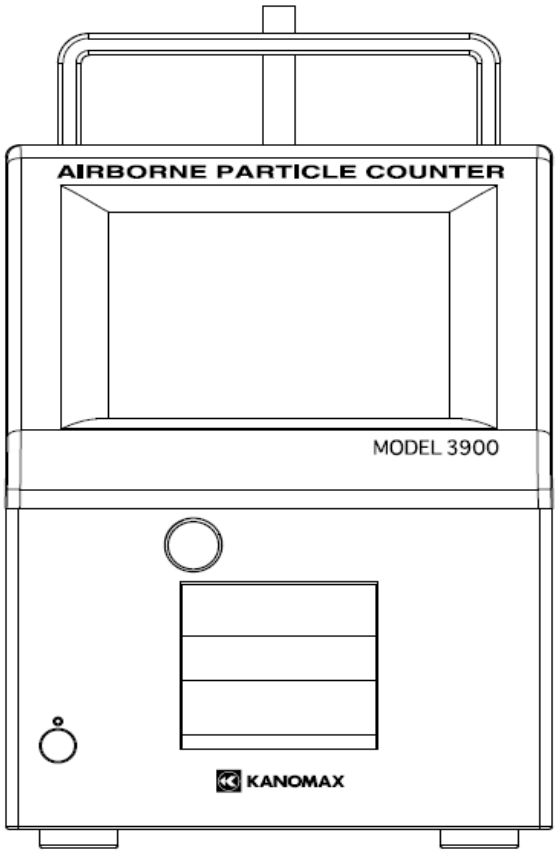
KANOMAX

Airborne Particle Counter

MODEL 3900 -Part11 Edition-

Operation Manual



Please read this operation manual carefully and
understand the warnings described within
before operating this instrument.
Keep this manual handy for future reference.

01001
10.12

Component List

■ Standard

ITEM	MODEL	QTY
Main Unit	3900	1
Power Cord (with NEMA plug)	-	1
Standard Inlet	3900-06	1
Isokinetic Suction Probe	3900-07	1
Zero Filter	3900-04	1
Tygon Tube (2M)	-	1
Printer Paper (Dust Free Paper)	3900-05	2
Measurement Software	-	1
Operation Manual	-	1
Test Certificate	-	1
Fuse (0217002.MXP)	3900-08	2
CF Card – 256MB (preinstalled in the instrument)	-	1
Lithium-ion Battery*	BSA2-06	1
Battery Charger*	BSA2-10	1

* Lithium-ion battery and battery charger are not included in Model 3900-01.

■ Optional Extras

ITEM	MODEL	QTY
Carrying Case	3900-01	1
Lithium-ion Battery	BSA2-06	1
Battery Charger	BSA2-10	1
Air Velocity Probe	0843	1
Temperature and Humidity Probe	0844	1
Differential Pressure Sensor	C264 100Pa	1
Differential Pressure Sensor Cable	3900-02	1
Contact Output Cable	3900-03	1

■ Consumables

ITEM	MODEL	QTY
Zero Filter (w/t joint and tube (70cm))	3900-04	1
Printer Paper (Dust Free Paper)	3900-05	1
Standard Inlet	3900-06	1
Isokinetic Suction Probe	3900-07	1
A set of two (2) Fuses (0217002.MXP)	3900-08	1

For more information on consumables, please contact your distributor or to your KANOMAX service center.

Laser Classification

This instrument is classified as a Class 1 Laser Product in accordance with the following standards.

- EN60825-1: 2007
- I EC60825-1: 2007

CLASS 1 LASER PRODUCT
EN60825-1 : 2007

* Class 1 Laser:
Lasers that are considered to be safe under reasonably foreseeable conditions of operation, including the use of optical instruments for intrabeam viewing.

Laser Safety Instruction

Danger - This instrument employs a laser inside the unit as the light source of the sensor.
Never open/close the case of the unit or disassemble the optical sensor inside the unit.

Wave Length	775-800nm
Maximum Output	80mW

Caution - Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Important Safety Information

In this manual, warning types and classifications are defined as follows.

[Classification]

WARNING: To Prevent Serious Injury or Death

Indicates a potentially hazardous situation which, if not avoided, may result in serious injury or death.

CAUTION: To Prevent Damage to the Product

Indicates a potentially hazardous situation which, if not avoided, may result in damage to the product that may void the product warranty.

[Description of Symbols]

△ Indicates the condition (including danger) that requires caution. The subject of each caution is illustrated inside the triangle (e.g., the symbol shown on the left is high temperature caution).

⊘ Indicates prohibition. Do not take the prohibited action shown inside or near this symbol. (e.g., The symbol shown on the left prohibits disassembly.)

● Indicates a mandatory action. A specific action is described near the symbol.

⚠ WARNING

Do not modify/disassemble

¤ Do not disassemble, modify or repair the instrument.

…… A 3B laser diode is used as the optical source inside the instrument. Therefore, never attempt to disassemble the instrument as it is extremely dangerous Also disassembling the unit may result in short circuit and malfunction.

Handle Properly

¤ Use the instrument properly by carefully following this operation manual.

…… Misuse of the instrument may result in electric shock, fire, damage to the instrument, etc.

¤ If any abnormal noise, unusual odor or smoke is emitted, or any liquid enters into the instrument, turn the power off immediately, remove the battery and disconnect the power cable.

…… It may result in electric shock, fire, or damage to the instrument.
Contact your distributor or your KANOMAX service center for repair.

Prohibited Installation

¤ Do not use this instrument in an ambient temperature above 35 °C.

…… The performance may deteriorate significantly.
Also, dielectric degradation may occur, which may result in short circuit or fire.

⚠ WARNING

¤ Unplug the power cord when the instrument is not in use.
…… Failure to observe the above may result in electric shock, fire or damage to internal circuitry.
¤ Install the instrument where you can pull the power cord out anytime.
¤ When using the power cord, ensure there is no dust on the power plug. The AC outlet used must be within the specified power requirement of 100 ~ 240V.
…… Failure to observe the above may result in fire.

¤ When using a power cord, make sure to use the one provided with this instrument.
…… Other commercially available cords may have different voltage specifications and polarity, which could result in short circuit, fire or damage to the instrument.

⚠ CAUTION


Handle Properly

¤ Remove battery when the instrument is not to be used for an extended period of time. Also do not leave discharged battery inside the instrument.

…… Failure to observe the above may result in battery leakage and damage to the instrument.


Prohibition

¤ Do not perform measurements in environments exceeding the specified temperature and RH levels of the instrument.
The instrument should not be exposed to direct sunlight for prolonged period.

…… The instrument may not function properly outside the specified environment.
(10~35°C, 20~85%RH, non condensing)


Prohibition

¤ Do not wipe the instrument with volatile solvents.

…… The body may be deformed or deteriorated. Use soft dry cloth to remove stains. If stains persist, soak the cloth in a neutral detergent or water and wipe the instrument with the cloth. Never use volatile solvents such as thinner or benzene.


Prohibition

¤ Do not subject the instrument to strong shock. Do not place heavy objects on the instrument or sensor.

…… Failure to observe the above may cause damage to the instrument.

¤ Do not touch the instrument when it is electrically charged.

…… Failure to observe above may affect measurement value and cause damage to the instrument circuitry.


Handle Properly

¤ Do not let the instrument suck in highly concentrated particles that exceed the specification level.

…… Failure to observe above may contaminate inside the instrument. As a result the instrument may fail to obtain zero count.
In order to check the performance under highly concentrated environment, make sure to attach the filter to the inlet.

If you accidentally let the instrument suck in highly concentrated particles, attach the filter to the inlet and brush inside the instrument while the pump is running.

Table of Contents

1. Part Names and Functions

1.1 General Outline

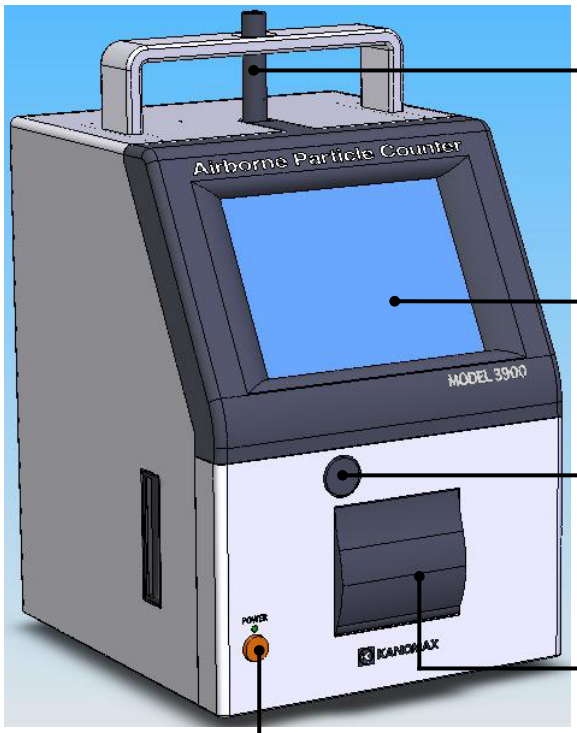
This Airborne Particle Counter is a light scattering laser particle counter using semiconductor laser radiation as a light source. This counter is used to detect ultrafine airborne particle in a cleanroom or other environment equivalent to a cleanroom. Mainly this counter is used as a monitoring measurement equipment to monitor the cleanliness in a cleanroom.

By using option sensors, air velocity, temperature, humidity and differential pressure can be measured simultaneously.

Each measurement value is displayed on the LCD screen as well as can be stored onto the CF card installed inside the counter and be printed out by using the internal printer. As for the power supply, either AC power (100-240V) or batteries can be used.

1.2 Airborne Particle Counter

FRONT



Standard Inlet
--- Particles enter the unit from here. Attach the provided standard inlet. To use the provided isokinetic suction probe, attach Tygon tube on the end of the standard inlet.
To change the standard inlet, refer to **2.2 Attaching Standard Inlet**.

LCD Touch Panel
--- This touch panel allows you to setup and control all instrument functions.

Paper Cover Open Button
--- Press this button to open the cover when changing the printer roll-paper.
To change printer paper refer to **2.5.1 Printer Paper Replacement**.

Printer
--- For printing measurement data. Set the printer roll-paper here.

Power Switch
--- When the main power switch located on the rear of the unit is ON, you can turn ON/OFF the power using this button.

BACK/LEFT

Sampling Air Exhaust Port
--- Filtered sample air is exhausted at this port.
Do not block the port as it may result in the damage to the instrument.

Exhaust Outlet for Ventilating the Instrument
---Exhaust outlet for ventilating inside the instrument.
Do not block the air vent when installing the instrument.

Optional Sensor Connecting Terminal
--- Terminals where the optional sensor is to be connected. Refer to **5. Connecting Option Sensors** for details.

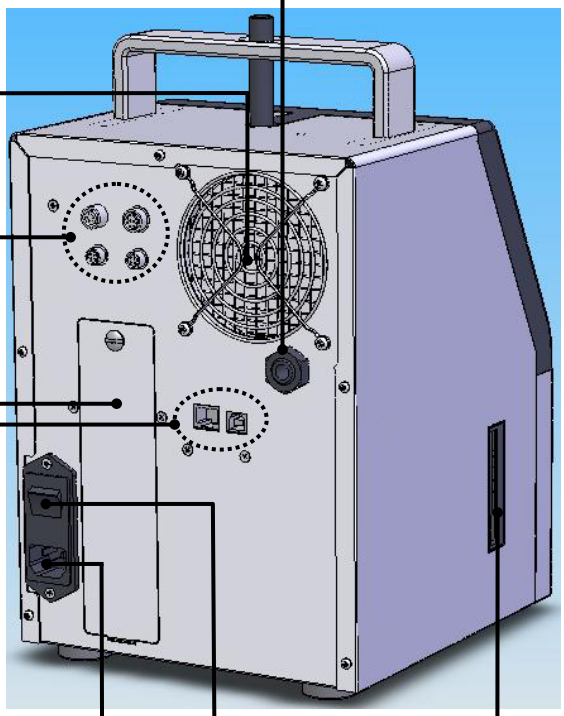
Battery Compartment
--- Insert rechargeable battery here. Refer to **2.1 Power Supply** for how to install the battery.

Ethernet Connector (Left)
--- To be used when controlling the instrument by the software. For details, refer to the operation manual for the software.
USB Connector (Right) **Factory Use Only**

AC Inlet
--- This is an inlet to supply AC power to the instrument. Connect the provided power cord here.
Make sure to connect a safety earth to the safety earth terminal of the provided power cord.

Main Power Switch (For AC)
--- Use this switch to turn ON/OFF the main power. You can also connect the provided power cord to supply the power.

CF Card Insertion Slot
--- Insert the CF card using the provided card reader to store measurement data.
To be used to transfer measurement data and other files to be processed on PCs.



2. Getting Started

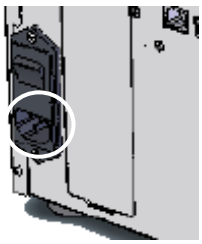
2.1 Power Supply

Supply power to the main unit.

There are two ways to supply power; using power cord or battery.

-- Power Cord --

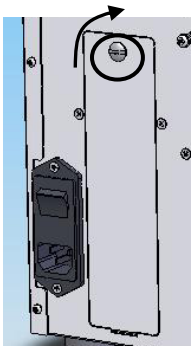
Plug the power cord into the connecting port located under the main power switch on the rear of the unit.
AC100V~240V power supply line shall be used.



-- Battery --

Charge the battery in advance. You cannot charge the battery when it is installed in the instrument. (Refer to **7. Battery Charge** for charging the battery.)

Open the battery compartment cover on the rear of the instrument. To open the cover turn the knob around 90 degrees. (Use a coin or something similar to turn it easily.)
Connect the battery to the connecter for rechargeable battery inside the battery compartment.

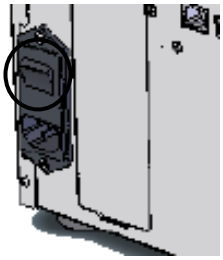


When installing the battery, align the notch of the battery socket with the notch on the instrument's battery connector cable.

Insert the battery as shown on the right picture (the connecter end should go to the rear of the compartment), and turn the knob back to the original location to close the cover.

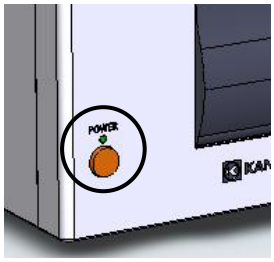
After supplying power using the power cord, switch ON the main power located on the rear of the instrument. When using battery, turn this switch OFF.

When both the power cord is connected and the battery is installed, the instrument will utilize AC power and will not discharge the battery.



After pressing the POWER switch on the front of the instrument, you will hear a beep sound and the LED will light up. If the power is supplied by the AC line, the LED is green and if supplied by battery, the LED is red.

Several seconds later, the initial screen appears automatically. Refer to **3. Display Description and Operation Procedure** for the details about the operation screen.



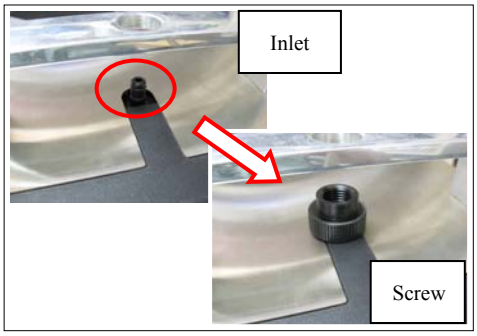
2.2 Attaching Standard Inlet

Upon measuring, attach the standard inlet following the procedure below.

Remove rubber cap

Remove the rubber cap that is mounted on the inlet (under the handle) on the upper side of the main unit.

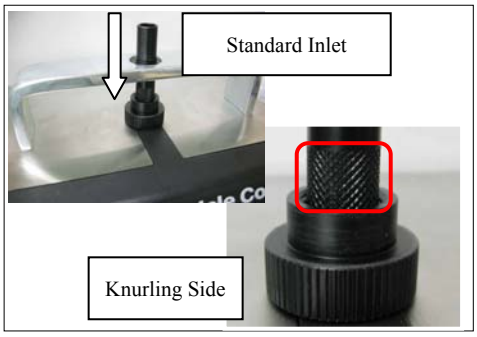
Put the screw supplied with the instrument on the inlet. (See the photo on the right.)



Prepare standard inlet

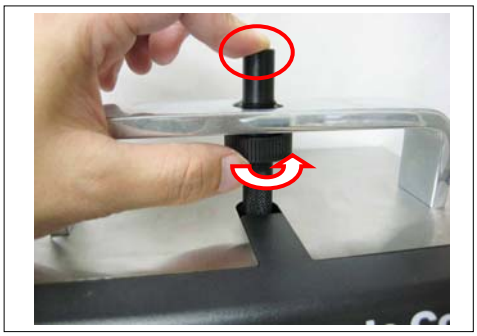
Attach the standard inlet supplied with the instrument to the inlet.

The knurling side of the port goes into the inlet.



Tighten screw

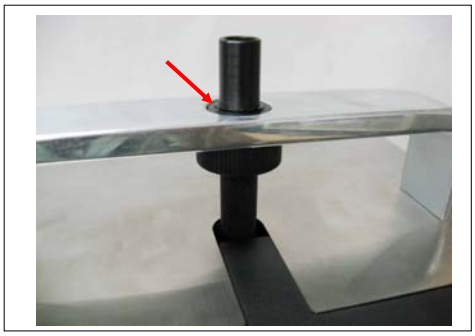
Hold the top of the inlet port down slightly when tightening a screw counterclockwise.



Done!

If the screw is tightly fit into the hole on the handle, the inlet is mounted properly.

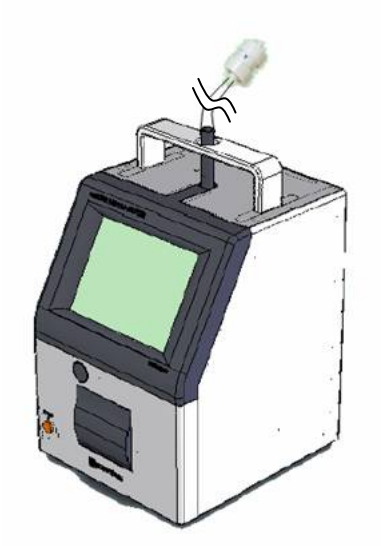
To take the inlet out, reverse the procedure.



2.3 Zero Check

If the internal optical system is dirty, you may not be able to perform an accurate measurement.
To confirm the cleanliness of the internal optical system, perform Zero Check before measuring.

Attach the standard inlet to the instrument.
Next, attach the zero filter to the standard inlet using the supplied Tygon tube.
The length of the tube is not critical. However, make sure that the tube is not bent. (Approx. 60cm)

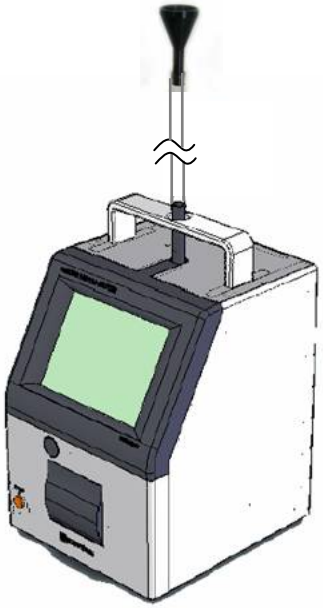


Follow the above procedure in order to prevent particles from entering the instrument.
Perform a measurement for one minute and then perform Zero Check.
(Refer to **3.4 MONITOR** for the operation procedure.)

Perform Zero Check at least once a day.
It is recommended a Zero Check be done before and after each measurement.

2.4 Isokinetic Suction Probe

Use the Isokinetic Suction Probe to ensure the sampling air velocity is equivalent to the operating environment air velocity. This allows you to perform a measurement without significantly disturbing the normal air flow.



Attach the standard inlet to the main body of the instrument.
Next, attach the Isokinetic Suction Probe to the standard inlet by using the provided Tygon tube.

When using the Tygon tube, cut the tube to the most suitable for your measurement requirements.

2.5 Consumables

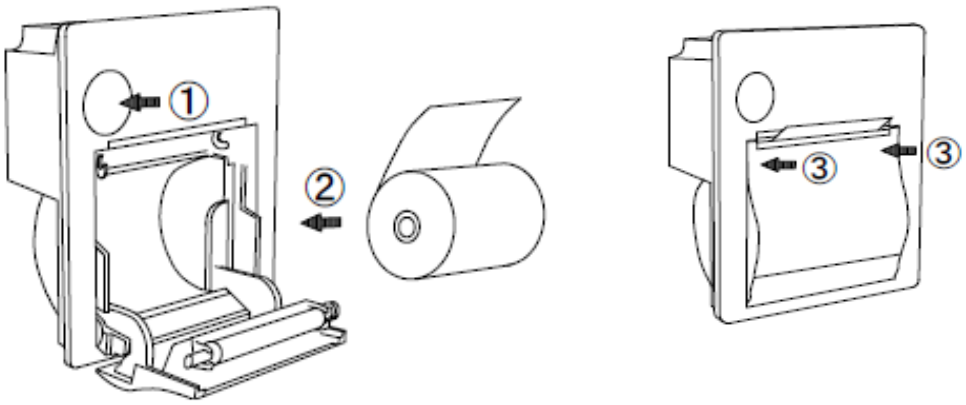
2.5.1 Printer Paper Replacement

Preparing printer paper

When the provided printer paper runs out, please purchase new printer paper (dust free paper), Model 3900-05.

Installing printer paper

1. Press the Paper Cover Open Button to open the paper cover.
2. Place the paper as shown in the below picture.
3. Pull the head of paper slightly from the outside the printer. Make sure that slight portion of the paper head is out of the printer when closing the cover.



2.5.2 Zero Filter Replacement

Preparing a Zero Filter

When performance of the provided zero filter is deteriorated, please purchase a new Zero Filter (w/t joint and tube (70cm)), Model 3900-04.

To replace a Zero Filter, refer to **2.3 Zero Check**.

2.5.3 Standard Inlet Replacement

Preparing a Standard Inlet

When the provided Standard Inlet is damaged or lost or any air leak is detected, please purchase a new Standard Inlet, Model 3900-06.

To replace a Standard Inlet, please refer to **2.3 Zero Check**.

2.5.4 Isokinetic Suction Probe Replacement

Preparing an Isokinetic Suction Probe

When the provided Isokinetic Suction Probe is damaged or lost or any leak is detected, please purchase a new Isokinetic Suction Probe, Model 3900-07.

To install Isokinetic Suction Probe, please refer to **2.4 Isokinetic Suction Probe**.

2.5.5 Fuse Replacement

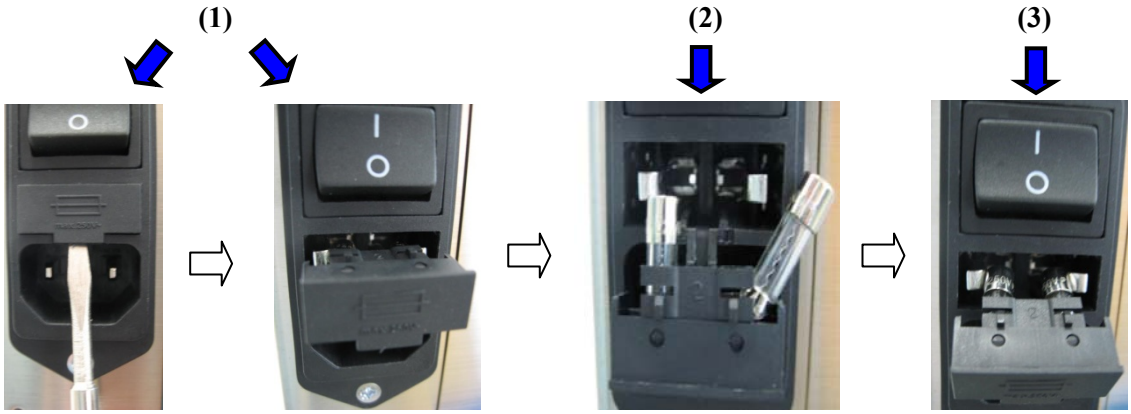
Preparing fuse

When the two fuses which have already been installed upon purchasing and the provided two other fuses are broken or lost, please purchase a new set of fuses (0217002.MXP) (a set of two fuses).

Fuse Rating: AC250V / 2A

Installing the fuse

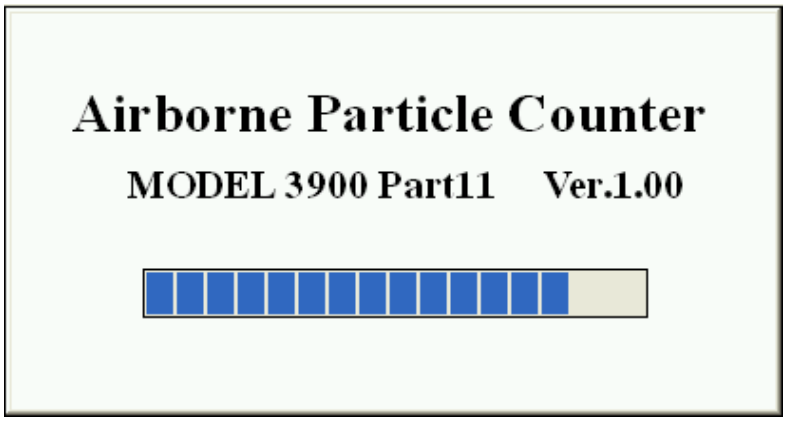
(1) Use a tip of a flat-blade screwdriver to take the fuse holder out.
(2) Remove the fuse(s) to be replaced and install new fuse(s).
(3) After the fuse is replaced, push the fuse holder in.



Caution: contact your Kanomax service center if you continue to blow fuses.

3. Display Description and Operation Procedure

3.1 Boot Screen

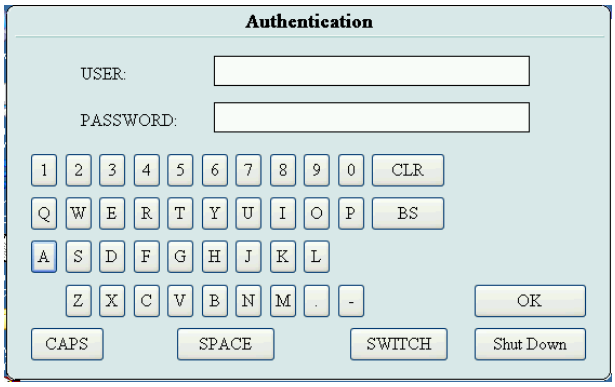


A few seconds after the instrument is turned ON, the screen shown on the left will be displayed.

The system is initializing. Please wait for a few moments.

3.2 Log-In

3.2.1 Log-In Display



Type your user ID and password in the field and press [OK] button.

Press [Shut Down] button to turn off the 3900.

[CAPS] button: To type upper case letters
[SWITCH] button: Jump to next field
[CLR] button: Clear input
[BS] button: Back space, delete the preceding character

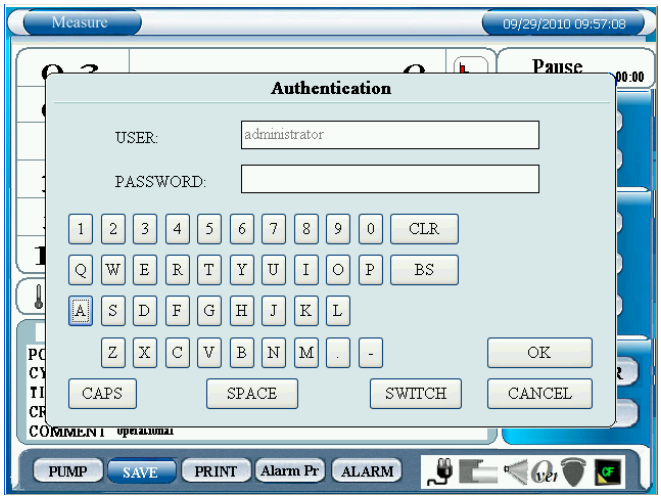
3.2.2 User

The 3900 manages the usage log based on user ID. Managing users from the user setting display (Refer **3.10.1 User Management**).
User information consists of User name, User ID, Password, and Qualification.

User name : setting a user name with up to 40 characters
User ID : setting a user ID with up to 16 characters.
Password: The 3900 recognizes user with the combination of the user ID and its password. Passwords need to be 4 to 16 alphanumeric characters. Password expires every 180 days and a reset is required before the expiration. After expiration of password, the user will be invalid.
Qualification: each user can set its authority level to implement certain operation.
For example, if a user doesn't have an authentication for [Change Measurement Setting], the user can't change measurement setting. Even a user, who is authorized to change setting, the user is always required authentication for the operation.

Administrator can re-set password for any users in case of lost or forgotten password (Refer **3.10.1 User Management**).
If administrator forgets its password, nobody can operate the 3900. Kanomax strongly recommend to register multiple administrator users on the 3900.

3.2.3 Authentication



Logging in and certain activity require user authentication.

User ID and password are required when user logs in the 3900.

Only password is required for other activities.

The maximum number of login trial is three times. After the third time of failed login, the account is revoked.

3.2.4 Log

The 3900 saves the history of activities, error messages, and alarms in the log file.

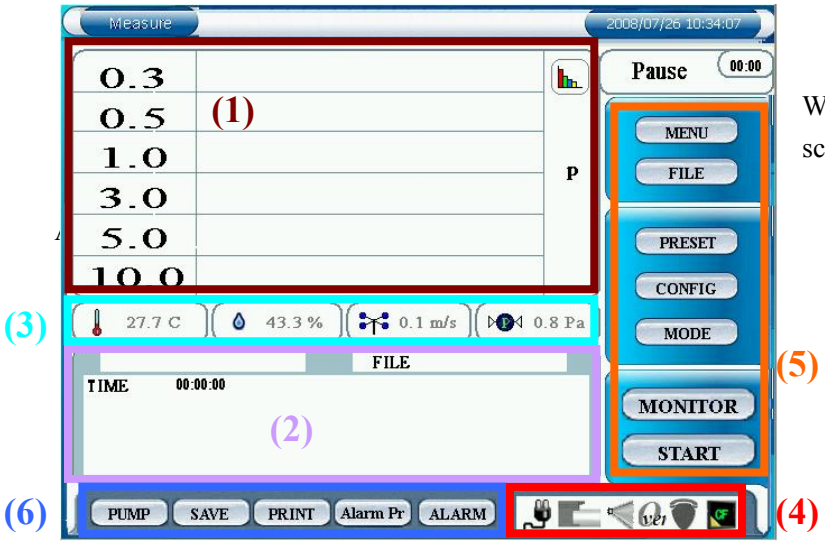
The activity log saves the time, user ID, operation detail, result, and parameter of the occurrence.

Please refer the detail of activity log in the section **3.10.2 Log Management**.

User can review logs on the log management window (Authentication required).

3.3 Initial Screen

3.3.1 Initial Screen



When the instrument is booted up, the initial screen on the left will be displayed.

(1) Data Display: Displays numeric value and chart.

(2) Measurement Condition: Displays measurement mode, measurement setting and measurement status.

(3) Environment Data: Displays the current status when using option sensors.

(4) Status Display: Displays the status of power source, pump, LD error, over count, alarm and data storage.

(5) MENU: Configures chart setting, alarm setting and system setting.

FILE: Loads, prints and deletes stored measurement data.

PRESET: Loads stored measurement setting file.

CONFIG: Configures advanced setting in the currently selected mode. Items such as INTERVAL, SAMPLE T. and CYCLES can be set in each mode.

MODE: Selects measurement mode. Select either “SINGLE”, “CONTINUOUS”, “INTERVAL”, “REPEAT”, “STATS” or “STANDARD” mode.

MONITOR: Performs a measurement and displays a measurement value. This mode does not save measurement results. Measurement display value is updated every second.

START: Starts measuring in the configured mode. This button becomes “STOP” button after sampling starts. Tap “STOP” button to stop sampling.

(6) PUMP: Tap “PUMP” button to turn ON/OFF the pump manually.

SAVE: Tap “SAVE” button to turn ON/OFF the data storage function while sampling.

PRINT: Tap “PRINT” button to turn ON/OFF the data printing function while sampling.

Alarm Pr: Tap “Alarm Pr” button to turn ON/OFF the alarm printing function while sampling.

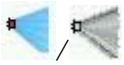
ALARM: Tap “ALARM” button to turn ON/OFF data alarm function while sampling.

<Icons in the Status Display>

To switch to display chart.

Indicates if the instrument is powered by AC power cord or battery. If battery-powered, the remaining battery level is also shown.

Indicates the pump status and pump error. When the pump is operating properly, the icon is in blue. When the pump is off, the icon is in gray.



Indicates LD status and LD error. When the LD is operating properly, the icon is in blue. When the LD is off, the icon is in gray.

Indicates if the measurement count per one second exceeds the maximum measurable concentration.

Indicates if an instrument error is occurring. Tap this icon to display the error details.

Indicates the data storage status and error.

Switches between Total display and Single display.

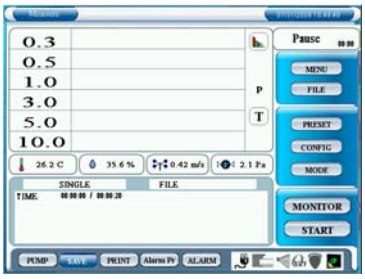
 is displayed when Total display is selected.  is displayed when Single display is selected.
The range of indicated data is as follows:

Channel	Total Display	Single Display
0.3um	X ≧ 0.3um	0.3um ≦ X < 0.5um
0.5um	X ≧ 0.5um	0.5um ≦ X <1.0um
1.0um	X ≧ 1.0um	1.0um ≦ X <3.0um
3.0um	X ≧ 3.0um	3.0um ≦ X <5.0um
5.0um	X ≧ 5.0um	5.0um ≦ X <10.0um
10.0um	X ≧ 10.0um	X ≧ 10.0um

* X: detected particle count

The numeric value will be indicated in black when Total display is set and in gray when Single display is set.

3.3.2 Screen Change – Initial Screen



MENU

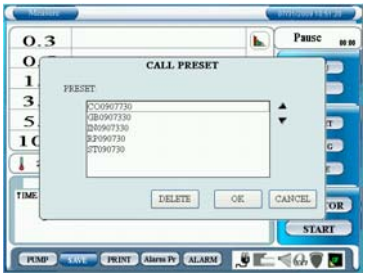
RETURN

FILE

CANCEL

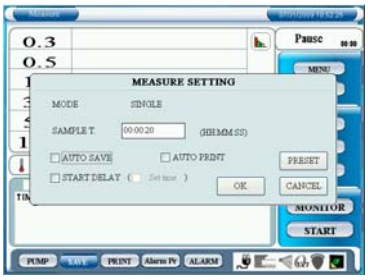
PRESET

CANCEL



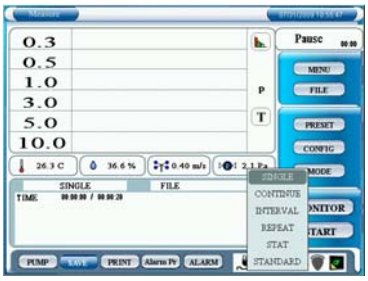
CONFIG

RETURN



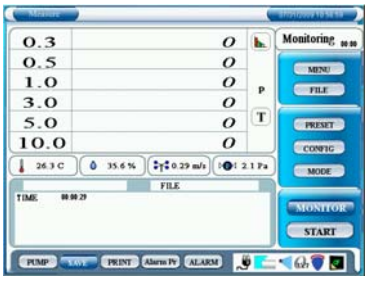
MODE

RETURN



MONITOR

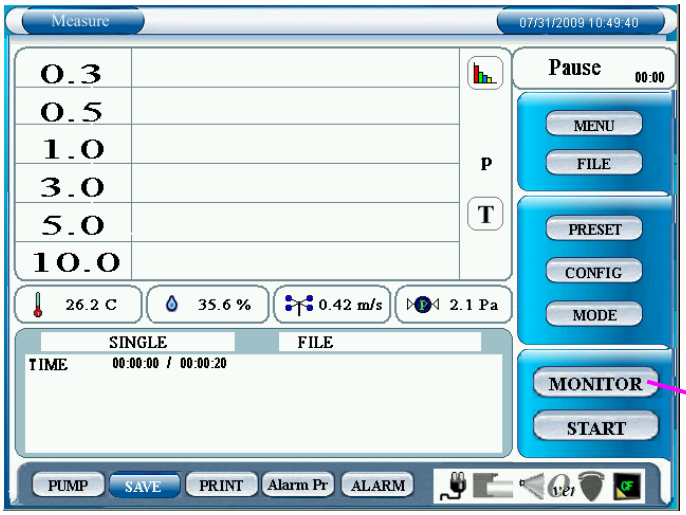
RETURN



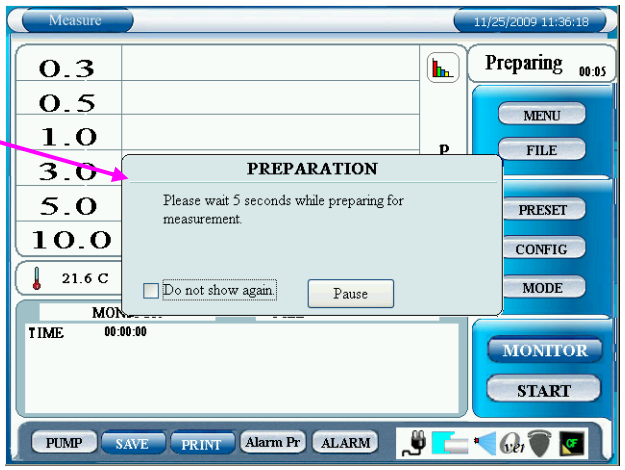
START

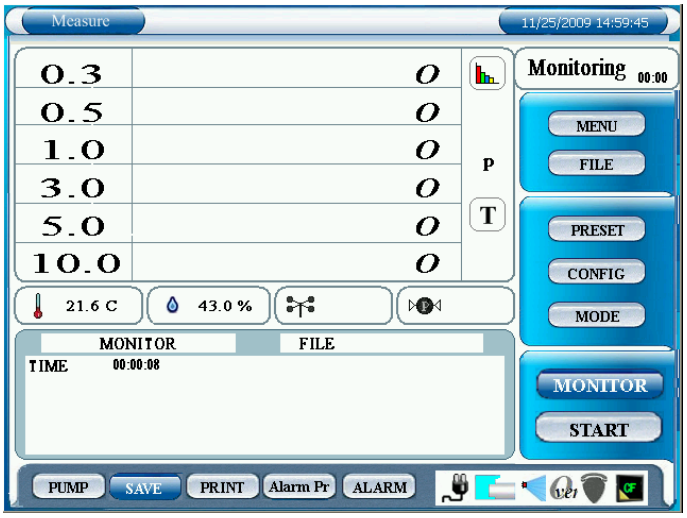
RETURN

3.4 MONITOR



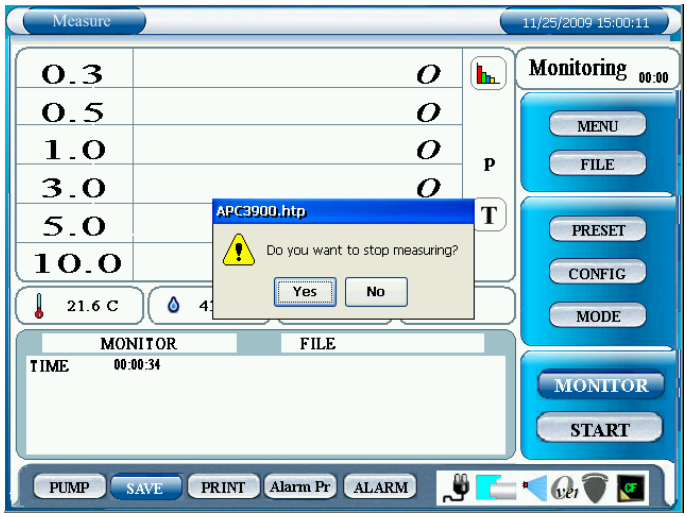
Tap [MONITOR] on the initial screen to start monitoring. Sampling will start in 10 seconds after the pump starts operating.





* Note that if the pump is already operating, sampling will start immediately when you tap [MONITOR].

* Note that the instrument is capable of 180 hours of continuous operation.

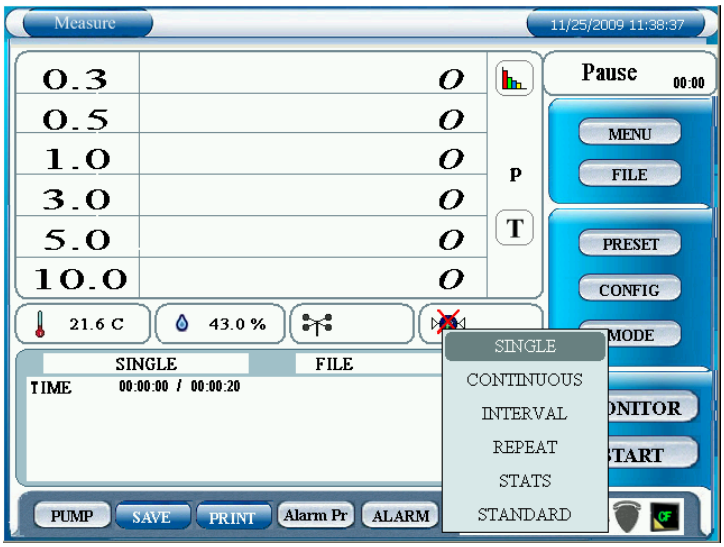


While measuring, tap [MONITOR] again. A dialog will be displayed asking you if you want to stop monitoring. Tap [Yes] to stop monitoring.

Note that you cannot save measurement data or display chart when you are monitoring in this mode.

3.5 MODE

Tap [MODE] to display the mode selection window (Authentication required).



***User needs to have authorization to change measurement mode.**

Choose a mode from the below selection and tap it;
"SINGLE", "CONTINUOUS", "INTERVAL", "REPEAT", "STATS" or "STANDARD".

Note that the instrument is capable of 180 hours of continuous operation in every measurement mode.

Mode Description

[SINGLE MODE]

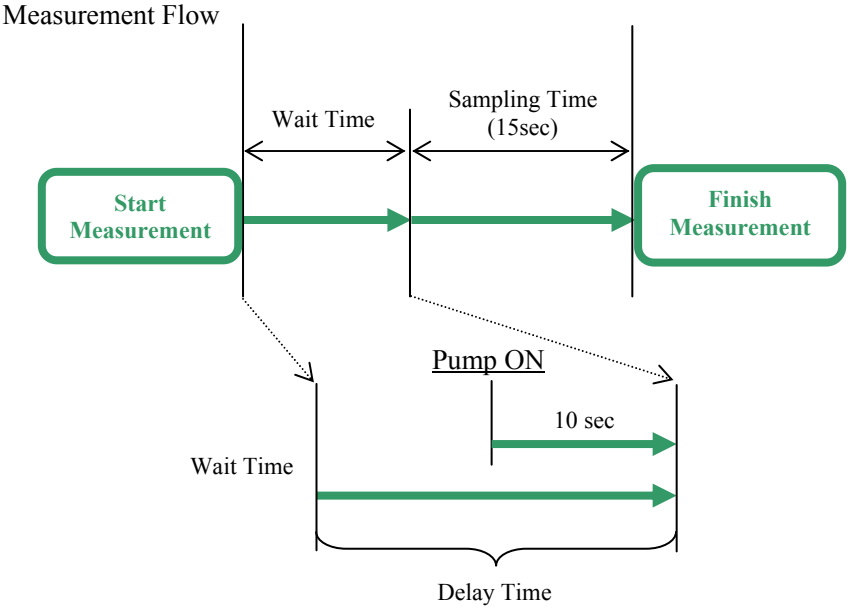
Perform a measurement once within the pre-set time frame.

Example: If the setting is as follows in "CONFIG" menu (Refer to **3.7.1 SINGLE**):

INTERVAL : N/A
SAMPLE T. : 00:00:15
CYCLES : N/A

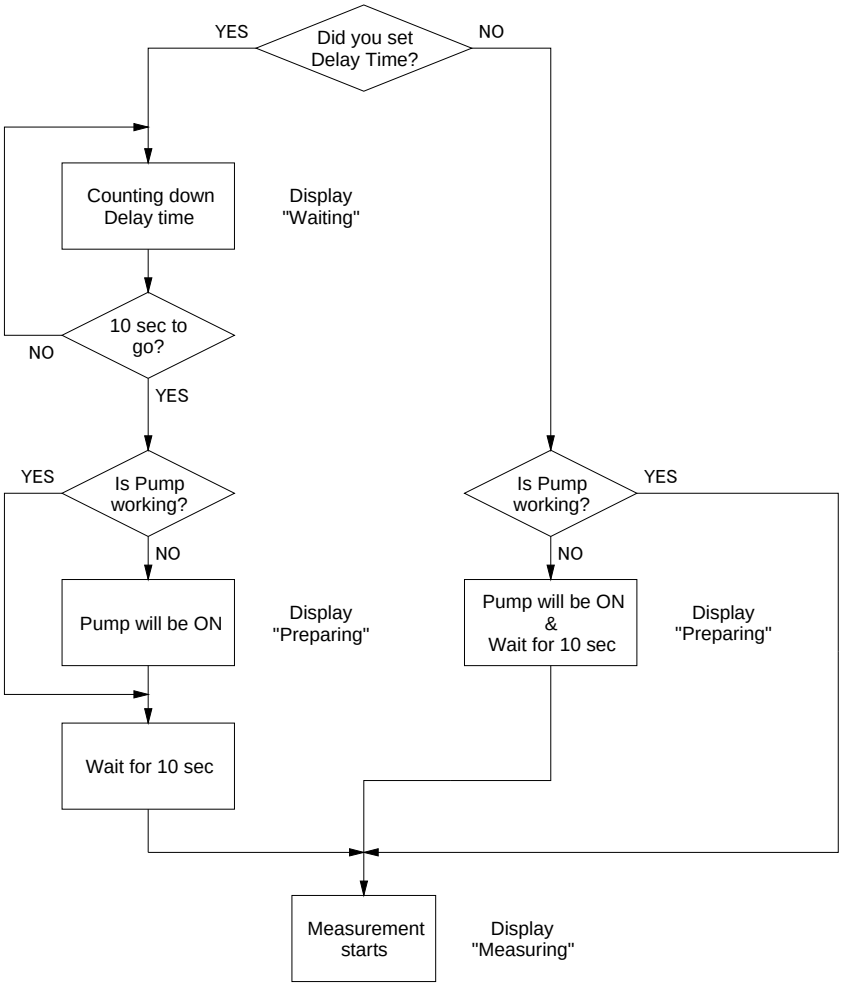
A 15 second sampling is performed.

Measurement Flow



* Delay Time: Set Delay Time in START DELAY window referring to **3.10.3 OPTION**.

Below is a breakdown of the Wait Time.



[CONTINUOUS MODE]

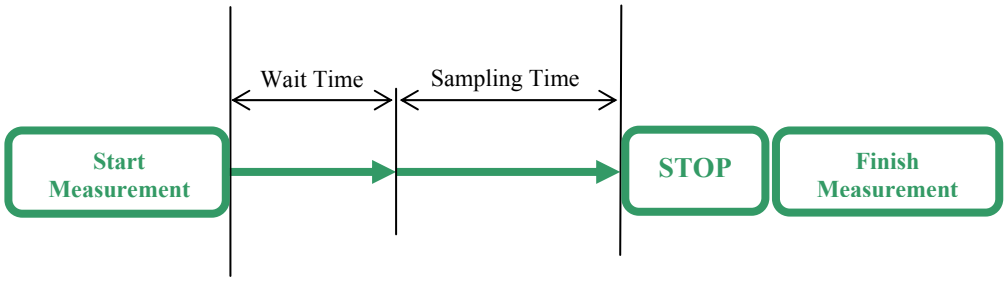
Start/Stop measuring manually.

Example: If the setting is as follows in "CONFIG" menu (Refer to **3.7.2 CONTINU**):

INTERVAL : N/A
SAMPLE T. : N/A
CYCLES : N/A

A continuous measurement is performed until you manually stop.

Measurement Flow



[INTERVAL MODE]

Configure INTERVAL, SAMPLE T and CYCLES, and repeat measuring.

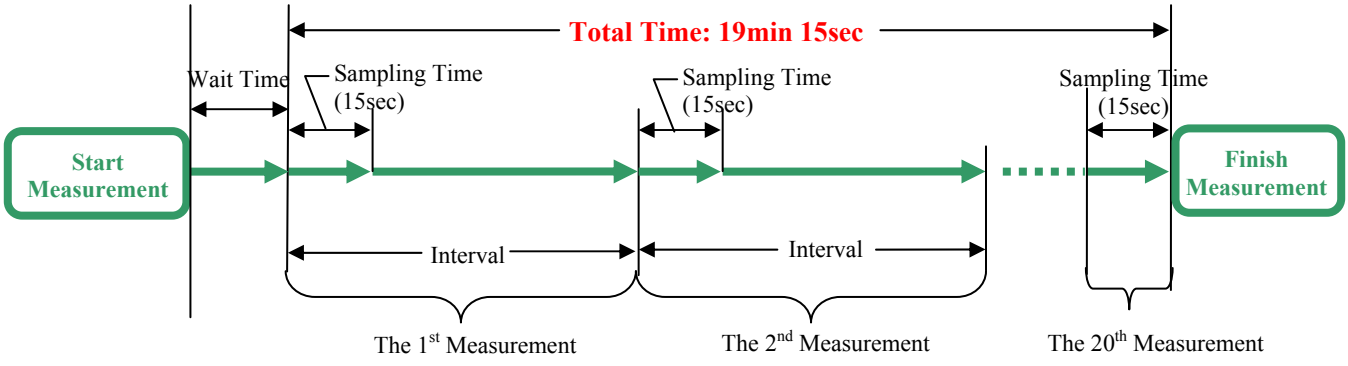
Example: If the setting is as follows in "CONFIG" menu (Refer to **3.7.3 INTERVAL**):

INTERVAL : 00:01:00
SAMPLE T. : 00:00:15
CYCLES : 20

A total of 20 samples are performed at one minute intervals.

Note: Sampling time is 15 seconds and standby time is 45 seconds.

Measurement Flow



If the time period between two samplings is 10 seconds or longer, the pump will be turned OFF after a sampling is finished. Then the pump will be turned ON again 10 seconds before the next sampling starts.

[REPEAT MODE]

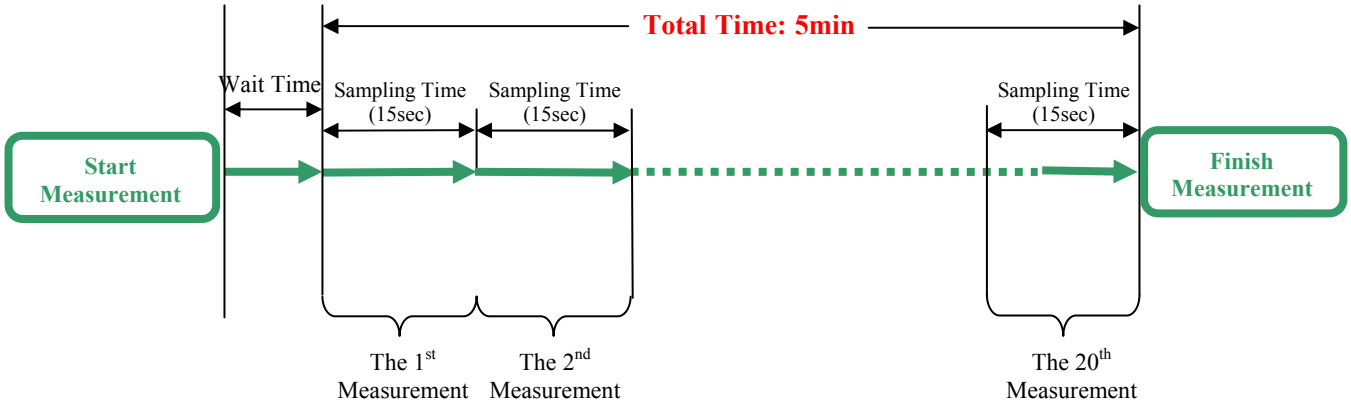
Configure SAMPLE T and CYCLES, and repeat measuring.

Example: If the setting is as follows in "CONFIG" menu (Refer to **3.7.4 REPEAT**):

INTERVAL : N/A
SAMPLE T. : 00:00:15
CYCLES : 20

20 measurement cycles lasting 15 seconds each are taken.

Measurement Flow



[STATS MODE]

Configure SAMPLE T., CYCLES and SAMPLE POINT, and repeat measuring.

Measurement at each point is same as the one in REPEAT Mode.

As for the measurement condition, you can configure the settings referring to **3.7.5 STATS**.

[STANDARD MODE]

You can perform a measurement which complies with 7 measurement standards as follows:

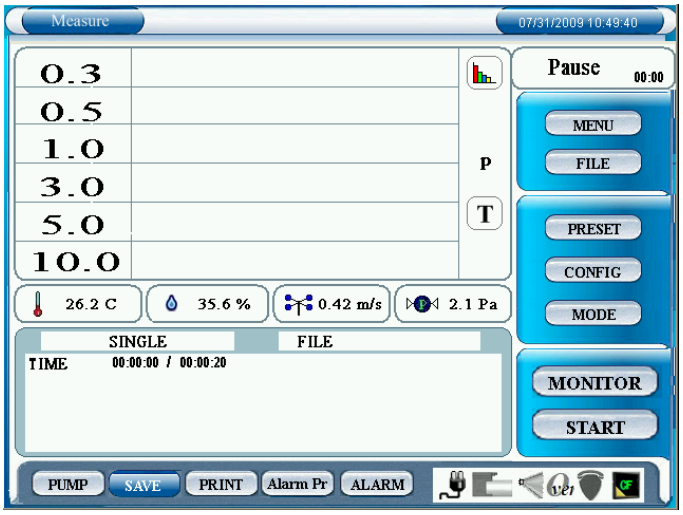
- ISO14644-1
  (International Standard) Refer to ISO14644-1.
- ISO 14644-1 SEQUENTIAL SAMPLING
  (International Standard) Refer to ISO14644-1.
- FEDERAL STANDARD (m)
  (The US Standard) Refer to FEDERAL STANDARD 209E.
- FEDERAL STANDARD (ft)
  (The US Standard)
- BRITISH STANDARD
  (British Standard) Refer to BS-5295.
- EC GMP
  (European Standard) Refer to EC GMP.
- GB/T 16292-1996
  (Chinese Standard) Refer to GB/T 16292-1996.

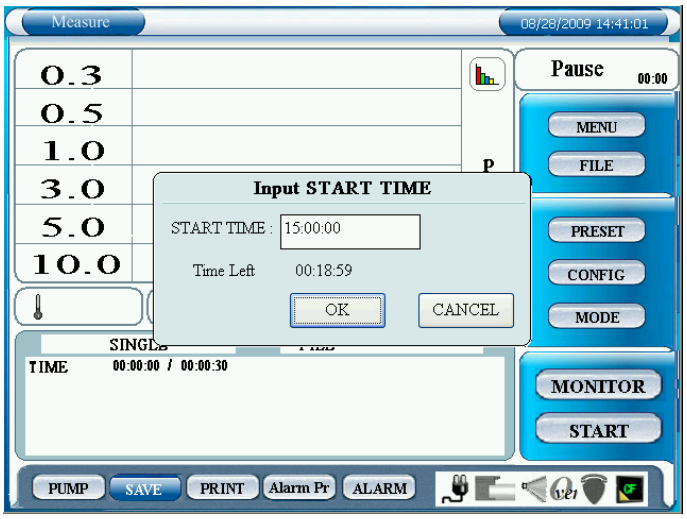
Select and set one of the above measurement standards referring to **STANDARD** in in **3.10.3 OPTION**.

As for the measurement condition, you can configure the settings referring to **3.7.6 STANDARD**.

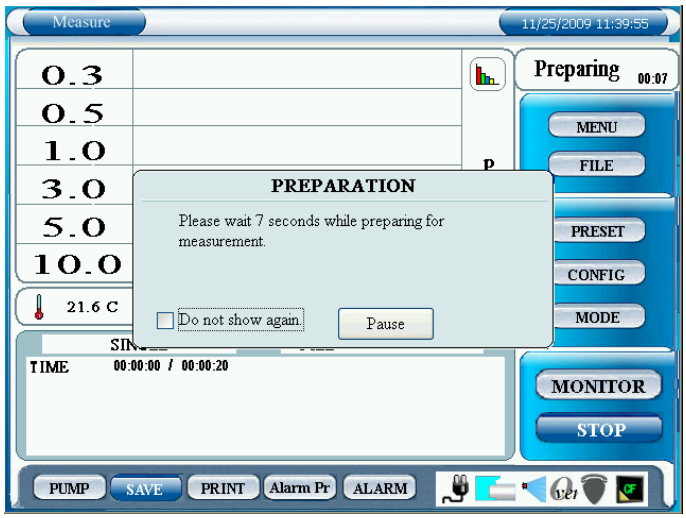
3.6 START

3.6.1 SINGLE, CONTINUOUS, INTERVAL, REPEAT





<Input START TIME dialog box>



Tap [START] on the main screen to start a measurement in the setting configured in **3.5 MODE** and **3.7 CONFIG**.

- **If "START DELAY" is NOT checked in "CONFIG" setting:**
  Upon tapping [START], the pump will begin running. After the pump has run for 10 seconds to stabilize, the measurement will begin

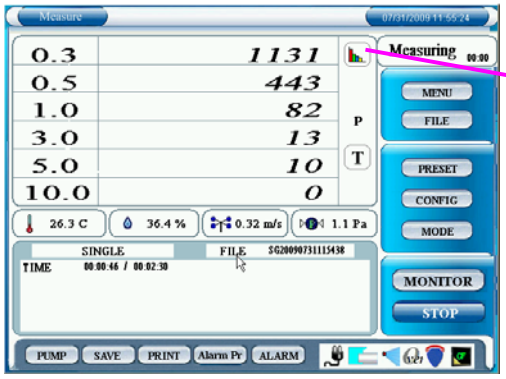
- **If only "START DELAY" is checked in "CONFIG" setting:**
  Upon tapping [START], the Delay Time configured begins. During the last 10 seconds of that Delay Time the pump will run to stabilize, after which the measurement will begin.

- **If "START DELAY" and "Set time" are checked in "CONFIG" setting:**
  Upon tapping [START], "Input START TIME" dialog box will be displayed. Enter the time when you want to start measuring and tap [OK]. During the last 10 seconds of the [Time left] time the pump will start running to stabilize, after which the measurement will begin.
  Tap [CANCEL] to go back to the menu screen.
  If you fail to press [OK] after entering "START TIME", 10 minutes will be added to the "START TIME" automatically when the entered START TIME comes and will continue to wait to be activated by pressing [OK].

.

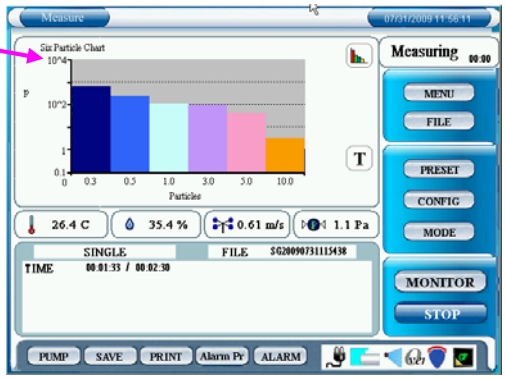
Display screen example while measuring

<SINGLE MODE>

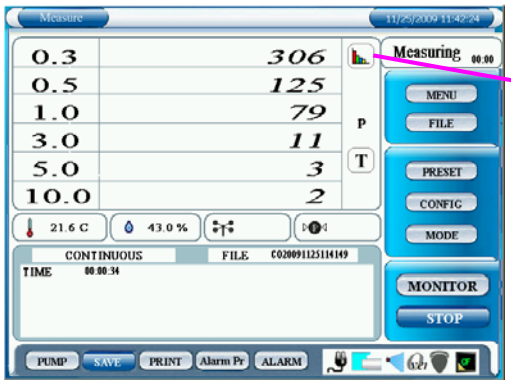


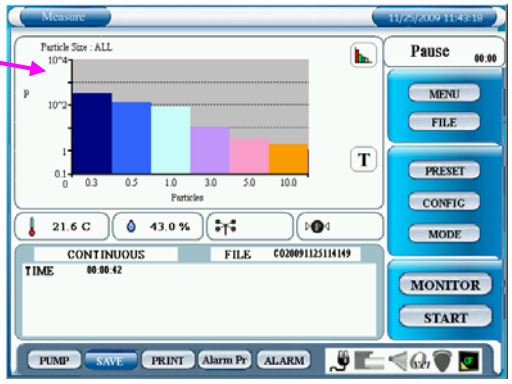
Tap [STOP] to stop a measurement.

To display the chart tap button while measuring.



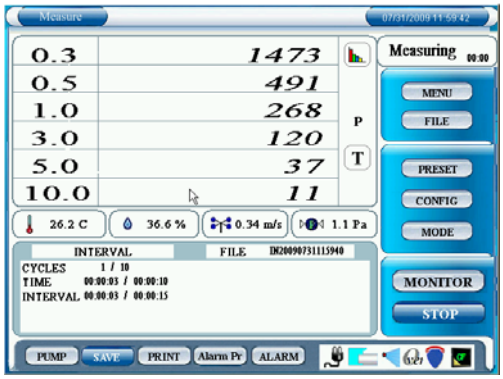
<CONTINUOUS MODE>



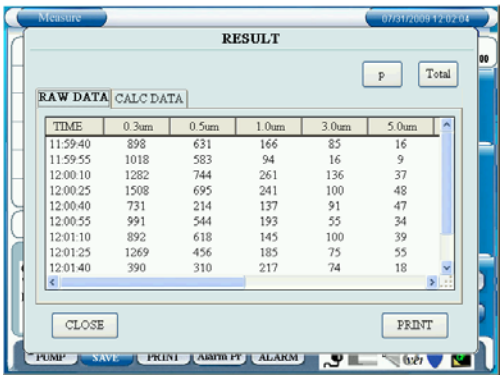


* After a measurement in REPEAT mode or INTERVAL mode is finished, the measurement result will be displayed.

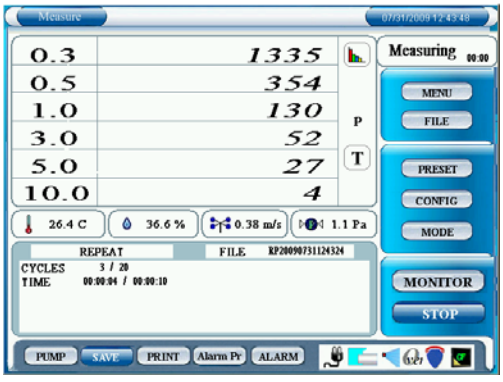
<INTERVAL MODE>



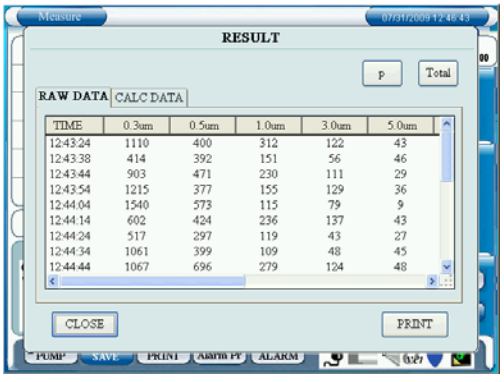
After measurement is finished



<REPEAT MODE>

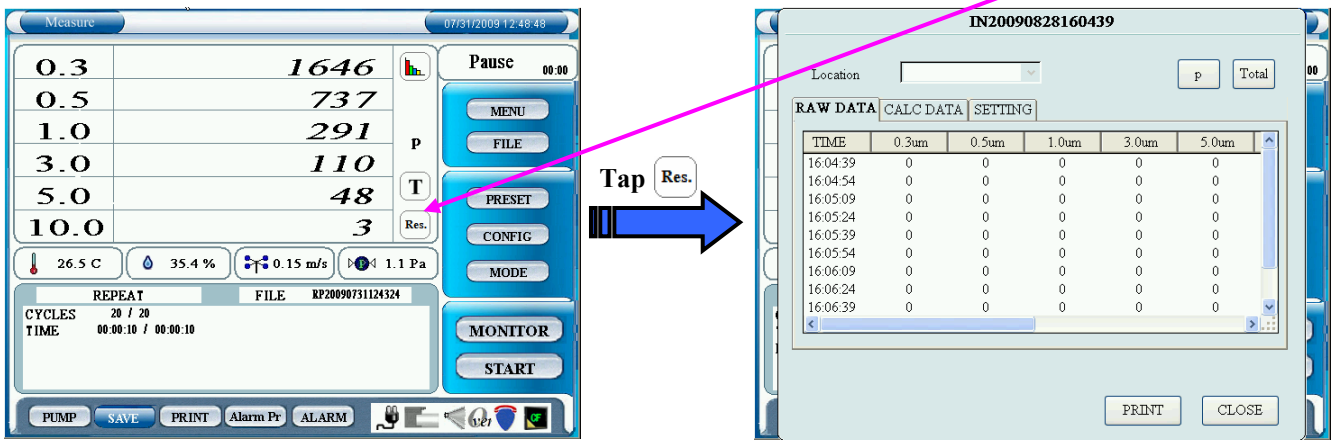


After measurement is finished



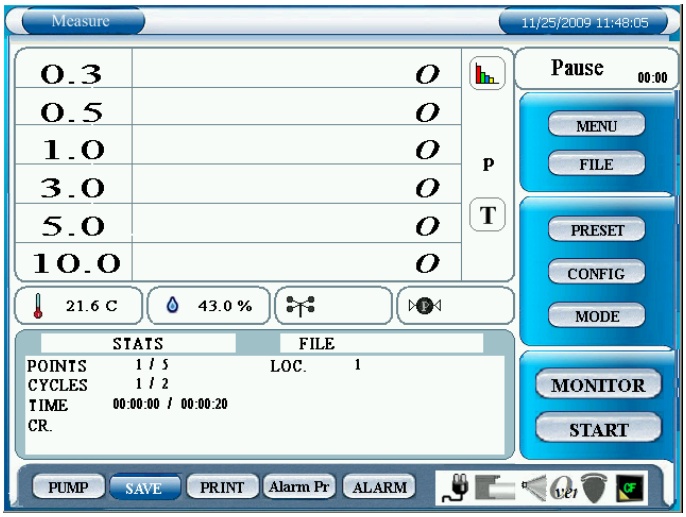
After a measurement in INTERVAL and REPEAT mode, the measurement result will be displayed as shown in the previous page.

If you want to view the measurement result again after closing the measurement result window, tap Res. button to redisplay the measurement result.



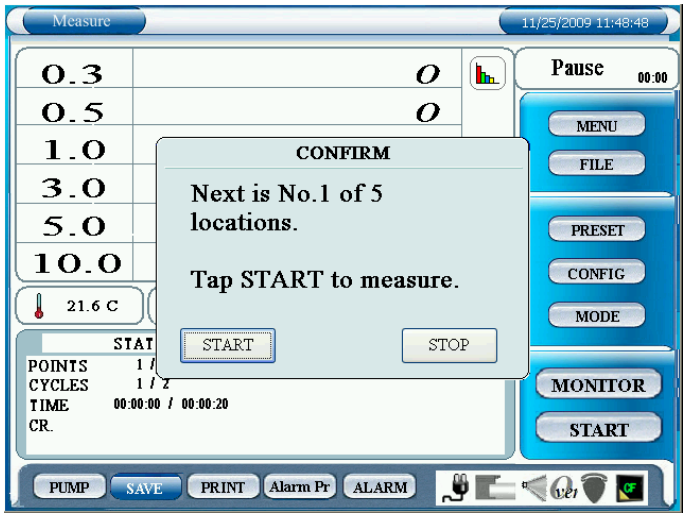
3.6.2 STATS

- When not using MAP (Refer to **3.7 CONFIG** for using a MAP.)



Tap [START] to display "CONFIRM" window.

A measurement will start based on the setting configured in **3.5 MODE** and **3.7 CONFIG**.

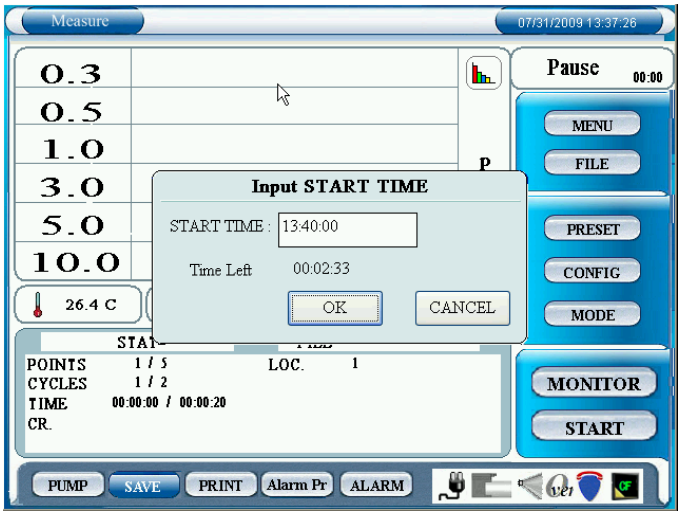


Tap [START] to start a measurement.

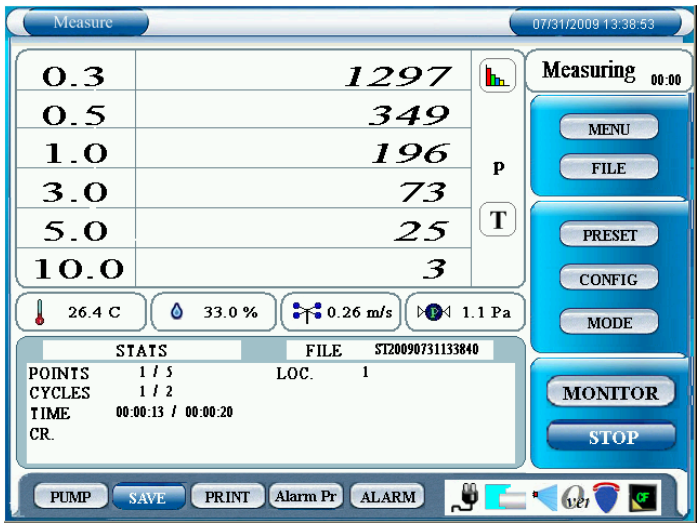
- **If "START DELAY" is NOT checked in "CONFIG" setting:**
  Upon tapping [START], the pump will begin running. After the pump has run for 10 seconds to stabilize, the measurement will begin

- **If only "START DELAY" is checked in "CONFIG" setting:**
  Upon tapping [START], the Delay Time configured begins. During the last 10 seconds of that Delay Time the pump will run to stabilize, after which the measurement will begin.

- **If "START DELAY" and "Set time" are checked in "CONFIG" setting:**
  Upon tapping [START], "Input START TIME" dialog box will be displayed. Enter the time when you want to start measuring and tap [OK]. During the last 10 seconds of the [Time left] time the pump will start running to stabilize, after which the measurement will begin.
  Tap [CANCEL] to go back to the menu screen.
  If you fail to press [OK] after entering "START TIME", 10 minutes will be added to the "START TIME" automatically when the entered START TIME comes and will continue to wait to be activated by pressing [OK].

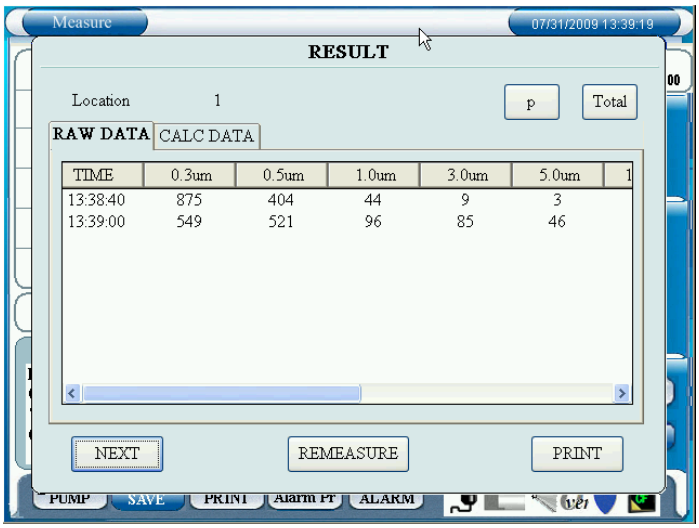


<Input START TIME dialog box>



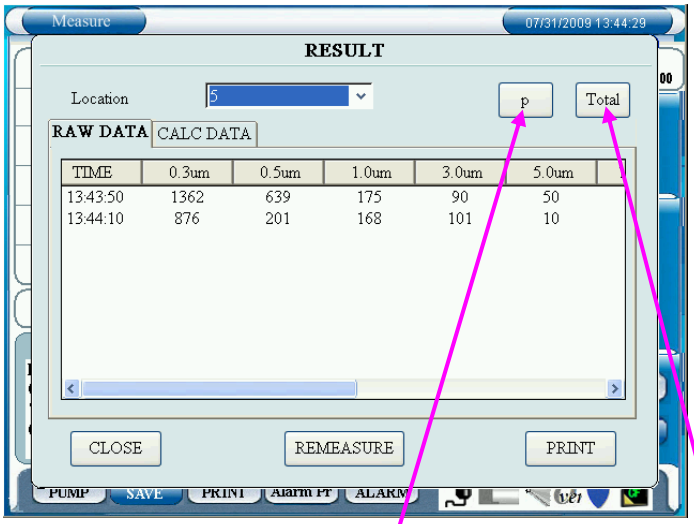
Tap [STOP] to stop a measurement.

Tap  button while measuring to display a chart.



When a measurement at each measurement point is finished, a measurement result window will be displayed each time.

Tap [NEXT] to display "CONFIRM" window informing you the next measurement point, and wait for the next measurement.
Tap [REMEASURE] to perform a re-measurement.
Tap [PRINT] to print a measurement result.



When all of the measurements are finished, a measurement result will be displayed.

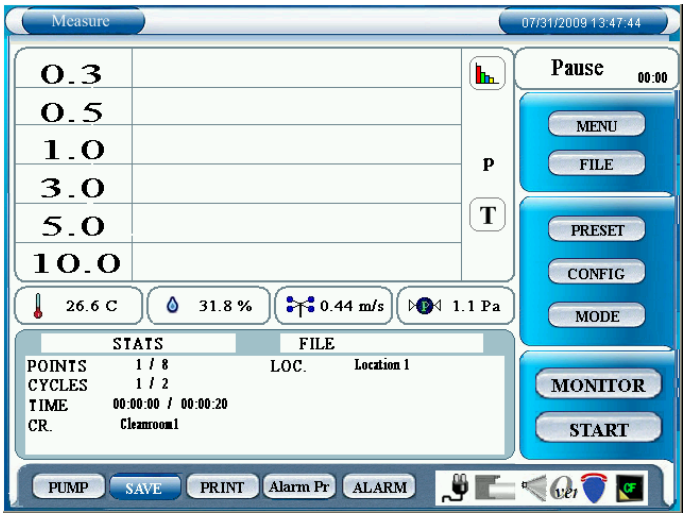
You can view the result of a certain LOCATION POINT by selecting Location.

Tap [CLOSE] to stop a measurement.
Tap [REMEASURE] to perform a measurement again at the last measurement point.
Tap [PRINT] to print a measurement result at the last measurement point.

Every time you tap this button, the particle unit changes in the order of: **p -> p/cf -> p/m³**.

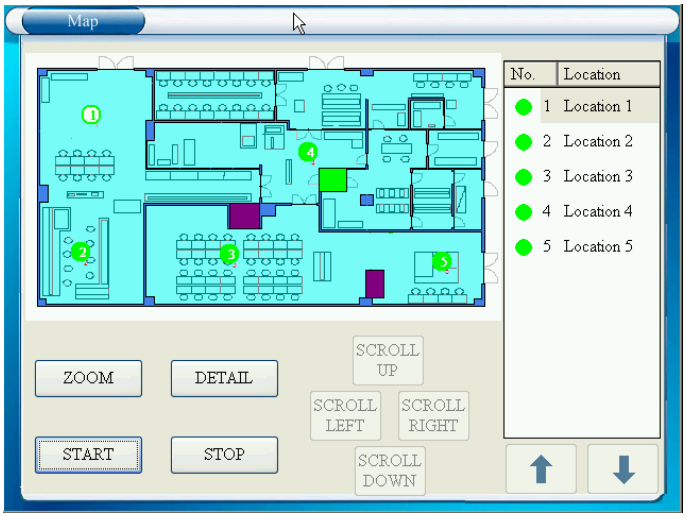
Use this button to select either Total display or Single display. (Only applicable for RAW DATA)

- When using MAP (Refer to **3.7 CONFIG** for using a MAP.)



In STATS mode, MAP will be displayed upon tapping [START].

A measurement will start based on the setting configured in **3.5 MODE** and **3.7 CONFIG**.



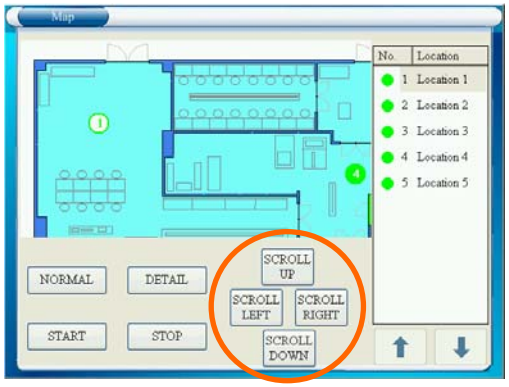
Select a measurement point and tap [START] to start a measurement.

Tap [STOP] to stop a measurement.

Tap [ZOOM] to enlarge a MAP.

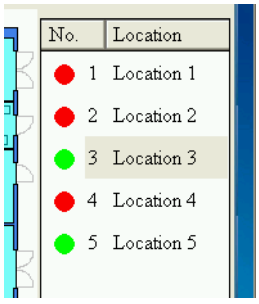
(This button will become [NORMAL] button. Press [NORMAL] to display an entire MAP when a map is enlarged.)

Select Location point and tap [DETAIL] to view the details of the selected Location point

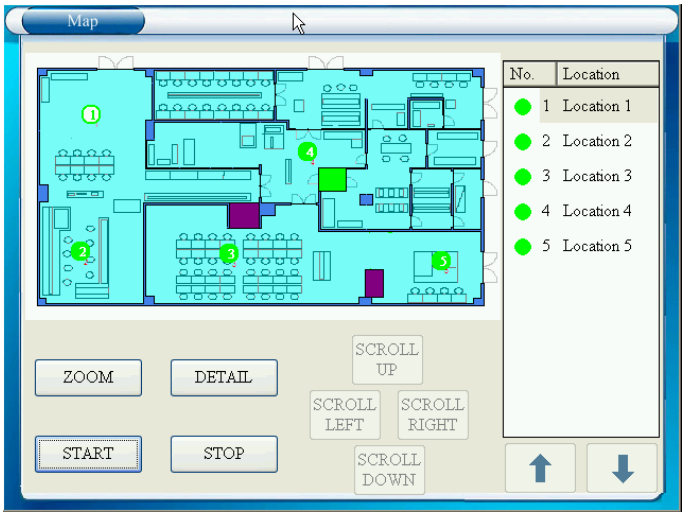


When a MAP is enlarged, [SCROLL UP], [SCROLL DOWN], [SCROLL LEFT] and [SCROLL RIGHT] buttons are activated, which enables you to move the MAP.

.



The color of the measurement point changes from green to red once a measurement is done.



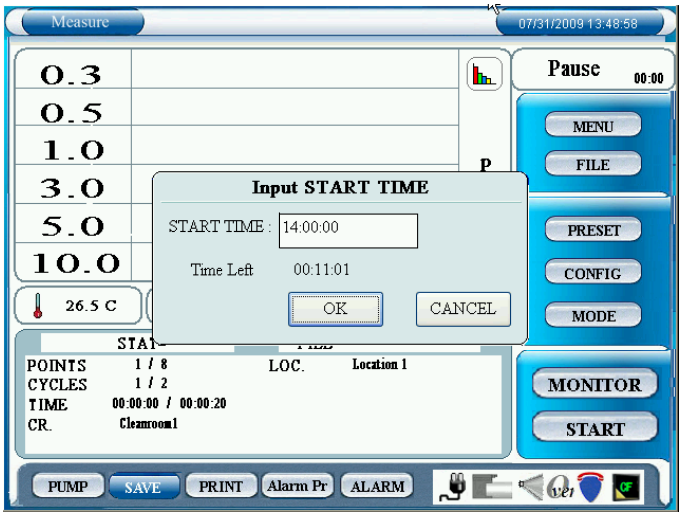
Tap [START] on the MAP to start a measurement

- **If "START DELAY" is <u>NOT</u> checked in "CONFIG" setting:**

  Upon tapping [START], the pump will begin running. After the pump has run for 10 seconds to stabilize, the measurement will begin.

- **If <u>only</u> "START DELAY" <u>is</u> checked in "CONFIG" setting:**

  Upon tapping [START], the Delay Time configured begins. During the last 10 seconds of that Delay Time the pump will run to stabilize, after which the measurement will begin.

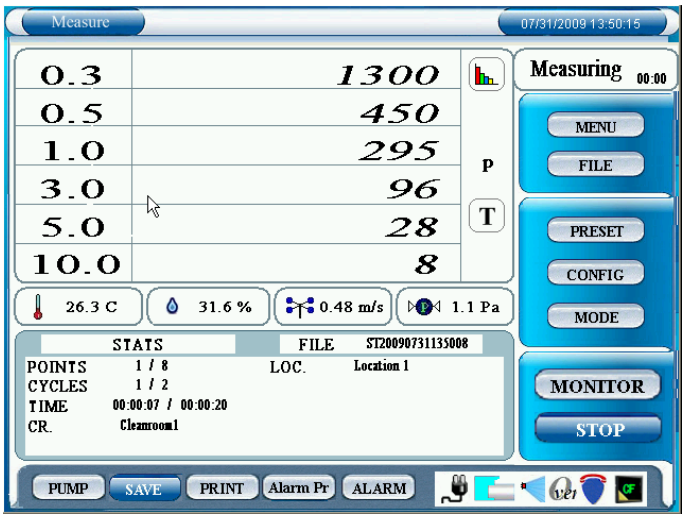


- **If "START DELAY" and "SET time" <u>are</u> checked in "CONFIG" setting:**

  Upon tapping [START], "Input START TIME" dialog box will be displayed. Enter the time when you want to start measuring and tap [OK]. During the last 10 seconds of the [Time left] time the pump will start running to stabilize, after which the measurement will begin.

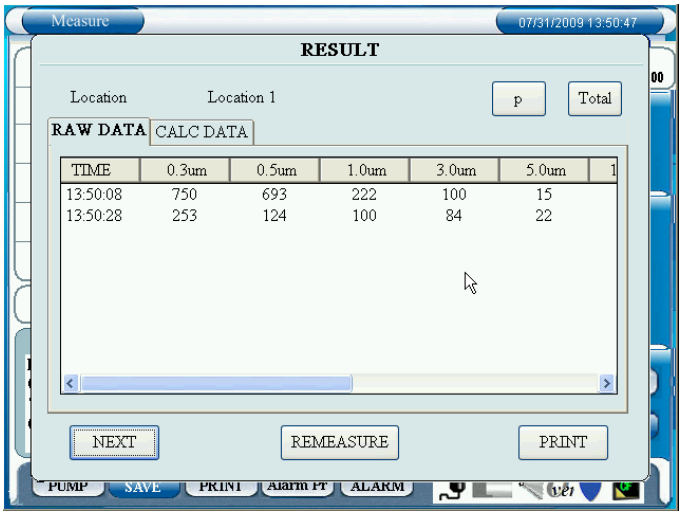
  Tap [CANCEL] to go back to the menu screen.

  If you fail to press [OK] after entering "START TIME", 10 minutes will be added to the "START TIME" automatically when the entered START TIME comes and will continue to wait to be activated by pressing [OK].



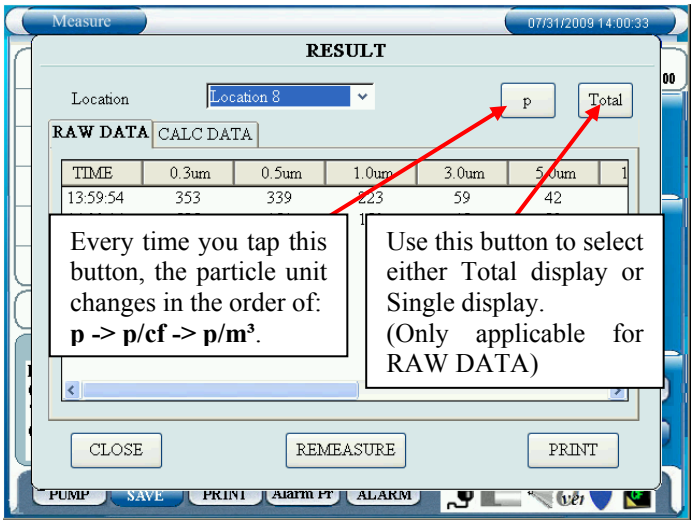
Tap  button while measuring to display a chart.

Tap [STOP] to stop a measurement.



When a measurement is finished, a measurement result window will be displayed.

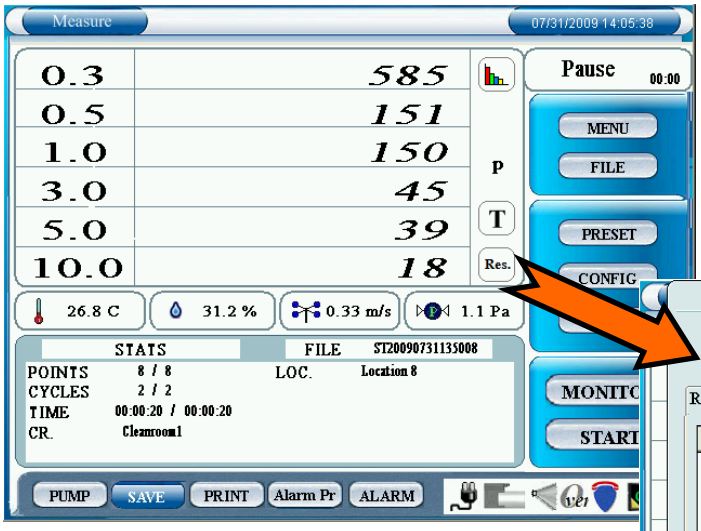
Tap [NEXT] to display MAP again. Then the instrument waits for the next measurement point to be selected.
Tap [REMEASURE] to perform a re-measurement.
Tap [PRINT] to print a measurement result.



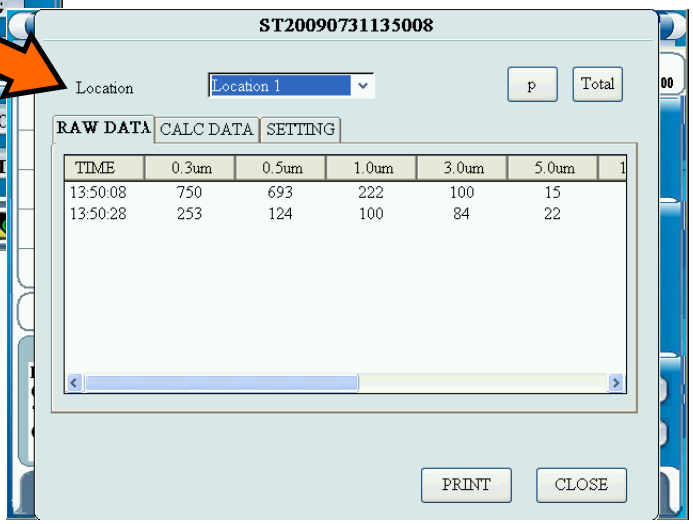
When all measurements are finished, the measurement result will be displayed.

You can view the result of a certain LOCATION POINT by selecting Location.

Tap [CLOSE] to stop a measurement.
Tap [REMEASURE] to perform a measurement again at the last measurement point.
Tap [PRINT] to print a measurement result at the last measurement point.

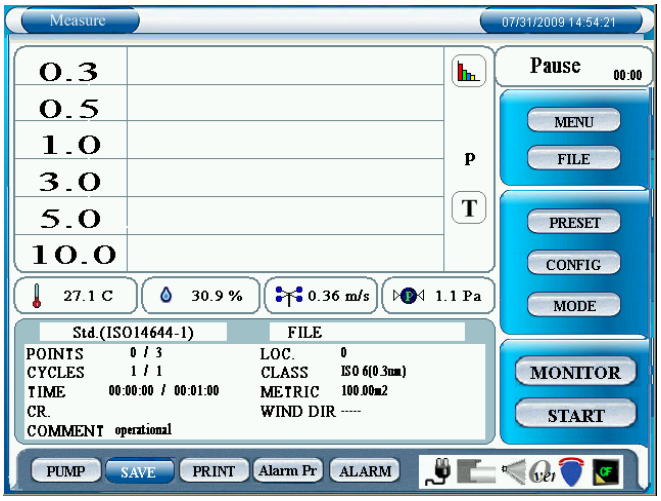


After a whole set of measurement is complete, Res. button will be displayed.
If you want to view the measurement result again, tap Res. button to redisplay the measurement result.



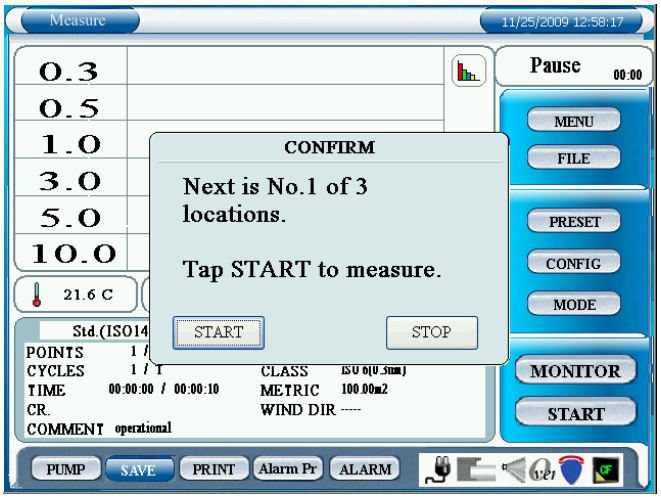
3.6.3 STANDARD

- When not using MAP (Refer to **3.7 CONFIG** for using a MAP.)

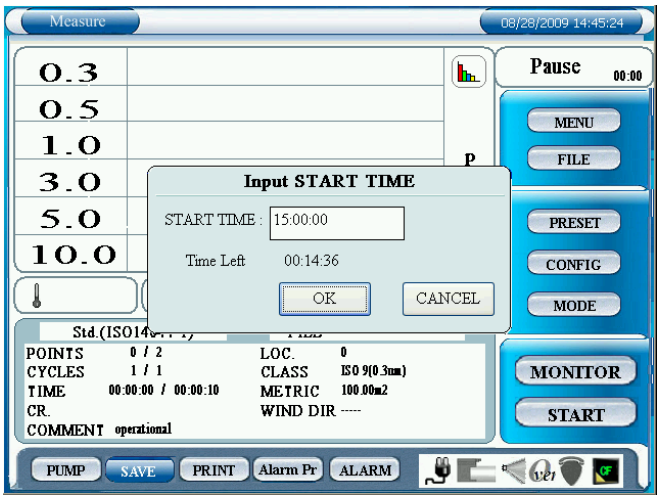


Tap [START] to display "CONFIRM" window.

A measurement will start based on the setting configured in **3.5 MODE** and **3.7 CONFIG**.



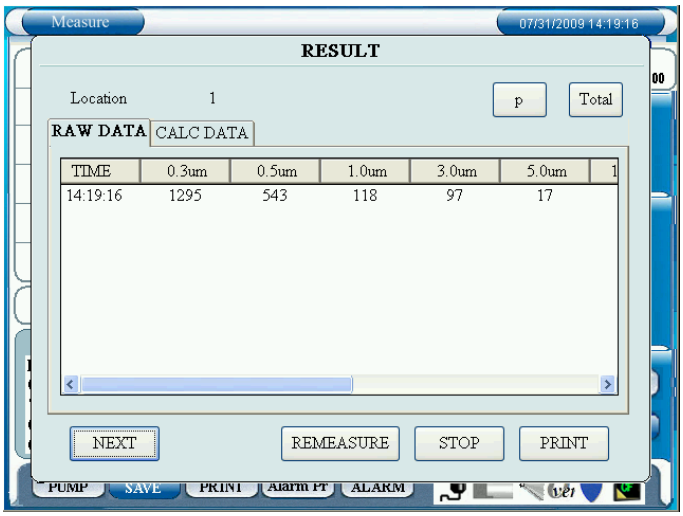
<CONFIRM window>



<Input START TIME dialog box>

Tap [START] to start a measurement.

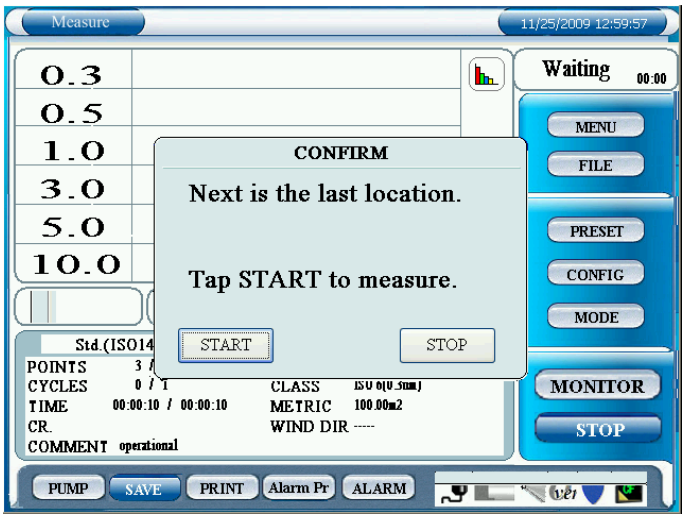
- **If "START DELAY" is NOT checked in "CONFIG" setting:**
  Upon tapping [START], the pump will begin running. After the pump has run for 10 seconds to stabilize, the measurement will begin.
- **If only "START DELAY" is checked in "CONFIG" setting:**
  Upon tapping [START], the Delay Time configured begins. During the last 10 seconds of that Delay Time the pump will run to stabilize, after which the measurement will begin.
- **If "START DELAY" are checked in "CONFIG" setting:**
  Upon tapping [START], "Input START TIME" dialog box will be displayed. Enter the time when you want to start measuring and tap [OK]. During the last 10 seconds of the [Time left] time the pump will start running to stabilize, after which the measurement will begin.
  Tap [CANCEL] to go back to the menu screen.
  If you fail to tap [OK] after entering "START TIME", 10 minutes will be added to the "START TIME" automatically when the entered START TIME comes and will continue to wait to be activated by pressing [OK].



After a measurement at each location is finished, a measurement result will be displayed.

In [RAW DATA] tab, measurement data will be displayed.
In [CALC DATA] tab, calculated data of minimum (MIN), maximum (MAX) and average (AVE) will be displayed.

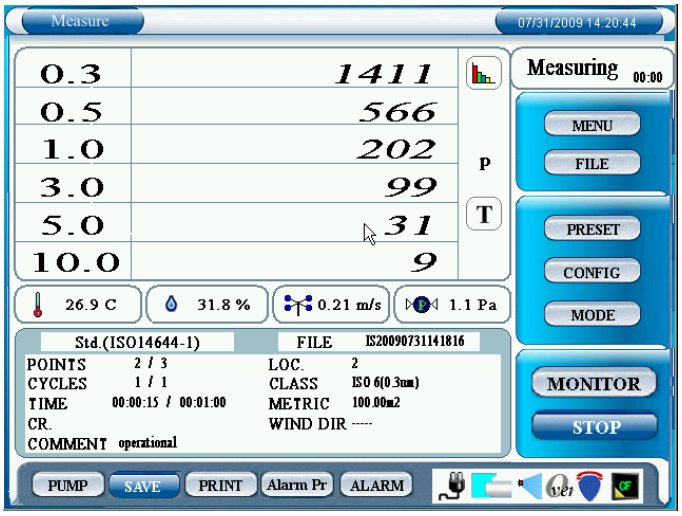
Tap [NEXT] to display a "CONFIRM" window informing you of the next measurement point, and wait for the next measurement.
Tap [REMEASURE] to perform a re-measurement.
Tap [STOP] to stop a measurement.
Tap [PRINT] to print a measurement result.



<CONFIRM window>

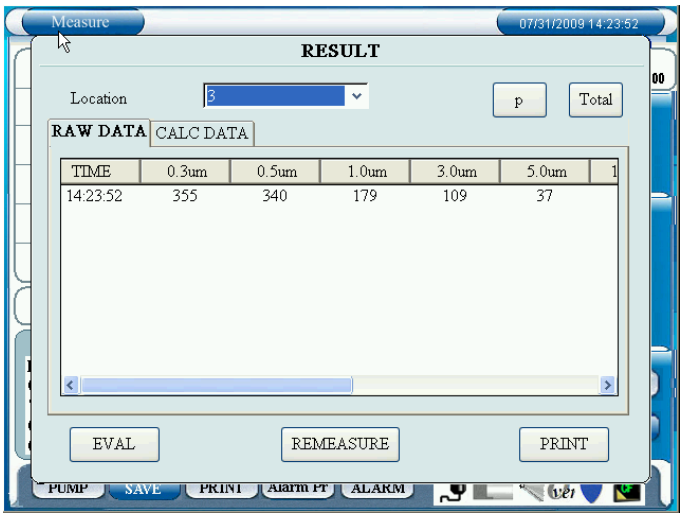
Tap [START] to start a measurement.

Tap [STOP] to stop a measurement.



Tap  button while measuring to display a chart.

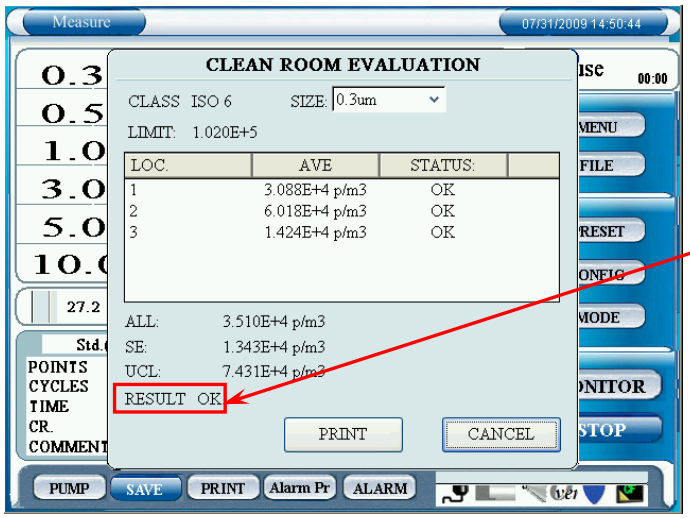
Tap [STOP] to stop a measurement.



<Measurement RESULT>

When all measurements are finished, the measurement result will be displayed.
You can view the result of a certain LOCATION POINT by selecting Location.

Tap [EVAL] to display CLEAN ROOM EVALUATION window.
Tap [REMEASURE] to perform a re-measurement.
Tap [PRINT] to print a measurement result.

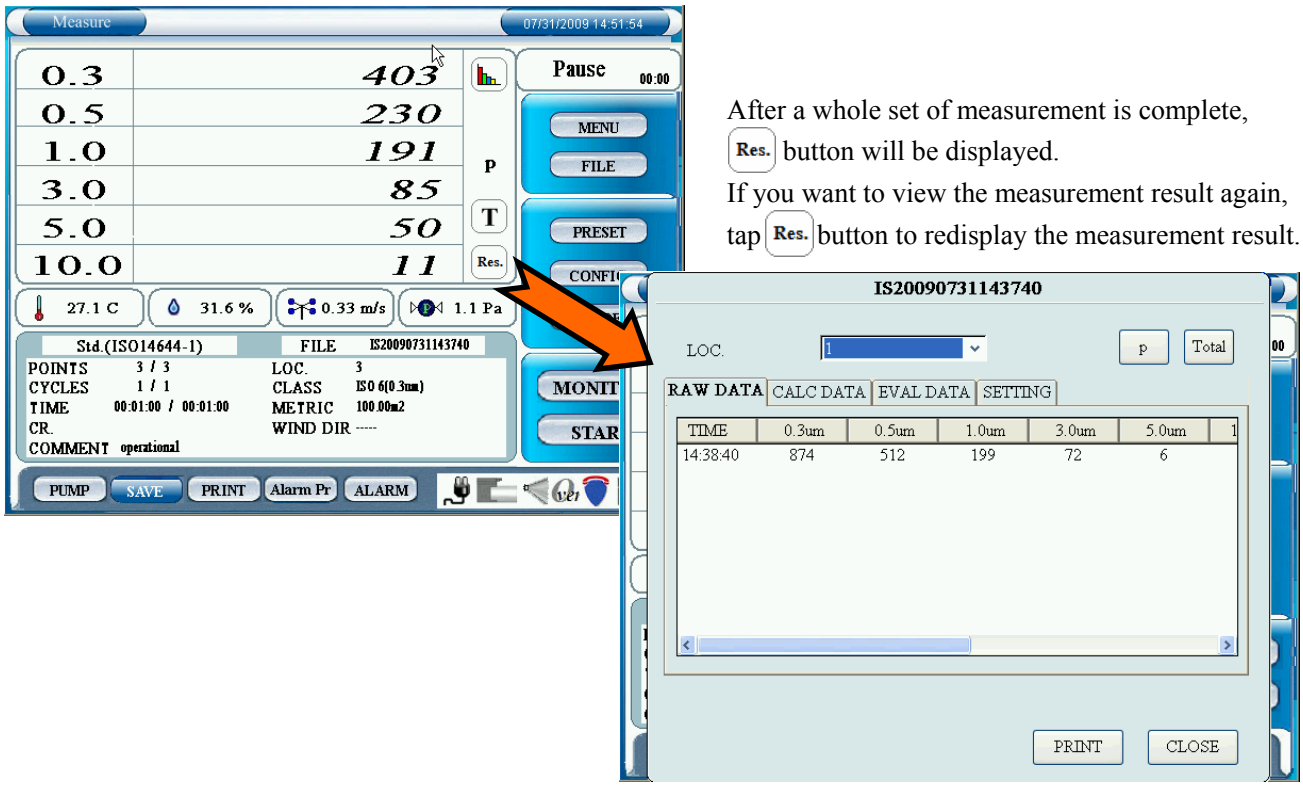


<CLEAN ROOM EVALUATION>

Tap [PRINT] to print a measurement result.

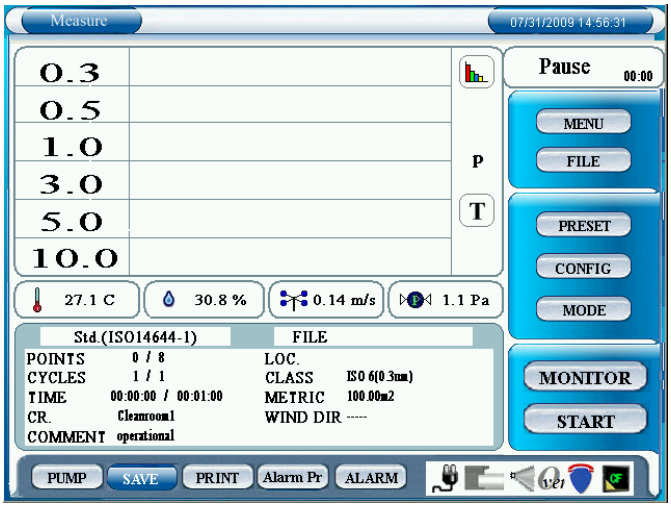
By selecting particle size you can change the particle size of the data to be evaluated. However, the RESULT will be made based on the particle size selected in CONFIG setting.

Tap [CLOSE] to close window.



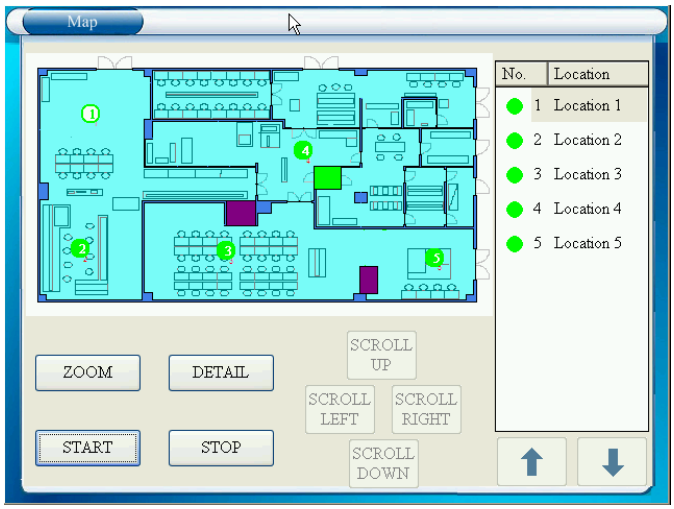
After a whole set of measurement is complete, Res. button will be displayed.
If you want to view the measurement result again, tap Res. button to redisplay the measurement result.

- When using MAP (Refer to **3.7 CONFIG** for using a MAP.)



In STANDARD measurement tap [START] to display MAP.

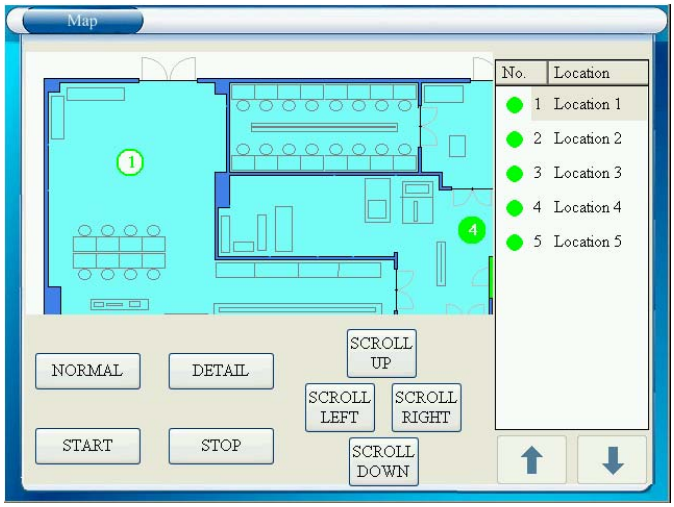
A measurement will start based on the setting configured in **3.5 MODE** and **3.7 CONFIG**.



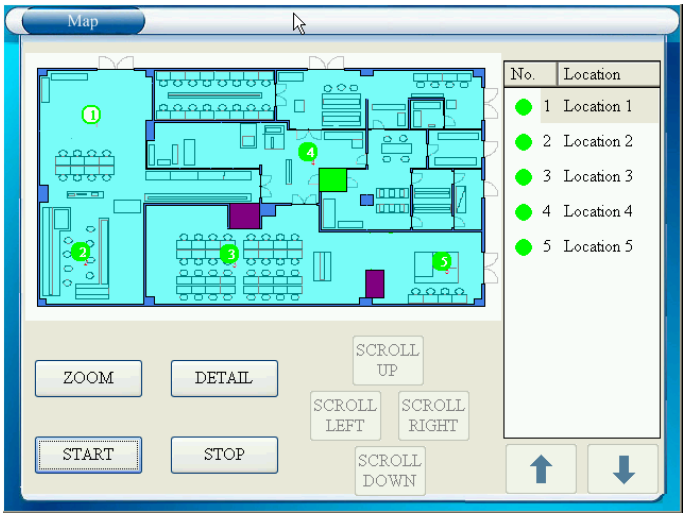
Select a measurement point and tap [START].

Tap [STOP] to stop a measurement.

Tap [ZOOM] to enlarge a MAP.
(This button will become [NORMAL] button. Press [NORMAL] to display an entire MAP when a map is enlarged.)



When a MAP is enlarged, [SCROLL UP], [SCROLL DOWN], [SCROLL LEFT] and [SCROLL RIGHT] buttons are activated, which enables you to move MAP.



Select a measurement point and tap [DETAIL] to view the details of the selected measurement point.

Tap [START] to start a measurement.

- **If "START DELAY" is <u>NOT</u> checked in "CONFIG" setting:**

  Upon tapping [START], the pump will begin running. After the pump has run for 10 seconds to stabilize, the measurement will begin.

- **If <u>only</u> "START DELAY" <u>is</u> checked in "CONFIG" setting:**

  Upon tapping [START], the Delay Time configured begins. During the last 10 seconds of that Delay Time the pump will run to stabilize, after which the measurement will begin.

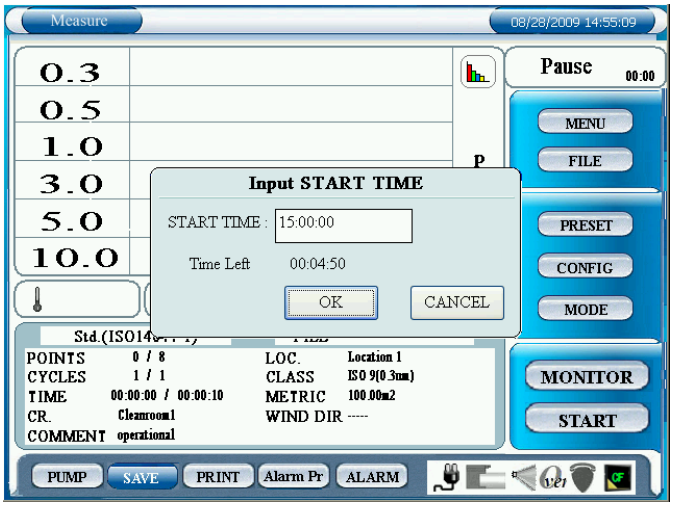
- **If "START DELAY" and "Set time" <u>are</u> checked in "CONFIG" setting:**

  Upon tapping [START], "Input START TIME" dialog box will be displayed. Enter the time when you want to start measuring and tap [OK]. During the last 10 seconds of the [Time left] time the pump will start running to stabilize, after which the measurement will begin.

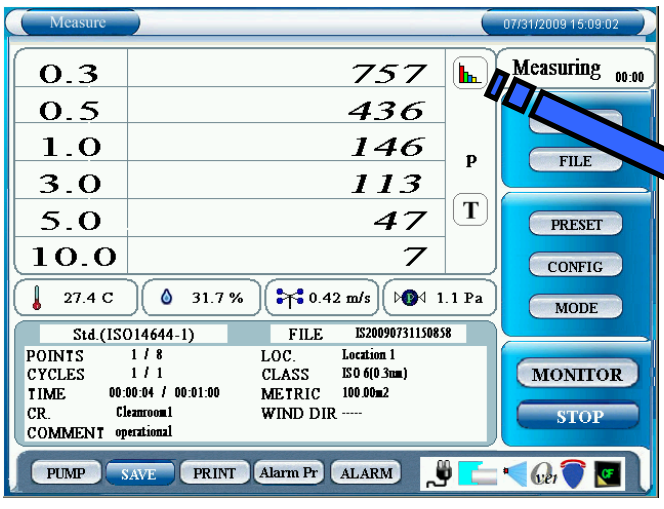
  Tap [CANCEL] to go back to the menu screen.

  If you fail to press [OK] after entering "START TIME", 10 minutes will be added to the "START TIME" automatically when the entered START TIME comes and will continue to wait to be activated by pressing [OK].

  After closing the measurement result,

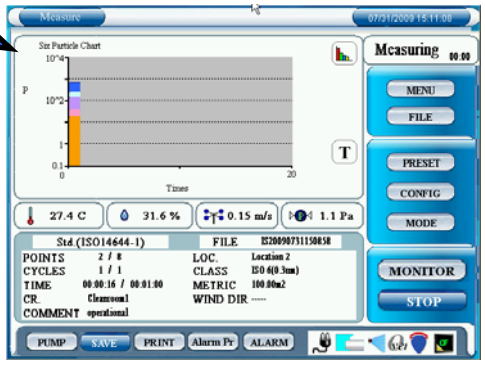


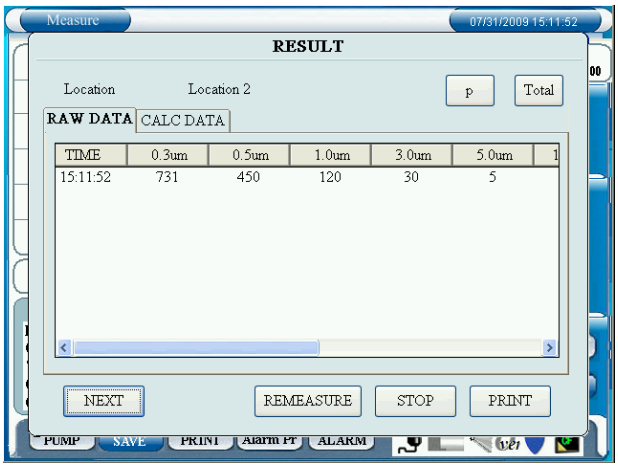
<Input START TIME dialog box>



<Screen while measuring>

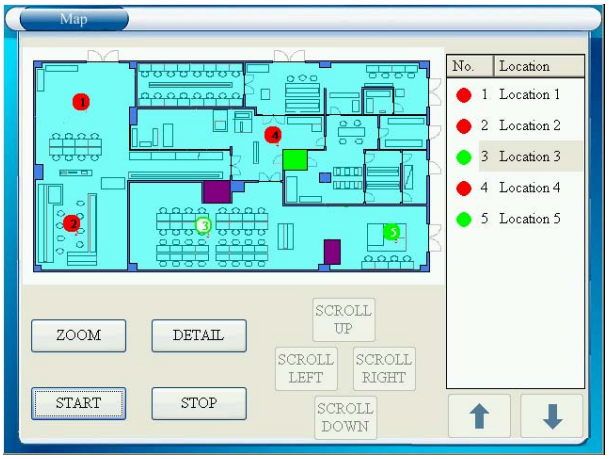
Tap  button while measuring to display a chart.



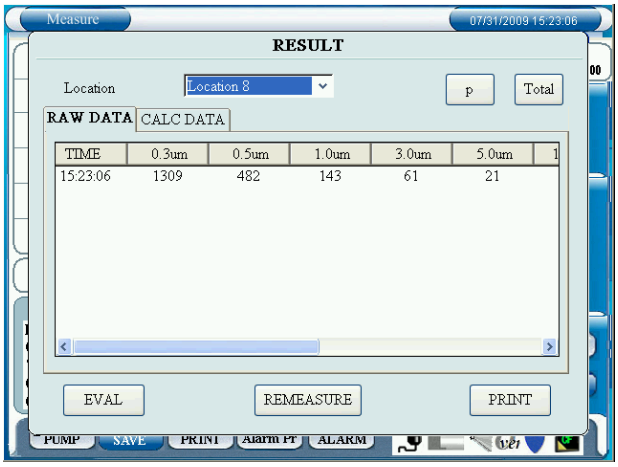


After a measurement at each location is finished, a measurement result will be displayed.
In [RAW DATA] tab, measurement data will be displayed.
In [CALC DATA] tab, calculated data of minimum (MIN), maximum (MAX) and average (AVE) will be displayed.

Tap [NEXT] to display MAP again and wait for the next point to be selected.
Tap [REMEASURE] to perform a re-measurement.
Tap [STOP] to stop a measurement.
Tap [PRINT] to print a measurement result.



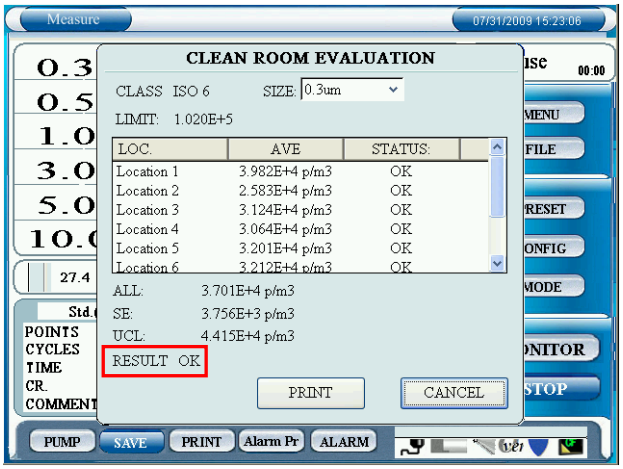
The color of the measurement point changes from green to red once a measurement is done.



When all measurements are finished, the measurement result will be displayed.

You can view the result of a certain LOCATION POINT by selecting Location.

Tap [EVAL] to display "CLEAN ROOM EVALUATION" screen.
Tap [REMEASURE] to perform a re-measurement.
Tap [PRINT] to print a measurement result.

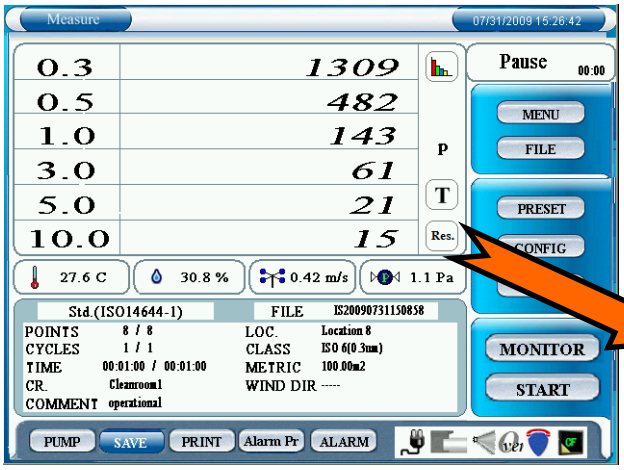


Tap [PRINT] to print a measurement result.

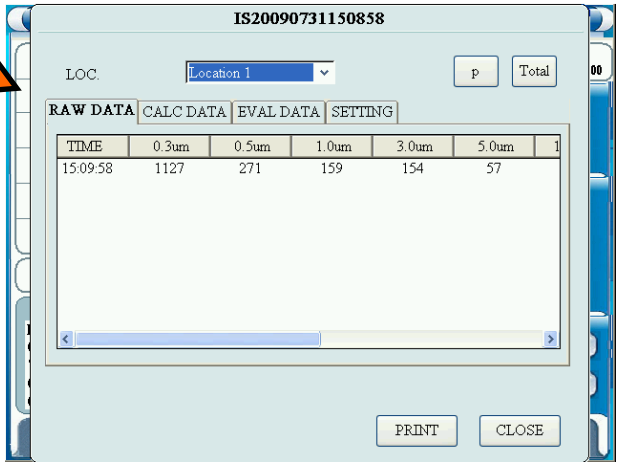
By selecting particle size you can change the particle size of the data to be evaluated. However, the RESULT will be made based on the particle size selected in the CONFIG setting.

Tap [Close] to close the window.

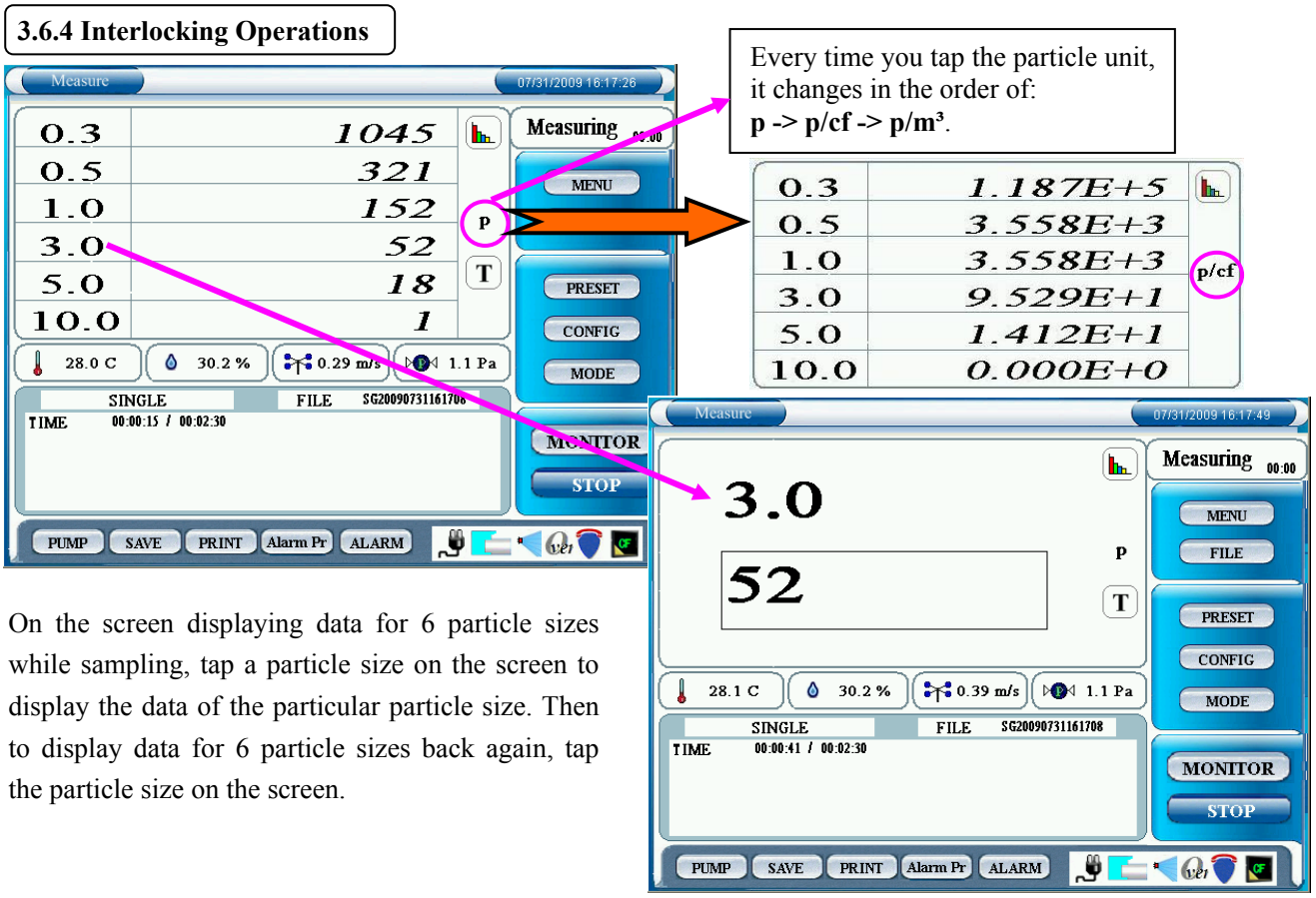
<CLEAN ROOM EVALUATION>



After a whole set of measurement is complete, Res. button will be displayed.
If you want to view the measurement result again, tap Res. button to redisplay the measurement result.

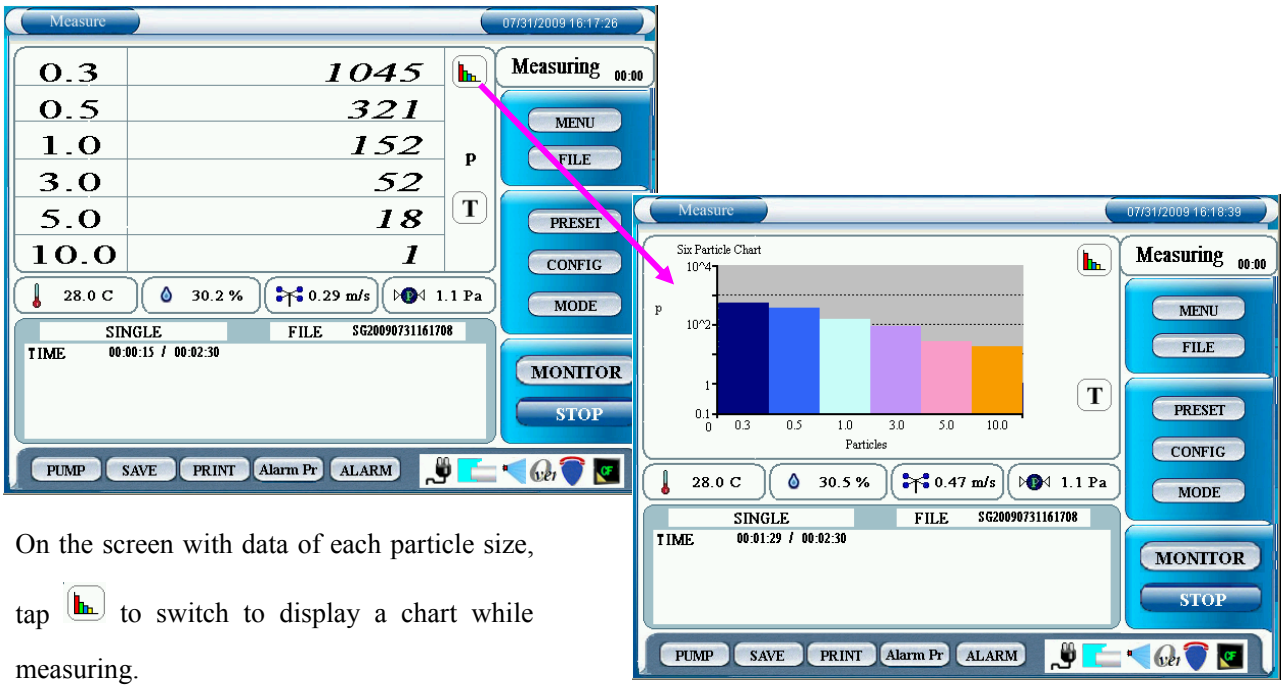


3.6.4 Interlocking Operations



On the screen displaying data for 6 particle sizes while sampling, tap a particle size on the screen to display the data of the particular particle size. Then to display data for 6 particle sizes back again, tap the particle size on the screen.

<SINGLE and CONTINUOUS mode>

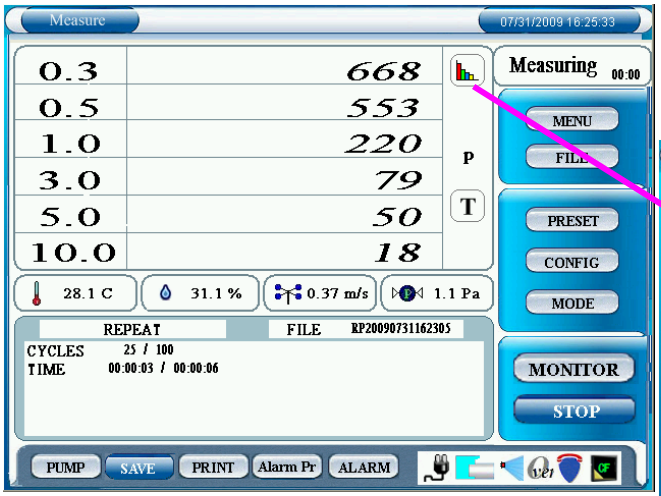


On the screen with data of each particle size, tap to switch to display a chart while measuring.

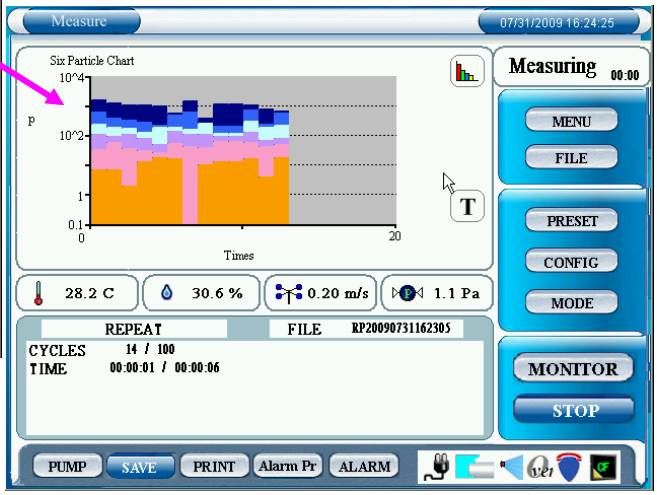
Particle size based histogram will be displayed in SINGLE and CONTINUOUS mode.

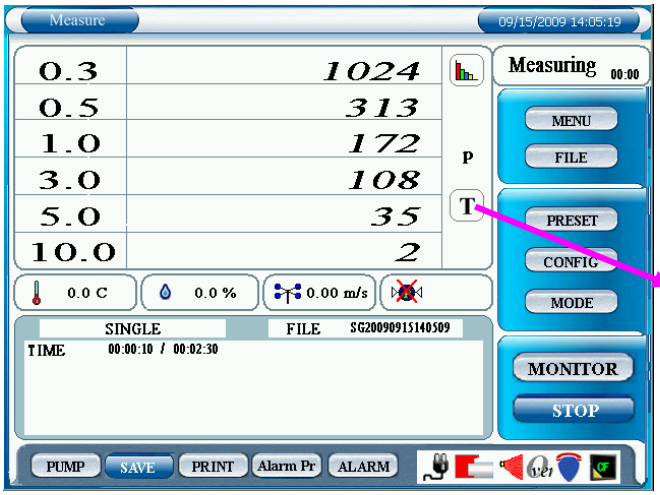
Tap  again to go back to the display with data for 6 particle size.

<INTERVAL, REPEAT, STATS and STANDARD modes>

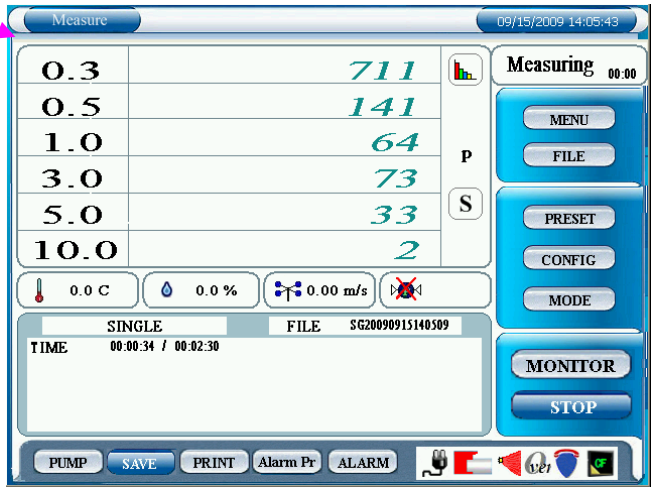


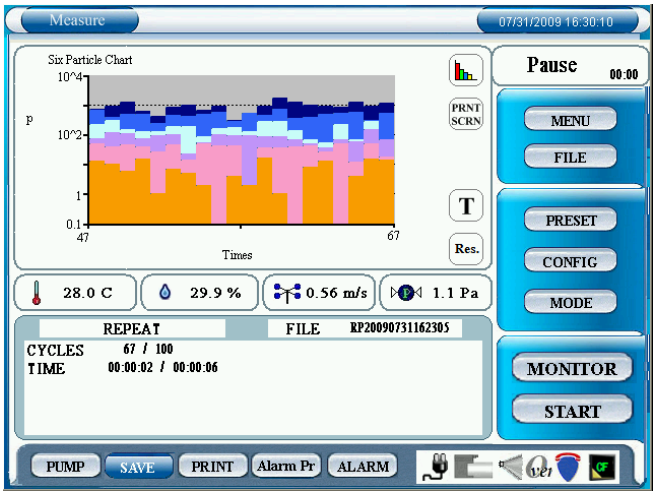
Time series chart will be displayed in REPEAT, INTERVAL, STATS and STANDARD mode.





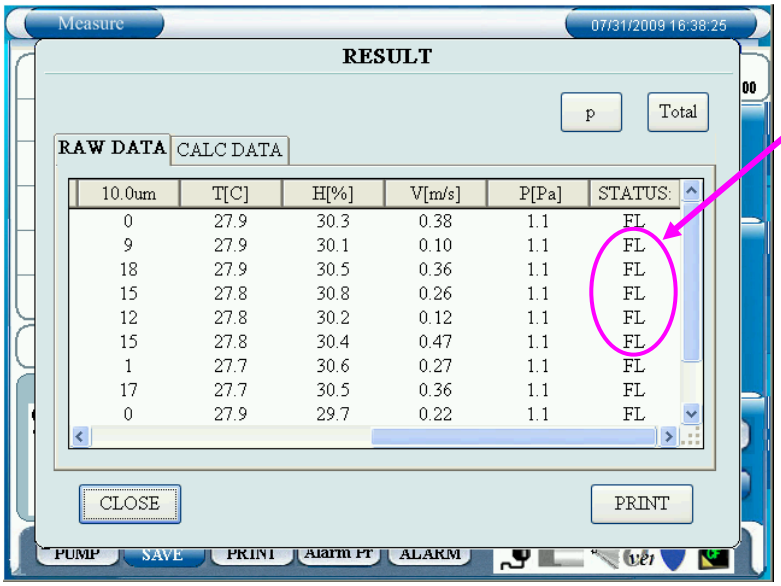
Tap T on the display with data for 6 particle size to switch to Single display.
Tap S when Single display is set, the display will go back to Total display.
For details on Total display and Single display, please refer to **page 10.**





When chart is displayed, PRNT SCRN will be displayed after a measurement is complete.
Tap PRNT SCRN to print out hardcopy of the chart.
Configure the setting for printing hardcopy on "CHART" tab of the PRINT SETTING window. (Please refer to **3.10.3 OPTION**.)

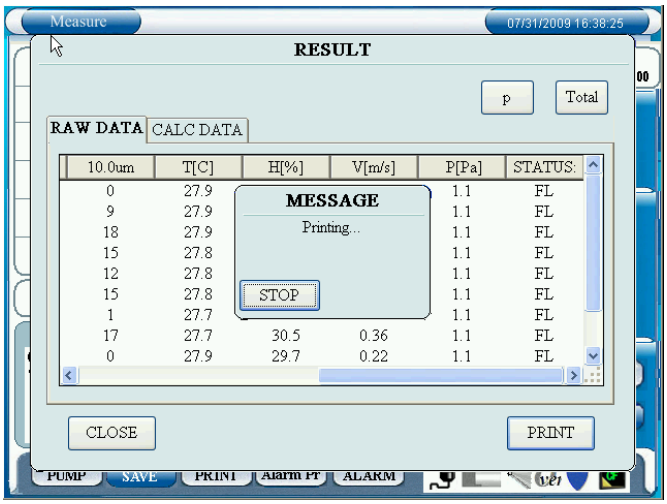
STATUS in Measurement RESULT



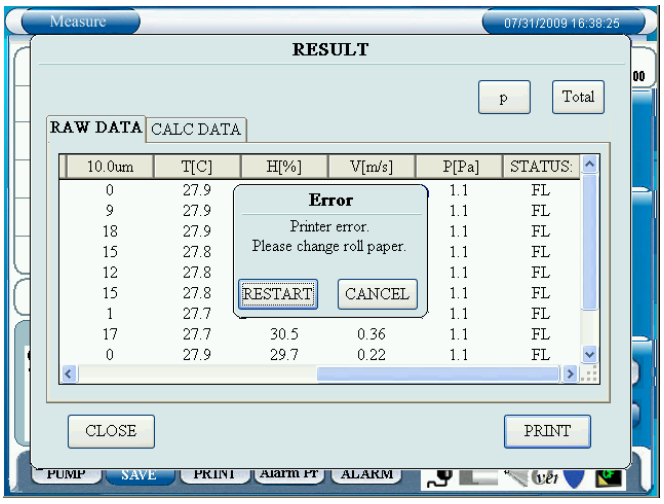
There are six indications for STATUS;
"OK", "F", "L", "O", "V" and "B".
Each means;

- OK: No error
- F: FLOW error
- L: LD error
- O: OPTION SENSOR error
- V: OVER
- B: BATTERY error

Message when printing



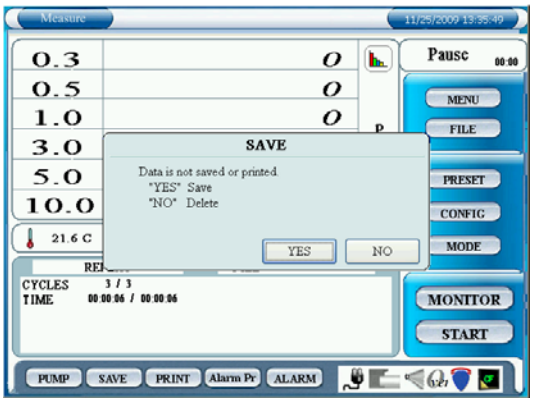
While data is being printed, the message shown on the left will be displayed.
If you tap [STOP], you can cancel the printing. However, the data already transmitted to the printer will be printed.



If data cannot be printed out as the printer paper is not installed or some other reasons, the message shown on the left will be displayed.
Please confirm that the printer paper is installed and tap [RESTART] to resume printing, or tap [CANCEL] to cancel printing.

3.6.5 Saving Data

If AUTO SAVE is not checked on the CONFIG setting window, data will not be saved in the file after measuring. If you try to change MODE or start another measurement when AUTO SAVE is not checked, you will get the message shown below.



- Tap [YES] to save data.
- Tap [NO] to discard data.

If the electricity goes out during a measurement, data will be treated as below.

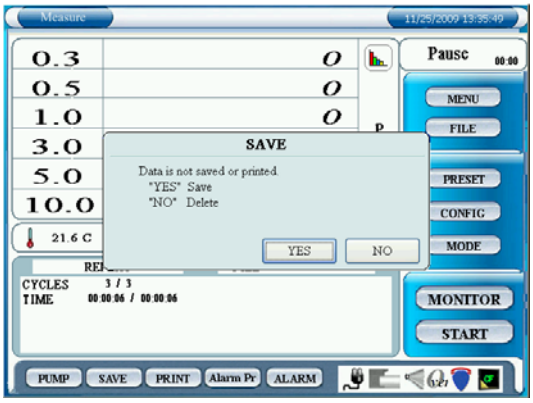
[SINGLE] and [CONTINUOUS] Mode

Data during a measurement will be discarded when the power goes OFF.

[INTERVAL] and [REPEAT] Mode

Data taken before electricity goes out is remained in the instrument.

When restarting the instrument, the message shown below will be displayed.



- Tap [YES] to save data.
- The calculation data will be created using data remained.
- Tap [NO] to discard data.

[STATS] and [STANDARD] Mode

Data taken before electricity went out is remained in the instrument. However, the data of the location point where a measurement was being performed when the power went out is not saved.

The measurement is in a temporary state of suspension.

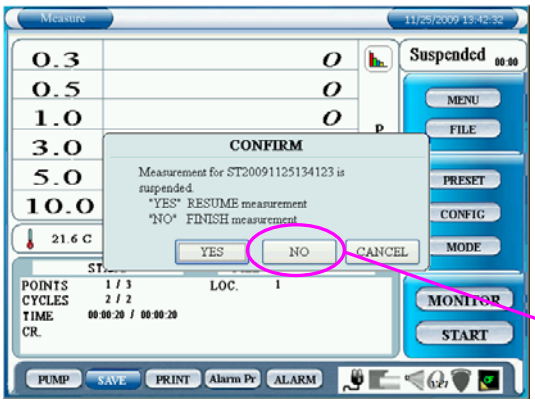
-> Refer to **3.6.6 In Case that Measurement is Interrupted**.

3.6.6 In Case that Measurement is Interrupted

If you stop a measurement in STATS or STANDARD mode before all measurements complete but there are more than one location where a measurement is finished, the instrument will be in a temporary state of suspension.
The instrument will remain in a temporary state of suspension until a measurement restarts or completes. During this period you cannot change a measurement mode or CONFIG setting.

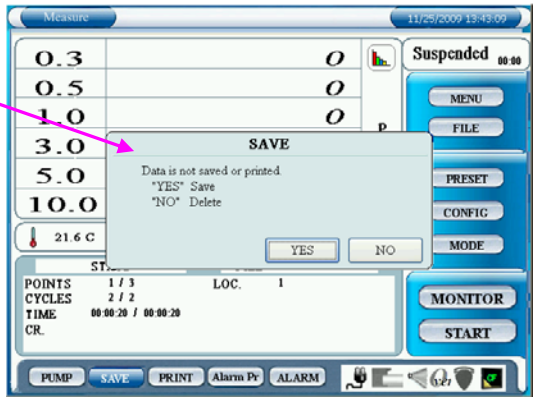
[STATS]

If you start a measurement when the instrument is in a temporary state of suspension, the message below will be displayed.

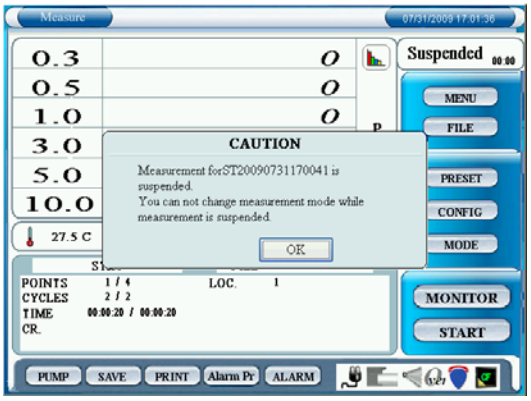


Tap [YES] to resume measuring from the next LOCATION.
If you tap [NO], you will get a message asking if you want to save data or not.
Tap [CANCEL] to go back to the main screen.

If you tap [NO] on the window above, a confirmation window will be displayed asking if you want to save data or no.
Tap [YES] to save data.
Tap [NO] to discard data.



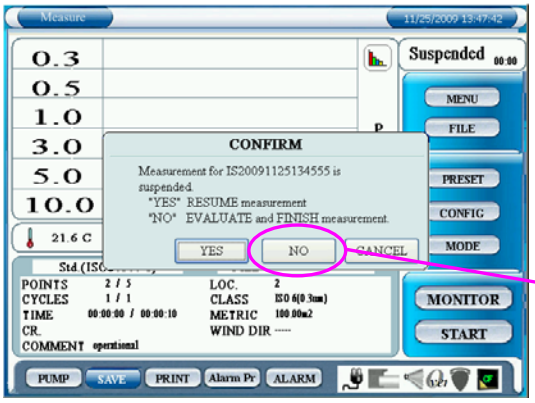
If you try to switch the mode, the below message will be displayed.



Tap [OK].
You cannot change the mode when a measurement is in a temporary state of suspension.
Tap [START] to determine the next stop.

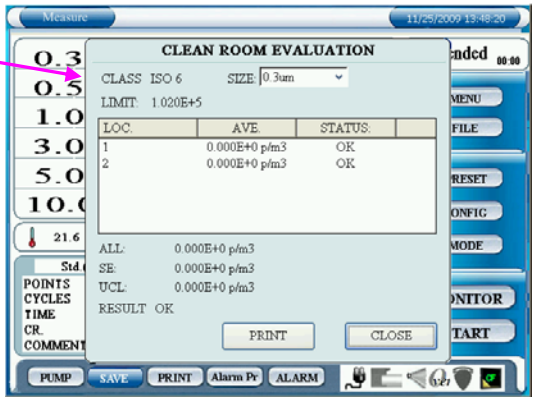
[STANDARD]

If you start a measurement when the instrument is in a temporary state of suspension, the message below will be displayed.



Tap [YES] to resume measuring from the next LOCATION.

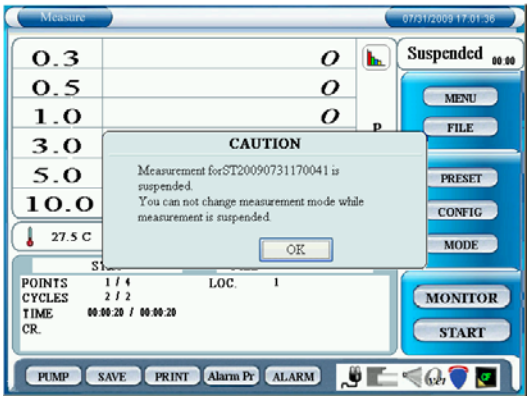
Tap [NO] to display CLEAN ROOM EVALUATION. Then the measurement will be completed.



Tap [PRINT] to print out the result.

Tap [CANCEL] to close the CLEAN ROOM EVALUATION window.

If you try to switch mode, the below message will be displayed.



Tap [OK].

You cannot change the mode when a measurement is in a temporary state of suspension.

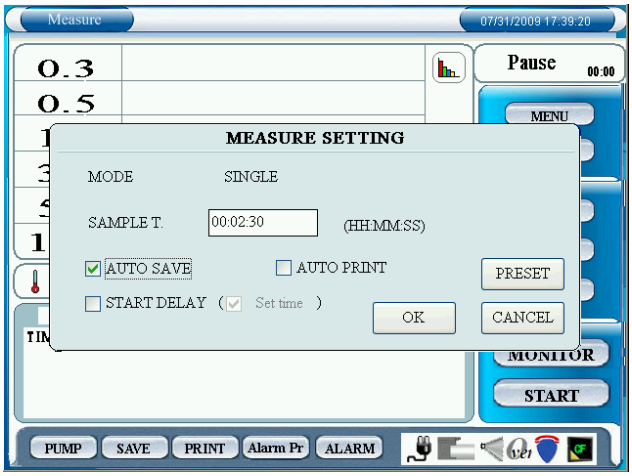
Tap [START] to determine the next stop.

3.7 Configuration

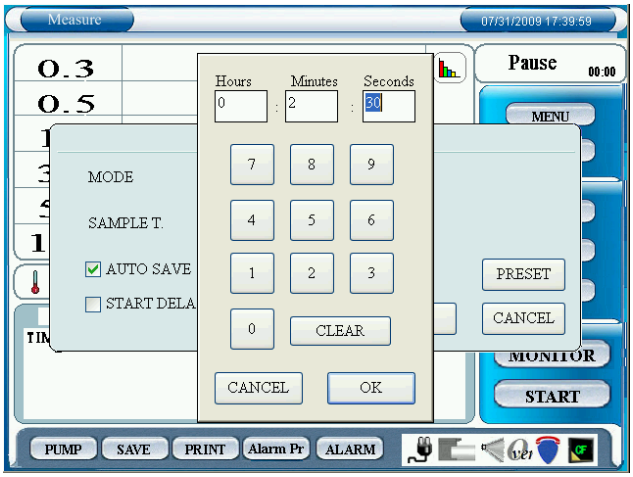
In CONFIG setting screen you can configure measurement settings in each mode.
You can set items such as INTERVAL, SAMPLE T., CYCLES, MANUAL STOP, AUTO SAVE, AUTO PRINT and START DELAY. Please note that the setting items vary depending on the measurement mode.

***User needs to have authorization to change configuration settings.**
***User needs to have authorization to save user "PRESET" setting.**

3.7.1 SINGLE

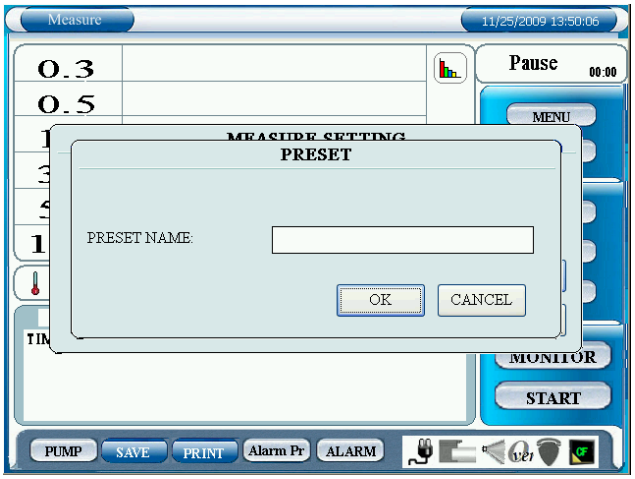


You can set **SAMPLE T.** (sampling time).
Tap the entry field to display a numeric keypad.
Enter "hour", "minute" and "second" on the numeric keypad and tap [OK].

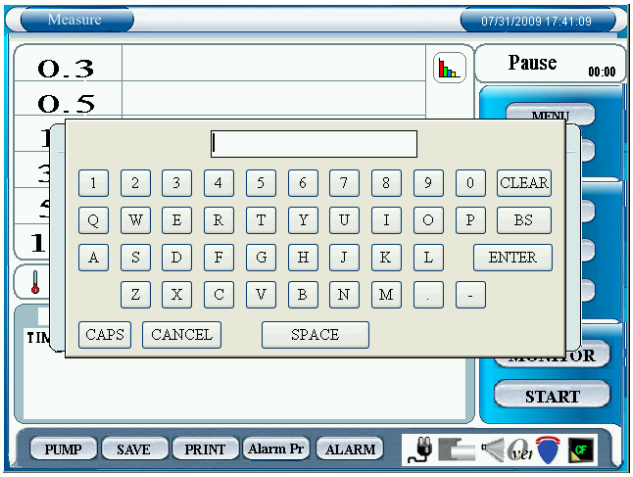


<numeric key pad to enter SAMPLE T.>

Check "AUTO SAVE" to store data automatically.
Check "AUTO PRINT" to print data automatically.
Check "START DELAY" to use delay time prior to a measurement.
Check "Set time" to set the time when you want to start a measurement.
Tap [OK] to save and activate the settings (Authentication required).



Tap [PRESET] on "MEASURE SETTING" dialog box to display a window asking you to input PRESET NAME.

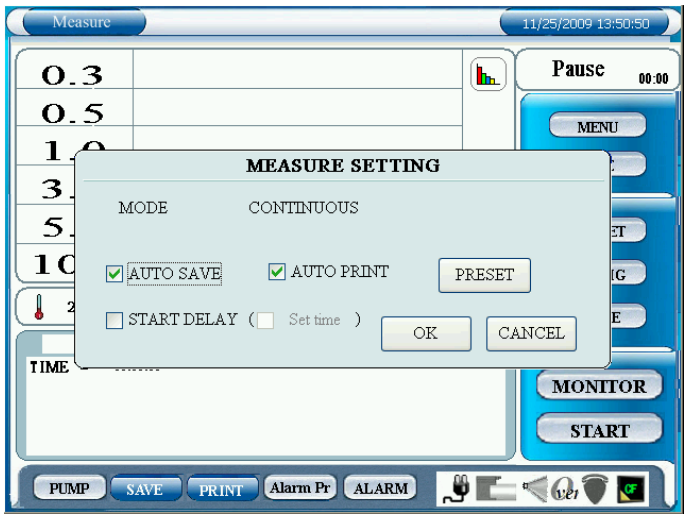


<keyboard to enter PRESET NAME>

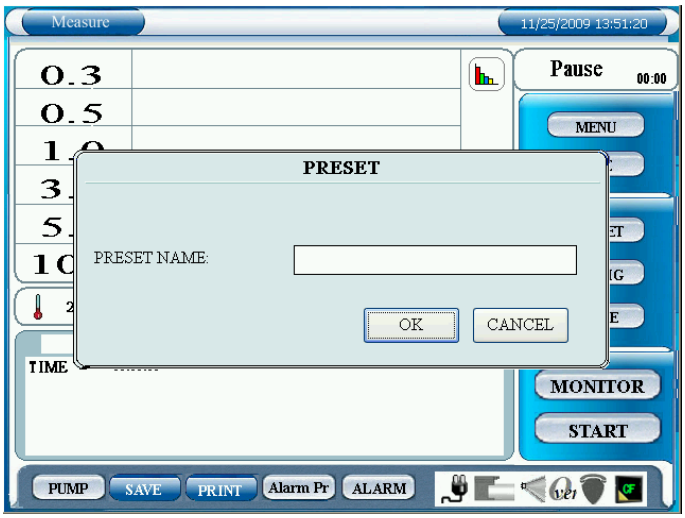
Tap the entry field to display the keyboard. Enter the file name and tap [Enter].

Tap [OK] to save the current settings on the CF card (Authentication required).
* In the future you can automatically load the configuration saved here as a PRESET. Refer to **3.9 PRESET**.

3.7.2 CONTINUOUS



Check “AUTO SAVE” to store data automatically.
Check “AUTO PRINT” to print data automatically.
Check “START DELAY” to use delay time prior to a measurement.
Check “Set time” to set the time when you want to start a measurement.
Tap [OK] to save and activate the current settings (Authentication required).

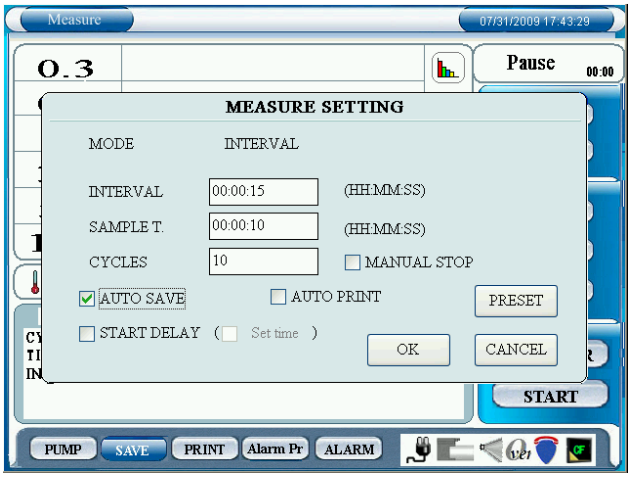


Tap [PRESET] to display a window asking you to input “PRESET NAME”.
Tap the entry field to display the keyboard. Enter the file name and tap [Enter].

Tap [OK] to save the current settings on the CF card (Authentication required).

* In the future you can load the configuration saved here as a PRESET. Refer to **3.9 PRESET**.

3.7.3 INTERVAL



You can set INTERVAL, SAMPLE T., CYCLES and MANUAL STOP.

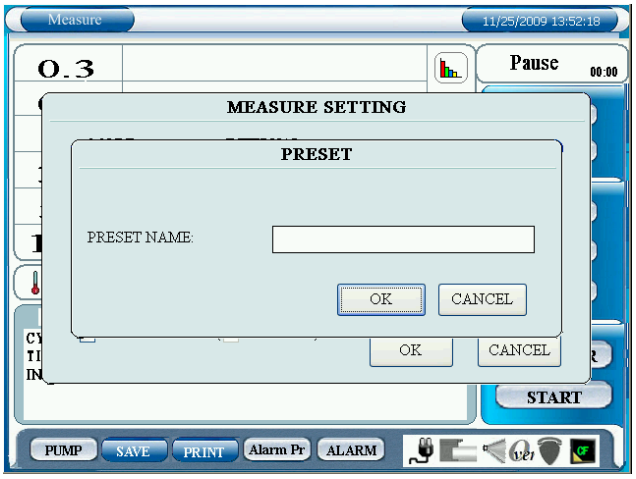
To set INTERVAL and SAMPLE T, tap the entry field to display a numeric keypad. Enter “hour”, “minute” and “second”, and tap [OK].

Tap entry field for CYCLES to display a numeric keypad. Tap the value you want to enter and tap [Enter].

Check “MANUAL STOP” to continue measuring until you stop measuring regardless of the CYCLES setting.

Check “AUTO SAVE” to store data automatically.
Check “AUTO PRINT” to print data automatically.
Check “START DELAY” to use delay time prior to a measurement.
Check “Set time” to set the time when you want to start a measurement.

Tap [OK] to save and activate the settings (Authentication required).



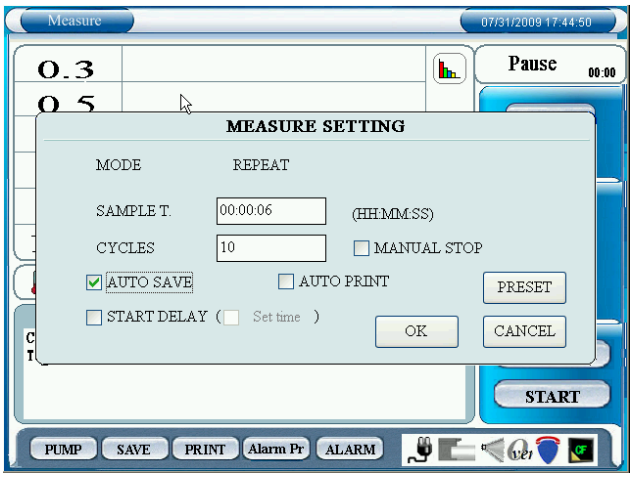
<Input PRESET NAME>

Tap [PRESET] to display a window asking you to input “PRESET NAME”.
Tap the entry field to display the keyboard. Enter the file name and tap [Enter].

Tap [OK] to save the current settings on the CF card (Authentication required).

* In the future you can automatically load the configuration saved here as a PRESET. Refer to **3.9 PRESET**.

3.7.4 REPEAT



You can set SAMPLE T., CYCLES and MANUAL STOP.

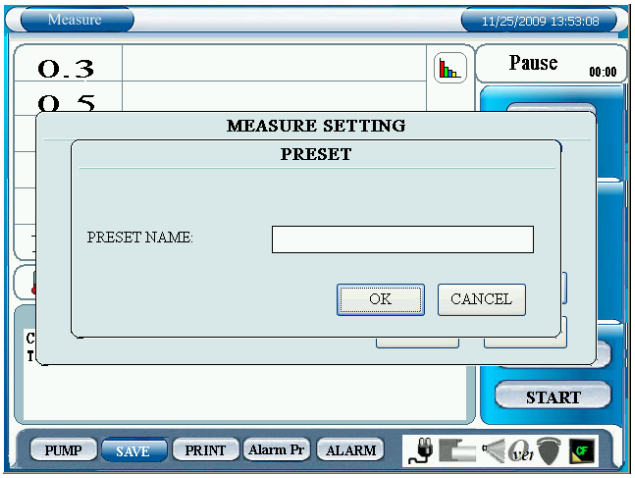
Tap the entry field of SAMPLE T. to display a numeric keypad. Enter “hour”, “minute” and “second” and tap [OK].

Tap the entry field of “CYCLES” to display a numeric keypad. Enter a value and tap [Enter].

Check “MANUAL STOP” to continue measuring until you stop the measurement, regardless of the CYCLES setting.

Check “AUTO SAVE” to store data automatically.
Check “AUTO PRINT” to print data automatically.
Check “START DELAY” to use delay time prior to a measurement.
Check “Set time” to set the time when you want to start a measurement.

Tap [OK] to save and activate the settings (Authentication required).



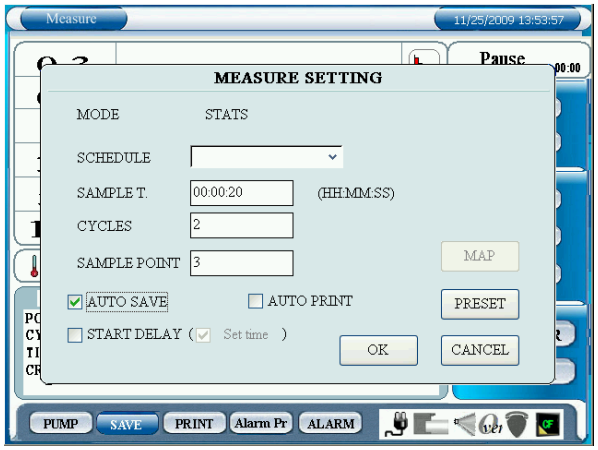
<Input PRESET NAME>

Tap [PRESET] to display a window asking you to input “PRESET NAME”.
Tap the entry field to display the keyboard. Enter the file name and tap [Enter].

Tap [OK] to save the current settings on the CF card (Authentication required).

* You can automatically configure measurement settings by loading a saved PRESET. Refer to **3.9 PRESET**.

3.7.5 STATS



<MEASURE SETTING>

Check “AUTO SAVE” to store data automatically.
Check “AUTO PRINT” to print data automatically.
Check “START DELAY” to use delay time prior to a measurement.
Check “Set time” to set the time when you want to start a measurement.

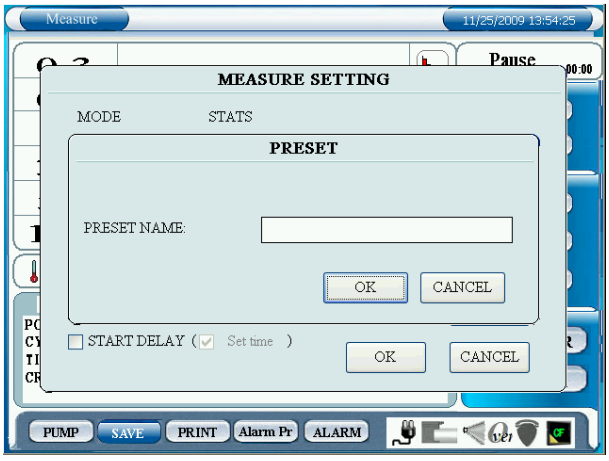
Tap [OK] to save and activate the settings (Authentication required).

If there are any MAP files saved, select the FILE to load it in SCHEDULE.

Tap the entry field for “SAMPLE T”. to display a numeric keypad. Enter “hour”, “minute” and “second” on the numeric keypad and tap [OK].

Tap the entry field of “CYCLES” to display a numeric keypad. Enter a value and tap [ENTER].

Once a MAP file is loaded, you cannot change the settings for SAMPLE POINT. (The configured number of measurement points in the MAP file will be applied.)
When a MAP file is not loaded, tap an entry field of “SAMPLE POINT” to display a numeric keypad. Enter a value and tap [ENTER].

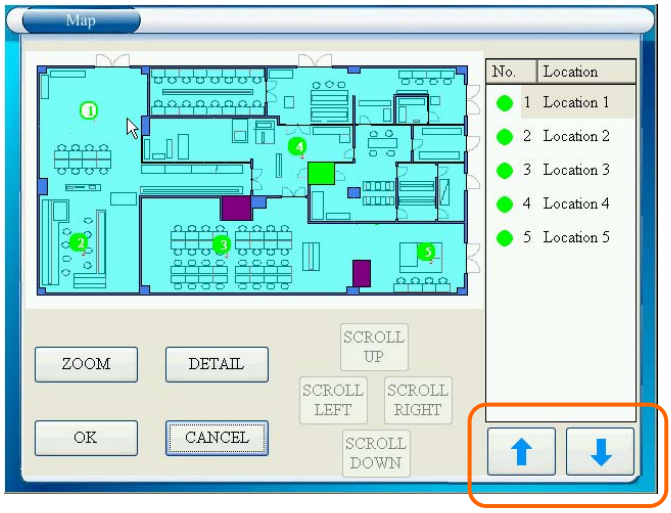


<Input PRESET NAME>

Tap “PRESET” to display a window asking you to input “PRESET NAME”.
Tap the entry field to display the keypad. Enter the file name and tap [Enter].

Tap [OK] to save the current settings on the CF card (Authentication required).

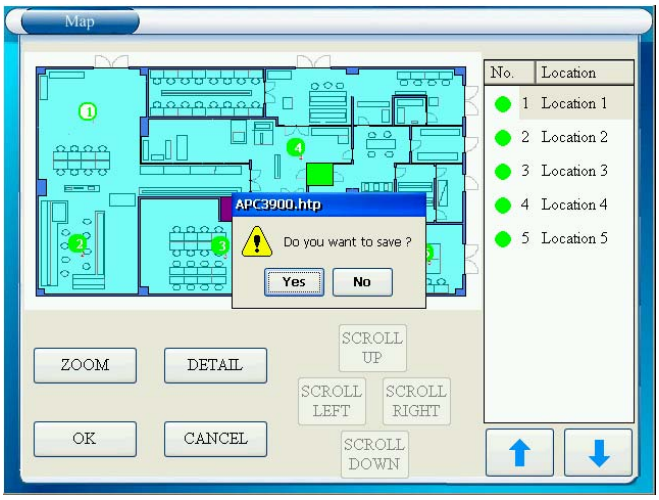
* In the future you can automatically load the configuration saved here as a PRESET. Refer to **3.9 PRESET**.



When a MAP file is specified in “SCHEDULE” on “MEASURE SETTING” screen, tap [MAP] to display a MAP.

You can change the location order.

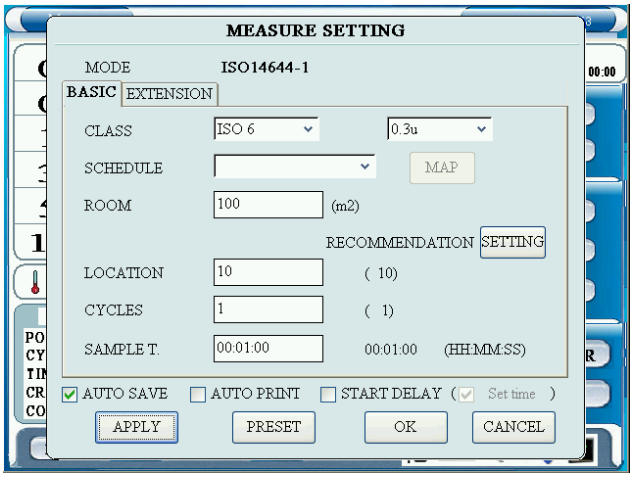
Tap the Location to be changed. Use  and  buttons to change the order.



Tap [OK]. Then a window will be displayed asking if you want to save the new order of the Location. Tap [YES] or [NO] (Authentication required).
Tap [YES] to set the changes and go back to “CONFIG” setting screen.
Tap [NO] to go back to MAP screen.

Tap [CANCEL] to discard the changes and go back to “MEASURE SETTING” screen.

3.7.6 STANDARD



STANDARD Measurement Setting

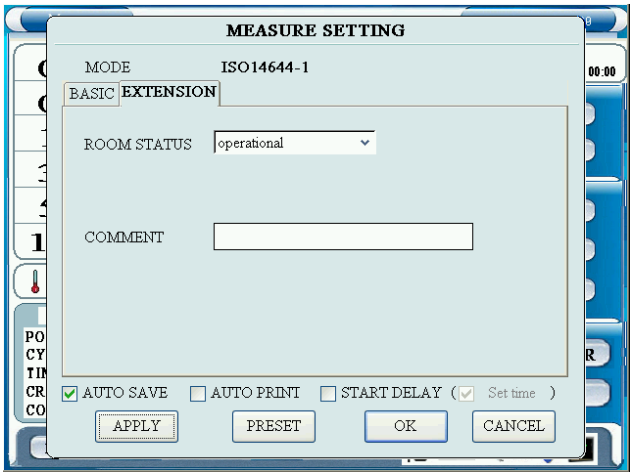
Depending on the STANDARD setting configured in **3.10.3 OPTION**, the setting items for CLASS and items in EXTENSION tab varies.

In the BASIC tab;

Configure the setting of CLASS, SCHEDULE, ROOM, LOCATION, CYCLES and SAMPLE T.

CLASS: Set the cleanliness level of the cleanroom to be measured. After configuring this setting, the appropriate particle size for the configured CLASS can be selected.
SCHEDULE: You can load a MAP file. If you select the file, the MAP function will be activated and the MAP will be displayed.
ROOM: Input the size of the room to be measured.
LOCATION: Input the number of measurement point.
CYCLES: Input the measurement cycles.
SAMPLE T.: Input the sampling time.

The numeric value shown next to the each entry field is the recommended value based on CLASS, ROOM and AIR DIRECTION (in EXTENTION tab). Tap [SET] to use the recommended value.



Tap [APPLY] to activate the new settings in each tab (Authentication required).

Tap [OK] to activate all the new settings. (Authentication required).

Tap [CANCEL] to discard the changes and close the window.

Check “AUTO SAVE” to store data automatically.

Check “AUTO PRINT” to print data automatically.

Check “START DELAY” to use delay time prior to a

In the EXTENTION tab, configure the followings;

- **ROOM STATUS**
- **AIR DIRECTION** (only for Federal Standard)
- **COMMENT**

[AIR DIRECTION]

- Select **unidirectional** when wind direction is constant.
- Select **nonunidirectional** when wind direction is not constant.

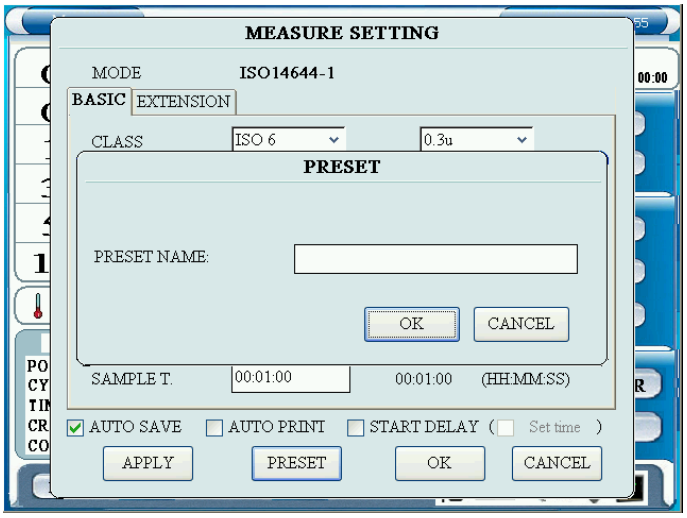
[ROOM STATUS]

Select either **as-built**, **as-rest** or **operational**.

- Select **as-built** when the cleanroom is setting up.
- Select **as-rest** when the cleanroom function is off.
- Select **operational** when the cleanroom function is on.

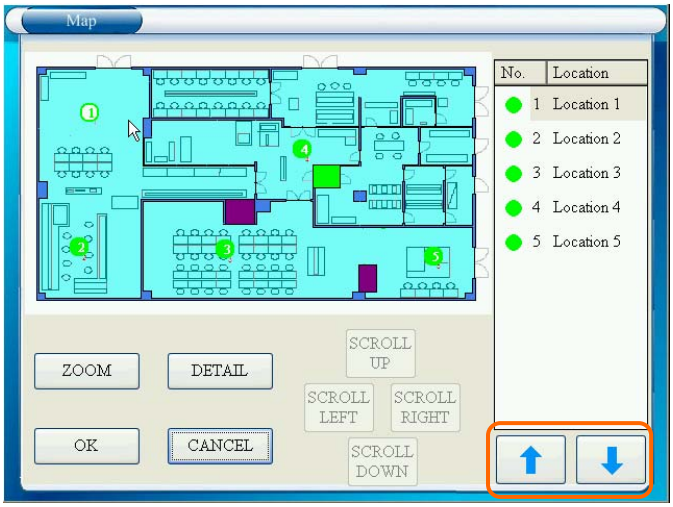
[COMMENT]

Tap the entry field to display a keypad. Enter comment and tap [Enter].



Tap [PRESET] to display a window asking you to input PRESET NAME.
Tap the entry field to display the keyboard. Enter the file name and tap [Enter].

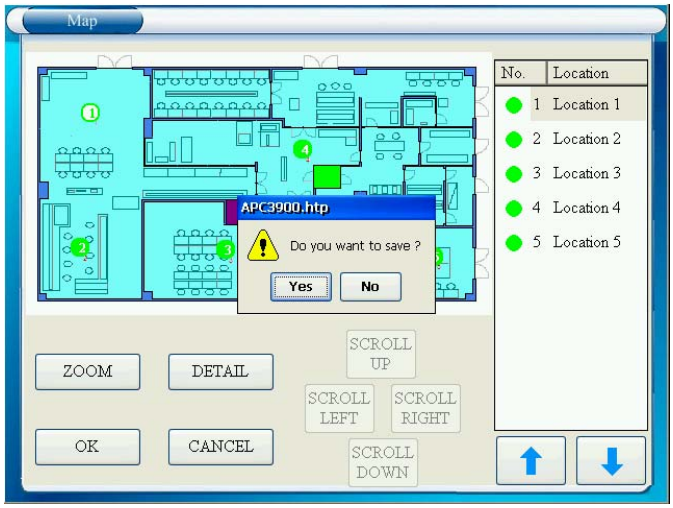
Tap [OK] to save the current settings on the CF card. You can configure the saved measurement settings by loading a saved PRESET (Authentication required).
Refer to **3.9 PRESET**.



Tap [MAP] button to display MAP.

You can change the location order.

Tap the Location to be changed. Use  and  buttons to change the order.



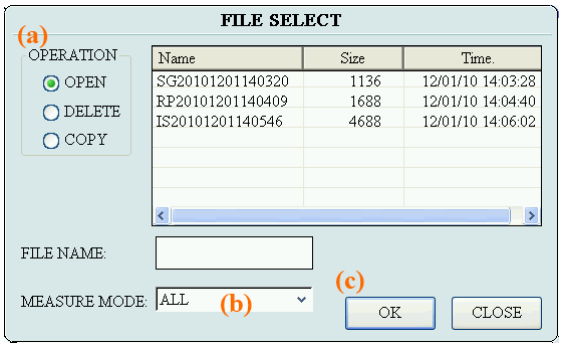
Tap [OK]. Then a window will be displayed asking if you want to save the new order of the Location. Tap [Yes] or [No].

Tap [Yes] to save the changes and go back to [CONFIG] setting screen. (Authentication required).

Tap [No] to go back to display MAP.

Tap [CANCEL] to discard the changes and go back to “MEASURE SETTING” screen..

3.8 FILE



Select [FILE] on the initial screen. Then a screen shown on the left will be displayed. You can display, print and delete data here. You can also display the list of files that has been output in the ALARM/ERROR LOG screen.

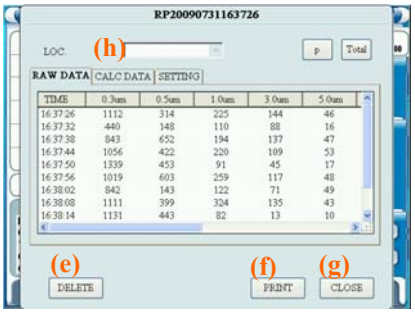
***User needs to have authorization to copy file.**
***User needs to have authorization to delete file.**

The file name consists of
abbreviation of the measurement mode + Date + Time.
The measurement mode abbreviations are;

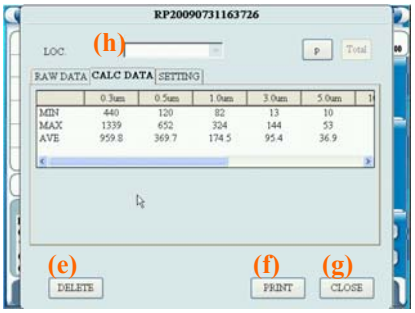
SG: SINGLE	IS: ISO
CO: CONTINUOUS	FS: FEDERAL STANDARD
IN: INTERVAL	BS: BRITISH STANDARD
RP: REPEAT	EC: EC GMP
ST: STATS	GB: GB/T

(a) To display names of every saved file, check "OPEN". (When this window "FILE SELECT" is open, "OPEN" is checked.)
(b) Use "MEASURE MODE" to narrow down the files to be displayed.
(c) After you select the file that you want to display, the file name will be displayed in the box for "FILE NAME". Then tap [OK] to display the data display screen as shown below.

Data Display Screen



<RAW DATA TAB>



<CALC TAB DATA>

<SETTING TAB>

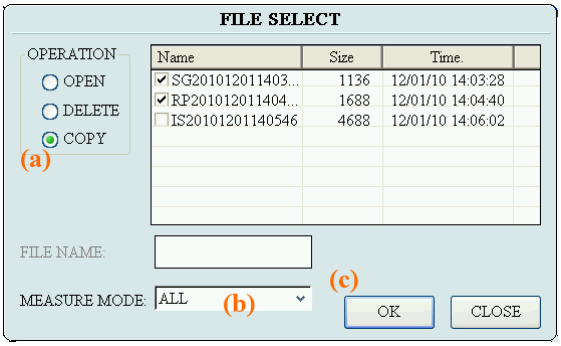
Tap CALC DATA tab to display CALC result.
Tap SETTING tab to display the setting information.

(e) To delete data file displayed, tap [DELETE]. Then a dialog will be displayed asking you if you want to delete it or not. Tap [YES] to delete the data file displayed.

(f) Tap [PRINT] to print the data.

(g) Tap [CLOSE] to close a window.

(h) In STATS mode and STANDARD mode, you can change the data to be displayed by selecting LOCATION.

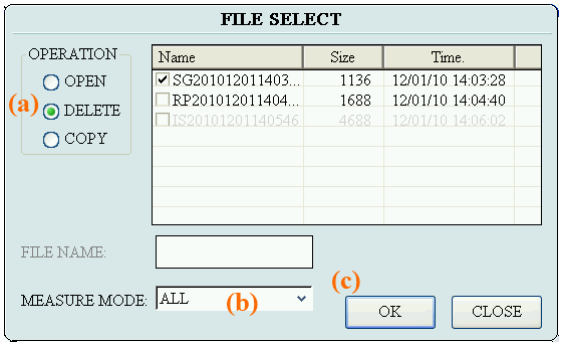


(a) Choose [COPY] button to copy file, and then user can select files. Insert CF card and save the selected file on the card.

(b) Select files based on “MEASURE MODE”

(c) Choose the file(s) to copy and tap [OK] to save (Authentication required).

Copied files are encrypted, and can be deciphered with data processing software.



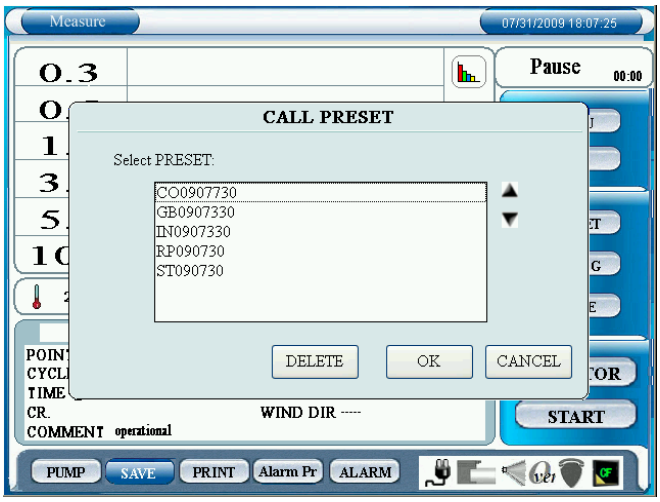
(a) To delete files, check “DELETE”. A check box will be displayed at the beginning of each file name so that you can check the file that you want to delete.

(b) Use “MEASURE MODE” to narrow down the files to be deleted.

(c) After you check the file(s) that you want to display and tap [OK] (Authentication required).

*For data protection, the 3900 doesn’t allow user to delete the file, which is not copied.

3.9 PRESET



Select "PRESET" on the initial screen to display CALL PRESET screen.

The selected PRESET file will be reflected in the MODE and CONFIG setting.

***User needs to have authorization to call "PRESET" files.**
***User needs to have authorization to delete "PRESET" files.**

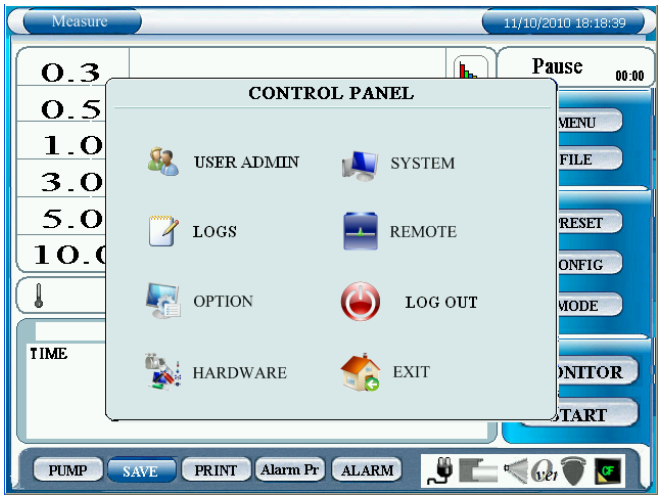
The first two letters of the file name indicates the mode type.

SG: SINGLE MEASUREMENT
CO: CONTINUOUS MEASUREMENT
IN: INTERVAL MEASUREMENT
RP: REPEAT MEASUREMENT
ST: STATS MEASUREMENT
IS: STANDARD MEASUREMENT

Select the item that you want to load or delete.
Tap [OK] to reflect the selected PRESET setting in MODE and CONFIG settings (Authentication required).
Tap [DELETE] to delete the selected PRESET setting (Authentication required).

Refer to **3.7 CONFIG** for setting procedure.

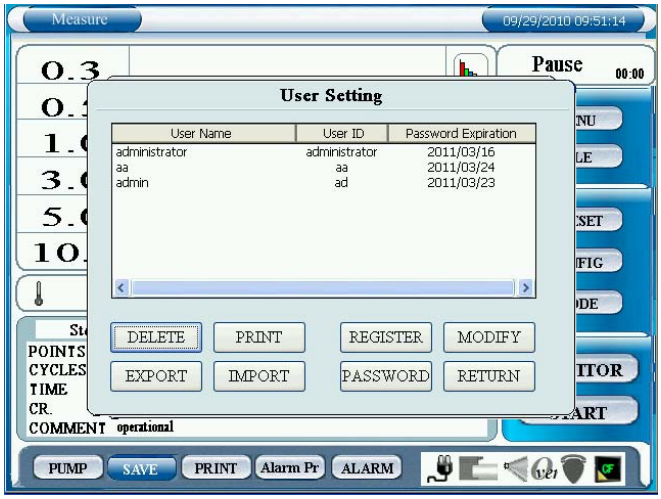
3.10 MENU



Select “MENU” on the initial screen to display the CONTROL PANEL window.

***User needs to have authorization to change the settings on the control panel.**

3.10.1 User Management



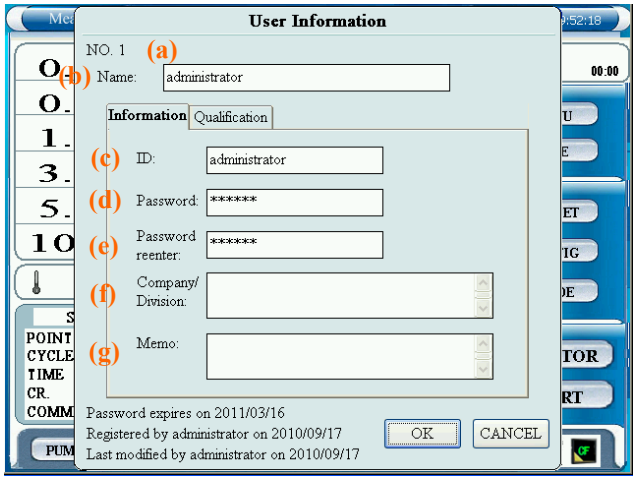
“User Setting” window shows up by choosing “USER ADMIN” menu on the control panel.
Registering user, modifying user information, deleting account, import/export user information, printing user information, and changing user password can be done from the “User Setting” window.

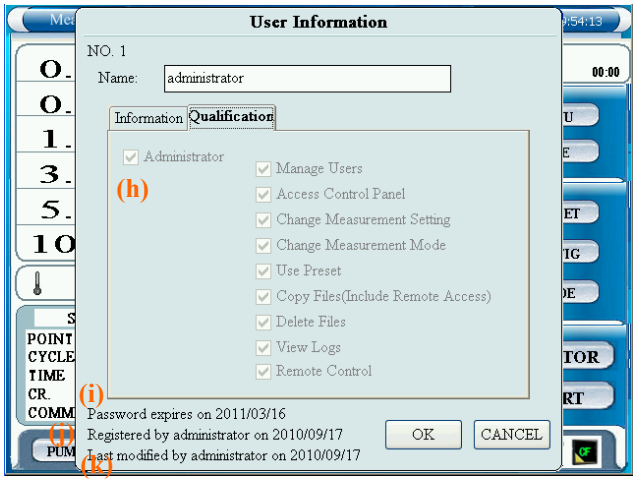
***Registering, modifying, and deleting user information have to done by the administrator.**
***User needs to have authorization to import and export user information.**

User Setting window shows registered users.

Choose one of registered users and tap [DELETE] button to delete the selected user (Authentication required).
Choose one of registered users and tap [PRINT] button to print out the selected user information.
Tap [REGISTER] button to register new user (Authentication required).
Choose one of registered users and tap [MODIFY] button to edit the selected user information (Authentication required).
Tap [EXPORT] button to copy the selected user information into the storage (Authentication required, insert storage card is required). Exported user information can be modified by PC software.
Tap [IMPORT] button to import user information from the storage card (Authentication required).
Tap [PASSWORD] button to change the selected user password.
Tap [RETURN] to go back to the control panel.

User Information Window





User Information Window for adding users and editing user information.

"Information" tab for user information
"Qualification" tab for setting authority level for user.

(a) User Number: automatically assigned

(b) User Name: up to 40 characters
(c) User ID: up to 16 characters, can't be duplicated
(d) Password: 4 to 16 characters
(e) Password Re-enter: confirmation of password
(f) Company / Division: up to 99 characters
(g) Memo: up to 99 characters

(h) Qualification:
check the items to set authority level. Administrator automatically has all authority level.

(i), (j), and (k) show when user edit its information.

(i) Password expiration:
shows expiration date for password. Password expires every 180 days.
(j) Registration date:
shows registration date and User ID who registered the information
(k) Last modified date:
shows latest modified date and User ID who modified the information

Tap [OK] to register the information and go back to "User Setting" window.
Tap [CANCEL] to cancel the registration and go back to "User Setting" window.

- **Qualification**

  Administrator: Administrator automatically has all authority level. “Manage Users” is only assigned to administrator.

  Manage User: enable to add, edit, delete, and activate / inactivate users.

  Access Control Panel: enable to change setting in the control panel.

  Change Measurement Setting: enable to change measurement settings.

  Change Measurement Mode: enable to change measurement mode.

  Use Preset: enable to create user preset file.

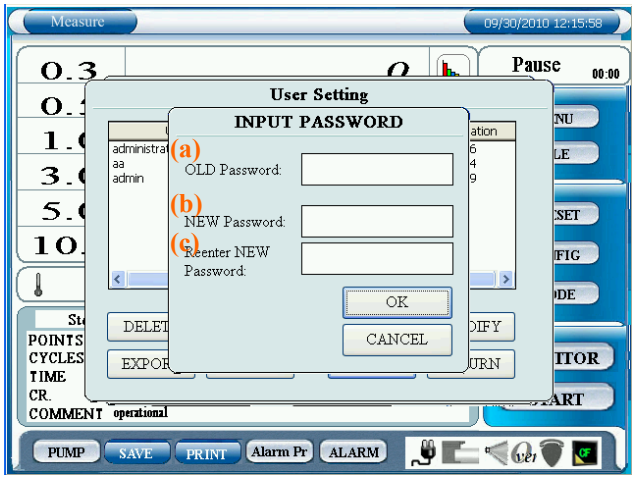
  Copy Files: enable to copy the data file, such as measurement data, log data, and user information. Data can be copied via network.

  Delete Files: enable to delete the data file, such as measurement data and user preset file.

  View Logs: enable to review the log data.

  Remote Control: enable to connect the 3900 via network by using Remote Console Program.

Input Password



Edit password from “INPUT PASSWORD” window.

Keyboard shows up when user taps entry fields.

(a) OLD Password: type in current password.

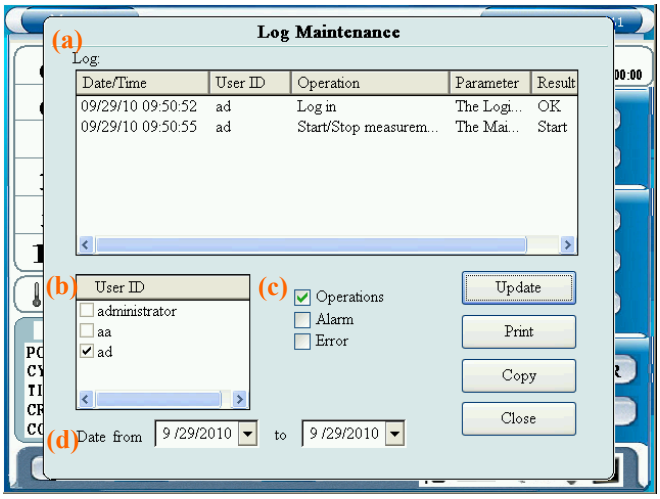
(b) NEW Password: type in new password.

(c) Reenter NEW Password: confirm new password

Tap [OK] to renew your password and go back to “Manage Users” window.

Tap [CANCEL] to cancel the process and go back to "Manage Users" window.

3.10.2 Log Maintenance



Log Maintenance window shows up when you choose “LOGS” on the control panel.
User can review and print-out the log files, such as operation log, alarm log, and error log

***Authentication is required for “View Logs”.**
***Authentication is required for “Copy Files”.**

(a) Log List

Shows following information; Date/Time, User ID, Operation, Parameters, Result

(b) User ID

Select user ID to review its logs.

(c) Operation / Alarm / Error

Select types of log

Operation: shows operation logs.

Alarm: shows alarm logs.

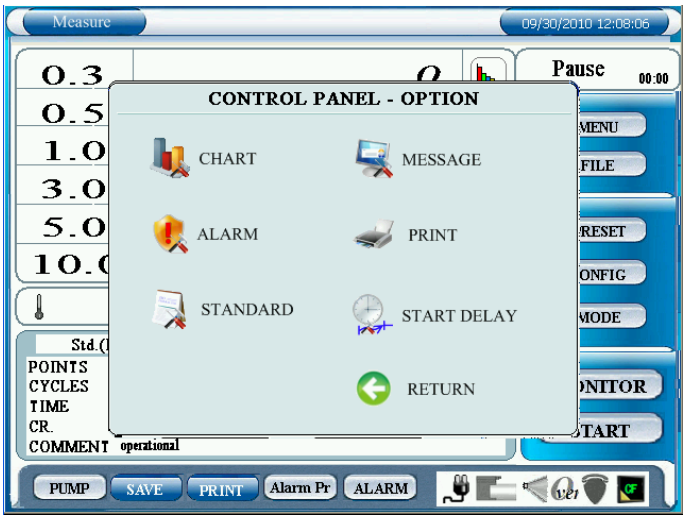
Error: shows error logs.

(d) Date

Select start date and end date for log

Tap [Update] to review log list, which based on the criteria you choose from (b) to (d).
Tap [Print] to print out information on the log list.
Tap [Copy] to copy the selected log files to the CF card (Authentication required).
Tap [Close] to go back to the control panel.

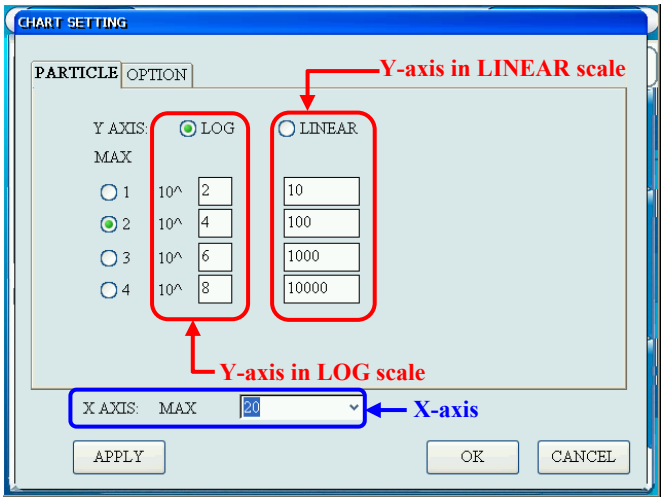
3.10.3 OPTION



In the OPTION window you can configure the following settings;

- CHART
- ALARM
- STANDARD
- MESSAGE
- PRINT
- START DELAY

· CHART SETTING

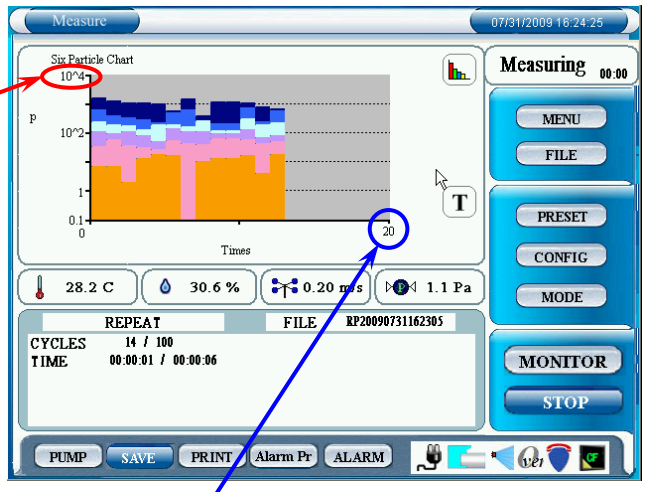


Configure the axis of the chart and range settings.
For **X Axis** select either “10”, “20”, “50”, “100”, “150” or “300”.

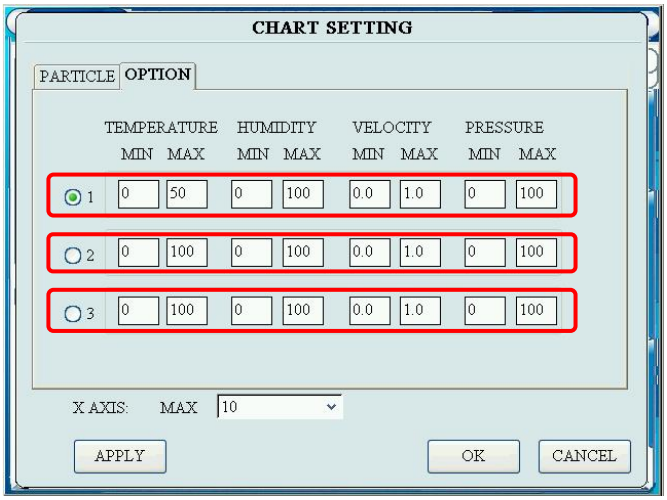
For **Y Axis** in PARTICLE tab select either “LOG” or “LINEAR”.
Select which MAX value to be set among four options.
You can set 4 different max values each for “LOG” and “LINEAR”.

When you configure the chart setting as shown above, the chat will be shown as below.

MAX value set in the PARTICLE tab in the CHART SETTING window is applied in the chart.
Tap **MAX value** to change it.
(It changes in the order of MAX setting 1, 2, 3, 4.)



MAX value set in the PARTICLE tab in the CHART SETTING window is applied in the chart.
Tap **MAX value** to change it.
(It changes in the order of “10”, “20”, “50”, “100”, “150” “300”.)

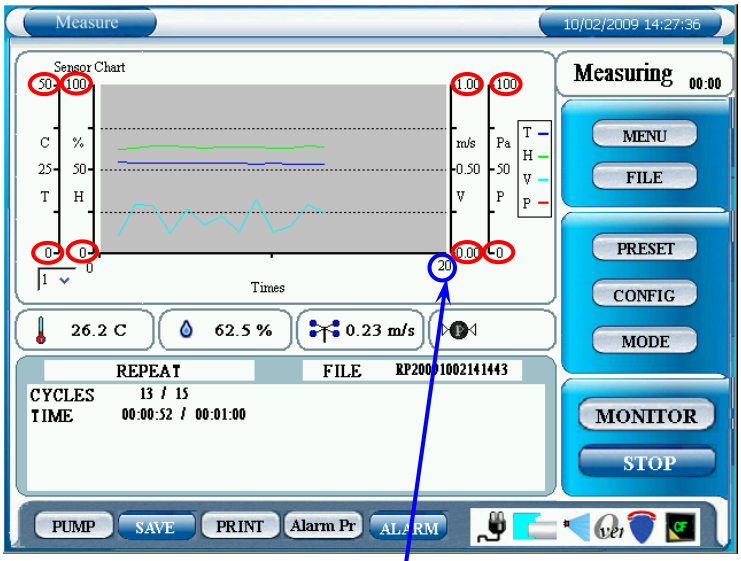


In OPTION tab, configure "MIN" and "MAX" settings for each sensor.
For each sensor you can set three different values.

Tap [APPLY] to save the setting value that is currently displayed in the tab (Authentication required).
Tap [OK] to save the setting value and close the window (Authentication required).
Tap [CANCEL] to discard the configure settings, and the previous settings will be applied.

In the chart, you can change the MIN and MAX values of the Y axis based on the three different settings configured in this tab.

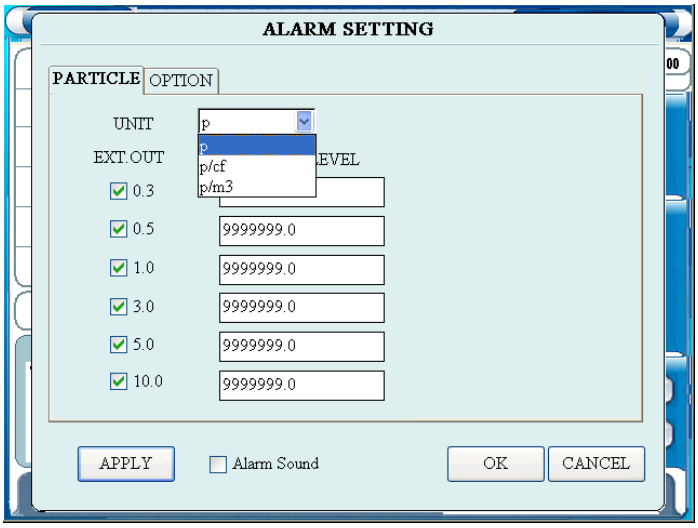
When you configure the chart setting as shown above, the chat will be shown as below.



MAX and MIN values set for each sensor in the OPTION tab in the CHART SETTING window is applied in the chart.
Tap **MAX or MIN value** to change it.
(It changes in the order of MIN & MAX setting 1, 2, 3.)

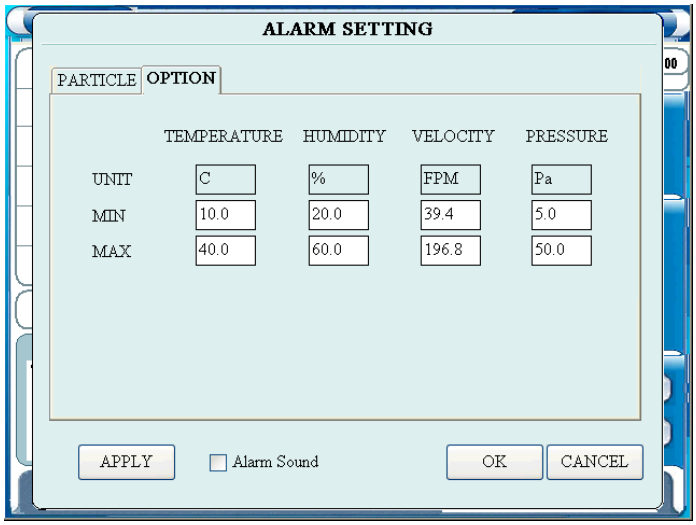
MAX value set in the OPTION tab in the CHART SETTING window is applied in the chart.
Tap **MAX value** to change it.
(It changes in the order of "10", "20", "50", "100", "150" "300".)

· ALARM SETTING



In ALARM SETTING set threshold for particle alarm and option sensor alarm.

In the PARTICLE tab, configure the unit and threshold for each particle.
Check the particle size that you want to alarm by external contact output and audible alarm*.
(* Note that audible alarm will be activated only when “Alarm Sound” is checked.)
Also enter the threshold that you want to alarm.
To enter the threshold tap entry field to display a numeric keypad. Enter a value and tap [Enter].



In the OPTION tab, you can set alarm threshold for TEMPERATURE, HUMIDITY, VELOCITY and DIFFERENTIAL PRESSURE.

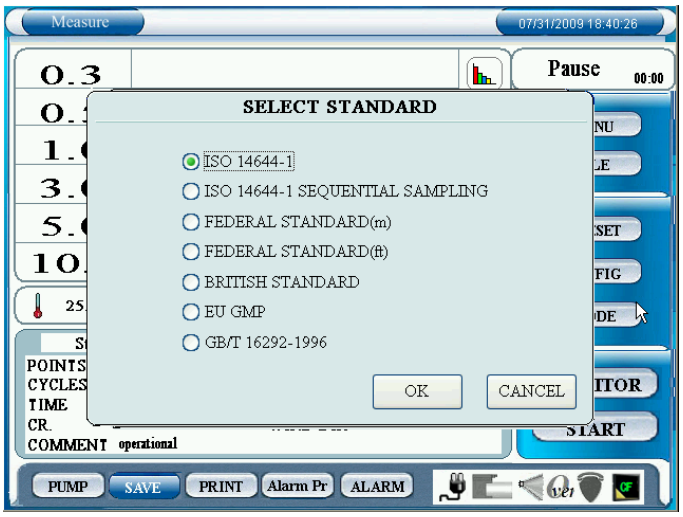
Tap the entry field to display a numeric keypad. Enter value and tap [Enter].

To activate audible alarm check “Alarm Sound”.
Tap [APPLY] to save the setting value that is displayed at the moment (Authentication required).

Tap [OK] to save the setting values both in PARTICLE tab and OPTION tab, and to close the window (Authentication required).

Tap [CANCEL] to discard the configured settings, and the previous settings will be applied.

· SELECT STANDARD



In the SELECT STANDARD window, select a measurement standard to be applied in the STANDARD mode.

There are 7 types of standard as follows:

- ISO14644-1
- ISO14644-1 SEQUENTIAL SAMPLING
- FEDERAL STANDARD (m)
- FEDERAL STANDARD (ft)
- BRITISH STANDARD
- EC GMP
- GB/T 16292-1996

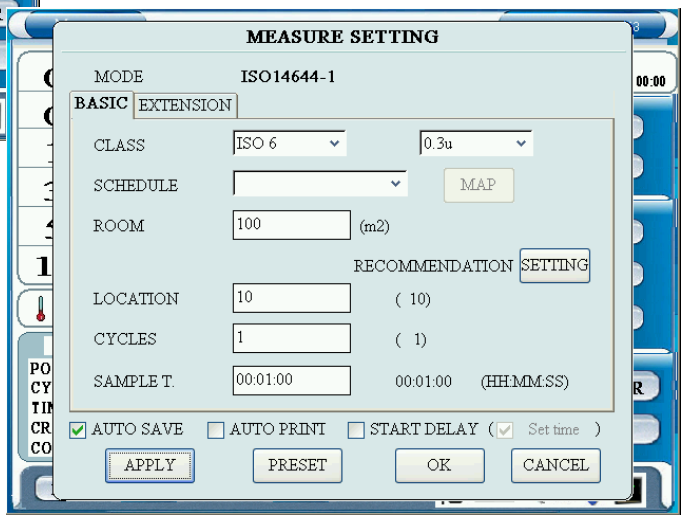
* Refer to **3.5 MODE** for the measurement standard.

Select one standard and tap [OK] to activate the setting.

Change the settings and tap [OK] (Authentication required). Then a dialog will be displayed saying "Standard Measurement Setting dialog will open because standard is changed". Tap [OK] at the upper right.

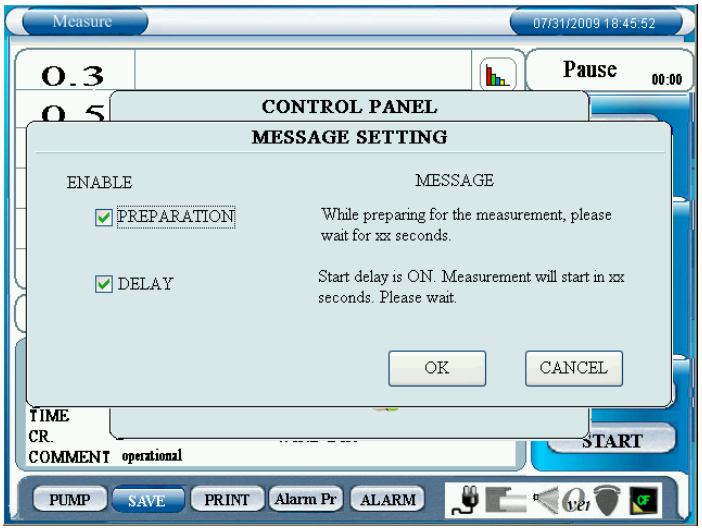
MEASURE SETTING screen will be displayed. Then configure the settings.

Refer to **3.7.6 STANDARD** for setting procedure.



<MEASURE SETTING>

· MESSAGE SETTING



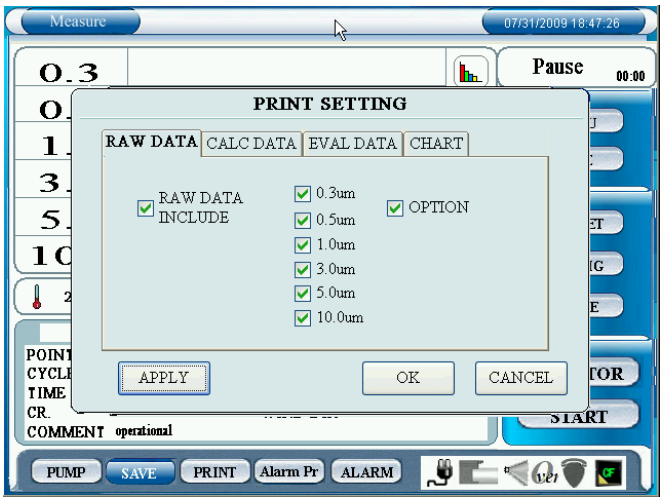
In the MESSAGE SETTING window, you can choose to display or not to display a message of “PREPARATION”, and “DELAY”.

Tap [OK] to activate the settings (Authentication required).

Each message is;

- PREPARATION:
  To be displayed after the pump is ON before sampling starts.
- DELAY:
  To be displayed before sampling starts when START DELAY function is ON.

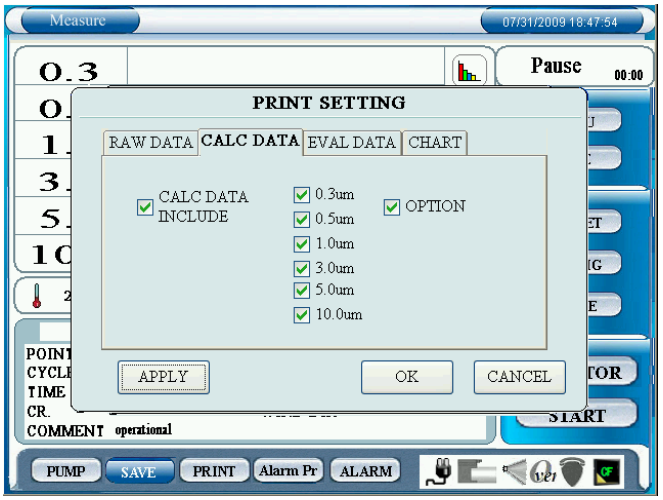
· PRINT SETTING



In the PRINT SETTING window set output items for printing.

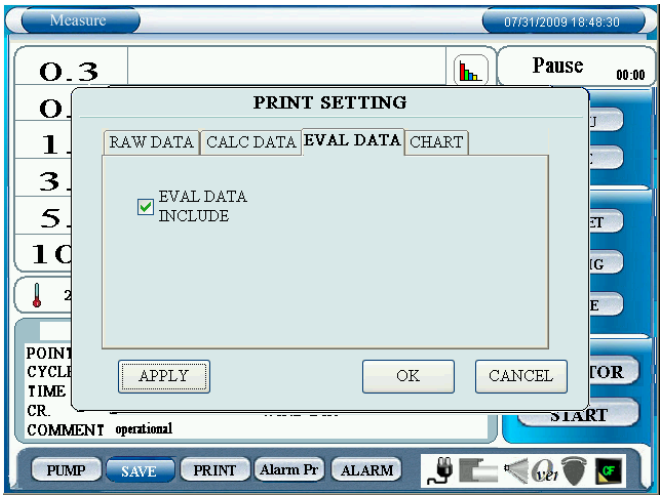
In RAW DATA tab, configure the following settings:
- RAW data printing ON/OFF
- Particle size to be printed
- Option sensor data printing ON/OFF

Check “RAW DATA INCLUDE” to print RAW data.
Check the particle size of the data that you want to print.
Check “OPTION” to output data of the option sensor.



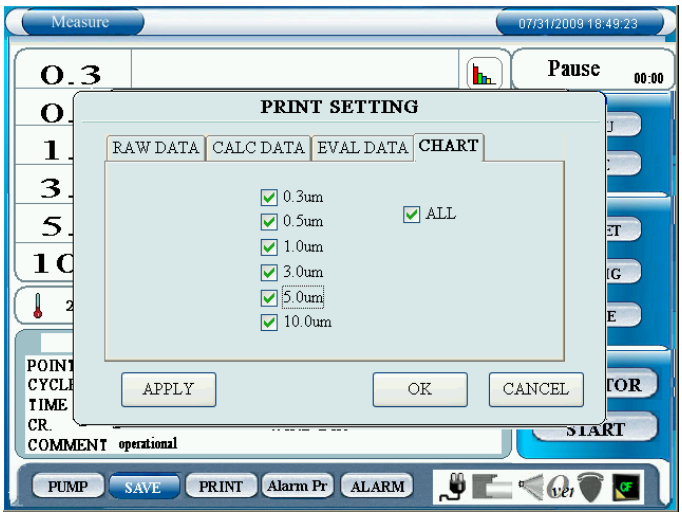
In CALC DATA tab, configure the following setting;
- CALC data printing ON/OFF
- Particle size to be printed out
- Option sensor data printing ON/OFF

Check “CALC DATA INCLUDED” to print calculated data (MAX, MIN and AVE).
Check particle size of the data that you want to print out.
Check “OPTION” to output data of the option sensor(s).



In EVAL DATA tab, configure the following setting;
- EVAL data printing ON/OFF

Check “EVAL DATA INCLUDED” to print out evaluation data.



In CHART tab you can select the particle size that you want to print out in the hardcopy.
If you tap [PRINT SCR] when time series chart is displayed, the chart of the selected particle size will be output one by one.
If you check “ALL”, the chart which integrates each count of the all six particle sizes will be output.
When particle base histogram is displayed, this setting is not available.

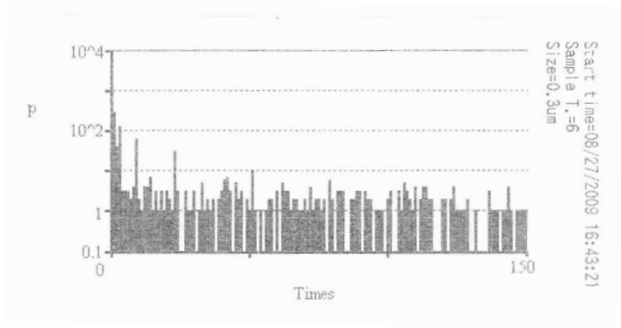
Tap [APPLY] to save the settings that is displayed at the moment (Authentication required).

Tap [OK] to save the setting values in all of the tabs, and to close the window (Authentication required).

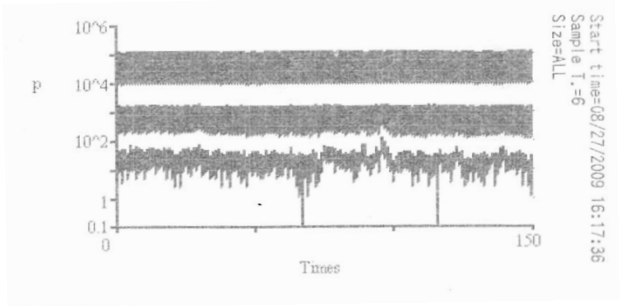
Tap [CANCEL] to discard the configured settings, and the previous settings will be applied.

Hardcopy Examples:

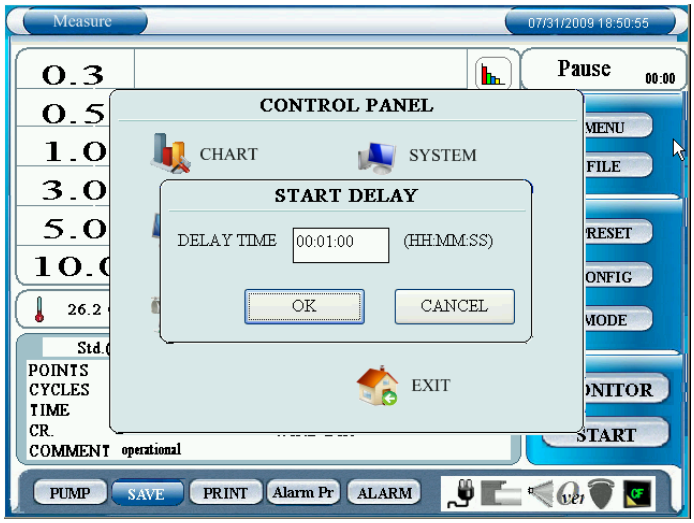
0.3um



All



· START DELAY

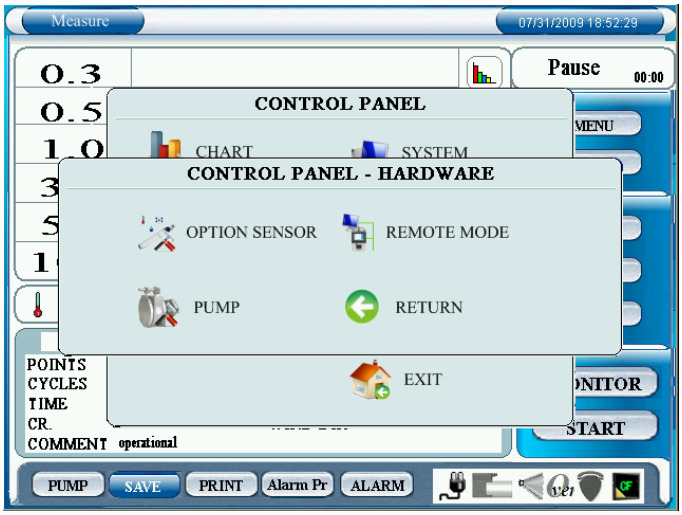


In START DELAY window set a measurement delay time.

Tap the entry field to display a keyboard. Enter “hour”, “minute” and “second” and tap [OK].

Tap [OK] in order to activate the setting (Authentication required).

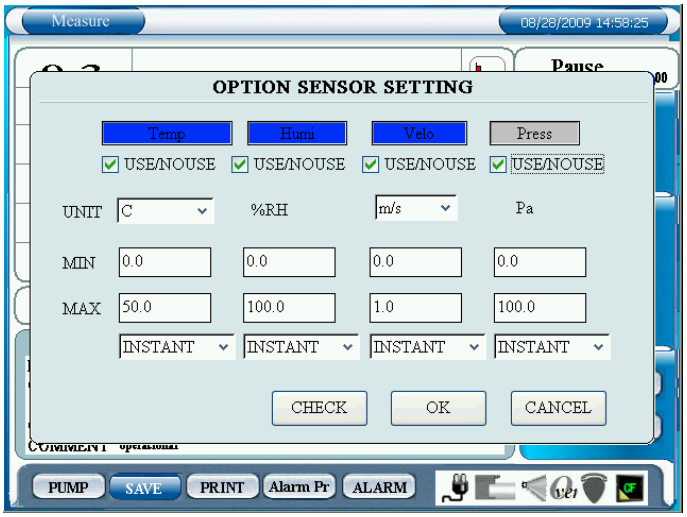
3.10.4 HARDWARE



In HARDWARE setting, you can configure the following settings;

- OPTION SENSOR
- PUMP
- REMOTE MODE

· OPTION SENSOR SETTING



In the OPTION SENSOR SETTING window you can confirm if the option sensor is connected or not, and set to use or not to use the sensor. You can also set the unit and MIN/MAX range value for each sensor. MIN/MAX value should be the spec range for each sensor.

When the sensor is connected, it is displayed in blue and if not, it is displayed in gray.

To use the option sensor, check USE/NO USE box.

After [OK] button is tapped, defined value is saved to close window (Authentication required).
Tap [CANCEL] to discord entries.

UNIT:

Set the unit for TEMPERATURE and VELOCITY.

For TEMEPRATURE, select °C or °F

For VELOCITY, select m/sec or FPM.

MIN/MAX:

Set the measurable range of the sensor connected according to the spec of the each option sensor.

Tap the entry field to display a numeric keyboard. Enter a value and tap [Enter].

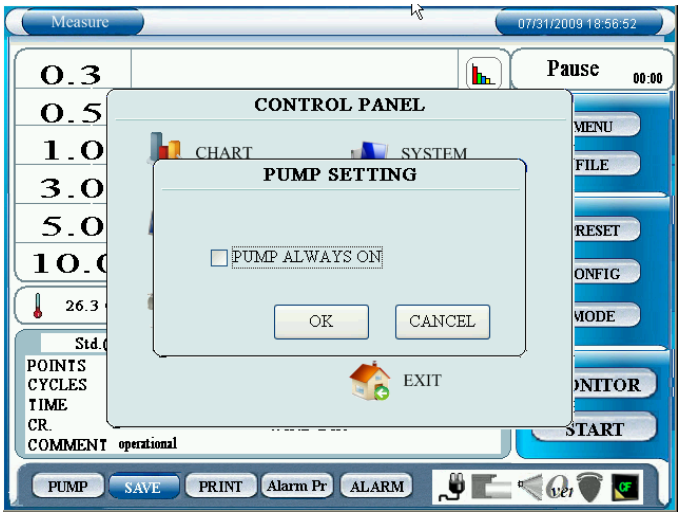
INSTANT/ AVERAGE:

Select INSTANT or AVERAGE for measurement value display format.

CHECK button:

Tap [CHECK] to confirm if the option sensor is connected or not.

· PUMP SETTING



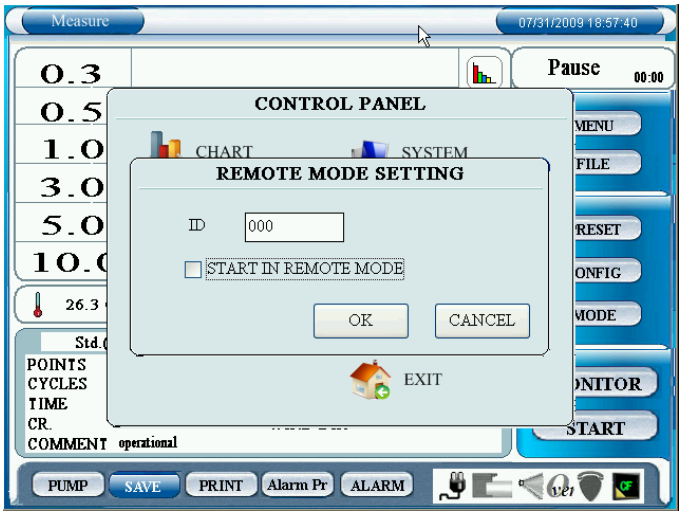
In the PUMP setting, set to turn the pump ON all the time or not.

To turn the pump ON all the time, check the check box for “PUMP ALWAYS ON”.

After [OK] button is tapped, defined value is saved to close window.
When [CANCEL] button is tapped, defined value is canceled.

If you set to turn the pump ON always, you can eliminate the PREPARATION time before sampling.
However, the vane becomes worn or the motor gets deteriorated as the shaft of the motor may go off-center while in use.
We recommend you not to turn the pump on all the time in general use to extend the life of pump.

· REMOTE MODE SETTING

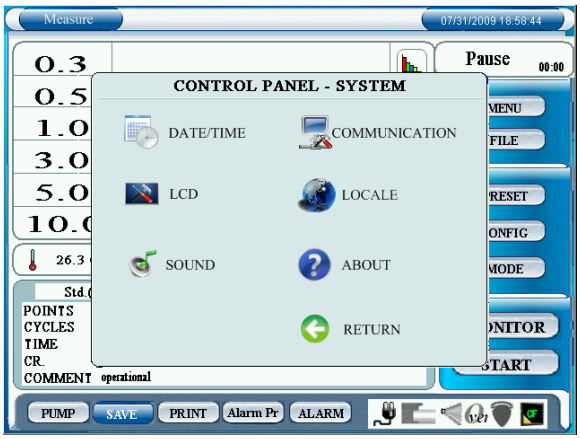


In the REMOTE MODE SETTING, check “START IN REMOTE MODE” to activate remote mode automatically when the instrument is turned ON.

Enter remote address in the entry field for ID.

After [OK] button is tapped, defined value is saved to close window.
When [CANCEL] button is tapped, defined value is canceled.

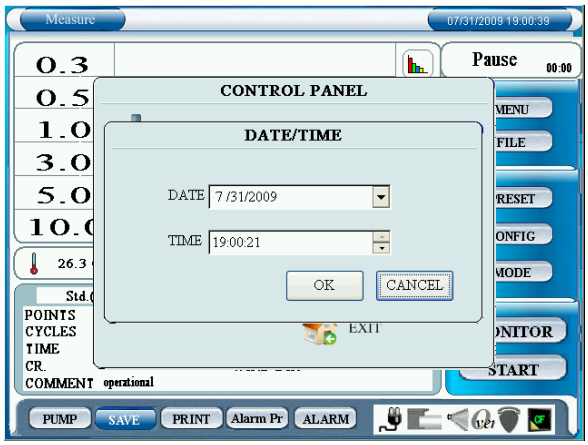
3.10.5 SYSTEM



In the SYSTEM setting, configure the following settings:

- DATE/TIME
- LCD
- SOUND
- COMMUNICATION
- LOCALE
- ABOUT (System Information)

· DATE/TIME

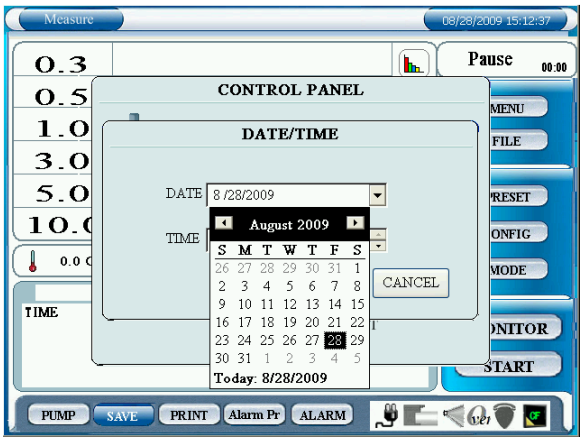


DATE/TIME setting;

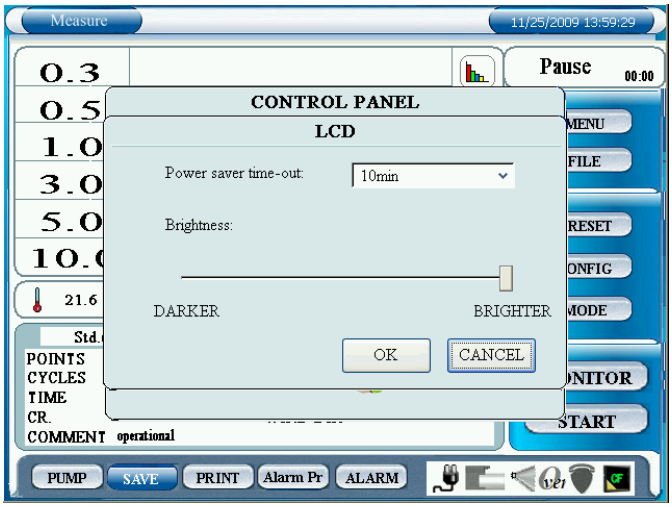
To adjust DATE, tap [▼] to display a calendar and set the date.

To change the TIME, tap “hour”, “minute” and “second” using [▲/▼] buttons.

Tap [OK] to activate the settings (Authentication required).



· LCD



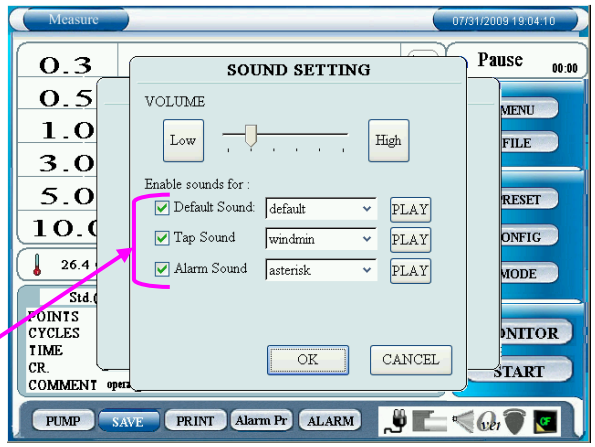
In LCD setting, configure Power saver time-out and Brightness setting.

For Power saver time-out setting, select one among 1min, 2min, 5min, 10min, 15min, and 30min.

To configure the brightness setting, move the slider from side to side.

Tap [OK] to activate the settings (Authentication required).

· SOUND



In SOUND setting, you can configure the sound volume and sound type.

> You can use Windows standard WAV format file for the sound function.
> Create a folder called Sound on the CF card. Then copy the WAV file in the folder. You will be able to select the file from the list.
> * is added to all of the WAV file names on the CF card.

Default Sound:

Set the sound for erroneous operation. When this item is unchecked, this sound function will be off.

Tap Sound:

Set the tap sound on the screen. When this item is unchecked, there will be no tap sound.

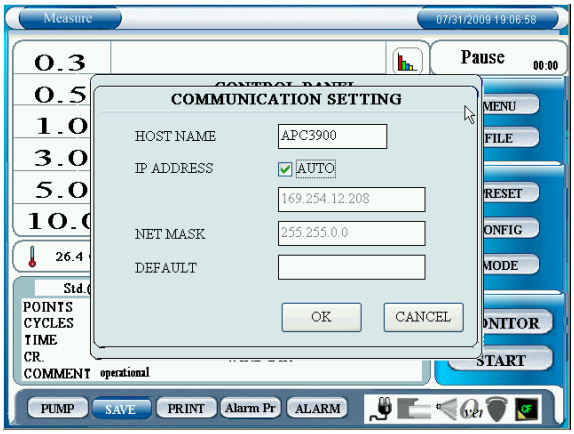
Alarm Sound:

Set the sound for Alarm. When this item is unchecked, there will be no alarm sound.

Tap [OK] to save the settings and close the window (Authentication required).

Tap [CANCEL] to discard the configured settings, and the previous settings will be applied.

· COMMUNICATION



In the COMMUNICATION SETTING, configure the setting for Ethernet connection. This setting shall be configured when connecting the instrument to PC using remote console or remote mode.

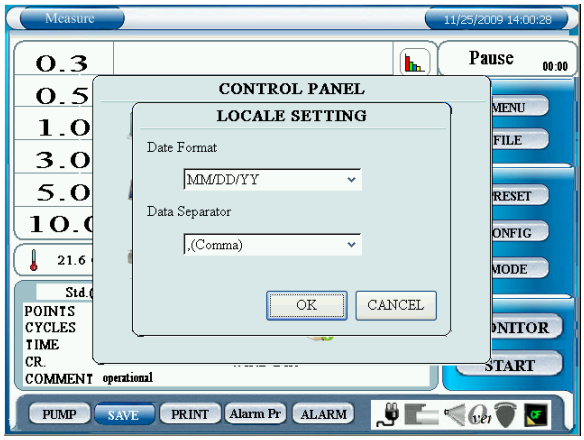
For the HOST NAME, enter the instrument name to be used when it is connecting by Ethernet.
Be sure not to use the same name as other PC names within the network or workgroup names when you enter the HOST NAME.

For IP ADDRESS, check AUTO to acquire IP ADDRESS automatically. If AUTO is unchecked, enter NET MASK and DEFAULT Gateway.

Tap [OK] to save the settings and to close the window (Authentication required).

Tap [CANCEL] to discard the configured settings, and the previous settings will be applied.

· LOCALE

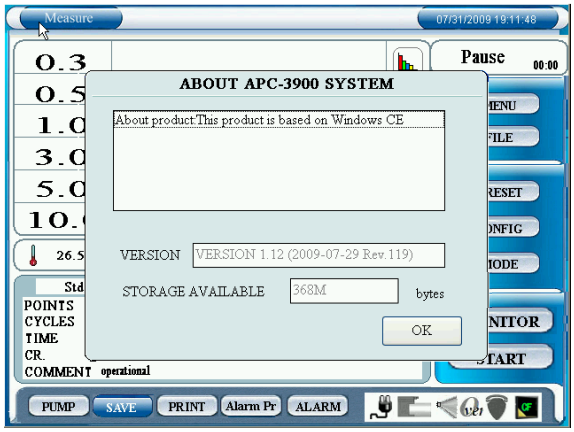


In LOCALE SETTING you can set the date display format, bound symbol when saving file and the time zone.

Tap [OK] to save the settings and close the window.
Tap [CANCEL] to discard the configured setting.

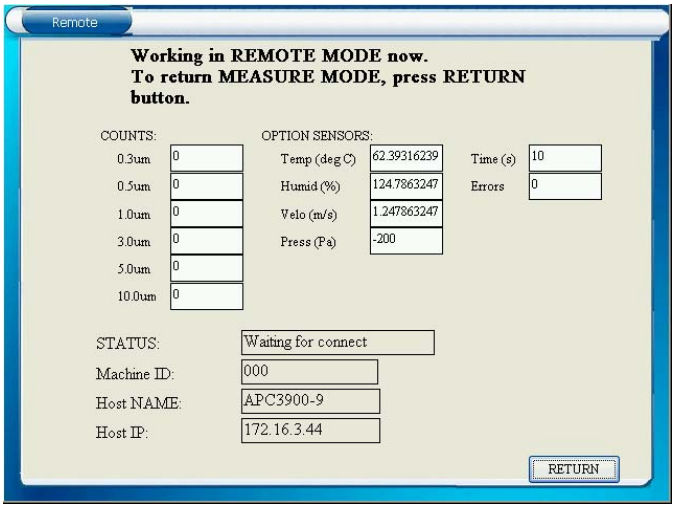
***When transferring data and other files to a PC, different date/time or timestamp will be displayed if the setting of time zone is different from the one in the PC.**

· ABOUT



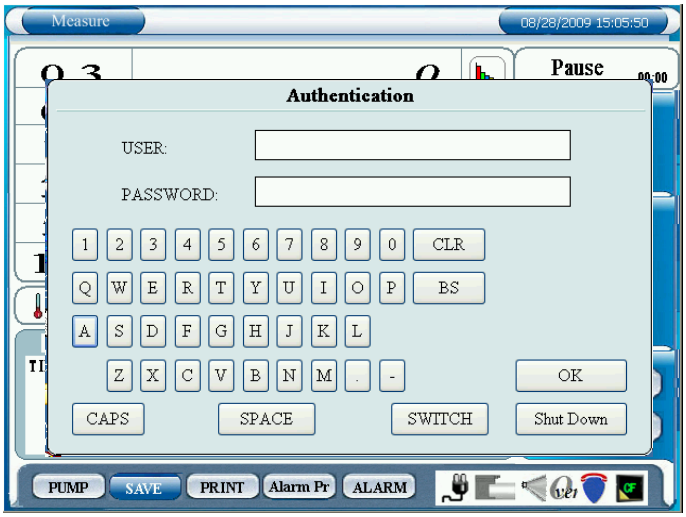
Tap [ABOUT] to view the firmware version of the instrument and remaining capacity of he internal data storage.

3.10.6 REMOTE



Change to REMOTE MODE.

3.10.7 LOG OUT



[LOG OUT] button is tapped, “LOG IN” screen shows up.
At this screen, users and shut-down can be done.

[OK] button is tapped after user ID and password are input, you return to MENU screen.

Tap [SHUTDOWN]. A window will be displayed asking “Do you want to shut down the power?”
In 5 seconds after tapping [YES], the instrument will shut down.

***Make sure to turn power off at “LOG IN” screen. If power is turned off NOT from “LOG IN” screen, this may cause set-ups/ data loss or hardware errors.**

3.10.8 EXIT

Go back to the main screen

4. PC Applications

The provided PC applications allow you to process measurement data and to operate the instrument on a Windows computer via network.
This section describes important settings when using PC applications.
For details of each application, refer to the operation manual “AIRBORNE PARTICLE COUNTER SOFTWARE”.

4.1 User Management

You can transfer files from the instrument and edit them on PCs. In addition to the management of data and log files, you can edit user information files on PCs.
You can convert data and log files into text files, so that they can be used for other application programs.

- To transfer files via network, you need to connect the instrument to the network and make appropriate settings in the COMMUNICATION SETTING.
- Enter the HOST NAME specified in the COMMUNICATION SETTING for the destination.
- User authentication is required when connecting PCs to the instrument. Enter the user ID and password registered in the instrument. Authentication is required to copy files.
- To transfer data to a PC using the CF card, choose “COPY” in the “FILE SELECT” window to transfer data files, and “COPY” in the “LOG MANAGEMENT” window to transfer log files. Choose “EXPORT” in the “USER MANAGEMENT” window to transfer user information files.
- To update the user information file on the instrument, in the “USER MANAGEMENT” window, import the user information file edited on a PC.

4.2 Remote Console

The program allows remote operation of the instrument from a PC connected via network.

- You need to connect the instrument to the network and make appropriate settings in the COMMUNICATION SETTING.
- Enter the HOST NAME specified in the COMMUNICATION SETTING for the destination.
- User authentication is required when connecting PCs to the instrument. Enter the user ID and password currently logged in the instrument. Authentication is required for remote control.

4.3 Create Schedule

You can create schedules to be used for STATS mode and STANDARD mode, and upload them to the instrument.

- When uploading files, you need to connect the instrument to the network and make appropriate settings in the COMMUNICATION SETTING.
- Enter the HOST NAME specified in the COMMUNICATION SETTING for the destination.
- User authentication is required when connecting PCs to the instrument. Enter the user ID and password registered in the instrument. Authentication is required to copy files.

4.4 Remote Measurement

You can read data directly from PCs connected via network to take measurements.

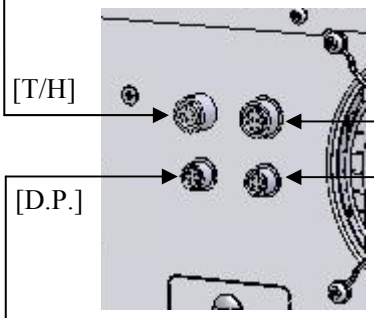
- You need to connect the instrument to the network and make appropriate settings in the COMMUNICATION SETTING.
- Before taking remote measurements, the REMOTE MODE window will be displayed from the CONTROL PANEL window of the instrument.
- Enter the HOST NAME specified in the COMMUNICATION SETTING for the destination.

5. Connecting Option Sensors

Three types of sensors are available as optional extras for this instrument.
By connecting sensors to four different connectors on the rear of the unit, you can perform three different kinds of measurement and one contact output simultaneously.

Temperature and Humidity Probe - Model 0844	
Temp. Range	0 ~ 50 °C (32~122 °F)
Temp. Accuracy	±0.5 °C (at the air velocity of 0.2m/s or more)
Humidity Range	3 ~ 98 %RH
Humidity Accuracy	±3 %RH (±5 % when the humidity level is outside the 30-85%RH)
Dimension	φ20 × 150mm

Air Velocity Probe - Model 0843	
Velocity Range	0 ~ 1 m/s (0~197FPM)
Velocity Accuracy	±0.05 m/s (10FPM)
Dimension	φ20 × 150 mm Curl Cord: 0.2 m (Max:1.5 m)



Pressure Transmitter - Model C264 0-100Pa	
Pressure Range	0 ~ 100 Pa
Pressure Accuracy	±1 %F.S.
Guaranteed Temp	5 ~ 65 °C
Output	4 ~ 20 mA

Contact Output Cable - Model 3900-03	
When the alarm function is ON and the threshold is exceeded, alarm will be turned ON.	
Spec	Photocoupler Maximum rating: 60V/400 mA Red: + / Black: -

* When connecting the pressure transmitter, cable MODEL 3900-02 is required separately. Please check with your sales representative.

* The alarm output is a single set of contacts that activates upon any sensor threshold being exceeded. It can be used to activate an alarm light, etc.

6. Printing Example

6.1 Printing Example for Each Measurement Mode

6.1.1 SINGLE

```
[SG20101201120000]
  Ser.No. = 654321
  Measured by kanomax
  Measured on 12/01/2010
  Sample Time = 00:01:00
  Repeats = 1
  Printed by kanomax

 Particle [p][Total]
 TIME    0.3um   0.5um   1.0um
12:00:00   8000   5000   3000
 TIME    3.0um   5.0um   10.0um
12:00:00   1000   500    100
 TIME    T[C] H[%] V[m/s] P[Pa]
12:00:00   25.2 68.5  0.1   15
```

6.1.2 CONTINUOUS

```
[CO20101201120000]
  Ser.No. = 654321
  Measured by kanomax
  Measured on 12/01/2010
  Sample Time = 00:01:00
  Repeats = 1
  Printed by kanomax

 Particle [p][Total]
 TIME    0.3um   0.5um   1.0um
12:00:00   8000   5000   3000
 TIME    3.0um   5.0um   10.0um
12:00:00   1000   500    100
 TIME    T[C] H[%] V[m/s] P[Pa]
12:00:00   25.2 68.5  0.1   15
```

6.1.3 INTERVAL

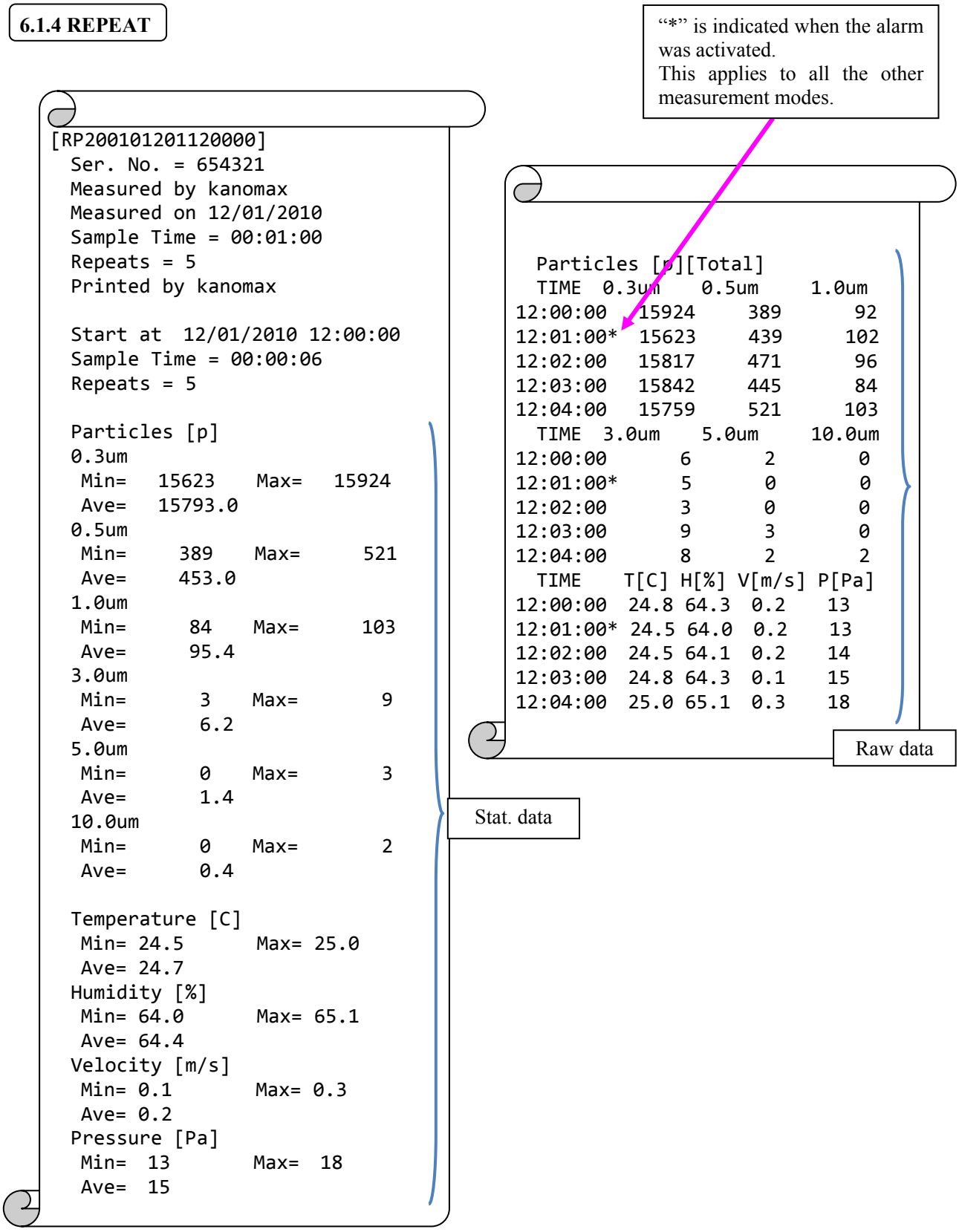
```
[IN20101201120000]
  Ser. No. = 654321
  Measured by kanomax
  Measured on 12/01/2010
  Sample Time = 00:00:06
  Repeats = 10
  Printed by kanomax

  Start at  12/01/2010 12:00:00
  Sample Time = 00:00:06
  Repeats = 10

  Particles [p]
  0.3um
   Min=   15623    Max=   16136
   Ave=   15848.3
  0.5um
   Min=     389    Max=      521
   Ave=     441.9
  1.0um
   Min=      57    Max=      103
   Ave=      90.9
  3.0um
   Min=       3    Max=       12
   Ave=       7.4
  5.0um
   Min=       0    Max=        4
   Ave=       1.4
  10.0um
   Min=       0    Max=        2
   Ave=       0.2

  Temperature [C]
   Min= 24.8       Max= 25.3
   Ave= 25.2
  Humidity [%]
   Min= 64.3       Max= 68.2
   Ave= 65.4
  Velocity [m/s]
   Min= 0.1        Max= 0.3
   Ave= 0.2
  Pressure [Pa]
   Min=  13        Max=  21
   Ave=  15
```

Stat. data

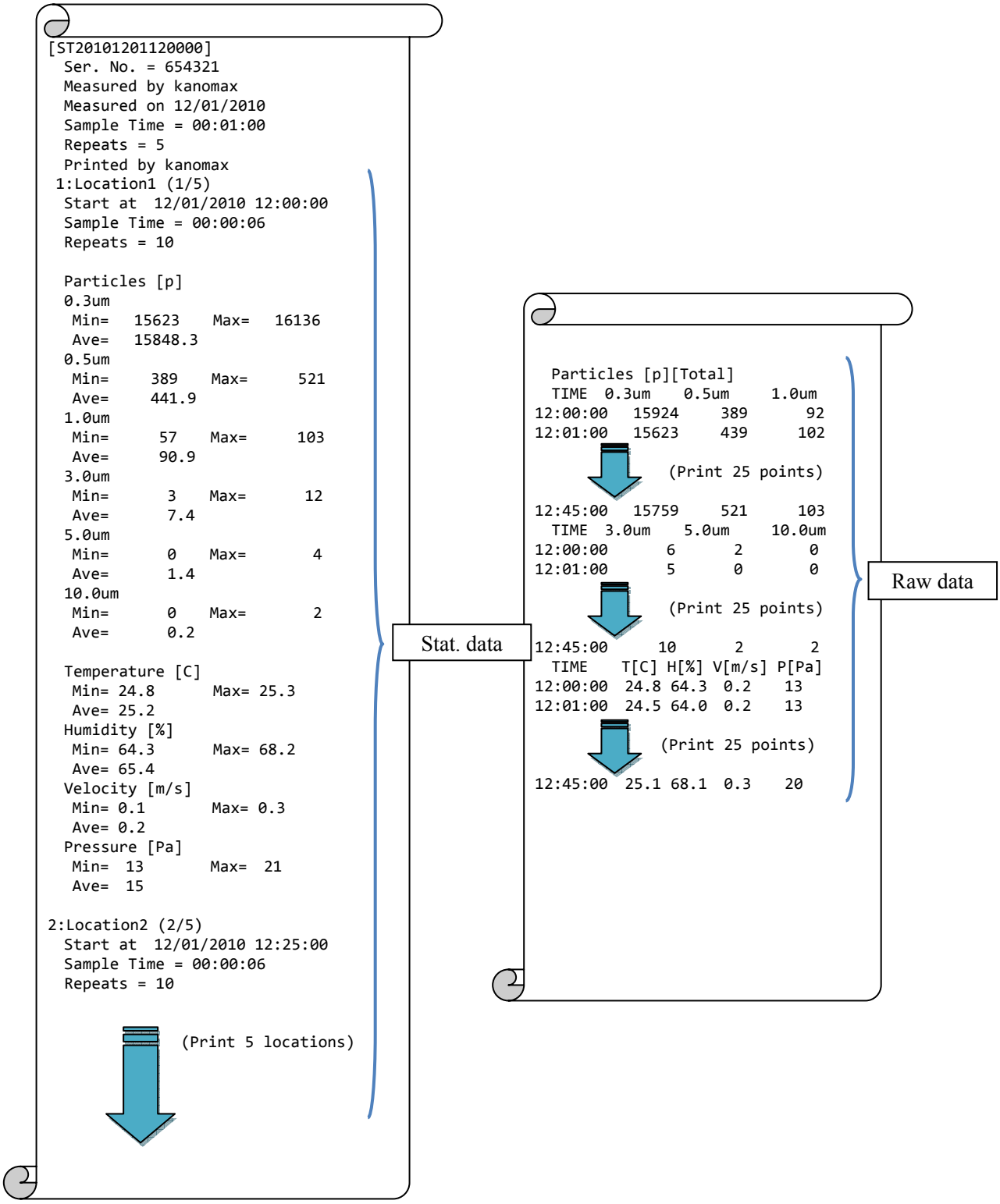
```
  Particles [p][Total]
  TIME  0.3um    0.5um     1.0um
12:00:00   15924     389       92
12:01:00   15623     439      102
   …          …        …        …
12:09:00   15759     521      103
  TIME  3.0um    5.0um     10.0um
12:00:00       6       2        0
12:01:00       5       0        0
   …          …        …        …
12:09:00      10       2        2
  TIME    T[C] H[%] V[m/s] P[Pa]
12:00:00  24.8 64.3  0.2    13
12:01:00  24.5 64.0  0.2    13
   …        …     …    …      …
12:09:00  25.1 68.1  0.3    20
```

Raw data

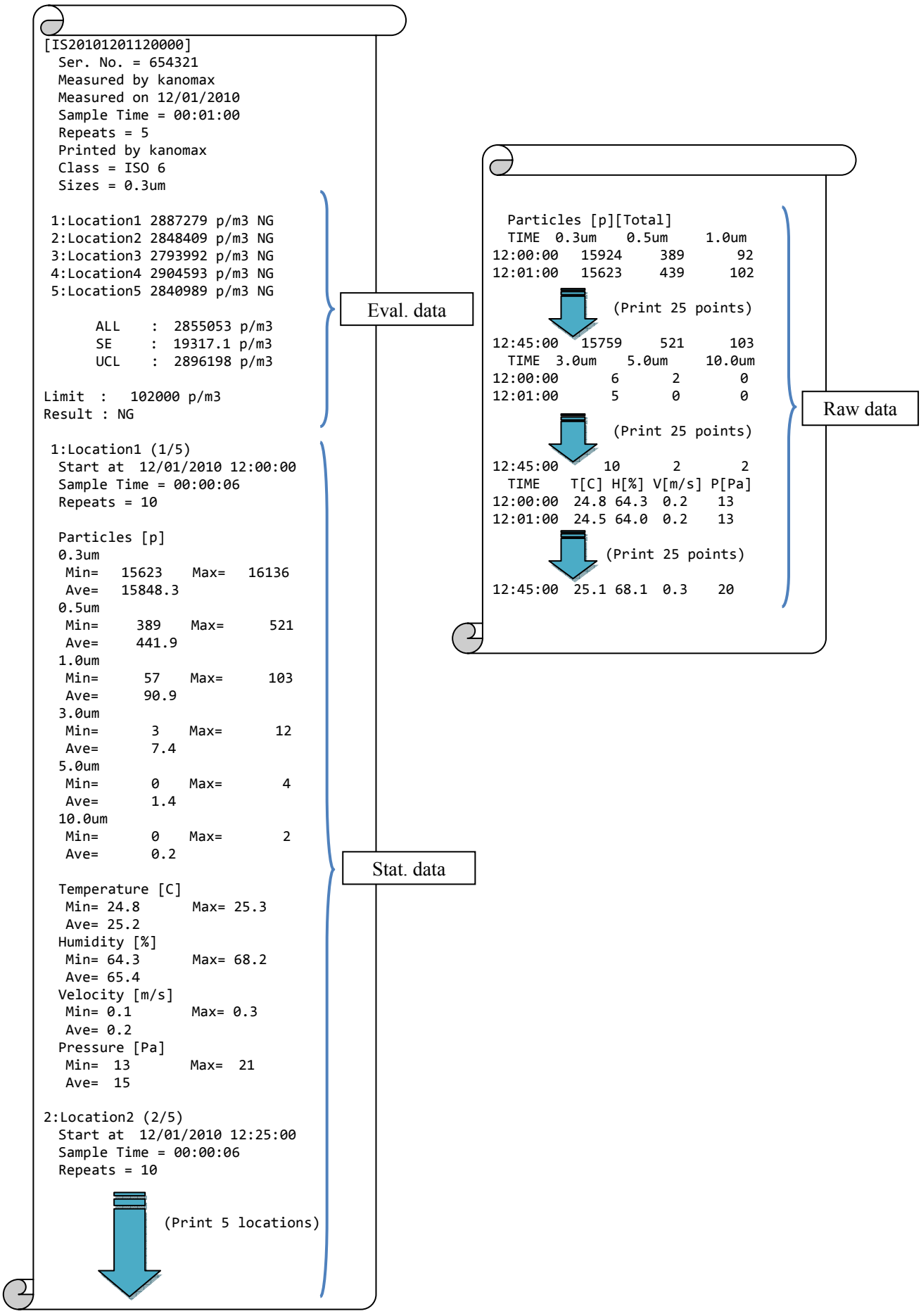
6.1.4 REPEAT


"*" is indicated when the alarm was activated.
This applies to all the other measurement modes.
[RP200101201120000]
Ser. No. = 654321
Measured by kanomax
Measured on 12/01/2010
Sample Time = 00:01:00
Repeats = 5
Printed by kanomax
Start at 12/01/2010 12:00:00
Sample Time = 00:00:06
Repeats = 5
Particles [p]
0.3um
Min= 15623 Max= 15924
Ave= 15793.0
0.5um
Min= 389 Max= 521
Ave= 453.0
1.0um
Min= 84 Max= 103
Ave= 95.4
3.0um
Min= 3 Max= 9
Ave= 6.2
5.0um
Min= 0 Max= 3
Ave= 1.4
10.0um
Min= 0 Max= 2
Ave= 0.4
Temperature [C]
Min= 24.5 Max= 25.0
Ave= 24.7
Humidity [%]
Min= 64.0 Max= 65.1
Ave= 64.4
Velocity [m/s]
Min= 0.1 Max= 0.3
Ave= 0.2
Pressure [Pa]
Min= 13 Max= 18
Ave= 15
Stat. data
Particles [p][Total]
TIME 0.3um 0.5um 1.0um
12:00:00 15924 389 92
12:01:00* 15623 439 102
12:02:00 15817 471 96
12:03:00 15842 445 84
12:04:00 15759 521 103
TIME 3.0um 5.0um 10.0um
12:00:00 6 2 0
12:01:00* 5 0 0
12:02:00 3 0 0
12:03:00 9 3 0
12:04:00 8 2 2
TIME T[C] H[%] V[m/s] P[Pa]
12:00:00 24.8 64.3 0.2 13
12:01:00* 24.5 64.0 0.2 13
12:02:00 24.5 64.1 0.2 14
12:03:00 24.8 64.3 0.1 15
12:04:00 25.0 65.1 0.3 18
Raw data

6.1.5 STATS


[ST20101201120000]
Ser. No. = 654321
Measured by kanomax
Measured on 12/01/2010
Sample Time = 00:01:00
Repeats = 5
Printed by kanomax
1:Location1 (1/5)
Start at 12/01/2010 12:00:00
Sample Time = 00:00:06
Repeats = 10
Particles [p]
0.3um
Min= 15623 Max= 16136
Ave= 15848.3
0.5um
Min= 389 Max= 521
Ave= 441.9
1.0um
Min= 57 Max= 103
Ave= 90.9
3.0um
Min= 3 Max= 12
Ave= 7.4
5.0um
Min= 0 Max= 4
Ave= 1.4
10.0um
Min= 0 Max= 2
Ave= 0.2
Temperature [C]
Min= 24.8 Max= 25.3
Ave= 25.2
Humidity [%]
Min= 64.3 Max= 68.2
Ave= 65.4
Velocity [m/s]
Min= 0.1 Max= 0.3
Ave= 0.2
Pressure [Pa]
Min= 13 Max= 21
Ave= 15
2:Location2 (2/5)
Start at 12/01/2010 12:25:00
Sample Time = 00:00:06
Repeats = 10
(Print 5 locations)
Stat. data
Particles [p][Total]
TIME 0.3um 0.5um 1.0um
12:00:00 15924 389 92
12:01:00 15623 439 102
(Print 25 points)
12:45:00 15759 521 103
TIME 3.0um 5.0um 10.0um
12:00:00 6 2 0
12:01:00 5 0 0
(Print 25 points)
12:45:00 10 2 2
TIME T[C] H[%] V[m/s] P[Pa]
12:00:00 24.8 64.3 0.2 13
12:01:00 24.5 64.0 0.2 13
(Print 25 points)
12:45:00 25.1 68.1 0.3 20
Raw data

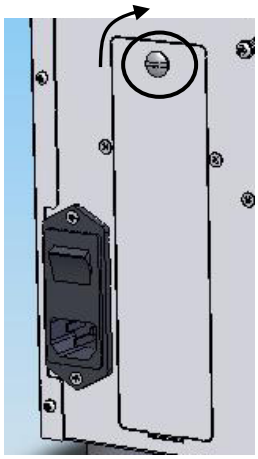
6.1.6 STANDARD

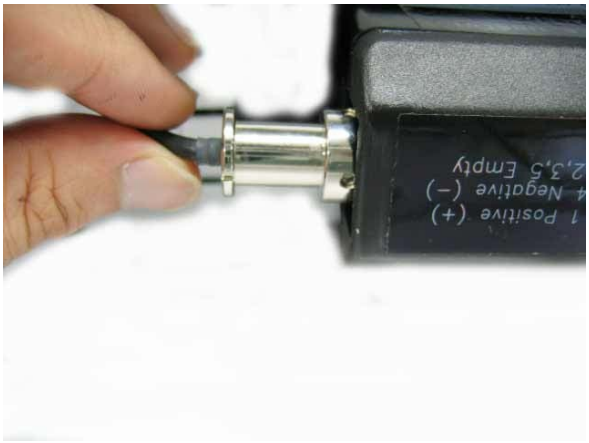


7. Battery Charge

7.1 Charging Battery

You cannot charge the battery when it is installed in the instrument.





Open the battery compartment cover on the rear of the instrument. To open the cover turn the knob around 90 degrees. (Use a coin or something similar to turn it easily.)

To disconnect the cable from the battery, hold the sides of the cable connector as shown in the picture below and remove the battery.

Connect the battery to the provided charger to recharge the battery. It takes about 6 hours to charge the battery fully.

After the battery is charged, install it into the instrument reversing the above procedure.

8. Main Specifications

Product Name	Airborne Particle Counter
Model	Model 3900
Optical Source	Laser Diode (two-year warranty)
Particle Size Distribution	0.3 / 0.5 / 1.0 / 3.0 / 5.0 / 10.0 μm (6 Channels)
Rated Flow	28.3L/min.
Counting Efficiency	50±20% (Compliant with ISO 21501-4)
Spurious Count	0.3 counts/cf or less (Compliant with ISO 21501-4)
Max Detectable Concentration	500,000 counts/cf (=17,667.8 counts/L)
Sampling Time	6sec ~ 23hours 59min 59sec (Configurable)
Interval Time	7sec ~ 23hours 59min 59sec (Configurable)
Delay Time	11sec ~ 1hour (=3,600sec) (Configurable)
Repeat Times	1 ~ 9,999 times (Continuous) (Configurable)
Location Number	Configurable in the range of 0~999 (Schedule can also be configured.)
Alarm Setting	1 ~ 9,999,999 count (= count/cf, count/m³) (Unit is Configurable)
Measurement Mode	SINGLE Mode, CONTINUOUS Mode, INTERVAL Mode, REPEAT Mode, STATS Mode, STANDARD Mode
Display	Color LCD Dot Matrix
Data Retention Capacity	256MB (Provided CF card) 1 data = Appro.100 bytes (For example, Repeat measurement × 1,000 times → 100 bytes × 1,000 times = 100k bytes)
Printer	Built-in (Compatible with Dust-free Paper)
Interface	Ethernet
Power Supply	AC 100 ~ 240V (50－60Hz) / 1A Rechargeable Lithium-ion battery Continuous duty time: 4 hours or longer (User replaceable)
Operating Environment	This model can be used under the environment described below: - Temperature 10 ~ 35 °C / Humidity 20 ~ 85 %RH (Non condensing) - This counter can be used indoors only - This counter cannot be used where the altitude is higher than 2,000 m. - Supply voltage tolerance: AC90 ~ 264V - Overvoltage Category II - Pollution Degree: Class 2
Storing Environment	Temperature -20~50 °C / Humidity 0~85%RH (No condensing)
Dimension	W 210 × D 220 × H 320 mm (Excluding Handle)
Weight	Approx. 8kg
Standard Accessory	Operation Manual / Test Certificate / Isokinetic Suction Probe Standard Inlet / Power Cord (with Nema Plug) / Tygon Tube (2M) / Printer roll-paper×2 / Zero Filter / Measurement Software / CF Card / Fuse / Battery / Battery Charger (* Battery and battery charger are not included in Model 3900-01)
Optional Extras	Temperature & Humidity Probe / Air Velocity Probe/ Differential Pressure Sensor / Contact Output Cable / Battery / Battery Charger / Carrying Case / Differential Pressure Sensor Cable * As for the specification for Temperature and Humidity Probe, Air Velocity Probe, Pressure Transmitter and Contact Output Cable, please refer to **5. Connecting Option Sensors**.

9. Troubleshooting

Symptom	Possible Cause	Maintenance
Cannot obtain Zero Count (When using a filter)	1) Inside the optical system may be dirty.	Attach the zero filter and perform aging for a prolonged time. After performing a measurement in the highly concentrated environment, attach the zero filter and perform aging.
	2) The filter's air tightness may be deteriorated.	Replace your zero filter.
	3) Leaks may be occurring inside the instrument.	Return the instrument to your distributor or to your KANOMAX service center for repair.
Count value is too high (Higher than the expected)	1) The particle concentration at the measurement site may be high.	-
	2) Inside the optical system may be dirty.	Attach the zero filter and perform aging for a prolonged time. After performing a measurement in the highly concentrated environment, attach the zero filter and perform aging.
	3) The instrument may be being used outside the operating environment in the specifications. (Measurement Environment Temperature / Humidity / Concentration etc)	Use the instrument under the environmental condition set in the specifications.
	4) The instrument may require calibration or repair. Even after you checked the above 1), 2) and 3), the instrument readings are still too high.	Contact your distributor or to your KANOMAX service center for repair.
Count value is too low (Lower than the expected)	1) The particle count at the measurement site may be low.	-
	2) The pump vacuum is low.	Pay attention to the pump performance. Check if an error status is displayed on the screen.
	3) The instrument may be being used outside the operating environment in the specifications. (Measurement Environment Temperature / Humidity / Concentration etc)	Use the instrument under the specified environmental condition.
	4) The instrument may require calibration or repair. Even after you checked the above 1), 2) and 3), the instrument readings are still too low.	Contact your distributor or to your KANOMAX service center for repair.
The output of the option sensors is not displayed.	1) The sensor may not be connected.	Check the option sensor connection.
Touch panel becomes unresponsive	1) The touch panel may be damaged.	Return the instrument to your distributor or to your KANOMAX service center for repair.

Symptom	Possible Cause	Maintenance
【LD ERR】 	The laser may be damaged.	Return the instrument to your distributor or to your KANOMAX service center for repair.
【FLOW ERR】 	The flow channel may be interrupted.	Make sure that the inlet and outlet are not blocked.
	The pump may be damaged.	Return the instrument to your distributor or to your KANOMAX service center for repair.
【BATTERY ERR】 	Power capacity is low.	If using a rechargeable battery, charge the battery. If using AC line, the line may have problems.
【OVER ERR】 	The instrument may be being used outside the operating environment in the specifications.	Inside the optical system may be dirty. Attach the zero filter to the inlet and perform aging.
【STORAGE ERR】 	1) The internal storage failed.	Return the instrument to your distributor or to your KANOMAX service center for repair.
	2) The internal storage capacity is low.	Delete data files after copying them to a PC.
【Alarm】 	Reading exceeds the Alarm setting value.	-

10. Warranty and After-sales Service

KANOMAX Limited Warranty

The limited warranty set below is given by KANOMAX with respect to the KANOMAX brand Airborne Particle Counter, its attachment parts including Probe and other accessories (hereafter referred to as “PRODUCT”) that you have purchased. PRODUCT you have purchased shall be the only one that the limited warranty stated herein applies to.

Your PRODUCT, when delivered to you in new condition in its original container, is warranted against defects in materials or workmanship as follows: for a period of one (1) year from the date of original purchase, defective parts or a defective PRODUCT returned to your sales representative, as applicable, and proven to be defective upon inspection, will be exchanged for a new or comparable rebuilt parts, or a refurbished PRODUCT as determined by your sales representative. Warranty for such replacements shall not extend the original warranty period of the defective PRODUCT.

This limited warranty covers all defects encountered in normal use of the PRODUCT, and does not apply to the following cases:

(1) Use of parts or supplies other than the PRODUCT sold by your sales representative, which cause damage to the PRODUCT or cause abnormally frequent service calls or service problems.
(2) If any PRODUCT has its serial number or date altered or removed.
(3) Loss of damage to the PRODUCT due to abuse, mishandling, improper packaging by the owner, alteration, accident, electrical current fluctuations, failure to follow operating, maintenance or environmental instructions prescribed in the PRODUCT's instruction manual provided by KANOMAX, or service performed by other than KANOMAX.

NO IMPLIED WARRANTY, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, APPLIES TO THE PRODUCT AFTER THE APPLICABLE PERIOD OF THE EXPRESS LIMITED WARRANTY STATED ABOVE, AND NO OTHER EXPRESS WARRANTY OR GUARANTY, EXCEPT AS MENTIONED ABOVE, GIVEN BY ANY PERSON OR ENTITY WITH RESPECT TO THE PRODUCT SHALL BIND KANOMAX. KANOMAX SHALL NOT BE LIABLE FOR LOSS OF STORAGE CHARGES, LOSS OR CORRUPTION OF DATA, OR ANY OTHER SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES CAUSED BY THE USE OR MISUSE OF, OR INABILITY TO USE, THE PRODUCT, REGARDLESS OF THE LEGAL THEORY ON WHICH THE CLAIM IS BASED, AND EVEN IF KANOMAX HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL RECOVERY OF ANY KIND AGAINST KANOMAX BE GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT SOLD BY KANOMAX AND CAUSING THE ALLEGED DAMAGE. WITHOUT LIMITING THE FOREGOING, THE OWNER ASSUMES ALL RISK AND LIABILITY FOR LOSS, DAMAGE OF, OR INJURY TO THE OWNER AND THE OWNER'S PROPERTY AND TO OTHERS AND THEIR PROPERTY ARISING OUT OF USE OR MISUSE OF, OR INABILITY TO USE, THE PRODUCT NOT CAUSED DIRECTLY BY THE NEGLIGENCE OF KANOMAX. THIS LIMITED WARRANTY SHALL NOT EXTEND TO ANYONE OTHER THAN THE ORIGINAL PURCHASER OF THE PRODUCT, OR THE PERSON FOR WHOM IT WAS PURCHASED AS A GIFT, AND STATES THE PURCHASER'S EXCLUSIVE REMEDY.

After-sales Service

If the PRODUCT is malfunctioning, please check with “Troubleshooting” to find possible cause first.

Repair parts are retained for a minimum period of five (5) years after production cessation of the PRODUCT. This storage period of repair parts is considered as the period during which KANOMAX can provide repair service.

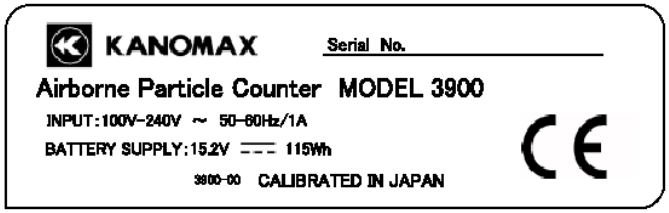
For more information, please contact your sales representative. When you make a call, please have the following information of your PRODUCT at hand:

(1) PRODUCT name;
(2) Model number;
(3) Serial number;
(4) Probe number;
(5) Description of Symptom, and;
(6) Date of purchase

11. Manufacturer Identification

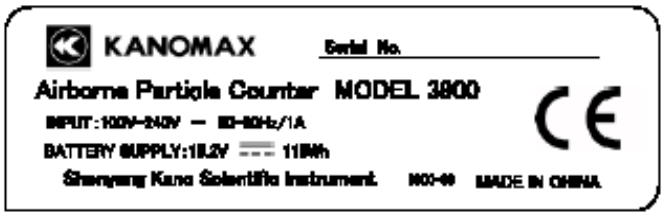
The country of the manufacture for this instrument is identified as shown below.

(1) For the products made in Japan, “CALIBRATED IN JAPAN” is indicated on the product identification label.



Manufacturer: **KANOMAX JAPAN INC. (Head office / Factory in Osaka)**
2-1 Shimizu, Suita City, Osaka 565-0805, Japan
TEL: (06) 6877 0477 FAX: (06) 6877 8263

(2) For the products made in China, “MADE IN CHINA” and “Shenyang Kano Scientific Instrument” are indicated on the product identification label.



Manufacturer: **Shenyang Kano Scientific Instrument Co., Ltd**
No. 12, 4 Jia Wencui Road Heping District
Shenyang City, PRC
TEL: 86-24-23845309 FAX: 86-24-23898417

KANOMAX

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KANOMAX USA, INC.
PO Box 372, 219 US Hwy. 206, Andover, NJ 07821 U.S.A.
TEL: 1-800-247-8887 / 1-973-786-6386 **FAX: 1-**973-786-7586
URL: http://www.kanomax-usa.com/
E-Mail: info@kanomax-usa.com

Japan & Asia

KANOMAX JAPAN INC.
2-1 Shimizu Suita City, Osaka 565-0805, Japan
TEL: 81-6-6877-0183 **FAX:** 81-6-6877-5570
URL: http://www.kanomax.co.jp/
E-Mail: sales@kanomax.co.jp

China

Shenyang Kano Scientific Instrument Co., Ltd
No. 12, 4 Jia Wencui Road Heping District
Shenyang City, PRC
TEL: 86-24-23845309 **FAX:** 86-24-23898417
URL: http://www.kanomax.com.cn/
E-Mail: sales@kanomax.com.cn