



KANOMAX

Piezoelectric Balance Dustmeter

MODEL 3521

Operational Manual



Before any use, read the manual carefully and understand correctly its content and warnings and precautions indicated therein.

Kanomax Instrument (Shengyang) Co., Ltd.

Take good care of this manual for future reference.


A001


05. 03

Before Use


Our company sets the following regulations on the warnings in the manual:


[Notes to the mark]


 **Danger:** For prevention of personal injury caused by an accident
The mark implies that there will be a danger of personal injury if improper operation is conducted by ignoring the mark.



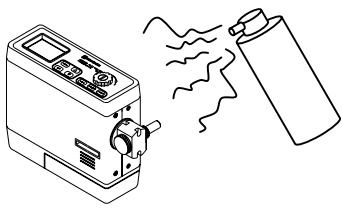




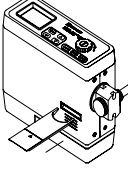
 **Note:** For prevention of the product from any damage.
The mark implies that any product will be damaged or its performance will fail if improper operation is conducted by ignoring the mark.

[Notes to the legend]

 △ The mark denotes precautions(including danger). The Legend depicts the content of attention.
(Left legend is for protection from high temperature).

 ● The mark denotes prohibitions. The legend depicts prohibitions.
(Left legend is for prohibition of dismantling).

 ● The mark denotes compulsory acts and instructions. The legend depicts instructions.

 Danger		
○ The instrument should be far away from any environment containing combustible gases.	 Prohibition	
○ Never dismantle or heat the battery box or throw it into fire. Explosion hazard	 Guard against crack	  Correct use
○ Never do any cleaning in the high-voltage supply period.	 Prohibition	



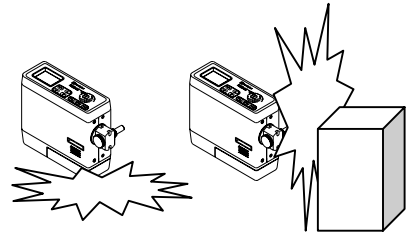
Note

- The instrument should not be impacted heavily

.....If it drops or collides, damage or trouble will occur easily.



Prohibition



- Never dismantle, modify or repair the instrument by yourself

.....this will lead to short circuit and malfunction of the instrument.



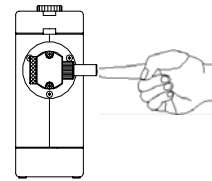
Prohibit modification/ dismantling.

- Don't seal the impacter port with your finger

..... this will lead to the pump failure.



Prohibition



- Don't measure in any environment with sharply changing temperature and humidity

..... it can cause measurement error.



Correct use

- Don't use volatile solvents for wiping the body.

.....The surface stains can be removed with a soft cloth. Stubborn stains can be removed with a soft cloth containing neutral cleaner. Volatile solutions including thinner and gasoline are prohibited, otherwise the casing may be deformed and deteriorated.



Prohibition

- Miscellaneous airstream should be kept away from the measuring hole and the effect of air conditioner and cooling fan avoided.

.....it can cause measurement error.



Correct use

Thank you for the purchase and the use of Kanomax products. Please read the operational manual carefully and do observe relevant precautions for your correction operation of the precision instrument.

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Working Principle

The measuring principle of the piezoelectric balance-type dust counter is completely different from that of the previous light random type. This measurement calculates the concentration of dust in air by directly measuring the weight of dust in air per unit volume. As a result, both stability and precision are greater than by light random mode.

The dust particle in the air is spread in a diameter ranging from subparticle to tens of micrometer. The instrument is graded by use of an impacter and specially measures the concentration of dust particles that affect the human body, namely, the dust concentration in the range of subparticle to tens of micrometers. The graded suspended particle has nothing to do with the diameter of particle. Dust is collected onto the piezoelectric element (crystal) at an approximate rate of 95% by electrostatic collection method. Depending upon the dust mass collected, the inherent frequency of the piezoelectric element will change correspondingly, proportional to the dust mass collected. The instrument calculates the concentration value finally in terms of the change in frequency of the piezoelectric element after a certain quantity of air absorbed in a given time and dust particles are collected onto the piezoelectric element. The calculation formula:
 $C = \alpha \times \Delta f$

C ---- Concentration value

Δf ---- Frequency difference measured for the crystal

α ---- calculation factor, $\alpha = 1/ES\Delta tQ$, E=charged efficiency, S=crystal sensitivity, t=test time, Q=flow.

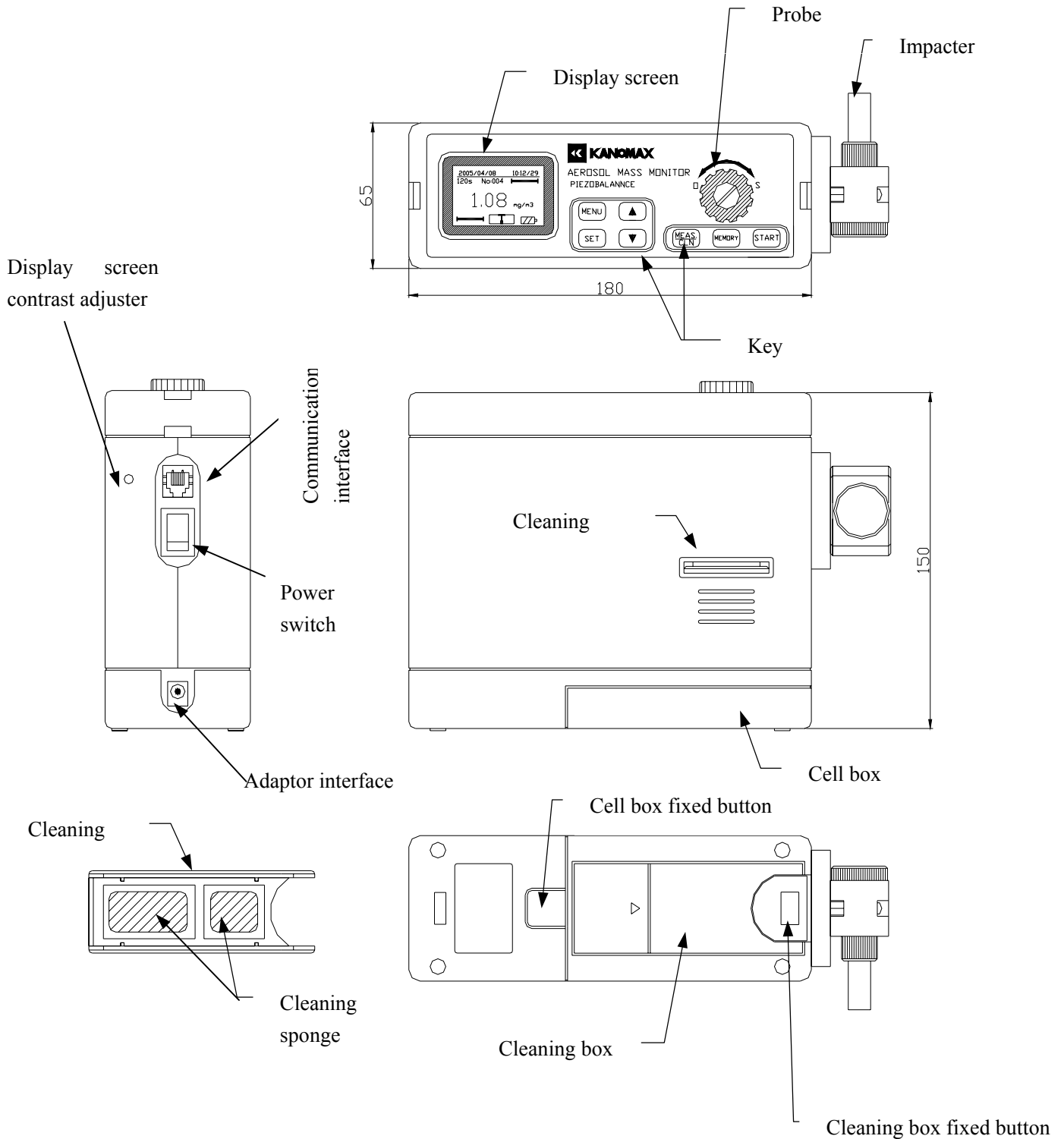
Besides, in this instrument, two piezoelectric elements are used to correct the temperature error, thereby improving the precision and stability of measurement greatly. The sampling air is absorbed by a subminiature rotary pump and its air flow has nothing to do with the change in power voltage. The use of electronic governor ensures the stability of the instrument to absorb air in a given time. As these gears are adopted, the measurement precision is improved remarkably with guaranteed stability.

Processing of data measured: the instrument adopts MCU for control, which features great speed, few errors and menu set-up. It can store 500 data records and can communicate with the computer or print out data directly, thereby making it more intelligent.

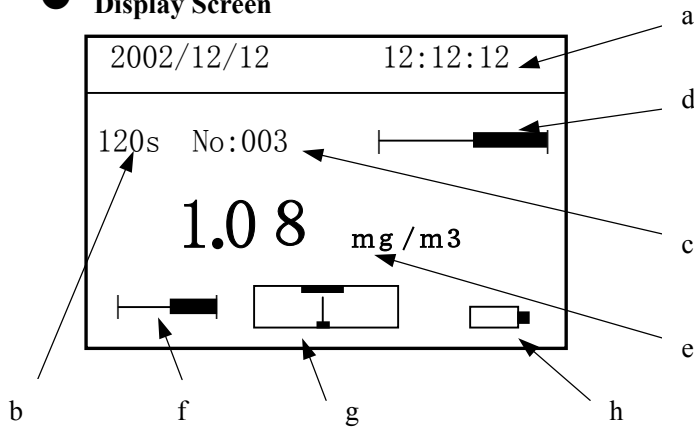
Besides, the dust deposited on the elements should be removed by manual cleaner.

Name of Parts

- Name of Parts

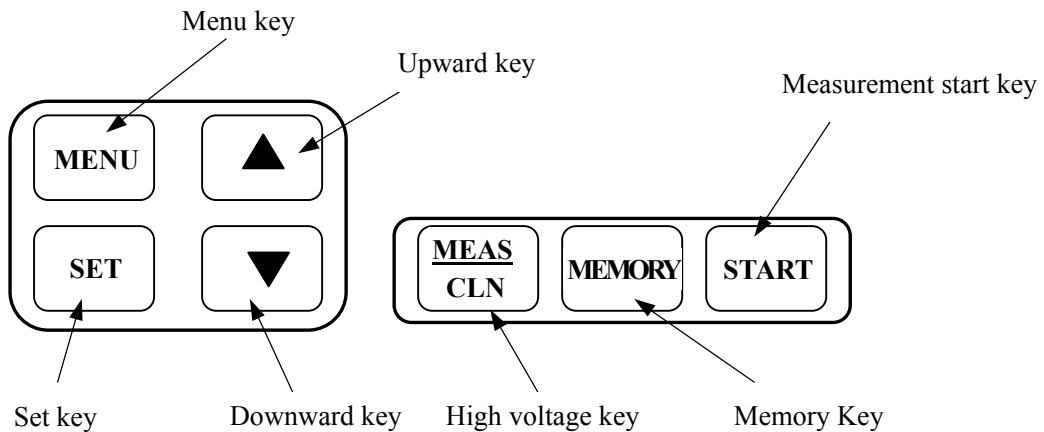


● **Display Screen**



- a. Date & Time----- Current date & time
- b. Measurement mode----- Time for measurement can be set to 120s, 24s or at random by users (10~3600s).
- c. Storage record ----- It displays current record number with 500 data to be stored at most. When measurement is over, “STORE” will be blinking, prompting the data can be stored. Press “MEMORY” key to store the data.
- d. Surplus of cleaning ----- As the crystal absorbs more and more dust, this item becomes smaller to the right. When the crystal dust exceeds $10 \mu\text{g}$ “cleaning” will be blinking here, the crystal must be cleaned.
- e. Concentration value ----- Upon measurement, the value will be blinked
- f. Status of operation ----- upon cleaning and starting for the stability of the crystal frequency, “wait” is blinked upon energization, “ready” is shown and upon measurement residual time will be displayed.
- g. High voltage pointer -----Upon energization at high voltage, the high voltage will be shown when the pointer enters into the black part in the middle of the frame, the status of operation will turn to “ready”. Then measurement can begin.
- h. Cell mark ----- Power of cell is shown section by section.

● **Key**



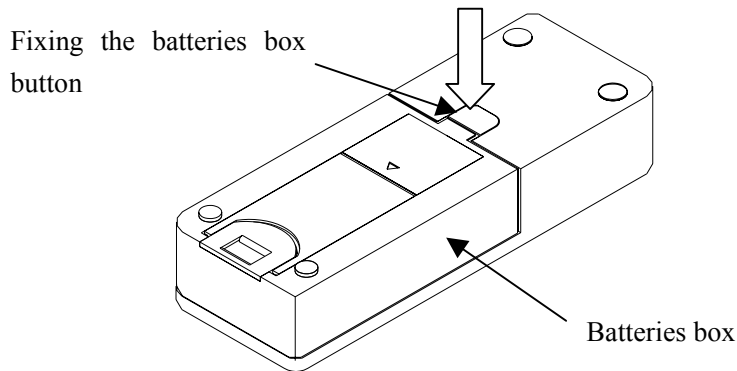
Main Specifications

Name	Piezoelectric Balance Dustmeter																																													
Model	Model 3521																																													
Measurement Object	Weight concentration of particles drifting in the air indoor or outdoor																																													
使用温度范围	-10℃～40℃																																													
保存温度范围	-30℃～60℃																																													
Measurement Range	0～10mg/m ³																																													
Diameter of Particle to Be Measured	Below Φ10 μ m, below Φ7.07 μ m (by changing the impacter nozzle)																																													
Measurement Time	120s, 24s, 10～3600s (measured through the menu)																																													
Measurement Precision	±10% (Indicated value)																																													
Elutriating Apparatus	Inertial impact elutriating apparatus (impacter)																																													
Suction Flow	1l/min																																													
Cleaning Gear	Manual cleaning crystal																																													
Communication Protocol	Standard RS232																																													
Communication Baud Rate	4800bps, 9600bps, 19200bps (set through the menu)																																													
Number of Data Memory	500																																													
Weight	About 2.4kg																																													
Overall Dimension	65 (w) ×180 (l) ×150 (h) mm																																													
Power Source	1) AC/Dc adaptor (input: AC100～240V) 2) Built-in Ni-Mh cell (9.6V-1.5AH), 4.5h for consecutive use and 5-8h for charging																																													
Attachments (on delivery)	<table> <tr> <td>1) Cleaning box</td> <td>.....</td> <td>2</td> </tr> <tr> <td>2) Cleaning sponge</td> <td>.....</td> <td>2group</td> </tr> <tr> <td>3) The sponge erection plate</td> <td>.....</td> <td>1</td> </tr> <tr> <td>4) Cleaning agent</td> <td>.....</td> <td>100cc</td> </tr> <tr> <td>5) Strap</td> <td>.....</td> <td>1</td> </tr> <tr> <td>6) Sponge pressure plate</td> <td>.....</td> <td>1</td> </tr> <tr> <td>7) Burettes</td> <td>.....</td> <td>2 个</td> </tr> <tr> <td>8) AC/DC adaptor</td> <td>.....</td> <td>1</td> </tr> <tr> <td>9) Φ7.07 μ impacter nozzle</td> <td>.....</td> <td>1</td> </tr> <tr> <td>10) Communication cable</td> <td>.....</td> <td>1</td> </tr> <tr> <td>11) Communication software CD</td> <td>.....</td> <td>1</td> </tr> <tr> <td>12) Directions for use</td> <td>.....</td> <td>1 copy</td> </tr> <tr> <td>13) Printer (optional)</td> <td>.....</td> <td>1 unit</td> </tr> <tr> <td>14) Adaptor of printer (optional)</td> <td>.....</td> <td>1 unit</td> </tr> <tr> <td>15) Print Cable (optional)</td> <td>.....</td> <td>1 unit</td> </tr> </table>	1) Cleaning box	2	2) Cleaning sponge	2group	3) The sponge erection plate	1	4) Cleaning agent	100cc	5) Strap	1	6) Sponge pressure plate	1	7) Burettes	2 个	8) AC/DC adaptor	1	9) Φ7.07 μ impacter nozzle	1	10) Communication cable	1	11) Communication software CD	1	12) Directions for use	1 copy	13) Printer (optional)	1 unit	14) Adaptor of printer (optional)	1 unit	15) Print Cable (optional)	1 unit
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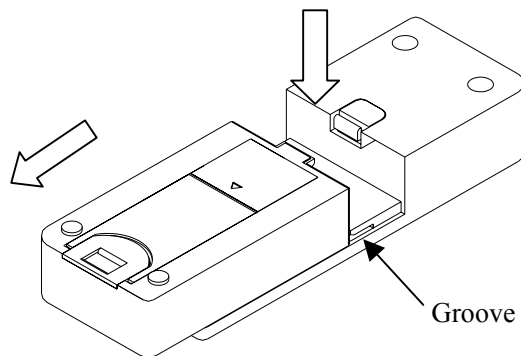
Installation of Parts and Preparation for Testing

● Dismantling and Installation of Battery Box

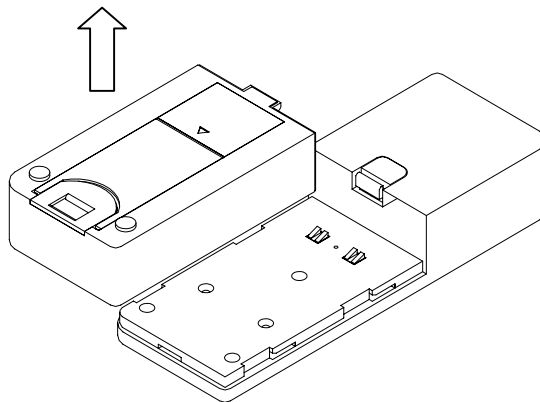
- (1) First press “the Fixing batteries box button” and then slide the battery box down the channel guide as shown in the figure below.



- (2) Press “fixing batteries box button” to the bottom, slide the batteries box horizontally along the groove as shown in the figure below.



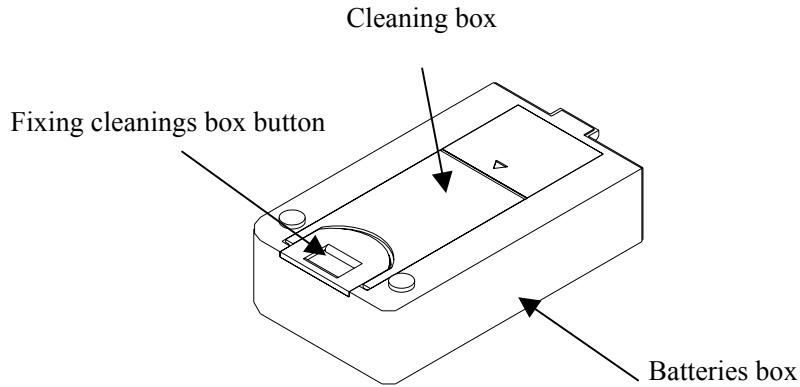
- (3) Installation of battery box: inverse the sequence of (1) and (2) and push up the battery box, the installation is over.



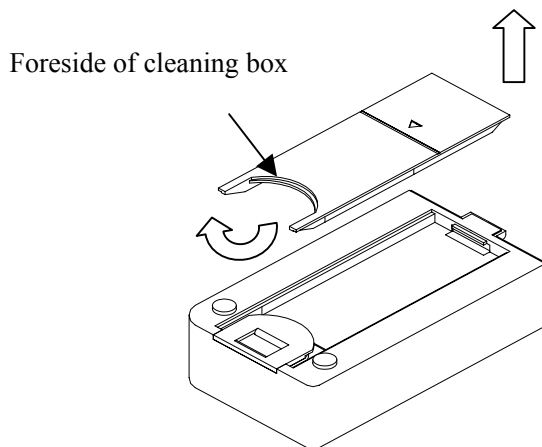
- (4) Installation of battery box: inverse the sequence of (1), (2) and (3) and push up the batteries box, the installation is over.

● **Dismantling and Installation of Cleaning Box**

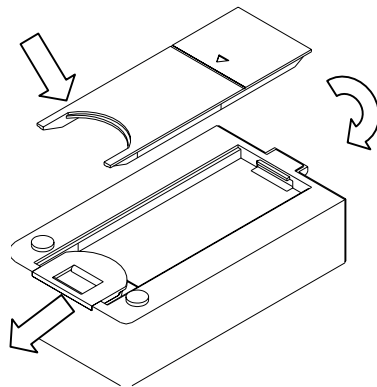
- (1) When disassembling the cleaning box, pull “the fixing cleaning box button” of cleaning box for some distance as shown in the figure below.



- (2) After pulling “the fixing cleaning box button” for some distance, the foreside of the cleaning box will flip from the batteries box itself as shown in the figure below.

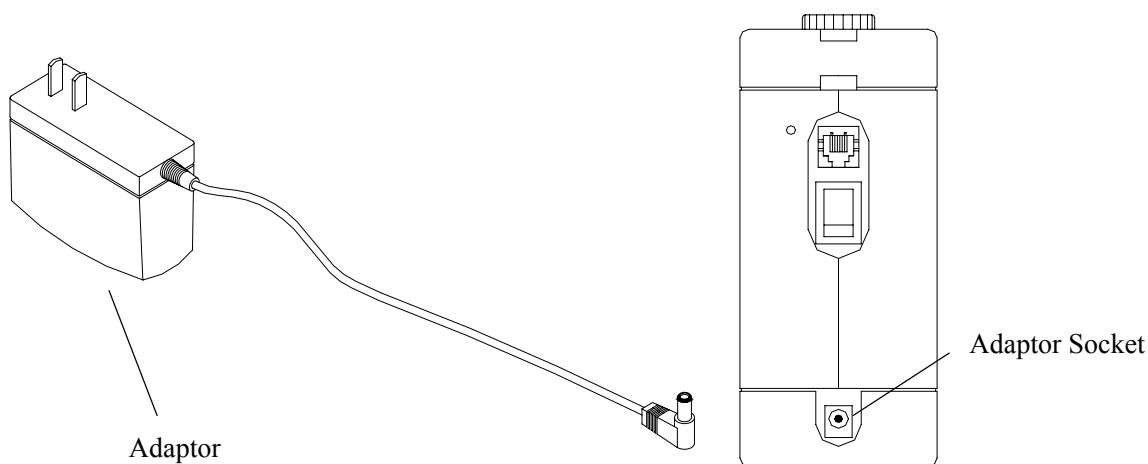


- (3) When installing the cleaning box, first put the back of cleaning box into the batteries box. Then push the foreside of the cleaning box so that it can be pressed into the batteries box. Finally push “fixing cleaning box button” to its original location.



- **AC/DC Adaptor**

AC of 100-240V should be used as much as possible if available to prolong service life of internal battery. Make sure that the output plug of the adaptor is inserted into the adaptor socket as shown in the figure below. Then the output plug of the adaptor is inserted into the power outlet.

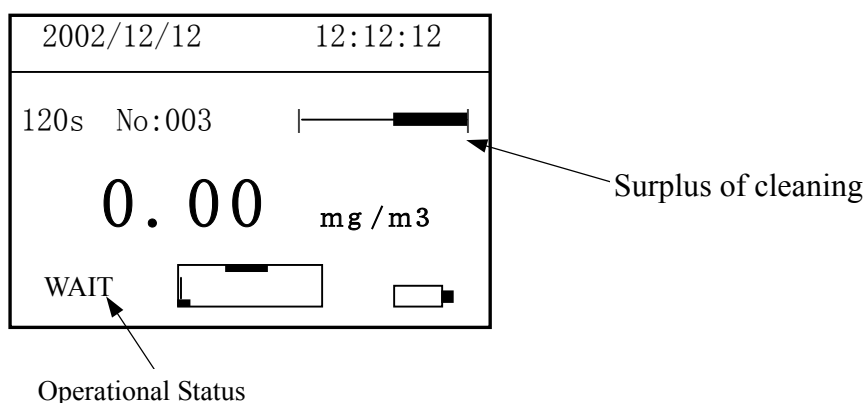


At this time the instrument screen displays the changing frame.

- **Inspection of crystal**

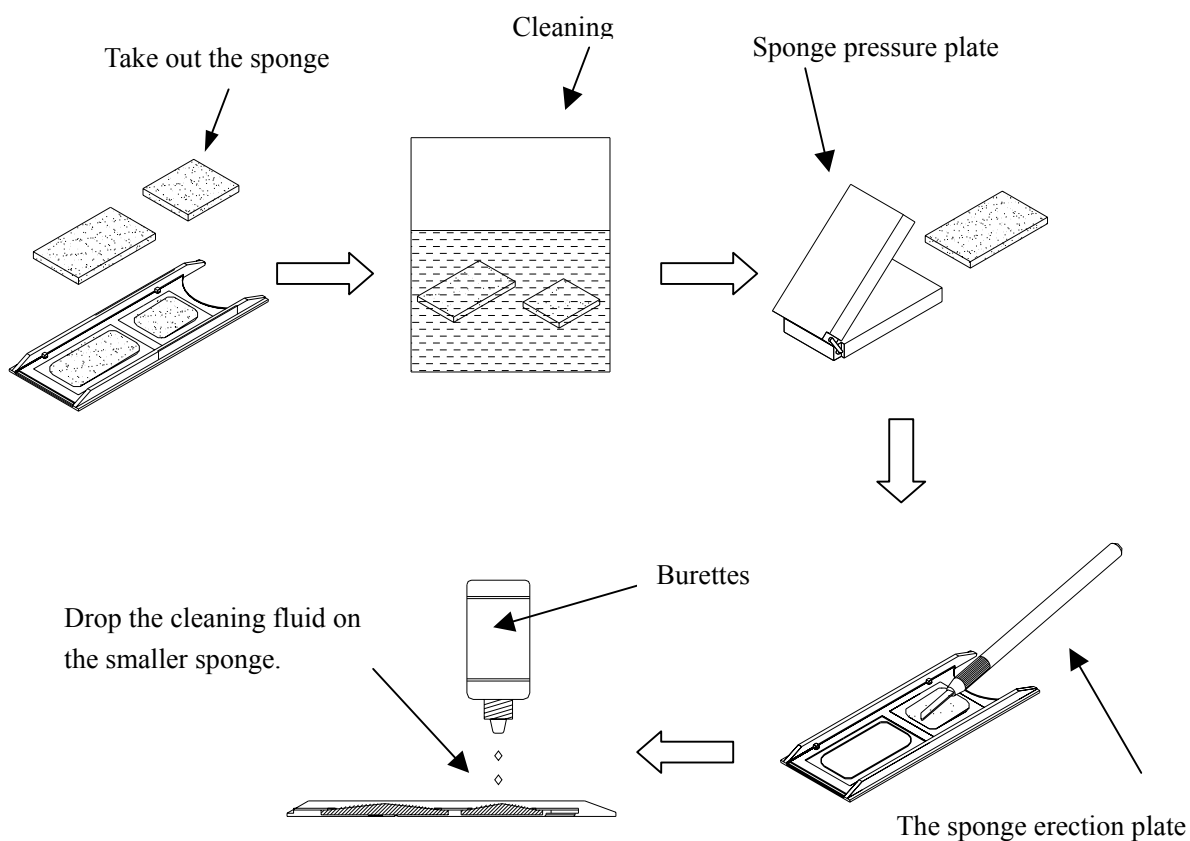
Turn on the power switch and the instrument is energized as shown in the figure below. Then the operation status shifts to blinking “wait”. Waiting in about 10 seconds until the crystal frequency becomes steady, “wait” is no longer blink. Check the surplus frequency first.

- If there is too much dust on the crystal ($>10 \mu\text{g}$), “cleaning” will blink, indicating crystal needs cleaning.
- In other condition the user can judge by the surplus frequency the amount of dust on the crystal to determine whether crystal needs cleaning (if surplus frequency is approaching the right end point, this shows the frequency may exceed upper limit, then “cleaning” is shown. It may affect the measurement precision or pause the measurement).



● Cleaning of Sponge

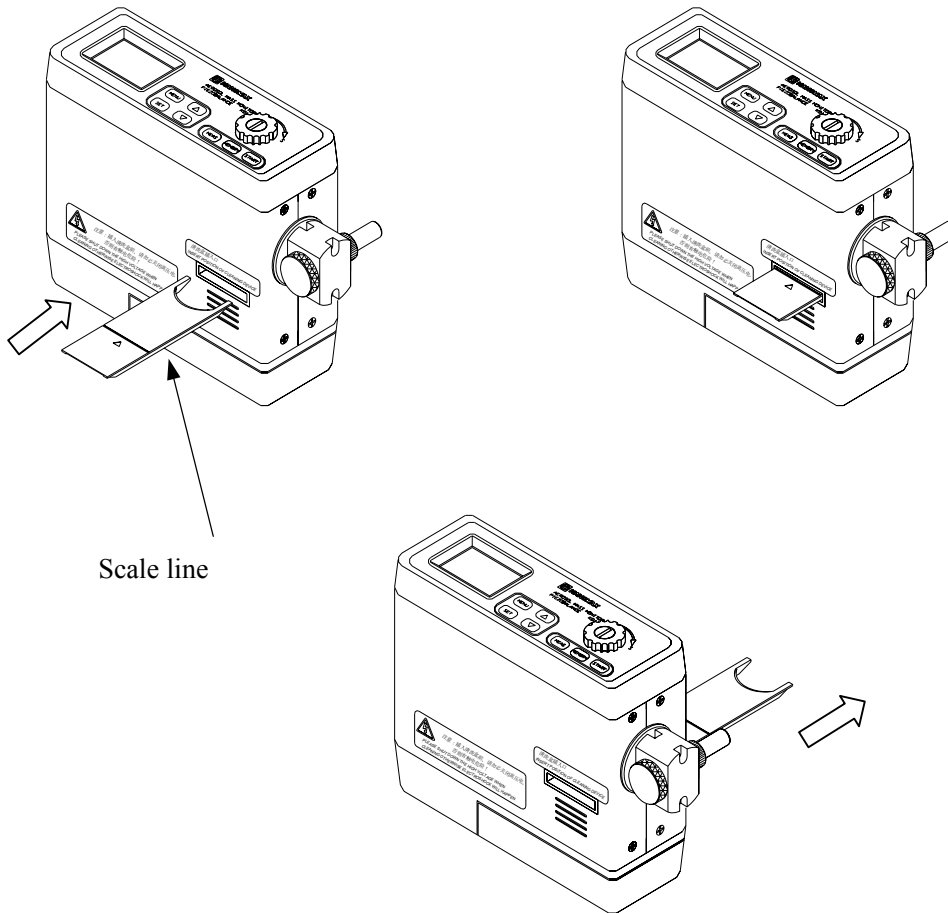
- a. Before cleaning the crystal, you should clean sponge first. Take out the two pieces of sponge in the cleaning box.
- b. Place them into a vessel filled with pure water for washing.
- c. Squeeze water out of the two pieces of sponge with the “Sponge pressure plate”.
- d. Put them into the cleaning box. Care should be taken as the two pieces are different in size. Install the sponge with Sponge erection plate as shown in the figure below.
- e. Finally place 4-5 drops of cleaning fluid on the smaller sponge. Note: Before pure the cleaning fluid, open the cover of the burette. After pure the cleaning fluid, press the cover tightly.



- (1) Take care that the two pieces of sponge different in size and cleaning fluid should be dropped on the smaller sponge. Install the sponge with clean figures and never dirt the sponge.
- (2) If there is any oily soil on the sponge, which can't be removed by washing in the pure water, place 3-4 drops of cleaner into the vessel with pure water for washing the sponge. After the soil is removed, sponge should be cleaned with pure water.
- (3) If soil on the sponge can't be removed or sponge is damaged, please contact the manufacturer or distributor for the purchase of new sponge. Never clean sponge with other cleaner or use other sponge.
- (4) If there is some water on the cleaning water, please wipe it with a dry towel, avoid bringing the water into the instrument when cleaning the crystal.

● Cleaning of Crystal

Check first if high voltage is cut off (It is forbidden to clean in high voltage). Then gradually insert the front end of the cleaning box by aligning with the cleaning port, with the sponge side facing downward. When the insertion depth reaches the scale line indicated on the back of the cleaning box, stop and stay for 20 seconds. Then go on until the cleaning boxes pulled out fully from the other side. Repeat this process twice or three times and dry it. At this time, the operating status shifts to blinking “wait”. Drying lasts for about three minutes when “wait” is no longer blinking, it shows the crystal has gone dry. When “wait” is blinking, it shows moisture on the crystal has not been removed. Then high voltage won’t be supplied and measurement is impossible.

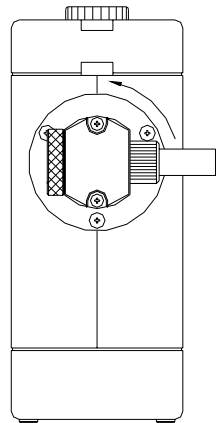


Note:

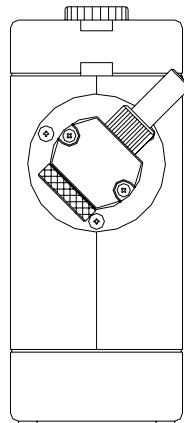
- (1) When cleaning the crystal, make sure that no high voltage is supplied. Even if high voltage is just cut off and the residual power has not been fully discharged (Through the high voltage pointer, it can be seen that it has not returned to the left frame completely), cleaning of crystal is impermissible. Do not clean the crystal unless high voltage current is discharged completely.
- (2) If crystal is cleaned when the instrument is turned off and the crystal is not dry, at this time, when you turn on the instrument, “wait” will go on with blinking till the crystal becomes dry. During this period, high voltage current will not be supplied and measurement is impossible.

- **Adjustment of Direction of Impacter Snout**

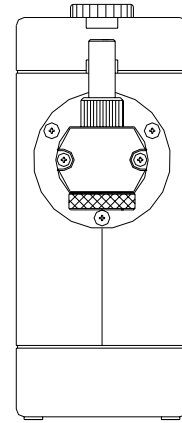
Horizontally, KD11 impacter snout boasts three directions for user's selection, namely 0°, 45° and 90°. The user can select the direction of impacter snout at his own discretion. When adjusting the direction of an impacter snout, just turn the body of impacter to the designated position until a crack is heard. The specific method of adjusting the impacter snout is shown in the figure below.



Rotation angle: 0°



Rotation angle: 45°



Rotation angle: 90°

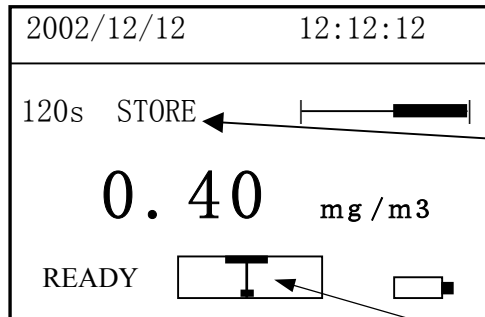
- **Setting the Measurement Mode**

Setting method can be referred to "Setting the Menu". When the instrument is turned on, the default measurement time of the instrument is 120s. The user can set the measurement mode as required. 24s is recommended in the high concentration location (the concentration is exceed $3.00\text{mg}/\text{m}^3$). It can reduce the times of cleaning the crystal. When the measurement is taken indoors, 120s mode can be selected. It can assure to absorb enough dust to deduce the error of the measurement. in a place with low concentration. Then measurement can begin. User can use custom measurement mode when necessary. (If in the clean room, measurement mode can be 240s or longer.)

Measuring Method

● Supply of High Voltage Current

When “wait” is not blinking, press “MEAS/CLN” key to supply high voltage current. Then the high-tension pointer in the high-tension block is seen to move right and remain in the black part of the block. The operating status shifts to “ready”, indicating measurement may begin. As is shown in the figure below, if the high-tension pointer can never enter the middle of the high-tension block, please turn off the instrument to confirm if the probe is inserted properly.



After measurement is over, “STORE” will be blinking here, prompting data be stored.

When high-tension pointer points here and operating status shifts to “ready”

● Beginning of Measurement

Press “START” key and the instrument will begin to measure. The blinking concentration value shows when the set time (measurement mode) is reached, it will stop automatically. If the concentration value is not blinking, the final concentration value measured is reached. Then “STORE” will be blinking at the record number, prompting the data be stored. Press “MEMORY” key to keep the data (or not to keep it). Press “START” key again and new measurement can begin.

- If in the course of measurement you press “START” key, measurement will stop and concentration will indicate “--.--”. This method can be adopted for emergency stop in the measuring process.
- If in the course of measurement, you press “MEAS/CLN” key, measurement will stop and concentration will indicate “----”. This method can be adopted for emergency stop due to high voltage cut-off.
- If in the course of measurement 2000Hz is exceeded because of too much dust absorbed by the crystal, surplus frequency will indicate blinking “cleaning”. If the measurement mode of 120s or 24s is selected, the measurement may proceed. After the measurement is finished, high-tension is cut off automatically, the crystal needs cleaning. The data can be stored. If any other mode is used, the measurement should be stopped immediately.
- From press “START” key about 5 seconds, the measurement data is “0.00 mg/m³”.
- After measuring, “STORE” is flashing here, clue to storing the data.
- The concentration value is only a reference during measuring, the concentration value which shown when the measuring is finished is the final value.

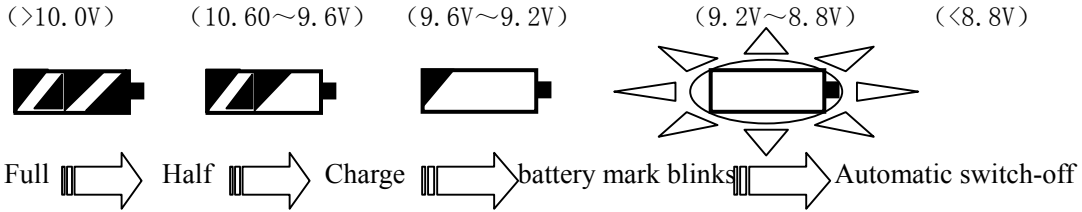
● End

At the end of the first measurement, press “MEMORY” key to store the measured value. If another measurement is necessary, press “START” key again. If not, press “MEAS/CLN” key to cut off high-tension and then turn off the power source to end this measurement. If too much dust is formed on the crystal in line with the surplus frequency, the crystal should be

cleaned before turning off the instrument for the convenience of the next measurement.

Indication of Battery

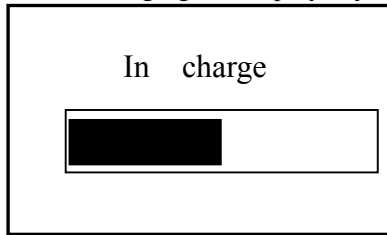
With the use of instrument, battery energy content will be consumed gradually. In the LCD part of the instrument, surplus battery energy is displayed as shown in the figure below.



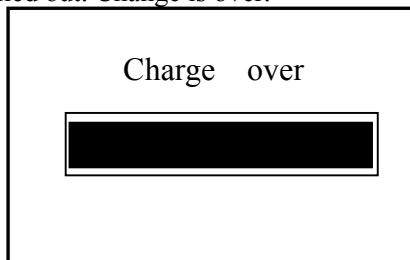
- ※ Normal operation is possible only when battery voltage is above 9.2V.
- ※ Battery mark blinks when battery voltage stands at 9.2V-8.8. Then test performance is not reliable and charging should be conducted at once.
- ※ If charging is not conducted, the battery voltage will be reduced further. When it is less than 8.8V, the instrument will be turned off automatically. So it needs charging.

Charging

The instrument will be in charge when the adaptor is inserted into the socket as shown in the figure below. The charging bar displays dynamically.



After charging is finished, the charging bar stops as is shown in the figure below. Then the adapter can be pulled out. Charge is over.



- 1) AC/DC adapter has AC 100-240v for output and 12.5v for input. If the adapter fails, contact our Company or distributor. Never replace any adapter by yourself, otherwise charge will be adversely affected and even the instrument damaged.
- 2) The built-in Ni-MU battery (9.6v-1.5AH) can be used continuously for 4.5 h or so with a charging time of 5-8 h..
- 3) When the instrument is not in use for long, battery should be charged once a month to extend service life of battery.
- 4) At the beginning of each measurement, the instrument switch is in an off position. Then the adapter is inserted into the socket and the screen will display “in charge”. The power switch can be turned on to start measurement.
- 5) At the end of each measurement, the power switch of the instrument is turned off. Then the adapter is still inserted into the socket and the screen displays “in charge”. If battery is not

exhausted, charging is unnecessary. So the adapter can be pulled out to stop charging.

Setting the Menu

- **Main Menu**

When high voltage current is not supplied to the instrument, press “MENU” key and the following menu will be displayed. Press keys to select items. Press “SET” key to enter sub-menu. Press “SET” key under item 1 “NORMAL” and exit from the menu.

MENU	1. NORMAL 2. SAMPLING TIME 3. DATA OUTPUT 4. PRINT OUTPUT 5. DATA CLEAR 6. TIME ADJUST 7. COMMUNICATION
------	---

- **SAMPLING TIME Menu**

This menu sets measurement mode and is operated as the following figure indicates. Press “MENU” key and return to the main menu. The set result won’t be saved.

SAMPLING TIME	
1.	120s
2.	SAVE INFO

Under item 1, press

SAMPLING TIME	
1.	20s
2.	SAVE INFO

In TSET, press

SAMPLING TIME	
1.	TSET
	CANGEOVER 0010 s
2.	SAVE INFO

Press keys to select the first and second items. Under the second item, pressing “SET” key will save set time and return to main menu. Under the first item, pressing “SET” key will enter the frame below.

Press keys to change time

120s → 24s → TSET

In 120s and 24s, pressing “SET” key will return to the first item. In TSET, pressing “SET” key will enter the following frame.

Press key to set time from 10~3600s, then press “SET” key to return to the first item.

- **DATA OUTPUT menu**

The menu is for check of the data saved as shown in the figure below. Pressing “MENU” key can return to the main menu.

DATA OUTPUT	No. 015
MASS CONCENTRATION	
	0.12 mg/m3
DATE	2002/12/12
TIME	12:12:12
SAMPLING TIME	120 s
STATUS	0

Press keys to select the record number to be checked. When releasing the key, recorded content will be displayed: mass concentration, date, time, measuring mode and error status.

When no record is available, the screen will display “There is no record. Please set MENU key”.

No. Data Record Number

Mass Concentration: concentration value measured

Date and Time: date and time when measurement begins

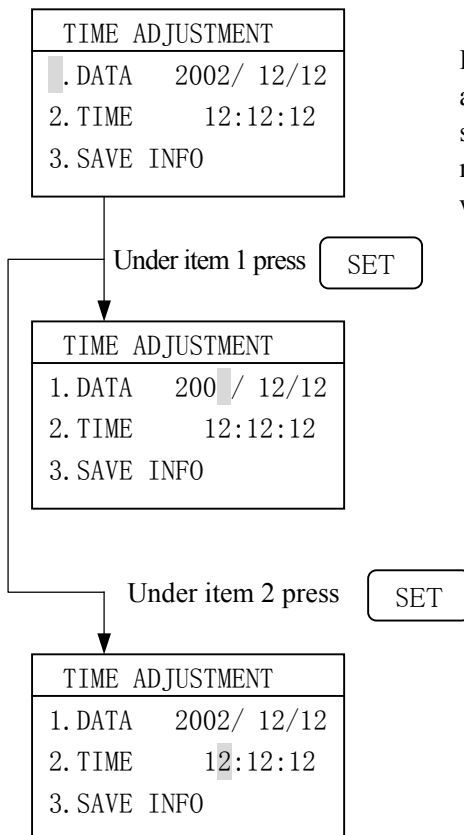
Sampling Time: measurement mode: 120s, 24s or TEST (10-3600s)

STATUS: error status including 0 and 1----- 0, normal measurement

----- 1, frequency exceeds 2000 HZ in modes of 120s and 24s.

● **TIME ADJUSTMENT Menu**

This menu sets and time as is shown in the figure below. Pressing “MENU” key can return to the main menu and save no set results.



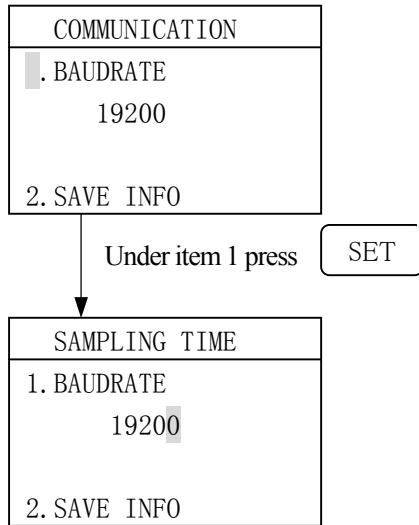
Press keys to select items 1,2 and 3. Under item 3, pressing “SET” key can save set date and time and return to the main menu. Under item 1 and 2, pressing “SET” key will enter the following frame.

Press keys and set the date according to the selected year, month and date. Press “SET” key, select year, month and date respectively and then return to item 1.

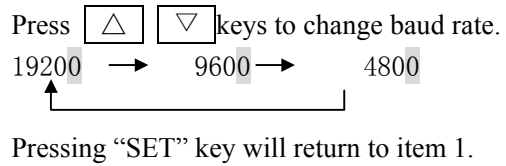
Press keys and set the time according to selected hour, minute and second. Press “SET” key and select hour, minute and second respectively and then return to item 1.

● **COMMUNICATION Menu**

This menu sets baud rate for communication as is shown in the figure below. Pressing “MENU” key can return to the menu and save no set results.

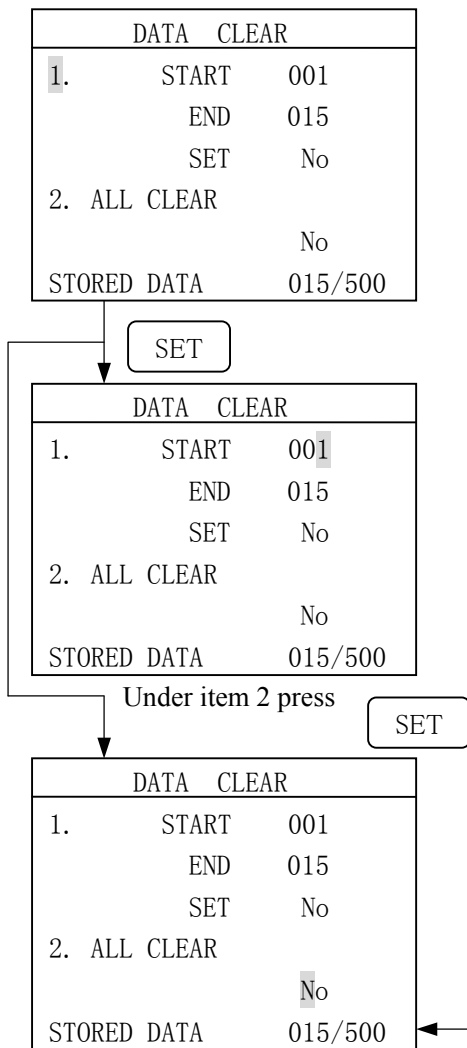


Press keys to select items 1 and 2. Under item 2, pressing “SET” will save set baud rate and return to the main menu. Under item 1, pressing “SET” will enter the following frame.



● **DATA CLEAR Menu**

This menu serves to delete data as is shown in the figure below. Pressing “MENU” key will return to the main menu and delete no data.



Press keys to select items 1 and 2. Pressing “SET” will enter the following frame. When no record is available, the screen will display “There is no record. Please set MENU key.”

Then the selection is the record number in START. Press keys to set the record number. Press “SET” key to select the record number in END. Press keys to set record number. Press keys to set record number. Press “SET” to select “No” in SET. Press keys to set “Yes” or “No”.

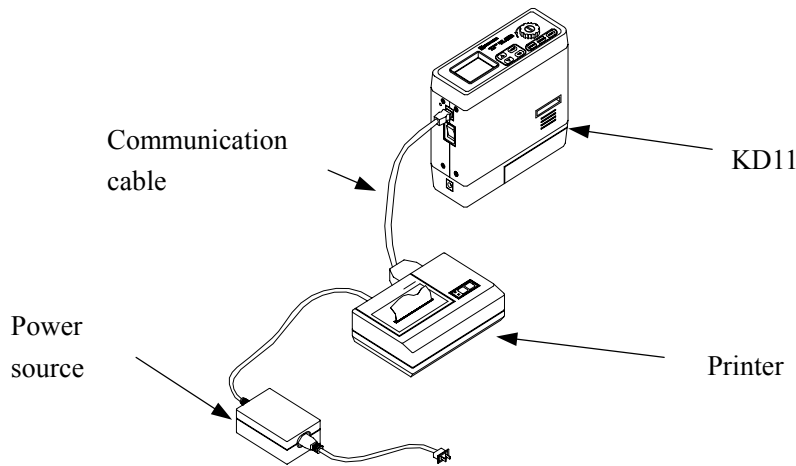
- a. Pressing “SET” key in “No” will return to item 1.
- b. Pressing key in “Yes” will clear all selected data and return to item 1.

Press keys to set “Yes” or “No”.
 a. Pressing “SET” in “No” will return to item 2.
 b. Pressing “SET” in “Yes” will clear all data and display “There is no record. Please set MENU key”. Then press “MENU” key to return to the main menu.

← representing current record number.

Printing

● **Preparation for Printing**



● **PRINT OUTPUT Menu**

In the main menu, item 4 “Print Output” is entered. This menu sets data to be printed as shown in the figure below. Pressing “MENU” can return to the main menu.

PRINT OUTPUT	
1. DATA	No
START	001
END	015
SET	No

Press

PRINT OUTPUT	
1. DATA	No
START	001
END	015
SET	No

Press

PRINT OUTPUT	
1. DATA	No
START	001
END	015
SET	No

Press keys to select initial record number. Press “SET” to enter the following frame.

When no record is available, the screen will display “There is no record. Please set MENU key”.

Press keys to select final record number. Press “SET” to enter the following frame.

- Press keys to select “Yes” or “No”.
- In “No”, press “SET” key to return to the first frame and reset the initial record number.
 - In “Yes”, press “SET” key for printing. After printing, return to the first frame.

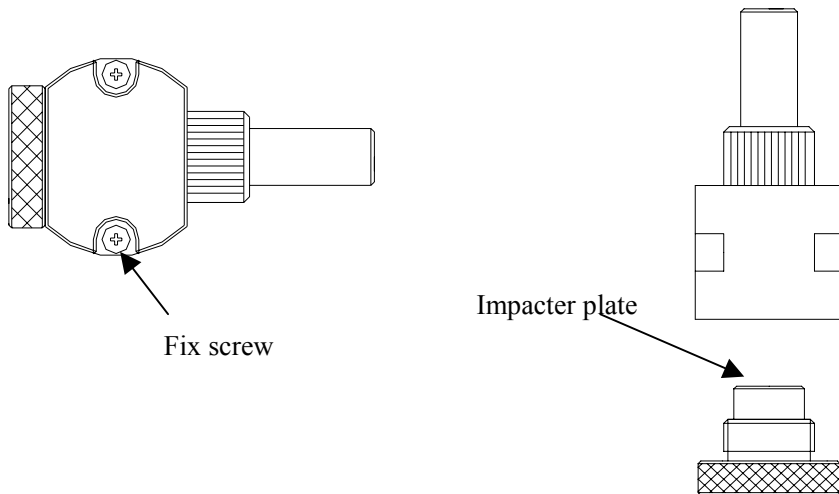
- ★ Make sure that power source of printer and KD11 adapter are reliable as wrong insertion will damage the instrument.
- ★ Before printing, the baud rate of KD11 should be set to 9600.
- ★ In printing, “Print Output” will blink on the screen.

Regular Maintenance and Replacement of Impacter Snout

When the instrument is used for a long period of time, regular maintenance is indispensable for its precision. For use of more than half a year the impacter and probe need cleaning. When the instrument is often used in a place of high concentration, cleaning and maintenance time may be determined independently in terms of frequency of use. The user may also change the impacter snout as required.

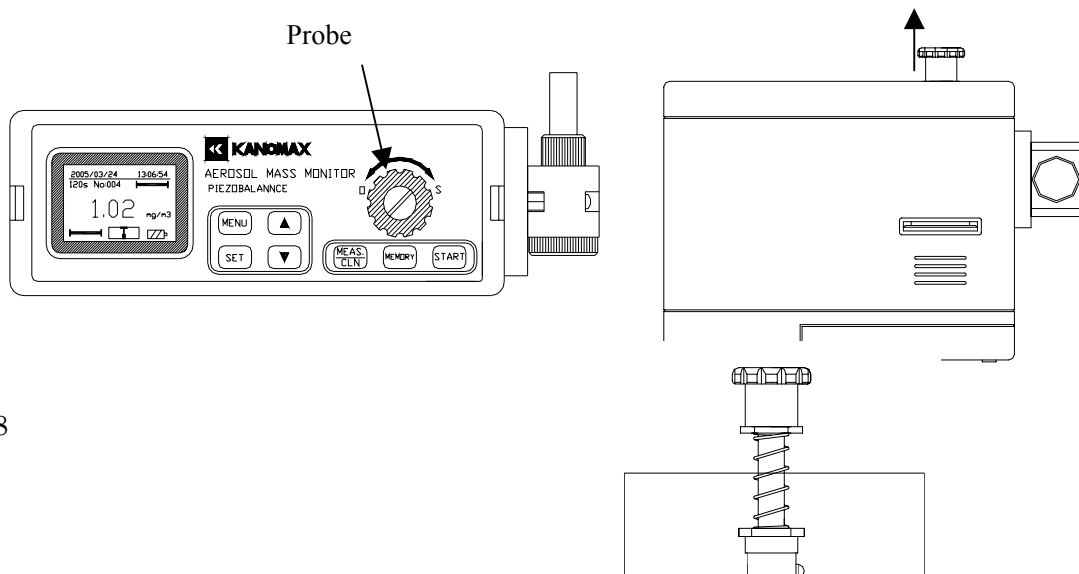
● Cleaning the impacter

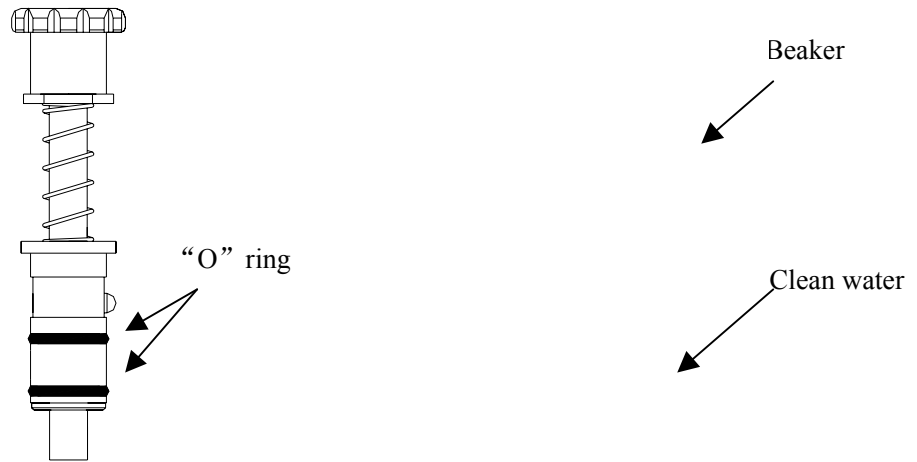
Twist off the fix screw, remove the impacter from the casing and open the top cover of the impacter as shown in the figure below. Dust deposited on the impacter plate of the head should be removed with cleaning agent, alcohol or pure water carefully. After the plate becomes dry as a bone, it is replaced in the instrument in a reverse order.



● Removal and Cleaning of the Probe

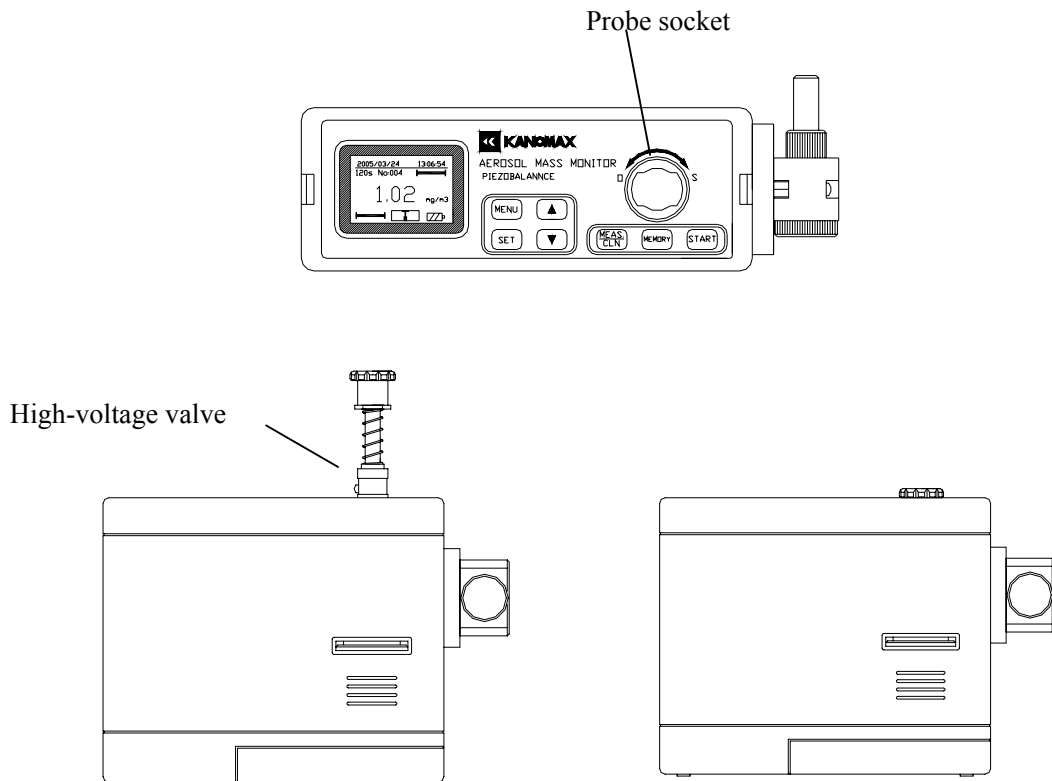
If the knob is turned to O (open) side, it will be ejected. The probe is removed by pulling out the knob upward slowly. The needle of the probe is fitted with “O” ring, which should not be damaged when the probe is taken out. When cleaning the probe, pour the cleaning agent into a beaker of 50 ml first and then dilute with two fold clean water. Finally the probe is placed in and cleaned for about 16 minutes by an ultrasonic cleanser. When placing the probe into the cleaning liquid, only “O” ring part on the top of the probe is inserted instead of part above the ring. After cleaning is over, thorough drying is necessary, otherwise high-tension leakage even malfunction may occur. Care should be taken. When replacing the probe, make sure that it is pressed in lightly by aligning the pin on the probe side with the channel guide in the instrument (the probe socket is seen from top). Finally turn the knob to s side for locking. Turn on the power source, press MEAS to supply high voltages and confirm if the high-voltage pointer just points to the center. Note: the probe should not be withdrawn to avoid affecting the measurement precision.





● **Installation of the Probe**

Insert the probe vertically into the socket (Note: high-voltage valve on the probe should correspond to the channel in the socket). Then squeeze the probe cap down to the socket and turn the cap to s side to lock the probe. The installation method is shown in the figure below.

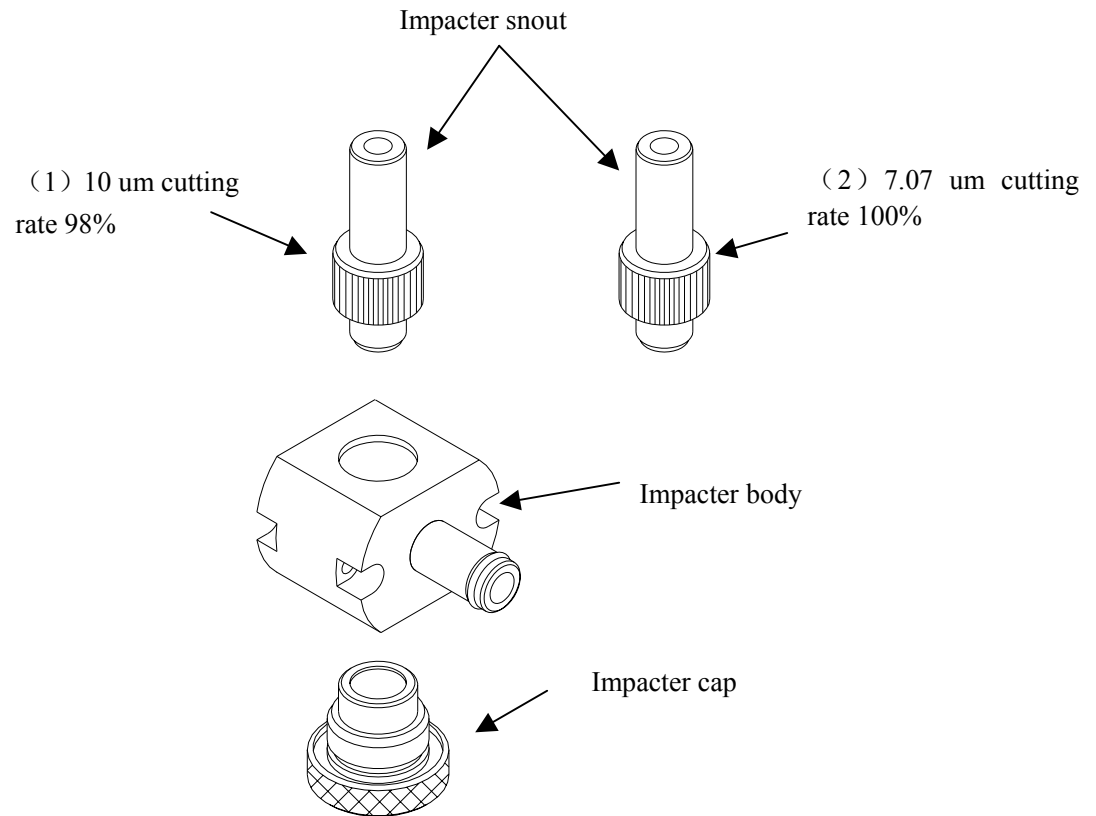


● **Replacement of Impacter Snout**

Impacter snout (1) is suitable for management measurement of high-rise building.

Impacter snout (2) is suitable for measurement of an operating environment.

When leaving the factory, an important snout (1) is attached with the instrument. In measurement an operating environment, impacter snout (2) should be substituted.



Confirmation of Trouble

Before entrusting repair, please confirm the following items once more.

Symptoms	Cause	Corrections
Power is not turned on (No display on the LCD)	Battery is exhausted	Charge the battery
	Power switch is in the on position because of no power in the battery	Turn off the power switch first and then turn on
	Poor contact between the contactors in the box	Remove the box and mount again
No LCD or fuzzy display (bright back)	LCD contrast unsuitable	Adjust the contrast with a screw driver and tune the program knob
High voltage is not supplied	Probe not inserted firmly	Remove the probe and reinstall it
	“Wait” keeps blinking	Turn off and wait for a while (2 minutes) because of incomplete drying after cleaning the crystal
	“Cleaning” keeps blinking	Clean the crystal
Concentration display at “— . —”	Press “START” key in measurement	Measure again
	Press “MEAS” key in measurement	Supply high voltages again before measurement
Battery mark blinks	Battery will be soon exhausted	Charge the battery at once
	Poor contact of battery contactors in the box	Remove the box and mount it again

Warranty Repair and After-sale Service

<Warranty Repair>

- Kanomax product is delivered after strict inspection on the basis of kanomax quality assurance system. Please contact the distributor or nearby business office and service center in the event of malfunction due to defective workmanship or accident in transport.
- The product has a service registration card attached, which is to be sent back after filling in the required items.

※ Note

Full maintenance service may not be provided if the registration card is not sent back.

- The warranty period of the product is one year beginning on the date of purchase. In this period trouble is repaired free of charge except for those due to improper operation, unauthorized modification or alteration by user as well as natural disaster.

<After-sale Service>

- Please check for yourself first in case of abnormality!
Refer to the chapter of “Confirmation of Troubles” and see if it is a trouble or not.
- Retention period of parts for repair
After suspension of production, parts for repair are retained for five years at least. Therefore the retention period is for repair. For details, please contact the service center of our Company.

Include the following for provision of service

◇Product Name	Dust meter
◇Model	3521
◇Serial No.	○○○○○○
◇Date of Purchase	Date
◇Trouble	(As detailed as possible)