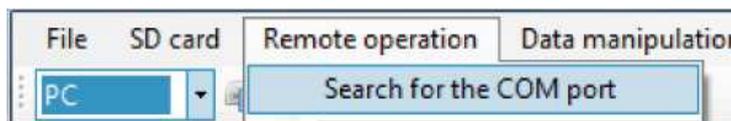
<Note>

USB Interface Cable shall be connected only after the power of the TYPE 6236 is turned ON.

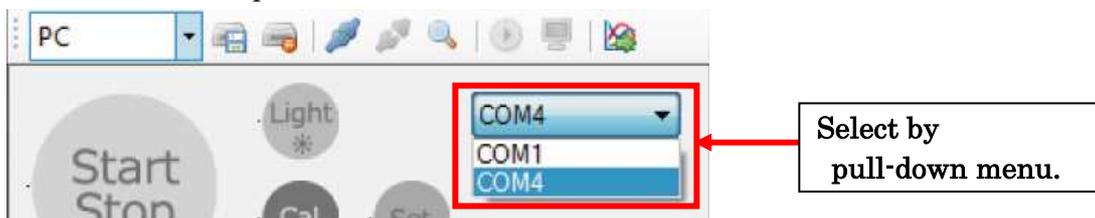
2-4. Select remote control using the [File management / remote control] button to display Remote Control Panel. By clicking the [Card] button, set the card type display on the remote control panel to the same card type recognized by the TYPE 6236. If the card is not inserted yet, set card type to **【STD】**



2-5. Select [Remote operation]→[Search for the COM port] on the Menu Bar, or by clicking [Search for the COM port] on the Tool Bar, restructure COM port in the PC.



2-6. Select USB COM port number that is connected to the TYPE 6236.



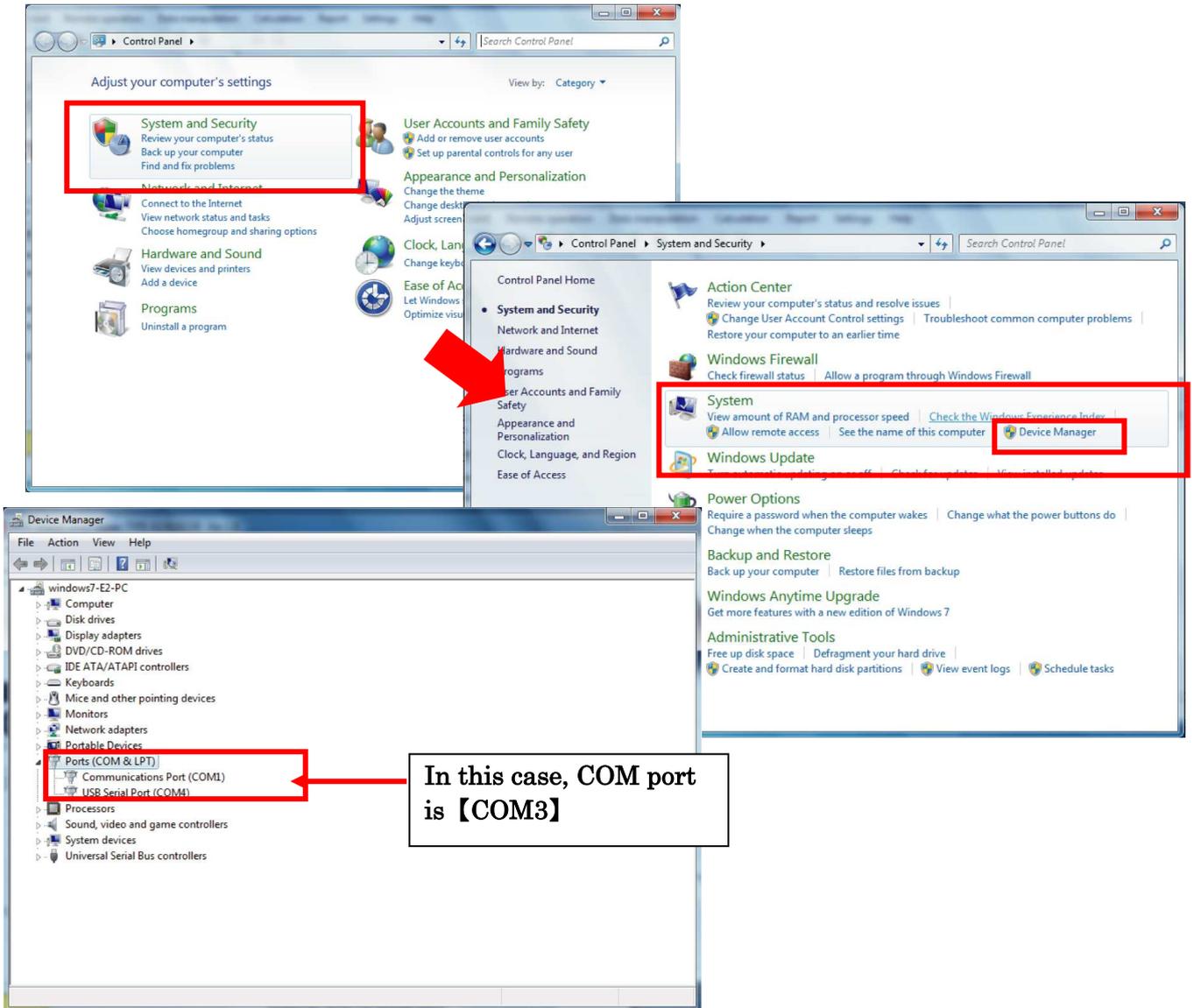
If correct COM port number is unknown, open the device manager from property of the system and then confirm the COM port number of the “USB Serial Port” by “Port (COM and LPT)” of the communication port.

【Procedure for confirmation of the COM port】

※Explanation as shown below is for the classic display style. Instruction Manual for Windows shall be referred to for detailed explanation.

1. Open [Control Panel] from the [Start] button of the Windows menu.
2. Click and open [System and Security].
3. [System] of the menu and then click [Device Manager].

At Port (COM and LPT), confirm the COM port of the connected USB Serial Port.



2-7. Click [Connect TYPE 6236] on the Tool Bar and TYPE 6236 and PC will be connected.

【When TYPE 6236 is not connected】



【When TYPE 6236 is connected】



<Note>

- a. When the SD card in the TYPE 6236 is changed, card type shall be changed as well using the [Card] button on the Remote Control Panel.
- b. If the TYPE 6236 is connected after the Data Management Software was started, search for the COM port shall be performed again.
- c. If the COM port number of the connected USB Interface Cable is not indicated on the Remote Control Panel, search for the COM port shall be performed again.
- d. If the connection with the TYPE 6236 is broken for some reason, such as disconnection of the USB Interface Cable, etc., such message will be displayed or there will be no response. Re-check the connection with the TYPE 6236 and re-start the Data Management Software. (During remote control operation, or “in connection”, do not connect/disconnect USB Cable. Disconnection operation with the TYPE 6236 shall be made first and then disconnect the USB Cable.)
- e. Remote control operation while the Real Sound Recording Card inserted to the TYPE 6236 is not supported.

3. Select [Help] → [Application authentication] on the Menu Bar.



4. Authentication window will be displayed.



Click [Open the file] on the Authentication window.

If authentication is already completed, following message will be shown on the window.

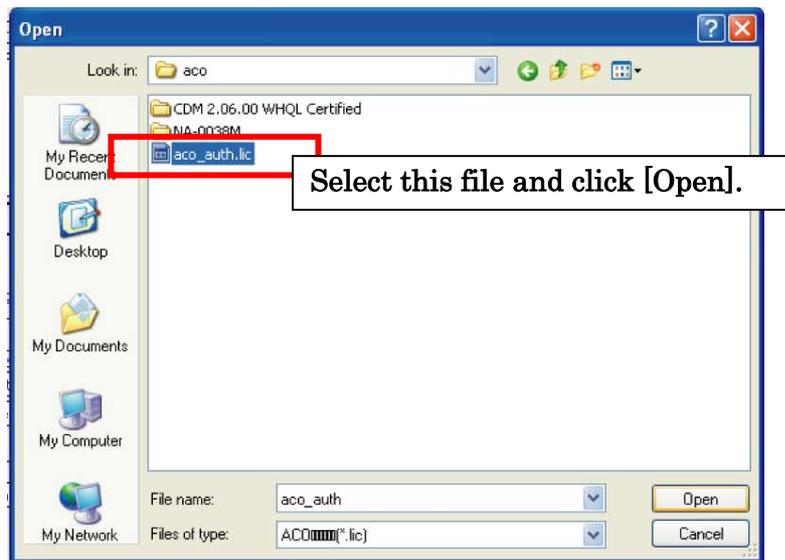
Click [OK] and the display will return to the main window of the Data Management Software.



If the connection between the TYPE 6236 is not established, [Open the file] and [Authenticated] button cannot be clicked. In such case, click [Exit] and confirm the connection with the TYPE 6236.



5. [Open] window will be displayed.
Select authentication file (aco_auth.lic) and click [Open].



6. File path of the selected authentication file will be indicated on the Authentication window. Click [Authenticate].



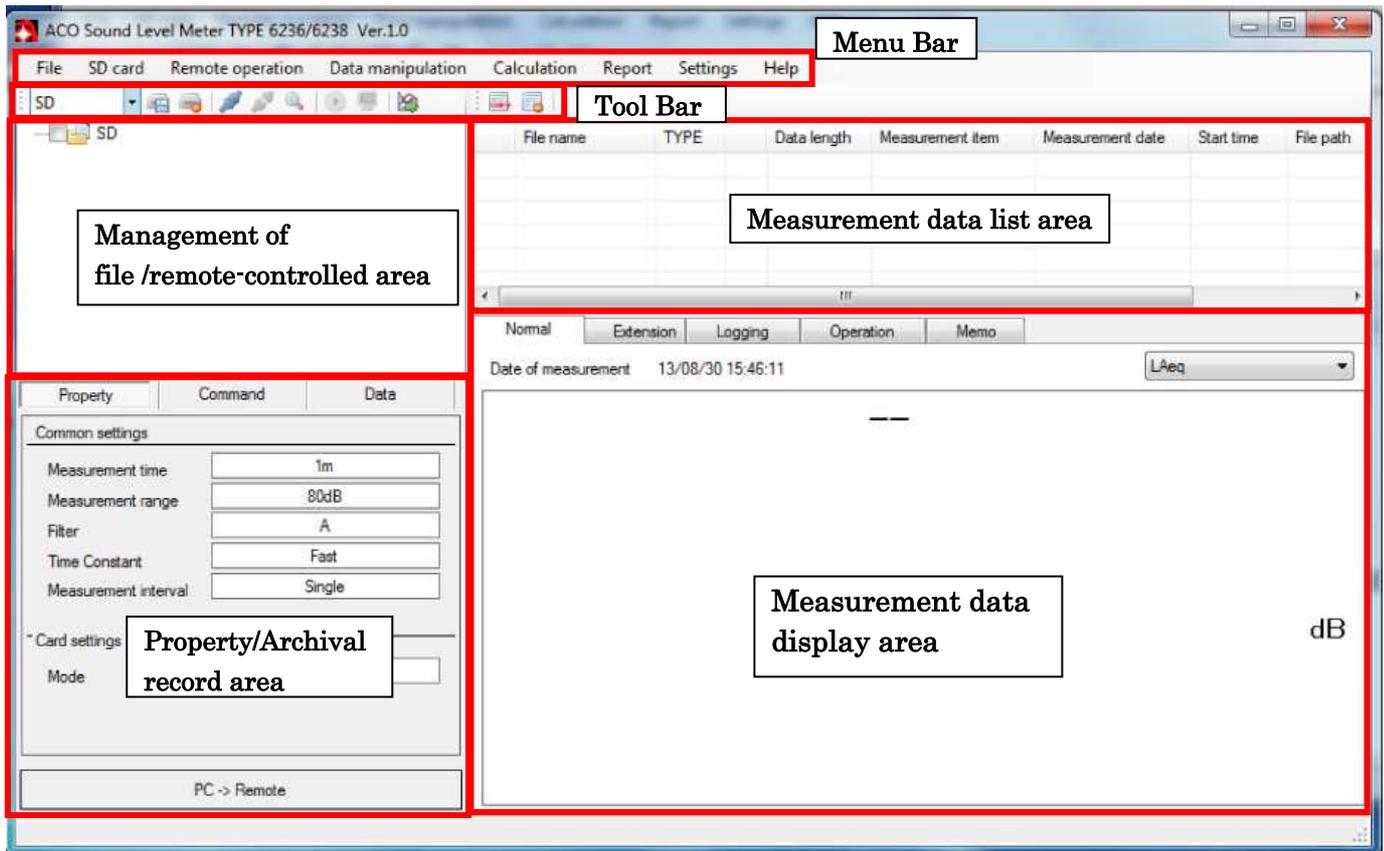
7. If the authentication is completed normally, Authentication Completion window will be displayed. Click [OK] and the display will return to the main window of the Data Management Software.



3. Name of each part and function

3.1 Outlook of the Data Management Software

General outlook of the Data Management Software is as shown below.



■ Menu Bar

Menu of the operation used by the Data Management Software.

■ Tool Bar

Indicates buttons of functions that are frequently used for the Data Management software.

■ Management of file/remote-controlled area

This area is to control the files in the SC card and PC, and to performed remote control operation.

■ Property/Archival record area

This area is to display simple list of the measurement setup, command history,

■ Measurement data list area

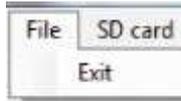
This area is to display list of measurement data recorded in the Data Management software.

■ Measurement data display area

This area is to display measurement values or graph for the content of the measured data selected by the Measurement data display area with measured data or graph

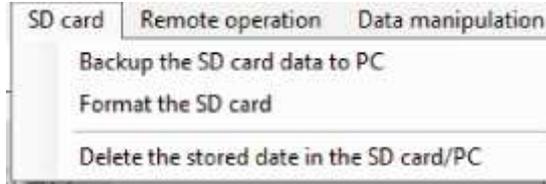
3.2 Functions on the Menu Bar

■ File



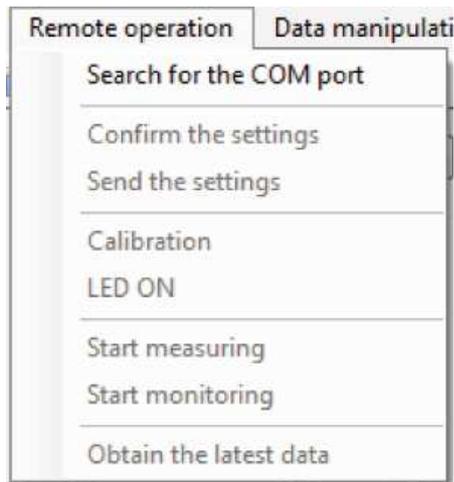
- Exit : Finish the Data Management Software.

■ SD Card



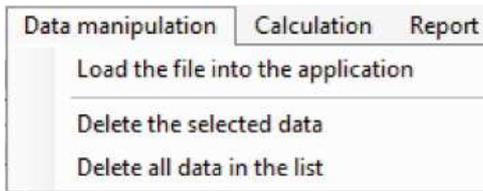
- Backup the SD card data to PC : Create backup file in the PC for the files (measured data) in the SD Card.
- Format the SD card : Delete all the files (measured data) in the SD Card.
- Delete the stored data in the SD card/PC : Delete specified file (measured data) in the SD Card or PC.

■ Remote Operation



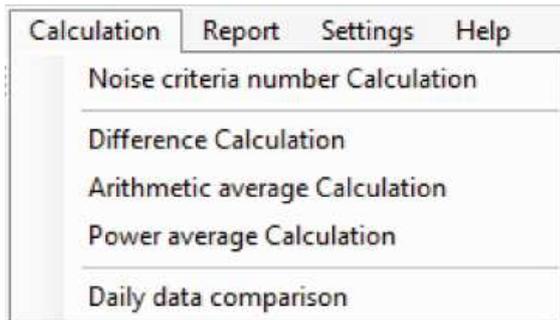
- Search for the COM port : Restructure COM port in the PC and list the COM port in the Remote Control Panel.
- Confirm the settings : Obtain information on measurement setup from the TYPE 6236.
- Send the settings : Setup measurement setup information in the TYPE 6236.
- Calibration : Start calibration of TYPE 6236.
- LED ON : Light up the backlight of the TYPE 6236 display. Re-click to turn off the light.
- Start measuring : Start remotely controlled measurement.
- Start monitoring : Start remotely controlled monitoring.
- Obtain the latest data : Obtain latest measurement data from the TYPE 6236.

■ Data manipulation



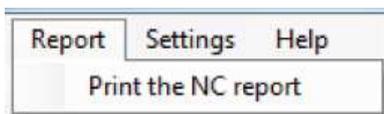
- Load the file into the application : Read file specified on the file control panel and add it the measurement data list.
- Delete the selected data : Delete measurement data selected from the measurement data list.
- Deletion all data in the list : Delete all the measurement files in the measurement data list from the list.

■ Calculation



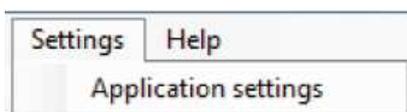
- Noise criteria number Calculation : Calculate noise criteria.
- Difference Calculation : Calculate difference using two (2) measurement data.
- Arithmetic average Calculation : Calculate arithmetic average using multiple measurement data.
- Power average Calculation : Calculate average of power using multiple measurement data.
- Daily data comparison : Display comparison in order of date for multiple measurement data.

■ Report



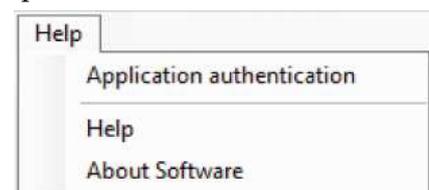
- Print the NC report : Create and print NC report.
Printing of the NC report is possible only if the measurement data is 「1/1 Octave Real-time analysis data」 and 「Z (Flat) characteristic」 .

■ Setting



- Application settings : Set backup folder for measurement data.

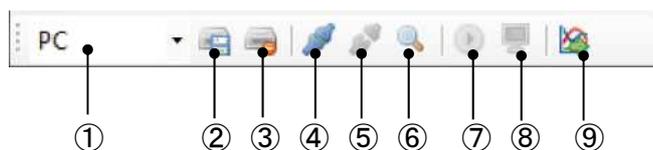
■ Help



- Application authentication : Perform authentication of the Data Management Software.
- Help : Display help file.
- About Software : Display version information.

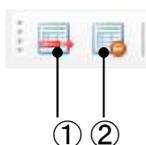
3.3 Functions on the Tool Bar

3.3.1 Tool Bar for file management / remote control



- | | |
|------------------------------------|--|
| ① Switch display of SD/PC tree | : Switch display of tree on the file control panel between “SD” or “PC”. |
| ② SD card data backup to PC | : Copy measurement data file in the SD card to the backup folder in the PC. |
| ③ Initialization of SD card | : Delete all the measured data file in the SD Card. |
| ④ Connect TYPE 6236 | : Connect to the TYPE 6236 |
| ⑤ Disconnect TYPE 6236 | : Disconnect the TYPE 6236 |
| ⑥ Restructuring COM port | : Restructure COM port in the PC. |
| ⑦ Start remote control measurement | : Start measurement by the TYPE 6236. |
| ⑧ Start remote control monitoring | : Start monitoring of the TYPE 6236. |
| ⑨ Import data to application | : Import data in the measurement files selected on the file control panel and add them to the measurement data list. |

3.3.2 Tool Bar for the measurement data list



- | | |
|--|--|
| ① Deletion of a data selected from the data list | : Delete 1 (one) data selected from the measurement data list. |
| ② Deletion of all data from the data list | : Delete all the data in the measurement data list. |

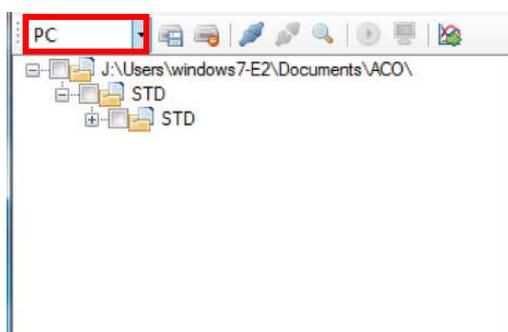
3.4 Management of file /remote-controlled area

3.4.1 File Management Panel

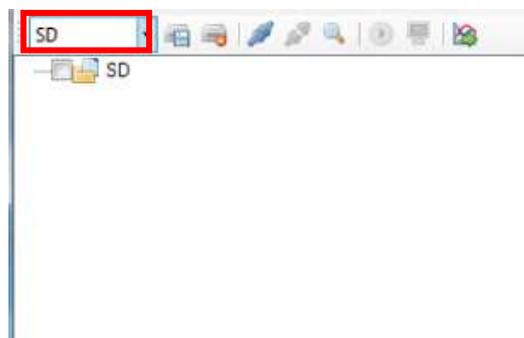
Tree list of the measurement data file / directory is displayed.

By using the upper box, “PC or “SD” can be switched. When the “PC” is selected, the route folder is the folder set by the [Setting] → [Application setting].

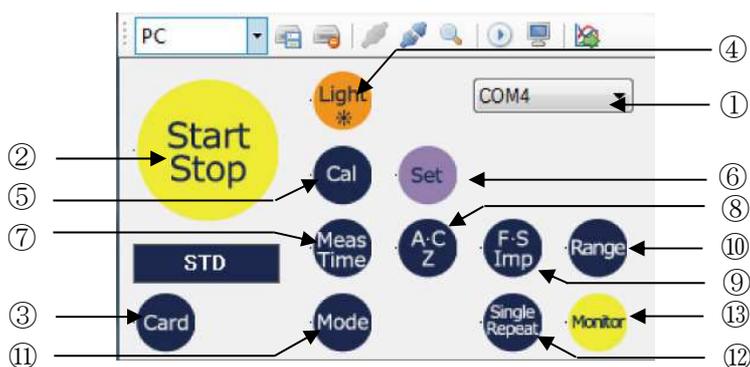
【At “PC”】



【At “SD”】



3.4.2 Remote Control Panel



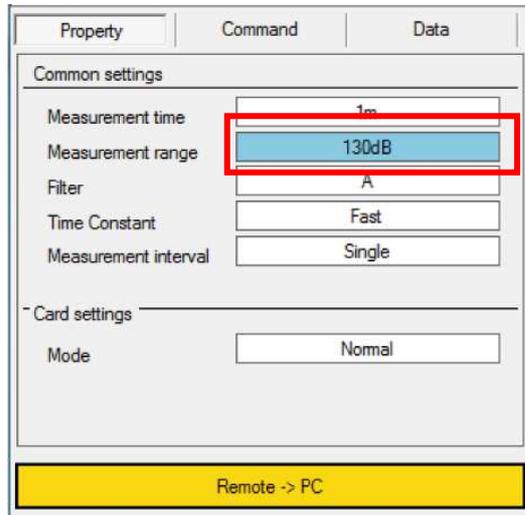
- ① COM port selection pull-down menu : All the COM ports available for the PC is indicated. Select 1 (one) COM port to connect.
- ② Start/Stop : Start/Stop remote control measurement. Click the button to start the measurement. Click again to stop. Other buttons cannot be used during the measurement.
- ③ Card : Set the SD card type recognized by the TYPE 6236. With each click of the button, the display is changed as follows. **【STD】**→**【Octave】**→**【FFT】**→**【RSR】** Even if the card type is set (changed), card type display on the TYPE 6238 is not changed.
- ④ Light : Light up the backlight of the display of the TYPE 6236. Click the button again to turn off the light.
- ⑤ Cal : Perform calibration of the TYPE 6238. Click again the button to stop the calibration.
- ⑥ Set : Reflect information set by the Data Management Software. Setting of the TYPE 6238 is not changed unless this button is clicked.
- ⑦ Meas.Time : Set measurement time. With each click of the button, measurement time is changed as follows.
***→1s→3s→5s→10s→1m→5m→10m→15m→30m→1h→8h→12h→24h
- ⑧ A·C, Z : Set filter. With each click of the button, filter is change as follows. A→C→Z
- ⑨ F·S, Imp : Set time constant. With each click of the button, time constant will be changed as follows. Fast→Slow→Impulse
- ⑩ Range : Set measurement range. With each click of the button, range is changed as follows. 130dB→120dB→110dB→100dB→90dB →80dB
- ⑪ Mode : Set measurement mode/analysis range Measurement mode/analysis range is changed depending on the SC card type set by the SD card type button.
For **【STD】** : Normal→Latm5→LA1eq
For **【Octave】** : 1/1→1/3
For **【FFT】** : LIN→MAX→INST
- ⑫ Single, Repeat : Set measurement interval. With each click of the button, measurement interval is changed as follows. Single→ Repeat
- ⑬ Monitor : Start/stop remote control monitoring. Click the button to start the monitoring. Click again to stop.

3.5 Property/Archival record area

3.5.1 Property Panel

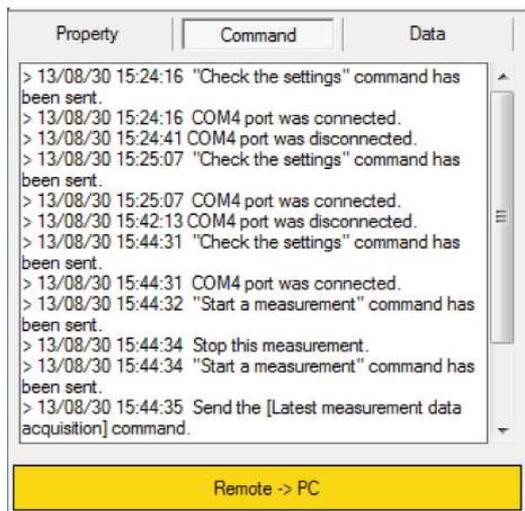
Setting for the remote control measurement, and setting for the measurement data file selected from the measurement data list, is displayed.

During remote control operation, background color of the columns, for which setting values are changed, will turn to light blue.



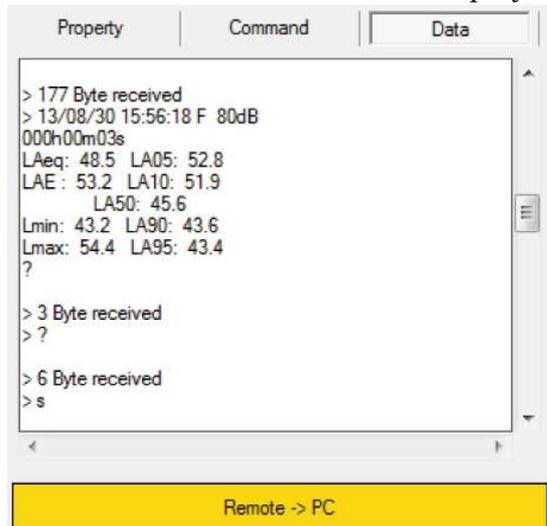
3.5.2 Command History Panel

History of operation during remote control operation is displayed.



3.5.3 Simple Data Display Panel

When the measurement data file is selected on the file management panel (when cursor is on the file name), first data of the measurement data file is displayed.

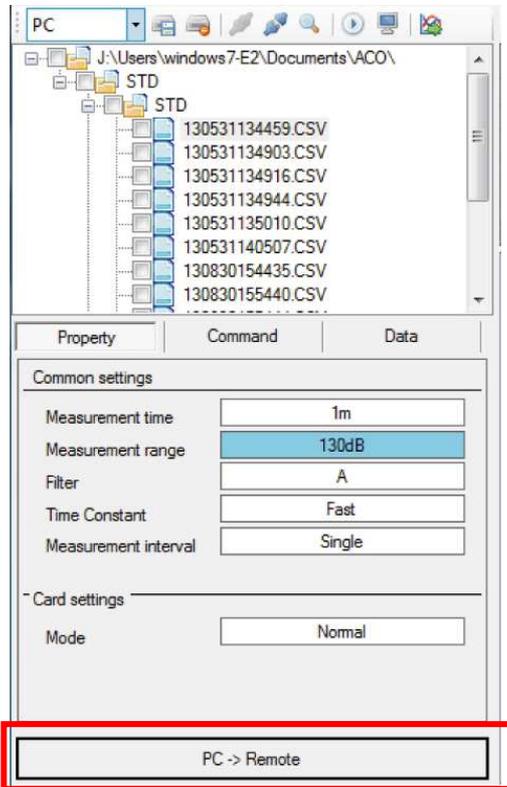


3.5.4 File management/remote control Button

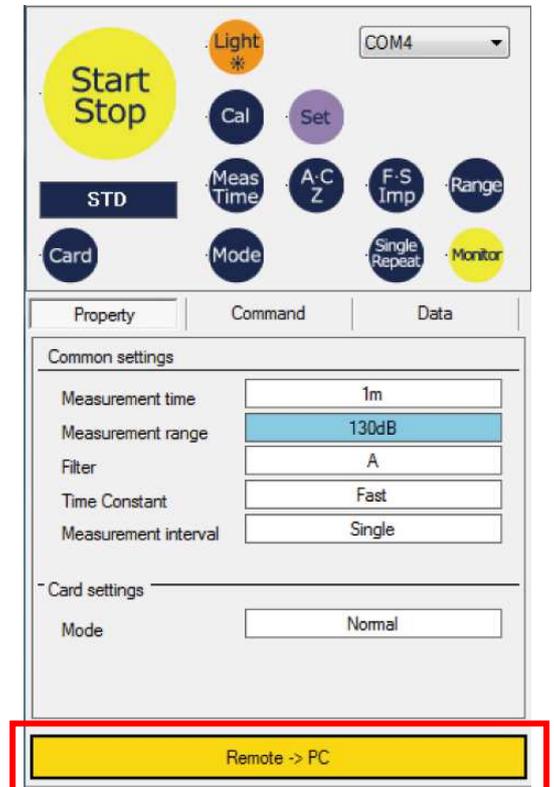
Switch display between file management and remote control operation.

With each click of the button, display is changed alternately file between file management and remote control. At the remote control, the button becomes yellow color.

【At File Management】



【At Remote Control】



3.6 Measurement data list area

3.6.1 Measurement data list

List of measurement data included in the Data Management Software is displayed.

Measured data is added with the same order as the acquisition of the data. Sorting of the list cannot be made. When certain measurement file in the list is selected, measured data is displayed on the measurement data list area.

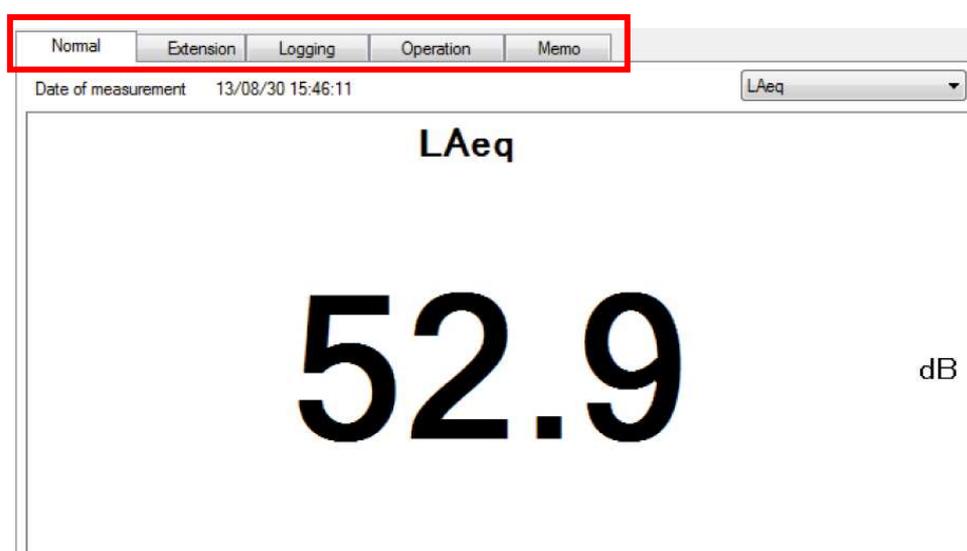
Measurement data with different format cannot be imported to the Data Management Software. If the file size is large, long period of time may be required to import the file to the Data Management Software.

	File name	TYPE	Data length	Measurement item	Measurement date	Start time	File path
01	005.CSV	STD	14	LAeq, LAE, Lmin, L...	13/08/30	18:09:14	M:\STD\00
02	006.CSV	STD	14	LAeq, LAE, Lmin, L...	13/08/30	18:09:31	M:\STD\00
03	007.CSV	STD	3	LAeq, LAE, Lmin, L...	13/08/30	19:44:58	M:\STD\00
04	004.CSV	STD	56	LAeq, LAE, Lmin, L...	13/08/30	16:56:03	M:\STD\00

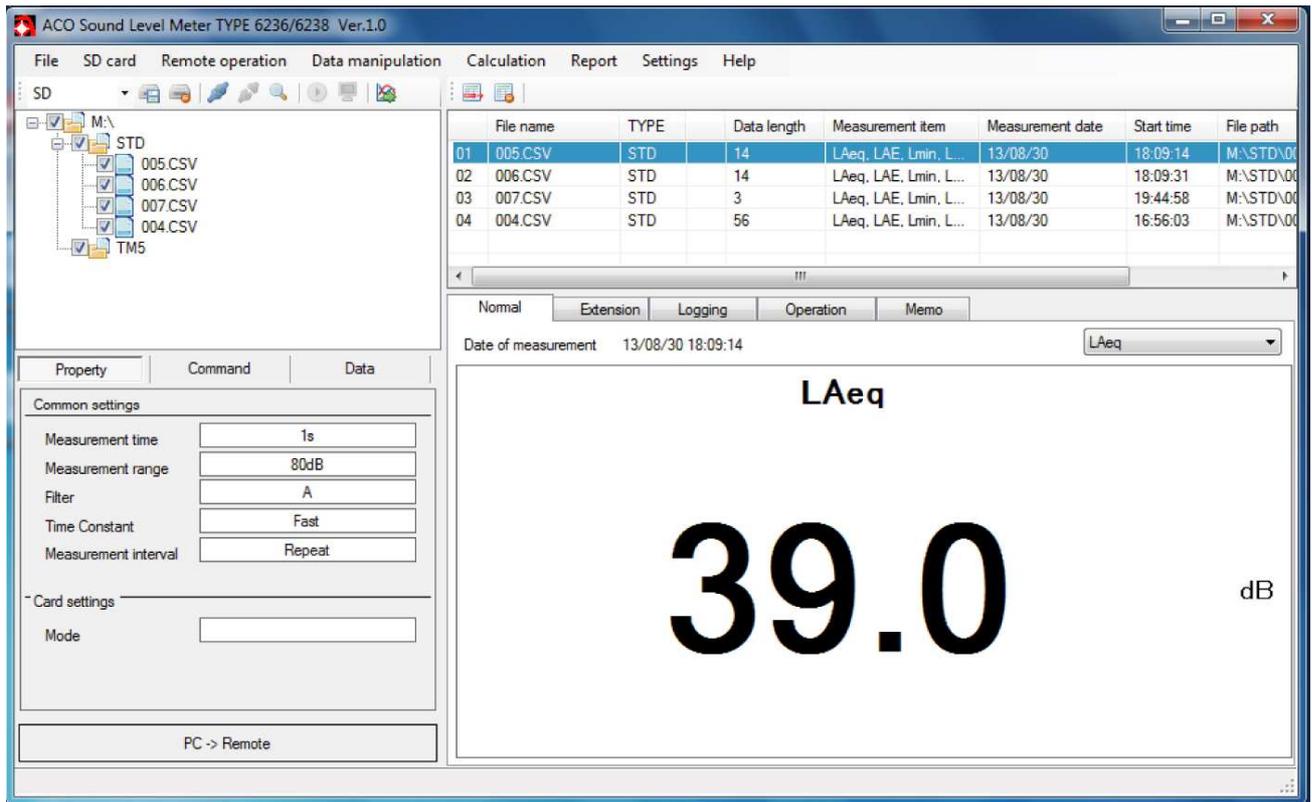
3.7 Measurement data display area

Measurement data of the measurement data file selected from the measurement data file list is displayed. It consists of following 5 panels.

- Normal panel : Main panel for measurement data display
- Extension panel : Panel to display measured value (numerical value).
- Logging panel : Panel for displaying logging
- Operation panel : Panel to display calculation result (calculation result for the noise
- Memo panel : Panel to register memo and image information for each measured data. Registered information is retained until the subject measured data is deleted from the measurement data list. When the subject measurement data is deleted from the measurement data list, the memo and image information is cleared.



4. Display of measurement data in the memory card



4.1 Basic operation

4.1.1 Procedure to display measurement data

Procedure to display the measurement data of the measurement data file recorded in the memory card is as follows.

1. Insert memory card in which the measurement data file is recorded to the drive of the PC or external SD card reader.

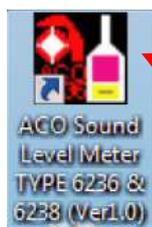
<Note>

Data Management Software can recognize SD card in only 1 (one) drive.

Also, if there are PC drive and multiple external SD card readers, the drive with the youngest name is used.

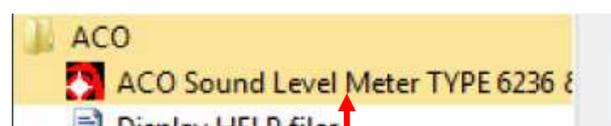
2. Start up the Data Management Software.

【Start using the Icon】



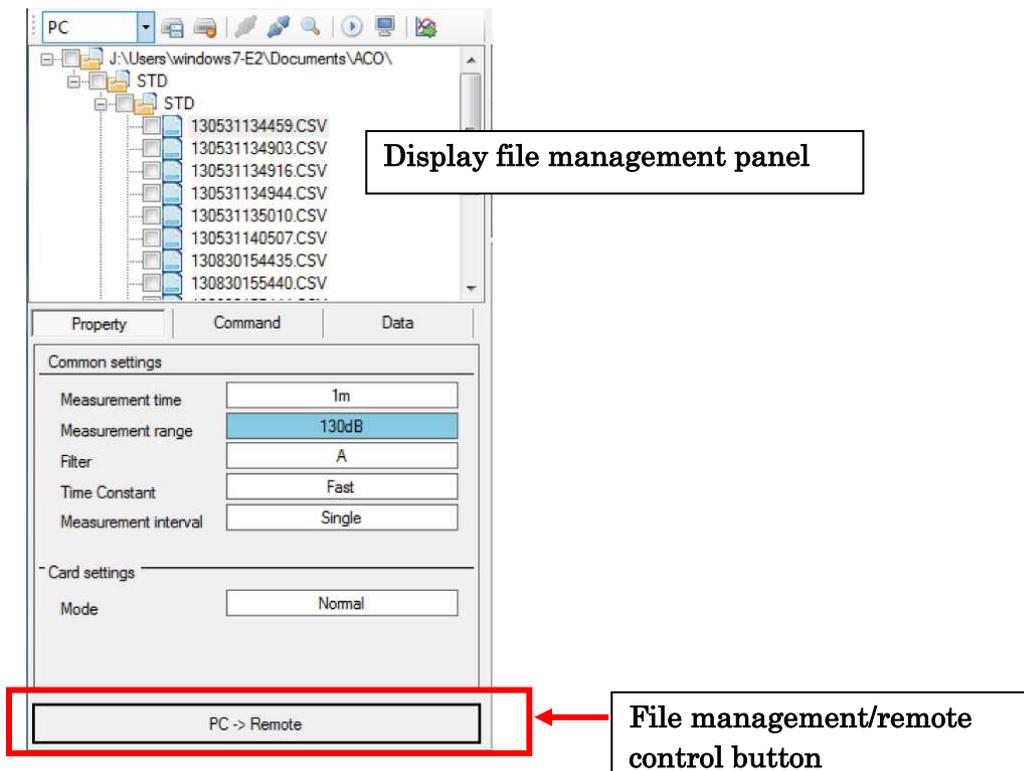
Click

【Start using the Start up button】

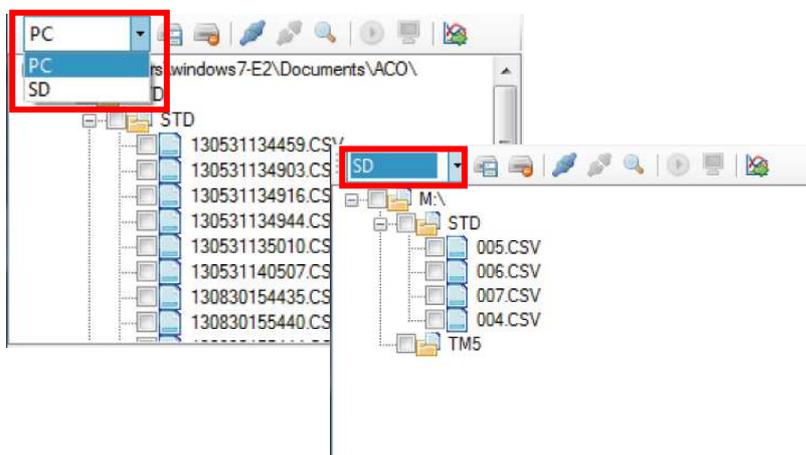


Start button]→[All programs]→[ACO] and select [ACO TYPE 6236/6238 Sound Level Meter Ver1.0]

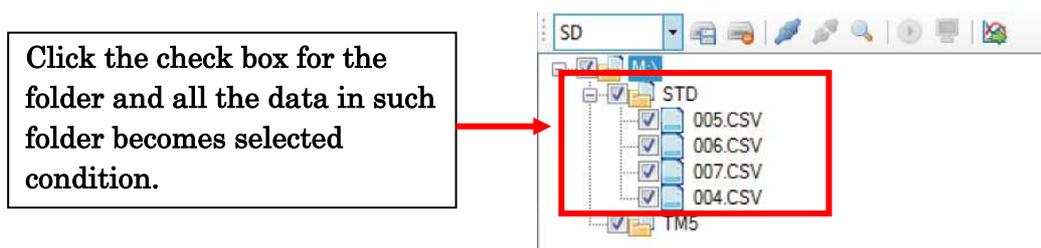
- Click [File management/remote control] to display file management panel.
The display is file management panel right after the start up of the Data Management Software.



- Change tree display on the file management panel to 「SD」.
The tree display is 「PC」 right after the start up of the Data Management Software.



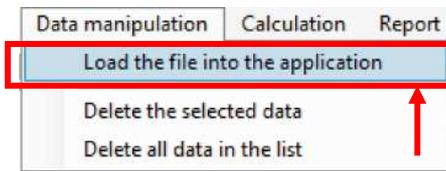
- Select measurement data file/folder on the file management panel to display desired measurement data (multiple data can be selected) Selection is made by clicking the check box of the data in the tree display. Check mark in the box shows selected data. Check mark for certain folder means that all the data in the folder is selected. To clear the selection, click check marked box again and the check mark disappears.



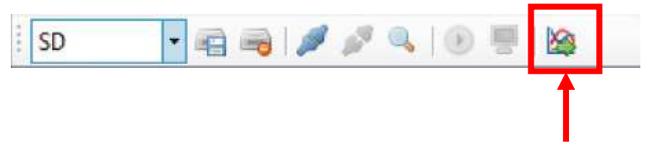
6. Import selected measurement data file to the measurement data list.

To import the measurement data file to the measurement data file list, select [Data manipulation]→[Load the file into the application] on the Menu Bar, or click [Load the file into the application] on the Tool Bar.

【Menu Bar】



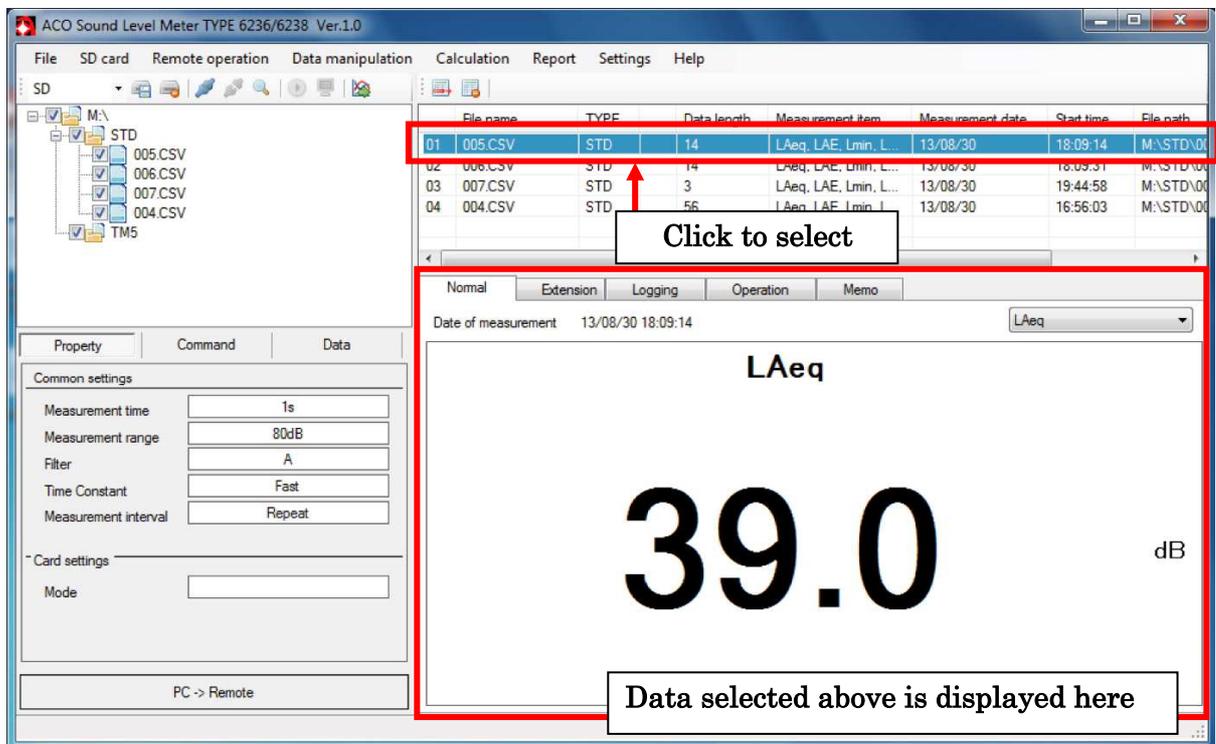
【Tool Bar】



7. Select 1 (one) measurement data file in the measurement data file list.

Selected measurement data is displayed in the Measurement data display area.

By changing display panels (Normal/Extension/Logging/Calculation/Memo), content of the display is changed.

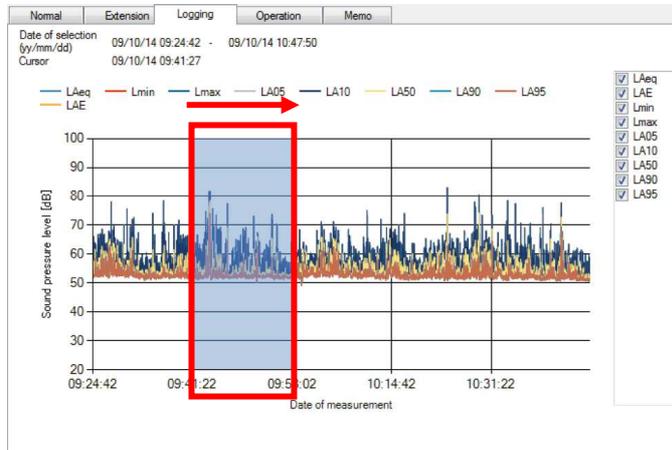


4.1.2 Change display range for X axis

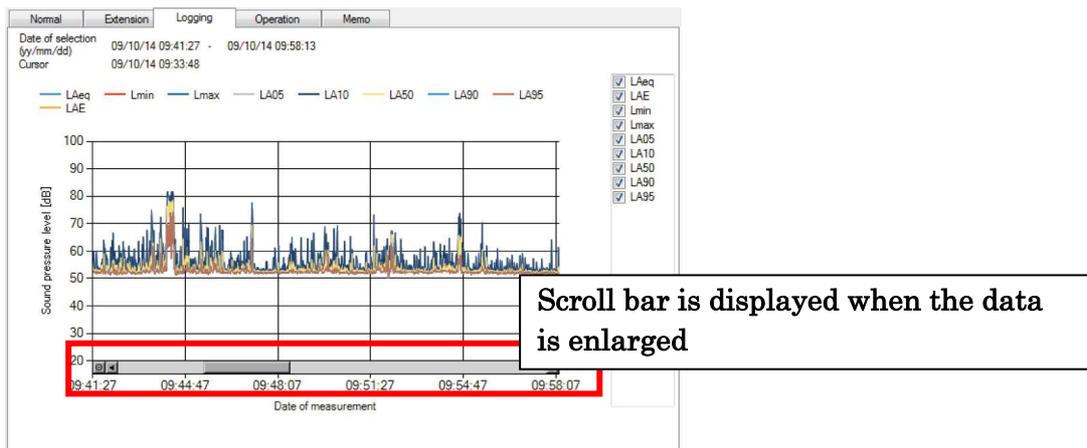
On the graph display, the range of the X axis can be set at desired value.

As an example, following explanation for the procedure to change the range is made for the logging panel.

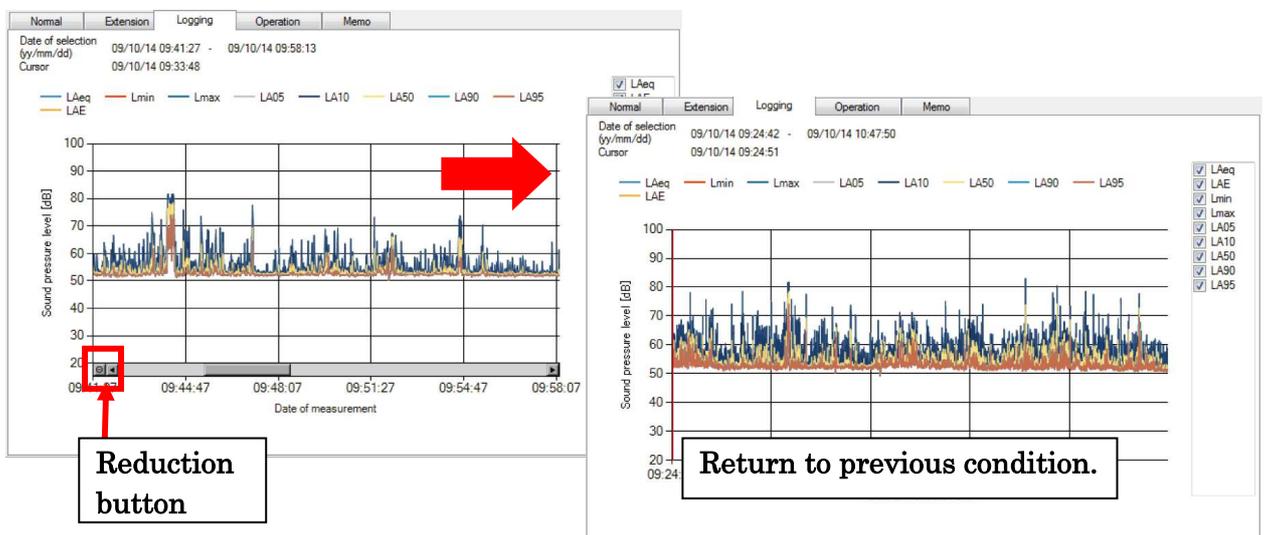
1. By left-clicking the data, move the mouse to the desired range and release the mouse button.



2. Selected data range is enlarged on the display.
To further enlarge the data, repeat above procedure.



3. To return the enlarged data to a previous display condition (to reduce), click the button (reduction button) on the left end of the scroll bar.



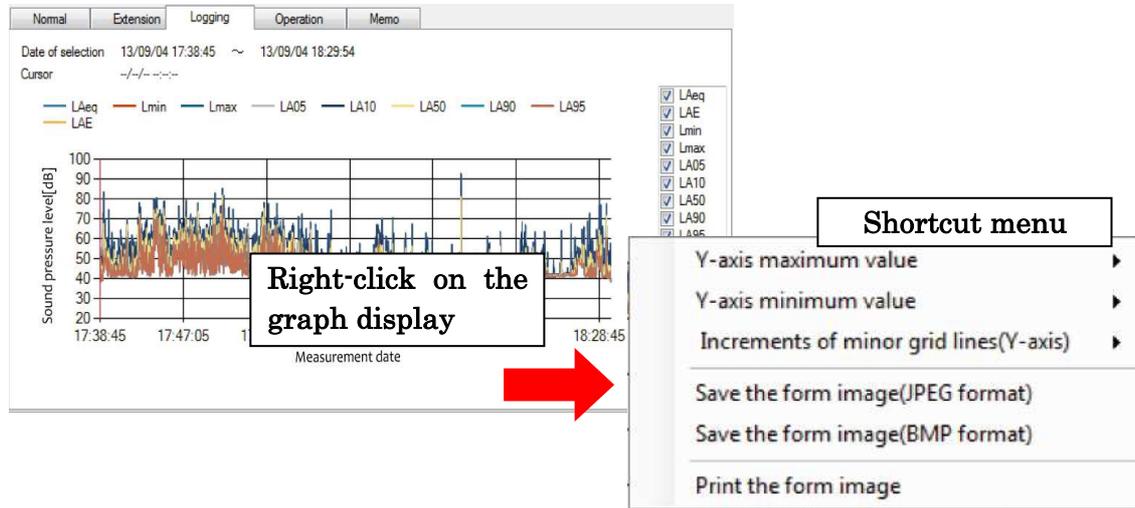
4.1.3 Change display range for Y axis

On the graph display, the range of the Y axis can be set at desired value.

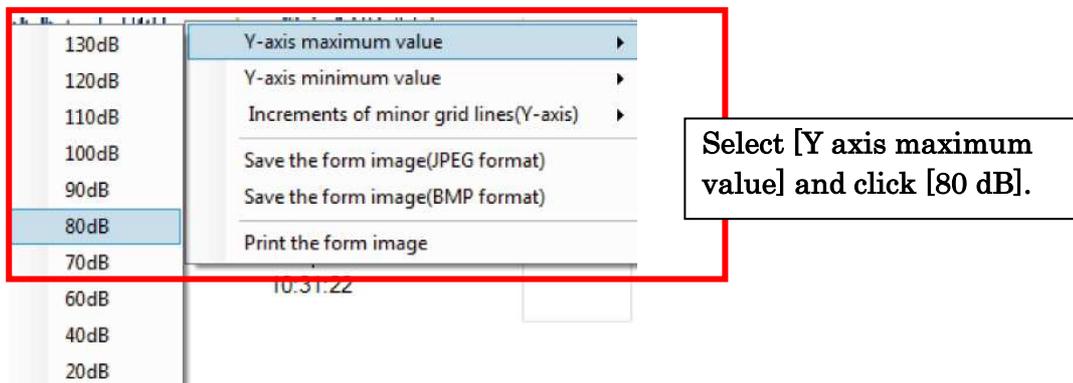
As an example, following explanation for the procedure to change the range is made for the logging panel.

(* with this example, the change is from 100 dB to 80 dB)

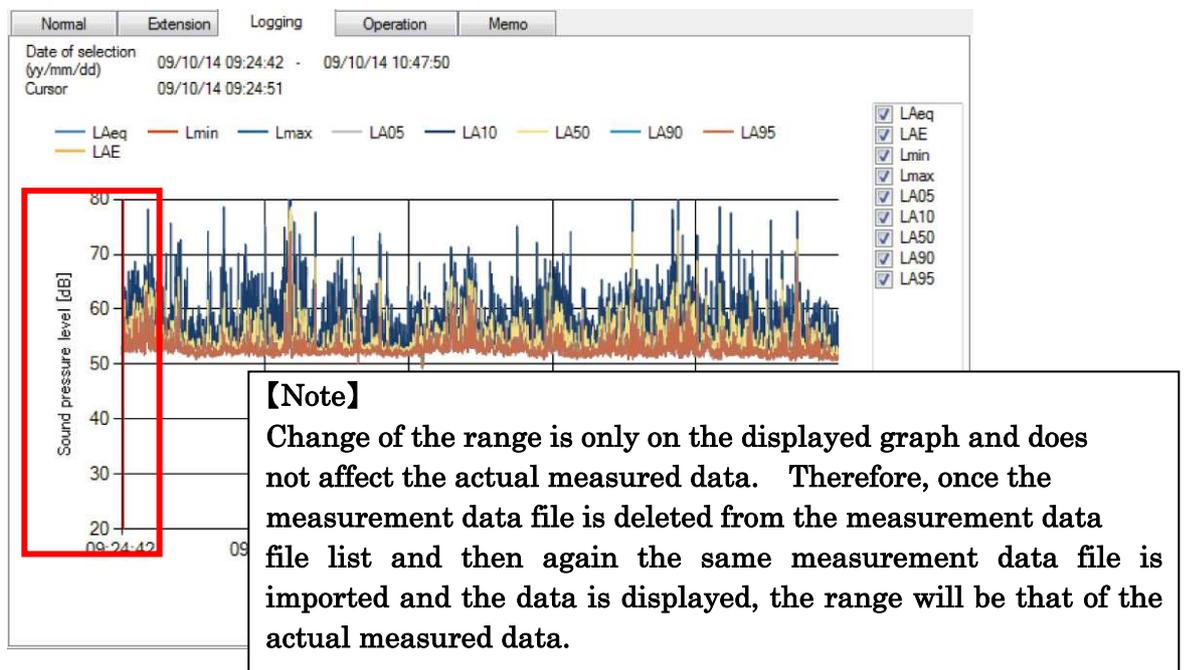
1. Right-click the mouse on the graph display screen. A shortcut menu will be displayed.



2. Select desired range from the menu.



3. Y axis display range will be changed.

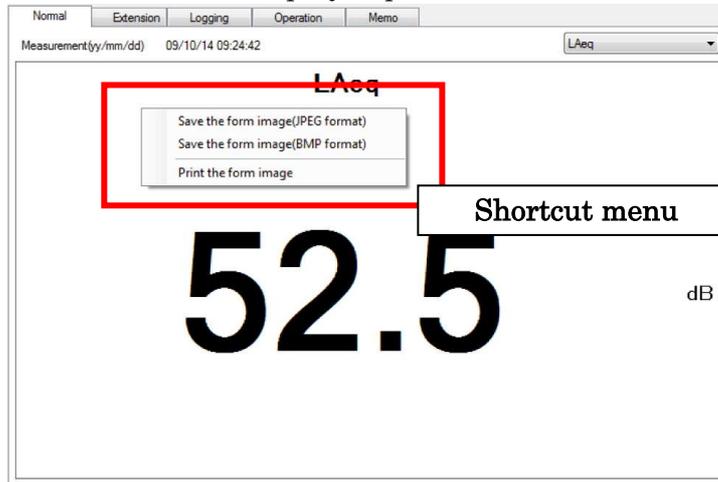


4.1.4 Save the image displayed on the screen.

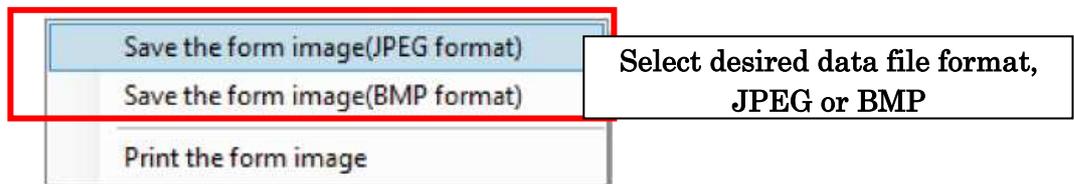
With the display of the Normal/Extension/Logging/Calculation/Memo panels, displayed image can be saved. The image file format can be selected from 2 (two) formats, [JPEG] or [BMP].

As an example, following explanation for the procedure to save the image is made for the Normal panel.

1. Right-click the mouse on the displayed panel. A shortcut menu will be displayed.

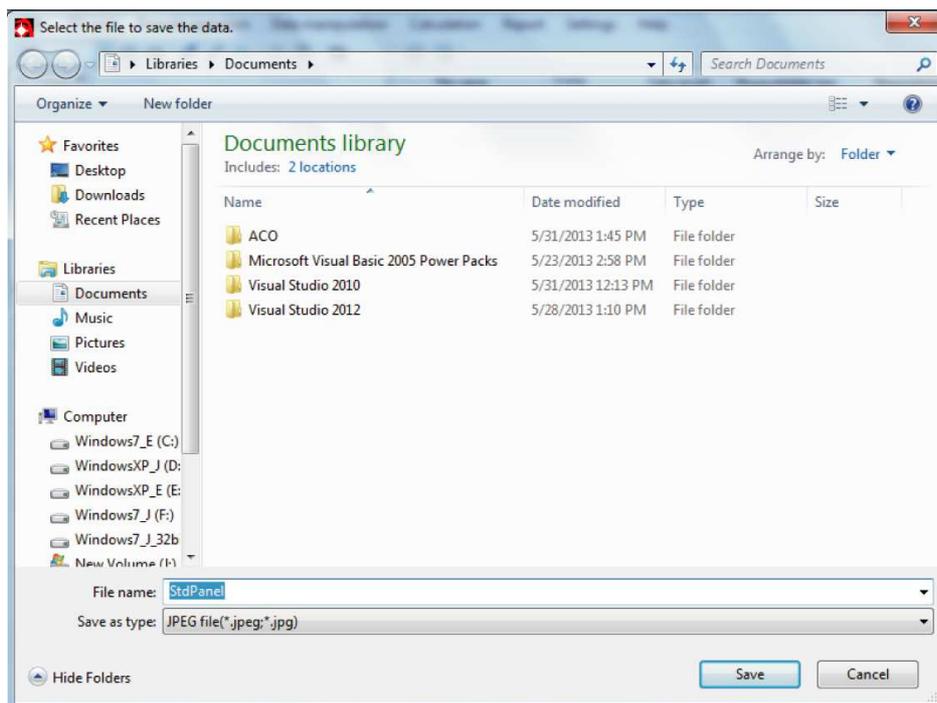


2. Select [Save the form image] from the shortcut menu.



3. Save file window will be displayed.

Select folder in which the image file is to be stored, and click [Save].

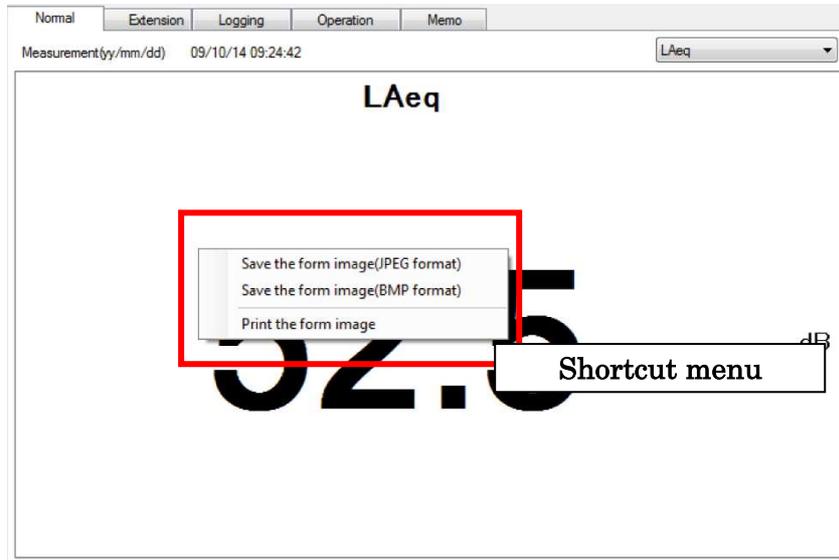


4.1.5 Print displayed image on the screen

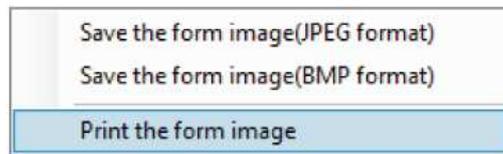
With the display of the Normal/Extension/Logging/Calculation/Memo panels, displayed image can be printed.

As an example, following explanation for the procedure to print the image is made for the Normal panel.

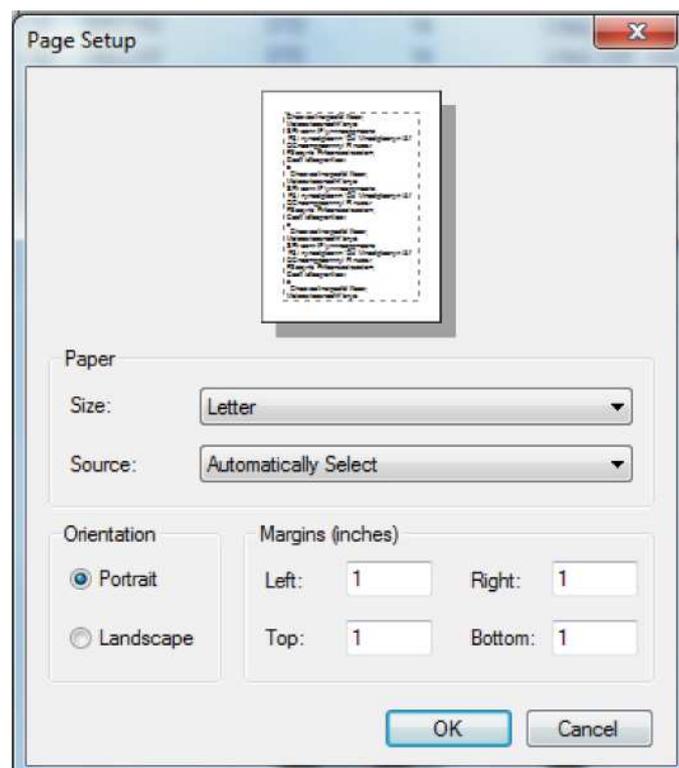
1. Right-click the mouse on the displayed panel. A shortcut menu will be displayed.



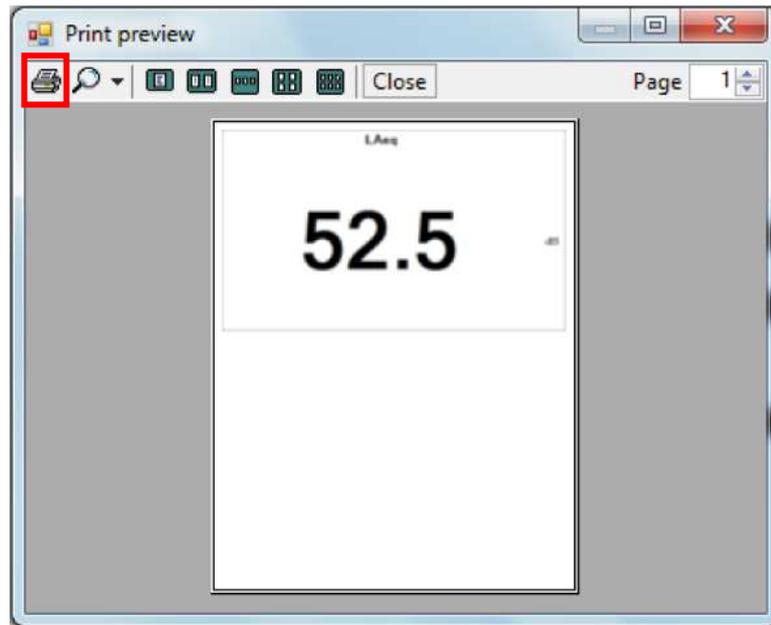
2. Select [Save the form image] from the shortcut menu.



3. Page setting window will be displayed. Make setting of the page and click [OK].



4. Print preview window will be displayed. Click [Print] to start the printing.

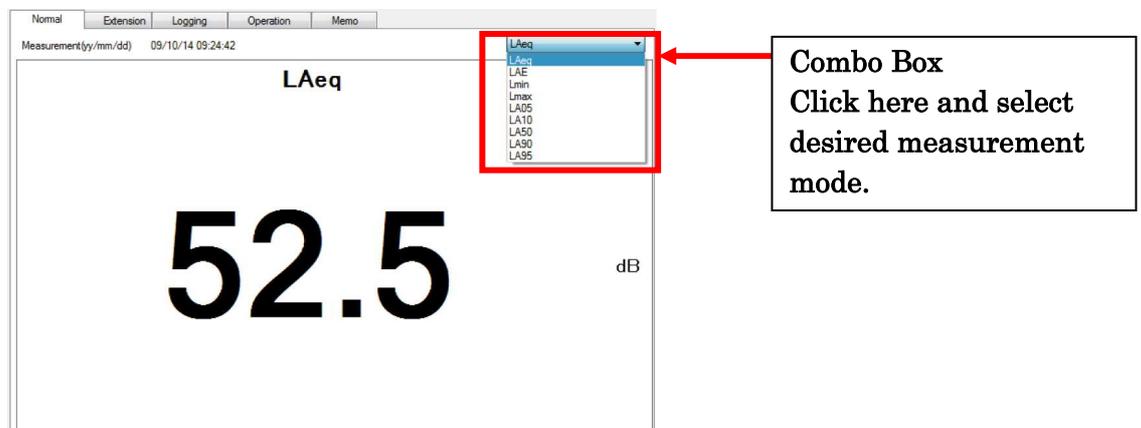


4.2 Display of measured data

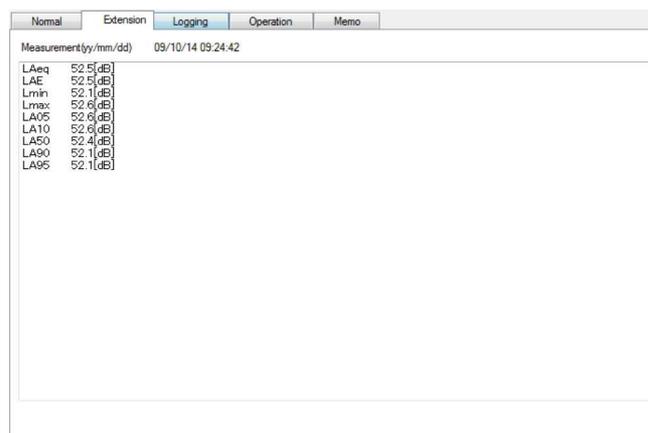
4.2.1 Display of measured value

To display calculated result of certain measurement mode, select Normal panel.

To display calculated result at other measurement mode, select desired measurement mode from the combo box on upper right corner of the panel.



To display calculation result of all measurement modes, select Extension panel.



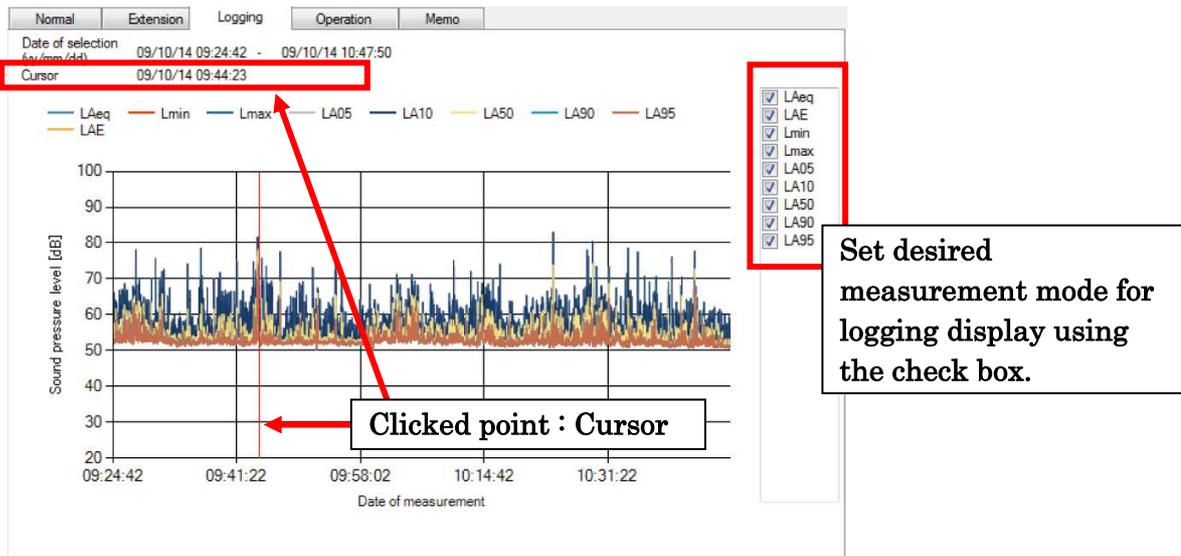
4.2.2 Display of logging

Select Logging panel to display measurement data in chronological order.

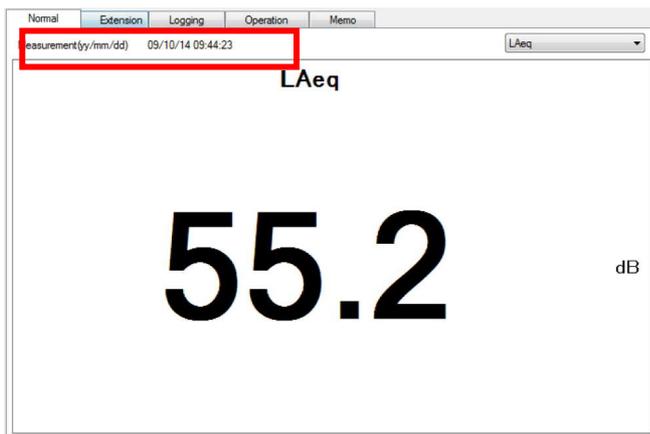
Logging is displayed if the measurement data has a measurement interval setting of [Repeat]

To designate measurement mode for logging display, select desired measurement mode using the check box in the measurement mode list on right side of the display. Check mark in the box shows selected measurement mode. To clear the selection, click check marked box again]and the check mark disappears.

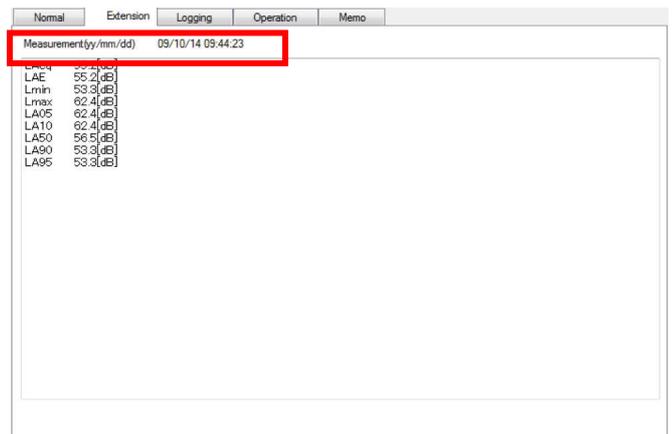
If the graph is clicked at certain point by the mouse, such point (measurement date) becomes a cursor and red line will move. Measurement data of the measurement date at the cursor position will be displayed on the Normal panel and Extension panel.



【In the case of the Normal panel】



【In the case of the Extension panel】



5. Calculation of measured data

Following 5 (five) calculations can be made using the measurement data file.

- Noise criteria number Calculation
- Difference Calculation
- Arithmetic average Calculation
- Power average Calculation
- Daily data comparison

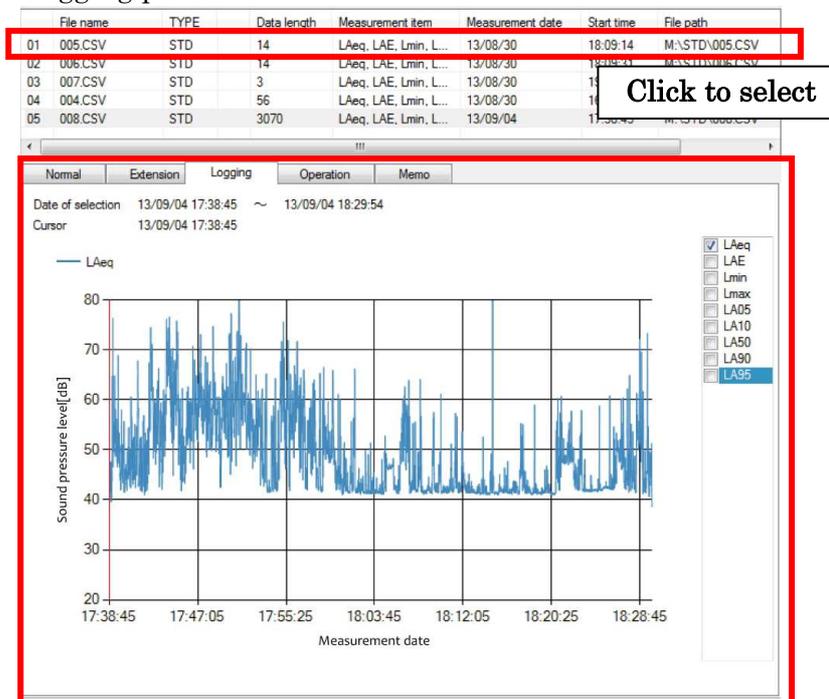
5.1 Noise criteria number Calculation

Criterion for the noise is calculated. Calculation of the noise criterion can be performed for the measurement data with the same data format as follows.

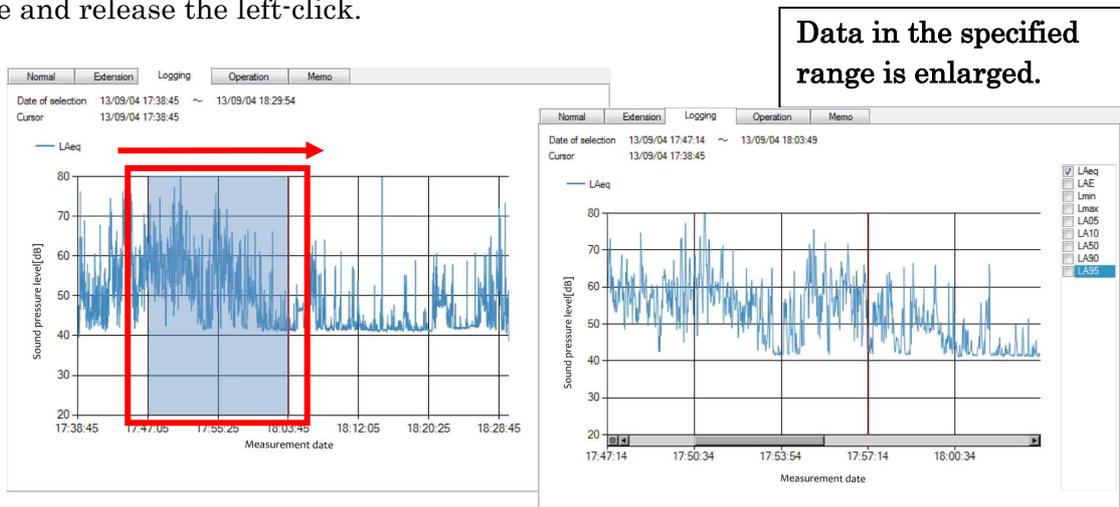
- Noise measurement data (Automatic measurement data) of either of L_A / L_C / L_P for which the measurement interval is set to 「Repeat」.

Calculation procedure is as follows.

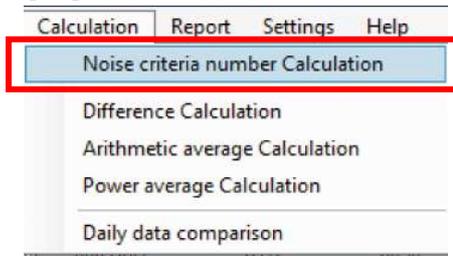
1. Select measurement data files subject for the calculation from the measurement data file list and select the Logging panel.



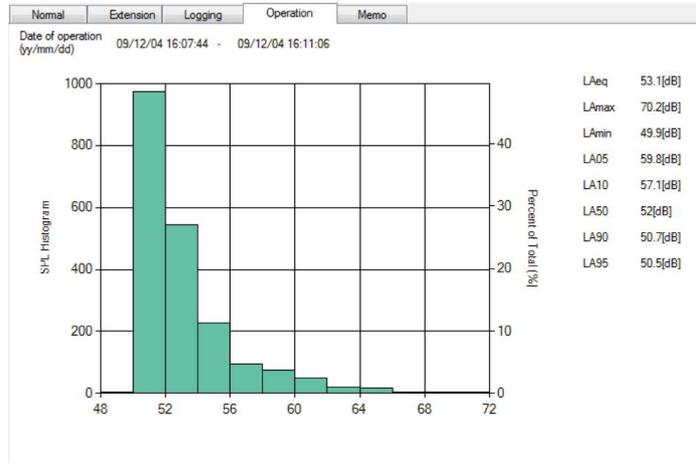
2. To specify desired time range for the calculation, left-click the mouse at the desired start point of the time and then move the mouse while keeping the left-click to the finish point of the time and release the left-click.



3. Select [Calculation]→[Noise criteria number Calculation] on the Menu Bar.



4. Calculated result will be displayed on the Calculation panel.



5.2 Difference Calculation

Calculate difference between 2 (two) different measurement data.

It is very useful for the calculation of sound insulation.

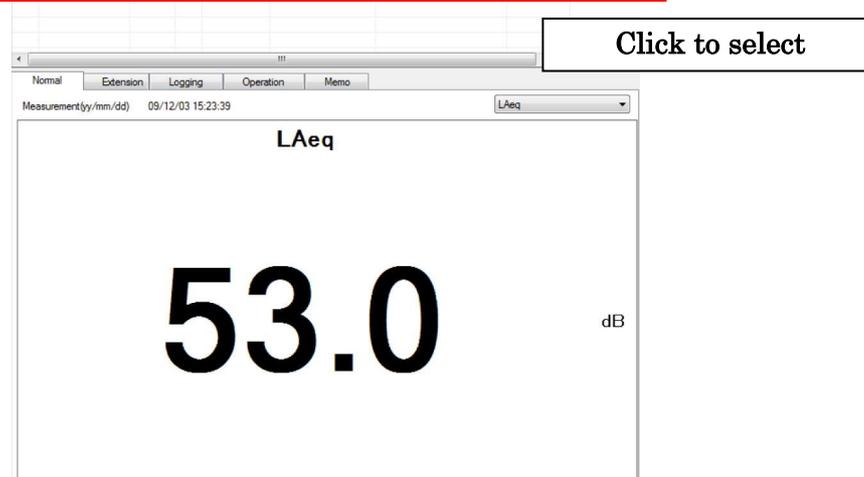
Calculation of level difference can be performed for measurement data that are for the same measurement items as listed below.

- Noise measurement data
- 1/1, 1/3 octave real-time analysis data
- FFT analysis measurement data

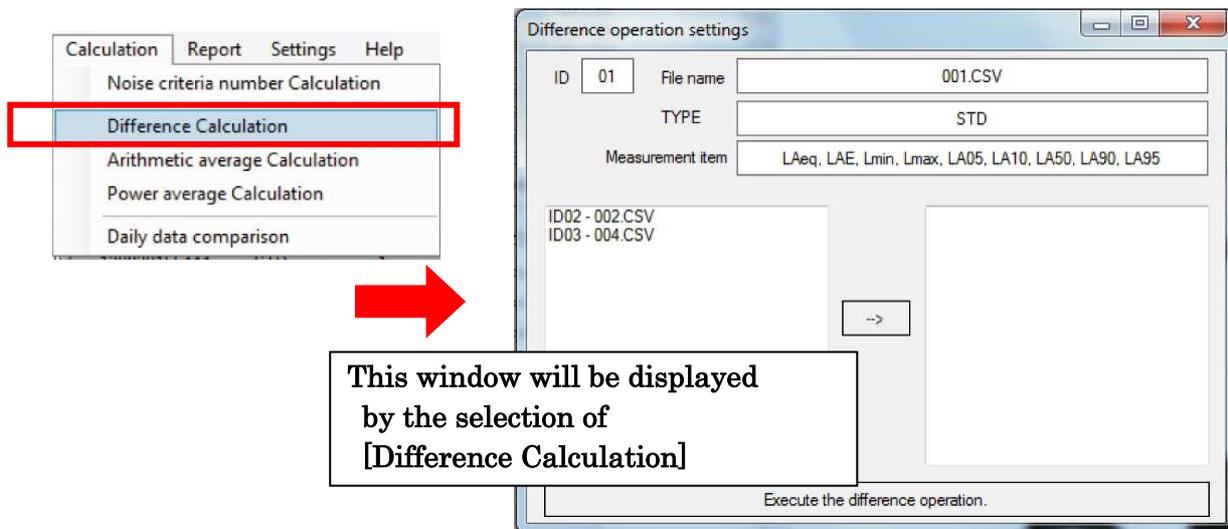
Calculation procedure is as follows. As an example, following explanation for the procedure for calculation is made for the noise measurement data.

1. Import measurement data file subject for calculation to the measurement data file list and select 1 (one) measurement data file,

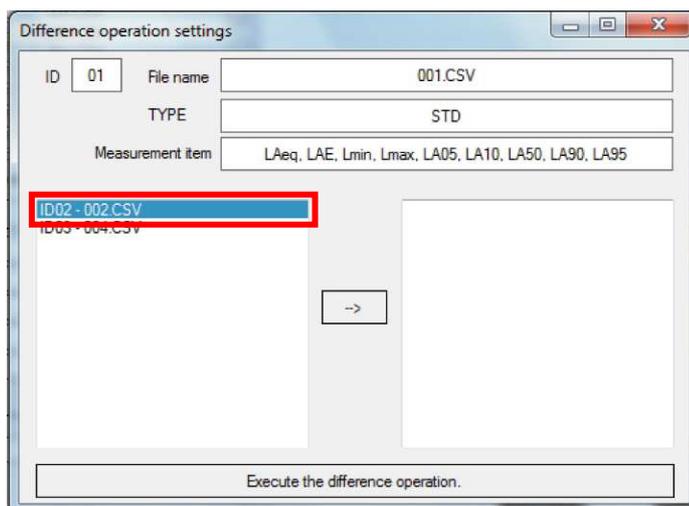
File name	TYPE	Data length	Measurement item	Measurement (yy/mm/dd)	Start time	File path
01_001.CSV	STD	1	LAeq, LAE, Lmin, L...	09/12/03	15:23:39	J:\Users\windo
02_002.CSV	STD	1	LAeq, LAE, Lmin, L...	09/12/03	15:23:51	J:\Users\windo
04_004.CSV	STD	1	LAeq, LAE, Lmin, L...	09/12/04	17:21:19	J:\Users\windo



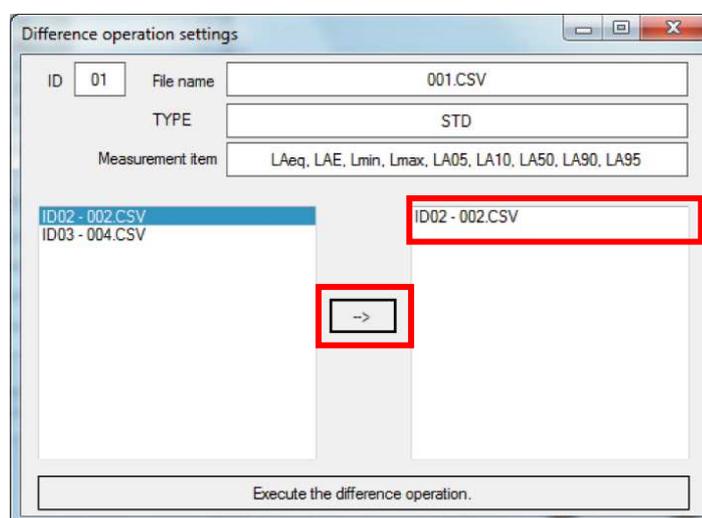
2. Select [Calculation]→[Difference Calculation] on the Menu Bar.
[Difference operation settings] window will be displayed.



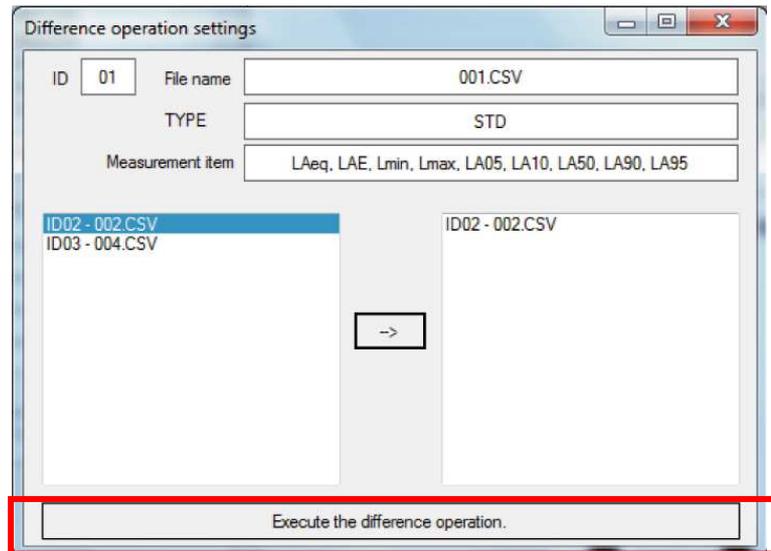
3. On the difference calculation setting dialog window, select the data file subject for the calculation of level difference. If the measurement data file subject for the calculation are not imported to the measurement data file list, such file names will not be displayed in the left side file name list column.



4. Click [→] button. Selected file will be copied to the right side file name list column.



5. Click [Execute the difference operation].



6. Calculation of level difference will be carried out and calculated result for the measurement data will be added to the measurement data file list.

File name will be *[file name selected by above step 1 – file name subjected for the calculation by above step 3]* .

	File name	TYPE	Data length	Measurement item	Measurement(yy/mm/dd)	Start time	File path
01	001.CSV	STD	1	LAeq, LAE, Lmin, L...	09/12/03	15:23:39	J:\Users\windo
02	002.CSV	STD	1	LAeq, LAE, Lmin, L...	09/12/03	15:23:51	J:\Users\windo
03	004.CSV	STD	1	LAeq, LAE, Lmin, L...	09/12/04	17:21:10	J:\Users\windo
04	001.CSV - 002.C...	STD	1	LAeq, LAE, Lmin, L...			

Normal Extension Logging Operation Memo

Measurement(yy/mm/dd) 13/10/02 10:20:06 LAeq

LAeq

0.5

dB

5.3 Arithmetic average Calculation

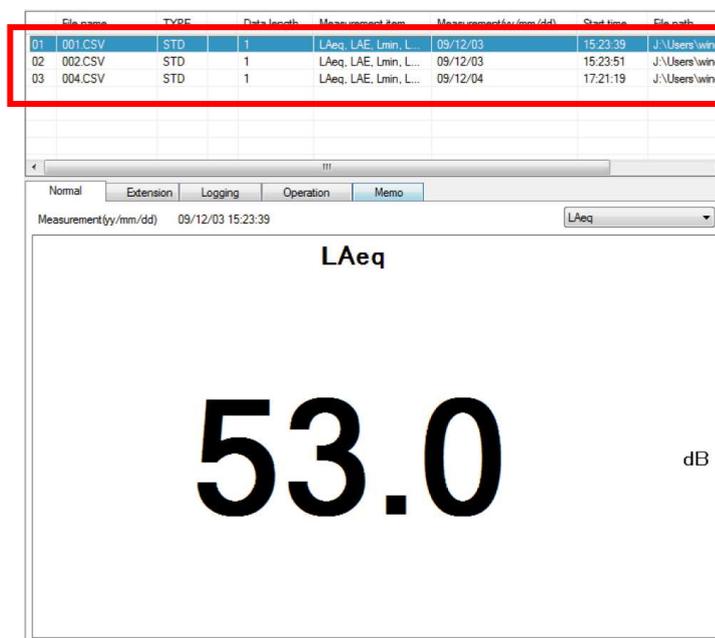
Calculate arithmetic mean value between multiple measurement data.

Calculation of arithmetic mean can be performed for measurement data that are for the same measurement items as listed below.

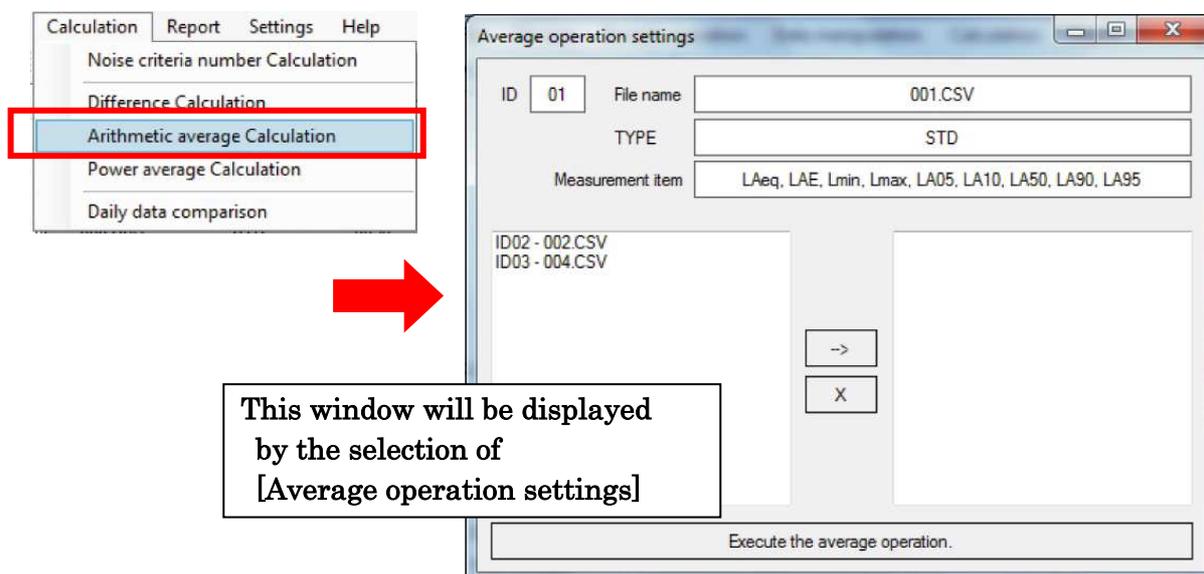
- Noise measurement data
- 1/1, 1/3 octave real-time analysis data
- FFT analysis measurement data

Calculation procedure is as follows. As an example, following explanation for the procedure for calculation is made for the noise measurement data.

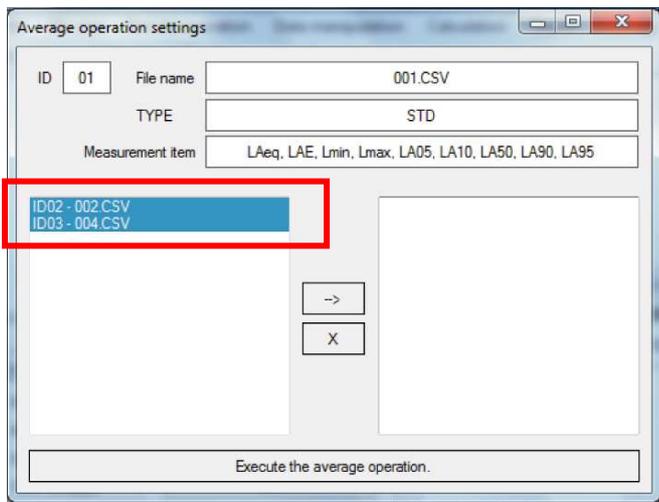
1. Import measurement data file subject for calculation to the measurement data file list and select 1 (one) measurement data file,



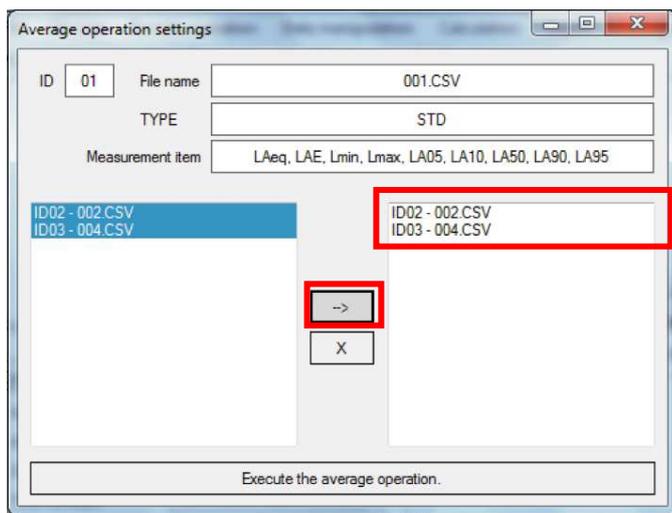
2. Select [Calculation]→[Arithmetic average Calculation] on the Menu Bar. [Average operation settings] window will be displayed.



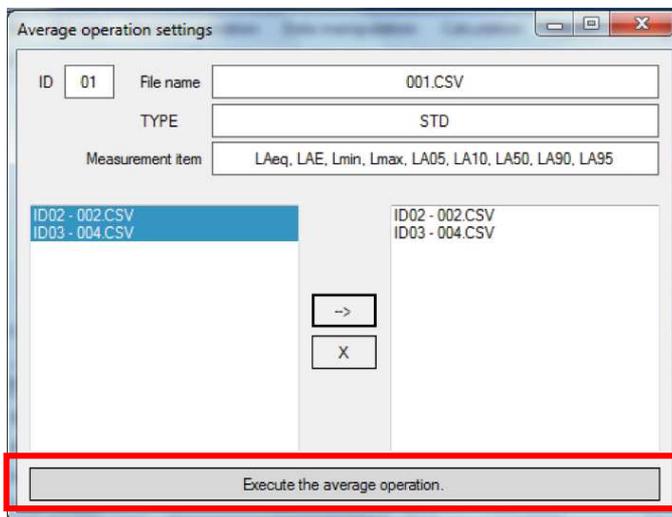
- On the average calculation setting dialog window, select the data files subject for the calculation of arithmetic mean value. (selection of multiple data files is possible) If the measurement data files for the calculation are not imported to the measurement data file list, such file names will not be displayed in the left side file name list column.



- Click [→] button. Selected files will be copied the right side file name list column. To delete data file from the right side file name list column, select the file in the right side column and click [x] button.

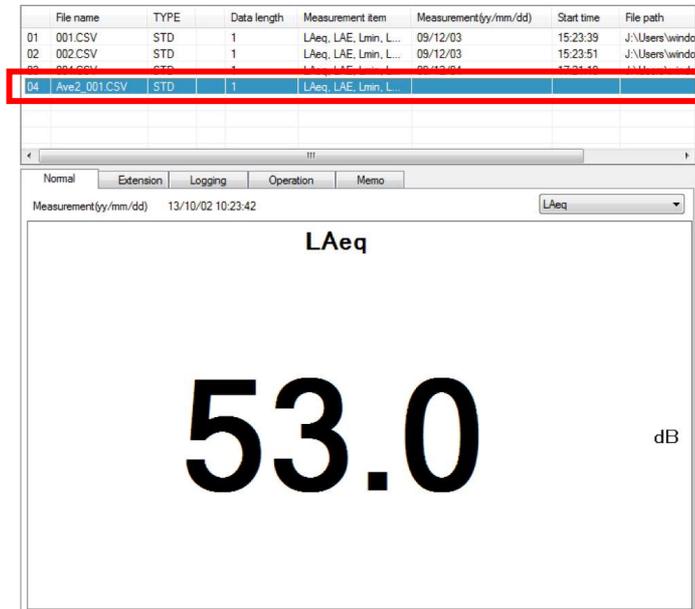


- Click [Execute the average operation].



6. Calculation of arithmetic mean will be carried out and calculated result for the measurement data will be added to the measured data file list.

File name will be 「Ave_n_file name selected by above step 1」, where “n” after ”Ave” shows the number of data files subjected for the calculation.



5.4 Power average Calculation

Calculate power average between multiple measurement data.

Calculation of power average can be performed for measurement data that are for the same measurement items as listed below.

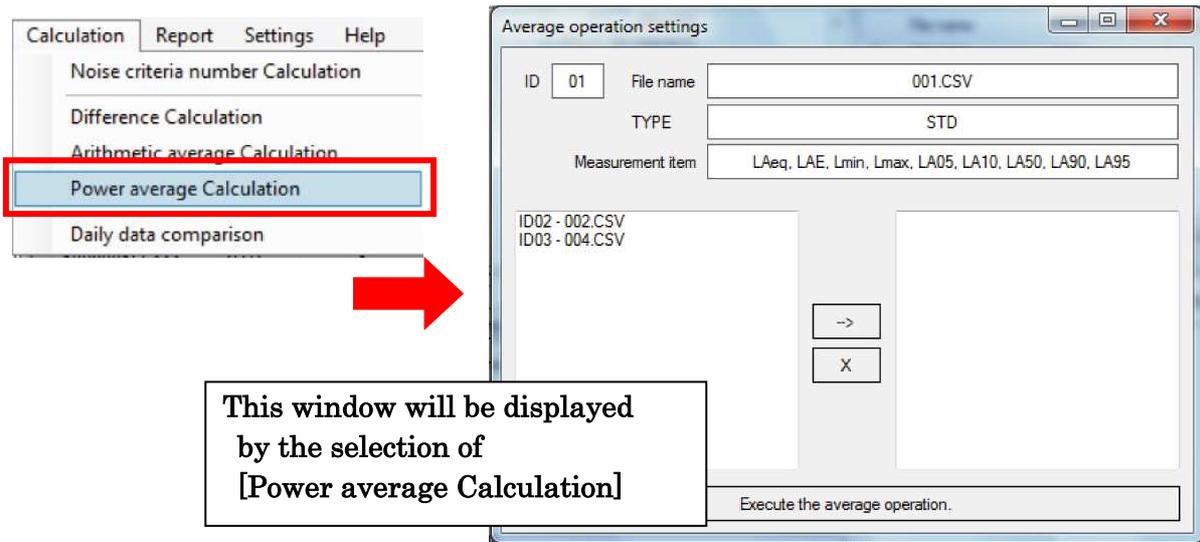
- Noise measurement data
- 1/1, 1/3 octave real-time analysis data
- FFT analysis measurement data

Calculation procedure is as follows. As an example, following explanation for the procedure for calculation is made for the noise measurement data.

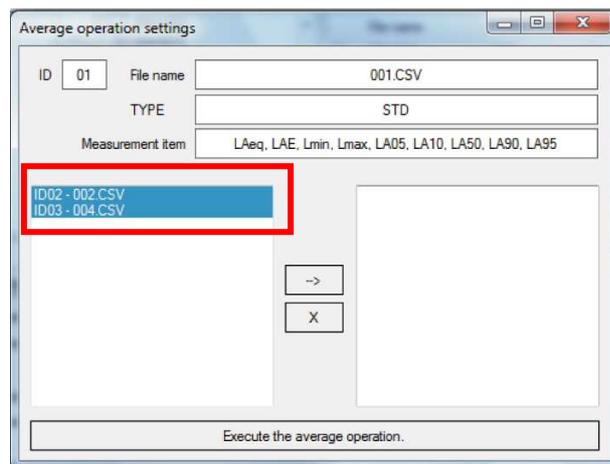
1. Import measurement data file subject for calculation to the measurement data file list and select 1 (one) measurement data file,



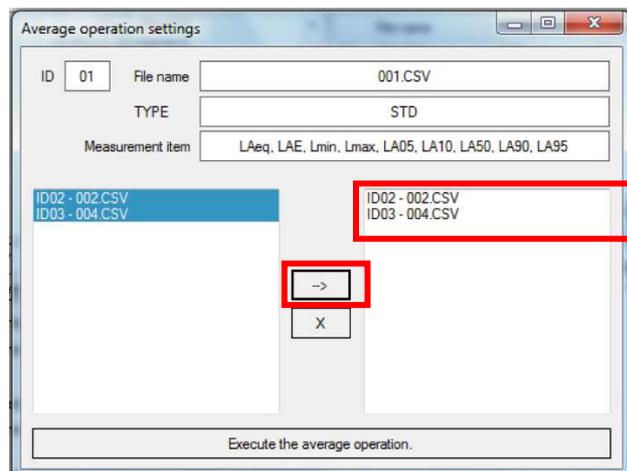
2. Select (Calculation)→[Power average Calculation] on the Menu Bar.
[Average operation settings] window will be displayed.



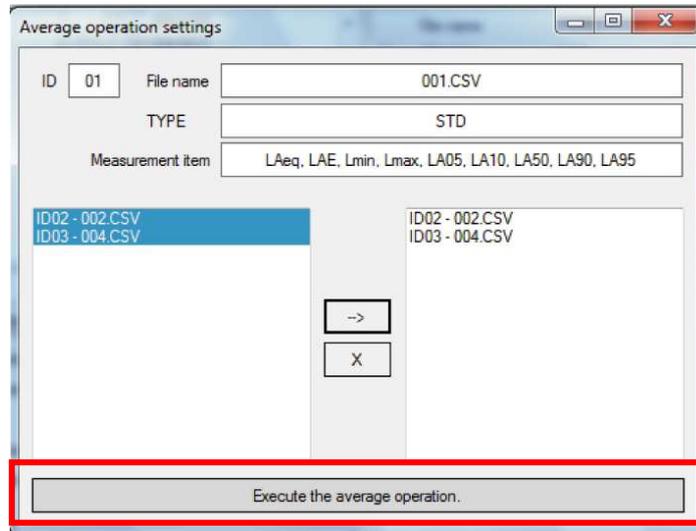
3. On the average calculation settings dialog window, select the data files subject for the calculation of energy average value. (selection of multiple data files is possible.) If the measurement data files for the calculation are not imported to the measurement data file list, such file names will not be displayed in the left side file name column.



4. Click [->] button. Selected files will be copied to the right side file name column. To delete data file from the right side file name list column, select the file in the right side column and click [x] button.



5. Click [Execute the average operation].



6. Calculation of power average will be carried out and calculated result for the measurement data will be added to the measured data file list.

File name will be 「PAve n_file name selected by above step 1」, where “n” after ”PAve” shows the number of data files subjected for the calculation.

File name	TYPE	Data length	Measurement item	Measurement(yy/mm/dd)	Start time	File path
01 001.CSV	STD	1	LAeq, LAE, Lmin, L...	09/12/03	15:23:39	J:\Users\windo
02 002.CSV	STD	1	LAeq, LAE, Lmin, L...	09/12/03	15:23:51	J:\Users\windo
03 001.CSV	STD	1	LAeq, LAE, Lmin, L...	09/12/03	17:21:19	J:\Users\windo
04 PAve2_001.CSV	STD	1	LAeq, LAE, Lmin, L...			

Normal Extension Logging Operation Memo

Measurement(yy/mm/dd) 13/10/02 10:30:29 LAeq

LAeq

53.0

dB

5.5 Daily data comparison

Display comparison of daily data for multiple measurement data of different measurement date.

Comparison can be performed for measurement data that are for the same measurement item as listed below.

- Noise measurement data for which the measurement interval is set to 「Repeat」.

Comparison procedure is as follows.

1. Select measurement data files subject for the comparison from the measurement data file list.

The screenshot shows a table with the following data:

ID	File name	TYPE	Data length	Measurement item	Measurement(yy/mm/dd)	Start time	File path
01	001.CSV	STD	3383	LAeq, LAE, Lmin, L...	09/10/07	13:36:40	J:\Users\windo
02	001.CSV	STD	4989	LAeq, LAE, Lmin, L...	09/10/14	09:24:42	J:\Users\windo
03	002.CSV	STD	143	LAeq, LAE, Lmin, L...	09/11/07	21:13:44	J:\Users\windo

Below the table, the measurement item is set to "LAeq" and the measurement date/time is "09/10/07 13:36:40". The main display area shows "LAeq" and a large "61.0" with "dB" to its right.

2. Select {Calculation}→[Daily data comparison] on the Menu Bar.
[Daily data comparison] window will be displayed.

The screenshot shows the 'Calculation' menu with the following options:

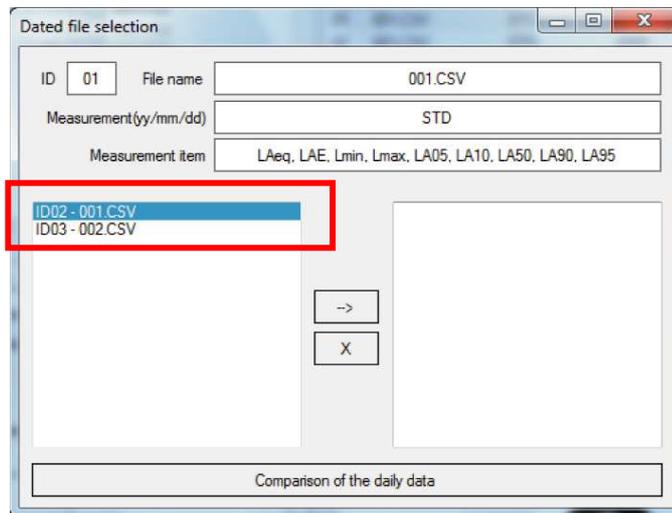
- Noise criteria number Calculation
- Difference Calculation
- Arithmetic average Calculation
- Power average Calculation
- Daily data comparison**

A red arrow points from the 'Daily data comparison' menu item to the 'Dated file selection' dialog box. The dialog box contains the following information:

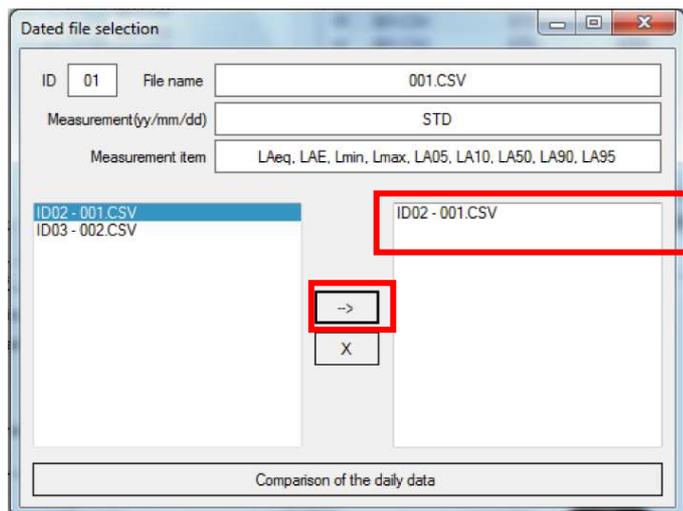
- ID: 01
- File name: 001.CSV
- Measurement(yy/mm/dd): STD
- Measurement item: LAeq, LAE, Lmin, Lmax, LA05, LA10, LA50, LA90, LA95
- Selected files: ID02 - 001.CSV, ID03 - 002.CSV
- Buttons: -->, X
- Footer: Comparison of the daily data

A text box below the dialog box states: "This window will be displayed by the selection of [Daily data comparison]"

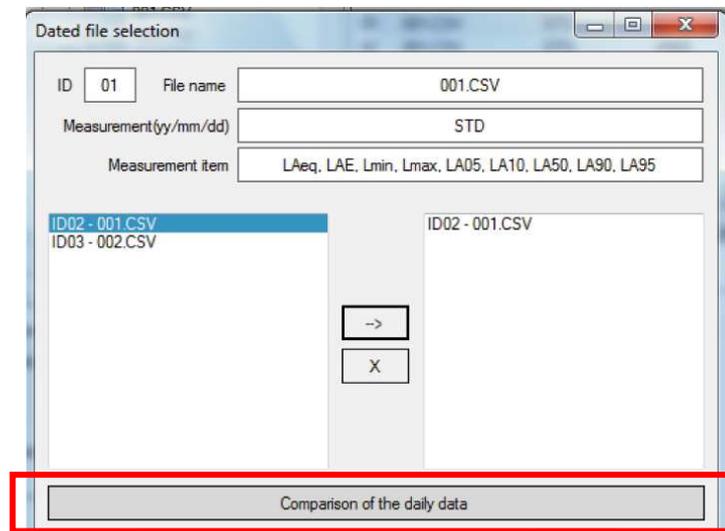
3. On the date and hour selection dialog window, select data files subject for the comparison of date and hour. (selection of multiple data files is possible.) If the measurement data files for the comparison are not imported to the measurement data file list, such file names will not be displayed in the left side file name list column.



4. Click [→] button Selected files will be copied to the right side file name column. To delete data file from the right side file name list column, select the file in the right side column and click [x] button.

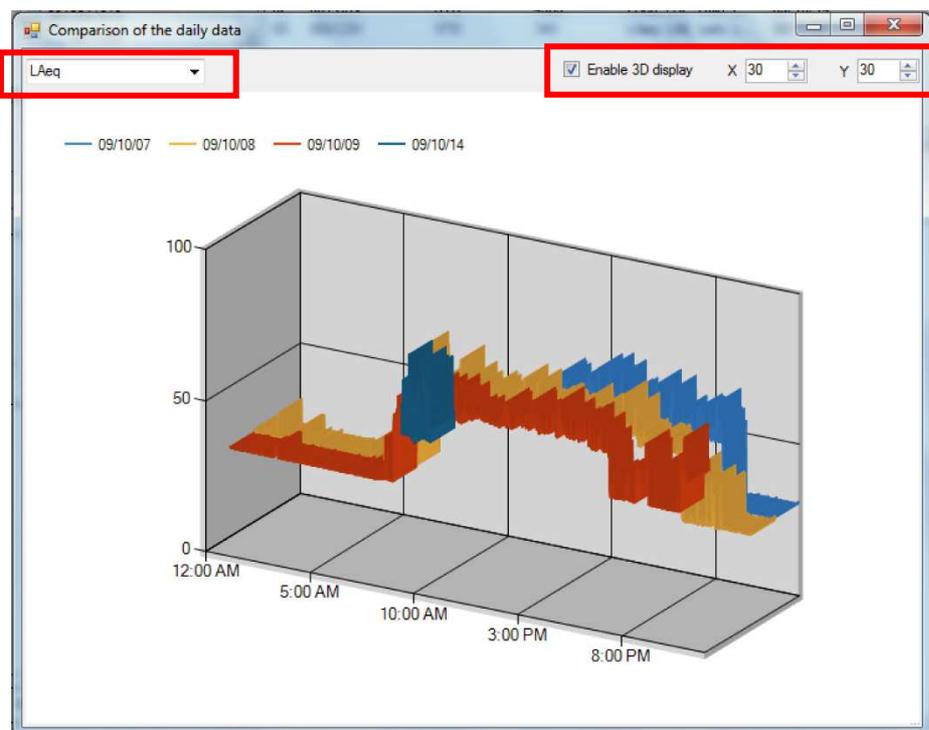


5. Click [Comparison of the daily data].



6. Comparison of the daily data window will be displayed.

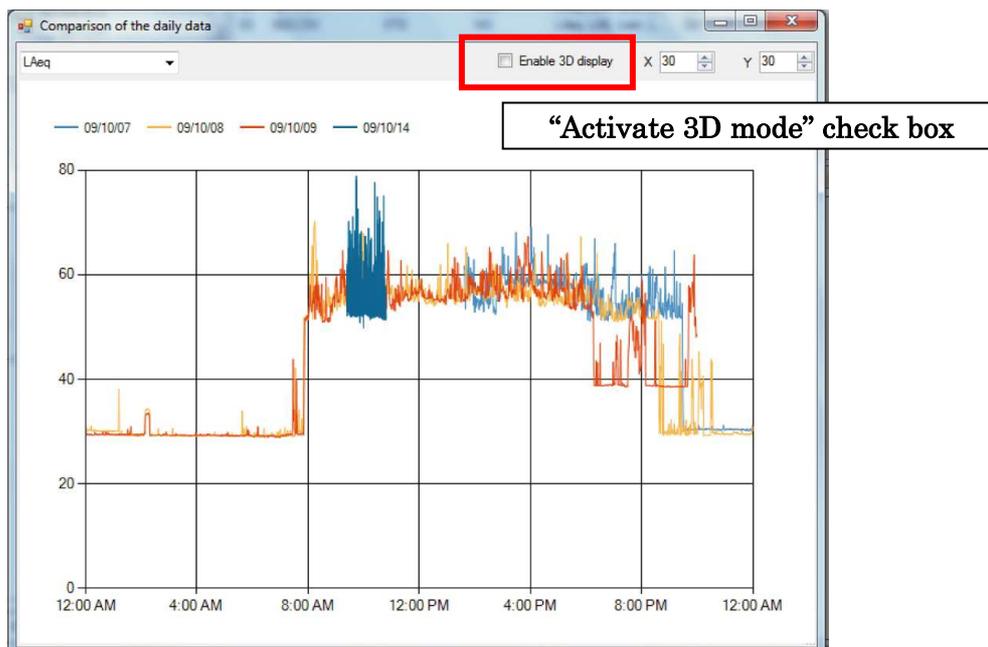
Comparison result is shown in 3D image. Select measurement mode from the combo box on the upper left corner. Point of view can be changed by changing the X and/or Y values on the upper right corner.



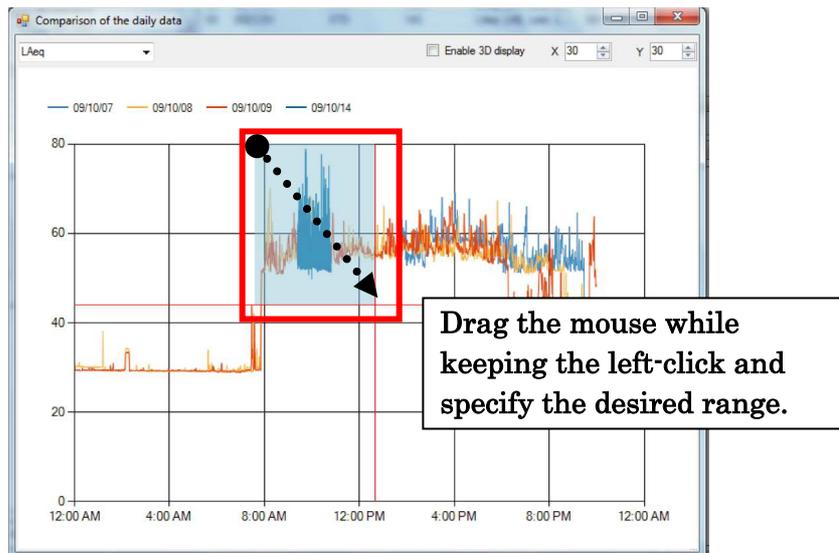
5.5.1 Change display range

Procedure to change the display range is as follows.

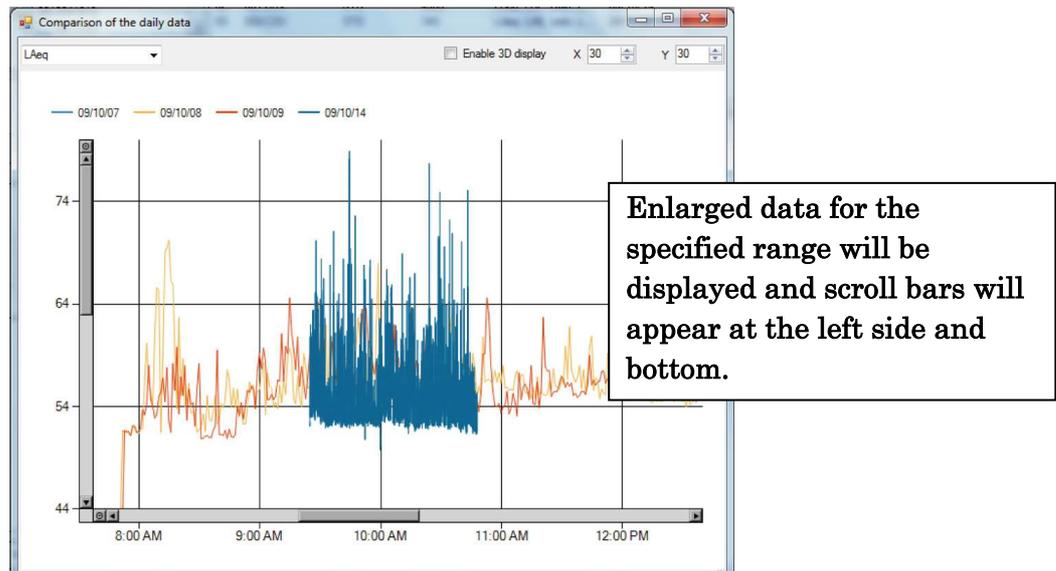
1. Clear the check box for "Activate 3D mode" and change the display from 3D to 2D.



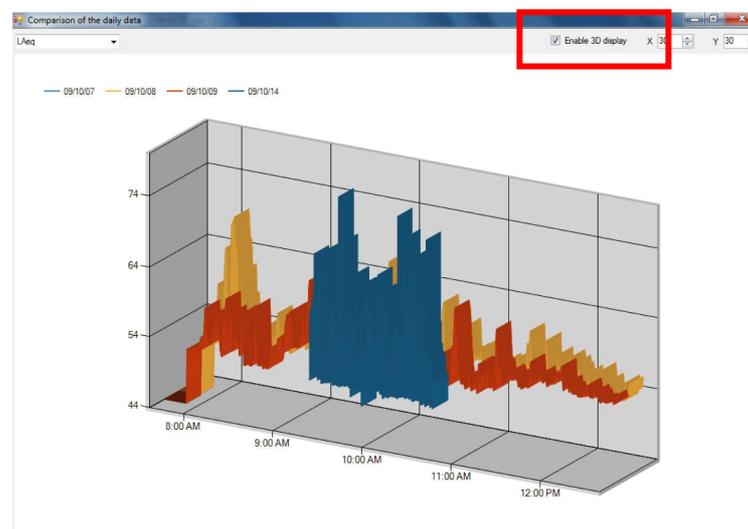
- Left-click the mouse at the initial position of desired area and while keeping the left click, drag it to the final position of the desired area and release the click.



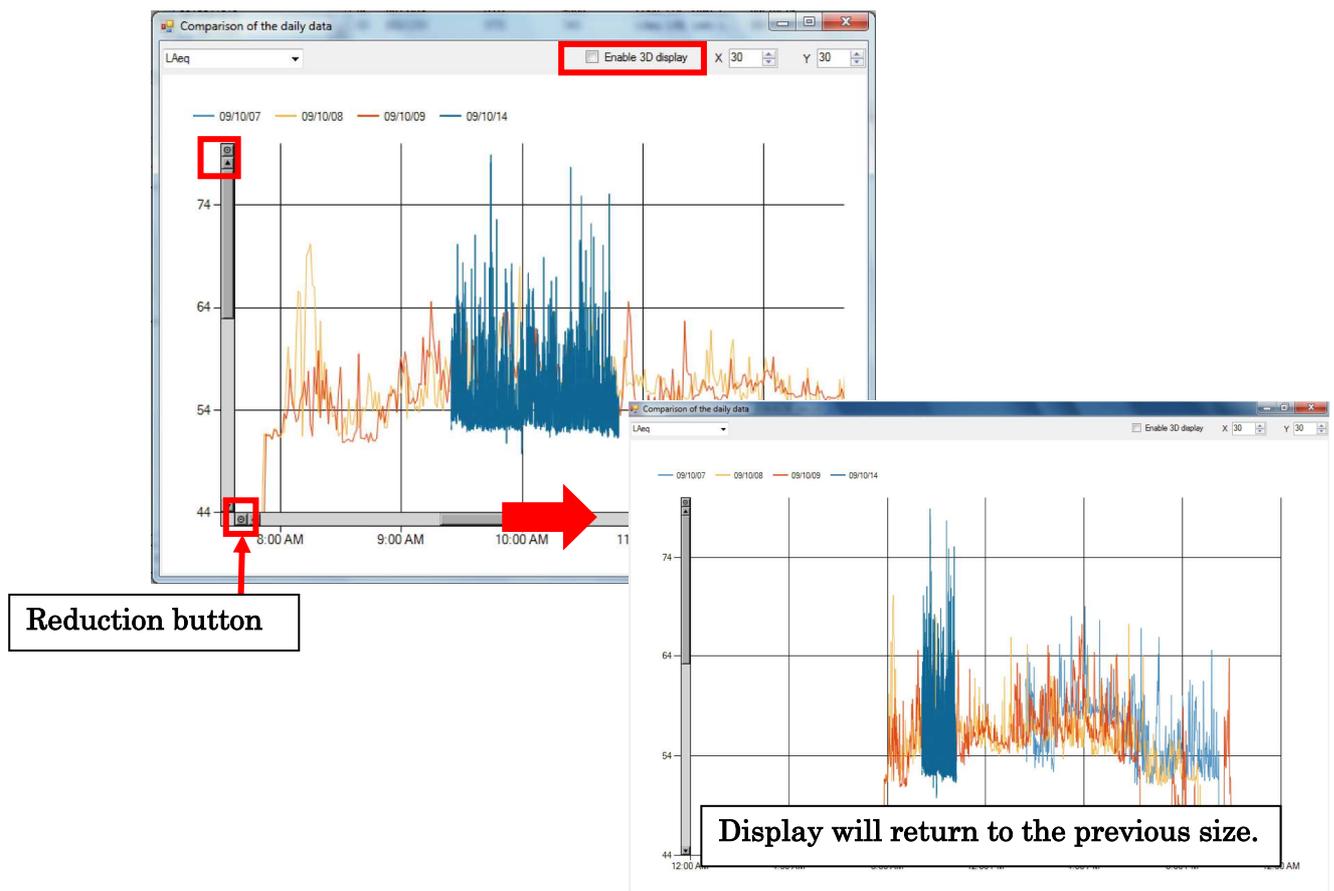
- Enlarged 2D data for the specified range will be displayed. To further enlarge the display, repeat above step 2.



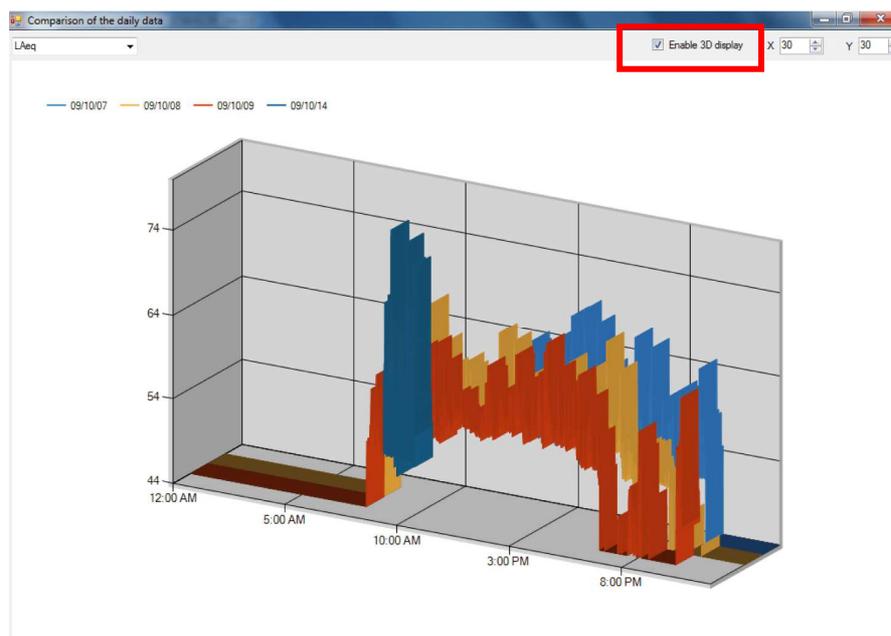
- Return the display to 3D by checking the check box for “Enable 3D display”



5. To return the enlarged display to previous size (to reduce the display), clear the box for “Enable 3D display” and change the display to 2D. Then click the buttons at the end of the scroll bars.



6. Check the check box for “Enable 3D display” and the display will return to 3D.

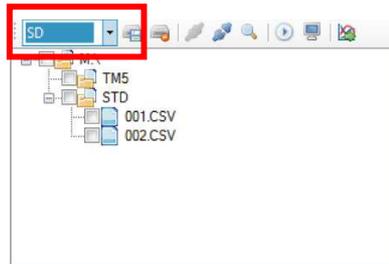


6. Backup of the measurement data files in SD card

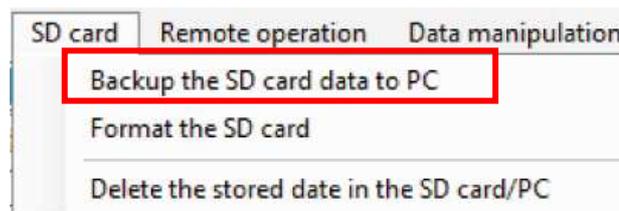
Copy the measurement data file recorded in the memory card and optional program card to the backup folder. All the measurement data files recorded in the card are subject for the backup regardless if the selected condition on the tree display of the file management panel is cleared or not.

Procedure for the backup operation is as follows.

1. Insert memory card or optional program card to the card drive of the PC or external SD card reader.
2. Select file management using the [File management / remote control] button to display File Management Panel. Change the tree display to 「SD」.



3. Select [SD Card]→[Backup the SD card data to PC.] on the Menu Bar, or click [Backup the SD card data to PC] button on the Tool Bar.

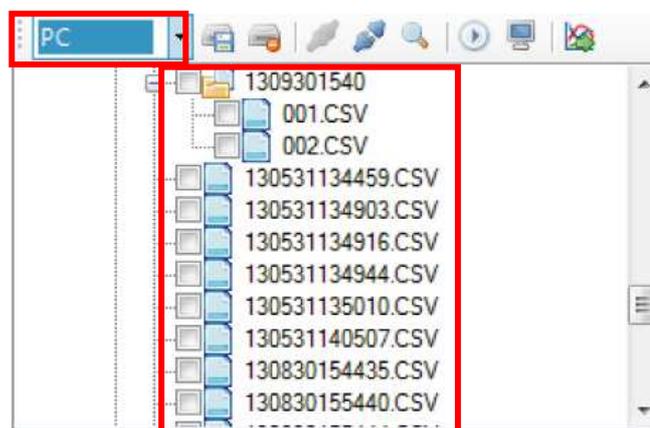


4. Backup confirmation window will be displayed.



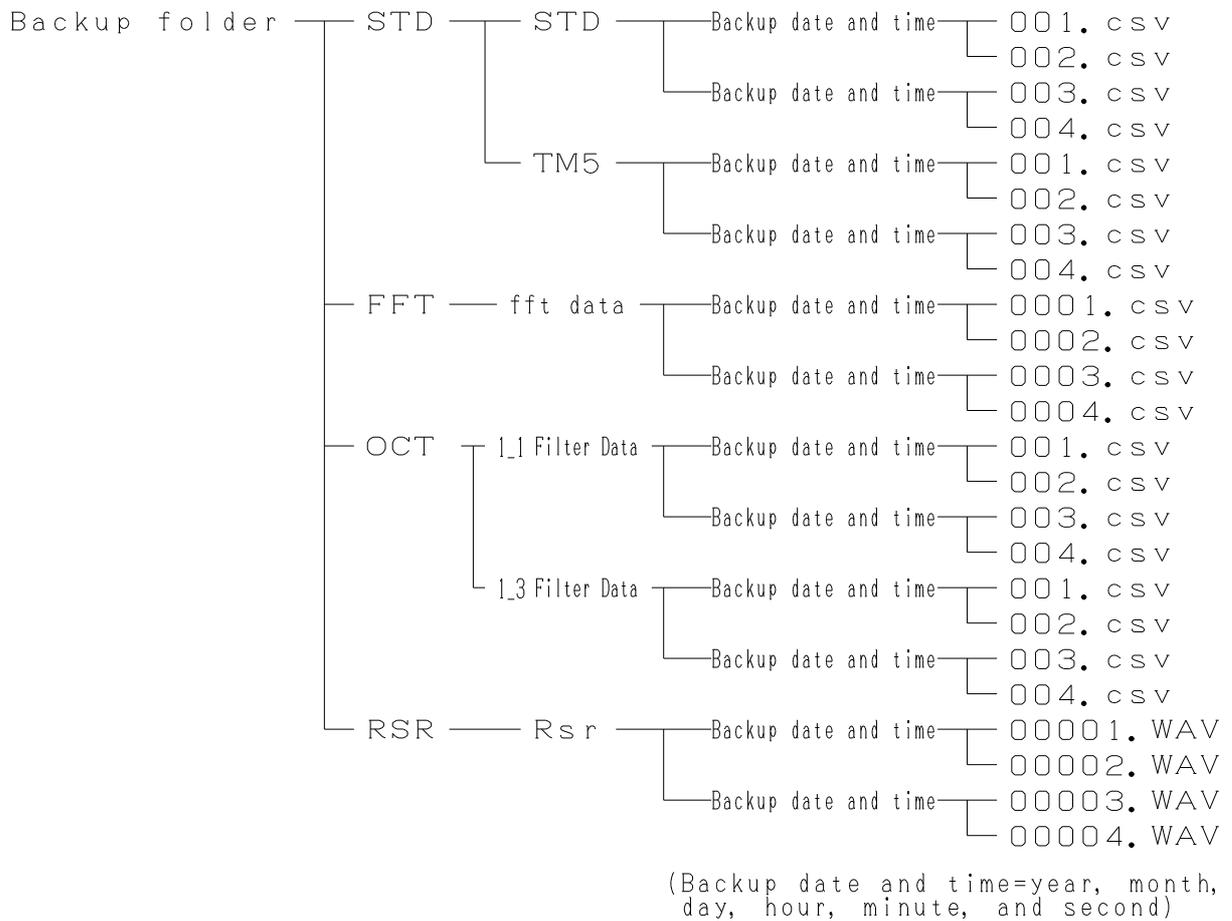
5. Click [OK] and backup operation will be carried out.

To confirm that data files are being copied, change the tree display to 「PC」.



Route folder for the backup is the folder set at the 「Backup setting」 of [Settings]→[Application settings] on the Menu Bar.

Folders for each card type will be created under the backup folder and backup will be carried out. Folder construction is as follows.



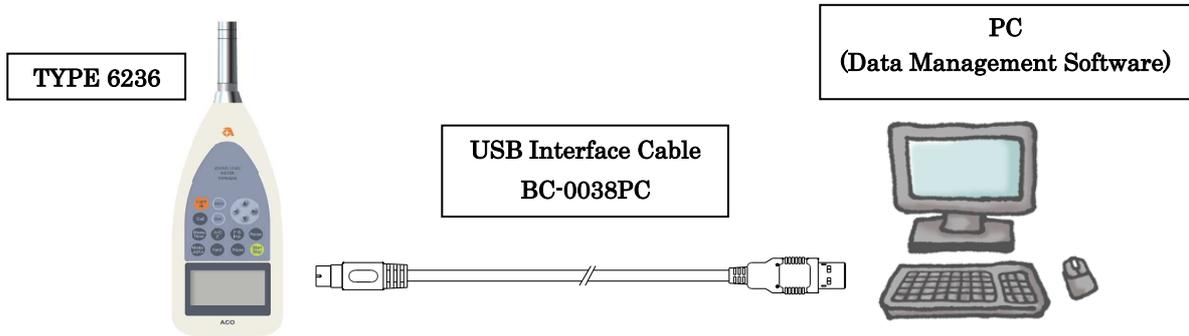
<Note>

Care should be taken to avoid setting files/folders to be used by other applications under the backup folder.

7. Remote Control Operation

7.1 Connection with the TYPE 6236

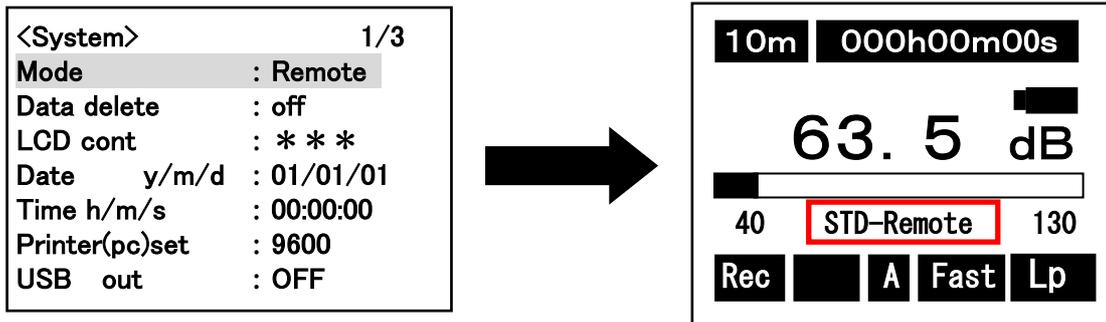
Set TYPE 6236 to communication mode (Remote) and connect TYPE 6236 with PC using USB interface cable included in the software as shown below.



Connection procedure is as follows.

1. Turn on the power of the TYPE 6236.
2. Set TYPE 6236 to communication mode (Remote).

At the [Menu] <System> 1/3 screen, change the [Mode : Normal] to [Mode : Remote] using ▲▼ keys. Register the setup by pressing the [Set] key and the screen will return to measurement screen.

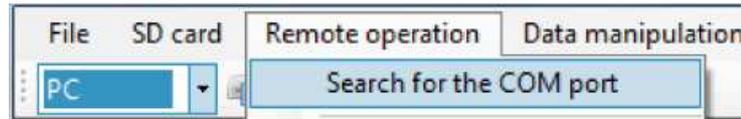


Name of the optional card inserted at the time will blink.

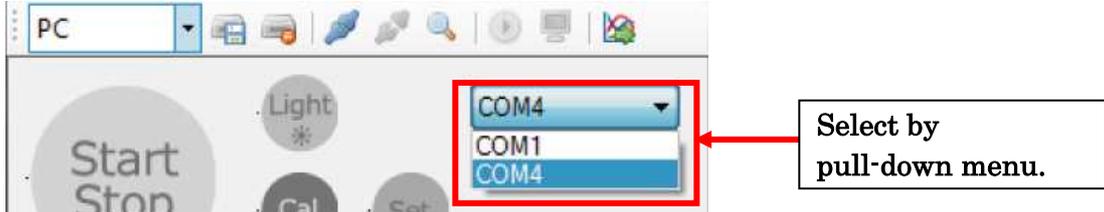
3. Connect TYPE 6236 and PC using the USB Interface Cable included in the Data Management Software. USB Interface Cable shall be connected only after the power of the TYPE 6236 is turned on.
4. Select remote control using the [File management / remote control] button to display Remote Control Panel. By clicking the [Card] button, set the card type display on the remote control panel to the same card type recognized by the TYPE 6236. If the card is not inserted yet, set card type to **【STD】**.



5. Select [Remote operation]→[Search for the COM port] on the Menu Bar, or by clicking [Restructuring COM port] on the Tool Bar, restructure COM port in the PC.



6. Select USB COM port number that is connected to the TYPE 6236.



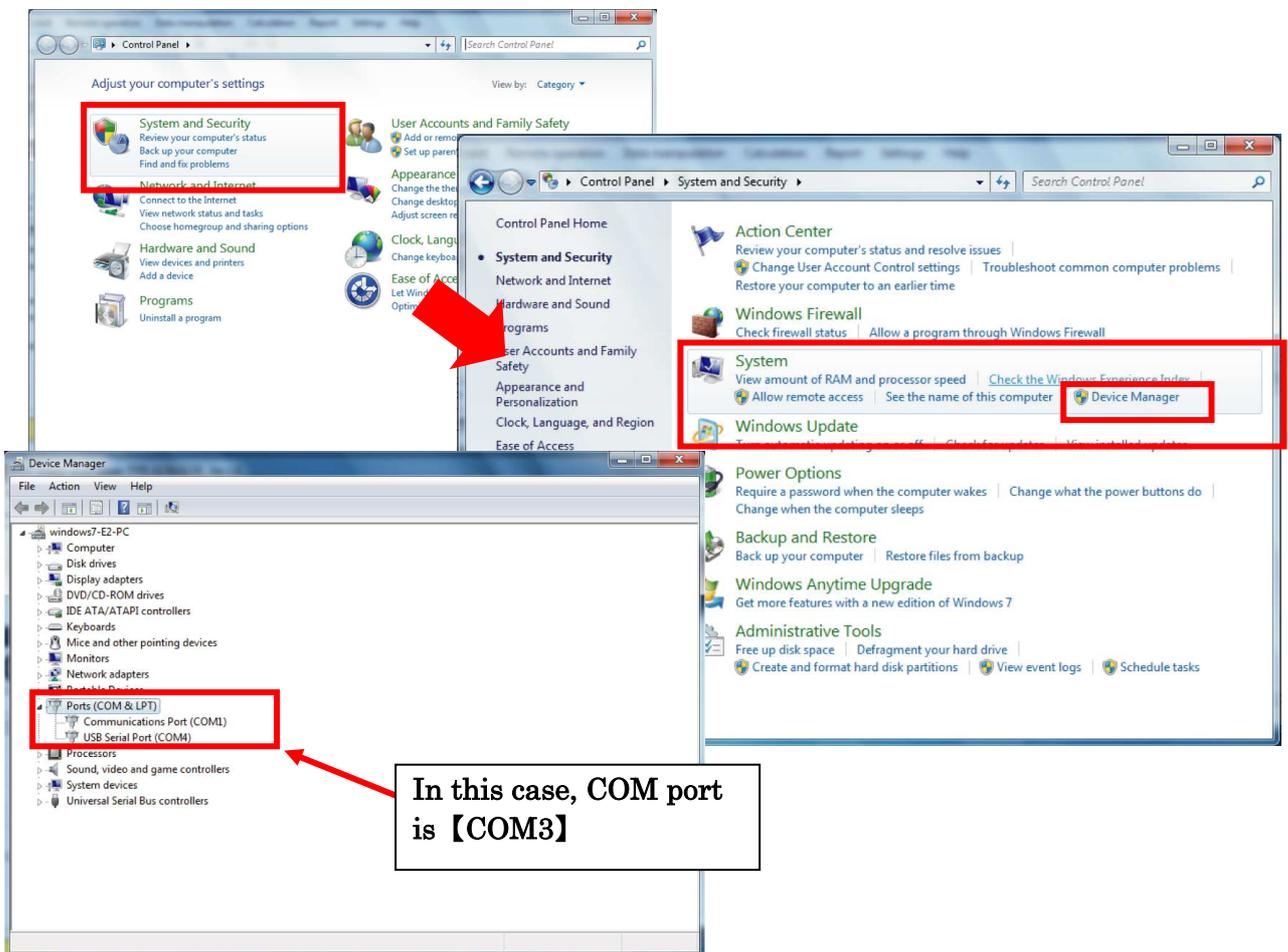
If correct COM port number is unknown, open the device manager from property of the system and then confirm the COM port number of the “USB Serial Port” by “Port (COM and LPT)” of the communication port.

【Procedure for confirmation of the COM port】

Explanation as shown below is for the classic display style. Instruction Manual for Windows shall be referred to for detailed explanation.

1. Open [Control Panel] from the [Start] button of the Windows menu.
2. Double click and open [System].
3. Click [Hardware] of the tag menu and then click [Device Manager].

At Port (COM and LPT), confirm the COM port of the connected USB Serial Port.

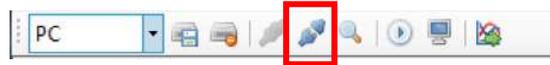


7. Click [Connect TYPE 6236] on the Tool Bar and TYPE 6236 and PC will be connected.

【When TYPE 6236 is not connected】



【When TYPE 6236 is connected】



<Note>

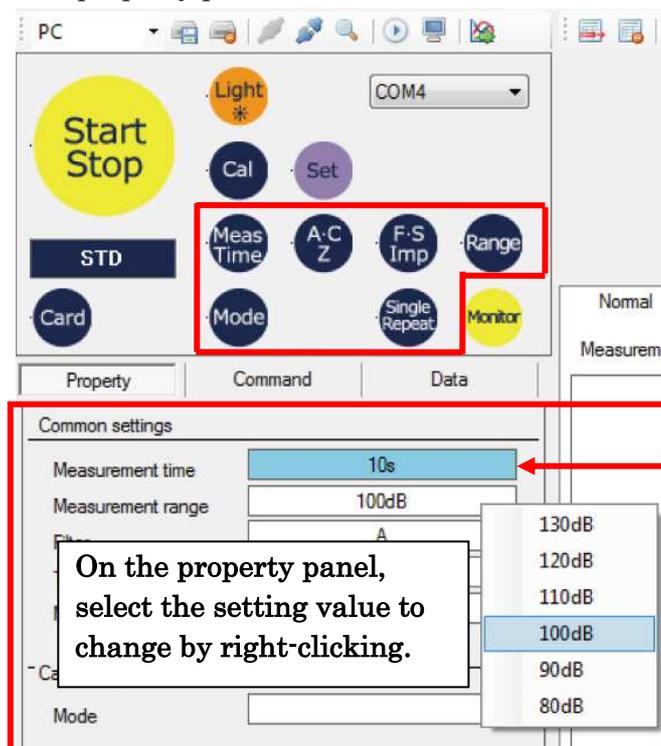
- When the SD card in the TYPE 6236 is changed, card type shall be changed as well using the [Card] button on the Remote Control Panel.
- If the TYPE 6236 is connected after the Data Management Software was started, search for the COM port shall be performed again.
- If the COM port number of the connected USB Interface Cable is not indicated on the Remote Control Panel, search for the COM port shall be performed again.
- If the connection with the TYPE 6236 is broken for some reason, such as disconnection of the USB Interface Cable, etc., such message will be displayed or there will be no response. Re-check the connection while the TYPE 6236 and re-start the Data Management Software. (During remote control operation, or “in connection”, do not connect/disconnect USB Cable. Disconnection operation with the TYPE 6236 shall be made first and then disconnect the USB Cable.)
- Remote control operation with the Real Sound Recording Card inserted to the TYPE 6236 is not supported.

7.2 Change setting of the TYPE 6236

When the connection with the TYPE 6236 is completed, Property Panel will display information for the setting of the TYPE 6236.

If it is necessary, change the setting of the TYPE 6236 per following procedure.

- Change the setting by clicking operation buttons on the remote control panel, or right-click setting values on the property panel and select desired value on the shortcut menu.



The color of the column for the selected value will be changed to blue.

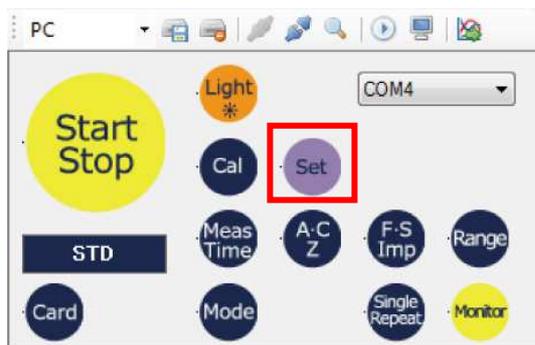
Shortcut menu will be displayed.

On the property panel, select the setting value to change by right-clicking.

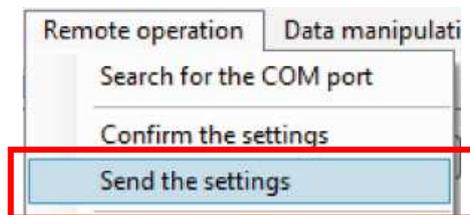
- Click [Set] button on the remote control panel, or select [Remote operation]→[Send the settings] on the Menu Bar.

With this operation, setting of the TYPE 6236 is reflected to the PC.

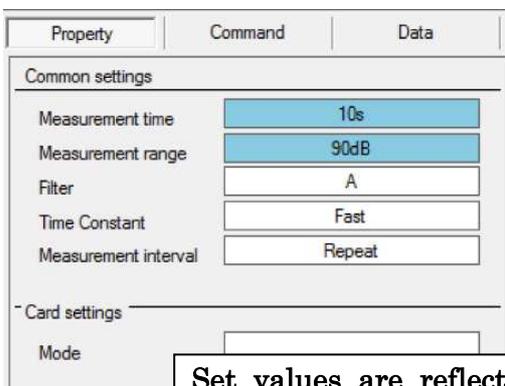
【In the case of remote control panel】



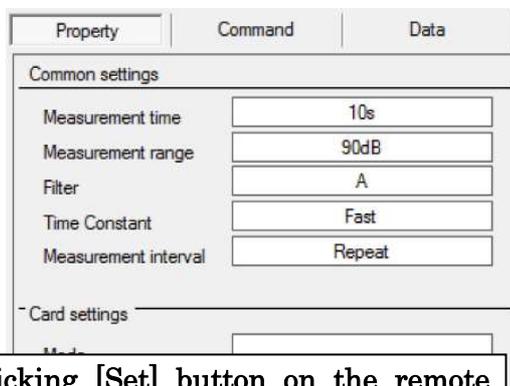
【In the case of Menu bar】



- Before reflection of set values



- After reflection of set values



Set values are reflected by clicking [Set] button on the remote control panel, or by selecting [Send the settings].

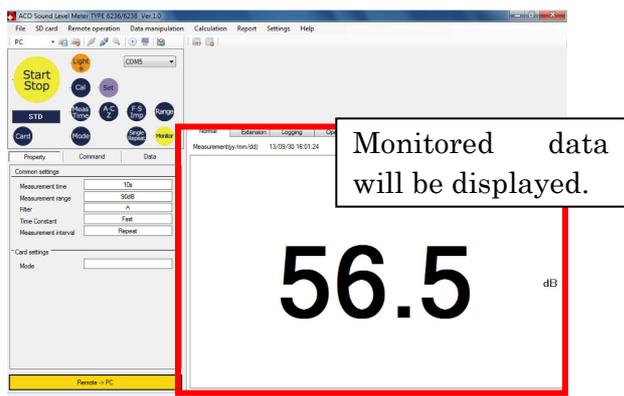
7.3 Monitoring

Confirmation of condition of sound environment is possible before starting the measurement by remote control. Perform either of the following operation to start the monitoring.

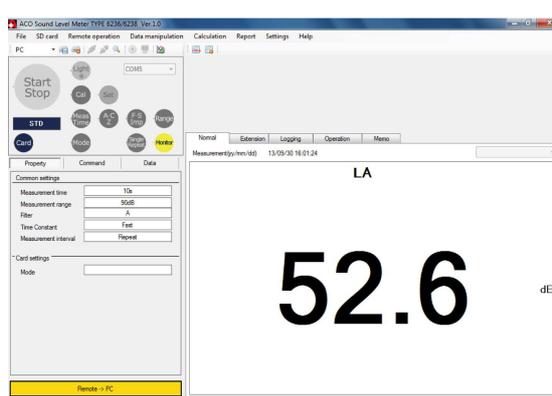
- *Click [Monitor] on the remote control panel.
- *Select [Remote operation]→[Start monitoring] on the Menu Bar.
- *Click [Start remote control monitoring] on the Tool Bar.

When the monitoring is started, measurement data will be displayed on the Measurement data display area. To stop the monitoring, click [Monitor] button on the remote control panel. Monitored data will not be stored as measurement data.

【While monitoring】



【When monitoring stopped】



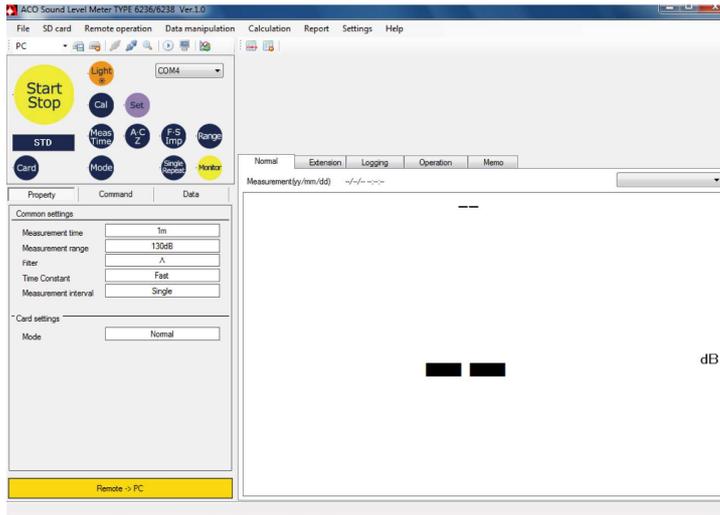
7.4 Measurement

To start measurement by remote control, perform either of the following operation.

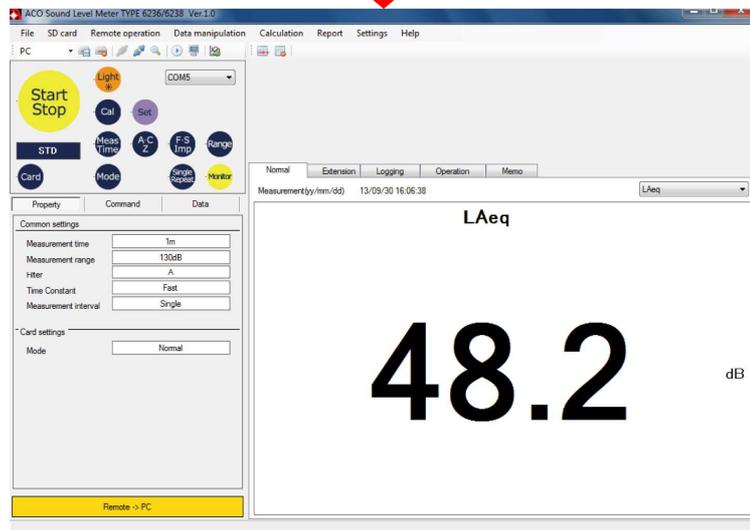
- * Click [Start/Stop] button on the remote control panel.
- * Select [Remote operation]→[Start measuring] on the Menu Bar.
- * Click [Remote-control operation of the measurement] on the Tool bar.

When the measurement is started, measurement data will be displayed on the Measurement data display area. To stop the measurement, click [Start/Stop] button on the remote control panel. If the measurement fulfilled the condition set for the termination of measurement, the measurement operation will be automatically stopped.

【Start measurement】



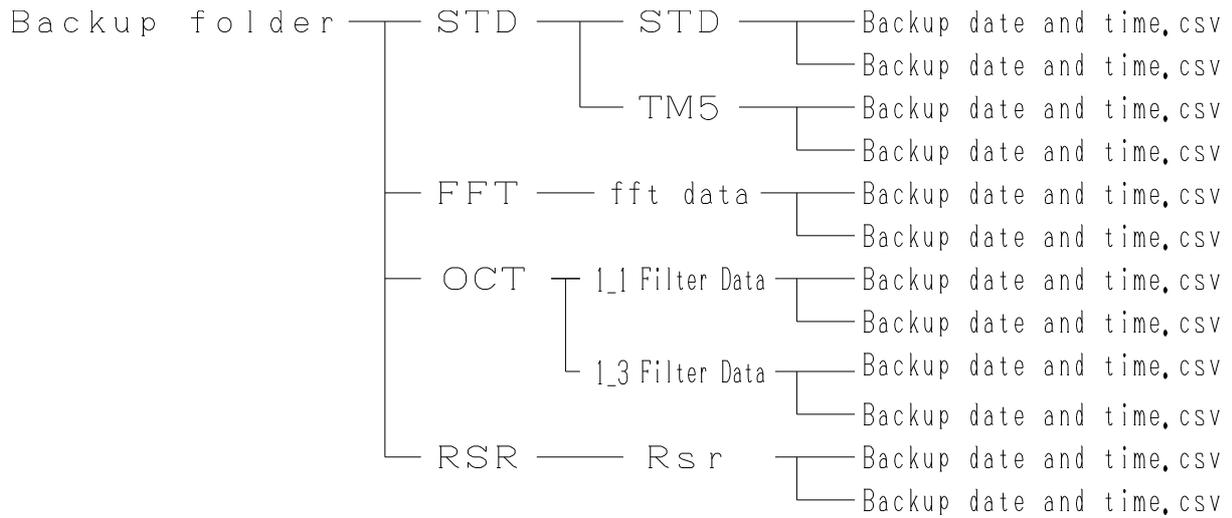
【Stop measurement】



Measured data are recorded as measurement data files. Route folder for the data storage is the folder set at the [Backup setting] of [Settings]→[Application settings]→[Backup setting].on the Menu Bar.

Folders for each card type will be created under measurement data file folder and data are stored in such folders.

Folder construction is as follows.



(Backup date and time=year, month, day, hour, minute, and second)

<Note>

Care should be taken to avoid setting files/folders to be used by other applications under the backup folder.

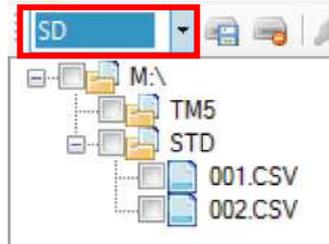
8. Management of measurement data files

8.1 Initialization of SD card

All the data in the memory card (SD card) and optional program cards will be deleted.

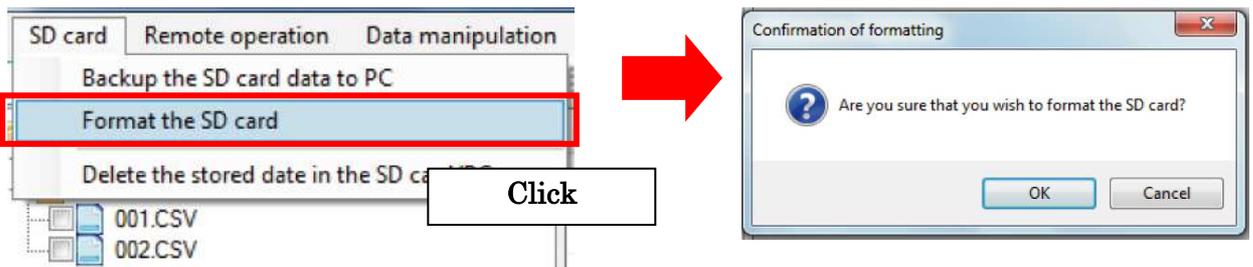
Procedure for initialization of SD card is as follows. As an example, following explanation for the procedure for initialization is made for the memory card (SD card).

1. Insert memory card (SD card) or optional program card to the card drive of the PC or external card reader.
2. Select file management panel using the [File management / remote control] button to display File Management Panel Change the tree display to 「SD」 .

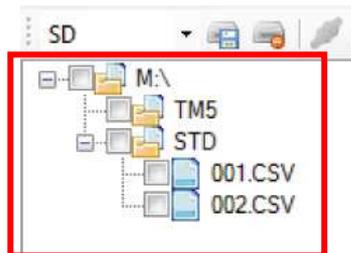


3. Select [SD card]→[Format the SD card] on the Menu Bar, or click [Format the SD card] button on the Tool Bar.

Window for confirmation of initialization will be displayed.



4. Click [OK] and all the measurement data files will be deleted.



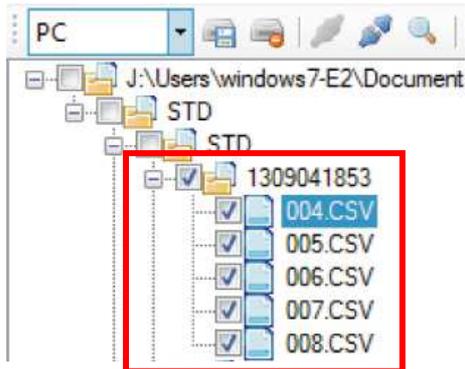
8.2 Deletion of measurement data file

Delete selected measurement data files recorded in the memory card (SD card) and optional program cards, or the PC.

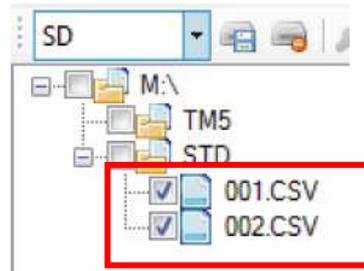
Procedure for the deletion is as follows.

1. Insert memory card (SD card) or optional program card to the card drive of the PC or external card reader.
2. Select file management using the [File management / remote control] button to display File Management Panel Change the tree display to 「PC」 or 「SD」 and select data to delete.

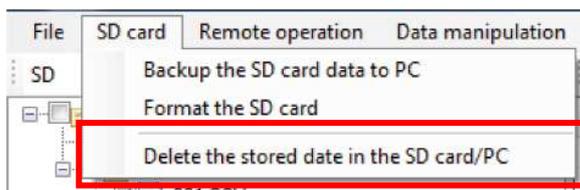
【When PC is selected】



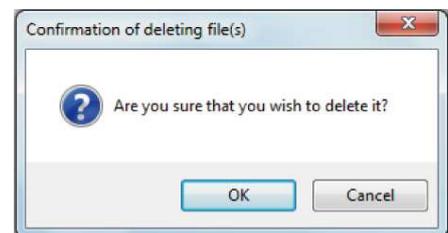
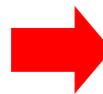
【When SD is selected】



3. Select [SD card]→[Delete the stored date in the SD card/PC] on the Menu Bar. Window for confirmation of deletion of files will be displayed.

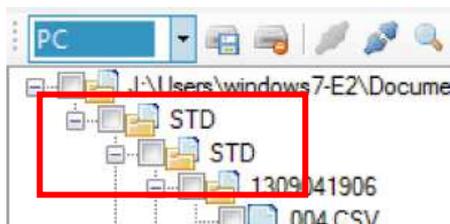


Click



4. Click [OK] and selected measurement data files will be deleted.

【When PC is selected】



【When SD is selected】



9. Display of measurement data in the optional program cards

Procedure to display measurement data in the Measurement data display area is the same as that described in Para. 4 “Display of measurement data in the memory card”.

9.1 Display of measurement data in 1/1-1/3 Octave Real-time Analysis Card

9.1.1 Display of measurement data

Display Normal Panel to see the measurement data.

Calculation result for certain measurement mode will be displayed.

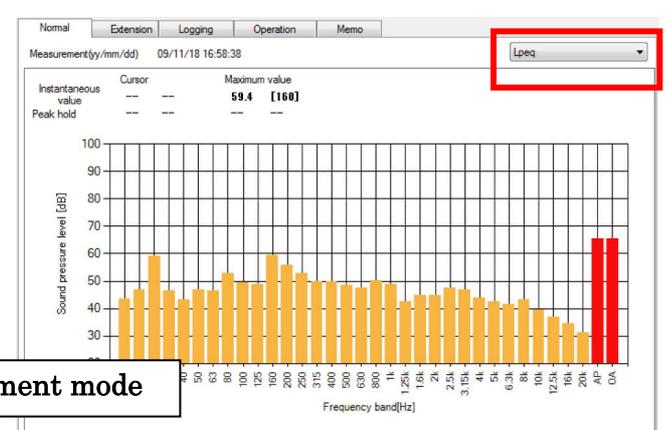
To display calculation result of other measurement mode, select desired measurement mode from the combo box on the upper right corner of the panel.

If the graph is clicked by the mouse, such point (measurement date) becomes a cursor and red line will move. If the measurement data is for 1/1 Octave Real-time Analysis and Z (Flat) characteristic, NC curve and NC value will be displayed.

【1/1 Octave Real-time Analysis measurement data】



【1/3 Octave Real-time Analysis measurement data】



To display frequency values of each band for the desired measurement mode, select Extension Panel. Numerical values on the Extension Panel are data for the measurement mode selected on the Normal Panel.

【1/1 Octave Real-time Analysis measurement data】

Normal	Extension	Logging	Operation	Memo
Measurement(yy/mm/dd) 09/11/18 16:59:39				
16	59.9[dB]			
31.5	50.5[dB]			
63	54.2[dB]			
125	56.6[dB]			
250	54.2[dB]			
500	52.5[dB]			
1k	49.7[dB]			
2k	44.7[dB]			
4k	38.3[dB]			
8k	31.0[dB]			
AP	63.8[dB]			
OA	63.7[dB]			

【1/3 Octave Real-time Analysis measurement data】

Normal	Extension	Logging	Operation	Memo	
Measurement(yy/mm/dd) 09/11/18 16:58:38					
16	43.4[dB]	400	49.7[dB]	10k	39.5[dB]
20	46.9[dB]	500	48.6[dB]	12.5k	36.9[dB]
25	59.1[dB]	630	47.6[dB]	16k	34.6[dB]
31.5	46.4[dB]	800	50.1[dB]	20k	31.3[dB]
40	43.3[dB]	1k	48.7[dB]	AP	65.5[dB]
50	46.8[dB]	1.25k	42.7[dB]	OA	65.5[dB]
63	46.5[dB]	1.6k	44.7[dB]		
80	52.9[dB]	2k	44.9[dB]		
100	49.4[dB]	2.5k	47.4[dB]		
125	48.8[dB]	3.15k	46.7[dB]		
160	59.4[dB]	4k	43.8[dB]		
200	55.7[dB]	5k	42.5[dB]		
250	52.9[dB]	6.3k	41.5[dB]		
315	50.0[dB]	8k	43.1[dB]		

9.1.2 Display of logging

Select Logging panel to display measurement data in chronological order.

Logging is displayed if the measurement data has a measurement interval setting of [Repeat]

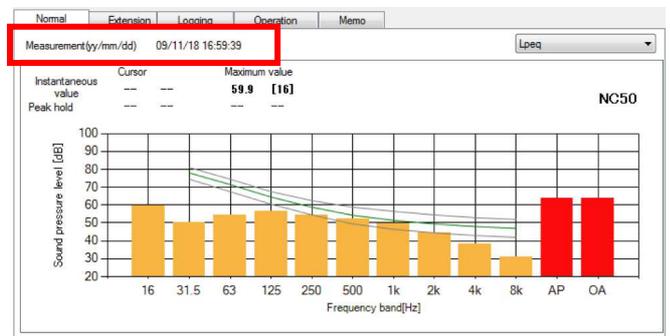
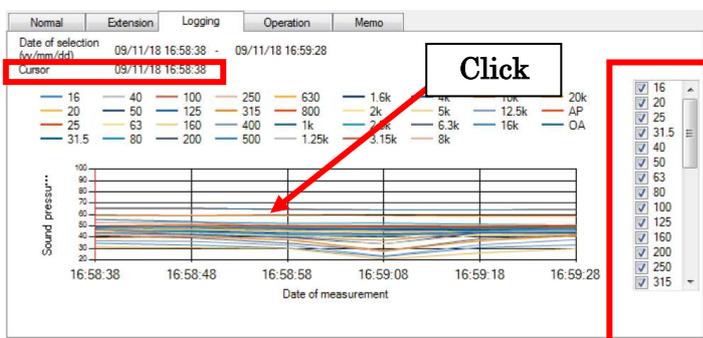
To designate frequency of each band for logging display, select desired frequencies using the check box in the frequency list on right side of the display. Check mark in the box shows selected frequencies. To clear the selection, click check marked box again and the check mark disappears.

If the graph is clicked at certain point by the mouse, such point (measurement date) becomes a cursor and red line will move. Measurement date at the cursor will be displayed on the Normal panel and Extension panel.

【1/1 Octave Real-time Analysis measurement data】

● Logging Panel

● Normal Panel



Select desired frequency to display

● Extension Panel

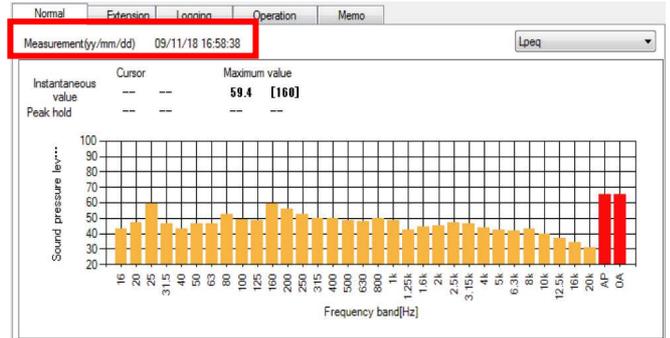
Normal	Extension	Logging	Operation	Memo
Measurement(yy/mm/dd)	09/11/18 16:59:39			
16	59.9[dB]			
31.5	50.5[dB]			
63	54.2[dB]			
125	56.6[dB]			
250	54.2[dB]			
500	52.5[dB]			
1k	49.7[dB]			
2k	44.7[dB]			
4k	38.3[dB]			
8k	31.0[dB]			
AP	63.8[dB]			
OA	63.7[dB]			

【1/3 Octave Real-time Analysis measurement data】

● Logging Panel



● Normal Panel



● Extension Panel

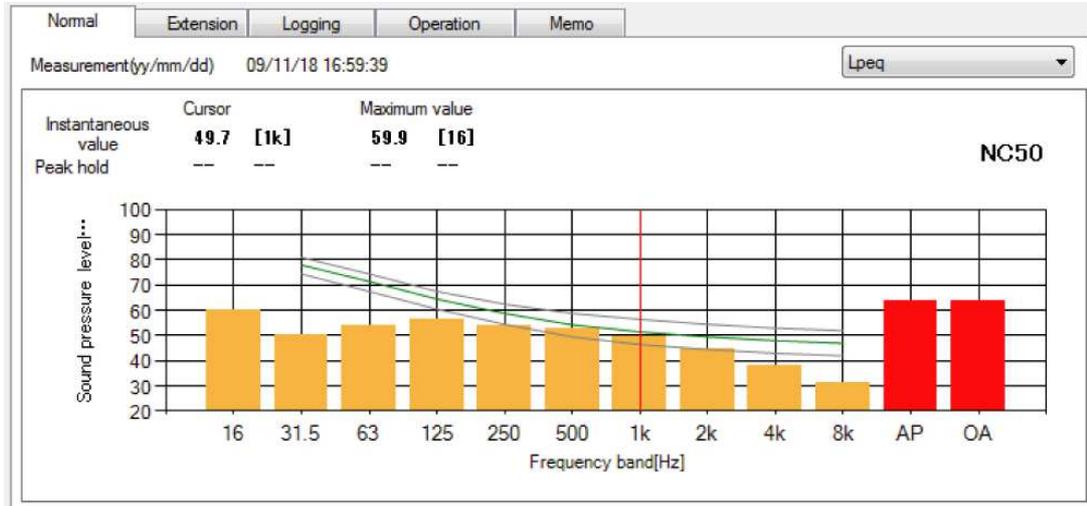
Normal	Extension	Logging	Operation	Memo
Measurement(y/mm/dd)		09/11/18 16:58:38		
16	43.4[dB]	1k	48.7[dB]	
20	46.9[dB]	1.25k	42.7[dB]	
25	59.1[dB]	1.6k	44.7[dB]	
31.5	46.4[dB]	2k	44.9[dB]	
40	43.3[dB]	2.5k	47.4[dB]	
50	46.8[dB]	3.15k	46.7[dB]	
63	46.5[dB]	4k	43.8[dB]	
80	52.9[dB]	5k	42.5[dB]	
100	49.4[dB]	6.3k	41.5[dB]	
125	48.8[dB]	8k	43.1[dB]	
160	59.4[dB]	10k	39.5[dB]	
200	55.7[dB]	12.5k	36.9[dB]	
250	52.9[dB]	16k	34.6[dB]	
315	50.0[dB]	20k	31.3[dB]	
400	49.7[dB]	AP	65.5[dB]	
500	48.6[dB]	OA	65.5[dB]	
630	47.6[dB]			
800	50.1[dB]			

9.1.3 Print NC report

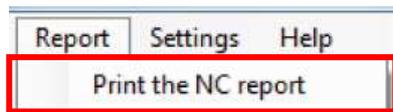
If the measurement data is for 1/1 Octave real-time Analysis and Z (Flat) characteristic, NC report can be printed.

Procedure for printing the NC report is as follows.

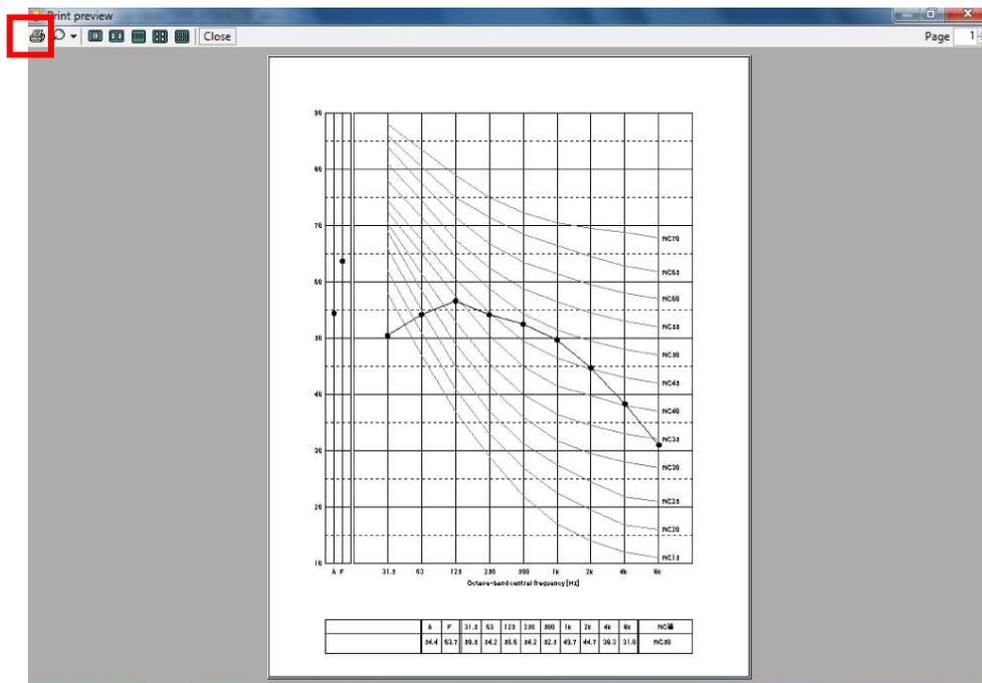
Display 1/1 Octave Real-time Analysis, Z (Flat) characteristic data.



1. Select [Report]→[Print out of NC report] on the Menu bar.



2. Print preview window will be displayed.
Click [Print] to start printing.



9.2 Display FFT Analysis measurement data

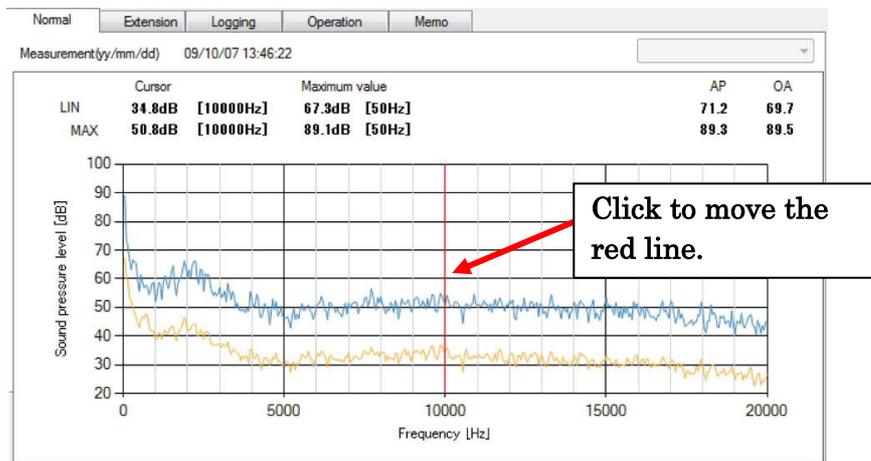
9.2.1 Display of measurement data

Display Normal Panel to see the measurement data.

For X axis, **Linear** or **Logarithm** can be displayed. Default display is **Linear**.

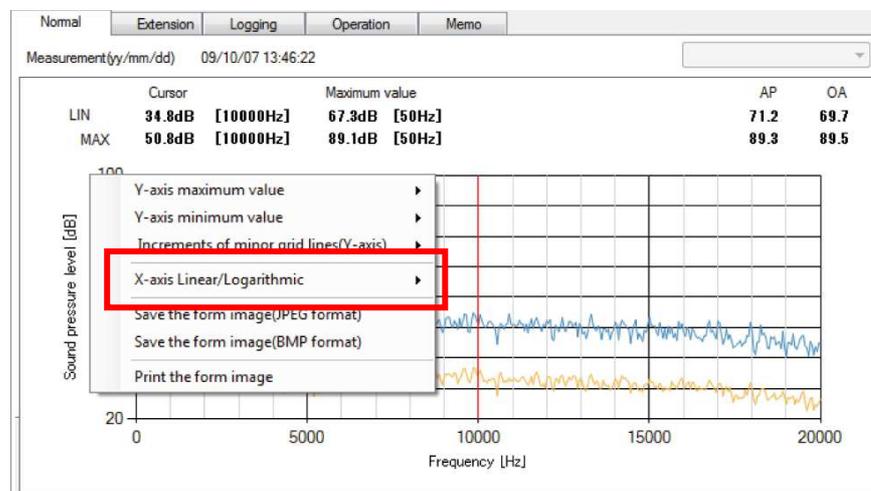
If the setting for the X axis is changed, such setting will be effective until the Data Management Software is terminated.

If the graph is clicked at certain point by the mouse, such point (measurement date) becomes a cursor and red line will move.

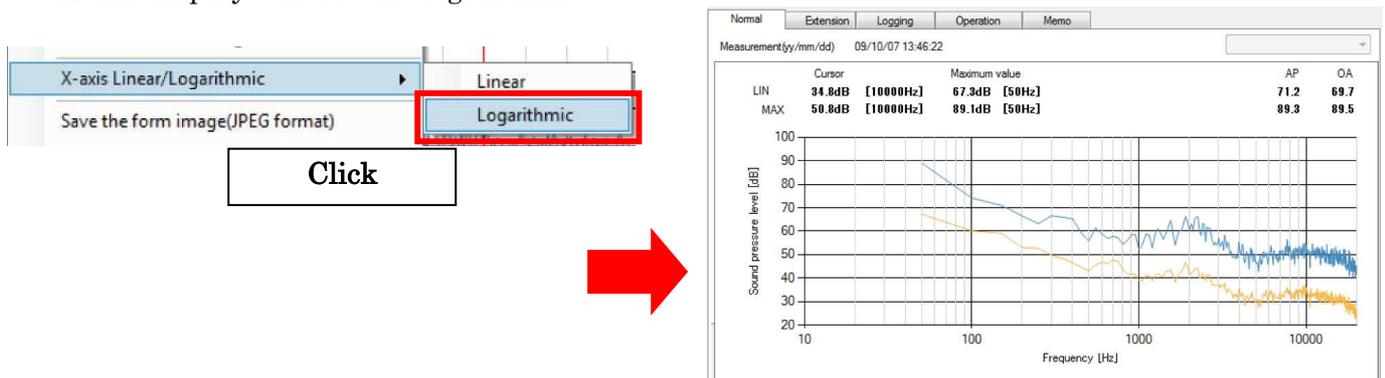


Procedure to change the setting for the X axis is as follows.

1. Right-click the mouse on the display of the Normal Panel. A menu for axis setting will be displayed.



2. Select [X axis mode : linear/logarithm] → [Logarithmic axis] on the menu. X axis display will become logarithmic.



To display each frequency values, select Extension Panel.

Normal Extension Logging Operation Memo									
Measurement(yy/mm/dd) 09/10/07 13:46:22									
50	67.3[dB]	1100	41.2[dB]	2150	43.8[dB]	3200	36.3[dB]	4250	29.9
100	60.1[dB]	1150	40.9[dB]	2200	44.3[dB]	3250	37.8[dB]	4300	28.4
150	59.1[dB]	1200	39.0[dB]	2250	44.1[dB]	3300	35.1[dB]	4350	31.5
200	53.0[dB]	1250	41.0[dB]	2300	40.1[dB]	3350	33.6[dB]	4400	32.5
250	52.6[dB]	1300	42.0[dB]	2350	40.3[dB]	3400	34.9[dB]	4450	32.2
300	49.7[dB]	1350	40.7[dB]	2400	42.1[dB]	3450	35.4[dB]	4500	31.6
350	48.3[dB]	1400	41.1[dB]	2450	41.2[dB]	3500	34.4[dB]	4550	29.9
400	46.6[dB]	1450	42.8[dB]	2500	39.0[dB]	3550	33.9[dB]	4600	30.7
450	44.7[dB]	1500	43.0[dB]	2550	41.4[dB]	3600	33.6[dB]	4650	32.7
500	43.1[dB]	1550	43.6[dB]	2600	41.4[dB]	3650	31.4[dB]	4700	32.6
550	45.6[dB]	1600	40.5[dB]	2650	41.1[dB]	3700	32.9[dB]	4750	33.9
600	46.8[dB]	1650	38.4[dB]	2700	38.6[dB]	3750	32.1[dB]	4800	31.7
650	46.2[dB]	1700	41.0[dB]	2750	37.0[dB]	3800	33.2[dB]	4850	31.0
700	47.8[dB]	1750	41.8[dB]	2800	37.0[dB]	3850	32.6[dB]	4900	30.7
750	47.1[dB]	1800	42.9[dB]	2850	36.8[dB]	3900	30.5[dB]	4950	29.6
800	43.7[dB]	1850	44.5[dB]	2900	36.8[dB]	3950	35.3[dB]	5000	29.9
850	41.8[dB]	1900	46.6[dB]	2950	37.2[dB]	4000	35.1[dB]	5050	31.0
900	41.7[dB]	1950	44.9[dB]	3000	37.1[dB]	4050	32.6[dB]	5100	30.8
950	41.5[dB]	2000	42.0[dB]	3050	36.0[dB]	4100	32.1[dB]	5150	29.8
1000	39.0[dB]	2050	41.9[dB]	3100	37.3[dB]	4150	33.7[dB]	5200	27.4
1050	39.0[dB]	2100	42.7[dB]	3150	36.7[dB]	4200	32.9[dB]	5250	30.7

9.3 Display of Real Sound Recording measurement file

9.3.1 Replay

Select Normal Panel to replay the measurement data (Wav file).

Windows Media Player will be displayed and the measurement data can be replayed.

