SIBATA

CODE 090130-31



# High Volume Air Sampler
# HV-500R series

## OPERATION MANUAL


**Thank you for purchasing this product.**

- This operation manual describes precautions that are important for preventing accidents as well as the procedures used to handle the product.
- To ensure safety, read this operation manual and the attached warranty thoroughly before use, and use the product correctly.
- After reading this operation manual and the warranty, keep them in a safe place where they can be referred to at any time.

# Contents

# Before Use

**⚠ WARNING**

- **Be sure to read this operation manual thoroughly before using the product, and be sure to use the product correctly.**
- **Keep this operation manual in a safe place where it can be referred to at any time.**
- **Be sure to familiarize yourself with and observe the safety precautions given in this operation manual.**
- **Observe usage procedures that are suitable for the product and that are specified in this operation manual.**

Be sure to observe the above instructions.
Not following these instructions may result in an accident or injury.

## ■ About This Operation Manual

- In the interests of product improvement, the contents of this operation manual may be changed without notice.
- Every effort has been made to ensure that the information contained in this operation manual is correct. If you discover any errors or omissions, however, please contact your Sibata representative.
- The copyright of this operation manual belongs to Sibata Scientific Technology Ltd.



## ■ Checking the Package

**Check the contents of the package before using the product.**

① High volume air sampler unit HV-500R
② Filter clip for φ110mm (Item Code 080130-0871)
③ φ110mm Glass fiber filter GB-100R-110A (10pcs.)
④ Touch panel protection sheet
⑤ Power cable
⑥ Operation Manual (this document)
⑦ MANUFACTURER'S INSPECTION RESULT

# Safety Precautions

The precautionary information that appears in this operation manual is for ensuring that the product is used safely and for preventing injury to you and other people and damage to equipment. It is all important for ensuring safety and so be sure to read it thoroughly before using the product and observe it during use.

## ■ About the User (Important)

This product must be operated only by persons with adequate specialist skills, training, and experience to understand the potential dangers of operating the product.
Personnel who are untrained or still undergoing training may operate the product only under guidance from a trained person or a person with specialized experience.
This instruction manual was written on the assumption that the product will be operated only by users who fully understand the potential dangers of operating the product.

## ■ Warning Labels

In this operation manual, precautionary information is labeled. The degree of damage or injury that may occur if the product is used without consideration of the corresponding item of precautionary information is indicated by one of three labels: DANGER, WARNING and CAUTION. These labels indicate precautionary information that is important for ensuring safety and so be sure to observe them.

### Labels Indicating Degrees of Damage or Injury

| | |
|---|---|
| **DANGER** | **Indicates a potentially hazardous situation which, if not avoided, could result in serious injury or possibly death.** |
| **WARNING** | **Indicates a potentially hazardous situation which, if not avoided, could result in serious injury.** |
| **CAUTION** | **Indicates a potentially hazardous situation which, if not avoided, may result in minor to moderate injury or equipment damage.** |

## DANGER

- Do not use this product near highly flammable or potential fire hazards. Doing so might cause explosion or fire.
- No Fires Allowed! Do not put this product into fires. Doing so might cause explosion or fire.

## WARNING

- Install this product on at level, stable location. Failure to do so might cause malfunction, accidents, or abnormal operation.
- This product is not waterproofed. Avoid rainwater falling or direct contact with water from the side. Failure to do so might cause malfunction or fire.
- Do not subject this product to strong impact or drop it. Doing so might cause malfunction or accidents.
- Never dismantle or modify this product. Doing so might cause malfunction or accidents.
- If an abnormality occurs during operation, immediately stop operation and remove the cause of the abnormality. When the abnormality is judged to be caused by this product, turn the power switch OFF, disconnect the power plug and contact your Sibata agent. Do not use this product in an abnormal state or allow it to be dismantled for repair by non-service personnel. Doing so might cause malfunction or accidents.
- Do not run this product wrapped in a cloth or bedding, or enclosed in a box. Doing so might cause heat to build up, resulting in fire or malfunction.
- Only use a single phase 220 V power supply. (180 V to 264 V can be used.) Also, do not connect the power adapter to a multi-plug power strip. Doing so might cause electric shock or fire. Before using this product on a non-specified voltage, contact your Sibata agent.
- Do not use this product when the power cable is damaged or the plug inlet on the power outlet is loose. Use in this state might cause fire or electric shock.
- Do not touch the power cable or power outlet with wet hands. Doing so might cause electric shock.
- Be sure to ground this product. Failure to do so might cause malfunction or electric shock. Also, never attach it to a gas pipe. Doing so might cause an explosion or fire.
- Do not block the exhaust port. Doing so will prevent the required airflow into the product, and cause heat to build up inside, resulting in malfunction or fire.
- Covering your head with the plastic bag that this product is packed in could cause suffocation. Never do this.

# CAUTION

- This product is an air sampler. Do not use the product for any purpose not described in this manual. Doing so might cause malfunction.
- Do not store this product where it will be exposed to direct sunlight, or near fire. Doing so might cause abnormal operation or malfunction.
- If this product is exposed to strong sunlight, the product may become hot. When handling it, be careful to avoid burning your hands.
- Do not place objects on top of this product. Doing so might cause the product to tip over or deform the product, resulting in accident or malfunction.
- Before cleaning or inspecting this product, disconnect the power plug from the power outlet. Failure to do so might cause electric shock, electric leak or other abnormalities.
- Do not use chemicals to wipe down unspecified parts of this product. Also, do not use unspecified chemicals. Doing so might cause malfunction.
- When not using this product, disconnect the power plug from the power outlet. Failure to do so might cause fire or malfunction.
- When disconnecting the power plug, be sure to hold the power cable by the power plug. Pulling the cable might damage it and cause electric shock or fire.
- Before use, check the sheath of the power adapter cable for scratches or other abnormalities. Also, do not place heavy objects or step on the power cable. Use in an abnormal state might cause fire or electric shock.
- Do not use wires, other metallic objects, or any other connection method not specified in this manual. Doing so might cause malfunction.
- Do not allow water and other liquids, and gases other than air to be sucked in. Also, do not allow corrosive gases (e.g. salt air) or chemicals to be sucked in. Doing so might cause malfunction or fire.
- Be sure to install a filter before operating the product. Malfunction might result from direct, long term intake of air.
- Do not insert screws or other foreign objects into the suction and exhaust ports. Doing so might cause malfunction. Should foreign objects get inside this product, immediately turn the power switch OFF, disconnect the power plug, and contact your Sibata agent.
- The operating temperature and humidity ranges of this product are 0 to 40 °C and 10 to 90 % rh (no condensation), respectively. Use of this product outside of these ranges might impair its performance and service life, resulting in malfunction.
- Do not bring this product close to equipment that generates electrical noise. Also, do not install it at locations subject to string magnetic fields, or lots of dust or humidity. Doing so might damage the hardware, for example.
- Note that, should some nonconformity occur, Sibata does not assume any liability whatsoever for compensation of data or content that could not be acquired or logged as a result, loss of data or other content, and other direct and indirect damages relating to the preceding. Periodically back up data as a precaution against malfunction or accidents.

# Product Overview

The HV-500R is sample suspended dust in the open face, and provide quantitative analysis of dust concentration and composition. High-accuracy flow rate control is provided by a differential pressure detection system, and instantaneous and cumulative flow rate values are displayed digitally. Reductions in suction flow rate due to increased dust collection are minimized thanks to a constant flow rate function. This product can be used to collect airborne dust by attaching the through pipe. Similarly, it can also be used to collect dioxins by attaching the shuttle tube (tube for polyurethane foam attachment). It is capable of stable, high flow rate sampling, and so can be used under a wide range of conditions as an airborne toxic substance sampler.

## ■ Features

- Compact and small design makes movement and storage convenient.
- Capable of high accuracy flow rate control thanks to a differential pressure detection system.
- The instantaneous and cumulative flow rate can be operated with 20 °C and 1 atmosphere correction, 25 °C and 1 atmosphere correction, 0 °C and 1 atmosphere correction, or actual flow rate.
- Incorporates a constant flow rate function to minimize drops in the suction flow rate accompanying increased suction pressure caused by sampling of dust, etc.
- A backlit touch panel is adopted to enable even more convenient operation.
- Two timer functions are provided for starting operations: a delay timer based on the time, and a clock timer based on the calendar date. Two types of timer sampling for ending operations are also available: a sampling timer based on the time, and a volume timer based on cumulative flow rate. Manual operation without using the timers is also possible.
- A brushless motor is adopted, minimizing dust generation and extending motor life.
- Noise reduction implemented
- If a power outage occurs, the remaining sampling is continued automatically after the power recovery.
- The particle size separator, through pipe and shuttle tube for polyurethane foam attachment are easy to attach.
- The polyurethane foam can be left in the shuttle tube for storage or conveyance, shielding it from light and air (HV-500RD, HV500RD1 for dioxins).
- Absolutely no grease is used in the sampling line.
- A sampling data recording function is provided. The past 5 sampling results can be checked on the sampler. Data can also be retrieved by connecting a PC and entering a communication command.
- The standard specifications are for 220 VAC, but 100 VAC specifications are also available.

## ■ Capability of This Product

This product can perform a variety of dust collection procedures using various types of optional equipment.
It is capable of simultaneous measurement of atmospheric pressure and temperature, and actual flow rate control, meaning that inertial impact particle size selector, which is sensitive to flow velocity, can be attached. In addition, it is capable of operating at high altitude sites and other places with differing air pressure.

＊Note however that suction capacity will be reduced when this product operates at a low pressure site.

**Filters**

Filter, $\phi$110mm is available for the HV-500R.
Filter, 8”X10” also can be used with attaching the squared filter holder (option, attachment parts are also needed).

**Dioxin Sampling**

It can be used to collect Dioxins by attaching the shuttle tube (tube for polyurethane foam attachment).

**Particle size selector**

By using this grading device you may sample SPM, PM 2.5, PM4 and PM10.

**Orifice flow meter**

A special orifice flow meter can be attached to perform flow rate calibrations.

**Others**

We accept special orders for additional connecting parts and special measurements. Contact your Sibata agent.

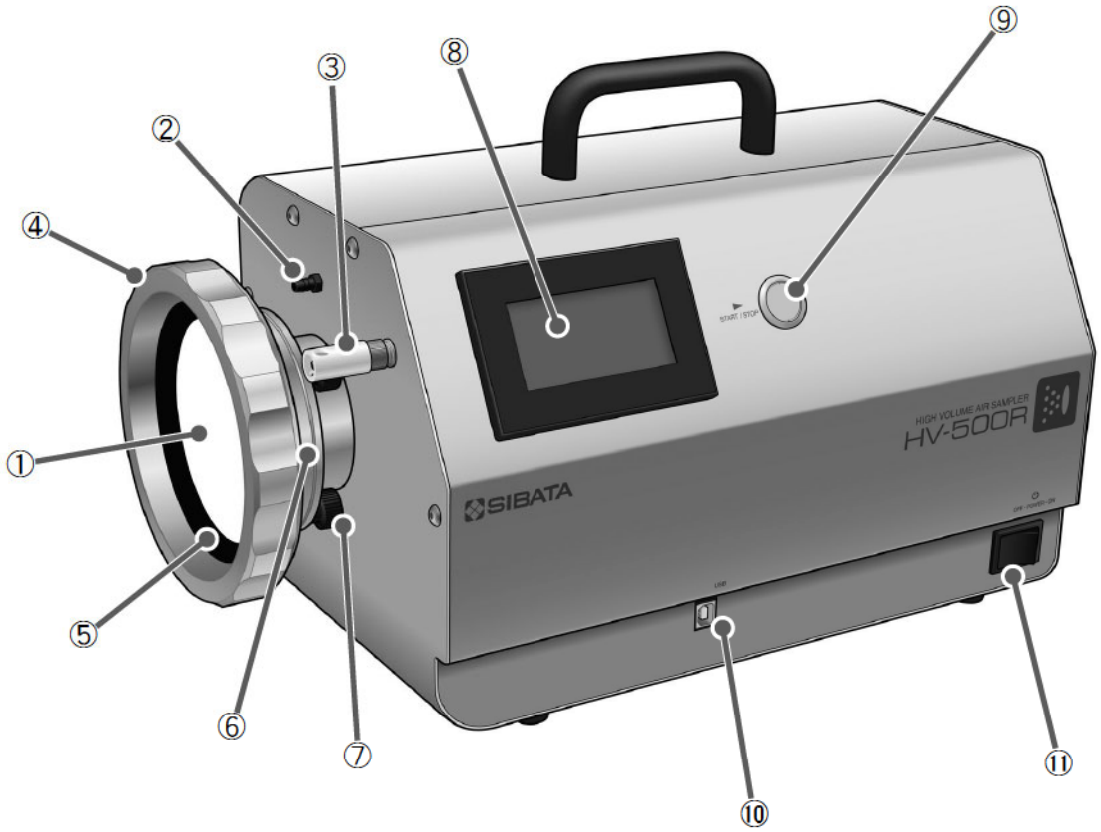
## ■ Product Limitations

This product is a suction based sampler. Note that it is not capable of the following:

- Utilization of exhaust
- Intake of anything (chemicals or gasses) except air
- Intake of water or other liquids

# Name of Parts

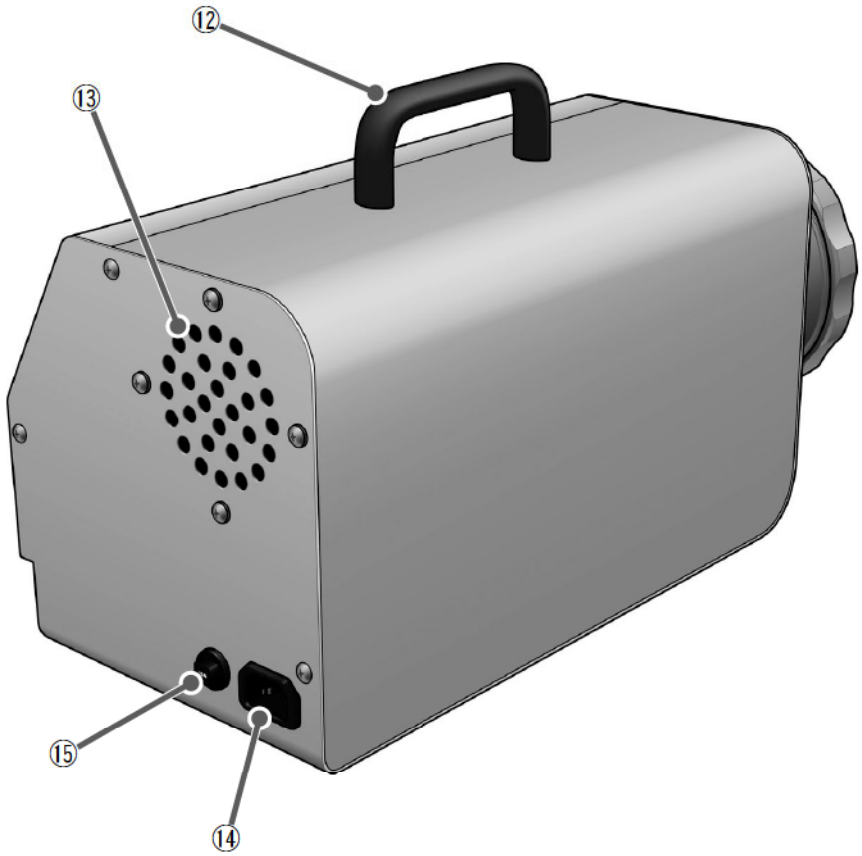
## ■ Front・Suction side




① Suction port
② Atmospheric pressure sensor port
③ Outside air temperature sensor
④ Clip holder
⑤ Filter clip (standard accessories) (The above figure has a filter.)
⑥ N type adaptor
⑦ Miniature knob
⑧ Touch panel
⑨ “START/STOP” Switch
⑩ “USB” : USB（B）Connector ( covered by a cap)
⑪ “POWER” : Power switch

※ ③ Outside air temperature sensor protrudes from the body, so it can measure a temperature around ① Suction port precisely.
Please handle with care not to touch or break the sensor.

## ■ Rear・Exhaust side




⑫ Handle

⑬ Exhaust

⑭ Power connector

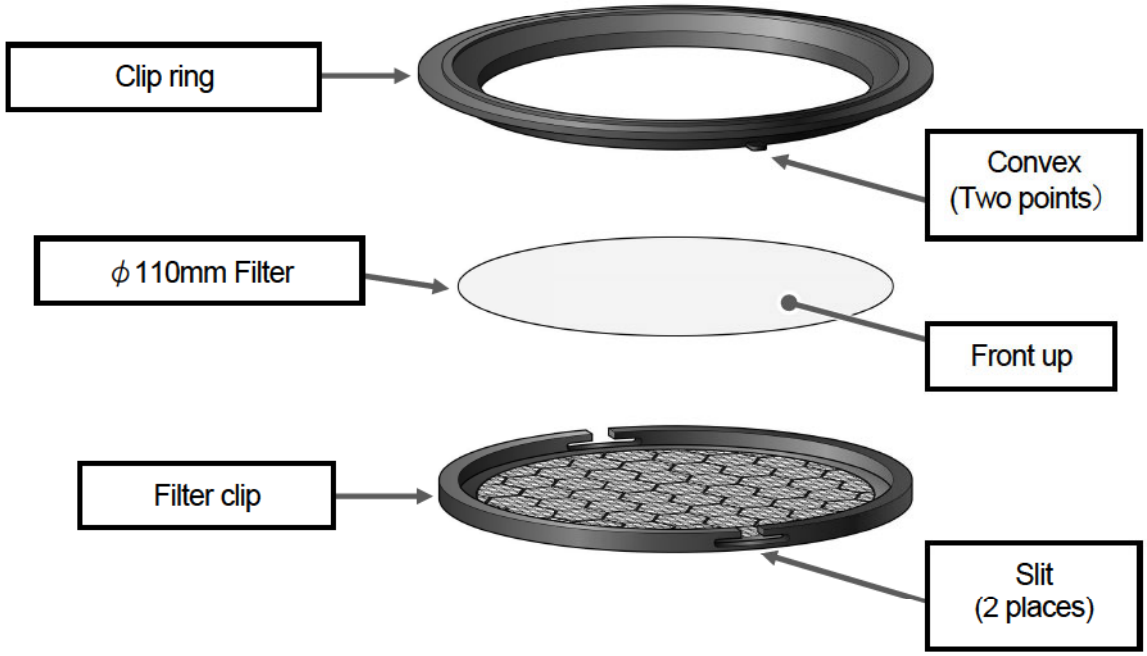
⑮ Circuit protector

# Operation

## ■ Preparation

### Replacement of the collecting filter

Set a ϕ110mm Filter no a Filter clip. Front side of the filter turns up as illustrated below.



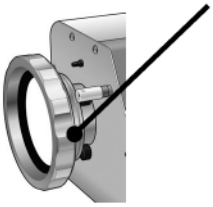

※ Handle a filter with case not to touch or damage surface of a filter. It may cause an ineffective sampling. And also foreign matter may get into the body, and it may cause of breakage of a flow meter and a blower.

Set convexes of a Clip ring in the slits of a Filter clip and rotate the Clip ring to fix.

※ The Filter clip is for one filter. Do not rotate the Clip ring to fix filters when you use two filters, or the Filter clip may be damaged.

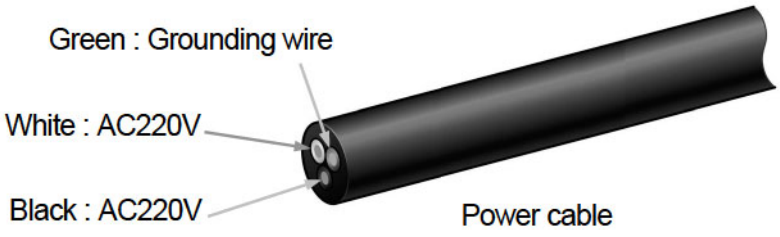
Rotate a Clip ring to remove it from a main body.

Set a Filter clip on a N type adaptor (make sure filter side faces outward), and set a Clip ring and rotate it to fix.

| ⚠CAUTION |  | **Caution for the sharp edge of screw cutting of inner side of Clip holder and the screw edge in N type adaptor. Especially, when you attach or remove the Clip holder to and from N type adaptor, do not rotate the Clip holder while your finger touches the edge. It may hurt your finger.** |
|---|---|---|

## Wiring Methods

Use a single phase 220 V power supply. (180 V to 264 V can be used.) **Be sure to ground this product.** If you wish to use a non-specified voltage, contact your Sibata agent.

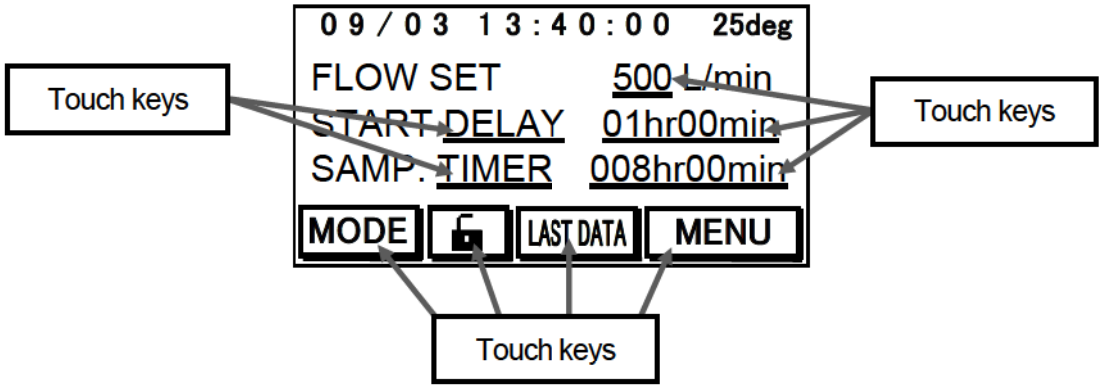



Make sure the Power switch is **"OFF"**, then connect one side of a power cable to a power connector, which is on the exhaust side of a main body, and connect the other side to an AC concent.

* Ensure that the power supply has sufficient electrical capacity. Two to three times the regular power consumption occurs in the instant directly after startup.
* Do not connect the power adapter to a multi-plug power strip. Doing so might cause electric shock or fire.
* Be sure to ground this product. Failure to do so might cause electric shock, malfunction, or fire.

# ■ Touch Panel

This product is equipped with a touch panel liquid crystal display. Operations can be performed by touching the display directly.
Press the [START/STOP] button to start sampling.
Touch keys are arranged at various points on the respective touch panel screens. Operations can be performed by touching them.
Touch keys consist of any onscreen buttons enclosed in a rectangle, and any underlined region.




With touching the touch keys on a screen, you can set a sampling status by selecting a mode and inputting numbers.

A backlight function is provided. The backlight goes out if no onscreen operations have been performed for at least one minute. Touching the screen again will relight the backlight.

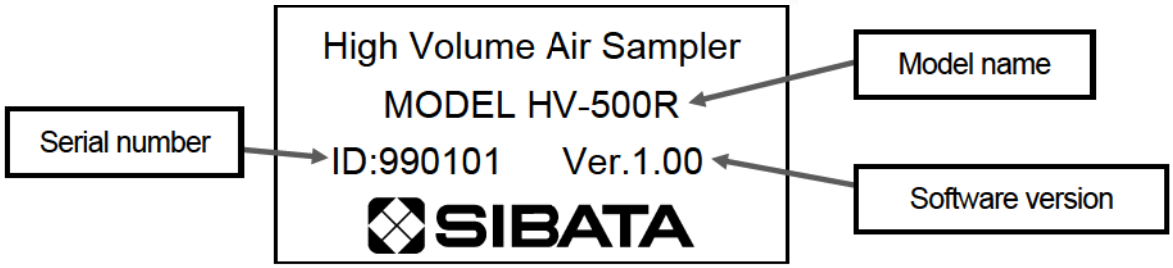
* Do not press two touch keys at the same time. Doing so might cause abnormal operation.
* Do not press too hard on the touch keys. (Use 0.5 N pressure max.) Also, do not press the screen using a pin or other pointed object, and do not strike the screen. Doing so might cause malfunction.

## Touch panel protection sheet

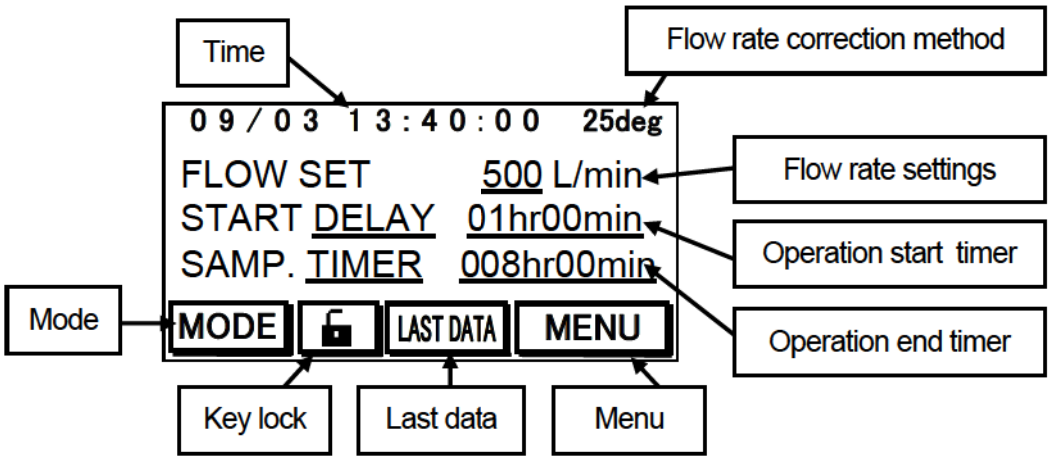
A Touch panel protection sheet is enclosed. Please put the protection sheet on the touch panel if any damages on the touch panel are concern depending on a sampling situation.

# ■ Main Screen

When the power is first turned ON, "**System Initializing**" will be displayed for 5 seconds. The screen then changes to the following screen:




If you touch the screen while this screen is displayed, or simply wait approximately 5 seconds, the system will proceed to the main screen, shown below.




Time ····· Displays the current date and time. Press [Menu] to set the time. (See page 28.)

Flow rate correction method ····· Displays the currently configured flow rate correction method. (See page 24.)

Flow rate settings ····· The flow rate can be set. (See page 12.)

Operation start timer ····· The operation start method and start timer can be set. (See page 13.)

Operation end timer ····· The operation ending method and end timer can be set. (See page 15.)

Mode ····· Displays environmental information. (See page 21.)

Key lock ····· Locks keys.

→Locked

→Lock cancelled

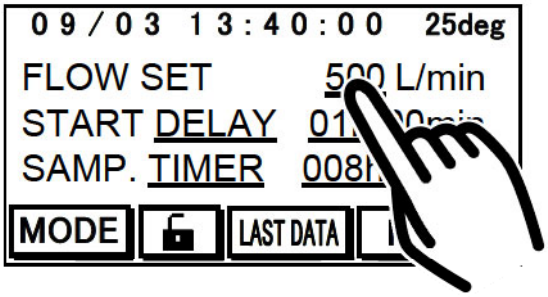
Last data ····· Displays the most recent sampling data. (See page 25.)

Menu ····· Used for configuring settings. (See page 23.)

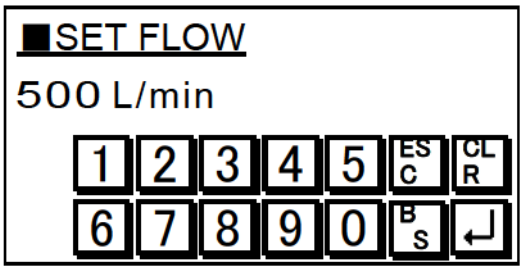
# ■ Sampling Method

## Setting the Flow Rate

Touch the numerical region of the flow rate settings directly to proceed to the flow rate setting screen, where the flow rate can be set.



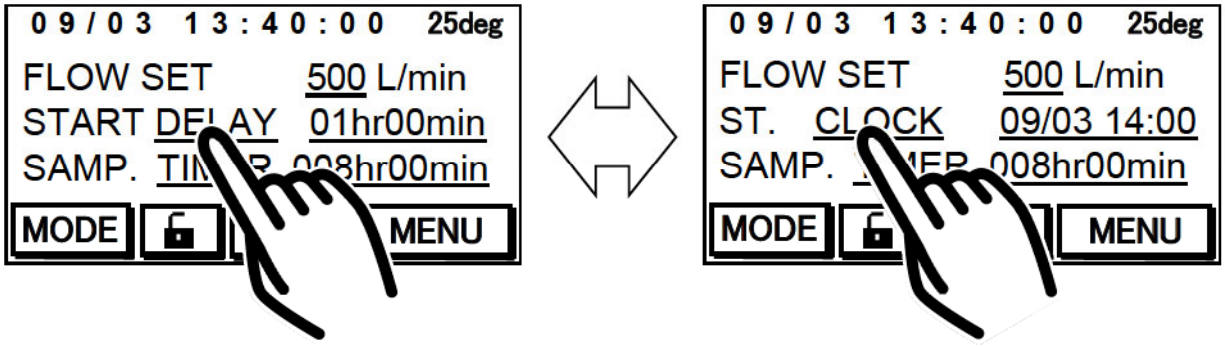

In the flow rate setting screen, press the numerical keys to enter the desired flow rate.
Press ↵ to confirm the numerical value and return to the main screen.
Press [ESC] to cancel entry and return to the main screen.
Press [CLR] to set the numerical value to "0."
Press [BS] to delete the last figure entered.



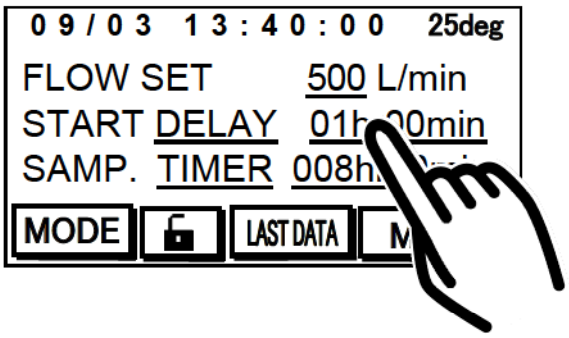

* The configurable flow rate range is as follows:
  100 L/min to 800 L/min

## Setting the Operation Start Timer

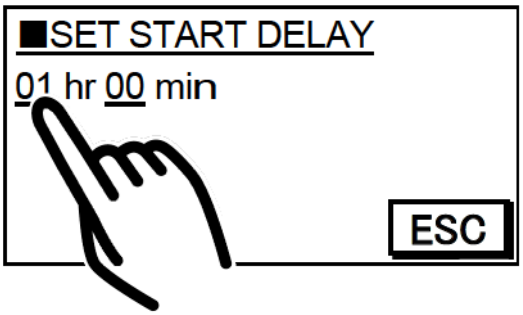
Press the characters in the operation start timer area to switch between the delay timer and the clock timer. The delay timer, shown onscreen as [DELAY], starts the operation after a certain period of time has elapsed. The clock timer, shown onscreen as [CLOCK], starts the operation at a specific hour and minute.




Press the numbers next to [DELAY] to proceed to the start time setting screen, where the starting time can be set.

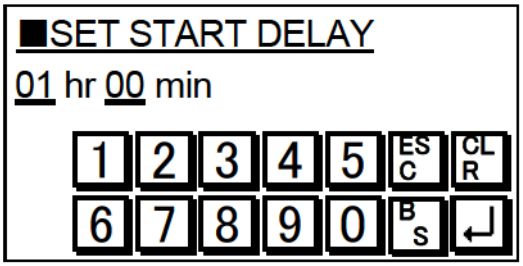



Press the regions with the respective numbers for hours and minutes to proceed to the numerical value entry screen.
When the numerical values have been entered, the system will return to this screen.
Press [ESC] to return to the main screen.



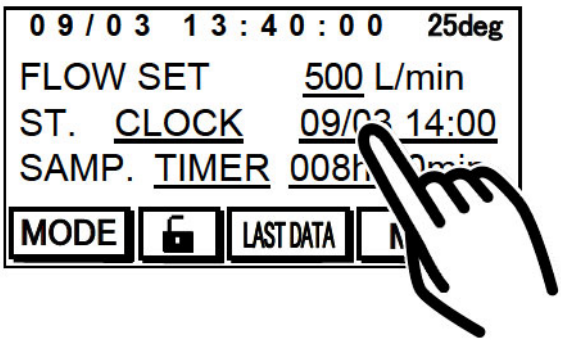

* Entering 0 hour and 0 minute will engage manual operation (i.e. pressing the [START/STOP] button will immediately start operations).

In the numerical value entry screen, press the numerical keys to enter the desired numerical values.
In this screen as well, press a region with underlined numbers to change the entry item.
Press ↵ to confirm the numerical values as the setting values and return to the start time setting screen.
Press [ESC] to cancel entry and return to the start time setting screen.
Press [CLR] to set the numerical value to "0."
Press [BS] to delete the last figure entered.




* The time can be configured up to 99 hours and 59 minutes.

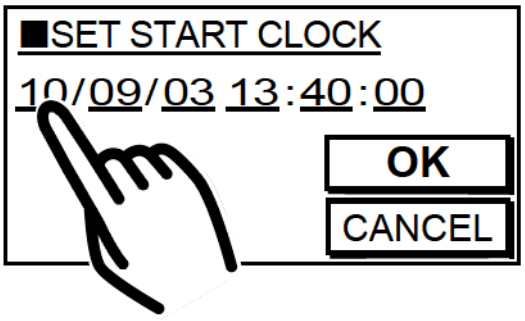
Press the numbers next to [CLOCK] to proceed to the start time setting screen, where the starting time can be set.




* If the numbers next to [CLOCK] show a time earlier than the present time, when the numbers are pressed, the next full hour after the present time will be shown, and the system will proceed to the start time setting screen.

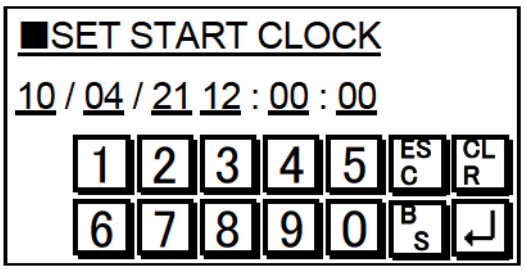
E.g.) If the current time is 10:40 and the numbers beside [CLOCK] reads "10:00," then when the numbers are pressed, the display will change to "11:00," and the system will proceed to the start time setting screen.

From the left, the display shows the year (last two figures of the western calendar), month, day, hour, minute, and second.
Press the respective numerical regions to proceed to the numerical value entry screen.
When the numerical values have been entered, the system will return to this screen.
Press [OK] to confirm the setting value and return to the main screen.
Press [CANCEL] to cancel the new settings and return to the main screen.




* Setting a time that is earlier than the present time will engage manual operation (i.e. pressing the [START/STOP] button will immediately start operations).

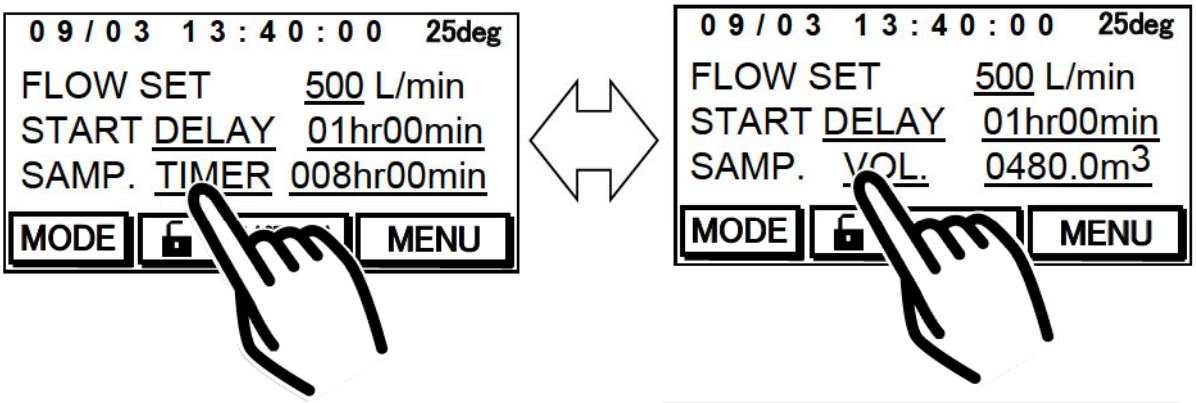
In the numerical value entry screen, press the numerical keys to enter the desired setting value.
In this screen as well, press a region with underlined numbers to change the entry item.
Press ↵ to confirm the numerical value and return to the start time setting screen.
Press [ESC] to cancel entry and return to the start time setting screen.
Press [CLR] to set the numerical value to "0."
Press [BS] to delete the last figure entered.



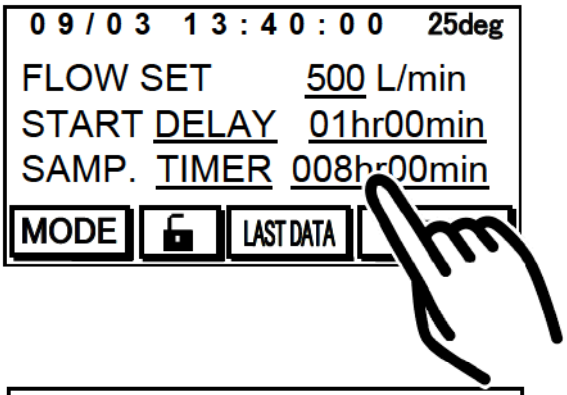

* The time can be configured up to (20)99/12/31, 23:59:59.
* Any date from 1 to 31 can be entered regardless of the month. If the number entered is too large for the month however, it will be reset to the final day for that month.
  E.g.) If April 31st is entered, pressing ↵ will reset the value to April 30th.

## Setting the Operation End Timer

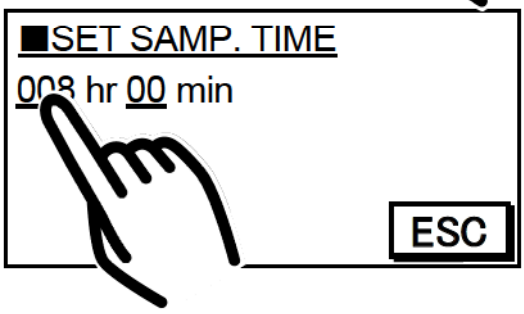
Press the characters in the operation end timer area to switch between the sampling timer and the volume timer. The sampling timer, shown onscreen as [TIMER], ends the operation after the configured period of time has elapsed. The volume timer, shown onscreen as [VOL.], ends the operation when the configured cumulative flow rate has been reached.




Press the numbers next to [TIMER] to proceed to the ending time setting screen, where the ending time can be set.

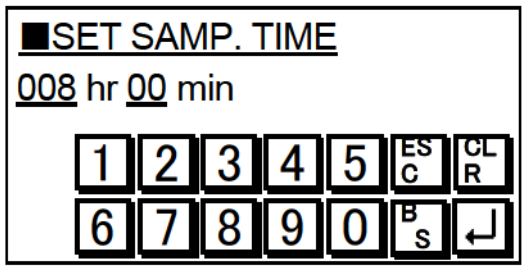



Press the regions with the respective numbers for hours and minutes to proceed to the numerical value entry screen.
When the numerical values have been entered, the system will return to this screen.
Press [ESC] to return to the main screen.



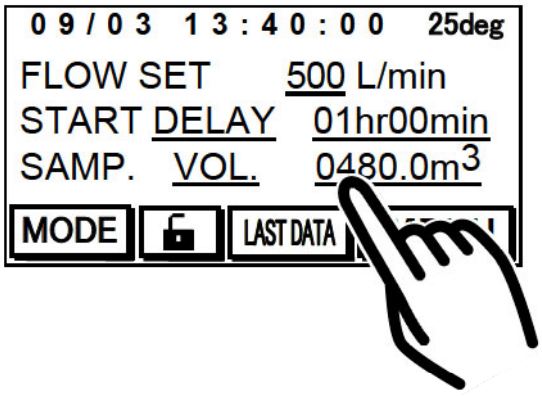

* Entering 0 hour and 0 minute will engage manual operation, in which pressing the [START/STOP] button will stop operations. The system will automatically stop however when the time reaches 999 hours and 59 minutes.

In the numerical value entry screen, press the numerical keys to enter the desired numerical values.
In this screen as well, press a region with underlined numbers to change the entry item.
Press ↵ to confirm the numerical values as the setting values and return to the ending time setting screen.
Press [ESC] to cancel entry and return to the ending time setting screen.
Press [CLR] to set the numerical value to "0."
Press [BS] to delete the last figure entered.



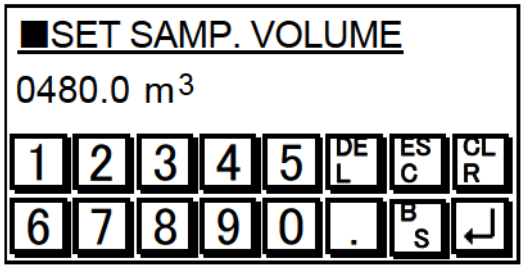

* The time can be configured up to 999 hours and 59 minutes.

Press the numbers next to [VOL.] to proceed to the ending cumulative flow rate setting screen, where the ending cumulative flow rate can be set.




* Entering 0.0 $m^3$ will engage manual operations, in which pressing the [START/STOP] button will stop operations. The system will automatically stop however when 99,999.9 $m^3$ is reached.

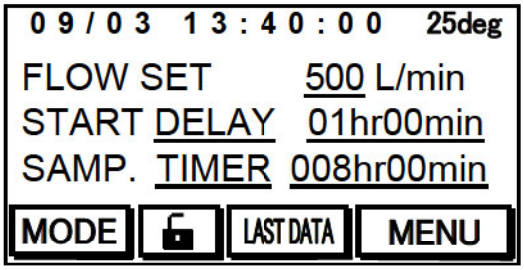
In the ending cumulative flow rate setting screen, press the numerical keys to enter the desired numerical values.
Press ↵ to confirm the numerical values and return to the main screen.
Press [ESC] to cancel entry and return to the main screen.
Press [CLR] to set the numerical value to "0."
Press [BS] to delete the last figure entered.
[DEL] is not used here.




* The cumulative flow rate can be configured up to 9,999.9 $m^3$.
(This numerical value is one figure different from the maximum cumulative flow rate in manual operation.)

## Starting Operations

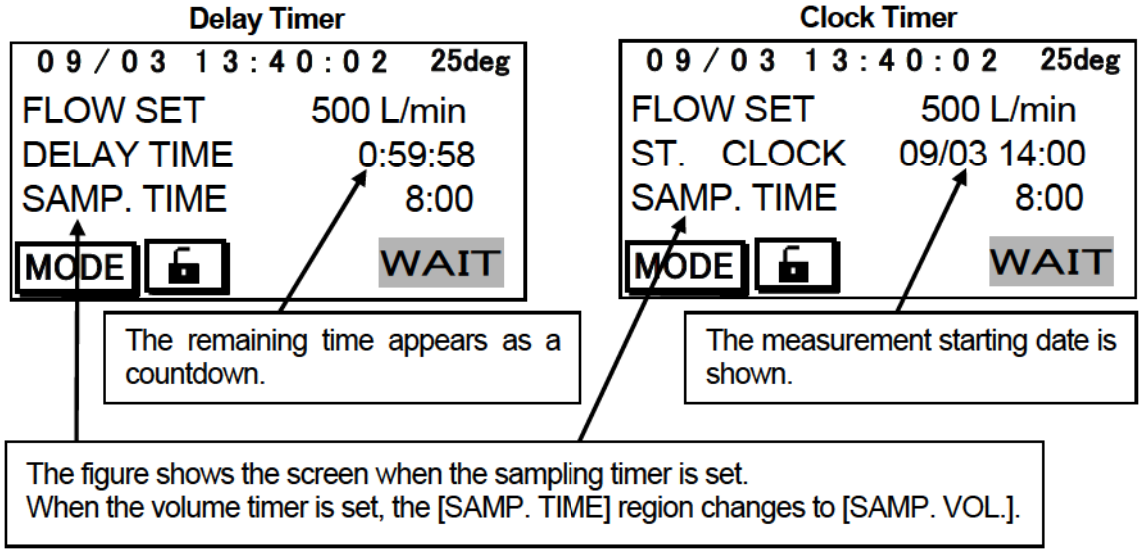
In the main screen, confirm the setting conditions. In the example in the figure below, the set flow rate is 1,000 L/min, operations start 1 hour later, and operations continue for 8 hours.




Press the [START/STOP] button to start operations.

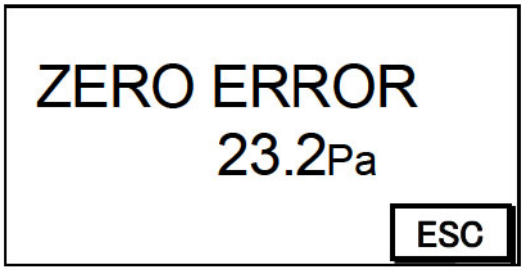
During manual operation, as soon as the [START/STOP] button is pressed, the blower will run, and the sampler will start operating.

When the timer has been set, the following screen appears, and the system remains in standby until the configured date and time. During standby, the message "WAIT" will blink onscreen. When the configured date and time are reached, the blower will run, and the sampler will start operating.




* During standby, press [MODE] to view environmental information. (See page 21.)

After the [START/STOP] button has been pressed, if the flow meter inadvertently responds to a slight airflow, a zero error will occur and the following screen will be displayed.



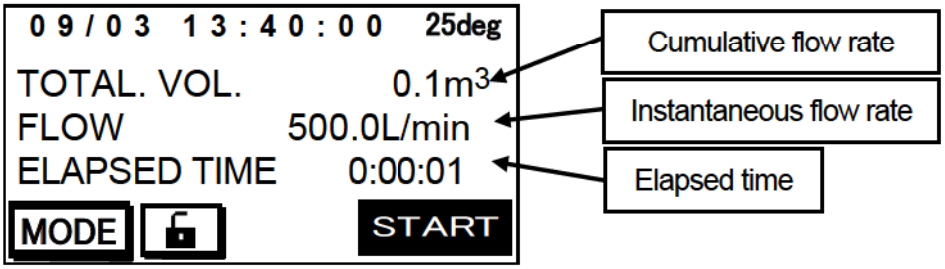

Press [ESC] to return to the main screen. Then press the [START/STOP] button again.

* A zero error determination will be made when the [START/STOP] button is pressed, even under timer operation. A zero error determination is not performed when the blower is actually running.

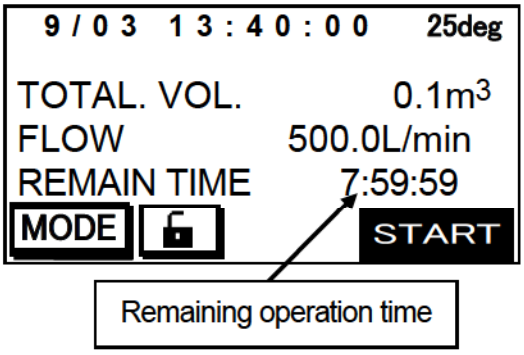
## During Operation

When the blower is running and the sampler starts operating, the following screen appears. At this point, the message "START" is highlighted. Pressing the [START/STOP] button during operation will forcibly stop operation.

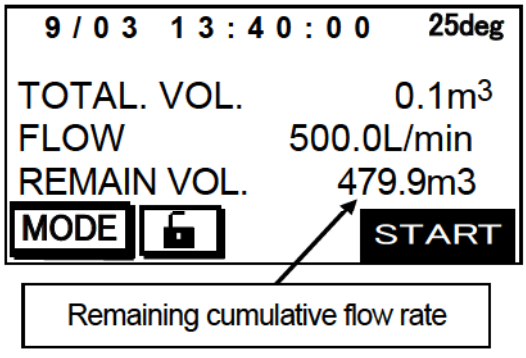
Manual Operation




Sampling Timer Operation



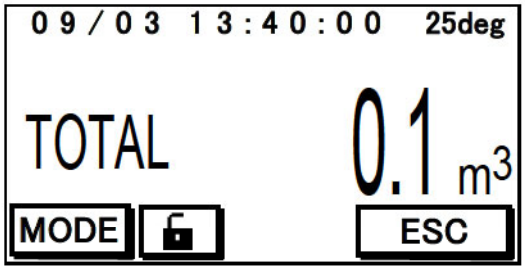

Remaining Operating Time




* During operation, press [MODE] to view environmental information. (See page 21.)

### Operation completed

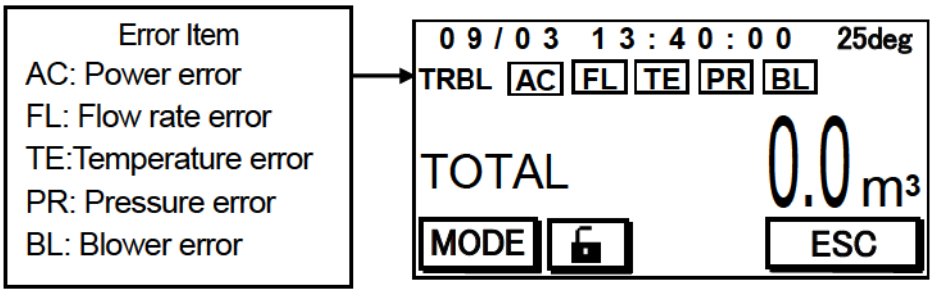
When an operation is finished, an Integrated Flow Volume is displayed as shown below.




ESC Key to back to Main display.

## ■ Error Displays

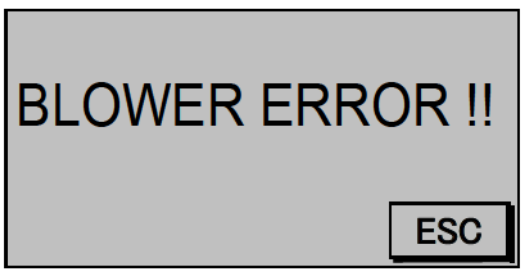
If an error occurs during operation, this product will log the error. (See page 27.) Unless the error involves the blower however, the blower will not stop, and operation will continue.
If an error occurs, it will be indicated onscreen.




If the error is blinking, this indicates that it is occurring right now, whereas if the error is lit, this indicates that it occurred previously. A blower error is always lit.
The internal battery run-down icon blinks when the battery power is low, and is lit when the battery is completely dead.

* When the power is turned ON, a power error is displayed in the error item field. This is because the product inadvertently detects a power outage when the power is turned OFF, and does not indicate a malfunction. The error will disappear when the [START/STOP] button is pressed, and operation starts.
  If the power error is displayed after operation ends, a power outage likely occurred.

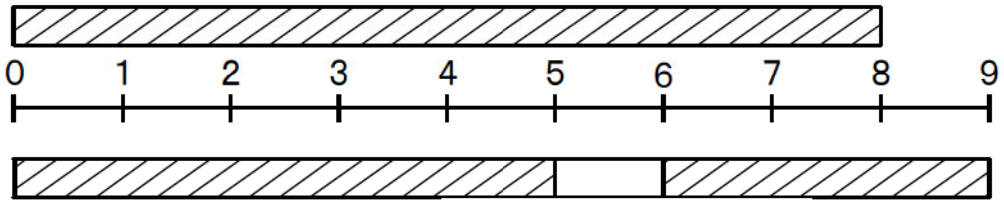
If a blower error occurs, the screen display at right will appear, with the screen backlit in red. The blower will stop and operations will be aborted.
This screen will persist until [ESC] is pressed.



## ■ Power Outages

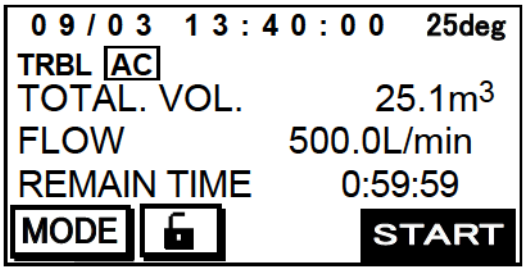
If a power outage occurs during operation, the product will turn OFF and stop operating. However, the remaining sampling will continue after power is restored.

E.g.) If an 8 hour sampling period has been set, and a 1 hour power outage occurring during this time, sampling will be delayed by 1 hour, but the full 8 hours of sampling will be completed. (In this case, sampling will finish 9 hours after it started.)




**1 hour power outage**

If a power outage has occurred, [AC] will be displayed in the error item field as in the figure, in the main screen during operation. In addition, operation will continue as per the remaining operating time shown.
It is not possible to confirm exactly when the power outage occurred or how long it lasted during operation.
After operations have ended, check the details of the power outage using the sampling data or last data. (See pages 25 and 27.)




* If the power switch is turned OFF, this will be treated as a power outage, and [AC] will be displayed in the error item field.

**Relationship Between Error Display and Power Outages During Timer Operation**

**During standby** ·····[AC] is displayed, but when the blower runs, the error disappears.

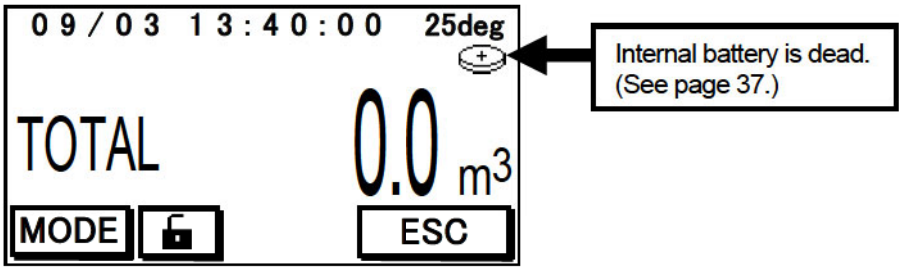
- Clock timer used
  After the power is restored, if the operation start time has been exceeded, the blower will start running immediately.
- Delay timer used
  The time is counted even during the power outage. For example, if there are 30 minutes remaining, and a power outage occurs for 10 minutes, after power is restored, the sampler will standby for the remaining 20 minutes.

**During operation** ·····[AC] is displayed, and a power outage is registered.
(See pages 25 and 27.)

**After operations have ended** ·· [AC] is displayed but a power outage is not registered.

## ■ The internal battery run-down icon

The internal battery run-down icon blinks when the battery power is low, and is lit when the battery is completely dead.



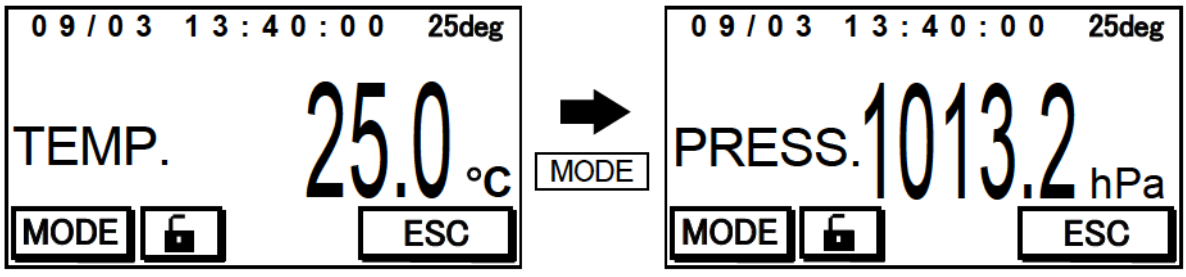

When the battery power runs down completely, a set status and an operation record are not kept when a power switch is “OFF”, and a sampling will not be started again after power is restored from power outage.
When the internal battery run-down icon is displayed, the battery needs to be changed immediately. Please contact your agent or Sibata Scientific Technology Ltd.

## ■ Mode Display

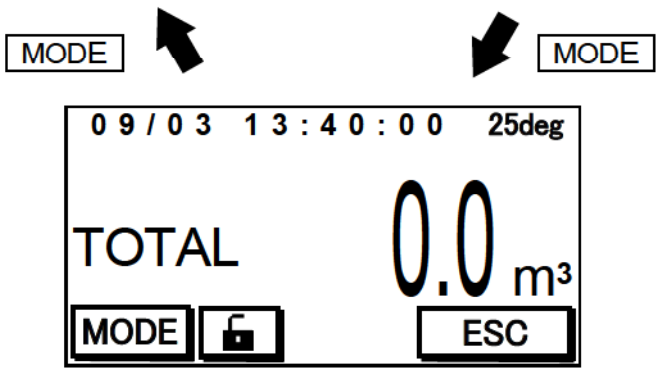
In the main screen and other screens, press [MODE] to view environmental information. The displayed items will differ before and after blower operation.

### Prior to Operation (before the [START/STOP] button is pressed)

Press [MODE] to toggle in sequence between the screens shown below. Press [ESC] to return to the main screen.




Atmospheric temperature　　Atmospheric pressure

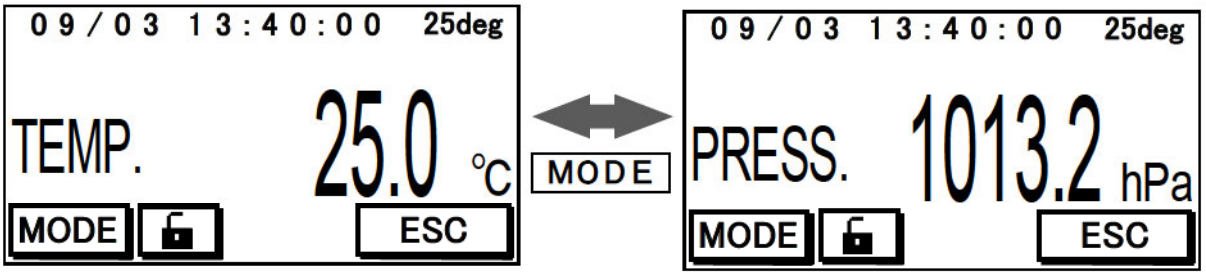



Cumulative flow rate for the most recent operating period

*The system returns to this screen after operations are complete.

## During Standby (after the [START/STOP] button is pressed but before the blower runs)

Press [MODE] to toggle in sequence between the screens shown below. Press [ESC] to return to the main screen.

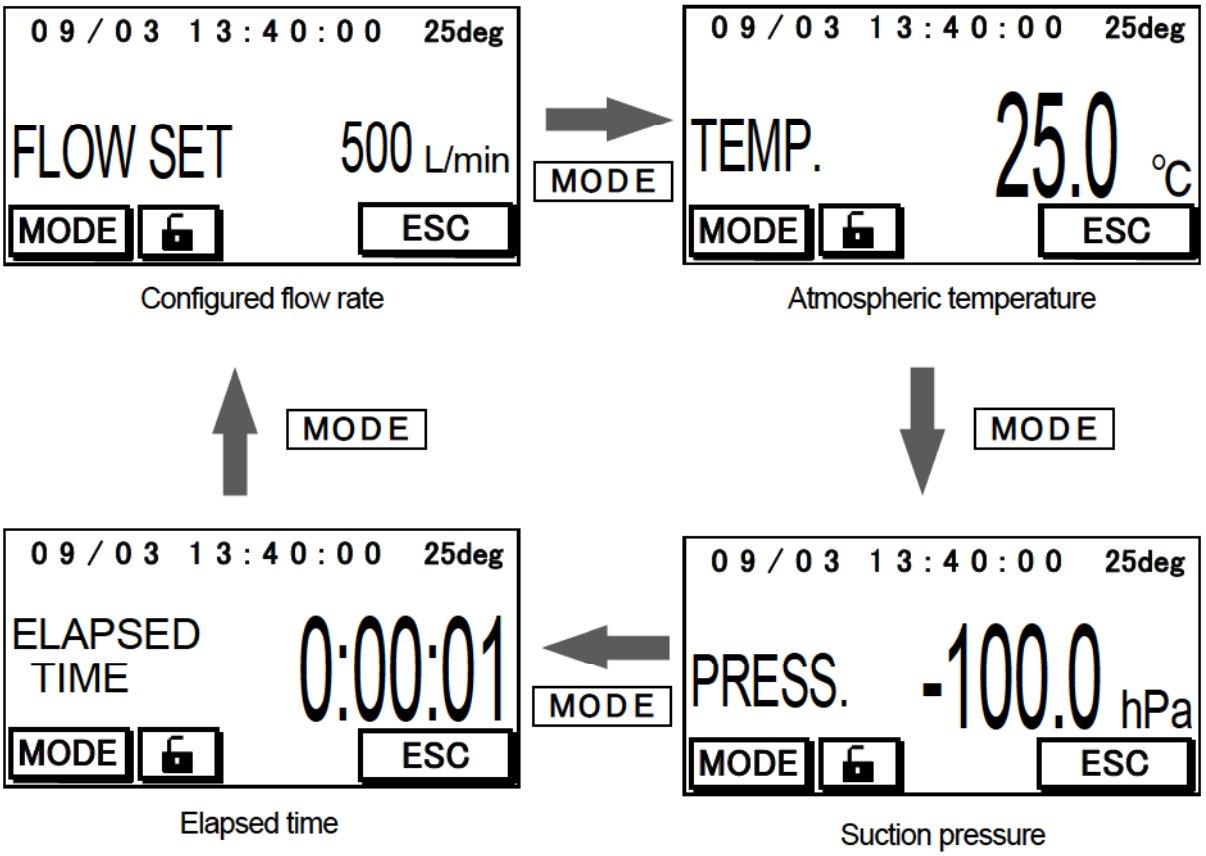



Atmospheric temperature

Atmospheric pressure

## During Operation (blower operating)

Press [MODE] to toggle in sequence between the screens shown below. Press [ESC] to return to the main screen.




Configured flow rate

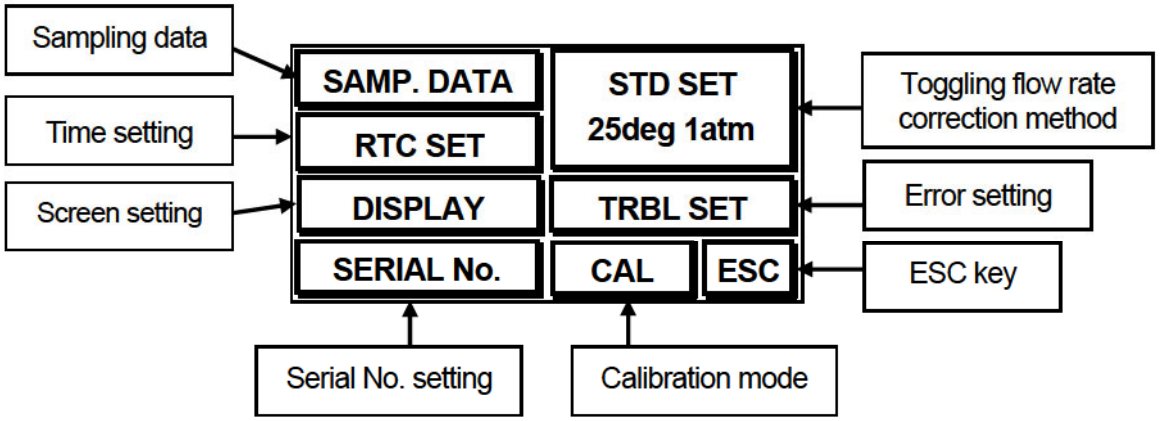
Atmospheric temperature

Elapsed time

Suction pressure

## ■ Menu

In the main screen, press [MENU] to display the menu shown in the following figure.




Sampling data ····· Displays the last 5 sets of sampling data. (See page 25.)

Time setting ····· Sets the internal clock. (See page 28.)

Screen setting ····· Sets the LCD screen. (See page 29.)

Serial No. setting····· Sets the serial number. (See page 29.)

Toggling flow rate correction method ····· Switches between the flow rate correction methods. (See page 24.)

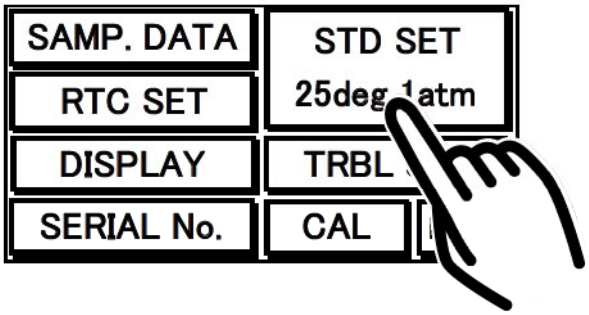
Error setting ····· Sets the threshold for errors (warnings). (See page 30.)

Calibration mode ····· Calibrates flow rate, temperature, and pressure. (See page 31.)

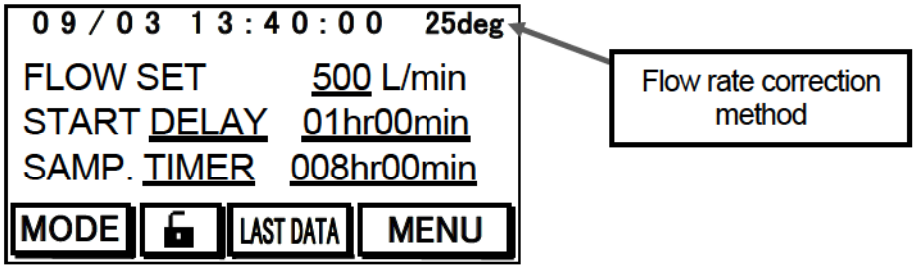
ESC key····· Pressing this key will return to the main screen.

## Toggling the Flow Rate Correction Method

Press this key to toggle between 20 °C 1 atmospheric correction, 25 °C 1 atmospheric correction, 0 °C 1 atmospheric correction, and actual flow rate.

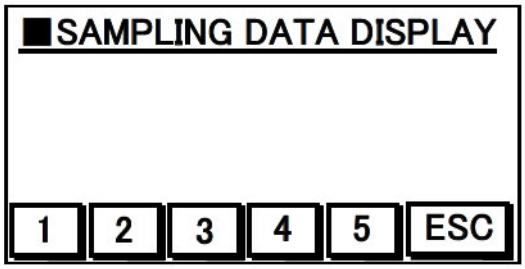



The toggled flow rate correction method can also be confirmed in the main screen.

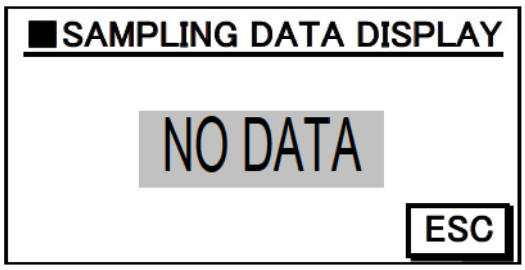


## Sampling Data

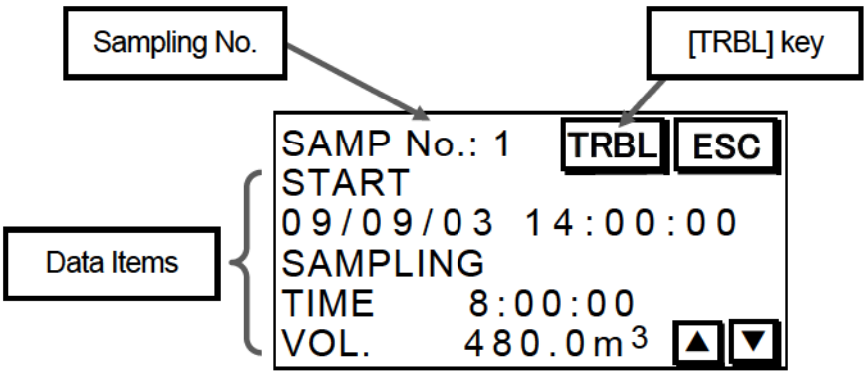
In the main screen, press [SAMP. DATA] to review previous sampling data (up to the last 5 sets).
Press [1] to review the most recent sampling data. The most recent 5 sets can be viewed by pressing the other numbers respectively.




If no sampling data exists, the message "NO DATA" will blink.




Press the respective numbers to view the sampling data sets. In the figure, the number [1] has been pressed.

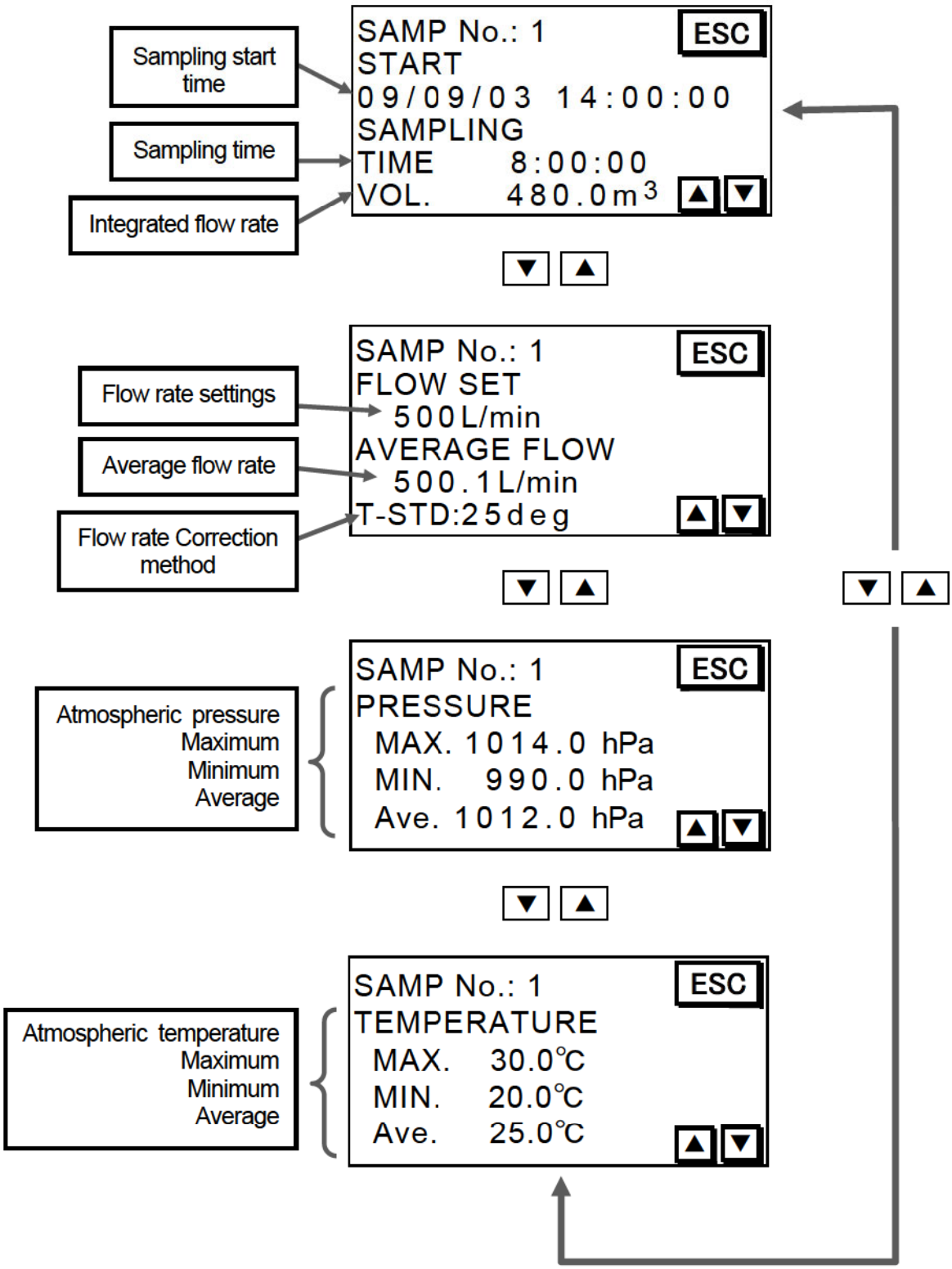



| | |
|---|---|
| Sampling No. | Displays the number corresponding to the numerical key pressed. |
| Data items | Displays the sampling data over 4 pages. (See page 26.) |
| [TRBL] key | Displayed only when an error has occurred. (See page 27.) |
| [ESC] key | Returns to the previous screen. |
| Up/Down keys | Pressing [▼] will move to the next page, and pressing [▲] will move to the previous page. (See page 26.) |

**Treatment of LAST DATA**

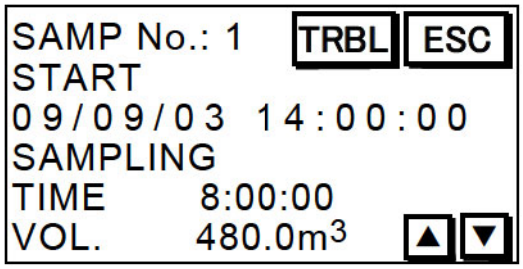
In the main screen, press [LAST DATA] to view the same data as in sampling data set #1 above. Use this chapter as a reference when viewing data by pressing [LAST DATA] as well. Note that "LAST DATA" will appear as the sampling number when data is viewed by pressing [LAST DATA].

The sampling data is shown over a total of 4 pages. Press [▲] and [▼] to toggle between the pages.

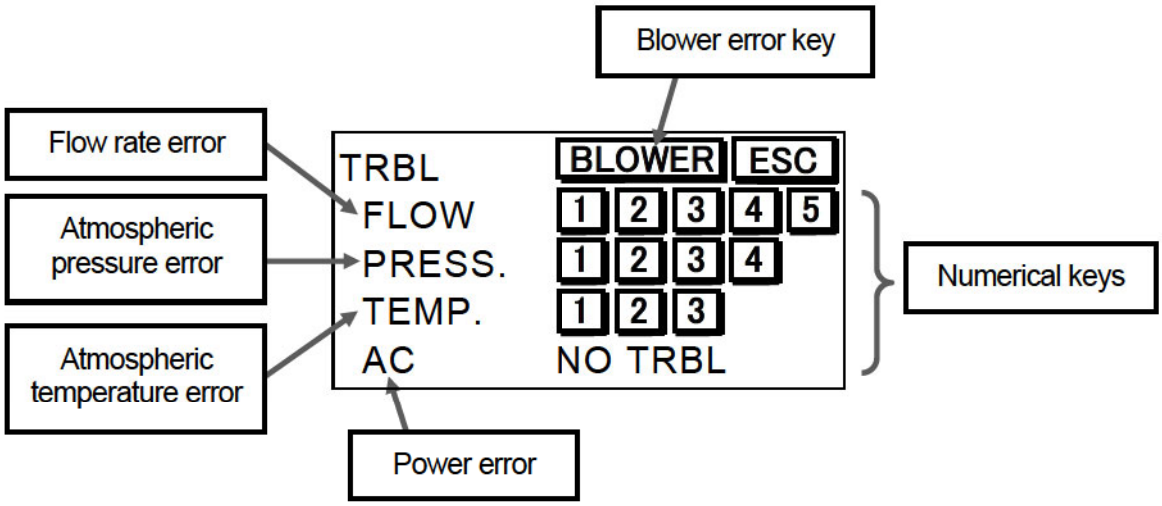


## Detailed Error Display

[TRBL] is displayed when an error has occurred.

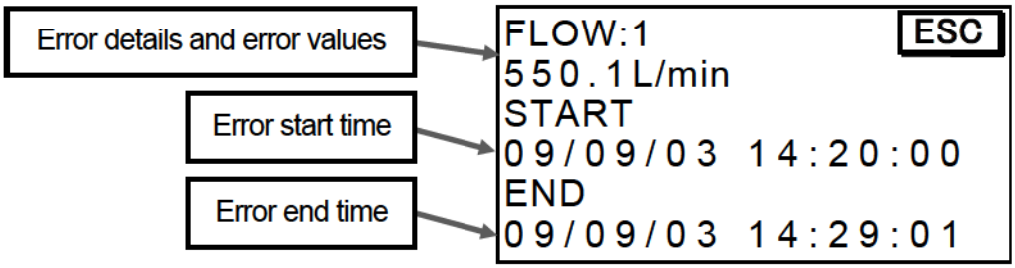



Press [TRBL] to view detailed error information.

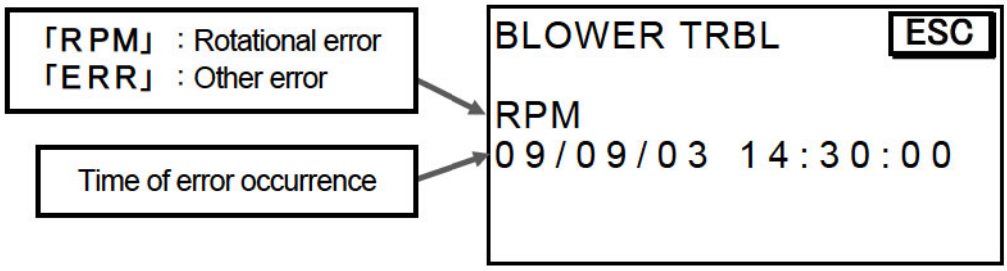



The error details can be viewed as shown below. The last 5 errors are logged in sequence from the oldest, and can be viewed by pressing the respective number keys. The 6th and subsequent errors are not logged. If there are no errors, "NO TRBL" is displayed. In the example in the figure below, flow rate errors have occurred 5 times, atmospheric pressure errors 4 times, and atmospheric temperature errors 3 times, but no power errors have occurred.
The threshold for each error can be configured in the error setting screen. (See page 30.)
A blower error key is only displayed if a blower error has occurred.

Press the respective numerical keys to display error detail screens as in the figure.



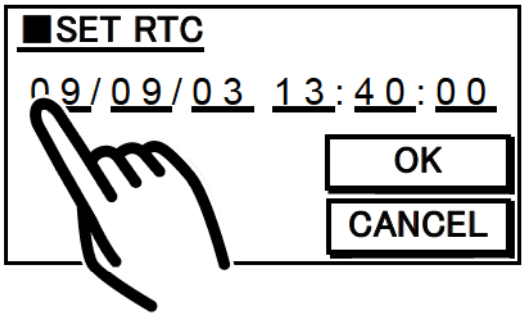
The screen will appear as in the figure, but only if a blower error occurs.



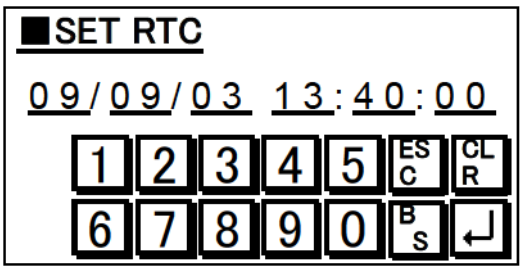

* The blower will automatically stop if the internal temperature reaches or exceeds 95 °C. In this case, [RPM] will be displayed as an error indication.

## Setting the Time

In the menu screen, press [RTC SET] to display the screen in the figure at right.
From the left, the display shows the year, month, day, hour, minute, and second.
Press the respective numerical regions to proceed to the numerical value entry screen.
When numerical values have been entered, the system returns to this screen.
Press [OK] to confirm the setting values and return to the menu screen.
Press [CANCEL] to cancel the new settings and return to the menu screen.



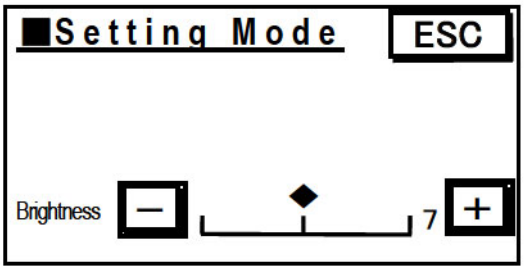

In the numerical value entry screen, press the numerical keys to enter the desired setting value.
In this screen as well, press a region with underlined numbers to change the entry item.
Press ↵ to confirm the numerical value and return to the time setting screen.
Press [ESC] to cancel entry and return to the time setting screen.
Press [CLR] to set the numerical value to "0."
Press [BS] to delete the last figure entered.




* The time can be configured up to (20)99/12/31, 23:59.
* Any date from 1 to 31 can be entered regardless of the month. If the number entered is too large for the month however, it will be reset to the final day for that month.
  E.g.) If April 31st is entered, pressing ↵ will reset the value to April 30th.

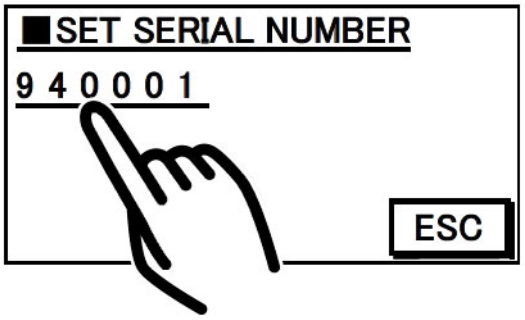
## Setting the Screen

In the menu screen, press [DISPLAY] to display the screen setting screen in the figure at right.
Press [+] and [-] to adjust the brightness.
Press [ESC] to confirm the settings and return to the menu screen.

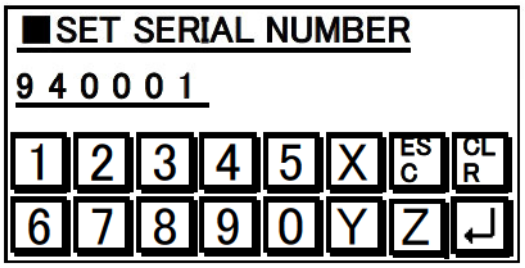



## Setting the Serial Number

In the menu screen, press [SERIAL NO.] to display the serial number setting screen in the figure at right.
Press a numerical region to switch to the numerical value entry screen.
When numerical values have been entered, the system will return to this screen.
Press [ESC] to return to the menu screen.



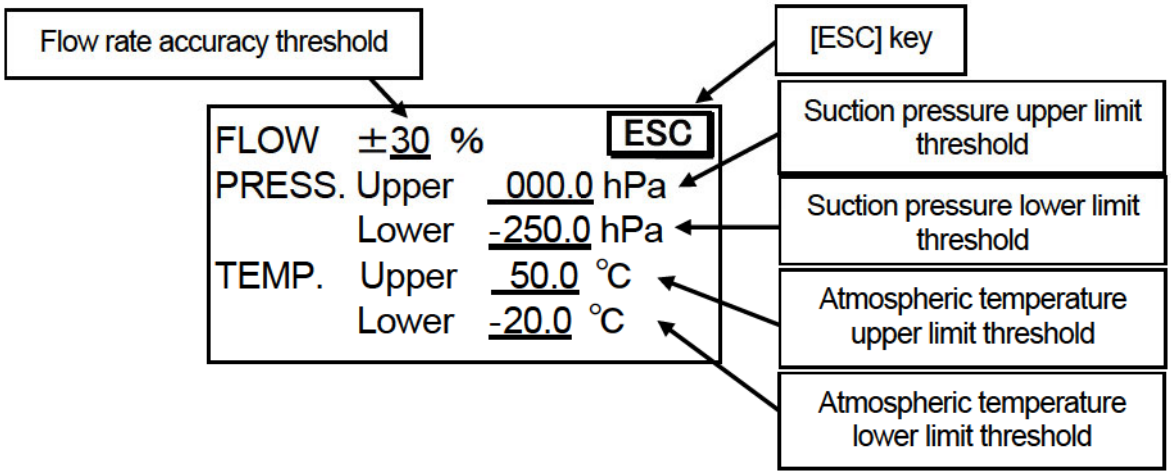

In the numerical value entry screen, press the numerical keys to enter the desired numerical values.
Press ↵ to confirm the numerical values as the setting values and return to the serial number setting screen.
Press [ESC] to cancel entry and return to the serial number setting screen.
Press [CLR] to set the numerical value to "0."




* The product serial number is set as the factory default.

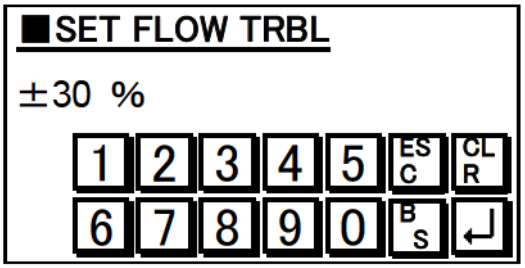
## Setting the Error

In the menu screen, press [TRBL SET] to display the error setting screen as in the figure below. Press the respective numerical regions to proceed to the numerical value entry screen. Set the respective threshold values. Press [ESC] to return to the menu screen.



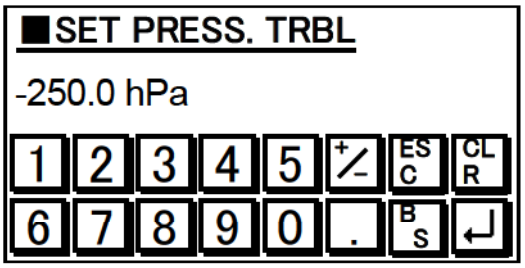

The respective numerical value entry screens are as follows. Press the numerical keys to enter the desired numerical values.
Press ↵ to confirm the numerical values as the setting values and return to the error setting screen.
Press [ESC] to cancel entry and return to the error setting screen.
Press [CLR] to set the numerical value to "0."
Press [BS] to delete the last figure entered.

Enter a flow rate accuracy threshold value between 5 % and 30 %.
The factory default is ±30 %.



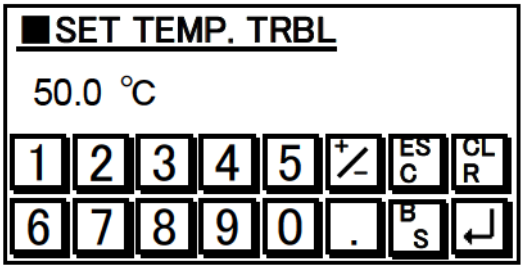

Enter a suction pressure threshold value between -250 hPa and 0.0 hPa.
The factory default upper limit is 0.0 hPa, and the lower limit is -250 hPa.

* Entry is rejected if the upper limit value is larger than the lower limit value.



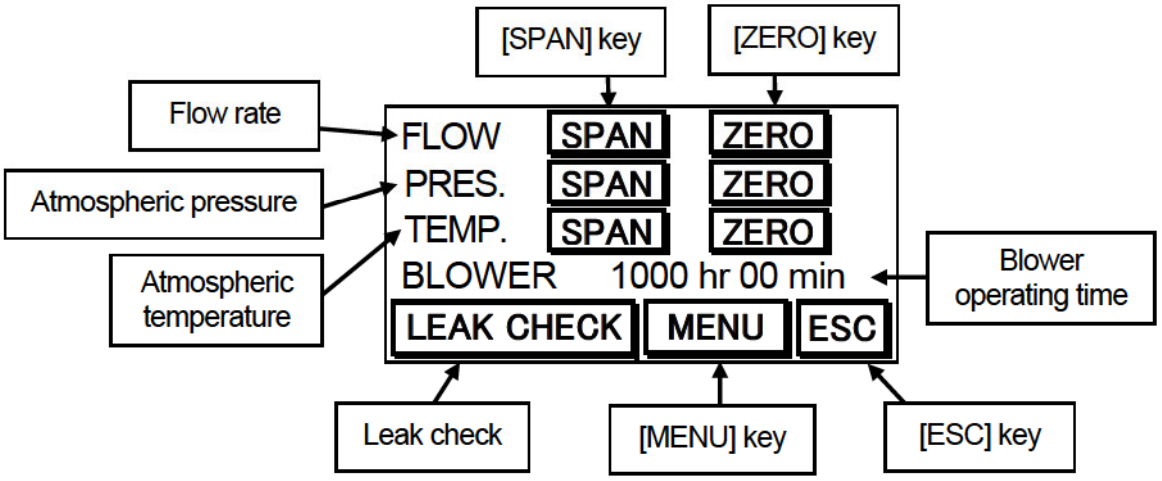

Enter an atmospheric temperature threshold value between -20.0 °C and 50.0 °C.
The factory default upper limit is 50.0 °C, and the lower limit is -20.0 °C.

* Entry is rejected if the upper limit value is larger than the lower limit value.



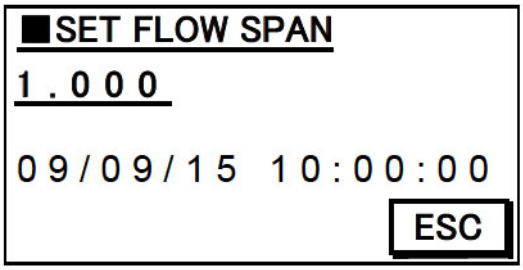
## Calibration Mode

In the menu screen, press [CAL] to switch to calibration mode. This section only describes the operating methods in the calibration mode. When performing an actual calibration, see the section on calibration methods. (See page 33.)

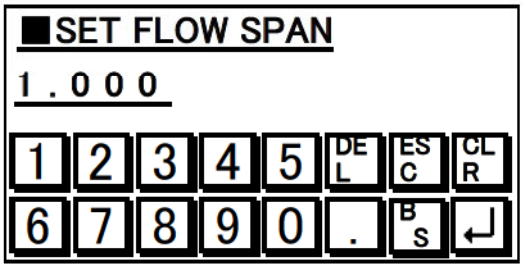



| | |
|---|---|
| [SPAN] key | Pressing this key will proceed to the respective span value entry screens. |
| [ZERO] key | Pressing this key will proceed to the respective zero value entry screens. |
| Leak check | Pressing this key will proceed to the leak check screen. (See page 32.) |
| Blower operating time | Displays the operating time for the blower mounted in this product. |
| [MENU] key | Pressing this key will return to the menu screen. |
| [ESC] key | Pressing this key will return to the main screen. |

The respective span value/zero value entry screens will be as in the figure at right. Press a numerical region to proceed to the numerical value entry screen.
When numerical values have been entered, the date of entry is recorded, and the system returns to this screen.
Press [ESC] to return to the menu screen.



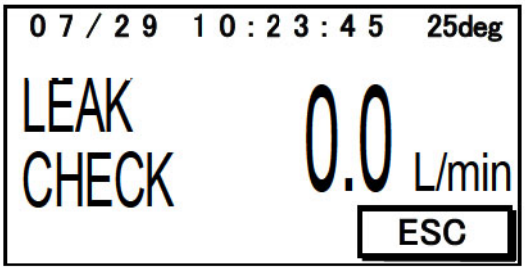

In the numerical value entry screen, press the numerical keys to enter the desired numerical values.
Press ↵ to confirm the numerical values as the setting values and return to the respective span value/zero value entry screens.
Press [ESC] to cancel entry and return to the respective span value/zero value entry screens.
Press [CLR] to set the numerical value to "0"
Press [BS] to delete the last figure entered.
[DEL] is not available here.




* The factory default span value is 1.000, and the zero value is 000.0.

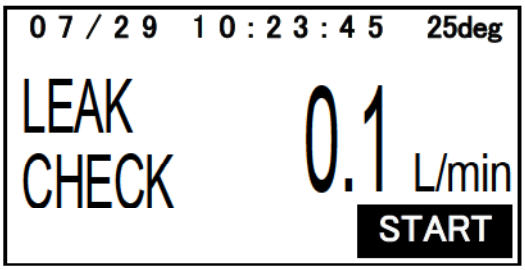
## Leak Check

Press [LEAK CHECK] to switch to leak check mode.




For the leak check, prepare an HV circular rubber plate (sold separately). Attach it to the same procedures as for attaching filters, and seal off the sampler's suction port.

Next, press the [START/STOP] button, and run the blower for 1 minute.
At this point, measure the flow rate.
If the flow rate exceeds 5 L/min, there is likely a leak somewhere in the sampling line. Check the attachment of the clamps, packing, and other connecting parts.




＊A numerical value of several L/min may be indicated even if the blower is not running. Because this sampler utilizes a differential pressure detection system, if there is even a tiny airflow at the flow rate detector, it will register as flow rate. For the same reason, a flow rate may be around 10L/min momentarily during the Leak check. Note that this does not indicate a malfunction.

Press [ESC] to return to the calibration screen.

# Calibration Methods

Calibration is recommended to further improve the accuracy of sampling.

## ■ 1 Point and 2 Point Calibration

1 point calibration is an effective method for adjusting the accuracy of a given value. A disadvantage however is that accuracy will actually be worsened if that value changes significantly.
2 point calibration can be used to adjust accuracy across a calibration range. A disadvantage however is that with parameters such as temperature, the preparation of differing environmental conditions can be difficult.

### Obtaining the Span Value and Zero Value in 1 Point Calibration

The span value and zero value are obtained from the following formulas:

$$\text{SPAN} = \frac{\text{Standard gage value}}{\text{Display value}} \quad \text{Or} \quad \text{ZERO} = \text{Standard gage value} - \text{Display value}$$

For calibration with respect to a particular flow rate, accuracy is more easily adjusted by changing the span value.
If you are performing a 1 point calibration with respect to constantly changing temperature or pressure values, then accuracy is more easily adjusted by changing the zero value.

*** With 1 point calibration, change either the span value or the zero value. Never change both values.**

### Obtaining the Span Value and Zero Value in 2 Point Calibration

The span value and zero value are obtained from the following formulas:

$$\text{SPAN} = \frac{(\text{Standard gage value 1} - \text{Standard gage value 2})}{(\text{Display value 1} - \text{Display value 2})}$$

$$\left[\begin{array}{l}\text{Standard gage value 1} > \text{Standard gage value 2} \\ \text{Display value 1} > \text{Display value 2}\end{array}\right]$$

$$\text{ZERO} = \text{Standard gage value 2} - \text{Display value 2} \times \text{SPAN}$$

Both the span value and zero value are changed in 2 point calibration.

## ■ Flow Rate Calibration Method

An optionally available standard flow meter can be attached to the sampler's intake side.
Calibration at the work site is simplified by using Sibata OFD-1 orifice flow meter (sold separately) as the standard flow meter (Optionally available round/rectangular adapter for orifice flow meter is required. A commercially available USB cable A-B type is also required). For calibration method by using OFD-1, refer to the OFD-1 operation manual. It is possible to use Orifice flow meter OF-1C/OF-1S as a standard flow meter.
For attachment method, refer to the orifice flow meter operation manual.
The following is manually calibration method by using a standard flow meter such as OFD-1 or OF-1C/OF-1S.

1. In the calibration mode, set the flow rate span value to 1.000, and return the zero value to 0.000.
2. Return to the main screen, and set the flow rate you wish to calibrate.
3. Press the [START/STOP] button, and start the high volume air sampler.
4. Record the standard flow meter value and the sampler's instantaneous flow rate display.
5. Calculate the span value. (See page 33.)
6. If you are performing a 2 point calibration, set the other flow rate, and proceed from step 3.
7. Switch to the calibration mode, and enter the obtained span value and zero value.

If you are only adjusting the accuracy of a particular flow rate, perform a 1 point calibration.
If you are using the product at multiple flow rate values, perform either a 1 point or 2 point calibration depending on the circumstances.
For a 1 point calibration, only change the span value. For a 2 point calibration, change both the span value and zero value.

＊To improve the calibration accuracy, perform the calibration under actual sampling conditions if possible.

## ■ Atmospheric Temperature Calibration Method

Calibration can similarly be performed with respect to the atmospheric temperature sensor. Use a standard thermometer, and place it near the atmospheric temperature sensor.

1. In calibration mode, set the atmospheric temperature span value to 1.000, and return the zero value to 0.000.
2. Set the mode display to atmospheric temperature display. (See page 21.)
3. Record the standard thermometer value and the equipment's atmospheric temperature display.
4. Calculate the zero value.
5. If you are performing a 2 point calibration, establish a different temperature environment, and proceed from step 2.
6. Switch to calibration mode, and enter the obtained span value and zero value.

For a 1 point atmospheric temperature calibration, only change the zero value. If you change the span value, this will adversely affect the accuracy.
For a 2 point calibration, change both the zero value and span value.
The temperature sensor region is not waterproof, so never perform atmospheric temperature calibration when it is wet.

## ■ Atmospheric Pressure Calibration

Prepare a standard pressure gage, remove the atmospheric pressure sensor tube, and connect the gage.

1. In the calibration mode, set the atmospheric pressure span value to 1.000, and return the zero value to 0.000.
2. Set the mode display to atmospheric pressure display. (See page 21.)
3. Record the value of standard atmospheric pressure gage and the sampler's atmospheric pressure display value.
4. Calculate the zero value.
5. If you are performing a 2 point calibration, establish a different pressure, and proceed from step 2.
6. Switch to the calibration mode, and enter the obtained span value and zero value.

# Flow Rate Correction Method

This product can display a 20 °C 1 atmospheric pressure corrected flow rate, a 25 °C 1 atmospheric pressure corrected flow rate, a 0 °C 1 atmospheric pressure corrected flow rate, or the actual flow rate. In addition, the blower can be controlled so as to ensure that the flow rate display matches the configured flow rate. The flow rate is calculated from the following flow rate formula, and correction is performed in accordance with the selected flow rate correction method.

$$Qc = Qa \times \frac{273.15 + Ts}{273.15 + Ta} \times \frac{Pa}{Ps}$$

Qc: Flow rate calculated under standard conditions (L/min)
Qa: Actual flow rate (L/min)
Pa: Atmospheric pressure (hPa)
Ps: Standard atmospheric pressure (1013.25 hPa)
Ta: Atmospheric temperature (°C)
Ts: Standard temperature (°C)

The cumulative flow rate is calculated by summing the instantaneous flow rate units corresponding to the selected flow rate correction method, in 1 second units.

# Communications

Sampling data can be retrieved by connecting a PC using the USB port provided on the product. No particular communications software is prepared, but products such as HyperTerminal can be used.

A special USB driver is required for communications. The USB driver can be downloaded from Sibata website:
(http://www.sibata.co.jp/technology/technology-27640/)
In addition, please refer to the online manual available at Sibata website for details on communications commands.

# Maintenance

Periodic maintenance is required in order to extend the life of this product.
When cleaning the product, use dry cloths and thoroughly wrung out damp cloths. The stainless steel parts of the sampling line may be wiped clean with acetone. For other parts however, wipe clean with dilute ethanol.

In the following cases, repairs or maintenance must be performed by the manufacturer. Contact your Sibata agent.

1. One year has elapsed since flow rate calibration by the manufacturer.
2. The internal battery run-down icon is lit.
3. The packing or rubber parts have become stiff, or cracks have developed.

If any other problems arise, contact your Sibata agent.

# Troubleshooting

If a problem occurs during use, promptly stop using the oven. If the error was caused by a product failure, please do not operate the unit again request for repair.
In some cases, errors may be caused by something other than a malfunction. Before requesting repair, verify the following.

| Symptom | Cause | Remedy |
|---|---|---|
| The power is turned ON but nothing is displayed. | The power cord is unplugged from the outlet, or the power cord is not connected securely to the sampler. | Ensure that the power cord is securely plugged into the outlet, and connected to the sampler. |
| The blower does not run even after the [START/STOP] button is pressed. | The button was accidently pressed twice in a row. | Press the button once properly. |
| | A slight airflow has developed over the flow meter (resulting in a "ZERO ERROR" display). | Wait for the airflow to settle down. Then press the [START/STOP] button. |
| The clock time is not right, or the clock reads "2000/1/1" when the power is turned OFF. | The internal battery is dead. (The internal battery icon is lit.) | The battery must be replaced. Contact your Sibata agent. |
| There is no sampling data. | The internal battery is dead. (The internal battery icon is lit.) | The battery must be replaced. Contact your Sibata agent. |
| The sampler does not recover from a power outage. | The internal battery is dead. (The internal battery icon is lit.) | The battery must be replaced. Contact your Sibata agent. |
| | The power outages have occurred intermittently. | A power outage will not be registered if the voltage fluctuates intermittently or gradually drops. Ensure that the power supply is stable. |
| The blower has stopped. | The blower temperature has reached or exceeded 95 °C. (A blower RPM error has been recorded.) | A blower temperature error may occur if the suction pressure is too high or if measurements are performed in direct sunlight. Lower the configured flow rate, or move the sampler to a cooler location. |
| | A blower ERR error has been recorded. | Maintenance or repairs may be necessary. Contact your Sibata agent. |
| The temperature display reads close to -50 °C. | The temperature sensor connector has come loose, or is not connected properly. | Check that the temperature sensor connector is properly connected. |
| "POWER TROUBLE" is displayed. | Abnormality of internal power supply. | The unit needs repairs and replacement. Please contact your Sibata agent. |

# Main Specifications

| | |
|---|---|
| **Item Code** | 090130-31 |
| **Model** | HV-500R |
| **Standard Suction Flow Rate** | 500 L/min. (with glass fiber filter ϕ110mm) |
| **Configurable Flow Rate Range** | 100 to 800 L/min |
| **Accuracy of Constant Flow Rate** | Within ±5 % of the set flow rate |
| **Suction Pressure *1** | -160 hPa (500 L/min) |
| **Flow Rate Detection** | Differential pressure detection method |
| **Suction Pump** | Brushless blower |
| **Filter** | ϕ110 mm circular filter |
| **Screen** | Touch panel LCD (backlit) |
| **Power Outage Countermeasures** | Continues with the prior operating conditions after power recovery |
| **Operating Temperature Range** | 0 to 40 °C with no condensation |
| **Power Supply** | 220VAC (180VAC to 264VAC), 50/60 Hz |
| **Current Protection Function** | 15 A Circuit protector |
| **Power Consumption *2** | 500 L/min: 1.4 A (with glass fiber filter ϕ110mm) |
| **Dimension** | 425 (W) × 200 (D) × 270 (H) mm |
| **Weight** | Approx. 8 kg |
| **Accessories** | Filter clip for ϕ110mm (Item Code 080130-0871),<br>Glass fiber filter ϕ110mm GB-100R-110A 10pcs,<br>Touch panel protection sheet, Power cable |

*1: Operation under 1 atmospheric pressure assumed. Performance may be inferior under low atmospheric conditions at high altitudes.

*2: This is the initial value (at time of shipment, at AC220V). Power consumption may exceed double the specified value if a collector with a large load exceeding the specifications is used.

# Spare Parts

| Item Code | Name of Part | Details |
|---|---|---|
| 080130-0871 | Filter clip (standard accessories) | For ϕ110mm |

# Consumables

| Item Code | Name of Part | Details |
|---|---|---|
| 080130-98110 | Glass fiber filter, PTFE binding | ϕ110mm, 50pcs, TF98 |
| 080130-031 | Glass fiber filter | ϕ110mm, 100pcs, GB-100R-110A |
| 080130-034 | Quartz fiber filter | ϕ110mm, 100pcs, QR-100 |

# Options

## ■ Particle Size Selector

The unit can be attached to a particle size selector (option) to cut and sample particles over specified sizes and sample them.
Please refer to an operation manual about details and the handling methods.
Please contact your Sibata agent to find out how the unit should be combined depending on purpose of your use.


| Item code | Name of parts | Details |
|---|---|---|
| 080130-042 | Particle size selector, round SPM | Over 10 μm, 100%cut |
| 080130-045 | Particle size selector, round PM10 | 10 μm, 50%cut |
| 080130-0874 | Particle size selector, round PM4 | 4 μm, 50%cut |
| 080130-047 | Particle size selector, round PM2.5 | 2.5 μm, 50%cut |
| 080130-033 | Sampling plate set | Sampling plate, φ110mm x 5,<br>Filter case with lid x 6,<br>Grease guide x 1,<br>Grease x 1, Storage box x 1 |
| 080130-037 | Grease guide | φ110mm |
| 080130-035A | Filter case with lid | φ110mm, 5pcs |
| 080130-032 | Glass fiber filter | φ110mm, 100pcs<br>GB-100R-110B with slit |
| 080130-036 | Grease | For Particle size Selector, 100g |

## ■ Dioxin Sampling

This product can perform sampling dioxins with a Shuttle Tube and a Shuttle Tube Fitting Set.
And, the Rectangular Filter Holder enables a sampling with 8" x 10" filter.
Please refer to an operation manual of the Shuttle Tube for the handling and details.
Please contact your Sibata agent to find out how the unit should be combined depending on purpose of your use


| Item code | Name of parts | Details |
|---|---|---|
| 080130-0971 | Shuttle tube | SUS outer tube x 1,<br>Carrying canopy x 2,<br>Clamp with lock x 2,<br>Urethan holder (urethane excluded) x 1 |
| 080130-0972 | Urethane holder | Glass urethane holder (holder only) |
| 080130-0994 | Clamp | For shuttle tube, lock excluded |
| 080130-0872 | Shuttle tube fitting set | Sanitary flange x 1,<br>Stand for shuttle tube x 1,<br>Teflon ring x1, Screw x 1,<br>Hexagon wrench x 1 |
| 080130-0873 | Rectangular filter holder | For 8" x 10" filter |
| 080130-0973 | Filter case | For 8" x 10" filter |
| 080130-053 | Glass fiber filter | 8" x 10" filter, 50pcs, QR-100 |
| 080130-0941A | Polyurethane foam | $\phi$90mm x 50mm, 10pcs |

# ■ Other Options

## Orifice Flow Meters

| Item Code | Item | Specifications |
|---|---|---|
| 080130-8 | Digital orifice flow meter, OFD-1 | ※1 |
| 080130-075 | Orifice flow meter, OF-1C | $\phi$110mm |
| 080130-055 | Orifice flow meter, OF-1S | 8" x 10" |
| 080130-0551 | Rectangular adaptor | For orifice flow meter, 8" x 10" |
| 080130-07511 | Round adaptor | For orifice flow meter, $\phi$110mm |
| 080130-0553 | Orifice adaptor | For particle size selector, round type |

※ Please contact your Sibata agent to find out how the unit should be combined depending on purpose of your use.

※1 When using this product, "080130-07511 Round adapter for orifice flow meter" or "080130-0551 Rectangular adapter for orifice flow meter" are required. It is possible to use Round adapter attached Orifice flow meter OF-1C or Rectangular adapter attached Orifice flow meter OF-1S.
A commercially available USB cable A-B type is required for automatic calibration.

## Rubber Plate for Leak Check

| Item Code | Item | Specifications |
|---|---|---|
| 080130-0904 | Rubber plate for leak check, round type | $\phi$110mm |
| 080130-0906 | Rubber plate for leak check, round type | 8" x 10" |

※ Please refer to pp. 32, “Leak Check”.

# Warranty and Repair

This product shall be repaired free-of-charge should it malfunction within one year of purchase. When asking for repair, be sure to directly contact the dealer of purchase.
Consumables provided with this product fall outside of the scope of this warranty. Repair of the product itself also shall fall outside of the scope of this warranty if any of the following causes it to malfunction:

- Faults or damage resulting from incorrect use
- Faults or damage resulting from repairs or modifications implemented by parties other than Sibata
- Faults or damage resulting from fires or natural disasters, such as earthquakes
- Faults or damage resulting from salt or gas damage, or from abnormal voltage
- Faults or damage occurring after purchase due to relocation, movement, falling, or vibration
- Faults or damage resulting from the use of consumable items not specified by Sibata
- Any case in which the date of purchase has not been entered on the warranty, the warranty has not been stamped, or the warranty items have been corrected
- Modifications and repairs prohibited. Never disassemble or modify this product, as the warranty will be voided. Such actions may cause unexpected faults or accidents.

### Disclaimer

Should some nonconformity occur during use of this product, Sibata does not assume any liability whatsoever for compensation of data or content that could not be acquired or logged as a result, loss of data or other content, and other direct and indirect damages (loss of business profit, interruption of business, etc.) relating to the preceding.
Sibata guarantees repair of production malfunctions under fixed conditions. However, Sibata does not offer any compensation for loss of or damage to data stored on the product. When asking Sibata for repair or other services, make a backup of any required data. Sibata does not assume any liability whatsoever for any damages that may occur accompanying loss or discarding of data due to infringement of precautions described in this manual or neglect to back up data on the part of the customer.

For details of repair after the Warranty has expired, contact your Sibata agent. The product shall be repaired for a fee only if Sibata judges that repair shall restore its functions, and its functions can be sustained in the future only in accordance with specified methods of use.
When returning this product for repair, fill in the Trouble Notification Sheet and send this sheet together with this product. (See page 44.)

# Disposal of the Product

Dispose of the product in accordance with the disposal laws and regulations of your respective local governing body. The sampler body is made almost entirely from metals (aluminum and stainless steel).

# Inquiries

If you have any questions about this product, or if there is any other way in which we can be of assistance, contact your Sibata agent.

2017.08.29H (07)

# Trouble Notification Sheet

This sheet is to be filled with information required for the smooth checking and repair of malfunctions. Please fill in this sheet in as much detail as possible. Also, attach this sheet when asking for repair.

## High Volume Air Sampler HV-500R Trouble Notification Sheet

If the sampler malfunctions, make a copy of this sheet, fill it in and contact your Sibata agent.

Entry Date (y/m/d):

Product Conditions of Use

Model: : HV-500R

Serial No.: Date of Purchase (y/m/d):

Start of Use (y/m/d):

Frequency of Use: ☐: Every day ☐: __ days/week ☐: __ days/month

Number of Hours Used per Day:

Operating Environment Temperature (measured temperature, if possible): ( ) °C to ( ) °C

Number of Installed Units: __ units Application:

Used Power Voltage: ( ) V

Symptoms of Malfunction

Frequency of Occurrence: ☐: Every time ☐: Occasionally ☐: Rarely ☐: Other

( )

Start of Malfunction: ☐: Since purchase ☐: Within a month ☐: Within a week

☐: Other ( )

Symptoms: (Write in as much detail as possible.) Ex: Backlight does not turn ON even by pressing a key.

Check Items (Please choose your answer. )

- Does the LCD display turn ON when the power to the sampler is turned ON? ( Yes · No )
- Has it been used near the sea or a hot spring? ( Yes · No )
- Are there any signs or scratches on the sampler body indicating that it has been dropped or impacted? ( Yes · No )

Work Check Items When Asking for Repair

☐: Make a copy of the Trouble Notification Sheet, fill it in and send it together with the sampler.

☐: If there is the risk that harmful substances have been sucked into the sampler, put this Trouble Notification Sheet in an envelope, and stick this to the outside of the box. Also, be sure to clearly indicate the presence of such substances on the Trouble Notification Sheet

SIBATA SCIENTIFIC TECHNOLOGY LTD.

SIBATA

1-1-62, Nakane, Soka, Saitama, 340-0005, Japan

TEL:+81-48-933-1582 FAX:+81-48-933-1591

E-mail:overseas@sibata.co.jp

**http://www.sibata.co.jp/english/**

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Note) Shape, dimensions, specifications, and other product information are subject to change without notice in the interest of product improvement to the extent that product functions and applications will not be impaired.