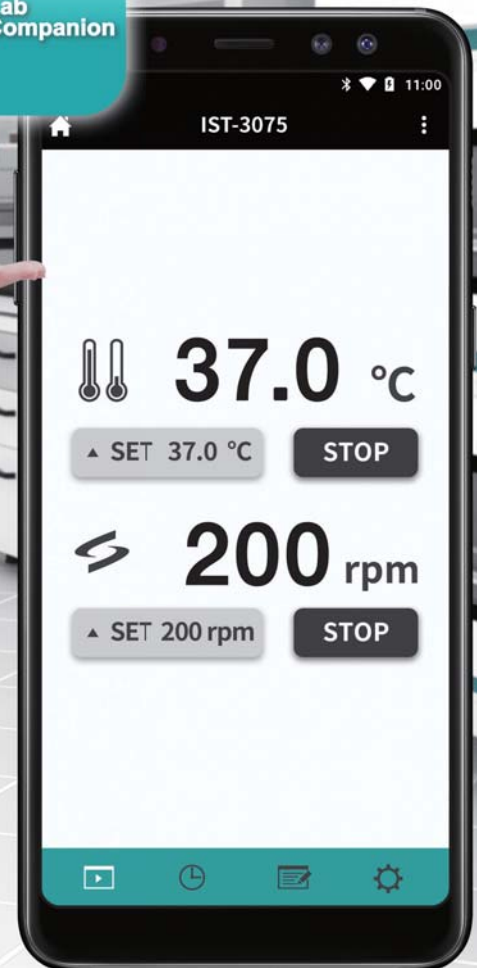




# Lab Companion

2020 - 2021 Catalog

*Creating  
Safe & Reliable Research Environment*





## LC Connected

Real-time monitoring and remote control of lab equipment anytime, anywhere

### LC Connected applied product list



Temp. & Humid. Chamber



Oven



Low Temp. Incubator



Incubated shaker



Shaker



Bath Circulator





Refrigerator



Chiller (Recirculating Cooler)

\* We will continue to expand Lab Companion equipment with a PC interface. (Supported from Android 6.0 Marshmallow version and above. iOS devices to be supported in the future)

## To Valued customer,

Founded in 1988, JEIO TECH, which started from the dream of localizing experimental equipment, has now reached its 32th anniversary. Thanks to the support of our customers, we have grown into a leading manufacturer of experimental equipment in Korea that supplies stable experimental equipment all over the world. In the lab area, we use  Lab Companion as we pursue our vision of becoming a 'Companion in Laboratory'. In the environmental reliability testing area, we are using our company's name as it is and are active in the global market using the  JEIO TECH brand.

JEIO TECH has served customers both at home and abroad for a long period of time in the fields of physics and chemistry experimental equipment and reliability testing equipment with technology that allows for excellent control of temperature, humidity, and motion. In this catalog, we have launched a series of laboratory ovens and incubators with new controllers for lab use. Temperature uniformity is superior to that of previous models, and the visibility and functionality of the controllers have been improved. We have also introduced a new type of temperature and humidity chamber, specialized for the pharmaceutical industry (p290). We have applied a dedicated temperature and humidity controller that reflects the know-how of JEIO TECH, and have also improved the water supply line to control the humidity, thereby improving durability and convenience.

Lab Companion's has been at the forefront of manufacturing safety equipment such as by introducing an experimental equipment safety certification and filing patent applications for overheating prevention technology. Through this catalog, Lab Companion's provides lab safety furniture (fume hoods, testing benches, safe reagent storage cabinets, etc.) for a safer research environment. In particular, the 90 type fire safety cabinet, which has been awarded the world's highest level of fire protection certification, will raise the level of safety for handling hazardous flammable materials in laboratories (p200). From lab safety furniture to general lab equipment, you can now take advantage of the professional services of Lab Companion's when designing a new laboratory.

In the modern day, IoT technology is improving time efficiency, and the laboratory is no exception. Lab Companion's has enabled customers to remotely control and monitor the majority of Lab Companion's equipment with PC connection ports remotely from their smartphones via LC GreenBox (p12). Currently Android 6.0 and later versions are supported, and we plan to expand services for iOS users in 2019. This service will help you to utilize your time more effectively.

In addition to the JEIO TECH (with Lab Companion's) standard products listed in this catalog, there are cases in which experimental equipment and reliability testing equipment are required to be designed separately according to the customer's various testing environments. JEIO TECH has accumulated extensive design-related know-how, especially for temperature and humidity test chambers. In particular, we created a custom-made specialty division (SP division), which has delivered successful results to leading international companies such as Samsung SDI, LG Chem, and Hyundai Motor Company. From customer consultation to design, production, installation, and after-sales service, we hope you take full advantage of our professional services at JEIO TECH (with Lab Companion's).

This catalog edition has been featured the Lab Companion's brand on the cover, which manufactures and distributes laboratory supplies. We have also placed an image index at the front of the catalog to allow you to find the products you are looking for more easily. You can easily find top-quality products that have been developed based on over 32 years of experience. In addition, the icons applied to the product family are described at the first page of each product family and help you understand the product.

The company contributes to the entire value chain of laboratory and reliability testing equipment supply, from product development, manufacturing, and sales to validation and after-sales service. From the time of founding to the present, we have achieved localization and globalization of a wide range of experimental equipment throughout continuous research and development. In addition to the new products introduced above, we have strengthened our product lineup in the life sciences field by introducing a CE-certified electric power supply device for electrophoresis as well as small refrigerators for pharmaceuticals and laboratory usage. We will continue to strive to enhance the quality of our products and services by listening to and reflecting the feedback of customers through sales, services, validation, and etc. JEIO TECH is creating safer research environments through Lab Companion's, the best partner of researchers and experimenters. We thank you for your support.

- All of the JEIO TECH Family



# Highlight Products

## LC Connected

For further details  
Page 12

You can check the operation status of your equipment anytime and anywhere, allowing you to use your time more efficiently.



## Temp. & Humid. Chamber

For further details  
Page 272

It is equipped with a dedicated controller that enhances the user's convenience, and the improved water supply line makes it possible to replenish water at the optimum time, making it excellent environmental testing equipment.



## Ovens

For further details  
Page 60

### Forced Convection Oven

It provides excellent temperature uniformity with airflow optimized for uniform heat transfer.



### Natural Convection Oven

The inside air is heated by the heater located on the bottom, so there are no concerns about scattering of the sample.



### Vacuum Oven

Optimally constructed for separating solvents from solutions or drying solvents with high boiling points.



## Incubator

For further details  
Page 78

### Forced convection Incubator & Natural Convection Incubator

It is a forced convection incubator with excellent temperature uniformity maintained through forced convection using an internal fan. It is a natural convection incubator that minimizes scattering and contamination of samples using air-jacket type heat transfer function.



## Incubated shaker, Stackable

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Page 100

The height of platform of the upper portion of triple stackable units is only 150 cm, and thus is convenient to remove and attach samples by pulling out the platform easily using a rail mechanism.



## Electrophoresis system and power supply

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Page 164

It is a means of power supply that has been proven safe through electrophoresis device, which is essential for life science experiments, and CE certification.



## Compact refrigerator (laboratory / Pharmacy)

For further details  
Page 240-249

The compact size of 73 L allows for even better spacious efficiency, and double digital door lock provides enhanced security, which consists of the inner drawer locking device and outer door locking device.



## Safety Storage & Cabinet

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Page 196

### Storage of Flammable / Combustible Materials



In case of an unexpected fire that may occur at any time, flammable and combustible materials must be stored in a suitable location. Lab Companion's flammable hazardous material storage cabinets to be certified the strictest EN 14470-1 standard, is the best choice.



### Storage of corrosive substances such as strong acids and strong bases

The structure is optimized for long-term safe storage of corrosive substances such as strong acids and strong bases used in experiments and processes. It is composed of a solid steel structure and corrosion-resistant interior material, and provides differentiated safety performance due to its space specific exhaust structure.



### Reagent cabinet with built-in circulation filter

It is a reagent cabinet in which air flow is uniformly formed and the harmful gas is adsorbed through the internal filter. It is safe from fine particles and gas as it is equipped with Lab Companion's exclusive carbon filter and HEPA filter.



### Physically / Chemically robust cabinets

It is a reagent cabinet consisting of a polypropylene drawer and a stable structure with a rigid steel frame coated with epoxy. Choice provided depending on the usage, including glass window door type, no sunlight exposure, tabletop type, under table type, etc.



### Safe storage of high-pressure cylinders

Cylindrical high-pressure containers must be prevented from falling and must be properly protected from unexpected external impact. High-pressure cylinders can be safely stored in Lab Companion's exclusive solid steel storage cabinets for peace of mind.



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## Environmental Reliability Test Equipment

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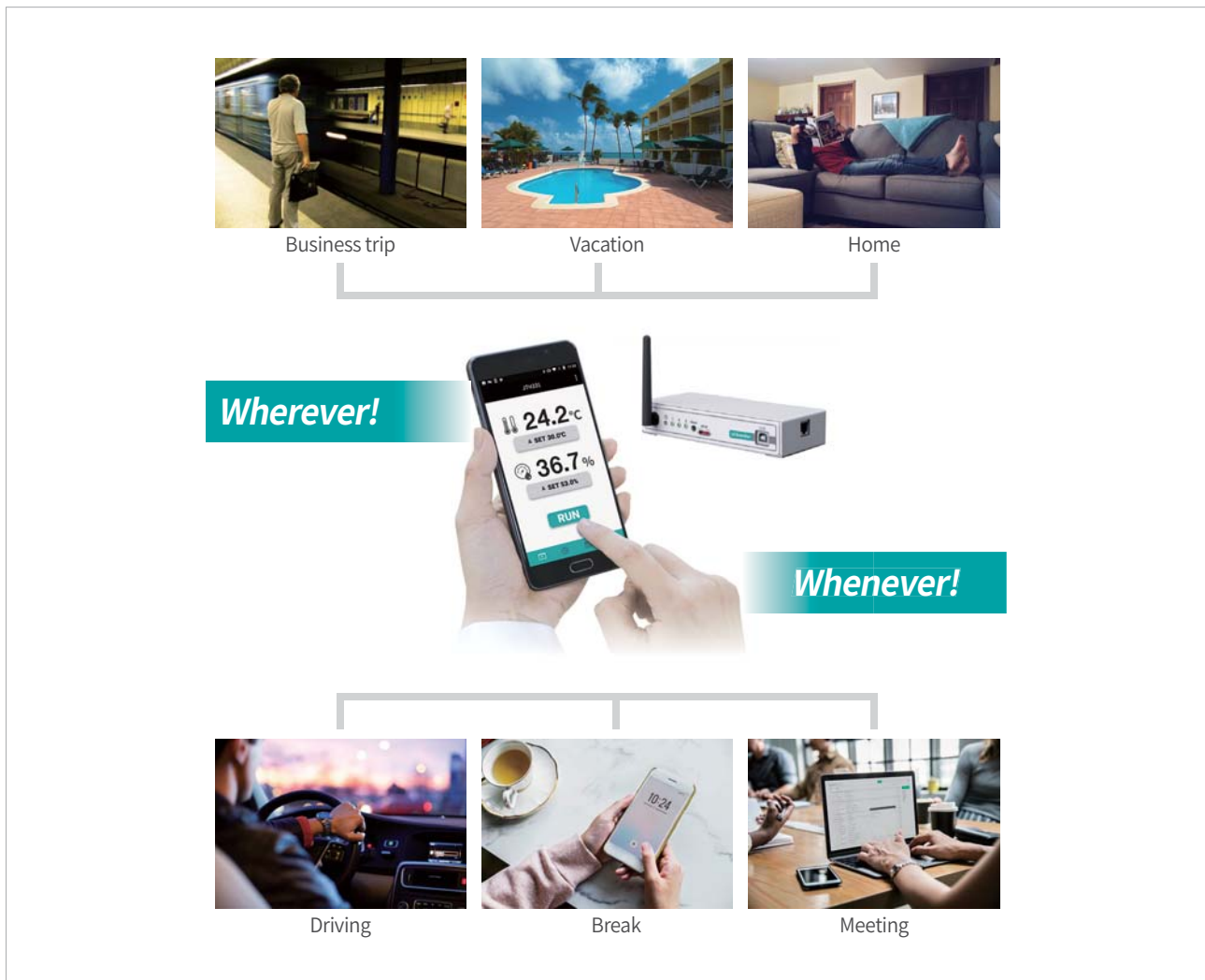


Clean Oven **338**

# LC Connected (Mobile monitoring system)

## A combination of research/lab and network! Efficient management of lab research equipment in the same network

LC Connected is a smart mobile monitoring system that is introduced into modern laboratories for the IoT era when everything is connected, and new value is created.



Whether you are on a business trip, dining out, or in a meeting, you will receive a notification to your mobile device in real-time if any error of the equipment is detected. In addition, temperature / humidity / rpm control and Run / Stop functions can be controlled at any time, and from any location. When you also utilize for the data backup service, you can manage the stored data precisely on the central server through the LC Connected.



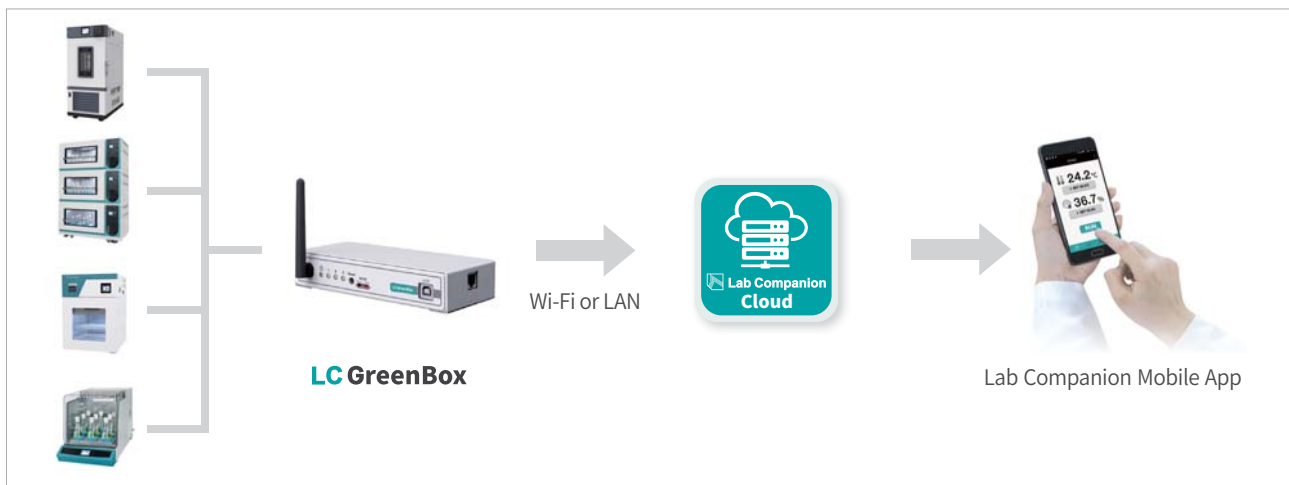
Reliable data management through backup of equipment history.

## LC Connected System

LC GreenBox is a device that connects the lab's research equipment to a single network, allowing the experimenter to operate the equipment more efficiently. Experimenters can check the condition of their devices anytime, from any location via the mobile app. Each piece of equipment connected to the LC GreenBox creates an LC Connected system by sending data to the Lab Companion Cloud Server and transmitting information to the experimenter's mobile app.

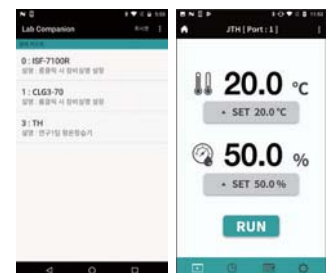


**LC GreenBox**



**LC Connected** Flow diagram

- Real-time monitoring of equipment connected to LC Connected possible through the dedicated mobile application for Lab Companion.  
(Supported from Android 6.0 Marshmallow version and above. iOS devices to be supported in the future)
- Each lab member can access connected devices for which they have access permission through their personal mobile app.
- One LC GreenBox can communicate with up to four Lab Companion devices via an RS-232 port and can be expanded via multiple LC GreenBoxes.
- Access to the Cloud Server via Wi-Fi or wired LAN allows for a high degree of freedom in the lab.
- Real-time alarms for events concerning connected equipment.  
(Temperature deviation, long-term door opening, power failure, and etc.)



Real-time monitoring through mobile devices



Connection up to 4 devices



Power failure notification

| Description        | Dimension (W x D x H, mm/inch)  | Cat. No.        |
|--------------------|---------------------------------|-----------------|
| <b>LC GreenBox</b> | 156 x 94 x 34 / 6.1 x 3.7 x 1.3 | <b>AAAQ1011</b> |

# Features at a glance

## Certificate / Patent / Common Features



Registered safety patent based on JEIO TECH's proprietary technology.



1 year warranty Free A/S.



Digital Input / Output for external device interlock control.



Registered patent based on JEIO TECH's proprietary technology.



2 year warranty Free A/S.



It memorizes the state of power failure and operates automatically when power is restored.



Satisfaction with the requirements of European regulations and guidelines.



3 year warranty Free A/S.



More precise temperature control through 3-point temperature calibration.



Certification of conformity of electricity, gas, etc. in accordance with the safety standards of Canada and USA.



Intuitive operation with Color Touch display.



More precise temperature control through temperature calibration.



Recognized as an excellent design product by the Ministry of Commerce, Industry, and Energy.



Real-time equipment monitoring and control system using mobile app.



Warning alarm in case of deviation of temperature control.



Compliance with Guidelines for Restriction of Hazardous Substances use.



Possible to set end time or start time of device operation.



Over temperature protection function.



Eco-friendly product that has passed environmental impact assessment tests.



Control of temperature / humidity / rpm / time, etc. through dedicated program.



Electronic over temperature protection system.



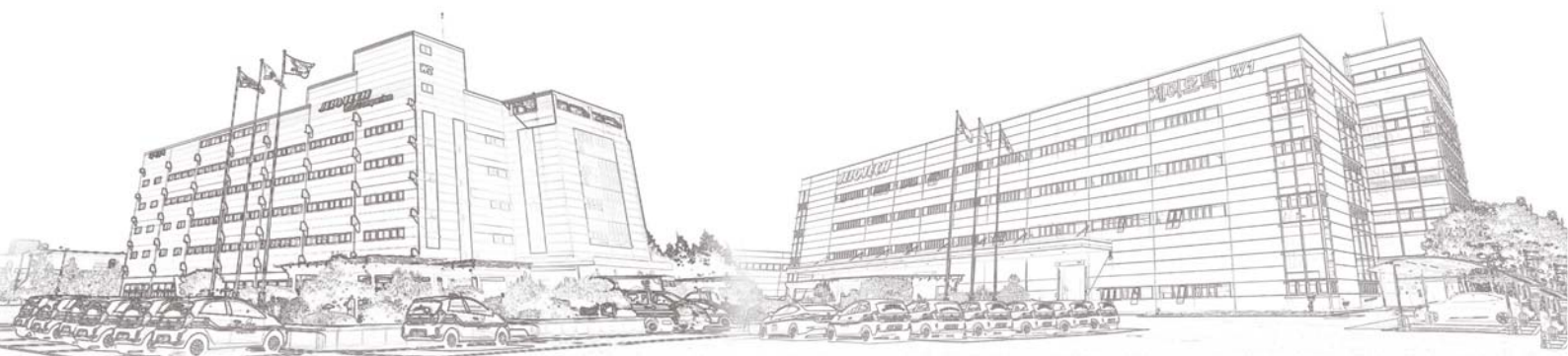
Certificate of medical devices management system for the manufacturers of medical devices.



PC communication via RS-232 / RS-485 / USB port.



Conventional over temperature protection, a kind of backup device against electronic over temperature protection failure.



## Stirrer / Hotplate



Bluetooth connection available for mobile control.



Possible to check and control temperature of sample by connecting to device with an external sensor.



Possible to connect an external controller.



Maintains possible maximum orbital motion without stopping, even if overload occurs.



If the surface temperature of the hot plate exceeds 50 degrees, the warning lamp turns on.

## Storage / Cabinet



Door locking system with key.



Excellence in acid/alkaline storage with a corrosion-resistant structure and exhaust system.



30 minute fire resistance confirmed.



60 minute fire resistance confirmed.



90 minute fire resistance confirmed.



User safety by blocking potentially harmful UV light.



Leakage minimized using an integrated mold.

## Shaker / Incubated Shaker



Orbital motion either clockwise or counterclockwise direction can be set.



Orbital motion.



Rocking motion.



Waving motion.



Vertical reciprocal motion.



Selectable shaking motion either orbital or reciprocal.



Mixing through 360 degree rotation.



More accurate speed control with rpm calibration.

## Bath / Chiller / Incubator / Temperature & Humidity Chamber



Indicator to as certain water level.



Alarm if the water is low level.



Improves temperature stability by performing internal agitation.

## Hood / Clean Bench



Differentiated diffusing muffler produces good laminar flow.



Equipped with UV Light.



Exhaust via duct connection.



Purifies and discharges harmful gas through internal filter.



If sash door is opened, automatically UV light is off and fluorescent light and fan are operated.



Equipped with the same controller inside and outside for convenience.

## Refrigerator / Freezer



Medical device in accordance with ISO 13485.



Automatic operation of auxiliary controller when main controller is out of order.



Automatic defrosting does not need the work of unnecessary frost elimination.



In case of abnormal operation of the device, a voice message alarm is transmitted via telephone.



Laboratory Equipment





# Laboratory Equipment



# Bath Circulator


















## General Application

Internal/external temperature control: Spectrophotometer, refractometer, polarimeter, viscometer, fermenter, electrophoresis equipment, column chromatography, rotary evaporator etc.

|                        | Description  | Temp. Range (°C/°F)  | Max. Temp. Stability (°C/°F) | Volume (L / cu ft)                       | Model | Page |
|------------------------|--|--|------------------------------|--|-------|------|
| Refrigerated & Heating | <b>Program</b> <ul style="list-style-type: none"> <li>• 10 Programs &amp; 10 Steps</li> <li>• Intuitive operation with color touch display</li> </ul>              | -25 ~ 150<br>/-13 ~ 302 (RW3-25P)<br>-35 ~ 150<br>/-31 ~ 302 (RW3-35P) | ±0.05 / 0.09<br>at -10 °C    | 5, 10, 20, 30<br>/ 0.2, 0.4, 0.7,<br>1.1 | RW3-P | 22   |
|                        | <b>General</b> <ul style="list-style-type: none"> <li>• Clear VFD &amp; simple operation</li> <li>• Applies smart refrigeration system</li> </ul>                  | -25 ~ 150<br>/-13 ~ 302 (RW3-25)<br>-35 ~ 150<br>/-31 ~ 302 (RW3-35)   | ±0.05 / 0.09<br>at -10°C     | 5, 10, 20, 30<br>/ 0.2, 0.4, 0.7,<br>1.1 | RW3   | 24   |
| Heating                | <b>Program</b> <ul style="list-style-type: none"> <li>• 10 Programs &amp; 10 Steps</li> <li>• Intuitive operation with Color Touch display</li> </ul>              | Amb. +10 ~ 150<br>/ Amb. +18 ~ 302                                     | ±0.05 / 0.09<br>at 50°C      | 5, 10, 20, 30<br>/ 0.2, 0.4, 0.7,<br>1.1 | CW3-P | 26   |
|                        | <b>General</b> <ul style="list-style-type: none"> <li>• Clear VFD &amp; simple operation</li> <li>• Detection and notification of temperature deviation</li> </ul> | Amb. +10 ~ 150<br>/ Amb. +18 ~ 302                                     | ±0.05 / 0.09<br>at 50°C      | 5, 10, 20, 30<br>/ 0.2, 0.4, 0.7,<br>1.1 | CW3   | 26   |

※ The contents of the above and the contents of this catalog may differ depending on the specific model and conditions of use. For the information about the features and specifications that applying to each models, please check the information on the corresponding page of each models.

|   |   |   |  |   |   |
|---|---|---|--|---|---|
|  | Satisfaction with the requirements of European regulations and guidelines.  |  | Real-time equipment monitoring and control system using mobile app.                        |  | Registered safety patent based on JEIO TECH's proprietary technology.           |
|  | Eco-friendly product that has passed environmental impact assessment tests. |  | Digital Input / Output for external device interlock control.                              |  | Intuitive operation with Color Touch display.                                   |
|  | Warning alarm in case of deviation of temperature control.                  |  | Possible to set end time or start time of device operation.                                |  | Control of temperature / humidity / rpm / time, etc. through dedicated program. |
|  | PC communication via RS-232 / RS-485 / USB port.                            |  | More precise temperature control through 3-point temperature calibration.                  |  | Over temperature protection function.   |
|  | Alarm if the water is low level.  |  | It memorizes the state of power failure and operates automatically when power is restored. |  | 2 year warranty Free A/S.   |

# Bath Circulator



## Innovative Control System & Design Application of specialized exclusive control system

### > Selection of 2 control systems

#### Program Controller Type

- Program operation controller, 10 programs. (10 steps maximum)
- Intuitive operation with color touch display.

#### General Controller Type

- Controller for constant temperature value control and temperature deviation notification. (deviation limit/alarm delay setting)
- Precise and stable control of set temperature.

### > Sharper screen display

Program type is applied to color touch display, general type is applied to clear VFD.

### > Provision of remote equipment monitoring service (option)

Real-time monitoring of equipment operation status using smartphone. (when purchased LC GreenBox)

### > More stable temperature control (RW3/CW3)

- Depending on the type of fluid used in the bath, three different auto-tuning values ( $\Delta T1-3$ ) are saved.
- Auto-tuning is activated after 3 operating temperatures are inputted for each auto-tuning.

### > Optimized temperature control

Auto-tuning function enables optimal control even when mainly used temperature or ambient conditions are frequently changed.

### > 3-point temperature calibration function (RW3/CW3)

Temperature calibration of up to 3 points provides more reliable temperature control.

### > Computer Interface (USB, RS-232)

Convenient remote control and data management on PC via built-in dedicated software.



Color Touch Display Controller.



Clear VFD Controller.



Provision of remote equipment monitoring service.



## Provision of convenient and useful functions for actual use Applies Lab Companion's patented safety system

- > **Convenient timer function provided**  
Wait On/Wait Off is run after the set time elapses.  
(Max. 999 hours and 59 minutes)
- > **Smart cooling control system**  
According to the temperature, the flow of refrigerant is controlled.  
The cooling speed from high temperature to room temperature is faster than previous product.
- > **Convenient solution discharge**  
Drain valve is included as standard, making it both easy and convenient to discharge the solution in the bath.
- > **Stable performance of circulation pump**  
Stable circulation pump with max. 0.4 bar pressure makes it easy to adjust pump speed in 5 steps.
- > **Top-grade protection system (Lab Companion's patent)**  
The safety device is configured to operate preferentially even if the malfunction is occurred in the device control unit.
- > **Shutdown function in case of over temperature**  
Safe structure with shutdown function using over temperature limiter in case of overheating.
- > **Solution level detection**  
Detects the level of solution in the bath and stops the device and notifying when the level is low.
- > **Prepared for unexpected power failure**  
Auto-run function capable of selecting reoperation when power is restored after sudden power failure.

※ Some of the above contents are limited to specific models.



Sophisticated refrigerant volume control system.



Removable freezing condenser grill structure.



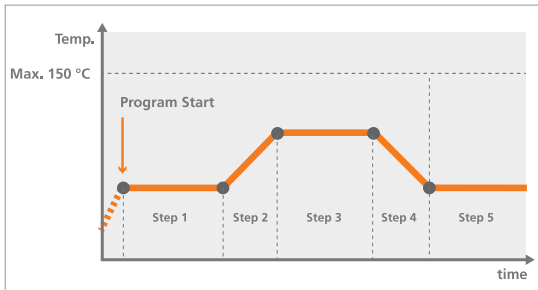
Convenient solution discharge (CW3) with drain valve located on the front.

# Refrigerated & Heating Bath Circulator Program type

## Convenient program control function

### Program Type

- Possible to set and save 10 programs.
- Up to 10 steps can be set in the one program.
- Set time up to 99 hours and 59 minutes per step.
- Includes useful scheduler management functions such as program operation range and repeat interval setting.
- Program repetition possible up to 99 times.
- Provides temperature ramp control in program operation.
- Digital Input / Output function makes it easy to connect external equipment.
- Intuitive operation with color touch display.



### RW3-0525P

with PPS (poly phenylene sulfide)  
Bath Cover (standard)

### Structural Functional Features

- Internal circulation and internal/external circulation of solution.
- Built-in bath cover with handle.
- Internal bath with seamless integral structure. (except RW3-3025P, 3035P models)
- Stainless steel material inside and at the top of the bath is excellent in terms of corrosion resistance and clean maintenance.
- Drain valve for easy draining of bath solution.
- Easy-to-clean refrigerator condenser filter.
- Equipped with easy-to-move/install caster.
- 8 models provided according to temperature range, capacity, etc.
- 5-steps pump speed adjustment with simple operation.

### Outstanding Safety

- Top-rated overheating protection system. (Registration KR 10-0397583)
- Over temperature limiting function. (Over Temperature Limiter)
- Prevention of mal-operation with controller lock function.
- Check and alert of temperature sensor abnormality.
- If an error occurs during operation, the details of the error are displayed on the screen and an alarm is sounded.
- Safe structure in which the heater, sensor, and pump inside the bath are separated by covering plates.

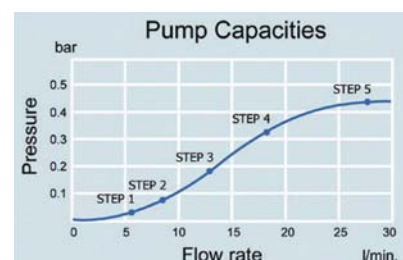
### Use Convenience Features

- Temperature calibration of up to 3 points provides more reliable temperature control.
- Optimized control with auto-tuning.
- Wait On/Off timer. (up to 99 hours 59 minutes)
- Microprocessor PID method for precise temperature control.
- USB/RS-232 connection and software provide convenient computer operation and data management.
- Notification of low solution. (low level limiter)
- Automatic restart of operation when power is restored after power failure.
- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)

### Pump Capacity

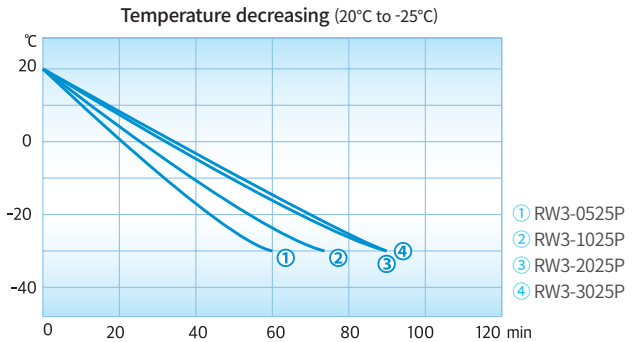
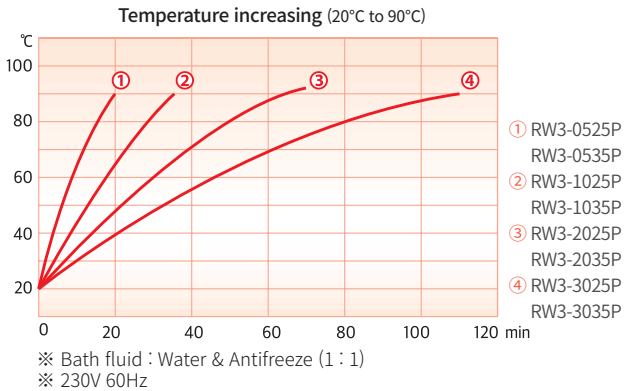
| Pump Step              | 1   | 2   | 3    | 4    | 5    |
|------------------------|-----|-----|------|------|------|
| Max. pressure (psi)    | 0.5 | 1.1 | 2.4  | 4.9  | 5.9  |
| Max. flow rate (L/min) | 5.6 | 8.0 | 12.8 | 18.8 | 28.0 |

※ Bath fluid : Water





## Heat-up Time, Cool-down Time



## Specification

| Model  |   | RW3-0525P                            | RW3-1025P                            | RW3-2025P                            | RW3-3025P                            |
|--|---|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| <b>Bath volume (L / cu ft)</b>                 |   | 5 / 0.2                              | 10 / 0.4                             | 20 / 0.7                             | 30 / 1.1                             |
| <b>Temperature</b>                             | Working temp. range (°C / °F)               | -25 to 150 / -13 to 302              | -25 to 150 / -13 to 302              | -25 to 150 / -13 to 302              | -25 to 150 / -13 to 302              |
|  | Temp. stability <sup>1)</sup> (±°C / °F)    | 0.05 / 0.09                          | 0.05 / 0.09                          | 0.05 / 0.09                          | 0.05 / 0.09                          |
| <b>Cooling capacity</b>                        | at +20°C (+68°F), W                         | 320                                  | 380                                  | 550                                  | 740                                  |
|  | at 0°C (+32°F), W                           | 230                                  | 270                                  | 420                                  | 630                                  |
|  | at -20°C (-4°F), W                          | 80                                   | 150                                  | 300                                  | 470                                  |
| <b>Dimension</b>                               | Bath opening / depth (W x D x H, mm / inch) | 150 x 99 x 160 / 5.9 x 3.9 x 6.3     | 211 x 154 x 180 / 8.3 x 6.1 x 7.1    | 290 x 214 x 200 / 11.4 x 8.4 x 7.9   | 300 x 264 x 230 / 11.8 x 10.4 x 9.1  |
|  | Exterior (W x D x H, mm / inch)             | 308 x 480 x 733 / 12.1 x 18.9 x 28.9 | 366 x 532 x 780 / 14.4 x 20.9 x 30.7 | 386 x 602 x 825 / 15.2 x 23.7 x 32.5 | 446 x 662 x 895 / 17.6 x 26.1 x 35.2 |
|  | Net weight (kg / lbs)                       | 37 / 81.6                            | 44 / 97                              | 60 / 132.2                           | 67 / 147.7                           |
| <b>Electrical requirements (230V, 60Hz, A)</b> |   | 11                                   | 11                                   | 12.5                                 | 13.5                                 |
| <b>Cat. No.</b>                                |   | <b>AAH57641K</b>                     | <b>AAH57651K</b>                     | <b>AAH57661K</b>                     | <b>AAH57671K</b>                     |
| <b>Electrical requirements (230V, 50Hz, A)</b> |   | 11                                   | 11                                   | 12.5                                 | 13.5                                 |
| <b>Cat. No.</b>                                |   | <b>AAH57642K</b>                     | <b>AAH57652K</b>                     | <b>AAH57662K</b>                     | <b>AAH57672K</b>                     |
| <b>Electrical requirements (120V, 60Hz, A)</b> |   | 12.6                                 | 12.6                                 |                                      |                                      |
| <b>Cat. No.</b>                                |   | <b>AAH57643U</b>                     | <b>AAH57653U</b>                     | -                                    | -                                    |

| Model  |   | RW3-0535P                            | RW3-1035P                            | RW3-2035P                            | RW3-3035P                            |
|--|---|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| <b>Bath volume (L / cu ft)</b>                 |   | 5 / 0.2                              | 10 / 0.4                             | 20 / 0.7                             | 30 / 1.1                             |
| <b>Temperature</b>                             | Working temp. range (°C / °F)               | -35 to 150 / -31 to 302              | -35 to 150 / -31 to 302              | -35 to 150 / -31 to 302              | -35 to 150 / -31 to 302              |
|  | Temp. stability <sup>1)</sup> (±°C / °F)    | 0.05 / 0.09                          | 0.05 / 0.09                          | 0.05 / 0.09                          | 0.05 / 0.09                          |
| <b>Cooling capacity</b>                        | at +20°C (+68°F), W                         | 280                                  | 450                                  | 800                                  | 880                                  |
|  | at 0°C (+32°F), W                           | 150                                  | 330                                  | 660                                  | 700                                  |
|  | at -20°C (-4°F), W                          | 80                                   | 150                                  | 400                                  | 440                                  |
| <b>Dimension</b>                               | Bath opening / depth (W x D x H, mm / inch) | 150 x 99 x 160 / 5.9 x 3.9 x 6.3     | 211 x 154 x 180 / 8.3 x 6.1 x 7.1    | 290 x 214 x 200 / 11.4 x 8.4 x 7.9   | 300 x 264 x 230 / 11.8 x 10.4 x 9.1  |
|  | Exterior (W x D x H, mm / inch)             | 308 x 480 x 733 / 12.1 x 18.9 x 28.9 | 366 x 532 x 780 / 14.4 x 20.9 x 30.7 | 386 x 602 x 825 / 15.2 x 23.7 x 32.5 | 446 x 662 x 895 / 17.6 x 26.1 x 35.2 |
|  | Net weight (kg / lbs)                       | 38 / 83.8                            | 44 / 97                              | 60 / 132.2                           | 67 / 147.7                           |
| <b>Electrical requirements (230V, 60Hz, A)</b> |   | 12.5                                 | 12.5                                 | 13.5                                 | 14.5                                 |
| <b>Cat. No.</b>                                |   | <b>AAH57741K</b>                     | <b>AAH57751K</b>                     | <b>AAH57761K</b>                     | <b>AAH57771K</b>                     |
| <b>Electrical requirements (230V, 50Hz, A)</b> |   | 12.5                                 | 12.5                                 | 13.5                                 | 14.5                                 |
| <b>Cat. No.</b>                                |   | <b>AAH57742K</b>                     | <b>AAH57752K</b>                     | <b>AAH57762K</b>                     | <b>AAH57772K</b>                     |

※ Technical data (according to DIN 12876)

※ In case using silicon oil, you need to exchange other material tube (inlet and out late part), such as copper tube, a teflon tube instead of a silicon tube in fitting.

1) Bath fluid : Ethanol at -10°C / 14°F

**Accessories** Page 28 Spring Wire Rack, Test Tube Rack, Silicone Tube, Tubing Insulation, Clamp, Cover, Silicone Oil, Ethylene Glycol, LC GreenBox

# Refrigerated & Heating Bath Circulator

## General type

### Stable internal/external temperature control

#### General Type

- Alert function when deviation from control temperature upper limit and lower limit occurs.
- Easy and convenient to use with simple operation.
- Clear VFD panel for clear information display.
- Applies smart refrigeration system using Lab Companion's technology.
- Optimized control reduces overall power consumption.
- Easily removable condenser grill structure.
- Equipped with advanced filter with flat plate structure in refrigeration condenser.
- Compact structure design.

#### RW3-2025

with PPS (poly phenylene sulfide)  
Bath Cover (standard)



#### Structural Functional Features

- Internal circulation and internal/external circulation of solution.
- Refrigerator stopped automatically when it rises too high of temperature, saving power, extending freezer life, and reducing noise generation.
- High-efficiency refrigeration through application of electronic expansion valve.
- Built-in bath cover with handle.
- Internal bath with seamless integral structure. (except RW3-3025, 3035 models)
- Stainless steel material inside and at the top of the bath is excellent in terms of corrosion resistance and clean maintenance.
- Left and right handles for convenient handling.
- Drain valve for easy draining of bath solution.
- Easy-to-clean refrigerator condenser filter.
- Equipped with easy-to-move/install caster.
- 8 models provided according to temperature range, capacity, etc.
- 5-steps pump speed adjustment with simple operation.

#### Use Convenience Features

- Temperature calibration of up to 3 points provides more reliable temperature control.
- Optimized control with auto-tuning.
- Save and use 3 frequently used temperatures.
- Wait On/Off timer. (up to 999 hours 59 minutes)
- Microprocessor PID method for precise temperature control.
- USB/RS-232 connection and software provide convenient computer operation and data management.
- Notification of low solution. (low level limiter)
- Automatic restart of operation when power is restored after power failure.
- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)

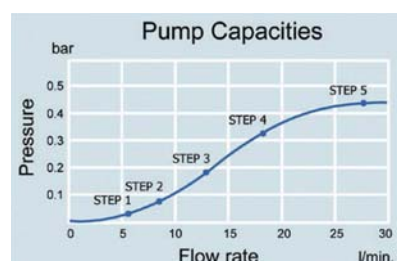
#### Outstanding Safety

- Top-rated overheating protection system. (Registration KR 10-0397583)
- Over temperature limiting function.
- Prevention of mal-operation with controller lock function.
- Check and alert of temperature sensor abnormality.
- If an error occurs during operation, the details of the error are displayed on the screen and an alarm is sounded.
- Safe structure in which the heater, sensor, and pump inside the bath are separated by covering plates.

#### Pump Capacity

| Pump Step              | 1   | 2   | 3    | 4    | 5    |
|------------------------|-----|-----|------|------|------|
| Max. pressure (psi)    | 0.5 | 1.1 | 2.4  | 4.9  | 5.9  |
| Max. flow rate (L/min) | 5.6 | 8.0 | 12.8 | 18.8 | 28.0 |

※ Bath fluid : Water







Single-Action refrigeration condenser grill structure allows for detaching and attaching without additional tools.



The drain valve located on the side is simple and convenient to use as it is ball valve type.

## Specification

| Model  |   | RW3-0525                                | RW3-1025                                | RW3-2025                                | RW3-3025                                |
|--|---|---|---|---|---|
| <b>Bath volume (L / cu ft)</b>                 |   | 5 / 0.2                                 | 10 / 0.4                                | 20 / 0.7                                | 30 / 1.1                                |
| <b>Temperature</b>                             | Working temp. range (°C / °F)               | -25 to 150 / -13 to 302                 | -25 to 150 / -13 to 302                 | -25 to 150 / -13 to 302                 | -25 to 150 / -13 to 302                 |
|  | Temp. stability <sup>1)</sup> (±°C / °F)    | 0.05 / 0.09                             | 0.05 / 0.09                             | 0.05 / 0.09                             | 0.05 / 0.09                             |
| <b>Cooling capacity</b>                        | at 20°C (+68°F), W                          | 400                                     | 560                                     | 850                                     | 980                                     |
|  | at 0°C (+32°F), W                           | 270                                     | 360                                     | 610                                     | 700                                     |
|  | at -20°C (-4°F), W                          | 140                                     | 180                                     | 310                                     | 465                                     |
| <b>Dimension</b>                               | Bath opening / depth (W x D x H, mm / inch) | 150 x 99 x 160<br>/ 5.9 x 3.9 x 6.3     | 211 x 154 x 180<br>/ 8.3 x 6.1 x 7.1    | 290 x 214 x 200<br>/ 11.4 x 8.4 x 7.9   | 300 x 264 x 230<br>/ 11.8 x 10.4 x 9.1  |
|  | Exterior (W x D x H, mm / inch)             | 308 x 480 x 733<br>/ 12.1 x 18.9 x 28.9 | 366 x 532 x 780<br>/ 14.4 x 20.9 x 30.7 | 386 x 602 x 825<br>/ 15.2 x 23.7 x 32.5 | 446 x 662 x 895<br>/ 17.6 x 26.1 x 35.2 |
|  | Net weight (kg / lbs)                       | 37 / 81.6                               | 44 / 97                                 | 60 / 132.3                              | 67 / 147.7                              |
| <b>Electrical requirements (230V, 60Hz, A)</b> |   | 11                                      | 11                                      | 12.5                                    | 13.5                                    |
| <b>Cat. No.</b>                                |   | <b>AAH57041K</b>                        | <b>AAH57051K</b>                        | <b>AAH57061K</b>                        | <b>AAH57071K</b>                        |
| <b>Electrical requirements (230V, 50Hz, A)</b> |   | 11                                      | 11                                      | 12.5                                    | 13.5                                    |
| <b>Cat. No.</b>                                |   | <b>AAH57042K</b>                        | <b>AAH57052K</b>                        | <b>AAH57062K</b>                        | <b>AAH57072K</b>                        |
| <b>Electrical requirements (120V, 60Hz, A)</b> |   | 12.6                                    | 12.6                                    |   |   |
| <b>Cat. No.</b>                                |   | <b>AAH57043U</b>                        | <b>AAH57053U</b>                        | -                                       | -                                       |

| Model  |   | RW3-0535                                | RW3-1035                                | RW3-2035                                | RW3-3035                                |
|--|---|---|---|---|---|
| <b>Bath volume (L / cu ft)</b>                 |   | 5 / 0.2                                 | 10 / 0.4                                | 20 / 0.7                                | 30 / 1.1                                |
| <b>Temperature</b>                             | Working temp. range (°C / °F)               | -35 to 150 / -31 to 302                 | -35 to 150 / -31 to 302                 | -35 to 150 / -31 to 302                 | -35 to 150 / -31 to 302                 |
|  | Temp. stability <sup>1)</sup> (±°C / °F)    | 0.05 / 0.09                             | 0.05 / 0.09                             | 0.05 / 0.09                             | 0.05 / 0.09                             |
| <b>Cooling capacity</b>                        | at 20°C (+68°F), W                          | 400                                     | 560                                     | 850                                     | 980                                     |
|  | at 0°C (+32°F), W                           | 270                                     | 360                                     | 610                                     | 700                                     |
|  | at -20°C (-4°F), W                          | 140                                     | 180                                     | 310                                     | 465                                     |
| <b>Dimension</b>                               | Bath opening / depth (W x D x H, mm / inch) | 150 x 99 x 160<br>/ 5.9 x 3.9 x 6.3     | 211 x 154 x 180<br>/ 8.3 x 6.1 x 7.1    | 290 x 214 x 200<br>/ 11.4 x 8.4 x 7.9   | 300 x 264 x 230<br>/ 11.8 x 10.4 x 9.1  |
|  | Exterior (W x D x H, mm / inch)             | 308 x 480 x 733<br>/ 12.1 x 18.9 x 28.9 | 366 x 532 x 780<br>/ 14.4 x 20.9 x 30.7 | 386 x 602 x 825<br>/ 15.2 x 23.7 x 32.5 | 446 x 662 x 895<br>/ 17.6 x 26.1 x 35.2 |
|  | Net weight (kg / lbs)                       | 38 / 83.8                               | 45 / 99.2                               | 60 / 132.3                              | 68 / 149.9                              |
| <b>Electrical requirements (230V, 60Hz, A)</b> |   | 12.5                                    | 12.5                                    | 13.5                                    | 14.5                                    |
| <b>Cat. No.</b>                                |   | <b>AAH57141K</b>                        | <b>AAH57151K</b>                        | <b>AAH57161K</b>                        | <b>AAH57171K</b>                        |
| <b>Electrical requirements (230V, 50Hz, A)</b> |   | 12.5                                    | 12.5                                    | 13.5                                    | 14.5                                    |
| <b>Cat. No.</b>                                |   | <b>AAH57142K</b>                        | <b>AAH57152K</b>                        | <b>AAH57162K</b>                        | <b>AAH57172K</b>                        |

※ Technical data (according to DIN 12876)

※ In case using silicon oil, you need to exchange other material tube (inlet and out late part), such as copper tube, a teflon tube instead of a silicon tube in fitting.

1) Bath fluid : Ethanol at -10°C / 14°F

**Accessories** Page 28 Spring Wire Rack, Test Tube Rack, Silicone Tube, Tubing Insulation, Clamp, Cover, Silicone Oil, Ethylene Glycol, LC GreenBox

# Heating Bath Circulator

## Suitable for precise temperature testing above ambient temperature

### CW3-05P

with PPS (poly phenylene sulfide)  
Bath Cover (standard)



### CW3-05

with PPS (poly phenylene sulfide)  
Bath Cover (standard)



### Program Type Features

- 10 Programs & 10 steps program control
- Set time up to 99 hours and 59 minutes per step.
- Intuitive operation with color touch display.
- Digital Input / Output function makes it easy to connect external equipment.

### Structural Functional Features

- Minimizes evaporation of internal solution at high temperatures and low-heat conductivity bath cover is provided as standard.
- Minimized usage space with compact design.
- Excellent durability even at high temperatures and repeated use.
- Internal circulation and internal/external circulation of solution.
- Easy to move and manage with the body handle.
- Stainless steel material inside and at the top of the bath is excellent in terms of corrosion resistance and clean maintenance.
- Drain valve for easy draining of bath solution.
- Includes rubber feet for stable product operation.
- 5-steps pump speed adjustment with simple operation.

### Outstanding Safety

- Top-rated overheating protection system. (Registration KR 10-0397583)
- Over temperature limiting function.
- Prevention of mal-operation with controller lock function.
- Check and alert of temperature sensor abnormality.
- If an error occurs during operation, the details of the error are displayed on the screen and an alarm is sounded.
- Safe structure in which the heater, sensor, and pump inside the bath are separated by covering plates.

### General Type Features

- Alert function when deviation from control temperature upper limit and lower limit occurs.
- Easy and convenient to use with simple operation.
- Clear VFD panel for clear information display.
- Convenient drain valve structure on the front panel.
- Built-in USB connection and dedicated software.

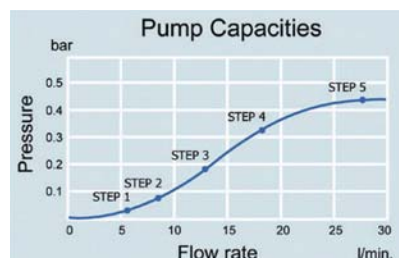
### Use Convenience Features

- Temperature calibration of up to 3 points provides more reliable temperature control.
- Optimized control with auto-tuning.
- Save and use 3 frequently used temperatures.
- Wait On/Off timer. (up to 999 hours 59 minutes)
- Microprocessor PID method for precise temperature control.
- Convenient remote control and data management through built-in dedicated software.
- Notification of low solution. (low level limiter)
- Automatic restart of operation when power is restored after power failure.
- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)

### Pump Capacity

| Pump Step              | 1   | 2   | 3    | 4    | 5    |
|------------------------|-----|-----|------|------|------|
| Max. pressure (psi)    | 0.5 | 1.1 | 2.4  | 4.9  | 5.9  |
| Max. flow rate (L/min) | 5.6 | 8.0 | 12.8 | 18.8 | 28.0 |

※ Bath fluid : Water





## Specification

| Model   |   | CW3-05P                             | CW3-10P                              | CW3-20P                              | CW3-30P                             |
|---|---|-------------------------------------|--------------------------------------|--------------------------------------|-------------------------------------|
| <b>Bath volume (L / cu ft)</b>                    |   | 5 / 0.2                             | 10 / 0.4                             | 20 / 0.7                             | 30 / 1.1                            |
| <b>Temperature</b>                                | Working temp. range (°C / °F)               | Amb. +10 to 150 / Amb. +18 to 302   | Amb. +10 to 150 / Amb. +18 to 302    | Amb. +10 to 150 / Amb. +18 to 302    | Amb. +10 to 150 / Amb. +18 to 302   |
|   | Temp. stability <sup>1)</sup> (±°C / °F)    | 0.05 / 0.09                         | 0.05 / 0.09                          | 0.05 / 0.09                          | 0.05 / 0.09                         |
|   | Heat up time to 70°C / 158 °F (min)         | 24                                  | 31                                   | 43                                   | 55                                  |
| <b>Dimension</b>                                  | Bath opening / depth (W x D x H, mm / inch) | 150 x 99 x 160 / 5.9 x 3.9 x 6.3    | 211 x 154 x 180 / 8.3 x 6.1 x 7.1    | 290 x 214 x 200 / 11.4 x 8.4 x 7.9   | 300 x 264 x 230 / 11.8 x 10.4 x 9.1 |
|   | Exterior (W x D x H, mm / inch)             | 228 x 395 x 424 / 9.0 x 15.6 x 16.7 | 289 x 450 x 444 / 11.4 x 17.7 x 17.5 | 368 x 510 x 464 / 14.5 x 20.1 x 18.3 | 378 x 560 x 494 / 14.9 x 22 x 19.4  |
|   | Net weight (kg / lbs)                       | 12.5 / 27.6                         | 15.0 / 33.1                          | 17.5 / 38.6                          | 19.5 / 43                           |
| <b>Electrical requirements (230V, 50/60Hz, A)</b> |   | 8.5                                 | 8.5                                  | 8.5                                  | 8.5                                 |
| <b>Cat. No.</b>                                   |   | <b>AAH52741K</b>                    | <b>AAH52751K</b>                     | <b>AAH52761K</b>                     | <b>AAH52771K</b>                    |
| <b>Electrical requirements (120V, 60Hz, A)</b>    |   | 8.6                                 | 8.6                                  | 8.6                                  | 8.6                                 |
| <b>Cat. No.</b>                                   |   | <b>AAH52742U</b>                    | <b>AAH52752U</b>                     | <b>AAH52762U</b>                     | <b>AAH52772U</b>                    |

| Model   |   | CW3-05                              | CW3-10                               | CW3-20                               | CW3-30                              |
|---|---|-------------------------------------|--------------------------------------|--------------------------------------|-------------------------------------|
| <b>Bath volume (L / cu ft)</b>                    |   | 5 / 0.2                             | 10 / 0.4                             | 20 / 0.7                             | 30 / 1.1                            |
| <b>Temperature</b>                                | Working temp. range (°C / °F)               | Amb. +10 to 150 / Amb. +18 to 302   | Amb. +10 to 150 / Amb. +18 to 302    | Amb. +10 to 150 / Amb. +18 to 302    | Amb. +10 to 150 / Amb. +18 to 302   |
|   | Temp. stability <sup>1)</sup> (±°C / °F)    | 0.05 / 0.09                         | 0.05 / 0.09                          | 0.05 / 0.09                          | 0.05 / 0.09                         |
|   | Heat up time to 70°C / 158 °F (min)         | 15                                  | 23                                   | 43                                   | 55                                  |
| <b>Dimension</b>                                  | Bath opening / depth (W x D x H, mm / inch) | 150 x 99 x 160 / 5.9 x 3.9 x 6.3    | 211 x 154 x 180 / 8.3 x 6.1 x 7.1    | 290 x 214 x 200 / 11.4 x 8.4 x 7.9   | 300 x 264 x 230 / 11.8 x 10.4 x 9.1 |
|   | Exterior (W x D x H, mm / inch)             | 228 x 395 x 424 / 9.0 x 15.6 x 16.7 | 289 x 450 x 444 / 11.4 x 17.7 x 17.5 | 368 x 510 x 464 / 14.5 x 20.1 x 18.3 | 378 x 560 x 494 / 14.9 x 22 x 19.4  |
|   | Net weight (kg / lbs)                       | 12.5 / 27.6                         | 15.0 / 33                            | 17.5 / 38.6                          | 19.5 / 43                           |
| <b>Electrical requirements (230V, 50/60Hz, A)</b> |   | 8.5                                 | 8.5                                  | 8.5                                  | 8.5                                 |
| <b>Cat. No.</b>                                   |   | <b>AAH52341K</b>                    | <b>AAH52351K</b>                     | <b>AAH52361K</b>                     | <b>AAH52371K</b>                    |
| <b>Electrical requirements (120V, 60Hz, A)</b>    |   | 8.6                                 | 8.6                                  | 8.6                                  | 8.6                                 |
| <b>Cat. No.</b>                                   |   | <b>AAH52342U</b>                    | <b>AAH52352U</b>                     | <b>AAH52362U</b>                     | <b>AAH52372U</b>                    |

※ The lowest temperature that can be controlled depends on changes in ambient temperature and sample temperature. Therefore, please contact the distributor of our products before purchasing for technical consultation.

※ Technical data (according to DIN 12876)

※ In case using silicon oil, you need to exchange other material tube (inlet and out late part), such as copper tube, a teflon tube instead of a silicon tube in fitting.

1) Bath fluid : Water at 50°C / 122°F

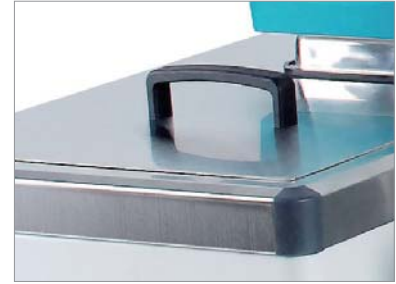
**Accessories** Page 28 Spring Wire Rack, Test Tube Rack, Silicone Tube, Tubing Insulation, Clamp, Cover, Silicone Oil, Ethylene Glycol, LC GreenBox

# Accessories

## Stainless Steel Cover

Sturdy, corrosion-resistant, stainless steel material.

| Cat. No. | Model                               |
|----------|-------------------------------------|
| AAA51531 | RW3-0525(P), RW3-0535(P), CW3-05(P) |
| AAA51532 | RW3-1025(P), RW3-1035(P), CW3-10(P) |
| AAA51533 | RW3-2025(P), RW3-2035(P), CW3-20(P) |
| AAA51534 | RW3-3025(P), RW3-3035(P), CW3-30(P) |



## Spring Wire Rack

It has a lattice-shaped double spring structure, which makes it easy to fix various kinds of experiment containers and the height can also be easily adjusted.

| Cat. No. | Model                |
|----------|----------------------|
| AAA51522 | RW3-2025(P), 2035(P) |
| AAA51523 | RW3-3025(P), 3035(P) |
| AAA51522 | CW3-20(P)            |
| AAA51523 | CW3-30(P)            |



## Test Tube Rack

Test tubes can be easily fixed in the bath and various models are available according to test tube size. Structure allows for easy adjustment of the degree of tilt and lock.

| Cat. No. | Description (mm / inch) | Max. Quantity of Racks   |
|----------|-------------------------|--|
| AAA44581 | ø8 / 0.3 x 86 tubes     | CW3-20(P): 2ea<br>CW3-30(P): 2ea<br>RW3-2025(P): 2ea<br>RW3-2035(P): 2ea<br>RW3-3025(P): 2ea<br>RW3-3035(P): 2ea |
| AAA44582 | ø10 / 0.4 x 86 tubes    |  |
| AAA44583 | ø12 / 0.5 x 58 tubes    |  |
| AAA44585 | ø16 / 0.6 x 32 tubes    |  |
| AAA44586 | ø25 / 1.0 x 19 tubes    |  |
| AAA41531 | ø8 / 0.3 x 50 tubes     |  |
| AAA41532 | ø10 / 0.4 x 50 tubes    |  |
| AAA41533 | ø12 / 0.5 x 33 tubes    |  |
| AAA41535 | ø16 / 0.6 x 16 tubes    |  |
| AAA41539 | ø25 / 1.0 x 10 tubes    |  |



## Silicone Tube

The operating temperature range is -50 ~ 250°C / -58 ~ 482°F.

Inner diameter of 10 mm,

Outside diameter of 16 mm.

| Cat. No.     | Length (m / inch) |
|--------------|-------------------|
| 00FAA0001110 | 10 / 393.7        |



## Tubing Insulation

EPDM material insulation prevents heat loss when using external circulation.

| Cat. No.     | Description      |
|--------------|------------------|
| 00FEA0001453 | I.D. 25 mm (13T) |



## Tube Clamp

Attachment that stably holds the tube connection.

| Cat. No.     | Description |
|--------------|-------------|
| 00HXE0001099 | 3/4"        |
| 00HXE0001100 | 5/8"        |



## LC GreenBox

Real-time monitoring and control of device operation via mobile app. Up to 4 devices can be connected at once.

| Cat. No. | Dimension (W x D x H, mm / inch) |
|----------|----------------------------------|
| AAAQ1011 | 156 x 94 x 34 / 6.1 x 3.7 x 1.3  |



## Bath Circulator

vs.

## Chiller



|                          | Bath Circulator (ex. RW3-3035)   | Chiller (Recirculating Cooler) (ex. HX-25H)  |
|--------------------------|--|--|
| <b>Application</b>       | Preserves precise temperature of external devices where heat removal capacity is not required largely. | Maintains temperature by stably removing large heat generated from external devices. |
| <b>Cooling Capacity</b>  | Heat removal capacity is low. 880W at 20°C / 68°F.   | Heat removal capacity is large. 2,800W at 20°C / 68°F.                               |
| <b>Temperature Range</b> | Temperature range is wide. -35 to 150°C / -31 to 302°F.  | Temperature range is narrow. 3 to 40°C / 37 to 104°F.                                |
| <b>Pump Pressure</b>     | Circulation pressure is weak. Max. 0.4 bar.  | Circulation pressure is strong. Max. 6 bar.  |

Lab Companion's Chiller Information

Page 30

## Chiller for Rotary Evaporator

- Chiller optimized for rotary evaporator.
- Easy to install and use with compact design.
- Pump In/Out port is located at the upper part, so it is convenient to connect with evaporator.
- Convenient bath fluid injection on the top.
- LCD screen for easy checking of operation status.
- Includes low-level solution alert notification.

| Model                            | RC-05               |
|----------------------------------|---------------------|
| <b>Temp. Range (°C / °F)</b>     | -20 ~ 30 / -4 ~ 86  |
| <b>Temp. Stability (°C / °F)</b> | ±1.0 / ±1.8         |
| <b>Cooling Capacity</b>          | 580W at 20°C / 68°F |
| <b>230V, 60Hz, A</b>             | 4                   |
| <b>Cat. No.</b>                  | <b>ACH651011K</b>   |
| <b>230V, 50Hz, A</b>             | 4                   |
| <b>Cat. No.</b>                  | <b>ACH651012K</b>   |



Chiller Page 40

Rotary Evaporator

# Chiller (Recirculating Cooler)











## General Application

- Sample thawing, and control of temperature of diverse experimental equipment.
- Analytical equipment requiring cooling. (rotary evaporator, vacuum oven, spectrophotometer, etc.)
- Plant, medical equipment, metalwork laser, injection machine.

|                              | Description   | Max. Temp. Stability ( $\pm$ °C /°F) at 50°C | Temp. Range (°C/°F)   | Max. Cooling Capacity (W) | Model | Page |
|------------------------------|---|--|-----------------------|---------------------------|-------|------|
| <b>Ambient temp. type</b>    | <b>General</b> <ul style="list-style-type: none"> <li>• Superior durability and performance</li> <li>• Verified according to international standards</li> </ul> | $\pm 1$ / 1.18                               | 3 to 40 / 37.4 to 104 | 29.0 at 20°C              | HX    | 34   |
| <b>Low temp. type</b>        | <b>General</b> <ul style="list-style-type: none"> <li>• Applies Clear VFD Display</li> <li>• Includes temperature calibration function</li> </ul>               | $\pm 1$ / 1.18                               | -20 to 40 / -4 to 104 | 7.1 at 20°C               | HL    | 36   |
|                              | <b>Precision</b> <ul style="list-style-type: none"> <li>• External temperature sensor control function</li> <li>• 0.2°C precision control</li> </ul>            | $\pm 0.2$ / 0.36                             | -20 to 40 / -4 to 104 | 7.1 at 20°C               | HS    | 38   |
|                              | <b>Small</b> <ul style="list-style-type: none"> <li>• Optimization of rotary evaporator use</li> <li>• Compact design configuration</li> </ul>                  | $\pm 1$ / 1.18                               | -20 to 30 / -4 to 86  | 0.5 at 20°C               | RC    | 40   |
| <b>High / Low temp. type</b> | <b>Precision</b> <ul style="list-style-type: none"> <li>• Wide temperature zone control</li> <li>• 0.1°C precision control</li> </ul>                           | $\pm 0.1$ / 0.2                              | -20 to 80 / -4 to 176 | 6.5 at 20°C               | HH    | 42   |

※ The contents of the above and the contents of this catalog may differ depending on the specific model and conditions of use. For the information about the features and specifications that applying to each models, please check the information on the corresponding page of each models.

|   |  |   |   |   |   |
|---|--|---|---|---|---|
|  | Satisfaction with the requirements of European regulations and guidelines. |  | Real-time equipment monitoring and control system using mobile app. |  | Eco-friendly product that has passed environmental impact assessment tests. |
|  | Indicator to ascertain water level.  |  | Alarm if the water is low level.                                    |  | Over temperature protection function.                                       |
|  | PC communication via RS-232 / RS-485 / USB port.                           |  | 2 year warranty Free A/S.   |   |   |

# Chiller (Recirculating Cooler)



## Innovative refrigeration system and dedicated controller for chiller Improved durability and stable control

### > Innovative refrigeration system

Increased durability of refrigerant adjustment-type refrigeration system by minimizing compressor on/off operation.

### > Verified by objective criteria

Designed and tested according to stringent international standards.  
Proven performance specifications and high reliability.

### > Heat absorption ability of excellent reproducibility

Convenient to select and use the optimal chiller with the heat absorption ability of each model verified by objective criteria.

### > Variety of products optimized for their specified purpose of use

Available in 4 types and 35 models as a standard type according to temperature range, precision, and endothermic/pump ability.

### > Chiller dedicated controller

Allows more stable control by using dedicated controller developed with Lab Companion's proprietary technology to optimize for chiller characteristics.

### > Temperature calibration function

Controller with temperature calibration function allows for stable implementation of more accurate temperature control.

### > On/Off of freezer and pump

The refrigeration system and pump can each be turned On/Off separately.  
This is useful for maintenance and experiment setting, etc.

### > Computer interface

Convenient device operation and data processing function using computer connection and dedicated software.



Bath inlet / outlet port.



Pressure Gauge.



Convenient bath fluid level checking.





## Useful features and structural features in actual use

### Easy maintenance

> **Provision of remote equipment monitoring service (option)**

Real-time monitoring of equipment operation status using smartphone.  
(when purchased LC GreenBox)

> **Convenient bath fluid level check**

Convenient to check the level of bath fluid at the front of the instrument.  
Level Indicator with LED backlight.

> **Check pump pressure on the front of the instrument**

Pump pressure can be confirmed from the front of the machine, so it is always convenient to check the operation status.

> **Casters for easy installation**

Convenient casters installed for easy moving and installation during initial installation and during use.

> **Over temperature warning function**

Over temperature warning function that generates an alarm when over temperature occurs.

> **Low bath fluid warning**

If the bath fluid is low, an alarm is generated so that fluid can be supplied when appropriate.

> **Application support priority**

Chiller operation continues to protect user application even when abnormal temperature or bath fluid is detected.

> **Refrigeration system protection device**

Refrigerator overload and over temperature protection.

Automatic stop when refrigerant pressure (high/low pressure) abnormality occurs.

※ Some of above contents are limited to specific models.



Bath filling inlet.



Includes drain valve.



Easy-to-install casters.

# Chiller (Recirculating Cooler)

## HX general type

**Verified performance and durability according to international standards.**

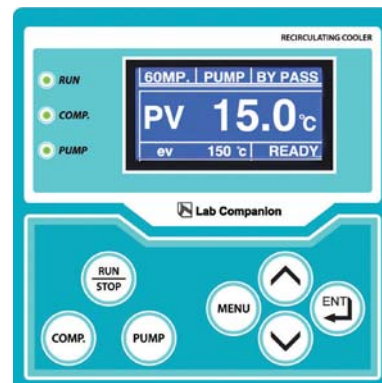
### ▣ Structural Functional Features

- Designed and tested according to strict international standards.
- Provides proven performance specifications and high reliability.
- Optimized slim and compact design minimizes installation space.
- The conventional simple refrigerant compressor control method can cause the compressor life to be shortened by turning the refrigeration system on/off from time to time to control the temperature. However, the Lab Companion's Chiller is a unique refrigerant control type cooling system completed using our proprietary technology development. Compressor On/Off operation is minimized, and durability of the cooling system is greatly increased.
- Double service valve prevents refrigerant leakage.
- Easy installation with air-cooled type integrated refrigeration system.
- Easy to clean as it is easy to remove refrigerator condenser grill, making it convenient to maintain efficiency of refrigeration.
- Installation of refrigeration system using environmentally friendly refrigerant.
- Pump pressure can be confirmed from the front of the machine, so it is always convenient to check the operation status.
- Pressure-sensitive user application protection (H Type) due to by-pass function to reduce pump pressure.
- Bath fluid inlet is wide, making installation and maintenance convenient.
- Equipped with removable casters for easy movement and installation.



HX-65H

HX-45H



### ▣ Use Convenience Features

- Bright LCD display provides excellent visual perception.
- Identify all operations and operating conditions from the front panel.
- Simultaneously displays the set value and the current value, and settings can be changed during equipment use, making it convenient.
- Highly-reliable control through calibration.
- The refrigeration compressor and pump can be each turned On/Off.
- Level indicator with LED backlight for easy checking of bath fluid level.
- Easy to maintain as a drain valve is included.

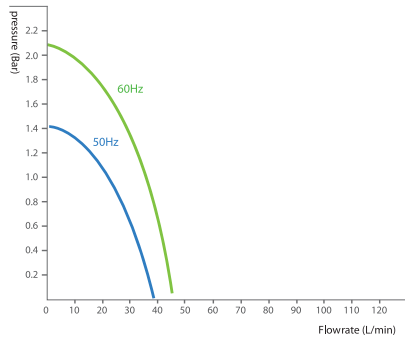
### ▣ Outstanding Safety

- Over temperature alarm.
- Provides a warning when abnormal temperature or bath fluid shortage is detected, and keeps the chiller operating continuously to protect the user application.
- Over-current and short circuit protection of device.
- Auto stop when operating current of refrigerator is overloaded.



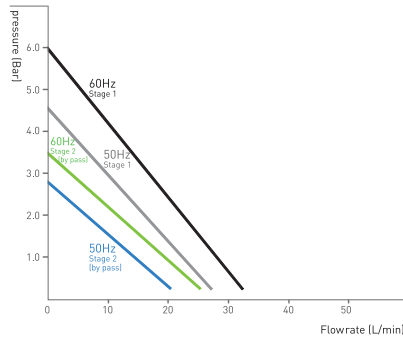
## Pumping capacities

### Submersible pump



※ Application model : HX-20, 25

### Centrifugal pump



※ Application model : HX-20H, 25H, 35H, 45H, 55H

## Specification

| Model   | HX-20                   | HX-25                   | HX-20H                  | HX-25H                  | HX-35H                    | HX-45H                    | HX-55H                    |
|---|-------------------------|-------------------------|-------------------------|-------------------------|---------------------------|---------------------------|---------------------------|
| <b>Interior dimensions</b>                        |                         |                         |                         |                         |                           |                           |                           |
| Max. filling volume (L / cu ft)                   | 35 / 1.24               | 35 / 1.24               | 35 / 1.24               | 35 / 1.24               | 45 / 1.59                 | 45 / 1.59                 | 45 / 1.59                 |
| Refrigerator capacity (HP)                        | 3/4                     | 1                       | 3/4                     | 1                       | 1.5                       | 2                         | 3                         |
| For tubing dia. (mm / inch)                       | 20 / (3/4")             | 20 / (3/4")             | 20 / (3/4")             | 20 / (3/4")             | 20 / (3/4")               | 20 / (3/4")               | 20 / (3/4")               |
| Filling inlet (Ø, mm / inch)                      | 50 / 1.9                | 50 / 1.9                | 50 / 1.9                | 50 / 1.9                | 50 / 1.9                  | 50 / 1.9                  | 50 / 1.9                  |
| <b>Exterior dimensions</b>                        |                         |                         |                         |                         |                           |                           |                           |
| Width (mm / inch)                                 | 620 / 24.4              | 620 / 24.4              | 620 / 24.4              | 620 / 24.4              | 745 / 29.3                | 745 / 29.3                | 745 / 29.3                |
| Depth (with drain valve), (mm / inch)             | 715 (785) / 28.1(30.9)  | 715 (785) / 28.1(30.9)  | 715 (785) / 28.1(30.9)  | 715 (785) / 28.1(30.9)  | 735 (800) / 28.9 (31.5)   | 735 (800) / 28.9 (31.5)   | 735 (800) / 28.9 (31.5)   |
| Height (with lid), (mm / inch)                    | 955 (990) / 37.6 (39.0) | 955 (990) / 37.6 (39.0) | 955 (990) / 37.6 (39.0) | 955 (990) / 37.6 (39.0) | 1060 (1095) / 41.7 (43.1) | 1060 (1095) / 41.7 (43.1) | 1060 (1095) / 41.7 (43.1) |
| Weight (kg / lbs)                                 | 93 / 205                | 101 / 223               | 97 / 214                | 105 / 231               | 120 / 265                 | 130 / 287                 | 140 / 309                 |
| <b>Temperature data</b>                           |                         |                         |                         |                         |                           |                           |                           |
| Working temperature range (°C / °F)               | 3 to 40 / 37.4 to 104   | 3 to 40 / 37.4 to 104   | 3 to 40 / 37.4 to 104   | 3 to 40 / 37.4 to 104   | 3 to 40 / 37.4 to 104     | 3 to 40 / 37.4 to 104     | 3 to 40 / 37.4 to 104     |
| Temperature stability at 15°C (±°C / °F)          | 1 / 1.18                | 1 / 1.18                | 1 / 1.18                | 1 / 1.18                | 1 / 1.18                  | 1 / 1.18                  | 1 / 1.18                  |
| <b>Cooling capacity, Max</b>                      |                         |                         |                         |                         |                           |                           |                           |
| at 20°C (kW)                                      | 2.2                     | 2.8                     | 2.2                     | 2.8                     | 4.2                       | 5.5                       | 8.1                       |
| at 10°C (kW)                                      | 1.6                     | 2                       | 1.6                     | 2                       | 3.6                       | 4.2                       | 5.9                       |
| at 5°C (kW)                                       | 1.2                     | 1.6                     | 1.2                     | 1.6                     | 2.8                       | 3.4                       | 4.8                       |
| <b>Pump data</b>                                  |                         |                         |                         |                         |                           |                           |                           |
| Max. flow rate (L / min, gal / min)               | 40 / 10.6               | 40 / 10.6               | 32 / 8.5                | 32 / 8.5                | 32 / 8.5                  | 32 / 8.5                  | 32 / 8.5                  |
| Max. pressure (bar / psi)                         | 2 / 29.0                | 2 / 29.0                | 6 / 87.0                | 6 / 87.0                | 6 / 87.0                  | 6 / 87.0                  | 6 / 87.0                  |
| <b>Electrical data &amp; Ordering information</b> |                         |                         |                         |                         |                           |                           |                           |
| 230V, 60Hz, A                                     | 8.5                     | 9                       | 9.3                     | 9.8                     | 15                        | 19                        | -                         |
| <b>Cat. No.</b>                                   | <b>AAH64011K</b>        | <b>AAH64021K</b>        | <b>AAH64111K</b>        | <b>AAH64121K</b>        | <b>AAH64131K</b>          | <b>AAH64141K</b>          | -                         |
| 230V, 50Hz, A                                     | 7                       | 7.6                     | 7.9                     | 8.8                     | 14                        | -                         | -                         |
| <b>Cat. No.</b>                                   | <b>AAH64012K</b>        | <b>AAH64022K</b>        | <b>AAH64112K</b>        | <b>AAH64122K</b>        | <b>AAH64132K</b>          | -                         | -                         |
| 120V, 60Hz, A                                     | 17                      | 22                      | -                       | -                       | -                         | -                         | -                         |
| <b>Cat. No.</b>                                   | <b>AAH64013U</b>        | <b>AAH64023U</b>        | -                       | -                       | -                         | -                         | -                         |
| 380V, 60Hz, A                                     | -                       | -                       | -                       | -                       | -                         | 10                        | 11.5                      |
| <b>Cat. No.</b>                                   | -                       | -                       | -                       | -                       | -                         | <b>AAH64149K</b>          | <b>AAH64159K</b>          |
| 380V, 50Hz, A                                     | -                       | -                       | -                       | -                       | -                         | 7                         | 8.5                       |
| <b>Cat. No.</b>                                   | -                       | -                       | -                       | -                       | -                         | <b>AAH64148K</b>          | <b>AAH64158K</b>          |

\* According to DIN 12876

\* Temperature stability / Cooling capacity / Pump data : Water

\* Above specification value is recorded by 230V 60Hz. (HX-45H, 55H is recorded by 380V 60Hz)

\* Product performance may be affected by ambient temperature.

# Chiller (Recirculating Cooler)

## HL low temperature general type

Low temperature-type general model controlled down to  $-20^{\circ}\text{C}$ .

### Structural Functional Features

- Low-temperature chiller controlled from  $-20^{\circ}\text{C}$  to  $40^{\circ}\text{C}$  has proven performance specifications and high reliability.
- Optimized slim and compact design minimizes installation space.
- The conventional simple refrigerant compressor control method can cause the compressor life to be shortened by turning the refrigeration system on/off from time to time to control the temperature. However, the Lab Companion's Chiller is a unique refrigerant control type cooling system completed using our proprietary technology development. Compressor On/Off operation is minimized, and durability of the cooling system is greatly increased.
- Double service valve prevents refrigerant leakage.
- Easy installation with air-cooled type integrated refrigeration system.
- Easy to clean as it is easy to remove refrigerator condenser grill, making it convenient to maintain efficiency of refrigeration.
- Installation of refrigeration system using environmentally friendly refrigerant.
- Pump pressure can be confirmed from the front of the machine, so it is always convenient to check the operation status.
- Bath fluid inlet is wide, making installation and maintenance convenient.
- Equipped with removable casters for easy movement and installation.



HL-25

HL-20H



### Use Convenience Features

- Clear VFD display provides excellent visual perception.
- Identify all operations and operating conditions from the front panel.
- Simultaneously displays the set value and the current value, and settings can be changed during equipment use, making it convenient.
- Highly-reliable control through calibration.
- The refrigeration compressor and pump can be each turned On/Off.
- Level indicator with LED backlight for easy checking of bath fluid level.
- Easy to maintain as a drain valve is included.

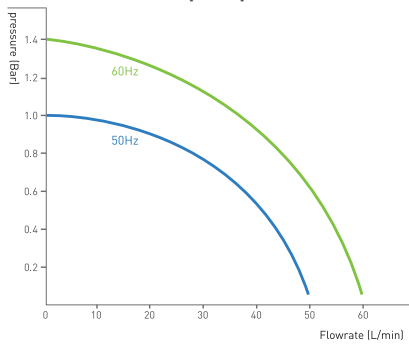
### Outstanding Safety

- Over temperature alarm.
- Provides a warning when abnormal temperature or bath fluid shortage is detected, and keeps the chiller operating continuously to protect the user application.
- Over-current and short circuit protection of device.
- Automatic stop in case of over temperature of the compressor.
- Malfunction prevented by controller lock function.

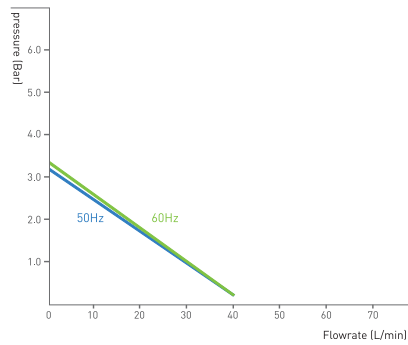


## Pumping capacities

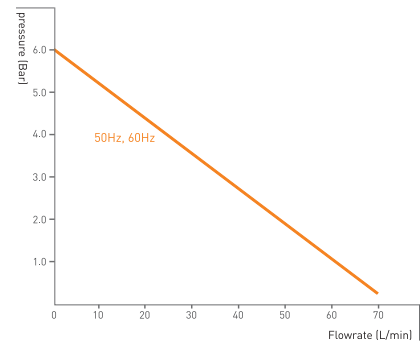
### Submersible pump



※ Application model : HL - 05, 10, 15, 20



※ Application model : HL - 15H, 20H, 25H, 35H



※ Application model : HL - 45H, 55H

## Specification

| Model   | HL-05                   | HL-10                   | HL-15                   | HL-20                   | HL-15H                  | HL-20H                  | HL-25H                    | HL-35H                    | HL-45H                    | HL-55H                    |
|---|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| <b>Interior dimensions</b>                        |                         |                         |                         |                         |                         |                         |                           |                           |                           |                           |
| Max. filling volume (L / cu ft)                   | 8 / 0.28                | 8 / 0.28                | 14 / 0.49               | 14 / 0.49               | 14 / 0.49               | 14 / 0.49               | 25 / 0.88                 | 25 / 0.88                 | 39 / 1.38                 | 39 / 1.38                 |
| Refrigerator capacity (HP)                        | 1/5                     | 1/3                     | 1/2                     | 3/4                     | 1/2                     | 3/4                     | 1                         | 1.5                       | 2                         | 3                         |
| For tubing dia. (mm / inch)                       | 20 / (3/4")             | 20 / (3/4")             | 20 / (3/4")             | 20 / (3/4")             | 20 / (3/4")             | 20 / (3/4")             | 20 / (3/4")               | 20 / (3/4")               | 20 / (3/4")               | 20 / (3/4")               |
| Filling inlet (ø, mm / inch)                      | 120 / 4.7               | 120 / 4.7               | 120 / 4.7               | 120 / 4.7               | 120 / 4.7               | 120 / 4.7               | 120 / 4.7                 | 120 / 4.7                 | 120 / 4.7                 | 120 / 4.7                 |
| <b>Exterior dimensions</b>                        |                         |                         |                         |                         |                         |                         |                           |                           |                           |                           |
| Width (mm / inch)                                 | 405 / 15.9              | 405 / 15.9              | 515 / 20.3              | 515 / 20.3              | 515 / 20.3              | 515 / 20.3              | 550 / 21.7                | 550 / 21.7                | 605 / 23.8                | 605 / 23.8                |
| Depth (with drain valve), (mm / inch)             | 550 (620) / 21.7 (24.4) | 550 (620) / 21.7 (24.4) | 645 (715) / 25.4 (28.1) | 645 (715) / 25.4 (28.1) | 645 (715) / 25.4 (28.1) | 645 (715) / 25.4 (28.1) | 830 (900) / 32.7 (35.4)   | 830 (900) / 32.7 (35.4)   | 975 (1045) / 38.4 (41.1)  | 975 (1045) / 38.4 (41.1)  |
| Height (with lid), (mm / inch)                    | 675 (710) / 26.6 (10.6) | 675 (710) / 26.6 (10.6) | 800 (835) / 31.5 (32.9) | 800 (835) / 31.5 (32.9) | 800 (835) / 31.5 (32.9) | 800 (835) / 31.5 (32.9) | 1105 (1140) / 43.5 (44.9) | 1105 (1140) / 43.5 (44.9) | 1265 (1300) / 49.8 (51.2) | 1265 (1300) / 49.8 (51.2) |
| Weight (kg / lbs)                                 | 62.9 / 138.7            | 64.9 / 143.1            | 86.5 / 190.7            | 87.4 / 192.7            | 91.8 / 202.4            | 92.7 / 204.4            | 141.3 / 311.5             | 146.3 / 322.5             | 171±10 / 377±20.1         | 176±10 / 388±20.1         |
| <b>Temperature data</b>                           |                         |                         |                         |                         |                         |                         |                           |                           |                           |                           |
| Working temperature range (°C / °F)               | -20 to 40 / -4 to 104   | -20 to 40 / -4 to 104   | -20 to 40 / -4 to 104   | -20 to 40 / -4 to 104   | -20 to 40 / -4 to 104   | -20 to 40 / -4 to 104   | -20 to 40 / -4 to 104     | -20 to 40 / -4 to 104     | -20 to 40 / -4 to 104     | -20 to 40 / -4 to 104     |
| Temperature stability at 15°C (±°C / °F)          | 1 / 1.8                 | 1 / 1.8                 | 1 / 1.8                 | 1 / 1.8                 | 1 / 1.8                 | 1 / 1.8                 | 1 / 1.8                   | 1 / 1.8                   | 1 / 1.8                   | 1 / 1.8                   |
| <b>Cooling capacity, Max</b>                      |                         |                         |                         |                         |                         |                         |                           |                           |                           |                           |
| at 20°C (kW)                                      | 0.7                     | 0.76                    | 1.7                     | 1.85                    | 1.7                     | 1.85                    | 2.8                       | 3.5                       | 6.5                       | 7.1                       |
| at 10°C (kW)                                      | 0.6                     | 0.65                    | 1.35                    | 1.6                     | 1.35                    | 1.6                     | 2.2                       | 2.5                       | 4.5                       | 6                         |
| at 0°C (kW)                                       | 0.4                     | 0.5                     | 0.87                    | 1.2                     | 0.87                    | 1.2                     | 1.3                       | 1.8                       | 3                         | 4.1                       |
| at -10°C (kW)                                     | 0.2                     | 0.36                    | 0.67                    | 0.87                    | 0.67                    | 0.87                    | 0.9                       | 1.1                       | 2.1                       | 2.5                       |
| at -20°C (kW)                                     | 0.06                    | 0.16                    | 0.32                    | 0.45                    | 0.32                    | 0.45                    | 0.45                      | 0.6                       | 1.2                       | 1.5                       |
| <b>Pump data</b>                                  |                         |                         |                         |                         |                         |                         |                           |                           |                           |                           |
| Max. flow rate (L / min, gal / min)               | 60 / 15.9               | 60 / 15.9               | 60 / 15.9               | 60 / 15.9               | 40 / 10.6               | 40 / 10.6               | 40 / 10.6                 | 40 / 10.6                 | 70 / 18.5                 | 70 / 18.5                 |
| Max. pressure (bar / psi)                         | 1.4 / 20.3              | 1.4 / 20.3              | 1.4 / 20.3              | 1.4 / 20.3              | 3.3 / 47.9              | 3.3 / 47.9              | 3.3 / 47.9                | 3.3 / 47.9                | 6 / 87.0                  | 6 / 87.0                  |
| <b>Electrical data &amp; Ordering information</b> |                         |                         |                         |                         |                         |                         |                           |                           |                           |                           |
| 230V, 60Hz, A                                     | 5                       | 5.5                     | 6.5                     | 7.5                     | 6.5                     | 7.5                     | 9.5                       | 13.5                      |                           |                           |
| <b>Cat. No.</b>                                   | <b>AAH65001K</b>        | <b>AAH65011K</b>        | <b>AAH65021K</b>        | <b>AAH65031K</b>        | <b>AAH65121K</b>        | <b>AAH65131K</b>        | <b>AAH65141K</b>          | <b>AAH65151K</b>          | -                         | -                         |
| 230V, 50Hz, A                                     | 4.5                     | 5                       | 6                       | 7                       | 6                       | 7                       | 7.5                       | 12.5                      |                           |                           |
| <b>Cat. No.</b>                                   | <b>AAH65002K</b>        | <b>AAH65012K</b>        | <b>AAH65022K</b>        | <b>AAH65032K</b>        | <b>AAH65122K</b>        | <b>AAH65132K</b>        | <b>AAH65142K</b>          | <b>AAH65152K</b>          | -                         | -                         |
| 120V, 60Hz, A                                     | 10                      | 11                      | 13                      | 15                      |                         |                         |                           |                           |                           |                           |
| <b>Cat. No.</b>                                   | <b>AAH65003U</b>        | <b>AAH65013U</b>        | <b>AAH65023U</b>        | <b>AAH65033U</b>        | -                       | -                       | -                         | -                         | -                         | -                         |
| 380V, 60Hz, A                                     |                         |                         |                         |                         |                         |                         |                           |                           | 5.5                       | 7                         |
| <b>Cat. No.</b>                                   | -                       | -                       | -                       | -                       | -                       | -                       | -                         | -                         | <b>AAH65169K</b>          | <b>AAH65179K</b>          |
| 380V, 50Hz, A                                     |                         |                         |                         |                         |                         |                         |                           |                           | 5                         | 6                         |
| <b>Cat. No.</b>                                   | -                       | -                       | -                       | -                       | -                       | -                       | -                         | -                         | <b>AAH65168K</b>          | <b>AAH65178K</b>          |

\* According to DIN 12876  
 \* Temperature stability / Pump data : Water, Cooling capacity : Ethanol  
 \* Above specification value is recorded by 230V 60Hz. (HL-45H, 55H is recorded by 380V 60Hz)  
 \* Product performance may be affected by ambient temperature.

# Chiller (Recirculating Cooler)

## HS low-temperature precision type

**Precise control with  $\pm 0.2^{\circ}\text{C}$  stability utilizing external temperature sensor.**

### **Structural Functional Features**

- It is low temperature type able to control from  $-20^{\circ}\text{C}$  to  $40^{\circ}\text{C}$ , and with precise temperature control-type chiller with  $\pm 0.2^{\circ}\text{C}$  stability, has proven performance specifications and high reliability.
- Optimized slim and compact design minimizes installation space.
- The conventional simple refrigerant compressor control method can cause the compressor life to be shortened by turning the refrigeration system on/off from time to time to control the temperature. However, the Lab Companion's Chiller is a unique refrigerant control type cooling system completed using our proprietary technology development. Compressor On/Off operation is minimized, and durability of the cooling system is greatly increased.
- Double service valve prevents refrigerant leakage.
- Easy installation with air-cooled type integrated refrigeration system.
- Easy to clean as it is easy to remove refrigerator condenser grill, making it convenient to maintain efficiency of refrigeration.
- Installation of refrigeration system using environmentally friendly refrigerant.
- Pump pressure can be confirmed from the front of the machine, so it is always convenient to check the operation status.
- Bath fluid inlet is wide, making installation and maintenance convenient.
- Equipped with removable casters for easy movement and installation.



**HS-25**

**HS-55H**



### **Use Convenience Features**

- Can be controlled by connecting external temperature sensor. (option)
- Convenient control and easy data processing with computer connection and dedicated software.
- Alarm output port provided as standard.
- Clear VFD display provides excellent visual perception.
- Identify all operations and operating conditions from the front panel.
- Simultaneously displays the set value and the current value, and settings can be changed during equipment use, making it convenient.
- Highly-reliable control through calibration.
- The refrigeration compressor and pump can be each turned On/Off.
- Level indicator with LED backlight for easy checking of bath fluid level.
- Easy to maintain as a drain valve is included.

- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)

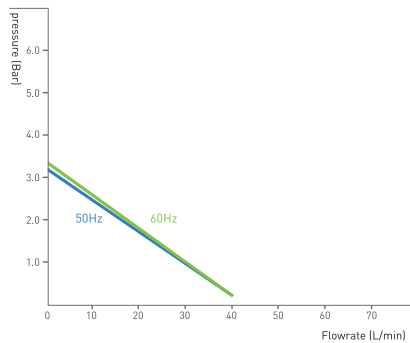
### **Outstanding Safety**

- Over temperature alarm.
- Provides a warning when abnormal temperature or bath fluid shortage is detected, and keeps the chiller operating continuously to protect the user application.
- Over-current and short circuit protection of device.
- Malfunction prevented by controller lock function.
- Automatic stop in case of over temperature of the compressor.

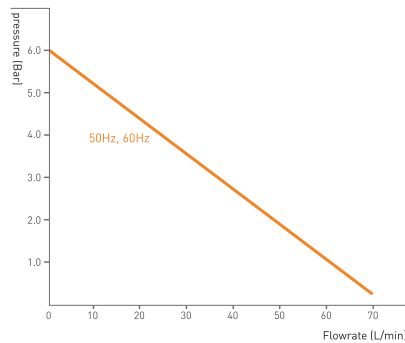


## Pumping capacities

### Submersible pump



※ Application model : HS -15, 20, 25, 35



※ Application model : HS -45H, 55H

## Specification

| Model   | HS-15                   | HS-20                   | HS-25                    | HS-35                    | HS-45H                    | HS-55H                    |
|---|-------------------------|-------------------------|--------------------------|--------------------------|---------------------------|---------------------------|
| <b>Interior dimensions</b>                        |                         |                         |                          |                          |                           |                           |
| Max. filling volume (L / cu ft)                   | 14 / 0.49               | 14 / 0.49               | 25 / 0.88                | 25 / 0.88                | 39 / 1.37                 | 39 / 1.37                 |
| Refrigerator capacity (HP)                        | 1/2                     | 3/4                     | 1                        | 1.5                      | 2                         | 3                         |
| For tubing dia. (mm / inch)                       | 20 / (3/4")             | 20 / (3/4")             | 20 / (3/4")              | 20 / (3/4")              | 20 / (3/4")               | 20 / (3/4")               |
| Filling inlet (Ø, mm / inch)                      | 120 / 4.7               | 120 / 4.7               | 120 / 4.7                | 120 / 4.7                | 120 / 4.7                 | 120 / 4.7                 |
| <b>Exterior dimensions</b>                        |                         |                         |                          |                          |                           |                           |
| Width (mm / inch)                                 | 515 / 20.3              | 515 / 20.3              | 550 / 21.7               | 550 / 21.7               | 605 / 23.8                | 605 / 23.8                |
| Depth (with drain valve), (mm / inch)             | 645 (715) / 25.4 (28.1) | 645 (715) / 25.4 (28.1) | 830 (900) / 32.7 (35.4)  | 830 (900) / 32.7 (35.4)  | 975 (1045) / 38.4 (41.4)  | 975 (1045) / 38.4 (41.4)  |
| Height (with lid), (mm / inch)                    | 800 (835) / 31.5 (32.9) | 800 (835) / 31.5 (32.9) | 975 (1045) / 38.4 (41.1) | 975 (1045) / 38.4 (41.1) | 1265 (1300) / 49.8 (51.2) | 1265 (1300) / 49.8 (51.2) |
| Weight (kg / lbs)                                 | 91.8 / 202.4            | 92.7 / 204.4            | 141.3 / 311.5            | 146.3 / 322.5            | 171±10 / 377±20.1         | 176±10 / 388±20.1         |
| <b>Temperature data</b>                           |                         |                         |                          |                          |                           |                           |
| Working temperature range (°C / °F)               | -20 to 40 / -4 to 104   | -20 to 40 / -4 to 104   | -20 to 40 / -4 to 104    | -20 to 40 / -4 to 104    | -20 to 40 / -4 to 104     | -20 to 40 / -4 to 104     |
| Temperature stability at 15°C (±°C / °F)          | 0.2 / 0.36              | 0.2 / 0.36              | 0.2 / 0.36               | 0.2 / 0.36               | 0.2 / 0.36                | 0.2 / 0.36                |
| <b>Cooling capacity, Max</b>                      |                         |                         |                          |                          |                           |                           |
| at 20°C (kW)                                      | 1.7                     | 1.85                    | 2.8                      | 3.5                      | 6.5                       | 7.1                       |
| at 10°C (kW)                                      | 1.35                    | 1.6                     | 2.2                      | 2.5                      | 4.5                       | 6                         |
| at 0°C (kW)                                       | 0.87                    | 1.2                     | 1.3                      | 1.8                      | 3                         | 4.1                       |
| at -10°C (kW)                                     | 0.67                    | 0.87                    | 0.9                      | 1.1                      | 2.1                       | 2.5                       |
| at -20°C (kW)                                     | 0.32                    | 0.45                    | 0.45                     | 0.6                      | 1.2                       | 1.5                       |
| <b>Pump data</b>                                  |                         |                         |                          |                          |                           |                           |
| Max. flow rate (L / min, gal / min)               | 40 / 10.6               | 40 / 10.6               | 40 / 10.6                | 40 / 10.6                | 70 / 18.5                 | 70 / 18.5                 |
| Max. pressure (bar / psi)                         | 3.3 / 47.86             | 3.3 / 47.86             | 3.3 / 47.86              | 3.3 / 47.86              | 6 / 87                    | 6 / 87                    |
| <b>Electrical data &amp; Ordering information</b> |                         |                         |                          |                          |                           |                           |
| 230V, 60Hz, A                                     | 6.5                     | 7.5                     | 9.5                      | 13.5                     |                           |                           |
| <b>Cat. No.</b>                                   | <b>AAH66011K</b>        | <b>AAH66021K</b>        | <b>AAH66031K</b>         | <b>AAH66041K</b>         | -                         | -                         |
| 230V, 50Hz, A                                     | 6                       | 7                       | 7.5                      | 12.5                     |                           |                           |
| <b>Cat. No.</b>                                   | <b>AAH66012K</b>        | <b>AAH66022K</b>        | <b>AAH66032K</b>         | <b>AAH66042K</b>         | -                         | -                         |
| 380V, 60Hz, A                                     |                         |                         |                          |                          | 5.5                       | 7                         |
| <b>Cat. No.</b>                                   | -                       | -                       | -                        | -                        | <b>AAH66359K</b>          | <b>AAH66569K</b>          |
| 380V, 50Hz, A                                     |                         |                         |                          |                          | 5                         | 6                         |
| <b>Cat. No.</b>                                   | -                       | -                       | -                        | -                        | <b>AAH66358K</b>          | <b>AAH66568K</b>          |

\* According to DIN 12876

\* Temperature stability / Pump data : Water, Cooling capacity : Ethanol

\* Above specification value is recorded by 230V 60Hz. (HS-45H, 55H is recorded by 380V 60Hz)

\* Product performance may be affected by ambient temperature.

# Chiller (Recirculating Cooler)

## Compact type

### Optimized for Use with Rotary Evaporators

#### ▣ Structural Functional Features

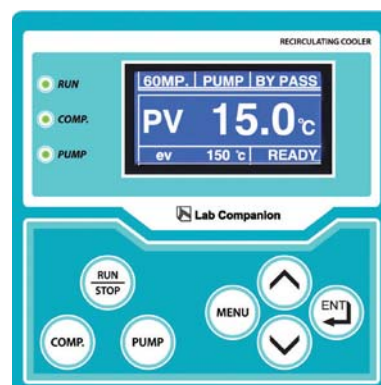
- Optimized for use with rotary evaporator.
- Pump In/Out port is located at the top, making it easy to connect and disassemble with the evaporator set.
- Optimized slim and compact design minimizes installation space.
- The conventional simple refrigerant compressor control method can cause the compressor life to be shortened by turning the refrigeration system on/off from time to time to control the temperature. However, the Lab Companion's Chiller is a unique refrigerant control type cooling system completed using our proprietary technology development. Compressor On/Off operation is minimized, and durability of the cooling system is greatly increased.
- Double service valve prevents refrigerant leakage.
- Easy installation with air-cooled type integrated refrigeration system.
- Easy to clean as it is easy to remove refrigerator condenser grill, making it convenient to maintain efficiency of refrigeration.
- Installation of refrigeration system using environmentally friendly refrigerant.
- Pump pressure can be confirmed from the front of the machine, so it is always convenient to check the operation status.
- Bath fluid inlet is wide, making installation and maintenance convenient.



RC-05

#### ▣ Use Convenience Features

- Bright LCD display provides excellent visual perception.
- Identify all operations and operating conditions from the front panel.
- Simultaneously displays the set value and the current value, and settings can be changed during equipment use, making it convenient.
- Highly-reliable control through calibration.
- The refrigeration compressor and pump can each be turned On/Off.
- Level indicator with LED backlight for easy checking of bath fluid level.
- Easy to maintain as a drain valve is included.



#### ▣ Outstanding Safety

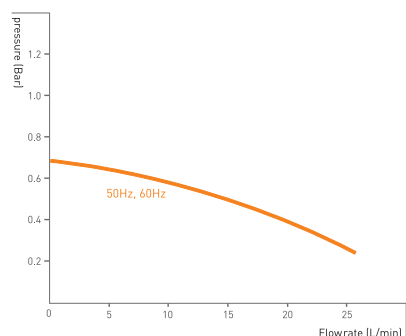
- Over temperature alarm.
- Provides a warning when abnormal temperature or bath fluid shortage is detected, and keeps the chiller operating continuously to protect the user application.
- Over-current and short circuit protection of device.
- Malfunction prevented by controller lock function.
- Automatic stop in case of over temperature of the compressor





## Pumping capacities

### Submersible pump



※ Application model : RC-05



RC-05

Rotary Evaporator

## Specification

| Model   | RC-05                |
|---|----------------------|
| <b>Interior dimensions</b>                        |                      |
| Max. filling volume (L / cu ft)                   | 5 / 0.18             |
| Refrigerator capacity (HP)                        | 1/3                  |
| For tubing dia. (mm / inch)                       | 9.5 / (3/8")         |
| Filling inlet (Ø, mm / inch)                      | 37 / 1.46            |
| <b>Exterior dimensions</b>                        |                      |
| Width (mm / inch)                                 | 300 / 11.8           |
| Depth (with drain valve), (mm / inch)             | 550 / 21.7           |
| Height (with lid), (mm / inch)                    | 530 / 20.9           |
| Weight (kg / lbs)                                 | 45 / 99.2            |
| <b>Temperature data</b>                           |                      |
| Working temperature range (°C / °F)               | -20 to 30 / -4 to 86 |
| Temperature stability at 15°C (±°C / °F)          | 1 / 1.8              |
| <b>Cooling capacity, Max</b>                      |                      |
| at 20°C (W)                                       | 580                  |
| at 10°C (W)                                       | 450                  |
| at 0°C (W)  | 350                  |
| at -10°C (W)                                      | 270                  |
| at -20°C (W)                                      | 110                  |
| <b>Pump data</b>                                  |                      |
| Max. flow rate (L / min, gal / min)               | 26 / 6.87            |
| Max. pressure (bar / psi)                         | 0.7 / 10.15          |
| <b>Electrical data &amp; Ordering information</b> |                      |
| 230V, 60Hz, A                                     | 4                    |
| <b>Cat. No.</b>                                   | <b>ACH651011K</b>    |
| 230V, 50Hz, A                                     | 4                    |
| <b>Cat. No.</b>                                   | <b>ACH651012K</b>    |

\* According to DIN 12876

\* Temperature stability / Cooling capacity / Pump data : Ethanol

\* Above specification value is recorded by 230V 60Hz.

## Custom-made chillers produced according to customer needs

Customized design, production and installation services with optimized performance for your application

### ◆ Expert technical consultation

We provide professional consultation based on our accumulated skills and experience centered on actual customer requirements.

### ◆ Optimized proposal

We provide optimized proposals that comprehensively consider the intended use and required performance / conditions.



# Chiller (Recirculating Cooler)

## HH high-temperature precision type

Precise control with  $\pm 0.1^\circ\text{C}$  stability up to  $80^\circ\text{C}$

### Structural Functional Features

- It is low temperature type able to control from  $-20^\circ\text{C}$  to  $80^\circ\text{C}$ , and with precise temperature control-type chiller with  $\pm 0.1^\circ\text{C}$  stability, has proven performance specifications and high reliability.
- Optimized slim and compact design minimizes installation space.
- The conventional simple refrigerant compressor control method can cause the compressor life to be shortened by turning the refrigeration system on/off from time to time to control the temperature. However, the Lab Companion's Chiller is a unique refrigerant control type cooling system completed using our proprietary technology development. Compressor On/Off operation is minimized, and durability of the cooling system is greatly increased.
- Double service valve prevents refrigerant leakage.
- Easy installation with air-cooled type integrated refrigeration system.
- Easy to clean as it is easy to remove refrigerator condenser grill, making it convenient to maintain efficiency of refrigeration.
- Installation of refrigeration system using environmentally friendly refrigerant.
- Pump pressure can be confirmed from the front of the machine, so it is always convenient to check the operation status.
- Bath fluid inlet is wide, making installation and maintenance convenient.
- Equipped with removable casters for easy movement and installation.



HH-20

HH-25H



### Use Convenience Features

- Can be controlled by connecting external temperature sensor. (option)
- Convenient control and easy data processing with computer connection and dedicated software.
- Alarm output port provided as standard.
- Clear VFD display provides excellent visual perception.
- Identify all operations and operating conditions from the front panel.
- Simultaneously displays the set value and the current value, and settings can be changed during equipment use, making it convenient.
- Highly-reliable control through calibration.
- The refrigeration compressor and pump can be each turned On/Off.
- Level indicator with LED backlight for easy checking of bath fluid level.
- Easy to maintain as a drain valve is included.

- Over temperature alarm.
- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)

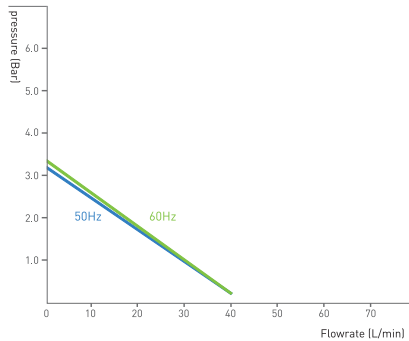
### Outstanding Safety

- Over temperature alarm.
- Provides a warning when abnormal temperature or bath fluid shortage is detected, and keeps the chiller operating continuously to protect the user application.
- Over-current and short circuit protection of device.
- Malfunction prevented by controller lock function.
- Automatic stop in case of over temperature of the compressor.

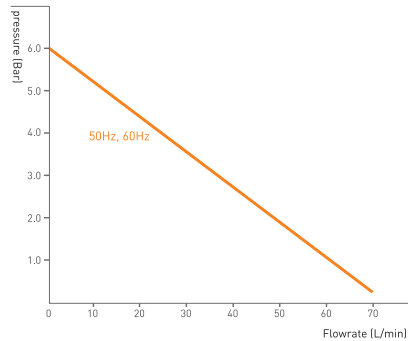


## Pumping capacities

### Submersible pump



※ Application model : HH - 15, 20, 25, 35



※ Application model : HH - 45H, 55H

## Specification

| Model   | HH-15                      | HH-20                      | HH-25                       | HH-35                       | HH-45H                       | HH-55H                       |
|---|----------------------------|----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------------|
| <b>Interior dimensions</b>                        |                            |                            |                             |                             |                              |                              |
| Max. filling volume (L / cu ft)                   | 14 / 0.49                  | 14 / 0.49                  | 25 / 0.88                   | 25 / 0.88                   | 39 / 1.38                    | 39 / 1.38                    |
| Refrigerator capacity (HP)                        | 1/2                        | 3/4                        | 1                           | 1.5                         | 2                            | 3                            |
| For tubing dia. (mm / inch)                       | 20 / (3/4")                | 20 / (3/4")                | 20 / (3/4")                 | 20 / (3/4")                 | 20 / (3/4")                  | 20 / (3/4")                  |
| Filling inlet (Ø, mm / inch)                      | 120 / 4.7                  | 120 / 4.7                  | 120 / 4.7                   | 120 / 4.7                   | 120 / 4.7                    | 120 / 4.7                    |
| <b>Exterior dimensions</b>                        |                            |                            |                             |                             |                              |                              |
| Width (mm / inch)                                 | 515 / 20.3                 | 515 / 20.3                 | 550 / 21.7                  | 550 / 21.7                  | 605 / 23.8                   | 605 / 23.8                   |
| Depth (with drain valve), (mm / inch)             | 645 (715)<br>/ 25.4 (28.1) | 645 (715)<br>/ 25.4 (28.1) | 830 (900)<br>/ 32.7 (35.4)  | 830 (900)<br>/ 32.7 (35.4)  | 975 (1045)<br>/ 38.4 (41.4)  | 975 (1045)<br>/ 38.4 (41.4)  |
| Height (with lid), (mm / inch)                    | 800 (835)<br>/ 31.5 (32.9) | 800 (835)<br>/ 31.5 (32.9) | 975 (1045)<br>/ 38.4 (41.1) | 975 (1045)<br>/ 38.4 (41.1) | 1265 (1300)<br>/ 49.8 (51.2) | 1265 (1300)<br>/ 49.8 (51.2) |
| Weight (kg / lbs)                                 | 92 / 202.8                 | 93 / 205                   | 142 / 313                   | 147 / 324                   | 171±10<br>/ 377±20.1         | 176±10<br>/ 388±20.1         |
| <b>Temperature data</b>                           |                            |                            |                             |                             |                              |                              |
| Working temperature range (°C / °F)               | -20 to 80<br>/ -4 to 176   | -20 to 80<br>/ -4 to 176   | -20 to 80<br>/ -4 to 176    | -20 to 80<br>/ -4 to 176    | -20 to 80<br>/ -4 to 176     | -20 to 80<br>/ -4 to 176     |
| Temperature stability at 15°C (±°C / °F)          | 0.1 / 0.2                  | 0.1 / 0.2                  | 0.1 / 0.2                   | 0.1 / 0.2                   | 0.1 / 0.2                    | 0.1 / 0.2                    |
| Heating capacity (kW)                             | 2                          | 2                          | 4                           | 4                           | 8.4                          | 8.4                          |
| <b>Cooling capacity, Max</b>                      |                            |                            |                             |                             |                              |                              |
| at 20°C (kW)                                      | 1.3                        | 1.6                        | 2.7                         | 3                           | 5                            | 6.5                          |
| at 0°C (kW)                                       | 0.9                        | 1.2                        | 1.3                         | 1.8                         | 3                            | 4.1                          |
| at -20°C (kW)                                     | 0.2                        | 0.3                        | 0.5                         | 0.6                         | 1                            | 1.3                          |
| <b>Pump data</b>                                  |                            |                            |                             |                             |                              |                              |
| Max. flow rate (L / min, gal / min)               | 40 / 10.6                  | 40 / 10.6                  | 40 / 10.6                   | 40 / 10.6                   | 70 / 18.5                    | 70 / 18.5                    |
| Max. pressure (bar / psi)                         | 3.3 / 47.9                 | 3.3 / 47.9                 | 3.3 / 47.9                  | 3.3 / 47.9                  | 6 / 87.02                    | 6 / 87.02                    |
| <b>Electrical data &amp; Ordering information</b> |                            |                            |                             |                             |                              |                              |
| 230V, 60Hz, A                                     | 15                         | 16                         | 27                          | 31                          |                              |                              |
| <b>Cat. No.</b>                                   | <b>AAH67011K</b>           | <b>AAH67021K</b>           | <b>AAH67031K</b>            | <b>AAH67041K</b>            | -                            | -                            |
| 230V, 50Hz, A                                     | 14.5                       | 15.5                       | 25                          | 30                          |                              |                              |
| <b>Cat. No.</b>                                   | <b>AAH67012K</b>           | <b>AAH67022K</b>           | <b>AAH67032K</b>            | <b>AAH67042K</b>            | -                            | -                            |
| 380V, 60Hz, A                                     |                            |                            |                             |                             | 18.3                         | 19.8                         |
| <b>Cat. No.</b>                                   | -                          | -                          | -                           | -                           | <b>AAH67159K</b>             | <b>AAH67169K</b>             |
| 380V, 50Hz, A                                     |                            |                            |                             |                             | 17.8                         | 19.3                         |
| <b>Cat. No.</b>                                   | -                          | -                          | -                           | -                           | <b>AAH67158K</b>             | <b>AAH67168K</b>             |

\* According to DIN 12876

\* Temperature stability / Pump data : Water, Cooling capacity : Ethanol

\* Above specification value is recorded by 230V 60Hz. (HH-45H, 55H is recorded by 380V 60Hz)

\* Product performance may be affected by ambient temperature.

\* Under the condition of no-load operation, cooling capacity should be lower than heating capacity.

# Accessories

## Proven reliability & reproducibility

### Made and tested according to international standards

- ◆ Meets safety requirements, including electrical safety standards for chillers.
- ◆ Conduction of device performance tests required as per the standards to provide reliable product performance.
- ◆ Verified test results provided as specification to allow for selection of the suitable model for the user.



## Barbed Fittings

| Cat. No.     | Description   |
|--------------|---|
| 00HXE0001066 | 3/4" Male to barbed fitting for tubing 1" inner dia   |
| 00HXE0001067 | 3/4" Male to barbed fitting for tubing 3/4" inner dia |
| 00HXE0001068 | 3/4" Male to barbed fitting for tubing 5/8" inner dia |
| 00HXE0001069 | 3/4" Male to barbed fitting for tubing 1/2" inner dia |
| 00HXE0001070 | 3/4" Male to barbed fitting for tubing 3/8" inner dia |
| AAA64501     | 1" Barbed fittings set with Ball valve                |
| AAA64502     | 3/4" Barbed fittings set with Ball valve              |
| AAA64503     | 5/8" Barbed fittings set with Ball valve              |
| AAA64504     | 1/2" Barbed fittings set with Ball valve              |
| AAA64505     | 3/8" Barbed fittings set with Ball valve              |
| AAA64506     | 1" Barbed fittings set with Gate valve                |
| AAA64507     | 3/4" Barbed fittings set with Gate valve              |
| AAA64508     | 5/8" Barbed fittings set with Gate valve              |
| AAA64509     | 1/2" Barbed fittings set with Gate valve              |
| AAA64510     | 3/8" Barbed fittings set with Gate valve              |



### Barbed Fittings

- Suitable for connecting tubes of various sizes.
- Pipe fittings, tube fittings, hose fittings, etc. can be fitted without tools.

## Connectors / Adapters

| Cat. No.     | Description              |
|--------------|--------------------------|
| 00HXE0001105 | 3/4" Male to 3/4" Female |
| 00HXE0001106 | 3/4" Male to 5/8" Female |
| 00HXE0001107 | 3/4" Male to 1/2" Female |
| 00HXE0001108 | 3/4" Male to 3/8" Female |
| 00HXE0001109 | 3/4" Male to 3/4" Male   |
| 00HXE0001110 | 3/4" Male to 5/8" Male   |
| 00HXE0001111 | 3/4" Male to 1/2" Male   |
| 00HXE0001112 | 3/4" Male to 3/8" Male   |



### Connectors / Adapters

- Used when connecting tubes and devices.

## One Touch Adapters Set

| Cat. No.     | Description                                   |
|--------------|---|
| 00HXE0001075 | 12 mm One touch adapter ID 9.0 mm, OD 12.0 mm |
| 00HXE0001076 | 10 mm One touch adapter ID 6.5 mm, OD 10.0 mm |
| 00HXE0001077 | 8 mm One touch adapter ID 5.5 mm, OD 8.0 mm   |
| 00HXE0001078 | 6 mm One touch adapter ID 4.0 mm, OD 6.0 mm   |
| AAA64531     | 12 mm Adapters set with Ball valve            |
| AAA64532     | 10 mm Adapters set with Ball valve            |
| AAA64533     | 8 mm Adapters set with Ball valve             |
| AAA64534     | 6 mm Adapters set with Ball valve             |



### One Touch Adapters Set

- Easy to connect or replace tubing.

※ Temperature Range : -15°C to 60°C

## Flexible Fittings

| Cat. No.     | Description  |
|--------------|--|
| 00GBA0008589 | 3/4" Male to 3/4" Flexible fitting                               |
| 00HXE0001072 | 3/4" Male to 1/2" Female with 1/2" Male to 1/2" Flexible fitting |
| AAA64521     | 3/4" Flexible fittings set with Ball valve                       |
| AAA64522     | 1/2" Flexible fittings set with Ball valve                       |
| AAA64523     | 3/4" Flexible fittings set with Gate valve                       |
| AAA64524     | 1/2" Flexible fittings set with Gate valve                       |



### Flexible Fittings

- Tubing is made of stainless steel material.

## Tubings

| Cat. No.     | Description                     |                        |
|--------------|---------------------------------|------------------------|
| 00HXE0001079 | 1 m 12 mm Urethane tubing       | ID 9.0 mm, OD 12.0 mm  |
| 00HXE0001080 | 1 m 10 mm Urethane tubing       | ID 6.5 mm, OD 10.0 mm  |
| 00HXE0001081 | 1 m 8 mm Urethane tubing        | ID 5.5 mm, OD 8.0 mm   |
| 00HXE0001082 | 1 m 6 mm Urethane tubing        | ID 4.0 mm, OD 6.0 mm   |
| 00HXE0001083 | 1 m 1" PVC tubing with thread   | ID 25.0 mm, OD 31.0 mm |
| 00HXE0001084 | 1 m 3/4" PVC tubing with thread | ID 19.0 mm, OD 24.0 mm |
| 00HXE0001085 | 1 m 5/8" PVC tubing with thread | ID 16.0 mm, OD 20.5 mm |
| 00HXE0001086 | 1 m 1/2" PVC tubing with thread | ID 12.0 mm, OD 16.0 mm |
| 00HXE0001087 | 1 m 3/8" PVC tubing with thread | ID 10.0 mm, OD 14.0 mm |
| 00HXE0001088 | 1 m 1" PVC tubing with wire     | ID 25.0 mm, OD 33.0 mm |
| 00HXE0001089 | 1 m 3/4" PVC tubing with wire   | ID 19.0 mm, OD 26.0 mm |
| 00HXE0001090 | 1 m 5/8" PVC tubing with wire   | ID 15.0 mm, OD 22.0 mm |
| 00HXE0001091 | 1 m 1/2" PVC tubing with wire   | ID 12.0 mm, OD 18.0 mm |
| 00HXE0001092 | 1 m 3/8" PVC tubing with wire   | ID 9.0 mm, OD 15.0 mm  |

※ Temperature Range : -15°C to 60°C

## Tubing Insulations

| Cat. No.     | Description                             |
|--------------|---|
| 00FEA0001453 | EPDM Insulation, 25 mm inner dia. (13T) |

## Flexible Tubing

| Cat. No.     | Description          |
|--------------|----------------------|
| 00HXE0001128 | 3/4" Flexible tubing |
| 00HXE0001074 | 1/2" Flexible tubing |

## Tube Clamps

| Cat. No.     | Description |
|--------------|-------------|
| 00HXE0001098 | 1" Clamp    |
| 00HXE0001099 | 3/4" Clamp  |
| 00HXE0001100 | 5/8" Clamp  |
| 00HXE0001101 | 1/2" Clamp  |
| 00HXE0001102 | 3/8" Clamp  |

## Bath Fluid

| Cat. No.     | Description            |
|--------------|------------------------|
| 00HXE0001113 | Distilled water (20 L) |
| 00HXE0001114 | Ethylene glycol (4 L)  |
| 00HXE0001115 | Ethylene glycol (20 L) |

## Distributing Fittings

| Cat. No. | Description                                   |
|----------|---|
| AAA64541 | 3-Way distributing barbed fittings set (1/4") |
| AAA64542 | 3-Way distributing barbed fittings set (3/8") |

## LC GreenBox

| Cat. No. | Model  | Description              | Dimension (W x D x H, mm) |
|----------|--------|--------------------------|---------------------------|
| AAAQ1011 | HS, HH | Mobile monitoring system | 156 x 94 x 34             |



### Tubings

- Excellent flexibility compared to PVC tubing.
- Excellent heat and corrosion resistance.



### Tubing Insulations

- Made from EPDM material, which has excellent flame resistance / oxidation resistance.
- Excellent flexibility at low temperatures.



### Tube Clamps

- Clamp is made from stainless steel material less susceptible to rust and corrosion.



### Distributing Fittings

- Multiple tubes can be connected simultaneously.



### LC GreenBox

- Monitor and control the operation status of the device in real time via mobile app with simple internet connection.

# Heating Bath










## General Application

General experiments: Determination of coliform, dissolution of samples, microbial experiments, bacteria experiments, cell cultures, etc.

|              | Description  | Temp. Range<br>(°C/°F)             | Max. Temp.<br>Stability<br>(°C) | Volume<br>(L / cu ft)               | Model | Page |
|--------------|--|------------------------------------|---------------------------------|-------------------------------------|-------|------|
| Heating Bath | <b>General</b> <ul style="list-style-type: none"> <li>• Temperature calibration and timer function.</li> <li>• Protection against low fluid level and dry running.</li> </ul>          | Amb. +7 to 100 / Amb. +12.6 to 212 | 0.3 / 0.54                      | 3.5, 11.5, 20 / 0.1, 0.4, 0.7       | BW3-G | 50   |
|              | <b>Agitator Dual</b> <ul style="list-style-type: none"> <li>• Improved distribution by agitation.</li> <li>• 2-in-1 model saves space.</li> </ul>                                      | Amb. +5 to 100 / Amb. +9 to 212    | 0.1 / 0.18                      | 3.5, 11.5, 20 / 0.1, 0.4, 0.7       | BW-H  | 51   |
|              | <b>Economy</b> <ul style="list-style-type: none"> <li>• Simple-scale temperature control.</li> <li>• Automatic power cut-off system against overheating.</li> </ul>                    | Amb. +7 to 100 / Amb. +12.6 to 212 | 0.4 / 0.72                      | 3.5, 11.5, 20 / 0.1, 0.4, 0.7       | BW-B  | 52   |
|              | <b>Visible</b> <ul style="list-style-type: none"> <li>• Intuitive viewing window for convenient internal observation</li> <li>• Suitable for viscosity measurement as well.</li> </ul> | Amb. +5 to 150 / Amb. +9 to 302    | 0.1 / 0.18                      | 25, 40 / 0.9, 1.4                   | VB-G  | 54   |
|              | <b>Shaking</b> <ul style="list-style-type: none"> <li>• Provides reliable reciprocating motion</li> <li>• Convenient structure for sample handling</li> </ul>                          | Amb. +5 to 100 / Amb. +9 to 212    | 0.1 / 0.18                      | 17, 25, 37, 55 / 0.6, 0.9, 1.3, 1.9 | BS    | 56   |
| Others       | <b>Cold Trap</b> <ul style="list-style-type: none"> <li>• Trap for water, organic solvents, etc.</li> <li>• Possible to use in cooling bath.</li> </ul>                                | Down to -35 / -31                  | N/A                             | 4.8 / 0.17                          | CTB   | 59   |

※ The contents of the above and the contents of this catalog may differ depending on the specific model and conditions of use. For the information about the features and specifications that applying to each models, please check the information on the corresponding page of each models.

|   |   |   |  |   |   |
|---|---|---|--|---|---|
|  | Satisfaction with the requirements of European regulations and guidelines.  |  | Real-time equipment monitoring and control system using mobile app.                        |  | Registered safety patent based on JEIO TECH's proprietary technology. |
|  | Eco-friendly product that has passed environmental impact assessment tests. |  | Possible to set end time or start time of device operation.                                |  | PC communication via RS-232 / RS-485 / USB port.                      |
|  | More precise temperature control through 3-point temperature calibration.   |  | More precise temperature control through temperature calibration.                          |  | Over temperature protection function.                                 |
|  | Alarm if the water is low level.  |  | It memorizes the state of power failure and operates automatically when power is restored. |  | 2 year warranty Free A/S.   |

# Heating Bath



## Constant temperature bath with proven performance and useful functions applying Lab Companion's patented safety system

- > **More stable temperature control**  
Optimized Microprocessor PID control for more accurate temperature control.
- > **Optimized temperature controls**  
Auto-tuning function enabling optimal control even when room temperature or set value is changed frequently.
- > **Temperature calibration function**  
Optimized Microprocessor PID control for more accurate temperature control.
- > **Convenient timer function provided**  
Dual wait on/off timer modes.  
(1 min. to 999 hr. 59 min.)
- > **Top-grade overheating prevention system (Lab Companion's patent)**  
Even if a failure occurs in the device control unit, the safety function is activated so that it is preferentially operated.
- > **Over temperature shutdown function**  
Safety structure with shutdown function using over temperature limiter in case of overheating.
- > **Detection of solution level (BW3, VB)**  
Detecting the level of solution in the bath and stops the device and notifies the user when the fluid level is low.
- > **Convenient solution drainage (BW3, VB, BS)**  
Drain Valve is included as standard, making it easy and convenient to discharge solution in the bath.

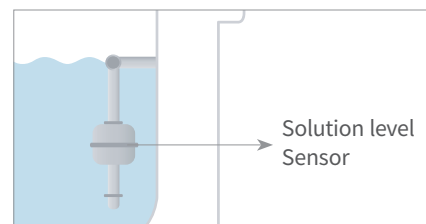
※ Some of the above contents are limited to specific models.



Simultaneously displays set temperature and actual temperature.



Safe use with over temperature protection function.



Warning alarm when water level is low.





Provides optimal choice for diverse experiment needs  
**Model series according to function classification and usage**



**General**



**Agitator**



**Economy**



**Visible**



**Shaking**

|                          |   |  |                                    |   |   |
|--------------------------|---|--|------------------------------------|---|---|
| <b>Main Feature</b>      | Representative water bath with advanced features and specifications | Dual model with agitation function and independent control | Economical water bath for easy use | Convenient for internal observation and easy to measure viscosity | Precision water bath with 180rpm shaking function |
| <b>Technical Feature</b> | Auto-tuning   | Auto-tuning  | -                                  | Auto-tuning   | Auto-tuning                                       |
|                          | Calibration   | Calibration  | -                                  | Calibration   | Calibration                                       |
|                          | Timer   | -  | -                                  | Timer   | Timer   |
|                          | -   | -  | -                                  | Communication   | -   |
|                          | Drain Valve   | -  | -                                  | Drain Valve   | Drain Valve                                       |
| <b>Safety</b>            | Over Temp.  | Over Temp.   | Over Temp.                         | Over Temp.  | Over Temp.  |
|                          | Water Level   | -  | -                                  | Water Level   | -   |
|                          | Controller Lock   | Controller Lock  | -                                  | Controller Lock   | -   |

# Heating Bath

## General type



## Representative water bath with advanced features and specifications.

### Structural Functional Features

- Drain valve for easy draining of bath solution. (except for BW3-05G model)
- Convenient structure for sample handling with device control part located on the inside.
- Convenient for carrying and moving with handles on the left and right sides.
- The internal bath is integral structure. It is made of stainless steel and has excellent durability.
- Compact design for excellent space utilization.

### Use Convenience Features

- Clear VFD panel for clear information display.
- Microprocessor PID method for precise temperature control.
- Optimized temperature control with temperature auto-tuning.
- 3-point calibration function minimizes temperature difference.
- Wait On/Off timer. (up to 999 hours 59 minutes)
- Save and use 3 frequently used temperatures.
- Automatic restart of operation when power is restored after sudden power failure.

### Outstanding Safety

- Top-rated overheating prevention system. (registration 10-0397583)
- Over temperature limit function.
- Safe structure in which the heater, sensor, and pump inside the bath are separated by covering plates.
- Malfunction prevented by controller lock function.



BW3-05G



Larger and brighter clear VFD panels intuitively provide device operation information.

## Specification

| Model  |   | BW3-05G                             | BW3-10G                              | BW3-20G                            |
|--|---|-------------------------------------|--------------------------------------|------------------------------------|
| Bath volume (L / cu ft)                      |   | 3.5 / 0.1                           | 11.5 / 0.4                           | 20 / 0.7                           |
| Temperature                                  | Working temp. range (°C / °F)               | Amb. +7 to 100 / Amb. +12.6 to 212  | Amb. +7 to 100 / Amb. +12.6 to 212   | Amb. +7 to 100 / Amb. +12.6 to 212 |
|  | Temp. stability at 50°C (±°C / °F)          | 0.4 / 0.72                          | 0.3 / 0.54                           | 0.3 / 0.54                         |
|  | Heat up time to 70°C (min)                  | 34                                  | 36                                   | 44                                 |
| Dimension                                    | Bath opening / depth (W x L, D) (mm / inch) | 240 x 136, 150 / 9.4 x 5.4, 5.9     | 300 x 240, 200 / 11.8 x 9.5, 7.9     | 498 x 300, 200 / 19.6 x 11.8, 7.9  |
|  | Exterior (W x L x H) (mm / inch)            | 307 x 200 x 264 / 12.1 x 7.9 x 10.4 | 360 x 300 x 294 / 14.2 x 11.8 x 11.6 | 564 x 356 x 294 / 22.2 x 14 x 11.6 |
|  | Net weight (kg / lbs)                       | 6.5 / 14.3                          | 10 / 22                              | 18.5 / 40.8                        |
| Electrical requirements (230V, 50 / 60Hz, A) |   | 3                                   | 4.3                                  | 8.7                                |
| Cat. No.                                     |   | AAH41305K                           | AAH41315K                            | AAH41325K                          |
| Electrical requirements (120V, 60Hz, A)      |   | 5.8                                 | 8.3                                  | 8.3                                |
| Cat. No.                                     |   | AAH41306U                           | AAH41316U                            | AAH41326U                          |

※ The lowest temperature that can be controlled depends on changes in room temperature and sample temperature. Therefore, please contact the distributor of our products before purchasing for technical consultation.

※ Technical data (according to DIN 12876)

※ Bath fluid : Water

**Accessories** Page 53 Cover, Spring Wire Rack, Half Shelf Adjuster, Test Tube Rack

# Heating Bath Agitator type



## Dual model with agitation function and independent control.

### Structural Functional Features

- Incorporates agitation function by magnetic stirring to mix solution uniformly and improve temperature distribution.
- Dual type is a model series that allows for independent temperature control for each bath and also reduces space and costs of experiments.
- Compact design for excellent space utilization.
- The internal bath is integral structure. It is made of stainless steel and has excellent durability.
- The control part at the bottom front is tilted, making it easier to set up the product and check information.
- Convenient for carrying and moving with handles on the left and right sides.



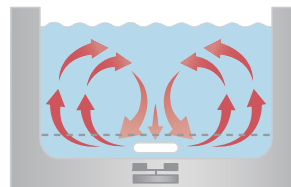
**BW-0510H**

### Use Convenience Features

- Microprocessor PID method for precise temperature control.
- Optimized temperature control with temperature auto-tuning.
- Calibration function minimizes temperature difference.
- Save and use 3 frequently used temperatures.
- Possible to select whether to use the agitation function or not, and scale-type agitation speed control makes it easy to operate.
- Automatic restart of operation when power is restored after sudden power failure.

### Outstanding Safety

- Top-rated overheating prevention system. (registration 10-0397583)
- Over temperature limit function.
- Malfunction prevented by controller lock function.
- Safe structure in which the heater, sensor, and pump inside the bath are separated by covering plates.
- If an error occurs during operation, the details of the error are shown on the display and an alarm is sounded.



Circulation of solution by an agitator



**BW-10H**

with Gable Cover & Test Tube Rack (option)

## Specification

| Model   |   | BW-05H                              | BW-10H                               | BW-20H                               | BW-0505H                            | BW-0510H                             | BW-1010H                             | BW-1020H                             |
|---|---|-------------------------------------|--------------------------------------|--------------------------------------|-------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| <b>Type</b>   |   | Single Bath                         | Single Bath                          | Single Bath                          | Dual Bath                           | Dual Bath                            | Dual Bath                            | Dual Bath                            |
| <b>Bath volume (L / cu ft)</b>                      |   | 3.5 / 0.1                           | 11.5 / 0.4                           | 20 / 0.7                             | 35 & 35 / 0.1 & 0.1                 | 35 & 11.5 / 0.1 & 0.4                | 11.5 & 11.5 / 0.4 & 0.4              | 11.5 & 20 / 0.4 & 0.7                |
| <b>Temperature</b>                                  | Working temp. range (°C / °F)               | Amb. +5 to 100 / Amb. +9 to 212     | Amb. +5 to 100 / Amb. +9 to 212      | Amb. +5 to 100 / Amb. +9 to 212      | Amb. +5 to 100 / Amb. +9 to 212     | Amb. +5 to 100 / Amb. +9 to 212      | Amb. +5 to 100 / Amb. +9 to 212      | Amb. +5 to 100 / Amb. +9 to 212      |
|   | Temp. stability at 50°C (±°C / °F)          | 0.1 / 0.18                          | 0.1 / 0.18                           | 0.1 / 0.18                           | 0.1 / 0.18                          | 0.1 / 0.18                           | 0.1 / 0.18                           | 0.1 / 0.18                           |
|   | Heat up time to 70°C (min)                  | 25                                  | 45                                   | 50                                   | 25 & 25                             | 25 & 45                              | 45 & 45                              | 45 & 50                              |
| <b>Dimension</b>                                    | Bath opening / depth (W x L, D) (mm / inch) | 240 x 136, 150 / 9.4 x 5.4, 5.9     | 300 x 240, 200 / 11.8 x 9.5, 7.9     | 498 x 300, 200 / 19.6 x 11.8, 7.9    | 240 x 136, 150 & 240 x 136, 150     | 240 x 136, 150 & 300 x 240, 200      | 300 x 240, 200 & 300 x 240, 200      | 300 x 240, 200 & 498 x 300, 200      |
|   | Exterior (W x L x H) (mm / inch)            | 307 x 216 x 266 / 12.1 x 8.5 x 10.5 | 364 x 316 x 318 / 14.3 x 14.4 x 12.5 | 564 x 372 x 318 / 22.2 x 14.6 x 12.5 | 590 x 216 x 265 / 23.2 x 8.5 x 10.4 | 544 x 316 x 318 / 21.4 x 12.4 x 12.5 | 706 x 300 x 318 / 27.8 x 11.8 x 12.5 | 844 x 372 x 318 / 33.2 x 14.6 x 12.5 |
|   | Net weight (kg / lbs)                       | 6.5 / 14.3                          | 9.5 / 21                             | 15.5 / 34.2                          | 9.7 / 21.3                          | 12.4 / 27.3                          | 14 / 30.8                            | 17.6 / 38.7                          |
| <b>Electrical requirements (230V, 50 / 60Hz, A)</b> |   | 3.0                                 | 4.3                                  | 8.7                                  | 3 & 3                               | 3 & 4.3                              | 4.3 & 4.3                            | 4.3 & 8.7                            |
| <b>Cat. No.</b>                                     |   | <b>AAH45115K</b>                    | <b>AAH45125K</b>                     | <b>AAH45135K</b>                     | <b>AAH47115K</b>                    | <b>AAH47125K</b>                     | <b>AAH47135K</b>                     | <b>AAH47145K</b>                     |
| <b>Electrical requirements (120V, 60Hz, A)</b>      |   | 5.8                                 | 8.3                                  | 8.3                                  | 5.8 & 5.8                           | 5.8 & 8.3                            | 8.3 & 8.3                            | 8.3 & 8.3                            |
| <b>Cat. No.</b>                                     |   | <b>AAH45113U</b>                    | <b>AAH45123U</b>                     | <b>AAH45133U</b>                     | <b>AAH47113U</b>                    | <b>AAH47123U</b>                     | <b>AAH47133U</b>                     | <b>AAH47143U</b>                     |

※ The lowest temperature that can be controlled depends on changes in room temperature and sample temperature. Therefore, please contact the distributor of our products before purchasing for technical consultation.

※ Technical data (according to DIN 12876)

※ Bath fluid : Water, Using agitator

**Accessories** Page 53 Cover, Spring Wire Rack, Half Shelf Adjuster, Test Tube Rack

# Heating Bath Economy type



## Economical water bath for easy use.

### Structural Functional Features

- The internal bath is integral structure and it is made of stainless steel and has excellent durability.
- Compact design for excellent space utilization.
- The control part at the bottom front is tilted, making it easier to set up the product and check information.
- Convenient to use as the power switch is located on the front.

### Use Convenience Features

- Intuitive and scale-type easy temperature setting make it suitable for simple experiments.
- Mounting accessories of various types and sizes convenience. (option)

### Outstanding Safety

- Safe structure in which the heater, sensor, and pump inside the bath are separated by covering plates.
- Over temperature limit function.



**BW-10B**

with Gable Cover & Test Tube Rack (option)



## Specification

| Model                                    |   | BW-05B                             |                  | BW-10B                             |                  | BW-20B                               |                  |
|--|---|------------------------------------|------------------|------------------------------------|------------------|--------------------------------------|------------------|
| <b>Bath volume (L / cu ft)</b>           |   | 3.5 / 0.1                          |                  | 11.5 / 0.4                         |                  | 20 / 0.7                             |                  |
| <b>Temperature</b>                       | Working temp. range (°C / °F)               | Amb. +7 to 100 / Amb. +12.6 to 212 |                  | Amb. +7 to 100 / Amb. +12.6 to 212 |                  | Amb. +7 to 100 / Amb. +12.6 to 212   |                  |
|  | Temp. stability at 50°C (±°C / °F)          | 0.4 / 0.72                         |                  | 0.5 / 0.9                          |                  | 0.5 / 0.9                            |                  |
|  | Heat up time to 70°C (min)                  | 25                                 |                  | 51                                 |                  | 68                                   |                  |
| <b>Dimension</b>                         | Bath opening / depth (W x L, D) (mm / inch) | 240 x 136, 115 / 9.4 x 5.4, 4.5    |                  | 300 x 240, 165 / 11.8 x 9.5, 6.5   |                  | 498 x 300, 165 / 19.6 x 11.8, 6.5    |                  |
|  | Exterior (W x L x H) (mm / inch)            | 303 x 242 x 245 / 11.9 x 9.5 x 9.6 |                  | 357 x 330 x 290 / 14.1 x 13 x 11.4 |                  | 564 x 392 x 290 / 22.2 x 15.4 x 11.6 |                  |
|  | Net weight (kg / lbs)                       | 6.5 / 14.3                         |                  | 10 / 22                            |                  | 18.5 / 40.8                          |                  |
| <b>Electrical requirements (230V, A)</b> |   | 60Hz, 3                            | 50Hz, 3          | 60Hz, 4.3                          | 50Hz, 4.3        | 60Hz, 8.7                            | 50Hz, 8.7        |
| <b>Cat. No.</b>                          |   | <b>AAH46011K</b>                   | <b>AAH46012K</b> | <b>AAH46021K</b>                   | <b>AAH46022K</b> | <b>AAH46031K</b>                     | <b>AAH46032K</b> |
| <b>Electrical requirements (120V, A)</b> |   | 60Hz, 5.8                          |                  | 60Hz, 8.3                          |                  | 60Hz, 8.3                            |                  |
| <b>Cat. No.</b>                          |   | <b>AAH46013U</b>                   |                  | <b>AAH46023U</b>                   |                  | <b>AAH46033U</b>                     |                  |

※ The lowest temperature that can be controlled depends on changes in room temperature and sample temperature. Therefore, please contact the distributor of our products before purchasing for technical consultation.

※ Technical data (according to DIN 12876)

※ Bath fluid : Water

## Accessories Page 53

Cover, Spring Wire Rack, Half Shelf Adjuster, Test Tube Rack

# Accessories



### Gable Type

- Prevents condensed water from falling onto specimen with gable roof shape.
- Transparency making it convenient internal observation.



### Flat Type <sup>1)</sup>

- Made from stainless steel with high corrosion resistance even with long-term use.
- Convenient handle.



### Open Ring Type

- Select the ring size according to flask size.
- Multiple rings in one hole allow for adjustment.



### Spring Wire Rack

- It has a lattice-shaped double spring structure, which makes it easy to fix various kinds of experiment containers and the height can also be easily adjusted.
- Excellent corrosion resistance as made from stainless steel.
- Convenient for handling with handles on either side.



### Half Shelf Adjuster

- Easy-to-use pedestal structure when using low-height experiment container.
- Convenient height adjustment.
- Convenient for handling with handles on either side.



### Test Tube Rack

- Fix test tubes of various sizes.
- Excellent durability as made from stainless steel.
- Structure allowing tilt adjustment.

| Model              |                               | BW3-05G                | BW3-10G  | BW3-20G  | BW-05H   | BW-10H   | BW-20H   | BW-05B   | BW-10B   | BW-20B   |          |
|--------------------|-------------------------------|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Cover              | Gable Type                    | AAA45531               | AAA45532 | AAA45533 | AAA45531 | AAA45532 | AAA45533 | AAA45531 | AAA45532 | AAA45533 |          |
|                    | Flat Type                     | AAA45541               | AAA45542 | AAA45543 | AAA45541 | AAA45542 | AAA45543 | AAA45541 | AAA45542 | AAA45543 |          |
|                    | Open Ring<br>(mm / inch)      | Ø80 / Ø3.1 x 2ea       | AAA45521 | -        | -        | AAA45521 | -        | -        | AAA45521 | -        | -        |
|                    |                               | Ø80 / Ø3.1 x 4ea       | -        | AAA45522 | -        | -        | AAA45522 | -        | -        | AAA45522 | -        |
|                    |                               | Ø80 / Ø3.1 x 8ea       | -        | -        | AAA45523 | -        | -        | AAA45523 | -        | -        | AAA45523 |
|                    |                               | Ø110 / Ø4.3 x 1ea      | AAA45524 | -        | -        | AAA45524 | -        | -        | AAA45524 | -        | -        |
|                    |                               | Ø110 / Ø4.3 x 2ea      | -        | AAA45525 | -        | -        | AAA45525 | -        | -        | AAA45525 | -        |
|                    |                               | Ø110 / Ø4.3 x 6ea      | -        | -        | AAA45527 | -        | -        | AAA45527 | -        | -        | AAA45527 |
|                    |                               | Ø185 / Ø7.3 x 1ea      | -        | AAA45526 | -        | -        | AAA45526 | -        | -        | AAA45526 | -        |
|                    | Ø185 / Ø7.3 x 2ea             | -                      | -        | AAA45528 | -        | -        | AAA45528 | -        | -        | AAA45528 |          |
| Rack <sup>1)</sup> | Spring Wire Rack              | -                      | AAA45502 | AAA45503 | -        | AAA45502 | AAA45503 | -        | AAA45502 | AAA45503 |          |
|                    | Half Shelf Adjuster           | AAA45511               | AAA45512 | AAA45513 | AAA45511 | AAA45512 | AAA45513 | AAA45511 | AAA45512 | AAA45513 |          |
|                    | Test Tube Rack<br>(mm / inch) | Ø8 / Ø0.3 x 50 tubes   | AAA41531 | -        | -        | AAA41531 | -        | -        | AAA41531 | -        | -        |
|                    |                               | Ø10 / Ø0.4 x 50 tubes  | AAA41532 | -        | -        | AAA41532 | -        | -        | AAA41532 | -        | -        |
|                    |                               | Ø12 / Ø0.5 x 33 tubes  | AAA41533 | -        | -        | AAA41533 | -        | -        | AAA41533 | -        | -        |
|                    |                               | Ø16 / Ø0.6 x 16 tubes  | AAA41535 | -        | -        | AAA41535 | -        | -        | AAA41535 | -        | -        |
|                    |                               | Ø25 / Ø1.0 x 10 tubes  | AAA41539 | -        | -        | AAA41539 | -        | -        | AAA41539 | -        | -        |
|                    |                               | Ø8 / Ø0.3 x 176 tubes  | -        | AAA45551 | AAA45551 | -        | AAA45551 | AAA45551 | -        | AAA45551 | AAA45551 |
|                    |                               | Ø10 / Ø0.4 x 176 tubes | -        | AAA45552 | AAA45552 | -        | AAA45552 | AAA45552 | -        | AAA45552 | AAA45552 |
|                    |                               | Ø12 / Ø0.5 x 84 tubes  | -        | AAA45554 | AAA45554 | -        | AAA45554 | AAA45554 | -        | AAA45554 | AAA45554 |
|                    |                               | Ø16 / Ø0.6 x 68 tubes  | -        | AAA45556 | AAA45556 | -        | AAA45556 | AAA45556 | -        | AAA45556 | AAA45556 |
|                    |                               | Ø25 / Ø1.0 x 33 tubes  | -        | AAA45561 | AAA45561 | -        | AAA45561 | AAA45561 | -        | AAA45561 | AAA45561 |
|                    | Max.mounting quantity         | 1ea                    | 1ea      | 2ea      | 1ea      | 1ea      | 2ea      | 1ea      | 1ea      | 2ea      |          |

※ The accessories for Dual Bath models in the BW-H series are identical to those for each Bath size in the Single Bath models.

1) These accessories cannot be use with flat cover. Please use gable cover.

# Heating Bath

## Visible type

**Convenient for internal observation and easy to measure viscosity.**

### Structural Functional Features

- Excellent temperature variation with internal circulation pump.
- Includes 5-step pump circulation speed adjustment function.
- Includes cooling line connecting with external cooling equipment.
- Bath cover provided as standard for easy viscometer installation.
- Convenient to use thermometer hole in bath cover.
- Drain valve for easy draining of bath solution.
- Convenient structure for sample handling due to the dropped location of the internal bath and device control part.

### Use Convenience Features

- Temperature adjustment control with 0.01°C resolution.
- Microprocessor PID method for precise temperature control.
- Optimized temperature control with temperature auto-tuning.
- Calibration function minimizes temperature difference.
- Wait On/Off timer. (up to 99 hours 59 minutes)
- Automatic restart of operation when power is restored after sudden power failure.
- Save and use 3 frequently used temperatures.
- Low level limiter.
- Operation and data management with computer connection.
- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)

### Outstanding Safety

- Top-rated overheating prevention system. (registration 10-0397583)
- Over temperature limit function.
- Malfunction prevented by controller lock function.
- Safe structure in which the heater, sensor, and pump inside the bath are separated by covering plates.



### VB-40G

with Bath Cover (standard)

## Specification

| Model                                    |   | VB-25G                               |                  | VB-40G                               |                  |
|--|---|--------------------------------------|------------------|--------------------------------------|------------------|
| <b>Bath volume (L / cu ft)</b>           |   | 25 / 0.9                             |                  | 40 / 1.4                             |                  |
| <b>Temperature</b>                       | Working temp. range (°C / °F)               | Amb. +5 to 150 / Amb. +9 to 302      |                  | Amb. +5 to 150 / Amb. +9 to 302      |                  |
|  | Temp. stability at 50°C (±°C / °F)          | 0.1 / 0.18                           |                  | 0.1 / 0.18                           |                  |
|  | Heat up time to 70°C (min)                  | 35                                   |                  | 55                                   |                  |
| <b>Dimension</b>                         | Bath opening / depth (W x L, D) (mm / inch) | 145 x 265, 330 / 5.7 x 10.4, 13      |                  | 295 x 265, 330 / 11.6 x 10.4, 13     |                  |
|  | Cover lids / Hole for thermometer (mm)      | 5ea / Ø51, 1ea / Ø12.6               |                  | 8ea / Ø51, 1ea / Ø12.6               |                  |
|  | Exterior (W x L x H) (mm / inch)            | 492 x 374 x 536 / 19.4 x 14.7 x 21.1 |                  | 642 x 374 x 536 / 25.3 x 14.7 x 21.1 |                  |
|  | Net weight (kg / lbs)                       | 28 / 61.7                            |                  | 37 / 81.6                            |                  |
| <b>Electrical requirements (230V, A)</b> |   | 60Hz, 13                             | 50Hz, 13         | 60Hz, 13                             | 50Hz, 13         |
| <b>Cat. No.</b>                          |   | <b>AAH43301K</b>                     | <b>AAH43302K</b> | <b>AAH43401K</b>                     | <b>AAH43402K</b> |

※ The lowest temperature that can be controlled depends on changes in room temperature and sample temperature. Therefore, please contact the distributor of our products before purchasing for technical consultation.



### Superior Internal Observation

- The front and back parts of the bath are made of transparent glass and can be easily used for experiments that require internal observation, viscosity measurement, etc.
- The front/rear view windows are made of reinforced glass with double-sided structure on each side and have excellent insulation and tightness.



### Convenient Viscometer Fixation

- Hole and hole cover for viscometer installation can be mounted on stainless steel bath cover.
- Viscometer holder (option) to fix the viscometer to the bath to perform viscosity measurement.



## Accessories

### Viscometer Holder

- Holder that can fix to the hole in the bath cover by fixing the viscometer.
- Convenient structure for detachment and mount of viscometer.

| Cat. No. | Max. Mountable Holders |        |
|----------|------------------------|--------|
|          | VB-25G                 | VB-40G |
| AAA43501 | 5                      | 8      |



### Bath Circulator

- External circulation required for maintaining low temperature when using transparent constant temperature water bath at temperatures under high temperature.
- Connects to the cooling line of the transparent constant temperature water bath.
- For more information on the Bath Circulator, see [Page 18](#)



### LC GreenBox

- Real-time monitoring and control of device operation via mobile app.
- Up to 4 devices can be connected.



# Heating Bath

## Shaking type

### Precision water bath with 180rpm Shaking function

#### ▣ Structural Functional Features

- Simultaneously maintains the sample at a precise temperature while providing a reciprocal Shaking environment of up to 180rpm.
- Excellent temperature variation due to shaking motion.
- Drain valve for easy draining of bath solution.
- Upper part is made of stainless steel and is easy to maintain.
- Convenient for carrying and moving with handles on the left and right sides.
- Vibration is minimized during shaking by using BLDC motor.
- Convenient structure for sample handling due to the dropped location of the internal bath and device control part.



BS-31

#### ▣ Use Convenience Features

- Simultaneously displays temperature and shaking speed.
- Temperature control and shaking can be set independently.
- Prevents sample run-off thanks to smooth shaking start.
- Microprocessor PID method for precise temperature control.
- Optimized temperature control with temperature auto-tuning.
- Calibration function minimizes temperature difference.
- Wait On/Off timer. (up to 99 hours 59 minutes)
- Automatic restart of operation when power is restored after sudden power failure.

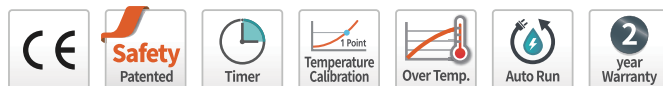


Spring Wire Rack (1ea: standard)

#### ▣ Outstanding Safety

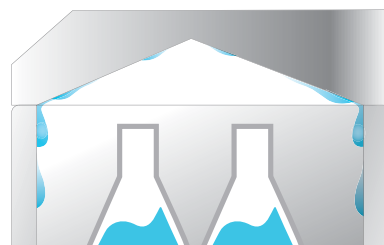
- Top-rated overheating protection system. (registration 10-0397583)
- Over temperature limit function.
- Safe structure in which the heater, sensor, and pump inside the bath are separated by covering plates.





### Inner Gable Cover

- Standard provided cover minimizes water evaporation.
- Gable roof-shape interior prevents condensed water from falling onto specimen.
- Convenient use at high temperatures with cover handle.



### Spring Wire Rack

- One supplied made of stainless steel.
- Easy to maintain as structure makes for convenient attachment to body.
- It has a lattice-shaped double spring structure, which makes it easy to fix various kinds of experiment containers and the height can also be easily adjusted.



| Cat. No. | Model |
|----------|-------|
| AAA44571 | BS-06 |
| AAA44572 | BS-11 |
| AAA44573 | BS-21 |
| AAA44574 | BS-31 |

## Specification

| Model  |   | BS-06                                     | BS-11                                     | BS-21                                     | BS-31                                     |
|--|---|---|---|---|---|
| <b>Bath volume (L / cu ft)</b>                 |   | 17 / 0.6                                  | 25 / 0.9                                  | 37 / 1.3                                  | 55 / 1.9                                  |
| <b>Temperature</b>                             | Working temp. range (°C / °F)               | Amb. +5 to 100 / Amb. +9 to 212           | Amb. +5 to 100 / Amb. +9 to 212           | Amb. +5 to 100 / Amb. +9 to 212           | Amb. +5 to 100 / Amb. +9 to 212           |
|  | Temp. stability at 50°C (±°C / °F)          | 0.1 / 0.18                                | 0.1 / 0.18                                | 0.2 / 0.36                                | 0.2 / 0.36                                |
| <b>Shaking system</b>                          | Motion type                                 | Reciprocal                                | Reciprocal                                | Reciprocal                                | Reciprocal                                |
|  | Frequency (rpm)                             | 20 to 180                                 | 20 to 180                                 | 20 to 180                                 | 20 to 180                                 |
|  | Stroke length (mm / inch)                   | 30 / 1.2<br>(25, 35 / 1.0, 1.4 available) | 30 / 1.2<br>(25, 35 / 1.0, 1.4 available) | 30 / 1.2<br>(25, 35 / 1.0, 1.4 available) | 30 / 1.2<br>(25, 35 / 1.0, 1.4 available) |
| <b>Dimension</b>                               | Bath opening / depth (W x L, D) (mm / inch) | 199 x 300, 235 / 7.8 x 11.8, 9.3          | 319 x 300, 235 / 12.6x11.8, 9.3           | 479 x 300, 235 / 18.9x11.8, 9.3           | 629 x 350, 235 / 24.8x13.8, 9.3           |
|  | Exterior (W x L x H) (mm / inch)            | 430 x 440 x 355 / 16.9 x 17.3 x 14        | 550 x 440 x 355 / 21.7 x 17.3 x 14        | 710 x 440 x 355 / 28 x 17.3 x 14.3        | 860 x 490 x 355 / 33.9 x 19.3 x 14        |
|  | Net weight (kg / lbs)                       | 26 / 57                                   | 30 / 66                                   | 35 / 77                                   | 42 / 93                                   |
| <b>Electrical requirements (230V, 60Hz, A)</b> |   | 3.7                                       | 4.6                                       | 8.9                                       | 8.9                                       |
| <b>Cat. No.</b>                                |   | <b>AAH44061K</b>                          | <b>AAH44111K</b>                          | <b>AAH44211K</b>                          | <b>AAH44311K</b>                          |
| <b>Electrical requirements (230V, 50Hz, A)</b> |   | 3.7                                       | 4.6                                       | 8.9                                       | 8.9                                       |
| <b>Cat. No.</b>                                |   | <b>AAH44062K</b>                          | <b>AAH44112K</b>                          | <b>AAH44212K</b>                          | <b>AAH44312K</b>                          |
| <b>Electrical requirements (120V, 60Hz, A)</b> |   | 7.1                                       | 8.8                                       | -   | -   |
| <b>Cat. No.</b>                                |   | <b>AAH44063U</b>                          | <b>AAH44113U</b>                          | -   | -   |

※ The lowest temperature that can be controlled depends on changes in room temperature and sample temperature.

Therefore, please contact the distributor of our products before purchasing for technical consultation.

※ Technical data (according to DIN 12876)

※ Bath fluid : Water

# Accessories

## Flask Clamp

- Clamp being able to hold an erlenmeyer flask.
- Excellent durability as made of stainless steel.
- Equipped with flask clamps of the desired size/quantity on the universal platform and used inside the bath.

| Cat. No. | Flask Clamp         | Max. Mountable Flask Clamps |       |       |       |
|----------|---------------------|-----------------------------|-------|-------|-------|
|          |                     | BS-06                       | BS-11 | BS-21 | BS-31 |
| AAA23550 | 50 ml               | 9                           | 12    | 20    | 32    |
| AAA23551 | 100 ml              | 3                           | 9     | 15    | 24    |
| AAA23552 | 250 ml              | 2                           | 4     | 8     | 12    |
| AAA23556 | 300 ml              | 2                           | 4     | 8     | 12    |
| AAA23553 | 500 ml              | 2                           | 4     | 6     | 12    |
| AAA23554 | 1 L                 | 1                           | 2     | 4     | 6     |
| AAA23555 | 2 L <sup>1)</sup>   | -                           | 1     | 2     | 3     |
| AAA23557 | 2.8 L <sup>1)</sup> | -                           | 1     | 1     | 2     |

1) 2 L and 2.8 L flasks can be used with the bath cover opened.



## Universal Platform

- Accessories for mounting flask clamp, test tube rack, etc. inside bath.
- Spring wire rack can be used attached and used instead of spring part.

| Cat. No. | Model |
|----------|-------|
| AAA44521 | BS-06 |
| AAA44522 | BS-11 |
| AAA44523 | BS-21 |
| AAA44524 | BS-31 |



## Dedicated Platform

- Set of 250 ml/500 ml flask clamps mounted on Universal Platform.
- Spring wire rack can be used attached and used instead of spring part.

| Cat. No. | Flask Clamps  | Model |
|----------|---------------|-------|
| AAA44531 | 250 ml x 2ea  | BS-06 |
| AAA44532 | 500 ml x 2ea  |       |
| AAA44541 | 250 ml x 4ea  | BS-11 |
| AAA44542 | 500 ml x 4ea  |       |
| AAA44551 | 250 ml x 8ea  | BS-21 |
| AAA44552 | 500 ml x 6ea  |       |
| AAA44561 | 250 ml x 12ea | BS-31 |
| AAA44562 | 500 ml x 12ea |       |



## Test Tube Rack

- Fix test tubes of various sizes.
- Excellent durability as made of stainless steel.
- Structure allows tilt adjustment.

| Cat. No. | Description (mm / inch) | Max. Quantity of Racks                                   |
|----------|-------------------------|--|
| AAA44581 | ø8 / ø0.3 x 86 Tubes    | BS-06 : 1ea<br>BS-11 : 2ea<br>BS-21 : 3ea<br>BS-31 : 4ea |
| AAA44582 | ø10 / ø0.4 x 86 Tubes   |  |
| AAA44583 | ø12 / ø0.5 x 58 Tubes   |  |
| AAA44585 | ø16 / ø0.6 x 32 Tubes   |  |
| AAA44586 | ø25 / ø1.0 x 19 Tubes   |  |



## Collect organic solvent at as low as -35°C / -31°F

### Structural Functional Features

- Capture moisture, organic solvents, etc. at as low as -35°C/-31°F.
- 2 glass traps provided as standard.
- Glass trap is simple to install and fix, and it's easy to handle collected liquid/solvents.
- Can be used in baths that requires rapid low temperature.
- Compact design makes installation convenient.
- Easy to clean condenser filter to maintain refrigeration efficiency with detachable condenser cover.

### Use Convenience Features

- Digitally displays the internal temperature at the front of the device.
- Provides the ability to dissolve and discharge ice or solid solvents inside.



**CTB-10**

## Accessories

### Glass Trap

- Ability to capture trapped solvents or moisture.

| Cat. No.     | Model            |
|--------------|------------------|
| 00FCA0001110 | Glass Trap (1ea) |



## Specification

| Model  |                                  | CTB-10  |
|--|----------------------------------|---|
| <b>Temperature range (°C / °F)</b>             |                                  | Down to -35 / -31                             |
| <b>Material</b>                                | Bath external                    | Stainless steel, 1.2t, Double painted & baked |
|  | Bath up desk                     | Stainless steel, 1.5t                         |
|  | Insulation                       | Polyurethane foam (30mm)                      |
|  | Refrigerator                     | 1/2 HP, R-404A (LBP)                          |
| <b>Dimension</b>                               | Volume (L / cu ft)               | 4.8 / 0.17                                    |
|  | Bath (Ø x H, mm / inch)          | 210 x 204 / 8.3 x 8                           |
|  | Glass trap (Ø x H, mm / inch)    | 60 x 262 / 2.4 x 103                          |
|  | Exterior (W x D x H) (mm / inch) | 360 x 465 x 555 / 14.1 x 18.3 x 21.9          |
|  | Net weight (kg / lbs)            | 46 / 101.4                                    |
| <b>Electrical requirements (230V, 60Hz, A)</b> |                                  | 4.5   |
| <b>Cat. No.</b>                                |                                  | <b>AAH62011K</b>                              |
| <b>Electrical requirements (230V, 50Hz, A)</b> |                                  | 4.5   |
| <b>Cat. No.</b>                                |                                  | <b>AAH62012K</b>                              |

# Oven & Furnace



Satisfaction with the requirements of European regulations and guidelines.



Real-time equipment monitoring and control system using mobile app.



Registered safety patent based on JEIO TECH's proprietary technology.



Intuitive operation with Color Touch display.



Digital Input / Output for external device interlock control.



More precise temperature control through 3-point temperature calibration.



More precise temperature control through temperature calibration.



Electronic over temperature protection system.



Over temperature protection function.



Warning alarm in case of deviation of temperature control.



Possible to set end time or start time of device operation.



Control of temperature / humidity / rpm / time, etc. through dedicated program.



PC communication via RS-232 / RS-485 / USB port.



It memorizes the state of power failure and operates automatically when power is restored.



2 year warranty Free A/S.

## General Application

**Forced convection oven:** Aging and curing, agricultural genetics, degradation/digestion of proteins and starches, universal /general drying/heating, QC/batch testing, stability testing, sterilization.

**Natural convection oven :** Annealing, plant tissue drying/ Drying of plant tissue, drug metabolism, purified chemical precipitation/ Fine chemical precipitation, universal /general drying/heating, serum protein analysis, sterilization, etc.

**Vacuum oven:** Agricultural genetics, annealing, desiccating, outgassing, vacuum embedding, volatile resin, polymer test, etc.

**Furnace:** New material development, superconducting material heating, ceramic sintering, heat treatment reaction, melting of glass and metal, casting moulding, organic matter weight analysis and coal ash measurement, heat resistance test, etc.

|                          | Description    | Temp. Range (°C/°F)   | Max. Temp. Fluctuation (±°C/°F)  | Volume (L / cu ft)    | Model  | Page           |
|--------------------------|----------------|---|--|-----------------------|--|----------------|
| Forced Convection Ovens  | <b>Program</b> | <ul style="list-style-type: none"> <li>• 10 programs &amp; 10 steps</li> <li>• Easy operation with color touch</li> </ul>                       | Amb. +10 to 250 / Amb. +18 to 482                                      | ±0.5/ 0.9 at 100 °C   | 60, 102, 151 / 2.1, 3.6, 5.3                                       | OF-P 64        |
|                          | <b>General</b> | <ul style="list-style-type: none"> <li>• Most representative forced convection type</li> <li>• Includes safety device as standard</li> </ul>    | Amb. +10 to 250 / Amb. +18 to 482                                      | ±0.5 / 0.9 at 100 °C  | 60, 102, 151 / 2.1, 3.6, 5.3                                       | OF-G 66        |
|                          | <b>Large</b>   | <ul style="list-style-type: none"> <li>• Large capacity standard type oven</li> <li>• Uniform and precise temperature control</li> </ul>        | Amb. +15 to 200 / Amb. +27 to 392<br>Amb. +15 to 300 / Amb. +27 to 300 | ±0.2 / 0.36 at 100 °C | 314, 450, 760 / 11.1, 15.9, 26.8                                   | OF3 OF3-H 68   |
|                          | <b>Economy</b> | <ul style="list-style-type: none"> <li>• Stable product that is faithful to the basics</li> <li>• Includes safety device as standard</li> </ul> | Amb. +10 to 220 / Amb. +18 to 428                                      | ±0.4 / 0.72 at 100 °C | 52, 100, 150 / 1.8, 3.5, 5.3                                       | OF-E 70        |
|                          | <b>Multi</b>   | <ul style="list-style-type: none"> <li>• Independent temperature control by chamber</li> <li>• 2-in-1, 4-in-1 models</li> </ul>                 | Amb. +10 to 200 / Amb. +18 to 392                                      | ±0.5 / 0.9 at 100 °C  | 120 / 4.2 (60/2.1 x 2 Chambers)<br>240 / 8.5 (60/2.1 x 4 Chambers) | OF-2C OF-4C 71 |
| Natural Convection Ovens | <b>General</b> | <ul style="list-style-type: none"> <li>• Most representative natural convection type</li> <li>• Suitable for drying powder samples</li> </ul>   | Amb. +10 to 250 / Amb. +18 to 482                                      | ±0.3 / 0.54 at 100 °C | 52, 91, 135 / 1.8, 3.2, 4.8  | ON-G 72        |
|                          | <b>Economy</b> | <ul style="list-style-type: none"> <li>• Stable product that is faithful to the basics</li> <li>• Includes safety device as standard</li> </ul> | Amb. +15 to 220 / Amb. +27 to 428                                      | ±0.3 / 0.54 at 100 °C | 52, 100, 150 / 1.8, 3.5, 5.3                                       | ON-E 73        |
| Vacuum Oven              | <b>Vacuum</b>  | <ul style="list-style-type: none"> <li>• Product optimized for vacuum drying</li> <li>• Structure separating vacuum/release line</li> </ul>     | Amb. +15 to 250 / Amb. +27 to 482                                      | ±0.1 / 0.18 at 100 °C | 28, 65 / 1.0, 2.3  | OV4 74         |
| Furnace                  | <b>Furnace</b> | <ul style="list-style-type: none"> <li>• High temperature test up to 1500°C</li> <li>• Convenient program control</li> </ul>                    | Max. 1100 / 2012<br>Max. 1500 / 2732                                   | ±1.5 / 2.7 at 1500°C  | 3.0, 4.5, 12.0 / 0.1, 0.2, 0.4                                     | MF2-G MF2-H 76 |

※ The contents of the above and the contents of this catalog may differ depending on the specific model and conditions of use. For the information about the features and specifications that applying to each models, please check the information on the corresponding page of each models.



## Oven Series with proven performance and durability Minimization of energy loss and provision of precise control

> **Variety of products optimized for specific purpose of use**

Optimal model provided based on heat transfer method, control temperature range, chamber capacity and program control.

> **Verified according to international standards**

Fluctuation, variation, heating time, and recovery time are tested according to DIN 12880.

> **Minimization of energy loss**

Superior insulation and enclosed design minimize energy loss and reduce operating costs.

> **Provision of remote equipment monitoring service (option)**

Real-time monitoring of equipment operation status using smartphone. (when purchased LC GreenBox)

> **Stable and accurate temperature control**

Optimized microprocessor PID control for accurate temperature control.

> **3-point temperature calibration function (OF3-Large, OF-P)**

Temperature calibration of up to 3 points allows for more reliable temperature control.

> **Optimized temperature control**

Auto-tuning function enables optimal control even when temperature or ambient conditions are changed frequently.

> **Computer interface control**

Convenient remote control and data management through built-in dedicated software. (applicable models)



Inside of forced convection oven



Inside of natural convection oven



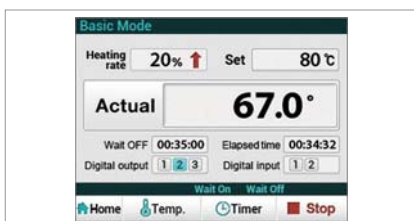
Provision of remote equipment monitoring service.



## Has functions that are convenient for actual use and applies Lab Companion's patented safety system

- > **Convenient timer function provided**  
Device is run (Wait On/Wait Off) after the set time elapses. (Max. 999 hours and 59 minutes)
- > **Controller lock function**  
Lock function for preventing change of controller settings prevents erroneous operation due to arbitrary changing.
- > **Convenient temperature save and operation**  
Conveniently save and use frequently used temperatures. (up to 3 presets allowed)
- > **Safe for use at maximum temperature**  
According to international standards, even when operated at maximum temperature, the surface temperature does not exceed 51°C.
- > **Top-grade overheating prevention system (Lab Companion's patent)**  
Even if a failure occurs in the device control unit, the safety device is structured so that it is preferentially operated.
- > **Overheat temperature cut-off function**  
Safety structure with shutdown function using Over Temperature Limiter in case of overheating.
- > **Door open detection**  
Stops the device and provides notification/alarms when the door is open for an extended period of time.
- > **Prepared for unexpected power failure**  
Auto-run function capable of selecting re-operation when power is restored after sudden power failure.

※ Some of the above contents are limited to specific models.



Program controller of the color touch screen.



General controller with clear VFD panel.



Triple-toughened glass windows.

# Forced Convection Oven

## Program type

### Convenient program control function

#### Structural Functional Features

- Wide temperature range that can be controlled up to 250°C.
- Intuitive operation with color touch display.
- Airflow optimized for uniform heat transfer.
- Superior insulation and enclosed design minimize energy loss and reduce operating costs.
- Easy to open and close the door. Soft handle minimizes shock to the sample.
- Stainless steel interior and shelves are excellent in terms of corrosion resistance and clean maintenance.
- Easy to clean as inner edges are curved.
- Two vent holes for gas discharge at the top.
- Safe temperature of the surface even when operating at maximum temperature.

#### Use Convenience Features

- 3-point temperature calibration, high temperature accuracy over a wide temperature range.
- Precise temperature control with temperature auto-tuning.
- Easy to adjust air circulation speed.
- Wait On/Off timer. (up to 99 hours 59 minutes)
- Microprocessor PID method for precise temperature control.
- Displays all major operation information on the main screen.
- Operation and data management with computer connection.
- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)
- Automatic restart of operation when power is restored after sudden power failure.

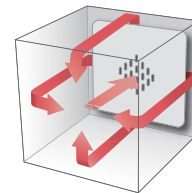
#### Outstanding Safety

- Top-rated overheating protection system. (registration 10-0397583)
- Over temperature limit function.
- Safety circuit design to protect against overcurrent and overheating.
- Safe surface temperature even when operating at high temperature.
- Triple-toughened viewing window for safe and convenient observation even at high temperatures. (OF-PW)
- Malfunction prevented by controller lock function.
- Self-diagnostics function to check abnormal condition of temperature sensor.



#### OF-12PW

with Wire Shelves 2ea (standard)

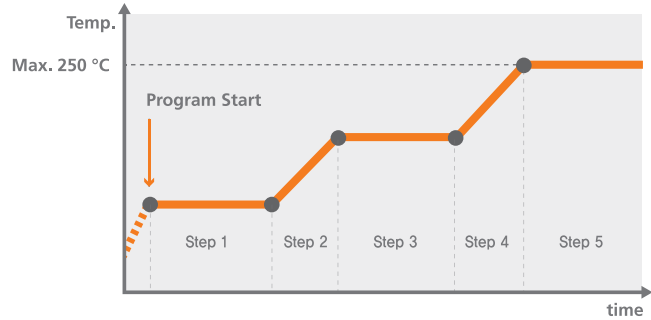






## Program Type

- Possible to set and save 10 programs.
- Up to 10 steps can be set per program.
- Set time up to 99 hours and 59 minutes per step.
- Includes useful scheduler management functions such as program operation range and repeat interval setting.
- Program repetition possible up to 99 times.
- Possible to set temperature rise time. (maximum 4.7°C/min)
- Digital Input / Output function makes it easy to connect external equipment.



## Specification

| Model  | Solid Door (without window)         | OF-02P                               | OF-12P                               | OF-22P                               |
|--|-------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
|  | Window door                         | OF-02PW                              | OF-12PW                              | OF-22PW                              |
| Chamber volume (L / cu ft)                   |                                     | 60 / 2.1                             | 102 / 3.6                            | 151 / 5.3                            |
| Temperature                                  | Range (°C / °F)                     | Amb. +10 to 250 / Amb. +18 to 482    | Amb. +10 to 250 / Amb. +18 to 482    | Amb. +10 to 250 / Amb. +18 to 482    |
|  | Fluctuation at 100°C (±°C / °F)     | 0.5 / 0.9                            | 0.6 / 1.08                           | 0.8 / 1.44                           |
|  | Variation at 100°C (±°C / °F)       | 1.0 / 1.8                            | 1.3 / 2.3                            | 1.7 / 3.1                            |
|  | Heating time to 100°C (min.)        | 9                                    | 9                                    | 6                                    |
|  | Recovery time at 100°C (min.)       | 2                                    | 1                                    | 1                                    |
| Dimension                                    | Interior (W x D x H, mm / inch)     | 400 x 360 x 420 / 15.7 x 14.2 x 16.5 | 480 x 410 x 520 / 18.9 x 16.1 x 20.5 | 550 x 460 x 600 / 22 x 18 x 23.6     |
|  | Exterior (W x D x H, mm / inch)     | 577 x 642 x 760 / 22.7 x 25.3 x 30   | 657 x 692 x 870 / 25.9 x 27.2 x 34.3 | 727 x 742 x 974 / 28.7 x 29.2 x 38.3 |
|  | Net weight (Kg / lbs)               | 53 / 117                             | 63 / 139                             | 72.5 / 160                           |
| Shelves                                      | Quantity of shelves (standard/max.) | 2 / 4                                | 2 / 6                                | 2 / 7                                |
|  | Max. Load per shelf (Kg / lbs)      | 30 / 66                              | 30 / 66                              | 30 / 66                              |
| Electrical requirements (230V, 50 / 60Hz, A) |                                     | 4.2                                  | 5.9                                  | 7.1                                  |
| Cat. No.                                     | Solid door (without window)         | AAH12555K                            | AAH12565K                            | AAH12575K                            |
|  | Window door                         | AAH12655K                            | AAH12665K                            | AAH12675K                            |
| Electrical requirements (120V, 60Hz, A)      |                                     | 6.8                                  | 8.4                                  | 10.1                                 |
| Cat. No.                                     | Solid Door (without window)         | AAH12553U                            | AAH12563U                            | AAH12573U                            |
|  | Window door                         | AAH12653U                            | AAH12663U                            | AAH12673U                            |

※ The lowest temperature that can be controlled depends on changes in room temperature and sample temperature. Therefore, please contact the distributor of our products before purchasing for technical consultation.  
 ※ Technical data (according to DIN 12880, before 2013)

Accessories Page 77 Wire Shelves, Perforated Shelves, Recorder, LC GreenBox

# Forced Convection Oven

## General type

**Superb air dispersion and uniform temperature distribution.**

### **Structural Functional Features**

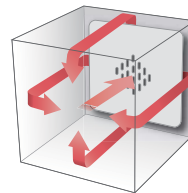
- Temperature range from ambient +10°C to 250°C.
- Microprocessor PID control / Temperature calibration / Automatic tuning.
- Forced air convection ensures optimal air circulation, temperature uniformity, and short heat-up time.
- Fan speed control by an analog dial prevents powdered samples from blowing away. (option)
- Adjustable dual slide vents for inner vapor circulation.

### **Use Convenience Features**

- Intuitive control panel with bright LED displays. (0.1°C resolution)
- Dual wait on/off timer modes. (1 min. to 99 hr. 59 min.)
- Convenient presetting function for 3 most commonly used temperature settings.
- Rounded inner chamber corners for easy cleaning and optimal airflow.
- Corrosion-resistant incoloy sheath heating element and stainless steel interior.
- Threefold tempered-glass window provides clear inside view of the chambers. (only OF-GW models)
- RS-232 interface for external control and data collection.
- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)



**OF-22GW**  
with Wire Shelves 2ea (standard)



Effective heat transfer through airflow



#### **Stainless steel Chamber**

- Grade 304 stainless steel chamber interior and dirt-repellent external surface with power coating.
- Adjustable and electropolished stainless steel wire shelves allowing efficient airflow and easy cleaning.



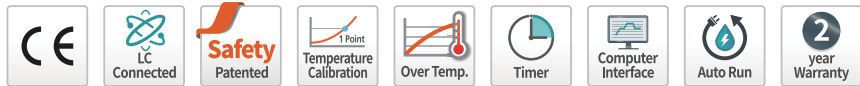
#### **Glass Window**

- Threefold tempered-glass window providing clear inside view of the chambers. (only OF-GW models)
- Door opens 180 degrees and features a double latch handle.



#### **Air-tight Door Gasket**

- Air-tight door gasket minimizing heat loss.



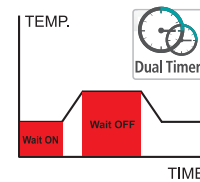
## Outstanding Safety

- Top-rated overheating protection system. (registration 10-0397583)
- Over temperature limit function.
- Safe product surface, even when operated at maximum temperature.
- Triple-toughened viewing window for safe and convenient observation even at high temperatures. (only OF-GW models)
- Malfunction prevented by controller lock function.
- Self-diagnostics function to check abnormal condition of temperature sensor.



### Safety

- Protection against overheating by automatic power cutoff from the heater and controller in sequence.
- Two separate fuses for protecting against overcurrent.
- Open door alert.



### Dual Wait ON/OFF Timer

- Dual wait on/off timer modes from 1 min to 99 hr 59 min.

## Specification

| Model   | Solid Door (without window)         | OF-02G                               | OF-12G                               | OF-22G                               |
|---|-------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
|   | Window door                         | OF-02GW                              | OF-12GW                              | OF-22GW                              |
| <b>Chamber volume (L / cu ft)</b>                   |                                     | 50 / 1.8                             | 100 / 3.5                            | 153 / 5.4                            |
| <b>Temperature</b>                                  | Range (°C / °F)                     | Amb. +10 to 250 / Amb. +18 to 482    | Amb. +10 to 250 / Amb. +18 to 482    | Amb. +10 to 250 / Amb. +18 to 482    |
|   | Fluctuation at 100°C (±°C / °F)     | 0.5 / 0.9                            | 0.6 / 1.08                           | 0.8 / 1.44                           |
|   | Variation at 100°C (±°C / °F)       | 1 / 1.8                              | 1.3 / 2.3                            | 1.7 / 3.1                            |
|   | Heating time to 100°C (min.)        | 12                                   | 15                                   | 16                                   |
| <b>Dimension</b>                                    | Recovery time at 100°C (min.)       | 6                                    | 6                                    | 6                                    |
|   | Interior (W x D x H, mm / inch)     | 400 x 360 x 420 / 15.7 x 14.2 x 16.5 | 480 x 410 x 520 / 18.9 x 16.1 x 20.5 | 550 x 460 x 600 / 22 x 18 x 23.6     |
|   | Exterior (W x D x H, mm / inch)     | 577 x 642 x 760 / 22.7 x 25.3 x 30   | 657 x 692 x 870 / 25.9 x 27.2 x 34.3 | 727 x 742 x 974 / 28.7 x 29.2 x 38.3 |
| <b>Shelves</b>                                      | Net weight (Kg / lbs)               | 53 / 117                             | 63 / 139                             | 72.5 / 160                           |
|   | Quantity of shelves (standard/max.) | 2 / 4                                | 2 / 6                                | 2 / 7                                |
| <b>Electrical requirements (230V, 50 / 60Hz, A)</b> | Max. Load per shelf (Kg / lbs)      | 30 / 66                              | 30 / 66                              | 30 / 66                              |
|   |                                     | 4.4                                  | 6.1                                  | 7.4                                  |
| <b>Cat. No.</b>                                     | Solid Door (without window)         | AAH12155K                            | AAH12165K                            | AAH12175K                            |
|   | Window door                         | AAH12255K                            | AAH12265K                            | AAH12275K                            |
| <b>Electrical requirements (120V, 60Hz, A)</b>      |                                     | 6.8                                  | 8.4                                  | 10.1                                 |
| <b>Cat. No.</b>                                     | Solid Door (without window)         | AAH12156U                            | AAH12166U                            | AAH12176U                            |
|   | Window door                         | AAH12256U                            | AAH12266U                            | AAH12276U                            |

1) Technical data according to DIN 12880. (before 2013)

※ The lowest temperature that can be controlled depends on changes in room temperature and sample temperature. Therefore, please contact the distributor of our products before purchasing for technical consultation.

# Forced Convection Oven

## Large type

### Up to 300°C and program/general control selection

#### Structural Functional Features

- Optimized model provision and selection based on temperature range, capacity, controller, etc.
- Air flow optimized for uniform heat transfer ensures stable overall temperature distribution.
- Includes vent hole base with cover for gas exhaust, cable connection, etc. on the side.
- Includes castors making it easy to move and install.

#### Use Convenience Features

- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)
- Temperature calibration of up to 3 points allows for more reliable temperature control.
- Optimized control with temperature auto-tuning.
- Wait On/Off timer. (up to 999 hours 59 minutes)
- Microprocessor PID method for precise temperature control.

#### Outstanding Safety

- Top-rated overheating protection system. (registration 10-0397583)
- Over temperature limit function.
- Safe product surface, even when operated at maximum temperature.
- Triple-toughened viewing window for safe and convenient observation even at high temperatures. (OF3-W)
- Malfunction prevented by controller lock function.
- Self-diagnostics function to check abnormal condition of temperature sensor.

#### Program Type

- Possible to set and save 10 programs.
- Up to 10 steps can be set per program.
- Set time up to 99 hours and 59 minutes per step.
- Includes useful scheduler management functions such as program operation range and repeat interval setting.
- Program repetition possible up to 99 times.
- Digital Input / Output function makes it easy to connect external equipment.

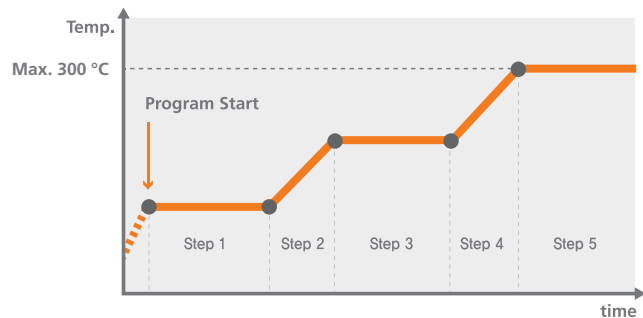
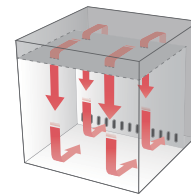
#### General Type

- 4.7-inch large VFD panel for clear information display.
- Easy and convenient to use with simple operation.
- Notifies when deviation from control temperature upper limit and lower limit occurs.
- USB/RS-232 connection and software provide convenient computer operation and data managing.



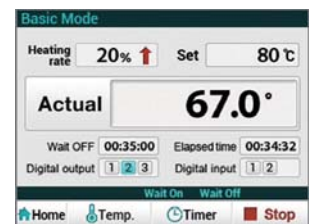
#### OF3-45PW

with Wire Shelves 2ea (standard)



#### General Controller

Simultaneous display of set temperature and current temperature.



#### Program Controller

- Color touch display
- Intuitive operation environment.



## Specification

|   |                                     | Max. 200°C                             |                                      |  |
|---|-------------------------------------|--|--------------------------------------|--|
| Model   | General (Without Window)            | OF3-30                                 | OF3-45 (CE Completed)                | OF3-75 (CE Completed)                  |
|   | General (Window Door)               | OF3-30W                                | OF3-45W (CE Completed)               | OF3-75W (CE Completed)                 |
|   | Program (Without Window)            | OF3-30P                                | OF3-45P (CE Completed)               | OF3-75P (CE Completed)                 |
|   | Program (Window Door)               | OF3-30PW                               | OF3-45PW (CE Completed)              | OF3-75PW (CE Completed)                |
| <b>Chamber volume (L / cu ft)</b>                 |                                     | 314 / 11.1                             | 450 / 15.9                           | 760 / 26.8                             |
| <b>Temperature</b>                                | Range (°C / °F)                     | Amb. +15 to 200 / Amb.+27 to 392       | Amb. +15 to 200 / Amb.+27 to 392     | Amb. +15 to 200 / Amb.+27 to 392       |
|   | Fluctuation at 100°C (±°C / °F)     | 0.2 / 0.36                             | 0.2 / 0.36                           | 0.2 / 0.36                             |
|   | Variation at 100°C (±°C / °F)       | 3.5 / 6.3                              | 3.5 / 6.3                            | 4.5 / 8.1                              |
|   | Heating time to 100°C (min.)        | 20                                     | 25                                   | 25                                     |
|   | Recovery time at 100°C (min.)       | 7                                      | 7                                    | 7                                      |
| <b>Dimension</b>                                  | Interior (W x D x H, mm / inch)     | 645 x 750 x 650 / 25.4 x 29.5 x 25.6   | 645 x 750 x 930 / 25.4 x 29.5 x 36.6 | 745 x 850 x 1200 / 29.3 x 33.5 x 47.2  |
|   | Exterior (W x D x H, mm / inch)     | 850 x 1100 x 1235 / 33.5 x 43.3 x 48.6 | 850 x 1100 x 1525 / 33.5 x 43.3 x 60 | 950 x 1200 x 1785 / 37.4 x 47.2 x 70.3 |
|   | Net weight (Kg / lbs)               | 200 / 440.9                            | 240 / 529.1                          | 300 / 661.4                            |
| <b>Shelves</b>                                    | No. of wire shelf (standard / max.) | 2 / 5                                  | 3 / 8                                | 3 / 11                                 |
|   | Max. load per shelf (kg / lbs)      | 25 / 55.1                              | 25 / 55.1                            | 25 / 55.1                              |
| <b>Electrical requirements (230V, 50/60Hz, A)</b> |                                     | 1P, 13.2                               |                                      |  |
| <b>Cat. No.</b>                                   | General (Without Window)            | AAH18215K                              | -                                    | -                                      |
|   | General (Window Door)               | AAH18315K                              | -                                    | -                                      |
|   | Program (Without Window)            | AAH18615K                              | -                                    | -                                      |
|   | Program (Window Door)               | AAH18715K                              | -                                    | -                                      |
| <b>Electrical requirements (380V, 50Hz, A)</b>    |                                     | -                                      | 3P, 6.7                              | 3P, 9.0                                |
| <b>Cat. No.</b>                                   | General (Without Window)            | -                                      | AAH182214K                           | AAH182314K                             |
|   | General (Window Door)               | -                                      | AAH183214K                           | AAH183314K                             |
|   | Program (Without Window)            | -                                      | AAH186214K                           | AAH186314K                             |
|   | Program (Window Door)               | -                                      | AAH187214K                           | AAH187314K                             |

※ Technical data (according to DIN 12880 before 2013)

|  |                                     | Max. 300°C                             |                                      |  |
|--|-------------------------------------|--|--------------------------------------|--|
| Model  | General (Without Window)            | OF3-30H (CE Completed)                 | OF3-45H (CE Completed)               | OF3-75 (CE Completed)                  |
|  | General (Window Door)               | OF3-30HW (CE Completed)                | OF3-45HW (CE Completed)              | OF3-75HW (CE Completed)                |
|  | Program (Without Window)            | OF3-30HP (CE Completed)                | OF3-45HP (CE Completed)              | OF3-75P (CE Completed)                 |
|  | Program (Window Door)               | OF3-30HPW (CE Completed)               | OF3-45HPW (CE Completed)             | OF3-75HPW (CE Completed)               |
| <b>Chamber volume (L / cu ft)</b>              |                                     | 314 / 11.1                             | 450 / 15.9                           | 760 / 26.8                             |
| <b>Temperature</b>                             | Range (°C / °F)                     | Amb. +15 to 300 / Amb.+27 to 572       | Amb. +15 to 300 / Amb.+27 to 572     | Amb. +15 to 300 / Amb.+27 to 572       |
|  | Fluctuation at 100°C (±°C / °F)     | 0.2 / 0.36                             | 0.2 / 0.36                           | 0.2 / 0.36                             |
|  | Variation at 100°C (±°C / °F)       | 3.5 / 6.3                              | 3.5 / 6.3                            | 4.5 / 8.1                              |
|  | Heating time to 100°C (min.)        | 15                                     | 20                                   | 20                                     |
|  | Recovery time at 100°C (min.)       | 7                                      | 7                                    | 7                                      |
| <b>Dimension</b>                               | Interior (W x D x H, mm / inch)     | 645 x 750 x 650 / 25.4 x 29.5 x 25.6   | 645 x 750 x 930 / 25.4 x 29.5 x 36.6 | 745 x 850 x 1200 / 29.3 x 33.5 x 47.2  |
|  | Exterior (W x D x H, mm / inch)     | 850 x 1100 x 1235 / 33.5 x 43.3 x 48.6 | 850 x 1100 x 1525 / 33.5 x 43.3 x 60 | 950 x 1200 x 1785 / 37.4 x 47.2 x 70.3 |
|  | Net weight (Kg / lbs)               | 200 / 440.9                            | 240 / 529.1                          | 300 / 661.4                            |
| <b>Shelves</b>                                 | No. of wire shelf (standard / max.) | 2 / 5                                  | 3 / 8                                | 3 / 11                                 |
|  | Max. load per shelf (kg / lbs)      | 25 / 55.1                              | 25 / 55.1                            | 25 / 55.1                              |
| <b>Electrical requirements (380V, 50Hz, A)</b> |                                     | 3P, 6.7                                | 3P, 9.0                              | 3P, 10.8                               |
| <b>Cat. No.</b>                                | General (Without Window)            | AAH192114K                             | AAH192214K                           | AAH192314K                             |
|  | General (Window Door)               | AAH193114K                             | AAH193214K                           | AAH193314K                             |
|  | Program (Without Window)            | AAH196114K                             | AAH196214K                           | AAH196314K                             |
|  | Program (Window Door)               | AAH197114K                             | AAH197214K                           | AAH197314K                             |

※ The lowest temperature that can be controlled depends on changes in room temperature and sample temperature. Therefore, please contact the distributor of our products before purchasing for technical consultation.

※ Technical data (according to DIN 12880 before 2013)

# Forced Convection Oven Economy type



## Stable oven that is faithful to the basic functions

### Structural Functional Features

- Economical model series that minimizes the purchase burden.
- Superior insulation and enclosed design minimize energy loss and reduce operating costs.
- Stainless steel interior and shelves are excellent in terms of corrosion resistance and clean maintenance.
- Two vent holes for gas discharge at the top.

### Use Convenience Features

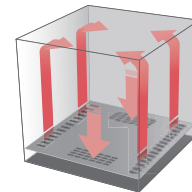
- Calibration function minimizes temperature difference.
- Optimized control with temperature auto-tuning.
- Save and use 3 frequently used temperatures.
- Wait On/Off timer. (up to 99 hours 59 minutes)
- Microprocessor PID method for precise temperature control.
- Automatic restart of operation when power is restored after sudden power failure.

### Outstanding Safety

- Top-rated overheating protection system. (registration 10-0397583)
- Over temperature limit function.
- Safety circuit design to protect against overcurrent and overheating.
- Safe surface temperature even when operating at high temperatures.
- Malfunction prevented by controller lock function.
- Self-diagnostics function to check abnormal condition of temperature sensor.



**OF-01E**  
with Wire Shelves 2ea (standard)



## Specification

| Model   | OF-01E                              | OF-11E                                  | OF-21E                                |   |
|---|-------------------------------------|---|---------------------------------------|---|
| <b>Chamber volume (L / cu ft)</b>                   | 52 / 1.8                            | 100 / 3.5                               | 150 / 5.3                             |   |
| <b>Temperature</b>                                  | Range (°C / °F)                     | Amb. +10 to 220<br>/ Amb. +18 to 428    | Amb. +10 to 220<br>/ Amb. +18 to 428  | Amb. +10 to 220<br>/ Amb. +18 to 428    |
|   | Fluctuation at 100°C (±°C / °F)     | 0.4 / 0.72                              | 0.4 / 0.72                            | 0.4 / 0.72                              |
|   | Variation at 100°C (±°C / °F)       | 3.3 / 5.94                              | 3.3 / 5.94                            | 2.3 / 4.14                              |
|   | Heating time to 100°C (min.)        | 6                                       | 6                                     | 5                                       |
|   | Recovery time at 100°C (min.)       | 1                                       | 1                                     | 1                                       |
| <b>Dimension</b>                                    | Interior (W x D x H, mm / inch)     | 375 x 370 x 370<br>/ 14.8 x 14.6 x 14.6 | 455 x 430 x 510<br>/ 18 x 17 x 20     | 585 x 460 x 555<br>/ 23 x 18.1 x 21.9   |
|   | Exterior (W x D x H, mm / inch)     | 530 x 535 x 737<br>/ 20.9 x 21.1 x 29   | 610 x 595 x 877<br>/ 24 x 23.4 x 34.5 | 740 x 625 x 922<br>/ 29.1 x 24.6 x 36.3 |
|   | Net weight (Kg / lbs)               | 36 / 79.4                               | 47 / 103.6                            | 59 / 130                                |
| <b>Shelves</b>                                      | Quantity of shelves (standard/max.) | 2 / 5                                   | 2 / 7                                 | 2 / 7                                   |
|   | Max. Load per shelf (Kg / lbs)      | 30 / 66.1                               | 30 / 66.1                             | 25 / 55.1                               |
| <b>Electrical requirements (230V, 50 / 60Hz, A)</b> | 4.3                                 | 6                                       | 7.4                                   |   |
| <b>Cat. No.</b>                                     | <b>AAH14012K</b>                    | <b>AAH14022K</b>                        | <b>AAH14032K</b>                      |   |
| <b>Electrical requirements (120V, 60Hz, A)</b>      | 6.8                                 | 8.4                                     | 10.1                                  |   |
| <b>Cat. No.</b>                                     | <b>AAH14016U</b>                    | <b>AAH14026U</b>                        | <b>AAH14036U</b>                      |   |

※ The lowest temperature that can be controlled depends on changes in room temperature and sample temperature. Therefore, please contact the distributor of our products before purchasing for technical consultation.  
 ※ Technical data (according to DIN 12880, before 2013)

**Accessories** Page 77 Wire Shelves, Perforated Shelves

# Forced Convection Oven Multi type



## Independent temperature control and optimal space efficiency per chamber

### Structural Functional Features

- Airflow optimized for uniform heat transfer.
- Superior insulation and enclosed design minimize energy loss and reduce operating costs.
- Easy to open and close the door, soft handle minimizes shock to the sample.
- Stainless steel interior and shelves are excellent in terms of corrosion resistance and clean maintenance.
- Easy to clean as inner edges are curved.
- Includes vent hole base with cover for gas exhaust, cable connection, etc. on the side.

### Use Convenience Features

- Calibration function minimizes temperature difference.
- Optimized control with temperature auto-tuning.
- Save and use 3 frequently used temperatures.
- Wait On/Off timer. (up to 99 hours 59 minutes)
- Microprocessor PID method for precise temperature control.
- Automatic restart of operation when power is restored after sudden power failure.

### Outstanding Safety

- Top-rated overheating protection system. (registration 10-0397583)
- Over temperature limit function.
- Safe product surface, even when operated at maximum temperature.
- Malfunction prevented by controller lock function.
- Self-diagnostics function to check abnormal condition of temperature sensor.

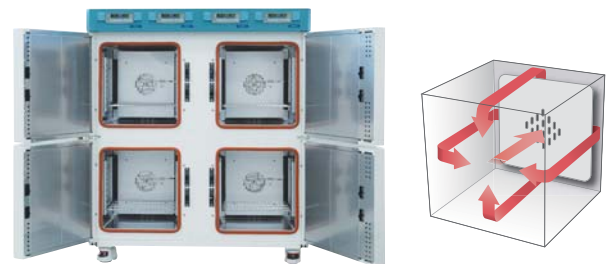


**OF-02G-2C**

with Wire Shelves 2ea (standard)

**OF-02G-4C**

with Wire Shelves 2ea (standard)



## Specification

| Model   |                                     | OF-02G-2C  | OF-02G-4C  |
|---|-------------------------------------|--|--|
| <b>Chamber volume (L / cu ft)</b>                   |                                     | 120 / 4.2 (60 / 2.1 x 2 chambers)                      | 240 / 8.5 (60 / 2.1 x 4 chambers)                      |
| <b>Temperature</b>                                  | Range (°C / °F)                     | Amb. +10 to 200 / Amb. +18 to 392                      | Amb. +10 to 200 / Amb. +18 to 392                      |
|   | Fluctuation at 100°C (±°C / °F)     | 0.5 / 0.9  | 0.5 / 0.9  |
|   | Variation at 100°C (±°C / °F)       | 1 / 1.8  | 1 / 1.8  |
|   | Heating time to 100°C (min.)        | 15   | 15   |
|   | Recovery time at 100°C (min.)       | 2  | 2  |
| <b>Dimension</b>                                    | Interior (W x D x H, mm / inch)     | 400 x 360 x 420<br>/ 15.7 x 14.2 x 16.5 (each chamber) | 400 x 360 x 420<br>/ 15.7 x 14.2 x 16.5 (each chamber) |
|   | Exterior (W x D x H, mm / inch)     | 570 x 640 x 1360 / 22.4 x 25.2 x 53.5                  | 1170 x 640 x 1360 / 46.1 x 25.2 x 53.5                 |
|   | Net weight (Kg / lbs)               | 110 / 242.5  | 170 / 374.8  |
| <b>Shelves</b>                                      | Quantity of shelves (standard/max.) | 2 / 4 per chamber                                      | 2 / 4 per chamber                                      |
|   | Max. Load per shelf (Kg / lbs)      | 26 / 57.3  | 26 / 57.3  |
| <b>Electrical requirements (230V, 50 / 60Hz, A)</b> |                                     | 8.4  | 8.4 x 2  |
| <b>Cat. No.</b>                                     |                                     | <b>AAH1A115K</b>                                       | <b>AAH1A015K</b>                                       |
| <b>Electrical requirements (120V, 60Hz, A)</b>      |                                     | 16.7   | 16.7 x 2ea   |
| <b>Cat. No.</b>                                     |                                     | <b>AAH1A116U</b>                                       | <b>AAH1A016U</b>                                       |

※ The lowest temperature that can be controlled depends on changes in room temperature and sample temperature. Therefore, please contact the distributor of our products before purchasing for technical consultation.  
 ※ Technical data (according to DIN 12880, before 2013)

**Accessories** Page 77 Wire Shelves, Perforated Shelves

# Natural Convection Oven

## General type



## Specially designed for applications requiring gentle airflow

### Structural Functional Features

- Gravity flow convection for uniform sample heating.
  - Ideal for all sterilization, drying, and high-temperature storage tasks that do not require high drying performance or airflow.
- Easy to open and close the door, soft handle minimizes shock to the sample.
- Two vent holes for gas discharge at the top.
- Stainless steel interior and shelves are excellent in terms of corrosion resistance and clean maintenance.
- Rounded inner chamber corners for easy cleaning and optimal airflow.

### Use Convenience Features

- Calibration function minimizes temperature difference.
- Optimized control with temperature auto-tuning.
- Save and use 3 frequently used temperatures.
- Wait On/Off timer. (up to 99 hours 59 minutes)
- Microprocessor PID method for precise temperature control.
- Automatic restart of operation when power is restored after sudden power failure.

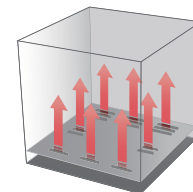
### Outstanding Safety

- Top-rated overheating protection system. (registration 10-0397583)
- Over temperature limit function.
- Safe product surface, even when operated at maximum temperature.
- Triple-toughened viewing window for safe and convenient observation even at high temperatures. (only ON-GW models)
- Malfunction prevented by controller lock function.
- Self-diagnostics function to check abnormal condition of temperature sensor.



**ON-22GW**

with Wire Shelves 2ea (standard)



## Specification

| Model   | Solid Door (without window)         | ON-02G                               | ON-12G                               | ON-22G                               |
|---|-------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
|   | Window door                         | ON-02GW                              | ON-12GW                              | ON-22GW                              |
| <b>Chamber volume (L / cu ft)</b>                   |                                     | 52 / 1.8                             | 91 / 3.2                             | 135 / 4.8                            |
| <b>Temperature</b>                                  | Range (°C / °F)                     | Amb. +15 to 250 / Amb. +27 to 482    | Amb. +15 to 250 / Amb. +27 to 482    | Amb. +15 to 250 / Amb. +27 to 482    |
|   | Fluctuation at 100°C (±°C / °F)     | 0.3 / 0.54                           | 0.3 / 0.54                           | 0.3 / 0.54                           |
|   | Variation at 100°C (±°C / °F)       | 5.9 / 10.62                          | 7.5 / 13.5                           | 6.9 / 12.42                          |
|   | Heating time to 100°C (min.)        | 13                                   | 12                                   | 12                                   |
| <b>Dimension</b>                                    | Recovery time at 100°C (min.)       | 5                                    | 4                                    | 2                                    |
|   | Interior (W x D x H, mm / inch)     | 400 x 360 x 365 / 15.7 x 14.2 x 14.4 | 480 x 410 x 465 / 18.9 x 16.1 x 18.3 | 610 x 460 x 485 / 24 x 18 x 19       |
|   | Exterior (W x D x H, mm / inch)     | 577 x 542 x 760 / 22.7 x 21.3 x 30   | 657 x 592 x 870 / 25.9 x 23.3 x 34.3 | 785 x 642 x 897 / 30.9 x 25.3 x 35.3 |
|   | Net weight (Kg / lbs)               | 49 / 108                             | 59 / 130                             | 68 / 150                             |
| <b>Shelves</b>                                      | Quantity of shelves (standard/max.) | 2 / 4                                | 2 / 6                                | 2 / 7                                |
|   | Max. Load per shelf (Kg / lbs)      | 30 / 66.1                            | 30 / 66.1                            | 30 / 66.1                            |
| <b>Electrical requirements (230V, 50 / 60Hz, A)</b> |                                     | 4.3                                  | 6                                    | 7.4                                  |
| <b>Cat. No.</b>                                     | Solid Door (without window)         | AAH11135K                            | AAH11145K                            | AAH11155K                            |
|   | Window door                         | AAH11235K                            | AAH11245K                            | AAH11255K                            |
| <b>Electrical requirements (120V, 60Hz, A)</b>      |                                     | 6.7                                  | 8.3                                  | 10                                   |
| <b>Cat. No.</b>                                     | Solid Door (without window)         | AAH11136U                            | AAH11146U                            | AAH11156U                            |
|   | Window door                         | AAH11236U                            | AAH11246U                            | AAH11256U                            |

※ The lowest temperature that can be controlled depends on changes in room temperature and sample temperature. Therefore, please contact the distributor of our products before purchasing for technical consultation.  
 ※ Technical data (according to DIN 12880, before 2013)



# Natural Convection Oven Economy type



## Substantial oven that is faithful to the basic functions

### Structural Functional Features

- Economical model series that minimizes the purchase burden.
- Superior insulation and enclosed design minimize energy loss and reduce operating costs.
- Stainless steel interior and shelves are excellent in terms of corrosion resistance and clean maintenance.
- Two vent holes for gas discharge at the top.

### Use Convenience Features

- Calibration function minimizes temperature difference.
- Optimized control with temperature auto-tuning.
- Save and use 3 frequently used temperatures.
- Wait On/Off timer. (up to 99 hours 59 minutes)
- Microprocessor PID method for precise temperature control.
- Automatic restart of operation when power is restored after sudden power failure.

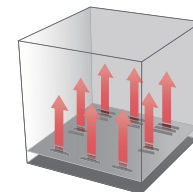
### Outstanding Safety

- Top-rated overheating protection system. (registration 10-0397583)
- Over temperature limit function.
- Safe product surface, even when operated at maximum temperature.
- Malfunction prevented by controller lock function.
- Self-diagnostics function to check abnormal condition of temperature sensor.
- Provides notification/alarms when the door is open for an extended period of time.



**ON-11E**

with Wire Shelves 2ea (standard)



## Specification

| Model   |                                     | ON-01E                                  | ON-11E                                | ON-21E                                  |
|---|-------------------------------------|---|---------------------------------------|---|
| <b>Chamber volume (L / cu ft)</b>                   |                                     | 52 / 1.8                                | 100 / 3.5                             | 150 / 5.3                               |
| <b>Temperature</b>                                  | Range (°C / °F)                     | Amb. +15 to 220<br>/ Amb. +27 to 428    | Amb. +15 to 220<br>/ Amb. +27 to 428  | Amb. +15 to 220<br>/ Amb. +27 to 428    |
|   | Fluctuation at 100°C (±°C / °F)     | 0.3 / 0.54                              | 0.4 / 0.72                            | 0.5 / 0.9                               |
|   | Variation at 100°C (±°C / °F)       | 6.5 / 11.7                              | 4.1 / 7.38                            | 7.3 / 13.14                             |
|   | Heating time to 100°C (min.)        | 12                                      | 13                                    | 10                                      |
|   | Recovery time at 100°C (min.)       | 4                                       | 5                                     | 3                                       |
| <b>Dimension</b>                                    | Interior (W x D x H, mm / inch)     | 375 x 370 x 370<br>/ 14.8 x 14.6 x 14.6 | 455 x 430 x 510<br>/ 18 x 17 x 20     | 585 x 460 x 555<br>/ 23 x 18.1 x 21.9   |
|   | Exterior (W x D x H, mm / inch)     | 530 x 535 x 737<br>/ 20.9 x 21.1 x 29   | 610 x 595 x 877<br>/ 24 x 23.4 x 34.5 | 740 x 625 x 922<br>/ 29.1 x 24.6 x 36.3 |
|   | Net weight (Kg / lbs)               | 34 / 75                                 | 46 / 101.4                            | 59 / 130                                |
| <b>Shelves</b>                                      | Quantity of shelves (standard/max.) | 2 / 5                                   | 2 / 7                                 | 2 / 7                                   |
|   | Max. Load per shelf (Kg / lbs)      | 30 / 66.1                               | 30 / 66.1                             | 30 / 66.1                               |
| <b>Electrical requirements (230V, 50 / 60Hz, A)</b> |                                     | 4.3                                     | 6                                     | 7.4                                     |
| <b>Cat. No.</b>                                     |                                     | <b>AAH15015K</b>                        | <b>AAH15025K</b>                      | <b>AAH15035K</b>                        |
| <b>Electrical requirements (120V, 60Hz, A)</b>      |                                     | 6.7                                     | 8.3                                   | 10                                      |
| <b>Cat. No.</b>                                     |                                     | <b>AAH15016U</b>                        | <b>AAH15026U</b>                      | <b>AAH15036U</b>                        |

※ The lowest temperature that can be controlled depends on changes in room temperature and sample temperature. Therefore, please contact the distributor of our products before purchasing for technical consultation.

※ Technical data (according to DIN 12880, before 2013)

# Vacuum Oven

## New vacuum oven with improved usability and reliability

### Structural Functional Features

- Wide temperature range that can be controlled up to 250°C.
- Improved temperature distribution. ( $\pm 1.5^{\circ}\text{C}$  at 100°C)
- 3-point temperature calibration, high temperature accuracy over a wide temperature range.
- Inner stainless steel and aluminum shelves provide excellent corrosion resistance and clean maintenance.
- Protects equipment from overcurrent and over temperature through safety circuits.
- Vacuum line and release line are separated and convenient to use.
- The display is mounted at the top, minimizing floor size requirement.

### Use Convenience Features

- When a vacuum is formed and maintained, the toughened glass is attached to the gasket, so it is kept confined for long-time repeated use.
- Save and use 3 frequently used temperatures.
- PC connection using RS-232 port and USB port.
- Excellent visibility and viewing angle due to application of 5-inch large LCD.
- Wait On/Off timer. (up to 999 hours 59 minutes)
- Toughened glass viewing window for easy internal viewing
- Microprocessor PID method for precise temperature control.
- Automatic restart as it was operated after power recovery.
- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)

### Outstanding Safety

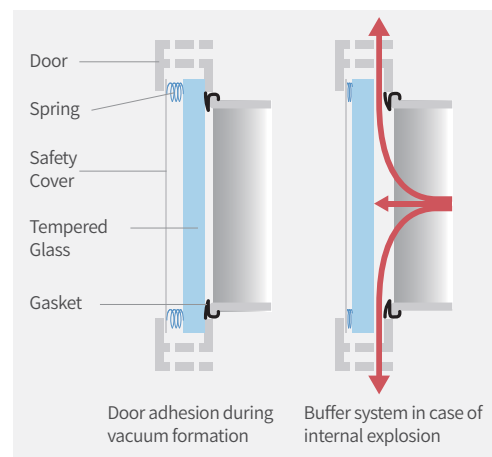
- Door structure including buffer system allows for internal pressure release through upper and lower ventilation holes when stable vacuum is formed/maintained and when there is an internal explosion.
- Polycarbonate safety cover provided in case of toughened glass breakage.
- 12 events is recorded in case of door open, error, and etc. (registration 10-0397583)
- Over temperature limit function.
- Safe product surface, even when operated at upper temperature.
- Malfunction prevented by controller lock function.
- Alarm if set temperature deviation outside of acceptable range.



OV4-30



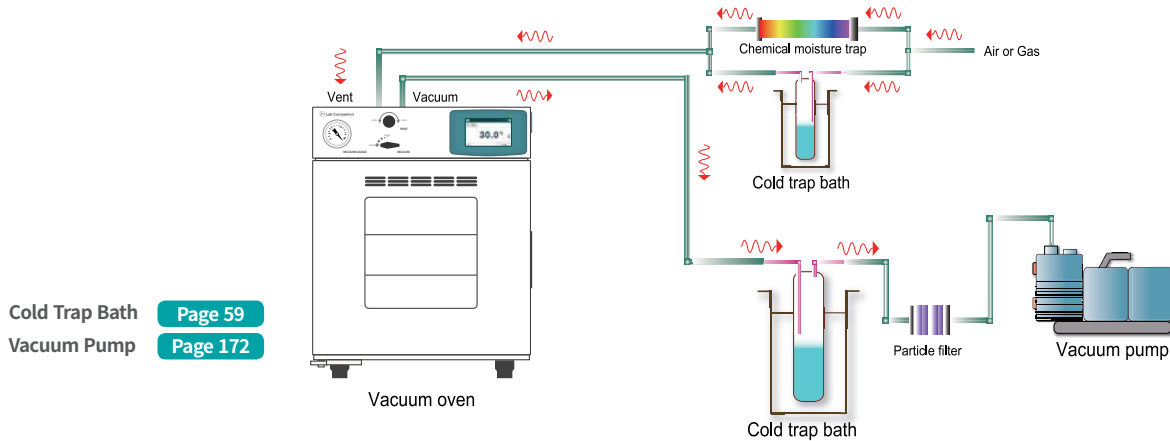
Excellent visibility with 5-inch large LCD



Buffer system door structure

## Vacuum Oven Use Configuration

- It is recommended to use the cold trap bath on the vacuum line to protect the weak vacuum pump against water/solvent or to supply dry air to the sample.



Cold Trap Bath [Page 59](#)  
 Vacuum Pump [Page 172](#)

## Specification

| Model   |                                     | OV4-30                                  | OV4-65                                  |
|---|-------------------------------------|---|---|
| <b>Chamber volume (L / cu ft)</b>                   |                                     | 28 / 1                                  | 65 / 2.3                                |
| <b>Temperature</b>                                  | Range (°C / °F)                     | Amb. +15 to 250<br>/ Amb. +27 to 482    | Amb. +15 to 250<br>/ Amb. +27 to 482    |
|   | Fluctuation at 100°C (±°C / °F)     | 0.1 / 0.18                              | 0.3 / 0.54                              |
|   | Variation at 100°C (±°C / °F)       | 1.5 / 2.7                               | 1.5 / 2.7                               |
|   | Heating time to 100°C (min.)        | 60                                      | 90                                      |
| <b>Vacuum gauge range, analog (Mpa)</b>             |                                     | 0 to 0.1                                | 0 to 0.1                                |
| <b>Dimension</b>                                    | Interior (W x D x H, mm / inch)     | 302 x 305 x 302<br>/ 11.9 x 12 x 11.9   | 402 x 405 x 402<br>/ 15.8 x 15.9 x 15.8 |
|   | Exterior (W x D x H, mm / inch)     | 537 x 522 x 655<br>/ 21.1 x 20.6 x 25.8 | 636 x 622 x 755<br>/ 25.0 x 24.5 x 29.7 |
|   | Net weight (Kg / lbs)               | 69 / 152.1                              | 110 / 242.5                             |
| <b>Shelves</b>                                      | Quantity of shelves (standard/max.) | 2 / 2                                   | 3 / 3                                   |
|   | Max. Load per shelf (Kg / lbs)      | 20 / 44.1                               | 20 / 44.1                               |
| <b>Electrical requirements (230V, 50 / 60Hz, A)</b> |                                     | 5                                       | 5.8                                     |
| <b>Cat. No.</b>                                     |                                     | <b>AAH13315K</b>                        | <b>AAH13325K</b>                        |
| <b>Electrical requirements (120V, 60Hz, A)</b>      |                                     | 10.2                                    | 11.7                                    |
| <b>Cat. No.</b>                                     |                                     | <b>AAH13316U</b>                        | <b>AAH13326U</b>                        |

※ The lowest temperature that can be controlled depends on changes in room temperature and sample temperature. Therefore, please contact the distributor of our products before purchasing for technical consultation.  
 ※ Technical data (according to DIN 12880, after 2013)

## Accessories

| Description            | Model  | Cat. No.            |
|------------------------|--------|---------------------|
| <b>Silicone Gasket</b> | OV4-30 | <b>00FAA0005146</b> |
|                        | OV4-65 | <b>00FAA0005147</b> |
| <b>Viton Gasket</b>    | OV4-30 | <b>00FAA0005187</b> |
|                        | OV4-65 | <b>00FAA0005188</b> |
| <b>Safety Cover</b>    | OV4-30 | <b>AAA13603</b>     |
|                        | OV4-65 | <b>AAA13604</b>     |
| <b>LC GreenBox</b>     | OV4-30 | <b>AAAQ1011</b>     |
|                        | OV4-65 |                     |

### Silicone Gasket

Basics are included, and structure allows for easy replacement.

### Viton Gasket

Viton gasket with excellent chemical resistance.

### Safety Cover (Standard)

User and laboratory protection in case of toughened glass breakage.

### LC GreenBox

Monitor the operation status of the device in real time via mobile app with simple internet connection.

# Muffle Furnace



## Electric furnace for high temperature experiment at 1100 °C / 1500 °C

### Structural Functional Features

- Improved airtight system of internal due to door buffer devices and sturdy double-door structure.
- Use durable insulation to minimize heat loss.
- Easy replacement of upper heater. (only for 1500°C model)

### Use Convenience Features

- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)
- Microprocessor PID method for precise temperature control.
- Optimal temperature control with temperature auto-tuning.
- Excellent visibility and viewing angle due to application of large 5-inch TFT LCD.
- Automatic restart as it was operated after power recovery.
- 12 events is recorded in case of door open, error, and etc.

### Outstanding Safety

- When the present temperature is more than specific set-temperature for safety, product door will be locked.
- Precise electronic over-temperature protection system.
- Safe product surface, even when operated at maximum temperature.
- Automatic operating stop when door open for using safety.

### Program type

- Possible to set and save 10 programs.
- Up to 10 steps can be set in the one program.
- Program repetition possible up to 99 times.
- The temperature change rate over time and closing situation (standby, next step, and etc.) can be set.
- Displays the time remaining of the corresponding step when the program is operated.
- Desired program can be operating at reservation time.



MF2-12H



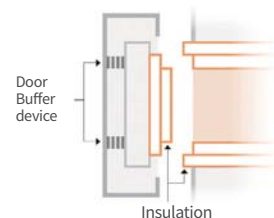
1100°C model  
(4-side molding type heater)



1500°C model  
(2-side exposed type heater)



Excellent visibility with 5-inch large LCD

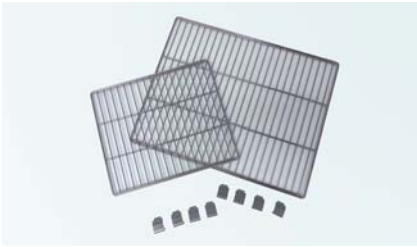


Excellent airtight structure even maximum temperature

## Specification

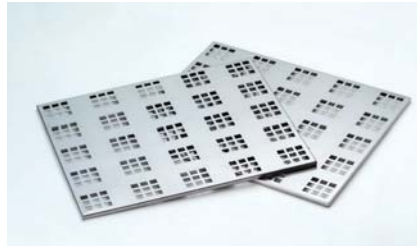
|   |                      | Max. 1100°C / 2012°F                 |                                      |                                      | Max. 1500°C / 2732°F                 |                                      |                                      |
|---|----------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| Model   | Fix Mode Control     | MF2-12GF                             | MF2-22GF                             | MF2-32GF                             | MF2-12HF                             | MF2-22HF                             | MF2-32HF                             |
|   | Program Mode Control | MF2-12G                              | MF2-22G                              | MF2-32G                              | MF2-12H                              | MF2-22H                              | MF2-32H                              |
| <b>Chamber Volume (L / cu ft)</b>                   |                      | 3 / 0.11                             | 4.5 / 0.16                           | 12 / 0.42                            | 3.2 / 0.11                           | 4.5 / 0.16                           | 12 / 0.42                            |
| <b>Temperature</b>                                  |                      |                                      |                                      |                                      |                                      |                                      |                                      |
| Range (°C / °F)                                     |                      | Amb. +15 to 1100 / Amb. +27 to 2012  | Amb. +15 to 1100 / Amb. +27 to 2012  | Amb. +15 to 1100 / Amb. +27 to 2012  | Amb. +15 to 1500 / Amb. +27 to 2732  | Amb. +15 to 1500 / Amb. +27 to 2732  | Amb. +15 to 1500 / Amb. +27 to 2732  |
| Fluctuation at Max. temp. (±°C / °F)                |                      | 1 / 1.8                              | 1 / 1.8                              | 1 / 1.8                              | 1.5 / 2.7                            | 1.5 / 2.7                            | 1.5 / 2.7                            |
| <b>Dimensions</b>                                   |                      |                                      |                                      |                                      |                                      |                                      |                                      |
| Interior (W x D x H, mm / inch)                     |                      | 130 x 250 x 90 / 5.1 x 9.8 x 3.5     | 150 x 300 x 100 / 5.1 x 11.8 x 3.9   | 250 x 300 x 160 / 9.8 x 11.8 x 6.3   | 130 x 250 x 100 / 5.1 x 9.8 x 3.9    | 150 x 300 x 100 / 5.1 x 11.8 x 3.9   | 250 x 300 x 160 / 9.8 x 11.8 x 6.3   |
| Exterior (W x D x H, mm / inch)                     |                      | 395 x 500 x 590 / 15.6 x 19.7 x 23.2 | 425 x 550 x 630 / 16.7 x 21.7 x 24.8 | 525 x 550 x 690 / 20.7 x 21.7 x 27.2 | 515 x 590 x 670 / 20.3 x 23.2 x 26.4 | 535 x 640 x 670 / 26.4 x 25.2 x 26.4 | 635 x 640 x 730 / 25.0 x 25.2 x 28.7 |
| Weight (Kg / lbs)                                   |                      | 42 / 92.6                            | 50 / 110.2                           | 70 / 154.3                           | 53 / 116.8                           | 63 / 138.9                           | 78 / 172.0                           |
| <b>Electrical requirements (230V, 50 / 60Hz, A)</b> |                      | 9.5                                  | 14.3                                 | 21.4                                 | 15.8                                 | 17.6                                 | 22.8                                 |
| Cat. No.  | Fix Mode Control     | AAHP2112K                            | AAHP2122K                            | AAHP2132K                            | AAHP2212K                            | AAHP2222K                            | AAHP2232K                            |
|   | Program Mode Control | AAHP2111K                            | AAHP2121K                            | AAHP2131K                            | AAHP2211K                            | AAHP2221K                            | AAHP2231K                            |

# Accessories for Oven



### Wire Shelf

- Excellent corrosion resistance as made of stainless steel.
- Excellent air permeability and uniform temperature distribution.



### Perforated Shelf

- Porous structure made of stainless steel.
- Solid structure makes it suitable for high load samples.



### LC GreenBox

- Monitor and control the operation status of the device in real time via mobile app with simple internet connection.
- One LC GreenBox can connect up to 4 devices.

## Wire & Perforated shelves

| Model                         | Wire shelves |                                     | Perforated shelves |                            |
|-------------------------------|--------------|-------------------------------------|--------------------|----------------------------|
|                               | Cat. No.     | Quantity of shelves (standard/max.) | Cat. No.           | Quantity of shelves (max.) |
| OF-02G / GW                   | 00EDA0008136 | 2 / 4                               | AAA12531           | 7                          |
| OF-12G / GW                   | 00EDA0008135 | 2 / 6                               | AAA12532           | 6                          |
| OF-22G / GW                   | 00EDA0008134 | 2 / 7                               | AAA12533           | 7                          |
| OF-02P / PW                   | 00EDA0008136 | 2 / 4                               | AAA12531           | 7                          |
| OF-12P / PW                   | 00EDA0008135 | 2 / 6                               | AAA12532           | 6                          |
| OF-22P / PW                   | 00EDA0008134 | 2 / 7                               | AAA12533           | 7                          |
| OF-01E                        | 00EDA0008136 | 2 / 5                               | AAA14501           | 5                          |
| OF-11E                        | 00EDA0008135 | 2 / 7                               | AAA14502           | 7                          |
| OF-21E                        | 00EDA0008137 | 2 / 7                               | AAA14503           | 7                          |
| OF3-30 / 30W / 30P / 30PW     | 00RTD0001196 | 2 / 5                               | AAA18501           | 5                          |
| OF3-45 / 45W / 45P / 45PW     | 00RTD0001196 | 3 / 8                               | AAA18501           | 8                          |
| OF3-75 / 75W / 75P / 75PW     | 00RTD0001197 | 3 / 11                              | AAA18502           | 11                         |
| OF3-30H / 30HW / 30HP / 30HPW | 00RTD0001196 | 2 / 5                               | AAA18501           | 5                          |
| OF3-45H / 45HW / 45HP / 45HPW | 00RTD0001196 | 3 / 8                               | AAA18501           | 8                          |
| OF3-75H / 75HW / 75HP / 75HPW | 00RTD0001197 | 3 / 11                              | AAA18502           | 11                         |
| OF-02G-2C                     | 00EDA0008136 | 4 / 8                               | AAA12531           | 8                          |
| OF-02G-4C                     | 00EDA0008136 | 8 / 16                              | AAA12531           | 16                         |
| ON-02G / GW                   | 00EDA0008136 | 2 / 4                               | AAA12531           | 4                          |
| ON-12G / GW                   | 00EDA0008135 | 2 / 6                               | AAA12532           | 6                          |
| ON-22G / GW                   | 00EDA0008137 | 2 / 7                               | AAA12535           | 7                          |
| ON-01E                        | 00EDA0008136 | 2 / 5                               | AAA12531           | 5                          |
| ON-11E                        | 00EDA0008135 | 2 / 7                               | AAA12532           | 7                          |
| ON-21E                        | 00EDA0008137 | 2 / 7                               | AAA12535           | 7                          |

※ Included bracket for each shelf

## LC GreenBox

| Model                         | Description              | Dimension (W x D x H, mm / inch) | Cat. No. |
|-------------------------------|--------------------------|----------------------------------|----------|
| OF-P / OF-G / OF3 / OV4 / MF2 | Mobile monitoring system | 156 x 94 x 34 / 6.1 x 3.7 x 1.3  | AAAQ1011 |

### Recorder (Dot)

6-channel graph-type temperature recorder.  
Adjustable recording range, speed, etc.

### Recorder (Thermal Line)

Graph/Digital mode  
Thermal-type temperature recorder

### Fan speed adjuster

Adjustable inner air circulation speed, which protects spreading out powder sample.

| Model                           | Description             | Cat. No. |
|---------------------------------|-------------------------|----------|
| OF3-30/45/75/30H/45H/75H Series | Recorder (Dot)          | AAA8T500 |
|                                 | Recorder (Thermal line) | AAAE1503 |

| Model            | Cat. No. |
|------------------|----------|
| OF-02G, 12G, 22G | AAA12701 |

# Incubator



- |  |  |  |   |  |  |
|--|--|--|---|--|--|
|  | <p>Satisfaction with the requirements of European regulations and guidelines.</p>  |  | <p>Real-time equipment monitoring and control system using mobile app.</p>                        |  | <p>Registered safety patent based on JEIO TECH's proprietary technology.</p>           |
|  | <p>Eco-friendly product that has passed environmental impact assessment tests.</p> |  | <p>More precise temperature control through 3-point temperature calibration.</p>                  |  | <p>More precise temperature control through temperature calibration.</p>               |
|  | <p>Warning alarm in case of deviation of temperature control.</p>                  |  | <p>Over temperature protection function.</p>  |  | <p>Possible to set end time or start time of device operation.</p>                     |
|  | <p>Indicator to ascertain water level.</p>   |  | <p>Alarm if the water is low level.</p>   |  | <p>Control of temperature / humidity / rpm / time, etc. through dedicated program.</p> |
|  | <p>PC communication via RS-232 / RS-485 / USB port.</p>                            |  | <p>It memorizes the state of power failure and operates automatically when power is restored.</p> |  | <p>2 year warranty Free A/S.</p>   |

## General Application

Organic bacteria, organic drugs, tissue cultures in the areas of antibody testing, clinical studies, hematology, microbiology, and others.

|                           | Description   | Temp. Range<br>(°C/°F)   | Max. Temp. Fluctuation<br>(±°C/°F) | Volume<br>(L / cu ft)  | Model                  | Page |
|---------------------------|---|--|------------------------------------|--|------------------------|------|
| Incubator                 | <b>General</b> <ul style="list-style-type: none"> <li>Stable temperature control through forced convection</li> <li>Airflow that maintains even temperature distribution</li> </ul> | Amb. +5 to 70<br>/ Amb. +9 to 158  | 0.2 at 37°C<br>/ 0.6 at 98.6       | 60, 102, 151<br>/ 2.1, 102, 151  | IB-G                   | 82   |
|                           | <b>Economy</b> <ul style="list-style-type: none"> <li>Stable product that is faithful to the basics</li> <li>Film heater-type incubator</li> </ul>                                  | Amb. +3 to 60<br>/ Amb. +5.4 to 140  | ±0.1 at 37°C<br>/ 0.18 at 98.6°F   | 65, 150, 205<br>/ 2.3, 5.3, 7.2  | IB-E                   | 83   |
|                           | <b>Mini</b> <ul style="list-style-type: none"> <li>Compact design</li> <li>Downward door for convenient internal observation</li> </ul>   | Amb. +5 to 65<br>/ Amb. +9 to 149  | 0.5 at 37°C<br>/ 0.9 at 98.6°F     | 10 / 0.4   | IM                     | 84   |
|                           | <b>Multi</b> <ul style="list-style-type: none"> <li>Independent temperature control for each chamber</li> <li>2-in-1, 4-in-1 models</li> </ul>                                      | Amb. +5 to 70<br>/ Amb. +9 to 158  | ±0.1 at 37°C<br>/ 0.18 at 98.6°F   | 120 / 4.2<br>(60 L / 2.1 cu ft x 2 chamber)<br>240 / 8.5<br>(60 L / 2.1 cu ft x 4 chamber)     | IB-02G-2C<br>IB-02G-4C | 85   |
| Low Temperature Incubator | <b>Air-Jacket</b> <ul style="list-style-type: none"> <li>Minimization of culture medium dry-out</li> <li>Air-jacket type incubator</li> </ul>                                       | 4 to 70<br>/ 39.2 to 158   | 0.2 at 37°C<br>/ 0.36 at 98.6°F    | 156, 254<br>/ 5.5, 9.0   | IL3-A                  | 86   |
|                           | <b>General</b> <ul style="list-style-type: none"> <li>Optimized for BOD experiments</li> <li>Forced convection method</li> </ul>  | 0 to 80<br>/ 32 to 176   | ±0.1 at 37°C<br>/ 0.18 at 98.6°F   | 150, 242<br>/ 5.3, 8.5   | IL3                    | 86   |
|                           | <b>Personal</b> <ul style="list-style-type: none"> <li>Application of peltier cooling device system</li> <li>Structure minimizes noise/vibration</li> </ul>                         | 5~40 / +41~104<br>(at 20°C / 68°F)<br>10~40 / +50~104<br>(at 25°C / 77°F)<br>15~40 / +59~104<br>(at 25°C / 77°F) | 0.1 at 25°C<br>/ 0.18 at 77°F      | 14, 48<br>/ 0.5, 1.7   | ILP                    | 88   |
|                           | <b>Multi</b> <ul style="list-style-type: none"> <li>Independent temperature control for each chamber</li> <li>2-in-1, 4-in-1 models</li> </ul>                                      | 0 to 60<br>/ 32 to 140   | 0.1 at 25°C<br>/ 0.18 at 77°F      | 300 / 10.6<br>(150 L / 5.3 cu ft x 2 chamber)<br>600 / 21.2<br>(150 L / 5.3 cu ft x 4 chamber) | IL-11-2C<br>IL-11-4C   | 89   |
| Growth Chamber            | <b>Growth Chamber</b> <ul style="list-style-type: none"> <li>10-step program control</li> <li>Temperature/Humidity auto-tuning</li> </ul>   | 5~50 / 41~122  | 0.1 at 25°C<br>/ 0.18 at 77°F      | 300, 1000 /<br>10.6, 35.3  | GC                     | 90   |

※ The contents of the above and the contents of this catalog may differ depending on the specific model and conditions of use. For the information about the features and specifications that applying to each model, please check the information on the corresponding page of each model.



## Incubator

An incubator series that provides optimal culture environment  
**Application of dedicated controller for precise control**

- > **Optimized selection model provided**  
Optimal model provided based on heat transfer method and airflow, capacity, performance and function, controller type, etc.
- > **More stable temperature control**  
Optimized Microprocessor PID control for more accurate temperature control.
- > **3-point temperature calibration function (IL3)**  
Temperature calibration of up to 3 points provides more reliable temperature control.
- > **Optimized temperature control**  
Auto-tuning function enables optimal control even when ambient temperature or conditions are changed frequently.
- > **Computer interface control**  
Convenient remote control and data management through built-in dedicated software. (IL3, IL3-A)
- > **Verified according to international standards**  
Fluctuation, variation, heating time, and recovery time are tested according to DIN 12880.
- > **Glass door for contamination prevention**  
Internal glass door allows for convenient observation of sample without temperature change and prevents inflow of external contaminants.
- > **Clean use and maintenance**  
Internal stainless steel structure allows for clean maintenance and excellent corrosion resistance.



Sealed glass door for contamination prevention.



Large VFD-dedicated controller. (4.7 inch)



Easy shelf height adjustment.





## Functions convenient for actual use and Lab Companion's patented safety system

### > Provide convenient timer function

Wait On/Wait Off is run after the set time elapses. (Max. 999 hours and 59 minutes)

### > Controller lock function

Lock function for preventing change of controller settings prevents erroneous operation due to arbitrary changing.

### > Convenient temperature value save and operation

Conveniently save and used frequently used temperatures value. (up to 3 presets allowed)

### > Cable port provided as standard

38mm diameter cable port and cover for convenient utilization of culture conditions. (general and multi models)

### > Top-grade overheating prevention system (Lab Companion's patent)

Even if a failure occurs in the device control unit, the safety device is structured so that it is preferentially operated.

### > Over heating limit function in case of accidental over heating.

Safety structure with shutdown function using over temperature limiter in case of overheating.

### > Support for remote equipment monitoring services (option)

Real-time monitoring of equipment operating status using smart phones.

### > Prepared for unexpected power failure

Auto-run function capable of selecting reoperation when power is restored after power failure.

※ Some of the above contents are limited to specific models.

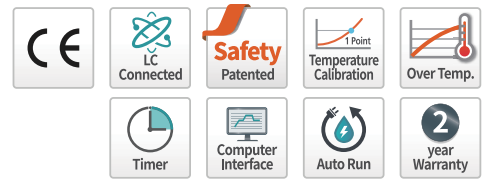


Various models for selecting the desired structure.



Cable port provided as standard on the side.

# Incubator (Air-jacket) General type



## Versatile air-jacketed natural convection incubators

### Structural Functional Features

- Microprocessor PID control / Temperature calibration / Automatic tuning.
- Temperature range from ambient +5°C to 70°C.
- Vibration-free design ideal for yeast cultivation.
  - Air-jacketed natural convection is beneficial for uniform temperature distribution and minimal sample contamination caused by external air intrusion.
- Durable incoloy heating element with radiator fans for efficient heat dissipation.

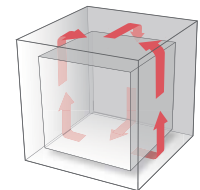
### Use Convenience Features

- Vibration-free design ideal for yeast cultivation.
- Corrosion-resistant stainless steel interior with rounded corners for easy cleaning and optimal airflow.
- Intuitive control panel with bright LED display. (0.1°C resolution)
- Dual wait on/off timer modes. (1 min. to 99 hr. 59 min.)
- Convenient preset function for 3 most commonly used temperature settings.
- Convenient sample monitoring without affecting chamber temperature via the inner tempered-glass door.
- Built-in cable port to use other instruments inside the chamber. (diameter: 38mm, provided silicon or rubber cap)
- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)



### IB-05G

with Wire Shelves 2ea (standard)



### Outstanding Safety

- Top-rated overheating protection system. (registration 10-0397583)
- Safety circuit design to protect against overcurrent and overheating.
- Over temperature limit function.
- Mal-operation prevented by controller lock function.
- Error display and alarm when an abnormality occurs during operation.

### Specification

| Model   |                                       | IB-05G                               | IB-15G                               | IB-25G                           |
|---|---------------------------------------|--------------------------------------|--------------------------------------|----------------------------------|
| <b>Chamber volume (L / cu ft)</b>                   |                                       | 60 / 2.1                             | 102 / 3.6                            | 151 / 5.3                        |
| <b>Temperature</b>                                  | Range (°C / °F)                       | Amb. +5 to 70 / Amb. +9 to 158       | Amb. +5 to 70 / Amb. +9 to 158       | Amb. +5 to 70 / Amb. +9 to 158   |
|   | Fluctuation at 37°C (±°C / °F)        | 0.1 / 0.18                           | 0.1 / 0.18                           | 0.2 / 0.36                       |
|   | Variation at 37°C (±°C / °F)          | 0.6 / 1.08                           | 0.2 / 0.36                           | 0.6 / 1.08                       |
|   | Heating time to 37°C (min.)           | 41                                   | 22                                   | 6                                |
| <b>Dimension</b>                                    | Recovery time at 37°C (min.)          | 1                                    | 2                                    | 1                                |
|   | Interior (W x D x H, mm / inch)       | 400 x 360 x 420 / 15.7 x 14.2 x 16.5 | 480 x 410 x 520 / 18.9 x 16.1 x 20.5 | 610 x 460 x 540 / 24 x 18 x 21.3 |
|   | Exterior (W x D x H, mm / inch)       | 595 x 555 x 745 / 23 x 22 x 29       | 675 x 605 x 855 / 27 x 24 x 34       | 805 x 655 x 885 / 32 x 26 x 35   |
|   | Net weight (kg / lbs)                 | 45 / 99                              | 55 / 121                             | 62 / 136                         |
| <b>Shelves</b>                                      | Quantity of shelves (standard / max.) | 2 / 4                                | 2 / 6                                | 2 / 7                            |
|   | Max. Load per shelf (kg / lbs)        | 30 / 66                              | 30 / 66                              | 30 / 66                          |
| <b>Electrical requirements (230V, 50 / 60Hz, A)</b> |                                       | 1.3                                  | 2.2                                  | 3.1                              |
| <b>Cat. No.</b>                                     |                                       | <b>AAH21162K</b>                     | <b>AAH21172K</b>                     | <b>AAH21182K</b>                 |
| <b>Electrical requirements (120V, 60Hz, A)</b>      |                                       | 2.8                                  | 4.6                                  | 6.4                              |
| <b>Cat. No.</b>                                     |                                       | <b>AAH21166U</b>                     | <b>AAH21176U</b>                     | <b>AAH21186U</b>                 |

※ Technical data (according to DIN 12880 before 2013)

**Accessories** Page 93 Wire Shelves, Perforated Shelves, Double-stacked Bracket

# Incubator (Film Heater) Economy type



## Stable incubator that is faithful to the basic functions

### Structural Functional Features

- Economical model series that minimizes the purchase burden.
- An incubator in which the internal chamber is heated using a film heater on the outer wall of the space where the sample is placed.
- The sample space is independently kept clean and the structure protects against sources of contamination.
- External door can be opened and closed smoothly with magnetic packing to minimize sample impact.
- Stainless steel interior and shelves are excellent in terms of corrosion resistance and clean maintenance.

### Use Convenience Features

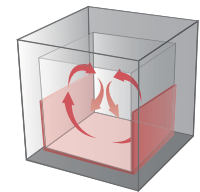
- Accurately controlling temperature based on temperature calibration / auto-tuning / microprocessor PID.
- The inner glass door is completely enclosed with silicone packing, making it easy to observe the sample without changing the temperature.
- Save and use 3 frequently used temperatures.
- Wait On/Off timer. (up to 99 hours 59 minutes)
- Provides notification/alarms when the door is open for an extended period of time.

### Outstanding Safety

- Top-rated overheating protection system. (registration 10- 0397583)
- Over temperature limit function.
- Mal-operation prevented by controller lock function.



**IB-01E**  
with Wire Shelves 2ea (standard)



## Specification

| Model   |                                     | IB-01E                             | IB-11E                             | IB-21E                               |
|---|-------------------------------------|------------------------------------|------------------------------------|--------------------------------------|
| <b>Chamber volume (L / cu ft)</b>                   |                                     | 65 / 2.3                           | 150 / 5.3                          | 205 / 7.2                            |
| <b>Temperature</b>                                  | Range (°C / °F)                     | Amb. +3 to 60 / Amb. +5.4 to 140   | Amb. +3 to 60 / Amb. +5.4 to 140   | Amb. +3 to 60 / Amb. +5.4 to 140     |
|   | Fluctuation at 37°C (±°C / °F)      | 0.2 / 0.36                         | 0.3 / 0.54                         | 0.1 / 0.18                           |
|   | Variation at 37°C (±°C / °F)        | 0.6 / 1.08                         | 0.8 / 1.44                         | 1.1 / 1.98                           |
|   | Heating time to 37°C (min.)         | 41                                 | 22                                 | 6                                    |
|   | Recovery time at 37°C (min.)        | 1                                  | 2                                  | 1                                    |
| <b>Dimension</b>                                    | Interior (W x D x H, mm / inch)     | 423 x 355 x 445 / 16.7 x 14 x 17.5 | 500 x 515 x 585 / 19.7 x 20.3 x 23 | 632 x 515 x 630 / 24.9 x 20.3 x 24.8 |
|   | Exterior (W x D x H, mm / inch)     | 533 x 475 x 725 / 21 x 18.7 x 28.5 | 595 x 630 x 865 / 23.5 x 24.8 x 34 | 740 x 630 x 910 / 29.1 x 24.8 x 35.8 |
|   | Net weight (Kg / lbs)               | 33 / 72.8                          | 47 / 103.6                         | 57 / 125.7                           |
| <b>Shelves</b>                                      | Quantity of shelves (standard/max.) | 2 / 5                              | 2 / 7                              | 2 / 7                                |
|   | Max. Load per shelf (Kg / lbs)      | 30 / 66                            | 30 / 66                            | 25 / 55.1                            |
| <b>Electrical requirements (230V, 50 / 60Hz, A)</b> |                                     | 1.1                                | 2.2                                | 2.4                                  |
| <b>Cat. No.</b>                                     |                                     | <b>AAH26015K</b>                   | <b>AAH26025K</b>                   | <b>AAH26035K</b>                     |
| <b>Electrical requirements (120V, 60Hz, A)</b>      |                                     | 2.1                                | 4.2                                | 4.6                                  |
| <b>Cat. No.</b>                                     |                                     | <b>AAH26016U</b>                   | <b>AAH26026U</b>                   | <b>AAH26036U</b>                     |

※ Technical data (according to DIN 12880 before 2013)

**Accessories** Page 93 Wire Shelves, Perforated Shelves, Double-stacked Bracket

# Incubator (Forced Convection) Mini type



## Small-sized incubator with compact design for ambient temperature use

### Structural Functional Features

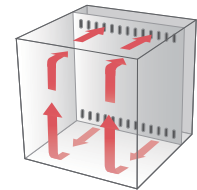
- Small incubator with compact design.
- Structure that circulates internal air for temperature control.
- Design with door that opens downward, minimizing the required space on the side of the device.
- Convenient internal observation door with a sight window.
- Stainless steel interior and shelves are excellent in terms of corrosion resistance and clean maintenance.

### Use Convenience Features

- Accurate temperature control through temperature calibration and microprocessor PID.
- Clear VFD panel for convenient operation status checking.
- Easy operation with touch button and jog dial.
- Over-temperature and over-current limiter function.
- Provides notification/alarms when the door is open for an extended period of time.
- Alarm function when temperature sensor is disconnected.



**IM-10**  
with Wire Shelves 2ea (standard)



※ When the chamber is operating with forced convection type, the amount of moisture evaporation of the medium is relatively high.

## Specification

| Model  |                                     | IM-10                                |
|--|-------------------------------------|--------------------------------------|
| Chamber volume (L / cu ft)                   |                                     | 10 / 0.4                             |
| Temperature                                  | Range (°C / °F)                     | Amb. +5 to 65 / Amb. +9 to 149       |
|  | Fluctuation at 37°C (±°C / °F)      | 0.5 / 0.9                            |
|  | Variation at 37°C (±°C / °F)        | 0.5 / 0.9                            |
|  | Heating time to 37°C (min.)         | 5                                    |
|  | Recovery time at 37°C (min.)        | 2                                    |
| Dimensions                                   | Interior (W x D x H, mm / inch)     | 278 x 262 x 160 / 11 x 10.4 x 6.3    |
|  | Exterior (W x D x H, mm / inch)     | 400 x 410 x 264 / 15.7 x 16.1 x 10.4 |
|  | Net weight (Kg / lbs)               | 13.0 / 28.7                          |
| Shelves                                      | Quantity of shelves (standard/max.) | 2 / 4                                |
| Electrical requirements (230V, 50 / 60Hz, A) |                                     | 1                                    |
| Cat. No.                                     |                                     | <b>AAH24315K</b>                     |
| Electrical requirements (120V, 60Hz, A)      |                                     | 2.1                                  |
| Cat. No.                                     |                                     | <b>AAH24316U</b>                     |

※ The lowest temperature that can be controlled depends on changes in room temperature and sample temperature. Therefore, please contact the distributor of our products before purchasing for technical consultation.

※ Technical data (according to DIN 12880 before 2013)

Accessories Page 93 Wire Shelves, Perforated Shelves

# Incubator (Forced Convection) Multi type



## Independent Control and Effective Space Utilization per Chamber

### Structural Functional Features

- 2 / 4 chambers can be controlled independently.
- Easy to use with maximally space-efficient structure.
- Structure that circulates internal air for temperature control.
- Easy to open and close the door. Soft handle minimizes shock to the sample.
- Stainless steel interior and shelves are excellent in terms of corrosion resistance and clean maintenance.
- Easy to clean as inner edges are curved.
- Useful cable port and cover on the side.
- Equipped with easy-to-move/install caster.

### Use Convenience Features

- Accurate temperature control through temperature calibration and microprocessor PID.
- Save and use 3 frequently used temperatures.
- Wait On/Off timer. (up to 99 hours 59 minutes)
- Mal-operation prevented by controller lock function.
- Over temperature limit function.
- Alarm function when temperature sensor is disconnected.
- Provides notification/alarms when the door is open for an extended period of time.

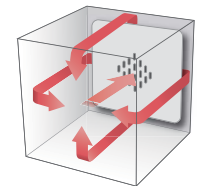


**IB-02G-2C**

with Wire Shelves  
2ea per chamber (standard)

**IB-02G-4C**

with Wire Shelves  
2ea per chamber (standard)



※ When the chamber is operating with forced convection type, the amount of moisture evaporation of the medium is relatively high.

## Specification

| Model   |                                     | IB-02G-2C  | IB-02G-4C  |
|---|-------------------------------------|--|--|
| <b>Chamber volume (L / cu ft)</b>                   |                                     | 120 / 4.2 (60 / 2.1 x 2 chambers)                      | 240 / 8.5 (60 / 2.1 x 4 chambers)                      |
| <b>Temperature</b>                                  | Range (°C / °F)                     | Amb. +5 to 70 / Amb. +9 to 158                         | Amb. +5 to 70 / Amb. +9 to 158                         |
|   | Fluctuation at 37°C (±°C / °F)      | 0.1 / 0.18   | 0.1 / 0.18   |
|   | Variation at 37°C (±°C / °F)        | 0.6 / 1.08   | 0.6 / 1.08   |
|   | Heating time to 37°C (min.)         | 16   | 16   |
|   | Recovery time at 37°C (min.)        | 3  | 3  |
| <b>Dimension</b>                                    | Interior (W x D x H, mm / inch)     | 400 x 360 x 420<br>/ 15.7 x 14.2 x 16.5 (each chamber) | 400 x 360 x 420<br>/ 15.7 x 14.2 x 16.5 (each chamber) |
|   | Exterior (W x D x H, mm / inch)     | 570 x 640 x 1360 / 22.4 x 25.2 x 53.5                  | 1170 x 640 x 1360 / 46.1 x 25.2 x 53.5                 |
|   | Net weight (Kg / lbs)               | 110 / 242.5  | 168 / 370.4  |
| <b>Shelves</b>                                      | Quantity of shelves (standard/max.) | 2 / 4 (each chamber)                                   | 2 / 4 (each chamber)                                   |
|   | Max. Load per shelf (Kg / lbs)      | 30 / 66  | 30 / 66  |
| <b>Electrical requirements (230V, 50 / 60Hz, A)</b> |                                     | 4.1  | 4.1 x 2ea  |
| <b>Cat No</b>                                       |                                     | <b>AAH2A115K</b>                                       | <b>AAH2A015K</b>                                       |
| <b>Electrical requirements (120V, 60Hz, A)</b>      |                                     | 7.5  | 7.5 x 2ea  |
| <b>Cat No</b>                                       |                                     | <b>AAH2A116U</b>                                       | <b>AAH2A016U</b>                                       |

※ The lowest temperature that can be controlled depends on changes in room temperature and sample temperature. Therefore, please contact the distributor of our products before purchasing for technical consultation.

※ Technical data (according to DIN 12880 before 2013)

**Accessories** Page 93 Wire Shelves, Perforated Shelves

# Low Temperature Incubator (Forced Convection/Air-jacket) General type

Provides stable, low-temperature culture environment



**IL3-15/15A**

with Wire Shelves 2ea (standard)



**IL3-25**

with Wire Shelves 3ea (standard)

## Structural Functional Features

- Compact structure design.
- Clear VFD panel for clear information display.
- The inner toughened-glass door is completely enclosed with silicone packing, making it easy to observe the sample without changing the temperature.
- External door can be opened and closed smoothly with magnetic packing to minimize sample impact.
- The sample space is independently kept clean and the structure protects against sources of contamination.
- Internal power outlet included as standard for easy operation of small products.
- Easily removable condenser grill structure.
- Stainless steel interior and shelves are excellent in terms of corrosion resistance and clean maintenance.
- Easy to clean as inner edges are curved.

## Use Convenience Features

- Accurately controlling temperature based on temperature calibration /auto-tuning / microprocessor PID.
- Save and use 3 frequently used temperatures.
- Wait On/Off timer. (up to 999 hours 59 minutes)
- USB/RS-232 connection and software provide convenient computer operation and data managing.
- Operation and data management with computer connection.
- Alarm function when temperature sensor is disconnected.
- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)

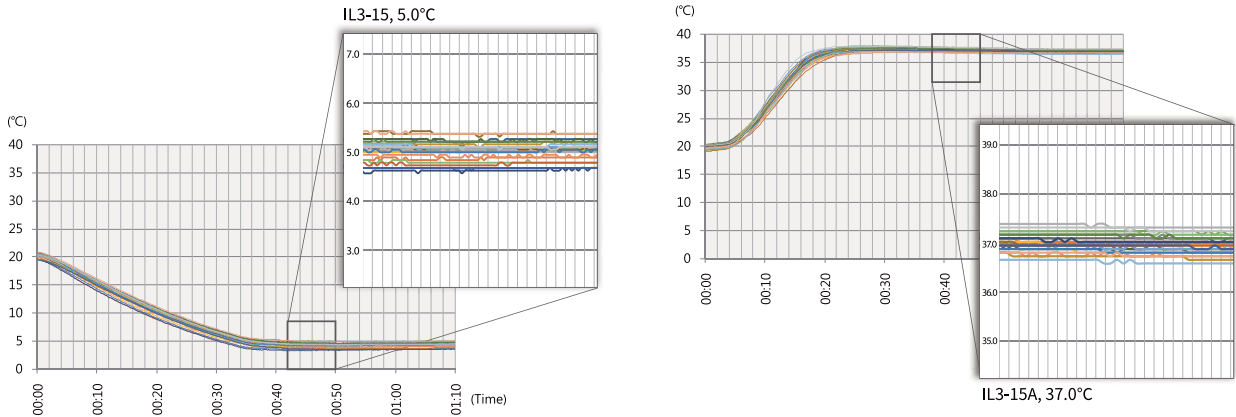
## Outstanding Safety

- Top-rated overheating protection system. (registration 10-0397583)
- Mechanical/ electronic overheat protection.
- Set the temperature deviation notification.
- Mal-operation prevented by controller lock function.



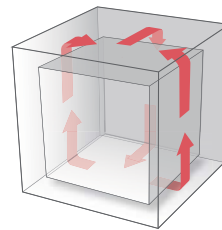
## Temperature Variation

- Superior temperature uniformity with excellent temperature control capability.

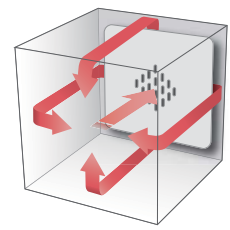


## Two Series Of Models According To Heat Transfer Method

- **Forced Convection**  
The structure allows for the inside air to be circulated and the temperature to be controlled, producing stable temperature control and good distribution. However, the amount of moisture evaporation of the culture is relatively high.
- **Natural Convection (Air-jacket)**  
The air-jacket structure heats the outside air in the space where the sample is placed and transfers the heat to the inside, and the moisture evaporation amount of the culture is relatively low.



Natural Convection (Air-jacket)



Forced Convection

## Specification

| Model  |                                     | Forced Convection                     |                                       | Natural Convection (Air-jacket)       |                                       |            |            |            |            |
|--|-------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|------------|------------|------------|------------|
|  |                                     | IL3-15                                | IL3-25                                | IL3-15A                               | IL3-25A                               |            |            |            |            |
| <b>Chamber volume (L / cu ft)</b>              |                                     | 150 / 5.3                             | 242 / 8.5                             | 156 / 5.5                             | 254 / 8.97                            |            |            |            |            |
| <b>Refrigerator (Hp)</b>                       |                                     | 1 / 6                                 | 1 / 6                                 | 1 / 6                                 | 1 / 6                                 |            |            |            |            |
| <b>Temperature</b>                             | Range (°C / °F)                     | 0 to 80 / 32 to 176                   | 0 to 80 / 32 to 176                   | 4 to 70 / 39.2 to 158                 | 4 to 70 / 39.2 to 158                 |            |            |            |            |
|  | Fluctuation at 37°C (±°C / °F)      | 0.1 / 0.18                            | 0.1 / 0.18                            | 0.2 / 0.36                            | 0.2 / 0.36                            |            |            |            |            |
|  | Variation at 37°C (±°C / °F)        | 0.6 / 1.08                            | 1.0 / 0.18                            | 0.7 / 1.26                            | 1.0 / 0.18                            |            |            |            |            |
|  | Heating time 20 to 37°C (min.)      | 43                                    | 45                                    | 45                                    | 50                                    |            |            |            |            |
|  | Cooling time 20 to 5°C (min.)       | 45                                    | 50                                    | 53                                    | 58                                    |            |            |            |            |
| <b>Recovery time at 37°C (min.)</b>            |                                     | 4                                     | 4                                     | 5                                     | 5                                     |            |            |            |            |
| <b>Dimension</b>                               | Interior (W x D x H, mm / inch)     | 600 x 500 x 500 / 24 x 20 x 20        | 500 x 520 x 930 / 20 x 20.5 x 36.6    | 600 x 520 x 500 / 24 x 20.5 x 20      | 500 x 540 x 940 / 20 x 21.3 x 37      |            |            |            |            |
|  | Exterior (W x D x H, mm / inch)     | 720 x 760 x 1070 / 28.3 x 29.9 x 42.1 | 620 x 770 x 1618 / 24.4 x 30.3 x 63.7 | 770 x 790 x 1115 / 30.3 x 31.1 x 43.9 | 670 x 805 x 1668 / 26.4 x 31.7 x 65.7 |            |            |            |            |
|  | Net weight (Kg / lbs)               | 100 / 220                             | 135 / 297                             | 108 / 238.1                           | 145 / 319.7                           |            |            |            |            |
| <b>Shelves</b>                                 | Quantity of shelves (standard/max.) | 2 / 6                                 | 3 / 13                                | 2 / 6                                 | 3 / 13                                |            |            |            |            |
|  | Max. Load per shelf (Kg / lbs)      | 26 / 57.3                             | 30 / 66                               | 26 / 57.3                             | 30 / 66                               |            |            |            |            |
| <b>Electrical requirements (230V, A)</b>       |                                     | 60Hz, 4.5                             | 50Hz, 4.5                             | 60Hz, 6.4                             | 50Hz, 6.4                             | 60Hz, 6.6  | 50Hz, 6.6  | 60Hz, 8    | 50Hz, 8    |
| <b>Cat. No.</b>                                |                                     | AAH220422K                            | AAH220412K                            | AAH220522K                            | AAH220512K                            | AAH220622K | AAH220612K | AAH220722K | AAH220712K |
| <b>Electrical requirements (120V, 60Hz, A)</b> |                                     | 8.3                                   |                                       | 10.6                                  |                                       | 10.2       |            | 12.3       |            |
| <b>Cat. No.</b>                                |                                     | AAH220462U                            |                                       | AAH220562U                            |                                       | AAH220632U |            | AAH220732U |            |

※ Technical data (according to DIN 12880 before 2013)

**Accessories** Page 93 Wire Shelves, Perforated Shelves, LC GreenBox

# Low Temperature Incubator Personal type



## Low temperature personal incubator

### Structural Functional Features

- Small incubator with compact design.
- Minimizes vibration and power consumption by using electronic cooling element. (peltier module)
- Structure that circulates internal air for temperature control.
- The inner glass door is completely enclosed with silicone packing, making it easy to observe the sample without changing the temperature.
- External door can be opened and closed smoothly with magnetic packing to minimize sample impact.
- Stainless steel interior and shelves are excellent in terms of corrosion resistance and clean maintenance.

### Use Convenience Features

- Accurately controlling temperature based on temperature calibration / auto-tuning / microprocessor PID.
- Save and use 3 frequently used temperatures.
- Wait On/Off timer. (up to 99 hours 59 minutes)
- Operation and data management with computer connection.
- Alarm function when temperature sensor is disconnected.
- Internal air circulation speed and defrost cycle control.
- Provides notification/alarms when the door is open for an extended period of time.
- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)

### Outstanding Safety

- Top-rated overheating protection system. (registration 10-0397583)
- Over temperature limit function.
- Mal-operation prevented by controller lock function.

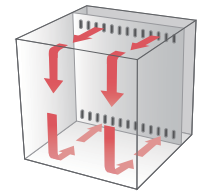


**ILP-02 (stackable unit)**

with Wire Shelf 1ea (standard)

**ILP-12**

with Wire Shelf 1ea (standard)



### Convenient Program Control

- Various culture and incubating experiments with the 9 step program.
- Temperature/time settings for each step.
- Up to 99 hours and 59 minutes.
- Repeat operation up to 200 times.

## Specification

| Model  |                                     | ILP-02  |                  | ILP-12  |                  |
|--|-------------------------------------|---|------------------|---|------------------|
| <b>Chamber volume (L / cu ft)</b>              |                                     | 14 / 0.5  |                  | 48 / 1.7  |                  |
| <b>Temperature</b>                             | Range (°C / °F)                     | 5~40 / +41~104 (at 20°C / 68°F)<br>10~40 / +50~104 (at 25°C / 77°F)<br>15~40 / +59~104 (at 30°C / 86°F) |                  | 5~40 / +41~104 (at 20°C / 68°F)<br>10~40 / +50~104 (at 25°C / 77°F)<br>15~40 / +59~104 (at 30°C / 86°F) |                  |
|  | Fluctuation at 25°C (±°C / °F)      | 0.1 / 0.18  |                  | 0.1 / 0.18  |                  |
|  | Variation at 25°C (±°C / °F)        | 0.5 / 0.9   |                  | 0.4 / 0.72  |                  |
|  | Heating time to 40 (min.)           | 17  |                  | 9   |                  |
|  | Cooling time 40 to 5°C (min.)       | 60  |                  | 60  |                  |
| Recovery time at 25°C (min.)                   | 1.5                                 |   | 1.5              |   |                  |
| <b>Dimension</b>                               | Interior (W x D x H, mm / inch)     | 315 x 200 x 230 / 12.4 x 7.9 x 9.1  |                  | 334 x 334 x 430 / 13.1 x 13.1 x 17  |                  |
|  | Exterior (W x D x H, mm / inch)     | 430 x 495 x 400 / 17 x 19.4 x 15.7  |                  | 430 x 665 x 620 / 17 x 26.2 x 24.4  |                  |
|  | Net weight (kg / lbs)               | 27.5 / 60.6   |                  | 49 / 108  |                  |
| <b>Shelves</b>                                 | Quantity of shelves (standard/max.) | 1 / 6   |                  | 2 / 13  |                  |
|  | Max. Load per shelf (kg / lbs)      | 15 / 33.0   |                  | 20 / 44.1   |                  |
| <b>Electrical requirements (230V, A)</b>       |                                     | 60Hz, 1.8   | 50Hz, 1.8        | 60Hz, 3.5   | 50Hz, 3.5        |
| <b>Cat. No.</b>                                |                                     | <b>AAH24031K</b>  | <b>AAH24032K</b> | <b>AAH24041K</b>  | <b>AAH24042K</b> |
| <b>Electrical requirements (120V, 60Hz, A)</b> |                                     | 3.4   |                  | 6.7   |                  |
| <b>Cat. No.</b>                                |                                     | <b>AAH24033U</b>  |                  | <b>AAH24043U</b>  |                  |

※ Technical data (according to DIN 12880 before 2013)

**Accessories** Page 93 Wire Shelves, Perforated Shelves, LC GreenBox



# Low Temperature Incubator Multi type (Forced Convection)



## Independent control and efficient space utilization for each chamber

### Structural Functional Features

- Each chamber can be controlled independently and easy to use with maximally space-efficient structure.
- Structure that circulates internal air for temperature control.
- The inner glass door is completely enclosed with silicone packing, making it easy to observe the sample without changing the temperature.
- External door can be opened and closed smoothly with magnetic packing to minimize sample impact.
- Stainless steel interior and shelves are excellent in terms of corrosion resistance and clean maintenance.
- Easy to clean as inner edges are curved.



IL-11-2C

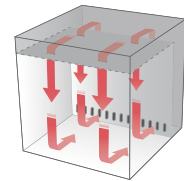


IL-11-4C

### Use Convenience Features

- Accurately controlling temperature based on temperature calibration / auto-tuning / microprocessor PID.
- Save and use 3 frequently used temperatures.
- Wait On/Off timer. (up to 99 hours 59 minutes)
- Alarm function when temperature sensor is disconnected.
- Internal air circulation speed and defrost cycle control

※ When the chamber is operating with forced convection type, the amount of moisture evaporation of the medium is relatively high.



### Outstanding Safety

- Top-rated overheating protection system. (registration 10-0397583)
- Over temperature limit function.
- Mal-operation prevented by controller lock function.

### Convenient Program Control

- Various culture and incubating experiments with the 9 step program.
- Temperature/time settings for each step.
- Up to 99 hours and 59 minutes.
- Repeat operation up to 200 times.

## Specification

| Model  |                                     | IL-11-2C  |                  | IL-11-4C  |                  |
|--|-------------------------------------|---|------------------|---|------------------|
| <b>Chamber volume (L / cu ft)</b>              |                                     | 300 / 10.6 (150 / 5.3 x 2 chambers)                 |                  | 600 / 21.2 (150 / 5.3 x 4 chambers)                 |                  |
| <b>Refrigerator (Hp)</b>                       |                                     | 1/8 x 2ea   |                  | 1/8 x 4ea   |                  |
| <b>Temperature</b>                             | Range (°C / °F)                     | 0 to 60 / 32 to 140                                 |                  | 0 to 60 / 32 to 140                                 |                  |
|  | Fluctuation at 25°C (±°C / °F)      | 0.1 / 0.18  |                  | 0.1 / 0.18  |                  |
|  | Variation at 25°C (±°C / °F)        | 0.5 / 0.9   |                  | 0.5 / 0.9   |                  |
|  | Heating time to 40°C (min.)         | 16  |                  | 16  |                  |
|  | Cooling time 40 to 5°C (min.)       | 53  |                  | 53  |                  |
| <b>Dimension</b>                               | Recovery time at 40°C (min.)        | 2   |                  | 2   |                  |
|  | Interior (W x D x H, mm / inch)     | 600 x 500 x 500 / 23.6 x 19.7 x 19.7 (each chamber) |                  | 600 x 500 x 500 / 23.6 x 19.7 x 19.7 (each chamber) |                  |
|  | Exterior (W x D x H, mm / inch)     | 760 x 760 x 1690 / 29.9 x 29.9 x 66.1               |                  | 1500 x 760 x 1690 / 59.1 x 29.9 x 66.1              |                  |
| <b>Shelves</b>                                 | Net weight (Kg / lbs)               | 180 / 397   |                  | 350 / 772   |                  |
|  | Quantity of shelves (standard/max.) | 2 / 12 (each chamber)                               |                  | 2 / 12 (each chamber)                               |                  |
| <b>Electrical requirements (230V, A)</b>       | Max. Load per shelf (Kg / lbs)      | 26 / 57.3   |                  | 26 / 57.3   |                  |
|  |                                     | 60Hz, 9   | 50Hz, 9          | 60Hz, 9 x 2ea                                       | 50Hz, 9 x 2ea    |
| <b>Cat No</b>                                  |                                     | <b>AAH28111K</b>                                    | <b>AAH28112K</b> | <b>AAH28011K</b>                                    | <b>AAH28012K</b> |
| <b>Electrical requirements (120V, 60Hz, A)</b> |                                     | 16.5  |                  | 16.5 x 2EA  |                  |
| <b>Cat No</b>                                  |                                     | <b>AAH28113U</b>                                    |                  | <b>AAH28013U</b>                                    |                  |

※ Technical data (according to DIN 12880 before 2013)

※ This product is forced convection type. If the sample dries easily or is sensitive, we recommend using the natural convection type.

**Accessories** Page 93 Wire Shelves, Perforated Shelves

# Plant Growth Chamber

Provision of optimum photosynthesis conditions for plant growth



GC-1000TLH



GC-300TLH

## Optimal photosynthesis condition for plant growth.

- Uniform temperature and humidity. (TLH models)
- Reinforced Blue and Red spectrums lighting system for plant photosynthesis.
- Optional CO<sub>2</sub> sensor. (option)
- Programmable temperature, humidity, and lighting.
- Progressive temperature, humidity, illumination program control for optimization of plant growth environment for night and day.

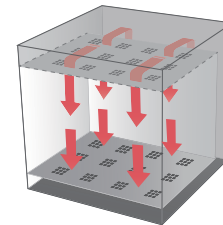
## Structural Functional Features

### General control system

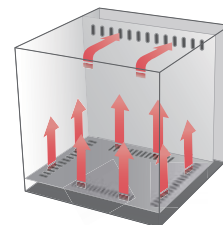
- 5°C to 50°C (lamp off) / 10°C to 50°C. (lamp on)
- Max. to 35,000Lux for GC-1000.  
Max. to 20,000Lux for GC-300 Models.
- 40 to 80% RH for GC-300TLH. (at 20 to 35°C)  
50 to 90% RH for GC-1000TLH. (at 20 to 35°C)
- Max. 5,000ppm CO<sub>2</sub> on/off system. (option)
- Microprocessor PID control / Temperature calibration / Automatic tuning.
- 10 step programmable temperature, humidity, and illumination profiles and repeatable steps of up to 999 cycles.
- Advanced performance of low and high temperature and humidity control, achieved by adapting the humidification tank exterior to the chamber, added benefit for long term test.

### Illuminance control system

- Uniformed luminescence distribution.
- Broad distribution of side lamps for hastening the growth of plants.
- High intensity illumination of upper lamp for light efficient and low thermal load. (for GC-1000TLH/1000TL)
- Unique construction for minimization of heat increase from surrounding lamps.
  - Tempered glass door blocks heated air from lamps.
  - Designed to exhaust heated air through upper vent holes. (for GC-1000TLH)
- Stable and long lasting lighting through introduction of high frequency electronic ballast lamps.



GC-300



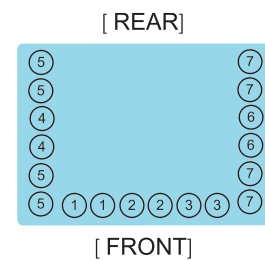
GC-1000

## Outstanding Safety

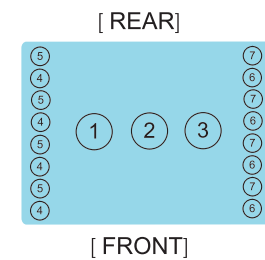
- Automatic shut off after overheat alarm.
- Low and empty water level alarm.
- Power supply leakage breaker.
- Over current protection,
- Open door alarm.

## Lamps setting

- Control illumination values with the below lamp setting arrangements.



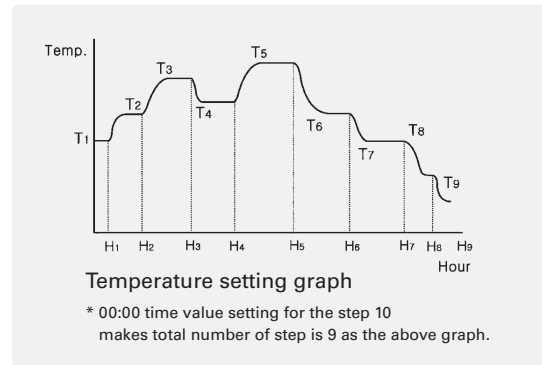
GC-300 lamp arrangement



GC-1000 lamp arrangement

## Use Convenience Features

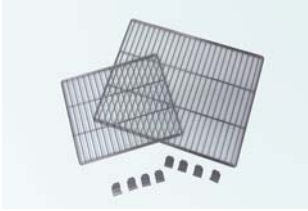
- Ergonomically designed door construction.
  - Inner glass door with silicone and external door with magnetic sealing for dual airtight packing.
  - Well designed providing a smooth open for minimization of damage to plants.
- Wide inner tempered glass door for clear observation of plant growth without affecting inner chamber's environment.
- Tall plants can be grown inside of the chamber with adjustment of shelf level.
- Maintenance of water supply are easily performed with a front water tank. (GC-1000TLH)
  - Water level check indicated by water level bar in the tank.
- Water supply during operation is also available for long term test purposes.
- Adjustable water tank position. (for GC-300TLH)
- Detachable condenser air-filter for easy maintenance of refrigerating efficiency.
  - Maintenance of air filter no longer cumbersome with our detachable condenser air filter.
- Casters for easy mobility during installation or relocation.
- Eco-friendly CFC-free refrigerant use.



## Specification

| Model                                    |                                 | GC-300TL   |                        | GC-300TLH                             |                        | GC-1000TLH                              |                  |
|--|---------------------------------|--|------------------------|---------------------------------------|------------------------|---|------------------|
| <b>Chamber volume (L / cu ft)</b>        |                                 | 300 / 10.6   |                        | 300 / 10.6                            |                        | 1000 / 35.3                             |                  |
| <b>Temperature</b>                       | Range (°C / °F)                 | 5 to 50 / 41 to 122 - Lamp off<br>10 to 50 / 50 to 122 - Lamp on<br>20 to 50 / 68 to 122 - with humidity |                        |                                       |                        |   |                  |
|  | Fluctuation at 25°C (±°C / °F)  | 0.4 / 0.72 - without humidity  |                        |                                       |                        |   |                  |
|  | Variation at 25°C (±°C / °F)    | 1.0 / 1.8 - without humidity   |                        |                                       |                        |   |                  |
| <b>Humidity</b>                          | Range (%RH)                     | -  | 40 to 80 at 20 to 35°C |                                       | 50 to 90 at 20 to 35°C |   |                  |
|  | Fluctuation at 60%RH (±%RH)     | -  | 70 to 90 at 36 to 50°C |                                       | 60 to 90 at 36 to 50°C |   |                  |
| <b>Illumination</b>                      | Range (Lux)                     | 0 to 20,000  |                        | 0 to 20,000                           |                        | 0 to 35,000                             |                  |
|  | Control (steps)                 | 10   |                        | 10                                    |                        | 11                                      |                  |
|  | Fluorescent lamp (W)            | 32 x 18ea  |                        | 32 x 18ea                             |                        | 32 x 16ea                               |                  |
|  | Metal lamp (W)                  | -  |                        | -                                     |                        | 400 x 3ea                               |                  |
| <b>CO<sub>2</sub> (Option)</b>           | Range                           | 300 to 5,000   |                        | 300 to 5,000                          |                        | 300 to 5,000                            |                  |
|  | Sensor                          | NDIR CO <sub>2</sub> sensor  |                        | NDIR CO <sub>2</sub> sensor           |                        | NDIR CO <sub>2</sub> sensor             |                  |
| <b>Dimensions</b>                        | Interior (W x D x H, mm / inch) | 510 x 540 x 1100 / 20 x 21.3 x 43.3  |                        | 510 x 540 x 1100 / 20 x 21.3 x 43.3   |                        | 1200 x 800 x 1080 / 47.2 x 31.5 x 42.5  |                  |
|  | Exterior (W x D x H, mm / inch) | 700 x 805 x 1900 / 27.6 x 31.7 x 74.8  |                        | 700 x 805 x 1900 / 27.6 x 31.7 x 74.8 |                        | 1410 x 1070 x 2150 / 55.5 x 42.1 x 84.6 |                  |
|  | Net weight (Kg / lbs)           | 250 / 551.2  |                        | 250 / 551.2                           |                        | 550 / 1212.5                            |                  |
| <b>Electrical requirements (230V, A)</b> |                                 | 60Hz / 15  | 50Hz / 15              | 60Hz / 15                             | 50Hz / 15              | 60Hz / 17                               | 50Hz / 17        |
| <b>Cat. No.</b>                          |                                 | <b>AAHA1011K</b>   | <b>AAHA1012K</b>       | <b>AAHA1021K</b>                      | <b>AAHA1022K</b>       | <b>AAHA1031K</b>                        | <b>AAHA1032K</b> |

# Accessories for Incubator



### Wire Shelf

- Excellent corrosion resistance as made of stainless steel.
- Excellent air permeability and uniform temperature distribution.



### Perforated Shelf

- Porous structure made of stainless steel.
- Solid structure makes it suitable for high load samples.



### Recorder (Dot)

- 6-channel graph-type temperature recorder.
- Adjustable recording range, speed, etc.



### CO<sub>2</sub> Sensor

- Dedicated sensor for CO<sub>2</sub> measurement
- Formation of optimal photosynthetic conditions

| Model                      | Wire Shelves |                                     | Perforated Shelves |                            | Recorder | CO <sub>2</sub> Sensor |
|----------------------------|--------------|-------------------------------------|--------------------|----------------------------|----------|------------------------|
|                            | Cat. No.     | Quantity of shelves (standard/max.) | Cat. No.           | Quantity of shelves (max.) | Cat. No. | Cat. No.               |
| IB-05G                     | 00EDA0008136 | 2 / 4                               | AAA12531           | 4                          | -        | -                      |
| IB-15G                     | 00EDA0008135 | 2 / 6                               | AAA12532           | 6                          | -        | -                      |
| IB-25G                     | 00EDA0008137 | 2 / 7                               | AAA12535           | 7                          | -        | -                      |
| IM-10                      | 00EDA0008244 | 2 / 4                               | AAA24511           | 4                          | -        | -                      |
| IB-01E                     | 00EDA0008136 | 2 / 5                               | AAA12531           | 5                          | -        | -                      |
| IB-11E                     | 00EDA0008220 | 2 / 7                               | AAA22522           | 7                          | -        | -                      |
| IB-21E                     | 00EDA0008219 | 2 / 7                               | AAA22521           | 7                          | -        | -                      |
| IB-02G-2C/4C <sup>1)</sup> | 00EDA0008136 | 2 / 4                               | AAA12531           | 4                          | -        | -                      |
| ILP-02                     | 00EDA0008223 | 1 / 6                               | AAA24501           | 6                          | -        | -                      |
| ILP-12                     | 00EDA0008221 | 2 / 13                              | AAA24502           | 13                         | -        | -                      |
| IL3-15/15A                 | 00EDA0008219 | 2 / 6                               | AAA22521           | 6                          | -        | -                      |
| IL3-25/25A                 | 00EDA0008220 | 3 / 13                              | AAA22522           | 13                         | -        | -                      |
| IL-11-2C/4C <sup>1)</sup>  | 00EDA0008219 | 2 / 12                              | AAA12532           | 12                         | -        | -                      |
| GC-300TL                   | 00EDA0008220 | 3 / 14                              | AAA22522           | 14                         | AAAA1501 | AAAA1521               |
| GC-300TLH                  | 00EDA0008220 | 3 / 14                              | AAA22522           | 14                         | AAAA1501 | AAAA1521               |
| GC-1000TLH                 | 00EDA0008222 | 6 / 29                              | AAAA1512           | 29                         | AAAA1502 | AAAA1521               |

1) Standard for each chamber

## LC GreenBox

- Monitor and control the operation status of the product in real time via mobile app with an internet connection.

| Model     | Description              | Dimension (mm / inch)           | Cat. No. |
|-----------|--------------------------|---------------------------------|----------|
| IL3 / ILP | Mobile Monitoring System | 156 x 94 x 34 / 6.1 x 3.7 x 1.3 | AAAQ1011 |



## Double-stacked bracket

- Incubator bracket for double stacked.

| Model  | Cat. No. | Model  | Cat. No. |
|--------|----------|--------|----------|
| IB-05G | AAA21521 | IB-01E | AAA26501 |
| IB-15G | AAA21522 | IB-11E | AAA26502 |
| IB-25G | AAA21523 | IB-21E | AAA26503 |

# Incubated Shaker



## General Application

Molecular biology, animal/plant cell culture, fermentation, genetics, new drug development, etc.

|   | Description  | Temp. Range<br>(°C/°F)   | Motion<br>Type  | Max.<br>Speed<br>(rpm) | 250 ml<br>Flask<br>Capacity | Model     | Page  |     |
|---|--|--|---|------------------------|-----------------------------|-----------|-------|-----|
| Multi-type<br>Stackable   | <b>Stackable Model</b> <ul style="list-style-type: none"> <li>• Double-stacked for space efficiency</li> <li>• Also, easy to use as a general incubator</li> </ul>                     | Amb. +5 to 80<br>/ Amb. +9 to 176  | Orbital   | 500                    | 24                          | ISS       | 98    |     |
|   |  | Amb. -20 (min. 4) to 80<br>/ Amb. -36 (min. 7.2) to 176  |   | 500                    | 24                          | ISS-R     | 98    |     |
|   | <b>Stackable Model (Multi)</b> <ul style="list-style-type: none"> <li>• Maximum triple-stacked for space efficiency</li> <li>• Powerful DD motor for large-capacity shaking</li> </ul> | Amb. +10 to 80<br>/ Amb. +18 to 176  | Orbital   | 400                    | 35                          | ISS-7100  | 100   |     |
|   |  | Amb. -20 (min. 4) to 80<br>/ Amb. -36 (min. 7.2) to 176  |   | 400                    | 35                          | ISS-7100R | 100   |     |
|   |  | Amb. +10 to 80<br>/ Amb. +18 to 176  |   | 300                    | 35                          | ISS-7200  | 100   |     |
|   |  | Amb. -20 (min. 4) to 80<br>/ Amb. -36 (min. 7.2) to 176  |   | 300                    | 35                          | ISS-7200R | 100   |     |
|   | Single-type  | <b>Benchtop Model</b> <ul style="list-style-type: none"> <li>• Convenient internal observation</li> <li>• Optimized for use on test bench top</li> </ul> | Amb. +5 to 80<br>/ Amb. +9 to 176                       | Orbital                | 500                         | 20        | IST   | 102 |
|   |  |  | Amb. -15 (min. 15) to 80<br>/ Amb. -27 (min. 27) to 176 |                        | 500                         | 20        | IST-R | 102 |
| <b>Floor Standing Model</b> <ul style="list-style-type: none"> <li>• Optimized for large-capacity of culture</li> <li>• Large capacity up to 5ea x 6 L flasks at the same time</li> </ul> |  | Amb. +5 to 80<br>/ Amb. +9 to 176  | Orbital   | 500                    | 39                          | ISF-7100  | 104   |     |
|   |  | Amb. -20 (min. 4) to 80<br>/ Amb. -36 (min. 7.2) to 176  |   | 500                    | 39                          | ISF-7100R | 104   |     |
|   |  | Amb. +5 to 80<br>/ Amb. +9 to 176  |   | 300                    | 39                          | ISF-7200  | 104   |     |
|   |  | Amb. -20 (min. 4) to 80<br>/ Amb. -36 (min. 7.2) to 176  |   | 300                    | 39                          | ISF-7200R | 104   |     |

※ The contents of the above and the contents of this catalog may differ depending on the specific model and conditions of use. For the information about the features and specifications that applying to each models, please check the information on the corresponding page of each models.

|   |  |   |  |   |   |
|---|--|---|--|---|---|
|  | Satisfaction with the requirements of European regulations and guidelines. |  | Certification of conformity of electricity, gas, etc. in accordance with the safety standards of Canada and USA. |  | Real-time equipment monitoring and control system using mobile app.   |
|  | Registered patent based on JEIO TECH's proprietary technology.             |  | Compliance with Guidelines for Restriction of Hazardous Substances Use.  |  | Eco-friendly product that has passed environmental impact assessment tests.   |
|  | Intuitive operation with Color Touch display.                              |  | Orbital motion either clockwise or counterclockwise direction can be set.  |  | Possible to set end time or start time of device operation.   |
|  | Warning alarm in case of deviation of temperature control.                 |  | Electronic over temperature protection system.   |  | Conventional over temperature protection, a kind of backup device against electronic over temperature protection failure. |
|  | PC communication via RS-232 / RS-485 / USB port.                           |  | It memorizes the state of power failure and operates automatically when power is restored.                       |  | 2 year warranty Free A/S.   |

# Incubated Shaker



## Reliable precision temperature control up to 80°C Innovatory temperature control system using Lab Companion's technology

- > **Extended temperature range up to 80°C**  
Broad range of applications, including culturing of thermophilic microorganisms at a temperature range up to 80°C, which is a wider range than previous models.
- > **Remote monitoring service (option)**  
Monitor via mobile app anytime, anywhere with LC Connected (mobile monitoring system) connection. (when purchased LC GreenBox)
- > **More stable temperature control**  
Optimized Microprocessor PID control for more accurate temperature control.
- > **Temperature calibration function**  
Temperature calibration of up to 3 points allows for more reliable temperature control.
- > **Real-time monitoring of temperature deviation**  
Prevents experiment errors through user notification when the actual temperature differs from the set temperature.
- > **Strong and stable shaking**  
DD motor & triple cam system provide a powerful and stable shaking motion even under high loads. (ISF, ISS-7000) (registered: 10-1678160)
- > **Electronic over temperature protection system**  
Independent precision temperature sensor and controller provides more secure and reliable over temperature protection. (ISF, ISS)
- > **Conventional over-temperature protection system**  
Backup device against electronic system failure. Implementation of over-temperature protection even for electronic errors.



USB, RS-232 connection port provided.



Easy to attach and detach large-volume sample (ISF) thanks to the inclined structure. (registered design 30-2014-0060254)



Viewing window and LED lighting for internal observation.





## Optimized model based on shape and performance Easy and intuitive operation with color touch screen display

- > **Achieve intuitive and convenient operation**  
Color LCD touch screen with excellent touch feeling makes researcher easy operation and it shows a status of operating.
- > **One action control provides convenience**  
Convenient operation environment with easy Start/Stop button for fast and simple operation and stop.
- > **Complete model lineup according to usage environment**  
Three models (tabletop, stackable, floor) provide the ability to choose the optimized model for the user environment.
- > **Maximal utilization with three operation modes**  
The three modes of temperature and shaking, temperature, or shaking, provide the ability to perform various experiments with a single device.
- > **Computer interface environment provided**  
USB, RS-232 connection and dedicated software provide convenient device operation and data accumulation/management function.
- > **Convenient sample observation environment provided**  
Low-power consumed LED illumination provided as standard provides a convenient environment for sample observation.
- > **Lock function of controller**  
Lock function for preventing change of controller settings prevents erroneous operation due to arbitrary changing.
- > **Spill drain port for internal cleanliness and easy maintenance**  
Even if the sample leaks inside the equipment, it can be cleaned through the spill drain port.

※ Some of the above contents are limited to specific models.



Color LCD touch screen.



Safe use with over temperature protection function.



Spill drain port for clean internal management.

# Incubated Shaker Stackable type

## Double stackable for space efficiency

### Structural Functional Features

- Best space-efficient model with double stacking.
- Up to 80°C, 500rpm enables setting of various experimental conditions.
- Utilized as an incubator using the shelves.
- Three operating modes: Temperature & Shaking, Temperature, or Shaking.
- Includes internal power outlet.
- Shaking structure with minimized vibration.

### Use Convenience Features

- Accurate rpm and temperature control through temperature auto-tuning / microprocessor PID and calibration.
- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)
- Countdown timer (999 hours 59 minutes) of shaking operation.
- Intuitive operation with color touch display.
- High brightness / low-power LED illumination makes it easy to observe inside.
- Spill drain port for internal cleanliness and easy maintenance.

### Outstanding Safety

- Electronic over temperature protection system. (advanced over temperature (A-OT) limiter)  
Independent precision temperature sensor and controller provides more secure and reliable over temperature protection.
- Conventional over-temperature protection system. (B-OT, backup over temperature limiter)  
A backup device against electronic system failure, mechanically preventing over temperature even when there are electronic errors.
- Soft start and stop shaking function.
- Malfunction prevented by controller lock function.
- Displays all information such as device operation and error occurrence.
- Overcurrent protection device restricts operation when objects are caught inside the system and shaking is not possible.

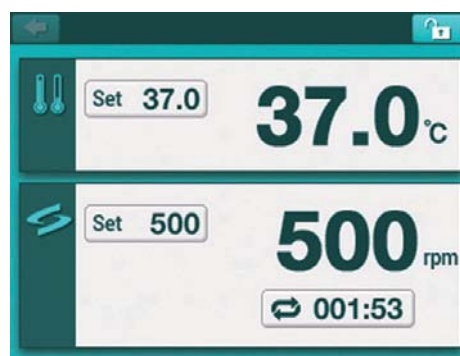


### ISS series

with Shelf 2ea (standard)  
Universal Platform, Flask Clamp (option)



Use the stacking kit  
for double stacked (option)

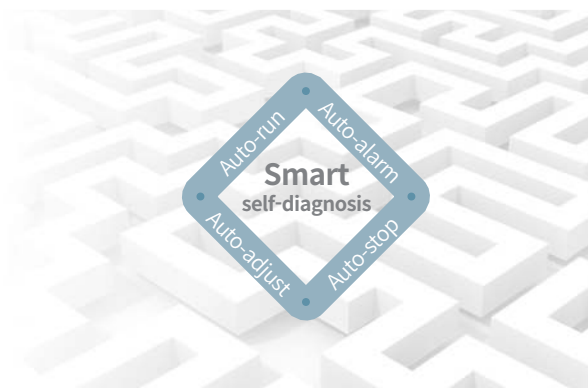


Color touch display



## Smart Self-diagnosis

- Real-time self-diagnostics to check equipment for abnormal conditions.
- Alarm is generated by monitoring difference between actual rpm/temperature and set rpm/temperature.
- Automatic rpm adjustment when device instability occurs. (high rpm, overload, weight imbalance, etc.)
- Detects abnormal conditions relating to the platform on which the sample is placed and stops the operation.
- Automatic restart as it was operated after power recovery.



## Specification

| Model                                    | ISS-3075  |                  | ISS-3075R   |                  | ISS-4075  |                  | ISS-4075R   |                  |
|--|---|------------------|---|------------------|---|------------------|---|------------------|
| <b>Temperature</b>                       |   |                  |   |                  |   |                  |   |                  |
| Range (°C / °F)                          | Amb. +5 to 80 / Amb. +9 to 176  |                  | Amb. -20 (Min. 4) to 80 / Amb. -36 (Min. 7.2) to 176  |                  | Amb. +5 to 80 / Amb. +9 to 176  |                  | Amb. -20 (Min. 4) to 80 / Amb. -36 (Min. 7.2) to 176  |                  |
| Fluctuation at 37°C in flask (±°C / °F)  | 0.1 / 0.18  |                  | 0.1 / 0.18  |                  | 0.1 / 0.18  |                  | 0.1 / 0.18  |                  |
| Variation at 37°C in flask (±°C / °F)    | 0.5 / 0.9   |                  | 0.5 / 0.9   |                  | 0.5 / 0.9   |                  | 0.5 / 0.9   |                  |
| Refrigerator (Hp)                        | -   |                  | 1/6   |                  | -   |                  | 1/6   |                  |
| <b>Shaking system</b>                    |   |                  |   |                  |   |                  |   |                  |
| Motion type                              | Orbital   |                  | Orbital   |                  | Orbital   |                  | Orbital   |                  |
| Speed range (rpm)                        | 20 to 500 (stackable : 20 to 250)   |                  | 20 to 500 (stackable : 20 to 250)   |                  | 20 to 500 (stackable : 20 to 250)   |                  | 20 to 500 (stackable : 20 to 250)   |                  |
| Max. speed per permissible load (rpm)    | 500 (max. 10 kg / 22.0 lbs)<br>400 (max. 15 kg / 33.1 lbs)<br>250 (max. 15 kg / 33.1 lbs) - Stacked |                  | 500 (max. 10 kg / 22.0 lbs)<br>400 (max. 15 kg / 33.1 lbs)<br>250 (max. 15 kg / 33.1 lbs) - Stacked |                  | 500 (max. 10 kg / 22.0 lbs)<br>400 (max. 21 kg / 46.3 lbs)<br>250 (max. 21 kg / 46.3 lbs) - Stacked |                  | 500 (max. 10 kg / 22.0 lbs)<br>400 (max. 21 kg / 46.3 lbs)<br>250 (max. 21 kg / 46.3 lbs) - Stacked |                  |
| Amplitude size (mm / inch, dia.)         | 19.1 / 0.75   |                  | 19.1 / 0.75   |                  | 19.1 / 0.75   |                  | 19.1 / 0.75   |                  |
| Speed stability <sup>2)</sup> (rpm, %)   | ±1  |                  | ±1  |                  | ±1  |                  | ±1  |                  |
| Timer (count-down)                       | 999hr 59min   |                  | 999hr 59min   |                  | 999hr 59min   |                  | 999hr 59min   |                  |
| <b>Dimension</b>                         |   |                  |   |                  |   |                  |   |                  |
| Chamber volume (L / cu ft)               | 80 / 2.8  |                  | 80 / 2.8  |                  | 150 / 5.3   |                  | 150 / 5.3   |                  |
| Platform (W x D, mm / inch)              | 350 x 350 / 13.8 x 13.8   |                  | 350 x 350 / 13.8 x 13.8   |                  | 450 x 450 / 17.7 x 17.7   |                  | 450 x 450 / 17.7 x 17.7   |                  |
| Interior (W x D x H, mm / inch)          | 440 x 440 x 418 / 17.3 x 17.3 x 16.5  |                  | 440 x 440 x 418 / 17.3 x 17.3 x 16.5  |                  | 540 x 540 x 518 / 21.3 x 21.3 x 20.4  |                  | 540 x 540 x 518 / 21.3 x 21.3 x 20.4  |                  |
| Exterior (W x D x H, mm / inch)          | 578 x 815 x 854 / 22.8 x 32.1 x 33.6  |                  | 578 x 815 x 854 / 22.8 x 32.1 x 33.6  |                  | 678 x 895 x 934 / 26.7 x 35.2 x 36.8  |                  | 678 x 895 x 934 / 26.7 x 35.2 x 36.8  |                  |
| Quantity of shelves (standard/max.)      | 2 / 8   |                  | 2 / 8   |                  | 2 / 11  |                  | 2 / 11  |                  |
| Net weight (kg / lbs)                    | 153 / 337.3   |                  | 160 / 352.7   |                  | 183 / 403.4   |                  | 190 / 418.9   |                  |
| <b>Electrical requirements (230V, A)</b> | 60Hz, 6.2   | 50Hz, 6.2        | 60Hz, 7.9   | 50Hz, 7.9        | 60Hz, 6.2   | 50Hz, 6.2        | 60Hz, 7.9   | 50Hz, 7.9        |
| <b>Cat. No.</b>                          | <b>AAH23431K</b>  | <b>AAH23432K</b> | <b>AAH23531K</b>  | <b>AAH23532K</b> | <b>AAH23631K</b>  | <b>AAH23632K</b> | <b>AAH23731K</b>  | <b>AAH23732K</b> |
| <b>Electrical requirements (120V, A)</b> | 60Hz, 9.5   |                  | 60Hz, 13  |                  | 60Hz, 9.5   |                  | 60Hz, 13  |                  |
| <b>Cat. No.</b>                          | <b>AAH23415U</b>  |                  | <b>AAH23515U</b>  |                  | <b>AAH23615U</b>  |                  | <b>AAH23715U</b>  |                  |

1) The temperature control range of the ISS-3075 and ISS-4075 models are from 5°C above the ambient temperature (15°C to 40°C) to 80°C. The temperature control range of the ISS-3075R and ISS-4075R models is from 20°C lower than the ambient temperature. (18°C to 35°C) of the device to 80°C. (However, the lowest control temperature is 4°C)

2) Actual rpm allowable error for set rpm is ±1rpm if setting is less than 100rpm, ±1% if setting is higher than 100rpm.

## Accessories Page 106

Universal Platform, Flask Clamp, Funnel Clamp, Test Tube Rack, Microplate Holder, Lab Sticker, Spring Wire Rack, Dedicated Platform, Rubber Mat, Universal Attachment, Rectangular Foot Caster, Stacking Kit, Wire Shelves, LC GreenBox

# Incubated Shaker

## Multi-stackable type

### Maximal space-saving multi-stackable model

#### Structural Functional Features

- Large-capacity triple stackable incubated shaker.
- Up to 80°C, 400rpm enables experimental conditions for various applications.
- Three operating modes: Temperature & Shaking, Temperature, or Shaking.
- Shaking structure with minimized vibration.
- Convenient to change samples with glide-up door.
- Stable shaking of high-load samples. (patent registered: 10-1678160)

#### Use Convenience Features

- Accurate rpm and temperature control through temperature auto-tuning / microprocessor PID and calibration.
- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)
- Countdown timer (999 hours 59 minutes) of shaking operation.
- Intuitive operation with color touch display.
- High brightness / low-power LED illumination makes it easy to observe inside.
- Spill drain port for internal cleanliness and easy maintenance.
- Stand with adjustable feet to ensure a level installation, and retractable casters to allow positioning prior to installation. (Retractable Foot Caster)

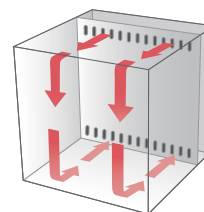
#### Outstanding Safety

- Electronic over temperature protection system. (A-OT, advanced over temperature limiter)  
Independent precision temperature sensor and controller provides more secure and reliable over temperature protection.
- Conventional over-temperature protection system. (B-OT, backup over temperature limiter)  
A backup device against electronic system failure, mechanically preventing over temperature even when there are electronic errors.
- Soft start and stop shaking function.
- Malfunction prevented by controller lock function.
- Displays all information such as device operation and error occurrence.
- Overcurrent protection device restricts operation when objects are caught inside the system and shaking is not possible.



**ISS-7100R**

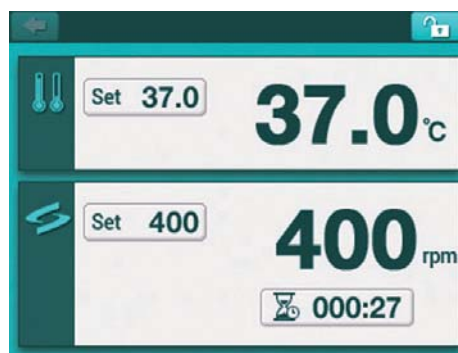
with Universal Platform, Flask Clamp (option)



Door lift-up structure for safe and convenient sample handling.



Rail-type platform allowing samples to be removed/mounted by pulling out the platform to the front.



Color touch display.

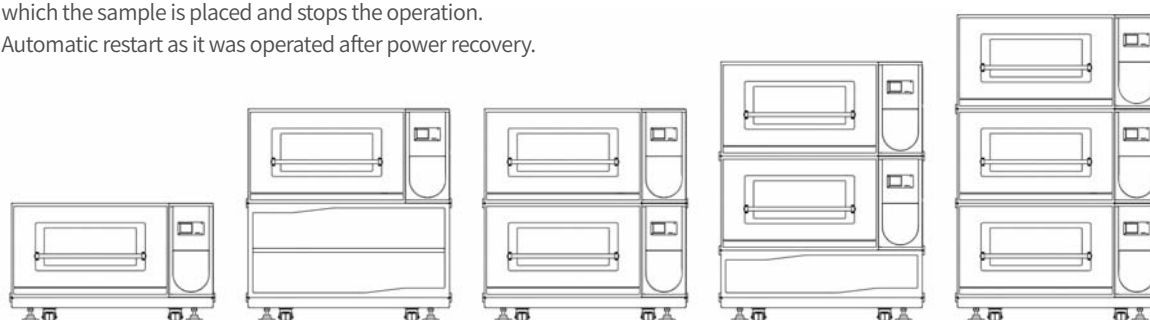


## Smart Self-diagnosis

- Real-time self-diagnostics to check equipment for abnormal conditions.
- Alarm is generated by monitoring difference between actual rpm/temperature and set rpm/temperature.
- Automatic rpm adjustment when device instability occurs. (high rpm, overload, weight imbalance, etc.)
- Detects abnormal conditions relating to the platform on which the sample is placed and stops the operation.
- Automatic restart as it was operated after power recovery.

**DD Shaking System** Patented

Powerful DD motor for large-capacity shaking  
The triple cam system provides stable shaking with high load samples.  
(patent registration : 10-1678160)



## Specification

| Model                                    | ISS-7100  |                   | ISS-7100R   |                   | ISS-7200  |                   | ISS-7200R   |                   |
|--|---|-------------------|---|-------------------|---|-------------------|---|-------------------|
| <b>Temperature</b>                       |   |                   |   |                   |   |                   |   |                   |
| Range (°C / °F)                          | Amb. +10 to 80 / Amb. +18 to 176  |                   | Amb. -20 (Min. 4) to 80 / Amb. -36 (Min. 7.2) to 176                        |                   | Amb. +10 to 80 / Amb. +18 to 176  |                   | Amb. -20 (Min. 4) to 80 / Amb. -36 (Min. 7.2) to 176                        |                   |
| Fluctuation at 37°C in flask (±°C / °F)  | 0.1 / 0.18  |                   | 0.1 / 0.18  |                   | 0.1 / 0.18  |                   | 0.1 / 0.18  |                   |
| Variation at 37°C in flask (±°C / °F)    | 0.6 / 1.08  |                   | 0.5 / 0.90  |                   | 0.6 / 1.08  |                   | 0.5 / 0.90  |                   |
| Refrigerator (Hp)                        | -   |                   | 1/6   |                   | -   |                   | 1/6   |                   |
| <b>Shaking system</b>                    |   |                   |   |                   |   |                   |   |                   |
| Motion type                              | Orbital   |                   | Orbital   |                   | Orbital   |                   | Orbital   |                   |
| Speed range (rpm)                        | 30 to 400 (stackable : 30 to 250)   |                   | 30 to 400 (stackable : 30 to 250)   |                   | 30 to 300 (stackable : 30 to 200)   |                   | 30 to 300 (stackable : 30 to 200)   |                   |
| Max. speed per permissible load (rpm)    | 1 unit only<br>400 (max. 20 kg / 44.1 lbs)  |                   | 1 unit only<br>400 (max. 20 kg / 44.1 lbs)                                  |                   | 1 unit only<br>300 (max. 20 kg / 44.1 lbs)                                  |                   | 1 unit only<br>300 (max. 20 kg / 44.1 lbs)                                  |                   |
|  | Stacked units<br>250 (max. 15 kg / 33.1 lbs)<br>200 (max. 20 kg / 44.1 lbs)   |                   | Stacked units<br>250 (max. 15 kg / 33.1 lbs)<br>200 (max. 20 kg / 44.1 lbs) |                   | Stacked units<br>200 (max. 15 kg / 33.1 lbs)<br>150 (max. 20 kg / 44.1 lbs) |                   | Stacked units<br>200 (max. 15 kg / 33.1 lbs)<br>150 (max. 20 kg / 44.1 lbs) |                   |
| Amplitude size (mm / inch, dia.)         | 25.4 / 1  |                   | 25.4 / 1  |                   | 50.8 / 2  |                   | 50.8 / 2  |                   |
| Speed stability <sup>2)</sup> (rpm, %)   | ±1  |                   | ±1  |                   | ±1  |                   | ±1  |                   |
| Timer (count-down)                       | 999 hr 59 min.  |                   | 999 hr 59 min.  |                   | 999 hr 59 min.  |                   | 999 hr 59 min.  |                   |
| <b>Dimension (1 unit)</b>                |   |                   |   |                   |   |                   |   |                   |
| Chamber volume (L / cu ft)               | 198 / 7.0   |                   | 198 / 7.0   |                   | 198 / 7.0   |                   | 198 / 7.0   |                   |
| Platform (W x D, mm / inch)              | 755 x 520 / 29.7 x 20.5   |                   | 755 x 520 / 29.7 x 20.5   |                   | 755 x 520 / 29.7 x 20.5   |                   | 755 x 520 / 29.7 x 20.5   |                   |
| Interior (W x D x H, mm / inch)          | 809 x 624 x 393 / 31.9 x 24.6 x 15.5  |                   | 809 x 624 x 393 / 31.9 x 24.6 x 15.5  |                   | 809 x 624 x 393 / 31.9 x 24.6 x 15.5  |                   | 809 x 624 x 393 / 31.9 x 24.6 x 15.5  |                   |
| Exterior (W x D x H, mm / inch)          | 1 unit ; 1307 x 996 x 755 / 51.5 x 39.2 x 29.7<br>1 unit+stand-I or 2 units stacked ; 1307 x 996 x 1355 / 51.5 x 39.2 x 53.3<br>2 units+stand-II stacked ; 1307 x 996 x 1655 / 51.5 x 39.2 x 65.2<br>3 units stacked ; 1307 x 996 x 1955 / 51.5 x 39.2 x 77.0 |                   |   |                   |   |                   |   |                   |
| Net weight (Kg / lbs)                    | 300 / 661.4   |                   | 320 / 705.5   |                   | 300 / 661.4   |                   | 320 / 705.5   |                   |
| <b>Electrical requirements (230V, A)</b> | 60Hz, 3.7   | 50Hz, 3.7         | 60Hz, 5.6   | 50Hz, 5.6         | 60Hz, 3.7   | 50Hz, 3.7         | 60Hz, 5.6   | 50Hz, 5.6         |
| <b>Cat. No.</b>                          | <b>AAH238131K</b>   | <b>AAH238132K</b> | <b>AAH238231K</b>   | <b>AAH238232K</b> | <b>AAH239131K</b>   | <b>AAH239132K</b> | <b>AAH239231K</b>   | <b>AAH239232K</b> |
| <b>Electrical requirements (120V, A)</b> | 60Hz, 7.1   |                   | 60Hz, 10  |                   | 60Hz, 7.1   |                   | 60Hz, 10  |                   |
| <b>Cat. No.</b>                          | <b>AAH238115U</b>   |                   | <b>AAH238215U</b>   |                   | <b>AAH239115U</b>   |                   | <b>AAH239215U</b>   |                   |

1) The temperature control range of the ISS-7100 and ISS-7200 models are from 10°C above the ambient temperature of the equipment. (15°C to 40°C) to 80°C The temperature control range of the ISS-7100R and ISS-7200R models are from 20°C below the ambient temperature (18°C to 35°C) of the device to 80°C. (However, the lowest control temperature is 4°C)

2) Actual rpm allowable error for set rpm is 1rpm if setting is less than 100rpm, ±1% if setting is higher than 100rpm.

## Accessories Page 106

Universal Platform, Flask Clamp, Funnel Clamp, Test Tube Rack, Microplate Holder, Lab Sticker, Spring Wire Rack, Dedicated Platform, Rubber Mat, Universal Attachment, Stand, Stacking Kit, LC GreenBox

# Incubated Shaker Tabletop type

## Provides convenient internal observation environment

### Structural Functional Features

- Model optimized for use on experiment bench.
- Up to 80°C, 500rpm enables setting of various experimental conditions.
- Three operating modes: Temperature & Shaking, Temperature, or Shaking.
- Door structure allows for easy sample removal/attach at the front.
- Shaking structure with minimized vibration.
- Four models according to refrigeration system and the size of the platform.

### Use Convenience Features

- Accurate rpm and temperature control through temperature auto-tuning / microprocessor PID and calibration.
- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)
- Countdown timer (999 hours 59 minutes) of shaking operation.
- Intuitive operation with color touch display.
- High brightness / low-power LED illumination makes it easy to observe inside.
- Spill drain port for internal cleanliness and easy maintenance.

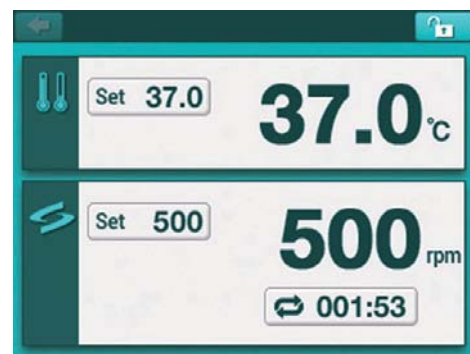
### Outstanding Safety

- Over temperature limit function.
- Soft start and stop shaking function.
- Malfunction prevented by controller lock function.
- Displays all information such as device operation and error occurrence.
- Overcurrent protection device restricts operation when objects are caught inside the system and shaking is not possible.



#### IST series

with Universal Platform, Flask Clamp (option)

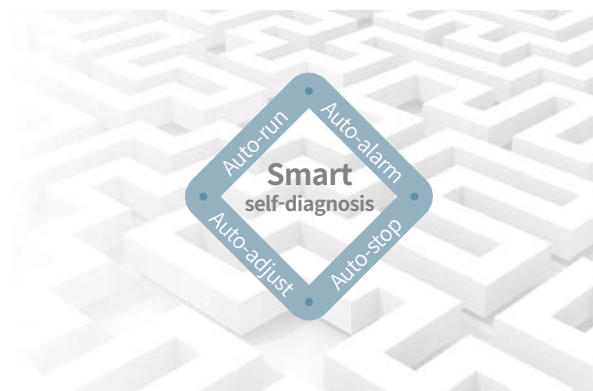


Color touch display



## Smart Self-diagnosis

- Real-time self-diagnostics to check equipment for abnormal conditions.
- Alarm is generated by monitoring difference between actual rpm/temperature and set rpm/temperature.
- Automatic rpm adjustment when device instability occurs. (high rpm, overload, weight imbalance, etc.)
- Detects abnormal conditions relating to the platform on which the sample is placed and stops the operation.
- Automatic restart as it was operated after power recovery.



## Specification

| Model                                    | IST-3075   |                  | IST-3075R  |                  | IST-4075   |                  | IST-4075R  |                  |
|--|--|------------------|--|------------------|--|------------------|--|------------------|
| <b>Temperature</b>                       |  |                  |  |                  |  |                  |  |                  |
| Range (°C / °F)                          | Amb. +5 to 80 / Amb. +9 to 176                             |                  | Amb. -15 (Min. 15) to 80 / Amb. -27 (Min. 27) to 176       |                  | Amb. +5 to 80 / Amb. +9 to 176                             |                  | Amb. -15 (Min. 15) to 80 / Amb. -27 (Min. 27) to 176       |                  |
| Fluctuation at 37°C in flask (±°C / °F)  | 0.1 / 0.18   |                  | 0.1 / 0.18   |                  | 0.1 / 0.18   |                  | 0.1 / 0.18   |                  |
| Variation at 37°C in flask (±°C / °F)    | 0.5 / 0.90   |                  | 0.5 / 0.90   |                  | 0.5 / 0.90   |                  | 0.5 / 0.90   |                  |
| Refrigerator (Hp)                        | -  |                  | 1/6  |                  | -  |                  | 1/6  |                  |
| <b>Shaking system</b>                    |  |                  |  |                  |  |                  |  |                  |
| Motion type                              | Orbital  |                  | Orbital  |                  | Orbital  |                  | Orbital  |                  |
| Speed range (rpm)                        | 20 to 500  |                  | 20 to 500  |                  | 20 to 500  |                  | 20 to 500  |                  |
| Max. speed per permissible load (rpm)    | 500 (max. 10 kg / 22.0 lbs)<br>400 (max. 15 kg / 33.1 lbs) |                  | 500 (max. 10 kg / 22.0 lbs)<br>400 (max. 15 kg / 33.1 lbs) |                  | 500 (max. 14 kg / 30.9 lbs)<br>400 (max. 21 kg / 46.3 lbs) |                  | 500 (max. 14 kg / 30.9 lbs)<br>400 (max. 21 kg / 46.3 lbs) |                  |
| Amplitude size (mm / inch, dia.)         | 19.1 / 0.75  |                  | 19.1 / 0.75  |                  | 19.1 / 0.75  |                  | 19.1 / 0.75  |                  |
| Speed stability <sup>2)</sup> (rpm, %)   | ±1   |                  | ±1   |                  | ±1   |                  | ±1   |                  |
| Timer (count-down)                       | 999 hr 59 min.   |                  | 999 hr 59 min.   |                  | 999 hr 59 min.   |                  | 999 hr 59 min.   |                  |
| <b>Dimension</b>                         |  |                  |  |                  |  |                  |  |                  |
| Chamber volume (L / cu ft)               | 53 / 1.9   |                  | 53 / 1.9   |                  | 83 / 2.9   |                  | 83 / 2.9   |                  |
| Platform (W x D, mm / inch)              | 350 x 350 / 13.8 x 13.8                                    |                  | 350 x 350 / 13.8 x 13.8                                    |                  | 450 x 450 / 17.7 x 17.7                                    |                  | 450 x 450 / 17.7 x 17.7                                    |                  |
| Interior (W x D x H, mm / inch)          | 410 x 410 x 320 / 16.1 x 16.1 x 12.6                       |                  | 410 x 410 x 320 / 16.1 x 16.1 x 12.6                       |                  | 510 x 510 x 320 / 20.1 x 20.1 x 12.6                       |                  | 510 x 510 x 320 / 20.1 x 20.1 x 12.6                       |                  |
| Exterior (W x D x H, mm / inch)          | 440 x 785 x 510 / 17.3 x 30.9 x 20.1                       |                  | 440 x 785 x 510 / 17.3 x 30.9 x 20.1                       |                  | 540 x 890 x 510 / 21.3 x 35 x 20.1                         |                  | 540 x 890 x 510 / 21.3 x 35 x 20.1                         |                  |
| Net weight (Kg / lbs)                    | 65 / 143.3   |                  | 73 / 160.9   |                  | 81 / 178.6   |                  | 90 / 198.4   |                  |
| <b>Electrical requirements (230V, A)</b> | 60Hz, 4      50Hz, 4                                       |                  | 60Hz, 5.5      50Hz, 5.5                                   |                  | 60Hz, 4      50Hz, 4                                       |                  | 60Hz, 5.5      50Hz, 5.5                                   |                  |
| <b>Cat. No.</b>                          | <b>AAH23411K</b>   | <b>AAH23422K</b> | <b>AAH23511K</b>   | <b>AAH23522K</b> | <b>AAH23611K</b>   | <b>AAH23622K</b> | <b>AAH23711K</b>   | <b>AAH23722K</b> |
| <b>Electrical requirements (120V, A)</b> | 60Hz, 7.5  |                  | 60Hz, 10.1   |                  | 60Hz, 7.5  |                  | 60Hz, 10.1   |                  |
| <b>Cat. No.</b>                          | <b>AAH23465U</b>   |                  | <b>AAH23565U</b>   |                  | <b>AAH23665U</b>   |                  | <b>AAH23765U</b>   |                  |

1) The temperature control range of the IST-3075 and IST-4075 models are from 5°C above the ambient temperature of the equipment. (15°C to 40°C) to 80°C The temperature control range of the IST-3075R and IST-4075R models are from 15°C below the ambient temperature (18°C to 35°C) of the device to 80°C. (However, the lowest control temperature is 15°C)  
 2) Actual rpm allowable error for set rpm is ±1rpm if setting is less than 100rpm, ±1% if setting is higher than 100rpm.

## Accessories Page 106

Universal Platform, Flask Clamp, Funnel Clamp, Test Tube Rack, Microplate Holder, Lab Sticker, Spring Wire Rack, Dedicated Platform, Rubber Mat, Universal Attachment, LC GreenBox

# Incubated Shaker Floor type

## Optimal solution for mass culturing

### Structural Functional Features

- Large-capacity incubated shaker model.
- Up to 80°C, 500rpm enables setting of various experimental conditions.
- It is convenient for attaching and detaching a large amount of sample because structure of door is lowering from the rear to the front. (registration: 30-2014-0060254)
- Three operating modes: Temperature & Shaking, Temperature, or Shaking.
- Easy to move/fix the product.
- Stable shaking of high-load samples. (patent registered: 10-1678160)

### Use Convenience Features

- Accurate rpm and temperature control through temperature auto-tuning / microprocessor PID and calibration.
- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)
- Countdown timer (999 hours 59 minutes) of shaking operation.
- Spill drain port for internal cleanliness and easy maintenance.

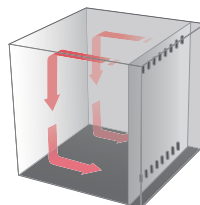
### Outstanding Safety

- Electronic over temperature protection system. (A-OT, advanced over temperature limiter)  
Independent precision temperature sensor and controller provides more secure and reliable over temperature protection.
- Conventional over-temperature protection system. (B-OT, backup over temperature limiter)  
A backup device against electronic system failure, mechanically preventing over temperature even when there are electronic errors.
- Soft start and stop shaking function.
- Malfunction prevented by controller lock function.
- Displays all information such as device operation and error occurrence.
- Overcurrent protection device restricts operation when objects are caught inside the system and shaking is not possible.

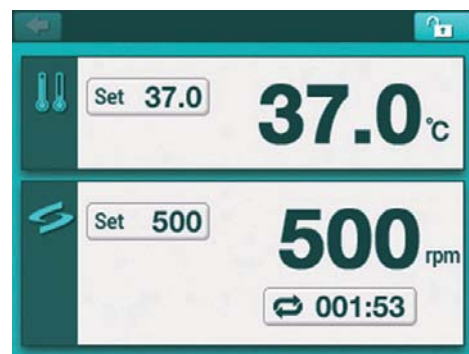


ISF series

with Optional Accessories



Easy to attach and detach large volume sample thanks to the inclined lid structure. (Registered design 30-2014-0060254)



Color touch display





## Smart Self-diagnosis

- Real-time self-diagnostics to check equipment for abnormal conditions.
- Alarm is generated by monitoring difference between actual rpm/temperature and set rpm/temperature.
- Automatic rpm adjustment when device instability occurs. (high rpm, overload, weight imbalance, etc.)
- Detects abnormal conditions relating to the platform on which the sample is placed and stops the operation.
- Automatic restart as it was operated after power recovery.



**DD Shaking System** Patented

Powerful DD motor for large-capacity shaking. The triple cam system provides stable shaking with high load samples.  
(patent registration : 10-1678160)

## Specification

| Model                                    | ISF-7100  | ISF-7100R   | ISF-7200   | ISF-7200R  |
|--|---|---|--|--|
| <b>Temperature</b>                       |   |   |  |  |
| Range (°C / °F)                          | Amb. +5 to 80 / Amb. +9 to 176  | Amb. -20 (Min. 4) to 80 / Amb. -36 (Min. 7.2) to 176                                      | Amb. +5 to 80 / Amb. +9 to 176                             | Amb. -20 (Min. 4) to 80 / Amb. -36 (Min. 7.2) to 176       |
| Fluctuation at 37°C in flask (±°C / °F)  | 0.1 / 0.18  | 0.1 / 0.18  | 0.1 / 0.18   | 0.1 / 0.18   |
| Variation at 37°C in flask (±°C / °F)    | 0.5 / 0.90  | 0.5 / 0.90  | 0.5 / 0.90   | 0.5 / 0.90   |
| Refrigerator (Hp)                        | -   | 1/6   | -  | 1/6  |
| <b>Shaking system</b>                    |   |   |  |  |
| Motion type                              | Orbital   | Orbital   | Orbital  | Orbital  |
| Speed range (rpm)                        | 30 to 500   | 30 to 500   | 30 to 300  | 30 to 300  |
| Max. speed per permissible load (rpm)    | 500 (max. 15 kg / 33.1 lbs)<br>400 (max. 25 kg / 55.1 lbs)<br>350 (max. 35 kg / 77.2 lbs) | 500 (max. 15 kg / 33.1 lbs)<br>400 (max. 25 kg / 55.1 lbs)<br>350 (max. 35 kg / 77.2 lbs) | 300 (max. 20 kg / 44.1 lbs)<br>200 (max. 35 kg / 77.2 lbs) | 300 (max. 20 kg / 44.1 lbs)<br>200 (max. 35 kg / 77.2 lbs) |
| Amplitude size (mm / inch, dia.)         | 25.4 / 1  | 25.4 / 1  | 50.8 / 2   | 50.8 / 2   |
| Speed stability <sup>2)</sup> (rpm, %)   | ±1  | ±1  | ±1   | ±1   |
| Timer (count-down)                       | 999 hr 59 min.  | 999 hr 59 min.  | 999 hr 59 min.   | 999 hr 59 min.   |
| <b>Dimension</b>                         |   |   |  |  |
| Chamber volume (L / cu ft)               | 270 / 9.5   | 270 / 9.5   | 270 / 9.5  | 270 / 9.5  |
| Platform (W x D, mm / inch)              | 755 x 520 / 29.7 x 20.5   | 755 x 520 / 29.7 x 20.5   | 755 x 520 / 29.7 x 20.5                                    | 755 x 520 / 29.7 x 20.5                                    |
| Interior (W x D x H, mm / inch)          | 894 x 634 x 480 / 35.2 x 25 x 18.9  | 894 x 634 x 480 / 35.2 x 25 x 18.9  | 894 x 634 x 480 / 35.2 x 25 x 18.9                         | 894 x 634 x 480 / 35.2 x 25 x 18.9                         |
| Exterior (W x D x H, mm / inch)          | 1128 x 854 x 1035 / 44.4 x 33.6 x 40.8  | 1128 x 854 x 1035 / 44.4 x 33.6 x 40.8  | 1128 x 854 x 1035 / 44.4 x 33.6 x 40.8                     | 1128 x 854 x 1035 / 44.4 x 33.6 x 40.8                     |
| Net weight (Kg / lbs)                    | 277 / 610.7   | 287 / 632.7   | 277 / 610.7  | 287 / 632.7  |
| <b>Electrical requirements (230V, A)</b> | 50 / 60Hz, 3.7  | 60Hz, 5.6    50Hz, 5.6  | 50 / 60Hz, 3.7   | 60Hz, 5.6    50Hz, 5.6                                     |
| <b>Cat. No.</b>                          | <b>AAH23342K</b>  | <b>AAH23542K    AAH23541K</b>   | <b>AAH23442K</b>   | <b>AAH23642K    AAH23641K</b>                              |
| <b>Electrical requirements (120V, A)</b> | 60Hz, 7.3   | 60Hz, 10  | 60Hz, 7.3  | 60Hz, 10   |
| <b>Cat. No.</b>                          | <b>AAH23375U</b>  | <b>AAH23575U</b>  | <b>AAH23475U</b>   | <b>AAH23675U</b>   |

1) The temperature control range of the ISF-7100 and ISF-7200 models are from 5°C above the ambient temperature of the equipment. (15°C to 40°C) to 80°C The temperature control range of the ISF-7100R and ISF-7200R models are from 20°C below the ambient temperature (18°C to 35°C) of the device to 80°C. (However, the lowest control temperature is 4°C)

2) Actual rpm allowable error for set rpm is ±1rpm if setting is less than 100rpm, ±1% if setting is higher than 100rpm.

## Accessories Page 106

Universal Platform, Flask Clamp, Funnel Clamp, Test Tube Rack, Microplate Holder, Lab Sticker, Spring Wire Rack, Dedicated Platform, Rubber Mat, Universal Attachment, LC GreenBox

# Accessories

## Universal Platform



### Universal Platform

Basic accessories required to use Erlenmeyer flasks, test tubes, separated funnels, etc.

## Accessories for Universal Platform



### Flask Clamp (Stainless Steel)

Erlenmeyer flask mounting (50 ml - 6 L)  
High-strength spring maintains excellent clamping.



### Flask Clamp (Plastic)

Erlenmeyer flask mounting (50 ml - 2 L)  
Reduced noise with plastic body and rubber on the bottom. (Using under 40°C, and under 300rpm)



### Funnel Clamp

Separated funnel mounting (250 ml - 2L)  
Easy detachment/attachment and stable clamping.



### Test Tube Rack

Test tube mounting (Φ8 mm - Φ35 mm)  
Easily adjustable angle.



### Microplate Holder

Various options for Microplate  
Single, Tower, Flat A (Large), Flat B (Small)



### Lab Sticker

Excellent adhesion as size is 200x200mm, allowing for application to petri dishes, culture bottles, etc.  
Temp. Range (°C): 15-60 Max. Speed (rpm): 250

## LC GreenBox



### LC GreenBox

Monitor the operation status of the device in real time via the mobile app with a simple internet connection.

## Set Accessories



### Spring Wire Rack

Fixed with 2-stage grid springs to accommodate various sample container shapes.



### Dedicated Platform

Accessories (250 mL, 500 mL) installed on platform with maximum quantity of flask clamps.



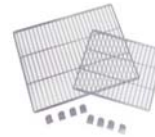
### Rubber Mat

Convenient for use with culture bottles and petri dishes with rubber mat to prevent slipping on the bottom.



### Universal Attachment

Rubber mat on the bottom and adjustable clamping rod make it a convenient structure for a wide range of applications.



### Wire Shelf

Shelf and its bracket enabling sample loading.  
(applied to ISS-3075(R)/4075(R) series)



### Retractable Foot Caster

Device that makes it easy to move/fix.  
(applied to ISS-3075(R)/4075(R) series)



### Stand 1 & 2

When using 1 unit of the ISS-7000 model or when using more than 2 units stackable, different height of stands provide convenient access to a platform.



### Stacking Kit

Fixing tool for stacked units.  
Applied to ISS series models.

| Description  | IST-3075 Series | IST-4075 Series | ISS-3075 Series | ISS-4075 Series | ISF-7000 Series | ISS-7000 Series |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Dedicated Platform (250 ml)                                    | AAA23611-V1     | AAA23623-V1     | AAA23611-V1     | AAA23621-V1     | AAA23634        | AAA23637        |
| Dedicated Platform (500 ml)                                    | AAA23612-V1     | AAA23622-V1     | AAA23612-V1     | AAA23622-V1     | AAA23635        | AAA23636        |
| Rubber Mat   | AAA23531        | AAA23532        | AAA23531-V1     | AAA23532-V1     | AAA23534        | AAA23537        |
| Universal Attachment   | AAA23511-V1     | AAA23512-V1     | AAA23511-V1     | AAA23512-V1     | AAA23505        | AAA23517        |
| Lab Sticker  | AAA30551        | AAA30551        | AAA30551        | AAA30551        | AAA30551        | AAA30551        |
| Wire Shelf   | -               | -               | 00EDA0008235    | 00EDA0008233    | -               | -               |
| Stand 1 with Stacking kits (600 mm height for stacking 1 unit) | -               | -               | -               | -               | -               | AAA23571        |
| Stand 2 with Stacking kits (300 mm height for stacking 2 unit) | -               | -               | -               | -               | -               | AAA23572        |
| Retractable Foot Caster  | -               | -               | AAA23801        | AAA23802        | -               | -               |
| Stacking Kit   | -               | -               | AAA23811        | AAA23812        | -               | AAA23573        |

## LC GreenBox

| Description | Dimension (W x D x H, mm/inch)  | IST-3075 Series | IST-4075 Series | ISS-3075 Series | ISS-4075 Series | ISF-7000 Series | ISS-7000 Series |
|-------------|---------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| LC GreenBox | 156 x 94 x 34 / 6.1 x 3.7 x 1.3 | AAAQ1011        | AAAQ1011        | AAAQ1011        | AAAQ1011        | AAAQ1011        | AAAQ1011        |

| Description  |                      | Model                   | IST-3075 Series         | IST-4075 Series         | ISS-3075 Series         | ISS-4075 Series         | ISF-7000 Series         | ISS-7000 Series         |
|--|----------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
|  |                      | Platform Size (mm/inch) | 350 x 350 / 13.8 x 13.8 | 450 x 450 / 17.7 x 17.7 | 350 x 350 / 13.8 x 13.8 | 450 x 450 / 17.7 x 17.7 | 755 x 520 / 29.7 x 20.5 | 755 x 520 / 29.7 x 20.5 |
| <b>Universal Platform</b>                                      |                      | <b>Cat. No.</b>         | <b>AAA23501-V3</b>      | <b>AAA23502-V3</b>      | <b>AAA23501-V3</b>      | <b>AAA23502-V3</b>      | <b>AAA23503-V3</b>      | <b>AAA23507</b>         |
| <b>Flask Clamp for Erlenmeyer Flask (Stainless Steel)</b>      | 50 ml                | <b>AAA23550</b>         | 36                      | 49                      | 36                      | 49                      | 88                      | 88                      |
|  | 100 ml               | <b>AAA23551</b>         | 24                      | 39                      | 24                      | 39                      | 68                      | 68                      |
|  | 250 ml               | <b>AAA23552</b>         | 14                      | 20                      | 14                      | 24                      | 39                      | 39                      |
|  | 300 ml               | <b>AAA23556</b>         | 14                      | 20                      | 14                      | 24                      | 39                      | 39                      |
|  | 500 ml               | <b>AAA23553</b>         | 9                       | 16                      | 9                       | 16                      | 28                      | 28                      |
|  | 1 L                  | <b>AAA23554</b>         | 6                       | 9                       | 6                       | 9                       | 18                      | 18                      |
|  | 2 L                  | <b>AAA23555</b>         | 4                       | 5                       | 4                       | 6                       | 11                      | 11                      |
|  | 2.8 L                | <b>AAA23557</b>         | 2                       | 4                       | 2                       | 5                       | 8                       | 8                       |
|  | 4 L                  | <b>AAA23558</b>         | -                       | -                       | -                       | 4                       | 6                       | 6                       |
| 6 L  | <b>AAA23559</b>      | -                       | -                       | -                       | 2                       | 5                       | -                       |                         |
| <b>Flask Clamp for Erlenmeyer Flask (Plastic)<sup>1)</sup></b> | 50 ml                | <b>AAA30570</b>         | 36                      | 49                      | 36                      | 49                      | 88                      | 88                      |
|  | 100~125 ml           | <b>AAA30571</b>         | 19                      | 29                      | 19                      | 29                      | 48                      | 48                      |
|  | 200 ml               | <b>AAA30572</b>         | 13                      | 21                      | 13                      | 21                      | 35                      | 35                      |
|  | 250 ml               | <b>AAA30573</b>         | 13                      | 19                      | 13                      | 19                      | 35                      | 34                      |
|  | 300 ml               | <b>AAA30574</b>         | 12                      | 19                      | 12                      | 19                      | 35                      | 34                      |
|  | 500 ml <sup>2)</sup> | <b>AAA30575</b>         | 9                       | 12                      | 9                       | 12                      | 24                      | 21                      |
|  | 1 L <sup>2)</sup>    | <b>AAA30576</b>         | 4                       | 9                       | 5                       | 9                       | 12                      | 11                      |
|  | 2 L <sup>2)</sup>    | <b>AAA30577</b>         | 2                       | 4                       | 4                       | 5                       | 8                       | 6                       |
| <b>Funnel Clamp</b>  | 250 ml               | <b>AAA23562</b>         | 4                       | 6                       | 4                       | 6                       | 15                      | 15                      |
|  | 500 ml               | <b>AAA23563</b>         | 2                       | 4                       | 3                       | 4                       | 10                      | 10                      |
|  | 1 L                  | <b>AAA23564</b>         | -                       | 3                       | -                       | 3                       | 7                       | 7                       |
|  | 2 L                  | <b>AAA23565</b>         | -                       | -                       | -                       | -                       | 5                       | 5                       |
| <b>Test Tube Rack<sup>3)</sup></b>                             | Ø8 mm (86ea)         | <b>AAA23581</b>         | 2                       | 4                       | 2                       | 4                       | 7                       | 7                       |
|  | Ø10 mm (86ea)        | <b>AAA23582</b>         | 2                       | 4                       | 2                       | 4                       | 7                       | 7                       |
|  | Ø12 mm (58ea)        | <b>AAA23583</b>         | 2                       | 4                       | 2                       | 4                       | 7                       | 7                       |
|  | Ø14 mm (58ea)        | <b>AAA23584</b>         | 2                       | 4                       | 2                       | 4                       | 7                       | 7                       |
|  | Ø17 mm (32ea)        | <b>AAA23585</b>         | 2                       | 4                       | 2                       | 4                       | 7                       | 7                       |
|  | Ø25 mm (19ea)        | <b>AAA23586</b>         | 2                       | 4                       | 2                       | 4                       | 7                       | 7                       |
|  | Ø35 mm (10ea)        | <b>AAA23594</b>         | 2                       | 4                       | 2                       | 4                       | 7                       | 7                       |
| <b>Microplate Holder</b>                                       | Single               | <b>AAA23654</b>         | 8                       | 15                      | 8                       | 15                      | 25                      | 25                      |
|  | Tower                | <b>AAA23651</b>         | 5                       | 8                       | 6                       | 10                      | 21                      | 21                      |
|  | Flat A (Large)       | <b>AAA23652</b>         | -                       | 2                       | -                       | 2                       | 4                       | 4                       |
|  | Flat B (Small)       | <b>AAA23653</b>         | 2                       | 2                       | 2                       | 3                       | 6                       | 6                       |

1) In the case of plastic flask clamps mounting, deformation may occur at temperatures over 40°C. Stainless steel flask clamps are recommended when using over 40°C and high temperature environment.

2) Possible to use under 300rpm

3) Maximum quantity on each platform. (no angle condition for test tube rack), it is the maximum quantity that does not cause the rack to tilt.

| Description                         |        | IST-3075 Series    | IST-4075 Series    | ISS-3075 Series    | ISS-4075 Series    | ISF-7000 Series | ISS-7000 Series |
|-------------------------------------|--------|--------------------|--------------------|--------------------|--------------------|-----------------|-----------------|
| <b>Spring Wire Rack (Cat. No.)</b>  |        | <b>AAA23521-V1</b> | <b>AAA23522-V2</b> | <b>AAA31521-V1</b> | <b>AAA31522-V1</b> | <b>AAA23514</b> | <b>AAA23527</b> |
| <b>Quantity of Erlenmeyer Flask</b> | 50 ml  | 16                 | 25                 | 16                 | 25                 | 45              | 45              |
|                                     | 100 ml | 9                  | 16                 | 9                  | 16                 | 28              | 28              |
|                                     | 250 ml | 4                  | 9                  | 4                  | 9                  | 18              | 18              |
|                                     | 300 ml | 4                  | 9                  | 4                  | 9                  | 18              | 18              |
|                                     | 500 ml | 4                  | 5                  | 4                  | 5                  | 15              | 15              |
|                                     | 1 L    | 2                  | 4                  | 2                  | 4                  | 10              | 10              |
|                                     | 2 L    | 1                  | 2                  | 1                  | 2                  | 6               | 6               |
|                                     | 2.8 L  | 1                  | 2                  | 1                  | 2                  | 4               | 4               |

# Shaker




















## General Application

General mixing, drug analysis, ELISA, enzyme immunoassay, dyeing, and bleaching of samples, protein synthesis.

|   | Description  | Motion Type          | Max. Speed (rpm) | Max. Platform Size (mm)                             | 250 ml Flask Capacity | Model   | Page |
|---|--|----------------------|------------------|---|-----------------------|---------|------|
| General type  | <b>Dual Action</b> <ul style="list-style-type: none"> <li>Orbital/Reciprocal motion selection</li> <li>Provides powerful shaking</li> </ul>          | Orbital / Reciprocal | 500              | 320 x 260   | 8                     | OS-2000 | 112  |
|   |  |                      | 500              | 350 x 350   | 14                    | OS-3000 | 112  |
|   |  |                      | 500              | 450 x 450   | 24                    | OS-4000 | 112  |
|   | <b>General</b> <ul style="list-style-type: none"> <li>Stable shaking even with high load samples</li> </ul>  | Orbital              | 500              | 755 x 520   | 39                    | OS-7100 | 112  |
|   |  |                      | 300              | 755 x 520   | 39                    | OS-7200 | 112  |
|   | <b>Program</b> <ul style="list-style-type: none"> <li>Program control mode</li> <li>Mounts the large capacity of samples</li> </ul>                  | Orbital              | 500              | 885 x 520   | 51                    | SKC     | 114  |
| <b>Compact</b> <ul style="list-style-type: none"> <li>Easy to use as a small shaker</li> <li>Can be used inside of chamber</li> </ul> | Orbital  | 300                  | 276 x 276        | 9   | CMS                   | 116     |      |
| Type by usages  | <b>Microplate</b> <ul style="list-style-type: none"> <li>Suitable for sample mixing for microplates, tubes, etc.</li> </ul>                          | Orbital              | 1200             | 267 x 185   | N/A                   | CPS     | 117  |
|   | <b>Rocking</b> <ul style="list-style-type: none"> <li>Easy to adjust the angle of motion</li> <li>Up to 99 hours timer function</li> </ul>           | Rocking              | 100              | 276 x 276   | N/A                   | CRS     | 118  |
|   | <b>Waving</b> <ul style="list-style-type: none"> <li>Easy to adjust the angle of motion</li> <li>Can be used inside of chamber</li> </ul>            | Waving               | 100              | 276 x 276   | N/A                   | CWS     | 118  |
|   | <b>Funnel</b> <ul style="list-style-type: none"> <li>Powerful up and down reciprocal motion</li> <li>Convenient as operation is simple</li> </ul>    | Reciprocal           | 300              | Funnel 500 ml x 10 ea                               |                       | RS      | 119  |
|   | <b>Rotating</b> <ul style="list-style-type: none"> <li>Smooth and stable operation</li> <li>Easy attachment and detachment of accessories</li> </ul> | Rotating             | 70               | 1.5 ml Tube x 120ea (When double disks are stacked) |                       | CRT     | 120  |

※ The contents of the above and the contents of this catalog may differ depending on the specific model and conditions of use. For the information about the features and specifications that applying to each models, please check the information on the corresponding page of each models.

|  |  |   |
|--|--|---|
|  Satisfaction with the requirements of European regulations and guidelines.                 |  Certification of conformity of electricity, gas, etc. in accordance with the safety standards of Canada and USA. |  Real-time equipment monitoring and control system using mobile app.     |
|  Registered patent based on JEIO TECH's proprietary technology.                             |  Recognized as an excellent design product by the Ministry of Commerce, Industry, and Energy.                     |  Compliance with Guidelines for Restriction of Hazardous Substances Use. |
|  Possible to set end time or start time of device operation.                                |  PC communication via RS-232 / RS-485 / USB port.   |  Selectable shaking motion either orbital or reciprocal motion.          |
|  Orbital motion either clockwise or counterclockwise direction can be set.                  |  Orbital motion.  |  Rocking motion.   |
|  Waving motion.   |  Vertical reciprocal motion.  |  Mixing through 360 degree rotation.                                     |
|  It memorizes the state of power failure and operates automatically when power is restored. |  2 year warranty Free A/S.  |   |



## Shaking speed of 500rpm with the world highest levels Powerful Shaking & Flexible Amplitude

- > **Primarily 500rpm shaking speed in Korea**  
Reliable shaking operation at high speed by allowing stable 500rpm control.
- > **Precise control technology allows for stable control**  
Precise speed control in all shaking areas by adopting control system developed using Lab Companion's own technology.
- > **Specialized shaking mechanism (Lab Companion's patent)**
  - BLDC motor and belt system applied to small model enables compact and strong shaking ability.
  - The medium and large class model DD motor and triple cam system allow for stable shaking of high load samples.
- > **Increased efficiency with diverse shaking radius**  
Four kinds of shaking radius (amplitude) are applied to provide a suitable shaking environment.
- > **Orbital/reciprocal shaking with dual action**  
Rotational shaking and reciprocal shaking are selectively used in one shaker. (OS-2000, 3000, 4000)
- > **Intuitive and convenient operation**
  - Large clear VFD panel provides intuitive operation information for all devices.
  - Smooth and comfortable control knob for easy and convenient operation.

※ Some of the above contents are limited to specific models.



Intuitive checking of device operation information.



USB & RS-232 Support.



Various accessories provided according to the sample.



## Provides functionality that is practically necessary for users Lab Companion's Shaker with useful aggregated functions

- > **Convenient setting by changing rpm in real time**

Set the appropriate rpm while checking the actual speed of sample shaking.
- > **Real-time monitoring of rpm error**

Prevents experiment errors through user notification when the actual rpm differs from the set rpm.
- > **Computer interface environment**

USB, RS-232 connection and dedicated software provide convenient device operation and data accumulation/management function.
- > **Safe automatic rpm adjustment**

If the product is unstable due to vibration, the safe rpm is set automatically.
- > **Count-down timer for accurate operation**

Count-down timer that can be set up to 999 hours and 59 minutes for convenient use.
- > **Check the actual sample shaking operation**

The operation of the platform on which the sample is actually placed is monitored in real time to detect abnormalities.
- > **Prepared for unexpected power shutdown**

Auto-run function that automatically restarts to the normal state immediately in the event of sudden power failure.
- > **Prevention of malfunction with motor self-protection function**

Motor operation is controlled if overcurrent occurs in the circuit configuration with the motor self-protection function.



# Shaker

## Dual action / General type

### Optimal model configuration with powerful performance

#### Structural Functional Features

- World Class, up to 500rpm.
- OS-2000, 3000, and 4000 models application of BLDC motor & belt system selectable orbital/reciprocal motion.
- Compact and powerful shaking.
- OS-7000 model  
Application of DD motor & triple cam system stable shaking ability. (Patent registration no. 10-1678160)
- Stable shaking with low center of gravity structure.
- Powder coating applied to outer surface for reinforced corrosion resistance.
- Structure prevents the sample from flowing into the inside.

#### Use Convenience Features

- Accurate shaking with PID feedback control.
- Precision control with rpm calibration function.
- Count-down timer. (up to 999 hours and 59 minutes)
- Intuitive and useful real-time rpm changes.
- Soft start and stop shaking function.
- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)
- Soft start and stop shaking function.
- The user can select a clockwise / counterclockwise rotation
- Usable when ambient temperature is at least 4°C.
- Various accessories depending on sample containers.
- Possible to stop the equipment at the same position.

#### Smart Self-diagnosis

- Real-time self-diagnostics to check equipment for abnormal conditions.
- Alarm from monitoring actual rpm error relative to the set rpm.
- When device instability occurs. (high rpm, overload, weight imbalance, etc.)
- Detects abnormal conditions relating to the platform on which the sample is placed and stops the operation.
- Automatic restart in the event of sudden power loss.

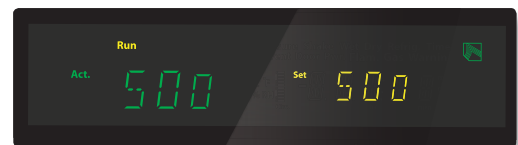
#### Optimized Rational Model Configuration

- Wide range of models from small to large type.
- 10 - 500 rpm for all applications.
- Applies four different shaking diameters. (amplitudes)
- Provides four sizes of platform models.
- Dual Action model. (orbital/reciprocal motion)
- Accessories for shared use.



#### OS-3000

with Universal Platform, Flask Clamp (option)



- Displays sets rpm and actual rpm simultaneously.
- Provides all information on equipment operation.
- Convenient operation with shaking start/stop button.
- Convenient operation by changing rpm with control knob.
- Clear display. (clear VFD)



Remote control and monitoring via mobile app.





## Heavy Duty Holder (Option) for large capacity shaking

- Shaking up to 50L carboy on OS-7100 / 7200 models.
- Select 20L / 50L Holder Sponge depending on the amount of shaking.

### Controllable rpm according to water weight

| Model   | Holder sponge | Water weight (kg) |     |     |     |     |     |
|---------|---------------|-------------------|-----|-----|-----|-----|-----|
|         |               | 0                 | 10  | 20  | 30  | 40  | 50  |
| OS-7100 | 20L x 2       | 300               | 280 | 180 | 160 | 160 | -   |
|         | 50L x 1       | 300               | 190 | 150 | 130 | 130 | 130 |
| OS-7200 | 20L x 2       | 210               | 180 | 160 | 150 | 150 | -   |
|         | 50L x 1       | 210               | 140 | 120 | 110 | 100 | 100 |

| Cat.No   | Description  |
|----------|--|
| AAA3D501 | Heavy duty holder for OS-7000 series                     |
| AAA3D502 | Heavy duty holder sponge (Φ376mm x 1hole) for 50L Carboy |
| AAA3D503 | Heavy duty holder sponge (Φ290mm x 2hole) for 20L Carboy |
| AAAJ3031 | 20L Carboy (260 x 317 x 539mm)                           |



### OS-7100

with Heavy duty holder (option) +  
1 hole-Heavy duty holder sponge (option)



### OS-7100

with Heavy duty holder (option) +  
2-hole Heavy duty holder sponge (option)

## Specification

| Model   | OS-2000                                    | OS-3000                                    | OS-4000                                    |  | OS-7100                                    | OS-7200                                    |
|---|--|--|--|--|--|--|
| <b>Shaking system</b>                               |  |  |  |  |  |  |
| Motion type   | Orbital / Reciprocal                       | Orbital / Reciprocal                       | Orbital                                    | Reciprocal                                   | Orbital                                    | Orbital                                    |
| Speed range (rpm)                                   | 20 to 500                                  | 20 to 500                                  | 20 to 500                                  | 20 to 450                                    | 30 to 500                                  | 30 to 300                                  |
| Max. speed per permissible load <sup>1)</sup>       | 500rpm (max. 10 kg)<br>300rpm (max. 16 kg) | 500rpm (max. 10 kg)<br>300rpm (max. 18 kg) | 500rpm (max. 14 kg)<br>400rpm (max. 21 kg) | 450 rpm (max. 10 kg)<br>300 rpm (max. 21 kg) | 500rpm (max. 10 kg)<br>400rpm (max. 30 kg) | 300rpm (max. 23 kg)<br>250rpm (max. 35 kg) |
| Amplitude size (mm / inch, dia.)                    | 19.1 / 0.8<br>(12.7 / 0.5 available)       | 19.1 / 0.8<br>(25.4 / 1 available)         | 19.1 / 0.75 (default)                      | 25.4 / 1 (available)                         | 25.4 / 1                                   | 50.8 / 2                                   |
| Speed stability <sup>2)</sup> (rpm, %)              | 1  | 1  | 1  |  | 1  | 1  |
| Timer (count-down)                                  | 999hr 59min                                | 999hr 59min                                | 999hr 59min                                |  | 999hr 59min                                | 999hr 59min                                |
| <b>Dimension</b>                                    |  |  |  |  |  |  |
| Platform (W x D, mm / inch)                         | 320 x 260<br>/ 12.6 x 10.2                 | 350 x 350<br>/ 13.8 x 13.8                 | 450 x 450 / 17.7 x 17.7                    |  | 755 x 520 / 29.6 x 20.5                    |  |
| Body <sup>1)</sup> (W x D x H, mm/inch)             | 354 x 388 x 146<br>/ 13.9 x 15.3 x 5.7     | 409 x 508 x 141<br>/ 16.1 x 20 x 5.6       | 510 x 632 x 156 / 20.1 x 24.9 x 6.1        |  | 755 x 627 x 151 / 29.7 x 24.7 x 5.9        |  |
| Net weight (Kg / lbs)                               | 22 / 48.5                                  | 28 / 61.7                                  | 43 / 94.8                                  |  | 117 / 257.9                                |  |
| <b>Electrical requirements (230V, 50 / 60Hz, A)</b> | 0.3  | 0.3  | 0.3  |  | 0.4  |  |
| <b>Cat. No.</b>                                     | <b>AAH3D1115K</b>                          | <b>AAH3D1215K</b>                          | <b>AAH3D1315K</b>                          |  | <b>AAH3D1415K</b>                          | <b>AAH3D1515K</b>                          |
| <b>Electrical requirements (120V, 60Hz, A)</b>      | 0.6  | 0.6  | 0.6  |  | 0.8  |  |
| <b>Cat. No.</b>                                     | <b>AAH3D1165U</b>                          | <b>AAH3D1265U</b>                          | <b>AAH3D1365U</b>                          |  | <b>AAH3D1465U</b>                          | <b>AAH3D1565U</b>                          |

1) In Orbital Shaking mode, Regarding the maximum controllable rpm and amplitude by weight, the measurement is performed based on the default value.  
2) Actual rpm allowable error for set rpm (1rpm if setting is less than 100rpm, ±1% if setting is higher than 100rpm)

## Accessories Page 122

Universal Platform, Spring Wire Rack, Dedicated Platforms, Rubber Mat, Universal Attachment, Lab Sticker, Microplate Tray, Stage Rack, Flask Clamp, Funnel Clamp, Test Tube Rack, Microplate Holder, LC Green Box

# Shaker

## Program type

### Program operation and maximum sample loading

#### ▣ Structural Functional Features

- Standard 350rpm, Maximum 500rpm. (option)
- Application of DD motor & triple cam system stable shaking ability. (Patent registration no. 10-1678160)
- Provides the widest platform size model.
- Up to fifty-one 250ml flasks can be mounted at once.
- Dual platform mountable. (SKC-7000) (only flasks less than 250ml can be mounted on the bottom part)
- Provided Maximum 50.8mm shaking radius model.
- Convenient platform detachment system.
- Stable shaking with low center of gravity structure.
- Corrosion-resistant outer surface with powder coating and PP material.
- Structure prevents the sample from flowing into the inside.
- Model awarded Good Design certification

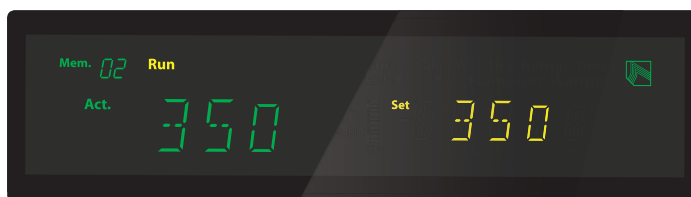
#### ▣ Use Convenience Features

- Accurate shaking with PID feedback control.
- Provides Quick, Timer, and Program modes.
- Wait On/Off timer. (up to 99 hours 59 minutes)
- More reliable shaking simulation by clockwise / counterclockwise rotation.
- Stable control system even at low-speed agitation.
- Soft start and stop shaking function.
- Easy to use with fast acceleration/deceleration function.
- Possible to stop the equipment at the same position.
- Automatic rpm adjustment in case of instability.
- Equipment stoppage and alarm in case of abnormal shock.

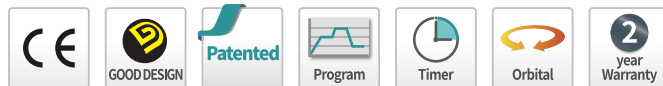


#### SKC-6000 Series

with Universal Platform, Flask Clamp, Test Tube Rack (option)



- Displays sets rpm and actual rpm simultaneously.
- Provides all information on equipment operation.
- Convenient operation with shaking start/stop button.
- Convenient operation by changing rpm with control knob.
- Clear display. (clear VFD)

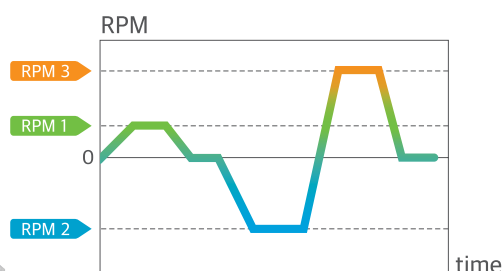


## Outstanding Safety

- Alarm occurs when the current rpm differs from the set rpm.
- Over-current protection.

## Differentiated Program Operation

- 20 patterns can be saved.
- 20 segments can be set per pattern.
- Time, rpm, and orbital direction can be set for each segment.
- Includes up to 99 repeat operations.



### SKC-7000 Series

with Universal Platform, Flask Clamp (option)

## Specification

| Model   | SKC-6075                                 | SKC-6100                                 | SKC-6200                                 | SKC-7075                                 | SKC-7100                                 | SKC-7200                                 |
|---|--|--|--|--|--|--|
| <b>Shaking system</b>                             |  |  |  |  |  |  |
| Motion type                                       | Orbital                                  | Orbital                                  | Orbital                                  | Orbital                                  | Orbital                                  | Orbital                                  |
| Speed range (rpm) <sup>1)</sup>                   | 30 to 500                                | 30 to 500                                | 30 to 500                                | 30 to 500                                | 30 to 500                                | 30 to 500                                |
| Max. speed per permissible load <sup>2)</sup>     | 350rpm (max. 13kg)<br>310rpm (max. 28kg) | 340rpm (max. 13kg)<br>260rpm (max. 28kg) | 250rpm (max. 13kg)<br>200rpm (max. 28kg) | 350rpm (max. 13kg)<br>310rpm (max. 28kg) | 340rpm (max. 13kg)<br>260rpm (max. 28kg) | 250rpm (max. 13kg)<br>200rpm (max. 28kg) |
| Amplitude size (mm / inch, dia)                   | 19 / 0.75                                | 25 / 1                                   | 50 / 2                                   | 19 / 0.75                                | 25 / 1                                   | 50 / 2                                   |
| Speed stability <sup>3)</sup> (rpm, %)            | 1  | 1  | 1  | 1  | 1  | 1  |
| Timer (wait on/off)                               | 99hr 59min                               | 99hr 59min                               | 99hr 59min                               | 99hr 59min                               | 99hr 59min                               | 99hr 59min                               |
| <b>Dimension</b>                                  |  |  |  |  |  |  |
| Platform (Small, W x D, mm / inch)                | 580 x 520 / 22.8 x 20.5                  |  |  | 755 x 520 / 29.7 x 20.5                  |  |  |
| Platform (Large, W x D, mm / inch)                | 660 x 520 / 26 x 20.5                    |  |  | 885 x 520 / 34.8 x 20.5                  |  |  |
| Exterior (W x D x H, mm / inch)                   | 582.8 x 618 x 122.2 / 22.9 x 24.3 x 4.8  |  |  | 754.8 x 662 x 122.2 / 29.7 x 26.1 x 4.8  |  |  |
| Net weight (kg / lbs)                             | 65 / 143.3                               | 65 / 143.3                               | 65 / 143.3                               | 75 / 165.4                               | 75 / 165.4                               | 75 / 165.4                               |
| <b>Electric requirements (230V, 50 / 60Hz, A)</b> |  |  |  |  |  |  |
| Cat. No.  | AAH30105K                                | AAH30115K                                | AAH30125K                                | AAH30205K                                | AAH30215K                                | AAH30225K                                |
| <b>Electric requirements (120V, 60Hz, A)</b>      |  |  |  |  |  |  |
| Cat. No.  | AAH30106U                                | AAH30116U                                | AAH30126U                                | AAH30206U                                | AAH30216U                                | AAH30226U                                |

1) 350 to 500rpm applies when separately purchased options are mounted.

2) The maximum controllable rpm by weight in Orbital Shaking mode. Maximum rpm that can be controlled according to increase in Orbital Shaking mode

3) Actual rpm allowable error for set rpm (1rpm if setting is less than 100rpm, ±1% if setting is higher than 100rpm)

## Accessories Page 122

Universal Platform, Spring Wire Rack, Rubber Mat, Universal Attachment, Lab Sticker, Flask Clamp, Funnel Clamp, Test Tube Rack, Microplate Holder

# Shaker

## Compact type



## Compact Mini Shaker for easy use

### Structural Functional Features

- Max. rpm of 300 is suitable for life science experiments sensitive to low rpm such as hybridization and immunocytochemistry.
- Orbital motion with shaking radius of 13 mm.
- Stable control up to 4 kg.
- It can be used mounted nine 250ml flasks.
- Count-down timer. (up to 99 hours and 59 minutes)
- Displays the elapsed time.
- Various accessories are available.

### Use Convenience Features

- It can be used in a temperature chamber such as cold room or incubator because it can be used at ambient temperatures between 2°C and 60°C.
- Small size and light weight provide good mobility and usability in various laboratory environments and experiment requirements.
- Accurate shaking control according to sample weight with PID feedback control.
- Easy to operate with clear VFD display, touch keys and control knobs.
- Displays the sett rpm and actual rpm simultaneously, and displays timer operation information.



### CMS-350

with Universal Platform, Flask Clamp (option)

### Outstanding Safety

- Self-checks for errors.
- Body made from PP material with excellent chemical resistance.
- Protected from overcurrent.

## Specification

| Model                                     |         | CMS-350                            |
|---|---------|------------------------------------|
| <b>Shaking system</b>                     |         |                                    |
| Motion type                               |         | Orbital                            |
| Speed range (rpm)                         |         | 50 to 300                          |
| Rpm control at 100rpm ( $\pm$ rpm)        |         | 5                                  |
| Orbit size (mm / inch, dia)               |         | 13                                 |
| Timer                                     |         | Run time : 1min ~ 99hr 59min       |
| <b>Dimension</b>                          |         |                                    |
| Tray (W x D, mm / inch)                   |         | 276 x 276 / 10.87 x 10.87          |
| Platform (W x D, mm / inch)               |         | 250 x 250 / 9.8 x 9.8              |
| Body <sup>1)</sup> (W x D x H, mm / inch) |         | 249 x 325 x 109 / 9.8 x 12.8 x 4.3 |
| Net weight (kg / lbs)                     |         | 8 / 17.6                           |
| <b>Electrical requirements</b>            |         | AC 100 ~ 240 V, 50 / 60 Hz         |
| <b>Cat. No.</b>                           | KR Plug | <b>AAH3B1115K</b>                  |
|   | US Plug | <b>AAH3B1115U</b>                  |

※ When operating at room temperature after use at low temperature, it may be affected by condensation. We recommend that you turn on the power after leaving at room temperature for a while.

1) Main body dimension without accessories

## Accessories Page 122

Universal Platform, Spring Wire Rack, Rubber Mat, Universal Attachment, Lab Sticker, Flask Clamp, Funnel Clamp, Test Tube Rack, Microplate Holder

# Microplate Shaker



## Exclusive Shaker for microplates and tubes

### Structural Functional Features

- Suitable for sample mixing with microplate, micro-tube and conical-tube at a maximum rpm of 1200.
- Orbital motion with shaking radius of 3 mm.
- Smooth shaking start control.
- Count-down timer. (up to 99 hours and 59 minutes)
- Displays the elapsed time.
- Various tube rack accessories.

### Use Convenience Features

- It can be used in a temperature chamber such as cold room or incubator because it can be used at ambient temperatures between 2°C and 60°C.
- Small size and light weight provide good mobility and usability in various laboratory environments and experiment requirements.
- Accurate shaking control according to sample weight with PID feedback control.
- Easy to operate with clear VFD display, touch keys and control knobs.
- Displays the sett rpm and actual rpm simultaneously, and displays timer operation information.



CPS-350

### Outstanding Safety

- Self-checks for errors.
- Body made from PP material with excellent chemical resistance.
- Protected from overcurrent.

## Specification

| Model                                     |         | CPS-350                             |
|---|---------|-------------------------------------|
| <b>Shaking system</b>                     |         |                                     |
| Motion type                               |         | Orbital                             |
| Speed range (rpm) with 4 Microplates      |         | 150 to 1200                         |
| Orbit size (mm / inch, dia)               |         | 3 / 0.12                            |
| Speed control                             |         | Feedback control                    |
| Timer                                     |         | Run time : 1min ~ 99hr 59min        |
| <b>Dimension</b>                          |         |                                     |
| Tray (W x D) (mm /inch)                   |         | 269 x 185 / 10.6 x 7.3              |
| Body <sup>1)</sup> (W x D x H) (mm /inch) |         | 269 x 325 x 128 / 10.6 x 12.8 x 5.0 |
| Net weight (kg / lbs)                     |         | 7.7 / 17                            |
| <b>Electrical requirements</b>            |         | AC 100 ~ 240 V, 50/60 Hz            |
| <b>Cat. No.</b>                           | KR Plug | <b>AAH3C1115K</b>                   |
|   | US Plug | <b>AAH3C1115U</b>                   |

※ When operating at room temperature after use at low temperature, it may be affected by condensation. We recommend that you turn on the power after leaving at room temperature for a while.

1) Including tray

## Accessories



1.5 ml Micro-tube Rack



15 ml Conical Tube Rack



50 ml Conical Tube Rack

| Cat. No.     | Description             | Max. mountable tube |
|--------------|-------------------------|---------------------|
| AAAJ2311     | 1.5 ml Micro-tube rack  | 80 (5 x 16)         |
| 00CPS0000011 | 15 ml Conical tube rack | 30 (3 x 10)         |
| 00CPS0000012 | 50 ml Conical tube rack | 12 (2 x 6)          |

# Rocking / Waving Shaker



## Optimized rocking / waving shaker

### Structural Functional Features

- Easily adjustable operating angle to optimize according to application.
- Provides speeds up to 100rpm.
- Provides stable control at low speeds.
- 6 micro-plates can be mounted.
- Convenient tray structure for easy mounting and removal.
- Count-down timer. (up to 99 hours and 59 minutes)
- Displays the elapsed time.

### Use Convenience Features

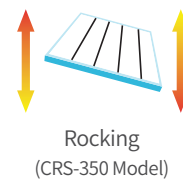
- User can easily adjust the operating angle to optimize according to application.
- It can be used in a temperature chamber such as cold room or incubator because it can be used at ambient temperatures between 2°C and 60°C.
- Small size and light weight provide good mobility and usability in various laboratory environments and experiment requirements.
- Accurate shaking control according to sample weight with PID feedback control.
- Easy to operate with clear VFD display, touch keys and control knobs.
- Displays the set rpm and actual rpm simultaneously, and displays timer operation information.

### Outstanding Safety

- Self-checks for errors.
- Body made from PP material with excellent chemical resistance.
- Protected from overcurrent.



**CWS-350**  
with Dimpled Mat



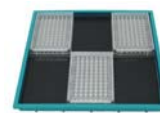
### Specification

| Model                                     | CRS-350                             | CWS-350                             |                   |
|---|-------------------------------------|-------------------------------------|-------------------|
| <b>Shaking system</b>                     |                                     |                                     |                   |
| Motion type                               | Rocking                             | Waving                              |                   |
| Speed range (rpm)                         | 5 to 100                            | 8 to 100                            |                   |
| Rpm control at 100rpm (± rpm)             | 5                                   | 5                                   |                   |
| Adjustable tilt                           | 7 to 13°                            | 0 ~ 13°                             |                   |
| Timer                                     | Run time : 1min ~ 99hr              | Run time : 1min ~ 99hr              |                   |
| <b>Dimension</b>                          |                                     |                                     |                   |
| Tray (W x D, mm / inch)                   | 276 x 276 / 10.87 x 10.87           | 276 x 276 / 10.87 x 10.87           |                   |
| Body <sup>1)</sup> (W x D x H, mm / inch) | 276 x 334 x 164 / 10.8 x 13.1 x 6.4 | 276 x 334 x 164 / 10.8 x 13.1 x 6.4 |                   |
| Net weight (kg / lbs)                     | 3.7 / 8.16                          | 3.7 / 8.16                          |                   |
| <b>Electrical requirements</b>            |                                     |                                     |                   |
|   | AC 100 ~ 240 V, 50/60 Hz            | AC 100 ~ 240 V, 50/60 Hz            |                   |
| <b>Cat. No.</b>                           | KR Plug                             | <b>AAH391115K</b>                   | <b>AAH381115K</b> |
|   | US Plug                             | <b>AAH391115U</b>                   | <b>AAH381115U</b> |

※ When operating at room temperature after use at low temperature, it may be affected by condensation. We recommend that you turn on the power after leaving at room temperature for a while.

1) Main body dimension without accessories

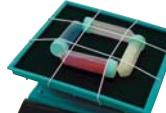
### Accessories



Rubber Mat



Dimpled Mat



Universal Harness

| Cat. No.        | Description       | Composition                         |
|-----------------|-------------------|-------------------------------------|
| <b>AAA38501</b> | Rubber mat        | Tray, Sticky pad                    |
| <b>AAA38502</b> | Dimpled mat       | Tray, Silicone pad                  |
| <b>AAA38503</b> | Universal harness | Tray, Sticky pad, Rubber Band (6ea) |

# Funnel Shaker



## Powerful up-down reciprocal motion

### Structural Functional Features

- Provides speeds up to 300rpm.
- Vertical motion with stroke length of 40mm.
- Countdown timer function. (up to 60 minutes)
- 3kg on one side, 6kg in total.
- Convenient holder height adjustment.
- Stable device structure at high speeds.
- Solid equipment with excellent durability.

### Use Convenience Features

- Digitally displays up-down reciprocal motion and it's easy to adjust speed with dial.
- Easy to detach separated funnel, maximizing convenience for repeat users.
- Adjustable height of funnel holder makes it possible to mount funnels of various sizes.
- Up to 10 holders can be mounted in addition to the basic 6 funnel holders.

### Outstanding Safety

- After the shaking ends, it is automatically shut down and an alarm is generated.
- Protected from overcurrent.



RS-1



Shaker

## Specification

| Model                                    | RS-1                                 |                  |
|--|--------------------------------------|------------------|
| <b>Shaking system</b>                    |                                      |                  |
| Motion type                              | Vertical Reciprocal                  |                  |
| Speed range (rpm)                        | 50 to 300                            |                  |
| Rpm control at 100rpm ( $\pm$ rpm)       | 1                                    |                  |
| Vertical stroke length (mm / inch)       | 40 / 1.6                             |                  |
| Timer                                    | 60min or continuous                  |                  |
| <b>Dimension</b>                         |                                      |                  |
| Exterior (W x D x H, mm / inch)          | 445 x 730 x 505 / 17.5 x 28.7 x 19.9 |                  |
| Max. load per each side (kg / lbs)       | 3 / 6.6                              |                  |
| Net weight (kg)                          | 53 / 116.8                           |                  |
| <b>Electrical requirements (230V, A)</b> | 50Hz, 0.4                            | 60Hz, 0.4        |
| <b>Cat. No.</b>                          | <b>AAH32012K</b>                     | <b>AAH32015K</b> |

### Number of funnel which can be mounted per condition (based on one side)

| Funnel Capacity        | Round type | Slim type |
|------------------------|------------|-----------|
| <b>Less than 500ml</b> | 3-5ea      | 5ea       |
| <b>500 ml</b>          | 3ea        | 3ea       |
| <b>1L</b>              | -          | 3ea       |

### Accessories

| Cat. No. | Description   |
|----------|---------------|
| AAA32501 | Funnel holder |

# Rotator

## Optimal model configuration with powerful performance

### Structural Functional Features

- Easily adjustable angle up to 90°.
- Provides a wide range of rpm speeds. (2 to 70rpm)
- Provides smooth and stable control even at low speeds.
- Stable control up to 4 kg.
- Count-down timer. (up to 99 hours and 59 minutes)
- Displays the elapsed time.
- The structure of minimizing vibration and movement.

### Use Convenience Features

- Possible to combine various accessories in one body.
- Easy disk removal.
- Up to 60 pieces mountable (total 120 pieces) based on 1.5ml tube per one disk when 2-stage disk loading.
- Easy to operate with clear VFD display, touch keys and control knobs.
- Displays sets rpm and actual rpm simultaneously.

### Outstanding Safety

- Self-checks for errors.
- Body made from PP material with excellent chemical resistance.
- Over-current protection.



**CRT-350**

with Disk, 1.5 ml Tube Holder (option)



Adjustable angle up to 90°



Easy angle adjustment

## Specification

| Model   | CRT-350                              |
|---|--------------------------------------|
| <b>Shaking system</b>                               |                                      |
| Speed range (rpm)                                   | 2 to 70                              |
| Angle   | 0 to 90°                             |
| Timer   | Run time : 1min ~ 99hr 59min         |
| <b>Dimension</b>                                    |                                      |
| Exterior with disk (option) (W x D x H) (mm / inch) | 320 x 325 x 463 / 12.6 x 12.8 x 18.2 |
| Net weight with disk (option) (kg / lbs)            | 7.5 / 16.5                           |
| <b>Electrical requirements</b>                      |                                      |
| AC 100 to 240 V, 50/60 Hz                           |                                      |
| <b>Cat. No.</b>                                     |                                      |
| KR plug   | <b>AAH3E115K</b>                     |
| US plug   | <b>AAH3E115U</b>                     |



Number of tubes used at the same time when double disks are stacked.

| Tube   | Quantity |
|--------|----------|
| 1.5 ml | 120      |
| 5 ml   | 36       |
| 15 ml  | 36       |
| 50 ml  | 24       |





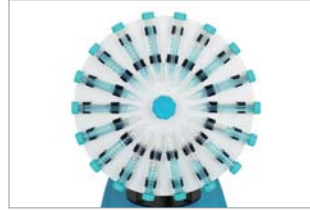
## Accessories



1.5 ml (Ø 10 mm)  
Tube holder



5 ml (Ø 12 mm)  
Tube holder



15 ml (Ø 16.5 mm)  
Tube holder



50 ml (Ø 29 mm)  
Tube holder



Disk for flask clamp



Flask clamp (plastic)



Flask clamp (stainless steel)



Post (use for double disk loading)

### Tube Holder

| Description       | Max. Mountable Tube | Cat. No. |
|-------------------|---------------------|----------|
| 1.5 ml (Ø 10 mm)  | 60                  | AAA3E501 |
| 5 ml (Ø 12 mm)    | 18                  | AAA3E502 |
| 15 ml (Ø 16.5 mm) | 18                  | AAA3E503 |
| 50 ml (Ø 29 mm)   | 12                  | AAA3E504 |

### Erlenmeyer Flask Clamp Holder

| Description                   | Max. Mountable Tube |    | Cat. No. |
|-------------------------------|---------------------|----|----------|
| Disk for flask clamp          | N/A                 |    | AAA3E511 |
| Flask clamp (Stainless steel) | 50 ml               | 13 | AAA23550 |
|                               | 100 ml              | 8  | AAA23551 |
|                               | 300 ml              | 6  | AAA23556 |
| Flask clamp (Plastic)         | 50 ml               | 13 | AAA30570 |
|                               | 100 ml~125 ml       | 8  | AAA30571 |
|                               | 300 ml              | 6  | AAA30574 |

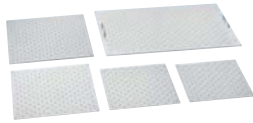
### Post for double stacking

| Description | Cat. No. |
|-------------|----------|
| Post        | AAA3E521 |



# Accessories for Shaker

## Universal Platform



**Universal Platform**  
Basic accessories required to use separated funnels, erlenmeyer flask, test tube, etc.



**Dual Universal Platform**  
Maximum sample loading possible with two-stage structure. (SKC series model exclusively)

## Accessories for Universal Platform



**Flask Clamp (Stainless Steel)**  
Equipped with Erlenmeyer flask. (50ml - 6L)  
High-strength spring maintains excellent clamping.



**Flask Clamp (Plastic)**  
Erlenmeyer flask mounting (50ml - 2L)  
Reduced noise with plastic body and rubber floor.



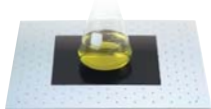
**Funnel Clamp**  
Separated funnel mounting (250ml - 2L)  
Easy detachment and stable clamping.



**Test Tube Rack**  
Test tube mounting (Ø8 mm - Ø35 mm)  
Easily adjustable angle.



**Microplate Holder**  
Various configurations for microplate  
Single, Tower, Flat A (Large), Flat B (Small)



**Lab Sticker**  
Excellent adhesion at 200mm x 200mm size, applied to petri dishes, culture bottles, etc.  
Temp. Range (°C): 15-60 Max. Speed (rpm): 250

## LC Connected



**LC GreenBox**

- Real-time monitoring of device operation via mobile app
- Up to 4 devices can be connected

## Set Accessories



**Spring Wire Rack**  
Fixed with 2-stage grid springs to load various sample container shapes.



**Half Spring Wire Rack**  
Platform that can be used both universal platform and spring wire rack at the same time.



**Dedicated Platform**  
Accessories (250 ml, 500 ml) installed on platform with maximum quantity of flask clamps.



**Rubber Mat**  
Convenient for use with culture bottles and petri dishes with rubber plate to prevent slipping on the floor.



**Universal Attachment**  
Floor rubber plate and adjustable clamping rod make it a convenient structure for a wide range of applications.



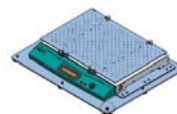
**Microplate Tray (Dual Stacking Tray)**  
Dual stacking structure for microplate allows for excellent space utilization.



**Microplate Tray (Large Tray)**  
The tray for microplates with anti-slip rubber plate on the bottom.



**Stage Rack**  
The rack maximizes space efficiency by stacking up to four shakers.



**Weight Increaser**  
Accessories allowing for use of SKC series shaker up to 500rpm.

| Description                  |               | OS-2000     | OS-3000     | OS-4000     | OS-7000 Series | SKC-6000 Series |          | SKC-7000 Series        |                        | CMS-350  |
|------------------------------|---------------|-------------|-------------|-------------|----------------|-----------------|----------|------------------------|------------------------|----------|
| Spring Wire Rack (Half)      |               | -           | -           | -           | -              | -               | -        | AAA30525 <sup>1)</sup> | AAA30526 <sup>2)</sup> | -        |
| Dedicated Platforms (250 mL) |               | -           | AAA23611-V1 | AAA23621-V1 | AAA23634       | -               | -        | -                      | -                      | -        |
| Dedicated Platforms (500 mL) |               | -           | AAA23613-V1 | AAA23622-V1 | AAA23635       | -               | -        | -                      | -                      | -        |
| Rubber Mat                   |               | AAA3A531-V1 | AAA23531-V1 | AAA23532-V1 | AAA23534       | AAA30531        | AAA30532 | AAA30533 <sup>1)</sup> | AAA30534 <sup>2)</sup> | AAA38501 |
| Universal Attachment         |               | AAA3A511-V1 | AAA23511-V1 | AAA23512-V1 | AAA23505       | AAA30511        | AAA30512 | AAA30513 <sup>1)</sup> | AAA30514 <sup>2)</sup> | AAA3B521 |
| Lab Sticker                  |               | AAA30551    | AAA30551    | AAA30551    | AAA30551       | AAA30551        | AAA30551 | AAA30551               | AAA30551               | AAA30551 |
| Microplate Tray              | Dual Stacking | AAA3A541    | -           | -           | -              | -               | -        | -                      | -                      | AAA3B531 |
|                              | Large Tray    | AAA3A542    | -           | -           | -              | -               | -        | -                      | -                      | AAA3B532 |
| Stage Rack                   | 4 Stages      | -           | AAA31541-V1 | AAA31542-V1 | AAA31702-V1    | -               | -        | -                      | -                      | -        |
|                              | 3 Stages      | -           | -           | -           | AAA31703-V1    | -               | -        | -                      | -                      | -        |
| Weight Increaser             |               | -           | -           | -           | -              | AAA30562        | AAA30562 | AAA30561               | AAA30561               | -        |

1) Small Size  
2) Large Size

| Description  |                      | Model                     | OS-2000                 | OS-3000                 | OS-4000                 | OS-7000 Series          | SKC-6000 Series                 |                               | SKC-7000 series                                  |  | CMS-350                 |
|--|----------------------|---------------------------|-------------------------|-------------------------|-------------------------|-------------------------|---------------------------------|-------------------------------|--|--|-------------------------|
|  |                      | Platform Size (mm / inch) | 320 x 260 / 13.8 x 10.2 | 350 x 350 / 13.8 x 13.8 | 450 x 450 / 17.7 x 17.7 | 755 x 520 / 29.7 x 20.5 | 580 x 520 / 22.8 x 20.5 (Small) | 660 x 520 / 25 x 20.5 (Large) | 755 x 520 / 29.7 x 20.5 (Small)                  | 885 x 520 / 34.8 x 20.5 (Large)                  | 276 x 276 / 10.9 x 10.9 |
| <b>Universal Platform</b>  |                      | Cat. No.                  | AAA3A501-V2             | AAA23501-V3             | AAA23502-V3             | AAA23503-V3             | AAA30501                        | AAA30503                      | AAA30502 <sup>1)</sup><br>AAA30541 <sup>2)</sup> | AAA30504 <sup>1)</sup><br>AAA30542 <sup>2)</sup> | AAA3B501                |
| <b>Flask Clamp for Erlenmeyer Flask (Stainless steel)<sup>4)</sup></b> | 50 mℓ                | AAA23550                  | 20                      | 36                      | 49                      | 88                      | 84                              | 96                            | 108 (216) <sup>3)</sup>                          | 126 (252) <sup>3)</sup>                          | 16                      |
|  | 100 mℓ               | AAA23551                  | 16                      | 28                      | 39                      | 68                      | 54                              | 66                            | 72 (144) <sup>3)</sup>                           | 84 (168) <sup>3)</sup>                           | 9                       |
|  | 250 mℓ               | AAA23552                  | 8                       | 14                      | 24                      | 39                      | 33                              | 39                            | 42 (84) <sup>3)</sup>                            | 51 (102) <sup>3)</sup>                           | 9                       |
|  | 300 mℓ               | AAA23556                  | 8                       | 14                      | 24                      | 39                      | 28                              | 32                            | 36   | 40   | 9                       |
|  | 500 mℓ               | AAA23553                  | 6                       | 10                      | 16                      | 28                      | 20                              | 24                            | 27   | 30   | 5                       |
|  | 1 L                  | AAA23554                  | 3                       | 6                       | 9                       | 18                      | 14                              | 16                            | 18   | 20   | 4                       |
|  | 2 L                  | AAA23555                  | -                       | 4                       | 6                       | 11                      | 8                               | 11                            | 12   | 13   | 1                       |
|  | 2.8 L                | AAA23557                  | -                       | 3                       | 5                       | 8                       | 6                               | 7                             | 9  | 11   | -                       |
|  | 4 L                  | AAA23558                  | -                       | 1                       | 4                       | 6                       | 4                               | 6                             | 8  | 9  | -                       |
| 6 L  | AAA23559             | -                         | 1                       | 3                       | 5                       | 3                       | 4                               | 6                             | 7  | -  |                         |
| <b>Flask Clamp for Erlenmeyer Flask (Plastic)<sup>5)</sup></b>         | 50 mℓ                | AAA30570                  | 20                      | 36                      | 49                      | 88                      | 56                              | 64                            | 72   | 80   | 16                      |
|  | 100~125 mℓ           | AAA30571                  | 12                      | 19                      | 29                      | 48                      | 42                              | 48                            | 54   | 60   | 9                       |
|  | 200 mℓ               | AAA30572                  | 8                       | 13                      | 21                      | 35                      | 25                              | 39                            | 30   | 32   | 9                       |
|  | 250 mℓ               | AAA30573                  | 8                       | 13                      | 19                      | 35                      | 25                              | 30                            | 30   | 32   | 9                       |
|  | 300 mℓ               | AAA30574                  | 6                       | 12                      | 19                      | 35                      | 25                              | 30                            | 30   | 32   | 9                       |
|  | 500 mℓ <sup>6)</sup> | AAA30575                  | 6                       | 9                       | 12                      | 24                      | 20                              | 20                            | 24   | 28   | 5                       |
|  | 1 L <sup>6)</sup>    | AAA30576                  | 3                       | 5                       | 9                       | 12                      | 10                              | 12                            | 12   | 15   | 4                       |
|  | 2 L <sup>6)</sup>    | AAA30577                  | -                       | 4                       | 5                       | 8                       | 6                               | 6                             | 6  | 9  | 1                       |
| <b>Funnel Clamp</b>  | 250 mℓ               | AAA23562                  | 4                       | 4                       | 6                       | 15                      | 14                              | 16                            | 18   | 20   | 3                       |
|  | 500 mℓ               | AAA23563                  | 3                       | 3                       | 4                       | 10                      | 9                               | 10                            | 11   | 14   | 2                       |
|  | 1 L                  | AAA23564                  | 3                       | 3                       | 3                       | 7                       | 7                               | 8                             | 9  | 12   | 2                       |
|  | 2 L                  | AAA23565                  | -                       | 2                       | 2                       | 5                       | 5                               | 6                             | 7  | 8  | -                       |
| <b>Test Tube Rack<sup>4)</sup></b>                                     | Ø8 mm (86ea)         | AAA23581                  | 2                       | 2                       | 4                       | 7                       | 8                               | 9                             | 9  | 12   | 2                       |
|  | Ø10 mm (86ea)        | AAA23582                  | 2                       | 2                       | 4                       | 7                       | 8                               | 9                             | 9  | 12   | 2                       |
|  | Ø12 mm (58ea)        | AAA23583                  | 2                       | 2                       | 4                       | 7                       | 8                               | 9                             | 9  | 12   | 2                       |
|  | Ø14 mm (58ea)        | AAA23584                  | 2                       | 2                       | 4                       | 7                       | 8                               | 9                             | 9  | 12   | 2                       |
|  | Ø17 mm (32ea)        | AAA23585                  | 2                       | 2                       | 4                       | 7                       | 8                               | 9                             | 9  | 12   | 2                       |
|  | Ø25 mm (19ea)        | AAA23586                  | 2                       | 2                       | 4                       | 7                       | 8                               | 9                             | 9  | 12   | 2                       |
|  | Ø35 mm (10ea)        | AAA23594                  | 2                       | 2                       | 4                       | 7                       | 8                               | 9                             | 9  | 12   | 2                       |
| <b>Microplate Holder<sup>4)</sup></b>                                  | Single               | AAA23654                  | 6                       | 8                       | 15                      | 25                      | 20                              | 23                            | 25   | 28   | 6                       |
|  | Tower                | AAA23651                  | 4                       | 6                       | 10                      | 21                      | 16                              | 19                            | 22   | 25   | 6                       |
|  | Flat A (Large)       | AAA23652                  | -                       | -                       | 2                       | 4                       | 3                               | 4                             | 4  | 5  | -                       |
|  | Flat B (Small)       | AAA23653                  | 1                       | 2                       | 3                       | 6                       | 4                               | 5                             | 6  | 7  | -                       |

1) Single platform installed in SKC-7000

2) Dual platform installed in SKC-7000, only flasks less than 250ml can be installed on the lower platform. (Height of lower platform is about 175mm)

3) The numbers in parentheses indicate the maximum number of 250ml flasks that can be installed when Dual Platform is mounted.

4) Maximum quantity that can be mounted on each platform (For test tube rack, it is the maximum quantity when the rack is not to be tilted)

5) In the case of plastic flask clamps mounting, deformation may occur at temperatures over 40°C. Stainless steel flask clamps are recommended when using in a high temperature environment.

6) Possible to use under 300rpm

| Spring Wire Rack                    | OS-2000         | OS-3000            | OS-4000            | OS-7000 Series  | SKC-6000 Series |                 | SKC-7000 Series |                 | CMS-350         |    |
|-------------------------------------|-----------------|--------------------|--------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----|
|                                     |                 |                    |                    |                 | Small           | Large           | Small           | Large           |                 |    |
| <b>Spring Wire Rack (Cat. No.)</b>  | <b>AAA3A521</b> | <b>AAA31521-V1</b> | <b>AAA31522-V1</b> | <b>AAA23514</b> | <b>AAA30521</b> | <b>AAA30522</b> | <b>AAA30523</b> | <b>AAA30524</b> | <b>AAA3B511</b> |    |
| <b>Quantity of Erlenmeyer Flask</b> | 50 mL           | 15                 | 16                 | 25              | 45              | 30              | 35              | 45              | 50              | 15 |
|                                     | 100 mL          | 9                  | 9                  | 16              | 28              | 20              | 24              | 28              | 32              | 9  |
|                                     | 250 mL          | 4                  | 4                  | 9               | 18              | 12              | 15              | 18              | 21              | 4  |
|                                     | 300 mL          | 4                  | 4                  | 9               | 18              | 12              | 15              | 18              | 21              | 4  |
|                                     | 500 mL          | 4                  | 4                  | 5               | 15              | 9               | 12              | 15              | 18              | 4  |
|                                     | 1 L             | 2                  | 2                  | 4               | 10              | 6               | 8               | 10              | 12              | 2  |
|                                     | 2 L             | -                  | 1                  | 2               | 6               | 4               | 5               | 6               | 7               | -  |
| 2.8 L                               | -               | 1                  | 2                  | 4               | 3               | 3               | 4               | 5               | -               |    |

## LC GreenBox

| Description | OS-2000  | OS-3000  | OS-4000  | OS-7000 Series |
|-------------|----------|----------|----------|----------------|
| LC GreenBox | AAAQ1011 | AAAQ1011 | AAAQ1011 | AAAQ1011       |

# Stirrer & Mixer



Satisfaction with the requirements of European regulations and guidelines.



Recognized as an excellent design product by the Ministry of Commerce, Industry, and Energy.



Over temperature protection function.



Control of temperature / humidity / rpm / time, etc. through dedicated program.



Possible to set end time or start time of device operation.



Certification of conformity of electricity, gas, etc. in accordance with the safety standards of Canada and USA.



Compliance with Guidelines for Restriction of Hazardous Substances Use.



Maintains possible maximum orbital motion without stopping, even if overload occurs.



If the surface temperature of the hot plate exceeds 50 degrees, the warning lamp turns on.



2 year warranty Free A/S.



Registered patent based on JEIO TECH's proprietary technology.



More precise temperature control through temperature calibration.



Intuitive operation with Color Touch display.



Possible to check and control temperature of sample by connecting to device with an external sensor.

## General Application

Hotplate: Acid and base digestions, trace metal analysis, sample drying, general reagent heating, evaporation.

Hotplate Stirrer: Accurate, stable, and highly-reproducible in various heating stirring experiments.

Magnetic Stirrer: Crystallization, solvent evaporation, chemical reaction, titration, distillation, media dissolution, food processing.

Overhead Stirrer: Petrochemical sector, beverage/hot water product/dairy product production, food processing.

Vortex Mixer: Powerful mixing of solutions.

|                             | Description        | Max. Speed (rpm)   | Max. Capacity (L / cuft) | Max. Temp. Range (°C / °F) | Model     | Page         |     |
|-----------------------------|--------------------|--|--------------------------|----------------------------|-----------|--------------|-----|
| Hotplate & Magnetic Stirrer | Digital            | • Stable and precise control based on sample temperature           | 2000                     | 20 / 0.71                  | 350 / 662 | TS           | 128 |
|                             | Analog             | • Easy to use and verified excellent durability                    | 2000                     | 20 / 0.71                  | 350 / 662 | TM           | 129 |
|                             | Multi Type         | • Differentiated multi-stirrer with temperature control            | 2000                     | 0.25 x 15ea / 0.009 x 15ea | 120 / 248 | MS-MH        | 130 |
| Hotplate                    | Digital            | • Precise digital temperature control and timer function           | N/A                      | N/A                        | 350 / 662 | T            | 131 |
| Magnetic Stirrer            | Digital            | • Accurate and smooth control of sample viscosity changes          | 2000                     | 5 / 0.18                   | N/A       | MS-G         | 134 |
|                             | Analog             | • Fast stirring speed control with real time response              | 2500                     | 5 / 0.18                   | N/A       | MS-B<br>MS-T | 135 |
|                             | Multi Type         | • Optimized for diverse uses with differentiated stirring controls | 2000                     | 0.25 x 15ea / 0.009 x 15ea | N/A       | MS-M         | 136 |
| Overhead Stirrer            | Prestige Touch     | • Powerful torque motor and Color Touch Display operation          | 2000                     | 100 / 3.53                 | N/A       | MSH          | 144 |
|                             | High Performance   | • Computer connection operation and stable control function        | 2000                     | 20 / 0.71                  | N/A       | MSD          | 146 |
|                             | Easy Control       | • Optimized for easy use overheating /overload safety function     | 2000                     | 20 / 0.71                  | N/A       | MSA          | 147 |
| Vortex Mixer                | Touch / Continuous | • True vortex mixing in innovative touch mode                      | 3000                     | N/A                        | N/A       | VM           | 154 |

※ The contents of the above and the contents of this catalog may differ depending on the specific model and conditions of use. For the information about the features and specifications that applying to each models, please check the information on the corresponding page of each models.



## Hotplate & Magnetic Stirrer

### Safe Hotplate & Magnetic Stirrer Proven durability and useful safety features

> **Variety of products optimized for purpose of use**

15 models available depending on the size and shape of the top plate, control method, and whether stirring is present.

> **Corrosion-resistant hotplates with white ceramic coating**

The white upper hotplate, which makes it easy to observe samples, is ceramic coated and has excellent corrosion resistance. (except for MS-MH)

> **Top plate with excellent heat transfer and durability**

Excellent durability and heat transfer ability as the heater is embedded in the top plate made of aluminum. (except for MS-MH)

> **Safety with spill-proof design**

Improved safety with structural design that prevents solution from flowing into the equipment.

> **Multiple overheating protection devices**

Equipment breakdown is prevented in advance with overheating prevention device for top plate, and main parts of the inside of the body, etc.

> **BLDC motor with excellent durability**

Excellent durability even for long-term use with BLDC motor. (except for T-series)

> **Maintains stirring ability even at high temperatures**

Using special permanent magnets that maintain strong magnetic force even at high temperatures. (except for T-Series)

> **Safety function of displaying top plate overheating**

A warning is displayed when the top plate is over 50°C even when the power is switched off. (except for MS-MH)



Digital feedback control. (left)  
Analog type scale control. (right)



Top plate with excellent heat transfer.



Top plate overheating indicator light.



## Stable & Powerful Magnetic Stirrer

### Stable Stirring with Differentiated Controllability

> **Variety of products optimized for purpose of use**

20 different models provided depending on the size and shape of the top plate, control method, and color, etc.

> **BLDC motor with excellent durability**

Excellent durability even during long-term repeated use with BLDC motor.

> **Special magnet for maintaining stirring ability**

Using a special permanent magnet to maintain powerful magnetic coupling.

> **Safety with spill-proof design**

Improved safety with structural design that prevents solution from flowing into the equipment.

> **Slip prevention for glassware**

Silicone top plate cover prevents accidents caused by slipping of glassware.

> **Top plate cover for easy sample observation**

White and black cover provided as standard makes it very convenient to observe changes according to the sample.

> **Fast stirring speed control with real time response**

Quick control of stirring speed (MS-B/T model) according to adjust with the of control knobs.

> **Smooth and precise speed control**

Smooth stirring control up to the settings values. Accurate feedback control. (MS-G/M model)

※ Some of the above contents are limited to specific models.



Silicone cover prevents slippage of glassware.



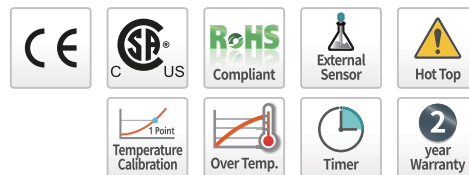
Easy to choose from various model configurations.



Selection of white or black cover according to sample.

# Hotplate & Magnetic Stirrer

## Digital type



## Precise control based on sample temperature

### Structural Functional Features

- Includes temperature probe (B class) as standard.
- Displays external temperature sensor errors.
- Top plate coated with white ceramic for excellent corrosion resistance.
- Excellent heat transfer and durability due to heater-integrated structure.
- Using special permanent magnets for maintaining stirring ability.

### Use Convenience Features

- Precise temperature/stirring control with PID feedback control.
- Temperature control mode selection function. (Optimal/Fast/Slow/User/Point)
- Includes temperature auto-tuning and calibration functions.
- Count-down timer provided. (up to 99 hours and 59 minutes)
- Clamp Rod (option) can be added to the main body fix other experiment equipment.
- Convenient experiment observation with removable transparent shield. (option)

### Outstanding Safety

- Spill-proof design minimizes inflow solution into device.
- Safety ensured by BLDC motor that does not generate sparks.
- Preventing equipment failure with multiple over temperature prevention devices.
- Warning displayed when top plate is 50°C or more.
- Prevents sample run-off thanks to smooth stirring start.
- The heating bath (option) is combined with the top plate to ensure safety. (except TS-Q)



## Specification

| Model                                      |                                       | TS-14SG                               | TS-17SG                               | TS-18QG                              |
|--|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------------------|
| Heating                                    | Temperature range (°C / °F)           | Top plate, Max, 350 / 662             | Top plate, Max, 350 / 662             | Top plate, Max, 350 / 662            |
|  | Control mode                          | PID Feedback (optimal, fast, slow)    | PID Feedback (optimal, fast, slow)    | PID Feedback (optimal, fast, slow)   |
|  | Display resolution (°C / °F)          | 0.1 / 32.18                           | 0.1 / 32.18                           | 0.1 / 32.18                          |
| Stirring                                   | Speed range (rpm)                     | 30 to 2000                            | 30 to 2000                            | 30 to 2000                           |
|  | Capacity (H <sub>2</sub> O, L)        | 20                                    | 20                                    | 20                                   |
|  | Magnetic bar, Max. (L x Ø, mm / inch) | 40 x 8 / 0.31 x 1.57                  | 40 x 8 / 0.31 x 1.57                  | 40 x 8 / 0.31 x 1.57                 |
| Material                                   | Top plate                             | White ceramic coated aluminum alloy   | White ceramic coated aluminum alloy   | White ceramic coated aluminum alloy  |
|  | Body                                  | Powder coated aluminum alloy          | Powder coated aluminum alloy          | Powder coated aluminum alloy         |
|  | Motor type                            | BLDC (Brushless Direct Current)       | BLDC (Brushless Direct Current)       | BLDC (Brushless Direct Current)      |
|  | Temperature probe                     | PT 100 (B class, Max. 250°C ,482°F)   | PT 100 (B class, Max. 250°C ,482°F)   | PT 100 (B class, Max. 250°C ,482°F)  |
| Dimensions                                 | Top plate (Ø or W x D, mm / inch)     | 140 / 5.51                            | 170 / 6.69                            | 180 x 180 / 7.08 x 7.08              |
|  | Exterior (W x D x H, mm / inch)       | 161 x 290 x 100 / 6.34 x 11.42 x 3.94 | 191 x 330 x 101 / 7.52 x 12.99 x 3.98 | 209 x 326 x 102 / 8.22 x 12.83 x 4.0 |
|  | Net weight (kg / lbs)                 | 2.8 / 6.17                            | 3.5 / 7.71                            | 3.8 / 8.36                           |
| Timer (Heating and/or Stirring)            |                                       | Max. 99 hrs 59 min.                   | Max. 99 hrs 59 min.                   | Max. 99 hrs 59 min.                  |
| Electrical requirements (230V, 50/60Hz, A) |                                       | 3.0                                   | 4.0                                   | 4.0                                  |
| Cat. No.                                   |                                       | <b>AAH34445K</b>                      | <b>AAH34475K</b>                      | <b>AAH34485K</b>                     |
| Electrical requirements (120V/60Hz, A)     |                                       | 5.0                                   | 6.7                                   | 6.7                                  |
| Cat. No.                                   |                                       | <b>AAH34443U</b>                      | <b>AAH34473U</b>                      | <b>AAH34483U</b>                     |

※ Except TS-18Q CSA certification ※ Except TS-17S, 18Q RoHS certification.

**Accessories** Page 133 Temperature Probe, Heating Bath, Clamp Rod, Clamp, Transparent Shield



# Hotplate & Magnetic Stirrer

## Analog type



## Easy to use with excellent durability

### Structural Functional Features

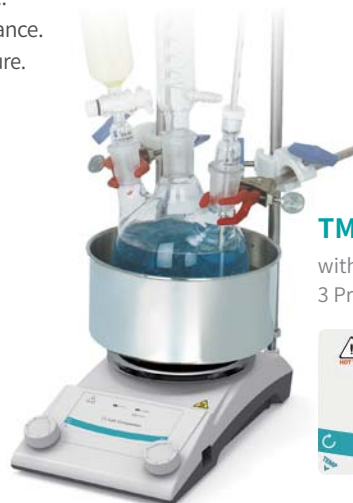
- Five models provided according to the size and shape of hot plate.
- Top plate coated with white ceramic for excellent corrosion resistance.
- Excellent heat transfer and durability due to heater-integrated structure.
- Using special permanent magnets for maintaining stirring ability.

### Use Convenience Features

- Easy adjustment of heating rate and stirring speed with individual control knobs.
- Maintains a constant stirring speed even when sample viscosity changes.
- Rapid stirring and stop function according to the user's needs.
- Clamp Rod (option) can be added to the main body to fix other experiment equipment.
- Convenient experiment observation with removable transparent shield. (option)

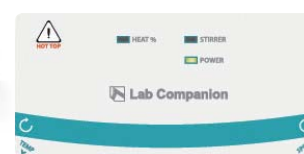
### Outstanding Safety

- Spill-proof design minimizes inflow solution into device.
- Safety ensured by BLDC motor that does not generate sparks.
- Preventing equipment failure with multiple over temperature prevention devices.
- Warning displayed when top plate is 50°C or more.
- Prevents sample run-off thanks to smooth stirring start.
- The heating bath (option) is combined with the top plate to ensure safety. (except TM-QG)



**TM-14SG**

with Heating Bath, Clamp Holder, 3 Prong Clamp, Clamp Rod (option)



**TM-18QG**



Stirrer & Mixer

## Specification

|   | Model                                  | TM-14SG                               | TM-14RB                             | TM-17SG                               | TM-17RB                               | TM-18QG                              |
|---|--|---------------------------------------|-------------------------------------|---------------------------------------|---------------------------------------|--------------------------------------|
| <b>Heating</b>                                    | Temperature range (°C / °F)            | Top plate, Max, 350 / 662             | Top plate, Max, 350 / 662           | Top plate, Max, 350 / 662             | Top plate, Max, 350 / 662             | Top plate, Max, 350 / 662            |
|   | Control mode                           | Scale                                 | Scale                               | Scale                                 | Scale                                 | Scale                                |
|   | Heating rate                           | 0 ~ 100% by 1%                        | 0 ~ 100% by 1%                      | 0 ~ 100% by 1%                        | 0 ~ 100% by 1%                        | 0 ~ 100% by 1%                       |
| <b>Stirring</b>                                   | Speed range (rpm)                      | Max. 2000                             | Max. 2000                           | Max. 2000                             | Max. 2000                             | Max. 2000                            |
|   | Capacity (L / cu ft, H <sub>2</sub> O) | 20 / 0.71                             | 20 / 0.71                           | 20 / 0.71                             | 20 / 0.71                             | 20 / 0.71                            |
|   | Magnetic bar, Max. (L x Ø, mm / inch)  | 40 x 8 / 0.31 x 1.57                  | 40 x 8 / 0.31 x 1.57                | 40 x 8 / 0.31 x 1.57                  | 40 x 8 / 0.31 x 1.57                  | 40 x 8 / 0.31 x 1.57                 |
| <b>Material</b>                                   | Top plate                              | White ceramic coated aluminum alloy   | White ceramic coated aluminum alloy | White ceramic coated aluminum alloy   | White ceramic coated aluminum alloy   | White ceramic coated aluminum alloy  |
|   | Body                                   | Powder coated aluminum alloy          | Powder coated aluminum alloy        | Powder coated aluminum alloy          | Powder coated aluminum alloy          | Powder coated aluminum alloy         |
|   | Motor type                             | BLDC (Brushless Direct Current)       | BLDC (Brushless Direct Current)     | BLDC (Brushless Direct Current)       | BLDC (Brushless Direct Current)       | BLDC (Brushless Direct Current)      |
| <b>Dimensions</b>                                 | Top plate (Ø or W x D, mm / inch)      | 140 / 5.51                            | 140 / 5.51                          | 170 / 6.69                            | 170 / 6.69                            | 180 x 180 / 7.08 x 7.08              |
|   | Exterior (W x D x H, mm / inch)        | 161 x 290 x 100 / 6.34 x 11.42 x 3.94 | 210 x 294 x 99 / 8.27 x 11.57 x 3.9 | 191 x 330 x 101 / 7.52 x 12.99 x 3.98 | 240 x 324 x 100 / 9.25 x 12.76 x 3.94 | 209 x 326 x 102 / 8.22 x 12.83 x 4.0 |
|   | Net weight (kg / lbs)                  | 2.8 / 6.17                            | 3 / 6.61                            | 3.5 / 7.72                            | 3.6 / 7.94                            | 3.8 / 8.37                           |
| <b>Body Shape</b>                                 |  | Straight body                         | Round body                          | Straight body                         | Round body                            | Straight body                        |
| <b>Electrical requirements (230V, 50/60Hz, A)</b> |  | 3.0                                   | 3.0                                 | 4.0                                   | 4.0                                   | 4.0                                  |
| <b>Cat. No.</b>                                   |  | <b>AAH34245K</b>                      | <b>AAH34315K</b>                    | <b>AAH34275K</b>                      | <b>AAH34325K</b>                      | <b>AAH34285K</b>                     |
| <b>Electrical requirements (120V, 60Hz, A)</b>    |  | 5.0                                   | 5.0                                 | 6.7                                   | 6.7                                   | 6.7                                  |
| <b>Cat. No.</b>                                   |  | <b>AAH34243U</b>                      | <b>AAH34313U</b>                    | <b>AAH34273U</b>                      | <b>AAH34323U</b>                      | <b>AAH34283U</b>                     |

※ Except TM-18QG CSA certification ※ Only TM-14SG RoHS certification.

**Accessories** Page 133 Heating Bath, Clamp Rod, Clamp, Transparent Shield

# Hotplate & Magnetic Stirrer Multi type



## Differentiated multi-stirrer with temperature control

### Structural Functional Features

- Integrated design with top plate and heater for fast heat transfer and excellent durability.
- Using special permanent magnets for maintaining stirring ability.
- Control by All/Column/Row/Point with four stirring control methods and timer function.

### Use Convenience Features

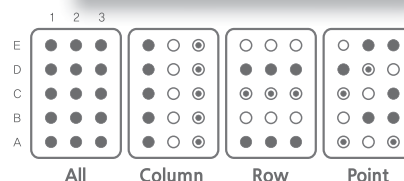
- Separate heater knobs and operation LED display.
- Maintains accurate speed with feedback control even when sample viscosity and amount change.
- Count-down timer provided. (up to 99 hours and 59 minutes)
- Rapid stirring and stop function according to the user's needs.
- VFD display with excellent visual perception.



MS-53MH

### Outstanding Safety

- The upper part of the top plate is composed of silicon pads, allowing for prevention of slippage of glassware and display of stirring point.
- Spill-proof design minimizes inflow solution into device.
- Safety ensured by BLDC motor that does not generate sparks.
- Safe by automatically shutting down the heater power when overheated.
- Prevents sample run-off thanks to smooth stirring start.



## Specification

| Model                                      |   | MS-33MH                                | MS-53MH                                |
|--|---|--|--|
| Heating                                    | Temperature range (°C / °F) <sup>1)</sup>                     | Top plate, Max, 120 / 248              | Top plate, Max, 120 / 248              |
|  | Control mode  | Scale                                  | Scale                                  |
|  | Heating Power (W)   | 600                                    | 1000                                   |
| Stirring                                   | Speed range (rpm)   | 30 to 2000                             | 30 to 2000                             |
|  | Capacity per point at 2,000rpm (H <sub>2</sub> O, mL / cu ft) | 500 / 0.017                            | 500 / 0.017                            |
|  | Operating mode  | 4 (All, Column, Row, Point)            | 4 (All, Column, Row, Point)            |
|  | Position (Row x Column)                                       | 9 (3 x 3)                              | 15 (5 x 3)                             |
|  | Point distance (W x D, mm / inch)                             | 117 x 90 / 4.61 x 3.54                 | 117 x 90 / 4.61 x 3.54                 |
|  | Magnetic bar , Max. (L x Ø, mm / inch)                        | 30 x 8 / 1.18 x 0.31                   | 30 x 8 / 1.18 x 0.31                   |
|  | Load, Max (kg / lbs)  | 30 / 66.14                             | 30 / 66.14                             |
| Material                                   | Top plate   | Aluminum                               | Aluminum                               |
|  | Body  | Powder coated steel                    | Powder coated steel                    |
|  | Motor type  | BLDC (Brushless Direct Current)        | BLDC (Brushless Direct Current)        |
| Dimensions                                 | Top plate (W x D, mm / inch)                                  | 385 x 328 / 15.16 x 12.91              | 385 x 493 / 15.16 x 19.41              |
|  | Exterior (W x D x H, mm / inch)                               | 395 x 450 x 104 / 15.55 x 71.72 x 4.09 | 395 x 614 x 104 / 15.55 x 24.17 x 4.09 |
|  | Net weight (kg / lbs)   | 10 / 22.05                             | 15 / 33.06                             |
| Timer (Stirring)                           |   | Max. 99 hrs 59 min.                    | Max. 99 hrs 59 min.                    |
| Electrical requirements (230V, 50/60Hz, A) |   | 4.1                                    | 5.8                                    |
| Cat. No.                                   |   | AAHK34015K                             | AAHK34025K                             |
| Electrical requirements (120V, 60Hz, A)    |   | 8.0                                    | 11.2                                   |
| Cat. No.                                   |   | AAHK34013U                             | AAHK34023U                             |

1) This refers to the maximum temperature of the top plate. The temperature of the actual specimen may be reduced depending on the conditions of the experiment.

Accessories [Page 133](#) Magnetic Bar, Magnetic Retriever

# Hotplate Digital type



## Precise hotplate using digital method

### Structural Functional Features

- Five models provided according to the size and shape of hot plate.
- Top plate coated with white ceramic for excellent corrosion resistance.
- Excellent heat transfer and durability due to heater-integrated structure.
- Possible to set the upper and lower limit of temperature control range.

### Use Convenience Features

- Temperature control by adjustment of heating rate.
- Temperature control mode selection function. (Optimal/Fast/Slow/User/Point)
- Includes temperature auto-tuning and calibration functions.
- Count-down timer provided. (up to 99 hours and 59 minutes)
- Clamp Rod (option) can be added to the main body to fix other experiment equipment.
- Convenient experiment observation with removable transparent shield. (option)

### Outstanding Safety

- Spill-proof design minimizes inflow solution into device.
- Preventing equipment failure with multiple over temperature prevention devices.
- Separate buttons for safe operating.
- Warning displayed when top plate is 50°C or more.
- Malfunction prevented by controller lock function.
- The heating bath (option) is combined with the top plate to ensure safety. (except T-QG)



**T-14SG**

with Clamp Holder, 3 Prong Clamp, Clamp Rod (option)



**T-18QG**



## Specification

| Model                                      |                                   | T-14SG                                | T-14R                                 | T-17SG                                | T-17R                                 | T-18QG                                |
|--|-----------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Heating                                    | Temperature range (°C /°F)        | Top plate, Max, 350 / 662             | Top plate, Max, 350 / 662             | Top plate, Max, 350 / 662             | Top plate, Max, 350 / 662             | Top plate, Max, 350 / 662             |
|  | Control mode                      | PID Feedback (optional, fast, slow)   | PID Feedback (optional, fast, slow)   | PID Feedback (optional, fast, slow)   | PID Feedback (optional, fast, slow)   | PID Feedback (optional, fast, slow)   |
|  | Display resolution (°C /°F)       | 0.1 / 32.18                           | 0.1 / 32.18                           | 0.1 / 32.18                           | 0.1 / 32.18                           | 0.1 / 32.18                           |
| Material                                   | Top plate                         | White ceramic coated aluminum alloy   | White ceramic coated aluminum alloy   | White ceramic coated aluminum alloy   | White ceramic coated aluminum alloy   | White ceramic coated aluminum alloy   |
|  | Body                              | Powder coated aluminium alloy         | Powder coated aluminium alloy         | Powder coated aluminium alloy         | Powder coated aluminium alloy         | Powder coated aluminium alloy         |
| Dimensions                                 | Top plate (Ø or W x D, mm / inch) | 140 / 5.51                            | 140 / 5.51                            | 170 / 6.69                            | 170 / 6.69                            | 180 x 180 / 7.09 x 7.09               |
|  | Exterior (W x D x H, mm / inch)   | 161 x 290 x 100 / 6.34 x 11.41 x 3.94 | 161 x 290 x 100 / 6.34 x 11.41 x 3.94 | 191 x 330 x 101 / 7.52 x 12.99 x 3.98 | 191 x 330 x 101 / 7.52 x 12.99 x 3.98 | 209 x 326 x 102 / 8.23 x 12.83 x 4.01 |
|  | Net weight (kg / lbs)             | 2.2 / 4.85                            | 2.4 / 5.29                            | 2.9 / 6.39                            | 2.9 / 6.39                            | 3.4 / 7.49                            |
| Timer                                      |                                   | Max. 99 hrs 59 min.                   | Max. 99 hrs 59 min.                   | Max. 99 hrs 59 min.                   | Max. 99 hrs 59 min.                   | Max. 99 hrs 59 min.                   |
| Electrical requirements (230V, 50/60Hz, A) |                                   | 3.0                                   | 3.0                                   | 4.0                                   | 4.0                                   | 4.0                                   |
| Cat. No.                                   |                                   | AAH35045K                             | AAH35115K                             | AAH35075K                             | AAH35125K                             | AAH35085K                             |
| Electrical requirements (120V, 60Hz, A)    |                                   | 5.0                                   | 5.0                                   | 6.7                                   | 6.7                                   | 6.7                                   |
| Cat. No.                                   |                                   | AAH35043U                             | AAH35113U                             | AAH35073U                             | AAH35123U                             | AAH35083U                             |

※Except T-18QG CSA certification ※Only T-14SG RoHS certification

Accessories [Page 133](#) Heating Bath, Clamp Rod, Clamp, Transparent Shield

# Heating Block for Round Flask and Vial



## A safe solution to replace oil bath and heating mantle when heating the contents over 100°C

### Using with Hotplate

- The heating block is mounted on a hotplate or hotplate magnetic stirrer to heat safely the contents of the 25ml - 2000ml round flask and vial.
- Excellent compatibility with various brands of hotplates. (flask dia. 135/140, Vial-135/180/150 x 150/180 x 180 (mm))
- Combination of inserts (option) allows the use of flasks of various capacities.

### Excellent Safety Standards

- No risk of burns or noxious fumes due to heated oil that may occur when using an oil bath.
- Hot spots do not occur even when heated up to 300°C, resulting in excellent temperature accuracy and prevention of damage to glassware.

### Use Convenience Features

- Economical and eco-friendly by eliminating the need to purchase and dispose of oil separately.
- Since oil is not used, it is easy to clean glassware and the product.



Hard anodized surface is treated on aluminum block body, so there is no concern regarding discoloration and the durability is excellent.



Highly compatible with top plates of various heaters.



Good contacting to flask surface with excellent thermal conductivity.

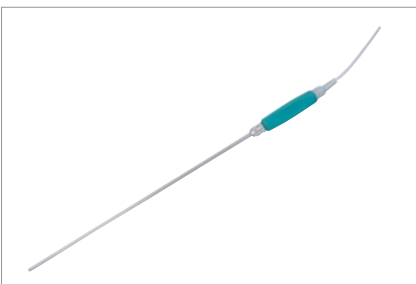


Various inserts (1 dram, 2 dram, 4 dram, 20ml, 30ml, 40ml) with vials of various capacities applicable.

## Specification

| Round Flask Heating Block |         |          |         | Vial Heating Block |   |         |   |
|---------------------------|---------|----------|---------|--------------------|---|---------|---|
| Plate                     |         | Insert   |         | Plate              |   | Insert  |   |
| Model                     | Volume  | Model    | Volume  | Model              | Volume  | Model   | Volume                                  |
| RBP-100                   | 100 ml  | RBI-25   | 25 ml   | VBP                | 190 x 190 x 20 mm<br>(Insert max. Four Mounted) | VBI-1D  | 4 ml (1 dram) (Φ 15 x 17 mm), 16 holes  |
|                           |         | RBI-50   | 50 ml   |                    |   | VBI-2D  | 8 ml (2 dram) (Φ 17 x 23 mm), 16 holes  |
| RBP-500                   | 500 ml  | RBI-100  | 100 ml  |                    |   | VBI-4D  | 15 ml (4 dram) (Φ 21 x 30 mm), 16 holes |
|                           |         | RBI-250  | 250 ml  |                    |   | VBI-20S | 20 ml (Φ 28 x 22 mm), 4 holes           |
| RBP-1000                  | 1000 ml | RBI-500  | 500 ml  |                    |   | VBI-30S | 30 ml (Φ 28 x 32 mm), 4 holes           |
| RBP-2000                  | 2000 ml | RBI-1000 | 1000 ml |                    |   | VBI-40S | 40 ml (Φ 28 x 42 mm), 4 holes           |

# Accessories for Hotplate & Magnetic Stirrer



## Temperature Probe, B Class

With external temperature sensor, it is possible to check and control the temperature of the sample when it is connected to the equipment. (TS model)



## Heating Bath

Top plate combines concave and convex structure, resulting in no slippage.



## Clamp Rod

Two pieces can be fixed on the left and right of the back of the main body.



## 3 Prong Clamp

Various types of instruments can be fixed.



## Clamp Holder

Clamp rod and clamp can be fixed.



## Transparent Shield

Safely observe experiments.

## Magnetic Bar

- Applied to a magnetic stirrer when stirring within the temperature range up to +280°C.
- Turbo type can be applied at high temperature of 400°C.

## Accessories [Page 140](#)



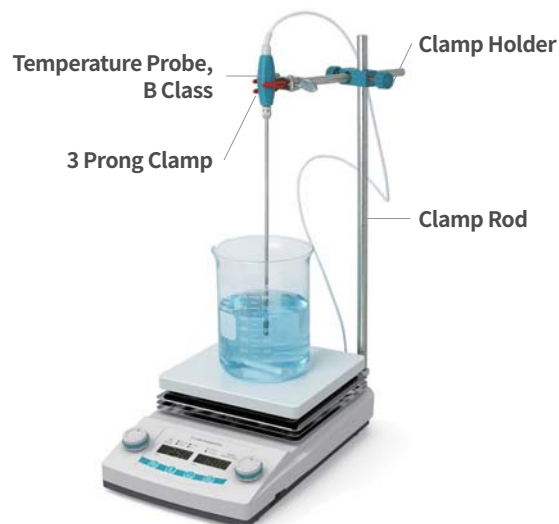
## Magnetic Retriever

- Used when taking out magnetic bar.
- Uses ALNICO V magnets and samarium cobalt magnets.

## Accessories [Page 141](#)



| Cat. No.     | Description                                   |
|--------------|---|
| AAA34501     | Temperature Probe, B Class (Max. 250°C)       |
| AAA34502     | Temperature Probe, A Class (Max. 400°C)       |
| 00HPS0000012 | Heating Bath (TS-14SG, TM-14SG, T-14SG)       |
| 00HPS0000015 | Heating Bath (TS-17SG, TM-17SG, T-17SG)       |
| 00MTT0000132 | Clamp Rod (Ø12, 400 mm)                       |
| BEA1000011   | 3 Prong Clamp (80 mm grip)                    |
| BEA1000012   | 3 Prong Clamp (60 mm grip)                    |
| BEA1000013   | 3 Prong Clamp (20 mm grip)                    |
| AAA37511     | Clamp Holder (max. Ø27, C-20)                 |
| AAA37512     | Clamp Holder (max. Ø17, C-10)                 |
| AAA37513     | Clamp Holder (max. Ø12, C-7)                  |
| AAA37514     | Clamp Holder (max. Ø12, C-5)                  |
| 00HPS0000059 | Transparent Shield (TS-14SG, TM-14SG, T-14SG) |
| 00HPS0000039 | Transparent Shield (TS-17SG, TM-17SG, T-17SG) |



# Magnetic Stirrer

## Digital type



## Accurate and smooth feedback speed control

### Structural Functional Features

- Maintains accurate speed with feedback control even when sample viscosity and amount change.
- Polypropylene (PP) material with excellent chemical resistance.
- Minimized vibration during high-speed stirring with rubber feet.
- Use of special permanent magnets to maintain stirring performance.

### Use Convenience Features

- Simultaneous display of set speed and actual speed.
- Timer (up to 99 hours 59 minutes) and program operation function. (2-step repeat pattern)
- Clamp Rod (option) can be added to the main body to fix other equipment such as burette, sensor, etc.
- 4 models provided according to the quantity and size of stirring.
- The two types of black and white covers are very useful for observing changes according to samples.



### Outstanding Safety

- Safety ensured by BLDC motor that does not generate sparks.
- Spill-proof design minimizes inflow solution into device.
- Prevents samples splash with smooth operation at the start and stop of stirring.
- Provides silicon-based top plate cover to prevent slipping accidents of glassware.



## Specification

| Model                   |                                       | MS-17G                               | MS-22G                                |             |
|-------------------------|---------------------------------------|--------------------------------------|---------------------------------------|-------------|
| Stirring                | Speed range (rpm)                     | 30 to 2000                           | 30 to 2000                            |             |
|                         | Capacity (H <sub>2</sub> O, L)        | 4                                    | 5                                     |             |
|                         | Speed stability (± %)                 | 1                                    | 1                                     |             |
|                         | Magnetic bar, Max. (L x Ø, mm / inch) | 40 x 8 / 0.31 x 1.57                 | 50 x 10 / 1.97 x 0.39                 |             |
|                         | Load, Max. (kg / lbs)                 | 20 / 44.09                           | 25 / 55.12                            |             |
| Material                | Top plate                             | Polypropylene with silicone cover    | Polypropylene with silicone cover     |             |
|                         | Body                                  | Polypropylene                        | Polypropylene                         |             |
|                         | Motor type                            | BLDC (Brushless Direct Current)      | BLDC (Brushless Direct Current)       |             |
| Dimensions              | Top plate                             | 170 (Ø, mm) / 6.69 (inch)            | 220 (Ø, mm) / 8.66 (inch)             |             |
|                         | Exterior (W x D x H, mm / inch)       | 210 x 280 x 72 / 8.27 x 11.02 x 2.83 | 260 x 355 x 72 / 10.23 x 13.98 x 2.83 |             |
|                         | Net weight (kg / lbs)                 | 1.4 / 3.09                           | 1.8 / 3.97                            |             |
| Electrical requirements |                                       | AC 100 ~ 240V, 50 / 60 Hz            |                                       |             |
| Power consumption (W)   |                                       | 6                                    | 6                                     |             |
| Cat. No.                | Persian blue                          | KR plug                              | AAH331215BK                           | AAH331315BK |
|                         |                                       | US plug                              | AAH331215BU                           | AAH331315BU |
|                         | Orange                                | KR plug                              | AAH331215YK                           | AAH331315YK |
|                         |                                       | US plug                              | AAH331215YU                           | AAH331315YU |

Accessories [Page 138](#) Plate Cover, Clamp Rod, Clamp Holder, Magnetic Bar, Magnetic Retriever

# Magnetic Stirrer

## Analog type



## Quick speed control of stirring with real time response

### Structural Functional Features

- 10 models according to size, shape and color.
- Polypropylene (PP) material with excellent chemical resistance.
- Minimized vibration during high-speed stirring with rubber feet.
- Using special permanent magnets for maintaining stirring ability.

### Use Convenience Features

- Quick control of stirring speed in real time according to degree of control knobs.
- The two types of black and white covers are very useful for observing changes according to samples.
- Convenient LED lamp for checking operation status.
- Lightweight makes handling convenient.

### Outstanding Safety

- Safety ensured by BLDC motor that does not generate sparks.
- Spill-proof design minimizes inflow solution into device.
- Provides Silicon-based top plate cover to prevent slipping accidents of glassware.



MS-12B

MS-17B



MS-12T

MS-17T

Stirrer & Mixer

## Specification

| Model                   |                                   | MS-12B                                      | MS-17B                              | MS-22B                              | MS-12T                              | MS-17T                              |             |
|-------------------------|-----------------------------------|---|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------|
| Stirring                | Speed range (rpm)                 | 150 to 2500                                 | 150 to 2500                         | 150 to 2500                         | 150 to 2500                         | 150 to 2500                         |             |
|                         | Capacity (H <sub>2</sub> O, L)    | 2   | 4                                   | 5                                   | 2                                   | 4                                   |             |
|                         | Magnetic bar, Max. (L x Ø, mm)    | 30 x 8 / 1.18 x 0.31                        | 40 x 8 / 1.57 x 0.31                | 50 x 10 / 1.97 x 0.39               | 30 x 8 / 1.18 x 0.31                | 30 x 8 / 1.18 x 0.31                |             |
|                         | Load, Max. (kg)                   | 15 / 33.07                                  | 20 / 44.09                          | 25 / 55.12                          | 10 / 22.05                          | 20 / 44.09                          |             |
| Material                | Top plate                         | Polypropylene with silicone cover           | Polypropylene with silicone cover   | Polypropylene with silicone cover   | Polypropylene with silicone cover   | Polypropylene with silicone cover   |             |
|                         | Body                              | Polypropylene                               | Polypropylene                       | Polypropylene                       | Polypropylene                       | Polypropylene                       |             |
|                         | Motor type                        | BLDC (Brushless Direct Current)             | BLDC (Brushless Direct Current)     | BLDC (Brushless Direct Current)     | BLDC (Brushless Direct Current)     | BLDC (Brushless Direct Current)     |             |
| Dimensions              | Top plate (Ø or W x D, mm / inch) | 120 / 4.72                                  | 170 / 6.69                          | 220 / 8.66                          | 115 / 4.53                          | 165 / 6.5                           |             |
|                         | Exterior (W x D x H, mm / inch)   | 130 x 133 x 65 / 5.11 x 5.24 x 2.56         | 180 x 186 x 65 / 7.09 x 7.32 x 2.56 | 230 x 235 x 65 / 9.05 x 9.25 x 2.56 | 181 x 176 x 64 / 7.13 x 6.93 x 2.52 | 246 x 243 x 64 / 9.68 x 9.57 x 2.52 |             |
|                         | Net weight (kg / lbs)             | 0.6 / 1.32                                  | 0.9 / 1.98                          | 1.1 / 2.42                          | 0.6 / 1.32                          | 0.9 / 1.98                          |             |
| Electrical requirements |                                   | AC 100 ~ 240V, 50 / 60Hz with power adapter |                                     |                                     |                                     |                                     |             |
| Power consumption (W)   |                                   | 5   | 6                                   | 6                                   | 5                                   | 6                                   |             |
| Cat. No.                | Persian blue                      | KR plug                                     | AAH330115BK                         | AAH330215BK                         | AAH330315BK                         | AAH333115BK                         | AAH333215BK |
|                         |                                   | US plug                                     | AAH330115BU                         | AAH330215BU                         | AAH330315BU                         | AAH333116BU                         | AAH333216BU |
|                         | Orange                            | KR plug                                     | AAH330115YK                         | AAH330215YK                         | AAH330315YK                         | AAH333115RK                         | AAH333215RK |
|                         |                                   | US plug                                     | AAH330115YU                         | AAH330215YU                         | AAH330315YU                         | AAH333116RU                         | AAH333216RU |

Accessories **Page 138** Plate Cover, Power Adapter, Magnetic Bar, Magnetic Retriever

# Magnetic Stirrer

## Multi Position type

### Differentiated multi-stirring control for multi-purpose use

#### Structural Functional Features

- Maintains accurate speed with feedback control even when sample viscosity and amount change.
- Display of stirring position on the upper part of the stainless steel.
- Using special permanent magnets for maintaining stirring ability.

#### Use Convenience Features

- Simultaneous display of set speed and actual speed.
- Count-down timer provided. (up to 99 hours and 59 minutes)
- Six models provided according to the quantity and size of stirring.

#### Outstanding Safety

- Safety ensured by BLDC motor that does not generate sparks.
- Spill-proof design minimizes inflow solution into device.
- Prevents samples splash with smooth operation at the start and stop of stirring.
- Silicon pad (option) to prevent slip-related accidents of glassware.



MS-53M

### Differentiated Multi Control

- Four kinds of stirring control methods and timer function allow for performance of various stirring experiments simultaneously. (MS-51M has two control methods.)
- Display LED point window for easy setting and confirmation.

#### All Mode

Simultaneous stirring with same speed.

#### Column Mode

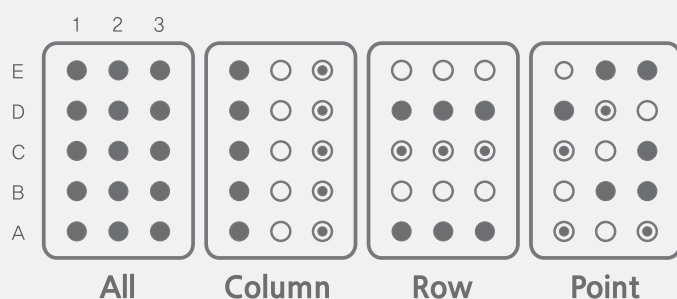
Stirring with different speeds for each column.

#### Row Mode

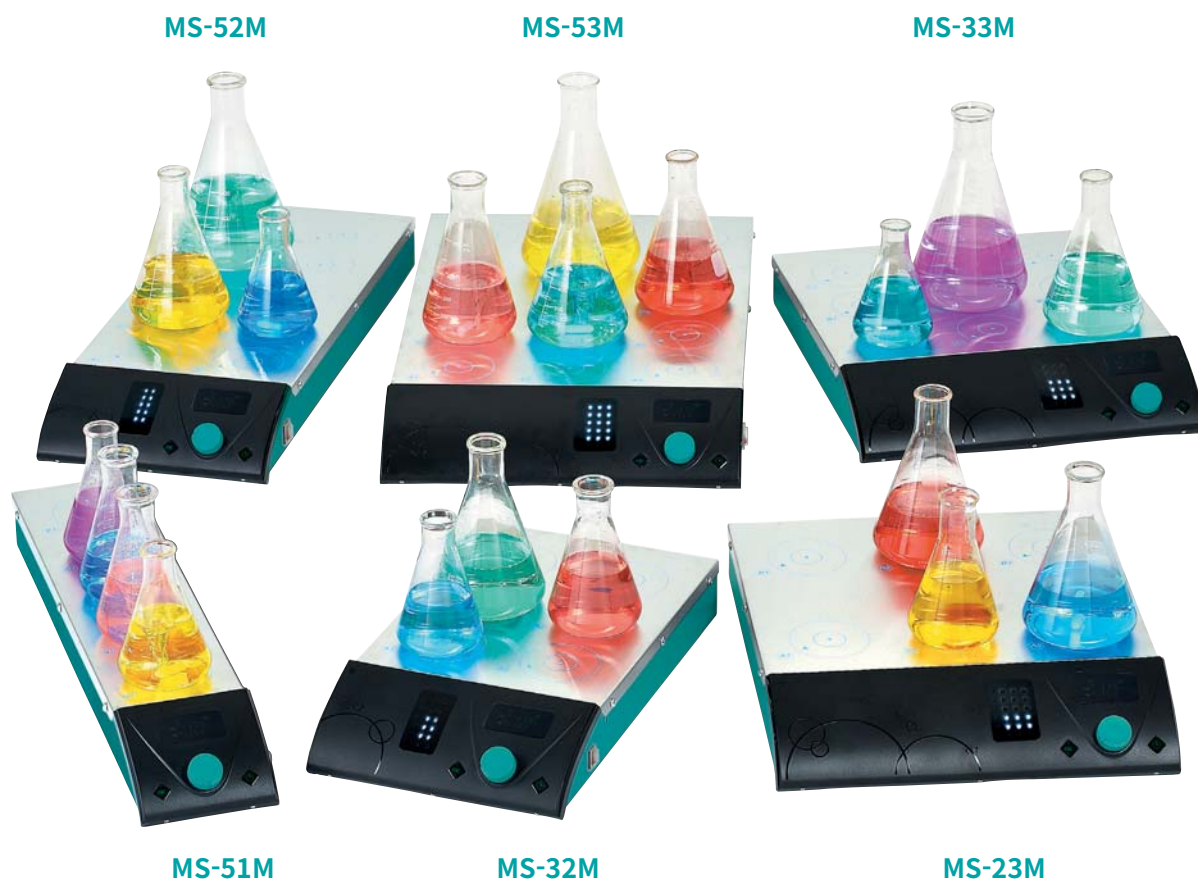
Stirring with different speeds for each row.

#### Point Mode

Stirring with different speeds for each point







Stirrer & Mixer

## Specification

| Model                          |  | MS-51M                               | MS-23M                                | MS-32M                             | MS-33M                                | MS-52M                            | MS-53M                                |
|--------------------------------|--|--------------------------------------|---------------------------------------|------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|
| <b>Stirring</b>                | Speed range (rpm)                                    | 30 to 2000                           | 30 to 2000                            | 30 to 2000                         | 30 to 2000                            | 30 to 2000                        | 30 to 2000                            |
|                                | Capacity per point at 2000rpm (H <sub>2</sub> O, mL) | 250                                  | 250                                   | 250                                | 250                                   | 250                               | 250                                   |
|                                | Operating mode                                       | 2 (All, Point)                       | 4 (All, Column, Row, Point)           | 4 (All, Column, Row, Point)        | 4 (All, Column, Row, Point)           | 4 (All, Column, Row, Point)       | 4 (All, Column, Row, Point)           |
|                                | Postion (Row x Column)                               | 5 (5 x 1)                            | 6 (2 x 3)                             | 6 (3 x 2)                          | 9 (3 x 3)                             | 10 (5 x 2)                        | 15 (5 x 3)                            |
|                                | Point distance (W x D, mm / inch)                    | 90 / 3.54                            | 117 x 170 / 4.61 x 6.69               | 117 x 90 / 4.61 x 3.54             | 117 x 90 / 4.61 x 3.54                | 117 x 90 / 4.61 x 3.54            | 117 x 90 / 4.61 x 3.54                |
|                                | Magnetic bar , Max. (L x Ø, mm / inch)               | 30 x 8 / 1.18 x 0.31                 | 30 x 8 / 1.18 x 0.31                  | 30 x 8 / 1.18 x 0.31               | 30 x 8 / 1.18 x 0.31                  | 30 x 8 / 1.18 x 0.31              | 30 x 8 / 1.18 x 0.31                  |
|                                | Load, Max. (kg / lbs)                                | 30 / 66.14                           | 30 / 66.14                            | 30 / 66.14                         | 30 / 66.14                            | 30 / 66.14                        | 30 / 66.14                            |
| <b>Material</b>                | Top plate  | Stainless steel                      | Stainless steel                       | Stainless steel                    | Stainless steel                       | Stainless steel                   | Stainless steel                       |
|                                | Body   | Powder coated steel, PET             | Powder coated steel, PET              | Powder coated steel, PET           | Powder coated steel, PET              | Powder coated steel, PET          | Powder coated steel, PET              |
|                                | Motor type   | BLDC (Brushless Direct Current)      | BLDC (Brushless Direct Current)       | BLDC (Brushless Direct Current)    | BLDC (Brushless Direct Current)       | BLDC (Brushless Direct Current)   | BLDC (Brushless Direct Current)       |
| <b>Dimensions</b>              | Top plate (W x D, mm / inch)                         | 124 x 485 / 4.88 x 19.09             | 362 x 318 / 14.25 x 12.52             | 242 x 318 / 9.53 x 12.52           | 362 x 318 / 14.25 x 12.52             | 246 x 485 / 9.68 x 19.09          | 367 x 485 / 14.45 x 19.09             |
|                                | Exterior (W x D x H, mm / inch)                      | 131 x 603 x 82 / 5.56 x 23.74 x 3.23 | 377 x 436 x 82 / 14.84 x 17.16 x 3.23 | 254 x 436 x 82 / 10 x 17.16 x 3.23 | 344 x 436 x 81 / 13.54 x 17.16 x 3.19 | 254 x 602 x 82 / 10 x 23.7 x 3.23 | 377 x 599 x 82 / 14.84 x 23.58 x 3.23 |
|                                | Net weight (kg / lbs)                                | 4 / 8.81                             | 6 / 13.23                             | 5 / 11.02                          | 7 / 15.43                             | 8 / 17.64                         | 11 / 24.25                            |
| <b>Timer</b>                   | Max. 99 hrs 59 min.                                  | Max. 99 hrs 59 min.                  | Max. 99 hrs 59 min.                   | Max. 99 hrs 59 min.                | Max. 99 hrs 59 min.                   | Max. 99 hrs 59 min.               | Max. 99 hrs 59 min.                   |
| <b>Electrical requirements</b> | AC 100 ~ 240V, 50 / 60Hz                             |                                      |                                       |                                    |                                       |                                   |                                       |
| <b>Power consumption (W)</b>   | 45   | 45                                   | 45                                    | 54                                 | 85                                    | 135                               |                                       |
| <b>Cat. No.</b>                | AAH332415K   | AAH332115K                           | AAH332215K                            | AAH332315K                         | AAH332515K                            | AAH332615K                        |                                       |
|                                | AAH332415U   | AAH332115U                           | AAH332215U                            | AAH332315U                         | AAH332515U                            | AAH332615U                        |                                       |

Accessories [Page 138](#) Silicone Pad, Magnetic Bar, Magnetic Retriever

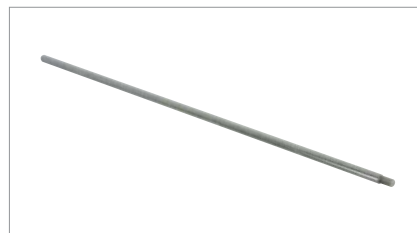
# Accessories for Magnetic Stirrer



Plate Cover (Black, White)



Silicone Pad



Clamp Rod

## Plate Cover

| Cat. No.     | Description                  | Model    |
|--------------|------------------------------|----------|
| 00MTT0000002 | White color, Silicone (Ø120) | MS-12B   |
| 00MTT0000003 | White color, Silicone (Ø170) | MS-17B/G |
| 00MTT0000004 | White color, Silicone (Ø220) | MS-22B/G |
| 00MTT0000005 | Black color, Silicone (Ø120) | MS-12B   |
| 00MTT0000006 | Black color, Silicone (Ø170) | MS-17B/G |
| 00MTT0000007 | Black color, Silicone (Ø220) | MS-22B/G |
| 00MTT0000144 | White color, Silicone        | MS-12T   |
| 00MTT0000143 | Black color, Silicone        | MS-12T   |
| 00MTT0000146 | White color, Silicone        | MS-17T   |
| 00MTT0000145 | Black color, Silicone        | MS-17T   |

## Silicone Pad

| Cat. No.     | Description (W x D x H, mm / inch)  | Model        |
|--------------|-------------------------------------|--------------|
| 00MTS0000015 | 355 x 475 x 1 / 13.98 x 18.7 x 0.04 | MS-53M       |
| 00MTS0000016 | 235 x 475 x 1 / 9.25 x 18.7 x 0.04  | MS-52M       |
| 00MTS0000017 | 115 x 475 x 1 / 4.53 x 18.7 x 0.04  | MS-51M       |
| 00MTS0000041 | 235 x 310 x 1 / 9.25 x 12.2 x 0.04  | MS-32M       |
| 00MTS0000042 | 355 x 310 x 1 / 13.98 x 12.2 x 0.04 | MS-23M / 33M |

## Power Adapter & Clamp Rod

| Cat. No.     | Description                                 | Model      |
|--------------|---|------------|
| 00MTT0000001 | Power Adapter (100~240V, 50/60Hz)           | MS-12B/17B |
|              |   | MS-12T/17T |
| 00MTT0000132 | Clamp Rod (Ø12 x 400 / Ø0.47 x 15.75", M10) | MS-17G/22G |

## Clamp Holder



- Up to Ø27 mm rods mountable.
- Manufactured using aluminum die-casting and plastic for lightweight but strong fixation.
- Knob structure that is comfortable to handle when locking / unlocking.
- The contact surface with the stand support is stable and does not slip.
- C-20 and C-10 models are suitable for the overhead stirrer.
- The C-10, C-7 and C-5 models are suitable for use with hotplate and magnetic stirrer.

| Model              | C-20             | C-10                        | C-7                         | C-5                         |
|--------------------|------------------|-----------------------------|-----------------------------|-----------------------------|
| Max. Ø (mm / inch) | 27 / 1.06        | 17 / 0.66                   | 12 / 0.47                   | 12 / 0.47                   |
| Open Ø (mm / inch) | 20 / 0.79        | 15 / 0.59                   | -                           | -                           |
| Body material      | Aluminum         | Aluminum                    | Aluminum                    | Polypropylene               |
| Knob material      | Polypropylene    | Polypropylene               | Polypropylene               | Polypropylene               |
| Bolt material      | Stainless Steel  | Stainless Steel             | Stainless Steel             | Stainless Steel             |
| Suitable for       | Overhead Stirrer | Overhead Stirrer            | -                           | -                           |
|                    | -                | Hotplate & Magnetic Stirrer | Hotplate & Magnetic Stirrer | Hotplate & Magnetic Stirrer |
| Cat. No.           | AAA37511         | AAA37512                    | AAA37513                    | AAA37514                    |

# Accessories Power Divider

## Clear arrangement the power supply lines of a lot of small appliance

- **Simultaneously Provides Power Up To 5 Devices**

- Simultaneously supplies DC 12V power of up to 0.7A per device for 5 devices in each channel.

- **LED lamp displaying operation state for each of 5 channels**

- Green light indicates normal operation.
- Red light indicates over-current.

- **Convenient and safe structure and functions**

- Rod supplied to fix on stand.
- Excellent durability with moisture-proof structure.
- Rubber stopper for each channel.
- Built-in over current protection function.



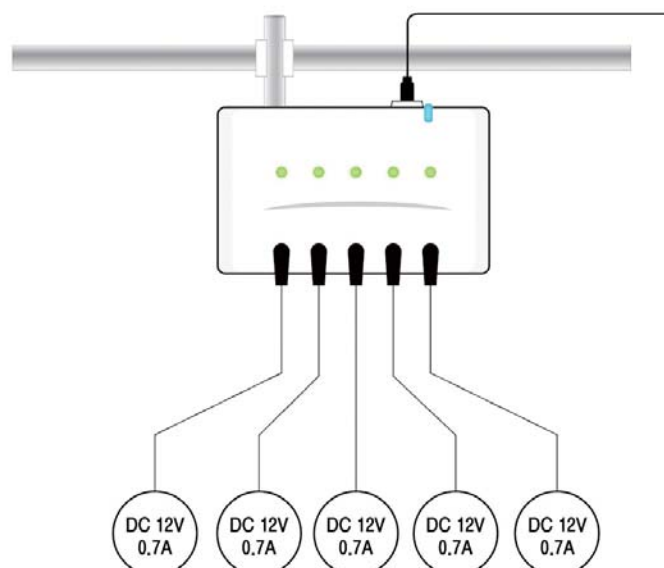
Stirrer & Mixer

### Specification

| Model                            | PD-5                              |
|----------------------------------|-----------------------------------|
| Input                            | DC 12V, Min. 3.5A                 |
| Output                           | DC 12V, Max. 0.7A per channel     |
| Dimension (W x D x H, mm / inch) | 126 x 78 x 33 / 4.96 x 3.07 x 1.3 |
| Weight (kg / lbs)                | 0.16 / 0.35                       |
| Cat. No.                         | AAH33501                          |



Application model: MS-17T, MS-12B, MS-17B



# Accessories Magnetic Bar

## Features of Magnetic Bar

- Chemically stable with PTFE inert material.
- Completely sealed structure with no cracks or pores.
- Smooth finish to avoid absorption or cross contamination.
- Working Temperature Range: up to +280°C.
- Can be sterilized using chemical or physical (thermal) methods. (except  $\gamma$  Radiation)
- Magnet-ALNICOV, PTFE Coated.

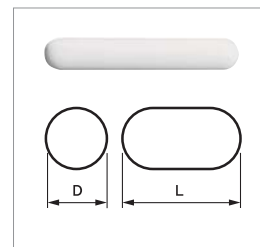
※ The size of the magnetic bar is the average value, and there may be an error of  $\pm 5\%$  in length and  $\pm 10\%$  in diameter.



## Cylindrical Magnetic Bar

- Smooth and round shape.
- The most commonly used magnetic bar for a variety of applications.

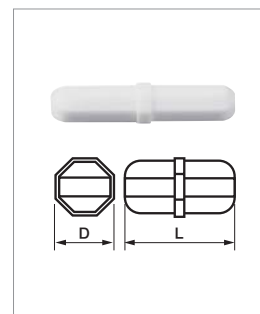
| Cat. No.   | D (mm / inch) | L (mm / inch) |
|------------|---------------|---------------|
| BCW0011138 | 8 / 0.31      | 13 / 0.51     |
| BCW0011156 | 6 / 0.23      | 15 / 0.59     |
| BCW0011208 | 8 / 0.31      | 20 / 0.78     |
| BCW0011258 | 8 / 0.31      | 25 / 0.98     |
| BCW0011308 | 8 / 0.31      | 30 / 1.18     |
| BCW001140  | 8 / 0.31      | 40 / 1.57     |
| BCW001150  | 8 / 0.31      | 50 / 1.96     |



## Octahedral Magnetic Bar

- Octagonal design for more efficient sample mixing.
- Used in containers having slight slopes or uneven surfaces.
- The center of the pivot ring selects the best position for stirring.
- Bigger turbulence than pivot ring is generated at lower speeds.
- Pivot ring reduces friction and noise.

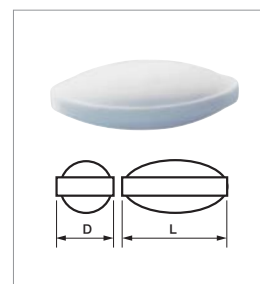
| Cat. No.    | D (mm / inch) | L (mm / inch) |
|-------------|---------------|---------------|
| BCW001513   | 8 / 0.31      | 13 / 0.51     |
| BCW001515   | 8 / 0.31      | 15 / 0.59     |
| BCW001522   | 8 / 0.31      | 22 / 0.86     |
| BCW001525   | 8 / 0.31      | 25 / 0.98     |
| BCW001528   | 8 / 0.31      | 28 / 0.10     |
| BCW001538   | 8 / 0.31      | 38 / 1.49     |
| BCW001541   | 8 / 0.31      | 41 / 1.61     |
| BCW001551   | 8 / 0.31      | 51 / 2.00     |
| BCW00155110 | 10 / 0.39     | 51 / 2.00     |



## Oval Magnetic Bar

- Designed to fit round-bottom flasks, the bar itself has a central axis.

| Cat. No.    | D (mm / inch) | L (mm / inch) |
|-------------|---------------|---------------|
| BCW001610   | 5 / 0.19      | 10 / 0.39     |
| BCW001615   | 6 / 0.23      | 15 / 0.59     |
| BCW001620   | 10 / 0.39     | 20 / 0.78     |
| BCW00162510 | 10 / 0.39     | 25 / 0.98     |
| BCW001630   | 16 / 0.63     | 30 / 1.18     |
| BCW001635   | 16 / 0.63     | 35 / 1.38     |
| BCW001640   | 20 / 0.78     | 40 / 1.57     |
| BCW001650   | 20 / 0.78     | 50 / 1.96     |



# Accessories Magnetic Retriever

## Polypropylene

- Product with built-in ALNICO V magnet and coated with polypropylene.
- Convenient structure having ring part at the end for hanging after use.



Polypropylene

## PTFE

- Product with built-in ALNICO V magnet and coated with PTFE. (teflon)



PTFE

| Cat. No.   | Ø (mm / inch) | L (mm / inch) | Description             |
|------------|---------------|---------------|-------------------------|
| BCW0041300 | 10 / 0.39     | 300 / 11.81   | Polypropylene, Alnico V |
| BCW0041350 | 10 / 0.39     | 350 / 13.77   |                         |
| BCW0041450 | 10 / 0.39     | 450 / 17.71   |                         |
| BCW004150  | 10 / 0.39     | 150 / 5.90    | PTFE, Alnico V          |
| BCW004250  | 10 / 0.39     | 250 / 9.84    |                         |
| BCW004350  | 10 / 0.39     | 350 / 13.77   |                         |
| BCW004450  | 10 / 0.39     | 450 / 17.71   |                         |





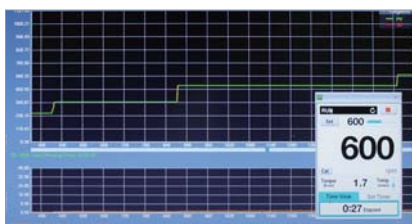
## Overhead Stirrer

Possesses practical functions required in actual experiments, and has a beneficial and convenient configuration system

- > **Safe, spark-free motor**  
Use of spark-free BLDC motor for safer experimental environment.
- > **Reliable control technology**  
Real-time PID feedback control method maintains accurate rpm even when sample viscosity changes.
- > **Excellent structure for long-term continuous use**  
Excellent durability of BLDC motor and structure allows for powerful and excellent heat dissipation.
- > **Patented best effort performance of superior level**  
Automatic rpm control in case overload operation. Attempt to stir with set rpm according to viscosity change.
- > **Over-temperature and overload protection**  
Built-in over-temperature and overload protection device with safety functions for continuous operation of the equipment.
- > **Free selection of rotation direction**  
Rotation direction is selectable for various impeller uses. (except for MSA)
- > **Computer interface control**  
Convenient remote control and data management through provided dedicated software. (except MSA)
- > **Comfortable use with smooth stirring start**  
Progressively and smoothly reaches the set rpm, preventing accidents such as sample spill-out.



Convenient remote control and data management through dedicated software.



Dedicated software provided as standard.



Free selection of rotation direction.



## Optimized model configuration and performance Lab Companion's Overhead Stirrer

- > **Model configuration for the appropriate choice**  
Four models provided for optimum selection according to torque, rpm, function, and display.
- > **Prestige touch model (MSH)**  
Color touch screen and control  
Knob control via external controller. (option)
- > **High performance model (MSD)**  
Clear FND & control knob.  
Control via PC using USB connection.
- > **Easy control model (MSA)**  
Clear FND and control knob.  
Over temperature and overload protection functions included.
- > **Slim & compact design**  
Design that minimizes interference with other devices even in the case of a complex set of experiments.
- > **Pass-through shaft design**  
Impeller shaft structure can be passed through, making it easy to control the height of the impeller at the time of experiment configuration.
- > **Easy to use with intuitive operation**  
Simple and intuitive operation environment.  
Useful function of displaying device information.
- > **Controller lock to prevent erroneous operation**  
Controller lock to prevent errors caused by unexpected pressing of buttons. (except for MSA)

※ Some of the above contents are limited to specific models.



Model configuration according to torque, rpm, function, and display part.



Structure allows for convenient adjustment of impeller height.



Separate external controller for remote control.

# Overhead Stirrer

## Prestige touch type

### Prestige touch model with highest performance and stability

#### Structural Functional Features

- Possible for user to select clockwise (CW) / counter clock wise. (CCW)
- Slim & compact design.
- Convenient adjustment of height with pass-through impeller shaft.
- Chuck with excellent corrosion resistance. (max. Ø10 mm)
- 2 models provided according to torque and rpm.

#### Use Convenience Features

- Best effort function to maintain maximum set rpm by monitoring sample viscosity changes in real time. (application 10-2014-0124899)
- Accurate stirring with PID feedback control.
- Count-down timer provided. (up to 99 hours and 59 minutes)
- Operating elapsed time display function.
- Machine operation and data management with USB connection.
- Complete with accessories such as impeller, stand, clamp, etc.

#### Outstanding Safety

- Safety ensured by BLDC motor that does not generate sparks.
- Excellent heat dissipation structure makes use for a long time without any trouble.
- Continual use in safe by over temperature and overload protection.
- Malfunction prevented by controller lock function.
- Prevents sample run-off by smooth stirring start and stop function.
- Motor protection by displaying motor temperature in three colors.



MSH-0512

#### Easy and convenient color touch LCD controller

- Intuitive operation with touch LCD controller and control knobs.
- Displays set value, actual value, time, torque, and motor temperature.



#### PC control and data management with USB connection

- Useful for data management through PC control.
- Dedicated software and USB cable provided as standard.







## Specialized External Controller

- When harmful fumes are generated through stirring, the reaction proceeds inside the fume hood and the device is safely controlled by external controller at outside.
- Checking control status in real time and controls start/stop or stirring speed changes.
- Color LCD display for intuitive and easy control.



| Model                           | RMS                             |
|---------------------------------|---------------------------------|
| Exterior (W x D x H, mm / inch) | 60 x 16 x 120 / 2.4 x 0.6 x 4.7 |
| Wire length (mm / inch)         | 3000 / 118                      |
| Cat. No.                        | AAA37591                        |



## Lab Companion's Bluetooth for Mobile Use

- Connects wirelessly using smartphone or tablet PC with Bluetooth enabled and a mobile app.
- Checking control status in real time and controls start/stop or stirring speed changes.
- Automatic remote notification function in case of device failure during experiment.



| Model                           | JBT                             |
|---------------------------------|---------------------------------|
| Exterior (W x D x H, mm / inch) | 140 x 54 x 18 / 5.5 x 2.1 x 0.7 |
| Weight (kg / lbs)               | 0.04 / 0.09                     |
| Frequency                       | 2.4GHz ISM band                 |
| Cat. No.                        | AAAQ1012                        |

## Specification

| Model  | MSH-0512                                   | MSH-0520  |
|--|--|---|
| Speed range (rpm)                                      | 50 to 1200                                 | 50 to 2000  |
| Viscosity, max. (cP) <sup>1)</sup>                     | 30000 (~1200rpm)<br>50000 (~700rpm)        | 5000 (~2000rpm)<br>10000 (~1600rpm)<br>30000 (~600rpm)<br>50000 (~300rpm) |
| Stirring capacity (H <sub>2</sub> O), max. (L / cu ft) | 100 / 3.53 (~1200rpm)                      | 60 / 2.12 (~2000rpm)  |
| Rated torque (N,cm / inch)                             | 41.6 / 16.38                               | 20.8 / 8.19   |
| Motor input / output (W)                               | 71 / 48                                    | 71 / 48   |
| Speed control  | PID feedback control                       | PID feedback control  |
| Material   | Body                                       | Powder coated aluminum  |
|  | Cover                                      | Polypropylene   |
|  | Motor type                                 | BLDC (Brushless Direct Current)   |
| Dimension  | Chuck range (Ø, mm / inch)                 | 3~10 / 0.12~0.39  |
|  | Exterior (W x D x H, mm / inch)            | 80 x 185 x 235 / 3.15 x 7.28 x 9.25                                       |
|  | Net weight (kg / lbs)                      | 3.1 / 6.83  |
| Electrical requirements                                | AC 100 to 240V, 50/60Hz with power adapter |   |
| Power consumption (A)                                  | 1.5  | 1.5   |
| Cat. No.   | KR plug                                    | AAH371415K  |
|  | US plug                                    | AAH371415U  |
|  |  | AAH371515K  |
|  |  | AAH371515U  |

1) Tested with silicone oil at 26°C and 60% RH, and uses triple-bladed propeller impeller (Ø50).

Accessories [Page 148](#) Impeller, Stand & Support, Clamp, Magnetic Drive, Stirring Seals

# Overhead Stirrer

## High performance type



## High performance model for faithful advanced features and safety

### Structural Functional Features

- Possible for user to select clockwise (CW) / counter clock wise. (CCW)
- Slim & compact design.
- Convenient adjustment of height with pass-through impeller shaft.
- Chuck with excellent corrosion resistance. (max. Ø10 mm)

### Use Convenience Features

- Best effort function to maintain maximum set rpm by monitoring sample viscosity changes in real time.
- Accurate stirring with PID feedback control.
- Operating elapsed time display function.
- Machine operation and data management with USB connection.
- Complete with accessories such as impeller, stand, clamp, etc.

### Outstanding Safety

- Safety ensured by BLDC motor that does not generate sparks.
- Excellent heat dissipation structure makes use for a long time without any trouble.
- Continual use in safe by over temperature and overload protection.
- Malfunction prevented by controller lock function.
- Prevents sample run-off by smooth stirring start and stop function.



MSD-0420

## Specification

| Model  |                                 | MSD-0420  |
|--|---------------------------------|---|
| Speed range (rpm)                                      |                                 | 80 to 2000  |
| Viscosity, max. (cP) <sup>1)</sup>                     |                                 | 5000 (~2000rpm)<br>10000 (~1200rpm)<br>30000 (~300rpm)<br>50000 (~200rpm) |
| Stirring capacity (H <sub>2</sub> O), max. (L / cu ft) |                                 | 20 / 0.71 (~2000rpm)  |
| Rated torque (N,cm / inch)                             |                                 | 19 / 7.48   |
| Moter input / output (W)                               |                                 | 70 / 40   |
| Speed control  |                                 | PID feedback control  |
| Material   | Body                            | Powder coated aluminum  |
|  | Cover                           | Polypropylene   |
|  | Motor type                      | BLDC (Brushless Direct Current)   |
| Dimension  | Chuck range (Ø, mm / inch)      | 3~10 / 0.12~0.39  |
|  | Exterior (W x D x H, mm / inch) | 75 x 215 x 150 / 2.95 x 8.46 x 5.9  |
|  | Net weight (kg / lbs)           | 2.8 / 6.17  |
| Electrical requirements (230V, 50/60Hz, A)             |                                 | 0.5   |
| Cat. No.   |                                 | AAH373225K  |
| Electrical requirements (120V/60Hz, A)                 |                                 | 0.5   |
| Cat. No.   |                                 | AAH373225U  |

1) Tested with silicone oil at 26°C and 60% RH, and uses triple-bladed propeller impeller (Ø50).

Accessories [Page 148](#) Impeller, Stand & Support, Clamp, Magnetic Drive, Stirring Seals

# Overhead Stirrer

## Easy control type



### Easy control model optimized for simple use

#### Structural Functional Features

- Excellent durability BLDC motor and dedicated controller.
- Slim & compact design.
- Convenient adjustment of height with pass-through impeller shaft.
- Chuck with excellent corrosion resistance. (max. Ø10 mm)

#### Use Convenience Features

- Accurate stirring with PID feedback control.
- Easy operating for convenient use.
- Displays the set speed and the current speed at the same time.
- Pause buttons make it easier to observe experiments.
- Motor output detection and display.
- Complete with accessories such as impeller, stand, clamp, etc.

#### Outstanding Safety

- Safety ensured by BLDC motor that does not generate sparks.
- Excellent heat dissipation structure makes use for a long time without any trouble.
- Continual use in safe by over temperature and overload protection.
- Over temperature/overload warning notification displayed.
- Prevents sample run-off by smooth stirring start and stop function.



MSA-0420

Stirrer & Mixer

### Specification

| Model  |                                 | MSA-0420  |
|--|---------------------------------|---|
| Speed range (rpm)                                      |                                 | 80 to 2000  |
| Viscosity, max. (cP) <sup>1)</sup>                     |                                 | 5000 (~2000rpm)<br>10000 (~1200rpm)<br>30000 (~300rpm)<br>50000 (~200rpm) |
| Stirring capacity (H <sub>2</sub> O), max. (L / cu ft) |                                 | 20 / 0.71 (~2000rpm)  |
| Rated torque (N,cm)                                    |                                 | 19 / 7.48   |
| Motor input / output (W)                               |                                 | 70 / 40   |
| Speed control  |                                 | PID feedback control  |
| Material   | Body                            | Powder coated aluminum  |
|  | Cover                           | Polypropylene   |
|  | Motor type                      | BLDC (Brushless Direct Current)   |
| Dimension  | Chuck range (Ø, mm)             | 3~10 / 0.12~0.39  |
|  | Exterior (W x D x H, mm / inch) | 75 x 215 x 150 / 2.95 x 8.46 x 5.9  |
|  | Net weight (kg / lbs)           | 2.8 / 6.17  |
| Electrical requirements (230V, 50/60Hz, A)             |                                 | 0.5   |
| Cat. No.   |                                 | AAH373325K  |
| Electrical requirements (120V/60Hz, A)                 |                                 | 0.5   |
| Cat. No.   |                                 | AAH373325U  |

<sup>1)</sup>Tested with silicone oil at 26°C and 60% RH, and uses triple-bladed propeller impeller (Ø50).

Accessories [Page 148](#) Impeller, Stand & Support, Clamp, Magnetic Drive, Stirring Seals

# Accessories Impeller

## Stainless steel impellers

### Propeller Impeller

- Suitable for high-speed stirring of low/medium viscosity solutions.
- Excellent mixing properties for homogeneous and suspended solids.
- it can be mounted on an overhead stirrer that rotates clockwise.

#### 3-Bladed

(Unit: mm / inch)

| Cat. No. | Blade Ø    | Shaft Ø  | Length      |
|----------|------------|----------|-------------|
| AAA37521 | 50 / 1.97  | 8 / 0.31 | 400 / 15.75 |
| AAA37522 | 70 / 2.76  | 8 / 0.31 | 400 / 15.75 |
| AAA37523 | 100 / 3.94 | 8 / 0.31 | 400 / 15.75 |



#### 4-Bladed

(Unit: mm / inch)

| Cat. No. | Blade Ø    | Shaft Ø  | Length      |
|----------|------------|----------|-------------|
| AAA37531 | 50 / 1.97  | 8 / 0.31 | 400 / 15.75 |
| AAA37532 | 70 / 2.76  | 8 / 0.31 | 400 / 15.75 |
| AAA37533 | 100 / 3.94 | 8 / 0.31 | 400 / 15.75 |

### Anchor Impeller

- Suitable for low-speed stirring or reaction of medium/high viscosity solutions.
- Used for polymer reactions or dispersion of large amounts of liquid minerals, etc.
- Select and use an impeller having similar size with the diameter of vessels.

(Unit: mm / inch)

| Cat. No. | Blade, W x H          | Shaft Ø  | Length      |
|----------|-----------------------|----------|-------------|
| AAA37571 | 45 x 45 / 1.77 x 1.77 | 8 / 0.31 | 300 / 11.81 |
| AAA37572 | 60 x 60 / 2.36 x 2.36 | 8 / 0.31 | 500 / 19.69 |



### Paddle Impeller

- Suitable for high-speed stirring of low/medium viscosity solutions.
- Provides smooth flow during heat exchange.

(Unit: mm / inch)

| Cat. No. | Blade, W x H          | Shaft Ø  | Length      |
|----------|-----------------------|----------|-------------|
| AAA37581 | 70 x 70 / 2.76 x 2.76 | 8 / 0.31 | 500 / 19.69 |



### Dissolver Impeller

- Suitable for high/medium-speed stirring of / low/medium (<500 mPas) viscosity solutions.

(Unit: mm / inch)

| Cat. No.   | Blade Ø   | Shaft Ø  | Length      |
|------------|-----------|----------|-------------|
| BEA0570031 | 55 / 2.17 | 8 / 0.31 | 350 / 13.78 |
| BEA0570032 | 75 / 2.95 | 8 / 0.31 | 350 / 13.78 |

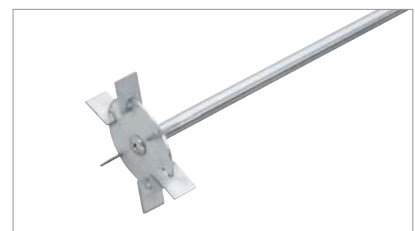


### Turbine Impeller

- Suitable for high-speed stirring of medium/high viscosity solutions.

(Unit: mm / inch)

| Cat. No. | Blade Ø   | Shaft Ø  | Length      |
|----------|-----------|----------|-------------|
| AAA37561 | 57 / 2.24 | 8 / 0.31 | 500 / 19.69 |
| AAA37562 | 90 / 3.54 | 8 / 0.31 | 500 / 19.69 |



**Half-Moon Impeller**

- Suitable for stirring medium viscosity solutions
- The blades are folded for use in narrow containers.
- The blades are spread by centrifugal force during stirring.

(Unit: mm / inch)

| Cat. No. | Blade, W x H          | Shaft Ø  | Length      |
|----------|-----------------------|----------|-------------|
| AAA37541 | 65 x 20 / 2.6 x 0.79  | 8 / 0.31 | 400 / 15.75 |
| AAA37542 | 90 x 25 / 3.54 x 0.98 | 8 / 0.31 | 400 / 15.75 |

**Centrifugal Impeller**

- Suitable for high-speed stirring of low/medium viscosity solutions.
- The blades are folded for use in narrow containers.
- The blades are spread by centrifugal force during stirring.

(Unit: mm / inch)

| Cat. No. | Blade, W x H          | Shaft Ø  | Length      |
|----------|-----------------------|----------|-------------|
| AAA37551 | 90 x 15 / 3.54 x 0.59 | 8 / 0.31 | 500 / 19.69 |
| AAA37552 | 150 x 15 / 5.9 x 0.59 | 8 / 0.31 | 500 / 19.69 |

**PTFE coated impellers****4-Bladed propeller**

(Unit: mm / inch)

| Cat. No.   | Blade, W x H | Shaft Ø  | Length      |
|------------|--------------|----------|-------------|
| BEA0570081 | 50 / 1.97    | 8 / 0.31 | 500 / 19.69 |
| BEA0570082 | 70 / 2.76    | 8 / 0.31 | 500 / 19.69 |



Propeller (4-bladed) / Turbine

**Turbine**

(Unit: mm / inch)

| Cat. No.   | Blade, W x H | Shaft Ø  | Length      |
|------------|--------------|----------|-------------|
| BEA0570131 | 70 / 2.76    | 8 / 0.31 | 500 / 19.69 |



Half-moon / Centrifugal

**Half-moon**

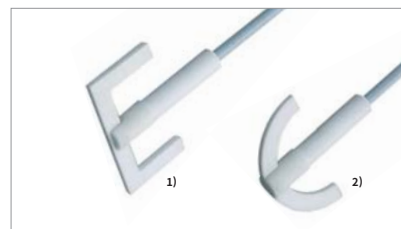
(Unit: mm / inch)

| Cat. No.   | Blade, W x H          | Shaft Ø  | Length      |
|------------|-----------------------|----------|-------------|
| BEA0570091 | 60 x 18 / 2.36 x 0.71 | 8 / 0.31 | 500 / 19.69 |

**Centrifugal**

(Unit: mm / inch)

| Cat. No.   | Blade, W x H          | Shaft Ø  | Length      |
|------------|-----------------------|----------|-------------|
| BEA0570101 | 76 x 17 / 2.99 x 0.67 | 8 / 0.31 | 500 / 19.69 |

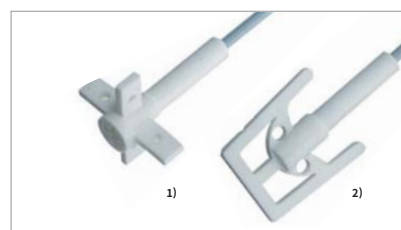


Anchor (Square / Round)

**Anchor (Square<sup>1)</sup> / Round<sup>2)</sup>**

(Unit: mm / inch)

| Cat. No.                 | Blade, W x H          | Shaft Ø  | Length      |
|--------------------------|-----------------------|----------|-------------|
| BEA0570111 <sup>1)</sup> | 80 x 50 / 3.15 x 1.97 | 8 / 0.31 | 500 / 19.69 |
| BEA0570121 <sup>2)</sup> | 80 x 40 / 3.15 x 1.57 | 8 / 0.31 | 500 / 19.69 |



Paddle / Paddle A

**Paddle (Paddle<sup>1)</sup> / Paddle A<sup>2)</sup>**

(Unit: mm / inch)

| Cat. No.                 | Blade, W x H          | Shaft Ø  | Length      |
|--------------------------|-----------------------|----------|-------------|
| BEA0570141 <sup>1)</sup> | 70 / 2.76             | 8 / 0.31 | 500 / 19.69 |
| BEA0570151 <sup>2)</sup> | 78 x 80 / 3.07 x 3.15 | 8 / 0.31 | 500 / 19.69 |

# Accessories for Overhead Stirrer

## Stand & Support



### Easy-to-use Dial Stand

- Fine adjustment of position up, down, back and forth.
- Possible to lock after finishing fine adjustment using dials.
- The structure allows for no additional clamp holder to be used.



Basic Stand 1



Basic Stand 2



Basic Stand 3

### Stand

| Cat. No. | Description (W x D x H, mm / inch)                      |
|----------|---|
| AAA37501 | Dial stand (400 x 400 x 700 / 15.75 x 15.75 x 27.56)    |
| AAA37502 | Basic stand 1 (400 x 400 x 700 / 15.75 x 15.75 x 27.56) |
| AAA37503 | Basic stand 2 (300 x 400 x 700 / 11.81 x 15.75 x 27.56) |
| AAA37504 | Basic stand 3 (250 x 350 x 700 / 9.84 x 13.78 x 27.56)  |

### Support

| Cat. No.     | Description (Ø x L, mm / inch)                 |
|--------------|--|
| 00MSS0000051 | Support Rod, M14 (Ø15 x 500mm / Ø0.59 x 19.68) |
| 00MSS0000052 | Support Rod, M14 (Ø18 x 500mm / Ø0.71 x 19.68) |
| 00MSS0000053 | Support Rod, M14 (Ø20 x 500mm / Ø0.79 x 19.68) |

## Clamp & Seal



Utility Clamp 3 Prong



Utility Clamp Plat



3 Prong Clamp



2 Prong Clamp



Fixing Clamp



Flexible Coupling



PTFE Stirring seal

| Cat. No.   | Description                               |
|------------|---|
| BEA1000001 | Utility clamp 3 prong                     |
| BEA1000002 | Utility clamp plat                        |
| BEA1000011 | 3 Prong clamp (80 mm grip)                |
| BEA1000012 | 3 Prong clamp (60 mm grip)                |
| BEA1000013 | 3 Prong clamp (20 mm grip)                |
| BEA1000014 | 2 Prong clamp (60 mm grip)                |
| BEA0570181 | Fixing clamp                              |
| BEA0570191 | Flexible coupling                         |
| BEA0570161 | PTFE stirring seals (24/40) with 8mm hole |
| BEA0570162 | PTFE stirring seals (29/42) with 8mm hole |
| BEA0570163 | PTFE stirring seals (34/45) with 8mm hole |

### Clamp Holder Page 138



C-20



C-10

- Made of aluminum die casting for light weight but strong fixing.
- Knob structure that is comfortable to handle when locking / unlocking.
- The contact surface with the stand support is stable and does not slip.
- C-20 and C-10 models are suitable for the overhead stirrer.

## Magnetic Drive



MD-T6



- Mixing reaction samples in case pressurized or depressurized in container, processing of resin solvents, decomposition and synthesis using enzymes, and uniform mixing of liquid raw materials.
- Experiments that require large stirring force while maintaining full sealing.
- Connected with overhead stirrer.

- The outer magnet and inner magnet are rare-earth element, which form a strong magnetic force to achieve high torque. (rotational force)
- Low vibration and high speed rotation even in a sealed state.
- Includes cooling line base for easy connection with external cooling device. (for experiments over 70°C)
- The connection point to the ground joint of glassware is easy to separate from glassware in a sealed state.

## Specification

| Model                         |                      | MD-T6-24   | MD-T6-29   | MD-T6-35   |
|-------------------------------|----------------------|--|--|--|
| Material                      | Body                 | STS316 / Cr-Plate                                | STS316 / Cr-Plate                                | STS316 / Cr-Plate                                |
|                               | Bushing & seal       | PTFE & viton                                     | PTFE & viton                                     | PTFE & viton                                     |
| Max. torque (kgf.cm)          |                      | 6  | 6  | 6  |
| Driving                       | Pressure             | 1 x 10 <sup>-4</sup> mmHg to 5kg/cm <sup>2</sup> | 1 x 10 <sup>-4</sup> mmHg to 5kg/cm <sup>2</sup> | 1 x 10 <sup>-4</sup> mmHg to 5kg/cm <sup>2</sup> |
|                               | Temp. (with cooling) | Max. 300°C / 572°F                               | Max. 300°C / 572°F                               | Max. 300°C / 572°F                               |
| Shaft size (Ø x H, mm / inch) |                      | 8 x 209 / 0.31 x 8.23                            | 8 x 209 / 0.31 x 8.23                            | 8 x 209 / 0.31 x 8.23                            |
| Ground joint                  |                      | 24 / 40  | 29 / 42  | 34 / 45  |
| Application                   |                      | Glassware  | Glassware  | Glassware  |
| Cat. No.                      |                      | BEA511001  | BEA511002  | BEA511003  |



## Vortex Mixer

### More convenient and useful functions Vortex Mixer Developed with Lab Companion's Proprietary Technology

> **Touch vortex function maximizes convenience**

No matter where you touch the top of the platform, it's very easy to use with fast vortex formation.

> **Patented touch switch method**

Stable and sensitive Touch vortex using touch switch connected to top plate.  
(patent registered: 10-1678161)

> **Low height to minimize burden on the wrist**

The structure minimizes the burden on the wrist during repeated use due to its low height.

> **Structure to maintain stability at high speeds**

The low-profile design and rubber feet make for slip-free operation of the equipment.

> **Multiple tubes can be combined simultaneously**

Multiple vortex tubes can be used simultaneously to reduce the required time for efficient testing.

> **Offers use environment of diverse tube shapes and capacities**

Most tubes such as centrifuge tubes, conical tubes, and test tubes can be used in Touch mode.

> **Powerful and fast vortex formation**

Runs up to 3,000 rpm for reliable and strong sample mixing.

> **Proven structural excellence**

BLDC motor with excellent durability.  
Structure allows for low noise and low vibration even at 3,000rpm.



Rapid vortex formation even touching anywhere on top plate.



Available to handle the several tubes at the same time.



Available in various shapes.





## Diverse vortex mixing in one device with optimized configuration can be used for various experiments

- > **Variety of convenient accessories**  
 Tube holder accessories up to Ø25mm.  
 Convenient use with easily interchangeable structure.
- > **Includes microplate shaking function**  
 Dedicated tray and stable speed adjustment function for optimum microplate mixing.
- > **Intuitive and convenient operation**  
 Selects operation mode easily and intuitive speed control knobs.
- > **Safety features for protection of equipment**  
 In case excessive pressure is applied to the top plate, operation is temporarily stopped to protect the equipment.
- > **Selectable operation mode according to application**  
 Rapid vortex formation with touch mode when needed.  
 Run-L/H mode provides stable continuous mixing environment.
- > **Touch mode (touch operation, Max. 3,000rpm)**  
 Slip-free platform provided as standard.  
 Quickly mix up to 3,000 rpm on touch.
- > **Run-L mode (continuous operation, Max. 1,500rpm)**  
 Low speed mode to prevent contamination between samples.  
 Stable and continuous mixing. (except for VM-T model)
- > **Run-H mode (continuous operation, Max. 3,000rpm)**  
 Strong and continuous vortex formation up to 3000rpm with excellent durability.

※ Some of the above contents are limited to specific models.



Various accessories provided according to the sample.



Easy attachment and detachment.



Low-profile design and non-slip feet for stability at high speeds.

# Vortex Mixer



## True vortex mixing with innovative touch



VM-96A



VM-96T  
(Persian Blue)



VM-96T  
(Orange)



## Specification

| Model                           |                                 | VM-96A                           | VM-96T                          |             |
|---------------------------------|---------------------------------|----------------------------------|---------------------------------|-------------|
| Control                         | Speed range (rpm)               | Max. 3000                        | Max. 3000                       |             |
|                                 | Speed control                   | Scale                            | Scale                           |             |
|                                 | Operating mode                  | Touch, Run-L, Run-H              | Touch, Run                      |             |
|                                 | Motion                          | Orbital                          | Orbital                         |             |
|                                 | Orbit (dia., mm / inch)         | 4 / 0.16                         | 4 / 0.16                        |             |
| Material                        | Platform                        | Silicone                         | Silicone                        |             |
|                                 | Body                            | Polypropylene                    | Polypropylene                   |             |
|                                 | Motor type                      | BLDC (Brushless Direct Current)  | BLDC (Brushless Direct Current) |             |
| Dimensions                      | Platform (W x D, mm / inch)     | 76 x 76 / 3 x 3                  | 76 x 76 / 3 x 3                 |             |
|                                 | Exterior (W x D x H, mm / inch) | 154 x 210 x 84 / 6.1 x 8.3 x 3.3 | 148 x 159 x 77 / 5.8 x 6.3 x 3  |             |
|                                 | Net weight (kg / lbs)           | 3.0 / 6.6                        | 2.6 / 5.7                       |             |
| Protection class (DIN EN 60529) |                                 | IP 42                            | -                               |             |
| Electrical requirements         |                                 | AC 100V to 240V, 50/60Hz         |                                 |             |
| Cat. No.                        | KR plug                         | AAH360215K                       | Persian blue                    | Orange      |
|                                 |                                 |                                  | AAH361215BK                     | AAH361215RK |
|                                 | US plug                         | AAH360215U                       | Persian blue                    | Orange      |
|                                 |                                 |                                  | AAH361215BU                     | AAH361215RU |

## Accessories for Vortex Mixer



Platform (pop-off)



Platform (standard)  
Included as standard on equipment purchase



Microplate Tray



| Cat. No.             | Description   |
|----------------------|---|
| <b>00VMS0000063</b>  | Platform (Pop-off)                                      |
| <b>00VMS0000058</b>  | Platform (standard)                                     |
| <b>00VMS000008JT</b> | Microplate tray   |
| <b>AAA36520</b>      | Tube holder (up to $\Phi 50$ mm)                        |
| <b>AAA36521</b>      | Tube holder ( $\Phi 10$ mm x 16ea)                      |
| <b>AAA36522</b>      | Tube holder ( $\Phi 12$ mm x 9ea)                       |
| <b>AAA36523</b>      | Tube holder ( $\Phi 15$ mm x 9ea)                       |
| <b>AAA36524</b>      | Tube holder ( $\Phi 20$ mm x 5ea)                       |
| <b>AAA36525</b>      | Tube holder ( $\Phi 25$ mm x 4ea)                       |
| <b>AAA36526</b>      | Tube holder ( $\Phi 8$ mm x 18ea & $\Phi 10$ mm x 28ea) |



# Life Science Equipment



Satisfaction with the requirements of European regulations and guidelines.



Real-time equipment monitoring and control system using mobile app.



Compliance with Guidelines for Restriction of Hazardous Substances Use.



Rocking motion.



Control of temperature / humidity / rpm / time, etc. through dedicated program.



More precise temperature control through temperature calibration.



Over temperature protection function.



PC communication via RS-232 / RS-485 / USB port.



2 year warranty Free A/S.

## General Application

**Hybridization Oven:** Useful for wash and Binding experiments in molecular biology.

**Heating Block:** Required in culture experiments such as enrichment, enzyme reaction, immunoassay, etc.

**Electrophoresis System:** Electrophoresis of nucleic acid.

**Power Supply for Electrophoresis System:** Electrophoresis of nucleic acids and proteins.

|                                      | Description                        | Note  | Model                                | Page |     |
|--------------------------------------|------------------------------------|---|--------------------------------------|------|-----|
| Preparation<br>Reaction<br>Detection | <b>Hybridization Oven</b>          | <ul style="list-style-type: none"> <li>Performs hybridization progressively</li> <li>10 Programs &amp; 10 Steps</li> </ul>  | Amb. +5 ~ 65°C<br>/ Amb. +41 ~ 149°F | HO   | 158 |
|                                      | <b>Heating Block</b>               | <ul style="list-style-type: none"> <li>Precise feedback temperature control up to 130°C</li> <li>Selection of aluminum blocks for various tubes</li> </ul>                  | Amb. +5 ~ 130°C<br>/ Amb +41 ~ 266°F | CHB  | 159 |
|                                      | <b>Heating &amp; Cooling Block</b> | <ul style="list-style-type: none"> <li>Convenient controlling for 10 programs &amp; 10 steps</li> <li>Temperature control in 0.1°C and timer function included</li> </ul>   | Amb. -20 ~ 95°C<br>/ Amb. 68 ~ 203°F | CCB  | 160 |
|                                      | <b>Heating Shaker</b>              | <ul style="list-style-type: none"> <li>High performance heating shaker at 100°C and 1500rpm</li> <li>Three specialized Interval Mix programs provided</li> </ul>            | Max. 100°C<br>Max. 1500rpm           | CBS  | 161 |
|                                      | <b>Electrophoresis System</b>      | <ul style="list-style-type: none"> <li>Integral structure solid, clean, and easy to maintain</li> <li>UV-transparent gel tray for convenient checking of results</li> </ul> | Buffer Capacity<br>(0.5, 1.0, 1.8 L) | EP   | 164 |
|                                      | <b>Power Supply</b>                | <ul style="list-style-type: none"> <li>Safe power supply with CE certificate</li> <li>Four-set simultaneous output and stackable structure</li> </ul>                       | Constant Voltage<br>Constant Current | EPS  | 167 |

※ The contents of the above and the contents of this catalog may differ depending on the specific model and conditions of use. For the information about the features and specifications that applying to each models, please check the information on the corresponding page of each models.

Vortex Mixer

Page 154



Incubated Shaker

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PCR Workstation

Page 183



Ice Pan / Rack

Page 262



# Hybridization Oven



## Program control that allows the hybridization process to be performed sequentially

### Structural Functional Features

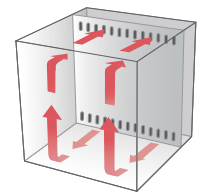
- Hybridization oven with compact design.
- Ideal for hybridization experiments where wash and dry is repeatedly required.
- Moisture provision tray for humidity control.
- Stable rocking motion.
- Internal air circulating to control temperature.
- Design with door that opens downward, minimizing the required space on the side of the device.
- Door with viewing window for easy internal observation.
- Stainless steel interior and shelves are excellent in terms of corrosion resistance and clean maintenance.
- Convenient to use in the Wash phase as a sliding shelf.



HO-10

### Use Convenience Features

- 10 Programs & 10 steps program control.
- Alarm occurs at the end of each step.
- Temperature and rocking can be operated selectively.
- Microprocessor PID method for precise temperature control.
- Calibration function minimizes temperature difference.
- Provides preheating/precooling functions to perform the hybridization step after reaching the set temperature.
- Clear VFD panel for convenient operation status checking.
- Touch button & Jog dial for easy operation.



### Outstanding Safety

- Alarm occurs when humidity is kept below the set value.
- Over temperature limit function.
- Alarm function when temperature sensor is disconnected.
- Preventing sample leakage by mounting pads from slippage onto the shelf.

## Specification

| Model  |                                       | HO-10                                   |
|--|---------------------------------------|---|
| <b>Chamber volume (L / cu ft)</b>              |                                       | 10 / 0.35                               |
| <b>Temperature</b>                             | Range (°C / °F)                       | Amb. +5 ~ 65 / Amb. +9 ~ 149            |
|  | Fluctuation at 50°C, 9rpm (±°C / ±°F) | 0.5 / 0.9                               |
|  | Variation at 50°C, 9rpm (±°C / ±°F)   | 0.5 / 0.9                               |
| <b>Rocking System</b>                          | Motion type                           | Rocking                                 |
|  | Speed range (rpm)                     | 5 to 50                                 |
|  | Rpm control at 100rpm (±rpm)          | 1                                       |
|  | Adjustable tilt                       | 8.5° ± 1                                |
| <b>Dimensions</b>                              | Platform (W x D, mm / inch)           | 256 x 198 / 10.08 x 7.79                |
|  | Interior (W x D x H, mm / inch)       | 278 x 262 x 160 / 10.94 x 10.31 x 6.3   |
|  | Exterior (W x D x H, mm / inch)       | 400 x 410 x 264 / 15.75 x 16.14 x 10.39 |
|  | Net weight (kg / lbs)                 | 14 / 30.86                              |
| <b>Electrical requirements (230V, 60Hz, A)</b> |                                       | 1.2                                     |
| <b>Cat. No.</b>                                |                                       | AAH1B011K                               |
| <b>Electrical requirements (230V, 50Hz, A)</b> |                                       | 2.4                                     |
| <b>Cat. No.</b>                                |                                       | AAH1B012K                               |



※ The lowest temperature that can be controlled depends on changes in room temperature and sample temperature. Therefore, please contact the distributor of our products before purchasing for technical consultation.

※ Technical data (according to DIN 12880)

# Heating Block



## Precise feedback temperature control up to 130°C

### Structural Functional Features

- Optimal heat transfer is achieved by the tight coupling design of the main body.
- Transparent and durable polycarbonate lid protects the sample and provides improved temperature distribution.
- Compact design makes it easy to move and use space.
- Polypropylene (PP) material with excellent chemical resistance.
- Two extractors for easy removal block are provided as standard.
- Aluminum blocks with excellent thermal conductivity. (option)
- Two models with different cover heights are provided depending on the block (tube size) used.

### Use Convenience Features

- The temperature can be set accurately in units of 0.1°C.
- Feedback control enables precise temperature control.
- Calibration function minimizes temperature difference.
- Easy to operate with clear VFD display, touch keys and control knobs.
- Provides operating elapsed time check.
- Count-down timer provided. (up to 99 hours and 59 minutes)

### Outstanding Safety

- Structure with minimal inflow of reagent or sample.
- Convenient and safe operation by notifying the status of heating condition.
- Overheating temperature prevention function. (heating panel, control unit)
- Over-current prevention function.



**CHB-350S**

with Exchangeable Block (option)

**CHB-350T**

with Exchangeable Block 2ea (option)



with Extractor 2ea (standard)

## Specification

| Model   | CHB-350S   | CHB-350T                             |
|---|--|--------------------------------------|
| <b>Temperature</b>                                |  |                                      |
| Range (°C / °F)                                   | Amb. +5 ~ 130 / Amb +41 ~ 266                        | Amb. +5 ~ 130 / Amb +41 ~ 266        |
| Fluctuation at 80°C (±°C / ±°F)                   | 0.1 / 0.18   | 0.1 / 0.18                           |
| Variation at 80°C (±°C / ±°F)                     | 0.5 / 0.9  | 0.5 / 0.9                            |
| Display   | Up to 130°C, 0.1°C resolution                        | Up to 130°C, 0.1°C resolution        |
| Heat up time Ambient to 130°C (min)               | 15   | 15                                   |
| Control   | Feedback control                                     | Feedback control                     |
| Timer   | 1min to 99hrs 59min                                  | 1min to 99hrs 59min                  |
| Safety device                                     | Over temperature protection, Over current protection |                                      |
| <b>Material</b>                                   |  |                                      |
| Body  | PP, Powder coated steel                              | PP, Powder coated steel              |
| Cover   | PC   | PC                                   |
| Block   | Black hard anodized Aluminum                         | Black hard anodized Aluminum         |
| <b>Dimensions</b>                                 |  |                                      |
| Exterior (W x D x H, mm / inch)                   | 249 x 330 x 125 / 9.8 x 12.99 x 4.92                 | 249 x 330 x 250 / 9.8 x 12.99 x 9.84 |
| Net weight (kg / lbs)                             | 3.9 / 8.6  | 4.3 / 9.48                           |
| <b>Electrical Requirements (230V, 50/60Hz, A)</b> | 3.5  | 3.5                                  |
| <b>Cat. No.</b>                                   | <b>AAHJ1015K</b>                                     | <b>AAHJ1115K</b>                     |
| <b>Electrical Requirements (120V, 60Hz, A)</b>    | 6.7  | 6.7                                  |
| <b>Cat. No.</b>                                   | <b>AAHJ1013U</b>                                     | <b>AAHJ1113U</b>                     |

# Heating & Cooling Block



## Convenient use thanks to easy temperature control with 10 programs and 10 steps

### Structural Functional Features

- 10 Programs & 10 steps program control.
- Program can be set to 99 repetitions or infinite repetitions.
- Optimal heat transfer is achieved by the tight coupling design of the main body.
- Transparent and durable polycarbonate lid protects the sample and provides improved temperature distribution.
- Compact design makes it easy to move and use space.
- Polypropylene (PP) material with excellent chemical resistance.
- Two extractors for easy removal block are provided as standard.
- Aluminum blocks with excellent thermal conductivity. (option)



**CCB-350**  
with Exchangeable Block (option)

### Use Convenience Features

- The temperature can be set accurately in units of 0.1°C.
- Feedback control enables precise temperature control.
- Calibration function minimizes temperature difference.
- Easy to operate with clear VFD display, touch keys and control knobs.
- Provides operating elapsed time check.
- Count-down timer provided. (up to 99 hours and 59 minutes)

### Outstanding Safety

- Structure with minimal inflow of reagent or sample.
- Convenient and safe operation by notifying the status of heating condition.
- Overheating temperature prevention function. (heating panel, control unit)
- Over-current prevention function.



## Specification

| Model   | CCB-350  |
|---|--|
| <b>Temperature</b>                                |  |
| Range (°C / °F)                                   | Amb. -20 ~ 95 / Amb. -36 ~ 203                       |
| Fluctuation at 37°C (±°C / ±°F)                   | 0.1 / 0.18   |
| Variation at 37°C (±°C / ±°F)                     | 0.5 / 0.9  |
| Display   | Up to 95°C, 0.1°C resolution                         |
| Control   | Feedback control                                     |
| Timer   | 1min to 99hrs 59min                                  |
| Safety device                                     | Over temperature protection, Over current protection |
| <b>Material</b>                                   |  |
| Body  | PP, Powder coated steel                              |
| Cover   | PC   |
| Block   | Black hard anodized Aluminum                         |
| <b>Dimensions</b>                                 |  |
| Exterior (W x D x H, mm / inch)                   | 249 x 330 x 168 / 9.8 x 12.99 x 6.61                 |
| Net weight (kg / lbs)                             | 5 / 11.02  |
| <b>Electrical Requirements (220V, 50/60Hz, A)</b> | 2  |
| <b>Cat. No.</b>                                   | <b>AAHJ5015K</b>                                     |
| <b>Electrical Requirements (120V, 60Hz, A)</b>    | 4  |
| <b>Cat. No.</b>                                   | <b>AAHJ5013U</b>                                     |



# Heating Shaker



## Up to 100°C, 1500rpm, and program control

### Structural Functional Features

- Three specialized interval mix programs are provided. (45/55/65°C & 1,000rpm, 1 minute operation/stop)
- 10-step temperature and shaking control set.
- Program can be set to 99 repetitions or infinite repetitions.
- Optimal heat transfer is achieved by the tight coupling design of the main body.
- Compact design makes it easy to move and use space.
- Polypropylene (PP) material with excellent chemical resistance
- Improved durability with integrated shaking module. (registration: 10-1429256)
- Aluminum block with excellent thermal conductivity and block cover (option) made of polypropylene.



**CBS-350**  
with Block (option)

### Use Convenience Features

- The temperature can be set accurately in units of 0.1°C.
- Feedback control enables precise temperature control.
- Calibration function minimizes temperature difference.
- Protecting the sample by starting with soft shaking.
- Easy to operate with clear VFD display, touch keys and control knobs.
- Provides operating elapsed time check.
- Count-down timer provided. (up to 99 hours and 59 minutes)

### Outstanding Safety

- Structure with minimal inflow of reagent or sample.
- Convenient and safe operation by notifying the status of heating condition.
- Overheating temperature prevention function. (heating panel, control unit)
- Over-current prevention function.

## Specification

| Model   |                          | CBS-350  |
|---|--------------------------|--|
| <b>Temperature</b>                                |                          |  |
| Range (°C / °F)                                   |                          | Amb. +5 ~ 100 / Amb. +41 ~ 212                       |
| Fluctuation at 80°C (±°C / ±°F)                   |                          | 0.3 / 32.54  |
| Variation at 80°C (±°C / ±°F)                     |                          | 0.7 / 33.26  |
| Display   |                          | Up to 100°C, 0.1°C resolution                        |
| Control   |                          | Feedback control                                     |
| <b>Shaking System</b>                             |                          |  |
| Motion type                                       |                          | Orbital  |
| <b>Speed range (rpm)</b>                          | 96-well tube block       | 150 to 1500  |
|   | 0.5 ml tube block        | 150 to 1000  |
|   | 1.5 ml/2.0 ml tube block | 150 to 1000  |
|   | 15 ml tube block         | 150 to 900   |
|   | Ø12 tube block           | 150 to 850   |
|   | Ø13 tube block           | 150 to 850   |
| Amplitude, Orbital size (mm, dia.)                |                          | 2  |
| <b>Timer</b>                                      |                          | 1min to 99hr 59min                                   |
| <b>Safety device</b>                              |                          | Over temperature protection, Over current protection |
| <b>Material</b>                                   |                          |  |
| Body  |                          | PP, Powder coated steel                              |
| Cover   |                          | PP   |
| Block   |                          | Black hard anodized Aluminum                         |
| <b>Dimensions</b>                                 |                          |  |
| Exterior (W x D x H, mm / inch)                   |                          | 249 x 325 x 120 / 9.8 x 12.79 x 4.72                 |
| Net weight (kg / lbs)                             |                          | 8.25 / 18.19   |
| <b>Electrical Requirements (230V, 50/60Hz, A)</b> |                          | 1.7  |
| <b>Cat. NO.</b>                                   |                          | <b>AAHJ4015K</b>                                     |
| <b>Electrical Requirements (120V, 60Hz, A)</b>    |                          | 3.4  |
| <b>Cat. No.</b>                                   |                          | <b>AAHJ4013U</b>                                     |

Accessories **Page 163** Heating Block

# Accessories








## Accessories for Heating Block, Heating & Cooling Block

| Image | Model        | Description   | Max. Mountable Tube | Dimensions (W x D x H, mm / inch)      | Mountable Capacity of Blocks |          |         |
|-------|--------------|---|---------------------|--|------------------------------|----------|---------|
|       |              |   |                     |  | CHB-350S                     | CHB-350T | CCB-350 |
|       | 00CHB0000028 | 1.5 / 2.0 ml Tube block (micro-tube)                    | 48                  | 153 x 98 x 41<br>/ 6.02 x 3.86 x 1.61  | 1                            | 1        | -       |
|       | 00CHB0000045 | 1.5 / 2.0 ml Tube block (micro-tube)                    | 30                  | 98 x 76.5 x 41<br>/ 3.86 x 3.01 x 1.61 | 2                            | 2        | 1       |
|       | 00CHB0000029 | 0.5 ml Tube block (micro-tube)                          | 48                  | 98 x 76.5 x 41<br>/ 3.86 x 3.01 x 1.61 | 2                            | 2        | 1       |
|       | 00CHB0000030 | 0.2 ml Tube block (micro tube / strips / 96-well plate) | 96                  | 153 x 98 x 41<br>/ 6.02 x 3.86 x 1.61  | 1                            | 1        | -       |
|       | 00CHB0000031 | 15 ml Tube block (conical tube)                         | 15                  | 98 x 76.5 x 51<br>/ 3.86 x 3.01 x 2.01 | 2*                           | 2        | 1*      |
|       | 00CHB0000032 | 50 ml Tube block (conical tube)                         | 6                   | 98 x 76.5 x 51<br>/ 3.86 x 3.01 x 2.01 | 2*                           | 2        | 1*      |
|       | 00CHB0000033 | 50 ml Tube block (conical tube)                         | 6                   | 98 x 76.5 x 87<br>/ 3.86 x 3.01 x 3.42 | 2*                           | 2        | 1*      |
|       | 00CHB0000034 | Φ10 mm Tube block                                       | 35                  | 98 x 76.5 x 51<br>/ 3.86 x 3.01 x 2.01 | 2*                           | 2        | 1*      |
|       | 00CHB0000035 | Φ12 mm Tube block                                       | 24                  | 98 x 76.5 x 51<br>/ 3.86 x 3.01 x 2.01 | 2*                           | 2        | 1*      |
|       | 00CHB0000036 | Φ13 mm Tube block                                       | 24                  | 98 x 76.5 x 51<br>/ 3.86 x 3.01 x 2.01 | 2*                           | 2        | 1*      |
|       | 00CHB0000037 | Φ15 mm Tube block                                       | 20                  | 98 x 76.5 x 51<br>/ 3.86 x 3.01 x 2.01 | 2*                           | 2        | 1*      |
|       | 00CHB0000038 | Φ16 mm Tube block                                       | 16                  | 98 x 76.5 x 51<br>/ 3.86 x 3.01 x 2.01 | 2*                           | 2        | 1*      |
|       | 00CHB0000039 | Φ18 mm Tube block                                       | 12                  | 98 x 76.5 x 51<br>/ 3.86 x 3.01 x 2.01 | 2*                           | 2        | 1*      |
|       | 00CHB0000040 | Φ20 mm Tube block                                       | 12                  | 98 x 76.5 x 51<br>/ 3.86 x 3.01 x 2.01 | 2*                           | 2        | 1*      |

※ It can be equipped when the lid is opened.



## Accessories for Heating Shaker

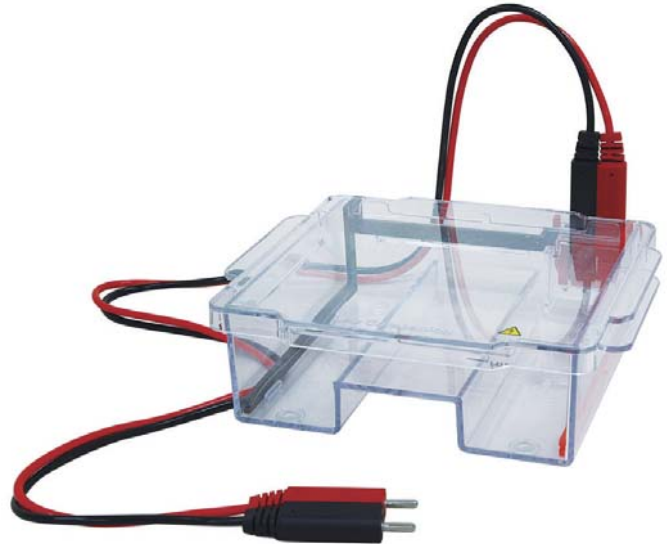
| Image   | Model    | Description                              | Max. Mountable Tube | Dimensions (W x D x H, mm / inch)       | Mountable Capacity of Blocks |  |
|---|----------|--|---------------------|---|------------------------------|--|
|   |          |  |                     |   | CBS-350                      |  |
|    | AAAJ4501 | 0.5 ml Tube block with block cover       | 48                  | 98 x 76.5 x 30<br>/ 3.86 x 3.01 x 1.18  | 1                            |  |
|    | AAAJ4502 | 1.5 / 2.0 ml Tube block with block cover | 24                  | 98 x 76.5 x 41<br>/ 3.86 x 3.01 x 1.61  | 1                            |  |
|    | AAAJ4503 | 50 ml Tube block with block cover        | 6                   | 98 x 76.5 x 51<br>/ 3.86 x 3.01 x 2.01  | 1                            |  |
|  | AAAJ4504 | 0.2 ml Tube block with block cover       | 96                  | 111 x 76.5 x 15<br>/ 4.37 x 3.01 x 0.59 | 1                            |  |
|  | AAAJ4505 | 15 ml Tube block with block cover        | 15                  | 98 x 76.5 x 51<br>/ 3.86 x 3.01 x 2.01  | 1                            |  |
|  | AAAJ4506 | Φ12 mm Tube block with block cover       | 24                  | 98 x 76.5 x 51<br>/ 3.86 x 3.01 x 2.01  | 1                            |  |
|  | AAAJ4507 | Φ13 mm Tube block with block cover       | 24                  | 98 x 76.5 x 87<br>/ 3.86 x 3.01 x 3.42  | 1                            |  |

# Electrophoresis System

## Clean maintenance and easy-to-use structure

### Structural Functional Features

- Horizontal electrophoresis system.
- Integral structure of transparent polycarbonate material ensures excellent durability and convenient sample checking.
- Cathode/anode and direction marking on the bottom of the tank makes it very convenient to use for checking the direction of electrophoresis.
- Easy to move with handles on the sides of the tank.
- There are rubber feet on the bottom of the tank and gel caster to prevent slip.
- Electrodes are easy to remove from tank and it's easy to clean the tank.
- The comb (31, 16 well) has set intervals, making it suitable to use for multi-channel pipets. Comb 12ea as standard. (EP-10, EP-18)

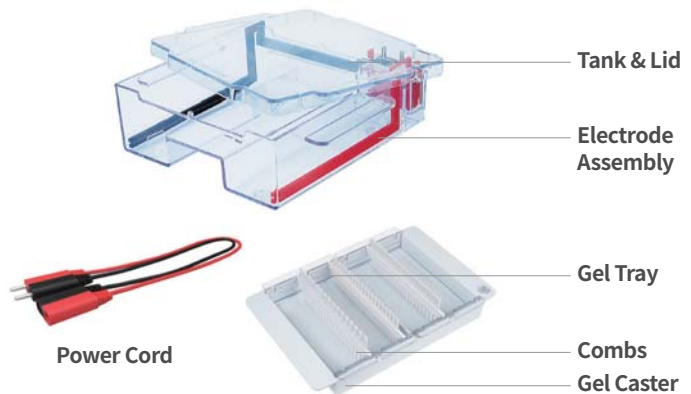


### EP-10

with Power Cord (standard)

### Use Convenience Features

- The gel tray is UV-transparent, and no need of separation for the Agarose Gel from the tray to check the results. (UV-A)
- Level marker is engraved on the gel tray to make it easy to make gel of constant thickness.
- Level meter included in gel caster. (except for EP-05 model)
- Power cord being connected/disconnected easily are divided into cathode/anode by black/red. Large quantities of samples can be loaded at once. (based on EP-18, total 198EA (including marker))



Level marker

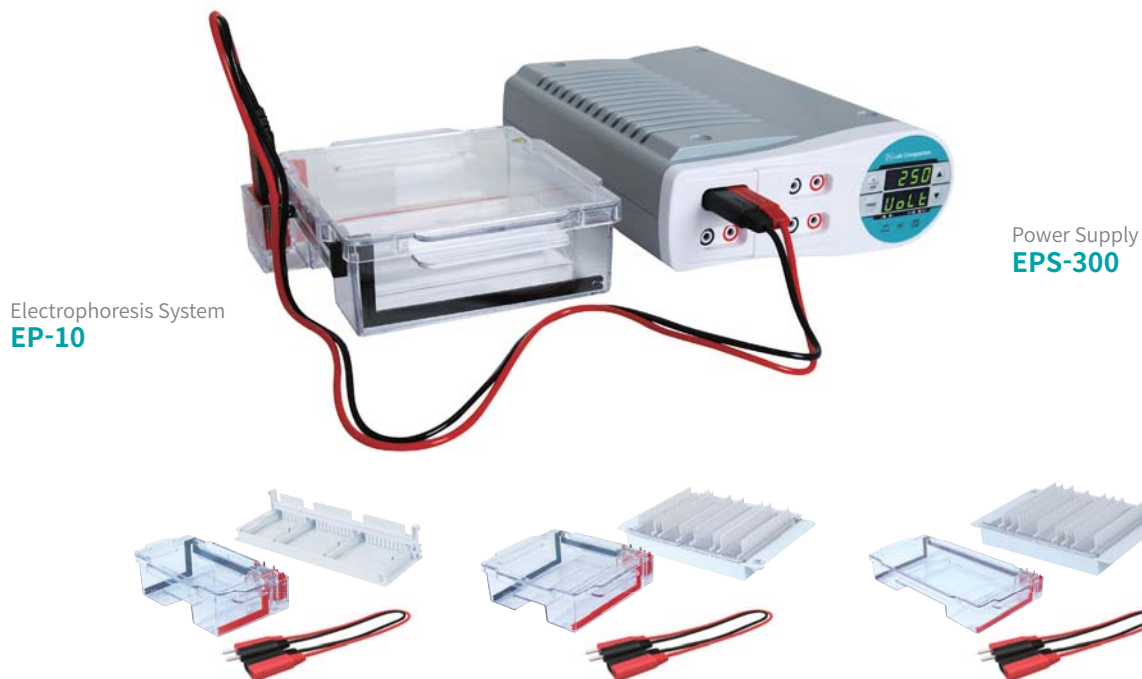


Gel caster level meter



Anti-slip rubber feet

Constructed with a power supply for electrophoresis of nucleic acids and proteins.



Electrophoresis System  
**EP-10**

Power Supply  
**EPS-300**

### Product composition

| Model  | EP-05                     | EP-10  | EP-18  |
|--|---------------------------|--|--|
| <b>Electrophoresis Unit</b><br>(Tank & Lid, Electrode, Power Cord) | 1 set                     | 1 set  | 1 set  |
| <b>Gel Caster</b>  | 1 ea                      | 1 ea   | 1 ea   |
| <b>Gel Tray</b>  | 3 ea                      | 2 ea   | 1 ea   |
| <b>Comb</b>  | 27/40 well (1.0 mm) x 1ea | 20/31 well (1.0 mm) x 2ea<br>20/31 well (1.5 mm) x 2ea<br>16/20 well (1.0 mm) x 2ea<br>16/20 well (1.5 mm) x 2ea<br>25/34 well (1.0 mm) x 2ea<br>25/34 well (1.5 mm) x 2ea | 20/31 well (1.0 mm) x 2ea<br>20/31 well (1.5 mm) x 2ea<br>16/20 well (1.0 mm) x 2ea<br>16/20 well (1.5 mm) x 2ea<br>25/34 well (1.0 mm) x 2ea<br>25/34 well (1.5 mm) x 2ea |

### Specification

| Model                                       | EP-05                                  | EP-10  | EP-18                                   |   |
|---|--|--|---|---|
| <b>Buffer capacity (L / cu ft)</b>          | 0.5 / 0.017                            | 1 / 0.035  | 1.8 / 0.063                             |   |
| <b>Material</b>                             | Electrophoresis tank, Lid              | PC (Polycarbonate)   |   |   |
|   | Electrodes                             | Platinum wire  |   |   |
| <b>Dimensions</b><br>(W x D x H, mm / inch) | Electrophoresis tank                   | 219 x 134 x 71<br>/ 8.62 x 5.27 x 2.79                                 | 219 x 214 x 71<br>/ 8.62 x 8.42 x 2.79  | 387 x 214 x 71<br>/ 15.24 x 8.42 x 2.79 |
|   | Gel caster                             | 254 x 87 x 18<br>/ 10 x 3.42 x 0.79                                    | 167 x 264 x 30<br>/ 6.57 x 10.39 x 1.18 | 167 x 264 x 30<br>/ 6.57 x 10.39 x 1.18 |
|   | Gel tray                               | 82 x 81 x 17 / 3.23 x 3.19 x 0.67<br>82 x 58 x 17 / 3.23 x 2.28 x 0.67 | 181 x 103 x 30<br>/ 7.12 x 4.05 x 1.18  | 181 x 206 x 30<br>/ 7.12 x 8.11 x 1.18  |
|   | Comb                                   | 225 x 45 / 8.86 x 1.77   | 158 x 46 / 6.22 x 1.81                  | 158 x 46 / 6.22 x 1.81                  |
|   | Electrophoresis unit weight (kg / lbs) | 0.39 / 0.86  | 0.6 / 1.32                              | 0.93 / 2.05                             |
| <b>Cat. No.</b>                             | <b>AAAJ6011</b>                        | <b>AAAJ6021</b>  | <b>AAAJ6031</b>                         |   |

# Accessories



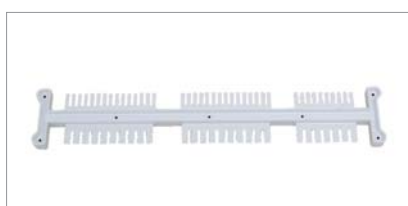
Electrophoresis Unit



Gel Caster Unit



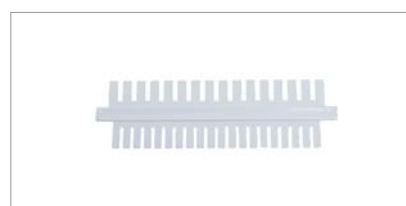
Electrode Assembly



Comb 27/40 well



Comb 20/31 well



Comb 16/20 well



Comb 25/34 well

| Cat. No. | Description  | model    |
|----------|--|----------|
| AAAJ6501 | Electrophoresis unit (tank, lid, electrode assembly) | EP-05    |
| AAAJ6502 | Electrophoresis unit (tank, lid, electrode assembly) | EP-10    |
| AAAJ6503 | Electrophoresis unit (tank, lid, electrode assembly) | EP-18    |
| AAAJ6511 | Gel caster unit (gel caster, gel tray)               | EP-05    |
| AAAJ6512 | Gel caster unit (gel caster, gel tray)               | EP-10    |
| AAAJ6513 | Gel caster unit (gel caster, gel tray)               | EP-18    |
| AAAJ6521 | Electrode assembly                                   | EP-05    |
| AAAJ6522 | Electrode assembly                                   | EP-10    |
| AAAJ6523 | Electrode assembly                                   | EP-18    |
| AAAJ6531 | Comb 27/40 well, thickness 1 mm - (5ea)              | EP-05    |
| AAAJ6532 | Comb 20/31 well, thickness 1 mm - (5ea)              | EP-10/18 |
| AAAJ6533 | Comb 20/31 well, thickness 1.5 mm - (5ea)            | EP-10/18 |
| AAAJ6534 | Comb 16/20 well, thickness 1 mm - (5ea)              | EP-10/18 |
| AAAJ6535 | Comb 16/20 well, thickness 1.5 mm - (5ea)            | EP-10/18 |
| AAAJ6536 | Comb 25/34 well, thickness 1 mm - (5ea)              | EP-10/18 |
| AAAJ6537 | Comb 25/34 well, thickness 1.5 mm - (5ea)            | EP-10/18 |

# Power Supply for Electrophoresis System



Multipurpose Power Supply can be used Horizontal agarose gel, Vertical polyacrylamide gel running, various blotting experiments, Etc.



EPS-300

## Structural Functional Features

- Power supply optimized for electrophoresis system.
- It consists of four sets of output terminals, so four electrophoresis devices can be used at the same time.
- Space-efficient use with stackable design.
- Folding legs on the lower part make it convenient to operate and check the status.
- Constant voltage and constant current, convenient use as two operation modes provided.
- PC communication via RS-232 Port.

## Outstanding Safety

- Rapid resistance change detection and detection of current leakage to prevent accidents by cutting power.
- Protection against over-current/over-voltage/overpower.
- Over-temperature protection.

## Use Convenience Features

- Accurate current and voltage by microprocessor.
- Pause and restart functions.
- Count-down timer. (up to 99 hours and 59 minutes)
- Displaying the operating time.
- Safety function that cuts off the electric output when no load or sudden change of load is detected.
- If the power supply is cut off by the automatic backup function, the most recently set values are saved automatically.
- Possible to monitor experimental conditions such as Voltage, current value, change the setting value, stopping and reactivating. (when purchased LC GreenBox)

## Accessories

| Cat. No. | Description | Dimension (W x D x H, mm / inch)  |
|----------|-------------|-----------------------------------|
| AAAQ1011 | LC GreenBox | 156 x 94 x 34 / 6.14 x 3.7 x 1.34 |

## Specification

| Model                                    | EPS-300   |
|--|---|
| <b>Output range</b>                      | 5~250V, in 1V increments<br>10mA~3000mA, in 10mA increments (Max. 300W) |
| <b>Type of output</b>                    | Constant voltage mode, constant current mode                            |
| <b>Output terminals</b>                  | 4 pair recessed banana jack in parallel                                 |
| <b>Timer</b>                             | 1min to 99hr 59min  |
| <b>Pause/resume function</b>             | Yes   |
| <b>Display</b>                           | 7-segment 4 digit LED, 2 line   |
| <b>Operating conditions</b>              | 0~40°C (32~104°F), 0~80% RH   |
| <b>Dimensions (W x D x H, mm / inch)</b> | 240 x 310 x 100 / 9.45 x 12.2 x 3.94                                    |
| <b>Net weight (kg /lbs)</b>              | 2.5 / 5.51  |
| <b>Electrical requirement (VAC, Hz)</b>  | 100-240VAC, 50/60Hz   |
| <b>Current consumption (A)</b>           | 4.0/1.7A at max voltage & max power                                     |
| <b>Cat. No.</b>                          | AAAH6541  |

# Autoclave



Over temperature protection function.



2 year warranty Free A/S.



Control of temperature / humidity / rpm / time, etc. through dedicated program.



## General Application

Sterilization of experimental equipment/ materials, growth media, and glassware using saturated steam

Easy to use with optimized program function for each application.  
Sterilization process monitoring ensures reliable sterilization.

### > Optimized usage mode provided

Three (General, Standard, Program) modes are provided to allow a choice of sterilization processes optimized for the application.

**General mode:** Operate by setting sterilization conditions manually.

**Standard mode:** Select and operate four representative actions.

**Program mode:** The mainly used conditions are saved and used.

### > Reliable sterilization performance monitoring

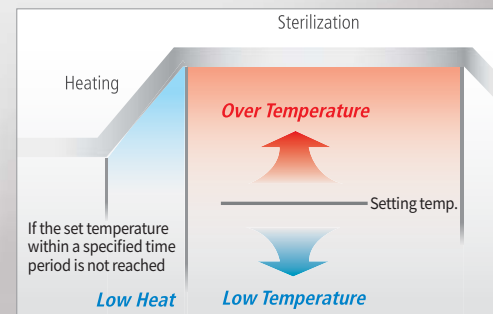
The device itself monitors the sterilization process to perform more reliable sterilization.

**Low Heat:** When the set temperature is not reached within the designated time.

**Over/Low Temp.:** When the set temperature is deviated from set value during the time set.

**Sterilization Fail:** When sterilization is incomplete due to power failure, and etc.

| Operational mode     | Temp. (°C)           | Time (min) |
|----------------------|----------------------|------------|
| <b>General mode</b>  | 110 ~ 123            | 1 ~ 999    |
| <b>Standard mode</b> | Decontamination      | 121        |
|                      | Solid sterilization  | 121        |
|                      | Liquid sterilization | 121        |
|                      | Melting              | 100        |
| <b>Program mode</b>  | Sterilization 1      | 110 ~ 123  |
|                      | Sterilization 2      | 110 ~ 123  |
|                      | Liquid sterilization | 110 ~ 123  |
|                      | Melting              | 60 ~ 100   |



High-capacity, top loading method.



Displays information on the progress of the sterilization process and operation of the equipment.



Pressure gauge to check pressure inside of chamber.

# Autoclave

## Suitable for temperature characteristic tests such as heat treatment and drying

### Proven Control Capability

- Verified according to KS P 6102, providing a more reliable sterilization environment.
- Verified stable temperature control performance by measuring the inside with 10 of temperature sensor.

### Structural Functional Features

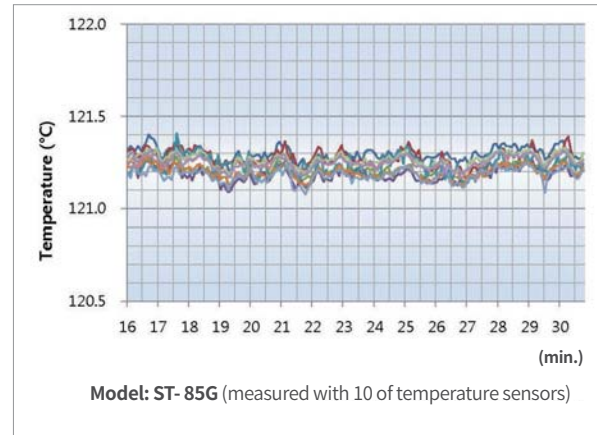
- Easy to open and close with circular handle.
- Including pressure gauge for internal pressure verification.
- Exhaust tank provided as standard.
- Including drain bucket for use cleanly.
- Upper part is made of stainless steel and is easy to maintain.
- Vertical, top loading system makes it easy to sterilize large volume samples.
- Casters for easy mobility during installation or relocation.

### Use Convenience Features

- Easy operation environment allowing the whole sterilization process to be started with just one operation.
- Three operation modes provided according to usage.
- Precise temperature control with PID Feedback control and Auto Tuning.
- Automatic exhaust after the sterilization process.
- LED display lamp, clear VFD and sterilization step to check operation status and sterilization progress conveniently.
- Including sterilization elapsed time display.
- Additional temperature sensor and recorder for recording sterilization procedure. (option)
- Pressure for each step can be checked with pressure sensor. (option)
- Including manual valve for releasing internal pressure.

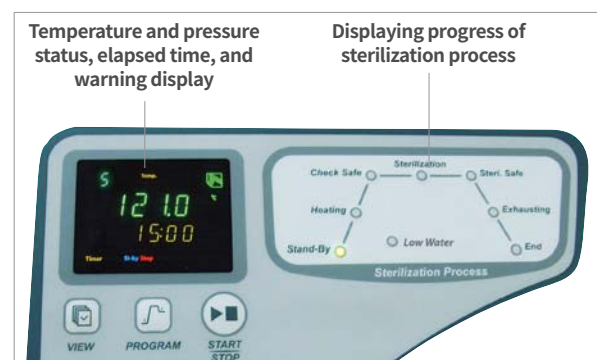
### Outstanding Safety

- Preventing users from get burnt by using safety door cover made of plastic with low thermal conductivity.
- Automatic operation of safety valve when overpressure occurs.
- Over temperature protection. (over temperature limiter)
- Low level of solution alarm. (low level limiter)
- Overcurrent and short circuit protection.



| Max. Loading Capacity of Media Bottle |                     |                     |                     |                      |
|---------------------------------------|---------------------|---------------------|---------------------|----------------------|
| Bottle Capacity (ml)                  | ST-50G (ea x floor) | ST-65G (ea x floor) | ST-85G (ea x floor) | ST-105G (ea x floor) |
| 250                                   | 20 x 3              | 20 x 3              | 20 x 5              | 20 x 6               |
| 500                                   | 14 x 2              | 14 x 3              | 14 x 4              | 14 x 4               |
| 1000                                  | 8 x 1               | 8 x 2               | 8 x 3               | 8 x 3                |
| 2000                                  | 5 x 1               | 5 x 1               | 5 x 2               | 5 x 3                |

| Max. Loading Capacity of Erlenmeyer Flask |                     |                     |                     |                      |
|---|---------------------|---------------------|---------------------|----------------------|
| Bottle Capacity (ml)                      | ST-50G (ea x floor) | ST-65G (ea x floor) | ST-85G (ea x floor) | ST-105G (ea x floor) |
| 250                                       | 14 x 3              | 14 x 4              | 14 x 5              | 14 x 6               |
| 500                                       | 8 x 2               | 8 x 3               | 8 x 4               | 8 x 4                |
| 1000                                      | 5 x 2               | 5 x 2               | 5 x 3               | 5 x 3                |
| 2000                                      | 3 x 1               | 3 x 2               | 3 x 2               | 3 x 3                |





Drain Bucket



Exhaust Tank



Basket



Recorder (Thermal Line)



Pressure Sensor



Step Stool

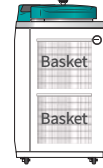
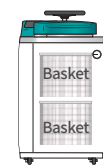
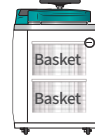
## Standard Accessories

| Cat. No.     | Description   | Standard | Max. mounted No. | Model               |
|--------------|---|----------|------------------|---------------------|
| 00ATC0000002 | Basket, Stainless steel (Ø380 x 180 mm)               | 2        | 2                | ST-50G              |
|              |   | -        | 2                | ST-65G              |
|              |   | -        | 3                | ST-85G              |
|              |   | -        | 4                | ST-105G             |
| 00ATC0000003 | Basket, Stainless steel (Ø380 x 230 mm)               | -        | 1                | ST-50G              |
|              |   | 2        | 2                | ST-65G              |
|              |   | -        | 2                | ST-85G              |
|              |   | -        | 3                | ST-105G             |
| 00ATC0000004 | Basket, Stainless steel (Ø380 x 330 mm)               | -        | 1                | ST-50G              |
|              |   | 2        | 2                | ST-65G              |
|              |   | -        | 2                | ST-85G              |
|              |   | -        | 2                | ST-105G             |
| 00ATC0000126 | Basket, Stainless steel (Ø380 x 405 mm)               | -        | -                | ST-50G              |
|              |   | -        | 1                | ST-65G              |
|              |   | -        | 1                | ST-85G              |
|              |   | 2        | 2                | ST-105G             |
| AAAL1521     | Exhaust Tank  | 1        | 1                | ST-50G/65G/85G/105G |
| 00ATC0000091 | Drain Bucket (490 x 291 x 107, mm)                    | 1        | 1                | ST-50G/65G/85G/105G |
| AAAL1531     | Step Stool, Powder Coated Steel (500 x 400 x 250, mm) | -        | -                | ST-105G             |

## Optional Accessories

| Cat. No.     | Description  |
|--------------|--|
| AAAL1501     | Recorder set : Recorder (Dot, 6 Point) & Temp. sensor (Double) |
| AAAL1502     | Recorder set : Recorder (Thermal Line) & Temp. sensor (Double) |
| 00ATC0000108 | Temperature sensor for Recorder                                |
| AAAL1511     | Pressure sensor  |

※ The above option is only installed when initial order.



## Specification

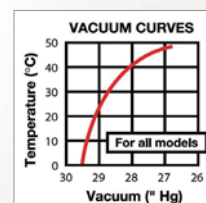
| Model   | ST-50G                                   | ST-65G                                  | ST-85G                                    | ST-105G                                   |
|---|--|---|---|---|
| <b>Temperature</b>                                |  |   |   |   |
| Sterilization (°C / °F)                           | 110 to 123 / 230 to 253.4                | 110 to 123 / 230 to 253.4               | 110 to 123 / 230 to 253.4                 | 110 to 123 / 230 to 253.4                 |
| Melting (°C / °F)                                 | 60 to 100 / 140 to 212                   | 60 to 100 / 140 to 212                  | 60 to 100 / 140 to 212                    | 60 to 100 / 140 to 212                    |
| <b>Pressure</b>                                   |  |   |   |   |
| Sterilization at 121°C (kg / cm <sup>2</sup> )    | 1.1 to 1.2                               | 1.1 to 1.2                              | 1.1 to 1.2                                | 1.1 to 1.2                                |
| Gauge range in analog (Mpa)                       | -0.1 to 0.6                              | -0.1 to 0.6                             | -0.1 to 0.6                               | -0.1 to 0.6                               |
| <b>Dimension</b>                                  |  |   |   |   |
| Volume (L / cu ft)                                | 50 / 1.76                                | 65 / 2.29                               | 85 / 3                                    | 105 / 3.7                                 |
| Internal (Ø x H, mm / inch)                       | 400 x 458 / 15.75 x 18.03                | 400 x 558 / 15.75 x 21.97               | 400 x 758 / 15.75 x 29.84                 | 400 x 908 / 15.75 x 35.75                 |
| External (W x D x H, mm / inch)                   | 624 x 672 x 870 / 24.57 x 26.46 x 34.25  | 624 x 672 x 971 / 24.57 x 26.46 x 38.23 | 624 x 672 x 1083 / 24.57 x 26.46 x 42.64  | 624 x 672 x 1233 / 24.57 x 26.46 x 48.54  |
| External with Exhaust Tank (W x D x H, mm / inch) | 722 x 672 x 870 / 28.42 x 26.46 x 34.25  | 722 x 672 x 971 / 28.42 x 26.46 x 38.23 | 722 x 672 x 1083 / 28.42 x 26.46 x 42.64  | 722 x 672 x 1233 / 28.42 x 26.46 x 48.54  |
| Door Max. Opening (W x D x H, mm / inch)          | 1012 x 672 x 882 / 39.84 x 26.46 x 32.72 | 1012 x 672 x 983 / 39.84 x 26.46 x 38.7 | 1012 x 672 x 1095 / 39.84 x 26.46 x 43.11 | 1012 x 672 x 1245 / 39.84 x 26.46 x 49.01 |
| Basket (Ø x H, mm / inch)                         | 380 x 180                                | 380 x 230 / 14.96 x 9.05                | 380 x 330 / 14.96 x 12.99                 | 380 x 405 / 14.96 x 15.94                 |
| Weight (kg / lbs)                                 | 94.5 / 208.34                            | 99.5 / 219.36                           | 104 / 229.28                              | 110 / 242.51                              |
| <b>Electrical data &amp; Ordering information</b> |  |   |   |   |
| 230V, 50/60Hz, A                                  | 14.3                                     | 14.3                                    | 14.3                                      | 21.3                                      |
| Cat. No.  | AAHL1015K                                | AAHL1025K                               | AAHL1035K                                 | AAHL1045K                                 |

※ Above product must be installed in a location below an altitude of 800 meters.

# Pumps

Select the optimum model between two different types of pump.

Both are suitable for rotary vacuum evaporation, decompression distillation, and vacuum filtering. Especially rotary vacuum pump provides more powerful pumping ideal for vacuum drying.



**VE-11**  
with optional vacuum gauge / regulator



**W2V10**

# Electrical Aspirator Pump



- Portable dual-channel water-jet aspirator pumps
  - Creating a vacuum by means of venturi effect, aspirator pumps are suitable for rotary vacuum evaporation, decompression distillation, vacuum drying, and vacuum filtering.
- Built-in circulating pump and water tank make the unit portable.
- Circulating pump continuously pumps water quietly across a set of aspirators, and is therefore clean and efficient.
- Built-in check valve prevents backflow of water into the aspirator pump.
- Corrosion-resistant construction of all wetted parts with 304 stainless steel, polypropylene, silicone, or nickel-coated brass.
- Water tank features a drain port and a spigot for easy changing of water.

## Accessories & Options

- Vacuum gauge with regulator: to monitor and control the vacuum pressure. (between 0.0267~0.0998MPa / 7.9~29.5" Hg)
- Cooling coil: to prevent vacuum from decreasing due to temperature increase.



Cooling coil Aspirators

| Cat. No.     | Description                 |
|--------------|-----------------------------|
| AAA71531     | Vacuum gauge with regulator |
| AAA71501     | Cooling coil                |
| 00EFA0009111 | Aspirator (1ea)             |
| AAH71122     | Aspirator (10ea)            |

| Model                                       | VE-11                                     |                   |                   |
|---|---|-------------------|-------------------|
| Bath volume (L / cu ft)                     | 9.5 / 0.3                                 |                   |                   |
| Max. vacuum (Mpa / mmHg)                    | 0.0906 / 680                              |                   |                   |
| Free-air capacity                           | 18L / minute (0.6 cfm) x 2ea              |                   |                   |
| Material (bath / aspirator)                 | Polypropylene / Nickel-coated brass x 2ea |                   |                   |
| Bath interior (W x L , D) (mm / inch)       | 298 x 210, 227 / 11.7 x 8.3 ,8.9          |                   |                   |
| Exterior (W x L x H) (mm / inch)            | 330 x 265 x 390 / 13 x 10.4 x 15.4        |                   |                   |
| Inhale nozzle                               | External Ø9.5 mm (0.4") x 2ea             |                   |                   |
| Drain cook, Over flow nozzle (Ø, mm / inch) | 17 / 0.7                                  |                   |                   |
| Net weight (kg / lbs)                       | 5.7 / 12.6                                |                   |                   |
| Electrical requirements                     | 230V, 60Hz / 0.7A                         | 230V, 50Hz / 0.7A | 120V, 60Hz / 1.4A |
| Cat. No.                                    | AAH71011K                                 | AAH71015K         | AAH71016U         |

# Rotary Vacuum Pump



- Rotary vacuum pump equipped with direct connect oil seal prevents air reflux, essentially used with vacuum ovens to achieve a higher level of vacuum pressure.
- Oil mist trap, an optional feature, prevents oil in-flow.

## Accessories & Options

| Cat. No.  | Model                         | Suitable for    |
|-----------|-------------------------------|-----------------|
| BEA700351 | Oil Mist Trap, WOF-150 (PC)   | W2V10 / 20 / 40 |
| BEA700355 | Oil Mist Trap WOF-150 (Metal) | W2V10 / 20 / 40 |
| BEA700352 | Oil Mist Trap (PA)            | W2V60           |
| BEA700353 | Vacuum Pump Oil (1L)          | All             |
| BEA700354 | Vacuum Pump Oil (20L)         | All             |

| Model                             | W2V-10  | W2V-20                              | W2V-40                              | W2V-60                              |
|-----------------------------------|---|-------------------------------------|-------------------------------------|-------------------------------------|
| Pumping speed (L/min, gal/min)    | 100 / 26.4  | 200 / 52.8                          | 400 / 105.7                         | 600 / 158.5                         |
| Ultimate pressure (closed, Pa)    | ≤1.3 x 10 <sup>-1</sup> (1 x 10 <sup>-3</sup> Torr) |                                     |                                     |                                     |
| Motor power (W / Hp)              | 400 / 0.5   | 400 / 0.5                           | 750 / 1.0                           | 1500 / 2.0                          |
| Motor speed (rpm)                 | 1700  |                                     |                                     |                                     |
| Recommended oil (cc, L)           | 500 / 0.5   | 600 / 0.6                           | 1500 / 1.5                          | 2300 / 2.3                          |
| Inlet port (DN)                   | NW25  |                                     |                                     | NW40 / 25                           |
| Outlet port (DN)                  | NW25  |                                     |                                     | NW40 / 25                           |
| Weight (kg / lbs)                 | 22.5 / 49.6   | 23.3 / 51.4                         | 34.8 / 76.7                         | 53.5 / 118.0                        |
| Dimensions (W x D x H, mm / inch) | 170 x 454 x 253 / 6.7 x 17.9 x 10.0                 | 170 x 479 x 253 / 6.7 x 18.9 x 10.0 | 210 x 543 x 288 / 8.3 x 21.4 x 11.3 | 210 x 576 x 288 / 8.3 x 22.7 x 11.3 |
| Electrical requirements (230V)    | 50/60Hz   |                                     |                                     |                                     |
| Cat. No.                          | BEH73205K   | BEH73215K                           | BEH73225K                           | BEH73235K                           |

# Ultrasonic Cleaners

**Aggressive cleaning ability in a variety of output modes!**

Industrial B.L.T type ultrasonic transducer (Bolt Clamped Langevin Type Transducer) generates high-frequency sound waves that provide maximum cleaning power.



**UCP-10**



**UCS-20**

## UCP models (ABS, Membrane key pad, and SUS tank)



- Durable / flame resistance ABS material used and cover with 304 stainless steel tanks.
- Over-temperature protection with alarm. (except for UCP-02)
- Digital LED display using splash-proof keypads: timer (1 to 99 min, Max 4 hour operating), temperature monitor. (except for UCP-02)
- High-frequency 40 kHz sound waves provide greater cleaning power and increased reliability.
- Multiple output mode (Normal/Pulse/Sweep) with power selection (Low/Middle/ High). (except for UCP-02)
- Before cleaning, dissolved gas removed by degas function. (except for UCP-02)
- Drain valve, basket, cover as standard offer. (except for UCP-02)

| Model   | UCP-02                             | UCP-10                               | UCP-20                               |
|---|------------------------------------|--------------------------------------|--------------------------------------|
| <b>Bath volume (L / cu ft)</b>                      | 2 / 0.07                           | 10 / 0.35                            | 20 / 0.70                            |
| <b>Temperature range (°C / °F)</b>                  | Amb. to 70 / Amb. to 158           |                                      |                                      |
| <b>Ultrasonic power (W)</b>                         | 100                                | 300                                  | 500                                  |
| <b>Dimensions</b>                                   |                                    |                                      |                                      |
| Bath interior (W x L, D) (mm / inch)                | 142 x 132, 104 / 5.6 x 5.2, 4.1    | 295 x 240, 160 / 11.6 x 9.4, 6.3     | 500 x 290, 160 / 19.7 x 11.4, 6.3    |
| Exterior (W x L x H) (mm / inch)                    | 290 x 210 x 200 / 11.4 x 8.4 x 7.9 | 490 x 368 x 297 / 19.3 x 14.5 x 11.7 | 721 x 451 x 297 / 28.4 x 17.8 x 11.7 |
| Net weight (kg / lbs)                               | 2 / 4.4                            | 11 / 24.3                            | 17 / 37.5                            |
| <b>Electrical requirements (230V, 50 / 60Hz, A)</b> | 0.6                                | 1.3                                  | 2.2                                  |
| <b>Cat. No.</b>                                     | <b>BDH532011K</b>                  | <b>BDH532012K</b>                    | <b>BDH532013K</b>                    |
| <b>Electrical requirements (120V, 60Hz, A)</b>      | 1                                  | 1.7                                  | 4.2                                  |
| <b>Cat. No.</b>                                     | <b>BDH532011U</b>                  | <b>BDH532012U</b>                    | <b>BDH532013U</b>                    |

## UCS models (SUS external and tank)



- External and tank parts are made of durable 304 stainless steel.
- Over-temperature protection with alarm.
- Digital LED display using splash-proof keypads: timer (1 to 99 min, Max 4 hour operating), temperature monitor.
- High-frequency 40 kHz sound waves provide greater cleaning power and increased reliability.
- Multiple output mode (Normal/Pulse/Sweep) with power selection (Low/Middle/ High).
- Drain valve, basket, cover as standard offer.

| Model   | UCS-05                              | UCS-10                               | UCS-20                               |
|---|-------------------------------------|--------------------------------------|--------------------------------------|
| <b>Bath volume (L / cu ft)</b>                      | 5.7 / 0.20                          | 10 / 0.35                            | 20 / 0.70                            |
| <b>Temperature range (°C / °F)</b>                  | Amb. to 70 / Amb. to 158            |                                      |                                      |
| <b>Ultrasonic power (W)</b>                         | 200                                 | 300                                  | 500                                  |
| <b>Dimensions</b>                                   |                                     |                                      |                                      |
| Bath interior (W x L, D) (mm / inch)                | 295 x 160, 160 / 11.6 x 6.3, 6.3    | 295 x 240, 160 / 11.6 x 9.4, 6.3     | 500 x 290, 160 / 19.7 x 11.4, 6.3    |
| Exterior (W x L x H) (mm / inch)                    | 325 x 230 x 320 / 12.8 x 9.1 x 12.6 | 325 x 330 x 320 / 12.8 x 12.9 x 12.6 | 530 x 330 x 297 / 20.9 x 12.9 x 11.7 |
| Net weight (kg / lbs)                               | 8 / 17.6                            | 11 / 24.3                            | 15 / 33.1                            |
| <b>Electrical requirements (230V, 50 / 60Hz, A)</b> | 0.9                                 | 1.3                                  | 2.2                                  |
| <b>Cat. No.</b>                                     | <b>BDH532031K</b>                   | <b>BDH532032K</b>                    | <b>BDH532033K</b>                    |
| <b>Electrical requirements (120V, 60Hz, A)</b>      | 1.7                                 | 2.5                                  | 4.2                                  |
| <b>Cat. No.</b>                                     | <b>BDH532031U</b>                   | <b>BDH532032U</b>                    | <b>BDH532033U</b>                    |



# Fume Hood





# Fume Hood



# Hood & Clean Bench



## General Application

**Clean Bench:** Non-toxic sap, DNA/RNA purification, plant tissue culture, solid medium division, electronic inspection, medical equipment assembly, pharmaceuticals, etc.

**PCR workstation:** Medical equipment assembly, PCR sample preparation, volatile staining, sterile medium division, tissue fixation/staining preparation.

**UV-sterilization Cabinet:** Sterilized to prevent DNA/RNA contamination.

**Hood:** Chemical sampling, cosmetics, production, steam generation experiments, slide coating, welding.

|  | Description   | Filter  | Working Table   | Model        | Page       |
|--|---|---|---|--------------|------------|
| Test sample protection<br>Clean experiment space                         | <b>Clean bench</b> <ul style="list-style-type: none"> <li>Fully validated</li> <li>Superior user convenience</li> </ul>   | HEPA  | Stainless Steel #304  | BC-H<br>BC-B | 180<br>182 |
|  | <b>PCR Workstation</b> <ul style="list-style-type: none"> <li>Convenient PCR working environment</li> <li>Easy wind speed control</li> </ul>  | HEPA  | Acryl   | PW           | 183        |
|  | <b>UV-Sterilization Cabinet</b> <ul style="list-style-type: none"> <li>Sterilized with UV light</li> <li>Stainless steel work surface</li> </ul>                                    | N/A   | Stainless Steel #304  | UVC          | 184        |
| Protection of users and the environment<br>Safe Removal of harmful gases | <b>Ductless Fume hood</b> <ul style="list-style-type: none"> <li>Structure without duct connection</li> <li>Various filters and workbenches</li> </ul>                              | (Option/Select up to 2ea)<br>Complex Carbon Acid<br>Formaldehyde<br>Ammonia/Amine<br>HEPA | (Option/Select 1ea)<br>Stainless Steel (#304, #316),<br>Ceramide, Polypropylene,<br>Bakelite, PVC | DLH          | 186        |
|  | <b>Fume hood (small)</b> <ul style="list-style-type: none"> <li>Convenient small tabletop hood</li> <li>Polyethylene material</li> </ul>  | N/A   | Polyethylene  | PMH<br>POH   | 188        |
|  | <b>Mobile Harmful Gas Removal Device And Arm hood</b> <ul style="list-style-type: none"> <li>Wide range of choices provided</li> <li>High-efficiency filter box included</li> </ul> | (Option/Select up to 2ea)<br>Complex Carbon Acid<br>Formaldehyde<br>Ammonia/Amine<br>HEPA | N/A   | EFS<br>AH    | 189<br>191 |

※ The contents of the above and the contents of this catalog may differ depending on the specific model and conditions of use. For the information about the features and specifications that applying to each models, please check the information on the corresponding page of each models.



Satisfaction with the requirements of European regulations and guidelines.



Registered patent based on JEIO TECH's proprietary technology.



If sash door is opened, automatically UV light is off and fluorescent light and fan are operated.



Differentiated diffusing muffler produces good laminar flow.



Equipped with UV Light.



Equipped with the same controller inside and outside for convenience.



Exhaust via duct connection.



Purifies and discharges harmful gas through internal filter.



2 year warranty Free A/S.

# Clean Bench

## Advanced type

### Easy to use with dual controller and smart system

#### Structural Functional Features

- Dedicated controller and digital airflow sensor allow for operation at set wind speed even with fluctuations in sash height, minimizing power consumption and dramatically increasing HEPA filter life.
- Polyester fiber pre-filter extends the life of the HEPA filter.
- High-performance HEPA filter provides a clean environment. (99.99% removal of 0.3 µm particles) (ISO Class 5, US Federal Class 100)
- Formation of reliable and uniform laminar flow through application of specialized diffusing muffler system.
- Easy to replace the filter on the front panel.
- Easy to move and fix the device.

#### Use Convenience Features

- Displays the temperature and humidity inside the workspace.
- Warning provided when the sash door is opened over the recommended height during operation.
- Easy and smooth sash door operation.
- Provides a quiet environment with minimal noise.
- Easy to operate with clear VFD and touch keys.
- UV lamp, fluorescent lamp, blower-dedicated button.
- Easy to check wind speed, temperature and humidity.

#### Outstanding Safety

- Smart door system protects the experimenter from UV light exposure.
- Toughened glass sash door blocks UV light.
- Protected from overcurrent.



#### BC-11H

with optional stand, HEPA filter, gas cock

#### Completed internal cleanliness evaluation and microbiological testing compatibility test.

- Internal cleanliness rating (ISO 14644-1 standard) **Equivalent to ISO Class 2**
- Microbiological testing (ISO 14698 standard) **ISO Class 5 rating, satisfies the microbiological testing standards**



#### Product Configuration For Easy Use

##### Easy operation during use with dual controller

- Equipped with the same controller inside and outside, it is convenient to operate the equipment even during work.

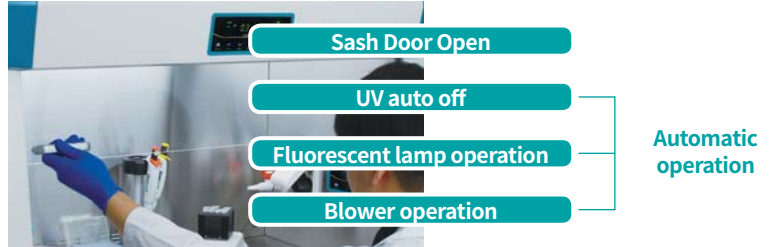
##### Built-in gas and air connection valves and power outlet

- Valves for gas and air use inside.
- Built-in electrical outlet with cover provided.



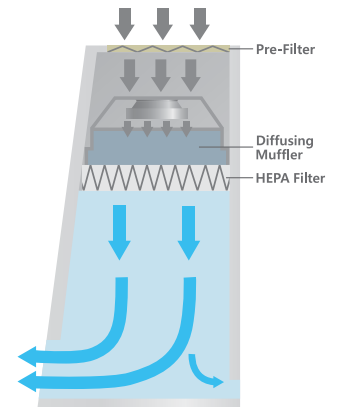
### Smart Door System (patent registered)

- When the sash door is opened during UV sterilization, the UV lamp is automatically turned off to protect from UV exposure and the fluorescent lamp and blower are automatically operated. (registration 10-1451382)



### Smart Maintenance

- HEPA filter replacement notification**  
Real time monitoring of HEPA filter status with digital differential pressure sensor and automatic replacement notification.
- UV lamp replacement notification**  
UV irradiation intensity is monitored by a UV sensor, and an automatic replacement notification is provided when irradiation intensity drops below 80%.



### Specification

| Model                                  |   | BC-01H                                 |  | BC-11H                                 |  | BC-21H                                 |  |
|--|---|--|--|--|--|--|--|
| Air                                    | Air flow type                                 | Vertical Laminar Flow                  |  | Vertical Laminar Flow                  |  | Vertical Laminar Flow                  |  |
|  | Airflow velocity (m/sec/fpm)                  | 0.3 / 59                               |  | 0.45 / 89                              |  | 0.3 / 59                               |  |
|  | Main filter                                   | HEPA (99.99% at 0.3 μm)                |  | HEPA (99.99% at 0.3 μm)                |  | HEPA (99.99% at 0.3 μm)                |  |
|  | Pre-filter                                    | Polyester Fibers                       |  | Polyester Fibers                       |  | Polyester Fibers                       |  |
| Illumination                           | U.V. lamp (254 nm, W)                         | 25 x 1ea                               |  | 30 x 1ea                               |  | 25 x 2ea                               |  |
|  | Fluorescent lamp (W)                          | 30 x 2ea                               |  | 30 x 2ea                               |  | 32 x 2ea                               |  |
|  | Fluorescent lamp intensity (Lux)              | more than 650                          |  | more than 650                          |  | more than 650                          |  |
| Dimensions                             | Exterior with stand (W x D x H, mm / inch)    | 1135 x 620 x 1860 / 44.7 x 24.4 x 73.2 |  | 1435 x 620 x 1860 / 56.5 x 24.4 x 73.2 |  | 2035 x 620 x 1860 / 80.1 x 24.4 x 73.2 |  |
|  | Exterior without stand (W x D x H, mm / inch) | 1135 x 620 x 1150 / 44.7 x 24.4 x 45.3 |  | 1435 x 620 x 1150 / 56.5 x 24.4 x 45.3 |  | 2035 x 620 x 1150 / 80.1 x 24.4 x 45.3 |  |
|  | Interior (W x D x H, mm / inch)               | 945 x 585 x 670 / 37.2 x 23.0 x 26.4   |  | 1245 x 585 x 670 / 49.0 x 23.0 x 26.4  |  | 1845 x 585 x 670 / 72.6 x 23.0 x 26.4  |  |
|  | Net weight (kg / lbs)                         | 140 / 308.6                            |  | 185 / 407.9                            |  | 225 / 496                              |  |
|  | Net weight (body + stand) (kg / lbs)          | 170 / 374.8                            |  | 215 / 474                              |  | 255 / 562.2                            |  |
| Noise level (dB)                       |   | Less than 65                           |  | Less than 65                           |  | Less than 65                           |  |
| Electrical requirements (230V, 1ph, A) |   | 60Hz / 1.25    50Hz / 1.38             |  | 60Hz / 1.57    50Hz / 1.73             |  | 60Hz / 2.09    50Hz / 2.30             |  |
| Cat. No.                               |   | AAHA5011K    AAHA5012K                 |  | AAHA5021K    AAHA5022K                 |  | AAHA5031K    AAHA5032K                 |  |
| Electrical requirements (120V, 1ph, A) |   | 60Hz / 2.62                            |  | 60Hz / 3.27                            |  | 60Hz / 4.36                            |  |
| Cat. No.                               |   | AAHA5013U                              |  | AAHA5023U                              |  | AAHA5033U                              |  |

Accessories **Page 185** HEPA Filter, Pre-filter, Stand, Gas Cock, Differential Pressure Gauge

# Clean Bench

## Basic type



## Vertical laminar flow clean benches offer quick operation by simple adjustable analog control

### Structural Functional Features

- High-performance HEPA filter provides a clean environment. (99.99% removal of 0.3 μm particles) (ISO Class 5, US Federal Class 100)
- Polyester fiber pre-filter extends the life of the HEPA filter.
- Formation of reliable and uniform laminar flow through application of specialized diffusing muffler system.
- Easy to replace the filter on the front panel.
- Easy to move and fix the device.

### Use Convenience Features

- Determines when to replace the filter with the built-in differential pressure gauge.
- Easy operation and wind speed control.
- Built-in gas and air connection valves and power outlet.
- Easy and smooth sash door operation.
- Provides a quiet environment with minimal noise.
- Height-adjustable caster for easy vertical installation.

### Outstanding Safety

- When the sash door is opened in when UV is ON, UV is automatically turned off for user protection.
- Toughened glass sash door blocks UV light.
- Protects against UV exposure through three modes of illumination. (UV/Fluorescent/Off)



**BC-11B**

with optional stand, HEPA filter



Controller



Differential pressure gauge

## Specification

| Model                                  |   | BC-01B                                 |  | BC-11B                                 |  | BC-21B                                 |  |
|--|---|--|--|--|--|--|--|
| Air                                    | Air flow type                                 | Vertical Laminar Flow                  |  | Vertical Laminar Flow                  |  | Vertical Laminar Flow                  |  |
|  | Airflow velocity (m/sec/fpm)                  | 0.3 / 59                               |  | 0.45 / 89                              |  | 0.3 / 59                               |  |
|  | Main filter                                   | HEPA (99.99% at 0.3 μm)                |  | HEPA (99.99% at 0.3 μm)                |  | HEPA (99.99% at 0.3 μm)                |  |
|  | Pre-filter                                    | Polyester Fibers                       |  | Polyester Fibers                       |  | Polyester Fibers                       |  |
| Illumination                           | U.V. lamp (254 nm, W)                         | 25 x 1ea                               |  | 30 x 1ea                               |  | 25 x 2ea                               |  |
|  | Fluorescent lamp (W)                          | 30 x 2ea                               |  | 30 x 2ea                               |  | 32 x 2ea                               |  |
|  | Fluorescent lamp intensity (Lux)              | more than 650                          |  | more than 650                          |  | more than 650                          |  |
| Dimensions                             | Exterior with stand (W x D x H, mm / inch)    | 1135 x 620 x 1860 / 44.7 x 24.4 x 73.2 |  | 1435 x 620 x 1860 / 56.5 x 24.4 x 73.2 |  | 2035 x 620 x 1860 / 80.1 x 24.4 x 73.2 |  |
|  | Exterior without stand (W x D x H, mm / inch) | 1135 x 620 x 1150 / 44.7 x 24.4 x 45.3 |  | 1435 x 620 x 1150 / 56.5 x 24.4 x 45.3 |  | 2035 x 620 x 1150 / 80.1 x 24.4 x 45.3 |  |
|  | Interior (W x D x H, mm / inch)               | 945 x 585 x 670 / 37.2 x 23.0 x 26.4   |  | 1245 x 585 x 670 / 49.0 x 23.0 x 26.4  |  | 1845 x 585 x 670 / 72.6 x 23.0 x 26.4  |  |
|  | Net weight (kg / lbs)                         | 140 / 308.6                            |  | 185 / 407.9                            |  | 225 / 496                              |  |
|  | Net weight (body + stand) (kg / lbs)          | 170 / 374.8                            |  | 215 / 474                              |  | 255 / 562.2                            |  |
| Noise Level (dB)                       |   | Less than 65                           |  | Less than 65                           |  | Less than 65                           |  |
| Electrical requirements (230V, 1ph, A) |   | 60Hz / 1.25    50Hz / 1.38             |  | 60Hz / 1.57    50Hz / 1.73             |  | 60Hz / 2.09    50Hz / 2.30             |  |
| Cat. No.                               |   | AAHA6011K    AAHA6012K                 |  | AAHA6021K    AAHA6022K                 |  | AAHA6031K    AAHA6032K                 |  |
| Electrical requirements (120V, 1ph, A) |   | 60Hz / 2.62                            |  | 60Hz / 3.27                            |  | 60Hz / 4.36                            |  |
| Cat. No.                               |   | AAHA6013U                              |  | AAHA6023U                              |  | AAHA6033U                              |  |

Accessories **Page 185** HEPA Filter, Pre-filter, Stand, Gas Cock, Differential Pressure Gauge

## Specially designed to minimize the sample contamination during PCR

### Structural Functional Features

- High-performance HEPA filter provides a clean environment. (ISO Class 4, US Federal Class 10)
- Convenient for use by mounting on an existing bench.
- Fluorescent lamp is included to make it convenient for conducting experiments.
- Fluorescent lamps are installed on the inside of the front to reduce eye fatigue.
- Effective sterilization with 254nm UV lamp. (replacement cycle: approx. 8,000 hours)
- Polyester fiber pre-filter extends the life of the HEPA filter.

### Use Convenience Features

- Easy to replace the filter on the front panel.
- Front cover opening structure at the front for convenient inspection and maintenance.
- Easy control of wind speed using the controller.
- Three model sizes depending on the bench size UV timer function. (up to 30 minutes)

### Outstanding Safety

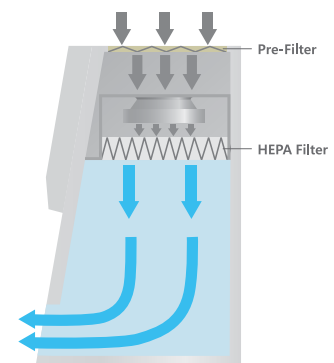
- Acrylic work surface blocks UV by 99.9%.
- When the door is opened with UV light is on, the UV light is turned off automatically to protect the user.
- Protection from overcurrent.



PW-21

**Completed internal cleanliness evaluation and microbiological testing compatibility test.**

- Internal cleanliness rating (ISO 14644-1 standard) **Equivalent to ISO Class 2**
- Microbiological testing (ISO 14698 standard) **ISO Class 5 rating, satisfies the microbiological testing standards**



Hood & Clean Bench

## Specification

| Model                                  |                                  | PW-01                              |           | PW-11                              |           | PW-21                               |           |
|--|----------------------------------|------------------------------------|-----------|------------------------------------|-----------|-------------------------------------|-----------|
| Air                                    | Air flow type                    | Vertical                           |           | Vertical                           |           | Vertical                            |           |
|  | Airflow velocity (m/sec/fpm)     | 0.4 / 78.7                         |           | 0.4 / 78.7                         |           | 0.4 / 78.7                          |           |
|  | Main filter                      | HEPA (99.99% at 0.3 μm)            |           | HEPA (99.99% at 0.3 μm)            |           | HEPA (99.99% at 0.3 μm)             |           |
|  | Pre-filter                       | Polyester Fibers                   |           | Polyester Fibers                   |           | Polyester Fibers                    |           |
| Illumination                           | U.V. lamp (254 nm, W)            | 15                                 |           | 20                                 |           | 30                                  |           |
|  | Fluorescent lamp (W)             | 15                                 |           | 20                                 |           | 30                                  |           |
|  | Fluorescent lamp intensity (Lux) | more than 1,000                    |           | more than 1,000                    |           | more than 1,000                     |           |
| Material                               | Window (Front, Sides, Rear)      | Acryl (Clear)                      |           | Acryl (Clear)                      |           | Acryl (Clear)                       |           |
|  | U.V. protection                  | 99.90%                             |           | 99.90%                             |           | 99.90%                              |           |
|  | Working table                    | Acryl (Clear)                      |           | Acryl (Clear)                      |           | Acryl (Clear)                       |           |
| Dimensions                             | Exterior (W x D x H, mm / inch)  | 720 x 605 x 964 / 28 x 24 x 38     |           | 900 x 605 x 964 / 35.4 x 24 x 38   |           | 1200 x 605 x 964 / 47.2 x 24 x 38   |           |
|  | Interior (W x D x H, mm / inch)  | 700 x 585 x 602 / 27.5 x 23 x 23.7 |           | 880 x 585 x 602 / 34.6 x 23 x 23.7 |           | 1180 x 585 x 602 / 46.5 x 23 x 23.7 |           |
|  | Net weight (kg / lbs)            | 56.2 / 123.9                       |           | 64.2 / 141.5                       |           | 77.8 / 171.5                        |           |
|  | Noise level (dB)                 | Less than 60                       |           | Less than 60                       |           | Less than 60                        |           |
| Electrical requirements (230V, 1ph, A) |                                  | 60Hz, 1.3                          | 50Hz, 1.3 | 60Hz, 1.4                          | 50Hz, 1.4 | 60Hz, 1.5                           | 50Hz, 1.5 |
| Cat. No.                               |                                  | AAHB3001K                          | AAHB3002K | AAHB3011K                          | AAHB3012K | AAHB3021K                           | AAHB3022K |
| Electrical requirements (120V, 1ph, A) |                                  | 60Hz, 2.2                          |           | 60Hz, 2.7                          |           | 60Hz, 2.9                           |           |
| Cat. No.                               |                                  | AAHB3003U                          |           | AAHB3013U                          |           | AAHB3023U                           |           |

※ Basic composition : Main Body, HEPA Filter, Pre-Filter, UV Lamp, Fluorescent Lamp

Accessories Page 185 Pre-filter, HEPA Filter

# UV Sterilization Cabinet



## Clean environment due to sterilization and removal of sources of contamination with UV light

### Structural Functional Features

- Built-in fluorescent lamp makes it easy to see inside.
- Compact design makes installation and movement convenient.
- VFD display allows for easy checking of operation status.

### Use Convenience Features

- Convenient handling of equipment due to convenient front opening.
- Three sizes of models according to the cabinet size.
- Digital-type UV timer function.  
(up to 59 minutes and 59 seconds)

### Outstanding Safety

- Block UV 99.9% on the front/ left / right side with acrylic material.
- When the door is opened, the UV light is turned off automatically to protect the user and the fluorescent lamp is operated, making it convenient to use.
- Protection from overcurrent.



UVC-11



## Specification

| Model   |  | UVC-01                                  |  | UVC-11                                |  | UVC-21                                  |  |
|---|--|---|--|---------------------------------------|--|---|--|
| Illumination                                  | U.V. Density ( $\mu\text{W}/\text{cm}^2$ ) | 300 $\pm$ 10%                           |  | 350 $\pm$ 10%                         |  | 300 $\pm$ 20%                           |  |
|   | U.V. lamp (254 nm, W)                      | 8                                       |  | 15                                    |  | 20                                      |  |
|   | Fluorescent lamp (W)                       | 8                                       |  | 15                                    |  | 20                                      |  |
|   | Fluorescent lamp intensity (Lux)           | more than 800                           |  | more than 900                         |  | more than 1,000                         |  |
| Material                                      | Window (Front, Sides, Rear)                | Acryl (Clear)                           |  | Acryl (Clear)                         |  | Acryl (Clear)                           |  |
|   | Window (Rear)                              | Powder coated steel                     |  | Powder coated steel                   |  | Powder coated steel                     |  |
|   | U.V. protection                            | 99.9%                                   |  | 99.9%                                 |  | 99.9%                                   |  |
|   | Working table                              | Stainless steel                         |  | Stainless steel                       |  | Stainless steel                         |  |
| Dimensions                                    | Exterior (W x D x H, mm / inch)            | 450 x 509 x 610<br>/ 17.7 x 20 x 24     |  | 600 x 509 x 610<br>/ 23.6 x 20 x 24   |  | 900 x 509 x 610<br>/ 35.4 x 20 x 24     |  |
|   | Interior (W x D x H, mm / inch)            | 433 x 500 x 468<br>/ 17.0 x 19.7 x 18.4 |  | 583 x 500 x 468<br>/ 23 x 19.7 x 18.4 |  | 880 x 500 x 468<br>/ 34.6 x 19.7 x 18.4 |  |
|   | Net weight (kg / lbs)                      | 15 / 33.1                               |  | 17.5 / 38.6                           |  | 20 / 44.1                               |  |
| <b>Electrical requirements (230V, 1ph, A)</b> |  | 60Hz, 0.1    50Hz, 0.1                  |  | 60Hz, 0.2    50Hz, 0.2                |  | 60Hz, 0.3    50Hz, 0.3                  |  |
| <b>Cat. No.</b>                               |  | <b>AAHB4001K    AAHB4002K</b>           |  | <b>AAHB4011K    AAHB4012K</b>         |  | <b>AAHB4021K    AAHB4022K</b>           |  |
| <b>Electrical requirements (120V, 1ph, A)</b> |  | 60Hz, 0.2                               |  | 60Hz, 0.4                             |  | 60Hz, 0.6                               |  |
| <b>Cat. No.</b>                               |  | <b>AAHB4003U</b>                        |  | <b>AAHB4013U</b>                      |  | <b>AAHB4023U</b>                        |  |

※ Basic composition : Main Body, UV Lamp, Fluorescent Lamp



# Accessories



### HEPA Filter (option)

- 99.99% efficient HEPA filter, industry standard size for economical replacement.



### Electrical Socket

- For equipments used inside the workspace .



### Pre Filter (1EA included)

- Easy-to-replace pre-filter for trapping larger particles and extending the life of HEPA filters.



### Service Fixture (option)

- For convenient hooking up with a gas/ air/vacuum source inside the workspace.



### Stand with Casters (option)

- Stand with Casters : Mobile stand made of powder-coated steel ideal for easy relocation.



### Differential Pressure Gauge (option-only for BC-B)

- Magnehelic differential pressure gauge measuring pressure drop across the HEPA filter to monitor its efficiency.

## Filters

| Description |             | BC-01H/B | BC-11H/B | BC-21H/B | PW-01        | PW-11        | PW-21        |
|-------------|-------------|----------|----------|----------|--------------|--------------|--------------|
| Cat. No.    | HEPA Filter | AAAB1601 | AAAB1602 | AAAB1603 | 00EDA0009219 | 00EDA0009220 | 00EDA0009221 |
|             | Pre Filter  | AAAB1611 | AAAB1612 | AAAB1613 | AAAB3511     | AAAB3512     | AAAB3513     |

## Others

| Description |   | BC-01H/B | BC-11H/B | BC-21H/B |
|-------------|---|----------|----------|----------|
| Cat. No.    | Stand with Casters                      | AAAB1621 | AAAB1622 | AAAB1623 |
|             | Gas Cock                                | AAAB1561 | AAAB1561 | AAAB1561 |
|             | Differential Pressure Gauge (Only BC-B) | AAAB1571 | AAAB1571 | AAAB1571 |

# Ductless Fume Hood

## Built-in filter hood without duct connection

### Structural Functional Features

- Easy to move and install due to there being no duct connection.
- Filtered air circulates through the room, dramatically reducing the air conditioning costs for room air.
- Structure that allows for selection of the appropriate filter and table material according to the chemical used.
- Polyester fiber pre-filter is included as standard to maximize the life of the main filter.
- Fluorescent lamp is included to make it convenient for conducting experiments.
- Convenient utility hole for connection with external equipment is included in the back of the work surface.
- Transparent acrylic material for easy internal observation.
- Easy to move and fix the device.

### Use Convenience Features

- Convenient handling of equipment due to convenient front opening.
- Provides a quiet environment with minimal noise.
- Port for filter performance test provided on the front for convenient periodical validation.
- It can be used more safely by applying the fume hood monitoring system. (option)

### Reliability Verification Completed

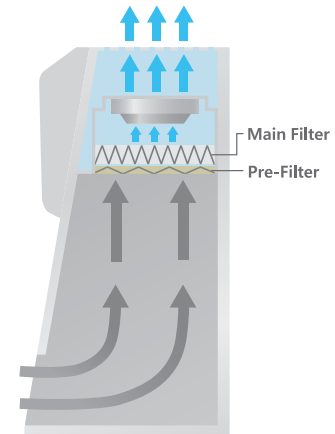
Designed, manufactured and self-certified according to international standards to protect users and the environment from fumes generated during experiments.

- **SPS-KACA002-132 (Korean Air Cleaning Association)**
  - Applies verified composite carbon filter to remove harmful gases.
  - Completed deodorization efficiency test. (VOC, acid, base).
- **ANSI / ASHRAE 110-1995, NF EN 14175-1 (U.S.A / EU)**
  - Front suction wind speed measurement. (average 0.4m/s or more)
  - Maintains average surface wind speed  $\pm 20\%$  at all measuring points.
  - Localization of air flow observation / observation of large-volume smoke flow. (no opening leakage)
  - Tracer-gas measurement, and user bodily inhalation pollution test. (less than 0.05 ppm)



**DLH-01G**

with Stainless Steel work surface & Stand with Casters (option)



## Specification

| Model                             |                                      | DLH-01G                              |                  | DLH-11G                               |                  |
|-----------------------------------|--------------------------------------|--------------------------------------|------------------|---------------------------------------|------------------|
| Air                               | Face velocity (m/s / fpm)            | 0.4 / 80 (Initial set point)         |                  | 0.4 / 80 (Initial set point)          |                  |
|                                   | Main filter                          | Max. 2ea available                   |                  | Max. 2ea available                    |                  |
|                                   | Pre-Filter                           | Polyester fibers                     |                  | Polyester fibers                      |                  |
| Fluorescent lamp intensity (Lux)  |                                      | More than 600                        |                  | More than 600                         |                  |
| Dimensions                        | Exterior with stand (mm / inch)      | 900 x 660 x 1985 / 35.4 x 26 x 78.1  |                  | 1200 x 660 x 1985 / 47.2 x 26 x 78.1  |                  |
|                                   | Exterior without stand (mm / inch)   | 900 x 660 x 1250 / 35.4 x 26 x 49.2  |                  | 1200 x 660 x 1250 / 47.2 x 26 x 49.2  |                  |
|                                   | Interior (mm / inch)                 | 880 x 640 x 800 / 34.6 x 25.2 x 31.5 |                  | 1180 x 640 x 800 / 46.5 x 25.2 x 31.5 |                  |
|                                   | Net weight (body) (kg / lbs)         | 100 / 220.5                          |                  | 118 / 260.1                           |                  |
|                                   | Net weight (body + stand) (kg / lbs) | 120 / 264.6                          |                  | 140 / 308.6                           |                  |
| Noise level (dB)                  |                                      | Less than 55                         |                  | Less than 55                          |                  |
| Electrical requirements (230V, A) |                                      | 50Hz, 0.6                            | 60Hz, 0.7        | 50Hz, 0.6                             | 60Hz, 0.7        |
| Cat. No.                          |                                      | <b>AAHB2002K</b>                     | <b>AAHB2001K</b> | <b>AAHB2012K</b>                      | <b>AAHB2011K</b> |
| Electrical requirements (120V, A) |                                      | 60Hz, 1.3                            |                  | 60Hz, 1.3                             |                  |
| Cat. No.                          |                                      | <b>AAHB2003U</b>                     |                  | <b>AAHB2013U</b>                      |                  |

※ Standard : Main Body, Pre-Filter, Fluorescent Lamp



Dedicated Controller



Anemometer



Front Cover

## Accessories

### Filters

| Cat. No.     | Description               | Application   | DLH-01G | DLH-11G |
|--------------|---------------------------|---|---------|---------|
| AAAB2543     | Complex carbon filter     | Filters a wide range of chemicals, including acid, ammonia, and aldehyde              | •       | -       |
| AAAB2544     |                           |   | -       | •       |
| AAAB2545     | Acid filter <sup>1)</sup> | Filters acid gases such as HCl, HF, H <sub>2</sub> S, and CH <sub>3</sub> COOH        | -       | •       |
| AAAB2546     |                           |   | -       | •       |
| AAAB2547     | Formaldehyde filter       | Filters formaldehyde, acetic aldehyde, etc.   | •       | -       |
| AAAB2548     |                           |   | -       | •       |
| AAAB2549     | Ammonia / Amines filter   | Filters basic gases such as NH <sub>3</sub> , (CH <sub>3</sub> ) <sub>3</sub> N, etc. | •       | -       |
| AAAB2550     |                           |   | -       | •       |
| 00EDA0009193 | HEPA filter               | Filters 99.99% of toxic dust and other 0.3µm particles                                | •       | -       |
| 00EDA0009194 |                           |   | -       | •       |
| 00EDA0009196 | Pre filter                | Primarily filters particles to extend the life of other filters                       | •       | -       |
| 00EDA0009198 |                           |   | -       | •       |

1) Please do not use high percentage of reactive acid such as perchloric acid.

### Work surfaces / Stands

| Cat. No. | Description                  | DLH-01G | DLH-11G |
|----------|------------------------------|---------|---------|
| AAAB2501 | Work surface (SUS #304)      | •       | -       |
| AAAB2502 |                              | -       | •       |
| AAAB2503 | Work surface (SUS #316)      | •       | -       |
| AAAB2504 |                              | -       | •       |
| AAAB2505 | Work surface (ceramite)      | •       | -       |
| AAAB2506 |                              | -       | •       |
| AAAB2507 | Work surface (polypropylene) | •       | -       |
| AAAB2508 |                              | -       | •       |
| AAAB2509 | Work surface (bakelite)      | •       | -       |
| AAAB2510 |                              | -       | •       |
| AAAB2511 | Work surface (PVC)           | •       | -       |
| AAAB2512 |                              | -       | •       |
| AAAB2521 | Stand with casters           | •       | -       |
| AAAB2522 |                              | -       | •       |

### Gas detector / Gas detecting tubes

| Cat. No.     | Description  | DLH-01G | DLH-11G |
|--------------|--|---------|---------|
| AAAB2531     | Gas detector (KITAGAWA AP-20)                              | •       | •       |
| 00EAA0001550 | Gas detecting tube (benzene, GASTEC-121SP (0.5-10ppm))     | •       | •       |
| 00EAA0001551 | Gas detecting tube (toluene, GASTEC-122L (1-100ppm))       | •       | •       |
| 00EAA0001552 | Gas detecting tube (acetic acid, GASTEC-81L (0.125-25ppm)) | •       | •       |
| 00EAA0001553 | Gas detecting tube (chloroform, GASTEC-137 (4-400ppm))     | •       | •       |
| 00EAA0001554 | Gas detecting tube (formaldehyde, GASTEC-91LL (0.05-1ppm)) | •       | •       |
| 00EAA0001555 | Gas detecting tube (ammonia, GASTEC-3L (0.5-60ppm))        | •       | •       |

# Fume Hood

## Small type



### Easy-to-use compact fume hood

#### Structural Functional Features

- Lightweight, easy-to-move compact tabletop hood.
- Connected to the exhaust system of existing facilities or connected to a dedicated harmful gas eliminator.
- Easy to move and install if connected with exhaust system. (EM-33 or EFS-33)
- Sash door has 5 levels of height adjustment, transparent and made of solid polycarbonate material.
- Integral mold product that does not leak.

#### Use Convenience Features

- The front and back side are made by wide transparent window (PC), useful for simulation and observing in school. (only POH models)
- The dedicated harmful gas eliminator (EM-33) or portable harmful gas eliminator (EFS-33) utilize Lab Companion's proven dedicated filter for safe removal of generated fumes, so there is no need for a separate exhaust system. (option)
- Polyethylene material ensures excellent chemical resistance and safe handling of strong acids and corrosive samples.

#### Used As Storage Of Corrosive Materials

- Material and exhaust device connector that can be used for exclusive storage for strong acids and corrosive chemicals.
- Ventilation is not possible for existing plastic material storage, so the sample is exposed to harmful gas when entering or exiting. However, this product is connected with the harmful gas exhaust device (option) to keep the use environment safe and pleasant.



#### PMH-720

with Fume Extraction Module (EM-33)+ Plinth-PMH (option)



Front and back side Transparent window

#### POH-720

with Fume Extraction Module (EM-33)+ Plinth-POH (option)



Free of the harmful fume can be increased learning effects and focused observation.



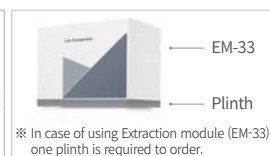
Conducted a long-term storage test for more than a month and completed the chemical resistance test.



Selecting the duct type or filter type depending on space

### Specification

|           | Model                            | POH-720                              | PMH-720                              |
|-----------|----------------------------------|--------------------------------------|--------------------------------------|
| Material  | Body                             | Polyethylene                         | Polyethylene                         |
|           | Door / Guide                     | Polycarbonate                        | Polycarbonate                        |
|           | Observation window               | O                                    | X                                    |
| Dimension | Exterior (mm / inch)             | 720 x 472 x 535 / 28.3 x 18.6 x 21.1 | 720 x 472 x 535 / 28.3 x 18.6 x 21.1 |
|           | Front opening (W x D, mm / inch) | 560 x 320 / 22.0 x 12.6              | 560 x 320 / 22.0 x 12.6              |
|           | Duct hole (O.D., mm / inch)      | 150 / 6                              | 150 / 6                              |
|           | Net weight (kg / lbs)            | 9.7 / 21.4                           | 9.7 / 21.4                           |
| Cat. No.  |                                  | AAAB5021                             | AAAB5011                             |



※ In case of using Extraction module (EM-33), one plinth is required to order.

| Model                         | Cat.No.   |
|-------------------------------|-----------|
| Brackets for Molded Fume Hood | AAAB6411  |
| EM-33, Extraction Module      | AAAF1536  |
| EM-33, Plinth-PMH             | AAAF15363 |

Filter information for EM-33 [Page 199](#)

# Mobile Fume Extractor



## Optimized configuration according to an usage environment



**EFS-33-75D**



**EFS-33-75D**

with Extraction Arm & Hood (option)



**EFS-33-75S**

with Extraction Arm & Hood (option)



**EFS-33-75S**

with with Extraction Arm & PMH-720

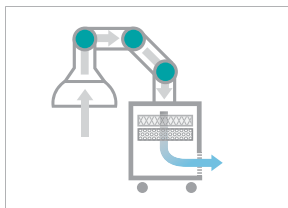
### Structural Functional Features

- Excellent space utilization through compact design.
- The body has a low height (650 mm) allowing it to be placed on the bench and on the bottom part of the table.
- Easy to control wind and intuitive display of fan level. (maximum 240m<sup>3</sup>/h)
- Better safe use of chemicals with durability and spark-free BLDC motor.
- The appropriate filter is selected according to the experiment environment. (option)
- Single / Dual arm, arm diameter, and hood are selected according to the usage environment. (option)

### Use Convenience Features

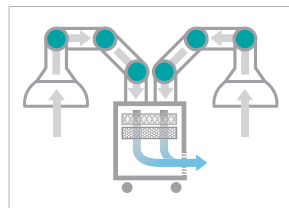
- Pre-filter built in to extend other filter life.
- Up to 2 filters can be installed depending on the material used. (option)
  - ※ Example of filter configuration  
HEPA Filter for removing dust and carbon filter for removing/neutralizing harmful gas.
- Soft wheels for easy movement and fixing.
- Low fan speed notification when fan speed is low.

### Examples Of Diverse Applications



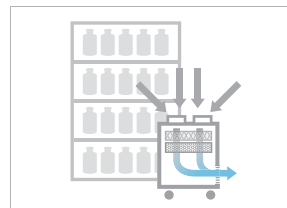
#### Single Arm

General configuration for 100% suction performance.



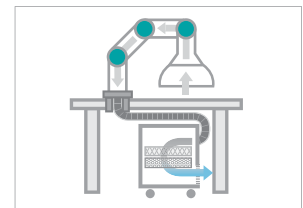
#### Dual Arm

Space-efficient configuration with two hoods used.



#### Harmful gas purifier

Purification of harmful gases and fine dust in the experiment space.



#### Laboratory table integral structure

Maximal space utilization with placement of the lower part of the testing bench.

## Specification

| Model                                   | EFS-33-50S                           | EFS-33-50D                   | EFS-33-75S                            | EFS-33-75D                         |
|---|--------------------------------------|------------------------------|---------------------------------------|------------------------------------|
| <b>Adaptable Arm</b>                    | AH-50, Φ50 mm / 2.0 inch 1ea         | AH-50, Φ50 mm / 2.0 inch 2ea | AH-75 / AH-75A, Φ75 mm / 3.0 inch 1ea | AH-75 / AH-75A, Φ75 / 3.0 inch 2ea |
| <b>Airflow Rate</b>                     | 240 m <sup>3</sup> /h                |                              |                                       |                                    |
| <b>Noise Level</b>                      | 60 dB                                |                              |                                       |                                    |
| <b>Electric Requirement</b>             | 230V, 50/60 Hz, 1.5A                 |                              |                                       |                                    |
| <b>Dimension (W x D x H, mm / inch)</b> | 460 x 460 x 650 / 18.1 x 18.1 x 25.6 |                              |                                       |                                    |
| <b>Net Weight (kg / lbs)</b>            | 65 / 143.3                           |                              |                                       |                                    |
| <b>Cat. No.</b>                         | <b>AAHB6312</b>                      | <b>AAHB6313</b>              | <b>AAHB6314</b>                       | <b>AAHB6315</b>                    |

## Accessories

### Extraction Arm

- Materials are selected according to the physical properties of the fumes and gases used.
- Diameter selected according to work type.
- Joint selected according to the working radius.

|          | Type              | Description                    |
|----------|-------------------|--------------------------------|
| Material | Polypropylene     | Excellent chemical resistance  |
|          | Anodized Aluminum | Lightweight, general use       |
| Diameter | 50 mm / 2.0 inch  | For fine work                  |
|          | 75 mm / 3.0 inch  | For general work               |
| Joint    | 2 Joint           | Within 1 m working radius      |
|          | 3 Joint           | More than 1.5 m working radius |

※ Check out the selection guide at [Page 192](#) for details.

### Hood

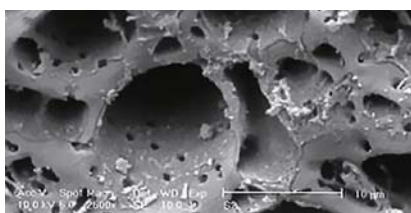
- Φ50 hood mounted on extraction arm as standard. (selection of white or clear)
- Shape selected according to the nature of the fumes and gases used.
- Material selected according to the job type.
- Strong and chemical resistant using PP and SBC materials.

|          | Type                                     | Description  |
|----------|--|--|
| Shape    | Square                                   | Square Suction of substances heavier than air on the floor |
|          | Dome                                     | Suction of material lighter than air from the top          |
| Material | Polypropylene, Opaque                    | Simple suction   |
|          | Styrene butadiene copolymer, Transparent | Suction as work progresses                                 |

※ Check out the selection guide at [Page 193](#) for details.

### Lab Companion's Filter Series

- The Lab Companion's carbon filter is an excellent amorphous adsorbent with a high surface area, has fine pores and is manufactured through a multi-level impregnation process.
- Made of 100% impregnated filter, it is more than twice as efficient as general filters.
- Has the efficiency of an excellent composite filter as it simultaneously performs physical adsorption and chemical adsorption.



Electron microscope image of Lab Companion's carbon filter

| Filter           | Description   | Cat. No. |
|------------------|---|----------|
| Complex Carbon   | Filters a wide range of chemicals, including acid, ammonia, and aldehyde.             | AAAB6354 |
| Acid             | Filters acid gases such as HCl, HF, H <sub>2</sub> S and CH <sub>3</sub> COOH         | AAAB6356 |
| Formaldehyde     | Filters formaldehyde, acetate aldehyde, etc.  | AAAB6358 |
| Ammonia / Amines | Filters Basic Gases Such As NH <sub>3</sub> , (CH <sub>3</sub> ) <sub>3</sub> N, ETC. | AAAB6359 |
| HEPA             | Filters 99.99% of toxic dust and other 0.3 μm particles                               | AAAB6353 |
| Pre-Filter       | Primarily filters particles to extend the life of other filters.                      | AAAB6360 |

※ Select a suitable filter according to the Chemistry used.

※ For the built-in pre-filter, the Particle is filtered first to extend the life of the other filter.

### Table Bracket Set

- Bracket for fixing extraction arm to table and flexible duct hose for connecting to the main body.

| Model                                 | Dimension (W x D x H, mm / inch) | Cat. No. |
|---------------------------------------|----------------------------------|----------|
| Table Bracket Set (Φ50 mm / 2.0 inch) | 165 x 254 x 110 / 6.5 x 10 x 4.3 | AAAB6351 |
| Table Bracket Set (Φ75 mm / 3.0 inch) | 165 x 254 x 110 / 6.5 x 10 x 4.3 | AAAB6352 |

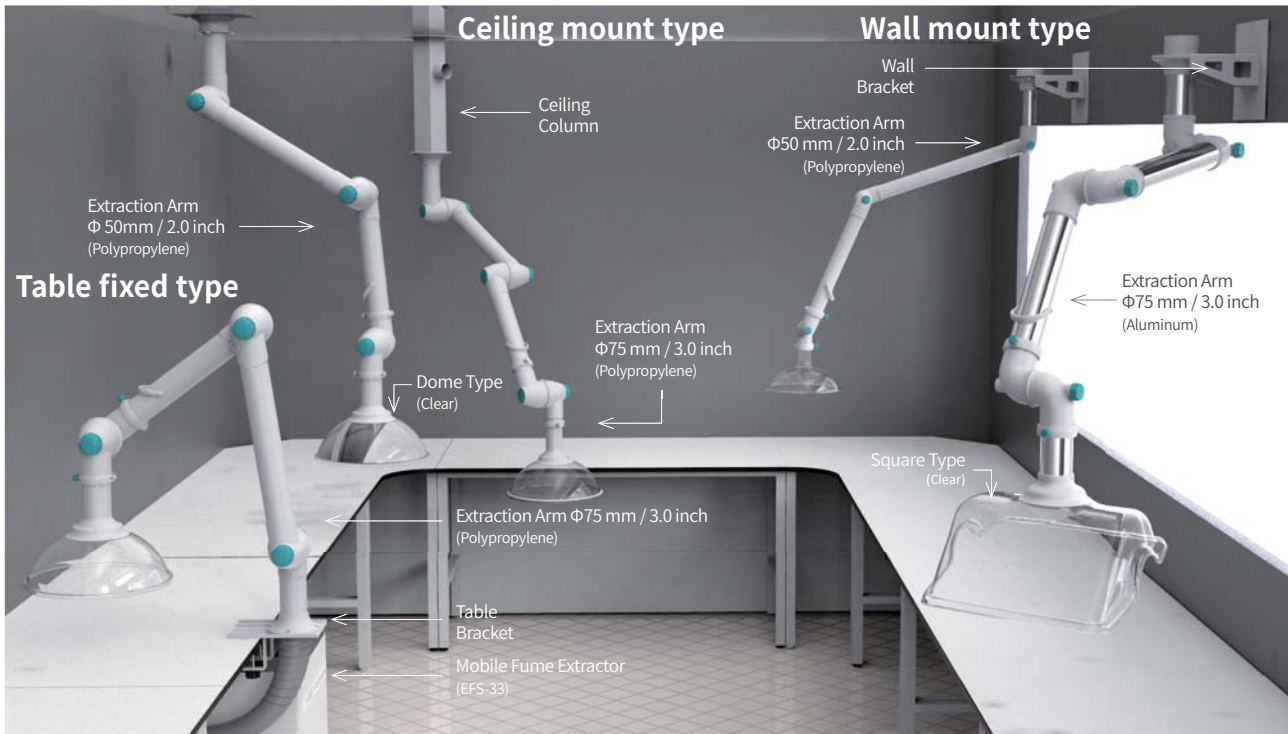
### Gas Detector & Tubes

- Determine the exchange period by checking the status of the currently installed filter.

|                    | Item                                   | Cat. No.     |
|--------------------|--|--------------|
| Gas Detector       | KITAGAWA AP-20                         | AAAB2531     |
|                    | Benzene, GASTEC-121SP (0.5-10 ppm)     | 00EAA0001550 |
| Gas Detecting Tube | Toluene, GASTEC-122L (1-100 ppm)       | 00EAA0001551 |
|                    | Acetic acid, GASTEC-81L (0.125-25 ppm) | 00EAA0001552 |
|                    | Chloroform, GASTEC-137 (4-400 ppm)     | 00EAA0001553 |
|                    | Formaldehyde, GASTEC-91LL (0.05-1 ppm) | 00EAA0001554 |
|                    | Ammonia, GASTEC-3L (0.5-60 ppm)        | 00EAA0001555 |

# Extraction Arm Hood

Direct connection to external exhaust system to remove dust and harmful gases



## Structural Functional Features

- Powerful exhaust possible with central exhaust system.
- The place to install, extraction arm, hood, column, and bracket are selected according to user's working environment and usage.
- Knobs used for freely adjusting the angle of each joint.
- Easy 360-degree rotation for convenient placement to the desired point.
- Equipped with a damper that can open and close the passage of the arm and adjust the wind speed.
- A dome hood is fitted as standard on the  $\Phi 50$  arm.

## Product Configuration Guide

- Place and surrounding environment desired for installation.
  - Column and bracket selected to decide whether to fix arm to wall/ceiling/table in the workspace.
- Working radius.
  - 2 Joint / 3 Joint selected and the length is determined considering the access radius of the arm.
- Work type.
  - 75mm for general use and 50mm for fine work selected according to the volume to be subjected to suction.
  - In case of suction only, opaque hood / In case of inhalation during operation, transparent hood.
- Properties of used fumes and gases.
  - Polypropylene with excellent chemical resistance and anodized aluminum suitable for general use.
  - Dome hood and square hood selected considering the weight compared to air.



Polypropylene

Anodized aluminum

Knob for angle adjustment

360° rotatable structure

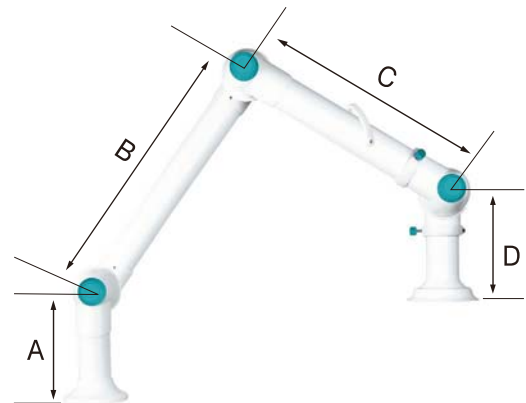
Damper for controlling wind speed

# Extraction Arm Hood

## Extraction Arm

|          | Type                            | Description                              |
|----------|---------------------------------|--|
| Material | Polypropylene                   | Excellent chemical resistance            |
|          | Anodized Aluminum <sup>1)</sup> | Lightweight, General use                 |
| Diameter | 50 mm                           | For fine work                            |
|          | 75 mm <sup>2)</sup>             | For general work                         |
| Joint    | 2 Joint                         | Radius 840 ~ 1140 mm / 33.1 ~ 44.9 inch  |
|          | 3 Joint                         | Radius 1480 ~ 1780 mm / 58.3 ~ 70.1 inch |

- 1) Weak against scratching due to the nature of the material.  
2) 75mm radius used in the case of mist.



## Specification

| Model  |          |             | Extraction Arm, Length (mm / inch) |            |            |            |             | Weight (kg / lbs) | Cat. No. |
|--|----------|-------------|------------------------------------|------------|------------|------------|-------------|-------------------|----------|
|  |          |             | A                                  | B          | C          | D          | Total       |                   |          |
| 75mm / 3.0 inch diameter, Polypropylene                        | 2 Joints | AH-2100     | 250 / 9.8                          | N/A        | 530 / 20.9 | 260 / 10.2 | 1040 / 40.9 | 1.75 / 3.9        | AAAB6511 |
|  | 3 Joints | AH-3160     | 250 / 9.8                          | 640 / 25.2 | 530 / 20.9 | 260 / 10.2 | 1680 / 66.1 | 2.4 / 5.3         | AAAB6541 |
| 75mm / 3.0 inch diameter, Polypropylene, Ceiling mount type    | 2 Joints | AH-2100C    | 250 / 9.8                          | N/A        | 530 / 20.9 | 260 / 10.2 | 1040 / 40.9 | 1.75 / 3.9        | AAAB6524 |
|  | 3 Joints | AH-3160C    | 250 / 9.8                          | 640 / 25.2 | 530 / 20.9 | 260 / 10.2 | 1680 / 66.1 | 2.4 / 5.3         | AAAB6542 |
| 75mm / 3.0 inch diameter, Anodized Aluminum                    | 2 Joints | AH-2100A    | 250 / 9.8                          | N/A        | 530 / 20.9 | 260 / 10.2 | 1040 / 40.9 | 1.9 / 4.2         | AAAB6523 |
|  | 3 Joints | AH-3160A    | 250 / 9.8                          | 641 / 25.2 | 530 / 20.9 | 260 / 10.2 | 1680 / 66.1 | 2.6 / 5.7         | AAAB6533 |
| 75mm / 3.0 inch diameter, Anodized Aluminum Ceiling mount type | 2 Joints | AH75-2100AC | 250 / 9.8                          | N/A        | 530 / 20.9 | 260 / 10.2 | 1040 / 40.9 | 1.9 / 4.2         | AAAB6526 |
|  | 3 Joints | AH75-3160AC | 250 / 9.8                          | 641 / 25.2 | 530 / 20.9 | 260 / 10.2 | 1680 / 66.1 | 2.6 / 5.7         | AAAB6537 |
| 50mm / 2.0 inch diameter, Polypropylene                        | 2 Joints | AH5-2110    | 250 / 9.8                          | N/A        | 640 / 25.2 | 250 / 9.8  | 1140 / 40.9 | 1.0 / 2.2         | AAAB6554 |
|  | 3 Joints | AH5-3160    | 250 / 9.8                          | 642 / 25.2 | 540 / 21.3 | 250 / 9.8  | 1680 / 66.1 | 1.4 / 3.1         | AAAB6563 |
| 50mm / 2.0 inch diameter, Polypropylene, Ceiling mount type    | 3 Joints | AH5-3160C   | 250 / 9.8                          | 640 / 25.2 | 540 / 21.3 | 250 / 9.8  | 1680 / 66.1 | 1.4 / 3.1         | AAAB6566 |

## Bracket & Column

- Column of suitable height is selected based on the ceiling height.
- Excellent durability due to powder coating.



Ceiling Bracket



Ceiling Column









Wall Bracket

## Specification

| Model           | Dimension (W x D x H, mm / inch)    | Suitable for (mm/inch) | Cat. No. |
|-----------------|-------------------------------------|------------------------|----------|
| Ceiling Bracket | 260 x 260 x 2 / 10.2 x 10.2 x 0.08  | 75 / 3.0               | AAAB6508 |
| Ceiling Column  | 100 x 100 x 250 / 3.9 x 3.9 x 9.8   | 75 / 3.0, 50 / 2.0     | AAAB6512 |
|                 | 100 x 100 x 500 / 3.9 x 3.9 x 19.7  |                        | AAAB6513 |
|                 | 100 x 100 x 750 / 3.9 x 3.9 x 29.5  |                        | AAAB6514 |
|                 | 100 x 100 x 1000 / 3.9 x 3.9 x 39.4 |                        | AAAB6515 |
|                 | 100 x 100 x 1250 / 3.9 x 3.9 x 49.2 |                        | AAAB6516 |
|                 | 100 x 100 x 1500 / 3.9 x 3.9 x 59.1 |                        | AAAB6517 |
| Wall Bracket    | 158 x 259 x 82 / 6.2 x 10.2 x 3.2   | 75 / 3.0               | AAAB6510 |



## Hood

| Type  | Material                           | Description  |
|---|------------------------------------|--|
|    | <b>Polypropylene</b>               | <ul style="list-style-type: none"> <li>When the emission range of the source is narrow.</li> <li>When the source can be collected at close range.</li> </ul> |
|    | <b>Styrene butadiene copolymer</b> | <ul style="list-style-type: none"> <li>When the emission range of the source is wide.</li> <li>Used for capturing light gas.</li> </ul>                      |
|    | <b>Polypropylene</b>               |  |
|    | <b>Styrene butadiene copolymer</b> | <ul style="list-style-type: none"> <li>When heavy gas is collected, one side is supported on the table and used like a shield.</li> </ul>                    |
|   | <b>Polypropylene</b>               |  |
|  | <b>Polyethylene</b>                | <ul style="list-style-type: none"> <li>Compact total hood form, securely blocking the user's gas hose.</li> </ul>  |



Dome type



Square type



Hood type

## Specification

| Diameter             | Type                                 | Dimension                              | Color                       | Material   | Cat. No.   |
|----------------------|--------------------------------------|--|-----------------------------|--|--|
| Ø75 mm<br>/ 3.0 inch | <b>Basic (Ø, mm / inch)</b>          | 171 / 6.7                              | White                       | Polypropylene  | <b>Standard</b>  |
|                      | <b>Dome (Ø x H, mm / inch)</b>       | 400 x 140 / 15.7 x 5.5                 | White                       | Polypropylene  | <b>AAAB6221</b>  |
|                      |                                      |  | Clear                       | Styrene butadiene copolymer                            | <b>AAAB6211</b>  |
|                      | <b>Square (W x D x H, mm / inch)</b> | 494 x 390 x 245<br>/ 19.4 x 15.4 x 9.6 | White                       | Polypropylene  | <b>AAAB6241</b>  |
|                      |                                      |  | Clear                       | Styrene butadiene copolymer                            | <b>AAAB6231</b>  |
| White                |                                      |  | Polypropylene               | <b>Clear Dome (Standard)<br/>(Optional White Dome)</b> |  |
| Clear                | Styrene butadiene copolymer          |  |                             |  |  |
| Ø50 mm<br>/ 2.0 inch | <b>Dome (Ø x H, mm / inch)</b>       | 294 x 180 / 11.6 x 7.1                 | White                       | Polypropylene  | <b>Clear Dome (Standard)<br/>(Optional White Dome)</b> |
|                      |                                      | Clear                                  | Styrene butadiene copolymer |  |  |

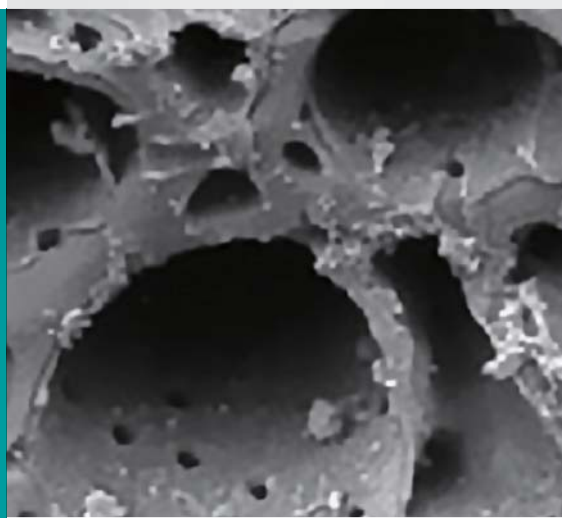
※ Ø75 Basic hood is provided as an integral part of the extraction arm and is used for suction of small volumes of material in confined spaces.  
 ※ Ø50 Dome hood is provided as standard on the extraction arm.



# Safety Storage & Cabinet



# Safety Storage & Cabinet



# Safety Storage & Cabinet



|                  | Description  | Note                             | Model          | Page |
|------------------|--|----------------------------------|----------------|------|
| Safe-type        | <b>Dangerous flammable goods</b> <ul style="list-style-type: none"> <li>Safe storage of flammable/combustible materials in the event of a surrounding fire</li> <li>Designed according to the strictest European standards EN 14470-1</li> </ul> | Type 30, 60, 90                  | SC3-F<br>SC2-F | 200  |
|                  | <b>Acid/Base</b> <ul style="list-style-type: none"> <li>Acid/Base reagents can be safely stored for a long period of time</li> <li>Solid steel structure with corrosion-resistant interior finish</li> </ul>                                     | Anti-corrosion interior finish   | SC-C<br>PCC    | 209  |
| Filter-type      | <b>Filtering</b> <ul style="list-style-type: none"> <li>The harmful gas is filtered by the filter included inside</li> <li>Economical reagent cabinets that does not require external duct connection</li> </ul>                                 | Closed internal circulation type | FSC            | 214  |
| Each use         | <b>High-pressure cylinder cabinets</b> <ul style="list-style-type: none"> <li>Safeguards gas cylinders from external impact</li> <li>Stores gas cylinders so that they do not fall over</li> </ul>   | Gas cylinder                     | DS-GC          | 218  |
|                  | <b>Multipurpose cabinets</b> <ul style="list-style-type: none"> <li>Store small apparatus, parts, etc. systematically and efficiently</li> <li>Easy access to stored items with 11-level shelf-type structure</li> </ul>                         | Multi-drawers                    | DS-OR          | 219  |
| General type     | <b>Steel window</b> <ul style="list-style-type: none"> <li>Extremely convenient to check inside storage with glass window door</li> <li>Convenient drawer-type structure with excellent chemical resistance due to PP material</li> </ul>        | Stand type                       | DS-OW          | 220  |
|                  |  | Tabletop type                    | DS-TW          |      |
|                  | <b>Steel drawer</b> <ul style="list-style-type: none"> <li>Reagent cabinet with solid steel structure and excellent durability</li> <li>Suitable for long-term storage without exposure to sunlight</li> </ul>                                   | Stand type                       | DS-S, C        | 222  |
|                  |  | Tabletop type                    | DS-TT          |      |
| Under table type | DS-UT, UD  |                                  |                |      |

※ The contents of the above and the contents of this catalog may differ depending on the specific model and conditions of use. For the information about the features and specifications that applying to each models, please check the information on the corresponding page of each models.



Satisfaction with the requirements of European regulations and guidelines.



Real-time equipment monitoring and control system using mobile app.



30 minute fire resistance confirmed.



60 minute fire resistance confirmed.



90 minute fire resistance confirmed.



Door locking system with key.



Excellence in acid/alkaline storage with a corrosion-resistant structure and exhaust system.



Exhaust via duct connection.



Purifies and discharges harmful gas through internal filter.



2 year warranty Free A/S.

## Rational storage according to purpose



### > Storage of flammable / combustible materials

In case of an unexpected fire that may occur at any time, flammable and combustible materials must be stored in a suitable location. Lab Companion's flammable hazardous material storage cabinets to be certified the strictest EN 14470-1 standard, is the best choice.



### > Storage of corrosive substances such as strong acids and strong bases

The structure is optimized for long-term safe storage of corrosive substances such as strong acids and strong bases used in experiments and processes. It is composed of a solid steel structure and corrosion-resistant interior material, and provides differentiated safety performance due to its space specific exhaust structure.



### > Reagent cabinet with built-in circulation filter

It is a reagent cabinet in which air flow is uniformly formed and the harmful gas is adsorbed through the internal filter. It is safe from fine particles and gas as it is equipped with Lab Companion's exclusive carbon filter and HEPA filter.



### > Physically / chemically sturdy cabinets

It is a reagent cabinet consisting of a polypropylene drawer and a stable structure with a rigid steel frame coated with epoxy. Choice provided depending on the usage, including glass window door type, no sunlight exposure, tabletop type, under table type, etc.



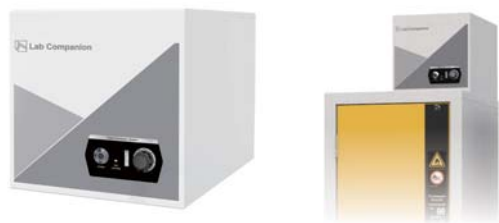
### > Safe storage of high-pressure cylinders

Cylindrical high-pressure containers must be prevented from falling and must be properly protected from unexpected external impact. High-pressure cylinders can be safely stored in Lab Companion's exclusive solid steel storage cabinets.



## > Extraction module (option)

This is harmful gas exhaust equipment (EM-33) equipped with Lab Companion's exclusive filter. It can be installed and used on Lab Companion's storage cabinets and reagent cabinet.



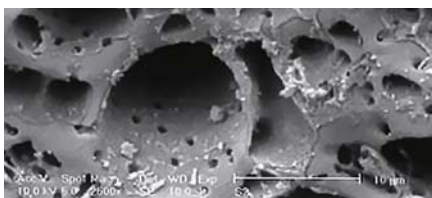
| Cat. No. | Description (W x D x H, mm/inch)                        |
|----------|---|
| AAAF1536 | EM-33, 348 x 498 x 343 / 13.7 x 19.6 x 13.5, 230V, 60Hz |

- It is installed at the upper part of the storage cabinet without a separate duct connection to filter and remove the harmful gas inside.
- Pre-filter is included as standard, and up to 2 filters can be added depending on the stored material. (for example: HEPA filter + carbon filter)
- Applicable to Lab Companion's dangerous and flammable goods storage cabinets, acid/base cabinets, general reagent cabinet series, small fume hood, etc.

## > Lab Companion's exclusive filter

The exclusive filter series developed by JEIO TECH has been objectively verified by an accredited laboratory.

- The Lab Companion's carbon filter is an excellent amorphous adsorbent with a high surface area, has fine pores and is manufactured through a multi-level impregnation process.
- Made of 100% impregnated filter, it is more than twice as efficient as general filters.
- Has the efficiency of an excellent composite filter as it simultaneously performs physical adsorption and chemical adsorption.



- Electron microscopic photographs of Lab Companion's carbon filter confirms development of numerous pores such as Macropores (diameter of more than 500Å), Mesopores (diameter of 20-500Å), and Micropores. (diameter of 20Å or less)

| Filter                  | Description  | Mounted on EM-33 |
|-------------------------|--|------------------|
| <b>Complex Carbon</b>   | Filters a wide range of chemicals, including acid, ammonia, and aldehyde.            | <b>AAAB6354</b>  |
| <b>Acid</b>             | Filters acid gases such as HCl, HF, H <sub>2</sub> S and CH <sub>3</sub> COOH        | <b>AAAB6356</b>  |
| <b>Formaldehyde</b>     | Filters formaldehyde, Acete aldehyde, etc.   | <b>AAAB6358</b>  |
| <b>Ammonia / Amines</b> | Filters Basic Gases Such As NH <sub>3</sub> , (CH <sub>3</sub> ) <sub>3</sub> N etc. | <b>AAAB6359</b>  |
| <b>HEPA</b>             | Filters 99.99% of toxic dust and other 0.3µ m particles                              | <b>AAAB6353</b>  |

- ※ The appropriate filter is selected according to the chemical used.
- ※ Built-in pre-filter primarily filters particles to extend the life of the other filters.

## > Chemical test completed according to SEFA-8 standard

Lab Companion's cabinets and reagent series uses materials that have passed the SEFA (The Scientific Equipment and Furniture Association) standard test, and the equipment has excellent acid resistance, alkali resistance, heat resistance and durability.



Alkali resistance

### Exterior Epoxy Powder Coated Steel

The exterior has excellent durability and excellent chemical resistance due to epoxy powder coating.



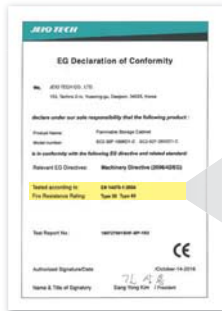
### Drawer Polypropylene (PP)

The drawer part made by solid mold injection is made of polypropylene with excellent chemical resistance.

# Fire Safety Storage Cabinet

## Basic, Type 30, 60, 90

Proven refractory performance to safeguard flammable hazardous materials from fire



Flammable Storage Cabinet  
EN 14470-1 : 2004



### SC3-90F-0806D1D-C

Standard : Bottom Sump 1ea

### SC3-90F-0812D2D-C

Standard : Bottom Sump 2ea

### SC3-90F-1906D1-C

Standard : Shelves 3ea & Bottom Sump 1ea  
Option : Fume Extraction Module & Filters

### SC3-90F-1912D2-C

Standard : Shelves 3ea & Bottom Sump 1ea  
Option : Fume Extraction Module & Filters

## Diverse Certifications Obtained



Awarded the Safe Korean Technology Prize by the Ministry of the Interior and Safety.

- > Obtained CE (EN 14470-1) certification.
- > Acquired Certificate of Excellent Product from the Public Procurement Service in Korea.
- > Acquired performance certification from the Ministry of SMEs and Startup in Korea.
- > Awarded the 2018 Safe Korean Technology Prize by the Ministry of the Interior and Safety.

\*EN14470-1 verifies that the equipment meets the European safety standards for dangerous goods containers such as fire resistance, internal ventilation, shelf stability, and automatic door closure.

### Fire resistance performance 90-minutes type

| Type  | Model             |
|-------|-------------------|
| Stand | SC3-90F-1912D2-C  |
|       | SC3-90F-1906D1-C  |
| Under | SC3-90F-0812D2D-C |
|       | SC3-90F-0806D1D-C |

### Fire resistance performance 60-minutes type

| Type  | Model             |
|-------|-------------------|
| Under | SC2-60F-0806D1-CL |
|       | SC2-60F-0806D1-CR |
|       | SC2-60F-0706D1-C  |

### Fire resistance performance 30-minutes type

| Type  | Model             |
|-------|-------------------|
| Stand | SC3-30F-1912D2-C  |
|       | SC3-30F-1906D1-C  |
| Under | SC3-30F-0812D2D-C |
|       | SC3-30F-0806D1D-C |





## Safe Storage From Fire

- > **High fire resistance**  
Fire resistance performance is in accordance with the strictest European standard, with the internal temperature kept below 180K for up to 90 minutes in the event of fire.
- > **Fire response sealing system**  
When the temperature reaches 50°C, the door automatically closes. When the ambient temperature reaches 70±10°C, the exhaust holes and ventilation openings are automatically closed, totally blocking the flow of heat from the outside in the event of fire.
- > **The right model for the application can be selected**  
Possible to suppress fire at the natural ignition point of the dangerous goods being handled.  
Model selected considering the prediction time, etc.
- > **Chemical resistant interior material**  
Excellent chemical resistance even for long-term use with the interior material coated with polyphenol resin.
- > **Under bench type height-adjustable (SC3 Under-type Model)**  
75 mm/820 mm height can be selected considering the work height when hood is installed at the bottom.

## Solid and Secure Shelf Structure

- > **Solid shelf structure**  
It is a solid structure allowing for up to 80kg to be held per shelf and it can be fixed firmly to the left and right inside walls.
- > **Safe shelf design**  
With 30mm-deep shelf shape for safe storage, it is designed to be safe even if the stored contents are leaked.
- > **Right shelf selection**  
The built-in shelf is excellent in chemical resistance due to epoxy powder coating. Also, stainless steel shelves and PP trays can be selected. (option)

### Patented system with safe exhaust structure

System with optimally designed exhaust structure that effectively removes flammable vapor at normal times while preventing external flames from flowing directly into the interior.



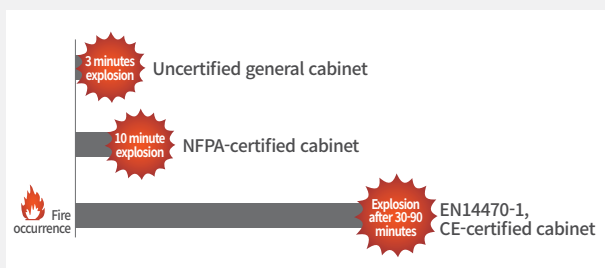
(Patent Registration No. 10-1605164)

Award Excellent Patent Award (in Korea)

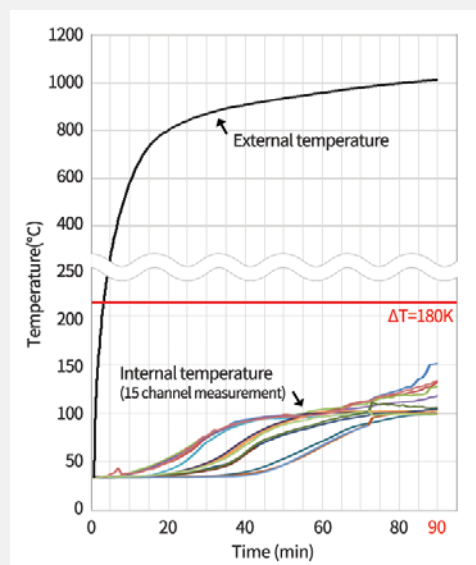
## Proven Fireproof Performance!

### Items proven by testing

- > 30 minutes / 60 minutes / 90 minutes fire resistance performance test
- > For fire test according to standards of EN 1363-1, the time required for AT to be kept below 180°C is expressed as fire resistance. (EN 14470-1)



Comparison of fire resistance performance based on certification



SC3-90F-1912D2-C fire test results

➤ **Convenient reagent In/Out**

Equipped with door closure to stop the door at the desired position for easy insertion and removal of flammable reagents.



➤ **Automatically sealed ventilation**

When the ambient temperature reaches  $70 \pm 10^\circ\text{C}$  in case of surrounding fire, the exhaust opening, and ventilation opening are designed to be automatically closed to completely prevent the inflow of external heat.



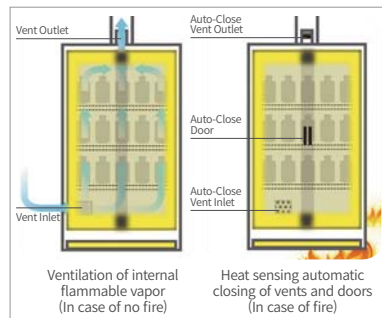
➤ **Anti-static charge through ground**

The ground to prevent static spark accidents caused by inside the cabinet where flammable vapors may be generated. For proper installation, each shelf should be connected with busbar inside of cabinet. Also the conduction bolt (located on upper part behind the cabinet) should be connected with distribution panelboard.



➤ **Safe ventilation of flammable vapor**

It is possible to discharge gas easily through the vent inlet and vent outlet to prevent accidents due to accumulation of flammable vapor, and to protect the health of the experimenter.



➤ **Configurable with lab safety workbench**

It is composed of a fume hood and a testing bench bottom, making it excellent for storing hazardous materials and waste liquids.





**Effluent reservoir**

Safe handling in the event of stored material leakage and prevention of leakage out of the cabinets.



**Key lock device**

Key lock is provided as standard to block unauthorized access.



**Safe stored materials handling**

Ergonomic structure with easy access to shelves for user's safety and convenience.



**Convenient moving and installation**

Forklift fork space for convenient movement. Leveling feet for stable installation.



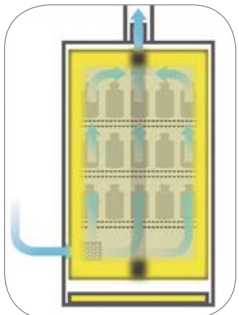
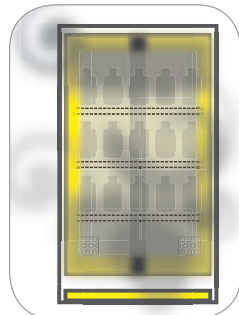
**Extraction module (option)**

Filters flammable gas inside the cabinet with a carbon filter without connecting a separate duct.



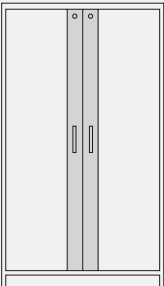

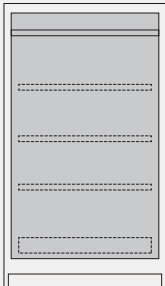

**Select a suitable shelf**

Providing the 3ea of shelf (up to 80kg storage) for stand type cabinet, and can be exchanged to drawer. (option)

|   | EN 14470-1  | NFPA 30   |
|---|---|---|
| <b>Fire resistance performance</b>                            | <p>O</p> <p>Fire test according to EN 1363-1, 15 min.- 90 min. (15 min. / 30 min. / 60 min. / 90 min.)</p>  | <p>O</p> <p>NFPA 251 standard fire resistance test, 10 minute level</p>   |
| <b>Flammable vapor ventilation</b>                            | <p>O</p> <p>Flammable vapor ventilation is recommended. Check sound pressure formation inside the cabinet during ventilation.</p>  <p>Keeps flammable vapors below the LEL concentration and removes smell(odors) through ventilation.</p> | <p>X</p> <p>Ventilation is not recommended. (Recommended to use level of container recommended in NFPA 30)</p>  <p>It seals the ventilation holes, and an smell(odors) occurs inside the storage cabinet. The risk of ignition is increased as the concentration of flammable vapor increases.</p> |
| <b>Fire detection, automatic door and ventilation closure</b> | <p>O</p> <p>Automatic door and ventilation closure during fire test.</p>  | <p>X</p> <p>In the case of a fire test, test with the ventilation hole blocked. Fire safety not considered when connecting to external ventilation facilities.</p>  |

Comparison of EN 14470-1 and NFPA 30 International Standards

## Specification (Type 90)

| Model  | SC3-90F-1912D2-C  | SC3-90F-1906D1-C  |
|--|---|---|
| Internal volume (L / cu ft)  | 763 / 26.9  | 357 / 12.6  |
| Interior dimensions (W x D x H, mm / inch)   | 968 x 484 x 1629 / 38.1 x 19.1 x 64.1   | 453 x 484 x 1629 / 17.8 x 19.1 x 64.1   |
| Exterior dimensions (W x D x H, mm / inch)   | 1116 x 625 x 1952 / 43.9 x 24.6 x 76.9  | 601 x 625 x 1952 / 23.7 x 24.6 x 76.9   |
| Quantity of shelf (standard / max.)  | 3 / 5   | 3 / 5   |
| Max. load per shelf (kg / lbs)   | 80 / 176.3  | 80 / 176.3  |
| Bottom collecting sump set <sup>2)</sup><br>(Volume : L / cu ft, Height : mm / inch) | 41 / 1.4, 82 / 3.2  | 19 / 0.7, 84 / 3.2  |
| Weight (kg / lbs)  | 420 / 925.9   | 220 / 485.0   |
| CE certification   | O   | O   |
| Cat. No.   | AAAF390170  | AAAF390140  |
| Product appearance   |   |   |
| Product interior   |  |  |

- 1) Providing Epoxy powder coated shelf (standard), change to Stainless Steel shelf (option) or Drawer type. (option) Additional shelf is possible.  
 2) Providing Epoxy powder coated bottom collecting sump set (standard), change to Stainless Steel material. (option)

## Accessories (Type 90)

| Accessory                      | Description (W x D x H, mm / inch)                | SC3-90F-1912D2-C                                   | SC3-90F-1906D1-C                                   |
|--------------------------------|---|--|--|
| Shelf                          | Epoxy powder coated steel                         | AAAF35014<br>(965 x 444 x 30 / 38.0 x 17.5 x 1.2)  | AAAF35013<br>(451 x 444 x 30 / 17.8 x 17.5 x 1.2)  |
|                                | Stainless steel                                   | AAAF35004<br>(965 x 444 x 30 / 38.0 x 17.5 x 1.2)  | AAAF35003<br>(451 x 444 x 30 / 17.8 x 17.5 x 1.2)  |
| Drawer                         | Epoxy powder coated steel                         | AAAF35313<br>(798 x 452 x 100 / 31.4 x 17.8 x 3.9) | AAAF35312<br>(350 x 452 x 100 / 13.8 x 17.8 x 3.9) |
|                                | Stainless steel                                   | AAAF35303<br>(798 x 452 x 100 / 31.4 x 17.8 x 3.9) | AAAF35302<br>(350 x 452 x 100 / 13.8 x 17.8 x 3.9) |
| Fume extraction module (EM-33) | 348 x 498 x 343 / 13.7 x 19.6 x 13.5 (230V, 60Hz) | AAAF1536   | AAAF1536   |

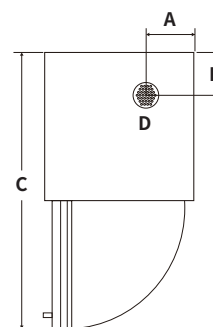
※ Please refer to page 199 for details on EM-33 compatible filter.

## Dimension

(Unit: mm / inch)

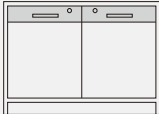

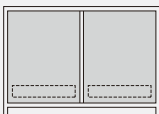

| Model            | A         | B         | C <sup>1)</sup> | D (Diameter) |
|------------------|-----------|-----------|-----------------|--------------|
| SC3-90F-1912D2-C | 170 / 6.7 | 160 / 6.3 | 1135 / 44.7     | 76 / 3       |
| SC3-90F-1906D1-C | 170 / 6.7 | 160 / 6.3 | 1135 / 44.7     | 76 / 3       |

1) C is the maximum depth when the door is opened.



Upper side

## Specification (Type 90)

| Model  | SC3-90F-0812D2D-C   | SC3-90F-0806D1D-C   |
|--|---|---|
| Internal volume (L / cu ft)  | 244 / 8.6   | 110 / 3.9   |
| Interior dimensions (W x D x H, mm / inch)   | 496 x 396 x 622 * 2ea / 19.5 x 15.6 x 24.5 * 2ea                                    | 448 x 396 x 622 / 17.6 x 15.6 x 24.5  |
| Exterior dimensions (W x D x H, mm / inch)   | 1200 x 560 x 730 (or 820) / 47.2 x 22.0 x 28.7 (or 32.3)                            | 600 x 560 x 730 (or 820) / 23.6 x 22.0 x 28.7 (or 32.3)                               |
| Quantity of shelf  | -   | -   |
| Max. load (kg / lbs)   | 40 * 2ea / 88.2 * 2ea   | 40 / 88.2   |
| Bottom collecting sump set <sup>1)</sup><br>(Volume : L / cu ft, Height : mm / inch) | 24 / 0.8 x 2ea, 16 / 0.6  | 23 / 0.8, 16 / 0.6  |
| Weight (kg / lbs)  | 220 / 485.0   | 134 / 295.4   |
| CE certification   | O   | O   |
| Cat. No.   | AAAF390130  | AAAF390120  |
| Product appearance   |    |    |
| Product interior   |  |  |

1) Providing Epoxy powder coated bottom collecting sump set (standard), change to Stainless Steel material. (option)  
 ※ Possible to set the exclusive guide for Safety Waste Disposal System. (option)

## Accessories (Type 90)

| Accessory                      | Description (W x D x H, mm / inch)   | SC3-90F-0812D2D-C | SC3-90F-0806D1D-C |
|--------------------------------|--------------------------------------|-------------------|-------------------|
| Plinth (side)                  | 480 x 340 x 350 / 18.9 x 13.4 x 13.8 | AAAF15364         | AAAF15364         |
| Fume extraction module (EM-33) | 348 x 498 x 343 / 13.7 x 19.6 x 13.5 | AAAF1536          | AAAF1536          |

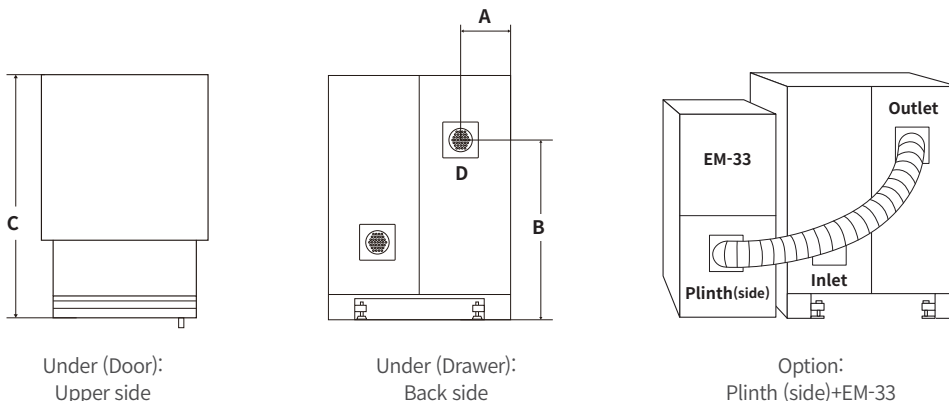
※ Please refer to page 199 for details on EM-33 compatible filter.

## Dimension

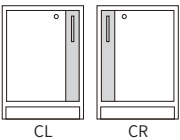

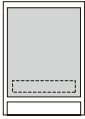

(Unit: mm / inch)

| Model                        | A         | B          | C <sup>1)</sup> | D (Diameter) |
|------------------------------|-----------|------------|-----------------|--------------|
| Under (Door):<br>Upper side  | 185 / 7.3 | 255 / 10.0 | 840 / 33.1      | 60 / 2.4     |
| Under (Drawer):<br>Back side | 165 / 6.5 | 255 / 10.0 | 840 / 33.1      | 60 / 2.4     |

1) C is the maximum depth when the Drawer is opened.



## Specification (Type 60)

| Model  | SC2-60F-0806D1-CL / SC2-60F-0806D1-CR   | SC2-60F-0706D1-C  |
|--|---|---|
| Internal volume (L / cu ft)  | 89 / 3.1  | 76 / 2.7  |
| Interior dimensions (W x D x H, mm / inch)   | 505 x 419 x 422 / 19.9 x 16.5 x 16.6  | 505 x 419 x 362 / 19.9 x 16.5 x 14.3  |
| Exterior dimensions (W x D x H, mm / inch)   | 600 x 610 x 820 / 23.6 x 24.0 x 32.3  | 600 x 610 x 720 / 23.6 x 24.0 x 28.3  |
| Max. load (kg / lbs)   | 80 / 176.4  | 80 / 176.4  |
| Bottom collecting sump set <sup>1)</sup><br>(Volume : L / cu ft, Height : mm / inch) | 7 / 0.2, 16 / 0.6   | 7 / 0.2, 16 / 0.6   |
| Weight (kg / lbs)  | 106 / 233.7   | 100 / 220.5   |
| Cat. No.   | AAAF360310 / AAAF360311   | AAAF360110  |
| Product appearance   |  |  |
| Product interior   |  |  |

1) Providing Epoxy powder coated bottom collecting sump set (standard), change to Stainless Steel material. (option)

## Accessories (Type 60)

| Accessory                                   | Description (W x D x H, mm / inch)   | SC2-60F-0806D1-CL / SC2-60F-0806D1-CR | SC2-60F-0706D1-C |
|---|--------------------------------------|---------------------------------------|------------------|
| Plinth (side)                               | 480 x 340 x 350 / 18.9 x 13.4 x 13.8 | AAAF15364                             | AAAF15364        |
| Fume extraction module (EM-33) (230V, 60Hz) | 348 x 498 x 343 / 13.7 x 19.6 x 13.5 | AAAF1536                              | AAAF1536         |

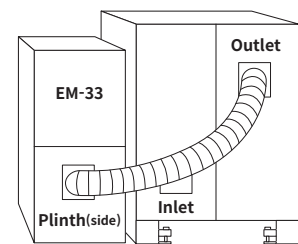
※ Please refer to page 199 for details on EM-33 compatible filter.

## Dimension

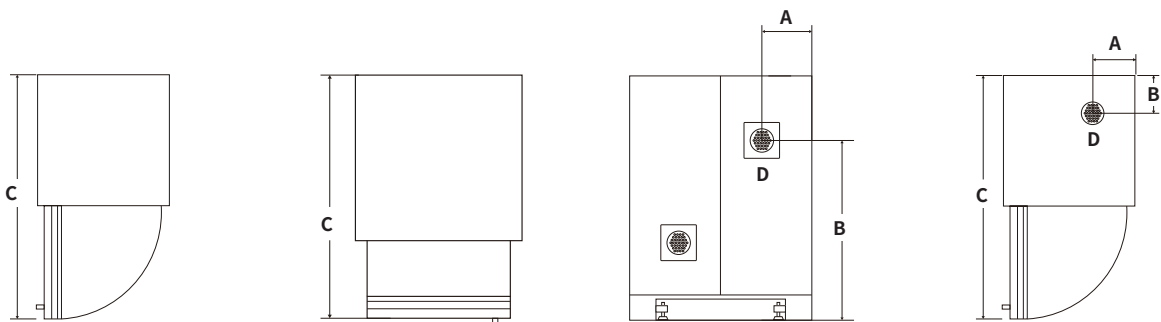
(Unit: mm / inch)

| Model          | A                    | B         | C <sup>1)</sup> | D (Diameter) |           |
|----------------|----------------------|-----------|-----------------|--------------|-----------|
| Under (Door)   | SC2-60F-0806D1-CR/CL | 125 / 4.9 | 530 / 20.9      | 1070 / 42.1  | 102 / 4.0 |
|                | SC2-60F-0706D1-C     | 125 / 4.9 | 480 / 18.9      | 1070 / 42.1  | 102 / 4.0 |
| Under (Drawer) | SC3-30F-0812D2D-C    | 160 / 6.3 | 235 / 9.3       | 840 / 33.1   | 60 / 2.4  |
|                | SC3-30F-0806D1D-C    | 160 / 6.3 | 235 / 9.3       | 840 / 33.1   | 60 / 2.4  |
| Tall           | SC3-30F-1912D2-C     | 180 / 7.1 | 170 / 6.7       | 1095 / 43.1  | 76 / 3.0  |
|                | SC3-30F-1906D2-C     | 180 / 7.1 | 170 / 6.7       | 1120 / 44.1  | 76 / 3.0  |

1) C is the maximum depth when the door is opened.



Option:  
Plinth (side)+EM-33



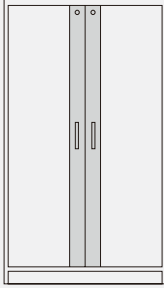

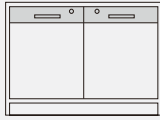

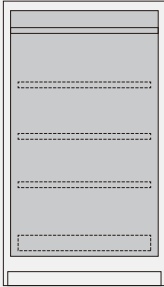
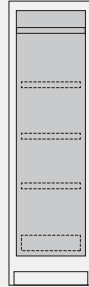
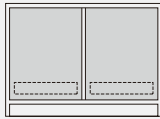

Under (Door): Upper side

Under (Drawer): Upper side

Under: Back side

Tall: Upper side

## Specification (Type 30)

| Model  | SC3-30F-1912D2-C  | SC3-30F-1906D1-C  | SC3-30F-0812D2D-C   | SC3-30F-0806D1D-C   |
|--|---|---|---|---|
| Internal volume (L / cu ft)  | 802 / 28.3  | 375 / 13.2  | 252 / 8.9   | 116 / 4.1   |
| Interior dimensions (W x D x H, mm / inch)   | 968 x 507 x 1635<br>/ 38.1 x 20.0 x 64.4  | 453 x 507 x 1635<br>/ 17.8 x 20.0 x 64.4  | 506 x 415 x 602 * 2ea<br>/ 19.9 x 16.3 x 23.7 * 2ea                                   | 468 x 415 x 602<br>/ 18.4 x 16.3 x 23.7   |
| Exterior dimensions (W x D x H, mm / inch)   | 1101 x 630 x 1951<br>/ 43.3 x 24.8 x 76.8   | 586 x 630 x 1951<br>/ 23.1 x 24.8 x 76.8  | 1200 x 560 x 820<br>/ 47.2 x 22.0 x 32.3  | 600 x 560 x 820<br>/ 23.6 x 22.0 x 32.3   |
| Quantity of shelf (standard / max.)  | 3/5   | 3/5   | -   | -   |
| Max. load per shelf (kg / lbs)   | 80 / 176.4  | 80 / 176.4  | 40*2ea <sup>1)</sup> / 88.2*2ea   | 40 <sup>1)</sup> / 88.2   |
| Bottom collecting sump set <sup>2)</sup><br>(Volume : L / cu ft, Height : mm / inch) | 41 / 1.4, 84 / 3.3  | 19 / 0.7, 84 / 3.2  | 24 / 0.8 x 2ea, 16 / 0.6  | 24 / 0.8, 16 / 0.6  |
| Weight (kg / lbs)  | 330 / 727.5   | 220 / 485.0   | 200 / 440.9   | 120 / 264.6   |
| Cat. No.   | AAAF330470  | AAAF330440  | AAAF330430  | AAAF330420  |
| Product appearance   |   |   |   |   |
| Product interior   |  |  |  |  |

1) Drawer type is the maximum load for the drawer.

2) Providing epoxy powder coated bottom collecting sump set (standard), change to stainless steel material. (option)

## Accessories (Type 30)

| Accessory                                   | Description<br>(W x D x H, mm / inch)   | SC3-30F-1912D2-C                                   | SC3-30F-1906D1-C                                   | SC3-30F-0812D2D-C | SC3-30F-0806D1D-C |
|---|---|--|--|-------------------|-------------------|
| Shelf                                       | Epoxy powder coated steel               | AAAF35014<br>(965 x 444 x 30 / 38.0 x 17.5 x 1.2)  | AAAF35013<br>(451 x 444 x 30 / 17.8 x 17.5 x 1.2)  | -                 | -                 |
|   | Stainless steel                         | AAAF35004<br>(965 x 444 x 30 / 38.0 x 17.5 x 1.2)  | AAAF35003<br>(451 x 444 x 30 / 17.8 x 17.5 x 1.2)  | -                 | -                 |
| Drawer                                      | Epoxy powder coated steel               | AAAF35313<br>(798 x 452 x 100 / 31.4 x 17.8 x 3.9) | AAAF35312<br>(350 x 452 x 100 / 13.8 x 17.8 x 3.9) | -                 | -                 |
|   | Stainless steel                         | AAAF35303<br>(798 x 452 x 100 / 31.4 x 17.8 x 3.9) | AAAF35302<br>(350 x 452 x 100 / 13.8 x 17.8 x 3.9) | -                 | -                 |
| Plinth (Side)                               | 480 x 340 x 350<br>/ 18.9 x 13.4 x 13.8 | -  | -  | AAAF15364         | AAAF15364         |
| Fume extraction module (EM-33) (230V, 60Hz) | 348 x 498 x 343<br>/ 13.7 x 19.6 x 13.5 | AAAF1536   | AAAF1536   | AAAF1536          | AAAF1536          |

※ Please refer to page 199 for details on EM-33 compatible filter.

# Safety Waste Disposal System

2  
year  
Warranty

## Easy to collect and store various chemicals and waste liquids generated in the lab.

### ➤ Safe device to prevent leakage

- Safety funnel dedicated to waste fluid treatment, which is convenient for handling due to wide funnel inlet opening.
- Use of durability and chemical resistance PP (polypropylene) better than other HDPE materials.
- 70 % level bar is standard to make it easier to know when to replace the disposal fluid level in container, and can be replaced 80% level bar as required by the experimenter. (option)

### ➤ Classified emission according to the type of chemical properties

- Different colors of the safety funnel lid depending on the chemical properties to clearly distinguish when treating waste liquid treatment.
- Safety labels can be attached to the top of the safety funnel to prevent the mixing of waste fluids with different properties.

### ➤ Pressure and gas treatment by reaction

- Hinge-type lid minimizes the discharge of vapors from the waste solution into the lab.
- Removes bad odors and harmful gas. (carbon filter can be replaced easily without remove existing attachment without the use of any tools) (option)

### ➤ Anti-static protection

- Anti-Static protection via special plastic material and ground cable. (SF model)
- Ease of ground wire cleanup when configured with a flammable material storage cabinets. (sold separately)



**SF-14P & WT-20P**

with Carbon Filter (option)



**SF-14C & WT-20C**

with Carbon Filter (option)



Wide inlet of waste liquid funnel.



Waste liquid level notification function.



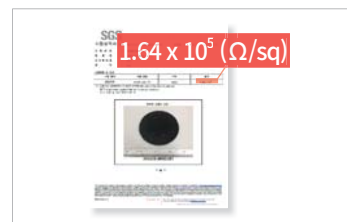
Classified color label and lid color according to chemical properties.



Hinge-type lid.



A dedicated flammable material storage cabinets to contain waste disposal system. (only for SC3-90F drawer type)



Anti-static material to prevent static electricity generation.



## Specification

| Model                                   | SF-14C   | SF-14P   | WT-20C                              | WT-20P                                 |
|---|--|--|-------------------------------------|--|
| <b>Description</b>                      | Anti-static Safety funnel for collection of waste liquid | General use Safety funnel for collection of waste liquid | Anti-static liquid waste container  | General-purpose liquid waste container |
| <b>Dimension (W x D x H, mm / inch)</b> | 160 x 142 x 270 / 6.3 x 5.6 x 10.6                       | 160 x 142 x 270 / 6.3 x 5.6 x 10.6                       | 220 x 300 x 380 / 8.7 x 11.8 x 15.0 | 220 x 300 x 380 / 8.7 x 11.8 x 15.0    |
| <b>Inlet (ø, mm / inch)</b>             | 135 / 5.3  | 135 / 5.3  | 45 / 1.8                            | 45 / 1.8                               |
| <b>Lid size (ø, mm / inch)</b>          | 142 / 5.6  | 142 / 5.6  | 65 / 2.6                            | 65 / 2.6                               |
| <b>Volume (L / cu ft)</b>               | 1 / 0.04   | 1 / 0.04   | 22 / 0.78                           | 22 / 0.78                              |
| <b>Cat. No.</b>                         | <b>AAAM6001</b>  | <b>AAAM6002</b>  | <b>AAAM6011</b>                     | <b>AAAM6012</b>                        |

## Accessories

| Description          | Dimension (ø x H, mm / inch) | Cat. No.        |
|----------------------|------------------------------|-----------------|
| <b>Carbon Filter</b> | 76 x 150 / 3.0 x 5.9         | <b>AAAM6051</b> |



# Acid Corrosive Cabinet Small type



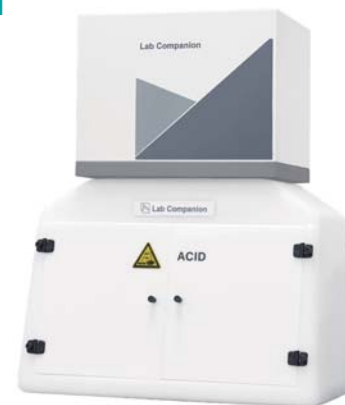
## Compact size enables efficient space utilization

### Safe storage from corrosive substances

- Full injection molding of polyethylene materials with excellent chemical resistance for durability and corrosion resistance.
- Suitable for storage of small amounts of corrosive reagents. (Max. 18ea based on a 1L reagent basis)
- Inside of cabinet is designed by with no steel structure for corrosion protection.

### Convenient and safe ventilation

- Use duct connection of existing facility or dedicated hazardous gas removal Fume Extraction Module (EM-33 option) connection.
- Dedicated the hazardous gas removal module(EM-33) can be selected the validated filter from JeioTech. (EM-33 and filter is option)



### PCC-720

with Fume Extraction Module (EM-33) (option) + Plinth-PCC (option)

## Specification

| Model            |                                  | PCC-720                              |
|------------------|----------------------------------|--------------------------------------|
| <b>Material</b>  | Body                             | PE (Polyethylene)                    |
|                  | Door / Guide                     | PE (Polyethylene)                    |
| <b>Dimension</b> | Exterior (W x D x H, mm / inch)  | 720 x 472 x 535 / 28.3 x 18.6 x 21.1 |
|                  | Front opening (W x D, mm / inch) | 560 x 320 / 22.0 x 12.6              |
|                  | Duct hole (O.D., mm / inch)      | 150 / 5.9                            |
|                  | Net weight (kg / lbs)            | 9.7 / 21.4                           |
| <b>Cat. No.</b>  | <b>AAAF61001</b>                 |                                      |

## Accessories

| Description       | Dimension (W x D x H, mm / inch)  | Cat. No.        |
|-------------------|-----------------------------------|-----------------|
| <b>Base Panel</b> | 340 x 390 x 8 / 13.9 x 15.4 x 0.3 | <b>AAAM6051</b> |



※ Include foot, the height will be 28mm / 1.1 inch.

# Acid/Corrosive Cabinet

## Safety cabinets for long-term storage of acid/base substances



### SC-C1912D4

with Shelves 4ea, Tray 8ea (standard)

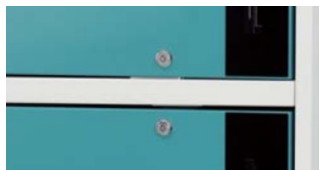
### SC-C1906D2

with Shelf 1ea, Tray 2ea (standard),  
Fume Extraction Module & Filters (option)



#### Filter-type harmful gas exhaust (option)

Filters harmful gas inside the cabinet with a carbon filter without connecting a separate duct. (see page 199 for details)



#### Key lock device

Key lock is provided as standard to block unauthorized access.



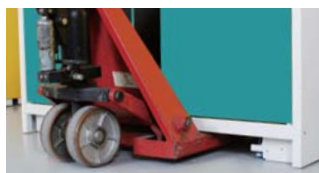
#### Corrosion-resistant PP Tray

Spill tray to prevent leakage of stored materials.



#### Safe stored materials handling

Ergonomic structure with easy access to shelves for user's safety and convenience.



#### Convenient moving and installation

Forklift fork space for convenient movement  
Leveling feet for stable installation.



#### Identification pictogram stickers provided

Easy to classify stored materials with the provision of removable acid/base stickers.



## Safe Storage From Corrosive Substances

- > **EN 14727 standards test completed**  
Reliable acid/base material container that has passed laboratory cabinet testing for performance and durability according to the strictest European standards.
- > **Completed SEFA standards chemical tests**  
Verified suitability for long-term storage of acid/base materials with testing of corrosion-resistant interior material, polypropylene shelf and exhaust outlet coated with polyphenol resin on the inside.
- > **Solid steel structure**  
Stable construction of steel frame prevents structural deformation, and it has excellent external chemical resistance due to epoxy coating.
- > **No steel structure inside storage cabinet**  
Stainless steel shelves, shelf racks, bolts, door catches, exhausts etc. are not used inside to prevent internal corrosion.
- > **Space-efficient internal compartments**  
The internal compartment structure allows materials stored in one reagent cabinet to be classified according to their characteristics, allowing for safe storage. (except SC-C-0706D1)

## Optimized For Categorized Storage

- > **Obtained performance certification**  
Acquired certification from the Ministry of SMEs (in Korea) for preventing mixing of samples (solutions, exhaust gases) between storage compartments.



## Strong and Secure Shelf Structure

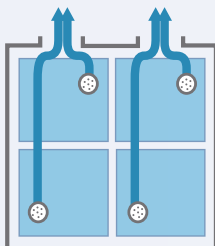
- > **Strong shelf structure**  
It is a solid structure allowing for up to 80kg to be held per shelf and it can be fixed firmly to the left and right inside walls.
- > **Safe shelf design**  
The shelf tray with a minimum depth of 30mm is made of polypropylene and is designed to be safe even when storage spills out. The corresponding tray is provided as standard for each model.

## Convenient and Safe Ventilation System

- > **Ventilation opening per inner compartment**  
It is possible to achieve maximum exhaust with there being a ventilation opening inside each compartment, preventing accumulation of gas.
- > **Connection of exhaust system (option)**  
The exhaust port can be conveniently connected to the exhaust system, making it easy to remove harmful gas.

### Safe storage with separate gas discharge path according to storage characteristics

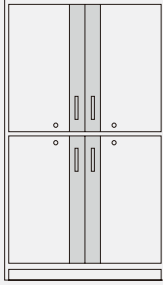
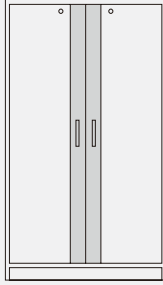


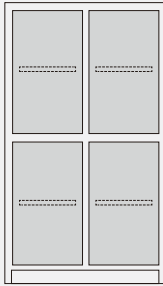
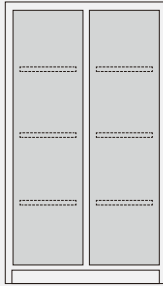


Outlets for contaminated air are designed for each internal space, so there is no heterogeneous gas mixing inside the storage compartment, and safe storage is possible as materials are stored according to their characteristics.



(Patent Registration No. 10-1614122)



## Specification (Tall Type)

| Model   | SC-C-1912D4   | SC-C-1912D2   | SC-C-1906D2   | SC-C-1906D1   |
|---|---|---|---|---|
| <b>Internal volume (L / cu ft)</b>                | 852 (213 x 4ea)<br>/ 30.1 (7.5 x 4ea)   | 894 (447 x 2ea)<br>/ 31.6 (15.8 x 2ea)  | 426 (213 x 2)<br>/ 15.0 (7.5 x 2ea)   | 445 / 15.7  |
| <b>Interior dimensions (W x D x H, mm / inch)</b> | 561 x 466 x 818 * 4ea<br>/ 22.1 x 18.3 x 32.2 * 4ea                                 | 561 x 466 x 1712 * 2ea<br>/ 22.1 x 18.3 x 67.4 * 2ea                                | 561 x 466 x 818 * 2ea<br>/ 22.1 x 18.3 x 32.2 * 2ea                                   | 558 x 466 x 1712<br>/ 22.1 x 18.3 x 67.4  |
| <b>Exterior dimensions (W x D x H, mm / inch)</b> | 1255 x 555 x 1900<br>/ 49.4 x 2.2 x 74.8  | 1255 x 555 x 1900<br>/ 49.4 x 2.2 x 74.8  | 655 x 555 x 1900<br>/ 25.8 x 2.2 x 74.8   | 655 x 555 x 1900<br>/ 25.8 x 2.2 x 74.8   |
| <b>Quantity of shelf (standard / max.)</b>        | 4 / 8   | 6 / 12  | 2 / 4   | 3 / 6   |
| <b>Quantity of tray (standard / max.)</b>         | 8 / 12  | 8 / 14  | 4 / 6   | 4 / 7   |
| <b>Distance of between shelves (mm / inch)</b>    | 120 / 4.7   | 100 / 3.9   | 130 / 5.1   | 100 / 3.9   |
| <b>Max. load per shelf (kg / lbs)</b>             | 80 / 176.4  | 80 / 176.4  | 80 / 176.4  | 80 / 176.4  |
| <b>Weight (kg / lbs)</b>                          | 284 / 626.1   | 257 / 566.6   | 160 / 352.7   | 146 / 321.9   |
| <b>Cat. No.</b>                                   | <b>AAAF60043</b>  | <b>AAAF60025</b>  | <b>AAAF60023</b>  | <b>AAAF60011</b>  |
| <b>Product appearance</b>                         |   |   |   |   |
| <b>Product interior</b>                           |  |  |  |  |

※ If combustible vapor is delayed without ventilation during storage of corrosive materials such as acid/base materials, this may affect the durability of the product, or the inside air may become contaminated. Therefore, it is recommended to connect to the ventilation system of the building or to a separate exhaust system.

※ There is an exhaust vent at the top of the cabinets, so it can be used by connecting to the forced exhaust or purifier.

## Accessories



Tray (PP)



Extraction Module (option)



Plinth (Side) + EM-33

| Accessories                           | Description (W x D x H, mm / inch)                    | SC-C-1912D4                                     | SC-C-1912D2                                     | SC-C-1906D2                                     | SC-C-1906D1                                     |
|---------------------------------------|---|---|---|---|---|
| <b>Tray</b>                           | 545 x 419 x 33<br>/ 21.5 x 16.5 x 1.3 (Polypropylene) | <b>00SCF0000037</b><br>(8 included as standard) | <b>00SCF0000037</b><br>(8 included as standard) | <b>00SCF0000037</b><br>(8 included as standard) | <b>00SCF0000037</b><br>(8 included as standard) |
| <b>Fume extraction module (EM-33)</b> | 348 x 498 x 343<br>/ 13.7 x 19.6 x 13.5 (230V, 60Hz)  | <b>AAAF1536</b>                                 | <b>AAAF1536</b>                                 | <b>AAAF1536</b>                                 | <b>AAAF1536</b>                                 |
| <b>Plinth (Top)</b> <sup>1)</sup>     | 852 x 480 x 49 / 33.5 x 18.9 x 1.9                    | <b>AAAF15362</b>                                | <b>AAAF15362</b>                                | -   | -   |

1) In case of using the 1ea extraction module, one plinth (top) need to order together. But when you ordered the 2ea extraction module, don't need to order extra plinth (top)

## Specification (Under Type)

| Model   | SC-C-0812D2                                      | SC-C-0809D2                                | SC-C-0806D1                          | SC-C-0706D1                          |
|---|--|--|--------------------------------------|--------------------------------------|
| <b>Internal volume (L / cu ft)</b>                | 312 (156 x 2ea) / 11.0 (5.5 x 2ea)               | 226 (113 x 2ea) / 8.0 (4.0 x 2ea)          | 146 / 5.2                            | 115 / 4.1                            |
| <b>Interior dimensions (W x D x H, mm / inch)</b> | 543 x 456 x 634 * 2ea / 21.4 x 18.0 x 25.0 * 2ea | 393 x 456 x 634 * 2ea / 15.5 x 18.0 x 25.0 | 505 x 456 x 634 / 19.9 x 18.0 x 25.0 | 505 x 421 x 542 / 19.9 x 18.0 x 21.3 |
| <b>Exterior dimensions (W x D x H, mm / inch)</b> | 1200 x 548 x 820 / 47.2 x 21.6 x 32.3            | 900 x 548 x 820 / 35.4 x 21.6 x 32.3       | 600 x 548 x 820 / 23.6 x 21.6 x 32.3 | 600 x 510 x 650 / 23.6 x 20.1 x 25.6 |
| <b>Quantity of tray</b>                           | 2  | 2  | 1                                    | 1                                    |
| <b>Max. load per tray (kg / lbs)</b>              | 80 / 176.4                                       | 80 / 176.4                                 | 80 / 176.4                           | 80 / 176.4                           |
| <b>Weight (kg / lbs)</b>                          | 110 / 242.5                                      | 92 / 202.8                                 | 65 / 143.3                           | 52 / 114.6                           |
| <b>Cat. No.</b>                                   | <b>AAAF60122</b>                                 | <b>AAAF60121</b>                           | <b>AAAF60113</b>                     | <b>AAAF60012</b>                     |
| <b>Product appearance</b>                         |  |  |                                      |                                      |
| <b>Product interior</b>                           |  |  |                                      |                                      |

※ If combustible vapor is delayed without ventilation during storage of corrosive materials such as acid/base materials, this may affect the durability of the product, or the inside air may become contaminated. Therefore, it is recommended to connect to the ventilation system of the building or to a separate exhaust system.

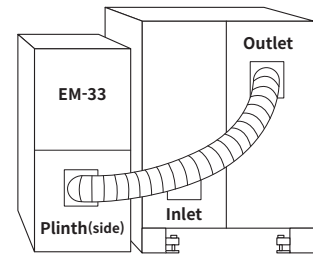
## Accessories

| Accessory            | Description (W x D x H, mm / inch)       | SC-C-0812D2         | SC-C-0809D2         | SC-C-0806D1         | SC-C-0706D1         |
|----------------------|--|---------------------|---------------------|---------------------|---------------------|
| <b>Tray</b>          | PP (545 x 419 x 33 / 21.5 x 16.5 x 1.3)  | <b>00CBN0000010</b> | -                   | -                   | -                   |
|                      | PP (470 x 370 x 100 / 18.5 x 14.6 x 3.9) | -                   | -                   | <b>00CBN0000010</b> | <b>00CBN0000010</b> |
|                      | PVC (390 x 450 x 37 / 15.3 x 17.7 x 1.5) | -                   | <b>00SCF0000100</b> | -                   | -                   |
| <b>Plinth (side)</b> | 480 x 340 x 350 / 7.1 x 13.4 x 13.8      | <b>AAAF15364</b>    | <b>AAAF15364</b>    | <b>AAAF15364</b>    | <b>AAAF15364</b>    |

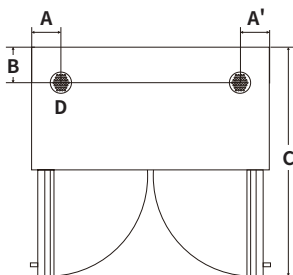
## Dimension

(Unit: mm / inch)

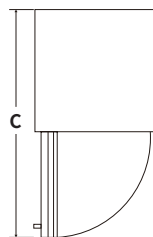
|              | Model              | A          | A'         | B          | C           | D (Dia.)  |
|--------------|--------------------|------------|------------|------------|-------------|-----------|
| <b>Tall</b>  | <b>SC-C-1912D4</b> | 315 / 12.4 | 315 / 12.4 | 75 / 3.0   | 1110 / 43.7 | 102 / 4.0 |
|              | <b>SC-C-1912D2</b> | 315 / 12.4 | 315 / 12.4 | 75 / 3.0   | 1110 / 43.7 | 102 / 4.0 |
|              | <b>SC-C-1906D2</b> | 325 / 12.8 | -          | 75 / 3.0   | 1120 / 44.1 | 102 / 4.0 |
|              | <b>SC-C-1906D1</b> | 325 / 12.8 | -          | 75 / 3.0   | 1120 / 44.1 | 102 / 4.0 |
| <b>Under</b> | <b>SC-C-0812D2</b> | 130 / 5.1  | 520 / 20.5 | 605 / 23.8 | 1190 / 46.9 | 102 / 4.0 |
|              | <b>SC-C-0809D2</b> | 130 / 5.1  | 370 / 14.5 | 605 / 23.8 | 940 / 37.0  | 102 / 4.0 |
|              | <b>SC-C-0806D1</b> | 130 / 5.1  | -          | 605 / 23.8 | 1060 / 41.7 | 102 / 4.0 |
|              | <b>SC-C-0706D1</b> | 130 / 5.1  | -          | 435 / 17.1 | 1060 / 41.7 | 102 / 4.0 |



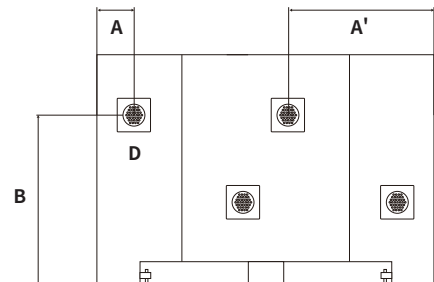
Option: Plinth (side)+EM-33



Tall: Upper side



Under: Upper side



Under: Back side

# Filtering Storage Cabinet

The internal carbon filter removes harmful gas in the reagent cabinet to protect the experimenter

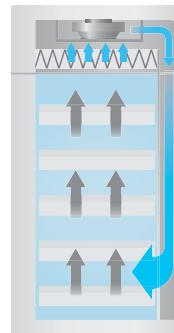


**FSC-140**

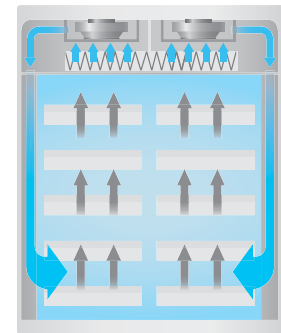
with Drawer Shelves 5ea (standard)

**Completed hazardous gas removal capability/capacity verification and door durability test.**

- Ability to remove harmful gases / Capacity Test. (SPS-KACA 002-132)  
Completed verification of high-efficiency hazardous gas rates.  
Apply composite carbon filter. (VOC, acid, base)
- Door durability test. (KS G 2020 specification)  
40,000 open/close test verification completed.



FSC-140



FSC-280



**Easy to use as a drawer-type shelf**  
Drawer-type shelf for convenient handling of inner samples installed as standard.



**Brightness control LED lamp**  
Easy to observe the inside with LED lamp, and possible to adjust the brightness to 5 levels.



**Safe with effluent storage container**  
Safe handling in the event of stored material leakage and prevention of leakage out of the reagent cabinet.



**Structure convenient for moving and installation**  
Structure allows it to be moved and fixed and it can be also be safely installed horizontally.



**Key lock device**  
Key lock is provided as standard to block unauthorized access.



**Possible to two filters installed at the same time**  
Two filters can be installed at the same time, except the pre-filter provided as standard.



## ▮ Suitable for Storing Sealed Reagents

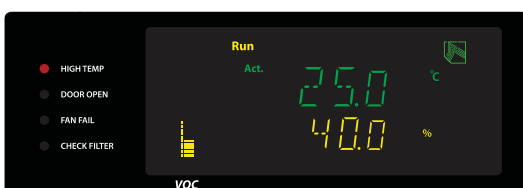
- **No external exhaust system connection required**  
A filter is installed inside the cabinet to remove harmful gas using internal air circulation.
- **Air-conditioning energy reduction**  
It is a closed structure that does not allow the inside air to be discharged through the exhaust device, thus saving energy used for indoor cooling/heating.
- **Efficient fan speed control**  
Convenient 0~5 step fan speed control function increases filter life and minimizes energy consumption.
- **Turbo mode for pleasant use**  
In order to minimize exposure to harmful gas, the fan speed is temporarily maximized when opening the door.

## ▮ Outstanding Safety

- **Internal temperature rise warning**  
High temperature warning alarm function in case of temperature rise inside the reagent.
- **Air circulation detection and warning**  
Notification of internal air flow abnormality with detection of fan operation.
- **Sturdy epoxy powder coating**  
Excellent chemical and corrosion resistance and durability even for long-term use.
- **External sensor connection possible**  
Can be connected with external sensor (option) so that alarm is generated when the set limit is exceeded.

## ▮ Various Functions Convenient for Management

- **Efficient use with sleep mode**  
Operates only at the set time (for example, working time period) to save energy and extend the filter life.
- **Displays various information**  
Displays useful information such as VOC, temperature, humidity, filter check notification, etc. in real time.
- **Filter configuration customizable for application**  
Various custom filter configurations supported depending on the chemical nature of the reagents to be stored. (see page 217 for details)
- **Structure allows for convenient filter management**  
It is very convenient to check filter saturation and replace by opening the front part of the reagent cabinet.
- **Check filter saturation with Gas Detector**  
Saturation of the complex carbon filter is easily checked using dedicated gas detector. (option)
- **Filter check notification function**  
Filter maintenance notification function of 1-24 month cycle makes it easy to manage the filter according to the usage environment.
- **Filter history management function**  
Supports efficient filter management by saving filter usage time and checking history.
- **Recording system for filter management**  
Records the filter check time, material name and concentration value in the controller.



Gather information at a glance

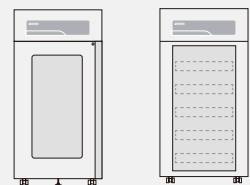
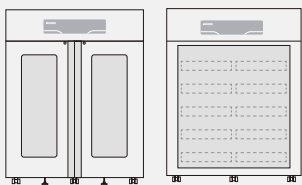


Simple replacement



Checking filter saturation

## Specification

| Model   |                                   | FSC-140   |                  | FSC-280   |                  |
|---|-----------------------------------|---|------------------|---|------------------|
| Internal volume (L / cu ft)                                 |                                   | 604 / 21.3  |                  | 1317 / 46.5   |                  |
| Capacity (L or quantity of 1 L bottle)                      |                                   | 140   |                  | 280   |                  |
| Airflow rate (m3/min)                                       |                                   | 0.67  |                  | 1.34  |                  |
| Noise level (dB)  |                                   | < 50  |                  | < 55  |                  |
| Safety  | Warning / Alarm                   | High Temperature, Door Open, Fan Fail, Sensor Error<br>Check Filter, External Input Error   |                  |   |                  |
|   | Protection                        | Over Temperature Protection, Over Current Protection  |                  |   |                  |
| Dimensions  | External (W x D x H, mm / inch)   | 930 x 636 x 1890 / 36.6 x 24.8 x 74.4   |                  | 1868 x 636 x 1890 / 73.5 x 24.8 x 74.4  |                  |
|   | Internal (W x D x H, mm / inch)   | 795 x 578 x 1315 / 31.3 x 22.8 x 51.8   |                  | 1733 x 578 x 1315 / 68.2 x 22.8 x 51.8  |                  |
|   | Drawer (W x D x H, mm / inch)     | 613 x 478 x 109 / 24.1 x 18.8 x 4.3   |                  | 613 x 478 x 109 / 24.1 x 18.8 x 4.3   |                  |
|   | Spill tray (W x D x H, mm / inch) | 670 x 526 x 34 (1ea) / 26.4 x 20.7 x 1.3 (1ea)  |                  | 670 x 526 x 34 (2ea) / 26.4 x 20.7 x 1.3 (2ea)  |                  |
| Weight (kg / lbs)   |                                   | 300 / 661.4   |                  | 495 / 1091.3  |                  |
| Quantity of drawer (standard / max.)                        |                                   | 5 / 10  |                  | 10 / 20   |                  |
| Max. load capacity per drawer (L or quantity of 1 L bottle) |                                   | 28  |                  | 28  |                  |
| Max. load per drawer (kg / lbs)                             |                                   | 40 / 88.2   |                  | 40 / 88.2   |                  |
| Electrical requirements (230V)                              |                                   | 60Hz, 0.5A  | 50Hz, 0.5A       | 60Hz, 1.0A  | 50Hz, 1.0A       |
| Cat. No   |                                   | <b>AAHF1121K</b>  | <b>AAHF1122K</b> | <b>AAHF1131K</b>  | <b>AAHF1132K</b> |
| Electrical requirements (120V)                              |                                   | 60Hz, 1.0A  |                  | 60Hz, 2.0A  |                  |
| Cat. No   |                                   | <b>AAHF1123U</b>  |                  | <b>AAHF1133U</b>  |                  |
|   |                                   |  <p><b>Product appearance</b>      <b>Product interior</b></p> |                  |  <p><b>Product appearance</b>      <b>Product interior</b></p> |                  |

- See page 242 (chapter on Refrigerator for laboratory/medical use) for filter-type refrigerating cabinet with filtering and cold storage functions.

| Model                                     | FSR-650G                              |                   | FSR-1400G                              |                   |
|---|---------------------------------------|-------------------|--|-------------------|
| Internal volume (L / cu ft)               | 660 / 22.3                            |                   | 1451 / 51.2                            |                   |
| Exterior dimension (W x D x H, mm / inch) | 770 x 850 x 1955 / 30.3 x 33.5 x 77.0 |                   | 1550 x 850 x 1955 / 61.0 x 33.5 x 77.0 |                   |
| Interior dimension (W x D x H, mm / inch) | 650 x 700 x 1450 / 25.6 x 27.6 x 57.1 |                   | 1430 x 700 x 1450 / 56.3 x 27.6 x 57.1 |                   |
| Cat. No.                                  | 230V / 60hz                           | 230V / 50hz       | 230V / 60hz                            | 230V / 50hz       |
|   | <b>AAHF13111K</b>                     | <b>AAHF13112K</b> | <b>AAHF13121K</b>                      | <b>AAHF13122K</b> |
|   | 120V / 60Hz                           |                   | 120V / 60Hz                            |                   |
|   | <b>AAHF13113U</b>                     |                   | <b>AAHF13123U</b>                      |                   |



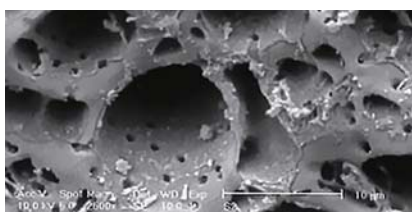




## Accessories

### Lab Companion's Filter Series

- The Lab Companion's carbon filter is an excellent amorphous adsorbent with a high surface area, has fine pores and is manufactured through a multi-level impregnation process.
- Made of 100% impregnated filter, it is more than twice as efficient as general filters.
- Has the efficiency of an excellent composite filter as it simultaneously performs physical adsorption and chemical adsorption.



- Electron microscopic photographs of Lab Companion's carbon filter confirms development of numerous pores such as Macropores (diameter of more than 500Å), Mesopores (diameter of 20-500Å), and Micropores. (diameter of 20Å or less)

| Filter                  | Description  | Cat. No.            |
|-------------------------|--|---------------------|
| <b>Complex Carbon</b>   | Filters a wide range of chemicals, including acid, ammonia, and aldehyde             | <b>AAAF1537</b>     |
| <b>Acid</b>             | Filters acid gases such as HCl, HF, H <sub>2</sub> S and CH <sub>3</sub> COOH        | <b>AAAF1539</b>     |
| <b>Formaldehyde</b>     | Filters formaldehyde, Acete aldehyde, etc.   | <b>AAAF1541</b>     |
| <b>Ammonia / Amines</b> | Filters Basic Gases Such As NH <sub>3</sub> , (CH <sub>3</sub> ) <sub>3</sub> N etc. | <b>AAAF1542</b>     |
| <b>HEPA</b>             | Filters 99.99% of toxic dust and other 0.3µm particles                               | <b>00FSC0000083</b> |

- ※ Above filter should be ordered two when you apply the FSC -280.
- ※ The appropriate filter is selected according to the chemical used.
- ※ Built-in pre-filter primarily filters particles to extend the life of the other filters.

### Gas Detector & Tube & Drawer Set

- Check the condition of the Complex Carbon filter for the currently used chemical and determine the replacement time of the filter.

| Item                      | Cat. No.  |
|---------------------------|---|
| <b>Gas Detector</b>       | KITAGAWA AP-20<br><b>AAAB2531</b>                         |
| <b>Gas Detecting Tube</b> | Benzene, GASTEC-121SP (0.5-10 ppm)<br><b>AAAB1550</b>     |
|                           | Toluene, GASTEC-122L (1-100 ppm)<br><b>AAAB1551</b>       |
|                           | Acetic acid, GASTEC-81L (0.125-25 ppm)<br><b>AAAB1552</b> |
|                           | Chloroform, GASTEC-137 (4-400 ppm)<br><b>AAAB1553</b>     |
|                           | Formaldehyde, GASTEC-91LL (0.05-1 ppm)<br><b>AAAB1554</b> |
|                           | Ammonia, GASTEC-3L (0.5-60 ppm)<br><b>AAAB1555</b>        |
| <b>Drawer set</b>         | Drawer shelf (slide) set<br><b>AAAF1512</b>               |



# Gas Cylinder Cabinet



## Safe storage of high-pressure cylinders

- > **Stable storage environment**  
Solid steel cabinet prevents external impact and prevents cylinders from falling over.
- > **Consideration of gas piping connection**  
The structure features a hole in the upper space for the connection of a gas regulator and piping.
- > **Door Lock**  
Key lock is provided as standard to block unauthorized access.
- > **Convenient internal observation**  
Inspection windows provided on the front to allow for checking of the gas valves and remaining amount.
- > **Plastic chain provided**  
Plastic chain for fixing cylinders included as standard.  
Plastic material prevents scratches to cylinders/product.
- > **Convenient cylinder replacement**  
Includes folding ramp, which is convenient for replacing heavy cylinders.



### DS-GC

with Plastic Chain, Folding Ramp (standard)

## Specification

| Model   | DS-GC (Height: 1800 mm) |               |               |
|---|-------------------------|---------------|---------------|
| Depth :<br>550 mm / 21.7inch                          | Cat. No.                | AAAF1070      | AAAF1071      |
|   | Model                   | DS-GC-18074N2 | DS-GC-18107N2 |
| Width (mm / inch)                                     |                         | 740 / 29.1    | 1070 / 42.1   |
| Gas Cylinder (Ø230 mm / 9.1 inch)<br>Storage quantity |                         | 2             | 3             |



Plastic chain for fixing cylinders



Folding ramp for convenient cylinder replacement

# Multiple Drawer Cabinet



## Solid and convenient storage

- > **Solid structure**  
Solid design with steel body and 11 vertical shelves.
- > **Convenient drawer-type shelf**  
Drawer-type shelf structure with sliding rails for convenient handling of stored materials located inside.
- > **Height-adjustable shelf structure**  
Designed to allow for adjustment of the height of the shelf, making it possible to store materials of various sizes simultaneously.
- > **Solid shelf structure**  
Each shelf can accommodate up to 40kg, and the polypropylene material provides excellent chemical resistance.
- > **Shelf interior partition provided**  
There are adjustable partitions inside each shelf to make it more convenient to organize stored materials.



**DS-OR-18091N2**

with Drawers (standard)

## Specification

| DS-OR series (Height : 1800 mm) |          |               |               |               |               |
|---------------------------------|----------|---------------|---------------|---------------|---------------|
| Depth :<br>550 mm / 21.7inch    | Cat. No. | AAAF1090      | AAAF1091      | AAAF1092      | AAAF1093      |
|                                 | Model    | DS-OR-18047N1 | DS-OR-18055N1 | DS-OR-18091N2 | DS-OR-18108N2 |
| Width (mm / inch)               |          | 472 / 18.6    | 556 / 21.9    | 915 / 36.0    | 1083 / 42.6   |
| No. of Drawer (standard/max.)   |          | 11 / 11       | 11 / 11       | 22 / 22       | 22 / 22       |

## Accessories

### Drawer set

| Cat. No. | Suitable for | Description                          |
|----------|--------------|--------------------------------------|
| AAAF1507 | DS-OR-       | 18047N1, 18091N2                     |
| AAAF1508 |              | 18055N1, 18108N2                     |
| AAAF1509 |              | 18047N1, 18091N2                     |
| AAAF1510 |              | 18055N1, 18108N2                     |
|          |              | Epoxy Painted Steel Drawer with Tray |
|          |              | Stainless Steel Drawer with Tray     |

### Tray partitions

| Cat. No.     | Description               | Suitable for     |
|--------------|---------------------------|------------------|
| 00CBN0000018 | 370 mm / 14.6 inch (Wide) | DS-OR-           |
| 00CBN0000019 | 450 mm / 17.7 inch (Wide) |                  |
|              |                           | 18047N1, 18091N2 |
|              |                           | 18055N1, 18108N2 |

# Multipurpose Cabinet

## Window type

Door with glass window on the front for easy checking of stored materials



### DS-OW-1810N2

with Drawer Set, Partition, Name Plate (standard)



### DS-OW-09108N2

with Drawer Set, Partition, Name Plate (standard)



#### Key lock device

Key lock is provided as standard to block unauthorized access.



#### Name plates provided

Name plates are provided for each shelf to allow for easy identification of stored material information.



#### Floor anchor

Anchor (option) for fixing the cabinet to the floor to help prevent accidents.



#### Tray and partition provided

Adjustable partition provided according to type and size of stored material.



#### Extraction Module (option)

Filters harmful gas inside the cabinet with a carbon filter without connecting a separate duct. (see page 199 for details)



#### Drawer-type shelf

Convenient storage possible even in the back of the shelf.



## Convenient and Durable Structure

- Front glass window door**  
 Front glass window door for easy checking of stored materials inside.  
 Easy information management for stored materials due to provision of name plates for each drawer.
- Solid steel structure**  
 Stable structure with steel frame prevents structural deformation, and it has excellent external chemical resistance due to epoxy coating.
- Door Sealing & Fixing**  
 Safe and secure sealing and fixing of glass window door with door packing and by applying magnet fixtures on the upper and lower parts.
- Exhaust system connection**  
 Fume extraction module (option) for connection to the exhaust system of the installation site.



Fume Extraction Module (option)

## Improved User Convenience

- Solid shelf structure**  
 Each shelf can accommodate up to 40kg, and the polypropylene material provides excellent chemical resistance.
- Convenient drawer-type shelf**  
 Drawer-type shelf structure with sliding rails for convenient handling of stored materials located inside.
- Height-adjustable shelf structure (option)**  
 It is possible to add holes to the appropriate height so that the height of the shelf can be adjusted.
- Shelf interior partitions provided**  
 There are adjustable partitions inside each shelf to make it more convenient to organize stored materials.  
 (4 partitions provided for each shelf as standard)

## Specification

### Stand Type

| Model                              | DS-OW-18047N1 | DS-OW-18055N1 | DS-OW-18091N2 | DS-OW-18108N2 | DS-TW-09091N2 | DS-TW-09108N2 |
|------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Exterior width (mm / inch)         | 472 / 18.6    | 556 / 21.9    | 915 / 36.0    | 1083 / 42.6   | 915 / 36.0    | 1083 / 42.6   |
| Exterior depth (mm / inch)         | 550 / 21.7    | 550 / 21.7    | 550 / 21.7    | 550 / 21.7    | 550 / 21.7    | 550 / 21.7    |
| Exterior height (mm / inch)        | 1800 / 70.9   | 1800 / 70.9   | 1800 / 70.9   | 1800 / 70.9   | 900 / 35.4    | 900 / 35.4    |
| Quantity of drawer (standard/max.) | 6 / 11        | 6 / 11        | 12 / 22       | 12 / 22       | 6 / 10        | 6 / 10        |
| Max. load per shelf (kg / lbs)     | 30 / 66.1     | 30 / 66.1     | 30 / 66.1     | 30 / 66.1     | 30 / 66.1     | 30 / 66.1     |
| Quantity of name plate             | 6             | 6             | 12            | 12            | 6             | 6             |
| Cat. No.                           | AAAF1050      | AAAF1051      | AAAF1052      | AAAF1053      | AAAF1056      | AAAF1057      |
|                                    |               |               |               |               |               |               |

# Multipurpose Cabinet

## Drawer type

Convenient drawer-type structure with excellent chemical resistance



### DS-C Series

with Tray, Partition, Name Plate (standard)



### Tabletop Type DS-TT-09056-N2

with Tray, Partition, Name Plate (standard)



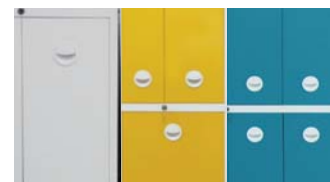
#### Key lock device

Key lock is provided as standard to block unauthorized access.



#### Name plates provided

Name plates are provided for each shelf to allow for easy identification of stored material information.



#### Choice of 3 colors

Light gray, yellow, and persian blue for classification and interior aesthetics.



#### Floor anchor

Anchor (option) for fixing the cabinet to the floor to help prevent accidents.



#### Solid combined structure

When multiple storage cabinets are attached, they can be joined to the side connection holes for sturdier and well balanced placement.



#### Built-in tray and partitions

Makes separate storage easy.



## Convenient and Durable Structure

- > **Solid steel structure**  
Stable structure with steel frame prevents structural deformation, and it has excellent external chemical resistance due to epoxy coating.
- > **Safe upper shelf**  
The upper shelves do not all open at the same time, so it doesn't fall over even with large loads.
- > **Hanging device for each shelf**  
When a shelf is closed, it is automatically fixed by a latching device.
- > **Interconnected structure**  
Interconnected structure for placement of multiple reagent cabinets, resulting in a neater appearance and sturdiness.
- > **Exhaust system connection**  
Fume extraction module (option) for connection to the exhaust system of the installation site.

## Improved User Convenience

- > **Storage without sunlight exposure**  
Designed for long-term storage of reagents that should not be exposed to sunlight.
- > **Solid shelf structure**  
Each shelf can accommodate up to 60kg, and the polypropylene material provides excellent chemical resistance.
- > **Convenient drawer-type shelf**  
Drawer-type shelf structure with sliding rails for convenient handling of stored materials located inside.
- > **Height-adjustable shelf structure**  
Designed to allow for adjustment of the height of the shelf, making it possible to store materials of various sizes simultaneously.
- > **Shelf interior partitions provided**  
There are adjustable partitions inside each shelf to make it more convenient to organize stored materials.



### Anti-fall device

When moving the upper drawers, it is the drawer located next to the drawer being moved is structurally blocked to prevent it from being moved at the same time, preventing heavy weight from moving forward.



### Extraction Module (option)

Filters harmful gas inside the cabinet with a carbon filter without connecting a separate duct. (see page 199 for details)



### Height-adjustable shelf structure






Tray can be adjusted to the desired height.







Fume Extraction Module (option)

## Specification




### Stand Type (DS-S Series)

| Model                              |       | DS-S-18047N4  | DS-S-18056N4  | DS-S-18064N4   | DS-S-18068N6  | DS-S-18093N6  |
|------------------------------------|-------|---|---|--|---|---|
| Exterior width (mm / inch)         |       | 476 / 18.7  | 560 / 22.0  | 644 / 26.1   | 686 / 27.0  | 938 / 36.9  |
| Exterior depth (mm / inch)         |       | 550 / 21.7  | 550 / 21.7  | 550 / 21.7   | 550 / 21.7  | 550 / 21.7  |
| Exterior height (mm / inch)        |       | 1800 / 70.9   | 1800 / 70.9   | 1800 / 70.9  | 1800 / 70.9   | 1800 / 70.9   |
| Weight (kg / lbs)                  |       | 107 / 235.9   | 119 / 262.4   | 126 / 277.8  | 148 / 326.3   | 178 / 392.4   |
| Quantity of drawer (standard/max.) | Upper | 3 / 4   | 3 / 4   | 3 / 4  | 3 / 4   | 3 / 4   |
|                                    | Lower | 4 / 6   | 4 / 6   | 4 / 6  | 4 / 6   | 4 / 6   |
| Max. load per shelf (kg / lbs)     | Upper | 30 / 66.1   | 30 / 66.1   | 30 / 66.1  | 30 / 66.1   | 30  |
|                                    | Lower | 60 / 132.3  | 60 / 132.3  | 60 / 132.3   | 60 / 132.3  | 60 / 132.3  |
| Quantity of name plate             |       | 4   | 4   | 4  | 6   | 6   |
| Cat. No.                           |       | AAAF1005  | AAAF1006  | AAAF1007   | AAAF1008  | AAAF1009  |
|                                    |       |  |  |  |  |  |




### Combi Type (DS-C Series)

| Model                              |       | DS-C-18047N4  | DS-C-18047N5  | DS-C-18056N4  | DS-C-18056N5  |
|------------------------------------|-------|---|---|---|---|
| Exterior width (mm / inch)         |       | 476 / 18.7  | 476 / 18.7  | 560 / 22.0  | 560 / 22.0  |
| Exterior depth (mm / inch)         |       | 550 / 21.7  | 550 / 21.7  | 550 / 21.7  | 550 / 21.7  |
| Exterior height (mm / inch)        |       | 1800 / 70.9   | 1800 / 70.9   | 1800 / 70.9   | 1800 / 70.9   |
| Weight (kg / lbs)                  |       | 100 / 220.5   | 108 / 238.1   | 110 / 242.5   | 120 / 264.6   |
| Quantity of drawer (standard/max.) | Upper | 3 / 4   | 3 / 4   | 3 / 4   | 3 / 4   |
|                                    | Lower | 1 / 1   | 1 / 1   | 1 / 1   | 1 / 1   |
| Max. load per shelf (kg / lbs)     |       | 30 / 66.1   | 30 / 66.1   | 30 / 66.1   | 30 / 66.1   |
| Quantity of name plate             |       | 4   | 5   | 4   | 5   |
| Cat. No.                           |       | AAAF1034  | AAAF1035  | AAAF1036  | AAAF1037  |
|                                    |       |  |  |  |  |

### Tabletop Type (DS-TT Series)

| Model                              | DS-TT-09047N2   | DS-TT-09056N2   | DS-TT-09064N2   |
|------------------------------------|---|---|---|
| Exterior width (mm / inch)         | 476 / 18.7  | 560 / 22.0  | 644 / 26.1  |
| Exterior depth (mm / inch)         | 550 / 21.7  | 550 / 21.7  | 550 / 21.7  |
| Exterior height (mm / inch)        | 900 / 35.4  | 900 / 35.4  | 900 / 35.4  |
| Weight (kg / lbs)                  | 54 / 119.0  | 59 / 130.1  | 64 / 141.0  |
| Quantity of drawer (standard/max.) | 3 / 4   | 3 / 4   | 3 / 4   |
| Max. load per shelf (kg / lbs)     | 30 / 66.1   | 30 / 66.1   | 30 / 66.1   |
| Quantity of name plate             | 2   | 2   | 2   |
| Cat. No.                           | AAAF1023  | AAAF1024  | AAAF1025  |
|                                    |  |  |  |

### Under Table Type (DS-UT Series)

| Model                              | DS-UT-06047N2   | DS-UT-06056N2   | DS-UT-06064N2   |
|------------------------------------|---|---|---|
| Exterior width (mm / inch)         | 476 / 18.7  | 560 / 22.0  | 644 / 26.1  |
| Exterior depth (mm / inch)         | 550 / 21.7  | 550 / 21.7  | 550 / 21.7  |
| Exterior height (mm / inch)        | 650 / 25.6  | 650 / 25.6  | 650 / 25.6  |
| Weight (kg / lbs)                  | 50 / 110.2  | 55 / 121.3  | 60 / 132.3  |
| Quantity of drawer (standard/max.) | 3 / 3   | 3 / 3   | 3 / 3   |
| Max. load per shelf (kg / lbs)     | 30 / 66.1   | 30 / 66.1   | 30 / 66.1   |
| Quantity of name plate             | 2   | 2   | 2   |
| Cat. No.                           | AAAF1013  | AAAF1014  | AAAF1015  |
|                                    |  |  |  |

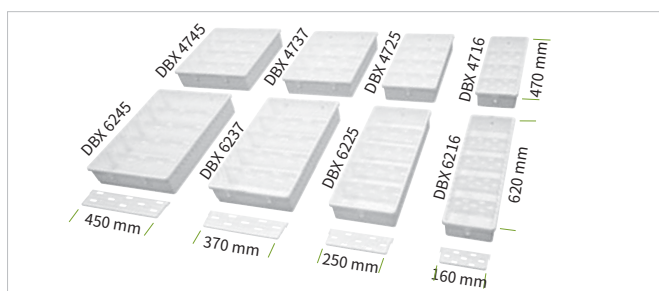


# Accessories

## Accessories for DS-OW / DS-TW / DS-S / DS-C / DS-TT / DS-UT

### Tray & Partitions

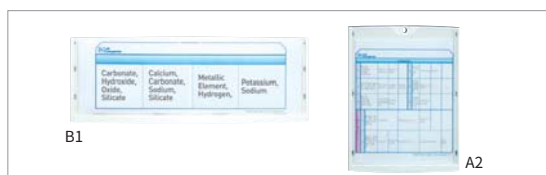
- Polypropylene (PP) material with excellent chemical resistance.
- Tray structure prevents secondary contamination due to storage leaks.



| Description | Tray Cat. No. | Tray dividers Cat. No. | Dimension (mm / inch) |            |           |
|-------------|---------------|------------------------|-----------------------|------------|-----------|
|             |               |                        | W                     | D          | H         |
| DBX 4716    | 00CBN000008   | 00CBN000016            | 160 / 6.3             | 470 / 18.5 | 80 / 3.1  |
| DBX 4725    | 00CBN000009   | 00CBN000017            | 250 / 9.8             | 470 / 18.5 | 90 / 3.5  |
| DBX 4737    | 00CBN000010   | 00CBN000018            | 370 / 14.6            | 470 / 18.5 | 100 / 3.9 |
| DBX 4745    | 00CBN000011   | 00CBN000019            | 450 / 17.7            | 470 / 18.5 | 110 / 4.3 |
| DBX 6216    | 00CBN000014   | 00CBN000016            | 160 / 6.3             | 620 / 24.4 | 80 / 3.1  |
| DBX 6225    | 00CBN000015   | 00CBN000017            | 250 / 9.8             | 620 / 24.4 | 90 / 3.5  |
| DBX 6237    | 00CBN000012   | 00CBN000018            | 370 / 14.6            | 620 / 24.4 | 100 / 3.9 |
| DBX 6245    | 00CBN000013   | 00CBN000019            | 450 / 17.7            | 620 / 24.4 | 110 / 4.3 |

### Name Plate

- It's easy to check the contents stored on each shelf of the cabinet.
- Convenient adjustment of mounting position with magnets.



| Description    | Cat. No. | Dimension (mm / inch) |           |
|----------------|----------|-----------------------|-----------|
|                |          | W                     | H         |
| Magnet (A1)    | AAAF1521 | 150 / 5.9             | 200 / 7.9 |
| Magnet (A2)    | AAAF1522 | 120 / 4.7             | 165 / 6.5 |
| Insertion (B1) | AAAF1523 | 320 / 12.6            | 115 / 4.5 |

### Extraction Module

| Cat. No. | Description                         | Model |
|----------|-------------------------------------|-------|
| AAAF1536 | Extraction Module (Stand type only) | EM-33 |

### Anchor

| Cat. No.    | Description |
|-------------|-------------|
| 00CBN000036 | Anchor      |

## Accessories for DS-OW / DS-TW

| Model         | Drawer set (Epoxy painted steel) | Drawer set (Stainless steel) | Tray dividers | Name plate |
|---------------|----------------------------------|------------------------------|---------------|------------|
| DS-OW-18047N1 | AAAF1501                         | AAAF1504                     | 00CBN000018   | AAAF1523   |
| DS-OW-18055N1 | AAAF1502                         | AAAF1505                     | 00CBN000019   | AAAF1523   |
| DS-OW-18091N2 | AAAF1501                         | AAAF1504                     | 00CBN000018   | AAAF1523   |
| DS-OW-18108N2 | AAAF1502                         | AAAF1505                     | 00CBN000019   | AAAF1523   |
| DS-TW-09091N2 | AAAF1501                         | AAAF1504                     | 00CBN000018   | AAAF1523   |
| DS-TW-09108N2 | AAAF1502                         | AAAF1505                     | 00CBN000019   | AAAF1523   |

※ The above drawer set includes a PP-based tray.

## Accessories for DS-S / DS-C / DS-TT / DS-UT

| Model        | Tray        | Tray dividers | Name plate |
|--------------|-------------|---------------|------------|
| DS-S-18047N4 | 00CBN000008 | 00CBN000016   | AAAF1521   |
| DS-S-18056N4 | 00CBN000008 | 00CBN000016   | AAAF1521   |
|              | 00CBN000009 | 00CBN000017   |            |
| DS-S-18064N4 | 00CBN000009 | 00CBN000017   | AAAF1521   |
| DS-S-18068N6 | 00CBN000008 | 00CBN000016   | AAAF1521   |
| DS-S-18093N6 | 00CBN000009 | 00CBN000017   | AAAF1521   |
| DS-C-18047N4 | 00CBN000008 | 00CBN000016   | AAAF1521   |
|              | 00CBN000010 | 00CBN000018   |            |
| DS-C-18047N5 | 00CBN000008 | 00CBN000016   | AAAF1521   |
|              | 00CBN000010 | 00CBN000018   |            |
| DS-C-18056N4 | 00CBN000008 | 00CBN000016   | AAAF1521   |
|              | 00CBN000009 | 00CBN000017   |            |
|              | 00CBN000011 | 00CBN000019   |            |
| DS-C-18056N5 | 00CBN000008 | 00CBN000016   | AAAF1521   |
|              | 00CBN000009 | 00CBN000017   |            |
|              | 00CBN000011 | 00CBN000019   |            |

| Model         | Tray        | Tray dividers | Name plate |
|---------------|-------------|---------------|------------|
| DS-TT-09047N2 | 00CBN000008 | 00CBN000016   | AAAF1521   |
| DS-TT-09056N2 | 00CBN000008 | 00CBN000016   | AAAF1521   |
|               | 00CBN000009 | 00CBN000017   |            |
| DS-TT-09064N2 | 00CBN000009 | 00CBN000017   | AAAF1521   |
| DS-UT-06047N2 | 00CBN000008 | 00CBN000016   | AAAF1521   |
| DS-UT-06056N2 | 00CBN000008 | 00CBN000016   | AAAF1521   |
|               | 00CBN000009 | 00CBN000017   |            |
| DS-UT-06064N2 | 00CBN000009 | 00CBN000017   | AAAF1521   |

# Dry Cabinet & Desiccator



## General Application

- Storage of various moisture-sensitive reagents, samples and seeds.
- Storage of various electronic devices, cameras, lenses, photographs, and film literature.

|                   | Description   | Note             | Model | Page |
|-------------------|---|------------------|-------|------|
| Dry cabinet       | <b>Auto desiccator</b> <ul style="list-style-type: none"> <li>• Storage of moisture-sensitive materials and samples</li> <li>• Convenient use with automatic electronic desiccator</li> </ul>                             | Auto-dry         | DC    | 228  |
|                   |   |                  | DCL   |      |
| Vacuum desiccator | <b>Cubic</b> <ul style="list-style-type: none"> <li>• Convenient checking of vacuum degree with the vacuum gauge on the front door</li> <li>• Height-adjustable shelves and space-efficient stacking structure</li> </ul> | General type     | VDC   | 230  |
|                   |   | UV blocking type | VDC-U | 230  |
|                   | <b>Round</b> <ul style="list-style-type: none"> <li>• Transparent and durable polycarbonate material</li> <li>• Vacuum up to 1 Torr for up to 72 hours</li> </ul>   | General type     | VDR   | 230  |
|                   |   | UV blocking type | VDR-U | 230  |
|                   | <b>Cylinder</b> <ul style="list-style-type: none"> <li>• Convenient structure for large-volume sample desiccator</li> <li>• 3-way valve included as standard for easy gas replacement</li> </ul>                          | General type     | VDP   | 230  |
|                   |   | UV blocking type | VDP-U | 230  |
| Desiccator        | <b>Cubic</b> <ul style="list-style-type: none"> <li>• Easy to check with hygrometer attached to the front door</li> <li>• Drawer-type shelves included as standard for convenient storage of small samples</li> </ul>     | General type     | SDC   | 232  |
|                   |   | UV blocking type | SDC-U | 232  |

※ The contents of the above and the contents of this catalog may differ depending on the specific model and conditions of use. For the information about the features and specifications that applying to each model, please check the information on the corresponding page of each model.



Compliance with Guidelines for Restriction of Hazardous Substances Use.



User safety by blocking potentially harmful UV light.



Leakage minimized using an integrated mold.



Door locking system with key.



2 year warranty Free A/S.

# Dry Cabinet

## Auto desiccator

### Storage of moisture-sensitive materials and samples

#### Structural Functional Features

##### > Automatic electronic desiccator unit

Convenient maintenance due to there being no need for a desiccant by automatically controlling the set humidity inside the storage cabinet.

##### > Convenient humidity setting and control

- 20~60%RH: Humidity can be set at 1% RH easily, reaching 20% RH within 8 hours. (DC model)
- 1~10%RH: Humidity can be set at 1% RH for ultra-low humidity, reaching 1% RH within 8 hours. (DCL model) (for external 25°C, 60% RH)

##### > Real-time temperature and humidity display

Displays the temperature and humidity inside the library in real time.



|                           |                        |                  |
|---------------------------|------------------------|------------------|
| Current temperature value | Current humidity value | Humidity setting |
|---------------------------|------------------------|------------------|



DC-41



DC-11



##### Convenient internal observation

Convenient internal observation with large transparent window made of acrylic material.



##### Height-adjustable shelves

Designed to allow for adjustment of the height of the shelf, making it possible to store materials of various sizes simultaneously.



##### Efficient two-level loading structure

It is possible to fix the feet of the product on the upper part of the product, making 2-level loading possible. (applicable models: DC-11, DC-21S)



##### Easy to move and install

Castors which make it easy to move/fix are provided as standard for convenient moving and installation of the product. (DC-41 model)



##### Door lock

Key lock is provided as standard to block unauthorized access.



## Specification

| Model                                      | DC-11   |                     | DC-21L   |                     | DC-21S                                   |                     | DC-41  |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
|--|---|---------------------|--|---------------------|--|---------------------|--|---------------------|--------|------|------|--------|------|------|-------|------|------|--|--|--|--|--|--|
|  | DCL-11  |                     | DCL-21L  |                     | DCL-21S                                  |                     | DCL-41   |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| Control range <sup>1)</sup>                | DC  | 20~60%RH (1% scale) |  | 20~60%RH (1% scale) |  | 20~60%RH (1% scale) |  | 20~60%RH (1% scale) |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
|  | DCL <sup>2)</sup>   | 1~10%RH (1% scale)  |  | 1~10%RH (1% scale)  |  | 1~10%RH (1% scale)  |  | 1~10%RH (1% scale)  |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| Internal volume (L / cu ft)                | 150 / 5.3   |                     | 300 / 10.6   |                     | 300 / 10.6                               |                     | 600 / 21.2   |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| Internal dimensions (W x D x H, mm / inch) | 470 x 499 x 500<br>/ 18.5 x 19.6 x 19.7   |                     | 470 x 599 x 561<br>/ 18.5 x 23.6 x 22.1 (upper)<br>470 x 499 x 561<br>/ 18.5 x 19.6 x 22.1 (lower) |                     | 1070 x 499 x 498<br>/ 42.1 x 19.6 x 19.6 |                     | 1070 x 599 x 561<br>/ 42.1 x 23.6 x 22.1 (upper)<br>1070 x 499 x 561<br>/ 42.1 x 19.6 x 22.1 (lower) |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| Exterior dimensions (W x D x H, mm / inch) | 550 x 700 x 653<br>/ 21.7 x 27.6 x 25.7   |                     | 547 x 700 x 1280<br>/ 21.5 x 27.6 x 50.4   |                     | 1140 x 700 x 653<br>/ 44.9 x 27.6 x 25.7 |                     | 1140 x 700 x 1140<br>/ 44.9 x 27.6 x 44.9  |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| Quantity of door                           | 1   |                     | 2  |                     | 2  |                     | 4  |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| Stackable type                             | Yes   |                     | No   |                     | Yes                                      |                     | No   |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| Quantity of shelves (standard/max.)        | 2 / 10  |                     | 4 / 19   |                     | 2 / 10                                   |                     | 4 / 19   |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| Distance of between shelves (mm / inch)    | 32 / 1.3  |                     | 39 / 1.5   |                     | 32 / 1.3                                 |                     | 39 / 1.5   |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| Max. load per shelf (kg / lbs)             | 20 / 44.1   |                     | 20 / 44.1  |                     | 20 / 44.1                                |                     | 20 / 44.1  |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| Weight (kg / lbs)                          | 36 / 79.4   |                     | 56.5 / 124.6   |                     | 58 / 127.9                               |                     | 110 / 242.5  |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| Electrical requirements (230V, 50/60Hz, A) | 2.0   |                     | 2.0  |                     | 2.0                                      |                     | 2.0  |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| Cat. No.                                   | AAHF72115K  | AAHF70115K          | AAHF72135K   | AAHF70215K          | AAHF72125K                               | AAHF71215K          | AAHF72145K   | AAHF70415K          |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| Electrical requirements (120V, 60Hz, A)    | 4.0   |                     | 4.0  |                     | 4.0                                      |                     | 4.0  |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| Cat. No.                                   | AAHF72116U  | AAHF70115U          | AAHF72136U   | AAHF70215U          | AAHF72126U                               | AAHF71215U          | AAHF72146U   | AAHF70415U          |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| Product appearance                         |   |                     |  |                     |  |                     |  |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| Product interior                           |   |                     |  |                     |  |                     |  |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
|  | <table border="1"> <thead> <tr> <th>Model</th> <th>A (mm)</th> <th>B (mm)</th> </tr> </thead> <tbody> <tr> <td>DC-11</td> <td>1074</td> <td>1182</td> </tr> <tr> <td>DC-21L</td> <td>1074</td> <td>1182</td> </tr> <tr> <td>DC-21S</td> <td>2276</td> <td>1235</td> </tr> <tr> <td>DC-41</td> <td>2276</td> <td>1235</td> </tr> </tbody> </table> |                     | Model  | A (mm)              | B (mm)                                   | DC-11               | 1074   | 1182                | DC-21L | 1074 | 1182 | DC-21S | 2276 | 1235 | DC-41 | 2276 | 1235 |  |  |  |  |  |  |
| Model                                      | A (mm)  | B (mm)              |  |                     |  |                     |  |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| DC-11                                      | 1074  | 1182                |  |                     |  |                     |  |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| DC-21L                                     | 1074  | 1182                |  |                     |  |                     |  |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| DC-21S                                     | 2276  | 1235                |  |                     |  |                     |  |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |
| DC-41                                      | 2276  | 1235                |  |                     |  |                     |  |                     |        |      |      |        |      |      |       |      |      |  |  |  |  |  |  |

- 1) Above (internal) humidity and temperature may temporarily increase when drying the device of the dehumidifying unit.  
2) Above DCL humidity range is only maintained when 25°C and 60%RH condition.

## Accessories

|         | Description               |                        | Dimension (W x D, mm / inch) | Cat. No. |
|---------|---------------------------|------------------------|------------------------------|----------|
| Shelf A | Epoxy powder coated steel | DC-11, DC-21L (lower)  | 462 x 479 / 18.2 x 18.9      | AAAF7501 |
|         | Stainless steel           | DC-11, DC-21 (lower)   | 462 x 479 / 18.2 x 18.9      | AAAF7511 |
| Shelf B | Epoxy powder coated steel | DC-21L (upper)         | 462 x 579 / 18.2 x 22.8      | AAAF7502 |
|         | Stainless steel           | DC-21L (upper)         | 462 x 579 / 18.2 x 22.8      | AAAF7512 |
| Shelf C | Epoxy powder coated steel | DC-21S / DC-41 (lower) | 1063 x 465 / 41.9 x 18.3     | AAAF7503 |
|         | Stainless steel           | DC-21S / DC-41 (lower) | 1063 x 465 / 41.9 x 18.3     | AAAF7513 |
| Shelf D | Epoxy powder coated steel | DC-41 (upper)          | 1063 x 550 / 41.9 x 21.7     | AAAF7504 |
|         | Stainless steel           | DC-41 (upper)          | 1063 x 550 / 41.9 x 21.7     | AAAF7514 |

※ In the case of DC-21 and DC-41, the upper and lower shelf sizes are different due to the lower dehumidifying unit.



Shelf



Shelf rack bracket

# Vacuum Desiccator

## Optimum choice for dehumidification in vacuum state

- > **1 Torr, maintained for 72 hours**  
Up to 1 Torr vacuum maintained for 72 hours. Suitable for samples that need to be dehumidified in vacuum state.
- > **Solid integral structure**  
Made of integral mold to minimize leakage and there is no warping even in repeated high vacuum conditions.
- > **Transparent observation environment**  
The material of the body is polycarbonate.(PC)
- > **UV blocking model**  
UV blocking model provided for vacuum storage of light-sensitive samples.
- > **Desiccant Tray**  
Includes a dedicated tray made of PP as standard that the user can conveniently place a desiccant in.



**VDC-31 (Cubic type)**  
with Vacuum Gauge (standard)



**VDR-25G (Round type)**  
with Vacuum Gauge (option)



**VDP-25G (Cylinder type)**  
with Vacuum Gauge (option)



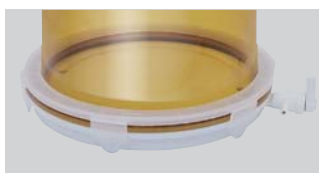
**Useful 3-way valve**  
Convenient and useful valve structure for vacuum formation, remove and gas substitution replacement.



**Multi-level stacking (VDC series)**  
Stable multi-level loading to maximize space efficiency.



**Height-adjustable shelves (VDC series)**  
Height-adjustable shelf structure for convenient loading of various samples.



**Locker (VDR, VDP series)**  
Conveniently and safely fixed at normal pressure when used or transported.



**RoHS eco-friendly products**  
Eco-friendly products that have been deemed acceptable in accordance with Restriction of the Use of Certain Hazardous Substances. (RoHS) (except for U model)



**UV blocking model**  
Vacuum storage of light-sensitive samples.



## Specification

### Cubic Type

| Model                              | Clear type                              | VDC-11                               | VDC-21                               | VDC-31                             | VDC-41                               |
|------------------------------------|---|--------------------------------------|--------------------------------------|------------------------------------|--------------------------------------|
|                                    | UV protection                           | VDC-11U                              | VDC-21U                              | VDC-31U                            | VDC-41U                              |
| <b>Internal volume (L / cu ft)</b> |   | 11 / 0.4                             | 23 / 0.8                             | 35 / 1.2                           | 45 / 1.6                             |
| <b>Vacuum</b>                      | Gauge range (Analog) (Mpa)              | 0 to -0.1                            | 0 to -0.1                            | 0 to -0.1                          | 0 to -0.1                            |
|                                    | Max. permissible vacuum (Body) (Mpa)    | 1.33 x 10 <sup>-4</sup> (1 Torr)     | 1.33 x 10 <sup>-4</sup> (1 Torr)     | 1.33 x 10 <sup>-4</sup> (1 Torr)   | 1.33 x 10 <sup>-4</sup> (1 Torr)     |
| <b>Dimension</b>                   | Internal (W x D x H, mm / inch)         | 248 x 254 x 238 / 9.8 x 10 x 9.4     | 346 x 365 x 246 / 13.6 x 14.4 x 9.7  | 355 x 375 x 345 / 14 x 14.8 x 13.6 | 355 x 374 x 445 / 14 x 14.7 x 17.5   |
|                                    | Overall (W x D x H, mm / inch)          | 322 x 285 x 271 / 12.7 x 11.2 x 10.7 | 420 x 397 x 281 / 16.5 x 15.6 x 11.1 | 420 x 397 x 381 / 16.5 x 15.6 x 15 | 420 x 397 x 491 / 16.5 x 15.6 x 19.3 |
|                                    | Perforated shelf (W x D x H, mm / inch) | 202 x 204 x 6.5 / 7.95 x 8.0 x 0.3   | 289 x 304 x 11 / 11.4 x 12.0 x 0.4   | 289 x 304 x 11 / 11.4 x 12.0 x 0.4 | 289 x 304 x 11 / 11.4 x 12.0 x 0.4   |
|                                    | Desiccant tray (W x D x H, mm / inch)   | 158 x 194 x 24 / 6.2 x 7.6 x 0.9     | 218 x 268 x 26 / 8.6 x 10.6 x 1.0    | 218 x 268 x 26 / 8.6 x 10.6 x 1.0  | 218 x 268 x 26 / 8.6 x 10.6 x 1.0    |
|                                    | Nozzle dia. (mm / inch)                 | 9.5 / 0.37                           | 9.5 / 0.37                           | 9.5 / 0.37                         | 9.5 / 0.37                           |
|                                    | Net weight (kg / lbs)                   | 4.2 / 9.3                            | 8.2 / 18.1                           | 10.8 / 23.8                        | 12.2 / 26.9                          |
| <b>Shelves</b>                     | Quantity of shelves (standard/max.)     | 2 / 4                                | 2 / 4                                | 3 / 5                              | 3 / 6                                |
|                                    | Max. load per shelf (kg / lbs)          | 3 / 6.6                              | 5 / 11.0                             | 5 / 11.0                           | 5 / 11.0                             |
| <b>Cat. No.</b>                    | <b>Clear type</b>                       | <b>AAAD4001</b>                      | <b>AAAD4021</b>                      | <b>AAAD4011</b>                    | <b>AAAD4031</b>                      |
|                                    | <b>UV protection</b>                    | <b>AAAD4101</b>                      | <b>AAAD4121</b>                      | <b>AAAD4111</b>                    | <b>AAAD4131</b>                      |

**Accessories** [Page 233](#) Desiccant Tray, Perforated Shelf, Vacuum Seal, 3-way Valve, Vacuum Gauge

### Round Type

| Model                              | Clear type  | VDR-20 (20G)                                  | VDR-25 (25G)                                      | VDR-30 (30G)                                      |
|------------------------------------|---|---|---|---|
|                                    | UV protection                                       | VDR-20U (20UG)                                | VDR-25U (25UG)                                    | VDR-30U (30UG)                                    |
| <b>Internal volume (L / cu ft)</b> |   | 6 / 0.2                                       | 10 / 0.4  | 20 / 0.7  |
| <b>Vacuum</b>                      | Gauge range (Analog) (Mpa)                          | 0 to -0.1                                     | 0 to -0.1   | 0 to -0.1   |
|                                    | Max. permissible vacuum (Body) (Mpa)                | 1.33 x 10 <sup>-4</sup> (1 Torr)              | 1.33 x 10 <sup>-4</sup> (1 Torr)                  | 1.33 x 10 <sup>-4</sup> (1 Torr)                  |
| <b>Dimension</b>                   | Overall (Ø x H, mm / inch)                          | 242 x 279 (242 x 354) / 9.5 x 11 (9.5 x 13.9) | 308 x 325 (308 x 400) / 12.1 x 12.8 (12.1 x 15.7) | 385 x 399 (385 x 475) / 15.2 x 15.7 (15.2 x 18.7) |
|                                    | Desiccant tray                                      | 159 x 31                                      | 220 x 29  | 276 x 34  |
|                                    | Nozzle dia.   | 9.5 / 0.37                                    | 9.5 / 0.37  | 9.5 / 0.37  |
|                                    | Net weight (kg / lbs)                               | 1.5 (1.7) / 3.3 (3.7)                         | 2.5 (2.6) / 5.5 (5.7)                             | 4.2 (4.3) / 9.3 (9.5)                             |
| <b>Shelves</b>                     | Perforated shelf (Ø, mm / inch)                     | 192 / 7.6                                     | 250 / 9.8   | 310 / 12.2  |
|                                    | Max. load per shelf (kg / lbs)                      | 15 / 33.1                                     | 20 / 44.1   | 25 / 55.1   |
| <b>Cat. No.</b>                    | <b>Clear type, without vacuum gauge</b>             | <b>AAAD2011</b>                               | <b>AAAD2111</b>                                   | <b>AAAD2211</b>                                   |
|                                    | <b>Clear type, with vacuum gauge (G type)</b>       | <b>AAAD2021</b>                               | <b>AAAD2121</b>                                   | <b>AAAD2221</b>                                   |
|                                    | <b>UV protection, without vacuum gauge (U type)</b> | <b>AAAD2031</b>                               | <b>AAAD2131</b>                                   | <b>AAAD2231</b>                                   |
|                                    | <b>UV protection, with vacuum gauge (UG type)</b>   | <b>AAAD2041</b>                               | <b>AAAD2141</b>                                   | <b>AAAD2241</b>                                   |

**Accessories** [Page 233](#) Desiccant Tray, Perforated Shelf, Vacuum Seal, 3-way Valve, Vacuum Gauge, Locker

### Cylinder Type

| Model                              | Clear type  | VDP-25 (25G)                                      | VDP-30 (30G)                                      |
|------------------------------------|---|---|---|
|                                    | UV protection                                       | VDP-25U (25UG)                                    | VDP-30U (30UG)                                    |
| <b>Internal volume (L / cu ft)</b> |   | 16 / 0.6  | 24.9 / 0.9  |
| <b>Vacuum</b>                      | Gauge range (Analog) (Mpa)                          | 0 to -0.1   | 0 to -0.1   |
|                                    | Max. permissible vacuum (Body) (Mpa)                | 1.33 x 10 <sup>-4</sup> (1 Torr)                  | 1.33 x 10 <sup>-4</sup> (1 Torr)                  |
| <b>Dimension</b>                   | Internal (Ø x H, mm / inch)                         | 244 x 318 / 9.6 x 12.5                            | 305 x 322 / 12.0 x 12.7                           |
|                                    | Overall (Ø x H, mm / inch)                          | 308 x 374 (308 x 449) / 12.1 x 14.7 (12.1 x 17.7) | 387 x 384 (387 x 459) / 15.2 x 15.1 (15.2 x 18.1) |
|                                    | Nozzle dia. (mm / inch)                             | 9.5 / 0.37  | 9.5 / 0.37  |
|                                    | Net weight (kg / lbs)                               | 2.7 (2.8) / 5.9 (6.2)                             | 4.0 (4.1) / 8.8 (9.0)                             |
| <b>Cat. No.</b>                    | <b>Clear type, without vacuum gauge</b>             | <b>AAAD3011</b>                                   | <b>AAAD3021</b>                                   |
|                                    | <b>Clear type, with vacuum gauge (G type)</b>       | <b>AAAD3111</b>                                   | <b>AAAD3121</b>                                   |
|                                    | <b>UV protection, without vacuum gauge (U type)</b> | <b>AAAD3211</b>                                   | <b>AAAD3221</b>                                   |
|                                    | <b>UV protection, with vacuum gauge (UG type)</b>   | <b>AAAD3311</b>                                   | <b>AAAD3321</b>                                   |

\* The last letter G in model names means that the model has a vacuum gauge.

\* The last letter U in model names means that it is a UV blocking model.

**Accessories** [Page 233](#) Perforated Shelf, Vacuum Seal, 3-way Valve, Vacuum Gauge, Locker

## Hygrometer and multi-level shelf structure for convenient dehumidified desiccator

### > Hygrometer included

Very convenient as equipped with a hygrometer to check the internal humidity from the front. (Reference type)

### > Height-adjustable shelf

Height of shelf/drawer can be adjusted according to the shape and size of stored material.

### > Multi-level loading

Stable multi-level loading allows for efficient utilization of space.

### > Transparent observation environment

The material of the body is polycarbonate. (PC)

### > UV blocking model

UV blocking model provided for vacuum storage of light-sensitive samples.

### > Desiccant Tray

Includes a dedicated tray made of PP as standard that the user can conveniently place a desiccant in.



SDC-45

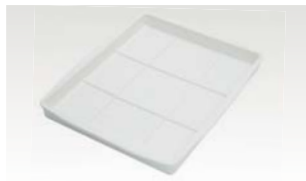
## Specification

| Model                              | Clear type                      | SDC-30 <sup>1)</sup>                 | SDC-45 <sup>1)</sup>                 |
|------------------------------------|---------------------------------|--------------------------------------|--------------------------------------|
|                                    | UV protection type              | SDC-30U <sup>1)</sup>                | SDC-45U <sup>1)</sup>                |
| <b>Internal volume (L / cu ft)</b> |                                 | 35 / 1.2                             | 50 / 1.8                             |
| <b>Dimension</b>                   | Internal (W x D x H, mm / inch) | 322 x 367 x 302 / 12.7 x 14.4 x 11.9 | 322 x 367 x 422 / 12.7 x 14.4 x 16.6 |
|                                    | Overall (W x D x H, mm / inch)  | 360 x 410 x 326 / 14.1 x 16.1 x 12.8 | 360 x 410 x 447 / 14.1 x 16.1 x 17.6 |
|                                    | Shelf (W x D x H, mm / inch)    | 279 x 354 x 3 / 11.0 x 13.9 x 0.1    | 279 x 354 x 3 / 11.0 x 13.9 x 0.1    |
|                                    | Drawer (W x D x H, mm / inch)   | 279 x 346 x 45 / 11.0 x 13.6 x 1.8   | 279 x 346 x 45 / 11.0 x 13.6 x 1.8   |
|                                    | Desiccant tray                  | 218 x 268 x 26 / 8.6 x 10.6 x 1.0    | 218 x 268 x 26 / 8.6 x 10.6 x 1.0    |
|                                    | Net weight (kg / lbs)           | 4.9 / 10.8                           | 6.2 / 13.7                           |
| <b>Shelves</b>                     | Quantity (Standard/Max.)        | 1 / 4                                | 2 / 6                                |
|                                    | Max. load per shelf (kg / lbs)  | 5 / 11.0                             | 5 / 11.0                             |
| <b>Drawers</b>                     | Quantity (Standard/Max.)        | 1 / 4                                | 1 / 6                                |
|                                    | Max. load per drawer (kg / lbs) | 5 / 11.0                             | 5 / 11.0                             |
| <b>Cat. No.</b>                    | <b>Clear type</b>               | <b>AAAD5011</b>                      | <b>AAAD5021</b>                      |
|                                    | <b>UV protection type</b>       | <b>AAAD5111</b>                      | <b>AAAD5121</b>                      |

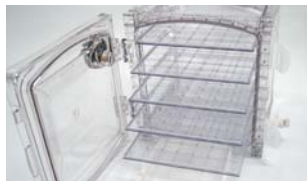
1) The deviation of the fitted hygrometers will be between 10 and 20%. The measuring of accurate humidity percentage should be needed a extra equipment.



# Accessories for Desiccator



Desiccant Tray



Perforated Shelf (VDC)



Perforated Shelf (VDP)



Vacuum Seal



Locker



3-way Valve (VDR)



3-way Valve (VDC)



Vacuum Gauge

| Model            | Cat. No.     | VDC    |        |        |        | VDR    |        |        | VDP    |        | SDC    |        |
|------------------|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                  |              | VDC-11 | VDC-21 | VDC-31 | VDC-41 | VDR-20 | VDR-25 | VDR-30 | VDP-25 | VDP-30 | SDC-30 | SDC-45 |
| Desiccant tray   | 00VDC0000037 | ●      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|                  | 00VDC0000005 | -      | ●      | ●      | ●      | -      | -      | -      | -      | -      | ●      | ●      |
|                  | AAAD1501     | -      | -      | -      | -      | ●      | -      | -      | -      | -      | -      | -      |
|                  | AAAD1502     | -      | -      | -      | -      | -      | ●      | -      | -      | -      | -      | -      |
|                  | AAAD1503     | -      | -      | -      | -      | -      | -      | ●      | -      | -      | -      | -      |
| Perforated shelf | 00VDC0000035 | ●      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|                  | 00VDC0000003 | -      | ●      | ●      | ●      | -      | -      | -      | -      | -      | -      | -      |
|                  | AAAD1511     | -      | -      | -      | -      | ●      | -      | -      | -      | -      | -      | -      |
|                  | AAAD1512     | -      | -      | -      | -      | -      | ●      | -      | -      | -      | -      | -      |
|                  | AAAD1513     | -      | -      | -      | -      | -      | -      | ●      | -      | -      | -      | -      |
|                  | AAAD3511     | -      | -      | -      | -      | -      | -      | -      | ●      | -      | -      | -      |
|                  | AAAD3512     | -      | -      | -      | -      | -      | -      | -      | -      | ●      | -      | -      |
| Drawer           | AAAD5531     | -      | -      | -      | -      | -      | -      | -      | -      | -      | ●      | ●      |
|                  | AAAD5521     | -      | -      | -      | -      | -      | -      | -      | -      | -      | ●      | ●      |
| Vacuum seal      | 00VDC0000032 | ●      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|                  | 00VDC0000033 | -      | ●      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
|                  | 00VDC0000015 | -      | -      | ●      | -      | -      | -      | -      | -      | -      | -      | -      |
|                  | 00VDC0000034 | -      | -      | -      | ●      | -      | -      | -      | -      | -      | -      | -      |
|                  | 00VDR0000001 | -      | -      | -      | -      | ●      | -      | -      | -      | -      | -      | -      |
|                  | 00VDR0000002 | -      | -      | -      | -      | -      | ●      | -      | ●      | -      | -      | -      |
|                  | 00VDR0000055 | -      | -      | -      | -      | -      | -      | ●      | -      | ●      | -      | -      |
| Locker           | 00VDR0000015 | -      | -      | -      | -      | ●      | -      | -      | -      | -      | -      | -      |
|                  | 00VDR0000016 | -      | -      | -      | -      | -      | ●      | -      | ●      | -      | -      | -      |
|                  | 00VDR0000017 | -      | -      | -      | -      | -      | -      | ●      | -      | ●      | -      | -      |
| 3-way valve      | AAAD4501     | ●      | ●      | ●      | ●      | -      | -      | -      | -      | -      | -      | -      |
|                  | AAAD1521     | -      | -      | -      | -      | ●      | ●      | ●      | -      | -      | -      | -      |
|                  | AAAD3501     | -      | -      | -      | -      | -      | -      | -      | ●      | ●      | -      | -      |
| Vacuum Gauge     | 00EDA0004301 | ●      | ●      | ●      | ●      | -      | -      | -      | -      | -      | -      | -      |
|                  | 00EDA0004302 | -      | -      | -      | -      | ●      | ●      | ●      | ●      | ●      | -      | -      |
| Silicagel        | BEA78603     | ●      | ●      | ●      | ●      | ●      | ●      | ●      | -      | -      | ●      | ●      |



# Refrigerator & Freezer for Laboratory/Medical



# Refrigerator & Freezer for Laboratory/ Medical



# Laboratory Refrigerator & Freezer



Satisfaction with the requirements of European regulations and guidelines.



Real-time equipment monitoring and control system using mobile app.



Registered patent based on JEIO TECH's proprietary technology.



Certificate of medical devices management system for the manufacturers of medical devices.



Eco-friendly product that has passed environmental impact assessment tests.



Automatic defrosting does not need the work of unnecessary frost elimination.



Purifies and discharges harmful gas through internal filter.



In case of abnormal operation of the device, a voice message alarm is transmitted via telephone.



Warning alarm in case of deviation of temperature control.



It memorizes the state of power failure and operates automatically when power is restored.



2 year warranty Free A/S.



Door locking system with key.

## General Application

Lab Refrigerators & Freezers: Chemical samples, various reagents, storage of culture media, temperature-sensitive materials, enzymes, preliminary cooling before freezing.

Medical refrigerators & freezers: Storage of blood and plasma, storage of medicines and vaccines in hospitals and pharmacies.

|                             | Description  | Temp. Range (°C/°F)  | Volume (L / Cu ft)  | Model   | Page        |     |
|-----------------------------|--------------|--|---|---|-------------|-----|
| Laboratory                  | Refrigerator | • Verified by international standards<br>• Temperature stabilization by defrost control  | 2 ~ 10<br>/ 35.6 ~ 50   | 74, 303, 603,<br>805, 1327<br>/ 2.6, 5.5, 10.7,<br>21.3, 28.4, 46.9 | CLG<br>CLG3 | 240 |
|                             |              | • Filtered storage cabinet with refrigeration function<br>• Stable temperature maintenance and alarm function when there is an abnormality | 0 ~ 15<br>/ 32 ~ 59   | 660, 1451<br>/ 23.3, 51.2   | FSR         | 242 |
|                             | Freezer      | • Model selected based on temperature range<br>• Excellent insulation and sealing structure  | -15 ~ 0<br>/ 5 ~ 32   | 154, 303, 647<br>/ 15.4, 10.7, 22.8                                 | FHG         | 244 |
|                             |              |  | -25 ~ -15<br>/ -13 ~ 5  | 154, 303, 647<br>/ 15.4, 10.7, 22.8                                 | FMG         |     |
|                             |              |  | -35 ~ -25<br>/ -31~-13  | 154, 303, 647<br>/ 15.4, 10.7, 22.8                                 | FCG         |     |
|                             |              |  | -50 ~ -30<br>/ -58 ~ -22  | 303, 647<br>/ 10.7, 22.8  | FDG         |     |
|                             | Medical      | Blood Refrigerator   | • Designed based on DIN 58371 (blood refrigerator conditions and tests) | 0 ~ 20<br>/ 32 ~ 68   | 303, 614    | BSR |
| Pharmaceutical Refrigerator |              | • Stable cold storage of medicines<br>• Designed based on DIN 58345 (pharmaceuticals refrigerator conditions and tests)                    | 2 ~ 10<br>/ 35.6 ~ 50   | 74, 303, 614  | PSR<br>PSR3 | 249 |
| Blood Plasma Freezer        |              | • Suitable for long-term storage of plasma<br>• Designed based on DIN 58375 (plasma freezer conditions and tests)                          | -35 ~ -25<br>/ -31~-13  | 303, 647  | BSF         | 250 |

※ The contents of the above and the contents of this catalog may differ depending on the specific model and conditions of use. For the information about the features and specifications that applying to each models, please check the information on the corresponding page of each models.



## Laboratory Refrigerators & Freezers

Improved reliability with strict international standard verification  
**Stable temperature control with excellent sealing and defrost control**

> **Stable temperature control and maintenance**

More precise and stable temperature control due to Lab Companion's exclusive controller.

> **Satisfies the requirements for safe cold storage of pharmaceuticals**

Temperature fluctuation and variation meets the requirements of ICH Guideline Q1A. (R2) (CLG model)

> **Complete chamber structure**

Excellent thermal insulation and sealing to minimize heat loss for long-term use.

> **Application of defrost control technology of Lab Companion**

Automatic defrosting or dual refrigeration without the need for defrosting minimizes temperature changes.

> **Clean use and maintenance**

Internal stainless steel material allows for clean maintenance and excellent corrosion resistance.

> **Dew-free exterior**

Provides a clean environment with a structure that does not form dew on the door and outer wall.

> **Height-adjustable and strong shelf**

Durable wire-shaped shelves provided as standard can be placed at different height.

> **Internal uniform temperature**

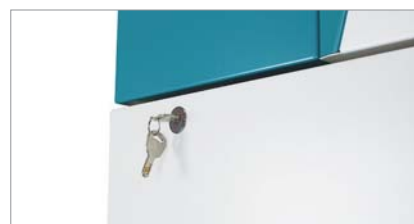
Optimized structural design for each model maintains uniform temperature inside.



Solid steel drawer shelf. (option)



Drawer type of wire shelf with excellent permeability. (option)



Key lock door.



## Provides optimized selection for storage purpose Convenient safety features for safe storage

### > Mobile monitoring system

LC Connected system (option) to monitor the current status of the equipment through the mobile app and receipt of status messages.

### > Door lock with key

Door structure with key lock as standard provides a safe storage environment.

### > Convenient mobility and installation

Easy to move and install with casters.  
(except for 150 model)

### > Convenient accessory selection supported

Selection of various accessories such as temperature recorder as well as various shelves according to storage type.

### > Temperature deviation notification function

Warning when the actual temperature is out of a certain range of the set temperature.  
(Hi & Low Temperature)

### > Lock function of controller

Lock function for preventing change of controller settings prevents erroneous operation due to arbitrary changing.

### > Self-protection system

Door open alarm Overcurrent protection and current leakage protection.

### > Voice alarm system supported

Alarm system (option) that transmits voice messages to designated users when device malfunction occurs.

※ Some of the above contents are limited to specific models.



Intuitive checking of device operation information with large VFD.



Easy to use with door open button.



Mobile remote monitoring system. (option) (CLG3/PSR3 model)

# Laboratory Refrigerator

## Excellent structure to meet stringent international standard



### Structural Functional Features

- Stable temperature control with excellent insulation and sealing structure.
- Clean construction with no condensation on outer walls.
- Interior has excellent corrosion resistance as made of stainless steel.
- Magnetic packing door with smooth opening and closing.
- Casters for easy movement / installation. (except for 70, 150 model)
- Space-efficient configuration with double stackable. (only for 70, 150 model)
- Auto defrost function eliminates the need for separate defrosting.

### Use Convenience Features

- Stable control with Lab Companion's exclusive controller.
- Easy to use with clear VFD and touch key.
- Simultaneously displays set temperature and actual temperature.
- Calibration function minimizes temperature difference.
- Height-adjustable and strong shelf provided as standard.
- Built-in fluorescent lamps. (except for 150 model)
- Glass door model for easy storage status checking.
- Convenient connecting external devices through Ø50 mm cable port. (option) (except for 70,150 model)



Intuitive checking of device operation information with large VFD



Door key lock





## Outstanding Safety

- The 850 and 1400 model are equipped with two refrigeration systems to maintain temperature even in the event of a single refrigeration system failure.
- Temperature deviation notification. (Hi & Low Temperature)
- Malfunction prevented by controller lock function.
- Door lock with key as standard.
- Enhanced security with digital door lock. (only CLG3)
- Notification function when the door is open for a long time.



Drawer Shelf

## Satisfies The Requirements For Safe Cold Storage Of Pharmaceuticals

- Temperature fluctuation and variation meets the requirements of ICH Guideline Q1A. (R2)
- Stable temperature control for long-term operation.



Wire Shelf

## Accessories Provided For Convenient Use

- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox, Only CLG3-70)
- Voice alarm system transmits voice messages to designated phone if there is an abnormality in operation. (option)
- Convenient use with drawer type shelf. (option)
- Selection of various temperature recorders. (option) (Dot, Chart, Thermal Line)



Digital door lock (CLG3 model)

## Specification

| Model  | Solid door        | -                                    | CLG-150S                             | CLG-300S                              | CLG-650S                              | CLG-850S                              | CLG-1400S                              |
|--|-------------------|--------------------------------------|--------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
|  | Glass door        | CLG3-70                              | CLG-150G                             | CLG-300G                              | CLG-650G                              | CLG-850G                              | CLG-1400G                              |
| <b>Temperature range (°C / °F)</b>             |                   | 2 to 10 / 35.6 to 50                 | 2 to 10 / 35.6 to 50                 | 2 to 10 / 35.6 to 50                  | 2 to 10 / 35.6 to 50                  | 2 to 10 / 35.6 to 50                  | 2 to 10 / 35.6 to 50                   |
| <b>Chamber volume (L / cu ft)</b>              |                   | 73 / 2.6                             | 156 / 5.5                            | 303 / 10.7                            | 603 / 21.3                            | 805 / 28.4                            | 1327 / 46.9                            |
| <b>Dimension</b>                               |                   |                                      |                                      |                                       |                                       |                                       |  |
| Interior (W x D x H, mm / inch)                |                   | 418 x 440 x 400 / 16.5 x 17.3 x 15.7 | 550 x 580 x 490 / 21.7 x 22.8 x 19.3 | 550 x 550 x 1000 / 21.7 x 21.7 x 39.4 | 650 x 640 x 1450 / 25.6 x 25.2 x 57.1 | 750 x 740 x 1450 / 29.5 x 29.1 x 57.1 | 1430 x 640 x 1450 / 56.3 x 25.2 x 57.1 |
| Exterior (W x D x H, mm / inch)                |                   | 522 x 600 x 725 / 20.6 x 23.6 x 28.5 | 683 x 791 x 870 / 26.9 x 31.1 x 34.3 | 670 x 770 x 1515 / 26.4 x 30.3 x 59.6 | 770 x 865 x 1965 / 30.3 x 34.1 x 77.4 | 870 x 965 x 1965 / 34.3 x 38 x 77.4   | 1550 x 865 x 1965 / 61 x 34.1 x 77.4   |
| Net weight (Kg / lbs)                          |                   | 67 / 147.7                           | 100 / 220.5                          | 130 / 286.6                           | 210 / 463                             | 260 / 573.2                           | 350 / 771.6                            |
| <b>Shelf</b>                                   |                   |                                      |                                      |                                       |                                       |                                       |  |
| Quantity of wire shelf (standard/max.)         |                   | 2 / 3                                | 2 / 6                                | 3 / 11                                | 3 / 17                                | 3 / 17                                | 6 / 34                                 |
| Quantity of wire shelf (slide) (max.)          |                   | 3                                    | 4                                    | 7                                     | 11                                    | 11                                    | 22                                     |
| Quantity of drawer shelf (slide) (max.)        |                   | 2                                    | 3                                    | 5                                     | 8                                     | 8                                     | 16                                     |
| Load per shelf (kg / lbs)                      |                   | 30                                   | 26                                   | 26                                    | 30                                    | 30                                    | 30                                     |
| Fluorescent lamp                               |                   | 4.2W, 1ea                            | -                                    | 18W, 1ea                              | 18W, 1ea                              | 32W, 1ea                              | 32W, 1ea                               |
| <b>Electrical requirements (230V, 60Hz, A)</b> |                   | 1.1                                  | 2                                    | 2.3                                   | 4                                     | 5                                     | 6                                      |
| <b>Cat. No.</b>                                | <b>Solid door</b> | -                                    | AAHE1001K                            | AAHE1011K                             | AAHE1021K                             | AAHE1031K                             | AAHE1041K                              |
|  | <b>Glass door</b> | AAHE1301K                            | AAHE1101K                            | AAHE1111K                             | AAHE1121K                             | AAHE1131K                             | AAHE1141K                              |
| <b>Electrical requirements (230V, 50Hz, A)</b> |                   | 1.1                                  | 2                                    | 2.3                                   | 4                                     | 5                                     | 6                                      |
| <b>Cat. No.</b>                                | <b>Solid door</b> | -                                    | AAHE1002K                            | AAHE1012K                             | AAHE1022K                             | AAHE1032K                             | AAHE1042K                              |
|  | <b>Glass door</b> | AAHE1302K                            | AAHE1102K                            | AAHE1112K                             | AAHE1122K                             | AAHE1132K                             | AAHE1142K                              |
| <b>Electrical requirements (120V, 60Hz, A)</b> |                   | 2.9                                  | 4                                    | 4.5                                   | 5                                     | 5.2                                   | 9.5                                    |
| <b>Cat. No.</b>                                | <b>Solid door</b> | -                                    | AAHE1003U                            | AAHE1013U                             | AAHE1023U                             | AAHE1033U                             | AAHE1043U                              |
|  | <b>Glass door</b> | AAHE1303U                            | AAHE1103U                            | AAHE1113U                             | AAHE1123U                             | AAHE1133U                             | AAHE1143U                              |

# Filtering Storage Refrigerator

**Strong deodorization function to remove hazardous gas from refrigerator and uniform temperature.  
(Refrigeration temperature 0-15°C)**



## FSR-650G

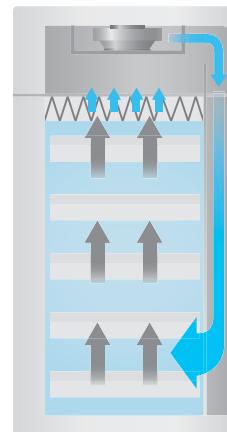
with Drawer Shelves 4ea, Spill Tray 1ea (standard)

### Completed verification for hazardous gas removal capability

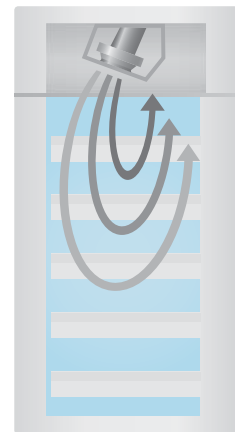
Proven ability to remove hazardous gases (SPS-KACA002-132)

**Application of complex carbon filter (VOC, acid, base)**

By circulating the air from the bottom of the storage to the filter at the top, hazardous gas removal and uniform temperature are provided.



Lab Companion Products



Existing commercial products

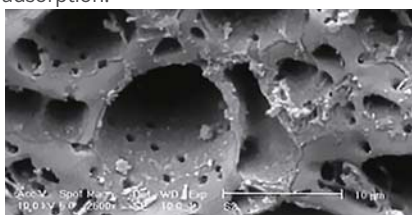
- > **Optimized air flow**  
Excellent temperature uniformity and effective removal of hazardous gas through uniform air circulation throughout the cabinet.
- > **Brightness control LED lamp**  
Easy to observe the inside with LED lamp, and possible to adjust the brightness to 5 levels.
- > **Filter check notification function**  
Filter maintenance notification function of 1-24 month cycle makes it easy to manage the filter according to the usage environment.
- > **Easy to use as a drawer-type shelf**  
Drawer-type shelf for convenient handling of inner samples installed as standard.
- > **Structure convenient for moving and installation**  
Structure allows it to be moved and fixed and it can be also be safely installed horizontally.
- > **JEIO TECH exclusive controller**  
Easy to use with touch, and displays useful information in real time such as VOC, temperature, humidity, filter check notifications, etc.
- > **Filter configuration customizable for application**  
Various custom filter configurations supported depending on the chemical nature of the reagents to be stored.



## Accessories

### Lab Companion's Filter Series

- The Lab Companion's carbon filter is an excellent amorphous adsorbent with a high surface area, has fine pores and is manufactured through a multi-level impregnation process.
- Made of 100% impregnated filter, it is more than twice as efficient as general filters.
- Has the efficiency of an excellent composite filter as it simultaneously performs physical adsorption and chemical adsorption.



- Electron microscopic photographs of Lab Companion's carbon filter confirms development of numerous pores such as  
Macropores (diameter of more than 500Å),  
Mesopores (diameter of 20-500Å), and  
Micropores. (diameter of 20Å or less)

| Filter                  | Description  | Cat. No.        |
|-------------------------|--|-----------------|
| <b>Complex Carbon</b>   | Filters a wide range of chemicals, including acid, ammonia, and aldehyde.            | <b>AAAB6354</b> |
| <b>Acid</b>             | Filters acid gases such as HCl, HF, H <sub>2</sub> S and CH <sub>3</sub> COOH        | <b>AAAB6356</b> |
| <b>Formaldehyde</b>     | Filters formaldehyde, Acete aldehyde, etc.   | <b>AAAB6358</b> |
| <b>Ammonia / Amines</b> | Filters Basic Gases Such As NH <sub>3</sub> , (CH <sub>3</sub> ) <sub>3</sub> N etc. | <b>AAAB6359</b> |
| <b>HEPA</b>             | Filters 99.99% of toxic dust and other 0.3µ m particles                              | <b>AAAB6353</b> |

- ※ The appropriate filter is selected according to the chemical used.
- ※ Built-in pre-filter primarily filters particles to extend the life of the other filters.
- ※ Above filter should be ordered two when you apply the FSR-1400G.

### Additional fitting of drawer-type shelves

| Description              | Cat. No.        |
|--------------------------|-----------------|
| Drawer shelf (slide) set | <b>AAAF1511</b> |

### Specification

| Model  |                                   | FSR-650G                                | FSR-1400G                               |
|--|-----------------------------------|---|---|
| <b>Temperature range (°C / °F)</b>             |                                   | 0 ~ 15 / 32 ~ 59                        | 0 ~ 15 / 32 ~ 59                        |
| <b>Volume</b>                                  | Capacity (1 L bottle *ea)         | 100                                     | 200                                     |
|  | Internal volume (L)               | 660 / 23.3                              | 1327 / 46.7                             |
| <b>Dimensions</b>                              | External (W x D x H, mm / inch)   | 770 x 850 x 1955 / 30.3 x 33.5 x 77     | 1550 x 850 x 1955 / 61 x 33.5 x 77      |
|  | Internal (W x D x H, mm / inch)   | 650 x 640 x 1450 / 25.6 x 25.2 x 57.1   | 1430 x 700 x 1450 / 56.3 x 27.6 x 57.1  |
|  | Drawer (W x D x H, mm / inch)     | 600 x 595 x 100 / 23.6 x 23.4 x 3.9     | 500 x 595 x 100 / 19.7 x 23.4 x 3.9     |
|  | Spill tray (W x D x H, mm / inch) | 602 x 550 x 35 / 23.7 x 21.7 x 1.4, 1ea | 602 x 550 x 35 / 23.7 x 21.7 x 1.4, 2ea |
| <b>Quantity of drawer (standard/max.)</b>      |                                   | 4 / 8                                   | 8 / 16                                  |
| <b>Weight (kg / lbs)</b>                       |                                   | 320 / 705.5                             | 640 / 1411                              |
| <b>Electrical requirements (230V, 60Hz, A)</b> |                                   | 3                                       | 4                                       |
| <b>Cat. No.</b>                                |                                   | <b>AAHF13111K</b>                       | <b>AAHF13121K</b>                       |
| <b>Electrical requirements (230V, 50Hz, A)</b> |                                   | 3                                       | 4                                       |
| <b>Cat. No.</b>                                |                                   | <b>AAHF13112K</b>                       | <b>AAHF13122K</b>                       |
| <b>Electrical requirements (120V, 60Hz, A)</b> |                                   | 3.7                                     | 7.3                                     |
| <b>Cat. No.</b>                                |                                   | <b>AAHF13113U</b>                       | <b>AAHF13123U</b>                       |

# Laboratory Freezer

## Maintain stable temperature by direct cooling-type refrigeration system



### ▣ Structural Functional Features

- Stable temperature control with excellent insulation and sealing structure.
- Clean construction with no condensation on outer walls.
- Interior has excellent corrosion resistance as made of stainless steel.
- Magnetic packing door with smooth opening and closing.
- Casters for easy movement / installation. (except for 150 model)
- Space-efficient configuration with double stackable. (only for 150 model)
- Auto defrost function eliminates the need for separate defrosting.

### ▣ Use Convenience Features

- Stable control with Lab Companion's exclusive controller.
- Easy to use with clear VFD and touch key.
- Simultaneously displays set temperature and actual temperature.
- Calibration function minimizes temperature difference.
- Height-adjustable and strong shelf provided as standard.
- Easy to use with door open button.

### ▣ Outstanding Safety

- Temperature deviation notification. (Hi & Low Temperature)
- Malfunction prevented by controller lock function.
- Door lock with key as standard.
- Notification function when door is opened for a long time.



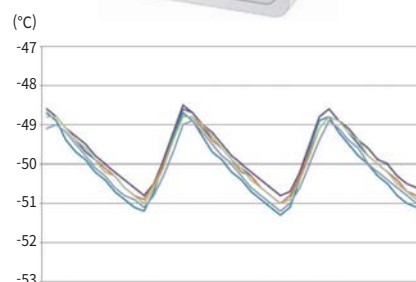
## Direct Cooling-type Refrigeration System

- Cooling method with structure surrounding the internal sample space.
- The structure maintains stable temperature uniformity throughout the entire interior where the sample is placed.
- Efficient operation provided with minimal heat loss.



## Accessories Provided For Convenient Use

- Voice alarm system transmits voice messages to designated phone if there is an abnormality in operation. (option)
- Convenient use with drawer type shelf. (option)
- Selection of various temperature recorders. (option)  
(Dot, Chart, Thermal Line)



## Specification

| Model   |               | -                                       | FDG-300                                  | FDG-650                                  |
|---|---------------|---|--|--|
|   |               | FCG-150                                 | FCG-300                                  | FCG-650                                  |
|   |               | FMG-150                                 | FMG-300                                  | FMG-650                                  |
|   |               | FHG-150                                 | FHG-300                                  | FHG-650                                  |
| Temperature range (°C / °F)                       | FDG           | -                                       | -50 to -30 / -58 to -22                  | -50 to -30 / -58 to -22                  |
|   | FCG           | -35 to -25 / -31 to -13                 | -35 to -25 / -31 to -13                  | -35 to -25 / -31 to -13                  |
|   | FMG           | -25 to -15 / -13 to 5                   | -25 to -15 / -13 to 5                    | -25 to -15 / -13 to 5                    |
|   | FHG           | -15 to 0 / 5 to 32                      | -15 to 0 / 5 to 32                       | -15 to 0 / 5 to 32                       |
| Chamber volume (L / cu ft)                        |               | 154 / 5.4                               | 303 / 10.7                               | 647 / 22.8                               |
| <b>Dimension</b>                                  |               |   |  |  |
| Interior (W x D x H, mm / inch)                   |               | 550 x 570 x 490<br>/ 21.7 x 22.4 x 19.3 | 550 x 550 x 1000<br>/ 21.7 x 21.7 x 39.4 | 700 x 675 x 1370<br>/ 27.6 x 26.6 x 53.9 |
| Exterior (W x D x H, mm / inch)                   | FDG           | -                                       | 805 x 800 x 1690<br>/ 31.7 x 31.5 x 66.5 | 955 x 925 x 2060<br>/ 37.6 x 36.4 x 81.1 |
|   | FCG, FMG, FHG | 763 x 815 x 1055<br>/ 30 x 32.1 x 41.5  | 765 x 760 x 1650<br>/ 30.1 x 29.9 x 65   | 915 x 885 x 2020<br>/ 36 x 34.8 x 79.5   |
| Net weight (Kg / lbs)                             | FDG           | -                                       | 180 / 396.8                              | 280 / 617.3                              |
|   | FCG           | 123 / 271.2                             | 155 / 341.7                              | 238 / 524.7                              |
|   | FMG           | 120 / 264.6                             | 150 / 330.7                              | 233 / 513.7                              |
|   | FHG           | 120 / 264.6                             | 150 / 330.7                              | 230 / 507.1                              |
| <b>Shelf</b>                                      |               |   |  |  |
| Quantity of shelf (standard/max.)                 |               | 2 / 6                                   | 3 / 11                                   | 3 / 17                                   |
| Load per shelf (kg / lbs)                         |               | 26 / 57.3                               | 26 / 57.3                                | 30 / 66.1                                |
| <b>Electrical data &amp; Ordering information</b> |               |   |  |  |
| 230V / 60Hz / A                                   | FDG           | -                                       | 5  | 6.5                                      |
|   | FCG           | 5.0                                     | 5.5                                      | 6.5                                      |
|   | FMG           | 4.5                                     | 4.8                                      | 5.5                                      |
|   | FHG           | 3.5                                     | 3.8                                      | 3.8                                      |
| Cat. No.  | FDG           | -                                       | AAHE2411K                                | AAHE2421K                                |
|   | FCG           | AAHE2301K                               | AAHE2311K                                | AAHE2321K                                |
|   | FMG           | AAHE2201K                               | AAHE2211K                                | AAHE2221K                                |
|   | FHG           | AAHE2101K                               | AAHE2111K                                | AAHE2121K                                |
| 230V / 50Hz / A                                   | FDG           | -                                       | 5  | 6.5                                      |
|   | FCG           | 5.0                                     | 5.5                                      | 6.5                                      |
|   | FMG           | 4.5                                     | 4.8                                      | 5.5                                      |
|   | FHG           | 3.5                                     | 3.8                                      | 3.8                                      |
| Cat. No.  | FDG           | -                                       | AAHE2412K                                | AAHE2422K                                |
|   | FCG           | AAHE2302K                               | AAHE2312K                                | AAHE2322K                                |
|   | FMG           | AAHE2202K                               | AAHE2212K                                | AAHE2222K                                |
|   | FHG           | AAHE2102K                               | AAHE2112K                                | AAHE2122K                                |



## Refrigerator & Freezer for Medical / Blood bank

Refrigerators and freezers licensed to be manufactured as medical devices  
**Meets blood and pharmaceuticals storage standards (KS P 6108)**

> **Completed tests conforming to the standards**

Meets blood and pharmaceuticals refrigerator and freezer specifications. Specifications and performance of products with excellent reliability.

> **Temperature measurement at 27 internal points**

Measures the temperature of the entire area where the sample is placed. Uniform temperature even with stricter standards.

> **Dew-free exterior**

Provides a clean environment with a structure that does not form dew on the door and outer wall.

> **Application of defrost control technology of Lab Companion's**

Automatic defrosting without the need for defrosting minimizes temperature changes.

> **Temperature deviation notification function**

Warning when the actual set temperature is out of a certain range of the set temperature. (Hi & high and Low Temperature)

> **Temperature recorder provided as standard**

7-day pie chart recorder included as standard. Temperature recording can be maintained even during power failure.

> **Door lock with key lock**

Door structure with key lock as standard provides a safe storage environment.

> **Controller lock function**

Lock function for preventing change of controller settings prevents erroneous operation due to arbitrary changing.

※ Some of the above contents are limited to specific models.



Stable temperature uniformity in the entire area where the sample is placed.



Steel drawer type shelf. (option)



Intuitive checking of device operation information with large VFD. (4.7 inches)



## Safe use with patented Dual Management System Includes voice alarm system and convenient and useful functions

### > Temperature monitoring with independent temperature sensor

Separate temperature sensors connected to the display monitors the internal temperature independently.

### > Dual management system (patent)

When the main controller fails, the sub-controller automatically operates and controls temperature until the user recognizes the failure of main controller and acts, allowing the sample to be safely stored.

### > Voice alarm system included as standard

Alarm system that transmits a voice messages to a designated users in case of abnormal operation of the equipment.

External battery also works in case of power failure. Delivers voice messages to up to seven phones.



In case of power supply cut such as power failure.



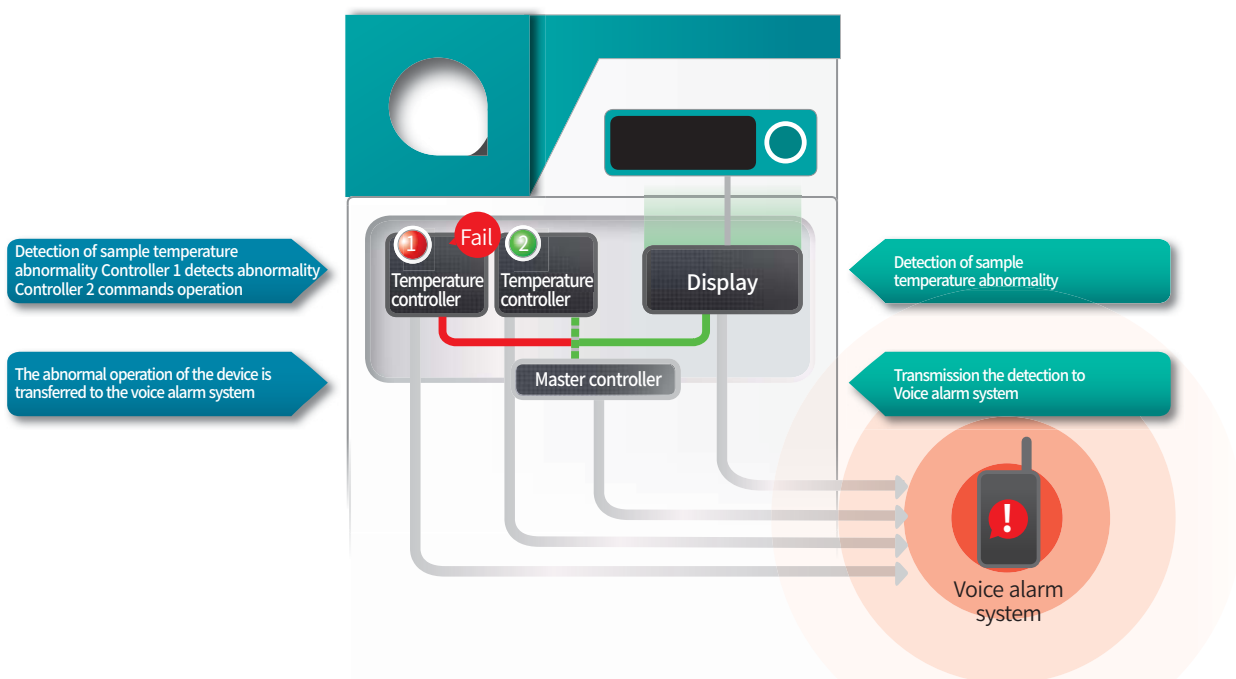
If there is abnormal temperature rise/fall.



If the temperature of the sample is abnormal.



If the door is opened for a long time.



# Blood Bank Refrigerator



## Dedicated refrigerator optimized for blood storage

### Obtained Medical Device Certificate

- Certificate of medical device management systems.

### Structural Functional Features

- Applies patented Dual Management System to keep stand-by controller operating automatically and maintains stable temperature even if main controller fails. (patent reg.10-1550400)
- Separate temperature sensors connected to the display monitor the internal temperature independently.
- Verified temperature uniformity with measurements performed at 27 points.
- Designed based on DIN 58371. (blood refrigerator conditions and tests)
- Equipped with easy-to-move/install caster.
- Clean use with dew-free structure.
- Excellent insulation and sealing structure.



**BSR-3001**

with Drawers 4ea (standard), Recorder (option)

### Use Convenience Features

- Built-in voice alarm system transmits voice messages to specified users (up to 7 phones) if there is an abnormality in the device.
- Includes 7-day circular chart temperature recorder.
- Stable temperature control by dedicated controller.
- Application of Lab Companion's specialized defrost control technology.
- Convenient drawer type shelf included as standard.
- Glass door and LED lighting make it easy to observe inside.

### Outstanding Safety

- Temperature deviation alarm function. (Hi & Low Temperature)
- Malfunction prevented by controller lock function.
- Door lock with key as standard.
- Alarm function when door is opened for a long time.

## Specification

| Model   | BSR-3001                              | BSR-6501                              |                   |
|---|---------------------------------------|---------------------------------------|-------------------|
| <b>Temperature range (°C / °F)</b>                | 0 to 20 / 32 to 68 <sup>1)</sup>      | 0 to 20 / 32 to 68 <sup>1)</sup>      |                   |
| <b>Chamber volume (L / cu ft)</b>                 | 303 / 10.7                            | 614 / 21.7                            |                   |
| <b>Refrigerator (HP)</b>                          | 1 / 6                                 | 1 / 3                                 |                   |
| <b>Dimension</b>                                  |                                       |                                       |                   |
| Interior (W x D x H, mm / inch)                   | 550 x 550 x 1000 / 21.7 x 21.7 x 39.4 | 700 x 640 x 1370 / 27.6 x 25.2 x 53.9 |                   |
| Exterior (W x D x H, mm / inch)                   | 670 x 770 x 1515 / 26.4 x 30.3 x 59.6 | 820 x 860 x 1885 / 32.3 x 33.9 x 74.2 |                   |
| Net weight (Kg / lbs)                             | 130 / 286.6                           | 210 / 463                             |                   |
| <b>Shelf</b>                                      |                                       |                                       |                   |
| Quantity of drawers                               | 4                                     | 6                                     |                   |
| Load per shelf (kg / lbs)                         | 26 / 57.3                             | 30 / 66.1                             |                   |
| <b>Electrical data &amp; Ordering information</b> |                                       |                                       |                   |
| 230V / A  | 50/60Hz, 2.8                          | 50Hz, 3.8                             | 60Hz, 3.8         |
| <b>Cat. No.</b>                                   | <b>AAHE41051K</b>                     | <b>AAHE41121K</b>                     | <b>AAHE41111K</b> |
| 120V / 60Hz / A                                   | 60Hz, 5.5                             | 60Hz, 7.5                             |                   |
| <b>Cat. No.</b>                                   | <b>AAHE41031U</b>                     | <b>AAHE411311U</b>                    |                   |

※ According to DIN 58371 (Definition, requirements, testing of blood refrigerators)  
1) 4°C Set point

**Accessories** Page 251 Shelf, Drawer, Recorder, Remote Alarm



# Pharmaceutical Refrigerator



## Stable cold storage for pharmaceuticals provided

### Obtained Medical Device Certificate

- Certificate of medical device management systems.

### Structural Functional Features

- Applies patented Dual Management System to keep stand-by controller operating automatically and maintains stable temperature even if main controller fails. (patent reg.10-1550400) (except for PSR3-70 model)
- Separate temperature sensors connected to the display monitor the internal temperature independently.
- Verified temperature uniformity with measurements performed at 27 points.
- Designed based on DIN 58345 (pharmaceuticals refrigerator conditions and tests)
- Equipped with easy-to-move/install caster.
- Clean use with dew-free structure.

### Use Convenience Features

- Monitor via mobile app anytime, anywhere with LC Connected (mobile monitoring system) connection. (when purchased LC GreenBox, only PSR3-70)
- Built-in voice alarm system transmits voice messages to specified users (up to 7 phones) if there is an abnormality in the device.
- Includes 7-day circular chart temperature recorder. (except for PSR3-70 model)
- Stable temperature control by dedicated controller.
- Application of Lab Companion's specialized defrost control technology.
- Glass door and LED lighting make it easy to observe inside.



### PSR3-70

with Wire Shelf 2ea (standard),  
Battery, Recorder, Drawer Shelf 1ea (option)



Digital door lock (PSR3 model)

### Outstanding Safety

- Temperature deviation alarm function. (Hi & Low temperature)
- Malfunction prevented by controller lock function.
- Door lock with key as standard.
- Notification function when door is opened for a long time.
- Back up battery in case of power failure. (option, PSR3)
- Enhanced security with digital door lock. (only PSR3)

## Specification

| Model   | PSR3-70 (CE Certified)               |           | PSR- 3001                             | PSR- 6501                             |            |
|---|--------------------------------------|-----------|---------------------------------------|---------------------------------------|------------|
| Temperature range (°C / °F)                       | 2 to 10 / 35.6 to 50 <sup>1)</sup>   |           | 2 to 10 / 35.6 to 50 <sup>1)</sup>    | 2 to 10 / 35.6 to 50 <sup>1)</sup>    |            |
| Chamber volume (L / cu ft)                        | 73 / 2.6                             |           | 303 / 10.7                            | 614 / 21.7                            |            |
| Refrigerator (HP)                                 | -                                    |           | 1 / 6                                 | 1 / 3                                 |            |
| <b>Dimension</b>                                  |                                      |           |                                       |                                       |            |
| Interior (W x D x H, mm / inch)                   | 418 x 440 x 400 / 16.5 x 17.3 x 15.7 |           | 550 x 550 x 1000 / 21.7 x 21.7 x 39.4 | 700 x 640 x 1370 / 27.6 x 25.2 x 53.9 |            |
| Exterior (W x D x H, mm / inch)                   | 522 x 600 x 725 / 20.6 x 23.6 x 28.5 |           | 670 x 770 x 1515 / 26.4 x 30.3 x 59.6 | 820 x 860 x 1885 / 32.3 x 33.9 x 74.2 |            |
| Net weight (Kg / lbs)                             | 67 / 147.7                           |           | 130 / 286.6                           | 210 / 463                             |            |
| <b>Shelf</b>                                      |                                      |           |                                       |                                       |            |
| Quantity of shelves (standard/max.)               | 2 / 3                                |           | 3 / 11                                | 3 / 15                                |            |
| Load per shelf (kg / lbs)                         | 30 / 66.1                            |           | 26 / 57.3                             | 30 / 66.1                             |            |
| <b>Electrical data &amp; Ordering information</b> |                                      |           |                                       |                                       |            |
| 230V / A  | 50Hz, 1.1                            | 60Hz, 1.1 | 50/60Hz, 2.8                          | 50Hz, 3.8                             | 60Hz, 3.8  |
| Cat. No.  | AAHE6302K                            | AAHE6301K | AAHE60151K                            | AAHE60221K                            | AAHE60211K |
| 120V / A  | 60Hz, 2.9                            |           | 60Hz, 5.5                             | 60Hz, 2.9                             |            |
| Cat. No.  | AAHE6303U                            |           | AAHE60313U                            | AAHE60231U                            |            |

※ According to DIN 58345 (pharmaceuticals refrigerator conditions and tests)

1) 4°C Set point

Accessories **Page 251** Shelf, Drawer, Recorder, Remote Alarm, LC GreenBox

# Blood Plasma Freezer



## Dedicated freezer suitable for storage of plasma

### Obtained Medical Device Certificate

- Certificate of medical device management systems.

### Structural Functional Features

- Applies patented Dual Management System to keep stand-by controller operating automatically and maintains stable temperature even if main controller fails. (patent reg.10-1550400)
- Separate temperature sensors connected to the display monitor the internal temperature independently.
- Verified temperature uniformity with measurements performed at 27 points.
- Designed based on DIN 58375 (blood plasma freezer conditions and tests)
- Equipped with easy-to-move/install caster.
- Clean use with dew-free structure.



**BSF-650**  
with Recorder (option)

### Use Convenience Features

- Built-in voice alarm system transmits voice messages to specified users (up to 7 phones) if there is an abnormality in the device.
- Includes 7-day circular chart temperature recorder.
- Stable temperature control by dedicated controller.
- Application of Lab Companion's specialized defrost control technology.

### Outstanding Safety

- Temperature deviation alarm function. (Hi & Low Temperature)
- Malfunction prevented by controller lock function.
- Door lock with key as standard.
- Alarm function when door is opened for a long time.

## Specification

| Model   | BSF-300                               |                  | BSF-650                               |                  |
|---|---------------------------------------|------------------|---------------------------------------|------------------|
| <b>Temperature</b>                                |                                       |                  |                                       |                  |
| Range (°C / °F)                                   | -35 to -25 / -31 to -13               |                  | -35 to -25 / -31 to -13               |                  |
| <b>Chamber volume (L / cu ft)</b>                 | 303 / 10.7                            |                  | 647 / 22.8                            |                  |
| <b>Refrigerator (HP)</b>                          | 1 / 4                                 |                  | 1 / 2                                 |                  |
| <b>Dimension</b>                                  |                                       |                  |                                       |                  |
| Interior (W x D x H, mm / inch)                   | 550 x 550 x 1000 / 21.7 x 21.7 x 39.4 |                  | 700 x 675 x 1370 / 27.6 x 26.6 x 53.9 |                  |
| Exterior (W x D x H, mm / inch)                   | 765 x 760 x 1650 / 30.1 x 29.9 x 65   |                  | 915 x 885 x 2020 / 36 x 34.8 x 79.5   |                  |
| Net weight (Kg / lbs)                             | 150 / 330.7                           |                  | 240 / 529.1                           |                  |
| <b>Shelf</b>                                      |                                       |                  |                                       |                  |
| Quantity of drawers                               | 4                                     |                  | 6                                     |                  |
| Load per shelf (kg / lbs)                         | 26 / 57.3                             |                  | 30 / 66.1                             |                  |
| <b>Electrical data &amp; Ordering information</b> |                                       |                  |                                       |                  |
| 230V / A  | 50Hz, 5.5                             | 60Hz, 5.5        | 50Hz, 7.5                             | 60Hz, 7.5        |
| <b>Cat. No.</b>                                   | <b>AAHE5102K</b>                      | <b>AAHE5101K</b> | <b>AAHE5112K</b>                      | <b>AAHE5111K</b> |
| 120V / A  |                                       |                  | 60Hz, 11                              |                  |
| <b>Cat. No.</b>                                   | <b>AAHE5103U</b>                      |                  |                                       |                  |

※ According to DIN 58375 (Blood plasma freezer conditions and tests)

**Accessories** Page 251 Shelf, Drawer, Recorder, Remote Alarm

# Accessories

## Wire Shelf



- Provides uniform temperature conditions throughout the storage area thanks to space between wires.

## Remote Alarm



- When a device malfunctions, a voice message is transmitted to the users.

## Drawer Shelf (Slide)



- The drawer shelf of a rigid steel plate makes easy to handle storage inside.

## Wire Shelf (Slide)



- Wire type with good airflow, and convenient to use as drawer type.

## Recorder with Sensor (Chart)



- 24/7 circular chart recorder.
- Easy replacement of the recording paper.
- Independent sensor that are separate from the product.

## Recorder with Sensor (Thermal Line)



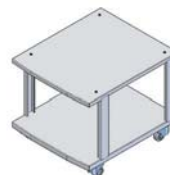
- Graph/Digital mode.
- Thermal-type temperature recorder.
- Independent sensor that are separate from the product.

## Recorder with Sensor (Dot)



- Up to 6 channels supported.
- Set recording range and speed.
- Paper width: 1000mm.
- Independent sensor that are separate from the product.

## Stand with Caster



- Convenient use of small devices.
- Easy to move/fix with casters.

## Electric Socket



- Power supply for AC 230V.
- Includes cover as standard.

# Accessories

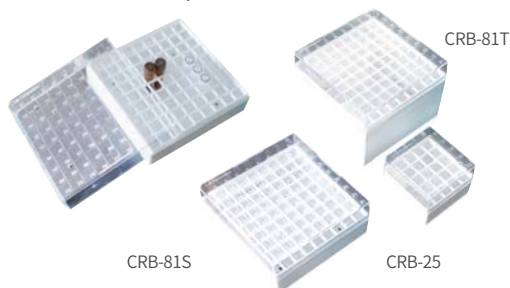
| Model    | Standard   |                      |                  |              | Option             |                         |                  |                |                         |                        |                   |              |
|----------|------------|----------------------|------------------|--------------|--------------------|-------------------------|------------------|----------------|-------------------------|------------------------|-------------------|--------------|
|          | Wire Shelf | Drawer Shelf (Slide) | Recorder (Chart) | Remote Alarm | Wire Shelf (Slide) | Drawer Shelf (Slide)    | Recorder (Chart) | Recorder (Dot) | Recorder (Thermal line) | Electric Socket        | Stand with Caster | Remote Alarm |
| CLG3-70  | AAAE15081  | N/A                  | N/A              | N/A          | AAAE15091          | AAAE15101 <sup>1)</sup> | N/A              | N/A            | AAAE15631               | N/A                    | N/A               | AAAE15511    |
| CLG-150  | AAAE1511   | N/A                  | N/A              | N/A          | AAAE1514           | AAAE1517                | N/A              | AAAE1562       | AAAE1563                | N/A                    | AAAE1542          | AAAE1551     |
| CLG-300  | AAAE1511   | N/A                  | N/A              | N/A          | AAAE1514           | AAAE1517                | AAAE1501         | AAAE1562       | AAAE1563                | AAAE1532 <sup>2)</sup> | N/A               | AAAE1551     |
| CLG-650  | AAAE1512   | N/A                  | N/A              | N/A          | AAAE1515           | AAAE1518                | AAAE1501         | AAAE1562       | AAAE1563                | AAAE1532 <sup>2)</sup> | N/A               | AAAE1551     |
| CLG-850  | AAAE1513   | N/A                  | N/A              | N/A          | AAAE1516           | AAAE1519                | AAAE1501         | AAAE1562       | AAAE1563                | AAAE1532 <sup>2)</sup> | N/A               | AAAE1551     |
| CLG-1400 | AAAE1512   | N/A                  | N/A              | N/A          | AAAE1515           | AAAE1518                | AAAE1501         | AAAE1562       | AAAE1563                | AAAE1532 <sup>2)</sup> | N/A               | AAAE1551     |
| FDG-300  | AAAE1511   | N/A                  | N/A              | N/A          | AAAE1514           | AAAE1517                | AAAE1501         | AAAE1562       | AAAE1563                | N/A                    | N/A               | AAAE1551     |
| FDG-650  | AAAE1512-1 | N/A                  | N/A              | N/A          | AAAE1515-1         | AAAE1518-1              | AAAE1501         | AAAE1562       | AAAE1563                | N/A                    | N/A               | AAAE1551     |
| FCG-150  | AAAE1511   | N/A                  | N/A              | N/A          | AAAE1514           | AAAE1517                | AAAE1501         | AAAE1562       | AAAE1563                | N/A                    | AAAE1542          | AAAE1551     |
| FCG-300  | AAAE1511   | N/A                  | N/A              | N/A          | AAAE1514           | AAAE1517                | AAAE1501         | AAAE1562       | AAAE1563                | N/A                    | N/A               | AAAE1551     |
| FCG-650  | AAAE1512-1 | N/A                  | N/A              | N/A          | AAAE1515-1         | AAAE1518-1              | AAAE1501         | AAAE1562       | AAAE1563                | N/A                    | N/A               | AAAE1551     |
| FMG-150  | AAAE1511   | N/A                  | N/A              | N/A          | AAAE1514           | AAAE1517                | AAAE1501         | AAAE1562       | AAAE1563                | N/A                    | AAAE1542          | AAAE1551     |
| FMG-300  | AAAE1511   | N/A                  | N/A              | N/A          | AAAE1514           | AAAE1517                | AAAE1501         | AAAE1562       | AAAE1563                | N/A                    | N/A               | AAAE1551     |
| FMG-650  | AAAE1512-1 | N/A                  | N/A              | N/A          | AAAE1515-1         | AAAE1518-1              | AAAE1501         | AAAE1562       | AAAE1563                | N/A                    | N/A               | AAAE1551     |
| FHG-150  | AAAE1511   | N/A                  | N/A              | N/A          | AAAE1514           | AAAE1517                | AAAE1501         | AAAE1562       | AAAE1563                | N/A                    | AAAE1542          | AAAE1551     |
| FHG-300  | AAAE1511   | N/A                  | N/A              | N/A          | AAAE1514           | AAAE1517                | AAAE1501         | AAAE1562       | AAAE1563                | N/A                    | N/A               | AAAE1551     |
| FHG-650  | AAAE1512-1 | N/A                  | N/A              | N/A          | AAAE1515-1         | AAAE1518-1              | AAAE1501         | AAAE1562       | AAAE1563                | N/A                    | N/A               | AAAE1551     |
| BSR-3001 | N/A        | AAAE1517             | AAAE1501         | AAAE1551     | N/A                | AAAE1517                | AAAE1501         | N/A            | N/A                     | N/A                    | N/A               | AAAE1551     |
| BSR-6501 | N/A        | AAAE1518             | AAAE1501         | AAAE1551     | N/A                | AAAE1518                | AAAE1501         | N/A            | N/A                     | N/A                    | N/A               | AAAE1551     |
| PSR3-70  | AAAE15081  | N/A                  | N/A              | N/A          | AAAE15091          | AAAE15101 <sup>1)</sup> | N/A              | N/A            | AAAE15631               | N/A                    | N/A               | AAAE15511    |
| PSR-3001 | AAAE1511   | N/A                  | AAAE1501         | AAAE1551     | AAAE1514           | AAAE1517                | AAAE1501         | N/A            | N/A                     | N/A                    | N/A               | AAAE1551     |
| PSR-6501 | AAAE1512   | N/A                  | AAAE1501         | AAAE1551     | AAAE1515           | AAAE1518-1              | AAAE1501         | N/A            | N/A                     | N/A                    | N/A               | AAAE1551     |
| BSF-300  | N/A        | AAAE1517             | AAAE1501         | AAAE1551     | N/A                | AAAE1517                | AAAE1501         | N/A            | N/A                     | N/A                    | N/A               | AAAE1551     |
| BSF-650  | N/A        | AAAE1518             | AAAE1501         | AAAE1551     | N/A                | AAAE1518                | AAAE1501         | N/A            | N/A                     | N/A                    | N/A               | AAAE1551     |

- 1) CLG3-70, PSR-70 offer 3 different drawer type : Digital type (AAAE15101), Key lock type (AAAE15102), Unlocked type (AAAE15103)  
 2) 230V (Korean style). If user want 120V (US style) socket, user need to choose AAAE1532.  
 3) We proved cable port (AAAE1521) only for CLG-300, 650, 850, 1400.

## Related Product

### Cryo Box

- Excellent durability even at ultra-low temperature with stable PC material.
- Easily distinguish samples with numbers on the covers.
- Cover, tray and dividers are separated for easy cleaning.
- Pressurized sterilization possible. (autoclavable)

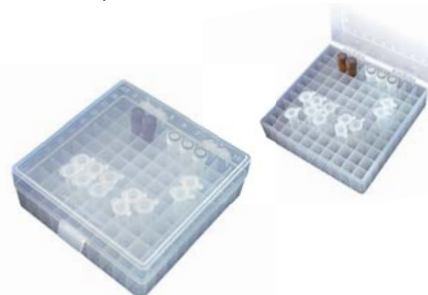


| Model                            | CRB-25                     | CRB-81S                          | CRB-81T                          |
|----------------------------------|----------------------------|----------------------------------|----------------------------------|
| Tube size (ml)                   | 1.2 to 2.0                 | 1.2 to 2.0                       | 5                                |
| Max. Mountable tube              | 25 (5 x 5)                 | 81 (9 x 9)                       | 91 (9 x 9)                       |
| Dimension (W x D x H, mm / inch) | 77 x 77 x 53 / 3 x 3 x 2.1 | 132 x 132 x 54 / 5.2 x 5.2 x 2.1 | 132 x 132 x 96 / 5.2 x 5.2 x 3.8 |
| Cat. No.                         | AAAJ7001                   | AAAJ7002                         | AAAJ7003                         |

※ 5 packs for one set. (each Cat. No.)

### Storage Box

- Excellent chemical resistance due to polypropylene material.
- The circular grooves at the bottom ensure stable mounting of tubes.
- Easy to separate samples with numbers and letters on covers.
- Pressurized sterilization possible. (autoclavable)



| Model                            | SRB-100                          |
|----------------------------------|----------------------------------|
| Tube size (ml)                   | 1.2 to 2.0                       |
| Max. Mountable tube              | 100 (10 x 10)                    |
| Dimension (W x D x H, mm / inch) | 140 x 140 x 53 / 5.5 x 5.5 x 2.1 |
| Cat. No.                         | AAAJ7011                         |

※ 5 packs for one set.

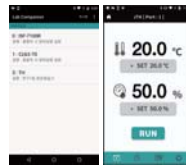
# Accessories for CLG3-70 / PSR3-70

## LC GreenBox

- Real-time monitoring of equipment connected to LC Connected possible through the dedicated mobile application for Lab Companion's.  
(Supported from Android 6.0 Marshmallow version and above. iOS devices to be supported in the future)
- Each lab member can access connected devices for which they have access permission through their personal mobile app.
- One LC GreenBox can communicate with up to four Lab Companion's devices via an RS-232 port and can be expanded via multiple LC GreenBoxes.
- Real-time alarms for events concerning connected equipment.  
(temperature deviation, long-term door opening, power failure, and etc.)



**LC GreenBox**



Real-time monitoring through mobile devices



Connection up to 4 devices



Power failure notification

| Cat. No. | Description | Dimension (W x D x H, mm / inch) |
|----------|-------------|----------------------------------|
| AAAQ1011 | LC GreenBox | 156 x 94 x 34 / 6.1 x 3.7 x 1.3  |

## Battery

- Activate/deactivate battery via settings.
- When the setting of battery is ON, a warning alarm occurs if the power is turned off during operation.
- The recorder also records power failure events.

| Cat. No.  | Description |
|-----------|-------------|
| AAAE15301 | Battery     |



Lab Essentials



# Lab Essentials



Made by  
**JEIO TECH**

## Disposable Beaker

### ✓ Economical beaker with minimal price burden

- Domestic products made by mold designed and manufactured by Lab Companion's, minimizing the cost burden.

### ✓ Structure that can allow for accurate pouring without spillage

- The unique triangular spout structure allows even highly viscous solutions to be poured precisely without any dripping.

### ✓ Extended use area and excellent material

- Flat bottom shape for use on a magnetic agitator
- Convenient to use as it does not bend easily even when grasped in the hand.
- Polypropylene (PP) material with excellent chemical resistance.
- Autoclavable, possible to use up to 121°C.
- Four types of composition: 50 ml, 100 ml, 250 ml, and 500 ml.

### ✓ Convenient design for actual users

- Stackable design that can store stacked beakers of the same capacity and save storage space.
- Easy to remove overlapping beakers.
- Semi-transparent material makes it easy to check the solution state from the side.
- Graduation are engraved and do not come off even after long periods of use.



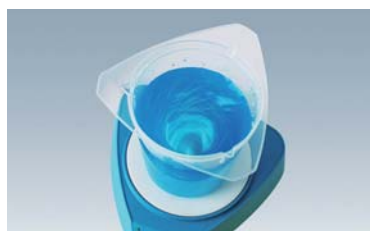
**Disposable Beaker**

with Magnetic Stirrer (MS-T)



#### Structure allows for pouring without spillage

The triangular spout allows for dripless pouring of even highly viscous solutions.



#### Can be used on magnetic agitator

Flat-bottom structure allows for use on a magnetic agitator by placing a magnetic bar.



#### Structure allowing for stacked storage

It is possible to store beakers of the same capacity by stacking and it is designed to allow the beakers to be removed easily.

| Cat. No.     | Model                     | Capacity (ml) | Graduation (ml) | Dimension (Ø x H, mm/inch) |
|--------------|---------------------------|---------------|-----------------|----------------------------|
| 00PER0000023 | Disposable beaker, 50 ml  | 50            | 5               | 45 x 55 / 1.8 x 2.2        |
| 00PER0000024 | Disposable beaker, 100 ml | 100           | 5               | 56 x 69 / 2.2 x 2.7        |
| 00PER0000025 | Disposable beaker, 250 ml | 250           | 10              | 77 x 92 / 3.0 x 3.6        |
| 00PER0000026 | Disposable beaker, 500 ml | 500           | 20              | 96 x 116 / 3.8 x 4.6       |



## Plastic Griffin Beaker (Transparent / Translucent)

Made by  
**JeioTech**

### ▮ Selectable materials according to purpose of use

- Choice of two series: polymethylpentene (PMP) transparent material and polypropylene (PP) translucent material with excellent chemical resistance.
- PMP: 135°C / PP: 121°C Autoclavable.

### ▮ Structure that can allow for accurate pouring without spillage

- Pointed spout allows for dripless pouring of even highly viscous solutions.

### ▮ Extended use area and excellent material

- Flat bottom shape for use on a magnetic agitator.
- Structure that does not become easily deformed.
- Convenient to use as it does not bend easily even when grasped in the hand.
- Plastic griffin beaker conforming to ISO 7056 standards.
- Repetitive use possible with excellent chemical resistance.
- Five different capacity configurations from 100 ml to 2000 ml.

### ▮ Convenient design for actual users

- Stackable design that can store stacked beakers of the same capacity and save storage space.
- Easy to remove stacked beakers.
- Graduation are engraved and do not come off even after long periods of use.



Plastic Griffin Beaker (PMP)



PMP griffin beaker (transparent)



PP griffin beaker (translucent)



#### Structure allows for pouring without spillage

Pointed spout allows for dripless pouring of even highly viscous solutions.



#### Engraved graduation type

Graduation are engraved and do not come off even after long periods of use.



#### Structure allowing for stacked storage

It is possible to store beakers of the same capacity by stacking and it is designed to allow the beakers to be removed easily.

#### PMP Griffin Beaker (transparent)

| Cat. No.     | Capacity (ml) | Graduation (ml) | Dimension (Ø x H, mm/inch) |
|--------------|---------------|-----------------|----------------------------|
| 00PER0000032 | 100           | 5               | 61 x 72 / 2.4 x 2.8        |
| 00PER0000033 | 250           | 10              | 81 x 95 / 3.2 x 3.7        |
| 00PER0000034 | 500           | 20              | 101 x 119 / 3.9 x 4.7      |
| 00PER0000035 | 1000          | 50              | 125 x 148 / 4.9 x 5.8      |
| 00PER0000036 | 2000          | 100             | 157 x 186 / 6.2 x 7.3      |

#### PP Griffin Beaker (translucent)

| Cat. No.     | Capacity (ml) | Graduation (ml) | Dimension (Ø x H, mm/inch) |
|--------------|---------------|-----------------|----------------------------|
| 00PER0000027 | 100           | 5               | 61x72 / 2.4x2.8            |
| 00PER0000028 | 250           | 10              | 81x95 / 3.2x3.7            |
| 00PER0000029 | 500           | 20              | 101x119 / 3.9x4.7          |
| 00PER0000030 | 1000          | 50              | 125x148 / 4.9x5.8          |
| 00PER0000031 | 2000          | 100             | 157x186 / 6.2x7.3          |

# Liquid Handling

## Handle Beaker (Transparent / Translucent)

Made by  
JEIOTECH

### Beaker with a convenient handle

- Handles are convenient for handling, and large capacities can be handled with just one hand.
- The inside of the handle is rounded to minimize pain of hand when holding.

### Structure that can allow for accurate pouring without spillage

- Pointed spout allows for dripless pouring of even highly viscous solutions.

### Extended use area and excellent material

- Flat bottom shape for use on a magnetic agitator.
- Structure where beaker wall and floor thickness are both constant and do not become easily deformed.
- Plastic beaker conforming to ISO 7056 standards.
- Repetitive use possible with excellent chemical resistance.
- 500ml, 1000ml, and 2000ml capacity available.

### Convenient design for actual users

- Stackable design that can store stacked beakers of the same capacity and save storage space.
- Easy to remove stacked beakers.
- Graduation are engraved and do not come off even after long periods of use.



Handle Beaker (PMP)



#### PMP Beaker (transparent)

| Cat. No.     | Capacity (ml) | Graduation (ml) | Dimension (W x Ø x H, mm/inch)    |
|--------------|---------------|-----------------|-----------------------------------|
| 00PER0000042 | 500           | 10              | 148 x 95 x 134 / 5.8 x 3.7 x 5.3  |
| 00PER0000039 | 1000          | 20              | 183 x 121 x 166 / 7.2 x 4.8 x 6.5 |
| 00PER0000040 | 2000          | 50              | 221 x 149 x 212 / 8.7 x 5.9 x 8.3 |

#### PP Beaker (translucent)

| Cat. No.     | Capacity (ml) | Graduation (ml) | Dimension (W x Ø x H, mm/inch)    |
|--------------|---------------|-----------------|-----------------------------------|
| 00PER0000041 | 500           | 10              | 148 x 95 x 134 / 5.8 x 3.7 x 5.3  |
| 00PER0000037 | 1000          | 20              | 183 x 121 x 166 / 7.2 x 4.8 x 6.5 |
| 00PER0000038 | 2000          | 50              | 221 x 149 x 212 / 8.7 x 5.9 x 8.3 |

## Wash Bottle

Made by  
JEIOTECH

### Wash Bottle Common Features

- Easily sprayed solution even when lightly pressed for convenience.
- Made of excellent chemical-resistant material. (Bottle: LDPE, Cap & Tube: PP)
- Easy to use with wide hole for supplying liquid.
- Double-helical structure increases tightness of both container and cap.
- Replaceable nozzle tip for effective maintenance.
- Engraved markings for convenient capacity checking
- Built-in safety labels for identification provided as standard.

### Automatic Gas-vent Type

- Vapor pressure self-discharge structure inside the container eliminates the inconvenience of liquid flowing out.



| Model         | WB-N25      | WB-N50   | WB-G25                         | WB-G50   |
|---------------|-------------|----------|--------------------------------|----------|
| Description   | Wash Bottle |          | Automatic Gas-Vent Wash Bottle |          |
| Capacity (ml) | 250         | 500      | 250                            | 500      |
| Cat. No.      | AAAM2501    | AAAM5001 | AAAM2511                       | AAAM5011 |

**Distilled water container (bottle with lower spigot), HDPE material**

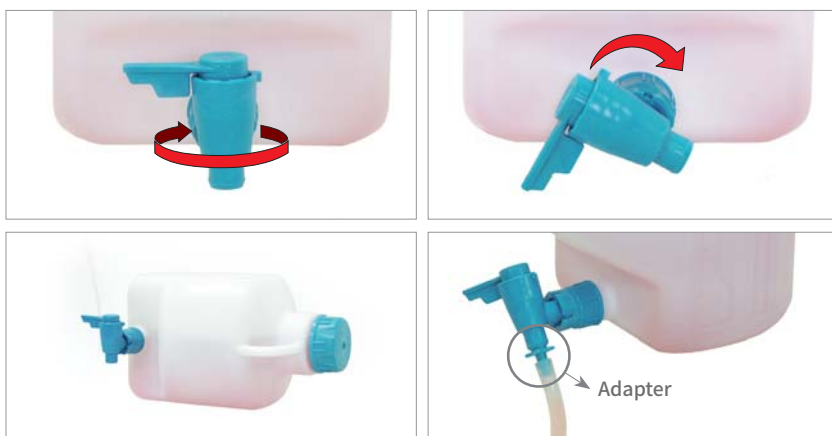
- Excellent chemical resistance, suitable for storage and dispensing of various solutions.
- Leak proof No leakage even when using for a long time due to spigot.
- Adjustable dispensing capacity according to the rotation angle of the spigot handle.
- The spigot is rotatable, and uses a tubing connection with an adapter.
- Adapter can use Tubing ID 6.35 - 7.94mm.
- The cap is made of silicone gasket, so it has excellent sealing.
- Easy to check the capacity with front-side scale.
- Space-efficient design for solution storage.



Round Type



Rectangular Type



| Model                          | DBR-10                              | DBR-20                               | DBC-05                            | DBC-10                            |
|--------------------------------|-------------------------------------|--------------------------------------|-----------------------------------|-----------------------------------|
| Description                    | Round Type                          |                                      | Rectangular Type                  |                                   |
| Volume (L)                     | 10 / 2.64                           | 20 / 5.28                            | 5 / 1.32                          | 10 / 2.64                         |
| Dimension (W x D x H, mm/inch) | 225 x 277 x 399 / 8.9 x 10.9 x 15.7 | 260 x 317 x 539 / 10.2 x 12.5 x 21.2 | 114 x 387 x 305 / 4.5 x 15.2 x 12 | 204 x 387 x 317 / 8 x 15.2 x 12.5 |
| Cat. No.                       | AAAJ3021                            | AAAJ3031                             | AAAJ3111                          | AAAJ3121                          |

# Storage

## Storage Box

- Excellent chemical resistance due to polypropylene material.
- Easy to separate samples with numbers and letters on covers.
- Pressurized sterilization possible. (autoclavable)
- Temperature range of use (°C / °F): -20 ~ 121 / -4 ~ 249.8



| Model                          | SRB-100                          |
|--------------------------------|----------------------------------|
| Tube size (ml)                 | 1.2 to 2.0                       |
| Max. Mountable tube            | 100 (10 x 10)                    |
| Dimension (W x D x H, mm/inch) | 140 x 140 x 53 / 5.5 x 5.5 x 2.1 |
| Cat. No.                       | AAAJ7011                         |

※ 5 packs for one set.

## Centrifuge Tube Rack, PC

- Excellent chemical resistance due to polycarbonate material
- 30ml centrifuge tube rack
- Pressurized sterilization possible. (autoclavable)



|                                |                                  |
|--------------------------------|----------------------------------|
| Tube size (ml)                 | 30                               |
| Max. mountable tube            | 6                                |
| Dimension (W x D x H, mm/inch) | 263 x 55 x 55 / 10.4 x 2.2 x 2.2 |
| Cat. No.                       | AAAJ2111                         |

## Conical Tube Rack

- Possible to use independently or in microplate shaker. (except for 50ml conical tube rack, 6 holes)



| Model                          | 15 ml Conical Tube Rack              | 50 ml Conical Tube Rack              |                                  |
|--------------------------------|--------------------------------------|--------------------------------------|----------------------------------|
| Material                       | ABS (Acrylonitrile-butadienestyrene) | ABS (Acrylonitrile-butadienestyrene) | PC (Polycarbonate)               |
| Dimension (W x D x H, mm/inch) | 269 x 85 x 72 / 10.6 x 3.3 x 2.8     | 269 x 85 x 72 / 10.6 x 3.3 x 2.8     | 263 x 55 x 55 / 10.4 x 2.2 x 2.2 |
| Max. mountable tube            | 30 (3 x 10)                          | 12 (2 x 6)                           | 6                                |
| Autoclavable                   | -                                    | -                                    | 0                                |
| Cat. No.                       | CPS0011JT                            | CPS0012JT                            | AAAJ2211                         |

## Micro Tube Rack, PC

More detail page 117

- Excellent chemical resistance due to polycarbonate material.
- Different size tubes available on both sides. (1.5ml/2.0ml micro tube on one side and 0.2ml/0.5ml micro tube on the other side)
- Available for independent use and for use in microplate shaker.
- Pressurized sterilization possible. (autoclavable)



| Model                          | 1.5 / 2.0 ml Micro Tube Rack<br>0.2 / 0.5 ml Micro Tube Rack |
|--------------------------------|--|
| Dimension (W x D x H, mm/inch) | 269 x 90 x 50 / 10.6 x 3.5 x 2.0 (Including cover)           |
| Max. mountable tube            | 80 (5 x 16), each side                                       |
| Cat. No.                       | AAAJ2311   |

## Cryo Box

Made by  
JeioTech

- Excellent durability even at ultra-low temperature with stable PC material.
- Easily distinguish samples with numbers on the covers.
- Cover, tray and dividers are separated for easy cleaning. (Except for CRB-25)
- Pressurized sterilization possible. (autoclavable)
- Temperature range of use (°C / °F) :-196 ~ 121 / -320.8 ~ 249.8



| Model                          | CRB-25                         | CRB-81S                          | CRB-81T                          |
|--------------------------------|--------------------------------|----------------------------------|----------------------------------|
| Tube size (ml)                 | 1.2 to 2.0                     | 1.2 to 2.0                       | 5                                |
| Max. Mountable tube            | 25 (5 x 5)                     | 81 (9 x 9)                       | 91 (9 x 9)                       |
| Dimension (W x D x H, mm/inch) | 77 x 77 x 53 / 3.0 x 3.0 x 2.1 | 132 x 132 x 54 / 5.2 x 5.2 x 2.1 | 132 x 132 x 96 / 5.2 x 5.2 x 3.8 |
| Cat. No.                       | AAAJ7001                       | AAAJ7002                         | AAAJ7003                         |

※ 5 packs for one set. (each Cat. No.)

## Safety Waste Disposal System

More detail page 208

Made by  
JeioTech

### Easy to collect and store various chemicals and waste liquids generated in the lab

- > Structure minimizes vapor emission**  
 Hinge-type lid minimizes the discharge of vapors from the waste solution into the lab.
- > Exclusive carbon filter (option)**  
 Removes bad odors and harmful gas. (carbon filter can be replaced easily without removing existing attachment without the use of any tools)
- > Safe anti-static function (SF-14C, WT-20C model)**  
 Prevention of explosion due to static electricity by using special plastic material with anti-static performance, and grounding cable is provided as standard. (completed anti-static performance test by KEPCO)
- > Water level notification function (SF model)**  
 Risk level displayed on the safety funnel when at 17.6L (80%) or 15.4L (70%) based on a 22L waste liquid container.



**SF-14P & WT-20P**  
with Carbon Filter (option)



**SF-14C & WT-20C**  
with Carbon Filter (option)



### Accessories

| Description   | Dimension (ø x H, mm / inch) | Cat. No. |
|---------------|------------------------------|----------|
| Carbon Filter | 76 x 150 / 3.0 x 5.9         | AAAM6051 |

| Model                            | SF-14C   | SF-14P   | WT-20C                              | WT-20P                                 |
|----------------------------------|--|--|-------------------------------------|--|
| Description                      | Anti-static safety funnel for collection of waste liquid | General use safety funnel for collection of waste liquid | Anti-static liquid waste container  | General-purpose liquid waste container |
| Dimension (W x D x H, mm / inch) | 160 x 142 x 270 / 6.3 x 5.6 x 10.6                       | 160 x 142 x 270 / 6.3 x 5.6 x 10.6                       | 220 x 300 x 380 / 8.7 x 11.8 x 15.0 | 220 x 300 x 380 / 8.7 x 11.8 x 15.0    |
| Inlet (ø, mm / inch)             | 135 / 5.3  | 135 / 5.3  | 45 / 1.8                            | 45 / 1.8                               |
| Lid size (ø, mm / inch)          | 142 / 5.6  | 142 / 5.6  | 65 / 2.6                            | 65 / 2.6                               |
| Volume (L / cu ft)               | 1 / 0.04   | 1 / 0.04   | 22 / 0.78                           | 22 / 0.78                              |
| Cat. No.                         | AAAM6001   | AAAM6002   | AAAM6011                            | AAAM6012                               |

# Storage

## Ice Pan

Made by JEIO TECH

- Bucket made of foamed urethane material with excellent thermal insulation.
- Ice, dry ice, liquid nitrogen, etc. can be used for low temperature maintenance and storage of samples.
- Operating temperature range: -196°C - 80°C
- Safe movement with top rim structure.



| Model                           | IBS-310                             |
|---------------------------------|-------------------------------------|
| Exterior (W x D x H, mm / inch) | 347 x 257 x 132 / 13.7 x 10.1 x 5.2 |
| Interior (W x D x H, mm / inch) | 271 x 181 x 132 / 10.7 x 7.1 x 5.2  |
| Cat. No.                        | AAAJ2801                            |

## On-Ice Rack

Made by JEIO TECH

- Block made of aluminum with excellent thermal conductivity.
- Keeps the temperature of the sample constant when using on ice.
- Excellent thermal conductivity with aluminum block.



| Model                            | On-Ice Rack                           | On-Ice Rack (96W)                      |
|----------------------------------|---------------------------------------|--|
| Dimension (W x D x H, mm / inch) | 157 x 152 x 21                        | 157 x 152 x 20                         |
| Max. mountable tube              | 1.5 ml tube 50ea,<br>0.2 ml tube 64ea | 1.5 ml tube 30ea,<br>96 well plate 1ea |
| Cat. No.                         | AAAJ2011                              | AAAJ2021                               |

## Flask Support

Made by JEIO TECH

- Safe storage and handling of round flasks.
- Convenient handling of various shapes and simultaneous handling of several things.
- Excellent chemical resistance and heat resistance. (-30 to 120°C)
- Side handles for easy movement.



Various types of flasks can be used for various purposes simultaneous storage



Convenient movement with side handles

Easy to distinguish samples by name tags and numbers



| Model                          | FT 010 13                               | FT 010 34                                | FT 025 12                                | FT 025 23                                | FT 050 12                                | FT 100 12                               | FT 200 12                               |
|--------------------------------|---|--|--|--|--|---|---|
| Capacity (ml)                  | 100                                     | 100                                      | 250                                      | 250                                      | 500                                      | 1000                                    | 2000                                    |
| Row x column                   | 1 x 3                                   | 3 x 4                                    | 1 x 2                                    | 2 x 3                                    | 1 x 2                                    | 1 x 2                                   | 1 x 2                                   |
| Hole (dia. x H, mm/inch)       | 70 x 91<br>/ 2.76 x 3.58                | 70 x 91<br>/ 2.76 x 3.58                 | 98 x 122<br>/ 3.86 x 4.8                 | 98 x 122<br>/ 3.86 x 4.8                 | 121 x 128<br>/ 4.76 x 5.04               | 148 x 156<br>/ 5.83 x 6.14              | 183 x 188<br>/ 7.2 x 7.4                |
| Dimension (W x D x H, mm/inch) | 310 x 100 x 100<br>/ 12.2 x 3.94 x 3.94 | 384 x 265 x 98<br>/ 15.12 x 10.43 x 3.86 | 280 x 125 x 130<br>/ 11.02 x 4.92 x 5.12 | 389 x 239 x 130<br>/ 15.31 x 9.41 x 5.12 | 360 x 146 x 135<br>/ 14.17 x 5.75 x 5.31 | 415 x 192 x 165<br>/ 16.34 x 7.56 x 6.5 | 503 x 223 x 199<br>/ 19.8 x 8.78 x 7.83 |
| Cat. No.                       | AAA23706                                | AAA23701                                 | AAA23707                                 | AAA23702                                 | AAA23703                                 | AAA23704                                | AAA23705                                |

## Hood

More detail page 188

Made by  
JeioTech



PMH-720



POH-720

with EM-33 (option)

### Fume Hood, Small type

- Excellent chemical resistance due to polyethylene material.
- Top hole that can be connected to the exhaust system.
- The front and back side are made by wide transparent window (PC), useful for simulation and observing in school. (only POH models)

| Model     |                             | POH-720                              | PMH-720                              |
|-----------|-----------------------------|--------------------------------------|--------------------------------------|
| Material  | Body                        | Polyethylene                         | Polyethylene                         |
|           | Observation window          | O                                    | X                                    |
| Dimension | Exterior (mm / inch)        | 720 x 472 x 535 / 28.3 x 18.6 x 21.1 | 720 x 472 x 535 / 28.3 x 18.6 x 21.1 |
|           | Duct hole (O.D., mm / inch) | 150 / 6                              | 150 / 6                              |
|           | Net weight (kg / lbs)       | 9.7 / 21.4                           | 9.7 / 21.4                           |
| Cat. No.  |                             | AAAB5021                             | AAAB5011                             |

## Desiccator

More detail page 230

Made by  
JeioTech

### Vacuum Desiccator, Cubic

- Max. 1 Torr vacuum maintained for 72 hours.
- Strong and transparent polycarbonate material.
- Includes vacuum gauge as standard.
- Height-adjustable shelves.
- Multi-level stacking structure for space efficiency.



### Desiccator

- Hygrometer included.
- Transparent PC material makes for convenient internal observation.
- Both shelves and drawers provided.
- Includes desiccant tray as standard.
- UV blocking model provided for light-sensitive samples.



| Cat. No. | Capacity (L/cu ft) |
|----------|--------------------|
| AAAD4001 | 11 / 0.39          |
| AAAD4021 | 23 / 0.81          |
| AAAD4011 | 35 / 1.24          |
| AAAD4031 | 45 / 1.59          |

| Cat. No.                 | Capacity (L / cu ft) |
|--------------------------|----------------------|
| AAAD5011 (Clear)         | 35 / 1.24            |
| AAAD5111 (UV protection) | 35 / 1.24            |
| AAAD5021 (Clear)         | 50 / 1.77            |
| AAAD5121 (UV protection) | 50 / 1.77            |

# Connection

## Tubing Connector

Made by  
**JeioTech**

- Excellent chemical resistance due to polypropylene material.
- 121°C, Autoclavable.
- Structure prevents tubes from dropping, adding convenience.
- T-shape, Y-shape, Cross Type, Straight Type.
- Various sizes from 3.2 mm to 12.7 mm.



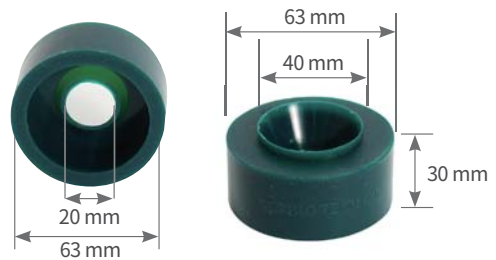
| O.D. (mm) | O.D. (inch) | Cat. No.     |              |              |              |
|-----------|-------------|--------------|--------------|--------------|--------------|
|           |             | T-shape      | Y-shape      | Cross        | Straight     |
| 3.2       | 1/8         | 00CJA0009042 | 00CJA0009057 | 00CJA0009048 | N/A          |
| 4.0       | 5/32        | 00CJA0009041 | 00CJA0009058 | 00CJA0009047 | N/A          |
| 4.7       | 3/16        | 00CJA0009044 | 00CJA0009046 | 00CJA0009050 | 00CJA0009051 |
| 6.0       | 1/4         | 00CJA0009043 | 00CJA0009045 | 00CJA0009049 | 00CJA0009054 |
| 8.0       | 5/16        | 00CJA0009055 | 00CJA0009059 | 00CJA0009061 | N/A          |
| 9.5       | 3/8         | 00CJA0009036 | 00CJA0009037 | 00CJA0009062 | 00CJA0009052 |
| 12.7      | 1/2         | 00CJA0009056 | 00CJA0009060 | 00CJA0009063 | 00CJA0009053 |

## Filter Adapter

Made by  
**JeioTech**

### Filter Adapter

- Can be used between the filtering funnel and the filtering flask during vacuum filtration.
- Excellent sealing and adhesion with silicone material.
- Various uses for flasks as they come in various sizes.



| Cat. No. | Description                |
|----------|----------------------------|
| AAA72200 | Filter Adapter (5ea / pk)  |
| AAA72210 | Filter Adapter (10ea / pk) |



## Clamp

Made by  
**JeioTech**

### Clamp Holder

- Aluminum die-casting and plastic materials allow for lightweight and rigid fixation.
- C-20 and C-10 are suitable for overhead stirrers.
- C-10, C-7 and C-5 models are suitable for use with hotplates and magnetic stirrers.
- Applicable to 5/8" diameter support rod.



C-20



C-10



C-7



C-5

| Model       | C-20     | C-10     | C-7      | C-5      |
|-------------|----------|----------|----------|----------|
| Max. Ø (mm) | 27       | 17       | 12       | 12       |
| Cat. No.    | AAA37511 | AAA37512 | AAA37513 | AAA37514 |

## Utility Clamp



Utility Clamp 3 Prong



Utility Clamp Plat



3 Prong Clamp



2 Prong Clamp



Fixing Clamp

| Cat. No.   | Description                | Cat. No.   | Description                |
|------------|----------------------------|------------|----------------------------|
| BEA1000001 | Utility Clamp 3 Prong      | BEA1000013 | 3 Prong Clamp (20 mm grip) |
| BEA1000002 | Utility Clamp Plat (2P)    | BEA1000014 | 2 Prong Clamp (60 mm grip) |
| BEA1000011 | 3 Prong Clamp (80 mm grip) | BEA0570181 | Fixing Clamp               |
| BEA1000012 | 3 Prong Clamp (60 mm grip) |            |                            |



# Environmental Test Equipment



# Environmental Test Equipment



# Temperature & Humidity Chamber



Satisfaction with the requirements of European regulations and guidelines.



Recognized as an excellent design product by the ministry of commerce, industry, and energy.



Conventional over temperature protection, a kind of backup device against electronic over temperature protection failure.



User safety by blocking potentially harmful UV light.



It memorizes the state of power failure and operates automatically when power is restored.



Real-time equipment monitoring and control system using mobile app.



More precise temperature control through temperature calibration.



Control of temperature / humidity / rpm / time, etc. through dedicated program.



Indicator to ascertain water level.



2 year warranty Free A/S.



Eco-friendly product that has passed environmental impact assessment tests.



Electronic over temperature protection system.



PC communication via RS-232 / RS-485 / USB port.



Alarm if the water is low level.

## General Application

Temperature and humidity chamber: Test for reliability, durability, climatic, freezing resistance, quality assurance, thermal endurance.

Pharmaceuticals stability test chamber: Stability test in accordance with ICH Guideline Q1A (R2) and Q1B (Option 2)

|                        | Description   | Temperature Range (°C / °F) | Humidity Range (%RH) | Volume (L / cu ft)   | Model  | Page |
|------------------------|---|-----------------------------|----------------------|--|--------|------|
| Small type             | <b>Tabletop type</b> <ul style="list-style-type: none"> <li>• Compact design Temp. &amp; Humid. chambers</li> <li>• Continuous innovative model</li> </ul>  | -35 to 150 / -31 to 302     | 20 ~ 95              | 25, 65, 100 / 0.9, 2.3, 3.5  | TH3-KE | 272  |
|                        |   | -20 to 150 / -4 to 302      | 20 ~ 95              | 25, 65, 100 / 0.9, 2.3, 3.5  | TH3-ME | 272  |
|                        |   | 0 to 120 / 32 to 248        | 30 ~ 95              | 25, 65, 100 / 0.9, 2.3, 3.5  | TH3-PE | 272  |
| Medium-large size type | <b>Ultra-low temperature type (-70°C)</b> <ul style="list-style-type: none"> <li>• Wide control range for temperature and humidity</li> <li>• Differentiated structural mechanisms</li> </ul>   | -70 to 150 / -94 to 302     | 25 ~ 95              | 189, 302, 408 / 6.7, 10.7, 14.4                                    | TH-KH  | 276  |
|                        | <b>Low temperature type (-40°C)</b> <ul style="list-style-type: none"> <li>• Proven reliability and reproducibility</li> <li>• Optimized control system</li> </ul>  | -35 to 150 / -31 to 302     | 25 ~ 95              | 189, 302, 408, 800, 1000, 1450 / 6.7, 10.7, 14.4, 28.3, 35.3, 57.1 | TH-G   | 276  |
|                        | <b>Low temperature and low humidity</b> <ul style="list-style-type: none"> <li>• Stable control in low temperature and humidity</li> <li>• Includes top-class safety features</li> </ul>  | -35 to 150 / -31 to 302     | 15 ~ 95              | 189, 302, 408 / 6.7, 10.7, 14.4                                    | TH-I   | 276  |
|                        | <b>General type</b> <ul style="list-style-type: none"> <li>• Stable temperature and humidity control for even during long-term continuous use</li> </ul>  | -5 to 100 / 23 to 212       | 10 ~ 95              | 180, 314, 419, 770, 997, 1540 / 6.4, 11.1, 14.8, 27.2, 35.2, 54.4  | TH-TG  | 282  |
|                        | <b>Dual chamber</b> <ul style="list-style-type: none"> <li>• Space-efficient with two chambers.</li> <li>• Independent temperature and humidity control of each chamber</li> </ul>  | -5 to 100 / 23 to 212       | 20 ~ 90              | 150, 288, 384 (x 2 chamber) / 5.3, 10.2, 13.6 (x 2 chamber)        | TH-DG  | 286  |
|                        | <b>Basic type</b> <ul style="list-style-type: none"> <li>• Dedicated controller with enhanced convenience</li> <li>• Improved water supply lines</li> </ul>   | 0 to 90 / 32 to 194         | 35 ~ 85              | 201, 398 / 7.1, 14.1   | TH3-E  | 290  |
|                        | <b>Pharmaceuticals stability test</b> <ul style="list-style-type: none"> <li>• ICH Q1A (R2), Q1B (Option 2)</li> <li>• Dedicated lamp control system</li> </ul>   | -5 to 85 / 23 to 185        | 20 ~ 85              | 300, 760 / 10.6, 26.8  | TH-ICH | 293  |
| Room chamber type      | <b>Walk-in</b> <ul style="list-style-type: none"> <li>• Optimized temperature and humidity distribution with large room size walk-in chamber</li> <li>• Easy to use by optimizing the position of the control part according to the installation space and user requirements</li> </ul> |                             |                      |  |        | 298  |
| Custom type            | <b>Customized</b> <ul style="list-style-type: none"> <li>• Design and manufacture the customized Temp. &amp; Humid. Chamber optimized by user requirements</li> <li>• Optimal customized equipment provided based on advanced technology and accumulated experience</li> </ul>          |                             |                      |  |        | 299  |

※ The contents of the above and the contents of this catalog may differ depending on the specific model and conditions of use. For the information about the features and specifications that applying to each models, please check the information on the corresponding page of each models.

# Temperature & Humidity Chamber



## Temperature & Humidity Chamber

### Proven reliability and reproducibility Continuous innovative model

- > **Stable temperature and humidity distribution**  
Specialized internal circulation for fan/motor system structure.  
Provides proven reproducibility and high reliability.
- > **Innovative external humidifier**  
Stable humidity control and maintains internal cleanliness with differentiated external humidification system.
- > **Complete chamber structure**  
Includes double-packing door.  
Stable temperature control with excellent insulation and sealing.
- > **Minimal water consumption**  
Minimized refilling of water even for long-term high-humidity tests.  
Efficient water supply and recirculation system.

### Powerful & Useful Control Optimized precision control

- > **Intuitive operation with color touch**  
Easy to understand operation of equipment and operation status with 5.6 inch Color Touch display controller.
- > **Powerful program operation**  
Provides diverse program operation environment with a maximum of 120 patterns and 1200 segments.
- > **Sophisticated custom control**  
PID zone subdivided into 6 zones for more precise control stability.
- > **Multi-functional dedicated software**  
Up to 32 devices can be controlled at same time.  
Device operation and data processing function supported.



Ease of check the test status with LED display showing the operation condition.



Electronic over temperature shutdown system.



Controller for temperature and humidity control. (TH3-model)



## Maximized usability with simple and useful functions

### > Ease of check the test status

Convenient internal observation with LED lamp and looking glass window.  
Figures out the operation state through displaying LED color even a long distance.

### > Door lock with key lock

Door structure having well-sealed.  
Included Key lock features as standard.

### > Cable port provided as standard

50 mm diameter cable port and silicone plug are provided as standard for convenient testing.

### > Convenient moving and installation

Easy to move and install with casters.

## More convenient and safe structure applied the highest grade safety system

### > Electronic over temperature shutdown system

Independent precision temperature sensor and controller.  
Provides more secure and reliable over temperature shutdown.

### > General-type over temperature shutdown system

Backup device for electronic system failure.  
Implementation of over-temperature shutdown even for electronic errors.

### > Self-protection system

Protection system as like water tank shortage, door open warning, etc.  
Over-current and short circuit breaking device.

### > Protection features for refrigeration system

Protection system for overload and over temperature on refrigerator.  
Stops automatically in case refrigerant pressure (high/low pressure) is abnormal.

※ Some of the above contents are limited to specific models.



Tempered glass window with wire heater and LED lamp.



Door handle and locking device.



Ø50mm cable port and silicone plug included as standard.

# Temperature & Humidity Chamber

## Tabletop type

More convenience small type Temp. & Humid chamber with new advanced controller



**TH3-ME**

with Wire Shelves 2ea,  $\Phi$ 50 Cable Port (standard), Stand (option)



### Optimized Model Configuration

- 3 series (KE, ME, PE) according to temperature and humidity control range.  
TH3-KE; -35 - 150°C (20~95% RH)  
TH3-ME; -20 - 150°C (20~95% RH)  
TH3-PE; 0 - 120°C (30~95% RH)
- Standard type Temp. & Humid chamber for selecting the optimized model according to test conditions.
- Dedicated stand for convenient use and moving. (option)
- Recorder for maintaining test records. (option)

### Structural Functional Features

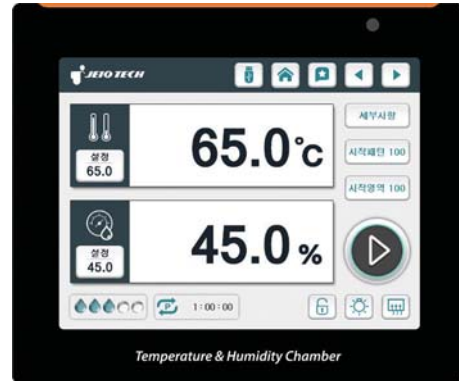
- Proven reproducibility and reliability with structural design optimized for miniaturization.
- Compact design for excellent space saving.
- Stable humidity control ability with applying differentiated external humidification system and convenient maintenance for cleaning testing space.
- Excellent thermal insulation and sealing to ensure stable temperature and humidity reproducibility even for repeated test use.
- The door part has a double sealing structure and excellent airtightness.





## Use Convenience Features

- Convenient operation with 5.6 inch color touch display controller.
- Possible to check the operation status with graphs.
- Water level check function enables water replenishment at the right time.
- Water inlet is easy to use with easy cap.
- Efficient water supply and recirculation system minimizes water refilling even for long-term high-humidity tests.
- Operation and status monitoring from the front of the chamber.
- Easy observation of samples with tempered glass door with built in heating wire and LED lamp.
- By displaying the operation status of the device with LED colors, convenient to identify chambers status from a far.
- The cable port and silicone plug included as standard make it convenient to connect external equipment.
- Easy to clean as it is easy to remove refrigerator condenser grill, making it convenient to maintain efficiency of refrigeration.



Color touch display controller (5.6 inches)



Indicator LED of operation condition

## Multifunction Control System

- Storage and documentation of programs.
- Save program information and back up the set values.
- RS-232 port (default) and RS-485 port (option) supported.
- Control and data processing by connecting up to 32 devices to PC at same time via RS-485 port.
- Reliable control with temperature/humidity auto-tuning and temperature calibration.
- PID zone subdivided into 9 zones for more precise control stability.
- Monitor and control via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)
- Convenient checking with useful graph display.
- Save data as excel and text files.



Tempered glass window with wire heater and LED lamp

| Description                         | No.            |
|-------------------------------------|----------------|
| Pattern                             | 100            |
| Repeat time                         | 999            |
| Part repeat time                    | 255            |
| Max. segments / pattern             | 100            |
| Available max. segments             | 2000           |
| Programmable process time / segment | 99 hr. 59 min. |

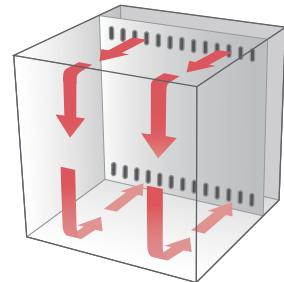
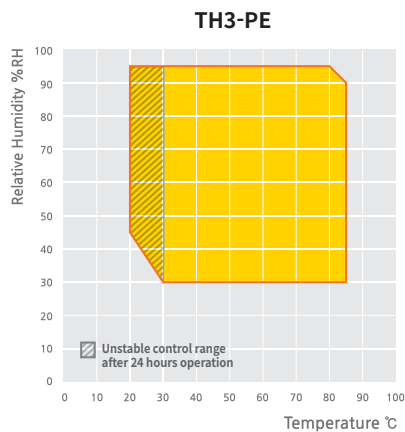
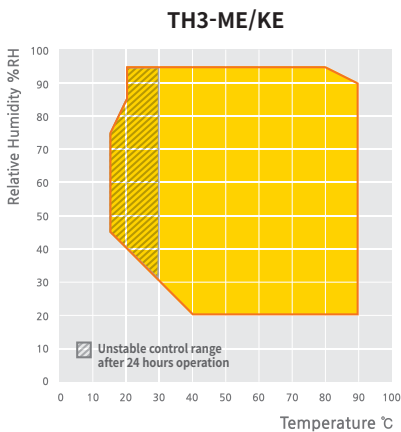
\* It is possible to set 100 segments per pattern, but the maximum number of segments is not 10,000 (100 pattern x 100 segment) but 2,000.



Remote monitoring and control via Lab Companion's app

## ▮ Outstanding Safety

- Electronic over temperature shutdown system.  
(advanced over temperature (A-OT) limiter)  
Independent precision temperature sensor and controller for safer and more accurate over temperature shutdown.
- General-type over power shutdown system.  
(B-OT, backup over temperature limiter)  
A backup device for electronic system failure, mechanically preventing over temperature even when it occurs electronic errors.
- Ensures that the surface temperature is kept below 60°C.
- Low and empty water level alarm and automatic shut off.
- Door open warning and automatic shut off.
- Overcurrent and short circuit protection of device.
- Fuse installed for each heater for safety.
- Auto stop when operating current of compressor is overloaded.



## Specification

| Model  | TH3-KE-025              | TH3-KE-065              | TH3-KE-100              | TH3-ME-025             | TH3-ME-065             | TH3-ME-100             | TH3-PE-025           | TH3-PE-065           | TH3-PE-100           |
|--|-------------------------|-------------------------|-------------------------|------------------------|------------------------|------------------------|----------------------|----------------------|----------------------|
| <b>Interior dimensions</b>                                       |                         |                         |                         |                        |                        |                        |                      |                      |                      |
| Chamber volume (L / cu ft)                                       | 25 / 0.9                | 65 / 2.3                | 100 / 3.5               | 25 / 0.9               | 65 / 2.3               | 100 / 3.5              | 25 / 0.9             | 65 / 2.3             | 100 / 3.5            |
| Width (mm / inch)  | 350 / 13.8              | 400 / 15.7              | 500 / 19.7              | 350 / 13.8             | 400 / 15.7             | 500 / 19.7             | 350 / 13.8           | 400 / 15.7           | 500 / 19.7           |
| Depth (mm / inch)  | 220 / 8.7               | 330 / 13.0              | 380 / 15.0              | 220 / 8.7              | 330 / 13.0             | 380 / 15.0             | 220 / 8.7            | 330 / 13.0           | 380 / 15.0           |
| Height (mm / inch)   | 350 / 13.8              | 495 / 19.5              | 530 / 20.9              | 350 / 13.8             | 495 / 19.5             | 530 / 20.9             | 350 / 13.8           | 495 / 19.5           | 530 / 20.9           |
| Quantity of shelves (standard/max.)                              | 2 / 7                   | 2 / 10                  | 2 / 10                  | 2 / 7                  | 2 / 10                 | 2 / 10                 | 2 / 7                | 2 / 10               | 2 / 10               |
| Distance of between shelves (mm / inch)                          | 20 / 0.8                | 20 / 0.8                | 20 / 0.8                | 20 / 0.8               | 20 / 0.8               | 20 / 0.8               | 20 / 0.8             | 20 / 0.8             | 20 / 0.8             |
| Max. load per shelf (kg / lbs)                                   | 25 / 55.1               | 25 / 55.1               | 25 / 55.1               | 25 / 55.1              | 25 / 55.1              | 25 / 55.1              | 25 / 55.1            | 25 / 55.1            | 25 / 55.1            |
| Permitted total load (kg / lbs)                                  | 65 / 143.3              | 65 / 143.3              | 65 / 143.3              | 65 / 143.3             | 65 / 143.3             | 65 / 143.3             | 65 / 143.3           | 65 / 143.3           | 65 / 143.3           |
| Cable port (Ø, mm / inch)  | 50 / 2.0                | 50 / 2.0                | 50 / 2.0                | 50 / 2.0               | 50 / 2.0               | 50 / 2.0               | 50 / 2.0             | 50 / 2.0             | 50 / 2.0             |
| Water tank capacity (L / cu ft)                                  | 8 / 0.3                 | 12 / 0.4                | 12 / 0.4                | 8 / 0.3                | 12 / 0.4               | 12 / 0.4               | 8 / 0.3              | 12 / 0.4             | 12 / 0.4             |
| <b>Weight (kg / lbs)</b>   | 110 / 242.5             | 140 / 308.6             | 150 / 330.7             | 80 / 176.4             | 110 / 242.5            | 130 / 286.6            | 80 / 176.4           | 110 / 242.5          | 130 / 286.6          |
| <b>Temperature data</b>  |                         |                         |                         |                        |                        |                        |                      |                      |                      |
| Range without humidity (°C / °F)                                 | -35 to 150 / -31 to 302 | -35 to 150 / -31 to 302 | -35 to 150 / -31 to 302 | -20 to 150 / -4 to 302 | -20 to 150 / -4 to 302 | -20 to 150 / -4 to 302 | 0 to 120 / 32 to 248 | 0 to 120 / 32 to 248 | 0 to 120 / 32 to 248 |
| Fluctuation (±°C / °F) <sup>1)</sup>                             | 0.3 / 0.54              | 0.3 / 0.54              | 0.3 / 0.54              | 0.3 / 0.54             | 0.3 / 0.54             | 0.3 / 0.54             | 0.3 / 0.54           | 0.3 / 0.54           | 0.3 / 0.54           |
| Variation (±°C / °F) <sup>1)</sup>                               | 0.5 / 0.9               | 0.5 / 0.9               | 0.5 / 0.9               | 0.5 / 0.9              | 0.5 / 0.9              | 0.5 / 0.9              | 0.5 / 0.9            | 0.5 / 0.9            | 0.5 / 0.9            |
| Heating time (min) <sup>2)</sup>                                 | 60                      | 60                      | 60                      | 50                     | 50                     | 50                     | 40                   | 40                   | 40                   |
| Cooling time (min) <sup>3)</sup>                                 | 70                      | 70                      | 70                      | 55                     | 55                     | 55                     | 35                   | 35                   | 35                   |
| <b>Humidity data (※ Ref.: Temp./ Humid. control range graph)</b> |                         |                         |                         |                        |                        |                        |                      |                      |                      |
| Range (%RH)  | 20 to 95                | 20 to 95                | 20 to 95                | 20 to 95               | 20 to 95               | 20 to 95               | 30 to 95             | 30 to 95             | 30 to 95             |
| Fluctuation (±%RH) <sup>1)</sup>                                 | 1                       | 1                       | 1                       | 1                      | 1                      | 1                      | 1                    | 1                    | 1                    |
| Variation (±%RH) <sup>1)</sup>                                   | 3                       | 3                       | 3                       | 3                      | 3                      | 3                      | 3                    | 3                    | 3                    |
| <b>Electrical data &amp; Ordering information</b>                |                         |                         |                         |                        |                        |                        |                      |                      |                      |
| Electrical requirements (AC230V, 1ph, 60Hz, A)                   | 9.7                     | 11.8                    | 15.6                    | 9.2                    | 11.1                   | 13.8                   | 9.2                  | 11.1                 | 13.8                 |
| <b>Cat. No.</b>  | <b>AAH824131K</b>       | <b>AAH824231K</b>       | <b>AAH824331K</b>       | <b>AAH821131K</b>      | <b>AAH821231K</b>      | <b>AAH821331K</b>      | <b>AAH822131K</b>    | <b>AAH822231K</b>    | <b>AAH822331K</b>    |
| Electrical requirements (AC230V, 1ph, 50Hz, A)                   | 9.7                     | 11.8                    | 15.6                    | 9.2                    | 11.1                   | 13.8                   | 9.2                  | 11.1                 | 13.8                 |
| <b>Cat. No.</b>  | <b>AAH824132K</b>       | <b>AAH824232K</b>       | <b>AAH824332K</b>       | <b>AAH821132K</b>      | <b>AAH821232K</b>      | <b>AAH821332K</b>      | <b>AAH822132K</b>    | <b>AAH822232K</b>    | <b>AAH822332K</b>    |

※ The above specifications are tested according to DIN 12880 and IEC 60068 standards.

※ Permissible environmental conditions are 18 - 30°C (recommended 20°C), 85% RH or less, under 2000m above sea level.

※ The DI water condition is pH 6.2 - 7.2 and the electrical conductivity is less than 20µs/cm.

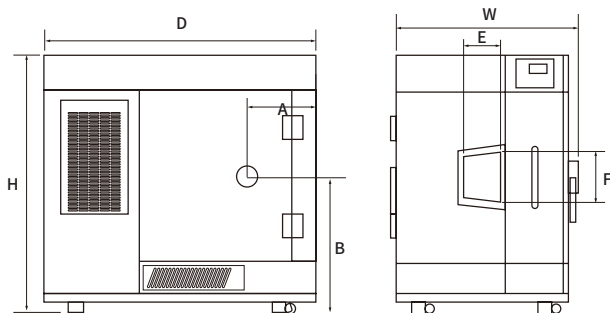
1) The set value is set under the conditions of 25°C, 60% RH.

2) Heating time condition value: TH3-KE (-40°C to 100°C), TH3-ME (-20°C to 100°C), TH3-PE (0°C to 100°C)

3) Cooling time condition value: TH3-KE (20°C to -40°C), TH3-ME (20°C to -20°C), TH3-PE (20°C to 0°C)

## Accessories Page 296

Cable Port, Shelves, Signal Lamp, Recorder, Water Purifier, Direct Water System, Stand, LC GreenBox



## Dimension

| Model                | TH3-KE-025 | TH3-KE-065  | TH3-KE-100  | TH3-ME-025 | TH3-ME-065  | TH3-ME-100  | TH3-PE-025 | TH3-PE-065  | TH3-PE-100  |
|----------------------|------------|-------------|-------------|------------|-------------|-------------|------------|-------------|-------------|
| <b>W (mm / inch)</b> | 550 / 21.7 | 600 / 23.6  | 700 / 27.6  | 550 / 21.7 | 600 / 23.6  | 700 / 27.6  | 550 / 21.7 | 600 / 23.6  | 700 / 27.6  |
| <b>D (mm / inch)</b> | 680 / 26.8 | 1050 / 41.3 | 1110 / 43.7 | 680 / 26.8 | 1050 / 41.3 | 1110 / 43.7 | 680 / 26.8 | 1050 / 41.3 | 1110 / 43.7 |
| <b>H (mm / inch)</b> | 915 / 36.0 | 1060 / 41.7 | 1100 / 43.3 | 915 / 36.0 | 1060 / 41.7 | 1100 / 43.3 | 915 / 36.0 | 1060 / 41.7 | 1100 / 43.3 |
| <b>A (mm / inch)</b> | 211 / 8.3  | 276 / 10.9  | 276 / 10.9  | 211 / 8.3  | 276 / 10.9  | 276 / 10.9  | 211 / 8.3  | 276 / 10.9  | 276 / 10.9  |
| <b>B (mm / inch)</b> | 495 / 19.5 | 580 / 22.8  | 580 / 22.8  | 495 / 19.5 | 580 / 22.8  | 580 / 22.8  | 495 / 19.5 | 580 / 22.8  | 580 / 22.8  |
| <b>E (mm / inch)</b> | 170 / 6.7  | 170 / 6.7   | 170 / 6.7   | 170 / 6.7  | 170 / 6.7   | 170 / 6.7   | 170 / 6.7  | 170 / 6.7   | 170 / 6.7   |
| <b>F (mm / inch)</b> | 229 / 9.0  | 229 / 9.0   | 229 / 9.0   | 229 / 9.0  | 229 / 9.0   | 229 / 9.0   | 229 / 9.0  | 229 / 9.0   | 229 / 9.0   |

# Temperature & Humidity Chamber

Low temperature type (-70 ~ 150°C / -35 ~ 150°C)

## General Temp. & Humid chamber with proven reliability and reproducibility

- **TH-KH** Ultralow temp. type (-70°C)
- **TH-G** Low temp. type (-35°C)
- **TH-I** Low temp. and low humid.



### TH-G-180

with Wire Shelves 2ea, Φ50 Cable Port (standard), Recorder (option)

### Optimized Model Configuration

- Various models optimized according to temperature and humidity control range and specialized functions.
- TH-KH Series (-70~150°C, 25~95% RH)  
Provides wide temperature control range.
- TH-G Series (-35~150°C, 25~95% RH)  
Representative model with proven reliability.
- TH-I Series (-35~150°C, 15~95% RH)  
Stable controls for low temperature and humidity range.

### Structural Functional Features

- Stable humidity control ability with applying differentiated external humidification system and convenient maintenance for cleaning testing space.
- Excellent thermal insulation and sealing to ensure stable temperature and humidity reproducibility even for repeated test use.
- Proven reproducibility and reliability with structural design optimized for each capacity.
- The door part is a double-sealed structure that provides enhanced airtightness.
- Durability even after long-term repeated use has been verified by satisfying the door load test (SEFA standard).



## Use Convenience Features

- Efficient water supply and recirculation system minimizes water refilling even for long-term high-humidity tests.
- Drawer-type water tank structure makes refill the water easily at the front part.
- Possible structure to refill the water even during operation.
- Direct water supply system. (option)
- Easy observation of samples with tempered glass door with built in heating wire and LED lamp.
- Open/close door with latches on either side.
- Door handle with built-in key lock.
- Cable port (Ø50 mm) is included as standard, making it convenient to connect external equipment.
- Easy to clean as it is easy to remove refrigerator condenser grill, making it convenient to maintain efficiency of refrigeration.



Drawer-type water tank



Door handle and locking device

## Multifunction Control System

- 5.7-inch color touch display controller for convenient intuitive operation and checking of operation status.
- Save program information and back up the set values.
- Includes temperature and humidity auto-tuning.
- Highly reliable control through temperature calibration.
- PID zone subdivided into 6 zones for more precise control stability.
- RS-232 port (default) and RS-485 port (option) supported.
- Control and data processing by connecting up to 32 devices to PC at same time via RS-485 port.
- Convenient checking with useful graph display.



Cable port



Tempered glass window with wire heater and LED lamp

| Description                         | No.            |
|-------------------------------------|----------------|
| Pattern                             | 100            |
| Repeat time                         | 999            |
| Part repeat time                    | 255            |
| Max. segments / pattern             | 100            |
| Available max. segments             | 2000           |
| Programmable Process time / segment | 99 hr. 59 min. |

\* It is possible to set 100 segments per pattern, but the maximum number of segments is not 10,000 (100 pattern x 100 segment) but 2,000.

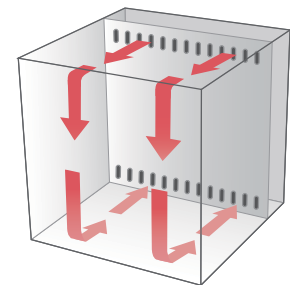
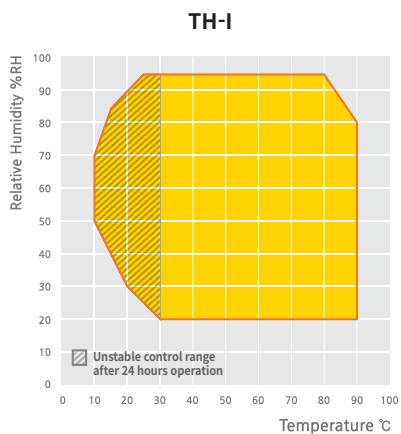
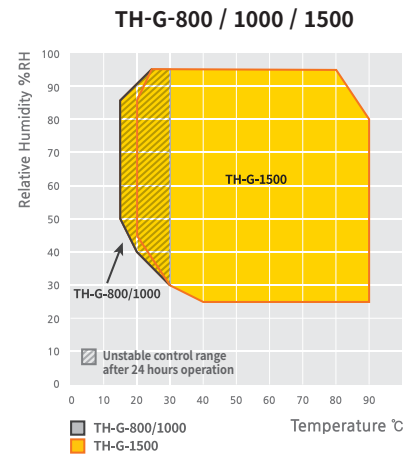
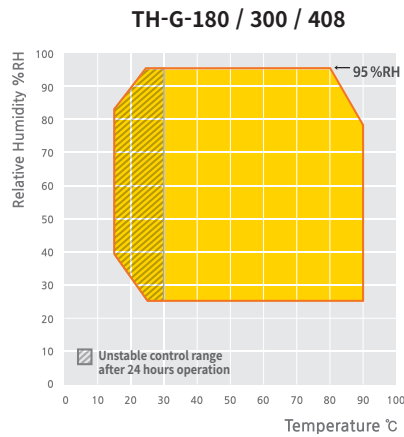
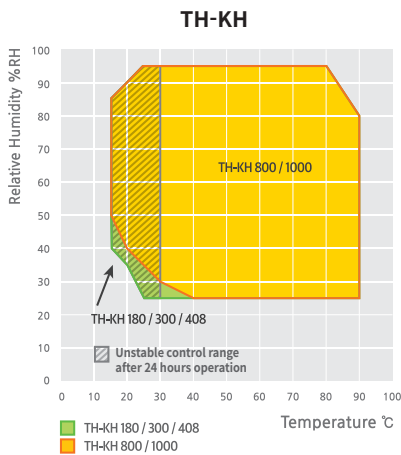


Controller (5.7 inch)

Temp. & humid. graph

## Outstanding Safety

- Electronic over temperature shutdown system (advanced over temperature. (A-OT) limiter)  
Independent precision temperature sensor and controller for safer and more accurate over temperature shutdown.
- General-type over power shutdown system. (B-OT, backup over temperature limiter)  
A backup device for electronic system failure, mechanically preventing over temperature even when it occurs electronic errors.
- Ensures that the surface temperature is kept below 60°C.
- Low and empty water level alarm and automatic shut off.
- Door open warning and automatic shut off.
- Overcurrent and short circuit protection of device.
- Fuse installed for each heater for safety.
- Auto stop when operating current of compressor is overloaded.
- Auto stop when compressor is overheating.
- Auto shut off in case refrigerant pressure (high/low pressure) is abnormal.



## Specification

| Model  | TH-KH-180               | TH-KH-300               | TH-KH-408               |
|--|-------------------------|-------------------------|-------------------------|
| <b>Interior dimensions</b>                                       |                         |                         |                         |
| Chamber volume (L / cu ft)                                       | 189 / 6.7               | 302 / 10.7              | 408 / 14.4              |
| Width (mm / inch)  | 500 / 19.7              | 600 / 23.6              | 600 / 23.6              |
| Depth (mm / inch)  | 630 / 24.8              | 630 / 24.8              | 850 / 33.5              |
| Height (mm / inch)   | 600 / 23.6              | 800 / 31.5              | 800 / 31.5              |
| Quantity of shelves (standard/max.)                              | 2 / 9                   | 2 / 10                  | 2 / 10                  |
| Distance of between shelves (mm / inch)                          | 60 / 2.4                | 60 / 2.4                | 60 / 2.4                |
| Max. load per shelf (kg / lbs)                                   | 20 / 44.1               | 25 / 55.1               | 25 / 55.1               |
| Permitted total load (kg / lbs)                                  | 50 / 110.2              | 65 / 143.3              | 65 / 143.3              |
| Cable port (∅, mm / inch)  | 50 / 2.0                | 50 / 2.0                | 50 / 2.0                |
| Water tank capacity (L / cu ft)                                  | 15 / 0.5                | 15 / 0.5                | 15 / 0.5                |
| <b>Weight (kg / lbs)</b>   | <b>320 / 705.5</b>      | <b>385 / 848.8</b>      | <b>410 / 903.9</b>      |
| <b>Temperature data</b>  |                         |                         |                         |
| Range without humidity (°C / °F)                                 | -70 to 150 / -94 to 302 | -70 to 150 / -94 to 302 | -70 to 150 / -94 to 302 |
| Fluctuation (±°C / °F) <sup>1)</sup>                             | 0.3 / 0.54              | 0.3 / 0.54              | 0.3 / 0.54              |
| Variation (±°C / °F) <sup>1)</sup>                               | 0.5 / 0.9               | 0.5 / 0.9               | 0.5 / 0.9               |
| Heating time (-70°C to 120°C) (min)                              | 70                      | 70                      | 70                      |
| Cooling time (20°C to -70°C) (min)                               | 80                      | 80                      | 80                      |
| <b>Humidity data (※ Ref.: Temp./ Humid. control range graph)</b> |                         |                         |                         |
| Range (%RH)  | 25 to 95                | 25 to 95                | 25 to 95                |
| Fluctuation (±%RH) <sup>1)</sup>                                 | 0.4                     | 0.4                     | 0.4                     |
| Variation (±%RH) <sup>1)</sup>                                   | 3                       | 3                       | 3                       |
| <b>Electrical data &amp; Ordering information</b>                |                         |                         |                         |
| Electrical requirements (380V, 3ph, 50Hz, A)                     | 10.1                    | 10.2                    | 10.2                    |
| <b>Cat. No.</b>  | <b>AAHC3014K</b>        | <b>AAHC3114K</b>        | <b>AAHC3214K</b>        |

※ The above specifications are tested according to DIN 12880 and IEC 60068 standards.

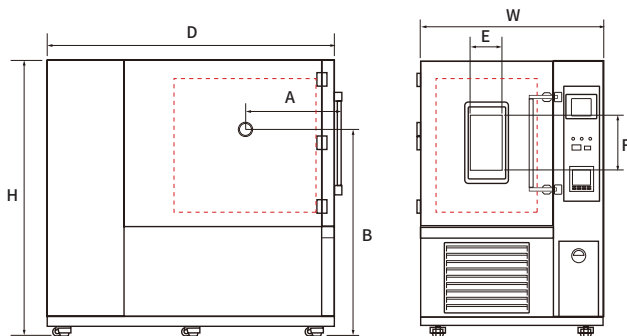
※ Permissible environmental conditions are 18 - 30°C (recommended 20°C), 85% RH or less, under 2000m above sea level.

※ The DI water condition is pH 6.2 - 7.2 and the electrical conductivity is less than 20µs/cm.

1) The set value is set under the conditions of 25°C, 60% RH.

## Accessories Page 296

Cable Port, Shelves, Signal Lamp, Recorder, Water Purifier, Direct Water System, Inner Glass Door



## Dimension

| Model                | TH-KH-180   | TH-KH-300   | TH-KH-408   |
|----------------------|-------------|-------------|-------------|
| <b>W (mm / inch)</b> | 1050 / 41.3 | 1150 / 45.3 | 1150 / 45.3 |
| <b>D (mm / inch)</b> | 1615 / 63.6 | 1615 / 63.6 | 1835 / 72.2 |
| <b>H (mm / inch)</b> | 1560 / 61.4 | 1760 / 69.3 | 1760 / 69.3 |
| <b>A (mm / inch)</b> | 550 / 21.7  | 550 / 21.7  | 670 / 26.4  |
| <b>B (mm / inch)</b> | 1225 / 48.2 | 1325 / 52.2 | 1325 / 52.2 |
| <b>E (mm / inch)</b> | 200 / 7.9   | 200 / 7.9   | 200 / 7.9   |
| <b>F (mm / inch)</b> | 330 / 13.0  | 330 / 13.0  | 330 / 13.0  |

## Specification

| Model  | TH-G-180                | TH-G-300                | TH-G-408                | TH-G-800                | TH-G-1000               | TH-G-1500               |
|--|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| <b>Interior dimensions</b>                                       |                         |                         |                         |                         |                         |                         |
| Chamber volume (L / cu ft)                                       | 189 / 6.7               | 302 / 10.7              | 408 / 14.4              | 800 / 28.3              | 1000 / 35.3             | 1450 / 57.1             |
| Width (mm / inch)  | 500 / 19.7              | 600 / 23.6              | 600 / 23.6              | 1000 / 39.4             | 1000 / 39.4             | 1100 / 43.3             |
| Depth (mm / inch)  | 630 / 24.8              | 630 / 24.8              | 850 / 33.5              | 800 / 31.5              | 1000 / 39.4             | 1000 / 39.4             |
| Height (mm / inch)   | 600 / 23.6              | 800 / 31.5              | 800 / 31.5              | 1000 / 39.4             | 1000 / 39.4             | 1450 / 57.1             |
| Quantity of shelves (standard/max.)                              | 2 / 9                   | 2 / 10                  | 2 / 10                  | 2 / 14                  | 2 / 14                  | 3 / 18                  |
| Distance of between shelves (mm / inch)                          | 40 / 1.6                | 40 / 1.6                | 40 / 1.6                | 40 / 1.6                | 40 / 1.6                | 40 / 1.6                |
| Max. load per shelf (kg / lbs)                                   | 20 / 44.1               | 25 / 55.1               | 25 / 55.1               | 40 / 88.2               | 40 / 88.2               | 40 / 88.2               |
| Permitted total load (kg / lbs)                                  | 50 / 110.2              | 65 / 143.3              | 65 / 143.3              | 100 / 220.5             | 100 / 220.5             | 100 / 220.5             |
| Cable port (Ø, mm / inch)  | 50 / 2.0                | 50 / 2.0                | 50 / 2.0                | 50 / 2.0                | 50 / 2.0                | 50 / 2.0                |
| Water tank capacity (L / cu ft)                                  | 15 / 0.5                | 15 / 0.5                | 15 / 0.5                | 15 / 0.5                | 15 / 0.5                | 15 / 0.5                |
| <b>Weight (kg / lbs)</b>   | 320 / 705.5             | 385 / 848.8             | 410 / 903.9             | 620 / 1366.9            | 680 / 1499.1            | 860 / 1896.0            |
| <b>Temperature data</b>  |                         |                         |                         |                         |                         |                         |
| Range without humidity (°C / °F)                                 | -35 to 150 / -31 to 302 | -35 to 150 / -31 to 302 | -35 to 150 / -31 to 302 | -35 to 150 / -31 to 302 | -35 to 150 / -31 to 302 | -35 to 150 / -31 to 302 |
| Fluctuation (±°C / °F) <sup>1)</sup>                             | 0.3 / 0.54              | 0.3 / 0.54              | 0.3 / 0.54              | 0.3 / 0.54              | 0.3 / 0.54              | 0.3 / 0.54              |
| Variation (±°C / °F) <sup>1)</sup>                               | 0.5 / 0.9               | 0.5 / 0.9               | 0.5 / 0.9               | 0.5 / 0.9               | 0.5 / 0.9               | 0.5 / 0.9               |
| Heating time (-40°C to 120°C) (min)                              | 60                      | 60                      | 60                      | 70                      | 70                      | 90                      |
| Cooling time (20°C to -40°C) (min)                               | 60                      | 60                      | 60                      | 75                      | 75                      | 90                      |
| <b>Humidity data (※ Ref.: Temp./ Humid. control range graph)</b> |                         |                         |                         |                         |                         |                         |
| Range (%RH)  | 25 to 95                | 25 to 95                | 25 to 95                | 25 to 95                | 25 to 95                | 25 to 95                |
| Fluctuation (±%RH) <sup>1)</sup>                                 | 0.4                     | 0.4                     | 0.4                     | 1                       | 1                       | 2                       |
| Variation (±%RH) <sup>1)</sup>                                   | 3                       | 3                       | 3                       | 3                       | 3                       | 3                       |
| <b>Electrical data &amp; Ordering information</b>                |                         |                         |                         |                         |                         |                         |
| Electrical requirements (230V, 1ph, 60Hz, A)                     | 26.3                    | 26.7                    | 26.7                    |                         |                         |                         |
| <b>Cat. No.</b>  | <b>AAH80011K</b>        | <b>AAH80021K</b>        | <b>AAH80031K</b>        | -                       | -                       | -                       |
| Electrical requirements (230V, 1ph, 50Hz, A)                     | 26.3                    | 26.7                    | 26.7                    |                         |                         |                         |
| <b>Cat. No.</b>  | <b>AAH80013K</b>        | <b>AAH80023K</b>        | <b>AAH80033K</b>        | -                       | -                       | -                       |
| Electrical requirements (380V, 3ph, 50Hz, A)                     | 9.1                     | 9.2                     | 9.2                     | 12.2                    | 12.2                    | 15.5                    |
| <b>Cat. No.</b>  | <b>AAH80018K</b>        | <b>AAH80028K</b>        | <b>AAH80038K</b>        | <b>AAH80048K</b>        | <b>AAH80058K</b>        | <b>AAH80078K</b>        |

※ The above specifications are tested according to DIN 12880 and IEC 60068 standards.

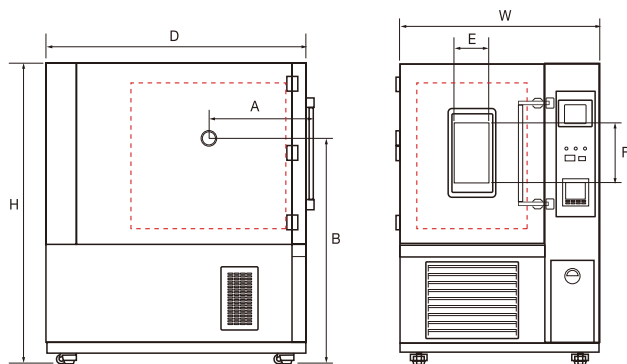
※ Permissible environmental conditions are 18 - 30°C (recommended 20°C), 85% RH or less, under 2000m above sea level.

※ The DI water condition is pH 6.2 - 7.2 and the electrical conductivity is less than 20µs/cm.

1) The set value is set under the conditions of 40°C, 75% RH.

## Accessories Page 296

Cable Port, Shelves, Signal Lamp, Recorder, Water Purifier, Direct Water System, Inner Glass Door



## Dimension

| Model                | TH-G-180     | TH-G-300     | TH-G-408     | TH-G-800     | TH-G-1000    | TH-G-1500    |
|----------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>W (mm / inch)</b> | 1003 / 294.9 | 1103 / 434.3 | 1103 / 434.3 | 1503 / 591.7 | 1503 / 591.7 | 1503 / 591.7 |
| <b>D (mm / inch)</b> | 1139 / 448.4 | 1139 / 448.4 | 1359 / 535.0 | 1319 / 519.3 | 1519 / 598.0 | 2065 / 813.0 |
| <b>H (mm / inch)</b> | 1468 / 558.0 | 1668 / 656.7 | 1668 / 656.7 | 1968 / 774.8 | 1968 / 774.8 | 2007 / 790.2 |
| <b>A (mm / inch)</b> | 412 / 162.2  | 432 / 170.1  | 532 / 209.4  | 509 / 200.4  | 609 / 239.8  | 482 / 189.8  |
| <b>B (mm / inch)</b> | 1110 / 43.7  | 1246 / 49.1  | 1246 / 49.1  | 1465 / 57.7  | 1495 / 58.9  | 1500 / 59.1  |
| <b>E (mm / inch)</b> | 200 / 7.9    | 200 / 7.9    | 200 / 7.9    | 270 / 10.6   | 270 / 10.6   | 270 / 10.6   |
| <b>F (mm / inch)</b> | 330 / 13.0   | 330 / 13.0   | 330 / 13.0   | 330 / 13.0   | 330 / 13.0   | 330 / 13.0   |



## Specification

| Model  | TH-I-180                | TH-I-300                | TH-I-408                |
|--|-------------------------|-------------------------|-------------------------|
| <b>Interior dimensions</b>                                       |                         |                         |                         |
| Chamber volume (L / cu ft)                                       | 189 / 6.7               | 302 / 10.7              | 408 / 14.4              |
| Width (mm / inch)  | 500 / 19.7              | 600 / 23.6              | 600 / 23.6              |
| Depth (mm / inch)  | 630 / 24.8              | 630 / 24.8              | 850 / 33.5              |
| Height (mm / inch)   | 600 / 23.6              | 800 / 31.5              | 800 / 31.5              |
| Quantity of shelves (standard/max.)                              | 2 / 9                   | 2 / 10                  | 2 / 10                  |
| Distance of between shelves (mm / inch)                          | 40 / 1.6                | 40 / 1.6                | 40 / 1.6                |
| Max. load per shelf (kg / lbs)                                   | 20 / 44.1               | 25 / 55.1               | 25 / 55.1               |
| Permitted total load (kg / lbs)                                  | 50 / 110.2              | 65 / 143.3              | 65 / 143.3              |
| Cable port (Ø, mm / inch)  | 50 / 2.0                | 50 / 2.0                | 50 / 2.0                |
| Water tank capacity (L / cu ft)                                  | 15 / 0.5                | 15 / 0.5                | 15 / 0.5                |
| <b>Weight (kg / lbs)</b>   | <b>320 / 705.5</b>      | <b>385 / 848.8</b>      | <b>410 / 903.9</b>      |
| <b>Temperature data</b>  |                         |                         |                         |
| Range without humidity (°C / °F)                                 | -35 to 150 / -31 to 302 | -35 to 150 / -31 to 302 | -35 to 150 / -31 to 302 |
| Fluctuation (±°C) <sup>1)</sup>                                  | 0.3                     | 0.3                     | 0.3                     |
| Variation (±°C) <sup>1)</sup>                                    | 0.5                     | 0.5                     | 0.5                     |
| Heating time (-40°C to 120°C) (min)                              | 60                      | 60                      | 60                      |
| Cooling time (20°C to -40°C) (min)                               | 60                      | 60                      | 60                      |
| <b>Humidity data (※ Ref.: Temp./ Humid. control range graph)</b> |                         |                         |                         |
| Range (%RH)  | 15 to 95                | 15 to 95                | 15 to 95                |
| Fluctuation (±%RH) <sup>1)</sup>                                 | 0.4                     | 0.4                     | 0.4                     |
| Variation (±%RH) <sup>1)</sup>                                   | 3.0                     | 3.0                     | 3.0                     |
| <b>Electrical data &amp; Ordering information</b>                |                         |                         |                         |
| Electrical requirements (230V, 1ph, 60Hz, A)                     | 26.3                    | 26.7                    | 26.7                    |
| <b>Cat. No.</b>  | <b>AAH80111K</b>        | <b>AAH80121K</b>        | <b>AAH80131K</b>        |
| Electrical requirements (230V, 1ph, 50Hz, A)                     | 26.3                    | 26.7                    | 26.7                    |
| <b>Cat. No.</b>  | <b>AAH80113K</b>        | <b>AAH80123K</b>        | <b>AAH80133K</b>        |
| Electrical requirements (380V, 3ph, 50Hz, A)                     | 9.1                     | 9.2                     | 9.2                     |
| <b>Cat. No.</b>  | <b>AAH80118K</b>        | <b>AAH80128K</b>        | <b>AAH80138K</b>        |

※ The above specifications are tested according to DIN 12880 and IEC 60068 standards.

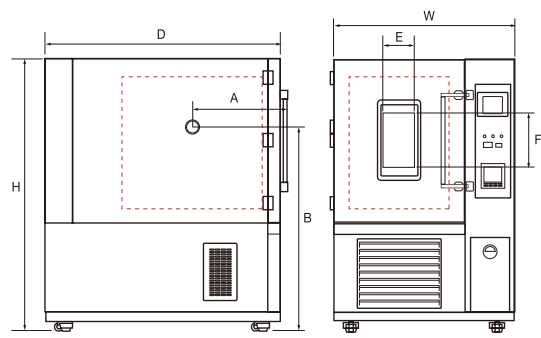
※ Permissible environmental conditions are 18 - 30°C (recommended 20°C), 85% RH or less, under 2000m above sea level.

※ The DI water condition is pH 6.2 - 7.2 and the electrical conductivity is less than 20µs/cm.

1) The set value is set under the conditions of 40°C, 75% RH.

## Accessories Page 296

Cable Port, Shelves, Signal Lamp, Recorder, Water Purifier, Direct Water System, Inner Glass Door



TH-I

## Dimension

| Model                | TH-I-180     | TH-I-300     | TH-I-408     |
|----------------------|--------------|--------------|--------------|
| <b>W (mm / inch)</b> | 1003 / 294.9 | 1103 / 434.3 | 1103 / 434.3 |
| <b>D (mm / inch)</b> | 1139 / 448.4 | 1139 / 448.4 | 1359 / 535.0 |
| <b>H (mm / inch)</b> | 1468 / 558.0 | 1668 / 656.7 | 1668 / 656.7 |
| <b>A (mm / inch)</b> | 412 / 162.2  | 432 / 170.1  | 532 / 209.4  |
| <b>B (mm / inch)</b> | 1110 / 43.7  | 1246 / 49.1  | 1246 / 49.1  |
| <b>E (mm / inch)</b> | 200 / 7.9    | 200 / 7.9    | 200 / 7.9    |
| <b>F (mm / inch)</b> | 330 / 13.0   | 330 / 13.0   | 330 / 13.0   |

# Temperature & Humidity Chamber

## General type (-5 ~ 100°C)

Stable control for long-term temperature and humidity tests



### TH-TG-180

with Wire Shelves 2ea,  $\Phi$ 50 Cable Port (standard), Recorder (option)



### TH-TG-1500

with Wire Shelves 2ea,  $\Phi$ 50 Cable Port (standard), Recorder, Signal Lamp (option)

#### Optimized For Long-term Testing

- Superior defrosting control technology ensures stable temperature and humidity control for long-term tests.
- Recommended in case no low temperature testing.
- 6 models up to 1500L depending on capacity.
- Satisfies ICH Guideline Q1A (R2) Stability Test.
- Recorder for maintaining test records. (option)
- Options available for convenient internal observation during long-term testing and access to samples under testing. (inner glass door and hand-in port)

#### Structural Functional Features

- Optimum temperature and humidity test can be carried out even with minimum refrigeration performance, it makes reduce the electric energy efficiently.
- Excellent thermal insulation and sealing to ensure stable temperature and humidity reproducibility even for repeated test use.
- Proven reproducibility and reliability with structural design optimized for each capacity.
- The door part is a double-sealed structure that provides enhanced airtightness.



## Use Convenience Features

- Convenient operation with large color touch display controller.
- Efficient water supply and recirculation system minimizes water refilling even for long-term high-humidity tests.
- Drawer-type water tank structure makes refill the water easily at the front part.
- Possible structure to refill the water even during operation.
- Convenient checking the water level at the front of the chamber.
- Direct water supply system. (option)
- Easy observation of samples with tempered glass door with built in heating wire and LED lamp.
- Open/close door with latches on either side.
- Door handle with built-in key lock.
- Cable port (Ø50 mm) is included as standard, making it convenient to connect external equipment.
- Easy to clean as it is easy to remove refrigerator condenser grill, making it convenient to maintain efficiency of refrigeration.



Drawer-type water tank



Door handle and locking device



Cable port

## Multifunction Control System

- Save program information and back up the set values.
- Includes temperature and humidity auto-tuning.
- Highly reliable control through temperature calibration.
- PID zone subdivided into 9 zones for more precise control stability.
- RS-232 port (default) and RS-485 port (option) supported.
- Control and data processing by connecting up to 32 devices to PC at same time via RS-485 port.
- Convenient checking with useful graph display.



Tempered glass window with wire heater and LED lamp



Controller

| Description                         | No.            |
|-------------------------------------|----------------|
| Pattern                             | 100            |
| Repeat time                         | 999            |
| Part repeat time                    | 255            |
| Max. segments / pattern             | 100            |
| Available max. segments             | 2000           |
| Programmable process time / segment | 99 hr. 59 min. |

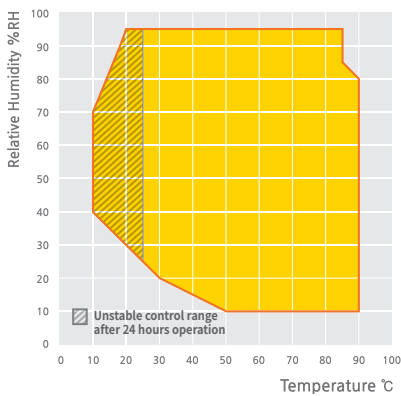
\* It is possible to set 100 segments per pattern, but the maximum number of segments is not 10,000 (100 pattern x 100 segment) but 2,000.

## ▮ Outstanding Safety

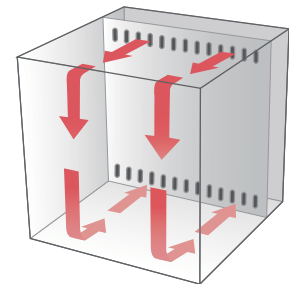
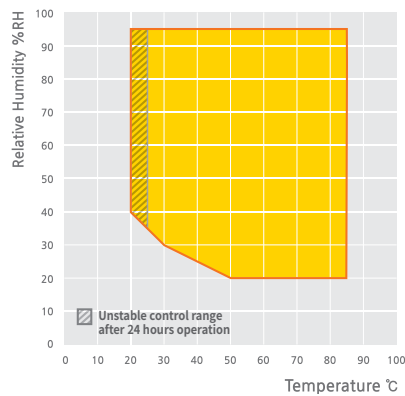
- Electronic over temperature shutdown system (advanced over temperature (A-OT) limiter)  
Independent precision temperature sensor and controller for safer and more accurate over temperature shutdown.
- General-type over power shutdown system. (B-OT, backup over temperature limiter)  
A backup device for electronic system failure, mechanically preventing over temperature even when it occurs electronic errors.
- Ensures that the surface temperature is kept below 60°C.
- Low and empty water level alarm and automatic shut off.
- Door open warning and automatic shut off.
- Overcurrent and short circuit protection of device.
- Fuse installed for each heater for safety.
- Auto stop when operating current of compressor is overloaded.
- Auto stop when compressor is overheating.
- Auto shut off in case refrigerant pressure (high/low pressure) is abnormal.



TH-TG-180 / 300 / 408



TH-TG-800 / 1000 / 1500



## Specification

| Model  | TH-TG-180             | TH-TG-300             | TH-TG-408             | TH-TG-800             | TH-TG-1000            | TH-TG-1500            |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Interior dimensions</b>                                       |                       |                       |                       |                       |                       |                       |
| Chamber volume (L / cu ft)                                       | 180 / 6.4             | 314 / 11.1            | 419 / 14.8            | 770 / 27.2            | 997 / 35.2            | 1540 / 54.4           |
| Width (mm / inch)  | 500 / 19.7            | 748 / 29.4            | 748 / 29.4            | 748 / 29.4            | 748 / 29.4            | 1100 / 43.3           |
| Depth (mm / inch)  | 600 / 23.6            | 600 / 23.6            | 800 / 31.5            | 920 / 36.2            | 1190 / 46.9           | 1000 / 39.4           |
| Height (mm / inch)   | 600 / 23.6            | 700 / 27.6            | 700 / 27.6            | 1120 / 44.1           | 1120 / 44.1           | 1400 / 55.1           |
| Quantity of shelves (standard/max.)                              | 2 / 7                 | 2 / 8                 | 2 / 8                 | 2 / 17                | 2 / 17                | 2 / 17                |
| Distance of between shelves (mm / inch)                          | 60 / 2.4              | 60 / 2.4              | 60 / 2.4              | 60 / 2.4              | 60 / 2.4              | 60 / 2.4              |
| Max. load per shelf (kg / lbs)                                   | 20 / 44.1             | 25 / 55.1             | 25 / 55.1             | 40 / 88.2             | 40 / 88.2             | 40 / 88.2             |
| Permitted total load (kg / lbs)                                  | 50 / 110.2            | 65 / 143.3            | 65 / 143.3            | 100 / 220.5           | 100 / 220.5           | 100 / 220.5           |
| Cable port (Ø, mm / inch)  | 50 / 2.0              | 50 / 2.0              | 50 / 2.0              | 50 / 2.0              | 50 / 2.0              | 50 / 2.0              |
| Water tank capacity (L / cu ft)                                  | 15 / 0.5              | 15 / 0.5              | 15 / 0.5              | 15 / 0.5              | 15 / 0.5              | 15 / 0.5              |
| <b>Weight (kg / lbs)</b>   | 220 / 485.0           | 250 / 551.2           | 280 / 617.3           | 360 / 793.7           | 410 / 903.9           | 480 / 1058.2          |
| <b>Temperature data</b>  |                       |                       |                       |                       |                       |                       |
| Range without humidity (°C / °F)                                 | -5 to 100 / 23 to 212 | -5 to 100 / 23 to 212 | -5 to 100 / 23 to 212 | -5 to 100 / 23 to 212 | -5 to 100 / 23 to 212 | -5 to 100 / 23 to 212 |
| Fluctuation (±°C / °F) <sup>1)</sup>                             | 0.3 / 0.54            | 0.3 / 0.54            | 0.3 / 0.54            | 0.3 / 0.54            | 0.3 / 0.54            | 0.3 / 0.54            |
| Variation (±°C / °F) <sup>1)</sup>                               | 0.5 / 0.9             | 0.5 / 0.9             | 0.5 / 0.9             | 0.5 / 0.9             | 0.5 / 0.9             | 0.5 / 0.9             |
| Heating time (-5°C to 100°C) (min)                               | 50                    | 50                    | 50                    | 55                    | 55                    | 55                    |
| Cooling time (100°C to -5°C) (min)                               | 120                   | 120                   | 120                   | 145                   | 145                   | 145                   |
| <b>Humidity data (※ Ref.: Temp./ Humid. control range graph)</b> |                       |                       |                       |                       |                       |                       |
| Range (%RH)  | 10 to 95              | 10 to 95              | 10 to 95              | 25 to 95              | 25 to 95              | 25 to 95              |
| Fluctuation (±%RH) <sup>1)</sup>                                 | 2                     | 2                     | 2                     | 2                     | 2                     | 2                     |
| Variation (±%RH) <sup>1)</sup>                                   | 3                     | 3                     | 3                     | 3                     | 3                     | 3                     |
| <b>Electrical data &amp; Ordering information</b>                |                       |                       |                       |                       |                       |                       |
| Electrical requirements (230V, 1ph, 60Hz, A)                     | 12.3                  | 14.5                  | 14.5                  | 15.4                  | 15.4                  | 25.0                  |
| <b>Cat. No.</b>  | <b>AAHC2001K</b>      | <b>AAHC2011K</b>      | <b>AAHC2021K</b>      | <b>AAHC2031K</b>      | <b>AAHC2041K</b>      | <b>AAHC2051K</b>      |
| Electrical requirements (230V, 1ph, 50Hz, A)                     | 12.3                  | 14.5                  | 14.5                  | 15.4                  | 15.4                  | 25.0                  |
| <b>Cat. No.</b>  | <b>AAHC2002K</b>      | <b>AAHC2012K</b>      | <b>AAHC2022K</b>      | <b>AAHC2032K</b>      | <b>AAHC2042K</b>      | <b>AAHC2052K</b>      |

※ The above specifications are tested according to DIN 12880 and IEC 60068 standards.

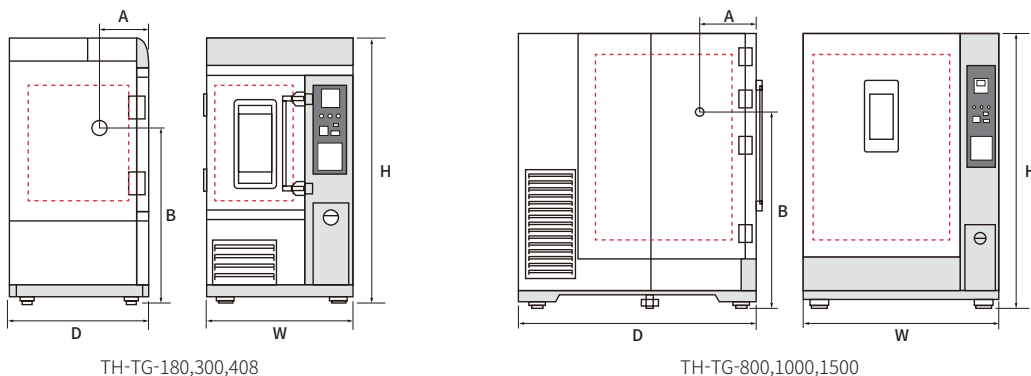
※ Permissible environmental conditions are 18 - 30°C (recommended 20°C), 85% RH or less, under 2000m above sea level.

※ The DI water condition is pH 6.2 - 7.2 and the electrical conductivity is less than 20µs/cm.

1) The set value is set under the conditions of 40°C, 60% RH.

## Accessories Page 296

Cable Port, Shelves, Signal Lamp, Recorder, Water Purifier, Direct Water System, Inner Glass Door



TH-TG-180,300,408

TH-TG-800,1000,1500

## Dimension

| Model                | TH-TG-180    | TH-TG-300   | TH-TG-408   | TH-TG-800   | TH-TG-1000  | TH-TG-1500  |
|----------------------|--------------|-------------|-------------|-------------|-------------|-------------|
| <b>W (mm / inch)</b> | 952 / 37.5   | 1201 / 47.3 | 1201 / 47.3 | 1201 / 47.3 | 1201 / 47.3 | 1554 / 61.2 |
| <b>D (mm / inch)</b> | 907 / 35.7   | 907 / 35.7  | 1107 / 43.6 | 1228 / 48.3 | 1498 / 59.0 | 1872 / 73.7 |
| <b>H (mm / inch)</b> | 1503 / 59.17 | 1525 / 60.0 | 1525 / 60.0 | 1993 / 78.5 | 1993 / 78.5 | 1935 / 76.2 |
| <b>A (mm / inch)</b> | 321 / 12.6   | 366 / 14.4  | 366 / 14.4  | 385 / 15.2  | 520 / 20.5  | 447 / 17.6  |
| <b>B (mm / inch)</b> | 1004 / 39.5  | 1016 / 40.0 | 1016 / 40.0 | 1335 / 52.6 | 1335 / 52.6 | 1384 / 54.5 |

# Temperature & Humidity Chamber

## Dual type

Space efficiency model that controls two upper and lower chambers individually



### TH-DG-150

with Wire Shelves 2ea  $\Phi$ 50 Cable Port (standard), Recorder (option)

#### ▮ Optimized For Long-term Testing

- Independent control of the temperature and humidity with dual chambers divided into upper and lower.
- Suitable for use when various test are required.
- Superior defrosting control technology ensures stable temperature and humidity control for long-term tests.
- Recommended in case no low temperature testing.
- Provide 3 kinds of model depending on capacity.
- Satisfies ICH Guideline Q1A (R2) Stability Test.
- Recorder for maintaining test records. (option)

#### ▮ Structural Functional Features

- Optimum temperature and humidity test can be carried out even with minimum refrigeration performance, it makes reduce the electric energy efficiently.
- Excellent thermal insulation and sealing to ensure stable temperature and humidity reproducibility even for repeated test use.
- Proven reproducibility and reliability with structural design optimized for each capacity.
- The door part is a double-sealed structure that provides enhanced airtightness.



## Use Convenience Features

- Convenient operation with large color touch display controller.
- Efficient water supply and recirculation system minimizes water refilling even for long-term high-humidity tests.
- Water inlet is easy to use with easy cap.
- Possible structure to refill the water even during operation.
- Direct water supply system. (option)
- Easy observation of samples with tempered glass door with built in heating wire and LED lamp.
- Open/close door with latches on either side.
- Door handle with built-in key lock.
- Cable port (Ø50 mm) is included as standard, making it convenient to connect external equipment.



Door handle & locking device



Cable Port

## Multifunction Control System

- Includes temperature and humidity auto-tuning.
- Highly reliable control through temperature calibration.
- PID zone subdivided into 9 zones for more precise control stability.
- RS-232 port (default) and RS-485 port (option) supported.
- Control and data processing by connecting up to 32 devices to PC at same time via RS-485 port.
- Convenient checking with useful graph display.



Controller

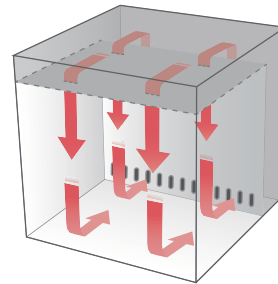
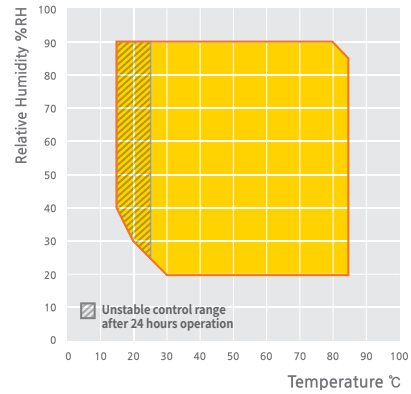
| Description                         | No.            |
|-------------------------------------|----------------|
| Pattern                             | 100            |
| Repeat time                         | 999            |
| Part repeat time                    | 255            |
| Max. segments / pattern             | 100            |
| Available max. segments             | 2000           |
| Programmable process time / segment | 99 hr. 59 min. |

\* It is possible to set 100 segments per pattern, but the maximum number of segments is not 10,000 (100 pattern x 100 segment) but 2,000.

## ▮ Outstanding Safety

- Electronic over temperature shutdown system.  
(advanced over temperature (A-OT) limiter)  
Independent precision temperature sensor and controller for safer and more accurate over temperature shutdown.
- General-type over power shutdown system.  
(B-OT, backup over temperature limiter)  
A backup device for electronic system failure, mechanically preventing over temperature even when it occurs electronic errors.
- Ensures that the surface temperature is kept below 60°C.
- Low and empty water level alarm and automatic shut off.
- Door open warning and automatic shut off.
- Overcurrent and short circuit protection of device.
- Fuse installed for each heater for safety.
- Auto stop when operating current of compressor is overloaded.
- Auto stop when compressor is overheating.
- Auto shut off in case refrigerant pressure (high/low pressure) is abnormal.

TH-DG





## Specification

| Model  | TH-DG-150         | TH-DG-300          | TH-DG-400          |
|--|-------------------|--------------------|--------------------|
| <b>Interior dimensions</b>                                       |                   |                    |                    |
| Chamber volume (L / cu ft)                                       | 150 x 2 / 5.3 x 2 | 288 x 2 / 10.2 x 2 | 384 x 2 / 13.6 x 2 |
| Width (mm / inch) <sup>2)</sup>                                  | 600 / 23.6        | 800 / 31.5         | 800 / 31.5         |
| Depth (mm / inch) <sup>2)</sup>                                  | 500 / 19.7        | 600 / 23.6         | 800 / 31.5         |
| Height (mm / inch) <sup>2)</sup>                                 | 500 / 19.7        | 600 / 23.6         | 600 / 23.6         |
| Quantity of shelves (standard/max.) <sup>2)</sup>                | 2 / 7             | 2 / 8              | 2 / 8              |
| Distance of between shelves (mm / inch)                          | 60 / 2.4          | 60 / 2.4           | 60 / 2.4           |
| Max. load per shelf (kg / lbs)                                   | 25 / 55.1         | 25 / 55.1          | 25 / 55.1          |
| Permitted total load (kg / lbs) <sup>2)</sup>                    | 75 / 165.3        | 75 / 165.3         | 75 / 165.3         |
| Cable port (∅, mm / inch) <sup>2)</sup>                          | 50 / 2.0          | 50 / 2.0           | 50 / 2.0           |
| Water tank capacity (L / cu ft)                                  | 20 / 0.7          | 24 / 0.8           | 24 / 0.8           |
| <b>Weight (kg / lbs)</b>   | 420 / 926         | 516 / 1137.6       | 560 / 1234.6       |
| <b>Temperature data</b>  |                   |                    |                    |
| Range without humidity (°C / °F)                                 | -5 to 100         | -5 to 100          | -5 to 100          |
| Fluctuation (±°C / °F) <sup>1)</sup>                             | 0.3 / 0.54        | 0.3 / 0.54         | 0.3 / 0.54         |
| Variation (±°C / °F) <sup>1)</sup>                               | 0.5 / 0.9         | 0.5 / 0.9          | 0.5 / 0.9          |
| Heating time (-5°C to 100°C) (min)                               | 85                | 85                 | 85                 |
| Cooling time (100°C to -5°C) (min)                               | 100               | 100                | 100                |
| <b>Humidity data (※ Ref.: Temp./ Humid. control range graph)</b> |                   |                    |                    |
| Range (%RH)  | 15 to 90          | 15 to 90           | 15 to 90           |
| Fluctuation (±%RH) <sup>1)</sup>                                 | 0.8               | 0.8                | 0.8                |
| Variation (±%RH) <sup>1)</sup>                                   | 3                 | 3                  | 3                  |
| <b>Electrical data &amp; Ordering information</b>                |                   |                    |                    |
| Electrical requirements (230V, 1ph, 60Hz, A)                     | 13.6 x 2ea        | 17.5 x 2ea         | 17.5 x 2ea         |
| <b>Cat. No.</b>  | <b>AAHC6001K</b>  | <b>AAHC6011K</b>   | <b>AAHC6021K</b>   |
| Electrical requirements (230V, 1ph, 50Hz, A)                     | 13.6 x 2ea        | 17.5 x 2ea         | 17.5 x 2ea         |
| <b>Cat. No.</b>  | <b>AAHC6002K</b>  | <b>AAHC6012K</b>   | <b>AAHC6022K</b>   |

※ The above specifications are tested according to DIN 12880 and IEC 60068 standards.

※ Permissible environmental conditions are 18 - 30°C (recommended 20°C), 85% RH or less, under 2000m above sea level.

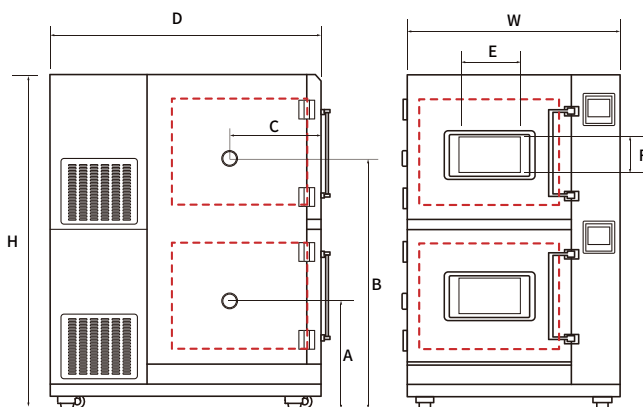
※ The DI water condition is pH 6.2 - 7.2 and the electrical conductivity is less than 20µs/cm.

1) The set value is set under the conditions of 40°C, 75% RH.

2) Each chamber.

## Accessories Page 296

Cable Port, Shelves, Signal Lamp, Recorder, Water Purifier, Direct Water System, Inner Glass Door



## Dimension

| Model                | TH-DG-150   | TH-DG-300   | TH-DG-400   |
|----------------------|-------------|-------------|-------------|
| <b>W (mm / inch)</b> | 1055 / 41.5 | 1255 / 49.4 | 1255 / 49.4 |
| <b>D (mm / inch)</b> | 1320 / 52.0 | 1470 / 57.9 | 1670 / 65.9 |
| <b>H (mm / inch)</b> | 1725 / 67.9 | 1925 / 75.8 | 1925 / 75.8 |
| <b>A (mm / inch)</b> | 710 / 28.0  | 760 / 29.9  | 760 / 29.9  |
| <b>B (mm / inch)</b> | 1450 / 57.1 | 1600 / 63.0 | 1600 / 63.0 |
| <b>C (mm / inch)</b> | 345 / 13.6  | 385 / 15.2  | 485 / 19.1  |
| <b>E (mm / inch)</b> | 330 / 13.0  | 330 / 13.0  | 330 / 13.0  |
| <b>F (mm / inch)</b> | 200 / 7.9   | 200 / 7.9   | 200 / 7.9   |

# Temperature & Humidity Chamber

## Basic type

### Applied the new developed controller specialized for Temp. & Humid chambers

#### **▮ Differentiated Systems**

- Convenient operation with 5.6 inch color touch display controller.
- Possible to check the operation status with graphs.
- Minimize the occurrence of faults by simplifying water direct line and electric circuit.
- Water level check function enables water replenishment at the right time.

#### **▮ Structural Functional Features**

- Excellent thermal insulation and sealing to ensure stable temperature and humidity reproducibility even for repeated test use.
- The door part is a double-sealed structure that provides enhanced airtightness.
- Maintains stable temperature and humidity by circulating air in the chamber at the optimum speed.
- Energy-saving system that can perform optimum temperature and humidity tests efficiently, reducing power consumption during operation.

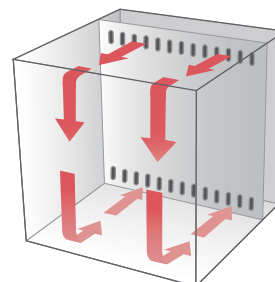
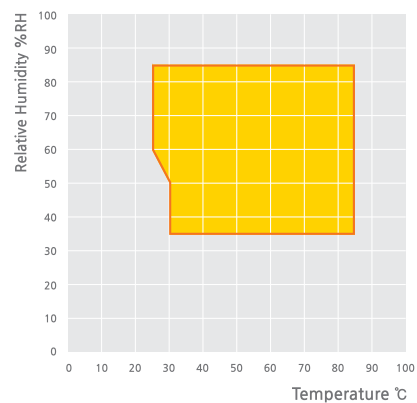
#### **▮ Outstanding Safety**

- Electronic over temperature shutdown system.  
(advanced over temperature (A-OT) limiter)  
Independent precision temperature sensor and controller for safer and more accurate over temperature shutdown.
- General-type over power shutdown system.  
(B-OT, backup over temperature limiter)  
A backup device for electronic system failure, mechanically preventing over temperature even when it occurs electronic errors.
- Ensures that the surface temperature is kept below 60°C.
- Low and empty water level alarm and automatic shut off.
- Door open warning and automatic shut off.
- Overcurrent and short circuit protection of device.
- Fuse installed for each heater for safety.
- Auto stop when operating current of compressor is overloaded.
- Auto stop when compressor is overheating.
- Auto shut off in case refrigerant pressure (high/low pressure) is abnormal.



**TH3-E-200**  
with Wire Shelves 2ea (standard)

**TH3-E-200, 400**





## Use Convenience Features

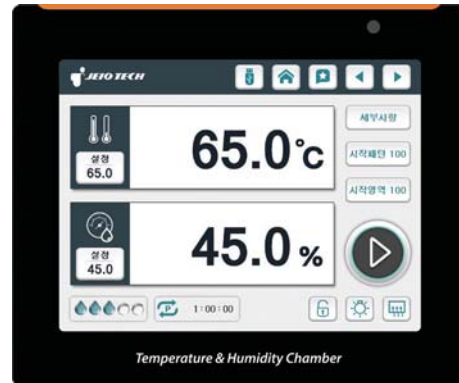
- Efficient water supply and recirculation system minimizes water refilling even for long-term high-humidity tests.
- Direct water supply system. (option)
- Easy observation of samples with tempered glass door with built in heating wire and LED lamp.
- A structure that allows the door to be opened and closed easily.
- Easy to clean as it is easy to remove refrigerator condenser grill, making it convenient to maintain efficiency of refrigeration.

## Multifunction Control System

- Reliable control with temperature/humidity auto-tuning and temperature calibration.
- Control and data processing by connecting up to 32 devices to PC at same time via RS-485 port.
- PID zone subdivided into 9 zones for more precise control stability.
- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)
- Convenient checking with useful graph display.

| Description                         | No.            |
|-------------------------------------|----------------|
| Pattern                             | 100            |
| Repeat time                         | 999            |
| Part repeat time                    | 255            |
| Max. segments / pattern             | 100            |
| Available max. segments             | 2000           |
| Programmable process time / segment | 99 hr. 59 min. |

\* It is possible to set 100 segments per pattern, but the maximum number of segments is not 10,000 (100 pattern x 100 segment) but 2,000.



Large LCD touch screen controller (5.6 inches)



Tempered glass window with wire heater and LED lamp



Remote monitoring and control via Lab Companion's app.

## Specification

| Model  | TH3-E-200           | TH3-E-400           |
|--|---------------------|---------------------|
| <b>Interior dimensions</b>                                       |                     |                     |
| Chamber volume (L / cu ft)                                       | 201 / 7.1           | 398 / 14.1          |
| Width (mm / inch)  | 500 / 19.7          | 600 / 23.6          |
| Depth (mm / inch)  | 670 / 26.4          | 830 / 32.7          |
| Height (mm / inch)   | 600 / 23.6          | 800 / 31.5          |
| Quantity of shelves (standard/max.)                              | 2 / 9               | 2 / 10              |
| Distance of between shelves (mm)                                 | 40 / 1.6            | 40 / 1.6            |
| Max. load per shelf (kg / lbs)                                   | 20 / 44.1           | 25 / 55.1           |
| Permitted total load (kg / lbs)                                  | 50 / 110.2          | 65 / 143.3          |
| Cable port (Ø, mm / inch)  | 50 / 2.0            | 65 / 2.6            |
| Water tank capacity (L / cu ft)                                  | 20 / 0.7            | 20 / 0.7            |
| <b>Weight (kg / lbs)</b>   | 200 / 440.9         | 270 / 595.2         |
| <b>Temperature data</b>  |                     |                     |
| Range without humidity (°C / °F)                                 | 0 to 90 / 32 to 194 | 0 to 90 / 32 to 194 |
| Fluctuation (±°C / °F) <sup>1)</sup>                             | 0.5 / 0.9           | 0.5 / 0.9           |
| Variation (±°C / °F) <sup>1)</sup>                               | 0.8 / 1.44          | 0.8 / 1.44          |
| Heating time (0°C to 90°C) (min)                                 | 80                  | 80                  |
| Cooling time (90°C to 0°C) (min)                                 | 90                  | 90                  |
| <b>Humidity data (※ Ref.: Temp./ Humid. control range graph)</b> |                     |                     |
| Range (%RH)  | 35 to 85            | 35 to 85            |
| Fluctuation (±%RH) <sup>1)</sup>                                 | 1                   | 1                   |
| Variation (±%RH) <sup>1)</sup>                                   | 3                   | 3                   |
| <b>Electrical data &amp; Ordering information</b>                |                     |                     |
| Electrical requirements (230V, 1ph, 60Hz, A)                     | 15                  | 16                  |
| <b>Cat. No.</b>  | <b>AAH841101K</b>   | <b>AAH841111K</b>   |
| Electrical requirements (230V, 1ph, 50Hz, A)                     | 15                  | 16                  |
| <b>Cat. No.</b>  | <b>AAH841102K</b>   | <b>AAH841112K</b>   |

※ The above specifications are tested according to DIN 12880 and IEC 60068 standards.

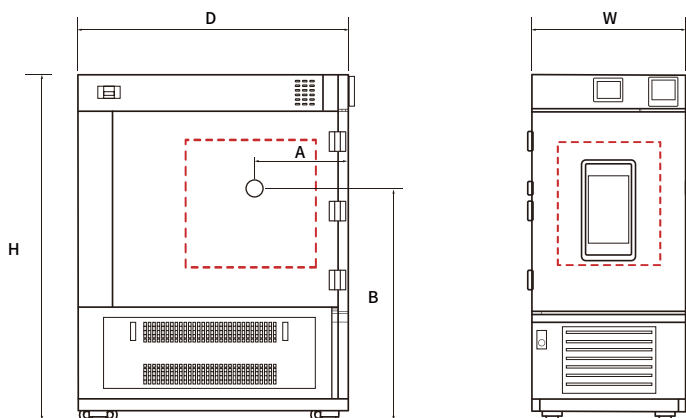
※ Permissible environmental conditions are 18 - 30°C (recommended 20°C), 85% RH or less, under 2000m above sea level.

※ The DI water condition is pH 6.2 - 7.2 and the electrical conductivity is less than 20µs/cm.

1) The set value is set under the conditions of 40°C, 75% RH.

## Accessories Page 296

Cable Port, Shelves, Signal Lamp, Recorder, Water Purifier, Direct Water System, Inner Glass Door, LC GreenBox



## Dimension

| Model                | TH3-E-200   | TH3-E-400   |
|----------------------|-------------|-------------|
| <b>W (mm / inch)</b> | 655 / 25.8  | 755 / 29.7  |
| <b>H (mm / inch)</b> | 1495 / 58.9 | 1695 / 66.7 |
| <b>D (mm / inch)</b> | 1162 / 45.7 | 1322 / 52.0 |
| <b>A (mm / inch)</b> | 375 / 14.8  | 455 / 17.9  |
| <b>B (mm / inch)</b> | 985 / 38.8  | 1135 / 44.7 |

# Pharmaceutical Stability Test Chamber

## Satisfies ICH Guideline Q1A (R2) & Q1B(Option 2) Test

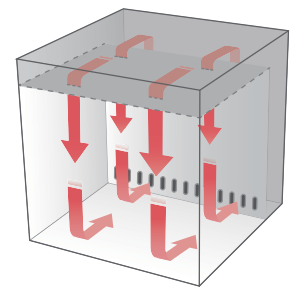
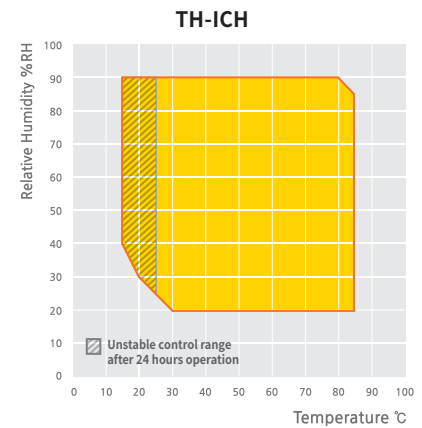


### TH-ICH-800

with Wire Shelves 2ea,  $\Phi$ 50 Cable Port (standard), Recorder (option)

### TH-ICH-300

with Wire Shelves 2ea,  $\Phi$ 50 Cable Port (standard), Recorder (option)



### ▣ Stability Test (ICH Guideline Q1A (R2))

- Ease of data analysis with useful graphical shows
- Superior defrosting control technology ensures stable temperature and humidity control for long-term tests.
- Drawer-type water tank structure makes refill the water easily at the front part.
- Possible structure to refill the water even during operation.
- Direct water supply system. (option)
- Recorder for maintaining test records. (option)
- Inner glass door allows for convenient internal observation during long-term testing and sample access during testing. (option)

### ▣ Photostability Test

- Built-in cool white fluorescent lamp and UVA lamp.
- Visible light sensor and UV sensor included as standard.
- Dedicated controller for light cumulative dose setting/control.
- Convenient management by displaying the usage time for each lamp.

### ▣ Structural Functional Features

- Optimum temperature and humidity test can be carried out even with minimum refrigeration performance, it makes reduce the electric energy efficiently.
- Excellent thermal insulation and sealing to ensure stable temperature and humidity reproducibility even for repeated test use.
- Proven reproducibility and reliability with structural design optimized for each capacity.
- The door part is a double-sealed structure that provides enhanced airtightness.

### Use Convenience Features

- Convenient operation with 3.7 inch color touch display controller.
- A structure that allows the door to be opened and closed easily.
- Door handle with built-in key lock.
- Cable port (Ø50 mm) is included as standard, making it convenient to connect external equipment.
- Easy to clean as it is easy to remove refrigerator condenser grill, making it convenient to maintain efficiency of refrigeration.

### Structural Functional Features

- Fix control and program control are selectable.
- Process time displayable.
- Includes temperature and humidity auto-tuning.
- Highly reliable control through temperature calibration.
- PID zone subdivided into 9 zones for more precise control stability.
- RS-232 port (default) and RS-485 port (option) supported.
- Control and data processing by connecting up to 32 devices to PC at same time via RS-485 port.

### Outstanding Safety

- Electronic over temperature shutdown system. (advanced over temperature (A-OT) limiter)  
Independent precision temperature sensor and controller for safer and more accurate over temperature shutdown.
- General-type over power shutdown system. (B-OT, backup over temperature limiter)  
A backup device for electronic system failure, mechanically preventing over temperature even when it occurs electronic errors.
- Ensures that the surface temperature is kept below 60°C.
- Low and empty water level alarm and automatic shut off.
- Door open warning and automatic shut off.
- Overcurrent and short circuit protection of device.
- Fuse installed for each heater for safety.
- Auto stop when operating current of compressor is overloaded.
- Auto stop when compressor is overheating.
- Auto shut off in case refrigerant pressure (high/low pressure) is abnormal.



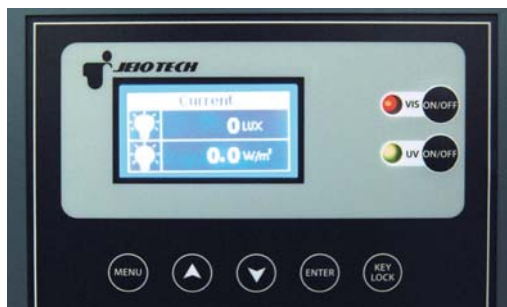
Built-in cool white fluorescent lamp and UVA lamp



drawer type of water tank



UV / VIS sensor



Lamp controller

| Description                         | No.            |
|-------------------------------------|----------------|
| Pattern                             | 100            |
| Repeat time                         | 999            |
| Part repeat time                    | 255            |
| Max. segments / pattern             | 100            |
| Available max. segments             | 2000           |
| Programmable process time / segment | 99 hr. 59 min. |

\* It is possible to set 100 segments per pattern, but the maximum number of segments is not 10,000 (100 pattern x 100 segment) but 2,000.



Controller



## Specification

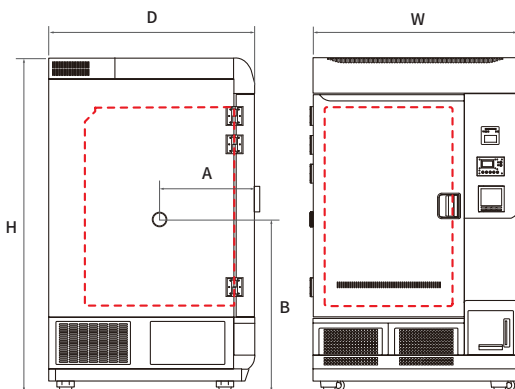
| Model  | TH-ICH-300           | TH-ICH-800           |
|--|----------------------|----------------------|
| <b>Interior dimensions</b>                                       |                      |                      |
| Chamber volume (L / cu ft)                                       | 300 / 10.6           | 760 / 26.8           |
| Width (mm / inch)  | 750 / 29.5           | 750 / 29.5           |
| Depth (mm / inch)  | 650 / 25.6           | 880 / 34.6           |
| Height (mm / inch)   | 650 / 25.6           | 1160 / 45.7          |
| Quantity of shelves (standard/max.)                              | 2 / 8                | 2 / 17               |
| Distance of between shelves (mm / inch)                          | 60 / 2.4             | 60 / 2.4             |
| Max. load per shelf (kg / lbs)                                   | 25 / 55.1            | 40 / 88.2            |
| Permitted total load (kg / lbs)                                  | 75 / 165.3           | 100 / 220.5          |
| Cable port (Ø, mm / inch)  | 50 / 2.0             | 50 / 2.0             |
| Water tank capacity (L / cu ft)                                  | 15 / 0.5             | 15 / 0.5             |
| <b>Weight (kg / lbs)</b>   | 280 / 617.3          | 400 / 881.8          |
| <b>Temperature data</b>  |                      |                      |
| Range without humidity (°C / °F)                                 | -5 to 85 / 23 to 185 | -5 to 85 / 23 to 185 |
| Fluctuation (±°C / °F) <sup>1)</sup>                             | 0.3 / 0.54           | 0.3 / 0.54           |
| Variation (±°C / °F) <sup>1)</sup>                               | 0.5 / 0.9            | 0.7 / 1.26           |
| Heating time (20°C to 85°C) (min)                                | 25                   | 30                   |
| Cooling time (20°C to -5°C) (min)                                | 35                   | 40                   |
| <b>Humidity data (※ Ref.: Temp./ Humid. control range graph)</b> |                      |                      |
| Range (%RH)  | 20 to 85             | 20 to 85             |
| Fluctuation (±%RH) <sup>1)</sup>                                 | 3                    | 3                    |
| Variation (±%RH) <sup>1)</sup>                                   | 5                    | 5                    |
| <b>Light data (ICH Q1B option 2)</b>                             |                      |                      |
| Cool white (Lux)   | 6000                 | 6500                 |
| Ultraviolet-A (W/m <sup>2</sup> )                                | 4.5                  | 5                    |
| Uniformity of Visible light (±%)                                 | 10                   | 15                   |
| Uniformity of Ultraviolet-A light (±%)                           | 15                   | 15                   |
| Typical time 1.2 million Lux-hr (hr)                             | 200                  | 184                  |
| Typical time 200 W-hr/m <sup>2</sup> (hr)                        | 50                   | 40                   |
| <b>Electrical data &amp; Ordering information</b>                |                      |                      |
| Electrical requirements (230V, 1ph, 60Hz, A)                     | 15.4                 | 24.5                 |
| <b>Cat.No.</b>   | <b>AAHC1001K</b>     | <b>AAHC1011K</b>     |
| Electrical requirements (230V, 1ph, 50Hz, A)                     | 15.4                 | 24.5                 |
| <b>Cat.No.</b>   | <b>AAHC1002K</b>     | <b>AAHC1012K</b>     |

※ The above specifications are tested according to DIN 12880 and IEC 60068 standards.

※ Permissible environmental conditions are 18 - 30°C (recommended 20°C), 85% RH or less, under 2000m above sea level.

※ The DI water condition is pH 6.2 - 7.2 and the electrical conductivity is less than 20µs/cm.

1) The set value is set under the conditions of 40°C, 60% RH.



## Dimension

| Model                | TH-ICH-300  | TH-ICH-800  |
|----------------------|-------------|-------------|
| <b>W (mm / inch)</b> | 1130 / 44.5 | 1220 / 48.0 |
| <b>D (mm / inch)</b> | 985 / 38.8  | 1215 / 47.8 |
| <b>H (mm / inch)</b> | 1520 / 59.8 | 1955 / 77.0 |
| <b>A (mm / inch)</b> | 460 / 18.1  | 545 / 21.5  |
| <b>B (mm / inch)</b> | 905 / 35.6  | 1185 / 46.7 |

## Accessories Page 296

Cable Port, Shelves, Signal Lamp, Recorder, Water Purifier, Direct Water System, Inner Glass Door

# Accessories

## Wire Shelf



- Excellent ventilation structure.
- Stainless steel.
- Includes 2ea as standard.

## Perforated Shelf



- Suitable for high-load samples.
- Excellent maintenance as made of stainless steel.

## Recorder (Paper)



- Up to 6 channels supported.
- Set recording range and speed.
- Paper width: 100 mm.

## Recorder (Digital)



- Paperless. (5.7" LCD display)
- Up to 6 channels supported.
- Data stored in internal/external memory.

## Cable Port



- Both cap and silicone plug are included as standard in Ø50 mm cable port.
- It is available to add Ø50 mm, Ø80 mm.

## Signal Lamp



- Figuring out equipment status remotely.
- Run/Stand-by/Error displayed by color.

## Water Purifier



- Water purifier composed of particle filter and carbon filter.
- Solid steel box construction.

## Inner Glass Door



- Minimized temperature and humidity changes and observation of internal samples enabled.
- Hand-in port is provided as standard. (selectable when purchasing)

## Stand (1 Stage)



- Dedicated stand for small appliances.
- Provides lower drawer and loading space.
- Casters provided as standard for moving/fixing.

## Stand (2 Stage)



- Placing of two compact devices vertically.
- Minimized installation space for different temperature and humidity tests.

## LC GreenBox



- Real-time monitoring of device operation via mobile app
- Up to 4 devices can be connected

## Direct Water System



- Direct connection of distilled water to direct water line of the equipment from a water supply pipe.
- Useful for long-term testing.



| Model      | Cable Port (ø50) | Cable Port (ø80) | Wire Shelf   | Perforated Shelf | Signal Lamp | Recorder (Paper) | Recorder (Digital) | Water Purifier | Direct Water System | Inner Glass Door | Stand (1 stage) | Stand (2 stage) |
|------------|------------------|------------------|--------------|------------------|-------------|------------------|--------------------|----------------|---------------------|------------------|-----------------|-----------------|
| TH3-KE-025 | AAA8T610         | N/A              | 00RTD0000679 | AAA80602-6       | AAA80550    | AAA8T504         | AAA8T506           | AAA8T621       | AAA80620            | N/A              | AAA80631        | AAA80634        |
| TH3-KE-065 | AAA8T610         | AAA8T611         | 00RTD0000680 | AAA80602-7       | AAA80550    | AAA8T504         | AAA8T506           | AAA8T621       | AAA80620            | N/A              | AAA80632        | AAA80635        |
| TH3-KE-100 | AAA8T610         | AAA8T611         | 00RTD0000681 | AAA80602-8       | AAA80550    | AAA8T504         | AAA8T506           | AAA8T621       | AAA80620            | N/A              | AAA80633        | N/A             |
| TH3-ME-025 | AAA8T612         | N/A              | 00RTD0000679 | AAA80602-6       | AAA80550    | AAA8T504         | AAA8T506           | AAA8T621       | AAA80620            | N/A              | AAA80631        | AAA80634        |
| TH3-ME-065 | AAA8T612         | AAA8T611         | 00RTD0000680 | AAA80602-7       | AAA80550    | AAA8T504         | AAA8T506           | AAA8T621       | AAA80620            | N/A              | AAA80632        | AAA80635        |
| TH3-ME-100 | AAA8T612         | AAA8T611         | 00RTD0000681 | AAA80602-8       | AAA80550    | AAA8T504         | AAA8T506           | AAA8T621       | AAA80620            | N/A              | AAA80633        | N/A             |
| TH3-PE-025 | AAA8T612         | N/A              | 00RTD0000679 | AAA80602-6       | AAA80550    | AAA8T504         | AAA8T506           | AAA8T621       | AAA80620            | N/A              | AAA80631        | AAA80634        |
| TH3-PE-065 | AAA8T612         | AAA8T611         | 00RTD0000680 | AAA80602-7       | AAA80550    | AAA8T504         | AAA8T506           | AAA8T621       | AAA80620            | N/A              | AAA80632        | AAA80635        |
| TH3-PE-100 | AAA8T612         | AAA8T611         | 00RTD0000681 | AAA80602-8       | AAA80550    | AAA8T504         | AAA8T506           | AAA8T621       | AAA80620            | N/A              | AAA80633        | N/A             |
| TH-KH-180  | AAA8T610         | AAA8T611         | 00EDA0008212 | AAA80602-1       | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAA81552         | N/A             | N/A             |
| TH-KH-300  | AAA8T610         | AAA8T611         | 00EDA0008213 | AAA80602-2       | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAA81551         | N/A             | N/A             |
| TH-KH-408  | AAA8T610         | AAA8T611         | 00EDA0008214 | AAA80602-3       | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAA81551         | N/A             | N/A             |
| TH-KH-800  | AAA8T610         | AAA8T611         | 00EDA0008215 | AAA80602-4       | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAA81550         | N/A             | N/A             |
| TH-KH-1000 | AAA8T610         | AAA8T611         | 00EDA0008216 | AAA80602-5       | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAA81550         | N/A             | N/A             |
| TH-G-180   | AAA8T610         | AAA8T611         | 00EDA0008212 | AAA80602-1       | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAA81552         | N/A             | N/A             |
| TH-G-300   | AAA8T610         | AAA8T611         | 00EDA0008213 | AAA80602-2       | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAA81551         | N/A             | N/A             |
| TH-G-408   | AAA8T610         | AAA8T611         | 00EDA0008214 | AAA80602-3       | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAA81551         | N/A             | N/A             |
| TH-G-800   | AAA8T610         | AAA8T611         | 00EDA0008215 | AAA80602-4       | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAA81550         | N/A             | N/A             |
| TH-G-1000  | AAA8T610         | AAA8T611         | 00EDA0008216 | AAA80602-5       | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAA81550         | N/A             | N/A             |
| TH-G-1500  | AAA8T610         | AAA8T611         | 00EDA0008216 | AAA80602-5       | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | N/A              | N/A             | N/A             |
| TH-I-180   | AAA8T610         | AAA8T611         | 00EDA0008212 | AAA80602-1       | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAA81552         | N/A             | N/A             |
| TH-I-300   | AAA8T610         | AAA8T611         | 00EDA0008213 | AAA80602-2       | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAA81551         | N/A             | N/A             |
| TH-I-408   | AAA8T610         | AAA8T611         | 00EDA0008214 | AAA80602-3       | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAA81551         | N/A             | N/A             |
| TH-TG-180  | AAA8T610         | AAA8T611         | 00RTD0001302 | AAA80604-11      | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAC2501          | N/A             | N/A             |
| TH-TG-300  | AAA8T610         | AAA8T611         | 00RTD0001303 | AAA80604-12      | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAC2502          | N/A             | N/A             |
| TH-TG-408  | AAA8T610         | AAA8T611         | 00RTD0001300 | AAA80604-13      | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAC2502          | N/A             | N/A             |
| TH-TG-800  | AAA8T610         | AAA8T611         | 00RTD0001304 | AAA80604-14      | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAC2503          | N/A             | N/A             |
| TH-TG-1000 | AAA8T610         | AAA8T611         | 00RTD0001301 | AAA80604-15      | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAC2503          | N/A             | N/A             |
| TH-TG-1500 | AAA8T610         | AAA8T611         | 00RTD0001305 | AAA80604-16      | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | N/A              | N/A             | N/A             |
| TH-DG-150  | AAA8T610         | AAA8T611         | 00EDA0008251 | AAAC6501         | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAAC6511         | N/A             | N/A             |
| TH-DG-300  | AAA8T610         | AAA8T611         | 00RTD0001280 | AAAC6502         | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAAC6512         | N/A             | N/A             |
| TH-DG-400  | AAA8T610         | AAA8T611         | 00EDA0008250 | AAAC6503         | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAAC6513         | N/A             | N/A             |
| TH3-E-200  | AAA8T610         | AAA8T611         | 00EDA0008212 | AAA80602-1       | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAA81551         | N/A             | N/A             |
| TH3-E-400  | AAA8T610         | AAA8T611         | 00EDA0008214 | AAA80602-3       | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAA81552         | N/A             | N/A             |
| TH-ICH-300 | AAA8T610         | AAA8T611         | 00RTD0001196 | AAA80604-2       | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAA81554         | N/A             | N/A             |
| TH-ICH-800 | AAA8T610         | AAA8T611         | 00RTD0001198 | AAA80604-4       | AAA80550    | AAA8T500         | AAA8T505           | AAA8T621       | AAA80620            | AAA81555         | N/A             | N/A             |

## LC GreenBox

· Monitor and control the operation status of the product in real time via mobile app with an internet connection.

| Model      | Description              | Dimension (mm / inch)           | Cat. No. |
|------------|--------------------------|---------------------------------|----------|
| TH3 series | Mobile Monitoring System | 156 x 94 x 34 / 6.1 x 3.7 x 1.3 | AAAQ1011 |

# Temperature & Humidity Chamber

## Walk-in type

Large room chamber with optimized structure and system configuration



### ▮ Structural Functional Features

- Excellent thermal insulation and sealing to ensure stable temperature and humidity reproducibility even for repeated test use.
- The structure panel has excellent durability, minimizing deformation of the structure.
- Clean form without leakage and water gaps through application of optimal drain system design.
- Reinforced door structure ensures excellent durability and door sealing for long-term use.

### ▮ Use Convenience Features

- Customized design and production are optimized by thoroughly inspecting the internal capacity, temperature/temperature and humidity range, freezing type, specimen jig, convenience devices, safety functions, control system, installation place, etc. together with the user.
- Designed as a modular control system structure and can be placed the position as the customer's request.
- Basic safety features such as over temperature, door opening and water shortage, also additional safety features can be added such as for smoke and flame.

# Temperature & Humidity Chamber

## Customized type

Customized production based on accumulated technology and experience



### Large temperature & humidity chamber

Custom-sized temp. & humid. chamber according to customer needs



### Clean room temperature & Humidity chamber

Clean temp. & humid. chamber with HEPA filter

#### > Expert technical consultation

We provide expert technical consultations based on our accumulated skills and experience to conduct appropriate environmental reliability tests.

#### > Optimized proposal

Proposal of optimal temperature and temperature & humidity chamber configuration based on the customer's use.

#### > Reasonable customization

Customized chamber comprehensively considering test conditions, usage patterns, place of use, etc.

#### Expert Consultation Contact

#### International Sales Team

RM1005, 219, Gasan digital 1-ro, Geumcheon-gu, Seoul, 08501, Republic of Korea  
Tel. +82-2627-3816  
E-mail. overseas@jeiotech.com

# Heating & Cooling Chamber



Satisfaction with the requirements of European regulations and guidelines.



Real-time equipment monitoring and control system using mobile app.



Eco-friendly product that has passed environmental impact assessment tests.



More precise temperature control through temperature calibration.



Electronic over temperature protection system.



Conventional over temperature protection, a kind of backup device against electronic over temperature protection failure.



Over temperature protection function.



Control of temperature / humidity / rpm / time, etc. through dedicated program.



PC communication via RS-232 / RS-485 / USB port.



It memorizes the state of power failure and operates automatically when power is restored.



2 year warranty Free A/S.

## General Application

Reliability, Climate/freezing, Quality assurance, Thermal resistance testing.

- Electrical and electronic components, Sensor.
- The machinery / Military / Aircraft equipment.
- Construction materials / Plastics / Textile industries.
- Metal industries such as metallurgy.
- Semiconductor, PCB, LCD&LED.
- Chemical / Oil industry.
- Automotive industry.
- Pharmaceutical industry.

| Description            |   | Temp. Range<br>(°C / °F)   | Airflow            | Volume<br>(L / cu ft)   | Model  | Page |
|------------------------|---|----------------------------|--------------------|---|--------|------|
| Small type             | <b>Tabletop type</b> <ul style="list-style-type: none"> <li>• Compact design</li> <li>• Excellent insulation and sealing structure</li> </ul>   | -35 to 150<br>/ -31 to 302 | Vertical airflow   | 25, 65, 100<br>/ 0.9, 2.3, 3.5                                    | TC3-KE | 304  |
|                        |   | -20 to 150<br>/ -4 to 302  | Vertical airflow   | 25, 65, 100<br>/ 0.9, 2.3, 3.5                                    | TC3-ME | 304  |
| Medium large size type | <b>Ultra low temp. type (-70°C)</b> <ul style="list-style-type: none"> <li>• Verification completed according to international standards</li> <li>• Convenient safety system configuration</li> </ul> | -70 to 180<br>/ -94 to 356 | Horizontal airflow | 125, 253, 420, 720, 1000 / 4.4, 8.9, 14.8, 25.4, 35.3             | KB     | 308  |
|                        | <b>Low temp. and horizontal type (-40°C)</b> <ul style="list-style-type: none"> <li>• 27 points temperature verification completed</li> <li>• High-load samples are available</li> </ul>              | -35 to 180<br>/ -31 to 356 | Horizontal airflow | 125, 253, 420, 720, 1000 / 4.4, 8.9, 14.8, 25.4, 35.3             | KM     | 312  |
|                        | <b>Low temp. and vertical type (-40°C)</b> <ul style="list-style-type: none"> <li>• Vertical airflow model series</li> <li>• Provide good permeable shelves</li> </ul>                                | -35 to 180<br>/ -31 to 356 | Vertical airflow   | 125, 253, 420, 720, 990 / 4.4, 8.9, 14.8, 25.4, 35.0              | JM     | 316  |
|                        | <b>Low temp. type (-25°C)</b> <ul style="list-style-type: none"> <li>• Excellent durability and performance</li> <li>• Dual overheating temperature limiter</li> </ul>                                | -25 to 100<br>/ -13 to 212 | Horizontal airflow | 125, 250, 400, 700, 1000 / 4.4, 8.8, 14.1, 24.7, 35.3             | PB     | 320  |
|                        | <b>Ambient temperature type</b> <ul style="list-style-type: none"> <li>• Stable temperature control</li> <li>• Offering a variety of custom options</li> </ul>  | -5 to 100<br>/ 23 to 212   | Horizontal airflow | 125, 250, 400, 700, 1000 / 4.4, 8.8, 14.1, 24.7, 35.3             | PM     | 324  |
| General type           | <b>Compact design</b> <ul style="list-style-type: none"> <li>• Space-saving vertical structure.</li> <li>• Includes Dual model. (2-in-1)</li> </ul>   | -20 to 100<br>/ -4 to 212  | Horizontal airflow | 150, 255, 485, 150 x 2 chamber / 5.3, 9.0, 17.1, 17.1 x 2 chamber | LCH    | 328  |
|                        |   | 0 to 100<br>/ 32 to 212    | Horizontal airflow | 150, 255, 485, 150 x 2 chamber / 5.3, 9.0, 17.1, 17.1 x 2 chamber | LCH-G  | 328  |

※ The contents of the above and the contents of this catalog may differ depending on the specific model and conditions of use. For the information about the features and specifications that applying to each models, please check the information on the corresponding page of each models.

# Heating & Cooling Chamber



## Heating & Cooling Chamber

### Proven reliability and reproducibility Continuous innovative model

› **Completion of verification according to strict international standards**

Increase in reliability of accurate temperature implementation and test results (27 point measurement data) according to DIN 12880 and IEC 60068.

› **Complete chamber structure**

Includes double-packing door.  
Stable temperature control with excellent insulation and sealing.

› **Steady and uniform airflow formation**

Air flow optimized for uniform heat transfer ensures stable overall temperature distribution.

› **Height-adjustable and strong shelf**

Durable wire-shaped shelves provided as standard can be placed at different height.

### Powerful & Useful control Optimized precision control

› **Dedicated controller to operate temperature.**

Temperature Auto-tuning function.  
Highly-reliable control through calibration.

› **Powerful program operation**

Provides diverse program operation environment with a maximum of 100 patterns and 6000 segments.

› **Sophisticated custom control**

Auto-tuning by subdivided PID zone for more precise control stability.

› **Multi-functional dedicated software**

Up to 32 devices can be controlled at same time.  
Device operation and data processing function supported.



Operating Stand-by  
Easy to understand running status with LED display showing the operation condition.



Temp. regulator  
Electronic over temperature protection system.



Controller for temperature. (TC3-model)



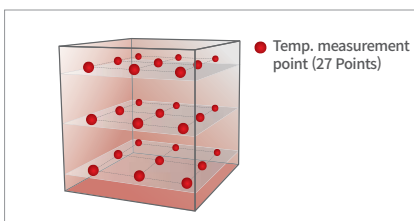
## Maximized usability with simple and useful functions

- > **Ease of check the test status**  
Convenient internal observation with LED lamp and looking glass window.  
Figures out the operation state through displaying LED even a long distance.
- > **Door lock with key lock**  
Door structure having well-sealed.  
Included key lock features as standard.
- > **Cable port provided as standard**  
50 mm diameter cable port and silicone plug are provided as standard for convenient testing.
- > **Convenient moving and installation**  
Easy to move and install with casters.

## More convenient and safe structure applied the top-grade safety system

- > **Electronic over temperature shutdown system**  
Independent precision temperature sensor and controller.  
Provides more secure and reliable over temperature shutdown.
- > **General-type over temperature shutdown system**  
Backup device for electronic system failure.  
Implementation of over-temperature shutdown even for electronic errors.
- > **Self-protection system**  
Protection system as like water tank shortage, door open warning, etc.  
Over-current and short circuit breaking device.
- > **Protection features for refrigeration system**  
Protection system for overload and over temperature on refrigerator.  
Stops automatically in case refrigerant pressure (high/low pressure) is abnormal.

※ Some of the above contents are limited to specific models.



27 Points temperature verification completed.



Dedicated stand with drawer and load space. (TC3-PE, KE)



Viewing Window as standard.

# Heating & Cooling Chamber

## Tabletop type

Compact temperature test chamber by continuing technological innovation

- TC3-KE (-35°C)
- TC3-ME (-20°C)

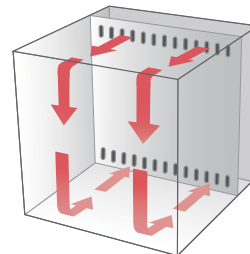


**TC3-KE**

with 2ea wire shelves (standard)  
Stand (option)



**TC3-ME**



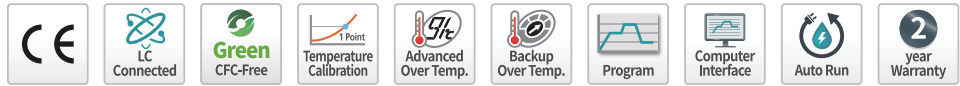
### Optimized Model Configuration

- 2 series (KE, ME) according to temperature control range.  
TC3-KE ; -35 ~ 150°C  
TC3-ME ; -20 ~ 150°C
- Standard type heating & cooling chamber for selecting the optimized model according to test conditions.
- Dedicated stand for convenient use and moving. (option)
- Recorder for maintaining test records. (option)

### Structural Functional Features

- Proven reproducibility and reliability with structural design optimized for miniaturization.
- Compact design for excellent space saving.
- Excellent thermal insulation and sealing to ensure stable temperature reproducibility even for repeated test use.
- The door part has a double sealing structure and excellent airtightness.





## Use Convenience Features

- Convenient operation with 5.6 inch color touch display controller.
- Easy observation of samples with tempered glass door with built in heating wire and LED lamp.
- By displaying the operation status of the device with LED colors, convenient to identify chambers status from a far.
- The cable port (ø 50 mm) included as standard make it convenient to connect external equipment.
- The door structure can be easily opened or closed.
- Door handle with built-in key lock.
- Identification of the control and operating conditions at the front panel.
- Design by stainless steel internal chamber made of stainless steel provide clean maintenance and excellent corrosion resistance.
- Easy to clean as it is easy to remove refrigerator condenser grill, making it convenient to maintain efficiency of refrigeration.
- Equipped with easy-to-move/install caster.



Viewing window



Indicator LED of operation condition.

## Multifunction Control System

- Highly-reliable control through calibration.
- Auto-tuning by subdivided PID zone for more precise control stability.
- RS-232 port (default) and RS-485 port (option) supported.
- Control and data processing by connecting up to 32 devices to PC at same time via RS-485 port.
- Convenient checking with useful graph display.
- Monitor and control via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)



Cable port



Door handles & Locking device

| Description                                | No.             |
|--|-----------------|
| <b>Pattern</b>                             | 100             |
| <b>Repeat time</b>                         | 999             |
| <b>Part repeat time</b>                    | 255             |
| <b>Max. segments / pattern</b>             | 100             |
| <b>Available max. segments</b>             | 2000            |
| <b>Programmable process time / segment</b> | 99 hour 59 min. |

\* It is possible to set 100 segments per pattern, but the maximum number of segments is not 10,000 (100 pattern x 100 segment) but 2,000.

## **▮ Outstanding Safety**

- Electronic over temperature protection system.  
(A-OT, advanced over temperature limiter)  
Independent precision temperature sensor and controller for safer and more accurate over temperature shutdown.
- Conventional over-temperature protection.  
(B-OT, backup over temperature limiter)  
A backup device for electronic system failure, mechanically preventing over temperature even when it occurs electronic errors.
- Door open warning and automatic shut off.
- Over-current and short circuit protection of device.
- Each heater has fuse for more being safe use
- Automatic stop when operating current of refrigerator is overloaded.
- Automatic stop in case of over temperature of the compressor.
- Auto shut off in case refrigerant pressure (high/low pressure) is abnormal.



## Specification

| Model   | TC3-KE-025              | TC3-KE-065              | TC3-KE-100              | TC3-ME-025             | TC3-ME-065             | TC3-ME-100             |
|---|-------------------------|-------------------------|-------------------------|------------------------|------------------------|------------------------|
| <b>Temperature data</b>                           |                         |                         |                         |                        |                        |                        |
| Range (°C / °F)                                   | -35 to 150 / -31 to 302 | -35 to 150 / -31 to 302 | -35 to 150 / -31 to 302 | -20 to 150 / -4 to 302 | -20 to 150 / -4 to 302 | -20 to 150 / -4 to 302 |
| Fluctuation (±°C / °F) <sup>1)</sup>              | 0.3 / 0.54              | 0.3 / 0.54              | 0.3 / 0.54              | 0.3 / 0.54             | 0.3 / 0.54             | 0.3 / 0.54             |
| Variation (±°C / °F) <sup>2)</sup>                | 0.5 / 0.9               | 0.5 / 0.9               | 0.5 / 0.9               | 0.5 / 0.9              | 0.5 / 0.9              | 0.5 / 0.9              |
| Heating time <sup>3)</sup>                        | 60                      | 60                      | 60                      | 50                     | 50                     | 50                     |
| Cooling time <sup>4)</sup>                        | 70                      | 70                      | 70                      | 55                     | 55                     | 55                     |
| <b>Interior dimensions</b>                        |                         |                         |                         |                        |                        |                        |
| Chamber volume (L / cu ft)                        | 25 / 0.88               | 65 / 2.3                | 100 / 3.53              | 25 / 0.88              | 65 / 2.3               | 100 / 3.53             |
| Width (mm / inch)                                 | 350 / 13.8              | 400 / 15.7              | 500 / 19.7              | 350 / 13.8             | 400 / 15.7             | 500 / 19.7             |
| Depth (mm / inch)                                 | 220 / 8.7               | 330 / 13                | 380 / 15                | 220 / 8.7              | 330 / 13               | 380 / 15               |
| Height (mm / inch)                                | 350 / 13.8              | 495 / 19.5              | 530 / 20.9              | 350 / 13.8             | 495 / 19.5             | 530 / 20.9             |
| Quantity of shelves (standard/max.)               | 2/7                     | 2/10                    | 2/10                    | 2/7                    | 2/10                   | 2/10                   |
| Distance of between shelves (mm / inch)           | 20 / 0.8                | 20 / 0.8                | 20 / 0.8                | 20 / 0.8               | 20 / 0.8               | 20 / 0.8               |
| Max. load per shelf (kg / lbs)                    | 25 / 55.1               | 25 / 55.1               | 25 / 55.1               | 25 / 55.1              | 25 / 55.1              | 25 / 55.1              |
| Permitted total load (kg / lbs)                   | 65 / 143.3              | 65 / 143.3              | 65 / 143.3              | 65 / 143.3             | 65 / 143.3             | 65 / 143.3             |
| Cable port (∅, mm / inch)                         | 50 / 2                  | 50 / 2                  | 50 / 2                  | 50 / 2                 | 50 / 2                 | 50 / 2                 |
| Weight (kg / lbs)                                 | 110 / 242.5             | 140 / 308.6             | 150 / 330.7             | 80 / 176.4             | 110 / 242.5            | 130 / 286.6            |
| <b>Electrical data &amp; Ordering information</b> |                         |                         |                         |                        |                        |                        |
| Electrical requirements (230V, 1ph, 60Hz, A)      | 7.4                     | 8.8                     | 10.8                    | 5.3                    | 6.1                    | 6.8                    |
| <b>Cat. No.</b>                                   | <b>AAH861131K</b>       | <b>AAH861231K</b>       | <b>AAH861331K</b>       | <b>AAH860131K</b>      | <b>AAH860231K</b>      | <b>AAH860331K</b>      |
| Electrical requirements (230V, 1ph, 50Hz, A)      | 7.4                     | 8.8                     | 10.8                    | 5.3                    | 6.1                    | 6.8                    |
| <b>Cat. No.</b>                                   | <b>AAH861132K</b>       | <b>AAH861232K</b>       | <b>AAH861332K</b>       | <b>AAH860132K</b>      | <b>AAH860232K</b>      | <b>AAH860332K</b>      |

※ The above specifications are tested according to DIN 12880 and IEC 60068 standards.

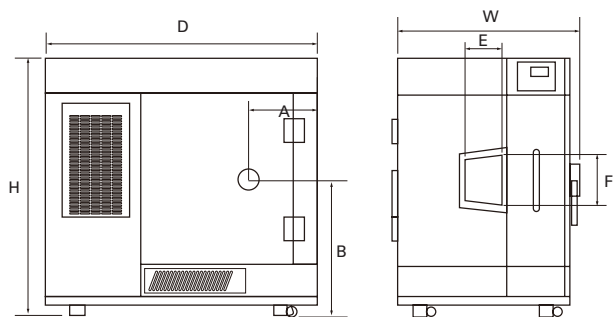
※ Permissible environmental conditions are 18 - 30°C (recommended 20°C), 85% RH or less, under 2000m above sea level.

1) The set value is set under the conditions of 100°C.

2) The set value is set under the conditions of 25°C.

3) TC3-KE : -40°C to 100°C(-40°F to 212°F), TC3-ME : -20°C to 100°C(-4°F to 212°F)

4) TC3-KE : 20°C to -40°C(68°F to -40°F), TC3-ME : 20°C to -20°C(68°F to -4°F)



## Dimension

| Model                | TC3-KE-025 | TC3-KE-065  | TC3-KE-100  | TC3-ME-025 | TC3-ME-065  | TC3-ME-100  |
|----------------------|------------|-------------|-------------|------------|-------------|-------------|
| <b>W (mm / inch)</b> | 550 / 21.7 | 600 / 23.6  | 700 / 27.6  | 550 / 21.7 | 600 / 23.6  | 700 / 27.6  |
| <b>D (mm / inch)</b> | 880 / 34.6 | 1050 / 41.3 | 1110 / 43.7 | 880 / 34.6 | 1050 / 41.3 | 1110 / 43.7 |
| <b>H (mm / inch)</b> | 915 / 36   | 1060 / 41.7 | 1100 / 43.3 | 915 / 36   | 1060 / 41.7 | 1100 / 43.3 |
| <b>A (mm / inch)</b> | 211 / 8.3  | 276 / 10.9  | 276 / 10.9  | 211 / 8.3  | 276 / 10.9  | 276 / 10.9  |
| <b>B (mm / inch)</b> | 495 / 19.5 | 580 / 22.8  | 580 / 22.8  | 495 / 19.5 | 580 / 22.8  | 580 / 22.8  |
| <b>E (mm / inch)</b> | 170 / 6.7  | 170 / 6.7   | 170 / 6.7   | 170 / 6.7  | 170 / 6.7   | 170 / 6.7   |
| <b>F (mm / inch)</b> | 229 / 9    | 229 / 9     | 229 / 9     | 229 / 9    | 229 / 9     | 229 / 9     |

## Accessories Page 330

Cable Port, Shelves, Signal Lamp, Recorder, Stand, LC Green Box

# Heating & Cooling Chamber

## Ultra low temperature type (-70°C), horizontal airflow

Wide range of temperature control from -70 to 180°C

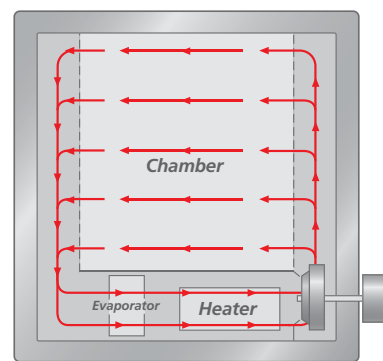


### KBD-040

with 2ea wire shelves (standard), Recorder, Signal Lamp (option)

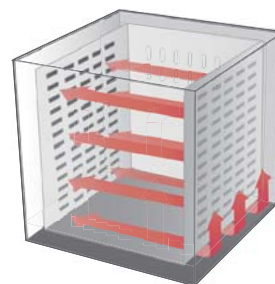
### Completion of Temperature Verification According to Strict International Standard

- Temperature verification in accordance with DIN 12880 and IEC 60068-3-5 provides excellent reliability and reproducibility.
- Provided specification the fluctuation and gradient in typical temperature point.
- Provided heating / cooling time data to help select the right model for testing purposes.
- Tested recovery time in accordance with specifications to provide data that is useful for real-use.



### Structural Functional Features

- Chamber structure with excellent sealing and insulation provides a stable long-term test and reduce costs by minimizing energy loss.
- According to international standards, even when operated at upper temperature, the surface temperature does not exceed 51°C. (EN 563 standard)
- Door consists of a double-sealed structure to satisfy DIN 58371. (door airtight guidance)
- Durability even after long-term repeated use has been verified by satisfying the door load test (SEFA standard).
- Door structure is a two-point hang structure, building more stable seal with less force.





## Optimized Dedicated Control System

- 3.7-inch color touch display controller.
- Intuitive screen configuration for easy and convenient control.
- Graph display makes it easier to check operation.
- PID zone subdivided into 4 zones for more precise control stability.
- RS-232 port (default) and RS-485 port (option) supported.
- Control and data processing by connecting up to 32 devices to PC at same time via RS-485 port.
- Includes software for PC control.
- Saving data, convenient for reporting.

## Use Convenience Features

- Convenient opening and closing door with either side latches.
- Door handle with built-in key lock.
- Identification of the control and operating conditions at the front panel.
- Design by stainless steel internal chamber provide clean maintenance and excellent corrosion resistance.
- Easy to clean as it is easy to remove refrigerator condenser grill, making it convenient to maintain efficiency of refrigeration.
- Equipped with easy-to-move/install caster.
- Perforated shelf for heavy-load sample. (option)
- Convenient and various options such as signal lamps, cable port, air cycle rate, gas purge, etc.

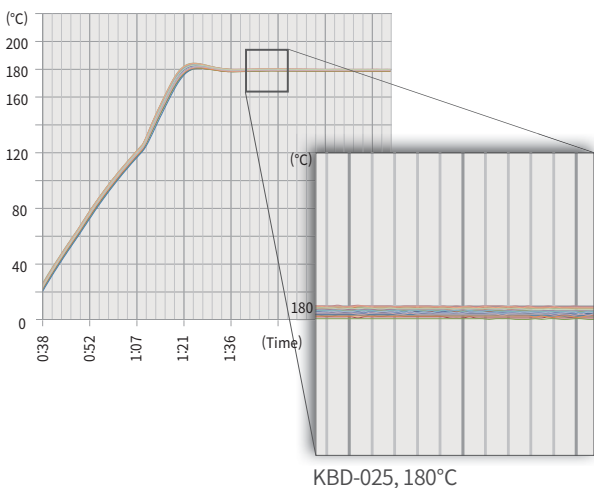
| Description                         | No.            |
|-------------------------------------|----------------|
| Pattern                             | 100            |
| Repeat time                         | 999            |
| Part repeat time                    | 255            |
| Max. segments / pattern             | 100            |
| Available max. segments             | 6000           |
| Programmable process time / segment | 99 hr. 59 min. |

\* It is possible to set 100 segments per pattern, but the maximum number of segments is not 10,000 (100 pattern x 100 segment) but 6,000.

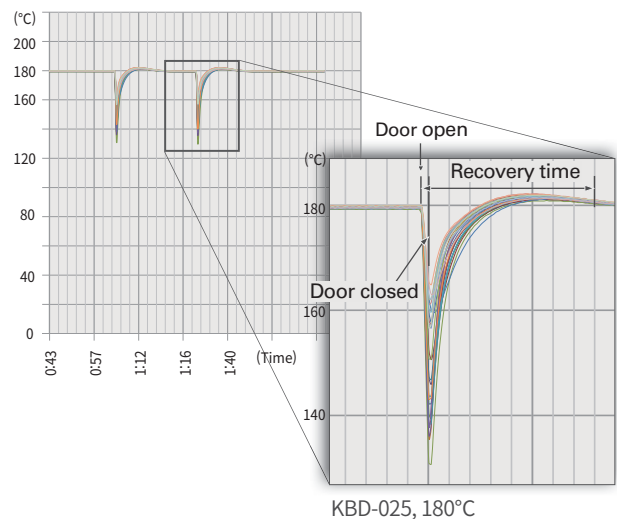
## Outstanding Safety

- Electronic over temperature protection system. (A-OT, advanced over temperature limiter)  
Independent precision temperature sensor and controller for safer and more accurate over temperature shutdown.
- Conventional over-temperature protection. (B-OT, backup over temperature limiter)  
A backup device for electronic system failure, mechanically preventing over temperature even when it occurs electronic errors.
- Door open warning and automatic shut off.
- Emergency stop button on the front of the product.
- Over-current and short circuit protection of device.
- When main power connections, users can quickly respond by notifying of electric phase sequence errors.
- Electrical instrumentation access warning and system shutdown.
- Each heater by fuse for more safety using.
- Auto stop when operating current of refrigerator is overloaded.
- Automatic stop in case of over temperature of the compressor.
- Auto shut off in case refrigerant pressure (high/low pressure) is abnormal.

### Temperature Fluctuation



### Recovery Time After Door Opening



## Specification

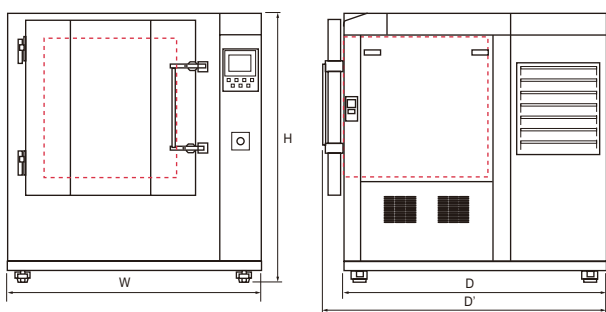
| Model   | KBD-012                    | KBD-025                    | KBD-040                    | KBD-070                    | KBD-100                    |
|---|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <b>Temperature data</b>   |                            |                            |                            |                            |                            |
| Range (°C / °F)   | -70 to 180<br>/ -94 to 356 | -70 to 180<br>/ -94 to 356 | -70 to 180<br>/ -94 to 356 | -70 to 180<br>/ -94 to 356 | -70 to 180<br>/ -94 to 356 |
| <b>Fluctuation (±°C / °F) <sup>1),2)</sup></b>                            |                            |                            |                            |                            |                            |
| at -70°C  | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 |
| at -50°C  | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 |
| at -25°C  | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 |
| at -10°C  | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.3 / 0.54                 | 0.2 / 0.36                 | 0.2 / 0.36                 |
| at 25°C   | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 |
| at 70°C   | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 |
| at 100°C  | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.3 / 0.54                 | 0.2 / 0.36                 | 0.2 / 0.36                 |
| at 150°C  | 0.2 / 0.36                 | 0.3 / 0.54                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 |
| at 180°C  | 0.3 / 0.54                 | 0.3 / 0.54                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 |
| <b>Gradient (±°C / °F) <sup>1)</sup></b>                                  |                            |                            |                            |                            |                            |
| at -70°C  | 0.3 / 0.54                 | 0.3 / 0.54                 | 0.3 / 0.54                 | 0.2 / 0.36                 | 0.2 / 0.36                 |
| at -50°C  | 0.4 / 0.72                 | 0.5 / 0.9                  | 0.4 / 0.72                 | 0.3 / 0.54                 | 0.3 / 0.54                 |
| at -25°C  | 0.4 / 0.72                 | 0.4 / 0.72                 | 0.4 / 0.72                 | 0.3 / 0.54                 | 0.3 / 0.54                 |
| at -10°C  | 0.5 / 0.9                  | 0.4 / 0.72                 | 0.5 / 0.9                  | 0.4 / 0.72                 | 0.4 / 0.72                 |
| at 25°C   | 0.5 / 0.9                  | 0.4 / 0.72                 | 0.4 / 0.72                 | 0.4 / 0.72                 | 0.4 / 0.72                 |
| at 70°C   | 0.6 / 1.08                 | 0.7 / 1.26                 | 0.6 / 1.08                 | 0.7 / 1.26                 | 0.7 / 1.26                 |
| at 100°C  | 1 / 1.8                    | 1 / 1.8                    | 1 / 1.8                    | 0.9 / 1.62                 | 0.9 / 1.62                 |
| at 150°C  | 1 / 1.8                    | 1.1 / 1.98                 | 1 / 1.8                    | 0.8 / 1.44                 | 0.8 / 1.44                 |
| at 180°C  | 1.2 / 2.16                 | 1.2 / 2.16                 | 1.1 / 1.98                 | 1 / 1.8                    | 1 / 1.8                    |
| <b>Heating time (min) <sup>2)</sup></b>                                   |                            |                            |                            |                            |                            |
| from -70°C to 25°C  | 26                         | 28                         | 30                         | 30                         | 31                         |
| from -50°C to 25°C  | 23                         | 23                         | 24                         | 25                         | 27                         |
| from -25°C to 25°C  | 15                         | 15                         | 16                         | 17                         | 18                         |
| from -10°C to 25°C  | 11                         | 10                         | 11                         | 13                         | 13                         |
| from 25°C to 70°C   | 13                         | 13                         | 14                         | 14                         | 16                         |
| from 25°C to 100°C  | 26                         | 25                         | 25                         | 26                         | 27                         |
| from 25°C to 150°C  | 41                         | 40                         | 38                         | 42                         | 44                         |
| from 25°C to 180°C  | 54                         | 53                         | 55                         | 56                         | 58                         |
| from -50°C to 180°C   | 69                         | 68                         | 68                         | 72                         | 75                         |
| from -50°C to 120°C   | 55                         | 56                         | 56                         | 61                         | 62                         |
| from -25°C to 120°C   | 47                         | 48                         | 48                         | 53                         | 55                         |
| from -50°C to 5°C   | 18                         | 17                         | 18                         | 21                         | 21                         |
| from -70°C to 5°C   | 25                         | 25                         | 25                         | 28                         | 28                         |
| from 5°C to 125°C   | 43                         | 42                         | 45                         | 47                         | 48                         |
| from 125°C to 180°C   | 18                         | 17                         | 18                         | 22                         | 23                         |
| <b>Cooling time (min)<sup>2)</sup></b>                                    |                            |                            |                            |                            |                            |
| from 25°C to -70°C  | 75                         | 75                         | 77                         | 74                         | 73                         |
| from 25°C to -40°C  | 33                         | 33                         | 32                         | 30                         | 32                         |
| from 25°C to -25°C  | 22                         | 22                         | 20                         | 20                         | 21                         |
| from 25°C to -10°C  | 17                         | 17                         | 14                         | 13                         | 15                         |
| from 70°C to 25°C   | 23                         | 20                         | 23                         | 20                         | 22                         |
| from 100°C to 25°C  | 34                         | 35                         | 35                         | 32                         | 31                         |
| from 120°C to -50°C   | 83                         | 80                         | 81                         | 80                         | 80                         |
| from 5°C to -40°C   | 23                         | 23                         | 23                         | 23                         | 23                         |
| from 5°C to -70°C   | 67                         | 72                         | 72                         | 70                         | 70                         |
| <b>Recovery time after door was opened for 30sec.(min.) <sup>2)</sup></b> |                            |                            |                            |                            |                            |
| at -70°C  | 12                         | 12                         | 13                         | 9                          | 10                         |
| at -50°C  | 8                          | 8                          | 8                          | 6                          | 6                          |
| at -25°C  | 6                          | 6                          | 6                          | 5                          | 5                          |
| at -10°C  | 5                          | 5                          | 6                          | 5                          | 5                          |
| at 70°C   | 6                          | 6                          | 6                          | 6                          | 6                          |
| at 100°C  | 5                          | 5                          | 5                          | 6                          | 6                          |
| at 150°C  | 7                          | 7                          | 10                         | 10                         | 10                         |
| at 180°C  | 7                          | 8                          | 10                         | 10                         | 10                         |
| <b>Electrical data &amp; Ordering information</b>                         |                            |                            |                            |                            |                            |
| Electrical requirement (380V, 50Hz, 3P, A)                                | 10                         | 12                         | 18                         | 29                         | 29                         |
| <b>Cat. No.</b>   | <b>AAHKC1114K</b>          | <b>AAHKC2114K</b>          | <b>AAHKC3114K</b>          | <b>AAHKC4114K</b>          | <b>AAHKC5114K</b>          |

1) According to IEC 60068-3-5

2) According to DIN 12880

※ Above specification value is recorded by 380V/50Hz.

※ Above specifications can be changed without prior notice.



## Dimension

| Model                                   | KBD-012                      | KBD-025                    | KBD-040                    | KBD-070                    | KBD-100                      |
|---|------------------------------|----------------------------|----------------------------|----------------------------|------------------------------|
| <b>Interior dimensions</b>              |                              |                            |                            |                            |                              |
| Chamber volume (L / cu ft)              | 125 / 4.41                   | 253 / 8.93                 | 420 / 14.83                | 720 / 25.43                | 1000 / 35.31                 |
| Width (mm / inch)                       | 500 / 19.7                   | 600 / 23.6                 | 750 / 29.5                 | 900 / 35.4                 | 1000 / 39.4                  |
| Depth (mm / inch)                       | 500 / 19.7                   | 650 / 25.6                 | 700 / 27.6                 | 800 / 31.5                 | 910 / 35.8                   |
| Height (mm / inch)                      | 500 / 19.7                   | 650 / 25.6                 | 800 / 31.5                 | 1000 / 39.4                | 1100 / 43.3                  |
| Quantity of shelves (standard/max.)     | 2 / 6                        | 2 / 9                      | 2 / 11                     | 2 / 15                     | 2 / 16                       |
| Distance of between shelves (mm / inch) | 30 / 1.2                     | 30 / 1.2                   | 30 / 1.2                   | 30 / 1.2                   | 30 / 1.2                     |
| Max. load per shelf (kg / lbs)          | 15 / 33.1                    | 20 / 44.1                  | 30 / 66.1                  | 40 / 88.2                  | 45 / 99.2                    |
| Permitted total load (kg / lbs)         | 50 / 110.2                   | 70 / 154.3                 | 90 / 198.4                 | 120 / 264.6                | 150 / 330.7                  |
| <b>Exterior dimensions</b>              |                              |                            |                            |                            |                              |
| Width (mm / inch), W                    | 1114 / 43.9                  | 1240 / 48.8                | 1424 / 56.1                | 1575 / 62                  | 1675 / 65.9                  |
| Depth / with handle (mm - inch), D/D'   | 1327 / 1360 -<br>52.2 / 53.5 | 1492 / 1525 -<br>58.7 / 60 | 1567 / 1600 -<br>61.7 / 63 | 1777 / 1810 -<br>70 / 71.3 | 1887 / 1920 -<br>74.3 / 75.6 |
| Height (mm / inch), H                   | 1208 / 47.6                  | 1308 / 51.5                | 1509 / 59.4                | 1819 / 71.6                | 1919 / 75.6                  |
| Weight (kg / lbs)                       | 170 / 374.8                  | 260 / 573.2                | 320 / 705.5                | 390 / 859.8                | 440 / 970                    |

## Accessories Page 330

Cable Port, Shelves, Signal Lamp, Recorder, Gas Purge System

# Heating & Cooling Chamber

## Low temperature type (-35°C), horizontal airflow

### Horizontal airflow and -35 to 180°C temperature range

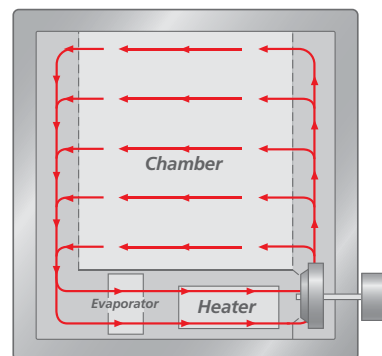


#### KMV-040

with 2ea wire shelves (standard), Recorder, Signal lamp (option)

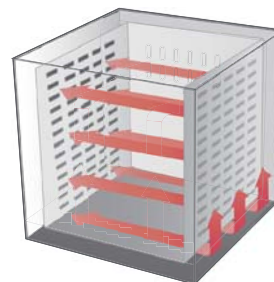
#### Completion of Temperature Verification According to Strict International Standard

- Temperature verification in accordance with DIN 12880 and IEC 60068-3-5 provides excellent reliability and reproducibility.
- Provided specification the fluctuation and gradient in typical temperature point.
- Provided heating / cooling time data to help select the right model for testing purposes.
- Tested recovery time in accordance with specifications to provide data that is useful for real-use.



#### Structural Functional Features

- Chamber structure with excellent sealing and insulation provides a stable long-term test and reduce costs by minimizing energy loss.
- According to international standards, even when operated at upper temperature, the surface temperature does not exceed 51°C. (EN 563 standard)
- Door consists of a double-sealed structure to satisfy DIN 58371. (door airtight guidance)
- Durability even after long-term repeated use has been verified by satisfying the door load test. (SEFA standard)
- Door structure is a two-point hang structure, building more stable seal with less force.







## Optimized Dedicated Control System

- 3.7-inch color touch display controller.
- Intuitive screen configuration for easy and convenient control.
- Graph display makes it easier to check operation.
- PID zone subdivided into 4 zones for more precise control stability.
- RS-232 port (default) and RS-485 port (option) supported.
- Control and data processing by connecting up to 32 devices to PC at same time via RS-485 port.
- Includes software for PC control.
- Saving data, convenient for reporting.

## Use Convenience Features

- Convenient opening and closing door with either side latches.
- Door handle with built-in key lock.
- Identification of the control and operating conditions at the front panel.
- Design by stainless steel internal chamber provide clean maintenance and excellent corrosion resistance.
- Easy to clean as it is easy to remove refrigerator condenser grill, making it convenient to maintain efficiency of refrigeration.
- Equipped with easy-to-move/install caster.
- Perforated shelf for heavy-load sample. (option)
- Convenient and various options such as signal lamps, cable port, air cycle rate, gas purge, etc.

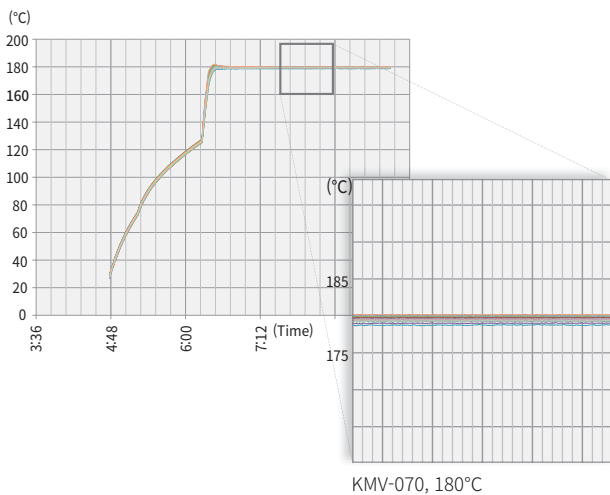
| Description                         | No.            |
|-------------------------------------|----------------|
| Pattern                             | 100            |
| Repeat time                         | 999            |
| Part repeat time                    | 255            |
| Max. segments / pattern             | 100            |
| Available max. segments             | 2000           |
| Programmable process time / segment | 99 hr. 59 min. |

\* It is possible to set 100 segments per pattern, but the maximum number of segments is not 10,000 (100 pattern x 100 segment) but 2,000.

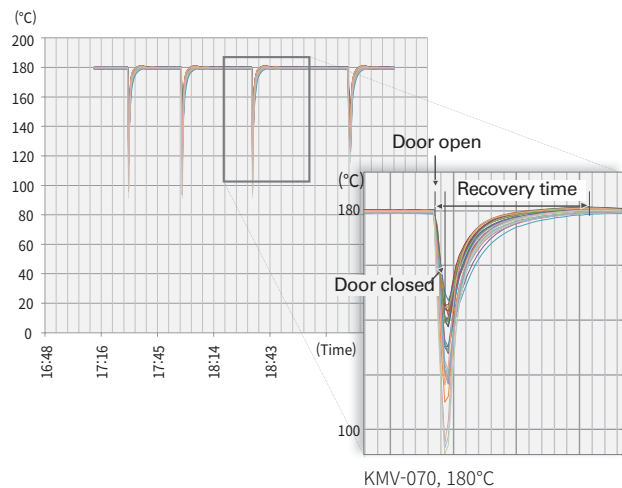
## Outstanding Safety

- Electronic over temperature protection system. (A-OT, advanced over temperature limiter)  
Independent precision temperature sensor and controller for safer and more accurate over temperature shutdown.
- Conventional over-temperature protection. (B-OT, backup over temperature limiter)  
A backup device for electronic system failure, mechanically preventing over temperature even when it occurs electronic errors.
- Door open warning and automatic shut off.
- Emergency stop button on the front of the product.
- Over-current and short circuit protection of device.
- When main power connections, users can quickly respond by notifying of electric phase sequence errors.
- Electrical instrumentation access warning and system shutdown.
- Each heater by fuse for more safety using.
- Auto stop when operating current of refrigerator is overloaded.
- Automatic stop in case of over temperature of the compressor
- Auto shut off in case refrigerant pressure (high/low pressure) is abnormal.

### Temperature Variation



### Recovery Time After Door Opening



## Specification

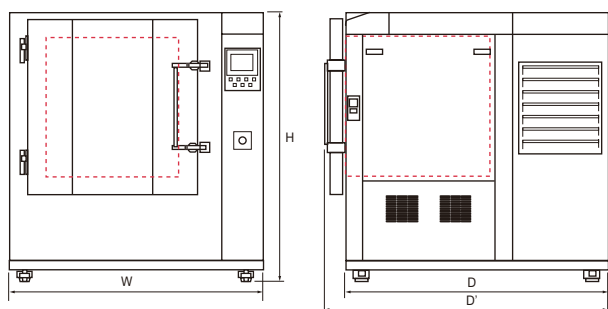
| Model   | KMV-012                   | KMV-025                   | KMV-040                   | KMV-070                   | KMV-100                   |
|---|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| <b>Temperature data</b>   |                           |                           |                           |                           |                           |
| Range (°C / °F)   | -35 to 180<br>/-31 to 356 | -35 to 180<br>/-31 to 356 | -35 to 180<br>/-31 to 356 | -35 to 180<br>/-31 to 356 | -35 to 180<br>/-31 to 356 |
| <b>Fluctuation (±°C / °F) <sup>1), 2)</sup></b>                           |                           |                           |                           |                           |                           |
| at -40°C  | 0.5 / 0.9                 | 0.5 / 0.9                 | 0.3 / 0.54                | 0.2 / 0.36                | 0.3 / 0.54                |
| at -25°C  | 0.3 / 0.54                | 0.3 / 0.54                | 0.3 / 0.54                | 0.2 / 0.36                | 0.2 / 0.36                |
| at -10°C  | 0.3 / 0.54                | 0.3 / 0.54                | 0.2 / 0.36                | 0.3 / 0.54                | 0.3 / 0.54                |
| at 25°C   | 0.2 / 0.36                | 0.2 / 0.36                | 0.5 / 0.9                 | 0.4 / 0.72                | 0.2 / 0.36                |
| at 70°C   | 0.3 / 0.54                | 0.3 / 0.54                | 0.4 / 0.72                | 0.3 / 0.54                | 0.2 / 0.36                |
| at 100°C  | 0.3 / 0.54                | 0.3 / 0.54                | 0.3 / 0.54                | 0.3 / 0.54                | 0.3 / 0.54                |
| at 150°C  | 0.2 / 0.36                | 0.2 / 0.36                | 0.3 / 0.54                | 0.2 / 0.36                | 0.2 / 0.36                |
| at 180°C  | 0.4 / 0.72                | 0.4 / 0.72                | 0.3 / 0.54                | 0.3 / 0.54                | 0.2 / 0.36                |
| <b>Gradient (±°C / °F) <sup>1)</sup></b>                                  |                           |                           |                           |                           |                           |
| at -40°C  | 0.5 / 0.9                 | 0.5 / 0.9                 | 1.2 / 2.16                | 0.6 / 1.08                | 0.3 / 0.54                |
| at -25°C  | 0.6 / 1.08                | 0.6 / 1.08                | 1.2 / 2.16                | 0.7 / 1.26                | 0.4 / 0.72                |
| at -10°C  | 0.7 / 1.26                | 0.7 / 1.26                | 1.2 / 2.16                | 0.8 / 1.44                | 0.4 / 0.72                |
| at 25°C   | 0.7 / 1.26                | 0.7 / 1.26                | 1.1 / 1.98                | 0.8 / 1.44                | 0.5 / 0.9                 |
| at 70°C   | 0.8 / 1.44                | 0.8 / 1.44                | 1.7 / 3.06                | 0.9 / 1.62                | 0.7 / 1.26                |
| at 100°C  | 1 / 1.8                   | 1 / 1.8                   | 1.9 / 3.42                | 1.1 / 1.98                | 0.8 / 1.44                |
| at 150°C  | 1 / 1.8                   | 1 / 1.8                   | 2.3 / 4.14                | 0.5 / 0.9                 | 0.7 / 1.26                |
| at 180°C  | 1.4 / 2.52                | 1.4 / 2.52                | 2.3 / 4.14                | 0.8 / 1.44                | 0.8 / 1.44                |
| <b>Heating time (min) <sup>2)</sup></b>                                   |                           |                           |                           |                           |                           |
| from -40°C to 25°C  | 23                        | 23                        | 23                        | 20                        | 23                        |
| from -25°C to 25°C  | 20                        | 20                        | 19                        | 20                        | 18                        |
| from -10°C to 25°C  | 14                        | 14                        | 17                        | 15                        | 14                        |
| from 25°C to 70°C   | 17                        | 17                        | 21                        | 19                        | 21                        |
| from 25°C to 100°C  | 31                        | 31                        | 29                        | 44                        | 44                        |
| from 25°C to 150°C  | 61                        | 61                        | 48                        | 82                        | 90                        |
| from 25°C to 180°C  | 65                        | 65                        | 55                        | 100                       | 76                        |
| from -40°C to 180°C   | 92                        | 92                        | 79                        | 102                       | 203                       |
| from -25°C to 120°C   | 68                        | 68                        | 66                        | 67                        | 99                        |
| from -40°C to 5°C   | 15                        | 15                        | 13                        | 10                        | 19                        |
| from 5°C to 125°C   | 53                        | 53                        | 54                        | 80                        | 171                       |
| from 125°C to 180°C   | 24                        | 24                        | 12                        | 12                        | 13                        |
| <b>Cooling time (min) <sup>2)</sup></b>                                   |                           |                           |                           |                           |                           |
| from 25°C to -40°C  | 41                        | 41                        | 37                        | 38                        | 44                        |
| from 25°C to -25°C  | 20                        | 20                        | 20                        | 17                        | 20                        |
| from 25°C to -10°C  | 13                        | 13                        | 15                        | 10                        | 15                        |
| from 70°C to 25°C   | 16                        | 16                        | 16                        | 13                        | 15                        |
| from 100°C to 25°C  | 25                        | 25                        | 25                        | 18                        | 27                        |
| from 150°C to 25°C  | 81                        | 81                        | 110                       | 103                       | 290                       |
| from 180°C to 25°C  | 152                       | 152                       | 173                       | 177                       | 310                       |
| from 180°C to -40°C   | 180                       | 180                       | 221                       | 212                       | 361                       |
| from 120°C to -25°C   | 43                        | 43                        | 46                        | 48                        | 48                        |
| from 180°C to 125°C   | 113                       | 113                       | 150                       | 153                       | 292                       |
| from 125°C to 5°C   | 33                        | 33                        | 36                        | 27                        | 31                        |
| from 5°C to -40°C   | 34                        | 34                        | 35                        | 32                        | 38                        |
| <b>Recovery time after door was opened for 30sec (min.) <sup>2)</sup></b> |                           |                           |                           |                           |                           |
| at -40°C  | 8                         | 8                         | 6.5                       | 7                         | 6                         |
| at -25°C  | 3.5                       | 3.5                       | 7.5                       | 6                         | 7                         |
| at -10°C  | 2.5                       | 2.5                       | 6.5                       | 6.5                       | 6.5                       |
| at 25°C   | 4                         | 4                         | 5.5                       | 4.5                       | 5                         |
| at 70°C   | 4                         | 4                         | 5.5                       | 5                         | 8                         |
| at 100°C  | 4                         | 4                         | 6.5                       | 6                         | 6                         |
| at 150°C  | 4                         | 4                         | 4.5                       | 4.3                       | 3.5                       |
| at 180°C  | 11.5                      | 11.5                      | 6                         | 5                         | 4                         |
| <b>Electrical data &amp; Ordering information</b>                         |                           |                           |                           |                           |                           |
| Electrical requirement (230V, 60Hz, 1P, A)                                | 19.2                      | 26                        |                           |                           |                           |
| <b>Cat. No.</b>   | <b>AAHK9011K</b>          | <b>AAHK9021K</b>          | -                         | -                         | -                         |
| Electrical requirement (230V, 50Hz, 1P, A)                                | 19.2                      | 26                        |                           |                           |                           |
| <b>Cat. No.</b>   | <b>AAHK9012K</b>          | <b>AAHK9022K</b>          | -                         | -                         | -                         |
| Electrical requirement (380V, 50Hz, 3P, A)                                |                           |                           | 12.5                      | 18                        | 19.4                      |
| <b>Cat. No.</b>   | -                         | -                         | <b>AAHK9038K</b>          | <b>AAHK9048K</b>          | <b>AAHK9058K</b>          |

1) According to IEC 60068-3-5

2) According to DIN 12880

※ Above specification value is recorded by 230V/60Hz, 380V/50Hz.

※ Above specifications can be changed without prior notice.



## Dimension

| Model                                   | KMV-012                    | KMV-025                  | KMV-040                  | KMV-070                    | KMV-100                      |
|---|----------------------------|--------------------------|--------------------------|----------------------------|------------------------------|
| <b>Interior dimensions</b>              |                            |                          |                          |                            |                              |
| Chamber volume (L / cu ft)              | 125 / 4.41                 | 253 / 8.93               | 420 / 14.83              | 720 / 25.43                | 1000 / 35.31                 |
| Width (mm / inch)                       | 500 / 19.7                 | 600 / 23.6               | 750 / 29.5               | 900 / 35.4                 | 1000 / 39.4                  |
| Depth (mm / inch)                       | 500 / 19.7                 | 650 / 25.6               | 700 / 27.6               | 800 / 31.5                 | 910 / 35.8                   |
| Height (mm / inch)                      | 500 / 19.7                 | 650 / 25.6               | 800 / 31.5               | 1000 / 39.4                | 1100 / 43.3                  |
| Quantity of shelves (standard/max.)     | 2 / 6                      | 2 / 9                    | 2 / 11                   | 2 / 15                     | 2 / 16                       |
| Distance of between shelves (mm / inch) | 30 / 1.2                   | 30 / 1.2                 | 30 / 1.2                 | 30 / 1.2                   | 30 / 1.2                     |
| Max. load per shelf (kg / lbs)          | 15 / 33.1                  | 20 / 44.1                | 30 / 66.1                | 40 / 88.2                  | 45 / 99.2                    |
| Permitted total load (kg / lbs)         | 50 / 110.2                 | 70 / 154.3               | 90 / 198.4               | 120 / 264.6                | 150 / 330.7                  |
| <b>Exterior dimensions</b>              |                            |                          |                          |                            |                              |
| Width (mm / inch), W                    | 1070 / 42.1                | 1170 / 46.1              | 1370 / 53.9              | 1495 / 58.9                | 1595 / 62.8                  |
| Depth / with handle (mm - inch), D/D'   | 740 / 775 -<br>29.1 / 30.5 | 890 / 925 -<br>35 / 36.4 | 940 / 975 -<br>37 / 38.4 | 1595 / 1625 -<br>62.8 / 64 | 1695 / 1725 -<br>66.7 / 67.9 |
| Height (mm / inch), H                   | 1385 / 54.5                | 1585 / 62.4              | 1780 / 70.1              | 1650 / 65                  | 1800 / 70.9                  |
| Weight (kg / lbs)                       | 170 / 374.8                | 260 / 573.2              | 320 / 705.5              | 390 / 859.8                | 440 / 970                    |

## Accessories Page 330

Cable Port, Shelves, Viewing Window, Signal Lamp, Recorder, Fan Speed Adjuster, Gas Purge System, Hour Meter

# Heating & Cooling Chamber

## Low temperature type (-35°C), vertical airflow

### Vertical airflow and -35 to 180°C temperature range



**JMV-070**

with 2ea wire shelves (standard), Recorder, Signal Lamp (option)

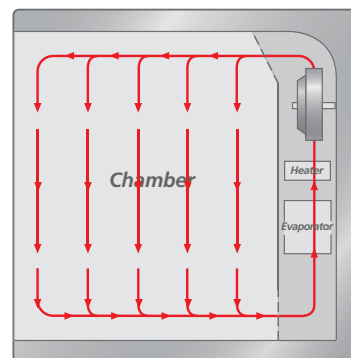


#### **Completion of Temperature Verification According to Strict International Standard**

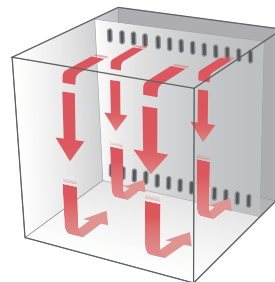
- Temperature verification in accordance with DIN 12880 and IEC 60068-3-5 provides excellent reliability and reproducibility.
- Provided specification the fluctuation and gradient in typical temperature point.
- Provided heating / cooling time data to help select the right model for testing purposes.
- Tested recovery time in accordance with specifications to provide data that is useful for real-use.

#### **Structural Functional Features**

- Chamber structure with excellent sealing and insulation provides a stable long-term test and reduce costs by minimizing energy loss.
- According to international standards, even when operated at upper temperature, the surface temperature does not exceed 51°C. (EN 563 standard)
- Door consists of a double-sealed structure to satisfy DIN 58371. (door airtight guidance)
- Durability even after long-term repeated use has been verified by satisfying the door load test. (SEFA standard)
- Door structure is a two-point hang structure, building more stable seal with less force.



Side View





## Optimized Dedicated Control System

- 3.7-inch color touch display controller.
- Intuitive screen configuration for easy and convenient control.
- Graph display makes it easier to check operation.
- PID zone subdivided into 4 zones for more precise control stability.
- RS-232 port (default) and RS-485 port (option) supported.
- Control and data processing by connecting up to 32 devices to PC at same time via RS-485 port.
- Includes software for PC control.
- Saving data, convenient for reporting.

## Use Convenience Features

- Convenient opening and closing door with either side latches.
- Door handle with built-in key lock.
- Identification of the control and operating conditions at the front panel.
- Design by stainless steel internal chamber provide clean maintenance and excellent corrosion resistance.
- Easy to clean as it is easy to remove refrigerator condenser grill, making it convenient to maintain efficiency of refrigeration.
- Equipped with easy-to-move/install caster.
- Perforated shelf for heavy-load sample. (option)
- Convenient and various options such as signal lamps, cable port, air cycle rate, gas purge, etc.

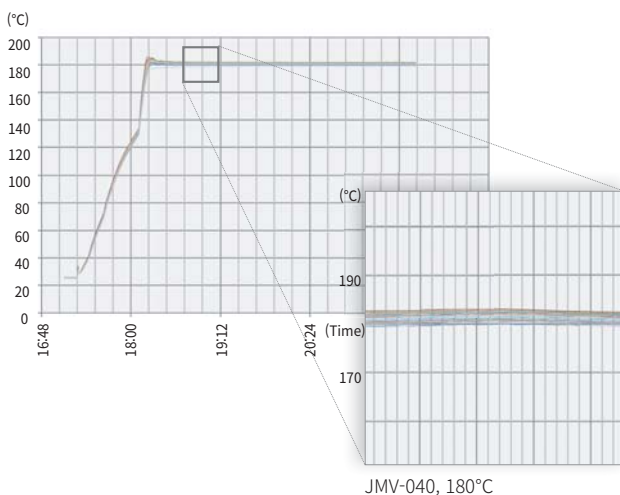
| Description                         | No.            |
|-------------------------------------|----------------|
| Pattern                             | 100            |
| Repeat time                         | 999            |
| Part repeat time                    | 255            |
| Max. segments / pattern             | 100            |
| Available max. segments             | 2000           |
| Programmable process time / segment | 99 hr. 59 min. |

\* It is possible to set 100 segments per pattern, but the maximum number of segments is not 10,000 (100 pattern x 100 segment) but 2,000.

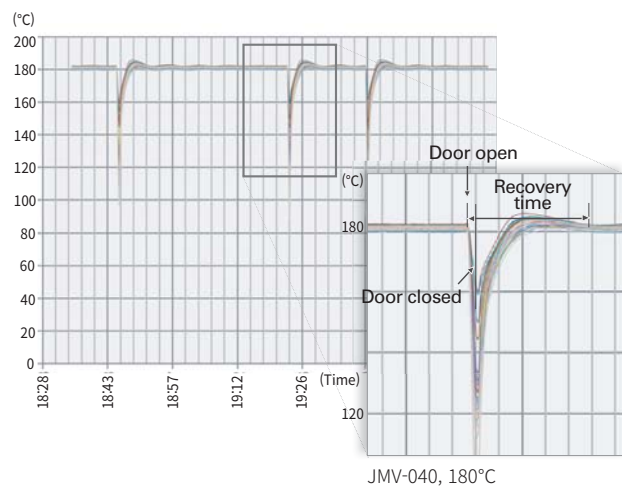
## Outstanding Safety

- Electronic over temperature protection system. (A-OT, advanced over temperature limiter)  
Independent precision temperature sensor and controller for safer and more accurate over temperature shutdown.
- Conventional over-temperature protection. (B-OT, backup over temperature limiter)  
A backup device for electronic system failure, mechanically preventing over temperature even when it occurs electronic errors.
- Door open warning and automatic shut off.
- Emergency stop button on the front of the product.
- Over-current and short circuit protection of device.
- When main power connections, users can quickly respond by notifying of electric phase sequence errors.
- Electrical instrumentation access warning and system shutdown.
- Each heater by fuse for more safety using.
- Auto stop when operating current of refrigerator is overloaded.
- Automatic stop in case of over temperature of the compressor.
- Auto shut off in case refrigerant pressure (high/low pressure) is abnormal.

### Temperature Fluctuation



### Recovery Time After Door Opening



## Specification

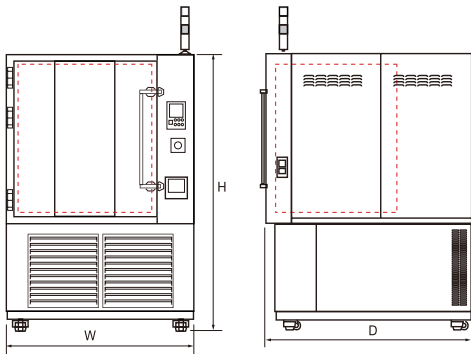
| Model  | JMV-012                    | JMV-025                    | JMV-040                    | JMV-070                    | JMV-100                    |
|--|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <b>Temperature data</b>  |                            |                            |                            |                            |                            |
| Range (°C / °F)  | -35 to 180<br>/ -31 to 356 | -35 to 180<br>/ -31 to 356 | -35 to 180<br>/ -31 to 356 | -35 to 180<br>/ -31 to 356 | -35 to 180<br>/ -31 to 356 |
| <b>Fluctuation (±°C / °F)<sup>1), 2)</sup></b>                           |                            |                            |                            |                            |                            |
| at -40°C   | 0.4 / 0.72                 | 0.4 / 0.72                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 |
| at -25°C   | 0.4 / 0.72                 | 0.4 / 0.72                 | 0.3 / 0.54                 | 0.2 / 0.36                 | 0.3 / 0.54                 |
| at -10°C   | 0.5 / 0.9                  | 0.5 / 0.9                  | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 |
| at 25°C  | 0.3 / 0.54                 | 0.3 / 0.54                 | 0.3 / 0.54                 | 0.2 / 0.36                 | 0.2 / 0.36                 |
| at 70°C  | 0.6 / 1.08                 | 0.6 / 1.08                 | 0.3 / 0.54                 | 0.2 / 0.36                 | 0.2 / 0.36                 |
| at 100°C   | 0.3 / 0.54                 | 0.3 / 0.54                 | 0.3 / 0.54                 | 0.3 / 0.54                 | 0.2 / 0.36                 |
| at 150°C   | 0.4 / 0.72                 | 0.4 / 0.72                 | 0.3 / 0.54                 | 0.3 / 0.54                 | 0.3 / 0.54                 |
| at 180°C   | 0.3 / 0.54                 | 0.3 / 0.54                 | 0.4 / 0.72                 | 0.4 / 0.72                 | 0.5 / 0.9                  |
| <b>Gradient (±°C / °F)<sup>1)</sup></b>                                  |                            |                            |                            |                            |                            |
| at -40°C   | 0.7 / 1.26                 | 0.7 / 1.26                 | 0.3 / 0.54                 | 0.9 / 1.62                 | 0.7 / 1.26                 |
| at -25°C   | 0.6 / 1.08                 | 0.6 / 1.08                 | 0.3 / 0.54                 | 0.9 / 1.62                 | 0.7 / 1.26                 |
| at -10°C   | 0.6 / 1.08                 | 0.6 / 1.08                 | 0.3 / 0.54                 | 1.1 / 1.98                 | 0.8 / 1.44                 |
| at 25°C  | 0.8 / 1.44                 | 0.8 / 1.44                 | 0.4 / 0.72                 | 0.7 / 1.26                 | 0.6 / 1.08                 |
| at 70°C  | 0.8 / 1.44                 | 0.8 / 1.44                 | 0.6 / 1.08                 | 1.1 / 1.98                 | 0.9 / 1.62                 |
| at 100°C   | 0.9 / 1.62                 | 0.9 / 1.62                 | 0.7 / 1.26                 | 1 / 1.8                    | 0.8 / 1.44                 |
| at 150°C   | 1.1 / 1.98                 | 1.1 / 1.98                 | 1.2 / 2.16                 | 0.8 / 1.44                 | 0.9 / 1.62                 |
| at 180°C   | 1.4 / 2.52                 | 1.4 / 2.52                 | 1.5 / 34.7                 | 1 / 1.8                    | 1.3 / 34.3                 |
| <b>Heating time (min)<sup>2)</sup></b>                                   |                            |                            |                            |                            |                            |
| from -40°C to 25°C   | 30                         | 30                         | 31                         | 20                         | 21                         |
| from -25°C to 25°C   | 20                         | 20                         | 17                         | 18                         | 16                         |
| from -10°C to 25°C   | 17                         | 17                         | 13                         | 13                         | 15                         |
| from 25°C to 70°C  | 26                         | 26                         | 18                         | 25                         | 20                         |
| from 25°C to 100°C   | 28                         | 28                         | 21                         | 26                         | 25                         |
| from 25°C to 150°C   | 50                         | 50                         | 39                         | 39                         | 51                         |
| from 25°C to 180°C   | 56                         | 56                         | 63                         | 46                         | 56                         |
| from -40°C to 180°C  | 61                         | 61                         | 81                         | 62                         | 73                         |
| from -25°C to 120°C  | 52                         | 52                         | 39                         | 47                         | 47                         |
| from -40°C to 5°C  | 7                          | 7                          | 8                          | 6                          | 7                          |
| from 5°C to 125°C  | 44                         | 44                         | 59                         | 40                         | 49                         |
| from 125°C to 180°C  | 10                         | 10                         | 14                         | 16                         | 17                         |
| <b>Cooling time (min)<sup>2)</sup></b>                                   |                            |                            |                            |                            |                            |
| from 25°C to -40°C   | 37                         | 37                         | 29                         | 28                         | 46                         |
| from 25°C to -25°C   | 22                         | 22                         | 20                         | 22                         | 24                         |
| from 25°C to -10°C   | 18                         | 18                         | 17                         | 19                         | 17                         |
| from 70°C to 25°C  | 20                         | 20                         | 22                         | 23                         | 23                         |
| from 100°C to 25°C   | 30                         | 30                         | 26                         | 34                         | 31                         |
| from 150°C to 25°C   | 95                         | 95                         | 92                         | 110                        | 160                        |
| from 180°C to 25°C   | 144                        | 144                        | 158                        | 186                        | 289                        |
| from 180°C to -40°C  | 172                        | 172                        | 198                        | 192                        | 297                        |
| from 120°C to -25°C  | 56                         | 56                         | 57                         | 54                         | 46                         |
| from 180°C to 125°C  | 110                        | 110                        | 133                        | 144                        | 228                        |
| from 125°C to 5°C  | 37                         | 37                         | 43                         | 30                         | 35                         |
| from 5°C to -40°C  | 25                         | 25                         | 22                         | 18                         | 34                         |
| <b>Recovery time after door was opened for 30sec.(min.)<sup>2)</sup></b> |                            |                            |                            |                            |                            |
| at -40°C   | 6                          | 6                          | 6                          | 6.5                        | 9                          |
| at -25°C   | 5                          | 5                          | 6.5                        | 7                          | 6.5                        |
| at -10°C   | 6.5                        | 6.5                        | 6.5                        | 8.5                        | 6.5                        |
| at 25°C  | 5.5                        | 5.5                        | 4.5                        | 2                          | 7                          |
| at 70°C  | 8.5                        | 8.5                        | 8                          | 9.5                        | 7.5                        |
| at 100°C   | 5.5                        | 5.5                        | 4.5                        | 6                          | 5.5                        |
| at 150°C   | 6.5                        | 6.5                        | 7                          | 9                          | 3.5                        |
| at 180°C   | 6.5                        | 6.5                        | 6.5                        | 8                          | 4                          |
| <b>Electrical data &amp; Ordering information</b>                        |                            |                            |                            |                            |                            |
| Electrical requirement (230V, 60Hz, 1P, A)                               | 19.2                       | 26                         | -                          | -                          | -                          |
| <b>Cat. No.</b>  | <b>AAHKB011K</b>           | <b>AAHKB021K</b>           | -                          | -                          | -                          |
| Electrical requirement (230V, 50Hz, 1P, A)                               | 19.2                       | 26                         |                            |                            |                            |
| <b>Cat. No.</b>  | <b>AAHKB012K</b>           | <b>AAHKB022K</b>           |                            |                            |                            |
| Electrical requirement (380V, 50Hz, 3P, A)                               |                            |                            | 12.5                       | 18                         | 19.4                       |
| <b>Cat. No.</b>  | -                          | -                          | <b>AAHKB038K</b>           | <b>AAHKB048K</b>           | <b>AAHKB058K</b>           |

1) According to IEC 60068-3-5

2) According to DIN 12880

※ Above specification value is recorded by 230V/60Hz, 380V/50Hz.

※ Above specifications can be changed without prior notice.



## Dimension

| Model                                   | JMV-012     | JMV-025     | JMV-040     | JMV-070     | JMV-100     |
|---|-------------|-------------|-------------|-------------|-------------|
| <b>Interior dimensions</b>              |             |             |             |             |             |
| Chamber volume (L / cu ft)              | 125 / 4.41  | 253 / 8.93  | 420 / 14.83 | 720 / 25.43 | 990 / 34.96 |
| Width (mm / inch)                       | 500 / 19.7  | 600 / 23.6  | 750 / 29.5  | 900 / 35.4  | 1000 / 39.4 |
| Depth (mm / inch)                       | 500 / 19.7  | 650 / 25.6  | 700 / 27.6  | 800 / 31.5  | 900 / 35.4  |
| Height (mm / inch)                      | 500 / 19.7  | 650 / 25.6  | 800 / 31.5  | 1000 / 39.4 | 1100 / 43.3 |
| Quantity of shelves (standard/max.)     | 2 / 6       | 2 / 9       | 2 / 11      | 2 / 15      | 2 / 16      |
| Distance of between shelves (mm / inch) | 30 / 1.2    | 30 / 1.2    | 30 / 1.2    | 30 / 1.2    | 30 / 1.2    |
| Load per shelf (kg / lbs)               | 15 / 33.1   | 20 / 44.1   | 25 / 55.1   | 40 / 88.2   | 40 / 88.2   |
| Permitted total load (kg / lbs)         | 50 / 110.2  | 70 / 154.3  | 75 / 165.3  | 100 / 220.5 | 100 / 220.5 |
| <b>Exterior dimensions</b>              |             |             |             |             |             |
| Width (mm / inch), W                    | 890 / 35    | 990 / 39    | 1140 / 44.9 | 1290 / 50.8 | 1390 / 54.7 |
| Depth (mm / inch), D                    | 950 / 37.4  | 1180 / 46.5 | 1330 / 52.4 | 1430 / 56.3 | 1530 / 60.2 |
| Height (mm / inch), H                   | 1200 / 47.2 | 1350 / 53.1 | 1590 / 62.6 | 1940 / 76.4 | 2040 / 80.3 |
| Weight (kg / lbs)                       | 170 / 374.8 | 260 / 573.2 | 320 / 705.5 | 390 / 859.8 | 440 / 970   |

## Accessories Page 330

Cable Port, Shelves, Viewing Window, Signal Lamp, Recorder, Fan Speed Adjuster, Gas Purge System, Hour Meter

# Heating & Cooling Chamber

## Low temperature type (-25°C), horizontal airflow

-25 to 100°C temperature range to meet basic test requirements



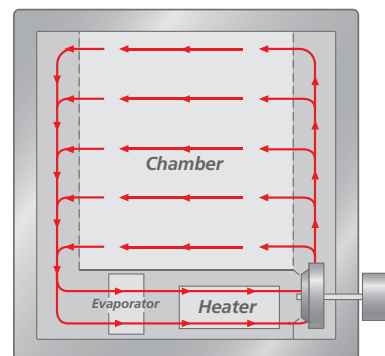
**PBV-040**

with 2ea wire shelves (standard), Recorder, Signal lamp (option)



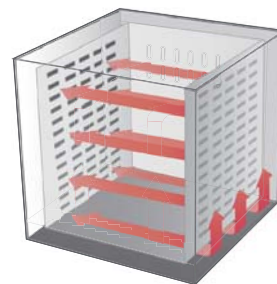
### Completion of Temperature Verification According to Strict International Standard

- Temperature verification in accordance with DIN 12880 and IEC 60068-3-5 provides excellent reliability and reproducibility.
- Provided specification the fluctuation and gradient in typical temperature point.
- Provided heating / cooling time data to help select the right model for testing purposes.
- Tested recovery time in accordance with specifications to provide data that is useful for real-use.



### Structural Functional Features

- Chamber structure with excellent sealing and insulation provides a stable long-term test and reduce costs by minimizing energy loss.
- According to international standards, even when operated at upper temperature, the surface temperature does not exceed 51°C. (EN 563 standard)
- Door consists of a double-sealed structure to satisfy DIN 58371. (door airtight guidance)
- Durability even after long-term repeated use has been verified by satisfying the door load test. (SEFA standard)
- Door structure is a two-point hang structure, building more stable seal with less force.







## Optimized Dedicated Control System

- 3.7-inch color touch display controller.
- Intuitive screen configuration for easy and convenient control.
- Graph display makes it easier to check operation.
- PID zone subdivided into 4 zones for more precise control stability.
- RS-232 port (default) and RS-485 port (option) supported.
- Control and data processing by connecting up to 32 devices to PC at same time via RS-485 port.
- Includes software for PC control.
- Saving data, convenient for reporting.

## Use Convenience Features

- Convenient opening and closing door with either side latches.
- Door handle with built-in key lock.
- Identification of the control and operating conditions at the front panel.
- Design by stainless steel internal chamber provide clean maintenance and excellent corrosion resistance.
- Easy to clean as it is easy to remove refrigerator condenser grill, making it convenient to maintain efficiency of refrigeration.
- Equipped with easy-to-move/install caster.
- Perforated shelf for heavy-load sample. (option)
- Convenient and various options such as signal lamps, cable port, air cycle rate, gas purge, etc.

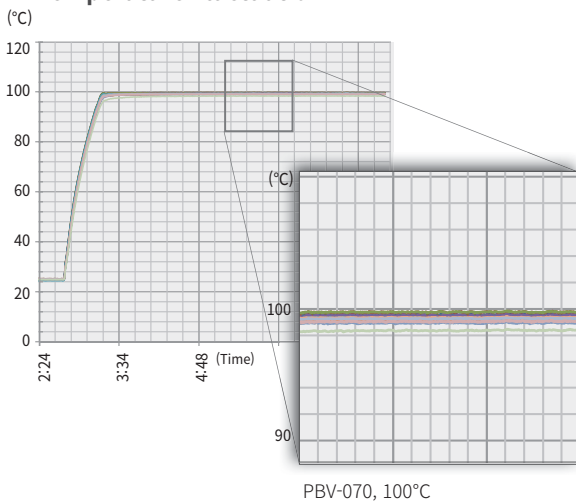
| Description                         | No.            |
|-------------------------------------|----------------|
| Pattern                             | 100            |
| Repeat time                         | 999            |
| Part repeat time                    | 255            |
| Max. segments / pattern             | 100            |
| Available max. segments             | 2000           |
| Programmable process time / segment | 99 hr. 59 min. |

\* It is possible to set 100 segments per pattern, but the maximum number of segments is not 10,000 (100 pattern x 100 segment) but 2,000.

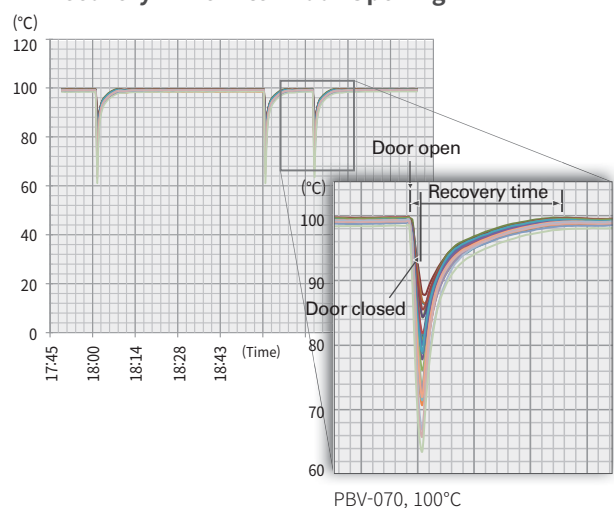
## Outstanding Safety

- Conventional over-temperature protection. (over temperature limiter)
- Door open warning and automatic shut off.
- Emergency stop button on the front of the product.
- Over-current and short circuit protection of device.
- When main power connections, users can quickly respond by notifying of electric phase sequence errors.
- Electrical instrumentation access warning and system shutdown.
- Each heater by fuse for more safety using.
- Auto stop when operating current of refrigerator is overloaded.
- Automatic stop in case of over temperature of the compressor.
- Auto shut off in case refrigerant pressure (high/low pressure) is abnormal.

### Temperature Fluctuation



### Recovery Time After Door Opening



## Specification

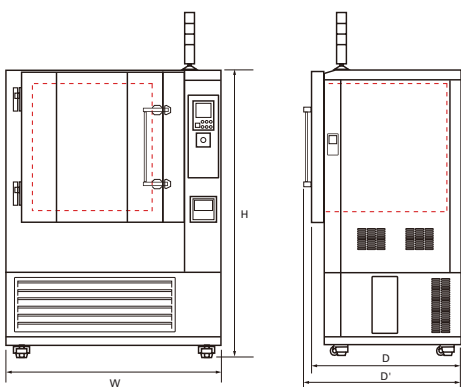
| Model  | PBV-012                    | PBV-025                    | PBV-040                    | PBV-070                    | PBV-100                    |
|--|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <b>Temperature data</b>  |                            |                            |                            |                            |                            |
| Range (°C / °F)  | -25 to 100<br>/ -13 to 212 | -25 to 100<br>/ -13 to 212 | -25 to 100<br>/ -13 to 212 | -25 to 100<br>/ -13 to 212 | -25 to 100<br>/ -13 to 212 |
| <b>Fluctuation (±°C / °F)<sup>1), 2)</sup></b>                           |                            |                            |                            |                            |                            |
| at -25°C   | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 |
| at -15°C   | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 |
| at -10°C   | 0.3 / 0.54                 | 0.3 / 0.54                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 |
| at 25°C  | 0.3 / 0.54                 | 0.3 / 0.54                 | 0.3 / 0.54                 | 0.4 / 0.72                 | 0.2 / 0.36                 |
| at 70°C  | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.3 / 0.54                 | 0.2 / 0.36                 |
| at 100°C   | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.2 / 0.36                 | 0.3 / 0.54                 | 0.2 / 0.36                 |
| <b>Gradient (±°C / °F)<sup>1)</sup></b>                                  |                            |                            |                            |                            |                            |
| at -25°C   | 0.3 / 0.54                 | 0.3 / 0.54                 | 0.4 / 0.72                 | 0.4 / 0.72                 | 0.4 / 0.72                 |
| at -15°C   | 0.3 / 0.54                 | 0.3 / 0.54                 | 0.4 / 0.72                 | 0.4 / 0.72                 | 0.4 / 0.72                 |
| at -10°C   | 0.3 / 0.54                 | 0.3 / 0.54                 | 0.4 / 0.72                 | 0.4 / 0.72                 | 0.4 / 0.72                 |
| at 25°C  | 0.3 / 0.54                 | 0.3 / 0.54                 | 0.4 / 0.72                 | 0.4 / 0.72                 | 0.4 / 0.72                 |
| at 70°C  | 0.4 / 0.72                 | 0.4 / 0.72                 | 0.6 / 1.08                 | 0.6 / 1.08                 | 0.6 / 1.08                 |
| at 100°C   | 0.6 / 1.08                 | 0.6 / 1.08                 | 0.7 / 1.26                 | 0.8 / 1.44                 | 0.8 / 1.44                 |
| <b>Heating time (min)<sup>2)</sup></b>                                   |                            |                            |                            |                            |                            |
| from -25°C to 25°C   | 19                         | 19                         | 29                         | 22                         | 24                         |
| from -15°C to 25°C   | 17                         | 17                         | 22                         | 20                         | 22                         |
| from -10°C to 25°C   | 15                         | 15                         | 21                         | 18                         | 20                         |
| from 25°C to 70°C  | 20                         | 20                         | 33                         | 22                         | 27                         |
| from 25°C to 100°C   | 34                         | 34                         | 52                         | 35                         | 38                         |
| from -25°C to 100°C  | 47                         | 47                         | 76                         | 46                         | 61                         |
| <b>Cooling time (min)<sup>2)</sup></b>                                   |                            |                            |                            |                            |                            |
| from 25°C to -25°C   | 36                         | 36                         | 26                         | 25                         | 34                         |
| from 25°C to -15°C   | 21                         | 21                         | 21                         | 20                         | 24                         |
| from 25°C to -10°C   | 17                         | 17                         | 19                         | 18                         | 21                         |
| from 70°C to 25°C  | 17                         | 17                         | 20                         | 20                         | 25                         |
| from 100°C to 25°C   | 28                         | 28                         | 30                         | 29                         | 35                         |
| from 100°C to -25°C  | 65                         | 65                         | 50                         | 53                         | 56                         |
| <b>Recovery time after door was opened for 30sec.(min.)<sup>2)</sup></b> |                            |                            |                            |                            |                            |
| at -25°C   | 5                          | 5                          | 5                          | 4                          | 7                          |
| at -15°C   | 4.5                        | 4.5                        | 3.5                        | 5.5                        | 5                          |
| at -10°C   | 6                          | 6                          | 4.5                        | 4                          | 5                          |
| at 25°C  | 5                          | 5                          | 4                          | 5.5                        | 3.5                        |
| at 70°C  | 5                          | 5                          | 9.5                        | 5                          | 7.5                        |
| at 100°C   | 5.5                        | 5.5                        | 9                          | 6                          | 7                          |
| <b>Electrical data &amp; Ordering information</b>                        |                            |                            |                            |                            |                            |
| Electrical requirement (230V, 60Hz, 1P, A)                               | 16.3                       | 22.8                       |                            |                            |                            |
| <b>Cat. No.</b>  | <b>AAHK5011K</b>           | <b>AAHK5021K</b>           | -                          | -                          | -                          |
| Electrical requirement (230V, 50Hz, 1P, A)                               | 16.3                       | 22.8                       |                            |                            |                            |
| <b>Cat. No.</b>  | <b>AAHK5012K</b>           | <b>AAHK5022K</b>           | -                          | -                          | -                          |
| Electrical requirement (380V, 50Hz, 3P, A)                               |                            |                            | 7.3                        | 9.1                        | 10.9                       |
| <b>Cat. No.</b>  | -                          | -                          | <b>AAHK5038K</b>           | <b>AAHK5048K</b>           | <b>AAHK5058K</b>           |

1) According to IEC 60068-3-5

2) According to DIN 12880

※ Above specification value is recorded by 230V/60Hz, 380V/50Hz.

※ Above specifications can be changed without prior notice.



## Dimension

| Model                                   | PBV-012                    | PBV-025                    | PBV-040                    | PBV-070                      | PBV-100                    |
|---|----------------------------|----------------------------|----------------------------|------------------------------|----------------------------|
| <b>Interior dimensions</b>              |                            |                            |                            |                              |                            |
| Chamber volume (L / cu ft)              | 125 / 4.41                 | 250 / 8.83                 | 400 / 14.13                | 700 / 24.72                  | 1000 / 35.31               |
| Width (mm / inch)                       | 500 / 19.7                 | 600 / 23.6                 | 750 / 29.5                 | 900 / 35.4                   | 1000 / 39.4                |
| Depth (mm / inch)                       | 500 / 19.7                 | 650 / 25.6                 | 700 / 27.6                 | 800 / 31.5                   | 910 / 35.8                 |
| Height (mm / inch)                      | 500 / 19.7                 | 650 / 25.6                 | 800 / 31.5                 | 1000 / 39.4                  | 1100 / 43.3                |
| Quantity of shelves (standard/max.)     | 2 / 6                      | 2 / 9                      | 2 / 11                     | 2 / 15                       | 2 / 16                     |
| Distance of between shelves (mm / inch) | 30 / 1.2                   | 30 / 1.2                   | 30 / 1.2                   | 30 / 1.2                     | 30 / 1.2                   |
| Load per shelf (kg / lbs)               | 15 / 33.1                  | 20 / 44.1                  | 30 / 66.1                  | 40 / 88.2                    | 45 / 99.2                  |
| Permitted total load (kg / lbs)         | 50 / 110.2                 | 70 / 154.3                 | 90 / 198.4                 | 120 / 264.6                  | 150 / 330.7                |
| <b>Exterior dimensions</b>              |                            |                            |                            |                              |                            |
| Width (mm / inch), W                    | 1060 / 41.7                | 1154 / 45.4                | 1304 / 51.3                | 1454 / 57.2                  | 1720 / 67.7                |
| Depth / with handle (mm - inch), D/D'   | 672 / 702 -<br>26.5 / 27.6 | 822 / 852 -<br>32.4 / 33.5 | 872 / 902 -<br>34.3 / 35.5 | 1510 / 1540 -<br>59.4 / 60.6 | 1620 / 1650 -<br>63.8 / 65 |
| Height (mm / inch), H                   | 1340 / 52.8                | 1540 / 60.6                | 1724 / 67.9                | 1628 / 64.1                  | 1534 / 60.4                |
| Weight (kg / lbs)                       | 360 / 793.7                | 420 / 925.9                | 520 / 1146.4               | 640 / 1411                   | 700 / 1543.2               |

## Accessories [Page 330](#)

Cable Port, Shelves, Viewing Window, Signal Lamp, Recorder, Fan Speed Adjuster, Gas Purge System, Hour Meter

# Heating & Cooling Chamber

## Ambient temperature type (-5°C), horizontal airflow

-5 to 100°C temperature range to meet basic test requirements



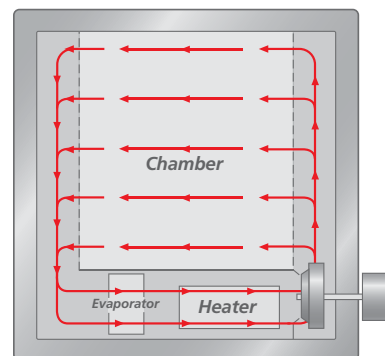
**PMV-040**

with 2ea wire shelves (standard), Recorder, Signal lamp (option)



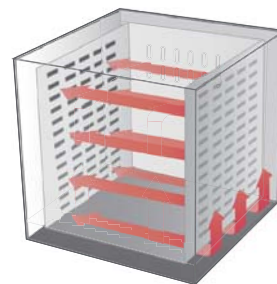
### Completion of Temperature Verification According to Strict International Standard

- Temperature verification in accordance with DIN 12880 and IEC 60068-3-5 provides excellent reliability and reproducibility.
- Provided specification the fluctuation and gradient in typical temperature point.
- Provided heating / cooling time data to help select the right model for testing purposes.
- Tested recovery time in accordance with specifications to provide data that is useful for real-use.



### Structural Functional Features

- Chamber structure with excellent sealing and insulation provides a stable long-term test and reduce costs by minimizing energy loss.
- According to international standards, even when operated at upper temperature, the surface temperature does not exceed 51°C. (EN 563 standard)
- Door consists of a double-sealed structure to satisfy DIN 58371. (door airtight guidance)
- Durability even after long-term repeated use has been verified by satisfying the door load test. (SEFA standard)
- Door structure is a two-point hang structure, building more stable seal with less force.





## Optimized Dedicated Control System

- 3.7-inch color touch display controller.
- Intuitive screen configuration for easy and convenient control.
- Graph display makes it easier to check operation.
- PID zone subdivided into 4 zones for more precise control stability.
- RS-232 port (default) and RS-485 port (option) supported.
- Control and data processing by connecting up to 32 devices to PC at same time via RS-485 port.
- Includes software for PC control.
- Saving data, convenient for reporting.

## Use Convenience Features

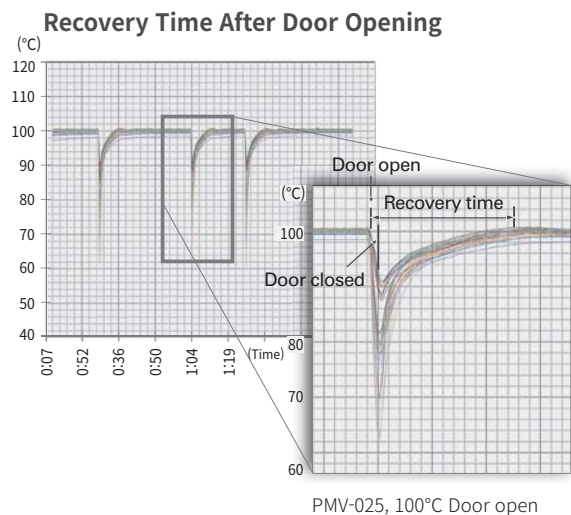
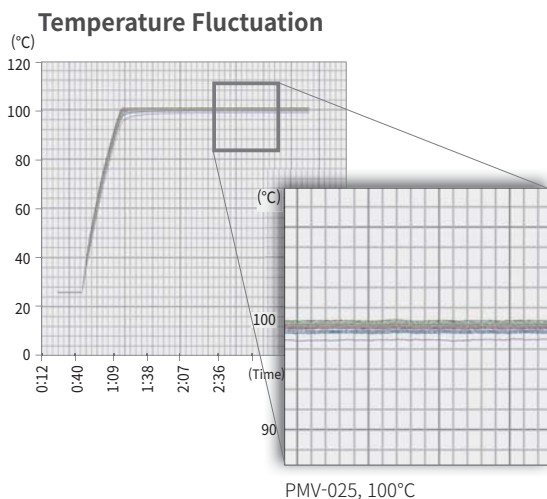
- Convenient opening and closing door with either side latches.
- Door handle with built-in key lock.
- Identification of the control and operating conditions at the front panel.
- Design by stainless steel internal chamber provide clean maintenance and excellent corrosion resistance.
- Easy to clean as it is easy to remove refrigerator condenser grill, making it convenient to maintain efficiency of refrigeration.
- Equipped with easy-to-move/install caster.
- Perforated shelf for heavy-load sample. (option)
- Convenient and various options such as signal lamps, cable port, air cycle rate, gas purge, etc.

| Description                         | No.            |
|-------------------------------------|----------------|
| Pattern                             | 100            |
| Repeat time                         | 999            |
| Part repeat time                    | 255            |
| Max. segments / pattern             | 100            |
| Available max. segments             | 2000           |
| Programmable process time / segment | 99 hr. 59 min. |

\* It is possible to set 100 segments per pattern, but the maximum number of segments is not 10,000 (100 pattern x 100 segment) but 2,000.

## Outstanding Safety

- Conventional over-temperature protection. (over temperature limiter)
- Door open warning and automatic shut off.
- Emergency stop button on the front of the product.
- Over-current and short circuit protection of device.
- When main power connections, users can quickly respond by notifying of electric phase sequence errors.
- Electrical instrumentation access warning and system shutdown.
- Each heater by fuse for more safety using.
- Auto stop when operating current of refrigerator is overloaded.
- Automatic stop in case of over temperature of the compressor.
- Auto shut off in case refrigerant pressure (high/low pressure) is abnormal.



## Specification

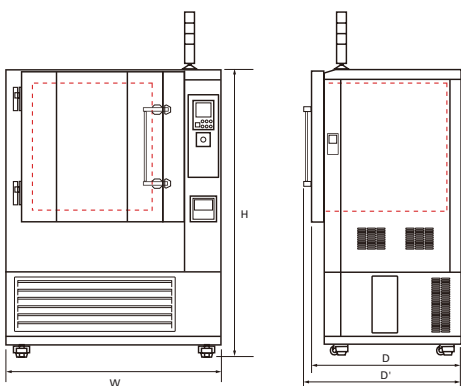
| Model  | PMV-012                  | PMV-025                  | PMV-040                  | PMV-070                  | PMV-100                  |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <b>Temperature data</b>  |                          |                          |                          |                          |                          |
| Range (°C / °F)  | -5 to 100<br>/ 23 to 212 | -5 to 100<br>/ 23 to 212 | -5 to 100<br>/ 23 to 212 | -5 to 100<br>/ 23 to 212 | -5 to 100<br>/ 23 to 212 |
| <b>Fluctuation (±°C / °F)<sup>1), 2)</sup></b>                           |                          |                          |                          |                          |                          |
| at -5°C  | 0.3 / 0.54               | 0.3 / 0.54               | 0.2 / 0.36               | 0.2 / 0.36               | 0.3 / 0.54               |
| at 0°C   | 0.3 / 0.54               | 0.3 / 0.54               | 0.2 / 0.36               | 0.2 / 0.36               | 0.3 / 0.54               |
| at 25°C  | 0.3 / 0.54               | 0.3 / 0.54               | 0.3 / 0.54               | 0.3 / 0.54               | 0.3 / 0.54               |
| at 40°C  | 0.3 / 0.54               | 0.3 / 0.54               | 0.3 / 0.54               | 0.3 / 0.54               | 0.3 / 0.54               |
| at 60°C  | 0.3 / 0.54               | 0.3 / 0.54               | 0.3 / 0.54               | 0.4 / 0.72               | 0.3 / 0.54               |
| at 80°C  | 0.3 / 0.54               | 0.3 / 0.54               | 0.2 / 0.36               | 0.2 / 0.36               | 0.3 / 0.54               |
| at 100°C   | 0.3 / 0.54               | 0.3 / 0.54               | 0.3 / 0.54               | 0.4 / 0.72               | 0.3 / 0.54               |
| <b>Gradient (±°C / °F)<sup>1)</sup></b>                                  |                          |                          |                          |                          |                          |
| at -5°C  | 0.4 / 0.72               | 0.4 / 0.72               | 0.4 / 0.72               | 0.4 / 0.72               | 0.3 / 0.54               |
| at 0°C   | 0.4 / 0.72               | 0.4 / 0.72               | 0.4 / 0.72               | 0.4 / 0.72               | 0.3 / 0.54               |
| at 25°C  | 0.2 / 0.36               | 0.2 / 0.36               | 0.3 / 0.54               | 0.4 / 0.72               | 0.3 / 0.54               |
| at 40°C  | 0.3 / 0.54               | 0.3 / 0.54               | 0.3 / 0.54               | 0.4 / 0.72               | 0.3 / 0.54               |
| at 60°C  | 0.5 / 0.9                | 0.5 / 0.9                | 0.4 / 0.72               | 0.4 / 0.72               | 0.4 / 0.72               |
| at 80°C  | 0.7 / 1.26               | 0.7 / 1.26               | 0.6 / 1.08               | 0.5 / 0.9                | 0.5 / 0.9                |
| at 100°C   | 1 / 1.8                  | 1 / 1.8                  | 0.8 / 1.44               | 0.7 / 1.26               | 0.7 / 1.26               |
| <b>Heating time (min)<sup>2)</sup></b>                                   |                          |                          |                          |                          |                          |
| from -5°C to 25°C  | 24                       | 24                       | 21                       | 17                       | 19                       |
| from 0°C to 25°C   | 20                       | 20                       | 17                       | 15                       | 16                       |
| from 25°C to 40°C  | 16                       | 16                       | 15                       | 11                       | 11                       |
| from 25°C to 60°C  | 30                       | 30                       | 26                       | 23                       | 25                       |
| from 25°C to 80°C  | 32                       | 32                       | 33                       | 34                       | 38                       |
| from 25°C to 100°C   | 45                       | 45                       | 48                       | 52                       | 56                       |
| from -5°C to 100°C   | 60                       | 60                       | 62                       | 64                       | 75                       |
| <b>Cooling time (min)<sup>2)</sup></b>                                   |                          |                          |                          |                          |                          |
| from 25°C to -5°C  | 36                       | 36                       | 35                       | 31                       | 31                       |
| from 25°C to 0°C   | 30                       | 30                       | 27                       | 25                       | 25                       |
| from 40°C to 25°C  | 17                       | 17                       | 16                       | 14                       | 16                       |
| from 60°C to 25°C  | 37                       | 37                       | 35                       | 31                       | 31                       |
| from 80°C to 25°C  | 52                       | 37                       | 48                       | 43                       | 45                       |
| from 100°C to 25°C   | 65                       | 65                       | 62                       | 59                       | 57                       |
| from 100°C to -5°C   | 97                       | 97                       | 92                       | 87                       | 91                       |
| <b>Recovery time after door was opened for 30sec.(min.)<sup>2)</sup></b> |                          |                          |                          |                          |                          |
| at -5°C  | 8.0                      | 8.0                      | 6.5                      | 5.0                      | 5.0                      |
| at 0°C   | 6.0                      | 6.0                      | 6.0                      | 6.0                      | 8.0                      |
| at 25°C  | 0.5                      | 0.5                      | 4.0                      | 6.0                      | 6.0                      |
| at 40°C  | 2.5                      | 2.5                      | 2.5                      | 2.5                      | 2.5                      |
| at 60°C  | 4.0                      | 4.0                      | 4.5                      | 5.0                      | 6.0                      |
| at 80°C  | 5.0                      | 5.0                      | 5.0                      | 5.5                      | 6.0                      |
| at 100°C   | 7.0                      | 7.0                      | 7.0                      | 6.5                      | 8.0                      |
| <b>Electrical data &amp; Ordering information</b>                        |                          |                          |                          |                          |                          |
| Electrical requirement (230V, 60Hz, 1P, A)                               | 9.7                      | 13.2                     | 15.5                     | 21.7                     |                          |
| <b>Cat. No.</b>  | <b>AAHK4011K</b>         | <b>AAHK4021K</b>         | <b>AAHK4031K</b>         | <b>AAHK4041K</b>         | -                        |
| Electrical requirement (230V, 50Hz, 1P, A)                               | 9.7                      | 13.2                     | 15.5                     | 21.7                     |                          |
| <b>Cat. No.</b>  | <b>AAHK4012K</b>         | <b>AAHK4022K</b>         | <b>AAHK4032K</b>         | <b>AAHK4042K</b>         | -                        |
| Electrical requirement (380V, 50Hz, 3P, A)                               |                          |                          |                          |                          | 6                        |
| <b>Cat. No.</b>  | -                        | -                        | -                        | -                        | <b>AAHK4058K</b>         |

1) According to IEC 60068-3-5

2) According to DIN 12880

※ Above specification value is recorded by 230V/60Hz, 380V/50Hz.

※ Above specifications can be changed without prior notice.



## Dimension

| Model                                   | PMV-012                    | PMV-025                    | PMV-040                    | PMV-070                      | PMV-100                    |
|---|----------------------------|----------------------------|----------------------------|------------------------------|----------------------------|
| <b>Interior dimensions</b>              |                            |                            |                            |                              |                            |
| Chamber volume (L / cu ft)              | 125 / 4.41                 | 250 / 8.83                 | 400 / 14.13                | 700 / 24.72                  | 1000 / 35.31               |
| Width (mm / inch)                       | 500 / 19.7                 | 600 / 23.6                 | 750 / 29.5                 | 900 / 35.4                   | 1000 / 39.4                |
| Depth (mm / inch)                       | 500 / 19.7                 | 650 / 25.6                 | 700 / 27.6                 | 800 / 31.5                   | 910 / 35.8                 |
| Height (mm / inch)                      | 500 / 19.7                 | 650 / 25.6                 | 800 / 31.5                 | 1000 / 39.4                  | 1100 / 43.3                |
| Quantity of shelves (standard/max.)     | 2 / 6                      | 2 / 9                      | 2 / 11                     | 2 / 15                       | 2 / 16                     |
| Distance of between shelves (mm / inch) | 30 / 1.2                   | 30 / 1.2                   | 30 / 1.2                   | 30 / 1.2                     | 30 / 1.2                   |
| Load per shelf (kg / lbs)               | 15 / 33.1                  | 20 / 44.1                  | 30 / 66.1                  | 40 / 88.2                    | 45 / 99.2                  |
| Permitted total load (kg / lbs)         | 50 / 110.2                 | 70 / 154.3                 | 90 / 198.4                 | 120 / 264.6                  | 150 / 330.7                |
| <b>Exterior dimensions</b>              |                            |                            |                            |                              |                            |
| Width (mm / inch), W                    | 1060 / 41.7                | 1154 / 45.4                | 1304 / 51.3                | 1454 / 57.2                  | 1720 / 67.7                |
| Depth / with handle (mm - inch), D/D'   | 672 / 702 -<br>26.5 / 27.6 | 822 / 852 -<br>32.4 / 33.5 | 872 / 902 -<br>34.3 / 35.5 | 1510 / 1540 -<br>59.4 / 60.6 | 1620 / 1650 -<br>63.8 / 65 |
| Height (mm / inch), H                   | 1340 / 52.8                | 1540 / 60.6                | 1724 / 67.9                | 1628 / 64.1                  | 1534 / 60.4                |
| Weight (kg / lbs)                       | 360 / 793.7                | 420 / 925.9                | 520 / 1146.4               | 640 / 1411                   | 700 / 1543.2               |

## Accessories Page 330

Cable Port, Shelves, Viewing Window, Signal Lamp, Recorder, Fan Speed Adjuster, Gas Purge System, Hour Meter

# Heating & Cooling Chamber

## General type (-20°C, 0), horizontal airflow

Includes space-saving vertical structure and dual chamber model

### Optimized Model Configuration

- Two series (LCH, LCH-G) according to temperature control range.  
LCH : -20 ~ 100°C  
LCH-G : 0 ~ 100°C
- Space-saving vertical structural design.
- Independent control of the temperature with dual chambers divided into upper and lower.
- Standard temperature test chamber to select optimized model according to test conditions.

### Structural Functional Features

- Chamber structure with excellent sealing and insulation provides a stable long-term test and reduce costs by minimizing energy loss.
- Ensures that the surface temperature is kept below 60°C.
- Cable port (Ø80 mm) is included as standard, making it convenient to connect external equipment.
- Easy to clean as it is easy to remove refrigerator condenser grill, making it convenient to maintain efficiency of refrigeration.
- Airflow optimized for uniform heat transfer.

### Use Convenience Features

- Microprocessor PID method for precise temperature control.
- Optimized temperature control with temperature auto-tuning.
- Calibration function minimizes temperature difference.
- 9 Steps Program Control. (200 times repeat function)
- Wait On/Off timer. (up to 99 hours 59 minutes)
- Save and use 3 frequently used temperatures.
- Identification of the control and operating conditions at the front panel.
- Internal chamber made of stainless steel provide clean maintenance and excellent corrosion resistance.
- Equipped with easy-to-move/install caster.

### Outstanding Safety

- Over temperature limit function. (over temperature limiter)
- Malfunction prevented by controller lock function.
- Over-current and short circuit protection of device.
- Door open warning function.

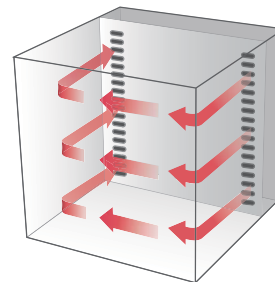


**LCH-21**

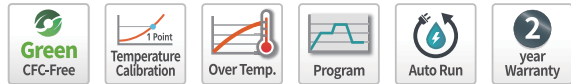
with 2EA wire shelves(standard)  
Recorder (option)

**LCH-11G-2C**

with 2EA wire shelves (standard)  
per chamber



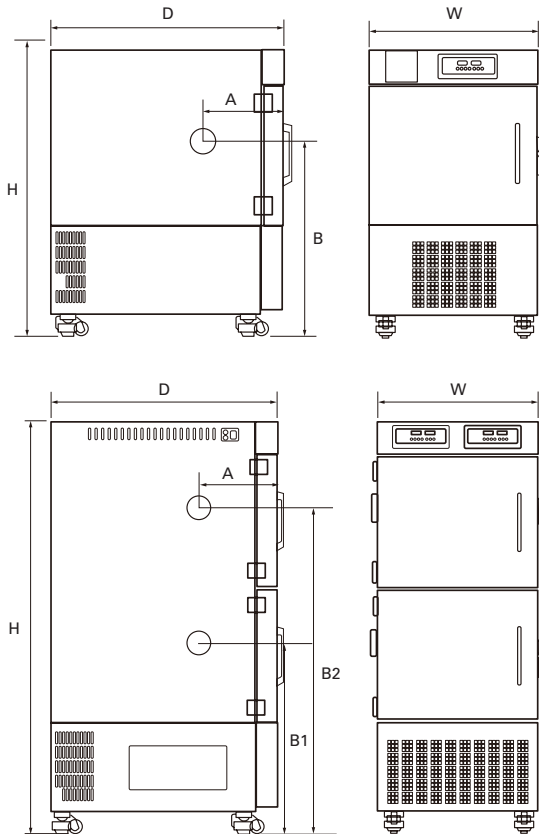




## Specification

| Model   | LCH-11                 | LCH-21                 | LCH-31                 | LCH-11-2C                | LCH-11G              | LCH-21G              | LCH-31G              | LCH-11G-2C                        |
|---|------------------------|------------------------|------------------------|--------------------------|----------------------|----------------------|----------------------|-----------------------------------|
| <b>Temperature data</b>                           |                        |                        |                        |                          |                      |                      |                      |                                   |
| Range (°C / °F)                                   | -20 to 100 / -4 to 212 | -20 to 100 / -4 to 212 | -20 to 100 / -4 to 212 | -20 to 100 / -4 to 212   | 0 to 100 / 32 to 212 | 0 to 100 / 32 to 212 | 0 to 100 / 32 to 212 | 0 to 100 / 32 to 212              |
| Fluctuation (±°C / °F) <sup>1)</sup>              | 0.3 / 0.54             | 0.3 / 0.54             | 0.3 / 0.54             | 0.3 / 0.54               | 0.3 / 0.54           | 0.3 / 0.54           | 0.3 / 0.54           | 0.3 / 0.54                        |
| Variation at 80°C (±°C / °F) <sup>1)</sup>        | 0.8 / 1.44             | 0.8 / 1.44             | 0.8 / 1.44             | 0.8 / 1.44               | 0.8 / 1.44           | 0.8 / 1.44           | 0.8 / 1.44           | 0.8 / 1.44                        |
| Heating time (20°C to 100°C, min)                 | 80                     | 80                     | 80                     | 80                       | 80                   | 80                   | 80                   | 80                                |
| Cooling time (100°C to 40°C, min)                 | 60                     | 60                     | 60                     | 60                       | 60                   | 60                   | 60                   | 60                                |
| <b>Interior dimensions</b>                        |                        |                        |                        |                          |                      |                      |                      |                                   |
| Chamber volume (L / cu ft)                        | 150 / 5.3              | 255 / 9                | 485 / 17.1             | 150x2/53x2               | 150 / 5.3            | 255 / 9              | 485 / 17.1           | 150x2/53x2                        |
| Width (mm / inch)                                 | 600 / 23.6             | 600 / 23.6             | 700 / 27.6             | 600 / 23.6 <sup>2)</sup> | 600 / 23.6           | 600 / 23.6           | 700 / 27.6           | 600 / 23.6 <sup>2)</sup>          |
| Depth (mm / inch)                                 | 500 / 19.7             | 500 / 19.7             | 680 / 26.8             | 500 / 19.7 <sup>2)</sup> | 500 / 19.7           | 500 / 19.7           | 680 / 26.8           | 500 / 19.7 <sup>2)</sup>          |
| Height (mm / inch)                                | 500 / 19.7             | 850 / 33.5             | 1020 / 40.2            | 500 / 19.7 <sup>2)</sup> | 500 / 19.7           | 850 / 33.5           | 1020 / 40.2          | 500 / 19.7 <sup>2)</sup>          |
| Quantity of shelves (standard/max.)               | 2 / 6                  | 2 / 12                 | 2 / 14                 | 22) / 6 <sup>2)</sup>    | 2 / 6                | 2 / 12               | 2 / 14               | 2 <sup>2)</sup> / 6 <sup>2)</sup> |
| Distance of between shelves (mm / inch)           | 30 / 1.2               | 30 / 1.2               | 30 / 1.2               | 30 / 1.2                 | 30 / 1.2             | 30 / 1.2             | 30 / 1.2             | 30 / 1.2                          |
| Max. load per shelf (kg / lbs)                    | 15 / 33.1              | 20 / 44.1              | 20 / 44.1              | 15 / 33.1                | 15 / 33.1            | 20 / 44.1            | 20 / 44.1            | 15 / 33.1                         |
| Permitted total load (kg / lbs)                   | 50 / 110.2             | 70 / 154.3             | 70 / 154.3             | 50 / 110.2 <sup>2)</sup> | 50 / 110.2           | 70 / 154.3           | 70 / 154.3           | 50 / 110.2 <sup>2)</sup>          |
| Cable port (∅, mm / inch)                         | 80 / 3.1               | 80 / 3.1               | 80 / 3.1               | 80 / 3.1 <sup>2)</sup>   | 80 / 3.1             | 80 / 3.1             | 80 / 3.1             | 80 / 3.1 <sup>2)</sup>            |
| Weight (kg / lbs)                                 | 125 / 275.6            | 185 / 407.9            | 225 / 496              | 195 / 429.9              | 120 / 264.6          | 180 / 396.8          | 220 / 485            | 190 / 418.9                       |
| <b>Electrical data &amp; Ordering information</b> |                        |                        |                        |                          |                      |                      |                      |                                   |
| Electrical requirement (230V, 60Hz, 1P, A)        | 6.3                    | 9.2                    | 11.1                   | 12.6                     | 7.1                  | 10.6                 | 13.8                 | 14.2                              |
| <b>Cat. No.</b>                                   | <b>AAHK6111K</b>       | <b>AAHK6211K</b>       | <b>AAHK6311K</b>       | <b>AAHK6411K</b>         | <b>AAHK6121K</b>     | <b>AAHK6221K</b>     | <b>AAHK6321K</b>     | <b>AAHK6421K</b>                  |
| Electrical requirement (230V, 50Hz, 1P, A)        | 6.3                    | 9.2                    | 11.1                   | 12.6                     | 7.1                  | 10.6                 | 13.8                 | 14.2                              |
| <b>Cat. No.</b>                                   | <b>AAHK6112K</b>       | <b>AAHK6212K</b>       | <b>AAHK6312K</b>       | <b>AAHK6412K</b>         | <b>AAHK6122K</b>     | <b>AAHK6222K</b>     | <b>AAHK6322K</b>     | <b>AAHK6422K</b>                  |
| Electrical requirement (380V, 50Hz, 3P, A)        | 11.6                   | -                      | -                      | 23.2                     | 13                   | -                    | -                    | 26                                |
| <b>Cat. No.</b>                                   | <b>AAHK6113U</b>       | -                      | -                      | <b>AAHK6413U</b>         | <b>AAHK6123U</b>     | -                    | -                    | <b>AAHK6423U</b>                  |

- 1) According to IEC 60068-3-5  
2) Based on inner chamber 1ea.



## Dimension

| Model                | LCH-11G<br>LCH-11 | LCH-21G<br>LCH-21 | LCH-31G<br>LCH-31 |
|----------------------|-------------------|-------------------|-------------------|
| <b>W (mm / inch)</b> | 740 / 29.1        | 740 / 29.1        | 840 / 33.1        |
| <b>D (mm / inch)</b> | 1032 / 40.6       | 1032 / 40.6       | 1212 / 47.7       |
| <b>H (mm / inch)</b> | 1280 / 50.4       | 1630 / 64.2       | 1800 / 70.9       |
| <b>A (mm / inch)</b> | 355 / 14          | 355 / 14          | 445 / 17.5        |
| <b>B (mm / inch)</b> | 845 / 33.3        | 1050 / 41.3       | 1155 / 45.5       |

## Dimension

| Model                 | LCH-11G-2C  |
|-----------------------|-------------|
|                       | LCH-11-2C   |
| <b>W (mm / inch)</b>  | 740 / 29.1  |
| <b>D (mm / inch)</b>  | 1032 / 40.6 |
| <b>H (mm / inch)</b>  | 1900 / 74.8 |
| <b>A (mm / inch)</b>  | 355 / 14    |
| <b>B1 (mm / inch)</b> | 875 / 34.4  |
| <b>B2 (mm / inch)</b> | 1495 / 58.9 |

## Accessories Page 330

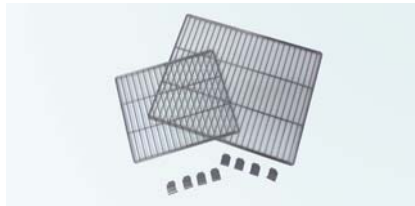
Cable Port, Shelves, Recorder

# Accessories



## Cable Port

- Both cap and silicone plug are included as standard in Ø50 mm cable port.
- It is available to add Ø50 mm, Ø80 mm.



## Wire Shelf

- Excellent ventilation structure.
- Stainless steel.
- Includes 2ea as standard.



## Perforated Shelf

- Suitable for high-load samples.
- Excellent maintenance as made of stainless steel.



## Viewing Window

- Constantly observing the samples under test in anytime.
- Tempered glass window with wire heater and LED lamp.



## Signal Lamp

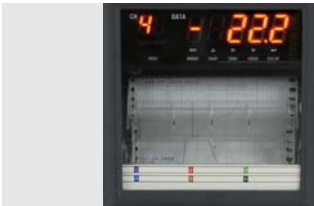
- Figuring out equipment status remotely.
- Run/Stand-by/Error displayed by color.



## LC GreenBox

- Monitor and control the operation status of the device in real time via mobile app with simple internet connection.
- One LC GreenBox can connect up to 4 devices. (only TC3 model (Cat. No.: AAAQ1011))

| Model      | Standard       | Cable Port ø50 | Cable Port ø80 | Wire Shelf   | Perforated Shelf | Viewing Window | Signal Lamp |
|------------|----------------|----------------|----------------|--------------|------------------|----------------|-------------|
| TC3-KE-025 | ø50 Cable Port | AAA8T610       | N/A            | 00RTD0000679 | AAA80602-6       | N/A            | AAA80550    |
| TC3-KE-065 | ø50 Cable Port | AAA8T610       | AAA8T611       | 00RTD0000680 | AAA80602-7       | N/A            | AAA80550    |
| TC3-KE-100 | ø50 Cable Port | AAA8T610       | AAA8T611       | 00RTD0000681 | AAA80602-8       | N/A            | AAA80550    |
| TC3-ME-025 | ø50 Cable Port | AAA8T612       | N/A            | 00RTD0000679 | AAA80602-6       | N/A            | AAA80550    |
| TC3-ME-065 | ø50 Cable Port | AAA8T612       | AAA8T611       | 00RTD0000680 | AAA80602-7       | N/A            | AAA80550    |
| TC3-ME-100 | ø50 Cable Port | AAA8T612       | AAA8T611       | 00RTD0000681 | AAA80602-8       | N/A            | AAA80550    |
| KBD-012    | ø50 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000070 | AAAK1501         | N/A            | AAA80550    |
| KBD-025    | ø50 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000053 | AAAK1502         | N/A            | AAA80550    |
| KBD-040    | ø80 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000029 | AAAK1503         | N/A            | AAA80550    |
| KBD-070    | ø80 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000030 | AAAK1504         | N/A            | AAA80550    |
| KBD-100    | ø80 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000057 | AAAK1505         | N/A            | AAA80550    |
| KMV-012    | ø50 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000070 | AAAK1501         | AAAK8501       | AAA80550    |
| KMV-025    | ø50 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000053 | AAAK1502         | AAAK8501       | AAA80550    |
| KMV-040    | ø80 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000029 | AAAK1503         | AAAK8501       | AAA80550    |
| KMV-070    | ø80 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000030 | AAAK1504         | AAA80673       | AAA80550    |
| KMV-100    | ø80 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000057 | AAAK1505         | AAA80673       | AAA80550    |
| JMV-012    | ø50 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000070 | AAAK1501         | AAAK8501       | AAA80550    |
| JMV-025    | ø50 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000053 | AAAK1502         | AAAK8501       | AAA80550    |
| JMV-040    | ø80 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000029 | AAAK1503         | AAAK8501       | AAA80550    |
| JMV-070    | ø80 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000030 | AAAK1504         | AAA80673       | AAA80550    |
| JMV-100    | ø80 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000057 | AAAK1505         | AAA80673       | AAA80550    |
| PBV-012    | ø50 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000070 | AAAK1501         | AAAK8501       | AAA80550    |
| PBV-025    | ø50 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000053 | AAAK1502         | AAAK8501       | AAA80550    |
| PBV-040    | ø80 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000029 | AAAK1503         | AAAK8501       | AAA80550    |
| PBV-070    | ø80 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000030 | AAAK1504         | AAA80673       | AAA80550    |
| PBV-100    | ø80 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000057 | AAAK1505         | AAA80673       | AAA80550    |
| PMV-012    | ø50 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000070 | AAAK1501         | AAAK8501       | AAA80550    |
| PMV-025    | ø50 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000053 | AAAK1502         | AAAK8501       | AAA80550    |
| PMV-040    | ø80 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000029 | AAAK1503         | AAAK8501       | AAA80550    |
| PMV-070    | ø80 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000030 | AAAK1504         | AAA80673       | AAA80550    |
| PMV-100    | ø80 Cable Port | AAAK8511       | AAAK8512       | 00LTV0000057 | AAAK1505         | AAA80673       | AAA80550    |
| LCH-11     | ø80 Cable Port | AAA8T610       | AAA8T611       | 00EDA0008219 | AAA22521         | N/A            | N/A         |
| LCH-21     | ø80 Cable Port | AAA8T610       | AAA8T611       | 00EDA0008220 | AAA22522         | N/A            | N/A         |
| LCH-31     | ø80 Cable Port | AAA8T610       | AAA8T611       | AAAK6531     | AAAK6532         | N/A            | N/A         |
| LCH-11-2C  | ø80 Cable Port | AAA8T610       | AAA8T611       | 00EDA0008219 | AAA22521         | N/A            | N/A         |
| LCH-11G    | ø80 Cable Port | AAA8T610       | AAA8T611       | 00EDA0008219 | AAA22521         | N/A            | N/A         |
| LCH-21G    | ø80 Cable Port | AAA8T610       | AAA8T611       | 00EDA0008220 | AAA22522         | N/A            | N/A         |
| LCH-31G    | ø80 Cable Port | AAA8T610       | AAA8T611       | AAAK6531     | AAAK6532         | N/A            | N/A         |
| LCH-11G-2C | ø80 Cable Port | AAA8T610       | AAA8T611       | 00EDA0008219 | AAA22521         | N/A            | N/A         |



#### Recorder (Paper)

- Up to 6 channels supported.
- Set recording range and speed.
- Paper width: 100mm.



#### Recorder (Digital)

- Paperless. (5.7" LCD Display)
- Up to 6 channels supported.
- Data stored in internal/external memory.



#### Gas Purge System

- Gas system that can replace and purge the inside of chamber with nitrogen and CO<sub>2</sub> gas.



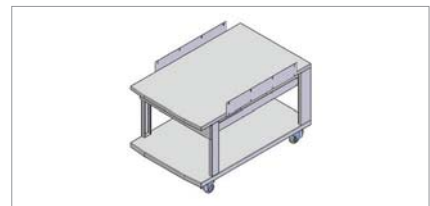
#### Hour Meter

- Cumulative usage time management. (No reset function)
- Minimum units of measurement: 0.1 hours. (6 minutes)
- Maximum display 99999.9 hours.



#### Stand (1 Stage)

- Dedicated stand for small appliances.
- Provides Lower drawer and loading space.
- Casters provided as standard for moving/fixing.

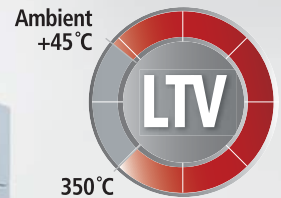
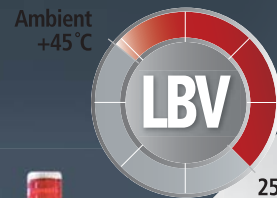


#### Stand (2 Stage)

- Placing of two compact devices vertically.
- Minimized installation space for different temperature and tests.

| Model      | Recorder (Paper) | Recorder (Digital) | Fan Speed Adjuster | Gas Purge System | Hour Meter | Stand (1 stage) | Stand (2 stage) |
|------------|------------------|--------------------|--------------------|------------------|------------|-----------------|-----------------|
| TC3-KE-025 | AAA8T504         | AAA8T506           | N/A                | N/A              | N/A        | AAA80631        | AAA80634        |
| TC3-KE-065 | AAA8T504         | AAA8T506           | N/A                | N/A              | N/A        | AAA80632        | AAA80635        |
| TC3-KE-100 | AAA8T504         | AAA8T506           | N/A                | N/A              | N/A        | AAA80633        | N/A             |
| TC3-ME-025 | AAA8T504         | AAA8T506           | N/A                | N/A              | N/A        | AAA80631        | AAA80634        |
| TC3-ME-065 | AAA8T504         | AAA8T506           | N/A                | N/A              | N/A        | AAA80632        | AAA80635        |
| TC3-ME-100 | AAA8T504         | AAA8T506           | N/A                | N/A              | N/A        | AAA80633        | N/A             |
| KBD-012    | AAA8T500         | AAA8T505           | N/A                | AAA80691         | N/A        | N/A             | N/A             |
| KBD-025    | AAA8T500         | AAA8T505           | N/A                | AAA80691         | N/A        | N/A             | N/A             |
| KBD-040    | AAA8T500         | AAA8T505           | N/A                | AAA80691         | N/A        | N/A             | N/A             |
| KBD-070    | AAA8T500         | AAA8T505           | N/A                | AAA80691         | N/A        | N/A             | N/A             |
| KBD-100    | AAA8T500         | AAA8T505           | N/A                | AAA80691         | N/A        | N/A             | N/A             |
| KMV-012    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| KMV-025    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| KMV-040    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| KMV-070    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| KMV-100    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| JMV-012    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| JMV-025    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| JMV-040    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| JMV-070    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| JMV-100    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| PBV-012    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| PBV-025    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| PBV-040    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| PBV-070    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| PBV-100    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| PMV-012    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| PMV-025    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| PMV-040    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| PMV-070    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| PMV-100    | AAA8T500         | AAA8T505           | AAAK1531           | AAA80691         | AAAK1532   | N/A             | N/A             |
| LCH-11     | AAA8T500         | AAA8T505           | N/A                | N/A              | N/A        | N/A             | N/A             |
| LCH-21     | AAA8T500         | AAA8T505           | N/A                | N/A              | N/A        | N/A             | N/A             |
| LCH-31     | AAA8T500         | AAA8T505           | N/A                | N/A              | N/A        | N/A             | N/A             |
| LCH-11-2C  | AAA8T500         | AAA8T505           | N/A                | N/A              | N/A        | N/A             | N/A             |
| LCH-11G    | AAA8T500         | AAA8T505           | N/A                | N/A              | N/A        | N/A             | N/A             |
| LCH-21G    | AAA8T500         | AAA8T505           | N/A                | N/A              | N/A        | N/A             | N/A             |
| LCH-31G    | AAA8T500         | AAA8T505           | N/A                | N/A              | N/A        | N/A             | N/A             |
| LCH-11G-2C | AAA8T500         | AAA8T505           | N/A                | N/A              | N/A        | N/A             | N/A             |

# Heating Chamber



Real-time equipment monitoring and control system using mobile app.



Registered safety patent based on JEIO TECH's proprietary technology.



Recognized as an excellent design product by the Ministry of Commerce, Industry, and Energy.



More precise temperature control through 3-point temperature calibration.



More precise temperature control through temperature calibration.



Electronic over temperature protection system.



Conventional over temperature protection, a kind of backup device against electronic over temperature protection failure.



Warning alarm in case of deviation of temperature control.



Purifies and discharges harmful gas through internal filter.



Intuitive operation with Color Touch display.



Control of temperature / time, etc. through dedicated program.



Possible to set end time or start time of device operation.



PC communication via RS-232 / RS-485 / USB port.



It memorizes the state of power failure and operates automatically when power is restored.



2 year warranty Free A/S.

## General Application

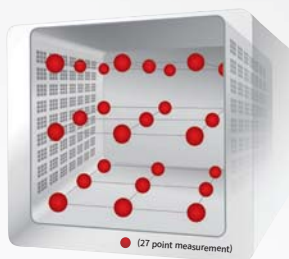
Industrial oven: Heat up to 350°C depending on the industrial site, and size is selectable from 125L to 1000L.

Clean oven: High temperature testing under clean conditions.

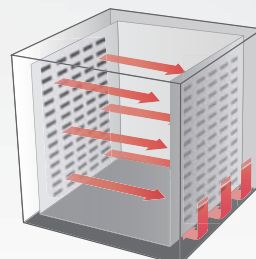
## Designed and tested based on 27 temperature measurement points in accordance with international standards

Horizontal airflow type with intake/damper included as standard.

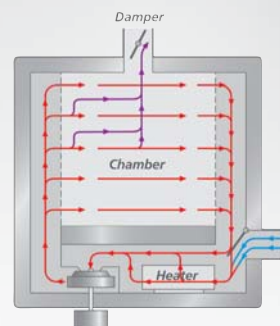
- › **Completion of verification according to strict international standards**  
High reliability by completing temperature verification at 27 points according to DIN 12880 standard.
- › **Includes air intake/damper as standard**  
Adjustable air intake and damper are included as standard, making it easy to use.
- › **Rapid air exchange capacity**  
Air intake and damper control as standard for quick air exchange and various tests.
- › **Enhanced safety thanks to over temperature double cut-off**  
Independent precision-type electronic over temperature protection device.  
Improved safety through double installation of mechanical devices.
- › **Steady and uniform horizontal airflow**  
Horizontal airflow optimized for uniform heat transfer ensures stable overall temperature distribution.
- › **Maintain precise temperature distribution**  
Air into Intake maintains precise control while supplying circulatory fresh air throughout the heater.
- › **Excellent chamber structure with sealing and insulation**  
Excellent insulation and sealing to minimize energy loss and reduce test costs.
- › **Model provided based on temperature range and capacity**  
10 standard models up to 350°C and 1000L.  
Customized model can be provided according to user requirements.



Tested based on 27 temperature measurement points in accordance with DIN 12880



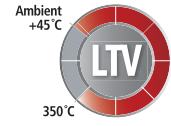
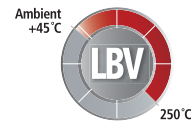
Uniform horizontal airflow



Structure allows for fresh air outside to be circulated through the heater

# Heating Chamber

Suitable for test of temperature feature such as heat treatment and drying.



## Completion of Temperature Verification According to Strict International Standard

- Temperature verification in accordance with DIN 12880 and IEC 60068-3-5 provides excellent reliability and reproducibility.
- Provided specification with the fluctuation and gradient in typical temperature point.
- Provided heating / cooling time data to help select the right model for testing purposes.
- Tested recovery time in accordance with specifications to provide data that is useful for real-use.

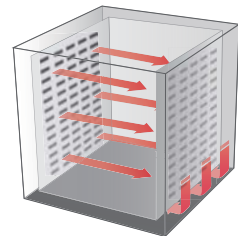
## Structural Functional Features

- Built-in air intake and damper that can be easily adjusted.
- There is a separate guard around the damper to protect the user from burns due to high temperature.
- Chamber structure with excellent sealing and insulation provides a stable long-term test and reduce costs by minimizing energy loss.
- According to international standards, even when operated at upper temperature, the surface temperature does not exceed 51°C. (EN-563 standard)
- Door consists of a double-sealed structure to satisfy DIN 58371. (door airtight guidance)
- Durability even after long-term repeated use has been verified by satisfying the door load test. (SEFA standard)
- Door locking device as standard offer.
- Equipped with easy-to-move/install caster.



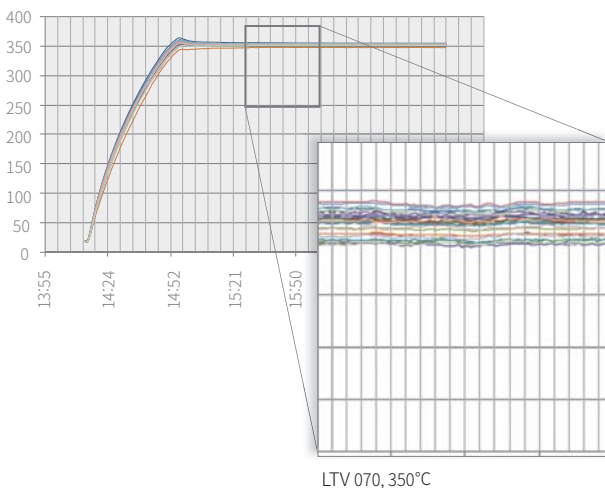
## LTV-012

with Wire Shelves 2ea (standard)  
Recorder (option)

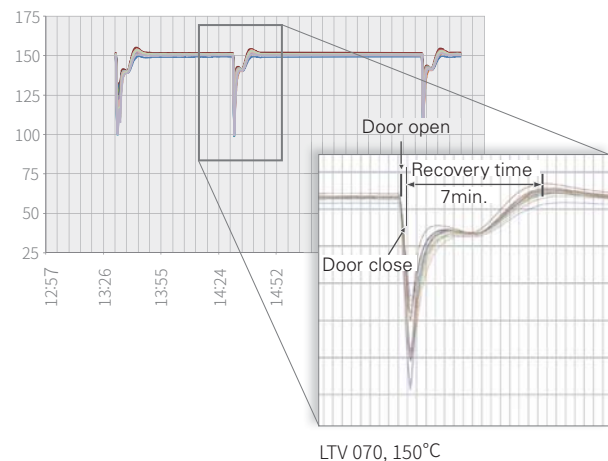


Uniform horizontal air flow

## Temperature Variation



## Recovery Time After Door Opening





## Optimized Dedicated Control System

- 3.5-inch color touch display controller applied.
- Intuitive screen configuration for easy and convenient control.
- Graph display makes it easier to check operation.
- PID zone subdivided into 4 zones for more precise control stability.
- RS-232 port (default) and RS-485 port (option) supported.
- Control and data processing by connecting up to 32 devices to PC at same time via RS-485 port.
- Includes software for PC control.
- Saving data, convenient for reporting.

| Description                         | No.             |
|-------------------------------------|-----------------|
| Pattern                             | 100             |
| Repeat time                         | 999             |
| Part repeat time                    | 255             |
| Max. segments / pattern             | 100             |
| Available max. segments             | 2000            |
| Programmable process time / segment | 99 hour 59 min. |

\* It is possible to set 100 segments per pattern, but the maximum number of segments is not 10,000 (100 pattern x 100 segment) but 2,000.



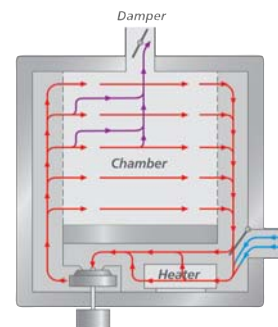
## Use Convenience Features

- Convenient opening and closing door with either side latches.
- Door handle with built-in key lock.
- Identify all operations and operating conditions from the front panel.
- Design by stainless steel internal chamber provide clean maintenance and excellent corrosion resistance.
- Perforated shelf for heavy-load sample. (option)
- Convenient and various options such as signal lamps, cable port, air cycle rate, gas purge, etc.



## Outstanding Safety

- Electronic over temperature protection system. (A-OT, advanced over temperature limiter)  
Independent precision temperature sensor and controller for safer and more accurate over temperature shutdown.
- Conventional over-temperature protection. (B-OT, backup over temperature limiter)  
A backup device for electronic system failure, mechanically preventing over temperature even when it occurs electronic errors.
- Door open warning and automatic shut off.
- Emergency stop button on the front of the product.
- Over-current and short circuit protection of device.
- When main power connections, users can quickly respond by notifying of electric phase sequence errors.
- Electrical instrumentation access warning and system shutdown.
- Each heater by fuse for more safety using.



Structure allows for fresh air outside to be circulated through the heater.

Heating Chamber (Industry)

## Specification

| Model   | Max. 250°C                    |                          |                |                         |                | Max. 350°C                    |                |                |                |                |
|---|-------------------------------|--------------------------|----------------|-------------------------|----------------|-------------------------------|----------------|----------------|----------------|----------------|
|   | LBV-012                       | LBV-025                  | LBV-040        | LBV-070                 | LBV-100        | LTV-012                       | LTV-025        | LTV-040        | LTV-070        | LTV-100        |
| <b>Temperature data</b>   |                               |                          |                |                         |                |                               |                |                |                |                |
| Range (intake/damper 100% close, °C / °F)                         | Amb.+45 ~ 250 / Amb.+81 ~ 482 |                          |                |                         |                | Amb.+45 ~ 350 / Amb.+81 ~ 662 |                |                |                |                |
| Range (intake/damper 100% open, °C / °F)                          | Max. 80 / 176                 | Max. 80 / 176            | Max. 120 / 248 | Max. 80 / 176           | Max. 140 / 284 | Max. 115 / 239                | Max. 115 / 239 | Max. 180 / 356 | Max. 150 / 302 | Max. 210 / 410 |
| <b>Fluctuation (±°C / °F) <sup>1),2)</sup></b>                    |                               |                          |                |                         |                |                               |                |                |                |                |
| at 100°C / 212°F  | 0.3 / 0.54                    | 0.3 / 0.54               | 0.3 / 0.54     | 0.3 / 0.54              | 0.3 / 0.54     | 0.4 / 0.72                    | 0.4 / 0.72     | 0.3 / 0.54     | 0.5 / 0.9      | 0.4 / 0.72     |
| at 150°C / 302°F  | 0.3 / 0.54                    | 0.3 / 0.54               | 0.4 / 0.72     | 0.4 / 0.72              | 0.4 / 0.72     | 0.4 / 0.72                    | 0.4 / 0.72     | 0.3 / 0.54     | 0.4 / 0.72     | 0.6 / 1.08     |
| at 200°C / 392°F  | 0.4 / 0.72                    | 0.4 / 0.72               | 0.4 / 0.72     | 0.3 / 0.54              | 0.3 / 0.54     | 0.5 / 0.9                     | 0.5 / 0.9      | 0.5 / 0.9      | 0.4 / 0.72     | 0.3 / 0.54     |
| at 250°C / 482°F  | 0.5 / 0.9                     | 0.5 / 0.9                | 0.5 / 0.9      | 0.6 / 1.08              | 0.4 / 0.72     | 0.6 / 1.08                    | 0.6 / 1.08     | 0.6 / 1.08     | 0.4 / 0.72     | 0.4 / 0.72     |
| at 300°C / 572°F  | -                             | -                        | -              | -                       | -              | 0.5 / 0.9                     | 0.5 / 0.9      | 0.7 / 1.26     | 0.6 / 1.08     | 0.5 / 0.9      |
| at 350°C / 662°F  | -                             | -                        | -              | -                       | -              | 0.7 / 1.26                    | 0.7 / 1.26     | 0.6 / 1.08     | 0.6 / 1.08     | 0.8 / 1.44     |
| <b>Gradient (±°C / °F) <sup>1)</sup></b>                          |                               |                          |                |                         |                |                               |                |                |                |                |
| at 100°C / 212°F  | 0.4 / 0.72                    | 0.4 / 0.72               | 0.5 / 0.9      | 0.5 / 0.9               | 0.5 / 0.9      | 0.5 / 0.9                     | 0.5 / 0.9      | 0.6 / 1.08     | 0.7 / 1.26     | 0.4 / 0.72     |
| at 150°C / 302°F  | 0.7 / 1.26                    | 0.7 / 1.26               | 1 / 1.8        | 0.7 / 1.26              | 0.8 / 1.44     | 0.7 / 1.26                    | 0.7 / 1.26     | 1 / 1.8        | 1.1 / 1.98     | 0.6 / 1.08     |
| at 200°C / 392°F  | 1.1 / 1.98                    | 1.1 / 1.98               | 1.7 / 3.06     | 1.1 / 1.98              | 1.2 / 2.16     | 1.1 / 1.98                    | 1.1 / 1.98     | 1.7 / 3.06     | 1.9 / 3.42     | 1.1 / 1.98     |
| at 250°C / 482°F  | 1.7 / 3.06                    | 1.7 / 3.06               | 2.6 / 4.68     | 1.5 / 34.7              | 1.7 / 3.06     | 1.6 / 2.88                    | 1.6 / 2.88     | 2.5 / 4.5      | 2.7 / 4.86     | 1.6 / 2.88     |
| at 300°C / 572°F  | -                             | -                        | -              | -                       | -              | 2.4 / 4.32                    | 2.4 / 4.32     | 3.4 / 6.12     | 3.4 / 6.12     | 2.4 / 4.32     |
| at 350°C / 662°F  | -                             | -                        | -              | -                       | -              | 3.4 / 6.12                    | 3.4 / 6.12     | 3.4 / 6.12     | 4.1 / 7.38     | 3.2 / 5.76     |
| <b>Heating time (min, intake/damper 100% close) <sup>2)</sup></b> |                               |                          |                |                         |                |                               |                |                |                |                |
| from Amb. to 100°C / 212°F  | 34                            | 34                       | 26             | 19                      | 29             | 18                            | 18             | 14             | 13             | 20             |
| from Amb. to 150°C / 302°F  | 35                            | 35                       | 32             | 30                      | 35             | 22                            | 22             | 19             | 17             | 23             |
| from Amb. to 200°C / 392°F  | 36                            | 36                       | 36             | 40                      | 44             | 24                            | 24             | 22             | 24             | 25             |
| from Amb. to 250°C / 482°F  | 51                            | 51                       | 51             | 55                      | 60             | 27                            | 27             | 29             | 25             | 32             |
| from Amb. to 300°C / 572°F  | -                             | -                        | -              | -                       | -              | 38                            | 38             | 36             | 37             | 38             |
| from Amb. to 350°C / 662°F  | -                             | -                        | -              | -                       | -              | 41                            | 41             | 43             | 40             | 45             |
| <b>Cooling time (min, intake/damper 100% open) <sup>2)</sup></b>  |                               |                          |                |                         |                |                               |                |                |                |                |
| from 150°C / 302°F to 100°C / 212°F                               | 31 / 87.8 <sup>3)</sup>       | 31 / 87.8 <sup>3)</sup>  | 21 / 69.8      | 18 / 64.4 <sup>3)</sup> | 31 / 87.8      | 19 / 66.2                     | 19 / 66.2      | 9 / 48.2       | 11 / 51.8      | 15 / 59        |
| from 200°C / 392°F to 100°C / 212°F                               | 45 / 113 <sup>3)</sup>        | 45 / 113 <sup>3)</sup>   | 32 / 89.6      | 22 / 71.6 <sup>3)</sup> | 48 / 118.4     | 28 / 82.4                     | 28 / 82.4      | 15 / 59        | 15 / 59        | 54 / 129.2     |
| from 250°C / 482°F to 100°C / 212°F                               | 54 / 129.2 <sup>3)</sup>      | 54 / 129.2 <sup>3)</sup> | 34 / 93.2      | 34 / 93.2 <sup>3)</sup> | 62 / 143.6     | 41 / 105.8                    | 41 / 105.8     | 21 / 69.8      | 16 / 60.8      | 59 / 138.2     |
| from 300°C / 572°F to 100°C / 212°F                               | -                             | -                        | -              | -                       | -              | 33 / 91.4                     | 33 / 91.4      | 26 / 78.8      | 22 / 71.6      | 62 / 143.6     |
| from 350°C / 662°F to 100°C / 212°F                               | -                             | -                        | -              | -                       | -              | 43 / 109.4                    | 43 / 109.4     | 30 / 86        | 27 / 80.6      | 62 / 143.6     |
| <b>Recovery time after door was opened (min.) <sup>2)</sup></b>   |                               |                          |                |                         |                |                               |                |                |                |                |
| at 100°C / 212°F  | 10.5                          | 10.5                     | 8              | 6.5                     | 8              | 8.5                           | 8.5            | 6              | 6              | 7.5            |
| at 150°C / 302°F  | 8                             | 8                        | 9              | 8                       | 9.5            | 8.5                           | 8.5            | 9              | 7.5            | 9.5            |
| at 200°C / 392°F  | 4.5                           | 4.5                      | 8.5            | 7                       | 8.5            | 3.5                           | 3.5            | 8.5            | 8.5            | 8.5            |
| at 250°C / 482°F  | 5                             | 5                        | 9.5            | 5.5                     | 9.5            | 5                             | 5              | 11.5           | 8.5            | 9.5            |
| at 300°C / 572°F  | -                             | -                        | -              | -                       | -              | 7.5                           | 7.5            | 12.5           | 8.5            | 9              |
| at 350°C / 662°F  | -                             | -                        | -              | -                       | -              | 8.5                           | 8.5            | 12.5           | 10             | 10             |
| <b>Air circulation data</b>                                       |                               |                          |                |                         |                |                               |                |                |                |                |
| Air change rate (approx, x/h)                                     | 213                           | 266                      | 173            | 233                     | 193            | 213                           | 266            | 173            | 233            | 193            |
| Air circulation (approx, x/h)                                     | 374                           | 590                      | 294            | 348                     | 220            | 374                           | 590            | 294            | 348            | 220            |
| Exhaust air volume flow (approx, L/min)                           | 380                           | 1240                     | 1400           | 1910                    | 1560           | 380                           | 1240           | 1400           | 1910           | 1560           |
| Air flow velocity (m/s)   | 0.2 to 0.6                    | 0.2 to 0.6               | 0.2 to 0.6     | 0.2 to 0.6              | 0.2 to 0.6     | 0.2 to 0.6                    | 0.2 to 0.6     | 0.2 to 0.6     | 0.2 to 0.6     | 0.2 to 0.6     |
| <b>Electrical data &amp; Ordering information</b>                 |                               |                          |                |                         |                |                               |                |                |                |                |
| Electrical requirement (230V, 60Hz, 1P, A)                        | 14                            | 21.3                     |                |                         |                | 27.6                          |                |                |                |                |
| Cat. No.  | AAHK1011K                     | AAHK1021K                | -              | -                       | -              | AAHK2011K                     | -              | -              | -              | -              |
| Electrical requirement (230V, 50Hz, 1P, A)                        | 14                            | 21.3                     |                |                         |                | 27.6                          |                |                |                |                |
| Cat. No.  | AAHK1012K                     | AAHK1022K                | -              | -                       | -              | AAHK2012K                     | -              | -              | -              | -              |
| Electrical requirement (380V, 50Hz, 1P, A)                        |                               |                          | 9.4            | 12                      | 14.2           |                               | 13.9           | 18.5           | 23.4           | 27.9           |
| Cat. No.  | -                             | -                        | AAHK1038K      | AAHK1048K               | AAHK1058K      | -                             | AAHK2028K      | AAHK2039K      | AAHK2048K      | AAHK2058K      |

1) According to IEC 60068-3-5

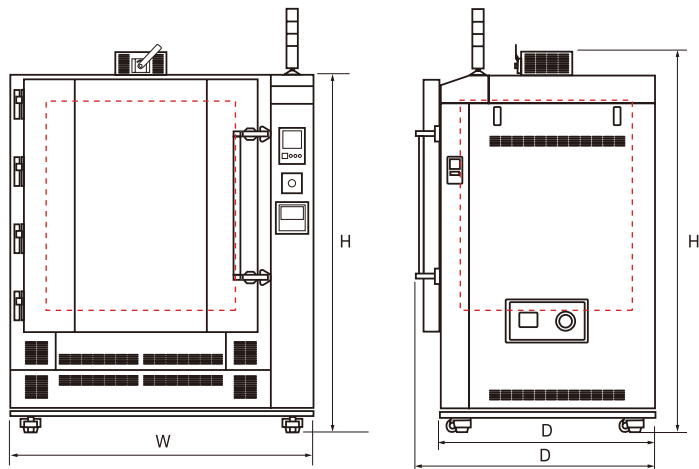
2) According to DIN 12880

3) Cooling time (min, Intake 50% close, Damper 100% open, According to DIN 12880)

※ Above specification value is recorded by 230V/60Hz, 380V/50Hz.

※ Above specifications can be changed without prior notice.





## Dimension

| Model                                   | Max. 250°C                |                           |                           |                           |                           | Max. 350°C                |                           |                           |                           |                           |
|---|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
|   | LBV-012                   | LBV-025                   | LBV-040                   | LBV-070                   | LBV-100                   | LTV-012                   | LTV-025                   | LTV-040                   | LTV-070                   | LTV-100                   |
| <b>Interior dimension</b>               |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           |
| Chamber volume (L / cu ft)              | 125 / 4.4                 | 253 / 8.9                 | 420 / 14.8                | 720 / 25.4                | 1000 / 35.3               | 125                       | 253 / 8.9                 | 420 / 14.8                | 720 / 25.4                | 1000 / 35.3               |
| Width (mm / inch)                       | 500 / 19.7                | 600 / 23.6                | 750 / 29.5                | 900 / 35.4                | 1000 / 39.4               | 500 / 19.7                | 600 / 23.6                | 750 / 29.5                | 900 / 35.4                | 1000 / 39.4               |
| Depth (mm / inch)                       | 500 / 19.7                | 650 / 25.6                | 700 / 27.6                | 800 / 31.5                | 910 / 35.8                | 500 / 19.7                | 650 / 25.6                | 700 / 27.6                | 800 / 31.5                | 910 / 35.8                |
| Height (mm / inch)                      | 500 / 19.7                | 650 / 25.6                | 800 / 31.5                | 1000 / 39.4               | 1100 / 43.3               | 500 / 19.7                | 650 / 25.6                | 800 / 31.5                | 1000 / 39.4               | 1100 / 43.3               |
| Quantity of shelves (standard/max.)     | 2 / 6                     | 2 / 8                     | 2 / 11                    | 2 / 14                    | 2 / 16                    | 2 / 6                     | 2 / 8                     | 2 / 11                    | 2 / 14                    | 2 / 16                    |
| Distance of between shelves (mm / inch) | 30 / 1.2                  | 30 / 1.2                  | 30 / 1.2                  | 30 / 1.2                  | 30 / 1.2                  | 30 / 1.2                  | 30 / 1.2                  | 30 / 1.2                  | 30 / 1.2                  | 30 / 1.2                  |
| Max. load per shelf (kg / lbs)          | 15 / 33.1                 | 20 / 44.1                 | 30 / 66.1                 | 40 / 88.2                 | 45 / 99.2                 | 15 / 33.1                 | 20 / 44.1                 | 30 / 66.1                 | 40 / 88.2                 | 45 / 99.2                 |
| Permitted total load (kg / lbs)         | 50 / 110.2                | 70 / 154.3                | 90 / 198.4                | 120 / 264.6               | 150 / 330.7               | 50 / 110.2                | 70 / 154.3                | 90 / 198.4                | 120 / 264.6               | 150 / 330.7               |
| Damper (Ø, mm / inch)                   | 96.4 / 3.8                | 146.4 / 5.8               | 146.4 / 5.8               | 146.4 / 5.8               | 146.4 / 5.8               | 96.4 / 3.8                | 146.4 / 5.8               | 146.4 / 5.8               | 146.4 / 5.8               | 146.4 / 5.8               |
| Air Intake (Ø, mm / inch)               | 42.8 / 1.7                | 73.3 / 2.9                | 73.3 / 2.9                | 73.3 / 2.9                | 73.3 / 2.9                | 42.8 / 1.7                | 73.3 / 2.9                | 73.3 / 2.9                | 73.3 / 2.9                | 73.3 / 2.9                |
| <b>Exterior dimension</b>               |                           |                           |                           |                           |                           |                           |                           |                           |                           |                           |
| Width (mm / inch), W                    | 1100 / 43.3               | 1200 / 47.2               | 1350 / 53.1               | 1500 / 59.1               | 1600 / 63                 | 1100 / 43.3               | 1200 / 47.2               | 1350 / 53.1               | 1500 / 59.1               | 1600 / 63                 |
| Depth / with handle (mm-inch), D/D'     | 714 / 745 - 28.1 / 29.3   | 965 / 995 - 38 / 39.2     | 1014 / 1045 - 39.9 / 41.1 | 1114 / 1145 - 43.9 / 45.1 | 1224 / 1255 - 48.2 / 49.4 | 714 / 745 - 28.1 / 29.3   | 965 / 995 - 38 / 39.2     | 1014 / 1045 - 39.9 / 41.1 | 1114 / 1145 - 43.9 / 45.1 | 1224 / 1255 - 48.2 / 49.4 |
| Height / with damper (mm-inch), H/H'    | 1240 / 1362 - 48.8 / 53.6 | 1435 / 1559 - 56.5 / 61.4 | 1590 / 1712 - 62.6 / 67.4 | 1790 / 1912 - 70.5 / 75.3 | 1890 / 2012 - 74.4 / 79.2 | 1240 / 1362 - 48.8 / 53.6 | 1435 / 1559 - 56.5 / 61.4 | 1590 / 1712 - 62.6 / 67.4 | 1790 / 1912 - 70.5 / 75.3 | 1890 / 2012 - 74.4 / 79.2 |
| Weight (kg / lbs)                       | 170 / 374.8               | 260 / 573.2               | 320 / 705.5               | 390 / 859.8               | 440 / 970                 | 170 / 374.8               | 260 / 573.2               | 320 / 705.5               | 390 / 859.8               | 440 / 970                 |

## Accessories

| Model                               | LBV-012      | LBV-025      | LBV-040      | LBV-070      | LBV-100      |
|-------------------------------------|--------------|--------------|--------------|--------------|--------------|
|                                     | LTV-012      | LTV-025      | LTV-040      | LTV-070      | LTV-100      |
| Wire shelf                          | 00LTV0000070 | 00LTV0000053 | 00LTV0000029 | 00LTV0000030 | 00LTV0000054 |
| Perforated shelf (Heavy load shelf) | AAAK1501     | AAAK1502     | AAAK1503     | AAAK1504     | AAAK1505     |
| Viewing window (LBV Only)           | AAAK1511     |              | AAAK1512     | AAAK1513     |              |
| Cable port (Φ80)                    | AAAK1521     |              |              |              |              |
| Cable port (Φ50)                    | AAAK1522     |              |              |              |              |
| Warning signal lamp                 | AAA80550     |              |              |              |              |
| Digital recorder (6 Channel)        | AAA8T505     |              |              |              |              |
| Fan speed adjuster                  | AAAK1531     |              |              |              |              |
| Gas purge system                    | AAA80691     |              |              |              |              |
| Hour meter                          | AAAK1532     |              |              |              |              |



### Gas Purge System

Gas system that can replace and purge the inside of chamber with nitrogen and CO<sub>2</sub> gas.

# Clean Oven

## Clean Oven - Class 100

### High temperature testing under clean conditions



**OFC-40HP**  
with Optional Accessory

**OFC-20**

#### **▮ Structural Functional Features**

- Optimized model provision and selection based on temperature range, capacity, controller, etc.
- Airflow optimized for uniform heat transfer ensures stable overall temperature distribution.
- Superior insulation and enclosed design minimize energy loss and reduce operating costs.
- Includes vent hole base with cover for gas exhaust, cable connection, etc. on the side.
- The door structure can be easily opened or closed, User can use both hands freely even if user hold the sample.
- Stainless steel interior and shelves are excellent in terms of corrosion resistance and clean maintenance.
- Includes castors, making it easy to move and install.
- Triple-toughened viewing window for safe and convenient observation even at high temperatures. (option)

#### **▮ Use Convenience Features**

- 3-point temperature calibration, high temperature accuracy over a wide temperature range.
- Optimized control with temperature auto-tuning.
- Wait On/Off timer.  
(OFC:Max. 999hour 59min., OFC-P:Max. 99hour 59min.)
- Microprocessor PID method for precise temperature control.
- USB/RS-232 connection and software provide convenient computer operation and data managing.
- Automatic restart of operation when power is restored after sudden power failure.
- Monitor via mobile app anytime, anywhere with LC Connected. (mobile monitoring system) (when purchased LC GreenBox)

#### **▮ Outstanding Safety**

- Top-rated overheating protection system. (registration 10-0397583)
- Safe surface temperature even when operating at higher temperatures.
- Over temperature limit function. (over temperature limiter)
- Notifies when deviation from control temperature upper limit and lower limit occurs.
- Safe structure in which the heater, sensor, and pump inside the bath are separated by covering plates.
- Provides notification/alarms when the door is open for an extended period of time.



### **▣ Built-in Class 100 HEPA Filter**

- The inside of the dryer is equipped with a heat-resistant HEPA filter to provide a clean environment inside the chamber.
- Class 100 cleanliness provided by HEPA Filter enabling 99.97% filtering of 0.3µm particles.
- Determines when to replace the filter with the built-in differential pressure gauge.
- Real time monitoring of HEPA filter status with digital differential pressure sensor and automatic replacement notification. (option)



### **▣ Smart Program Controller (OFC-P model)**

- Convenient operation with color LCD touch screen.
- 10-step programs can be set, so it is convenient for complex testing.
- Set time up to 99 hours and 59 minutes per step.
- Program repetition possible up to 99 times.



## **Specification**

| Model   |   | Max. 200°C         |  | Max. 300°C                             |  |  |
|---|---|--------------------|--|--|--|--|
|   |   | Basic Controller   | OFC-20                                 | OFC-40                                 | OFC-20H                                | OFC-40H                                |
|   |   | Program Controller | OFC-20P                                | OFC-40P                                | OFC-20HP                               | OFC-40HP                               |
| <b>Chamber volume (L / cu ft)</b>                     |   |                    | 200 / 7.1                              | 400 / 14.1                             | 200 / 7.1                              | 400 / 14.1                             |
| <b>Temperature</b>                                    | Range (°C / °F)                         |                    | Amb.+15 ~ 200 / Amb.+27 ~ 392          | Amb.+15 ~ 200 / Amb.+27 ~ 392          | Amb.+15 ~ 300 / Amb.+27 ~ 572          | Amb.+15 ~ 300 / Amb.+27 ~ 572          |
|   | Fluctuation at 100°C / 212°F (±°C / °F) |                    | 0.2 / 0.36                             | 0.2 / 0.36                             | 0.2 / 0.36                             | 0.2 / 0.36                             |
|   | Variation at 100°C / 212°F (±°C / °F)   |                    | 2 / 3.6                                | 2.2 / 3.96                             | 2 / 3.6                                | 2.2 / 3.96                             |
|   | Heating time to 100°C / 212°F (min.)    |                    | 20                                     | 25                                     | 15                                     | 20                                     |
|   | Recovery time at 100°C / 212°F (min.)   |                    | 7                                      | 7                                      | 7                                      | 7                                      |
| <b>Dimensions</b>                                     | Interior (W x D x H, mm / inch)         |                    | 645 x 750 x 412 / 25.4 x 29.5 x 16.2   | 645 x 750 x 866 / 25.4 x 29.5 x 34.1   | 645 x 750 x 412 / 25.4 x 29.5 x 16.2   | 645 x 750 x 866 / 25.4 x 29.5 x 34.1   |
|   | Exterior (W x D x H, mm / inch)         |                    | 850 x 1025 x 1240 / 33.5 x 40.4 x 48.8 | 850 x 1025 x 1692 / 33.5 x 40.4 x 66.6 | 850 x 1025 x 1240 / 33.5 x 40.4 x 48.8 | 850 x 1025 x 1692 / 33.5 x 40.4 x 66.6 |
|   | Net Weight (kg / lbs)                   |                    | 190 / 418.9                            | 250 / 551.2                            | 190 / 418.9                            | 250 / 551.2                            |
| <b>Electrical requirements (230V, 50/60Hz, 1P, A)</b> |   |                    | 12.0                                   | -                                      | -                                      | -                                      |
| <b>Cat No.</b>  | <b>Basic Controller</b>                 | <b>Solid door</b>  | AAH171115K                             | -                                      | -                                      | -                                      |
|   |   | <b>Window door</b> | AAH171125K                             | -                                      | -                                      | -                                      |
|   | <b>Program Controller</b>               | <b>Solid door</b>  | AAH173115K                             | -                                      | -                                      | -                                      |
|   |   | <b>Window door</b> | AAH173125K                             | -                                      | -                                      | -                                      |
| <b>Electrical requirements (380V, 50Hz, 3P, A)</b>    |   |                    | -                                      | 6.7                                    | 6.2                                    | 9.0                                    |
| <b>Cat No.</b>  | <b>Basic Controller</b>                 | <b>Solid door</b>  | -                                      | AAH171214K                             | AAH172114K                             | AAH172214K                             |
|   |   | <b>Window door</b> | N/A                                    | AAH171224K                             | AAH172124K                             | AAH172224K                             |
|   | <b>Program Controller</b>               | <b>Solid door</b>  | -                                      | AAH173214K                             | AAH174114K                             | AAH174214K                             |
|   |   | <b>Window door</b> | -                                      | AAH173224K                             | AAH174124K                             | AAH174224K                             |

## **Accessories**

| Model                                      | OFC-20   | OFC-40   | OFC-20H  | OFC-40H  |
|--|--|----------|----------|----------|
|  | OFC-20P  | OFC-40P  | OFC-20HP | OFC-40HP |
| <b>Viewing window</b>                      | AAA17505   | AAA17509 | AAA17505 | AAA17509 |
| <b>Perforated shelf</b>                    | 00RTD0001196                                       |          |          |          |
| <b>Dot recorder</b>                        | AAA8T500   |          |          |          |
| <b>Thermal line recorder</b>               | AAAE1503   |          |          |          |
| <b>Digital recorder</b>                    | AAA8T505   |          |          |          |
| <b>Digital differential pressure gauge</b> | AAAB1571(Analog, OFC) 00STT0002793(Digital, OFC-P) |          |          |          |
| <b>HEPA filter</b>                         | 00STT0002792                                       |          |          |          |

# APPENDIX

 **Lab Companion 2020-2021 Catalog**

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# Build a New Lab!

## Preparation room



Autoclave



Forced Convection Oven



Incubated Shaker, Stackable

## Culture room



Clean Bench



Incubator

## Reagent (sample) storage room



Fire Safety Storage Cabinet



Acid/Corrosive Cabinet



Filtering Storage Refrigerator



Filtering Storage Cabinet



Dry Cabinet

## Central Laboratory



Hotplate & Magnetic Stirrer



Heating Bath Circulator



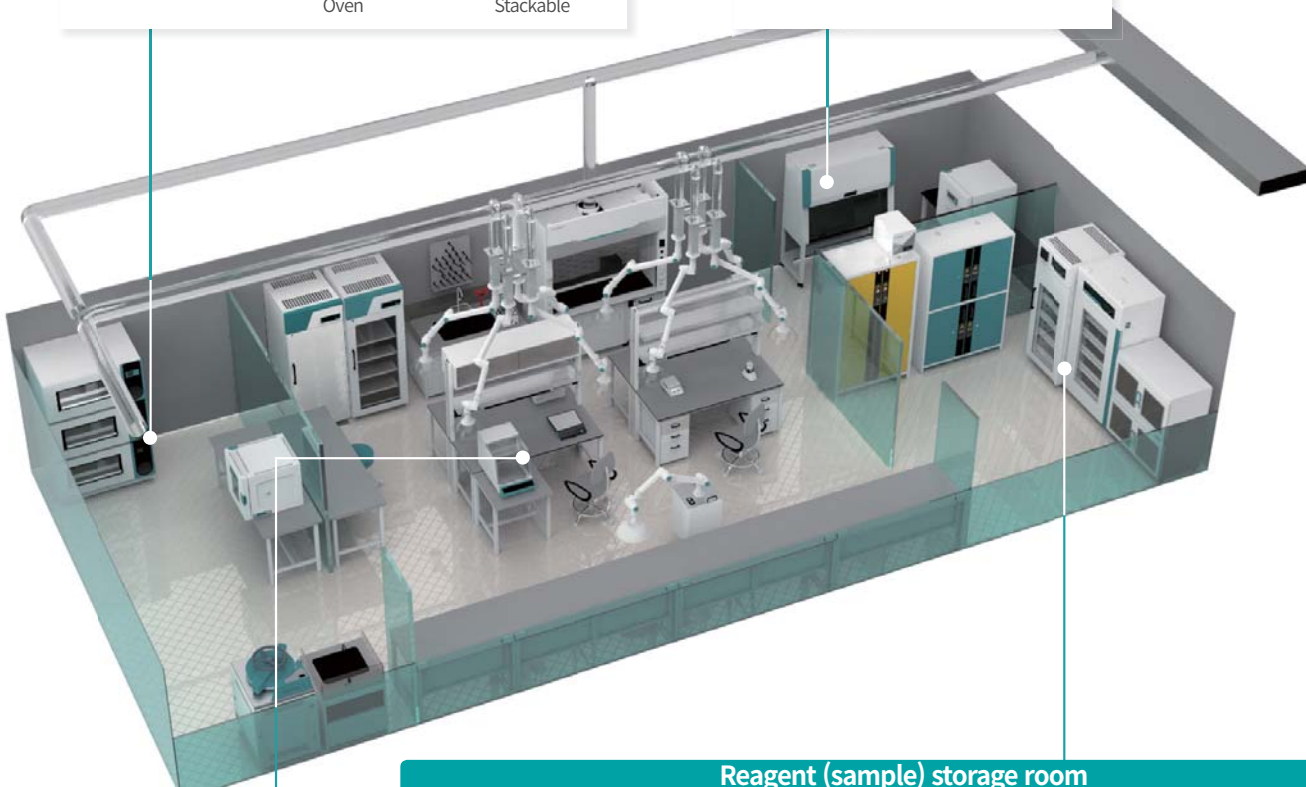
Incubated Shaker, Tabletop



Mobile Fume Extractor



Extraction Arm Hood



**Laboratory Equipment**

Oven & Incubator  
Shaker & Incubated Shaker  
Bath Circulator & Heating Bath  
Chiller (Recirculating Cooler)  
Stirrer & Mixer  
Autoclave

**Safety Storage & Cabinet**

Fire Safety Storage Cabinet  
Corrosive Cabinet  
Filtering Storage Cabinet  
Gas Cylinder Cabinet  
Multiple Drawer Cabinet  
Dry Cabinet & Desiccator

**Fume Hood**

Clean Bench  
PCR Workstation  
UV Sterilization Cabinet  
Ductless Fume Hood  
Mobile Fume Extractor

**Environmental Reliability Test Equipment**

Temp. & Humid. Chamber  
Heating & Cooling Chamber  
Heating Chamber

**Refrigerator & Freezer for Laboratory/Medical**

Laboratory Refrigerator  
Laboratory Freezer  
Filtering Storage Refrigerator  
Blood Bank Refrigerator  
Pharmaceutical Refrigerator  
Blood Plasma Freezer

**Lab Essentials**

Plastic Ware  
Safety Product

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