

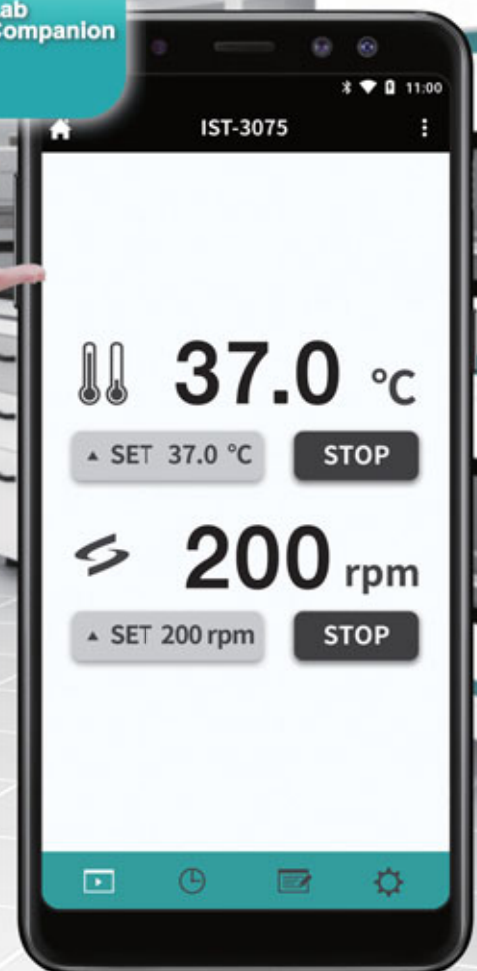


# Lab Companion

2020 - 2021 Catalog

*Creating  
Safe & Reliable Research Environment*

Lab  
Companion





## 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

For further details  
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

For further details  
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

For further details  
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.



# Contents



## Lab Companion Research / Laboratory Equipment

### Laboratory Equipment

#### — Bath Circulator —

- 22 Refrigerated & Heating bath Circulator (Program, General)
- 26 Heating Bath Circulator (Program, General)

#### — Chiller (Recirculating Cooler) —

- 34 Chiller (Recirculating Cooler), General
- 36 Chiller (Recirculating Cooler), Low temp. general
- 38 Chiller (Recirculating Cooler), Low temp. precision
- 40 Chiller (Recirculating Cooler), Compact
- 42 Chiller (Recirculating Cooler), High temp. precision

#### — Heating Bath —

- 50 Heating Bath (General, Agitator, Economy)
- 54 Heating Bath, Visible
- 56 Heating Bath, Shaking
- 59 Cold Trap Bath

#### — Oven —

- 64 Forced Convection Oven (Program, General)
- 68 Forced Convection Oven, Large
- 70 Forced Convection Oven, Economy
- 71 Forced Convection Oven, Multi-Chamber
- 72 Natural Convection Oven (General, Economy)
- 74 Vacuum Oven
- 76 Furnace

#### — Incubator —

- 82 Incubator (Air-Jacket), General
- 83 Incubator (Film Heater), Economy
- 84 Incubator (Forced Convection), Mini
- 85 Incubator (Forced Convection), Multi-Chamber
- 86 Low Temp. Incubator, General
- 88 Low Temp. Incubator (Forced Convection), Personal
- 89 Low Temp. Incubator (Forced Convection), Multi Chamber
- 90 Plant Growth Chamber

#### — Incubated Shaker —

- 98 Incubated Shaker, Stackable
- 100 Incubated Shaker, Stackable (Multi)
- 102 Incubated Shaker, Tabletop
- 104 Incubated Shaker, Floor

#### — Shaker —

- 112 Shaker (Dual Action, General, Program)
- 116 Shaker, Compact
- 117 Microplate Shaker
- 118 Rocking / Waving Shaker
- 119 Funnel Shaker
- 120 Rotator

#### — Stirrer & Mixer —

- 128 Hotplate & Magnetic Stirrer (Digital, Analog, Multi Type)
- 131 Hotplate, Digital
- 132 Round Flask & Vial Heating Block
- 134 Magnetic Stirrer, (Digital, Analog, Multi Type)
- 144 Overhead Stirrer, Prestige Touch
- 146 Overhead Stirrer, High Performance
- 147 Overhead Stirrer, Easy Control
- 154 Vortex Mixer

#### — Life Science Equipment —

- 158 Hybridization Oven
- 159 Heating Block
- 160 Heating & Cooling Block
- 161 Heating Shaker
- 164 Electrophoresis System
- 167 Power Supply for Electrophoresis System

#### — Autoclave —

- 170 Autoclave

#### — Pump —

- 173 Pump

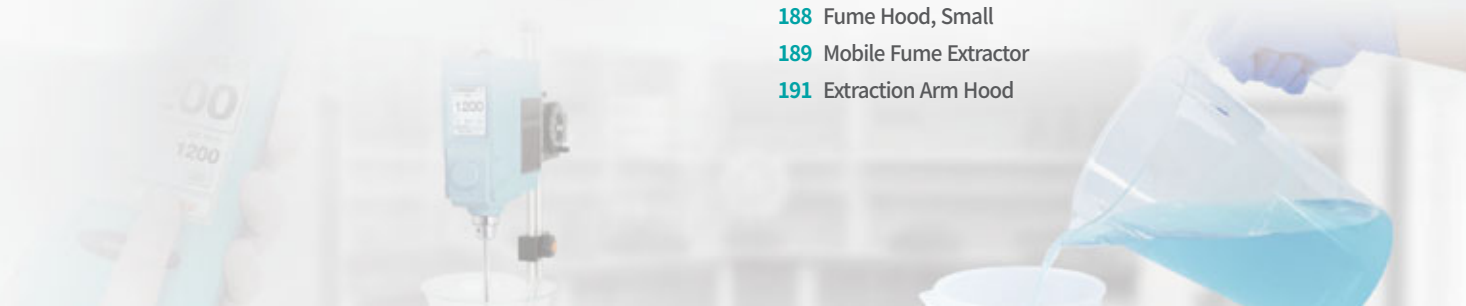
#### — Ultrasonic Cleaner —

- 175 Ultrasonic Cleaner

### Fume Hood

#### — Hood & Clean Bench —

- 180 Clean Bench (Advanced, Basic)
- 183 PCR Workstation
- 184 UV Sterilization Cabinet
- 186 Ductless Fume Hood
- 188 Fume Hood, Small
- 189 Mobile Fume Extractor
- 191 Extraction Arm Hood



## Safety Storage & Cabinet

### — Safety Storage & Cabinet —

- 200 Fire Safety Storage Cabinet (Basic, Type 30, 60, 90)
- 208 Safety Waste Disposal System
- 209 Acid/Corrosive Cabinet
- 214 Filtering Storage Cabinet
- 218 Gas Cylinder Cabinet
- 219 Multiple Drawer Cabinet
- 220 Multipurpose Cabinet (Window, Drawer)

### — Dry Cabinet & Desiccator —

- 228 Dry Cabinet (Auto desiccator)
- 230 Desiccator

## Refrigerator & Freezer for Laboratory/Medical

### — Laboratory Refrigerator & Freezer —

- 240 Laboratory Refrigerator
- 242 Filtering Storage Refrigerator
- 244 Laboratory Freezer

### — Medical Refrigerator & Freezer —

- 248 Blood Bank Refrigerator
- 249 Pharmaceutical Refrigerator
- 250 Blood Plasma Freezer

## Lab Essentials

- 256 Plastic Ware (Liquid Handling, Storage, Connection)



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## Environmental Reliability Test Equipment

## Environmental Reliability Test Equipment

### — Temp. & Humid. Chamber —

- 272 Temp. & Humid., Chamber, Tabletop type (-35°C, -20°C, 0°C)
- 276 Temp. & Humid., Ultra and Low temp. type (-70°C, -35°C)
- 282 Temp. & Humid., General type (-5°C)
- 286 Temp. & Humid., Dual type
- 290 Temp. & Humid., Basic type
- 293 Pharmaceutical Stability type
- 298 Temp. & Humid., Walk-in type
- 299 Temp. & Humid., Customized

### — Heating & Cooling Chamber —

- 304 Heating & Cooling Chamber, Table top (-35°C, -20°C) Horizontal
- 308 Heating & Cooling Chamber, Ultra Low Temp. (-70°C) Horizontal
- 312 Heating & Cooling Chamber, Low Temp. (-35°C) Horizontal
- 316 Heating & Cooling Chamber, Low Temp. (-35°C) Vertical
- 320 Heating & Cooling Chamber, Low Temp. (-25°C) Horizontal
- 324 Heating & Cooling Chamber, Ambient temp. (-5°C) Horizontal
- 328 Heating & Cooling Chamber, General (-20°C, 0°C) Horizontal

### — Heating Chamber —

- 334 Heating Chamber
- 338 Clean Oven





# Products at a Glance

## Lab Companion Research / Laboratory Equipment

### Laboratory Equipment



Bath Circulator **18**



Chiller (Recirculating Cooler) **30**



Heating Bath **50**



Heating Bath, Visible **54**



Heating Bath, Shaking **56**



Cold Trap Bath **59**



Forced (Natural) Convection Oven **66 (72)**



Forced Convection Oven, Multi-Chamber **71**



Vacuum Oven **74**



Furnace **76**



Incubator **82**



Plant Growth Chamber **90**



Incubated Shaker, Stackable **100**



Incubated Shaker, Tabletop **102**



Shaker **112**



Microplate Shaker **117**

## Lab Companion Research / Laboratory Equipment



Rocking / Waving Shaker **118**



Funnel Shaker **119**



Rotator **120**



Hotplate & Magnetic Stirrer **128**



Hotplate **131**



Magnetic Stirrer **134**



Overhead Stirrer **142**



Vortex Mixer **152**



Hybridization Oven **158**



Heating & Cooling Block **160**



Heating Shaker **161**



Electrophoresis System **164**



Power Supply for Electrophoresis System **167**



Autoclaves **168**



Electrical Aspirator & Vacuum pump **172**



Ultrasonic Cleaner **174**

# Products at a Glance

## Lab Companion Research / Laboratory Equipment

### Fume Hood



Clean Bench 180



PCR Workstation 183



UV Sterilization Cabinet 184



Ductless Fume Hood 186



Fume Hood, Small 188



Mobile Fume Extractor 189



Extraction Arm Hood 191

### Safety Storage & Cabinet



Fire Safety Storage Cabinet 200



Acid/Corrosive Cabinet 209



Filtering Storage Cabinet 214



Gas Cylinder Cabinet 218



Multipurpose Cabinet 220



Dry Cabinet (Auto desiccator) 228



Vacuum Desiccator 230



Desiccator 232





## Lab Companion Research / Laboratory Equipment

### Refrigerator & Freezer for Laboratory/ Medical



Laboratory Refrigerator **240**



Filtering Storage Refrigerator **242**



Laboratory Freezer **244**



Pharmaceutical Refrigerator **249**



Blood Bank Refrigerator / Freezer **250**

### Lab Essentials



Plastic Ware **256**



Safety Product **261**



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## Environmental Reliability Test Equipment



Temp. & Humid. Chamber **268**



Pharmaceutical Stability Chamber **293**



Heating & Cooling Chamber **300**



Heating Chamber **334**

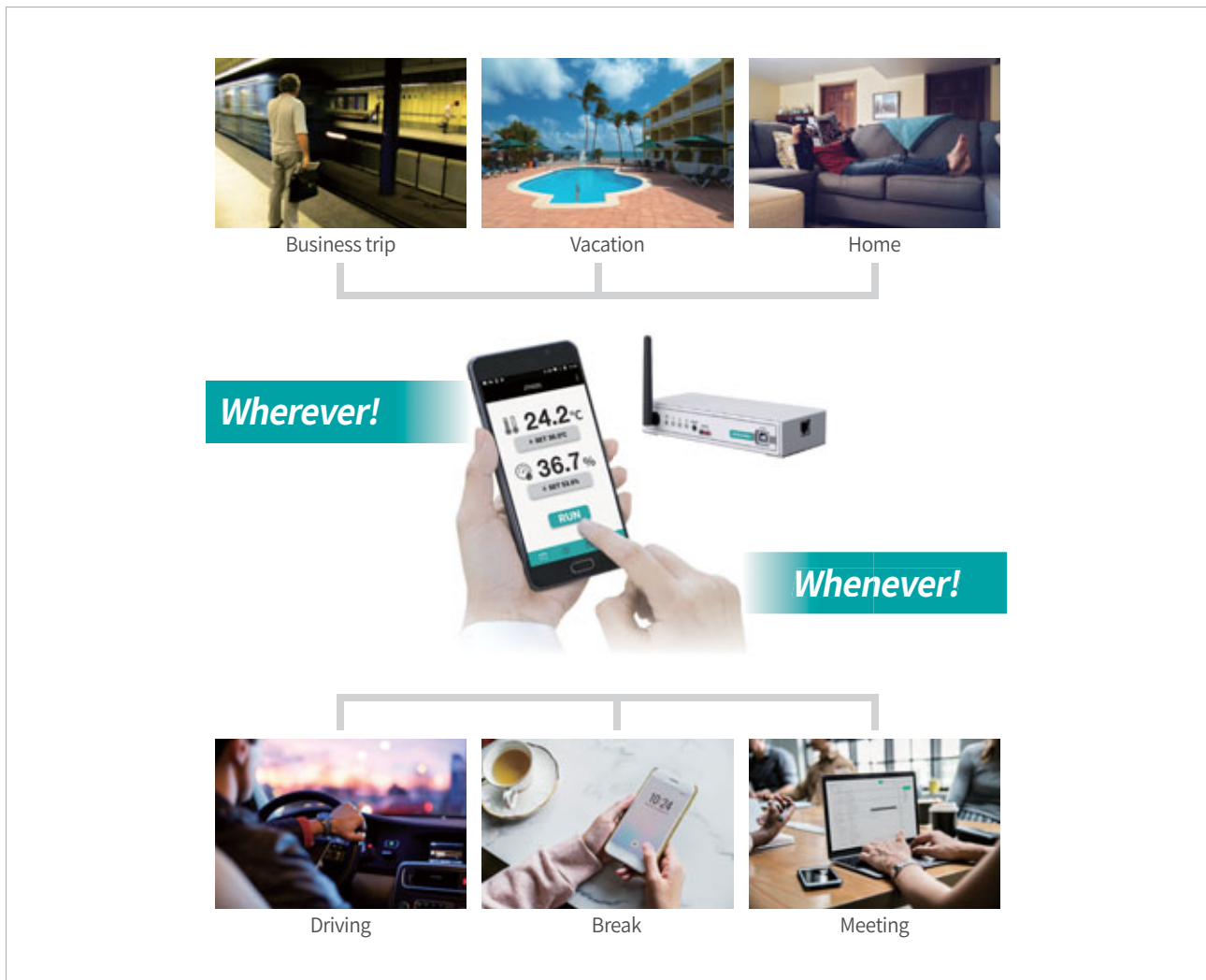


Clean Oven **338**

# 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.



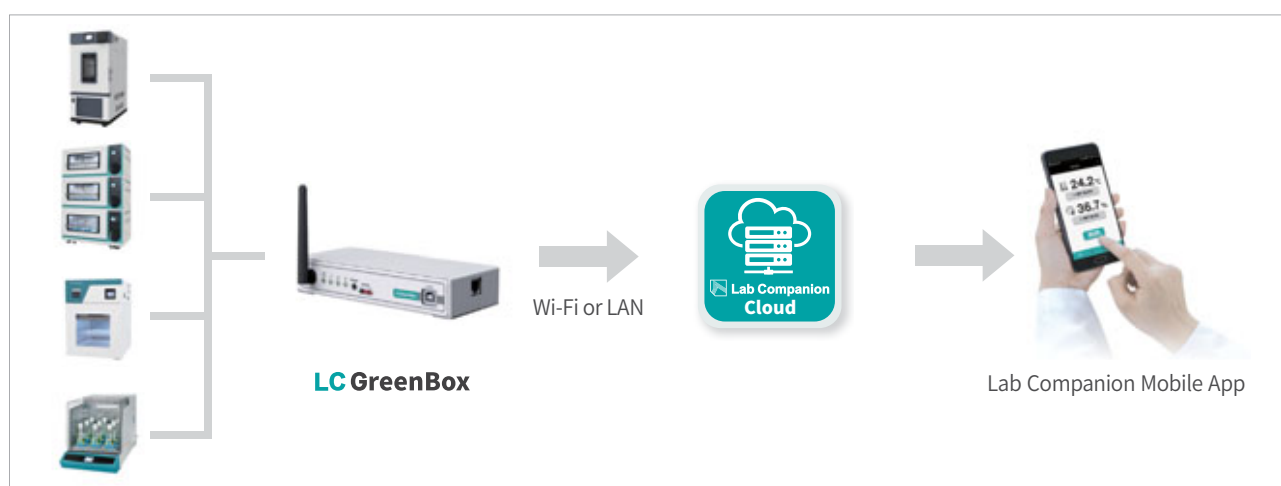
Reliable data management through backup of equipment history.

## 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.

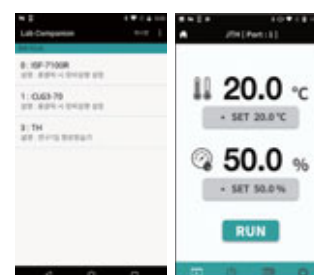


**LC GreenBox**



**LC Connected** Flow diagram

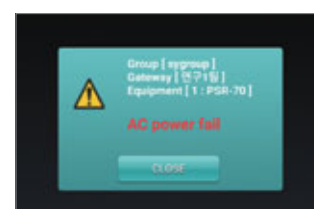
- Real-time monitoring of equipment connected to LC Connected possible through the dedicated mobile application for Lab Companion.  
(Supported from Android 6.0 Marshmallow version and above. iOS devices to be supported in the future)
- Each lab member can access connected devices for which they have 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.



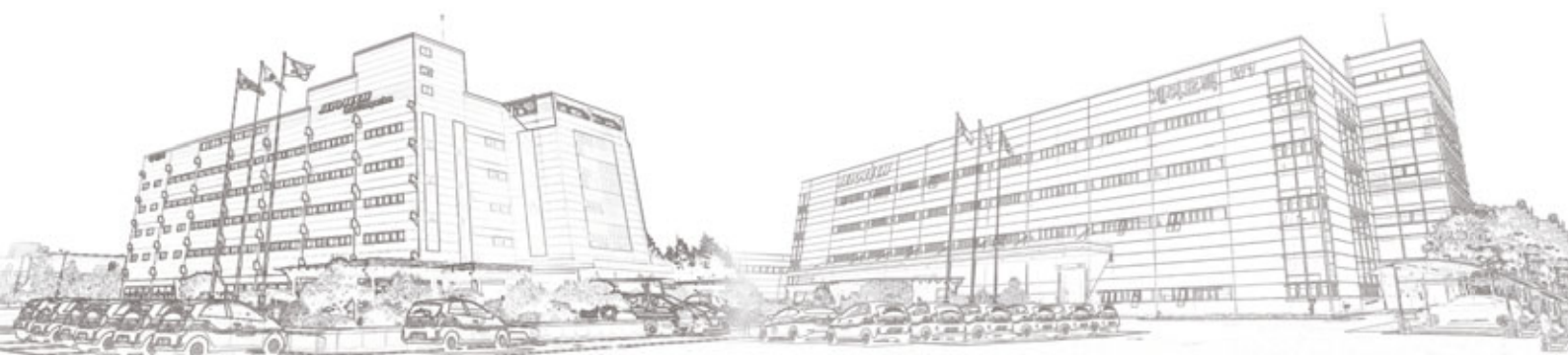
Certificate of medical devices management system for the manufacturers of medical devices.








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.








## 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 motion.
-  Mixing through 360 degree rotation.





## 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.





## 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.

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

-  More accurate speed control with rpm calibration.
-  Indicator to ascertain water level.
-  Alarm if the water is low level.
-  Improves temperature stability by performing internal agitation.

## 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 /-13 ~ 302 (RW3-25P) -35 ~ 150 /-31 ~ 302 (RW3-35P)	±0.05 / 0.09 at -10 °C	5, 10, 20, 30 / 0.2, 0.4, 0.7, 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 /-13 ~ 302 (RW3-25) -35 ~ 150 /-31 ~ 302 (RW3-35)	±0.05 / 0.09 at -10°C	5, 10, 20, 30 / 0.2, 0.4, 0.7, 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 / Amb. +18 ~ 302	±0.05 / 0.09 at 50°C	5, 10, 20, 30 / 0.2, 0.4, 0.7, 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 / Amb. +18 ~ 302	±0.05 / 0.09 at 50°C	5, 10, 20, 30 / 0.2, 0.4, 0.7, 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.

 <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>Digital Input / Output for external device interlock control.</p>	 <p>Intuitive operation with Color Touch display.</p>
 <p>Warning alarm in case of deviation of temperature control.</p>	 <p>Possible to set end time or start time of device operation.</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>More precise temperature control through 3-point temperature calibration.</p>	 <p>Over temperature protection function.</p>
 <p>Alarm if the water is low level.</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>



## 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

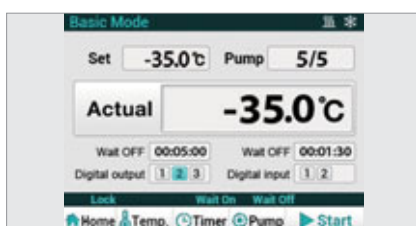
Auto-tuning function enables optimal control even when mainly used temperature or ambient conditions are frequently changed.

### > 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.



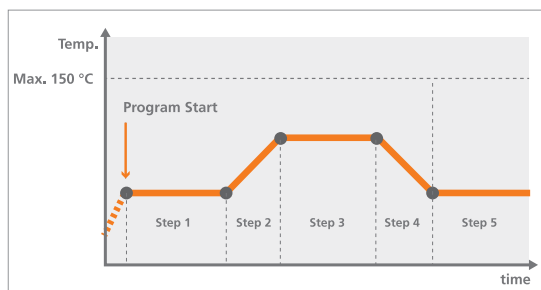
# Refrigerated & Heating Bath Circulator

## 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.



#### 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.



#### RW3-0525P

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

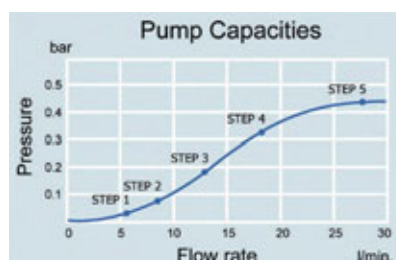
#### Use Convenience Features

- 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

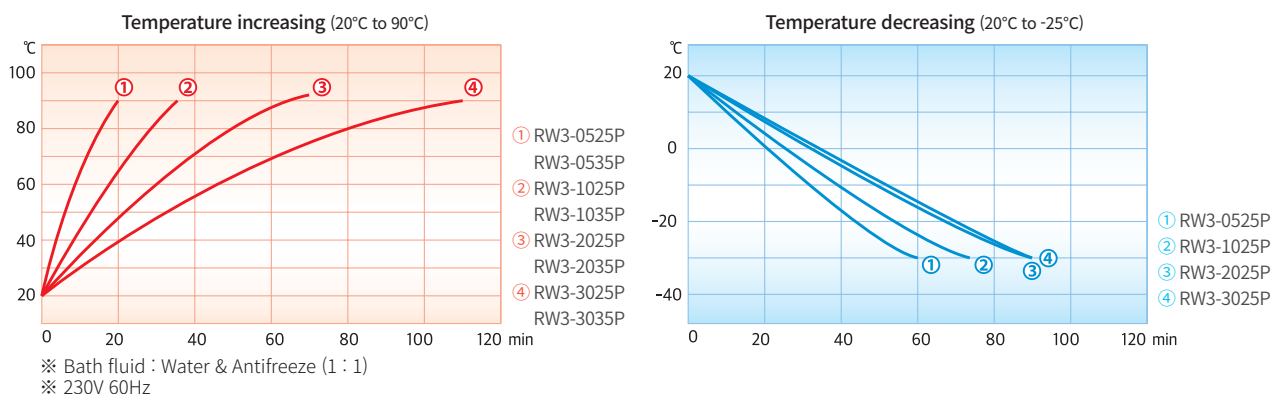
Pump Step	1	2	3	4	5
Max. pressure (psi)	0.5	1.1	2.4	4.9	5.9
Max. flow rate (L/min)	5.6	8.0	12.8	18.8	28.0

※ Bath fluid : Water





## Heat-up Time, Cool-down Time



## Specification

Model		RW3-0525P	RW3-1025P	RW3-2025P	RW3-3025P
Bath volume (L / cu ft)		5 / 0.2	10 / 0.4	20 / 0.7	30 / 1.1
Temperature	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
Cooling capacity	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
Dimension	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
Electrical requirements (230V, 60Hz, A)		11	11	12.5	13.5
Cat. No.		AAH57641K	AAH57651K	AAH57661K	AAH57671K
Electrical requirements (230V, 50Hz, A)		11	11	12.5	13.5
Cat. No.		AAH57642K	AAH57652K	AAH57662K	AAH57672K
Electrical requirements (120V, 60Hz, A)		12.6	12.6		
Cat. No.		AAH57643U	AAH57653U	-	-

Model		RW3-0535P	RW3-1035P	RW3-2035P	RW3-3035P
Bath volume (L / cu ft)		5 / 0.2	10 / 0.4	20 / 0.7	30 / 1.1
Temperature	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
Cooling capacity	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
Dimension	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
Electrical requirements (230V, 60Hz, A)		12.5	12.5	13.5	14.5
Cat. No.		AAH57741K	AAH57751K	AAH57761K	AAH57771K
Electrical requirements (230V, 50Hz, A)		12.5	12.5	13.5	14.5
Cat. No.		AAH57742K	AAH57752K	AAH57762K	AAH57772K

※ 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)

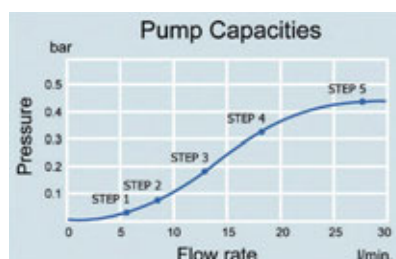
#### Outstanding Safety

- 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
Bath volume (L / cu ft)		5 / 0.2	10 / 0.4	20 / 0.7	30 / 1.1
Temperature	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
Cooling capacity	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
Dimension	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 / 132.3	67 / 147.7
Electrical requirements (230V, 60Hz, A)		11	11	12.5	13.5
Cat. No.		AAH57041K	AAH57051K	AAH57061K	AAH57071K
Electrical requirements (230V, 50Hz, A)		11	11	12.5	13.5
Cat. No.		AAH57042K	AAH57052K	AAH57062K	AAH57072K
Electrical requirements (120V, 60Hz, A)		12.6	12.6		
Cat. No.		AAH57043U	AAH57053U	-	-

Model		RW3-0535	RW3-1035	RW3-2035	RW3-3035
Bath volume (L / cu ft)		5 / 0.2	10 / 0.4	20 / 0.7	30 / 1.1
Temperature	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
Cooling capacity	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
Dimension	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	45 / 99.2	60 / 132.3	68 / 149.9
Electrical requirements (230V, 60Hz, A)		12.5	12.5	13.5	14.5
Cat. No.		AAH57141K	AAH57151K	AAH57161K	AAH57171K
Electrical requirements (230V, 50Hz, A)		12.5	12.5	13.5	14.5
Cat. No.		AAH57142K	AAH57152K	AAH57162K	AAH57172K

※ 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.

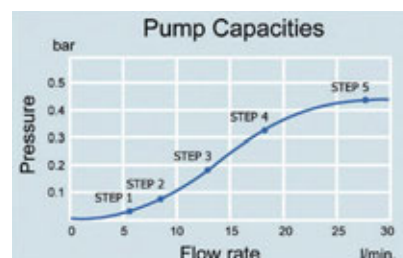
### Use Convenience Features

- 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)

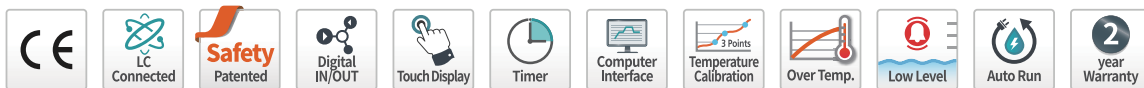
### Pump Capacity

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
Bath volume (L / cu ft)		5 / 0.2	10 / 0.4	20 / 0.7	30 / 1.1
Temperature	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
Dimension	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
Electrical requirements (230V, 50/60Hz, A)		8.5	8.5	8.5	8.5
Cat. No.		AAH52741K	AAH52751K	AAH52761K	AAH52771K
Electrical requirements (120V, 60Hz, A)		8.6	8.6	8.6	8.6
Cat. No.		AAH52742U	AAH52752U	AAH52762U	AAH52772U

Model		CW3-05	CW3-10	CW3-20	CW3-30
Bath volume (L / cu ft)		5 / 0.2	10 / 0.4	20 / 0.7	30 / 1.1
Temperature	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
Dimension	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
Electrical requirements (230V, 50/60Hz, A)		8.5	8.5	8.5	8.5
Cat. No.		AAH52341K	AAH52351K	AAH52361K	AAH52371K
Electrical requirements (120V, 60Hz, A)		8.6	8.6	8.6	8.6
Cat. No.		AAH52342U	AAH52352U	AAH52362U	AAH52372U

※ 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 CW3-30(P): 2ea RW3-2025(P): 2ea RW3-2035(P): 2ea RW3-3025(P): 2ea 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	CW3-10(P): 1ea RW3-1025(P): 1ea RW3-1035(P): 1ea
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>



Rotary Evaporator

Chiller

Page 40

# 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 ( $\pm^{\circ}\text{C}$ / $^{\circ}\text{F}$ ) at 50 $^{\circ}\text{C}$	Temp. Range ( $^{\circ}\text{C}$ / $^{\circ}\text{F}$ )	Max. Cooling Capacity (W)	Model	Page
Ambient temp. type	<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 $^{\circ}\text{C}$	HX	34
Low temp. type	<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 $^{\circ}\text{C}$	HL	36
	<b>Precision</b> <ul style="list-style-type: none"> <li>• External temperature sensor control function</li> <li>• 0.2<math>^{\circ}\text{C}</math> precision control</li> </ul>	$\pm 0.2$ / 0.36	-20 to 40 / -4 to 104	7.1 at 20 $^{\circ}\text{C}$	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 $^{\circ}\text{C}$	RC	40
High / Low temp. type	<b>Precision</b> <ul style="list-style-type: none"> <li>• Wide temperature zone control</li> <li>• 0.1<math>^{\circ}\text{C}</math> precision control</li> </ul>	$\pm 0.1$ / 0.2	-20 to 80 / -4 to 176	6.5 at 20 $^{\circ}\text{C}$	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.

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





## 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

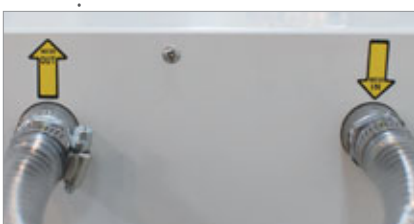
Controller with temperature calibration function allows for stable implementation of more accurate temperature control.

### > 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.**

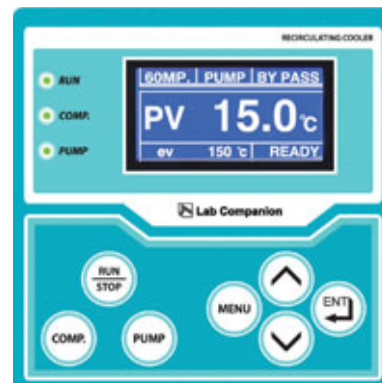
### Structural Functional Features

- 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

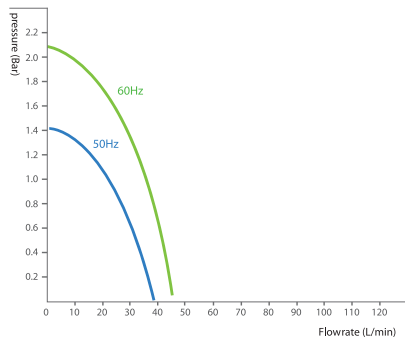
- Bright LCD display provides excellent visual perception.
- Identify all operations and operating conditions from the front panel.
- Simultaneously displays the set value and the current value, and settings can be changed during equipment use, making it convenient.
- Highly-reliable control through 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.

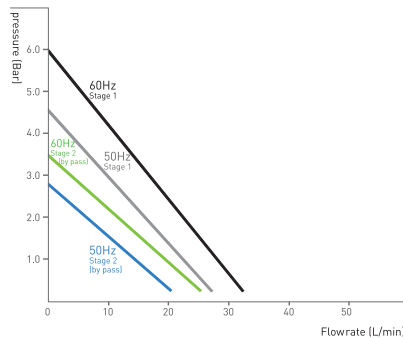
## Pumping capacities

### 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°C.

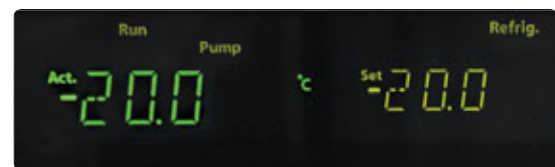
### Structural Functional Features

- Low-temperature chiller controlled from -20°C to 40°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

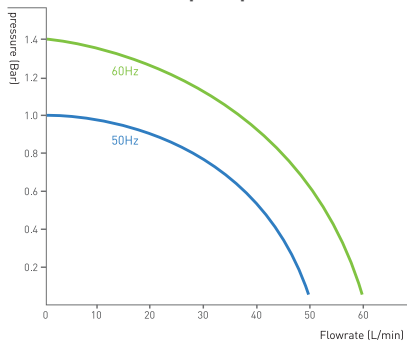
- Over temperature alarm.
- Provides a warning when abnormal temperature or bath fluid shortage is detected, and keeps the chiller operating continuously to protect the user application.
- Over-current and short circuit protection of device.
- Automatic stop in case of over temperature of the compressor.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



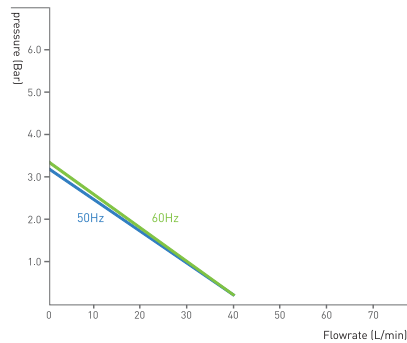


## Pumping capacities

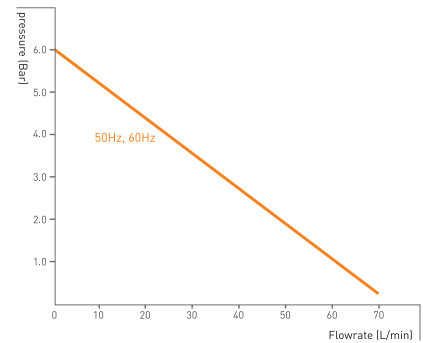
### Submersible pump



※ 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.

## Accessories

Page 44

Fitting, Connector, Adapter, Tubing, Tube Clamp, Bath Fluid

# 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)

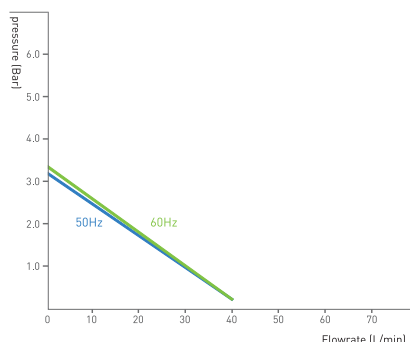
### Outstanding Safety

- 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.

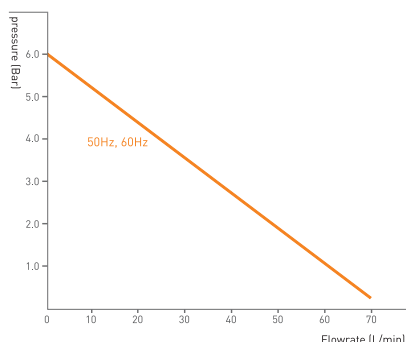


## Pumping capacities

### 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

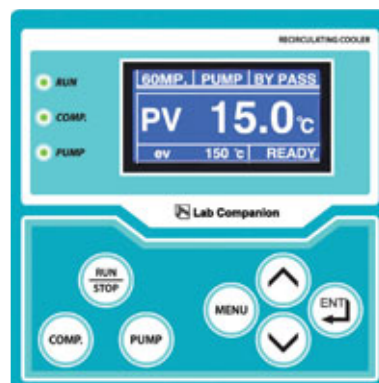
- Optimized for use with rotary evaporator.
- Pump In/Out port is located at the top, making it easy to connect and disassemble with the evaporator set.
- Optimized slim and compact design minimizes installation space.
- The conventional simple refrigerant compressor control method can cause the compressor 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.



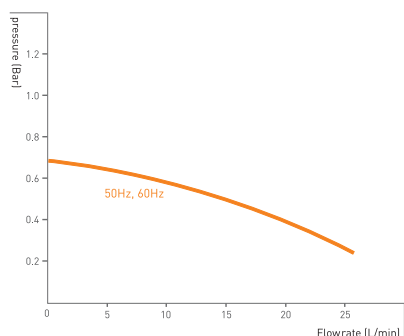
#### Outstanding Safety

- 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)

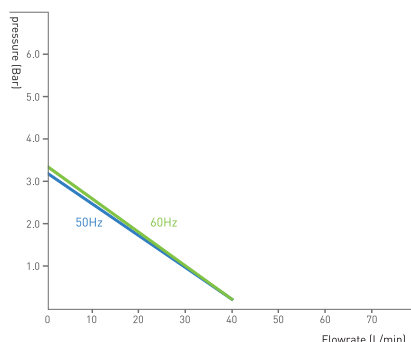
### Outstanding Safety

- 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.

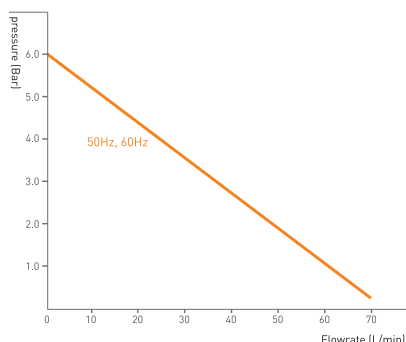


## Pumping capacities

### 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) / 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)	92 / 202.8	93 / 205	142 / 313	147 / 324	171±10 / 377±20.1	176±10 / 388±20.1
<b>Temperature data</b>						
Working temperature range (°C / °F)	-20 to 80 / -4 to 176	-20 to 80 / -4 to 176	-20 to 80 / -4 to 176	-20 to 80 / -4 to 176	-20 to 80 / -4 to 176	-20 to 80 / -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

※ Temperature Range : -15°C to 60°C



### One Touch Adapters Set

- Easy to connect or replace tubing.

## 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 (°C/°F)	Max. Temp. Stability (°C)	Volume (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.

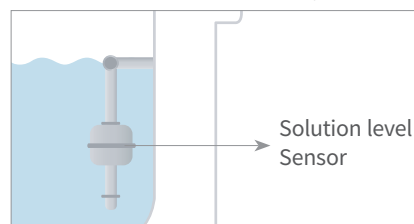
※ Some of the above contents are limited to specific models.



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**



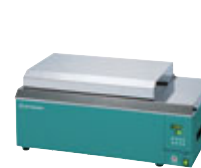
**Agitator**



**Economy**



**Visible**

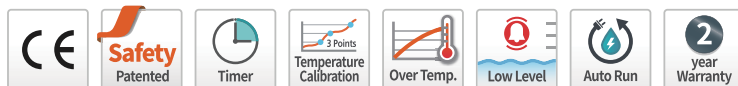


**Shaking**

Main Feature	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
Technical Feature	Auto-tuning	Auto-tuning	-	Auto-tuning	Auto-tuning
	Calibration	Calibration	-	Calibration	Calibration
	Timer	-	-	Timer	Timer
	-	-	-	Communication	-
	Drain Valve	-	-	Drain Valve	Drain Valve
Safety	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.



**BW3-05G**

### 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.



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

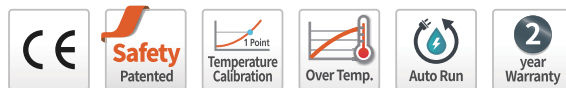
※ The lowest temperature that can be controlled depends on changes in room temperature and sample temperature. Therefore, please contact the distributor of our products before purchasing for technical consultation.

※ 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.



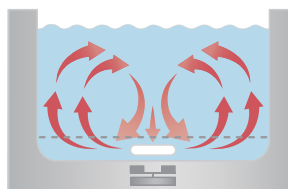
**BW-0510H**

### 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
Type		Single Bath	Single Bath	Single Bath	Dual Bath	Dual Bath	Dual Bath	Dual Bath
Bath volume (L / cu ft)		3.5 / 0.1	11.5 / 0.4	20 / 0.7	3.5 & 3.5 / 0.1 & 0.1	3.5 & 11.5 / 0.1 & 0.4	11.5 & 11.5 / 0.4 & 0.4	11.5 & 20 / 0.4 & 0.7
Temperature	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
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	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
Electrical requirements (230V, 50 / 60Hz, A)		3.0	4.3	8.7	3 & 3	3 & 4.3	4.3 & 4.3	4.3 & 8.7
Cat. No.		AAH45115K	AAH45125K	AAH45135K	AAH47115K	AAH47125K	AAH47135K	AAH47145K
Electrical requirements (120V, 60Hz, A)		5.8	8.3	8.3	5.8 & 5.8	5.8 & 8.3	8.3 & 8.3	8.3 & 8.3
Cat. No.		AAH45113U	AAH45123U	AAH45133U	AAH47113U	AAH47123U	AAH47133U	AAH47143U

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※ 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	
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		0.5 / 0.9		0.5 / 0.9	
	Heat up time to 70°C (min)	25		51		68	
Dimension	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	
Electrical requirements (230V, A)		60Hz, 3	50Hz, 3	60Hz, 4.3	50Hz, 4.3	60Hz, 8.7	50Hz, 8.7
Cat. No.		AAH46011K	AAH46012K	AAH46021K	AAH46022K	AAH46031K	AAH46032K
Electrical requirements (120V, A)		60Hz, 5.8		60Hz, 8.3		60Hz, 8.3	
Cat. No.		AAH46013U		AAH46023U		AAH46033U	

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※ Technical data (according to DIN 12876)

※ Bath fluid : Water

## Accessories Page 53

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

# Accessories



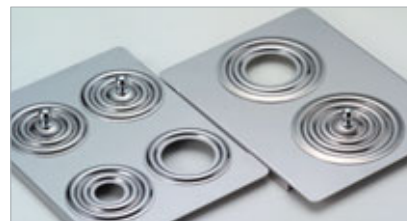
## Gable Type

- 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 (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		
Spring Wire Rack		-	AAA45502	AAA45503	-	AAA45502	AAA45503	-	AAA45502	AAA45503	
Half Shelf Adjuster		AAA45511	AAA45512	AAA45513	AAA45511	AAA45512	AAA45513	AAA45511	AAA45512	AAA45513	
Rack <sup>1)</sup>	Test Tube Rack (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

※ 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	
Bath volume (L / cu ft)		25 / 0.9		40 / 1.4	
Temperature	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	
Dimension	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	
Electrical requirements (230V, A)		60Hz, 13	50Hz, 13	60Hz, 13	50Hz, 13
Cat. No.		AAH43301K	AAH43302K	AAH43401K	AAH43402K

※ 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.

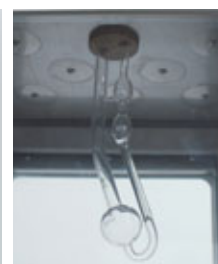


## Accessories

### 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
Bath volume (L / cu ft)		17 / 0.6	25 / 0.9	37 / 1.3	55 / 1.9
Temperature	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
Shaking system	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 (25, 35 / 1.0, 1.4 available)	30 / 1.2 (25, 35 / 1.0, 1.4 available)	30 / 1.2 (25, 35 / 1.0, 1.4 available)	30 / 1.2 (25, 35 / 1.0, 1.4 available)
Dimension	Bath opening / depth (W x L, D) (mm / inch)	199 x 300, 235 / 7.8 x 11.8, 9.3	319 x 300, 235 / 12.6 x 11.8, 9.3	479 x 300, 235 / 18.9 x 11.8, 9.3	629 x 350, 235 / 24.8 x 13.8, 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
Electrical requirements (230V, 60Hz, A)		3.7	4.6	8.9	8.9
Cat. No.		AAH44061K	AAH44111K	AAH44211K	AAH44311K
Electrical requirements (230V, 50Hz, A)		3.7	4.6	8.9	8.9
Cat. No.		AAH44062K	AAH44112K	AAH44212K	AAH44312K
Electrical requirements (120V, 60Hz, A)		7.1	8.8	-	-
Cat. No.		AAH44063U	AAH44113U	-	-

※ 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 BS-11 : 2ea BS-21 : 3ea 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	



# Cold Trap Bath



## 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
Temperature range (°C / °F)		Down to -35 / -31
Material	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)
Dimension	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
Electrical requirements (230V, 60Hz, A)		4.5
Cat. No.		AAH62011K
Electrical requirements (230V, 50Hz, A)		4.5
Cat. No.		AAH62012K

# Oven & Furnace



Satisfaction with the requirements of European regulations and guidelines.



Intuitive operation with Color Touch display.



More precise temperature control through temperature calibration.



Warning alarm in case of deviation of temperature control.



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



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



Digital Input / Output for external device interlock control.



Electronic over temperature protection system.



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



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



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



More precise temperature control through 3-point temperature calibration.



Over temperature protection function.



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



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 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) 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 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

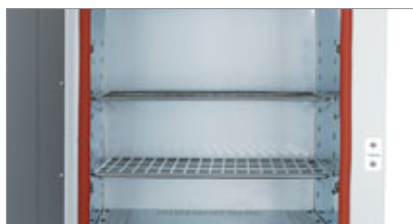
Auto-tuning function enables optimal control even when temperature or ambient conditions are changed frequently.

### > 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



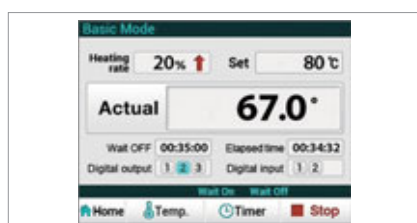
Provision of remote equipment monitoring service.



## 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.

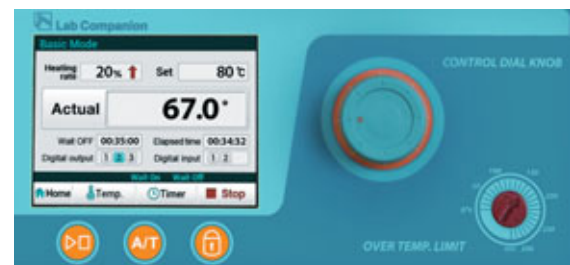
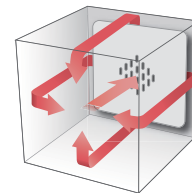
#### Outstanding Safety

- 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.



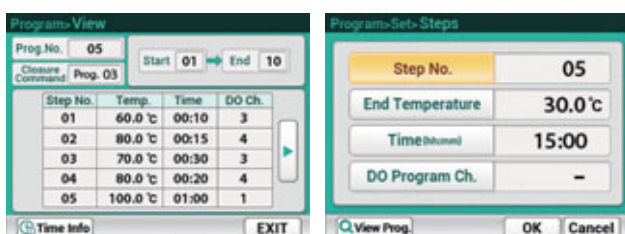
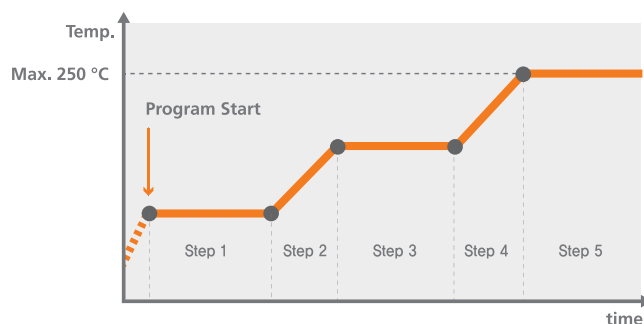
#### OF-12PW

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.

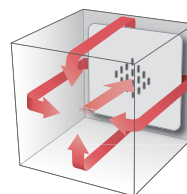
### Use Convenience Features

- 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.



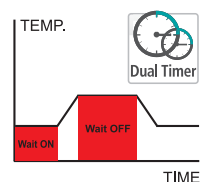
## Outstanding Safety

- 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
Chamber volume (L / cu ft)		50 / 1.8	100 / 3.5	153 / 5.4
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 / 1.8	1.3 / 2.3	1.7 / 3.1
	Heating time to 100°C (min.)	12	15	16
Dimension	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
Shelves	Net weight (Kg / lbs)	53 / 117	63 / 139	72.5 / 160
	Quantity of shelves (standard/max.)	2 / 4	2 / 6	2 / 7
Electrical requirements (230V, 50 / 60Hz, A)	Max. Load per shelf (Kg / lbs)	30 / 66	30 / 66	30 / 66
		4.4	6.1	7.4
Cat. No.	Solid Door (without window)	AAH12155K	AAH12165K	AAH12175K
	Window door	AAH12255K	AAH12265K	AAH12275K
Electrical requirements (120V, 60Hz, A)		6.8	8.4	10.1
Cat. No.	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.

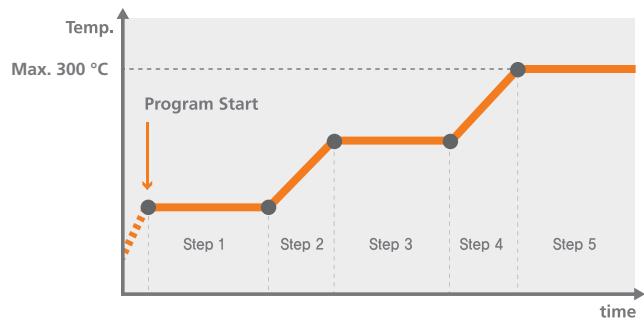
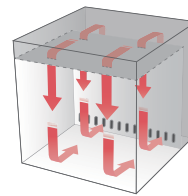
#### General Type

- 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.



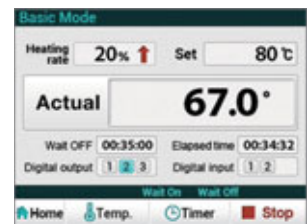
#### OF3-45PW

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)
Chamber volume (L / cu ft)		314 / 11.1	450 / 15.9	760 / 26.8
Temperature	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
Dimension	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
Shelves	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
Electrical requirements (230V, 50/60Hz, A)		1P, 13.2		
Cat. No.	General (Without Window)	AAH18215K	-	-
	General (Window Door)	AAH18315K	-	-
	Program (Without Window)	AAH18615K	-	-
	Program (Window Door)	AAH18715K	-	-
Electrical requirements (380V, 50Hz, A)		-	3P, 6.7	3P, 9.0
Cat. No.	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)
Chamber volume (L / cu ft)		314 / 11.1	450 / 15.9	760 / 26.8
Temperature	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
Dimension	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
Shelves	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
Electrical requirements (380V, 50Hz, A)		3P, 6.7	3P, 9.0	3P, 10.8
Cat. No.	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.

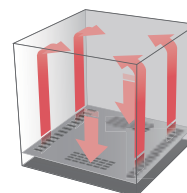
### Outstanding Safety

- 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
Chamber volume (L / cu ft)		52 / 1.8	100 / 3.5	150 / 5.3
Temperature	Range (°C / °F)	Amb. +10 to 220 / Amb. +18 to 428	Amb. +10 to 220 / Amb. +18 to 428	Amb. +10 to 220 / 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
Dimension	Interior (W x D x H, mm / inch)	375 x 370 x 370 / 14.8 x 14.6 x 14.6	455 x 430 x 510 / 18 x 17 x 20	585 x 460 x 555 / 23 x 18.1 x 21.9
	Exterior (W x D x H, mm / inch)	530 x 535 x 737 / 20.9 x 21.1 x 29	610 x 595 x 877 / 24 x 23.4 x 34.5	740 x 625 x 922 / 29.1 x 24.6 x 36.3
	Net weight (Kg / lbs)	36 / 79.4	47 / 103.6	59 / 130
Shelves	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
Electrical requirements (230V, 50 / 60Hz, A)		4.3	6	7.4
Cat. No.		AAH14012K	AAH14022K	AAH14032K
Electrical requirements (120V, 60Hz, A)		6.8	8.4	10.1
Cat. No.		AAH14016U	AAH14026U	AAH14036U

※ 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 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.

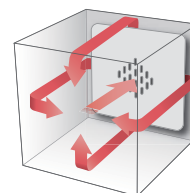


**OF-02G-2C**

with Wire Shelves 2ea (standard)

**OF-02G-4C**

with Wire Shelves 2ea (standard)



## Specification

Model		OF-02G-2C	OF-02G-4C
Chamber volume (L / cu ft)		120 / 4.2 (60 / 2.1 x 2 chambers)	240 / 8.5 (60 / 2.1 x 4 chambers)
Temperature	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
Dimension	Interior (W x D x H, mm / inch)	400 x 360 x 420 / 15.7 x 14.2 x 16.5 (each chamber)	400 x 360 x 420 / 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
Shelves	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
Electrical requirements (230V, 50 / 60Hz, A)		8.4	8.4 x 2
Cat. No.		AAH1A115K	AAH1A015K
Electrical requirements (120V, 60Hz, A)		16.7	16.7 x 2ea
Cat. No.		AAH1A116U	AAH1A016U

※ 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.

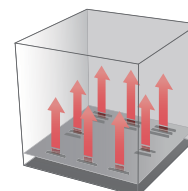
### Outstanding Safety

- 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
	Recovery time at 100°C (min.)	5	4	2
<b>Dimension</b>	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

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※ 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.

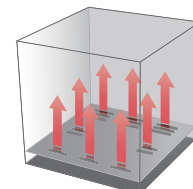
### Outstanding Safety

- 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
Chamber volume (L / cu ft)		52 / 1.8	100 / 3.5	150 / 5.3
Temperature	Range (°C / °F)	Amb. +15 to 220 / Amb. +27 to 428	Amb. +15 to 220 / Amb. +27 to 428	Amb. +15 to 220 / 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
Dimension	Interior (W x D x H, mm / inch)	375 x 370 x 370 / 14.8 x 14.6 x 14.6	455 x 430 x 510 / 18 x 17 x 20	585 x 460 x 555 / 23 x 18.1 x 21.9
	Exterior (W x D x H, mm / inch)	530 x 535 x 737 / 20.9 x 21.1 x 29	610 x 595 x 877 / 24 x 23.4 x 34.5	740 x 625 x 922 / 29.1 x 24.6 x 36.3
	Net weight (Kg / lbs)	34 / 75	46 / 101.4	59 / 130
Shelves	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
Electrical requirements (230V, 50 / 60Hz, A)		4.3	6	7.4
Cat. No.		AAH15015K	AAH15025K	AAH15035K
Electrical requirements (120V, 60Hz, A)		6.7	8.3	10
Cat. No.		AAH15016U	AAH15026U	AAH15036U

※ 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

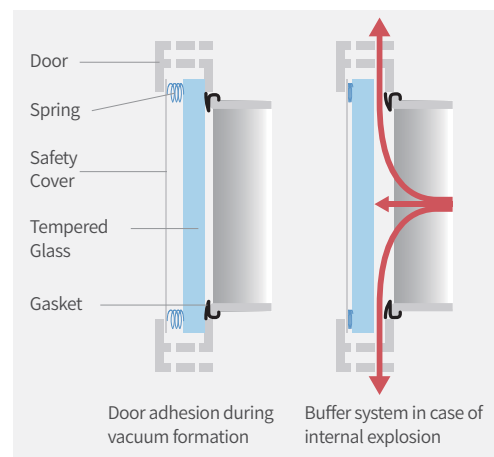
- Door structure including buffer system allows for internal pressure release through upper and lower ventilation holes when stable vacuum is formed/maintained and when there is an internal explosion.
- Polycarbonate safety cover provided in case of toughened glass breakage.
- 12 events is recorded in case of door open, error, and etc.
- Top-rated overheating protection system. (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

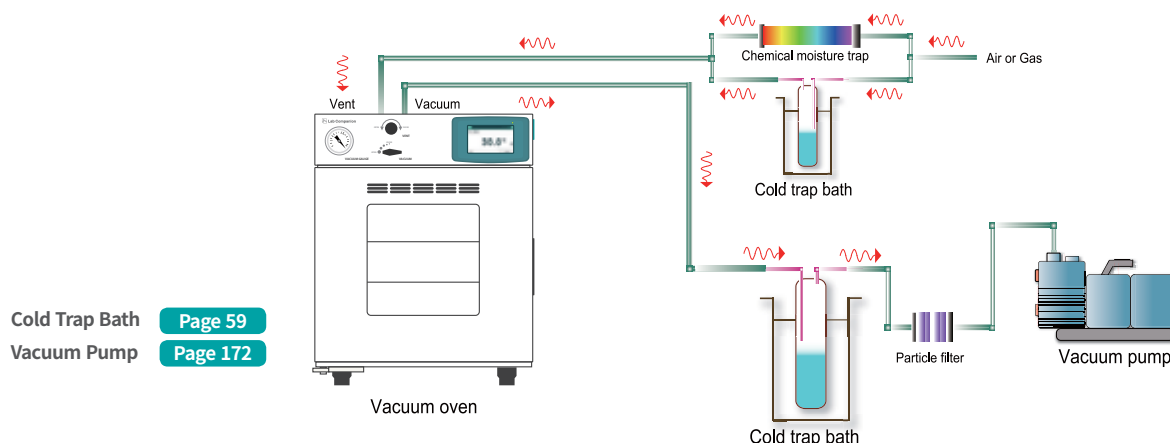


Buffer system door structure



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

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

## Accessories

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

### 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



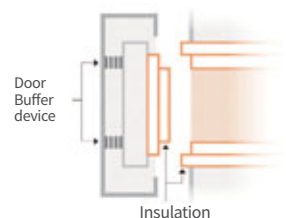
1100°C model  
(4-side molding type heater)



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



Excellent visibility with 5-inch large LCD



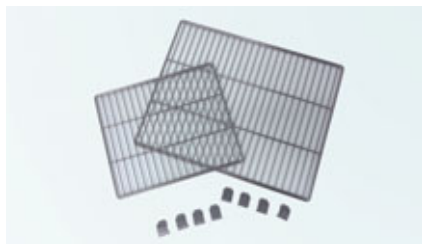
Excellent airtight structure even maximum temperature

## 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
Chamber Volume (L / cu ft)		3 / 0.11	4.5 / 0.16	12 / 0.42	3.2 / 0.11	4.5 / 0.16	12 / 0.42
Temperature							
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
Dimensions							
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
Electrical requirements (230V, 50 / 60Hz, A)		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



Satisfaction with the requirements of European regulations and guidelines.



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



Warning alarm in case of deviation of temperature control.



Indicator to ascertain water level.



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



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



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.



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



More precise temperature control through temperature calibration.



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



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



2 year warranty Free A/S.

## General Application

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

	Description	Temp. Range (°C/°F)	Max. Temp. Fluctuation (±°C/°F)	Volume (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 / Amb. +9 to 158	0.2 at 37°C / 0.6 at 98.6	60, 102, 151 / 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 / Amb. +5.4 to 140	±0.1 at 37°C / 0.18 at 98.6°F	65, 150, 205 / 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 / Amb. +9 to 149	0.5 at 37°C / 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 / Amb. +9 to 158	±0.1 at 37°C / 0.18 at 98.6°F	120 / 4.2 (60 L / 2.1 cu ft x 2 chamber) 240 / 8.5 (60 L / 2.1 cu ft x 4 chamber)	IB-02G-2C 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 / 39.2 to 158	0.2 at 37°C / 0.36 at 98.6°F	156, 254 / 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 / 32 to 176	±0.1 at 37°C / 0.18 at 98.6°F	150, 242 / 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 (at 20°C / 68°F) 10~40 / +50~104 (at 25°C / 77°F) 15~40 / +59~104 (at 25°C / 77°F)	0.1 at 25°C / 0.18 at 77°F	14, 48 / 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 / 32 to 140	0.1 at 25°C / 0.18 at 77°F	300 / 10.6 (150 L / 5.3 cu ft x 2 chamber) 600 / 21.2 (150 L / 5.3 cu ft x 4 chamber)	IL-11-2C 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 / 0.18 at 77°F	300, 1000 / 10.6, 35.3	GC	90

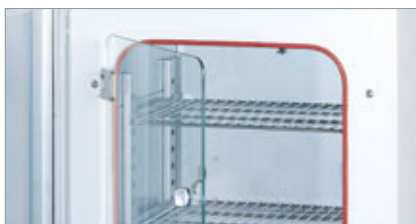
※ The contents of the above and the contents of this catalog may differ depending on the specific model and conditions of use. For the information about the features and specifications that applying to each model, please check the information on the corresponding page of each model.



## 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



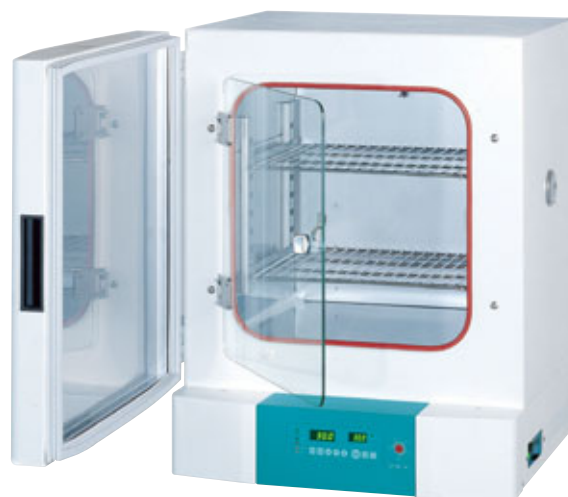
## Versatile air-jacketed natural convection incubators

### 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.

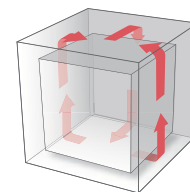
### Use Convenience Features

- 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
Chamber volume (L / cu ft)		60 / 2.1	102 / 3.6	151 / 5.3
Temperature	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
	Recovery time at 37°C (min.)	1	2	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	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
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)		1.3	2.2	3.1
Cat. No.		AAH21162K	AAH21172K	AAH21182K
Electrical requirements (120V, 60Hz, A)		2.8	4.6	6.4
Cat. No.		AAH21166U	AAH21176U	AAH21186U

※ 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.

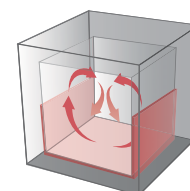
### Outstanding Safety

- 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
Chamber volume (L / cu ft)		65 / 2.3	150 / 5.3	205 / 7.2
Temperature	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
Dimension	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
Shelves	Quantity of shelves (standard/max.)	2 / 5	2 / 7	2 / 7
	Max. Load per shelf (Kg / lbs)	30 / 66	30 / 66	25 / 55.1
Electrical requirements (230V, 50 / 60Hz, A)		1.1	2.2	2.4
Cat. No.		AAH26015K	AAH26025K	AAH26035K
Electrical requirements (120V, 60Hz, A)		2.1	4.2	4.6
Cat. No.		AAH26016U	AAH26026U	AAH26036U

※ 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.

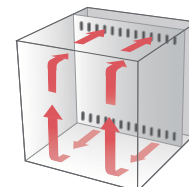
### Use Convenience Features

- 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.		AAH24315K
Electrical requirements (120V, 60Hz, A)		2.1
Cat. No.		AAH24316U

※ 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.



#### IB-02G-2C

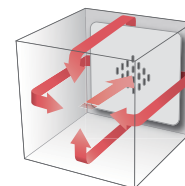
with Wire Shelves  
2ea per chamber (standard)

#### IB-02G-4C

with Wire Shelves  
2ea per chamber (standard)

### 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.



※ 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
Chamber volume (L / cu ft)		120 / 4.2 (60 / 2.1 x 2 chambers)	240 / 8.5 (60 / 2.1 x 4 chambers)
Temperature	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
Dimension	Interior (W x D x H, mm / inch)	400 x 360 x 420 / 15.7 x 14.2 x 16.5 (each chamber)	400 x 360 x 420 / 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
Shelves	Quantity of shelves (standard/max.)	2 / 4 (each chamber)	2 / 4 (each chamber)
	Max. Load per shelf (Kg / lbs)	30 / 66	30 / 66
Electrical requirements (230V, 50 / 60Hz, A)		4.1	4.1 x 2ea
Cat No		AAH2A115K	AAH2A015K
Electrical requirements (120V, 60Hz, A)		7.5	7.5 x 2ea
Cat No		AAH2A116U	AAH2A016U

※ 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)

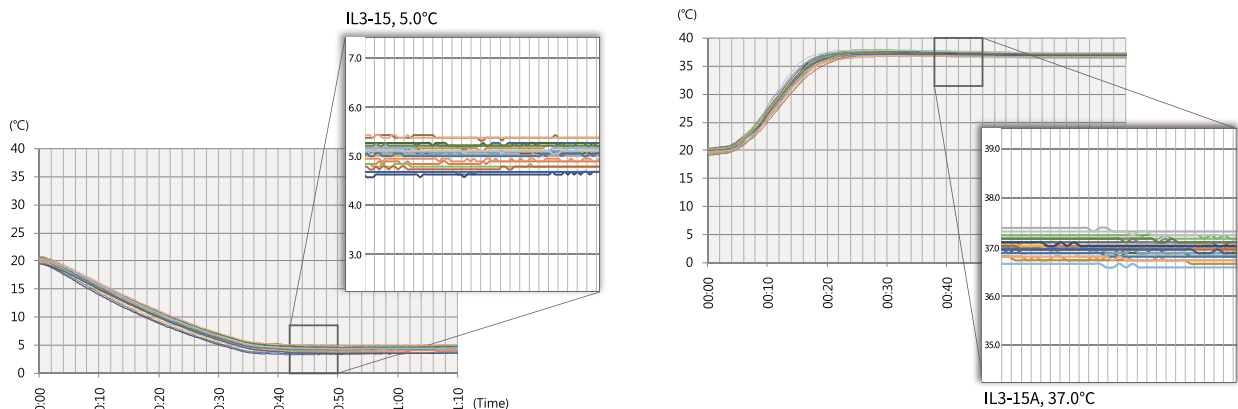
## **Outstanding Safety**

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



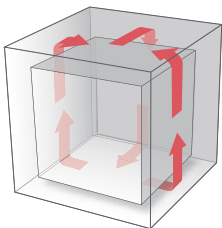
## Temperature Variation

- Superior temperature uniformity with excellent temperature control capability.

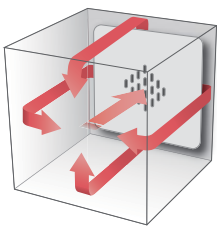


## Two Series Of Models According To Heat Transfer Method

- 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

		Forced Convection		Natural Convection (Air-jacket)	
Model		IL3-15	IL3-25	IL3-15A	IL3-25A
Chamber volume (L / cu ft)		150 / 5.3	242 / 8.5	156 / 5.5	254 / 8.97
Refrigerator (Hp)		1 / 6	1 / 6	1 / 6	1 / 6
Temperature	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
Dimension	Recovery time at 37°C (min.)	4	4	5	5
	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
Shelves	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
Electrical requirements (230V, A)		60Hz, 4.5    50Hz, 4.5	60Hz, 6.4    50Hz, 6.4	60Hz, 6.6    50Hz, 6.6	60Hz, 8    50Hz, 8
Cat. No.		AAH220422K    AAH220412K	AAH220522K    AAH220512K	AAH220622K    AAH220612K	AAH220722K    AAH220712K
Electrical requirements (120V, 60Hz, A)		8.3	10.6	10.2	12.3
Cat. No.		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.

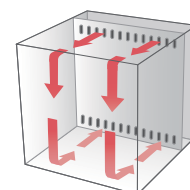


**ILP-02 (stackable unit)**

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	
Chamber volume (L / cu ft)		14 / 0.5		48 / 1.7	
Temperature	Range (°C / °F)	5~40 / +41~104 (at 20°C / 68°F) 10~40 / +50~104 (at 25°C / 77°F) 15~40 / +59~104 (at 30°C / 86°F)		5~40 / +41~104 (at 20°C / 68°F) 10~40 / +50~104 (at 25°C / 77°F) 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	
Dimension	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	
Shelves	Quantity of shelves (standard/max.)	1 / 6		2 / 13	
	Max. Load per shelf (Kg / lbs)	15 / 33.0		20 / 44.1	
Electrical requirements (230V, A)		60Hz, 1.8	50Hz, 1.8	60Hz, 3.5	50Hz, 3.5
Cat. No.		AAH24031K	AAH24032K	AAH24041K	AAH24042K
Electrical requirements (120V, 60Hz, A)		3.4		6.7	
Cat. No.		AAH24033U		AAH24043U	

※ 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

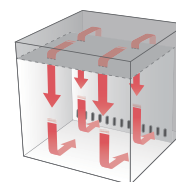


IL-11-4C

### 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	
Chamber volume (L / cu ft)		300 / 10.6 (150 / 5.3 x 2 chambers)		600 / 21.2 (150 / 5.3 x 4 chambers)	
Refrigerator (Hp)		1/8 x 2ea		1/8 x 4ea	
Temperature	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	
	Recovery time at 40°C (min.)	2		2	
Dimension	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	
	Net weight (Kg / lbs)	180 / 397		350 / 772	
Shelves	Quantity of shelves (standard/max.)	2 / 12 (each chamber)		2 / 12 (each chamber)	
	Max. Load per shelf (Kg / lbs)	26 / 57.3		26 / 57.3	
Electrical requirements (230V, A)		60Hz, 9	50Hz, 9	60Hz, 9 x 2ea	50Hz, 9 x 2ea
Cat No		AAH28111K	AAH28112K	AAH28011K	AAH28012K
Electrical requirements (120V, 60Hz, A)		16.5		16.5 x 2EA	
Cat No		AAH28113U		AAH28013U	

※ 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.

# 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.



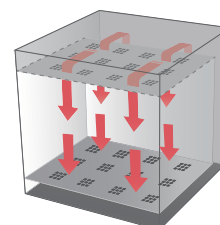
## Structural Functional Features

### General control system

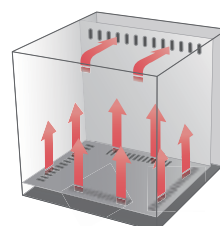
- 5°C to 50°C (lamp off) / 10°C to 50°C. (lamp on)
- Max. to 35,000Lux for GC-1000.  
Max. to 20,000Lux for GC-300 Models.
- 40 to 80% RH for GC-300TLH. (at 20 to 35°C)  
50 to 90% RH for GC-1000TLH. (at 20 to 35°C)
- Max. 5,000ppm CO<sub>2</sub> on/off system. (option)
- Microprocessor PID control / 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



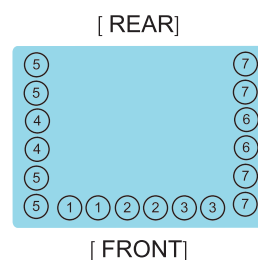
GC-1000

## Outstanding Safety

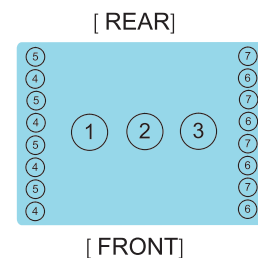
- Automatic shut off after overheat alarm.
- Low and empty water level alarm.
- Power supply leakage breaker.
- Over current protection,
- Open door alarm.

## Lamps setting

- Control illumination values with the below lamp setting arrangements.



GC-300 lamp arrangement

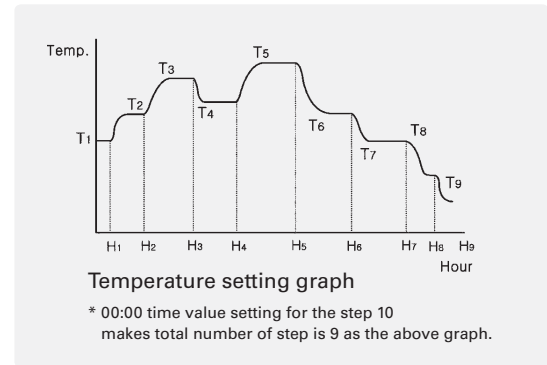


GC-1000 lamp arrangement



## Use Convenience Features

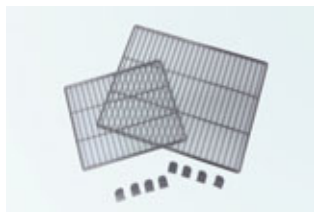
- Ergonomically designed door construction.
  - Inner glass door with silicone and external door with magnetic sealing for dual airtight packing.
  - Well designed providing a smooth open for minimization of damage to plants.
- Wide inner tempered glass door for clear observation of plant growth without 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	
Chamber volume (L / cu ft)		300 / 10.6		300 / 10.6		1000 / 35.3	
Temperature	Range (°C / °F)	5 to 50 / 41 to 122 - Lamp off 10 to 50 / 50 to 122 - Lamp on 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					
Humidity	Range (%RH)	-		40 to 80 at 20 to 35°C		50 to 90 at 20 to 35°C	
				70 to 90 at 36 to 50°C		60 to 90 at 36 to 50°C	
	Fluctuation at 60%RH (±%RH)	-		3		3	
Illumination	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	
CO <sub>2</sub> (Option)	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	
Dimensions	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	
Electrical requirements (230V, A)		60Hz / 15	50Hz / 15	60Hz / 15	50Hz / 15	60Hz / 17	50Hz / 17
Cat. No.		AAHA1011K	AAHA1012K	AAHA1021K	AAHA1022K	AAHA1031K	AAHA1032K

# Accessories for Incubator



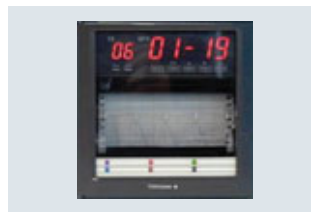
## Wire Shelf

- 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 (°C/°F)	Motion Type	Max. Speed (rpm)	250 ml Flask Capacity	Model	Page
Multi-type 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 / Amb. +9 to 176	Orbital	500	24	ISS	98
		Amb. -20 (min. 4) to 80 / 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 / Amb. +18 to 176	Orbital	400	35	ISS-7100	100
		Amb. -20 (min. 4) to 80 / Amb. -36 (min. 7.2) to 176		400	35	ISS-7100R	100
		Amb. +10 to 80 / Amb. +18 to 176		300	35	ISS-7200	100
		Amb. -20 (min. 4) to 80 / 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 / Amb. +9 to 176	Orbital	500	20	IST	102
		Amb. -15 (min. 15) to 80 / 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 / Amb. +9 to 176	Orbital	500	39	ISF-7100	104
		Amb. -20 (min. 4) to 80 / Amb. -36 (min. 7.2) to 176		500	39	ISF-7100R	104
		Amb. +5 to 80 / Amb. +9 to 176		300	39	ISF-7200	104
		Amb. -20 (min. 4) to 80 / 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.

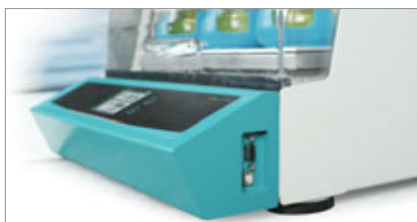
	Satisfaction with the requirements of European regulations and guidelines.		Certification of conformity of electricity, gas, etc. in accordance with the safety standards of Canada and USA.		Real-time equipment monitoring and control system using mobile app.
	Registered patent based on JEIO TECH's proprietary 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.

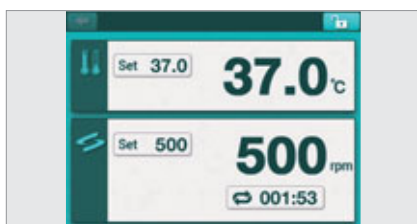




## Optimized model based on shape and performance Easy and intuitive operation with color touch screen display

- > **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.

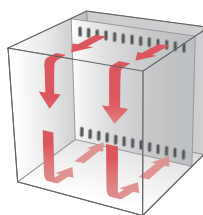
### Outstanding Safety

- 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.

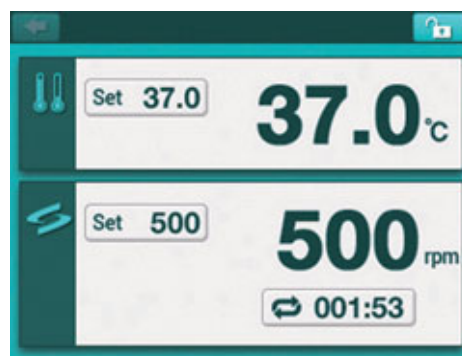


#### ISS series

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



Use the stacking kit  
for double stacked (option)

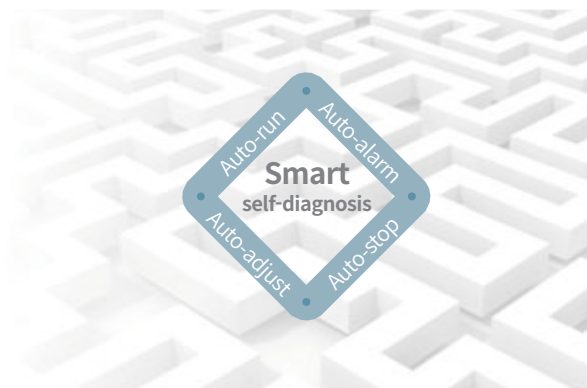


Color touch display



## 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	
Temperature								
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	
Shaking system								
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) 400 (max. 15 kg / 33.1 lbs) 250 (max. 15 kg / 33.1 lbs) - Stacked		500 (max. 10 kg / 22.0 lbs) 400 (max. 15 kg / 33.1 lbs) 250 (max. 15 kg / 33.1 lbs) - Stacked		500 (max. 10 kg / 22.0 lbs) 400 (max. 21 kg / 46.3 lbs) 250 (max. 21 kg / 46.3 lbs) - Stacked		500 (max. 10 kg / 22.0 lbs) 400 (max. 21 kg / 46.3 lbs) 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	
Dimension								
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	
Electrical requirements (230V, A)	60Hz, 6.2	50Hz, 6.2	60Hz, 7.9	50Hz, 7.9	60Hz, 6.2	50Hz, 6.2	60Hz, 7.9	50Hz, 7.9
Cat. No.	AAH23431K	AAH23432K	AAH23531K	AAH23532K	AAH23631K	AAH23632K	AAH23731K	AAH23732K
Electrical requirements (120V, A)	60Hz, 9.5		60Hz, 13		60Hz, 9.5		60Hz, 13	
Cat. No.	AAH23415U		AAH23515U		AAH23615U		AAH23715U	

- 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)

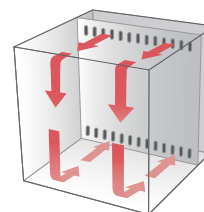
#### Outstanding Safety

- 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**

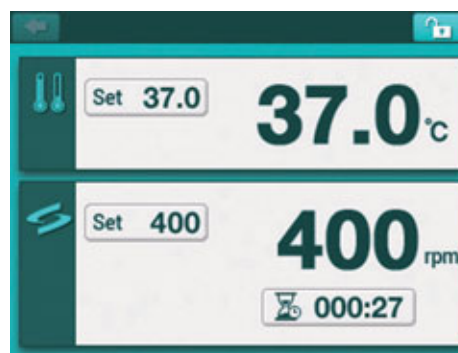
with Universal Platform, Flask Clamp (option)



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

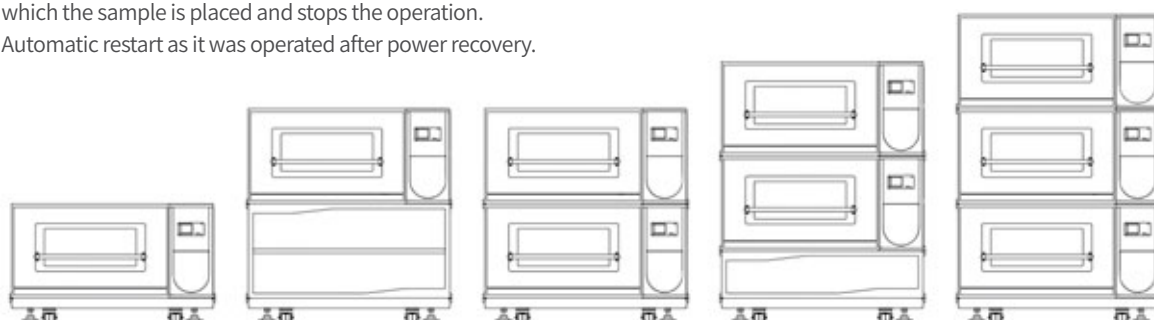
- Real-time self-diagnostics to check equipment for abnormal conditions.
- Alarm is generated by monitoring difference between actual rpm/temperature and set rpm/temperature.
- Automatic rpm adjustment when device instability occurs. (high rpm, overload, weight imbalance, etc.)
- Detects abnormal conditions 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 400 (max. 20 kg / 44.1 lbs)		1 unit only 400 (max. 20 kg / 44.1 lbs)		1 unit only 300 (max. 20 kg / 44.1 lbs)		1 unit only 300 (max. 20 kg / 44.1 lbs)	
	Stacked units 250 (max. 15 kg / 33.1 lbs) 200 (max. 20 kg / 44.1 lbs)		Stacked units 250 (max. 15 kg / 33.1 lbs) 200 (max. 20 kg / 44.1 lbs)		Stacked units 200 (max. 15 kg / 33.1 lbs) 150 (max. 20 kg / 44.1 lbs)		Stacked units 200 (max. 15 kg / 33.1 lbs) 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 1 unit+stand-I or 2 units stacked ; 1307 x 996 x 1355 / 51.5 x 39.2 x 53.3 2 units+stand-II stacked ; 1307 x 996 x 1655 / 51.5 x 39.2 x 65.2 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.

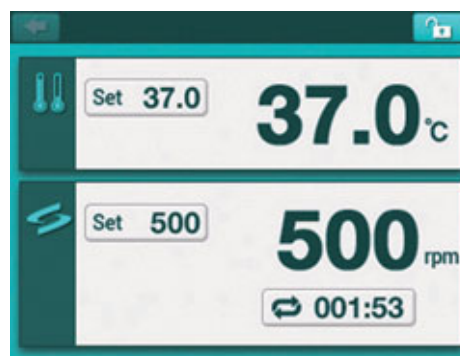
### Outstanding Safety

- 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)

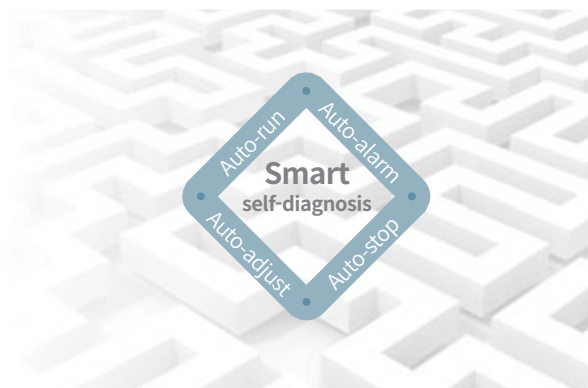


Color touch display



## 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	
Temperature								
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	
Shaking system								
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) 400 (max. 15 kg / 33.1 lbs)		500 (max. 10 kg / 22.0 lbs) 400 (max. 15 kg / 33.1 lbs)		500 (max. 14 kg / 30.9 lbs) 400 (max. 21 kg / 46.3 lbs)		500 (max. 14 kg / 30.9 lbs) 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.	
Dimension								
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	
Electrical requirements (230V, A)	60Hz, 4	50Hz, 4	60Hz, 5.5	50Hz, 5.5	60Hz, 4	50Hz, 4	60Hz, 5.5	50Hz, 5.5
Cat. No.	AAH23411K	AAH23422K	AAH23511K	AAH23522K	AAH23611K	AAH23622K	AAH23711K	AAH23722K
Electrical requirements (120V, A)	60Hz, 7.5		60Hz, 10.1		60Hz, 7.5		60Hz, 10.1	
Cat. No.	AAH23465U		AAH23565U		AAH23665U		AAH23765U	

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.

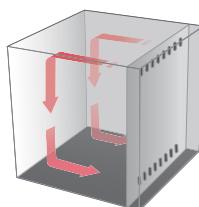
### Outstanding Safety

- 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.

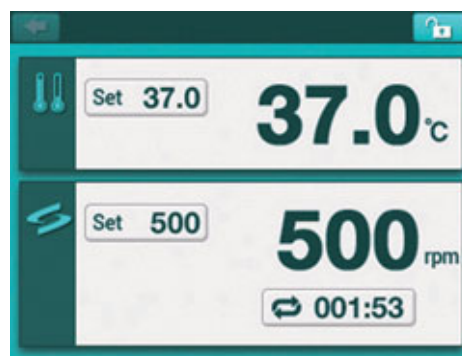


**ISF series**

with Optional Accessories



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

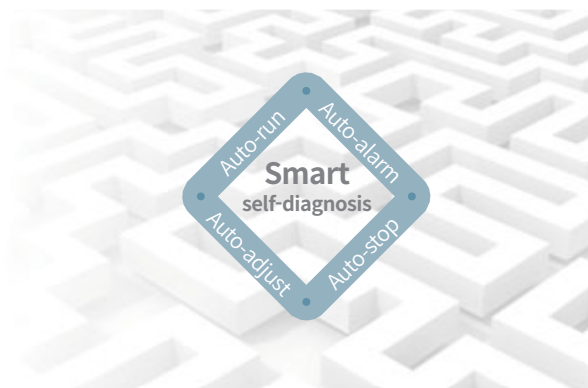


Color touch display



## 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) 400 (max. 25 kg / 55.1 lbs) 350 (max. 35 kg / 77.2 lbs)	500 (max. 15 kg / 33.1 lbs) 400 (max. 25 kg / 55.1 lbs) 350 (max. 35 kg / 77.2 lbs)	300 (max. 20 kg / 44.1 lbs) 200 (max. 35 kg / 77.2 lbs)	300 (max. 20 kg / 44.1 lbs) 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	50 / 60Hz, 3.7	60Hz, 5.6
<b>Cat. No.</b>	<b>AAH23342K</b>	<b>AAH23542K</b>	<b>AAH23541K</b>	<b>AAH23442K</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)

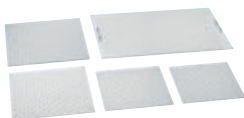
2) Actual rpm allowable error for set rpm is ±1rpm if setting is less than 100rpm, ±1% if setting is higher than 100rpm.

## 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

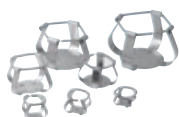
## Universal Platform



### 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.



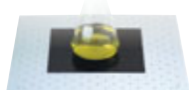
### Test Tube Rack

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



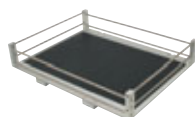
### Spring Wire Rack

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



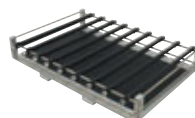
### Dedicated Platform

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
Universal Platform		Cat. No.	AAA23501-V3	AAA23502-V3	AAA23501-V3	AAA23502-V3	AAA23503-V3	AAA23507
Flask Clamp for Erlenmeyer Flask (Stainless Steel)	50 ml	AAA23550	36	49	36	49	88	88
	100 ml	AAA23551	24	39	24	39	68	68
	250 ml	AAA23552	14	20	14	24	39	39
	300 ml	AAA23556	14	20	14	24	39	39
	500 ml	AAA23553	9	16	9	16	28	28
	1 L	AAA23554	6	9	6	9	18	18
	2 L	AAA23555	4	5	4	6	11	11
	2.8 L	AAA23557	2	4	2	5	8	8
	4 L	AAA23558	-	-	-	4	6	6
	6 L	AAA23559	-	-	-	2	5	-
Flask Clamp for Erlenmeyer Flask (Plastic) <sup>1)</sup>	50 ml	AAA30570	36	49	36	49	88	88
	100~125 ml	AAA30571	19	29	19	29	48	48
	200 ml	AAA30572	13	21	13	21	35	35
	250 ml	AAA30573	13	19	13	19	35	34
	300 ml	AAA30574	12	19	12	19	35	34
	500 ml <sup>2)</sup>	AAA30575	9	12	9	12	24	21
	1 L <sup>2)</sup>	AAA30576	4	9	5	9	12	11
	2 L <sup>2)</sup>	AAA30577	2	4	4	5	8	6
Funnel Clamp	250 ml	AAA23562	4	6	4	6	15	15
	500 ml	AAA23563	2	4	3	4	10	10
	1 L	AAA23564	-	3	-	3	7	7
	2 L	AAA23565	-	-	-	-	5	5
Test Tube Rack <sup>3)</sup>	Ø8 mm (86ea)	AAA23581	2	4	2	4	7	7
	Ø10 mm (86ea)	AAA23582	2	4	2	4	7	7
	Ø12 mm (58ea)	AAA23583	2	4	2	4	7	7
	Ø14 mm (58ea)	AAA23584	2	4	2	4	7	7
	Ø17 mm (32ea)	AAA23585	2	4	2	4	7	7
	Ø25 mm (19ea)	AAA23586	2	4	2	4	7	7
	Ø35 mm (10ea)	AAA23594	2	4	2	4	7	7
Microplate Holder	Single	AAA23654	8	15	8	15	25	25
	Tower	AAA23651	5	8	6	10	21	21
	Flat A (Large)	AAA23652	-	2	-	2	4	4
	Flat B (Small)	AAA23653	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
Spring Wire Rack (Cat. No.)		AAA23521-V1	AAA23522-V2	AAA31521-V1	AAA31522-V1	AAA23514	AAA23527
Quantity of Erlenmeyer Flask	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	Dual Action	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
	General	Orbital	500	755 x 520	39	OS-7100	112
			300	755 x 520	39	OS-7200	112
	Program	Orbital	500	885 x 520	51	SKC	114
Type by usages	Compact	Orbital	300	276 x 276	9	CMS	116
	Microplate	Orbital	1200	267 x 185	N/A	CPS	117
	Rocking	Rocking	100	276 x 276	N/A	CRS	118
	Waving	Waving	100	276 x 276	N/A	CWS	118
	Funnel	Reciprocal	300	Funnel 500 ml x 10 ea		RS	119
	Rotating	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.

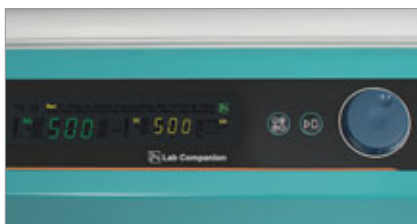
	Satisfaction with the requirements of European regulations and guidelines.		Certification of conformity of electricity, gas, etc. in accordance with the safety standards of Canada and USA.		Real-time equipment monitoring and control system using mobile app.
	Registered patent based on JEIO TECH's proprietary 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

- > **Primally 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.

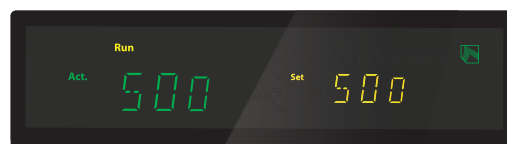
#### Optimized Rational Model Configuration

- 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
AAA3031	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
Shaking system						
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) 300rpm (max. 16 kg)	500rpm (max. 10 kg) 300rpm (max. 18 kg)	500rpm (max. 14 kg) 400rpm (max. 21 kg)	450 rpm (max. 10 kg) 300 rpm (max. 21 kg)	500rpm (max. 10 kg) 400rpm (max. 30 kg)	300rpm (max. 23 kg) 250rpm (max. 35 kg)
Amplitude size (mm / inch, dia.)	19.1 / 0.8 (12.7 / 0.5 available)	19.1 / 0.8 (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
Dimension						
Platform (W x D, mm / inch)	320 x 260 / 12.6 x 10.2	350 x 350 / 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 / 13.9 x 15.3 x 5.7	409 x 508 x 141 / 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	
Electrical requirements (230V, 50 / 60Hz, A)	0.3	0.3	0.3		0.4	
Cat. No.	AAH3D1115K	AAH3D1215K	AAH3D1315K		AAH3D1415K	AAH3D1515K
Electrical requirements (120V, 60Hz, A)	0.6	0.6	0.6		0.8	
Cat. No.	AAH3D1165U	AAH3D1265U	AAH3D1365U		AAH3D1465U	AAH3D1565U

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

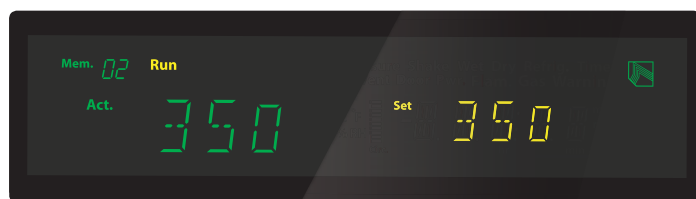
#### Use Convenience Features

- 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)

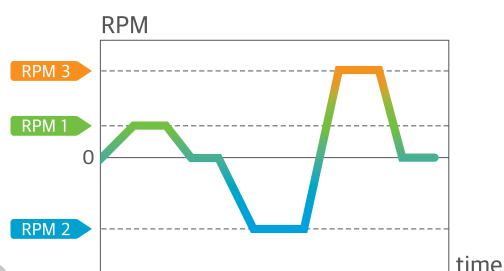


## Outstanding Safety

- 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) 310rpm (max. 28kg)	340rpm (max. 13kg) 260rpm (max. 28 kg)	250rpm (max. 13 kg) 200rpm (max. 28 kg)	350rpm (max. 13kg) 310rpm (max. 28kg)	340rpm (max. 13 kg) 260rpm (max. 28 kg)	250rpm (max. 13 kg) 200rpm (max. 28 kg)
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,  $\pm 1\%$  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	AAH3B1115K
	US Plug	AAH3B1115U

※ 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.

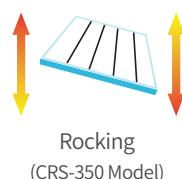
### Outstanding Safety

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



**CWS-350**

with Dimpled Mat



Rocking  
(CRS-350 Model)



Waving  
(CWS-350 Model)

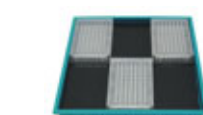
## Specification

Model		CRS-350	CWS-350
Shaking system			
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
Dimension			
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
Electrical requirements		AC 100 ~ 240 V, 50/60 Hz	AC 100 ~ 240 V, 50/60 Hz
Cat. No.	KR Plug	AAH391115K	AAH381115K
	US Plug	AAH391115U	AAH381115U

※ 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

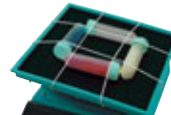
## Accessories



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	
Shaking system		
Motion type	Vertical Reciprocal	
Speed range (rpm)	50 to 300	
Rpm control at 100rpm (± rpm)	1	
Vertical stroke length (mm / inch)	40 / 1.6	
Timer	60min or continuous	
Dimension		
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	
Electrical requirements (230V, A)	50Hz, 0.4	60Hz, 0.4
Cat. No.	AAH32012K	AAH32015K

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

Funnel Capacity	Round type	Slim type
Less than 500ml	3-5ea	5ea
500 ml	3ea	3ea
1L	-	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>	
<b>Cat. No.</b>	
KR plug	AAH3E115K
US plug	AAH3E115U

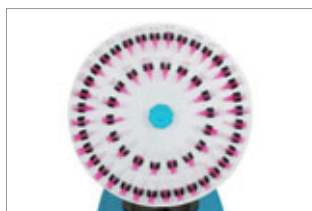


Number of tubes used at the same time when double disks are stacked.

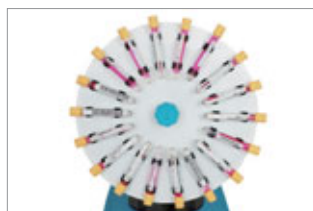
Tube	Quantity
1.5 ml	120
5 ml	36
15 ml	36
50 ml	24



## Accessories



1.5 ml (Ø 10 mm)  
Tube holder



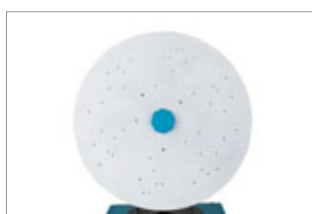
5 ml (Ø 12 mm)  
Tube holder



15 ml (Ø 16.5 mm)  
Tube holder



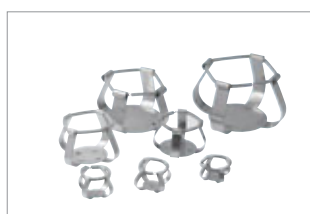
50 ml (Ø 29 mm)  
Tube holder



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

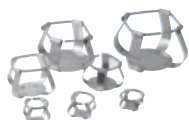
Basic accessories required to use separated funnels, erlenmeyer flask, test tube, etc.



### 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.



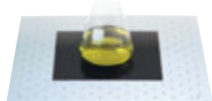
### Test Tube Rack

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.



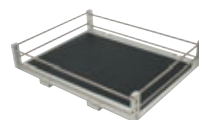
### Half Spring Wire Rack

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.



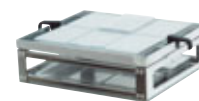
### Rubber Mat

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.



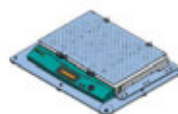
### Microplate Tray (Large Tray)

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
Universal Platform		Cat. No.	AAA3A501-V2	AAA23501-V3	AAA23502-V3	AAA23503-V3	AAA30501	AAA30503	AAA30502 <sup>1)</sup> AAA30541 <sup>2)</sup>	AAA30504 <sup>1)</sup> AAA30542 <sup>2)</sup>	AAA3B501
Flask Clamp for Erlenmeyer Flask (Stainless steel) <sup>4)</sup>	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	-
Flask Clamp for Erlenmeyer Flask (Plastic) <sup>5)</sup>	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
Funnel Clamp	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	-
Test Tube Rack <sup>4)</sup>	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
Microplate Holder <sup>4)</sup>	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	
Spring Wire Rack (Cat. No.)		AAA3A521	AAA31521-V1	AAA31522-V1	AAA23514	AAA30521	AAA30522	AAA30523	AAA30524	AAA3B511
Quantity of Erlenmeyer Flask	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 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.



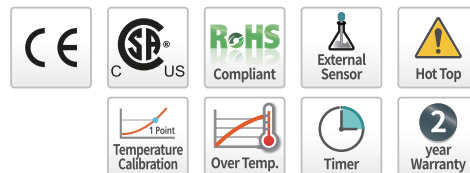
Easy to choose from various model configurations.



Selection of white or black cover according to sample.

# Hotplate & Magnetic Stirrer

## Digital type



## Precise control based on sample temperature

### Structural Functional Features

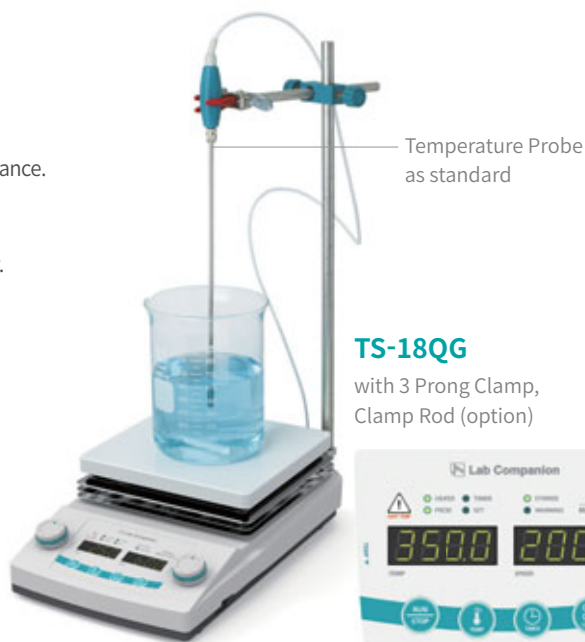
- Includes temperature probe (B class) as standard.
- Displays external temperature sensor errors.
- Top plate coated with white ceramic for excellent corrosion resistance.
- Excellent heat transfer and durability due to heater-integrated structure.
- Using special permanent magnets for maintaining stirring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



**TS-18QG**

with 3 Prong Clamp,  
Clamp Rod (option)



**TS-17SG**

## 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)
Dimensions	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)
	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.		AAH34445K	AAH34475K	AAH34485K
Electrical requirements (120V/60Hz, A)		5.0	6.7	6.7
Cat. No.		AAH34443U	AAH34473U	AAH34483U

※ 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

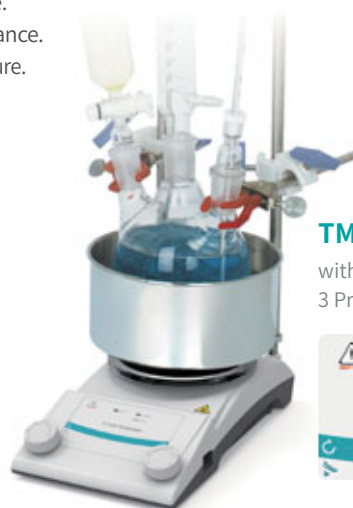
- Five models provided according to the size and shape of hot plate.
- Top plate coated with white ceramic for excellent corrosion resistance.
- Excellent heat transfer and durability due to heater-integrated structure.
- Using special permanent magnets for maintaining stirring ability.

### 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**



## Specification

	Model	TM-14SG	TM-14RB	TM-17SG	TM-17RB	TM-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	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%
Stirring	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
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 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)
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 / 7.08 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
Body Shape		Straight body	Round body	Straight body	Round body	Straight body
Electrical requirements (230V, 50/60Hz, A)		3.0	3.0	4.0	4.0	4.0
Cat. No.		AAH34245K	AAH34315K	AAH34275K	AAH34325K	AAH34285K
Electrical requirements (120V, 60Hz, A)		5.0	5.0	6.7	6.7	6.7
Cat. No.		AAH34243U	AAH34313U	AAH34273U	AAH34323U	AAH34283U

※ 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

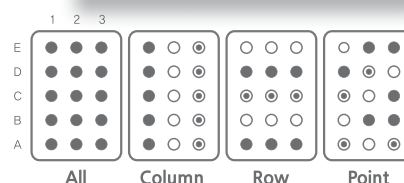
- Separate heater knobs and operation LED display.
- Maintains accurate speed with feedback control even when sample viscosity and amount change.
- Count-down timer provided. (up to 99 hours and 59 minutes)
- Rapid stirring and stop function according to the user's needs.
- VFD display with excellent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

<sup>1)</sup> 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.

# 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.

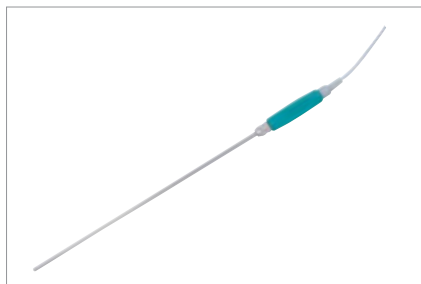


Various inserts (1 dram, 2 dram, 4 dram, 20ml, 30ml, 40ml) with vials of various capacities applicable.

## 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 (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



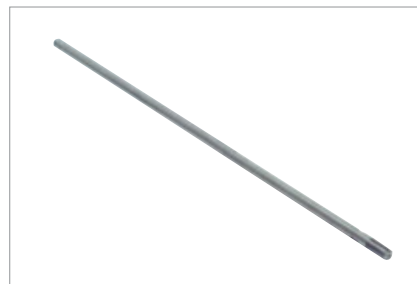
## Temperature Probe, B Class

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.



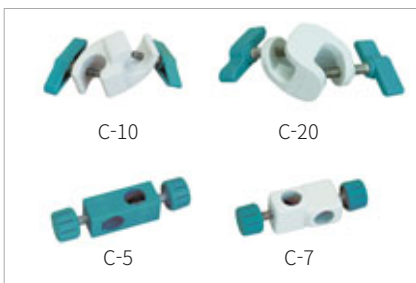
## Clamp Rod

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



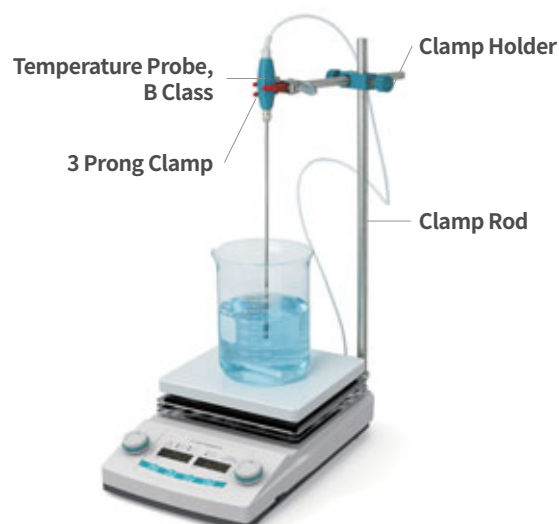
## Magnetic Retriever

- 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

## 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

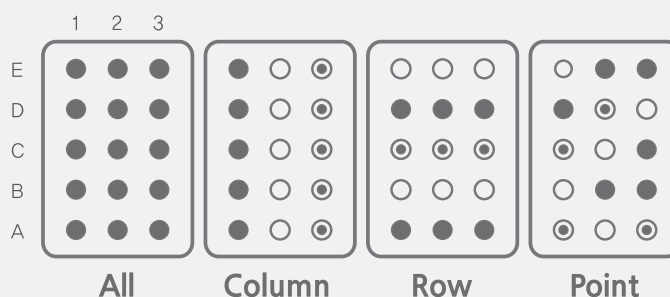
Stirring with different speeds for each column.

#### Row Mode

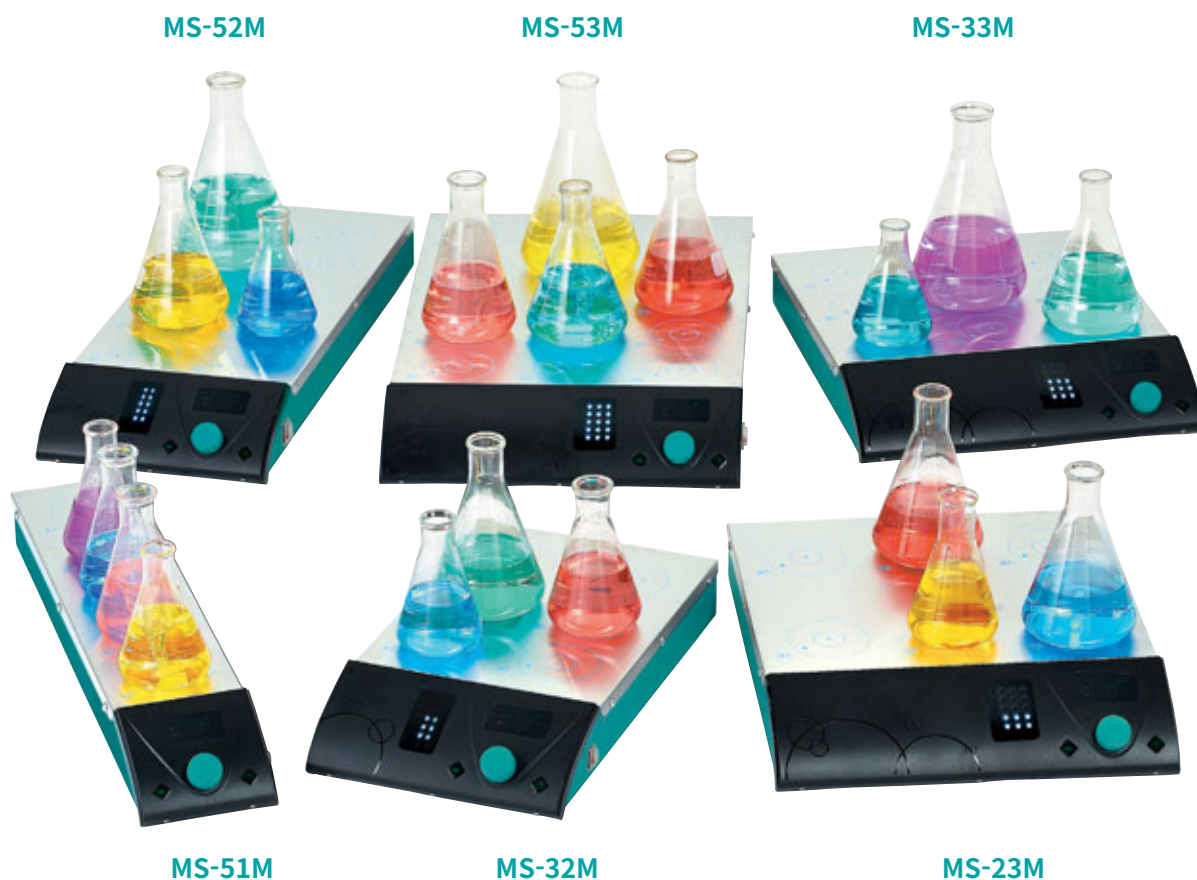
Stirring with different speeds for each row.

#### Point Mode

Stirring with different speeds for each point







## Specification

Model		MS-51M	MS-23M	MS-32M	MS-33M	MS-52M	MS-53M
Stirring	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
Material	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)
Dimensions	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
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.	Max. 99 hrs 59 min.
Electrical requirements		AC 100 ~ 240V, 50 / 60Hz					
Power consumption (W)		45	45	45	54	85	135
Cat. No.		AAH332415K	AAH332115K	AAH332215K	AAH332315K	AAH332515K	AAH332615K
		AAH332415U	AAH332115U	AAH332215U	AAH332315U	AAH332515U	AAH332615U

Accessories **Page 138** Silicone Pad, Magnetic Bar, Magnetic Retriever

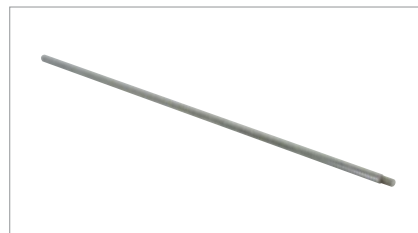
# Accessories for Magnetic Stirrer



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.



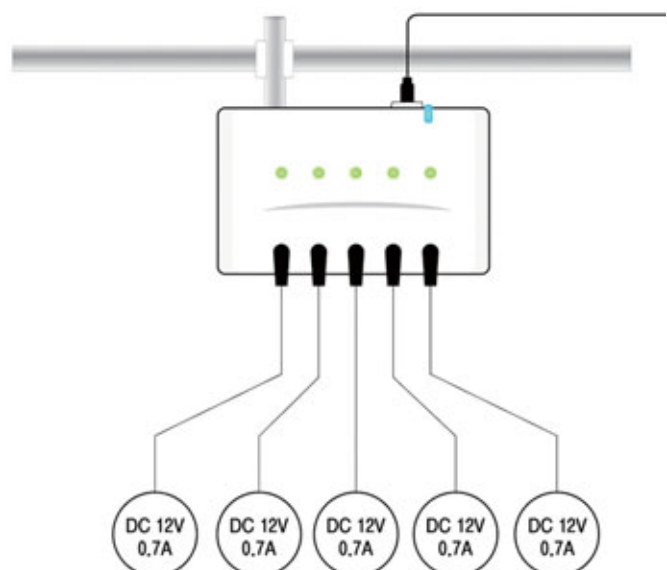
Stirrer & Mixer

### 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.

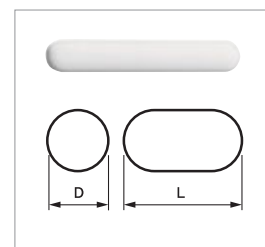
※ The size of the magnetic bar is the average value, and there may be an error of  $\pm 5\%$  in length and  $\pm 10\%$  in diameter.



## Cylindrical Magnetic Bar

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

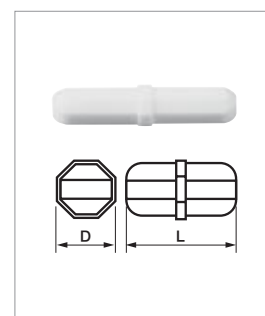
Cat. No.	D (mm / inch)	L (mm / inch)
BCW0011138	8 / 0.31	13 / 0.51
BCW0011156	6 / 0.23	15 / 0.59
BCW0011208	8 / 0.31	20 / 0.78
BCW0011258	8 / 0.31	25 / 0.98
BCW0011308	8 / 0.31	30 / 1.18
BCW001140	8 / 0.31	40 / 1.57
BCW001150	8 / 0.31	50 / 1.96



## 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.

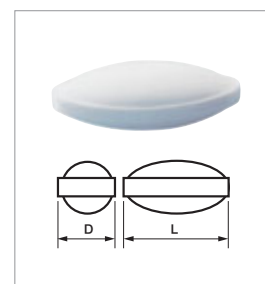
Cat. No.	D (mm / inch)	L (mm / inch)
BCW001513	8 / 0.31	13 / 0.51
BCW001515	8 / 0.31	15 / 0.59
BCW001522	8 / 0.31	22 / 0.86
BCW001525	8 / 0.31	25 / 0.98
BCW001528	8 / 0.31	28 / 0.10
BCW001538	8 / 0.31	38 / 1.49
BCW001541	8 / 0.31	41 / 1.61
BCW001551	8 / 0.31	51 / 2.00
BCW00155110	10 / 0.39	51 / 2.00



## 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.

## PTFE

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

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	



Polypropylene



PTFE







## 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.

> **Excellent structure for long-term continuous use**

Excellent durability of BLDC motor and structure allows for powerful and excellent heat dissipation.

> **Over-temperature and overload protection**

Built-in over-temperature and overload protection device with safety functions for continuous operation of the equipment.

> **Computer interface control**

Convenient remote control and data management through provided dedicated software. (except MSA)

> **Reliable control technology**

Real-time PID feedback control method maintains accurate rpm even when sample viscosity changes.

> **Patented best effort performance of superior level**

Automatic rpm control in case overload operation. Attempt to stir with set rpm according to viscosity change.

> **Free selection of rotation direction**

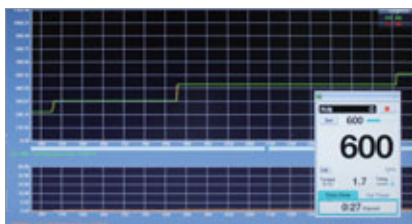
Rotation direction is selectable for various impeller uses. (except for MSA)

> **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

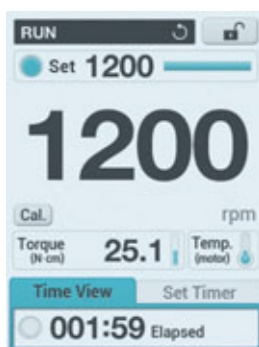
- Safety ensured by BLDC motor that does not generate sparks.
- Excellent heat dissipation structure makes use for a long time without any trouble.
- Continual use in safe by over temperature and overload protection.
- Malfunction prevented by controller lock function.
- Prevents sample run-off by smooth 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) 50000 (~700rpm)	5000 (~2000rpm) 10000 (~1600rpm) 30000 (~600rpm) 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	Powder coated aluminum
	Cover	Polypropylene	Polypropylene
	Motor type	BLDC (Brushless Direct Current)	BLDC (Brushless Direct Current)
Dimension	Chuck range (Ø, mm / inch)	3~10 / 0.12~0.39	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	80 x 185 x 235 / 3.15 x 7.28 x 9.25
	Net weight (kg / lbs)	3.1 / 6.83	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	AAH371515K
	US plug	AAH371415U	AAH371515U

<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

# 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) 10000 (~1200rpm) 30000 (~300rpm) 50000 (~200rpm)
Stirring capacity (H <sub>2</sub> O), max. (L / cu ft)		20 / 0.71 (~2000rpm)
Rated torque (N <sub>cm</sub> / inch)		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 / 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) 10000 (~1200rpm) 30000 (~300rpm) 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

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

# Accessories Impeller

## Stainless steel impellers

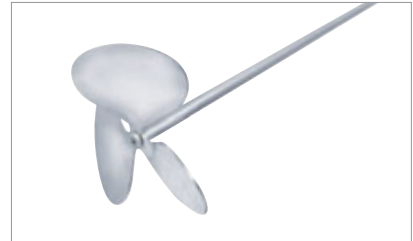
### Propeller Impeller

- 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

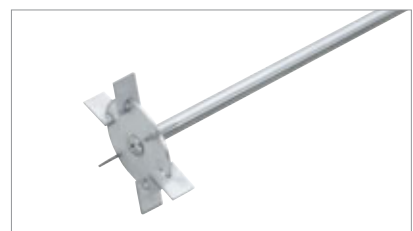


### Turbine Impeller

- 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

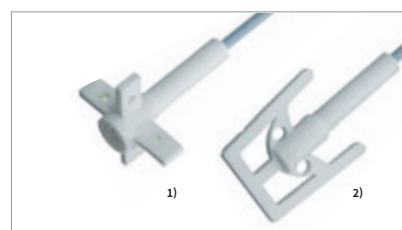


Anchor (Square / Round)

### 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

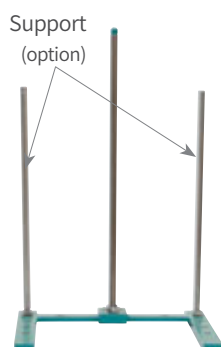
# Accessories for Overhead Stirrer

## 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)



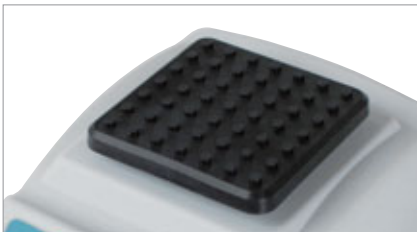
## Specification

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>00VMS0000008JT</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 Reaction 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 / 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 / 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 / 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 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 (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 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

Page 102



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

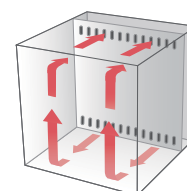
- Hybridization oven with compact design.
- Ideal for hybridization experiments where wash and dry is repeatedly required.
- Moisture provision tray for humidity control.
- Stable rocking motion.
- Internal air circulating to control temperature.
- Design with door that opens downward, minimizing the 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
Chamber volume (L / cu ft)		10 / 0.35
Temperature	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
Rocking System	Motion type	Rocking
	Speed range (rpm)	5 to 50
	Rpm control at 100rpm (±rpm)	1
	Adjustable tilt	8.5° ± 1
Dimensions	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
Electrical requirements (230V, 60Hz, A)		1.2
Cat. No.		AAH1B011K
Electrical requirements (230V, 50Hz, A)		2.4
Cat. No.		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
Temperature		
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	
Material		
Body	PP, Powder coated steel	PP, Powder coated steel
Cover	PC	PC
Block	Black hard anodized Aluminum	Black hard anodized Aluminum
Dimensions		
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
Electrical Requirements (230V, 50/60Hz, A)	3.5	3.5
Cat. No.	AAHJ1015K	AAHJ1115K
Electrical Requirements (120V, 60Hz, A)	6.7	6.7
Cat. No.	AAHJ1013U	AAHJ1113U

## 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>	AAHJ5015K
<b>Electrical Requirements (120V, 60Hz, A)</b>	4
<b>Cat. No.</b>	AAHJ5013U

# 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
Speed range (rpm)	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
50 ml tube block		150 to 800
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>		AAHJ4015K
<b>Electrical Requirements (120V, 60Hz, A)</b>		3.4
<b>Cat. No.</b>		AAHJ4013U

Accessories **Page 163** Heating Block






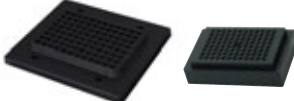



# Accessories

## 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 / 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 / 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 / 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 / 6.02 x 3.86 x 1.61	1	1	-
	00CHB0000031	15 ml Tube block (conical tube)	15	98 x 76.5 x 51 / 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 / 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 / 3.86 x 3.01 x 3.42	2*	2	1*
	00CHB0000034	Φ10 mm Tube block	35	98 x 76.5 x 51 / 3.86 x 3.01 x 2.01	2*	2	1*
	00CHB0000035	Φ12 mm Tube block	24	98 x 76.5 x 51 / 3.86 x 3.01 x 2.01	2*	2	1*
	00CHB0000036	Φ13 mm Tube block	24	98 x 76.5 x 51 / 3.86 x 3.01 x 2.01	2*	2	1*
	00CHB0000037	Φ15 mm Tube block	20	98 x 76.5 x 51 / 3.86 x 3.01 x 2.01	2*	2	1*
	00CHB0000038	Φ16 mm Tube block	16	98 x 76.5 x 51 / 3.86 x 3.01 x 2.01	2*	2	1*
	00CHB0000039	Φ18 mm Tube block	12	98 x 76.5 x 51 / 3.86 x 3.01 x 2.01	2*	2	1*
	00CHB0000040	Φ20 mm Tube block	12	98 x 76.5 x 51 / 3.86 x 3.01 x 2.01	2*	2	1*

※ It can be equipped when the lid is opened.

## Accessories for Heating Shaker

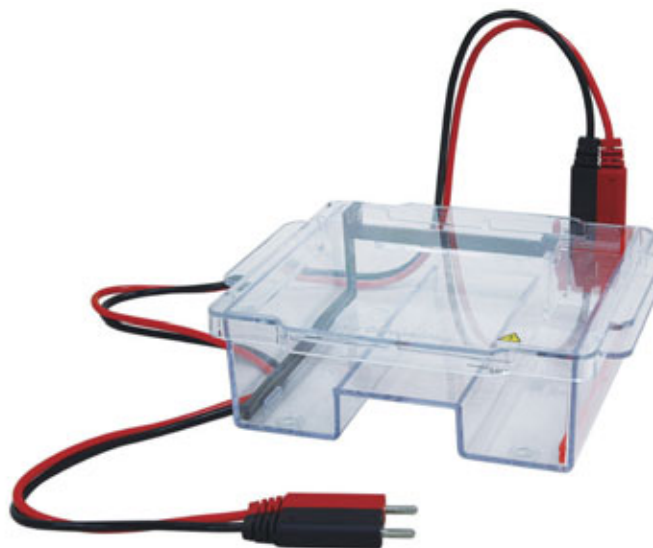
Image	Model	Description	Max. Mountable Tube	Dimensions (W x D x H, mm / inch)	Mountable Capacity of Blocks
					CBS-350
	AAAJ4501	0.5 ml Tube block with block cover	48	98 x 76.5 x 30 / 3.86 x 3.01 x 1.18	1
	AAAJ4502	1.5 / 2.0 ml Tube block with block cover	24	98 x 76.5 x 41 / 3.86 x 3.01 x 1.61	1
	AAAJ4503	50 ml Tube block with block cover	6	98 x 76.5 x 51 / 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 / 4.37 x 3.01 x 0.59	1
	AAAJ4505	15 ml Tube block with block cover	15	98 x 76.5 x 51 / 3.86 x 3.01 x 2.01	1
	AAAJ4506	Φ12 mm Tube block with block cover	24	98 x 76.5 x 51 / 3.86 x 3.01 x 2.01	1
	AAAJ4507	Φ13 mm Tube block with block cover	24	98 x 76.5 x 87 / 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)

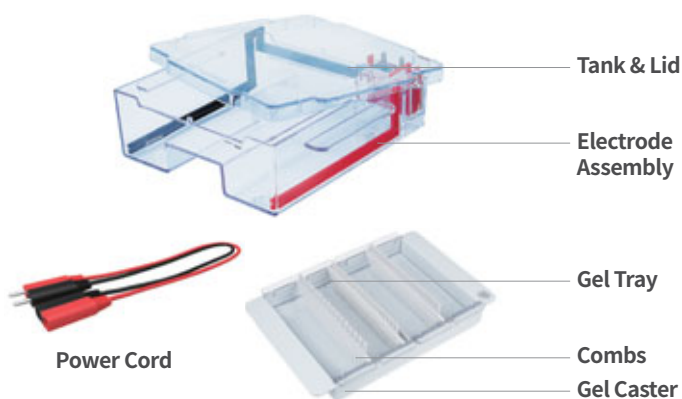


### EP-10

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

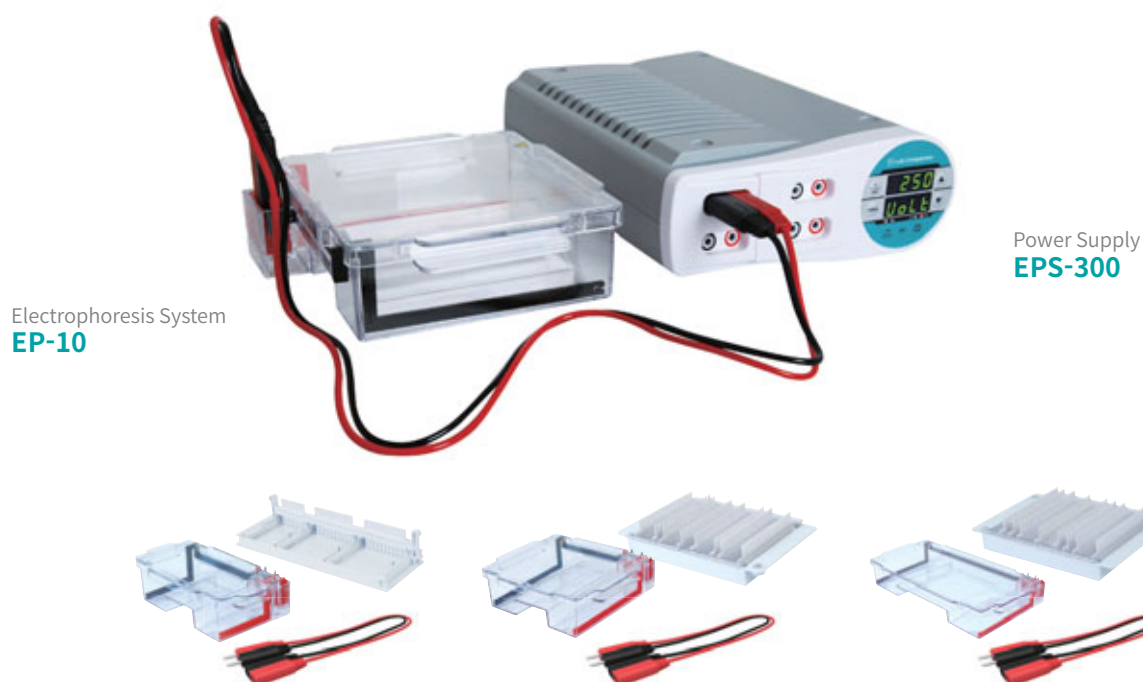


Gel caster level meter



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> (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 20/31 well (1.5 mm) x 2ea 16/20 well (1.0 mm) x 2ea 16/20 well (1.5 mm) x 2ea 25/34 well (1.0 mm) x 2ea 25/34 well (1.5 mm) x 2ea	20/31 well (1.0 mm) x 2ea 20/31 well (1.5 mm) x 2ea 16/20 well (1.0 mm) x 2ea 16/20 well (1.5 mm) x 2ea 25/34 well (1.0 mm) x 2ea 25/34 well (1.5 mm) x 2ea

## Specification

Model		EP-05	EP-10	EP-18
Buffer capacity (L / cu ft)		0.5 /0.017	1 / 0.035	1.8 / 0.063
Material	Electrophoresis tank, Lid	PC (Polycarbonate)		
	Electrodes	Platinum wire		
Dimensions (W x D x H, mm / inch)	Electrophoresis tank	219 x 134 x 71 / 8.62 x 5.27 x 2.79	219 x 214 x 71 / 8.62 x 8.42 x 2.79	387 x 214 x 71 / 15.24 x 8.42 x 2.79
	Gel caster	254 x 87 x 18 / 10 x 3.42 x 0.79	167 x 264 x 30 / 6.57 x 10.39 x 1.18	167 x 264 x 30 / 6.57 x 10.39 x 1.18
	Gel tray	82 x 81 x 17 / 3.23 x 3.19 x 0.67 82 x 58 x 17/ 3.23 x 2.28 x 0.67	181 x 103 x 30 / 7.12 x 4.05 x 1.18	181 x 206 x 30 / 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
Cat. No.		AAAJ6011	AAAJ6021	AAAJ6031

# Accessories



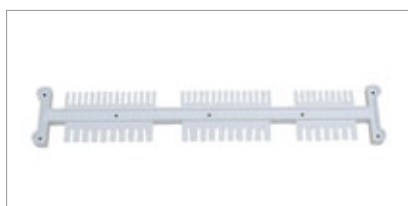
Electrophoresis Unit



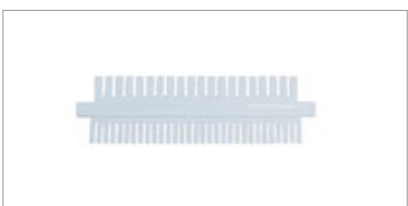
Gel Caster Unit



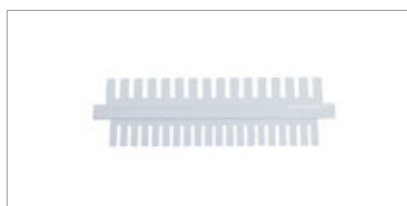
Electrode Assembly



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.

## 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)

## 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.

## 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
Output range	5~250V, in 1V increments 10mA~3000mA, in 10mA increments (Max. 300W)
Type of output	Constant voltage mode, constant current mode
Output terminals	4 pair recessed banana jack in parallel
Timer	1min to 99hr 59min
Pause/resume function	Yes
Display	7-segment 4 digit LED, 2 line
Operating conditions	0~40°C (32~104°F), 0~80% RH
Dimensions (W x D x H, mm / inch)	240 x 310 x 100 / 9.45 x 12.2 x 3.94
Net weight (kg /lbs)	2.5 / 5.51
Electrical requirement (VAC, Hz)	100-240VAC, 50/60Hz
Current consumption (A)	4.0/1.7A at max voltage & max power
Cat. No.	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

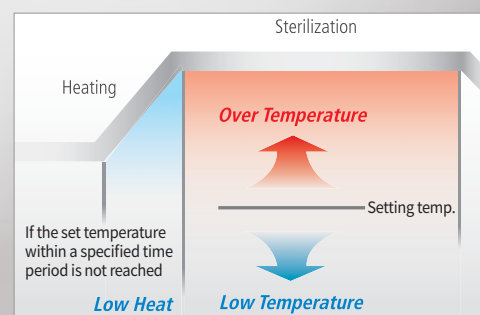
The device itself monitors the sterilization process to perform more reliable sterilization.

**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	35
	Solid sterilization	121	20
	Liquid sterilization	121	15
	Melting	100	30
<b>Program mode</b>	Sterilization 1	110 ~ 123	1 ~ 999
	Sterilization 2	110 ~ 123	1 ~ 999
	Liquid sterilization	110 ~ 123	1 ~ 999
	Melting	60 ~ 100	1 ~ 999



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

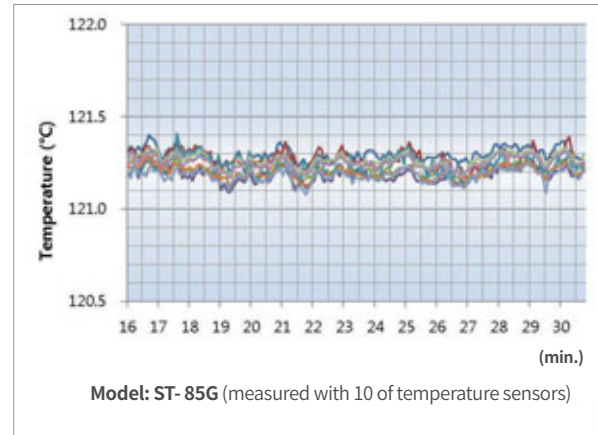
- Easy to open and close with circular handle.
- Including pressure gauge for internal pressure verification.
- Exhaust tank provided as standard.
- Including drain bucket for use cleanly.
- Upper part is made of stainless steel and is easy to maintain.
- Vertical, top loading system makes it easy to 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.

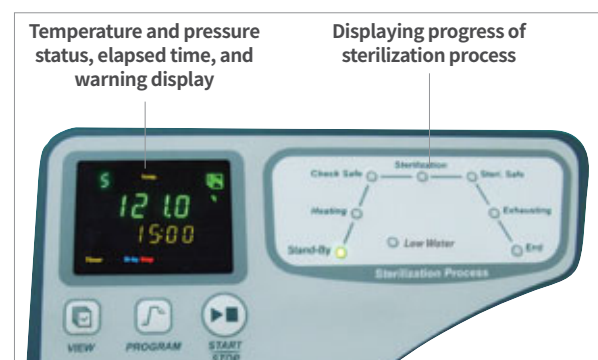
### Outstanding Safety

- 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

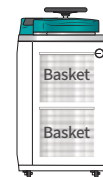
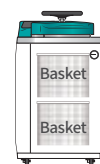
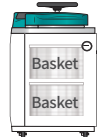
Cat. No.	Description	Standard	Max. mounted No.	Model
00ATC0000002	Basket, Stainless steel (Ø380 x 180 mm)	2	2	ST-50G
		-	2	ST-65G
		-	3	ST-85G
		-	4	ST-105G
00ATC0000003	Basket, Stainless steel (Ø380 x 230 mm)	-	1	ST-50G
		2	2	ST-65G
		-	2	ST-85G
		-	3	ST-105G
00ATC0000004	Basket, Stainless steel (Ø380 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

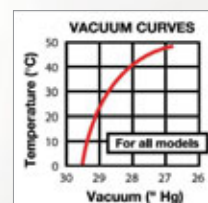
※ Above product must be installed in a location below an altitude of 800 meters.



# 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 cock, 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)	$\leq 1.3 \times 10^{-1}$ ( $1 \times 10^{-3}$ 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	50/60Hz	50/60Hz	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  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 BC-B	180 182
	<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  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) Complex Carbon Acid Formaldehyde Ammonia/Amine HEPA	(Option/Select 1ea) Stainless Steel (#304, #316), Ceramite, Polypropylene, 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 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) Complex Carbon Acid Formaldehyde Ammonia/Amine HEPA	N/A	EFS AH	189 191

※ 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  $\mu\text{m}$  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.

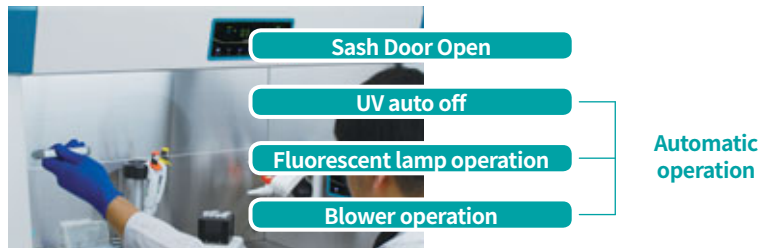
##### Built-in gas and air connection valves and power outlet

- Valves for gas and air use inside.
- Built-in electrical outlet with cover provided.



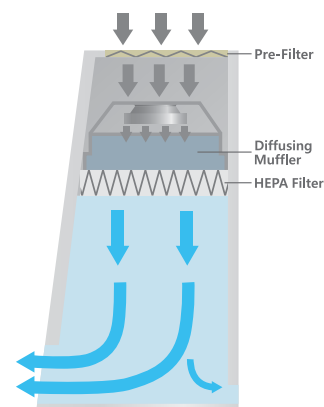
## Smart Door System (patent registered)

- 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%.



Hood & Clean Bench



Clear VFD for easy identification of information

## 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  $\mu$ m 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 $\mu$ m)		HEPA (99.99% at 0.3 $\mu$ m)		HEPA (99.99% at 0.3 $\mu$ m)	
	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

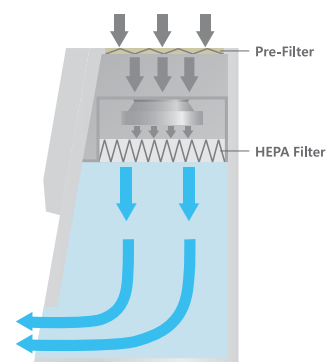
- Acrylic work surface blocks UV by 99.9%.
- When the door is opened with UV light is on, the UV light is turned off automatically to protect the user.
- Protection from overcurrent.



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

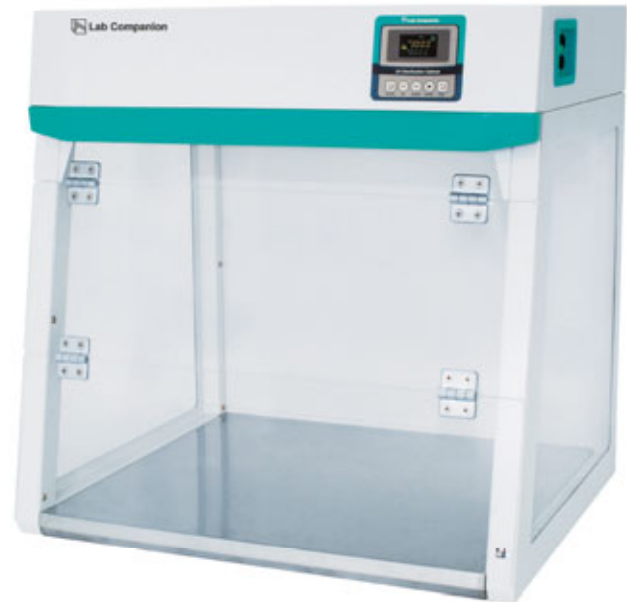
- Built-in fluorescent lamp makes it easy to see inside.
- Compact design makes installation and movement convenient.
- VFD display allows for easy checking of operation status.

### 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 / 17.7 x 20 x 24		600 x 509 x 610 / 23.6 x 20 x 24		900 x 509 x 610 / 35.4 x 20 x 24	
	Interior (W x D x H, mm / inch)	433 x 500 x 468 / 17.0 x 19.7 x 18.4		583 x 500 x 468 / 23 x 19.7 x 18.4		880 x 500 x 468 / 34.6 x 19.7 x 18.4	
	Net weight (kg / lbs)	15 / 33.1		17.5 / 38.6		20 / 44.1	
	Electrical requirements (230V, 1ph, A)	60Hz, 0.1	50Hz, 0.1	60Hz, 0.2	50Hz, 0.2	60Hz, 0.3	50Hz, 0.3
Cat. No.		AAHB4001K	AAHB4002K	AAHB4011K	AAHB4012K	AAHB4021K	AAHB4022K
Electrical requirements (120V, 1ph, A)		60Hz, 0.2		60Hz, 0.4		60Hz, 0.6	
Cat. No.		AAHB4003U		AAHB4013U		AAHB4023U	

※ 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

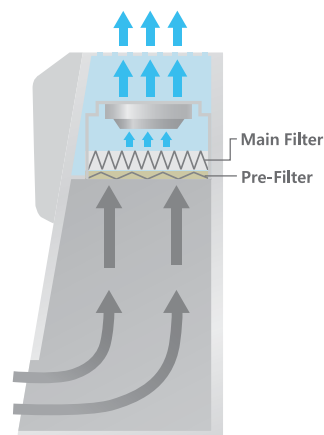
Designed, manufactured and self-certified according to international standards to protect users and the environment from fumes generated during experiments.

- **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.		AAHB2002K	AAHB2001K	AAHB2012K	AAHB2011K
Electrical requirements (120V, A)		60Hz, 1.3		60Hz, 1.3	
Cat. No.		AAHB2003U		AAHB2013U	

※ 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, acetate 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.



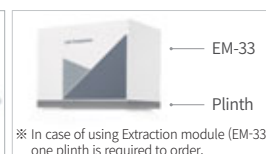
Filter type

Duct type

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

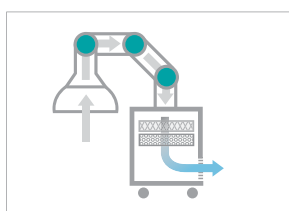
### Structural Functional Features

- 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

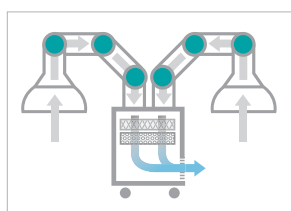
- Pre-filter built in to extend other filter life.
- Up to 2 filters can be installed depending on the material used. (option)
  - ※ Example of filter configuration  
HEPA Filter for removing dust and carbon filter for removing/neutralizing harmful gas.
- Soft wheels for easy movement and fixing.
- Low fan speed notification when fan speed is low.

### Examples Of Diverse Applications



#### Single Arm

General configuration for 100% suction performance.



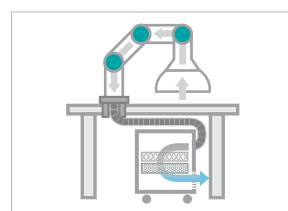
#### Dual Arm

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>	AAHB6312	AAHB6313	AAHB6314	AAHB6315

## 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

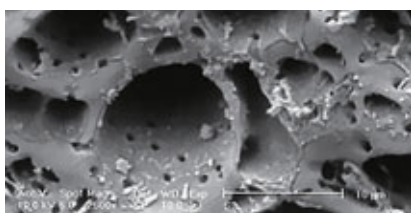
- Φ50 hood mounted on extraction arm as standard. (selection of white or clear)
- Shape selected according to the nature of the fumes and gases used.
- Material selected according to the job type.
- Strong and chemical resistant using PP and SBC materials.

	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

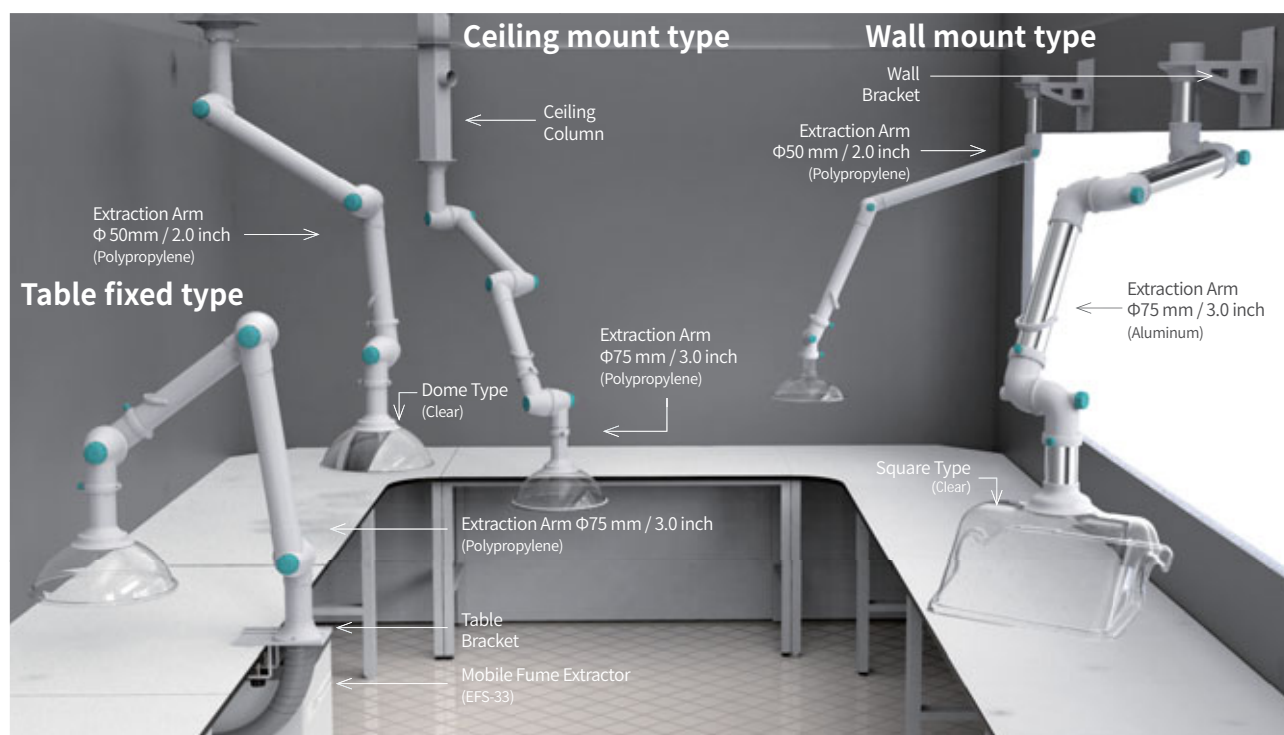
### Gas Detector & Tubes

- 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

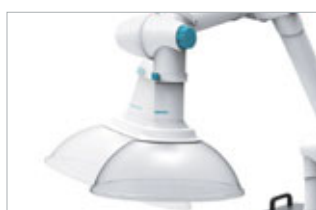
- Place and surrounding environment desired for installation.
  - Column and bracket selected to decide whether to fix arm to wall/ceiling/table in the workspace.
- Working radius.
  - 2 Joint / 3 Joint selected and the length is determined considering the access radius of the arm.
- Work type.
  - 75mm 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



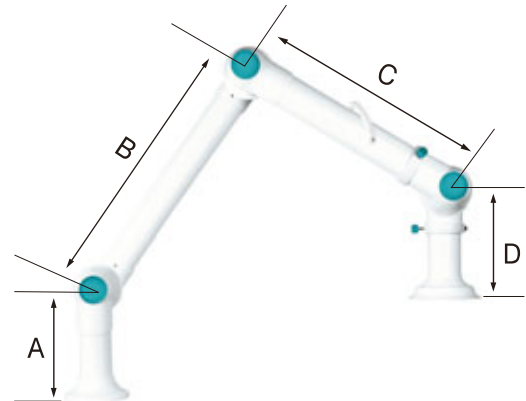
# Extraction Arm Hood

## 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
	100 x 100 x 1500 / 3.9 x 3.9 x 59.1		AAAB6510
Wall Bracket	158 x 259 x 82 / 6.2 x 10.2 x 3.2	75 / 3.0	AAAB6510

## Hood

Type	Material	Description
	Basic type	Polypropylene
	Dome type (Clear)	Styrene butadiene copolymer
	Dome type (White)	Polypropylene
	Square type (Clear)	Styrene butadiene copolymer
	Square type (White)	Polypropylene
	Hood type (White)	Polyethylene



Dome type



Square type



Hood type

## Specification

Diameter	Type	Dimension	Color	Material	Cat. No.
Φ75 mm / 3.0 inch	Basic (Ø, mm / inch)	171 / 6.7	White	Polypropylene	Standard
	Dome (Ø x H, mm / inch)	400 x 140 / 15.7 x 5.5	White	Polypropylene	AAAB6221
			Clear	Styrene butadiene copolymer	AAAB6211
	Square (W x D x H, mm / inch)	494 x 390 x 245 / 19.4 x 15.4 x 9.6	White	Polypropylene	AAAB6241
			Clear	Styrene butadiene copolymer	AAAB6231
Φ50 mm / 2.0 inch	Dome (Ø x H, mm / inch)	294 x 180 / 11.6 x 7.1	White	Polypropylene	Clear Dome (Standard) (Optional White Dome)
			Clear	Styrene butadiene copolymer	

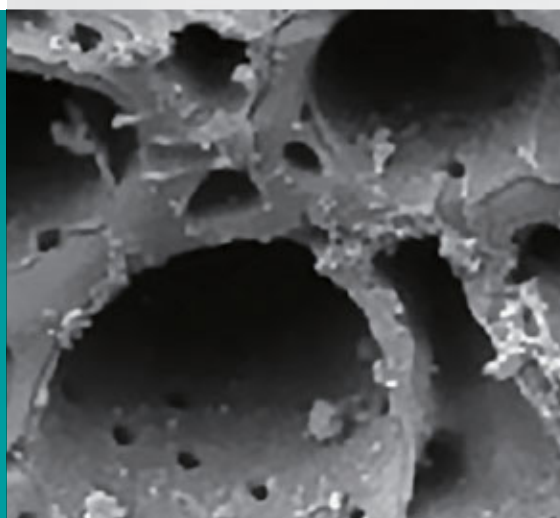
※ Ø75 Basic hood is provided as an integral part of the extraction arm and is used for suction of small volumes of material in confined spaces.  
 ※ Ø50 Dome hood is provided as standard on the extraction arm.



# 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 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 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.



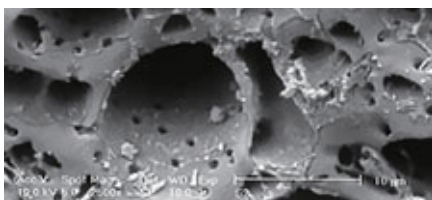
Cat. No.	Description (W x D x H, mm/inch)
AAAF1536	EM-33, 348 x 498 x 343 / 13.7 x 19.6 x 13.5, 230V, 60Hz

- 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)

750 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.



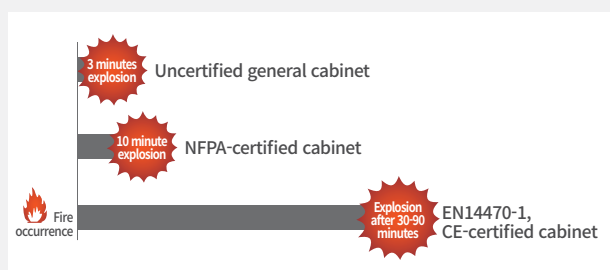
(Patent Registration No. 10-1605164)

Award Excellent Patent Award (in Korea)

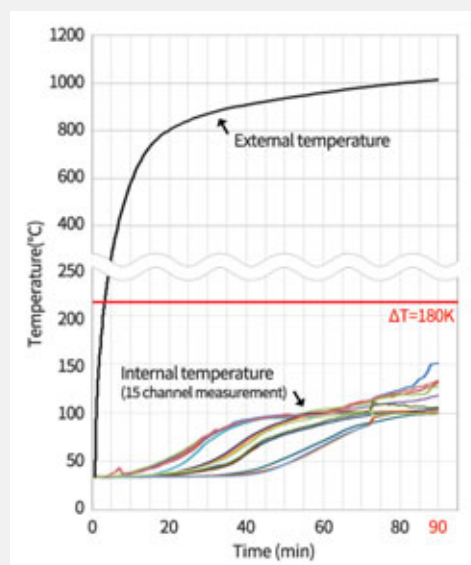
## Proven Fireproof Performance!

### 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.



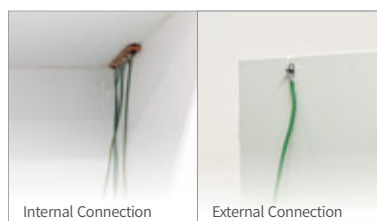
➤ **Automatically sealed ventilation**

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.



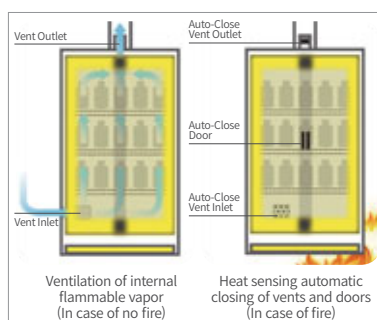
➤ **Anti-static charge through ground**

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.



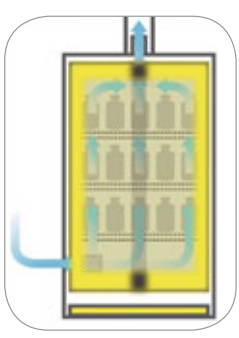

#### Extraction module (option)

Filters flammable gas inside the cabinet with a carbon filter without connecting a separate duct.



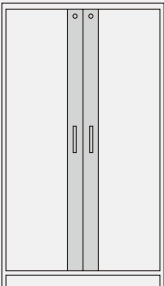

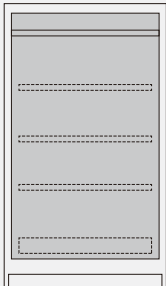

#### Select a suitable shelf

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>	O	O
	Fire test according to EN 1363-1, 15 min.- 90 min. (15 min. / 30 min. / 60 min. / 90 min.)	NFPA 251 standard fire resistance test, 10 minute level
<b>Flammable vapor ventilation</b>	O	X
	Flammable vapor ventilation is recommended. Check sound pressure formation inside the cabinet during ventilation.	Ventilation is not recommended. (Recommended to use level of container recommended in NFPA 30)
	 <p>Keeps flammable vapors below the LEL concentration and removes smell(odors) through ventilation.</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>	O	X
	Automatic door and ventilation closure during fire test.	In the case of a fire test, test with the ventilation hole blocked. Fire safety not considered when connecting to external ventilation facilities.

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> (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 (965 x 444 x 30 / 38.0 x 17.5 x 1.2)	AAAF35013 (451 x 444 x 30 / 17.8 x 17.5 x 1.2)
	Stainless steel	AAAF35004 (965 x 444 x 30 / 38.0 x 17.5 x 1.2)	AAAF35003 (451 x 444 x 30 / 17.8 x 17.5 x 1.2)
Drawer	Epoxy powder coated steel	AAAF35313 (798 x 452 x 100 / 31.4 x 17.8 x 3.9)	AAAF35312 (350 x 452 x 100 / 13.8 x 17.8 x 3.9)
	Stainless steel	AAAF35303 (798 x 452 x 100 / 31.4 x 17.8 x 3.9)	AAAF35302 (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

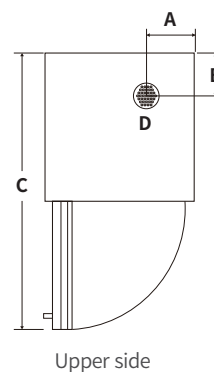
※ Please refer to page 199 for details on EM-33 compatible filter.

## Dimension

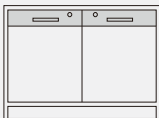



(Unit: mm / inch)

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.



## 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> (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

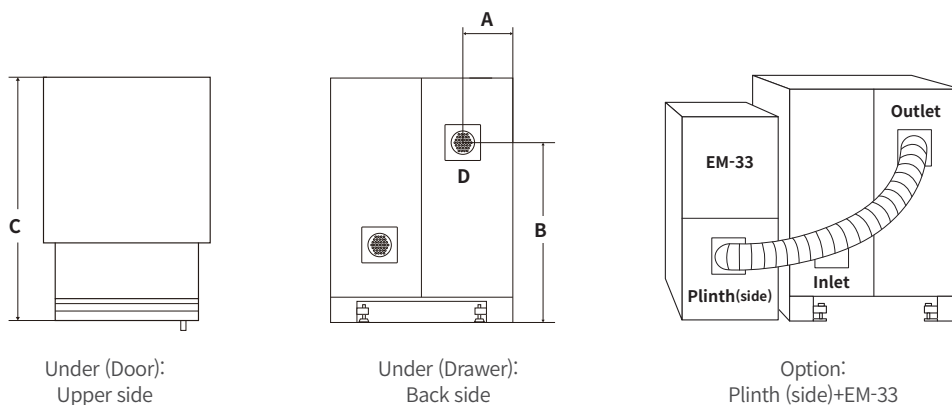
※ Please refer to page 199 for details on EM-33 compatible filter.

## Dimension

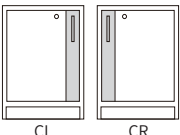



(Unit: mm / inch)

	Model	A	B	C <sup>1)</sup>	D (Diameter)
Under (Drawer)	SC3-90F-0812D2D-C	185 / 7.3	255 / 10.0	840 / 33.1	60 / 2.4
	SC3-90F-0806D1D-C	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> (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

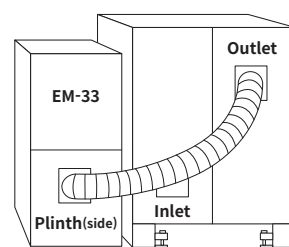
※ Please refer to page 199 for details on EM-33 compatible filter.

## Dimension

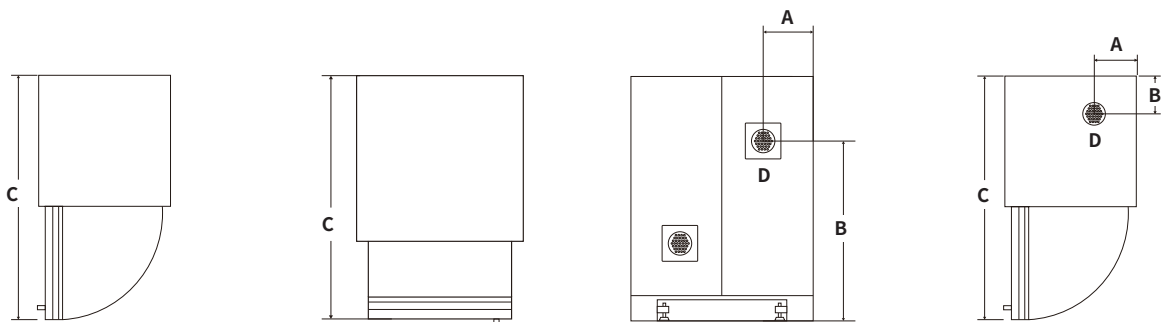
(Unit: mm / inch)

	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

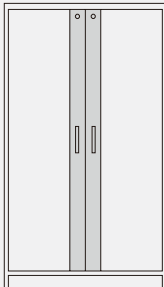

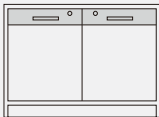

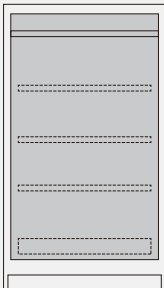
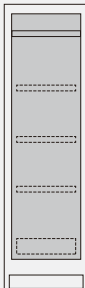

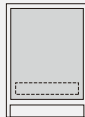
Under (Drawer): Upper side

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 / 38.1 x 20.0 x 64.4	453 x 507 x 1635 / 17.8 x 20.0 x 64.4	506 x 415 x 602 * 2ea / 19.9 x 16.3 x 23.7 * 2ea	468 x 415 x 602 / 18.4 x 16.3 x 23.7
Exterior dimensions (W x D x H, mm / inch)	1101 x 630 x 1951 / 43.3 x 24.8 x 76.8	586 x 630 x 1951 / 23.1 x 24.8 x 76.8	1200 x 560 x 820 / 47.2 x 22.0 x 32.3	600 x 560 x 820 / 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> (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 (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 (965 x 444 x 30 / 38.0 x 17.5 x 1.2)	AAAF35013 (451 x 444 x 30 / 17.8 x 17.5 x 1.2)	-	-
	Stainless steel	AAAF35004 (965 x 444 x 30 / 38.0 x 17.5 x 1.2)	AAAF35003 (451 x 444 x 30 / 17.8 x 17.5 x 1.2)	-	-
Drawer	Epoxy powder coated steel	AAAF35313 (798 x 452 x 100 / 31.4 x 17.8 x 3.9)	AAAF35312 (350 x 452 x 100 / 13.8 x 17.8 x 3.9)	-	-
	Stainless steel	AAAF35303 (798 x 452 x 100 / 31.4 x 17.8 x 3.9)	AAAF35302 (350 x 452 x 100 / 13.8 x 17.8 x 3.9)	-	-
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	AAAF1536	AAAF1536

※ Please refer to page 199 for details on EM-33 compatible filter.

## 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.



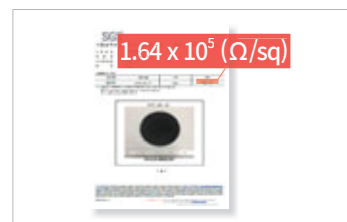
Classified color label and lid color according to chemical properties.



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



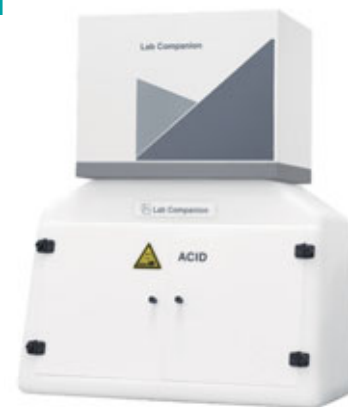
## Compact size enables efficient space utilization

### 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

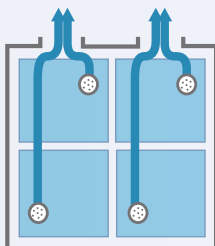
- Strong shelf structure**  
 It is a solid structure allowing for up to 80kg to be held per shelf and it can be fixed firmly to the left and right inside walls.
- Safe shelf design**  
 The shelf tray with a minimum depth of 30mm is made of polypropylene and is designed to be safe even when storage 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.

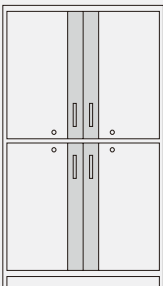
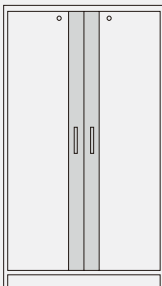


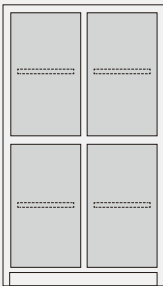
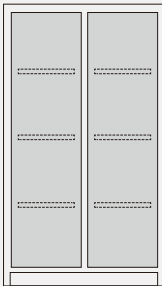




(Patent Registration No. 10-1614122)





## Specification (Tall Type)

Model	SC-C-1912D4	SC-C-1912D2	SC-C-1906D2	SC-C-1906D1
Internal volume (L / cu ft)	852 (213 x 4ea) / 30.1 (7.5 x 4ea)	894 (447 x 2ea) / 31.6 (15.8 x 2ea)	426 (213 x 2) / 15.0 (7.5 x 2ea)	445 / 15.7
Interior dimensions (W x D x H, mm / inch)	561 x 466 x 818 * 4ea / 22.1 x 18.3 x 32.2 * 4ea	561 x 466 x 1712 * 2ea / 22.1 x 18.3 x 67.4 * 2ea	561 x 466 x 818 * 2ea / 22.1 x 18.3 x 32.2 * 2ea	558 x 466 x 1712 / 22.1 x 18.3 x 67.4
Exterior dimensions (W x D x H, mm / inch)	1255 x 555 x 1900 / 49.4 x 2.2 x 74.8	1255 x 555 x 1900 / 49.4 x 2.2 x 74.8	655 x 555 x 1900 / 25.8 x 2.2 x 74.8	655 x 555 x 1900 / 25.8 x 2.2 x 74.8
Quantity of shelf (standard / max.)	4 / 8	6 / 12	2 / 4	3 / 6
Quantity of tray (standard / max.)	8 / 12	8 / 14	4 / 6	4 / 7
Distance of between shelves (mm / inch)	120 / 4.7	100 / 3.9	130 / 5.1	100 / 3.9
Max. load per shelf (kg / lbs)	80 / 176.4	80 / 176.4	80 / 176.4	80 / 176.4
Weight (kg / lbs)	284 / 626.1	257 / 566.6	160 / 352.7	146 / 321.9
Cat. No.	AAAF60043	AAAF60025	AAAF60023	AAAF60011
Product appearance				
Product interior				

※ 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)

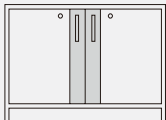
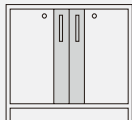
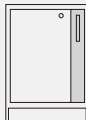







Plinth (Side) + EM-33

Accessories	Description (W x D x H, mm / inch)	SC-C-1912D4	SC-C-1912D2	SC-C-1906D2	SC-C-1906D1
Tray	545 x 419 x 33 / 21.5 x 16.5 x 1.3 (Polypropylene)	00SCF0000037 (8 included as standard)	00SCF0000037 (8 included as standard)	00SCF0000037 (8 included as standard)	00SCF0000037 (8 included as standard)
Fume extraction module (EM-33)	348 x 498 x 343 / 13.7 x 19.6 x 13.5 (230V, 60Hz)	AAAF1536	AAAF1536	AAAF1536	AAAF1536
Plinth (Top) <sup>1)</sup>	852 x 480 x 49 / 33.5 x 18.9 x 1.9	AAAF15362	AAAF15362	-	-

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
Internal volume (L / cu ft)	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
Interior dimensions (W x D x H, mm / inch)	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
Exterior dimensions (W x D x H, mm / inch)	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
Quantity of tray	2	2	1	1
Max. load per tray (kg / lbs)	80 / 176.4	80 / 176.4	80 / 176.4	80 / 176.4
Weight (kg / lbs)	110 / 242.5	92 / 202.8	65 / 143.3	52 / 114.6
Cat. No.	AAAF60122	AAAF60121	AAAF60113	AAAF60012
Product appearance				
Product interior				

※ 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.

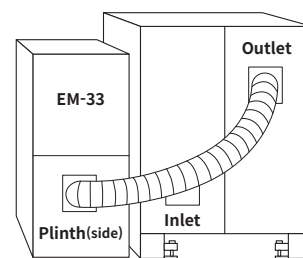
## Accessories

Accessory	Description (W x D x H, mm / inch)	SC-C-0812D2	SC-C-0809D2	SC-C-0806D1	SC-C-0706D1
Tray	PP (545 x 419 x 33 / 21.5 x 16.5 x 1.3)	00CBN0000010	-	-	-
	PP (470 x 370 x 100 / 18.5 x 14.6 x 3.9)	-	-	00CBN0000010	00CBN0000010
	PVC (390 x 450 x 37 / 15.3 x 17.7 x 1.5)	-	00SCF0000100	-	-
Plinth (side)	480 x 340 x 350 / 7.1 x 13.4 x 13.8	AAAF15364	AAAF15364	AAAF15364	AAAF15364

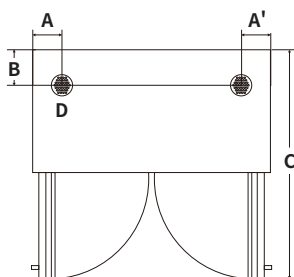
## Dimension

(Unit: mm / inch)

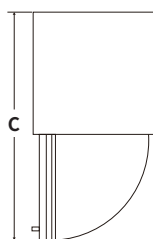
	Model	A	A'	B	C	D (Dia.)
Tall	SC-C-1912D4	315 / 12.4	315 / 12.4	75 / 3.0	1110 / 43.7	102 / 4.0
	SC-C-1912D2	315 / 12.4	315 / 12.4	75 / 3.0	1110 / 43.7	102 / 4.0
	SC-C-1906D2	325 / 12.8	-	75 / 3.0	1120 / 44.1	102 / 4.0
	SC-C-1906D1	325 / 12.8	-	75 / 3.0	1120 / 44.1	102 / 4.0
Under	SC-C-0812D2	130 / 5.1	520 / 20.5	605 / 23.8	1190 / 46.9	102 / 4.0
	SC-C-0809D2	130 / 5.1	370 / 14.5	605 / 23.8	940 / 37.0	102 / 4.0
	SC-C-0806D1	130 / 5.1	-	605 / 23.8	1060 / 41.7	102 / 4.0
	SC-C-0706D1	130 / 5.1	-	435 / 17.1	1060 / 41.7	102 / 4.0



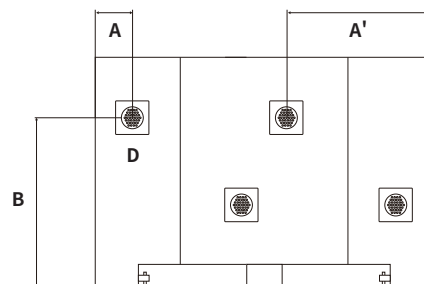
Option: Plinth (side)+EM-33



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

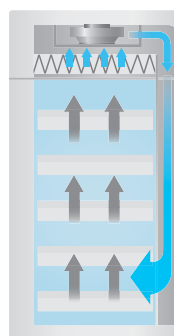


**FSC-140**

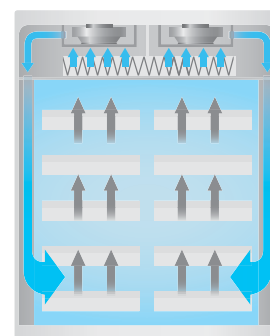
with Drawer Shelves 5ea (standard)

**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.



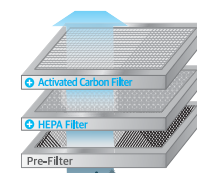
**Safe with effluent storage container**  
Safe handling in the event of stored material leakage and prevention of leakage out of the reagent cabinet.



**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.



Gather information at a glance

## 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.

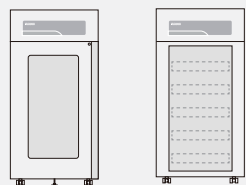
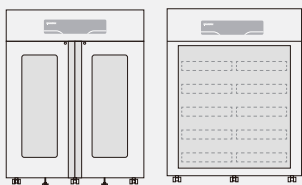


Simple replacement



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 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
Cat. No		AAHF1121K	AAHF1122K
Electrical requirements (120V)		60Hz, 1.0A	60Hz, 2.0A
Cat. No		AAHF1123U	AAHF1133U
		 <p>Product appearance      Product interior</p>	 <p>Product appearance      Product interior</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
	AAHF13111K	AAHF13112K	AAHF13121K	AAHF13122K
	120V / 60Hz		120V / 60Hz	
	AAHF13113U		AAHF13123U	

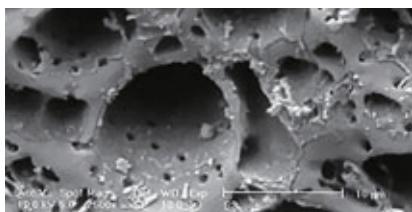




## Accessories

### 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	<b>AAAB2531</b>
<b>Gas Detecting Tube</b>	Benzene, GASTEC-121SP (0.5~10 ppm)	<b>AAAB1550</b>
	Toluene, GASTEC-122L (1~100 ppm)	<b>AAAB1551</b>
	Acetic acid, GASTEC-81L (0.125~25 ppm)	<b>AAAB1552</b>
	Chloroform, GASTEC-137 (4~400 ppm)	<b>AAAB1553</b>
	Formaldehyde, GASTEC-91LL (0.05~1 ppm)	<b>AAAB1554</b>
	Ammonia, GASTEC-3L (0.5~60 ppm)	<b>AAAB1555</b>
<b>Drawer set</b>	Drawer shelf (slide) set	<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 : 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) 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 : 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	Epoxy Painted Steel Drawer with Tray
AAAF1508		18055N1, 18108N2	
AAAF1509		18047N1, 18091N2	Stainless Steel Drawer with Tray
AAAF1510		18055N1, 18108N2	

### Tray partitions

Cat. No.	Description	Suitable for	
00CBN0000018	370 mm / 14.6 inch (Wide)	DS-OR-	18047N1, 18091N2
00CBN0000019	450 mm / 17.7 inch (Wide)		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)



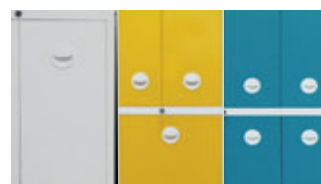
#### Key lock device

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)

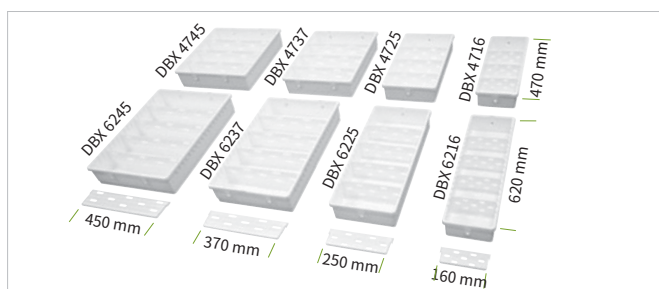
Model	DS-UT-06047N2	DS-UT-06056N2	DS-UT-06064N2
Exterior width (mm / inch)	476 / 18.7	560 / 22.0	644 / 26.1
Exterior depth (mm / inch)	550 / 21.7	550 / 21.7	550 / 21.7
Exterior height (mm / inch)	650 / 25.6	650 / 25.6	650 / 25.6
Weight (kg / lbs)	50 / 110.2	55 / 121.3	60 / 132.3
Quantity of drawer (standard/max.)	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	00CBN0000008	00CBN0000016	160 / 6.3	470 / 18.5	80 / 3.1
DBX 4725	00CBN0000009	00CBN0000017	250 / 9.8	470 / 18.5	90 / 3.5
DBX 4737	00CBN0000010	00CBN0000018	370 / 14.6	470 / 18.5	100 / 3.9
DBX 4745	00CBN0000011	00CBN0000019	450 / 17.7	470 / 18.5	110 / 4.3
DBX 6216	00CBN0000014	00CBN0000016	160 / 6.3	620 / 24.4	80 / 3.1
DBX 6225	00CBN0000015	00CBN0000017	250 / 9.8	620 / 24.4	90 / 3.5
DBX 6237	00CBN0000012	00CBN0000018	370 / 14.6	620 / 24.4	100 / 3.9
DBX 6245	00CBN0000013	00CBN0000019	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
00CBN0000036	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	00CBN0000018	AAAF1523
DS-OW-18055N1	AAAF1502	AAAF1505	00CBN0000019	AAAF1523
DS-OW-18091N2	AAAF1501	AAAF1504	00CBN0000018	AAAF1523
DS-OW-18108N2	AAAF1502	AAAF1505	00CBN0000019	AAAF1523
DS-TW-09091N2	AAAF1501	AAAF1504	00CBN0000018	AAAF1523
DS-TW-09108N2	AAAF1502	AAAF1505	00CBN0000019	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	00CBN0000008	00CBN0000016	AAAF1521
DS-S-18056N4	00CBN0000008 00CBN0000009	00CBN0000016 00CBN0000017	AAAF1521
DS-S-18064N4	00CBN0000009	00CBN0000017	AAAF1521
DS-S-18068N6	00CBN0000008	00CBN0000016	AAAF1521
DS-S-18093N6	00CBN0000009	00CBN0000017	AAAF1521
DS-C-18047N4	00CBN0000008 00CBN0000010	00CBN0000016 00CBN0000018	AAAF1521
DS-C-18047N5	00CBN0000008	00CBN0000016 00CBN0000010	AAAF1521 AAAF1522
DS-C-18056N4	00CBN0000008 00CBN0000009 00CBN0000011	00CBN0000016 00CBN0000017 00CBN0000019	AAAF1521
DS-C-18056N5	00CBN0000008 00CBN0000009 00CBN0000011	00CBN0000016 00CBN0000017 00CBN0000019	AAAF1521 AAAF1522

Model	Tray	Tray dividers	Name plate
DS-TT-09047N2	00CBN0000008	00CBN0000016	AAAF1521
DS-TT-09056N2	00CBN0000008 00CBN0000009	00CBN0000016 00CBN0000017	AAAF1521
DS-TT-09064N2	00CBN0000009	00CBN0000017	AAAF1521
DS-UT-06047N2	00CBN0000008	00CBN0000016	AAAF1521
DS-UT-06056N2	00CBN0000008 00CBN0000009	00CBN0000016 00CBN0000017	AAAF1521
DS-UT-06064N2	00CBN0000009	00CBN0000017	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 DCL	228
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)



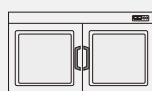
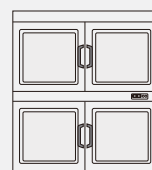

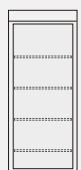
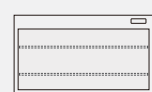
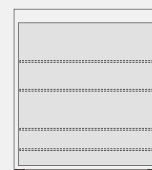


##### Door lock

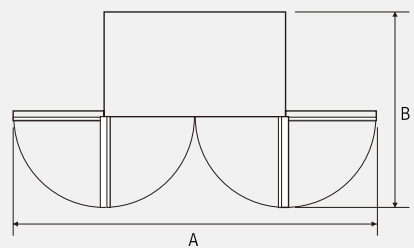
Key lock is provided as standard to block unauthorized access.



## 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 / 18.5 x 19.6 x 19.7		470 x 599 x 561 / 18.5 x 23.6 x 22.1 (upper) 470 x 499 x 561 / 18.5 x 19.6 x 22.1 (lower)		1070 x 499 x 498 / 42.1 x 19.6 x 19.6		1070 x 599 x 561 / 42.1 x 23.6 x 22.1 (upper) 1070 x 499 x 561 / 42.1 x 19.6 x 22.1 (lower)	
Exterior dimensions (W x D x H, mm / inch)		550 x 700 x 653 / 21.7 x 27.6 x 25.7		547 x 700 x 1280 / 21.5 x 27.6 x 50.4		1140 x 700 x 653 / 44.9 x 27.6 x 25.7		1140 x 700 x 1140 / 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									

Model	A (mm)	B (mm)
DC-11	1074	1182
DC-21L	1074	1182
DC-21S	2276	1235
DC-41	2276	1235

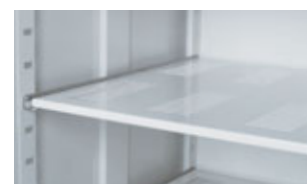


- 1) Above (internal) humidity and temperature may temporarily increase when drying the device of the dehumidifying unit.  
2) Above DCL humidity range is only maintained when 25°C and 60%RH condition.

## 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)



**VDP-25G (Cylinder type)**  
with Vacuum Gauge (option)



**VDR-25G (Round 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
Internal volume (L / cu ft)		11 / 0.4	23 / 0.8	35 / 1.2	45 / 1.6
Vacuum	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)
Dimension	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
Shelves	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
Cat. No.	Clear type	AAAD4001	AAAD4021	AAAD4011	AAAD4031
	UV protection	AAAD4101	AAAD4121	AAAD4111	AAAD4131

**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)
Internal volume (L / cu ft)		6 / 0.2	10 / 0.4	20 / 0.7
Vacuum	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)
Dimension	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)
Shelves	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
Cat. No.	Clear type, without vacuum gauge	AAAD2011	AAAD2111	AAAD2211
	Clear type, with vacuum gauge (G type)	AAAD2021	AAAD2121	AAAD2221
	UV protection, without vacuum gauge (U type)	AAAD2031	AAAD2131	AAAD2231
	UV protection, with vacuum gauge (UG type)	AAAD2041	AAAD2141	AAAD2241

**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)
Internal volume (L / cu ft)		16 / 0.6	24.9 / 0.9
Vacuum	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)
Dimension	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)
Cat. No.	Clear type, without vacuum gauge	AAAD3011	AAAD3021
	Clear type, with vacuum gauge (G type)	AAAD3111	AAAD3121
	UV protection, without vacuum gauge (U type)	AAAD3211	AAAD3221
	UV protection, with vacuum gauge (UG type)	AAAD3311	AAAD3321

\* 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>
Internal volume (L / cu ft)		35 / 1.2	50 / 1.8
Dimension	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
Shelves	Quantity (Standard/Max.)	1 / 4	2 / 6
	Max. load per shelf (kg / lbs)	5 / 11.0	5 / 11.0
Drawers	Quantity (Standard/Max.)	1 / 4	1 / 6
	Max. load per drawer (kg / lbs)	5 / 11.0	5 / 11.0
Cat. No.	Clear type	AAAD5011	AAAD5021
	UV protection type	AAAD5111	AAAD5121

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	-	-	-	-	-	-	●	-	●	-	-
	AAAD4501	●	●	●	●	-	-	-	-	-	-	-
3-way valve	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	<ul style="list-style-type: none"><li>• Verified by international standards</li><li>• Temperature stabilization by defrost control</li></ul>	2 ~ 10 / 35.6 ~ 50	74, 303, 603, 805, 1327 / 2.6, 5.5, 10.7, 21.3, 28.4, 46.9	CLG CLG3	240
		<ul style="list-style-type: none"><li>• Filtered storage cabinet with refrigeration function</li><li>• Stable temperature maintenance and alarm function when there is an abnormality</li></ul>	0 ~ 15 / 32 ~ 59	660, 1451 / 23.3, 51.2	FSR	242
	Freezer	<ul style="list-style-type: none"><li>• Model selected based on temperature range</li><li>• Excellent insulation and sealing structure</li></ul>	-15 ~ 0 / 5 ~ 32	154, 303, 647 / 15.4, 10.7, 22.8	FHG	244
			-25 ~ -15 / -13 ~ 5	154, 303, 647 / 15.4, 10.7, 22.8	FMG	
			-35 ~ -25 / -31~-13	154, 303, 647 / 15.4, 10.7, 22.8	FCG	
			-50 ~ -30 / -58 ~ -22	303, 647 / 10.7, 22.8	FDG	
Medical	Blood Refrigerator	<ul style="list-style-type: none"><li>• Designed based on DIN 58371 (blood refrigerator conditions and tests)</li></ul>	0 ~ 20 / 32 ~ 68	303, 614	BSR	248
	Pharmaceutical Refrigerator	<ul style="list-style-type: none"><li>• Stable cold storage of medicines</li><li>• Designed based on DIN 58345 (pharmaceuticals refrigerator conditions and tests)</li></ul>	2 ~ 10 / 35.6 ~ 50	74, 303, 614	PSR PSR3	249
	Blood Plasma Freezer	<ul style="list-style-type: none"><li>• Suitable for long-term storage of plasma</li><li>• Designed based on DIN 58375 (plasma freezer conditions and tests)</li></ul>	-35 ~ -25 / -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**

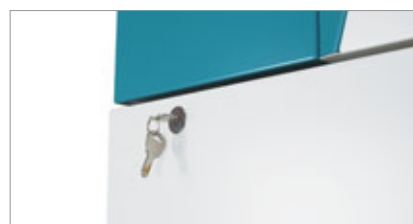
Optimized structural design for each model maintains uniform temperature inside.



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

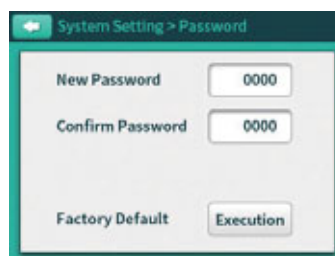
- Temperature fluctuation and variation meets the requirements of ICH Guideline Q1A. (R2)
- Stable temperature control for long-term operation.



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
Temperature range (°C / °F)		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
Chamber volume (L / cu ft)		73 / 2.6	156 / 5.5	303 / 10.7	603 / 21.3	805 / 28.4	1327 / 46.9
Dimension							
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
Shelf							
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
Electrical requirements (230V, 60Hz, A)		1.1	2	2.3	4	5	6
Cat. No.	Solid door	-	AAHE1001K	AAHE1011K	AAHE1021K	AAHE1031K	AAHE1041K
	Glass door	AAHE1301K	AAHE1101K	AAHE1111K	AAHE1121K	AAHE1131K	AAHE1141K
Electrical requirements (230V, 50Hz, A)		1.1	2	2.3	4	5	6
Cat. No.	Solid door	-	AAHE1002K	AAHE1012K	AAHE1022K	AAHE1032K	AAHE1042K
	Glass door	AAHE1302K	AAHE1102K	AAHE1112K	AAHE1122K	AAHE1132K	AAHE1142K
Electrical requirements (120V, 60Hz, A)		2.9	4	4.5	5	5.2	9.5
Cat. No.	Solid door	-	AAHE1003U	AAHE1013U	AAHE1023U	AAHE1033U	AAHE1043U
	Glass door	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

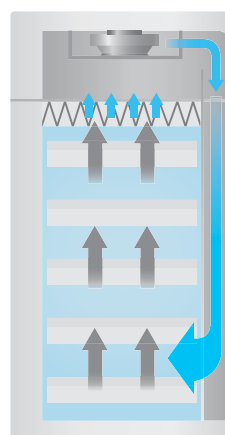
with Drawer Shelves 4ea, Spill Tray 1ea (standard)

### Completed verification for hazardous gas removal capability

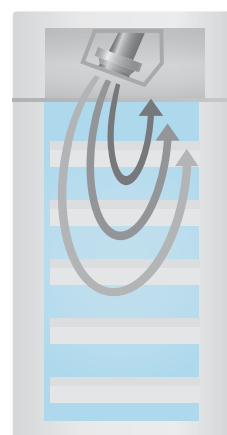
Proven ability to remove hazardous gases  
(SPS-KACA002-132)

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

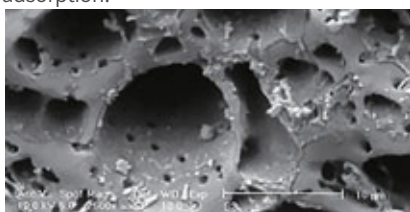
Various custom filter configurations supported depending on the chemical nature of the reagents to be stored.



## 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.
<b>Drawer shelf (slide) set</b>	<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.



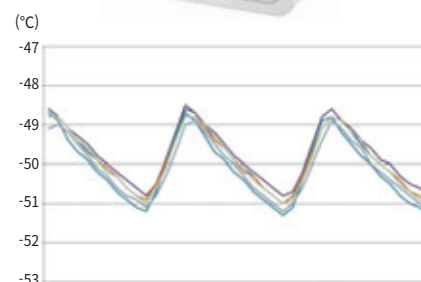
## Direct Cooling-type Refrigeration System

- 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
Dimension				
Interior (W x D x H, mm / inch)		550 x 570 x 490 / 21.7 x 22.4 x 19.3	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)	FDG	-	805 x 800 x 1690 / 31.7 x 31.5 x 66.5	955 x 925 x 2060 / 37.6 x 36.4 x 81.1
	FCG, FMG, FHG	763 x 815 x 1055 / 30 x 32.1 x 41.5	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)	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
Shelf				
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
Electrical data & Ordering information				
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



## 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.



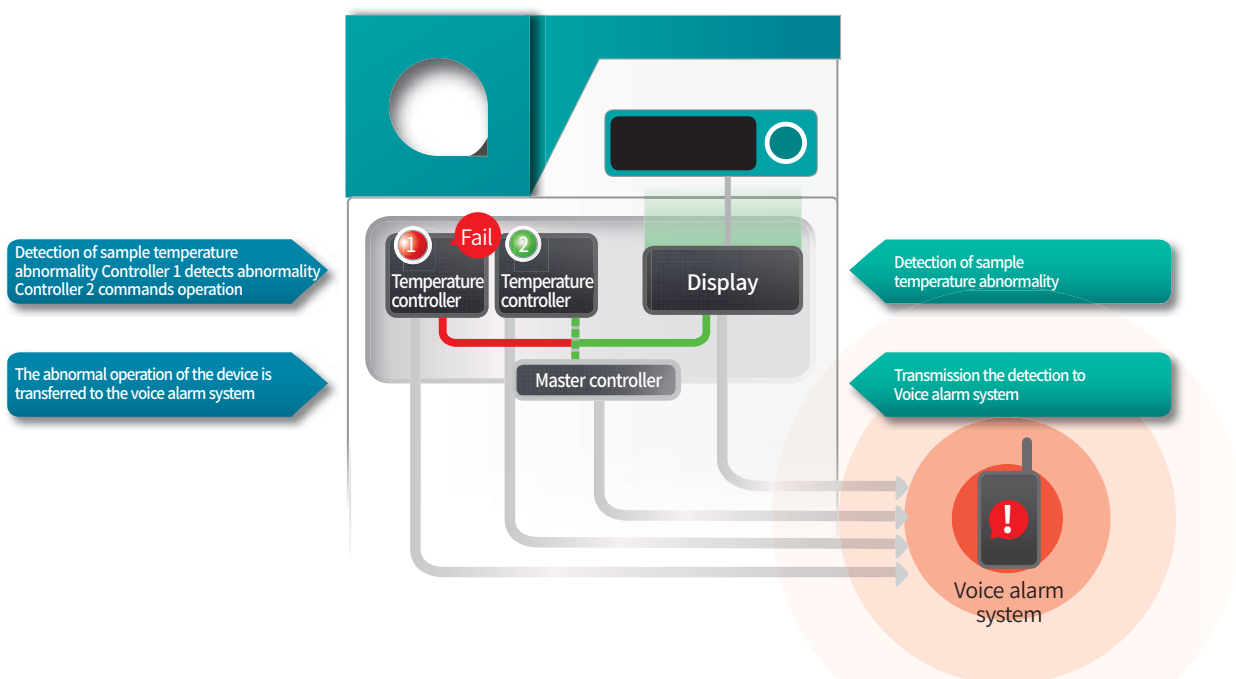
If there is abnormal temperature rise/fall.



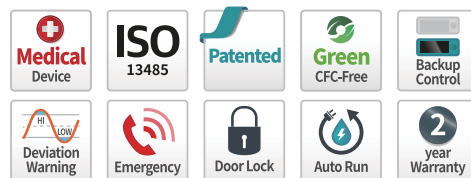
If the temperature of the sample is abnormal.



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	
Temperature range (°C / °F)	0 to 20 / 32 to 68 <sup>1)</sup>	0 to 20 / 32 to 68 <sup>1)</sup>	
Chamber volume (L / cu ft)	303 / 10.7	614 / 21.7	
Refrigerator (HP)	1 / 6	1 / 3	
Dimension			
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	
Shelf			
Quantity of drawers	4	6	
Load per shelf (kg / lbs)	26 / 57.3	30 / 66.1	
Electrical data & Ordering information			
230V / A	50/60Hz, 2.8	50Hz, 3.8	60Hz, 3.8
Cat. No.	AAHE41051K	AAHE41121K	AAHE41111K
120V / 60Hz / A	60Hz, 5.5	60Hz, 7.5	
Cat. No.	AAHE41031U	AAHE411311U	

※ 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.

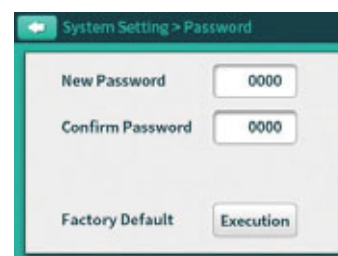
### Use Convenience Features

- 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

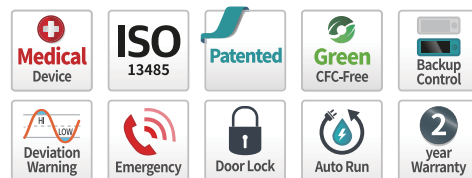
Model	PSR3-70 (CE Certified)		PSR- 3001	PSR- 6501	
Temperature range (°C / °F)	2 to 10 / 35.6 to 50 <sup>1)</sup>		2 to 10 / 35.6 to 50 <sup>1)</sup>	2 to 10 / 35.6 to 50 <sup>1)</sup>	
Chamber volume (L / cu ft)	73 / 2.6		303 / 10.7	614 / 21.7	
Refrigerator (HP)	-		1 / 6	1 / 3	
Dimension					
Interior (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	
Shelf					
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	
Electrical data & Ordering information					
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

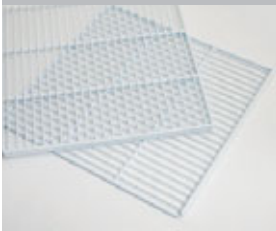
Model	BSF-300		BSF-650	
Temperature				
Range (°C / °F)	-35 to -25 / -31 to -13		-35 to -25 / -31 to -13	
Chamber volume (L / cu ft)	303 / 10.7		647 / 22.8	
Refrigerator (HP)	1 / 4		1 / 2	
Dimension				
Interior (W x D x H, mm / inch)	550 x 550 x 1000 / 21.7 x 21.7 x 39.4		700 x 675 x 1370 / 27.6 x 26.6 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	
Shelf				
Quantity of drawers	4		6	
Load per shelf (kg / lbs)	26 / 57.3		30 / 66.1	
Electrical data & Ordering information				
230V / A	50Hz, 5.5	60Hz, 5.5	50Hz, 7.5	60Hz, 7.5
Cat. No.	AAHE5102K	AAHE5101K	AAHE5112K	AAHE5111K
120V / A	60Hz, 11			
Cat. No.	AAHE5103U		-	

※ 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)

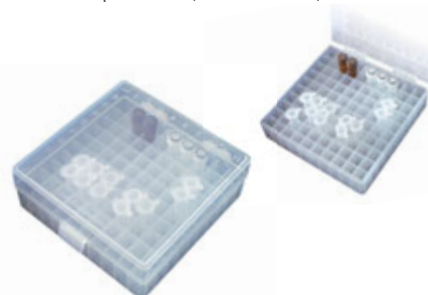


Model	CRB-25	CRB-81S	CRB-81T
Tube size (ml)	1.2 to 2.0	1.2 to 2.0	5
Max. Mountable tube	25 (5 x 5)	81 (9 x 9)	91 (9 x 9)
Dimension (W x D x H, mm / inch)	77 x 77 x 53 / 3 x 3 x 2.1	132 x 132 x 54 / 5.2 x 5.2 x 2.1	132 x 132 x 96 / 5.2 x 5.2 x 3.8
Cat. No.	AAAJ7001	AAAJ7002	AAAJ7003

※ 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.



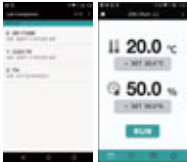
# Accessories for CLG3-70 / PSR3-70

## 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.)



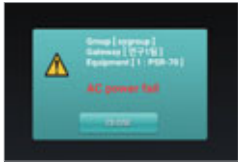
LC GreenBox



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



# Liquid Handling

## Disposable Beaker

Made by  
JEIO TECH

### 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.



Plastic Griffin Beaker (PMP)

### 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.



PMP griffin beaker (transparent)

### 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.



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 allows 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  
JEIO TECH

### 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  
JEIO TECH

### 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



# Carboy

Made by  
JeioTech

## 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	269 x 85 x 72 / 10.6 x 3.3 x 2.8	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	-	-	O
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
	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

- 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

### 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 KEPKO)
- **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

- 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

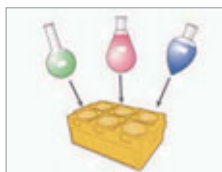
- Block made of aluminum with excellent thermal conductivity.
- Keeps the temperature of the sample constant when using on ice.
- Excellent thermal conductivity with aluminum block.



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, 0.2 ml tube 64ea	1.5 ml tube 30ea, 96 well plate 1ea
Cat. No.	AAAJ2011	AAAJ2021

## Flask Support

- 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 / 2.76 x 3.58	70 x 91 / 2.76 x 3.58	98 x 122 / 3.86 x 4.8	98 x 122 / 3.86 x 4.8	121 x 128 / 4.76 x 5.04	148 x 156 / 5.83 x 6.14	183 x 188 / 7.2 x 7.4
Dimension (W x D x H, mm/inch)	310 x 100 x 100 / 12.2 x 3.94 x 3.94	384 x 265 x 98 / 15.12 x 10.43 x 3.86	280 x 125 x 130 / 11.02 x 4.92 x 5.12	389 x 239 x 130 / 15.31 x 9.41 x 5.12	360 x 146 x 135 / 14.17 x 5.75 x 5.31	415 x 192 x 165 / 16.34 x 7.56 x 6.5	503 x 223 x 199 / 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

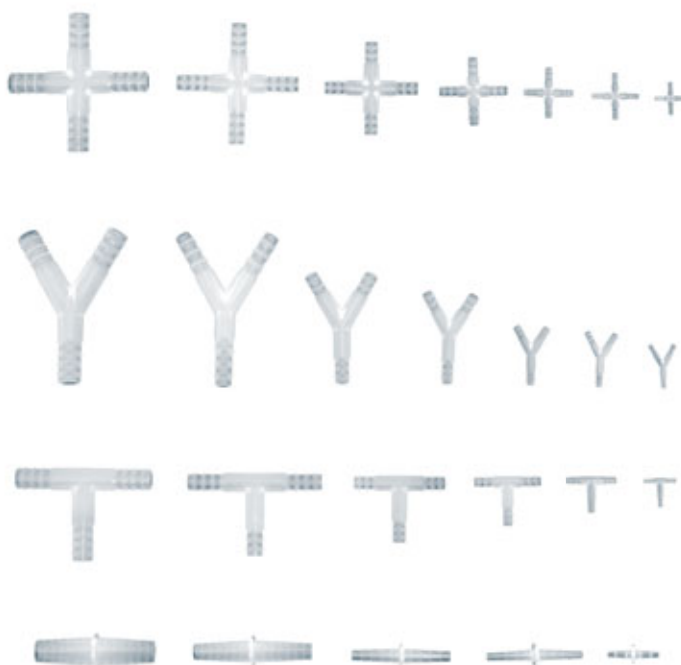
Cat. No.	Capacity (L / cu ft)
AAAD5011 (Clear)	35 / 1.24
AAAD5111 (UV protection)	35 / 1.24
AAAD5021 (Clear)	50 / 1.77
AAAD5121 (UV protection)	50 / 1.77

# Connection

## Tubing Connector

Made by  
JelioTech

- 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.



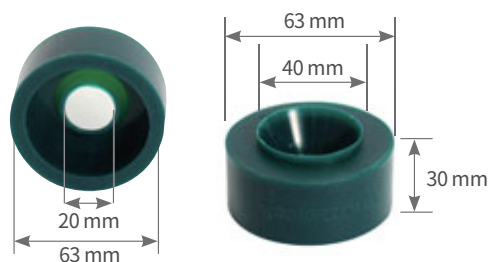
O.D. (mm)	O.D. (inch)	Cat. No.			
		T-shape	Y-shape	Cross	Straight
3.2	1/8	00CJA0009042	00CJA0009057	00CJA0009048	N/A
4.0	5/32	00CJA0009041	00CJA0009058	00CJA0009047	N/A
4.7	3/16	00CJA0009044	00CJA0009046	00CJA0009050	00CJA0009051
6.0	1/4	00CJA0009043	00CJA0009045	00CJA0009049	00CJA0009054
8.0	5/16	00CJA0009055	00CJA0009059	00CJA0009061	N/A
9.5	3/8	00CJA0009036	00CJA0009037	00CJA0009062	00CJA0009052
12.7	1/2	00CJA0009056	00CJA0009060	00CJA0009063	00CJA0009053

## Filter Adapter

Made by  
JelioTech

### 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

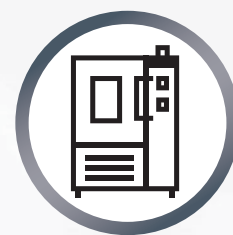


Fixing Clamp

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



- |  |  |  |
|--|--|--|
|  <p>Satisfaction with the requirements of European regulations and guidelines.</p>  |  <p>Real-time equipment monitoring and control system using mobile app.</p>             |  <p>Eco-friendly product that has passed environmental impact assessment tests.</p> |
|  <p>Recognized as an excellent design product by the ministry of commerce, industry, and energy.</p>                              |  <p>More precise temperature control through temperature calibration.</p>               |  <p>Electronic over temperature protection system.</p>                              |
|  <p>Conventional over temperature protection, a kind of backup device against electronic over temperature protection failure.</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>User safety by blocking potentially harmful UV light.</p>   |  <p>Indicator to ascertain water level.</p>   |  <p>Alarm if the water is low level.</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

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

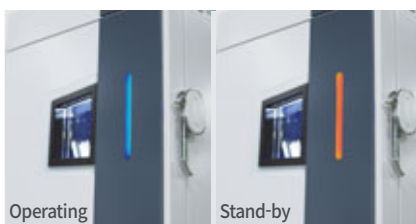
Provides diverse program operation environment with a maximum of 120 patterns and 1200 segments.

#### > 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.

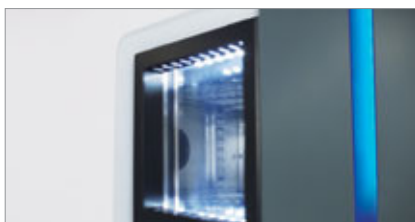
### > Self-protection system

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)

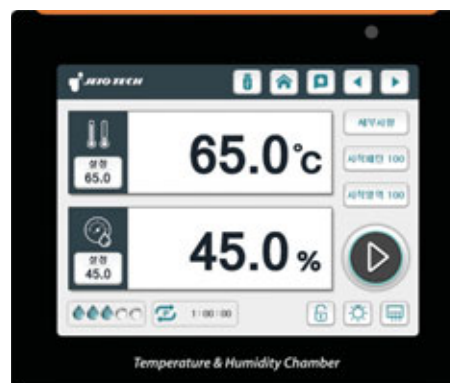
### Structural Functional Features

- 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)



Operating



Stand-by

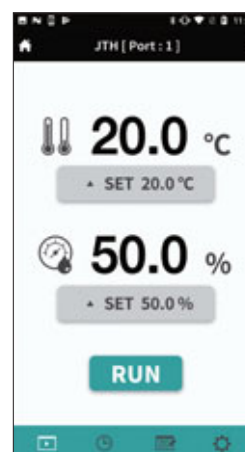
Indicator LED of operation condition

## 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



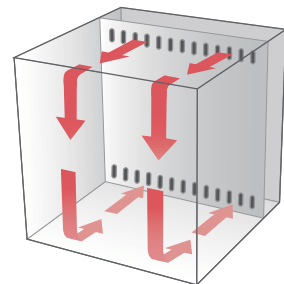
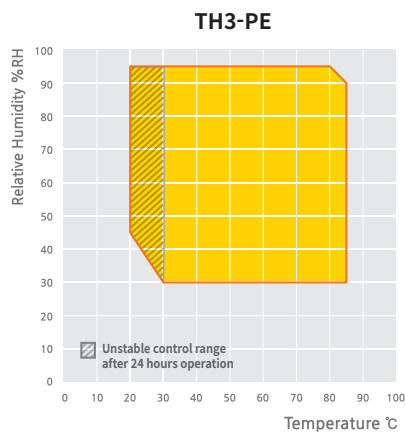
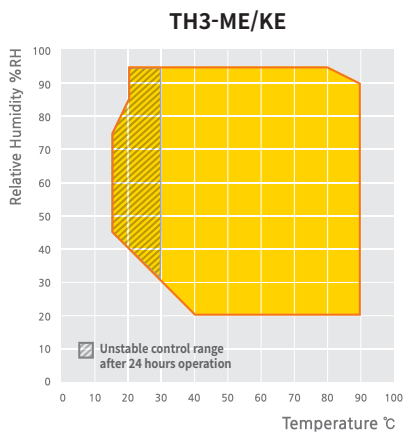
Remote monitoring and control via Lab Companion's app

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.



## 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.

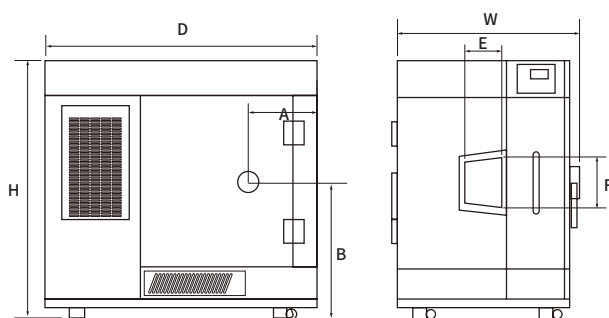
1) The set value is set under the conditions of 25°C, 60% RH.

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



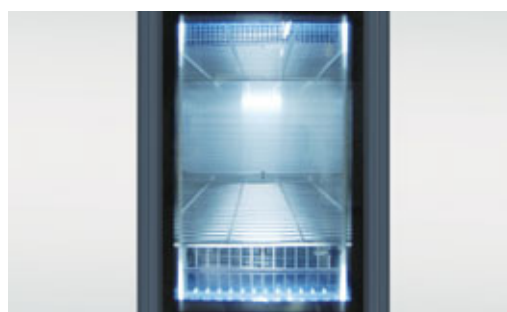
Door handle and locking device

## 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.

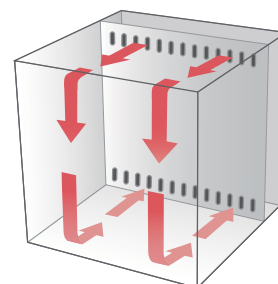
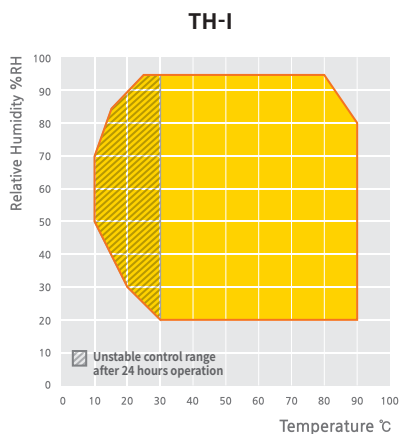
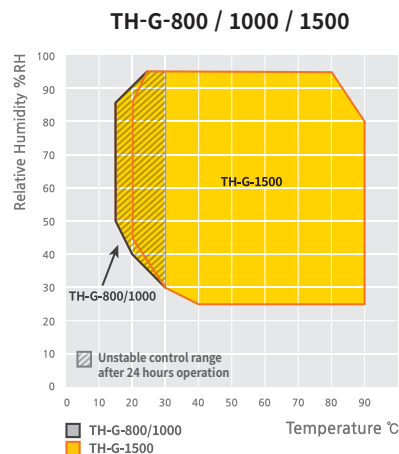
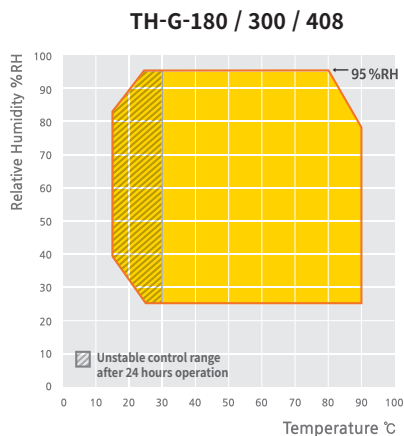
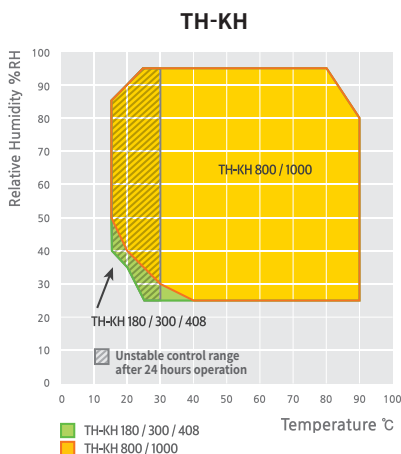


Controller (5.7 inch)

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 (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>	320 / 705.5	385 / 848.8	410 / 903.9
<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.

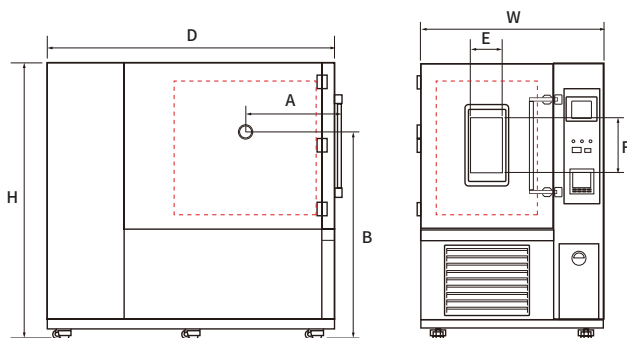
※ Permissible environmental conditions are 18 - 30°C (recommended 20°C), 85% RH or less, under 2000m above sea level.

※ 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.

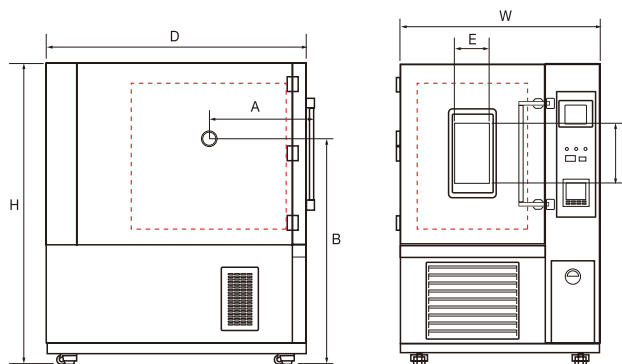
※ Permissible environmental conditions are 18 - 30°C (recommended 20°C), 85% RH or less, under 2000m above sea level.

※ 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>	320 / 705.5	385 / 848.8	410 / 903.9
<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.

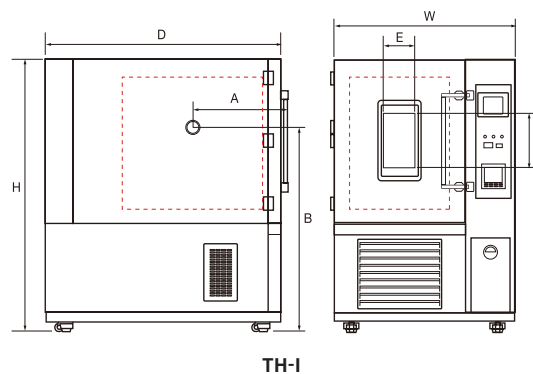
※ Permissible environmental conditions are 18 - 30°C (recommended 20°C), 85% RH or less, under 2000m above sea level.

※ 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



## 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



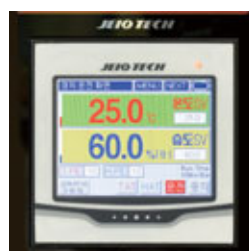
Tempered glass window with wire heater and LED lamp

## 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.

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.



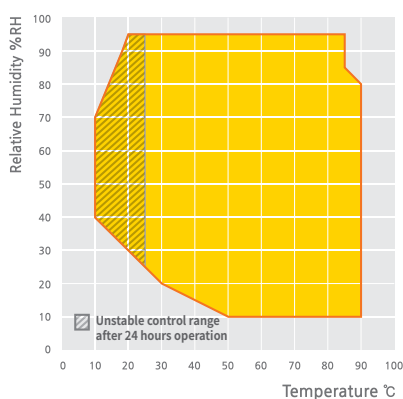
Controller

## ■ Outstanding Safety

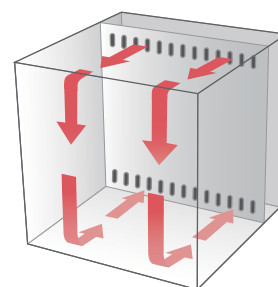
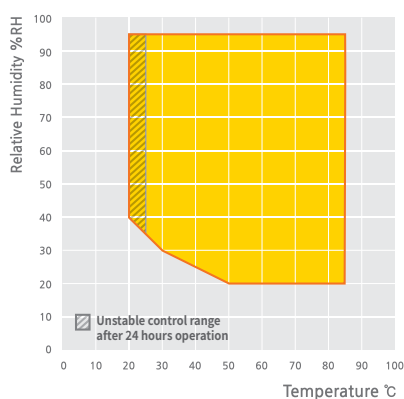
- Electronic over temperature shutdown system (advanced over temperature (A-OT) limiter)  
Independent precision temperature sensor and controller for safer and more accurate over temperature shutdown.
- General-type over power shutdown system. (B-OT, backup over temperature limiter)  
A backup device 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.

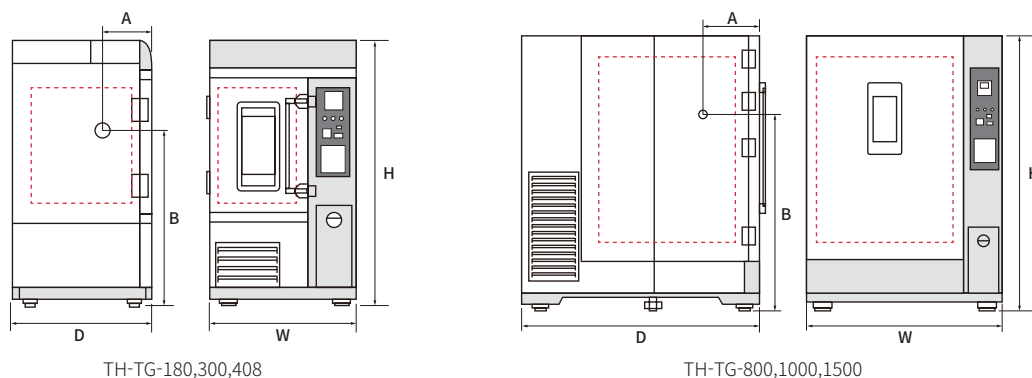
※ Permissible environmental conditions are 18 - 30°C (recommended 20°C), 85% RH or less, under 2000m above sea level.

※ 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



## 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.



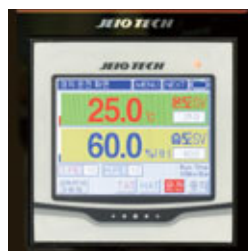
Door handle & locking device



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

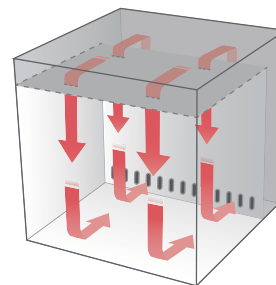
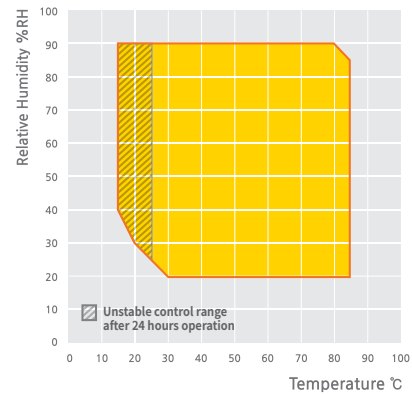
Description	No.
Pattern	100
Repeat time	999
Part repeat time	255
Max. segments / pattern	100
Available max. segments	2000
Programmable process time / segment	99 hr. 59 min.

\* 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 (Ø, 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.

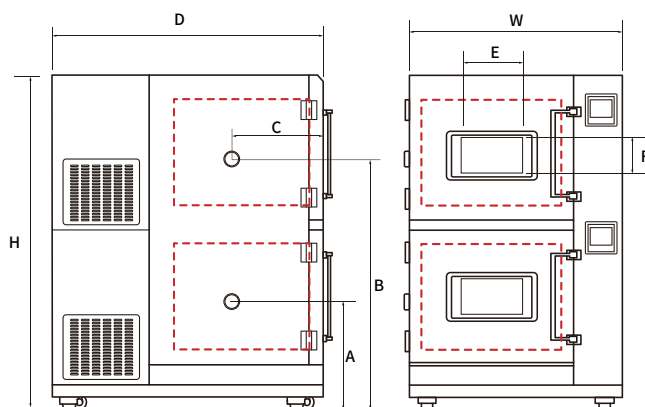
※ The DI water condition is pH 6.2 - 7.2 and the electrical conductivity is less than 20µs/cm.

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.

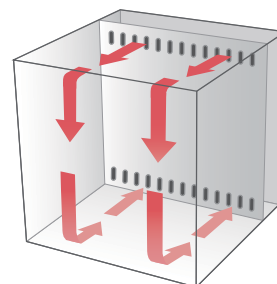
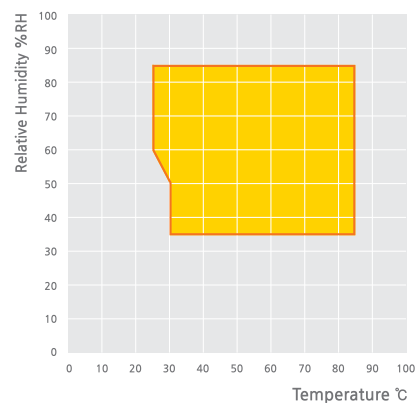
#### Outstanding Safety

- 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.

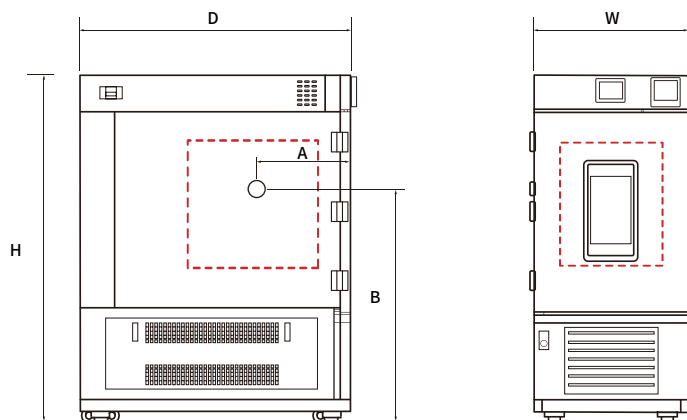
※ Permissible environmental conditions are 18 - 30°C (recommended 20°C), 85% RH or less, under 2000m above sea level.

※ 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

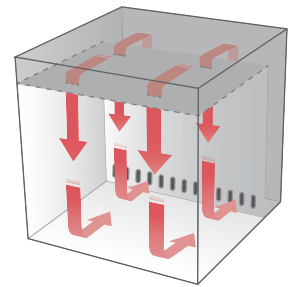
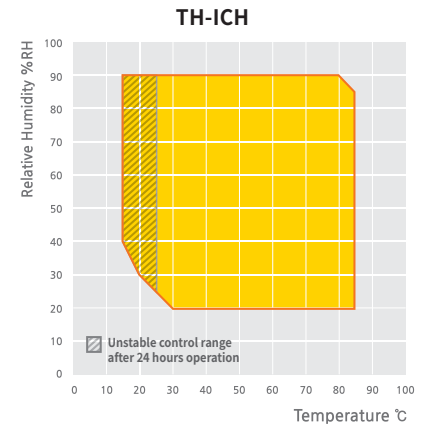


### TH-ICH-800

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.

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.



Built-in cool white fluorescent lamp and UVA lamp



drawer type of water tank



UV / VIS sensor



Lamp controller



Controller





## Specification

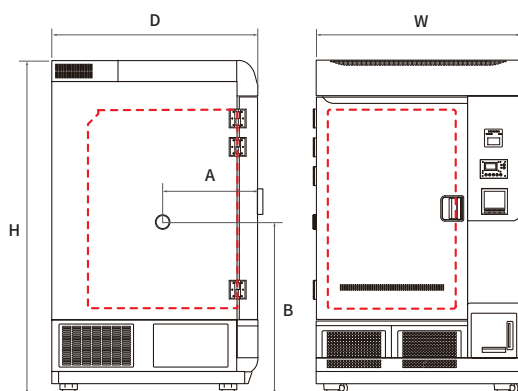
Model	TH-ICH-300	TH-ICH-800
<b>Interior dimensions</b>		
Chamber volume (L / cu ft)	300 / 10.6	760 / 26.8
Width (mm / inch)	750 / 29.5	750 / 29.5
Depth (mm / inch)	650 / 25.6	880 / 34.6
Height (mm / inch)	650 / 25.6	1160 / 45.7
Quantity of shelves (standard/max.)	2 / 8	2 / 17
Distance of between shelves (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



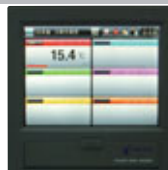
- Suitable for high-load samples.
- Excellent maintenance as made of stainless steel.

## 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

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# Heating & Cooling Chamber



- |   |  |  |
|---|--|--|
|  <p>Satisfaction with the requirements of European regulations and guidelines.</p>                 |  <p>Real-time equipment monitoring and control system using mobile app.</p>             |  <p>Eco-friendly product that has passed environmental impact assessment tests.</p>   |
|  <p>More precise temperature control through temperature calibration.</p>                          |  <p>Electronic over temperature protection system.</p>                                  |  <p>Conventional over temperature protection, a kind of backup device against electronic over temperature protection failure.</p> |
|  <p>Over temperature protection function.</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

Reliability, Climate/freezing, Quality assurance, Thermal resistance testing.

- Electrical and electronic components, Sensor.
- Semiconductor, PCB, LCD&LED.
- The machinery / Military / Aircraft equipment.
- Chemical / Oil industry.
- Construction materials / Plastics / Textile industries.
- Automotive industry.
- Metal industries such as metallurgy.
- Pharmaceutical industry.

	Description	Temp. Range (°C / °F)	Airflow	Volume (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 / -31 to 302	Vertical airflow	25, 65, 100 / 0.9, 2.3, 3.5	TC3-KE	304
		-20 to 150 / -4 to 302	Vertical airflow	25, 65, 100 / 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 / -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 / -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 / -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 / -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 / 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 / -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 / 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**

Powerful & Useful control  
**Optimized precision control**

› **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.

› **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.



Easy to understand running status with LED display showing the operation condition.



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.

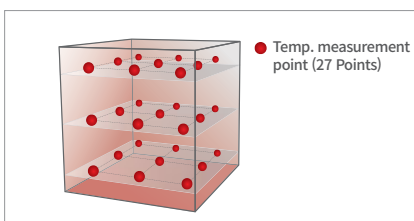
Over-current and short circuit breaking device.

### › 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.



● Temp. measurement point (27 Points)

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)

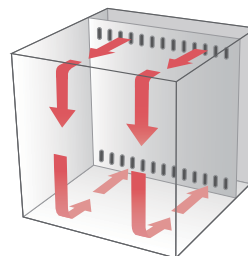


**TC3-KE**

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.
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.



## **▮ 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 (Ø, 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.

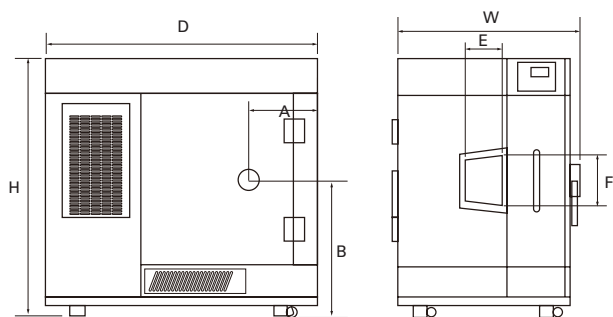
※ Permissible environmental conditions are 18 ~ 30°C (recommended 20°C), 85% RH or less, under 2000m above sea level.

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

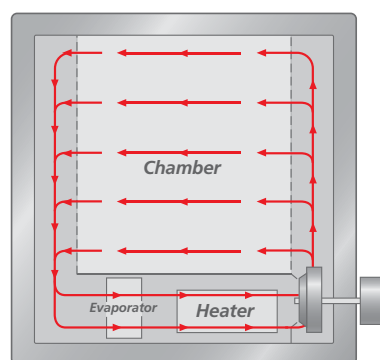


### KBD-040

with 2ea wire shelves (standard), Recorder, Signal Lamp (option)

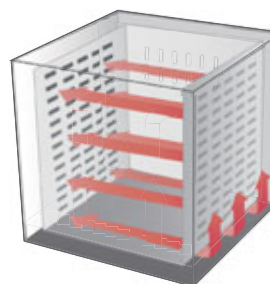
### Completion of Temperature Verification According to Strict International Standard

- 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.

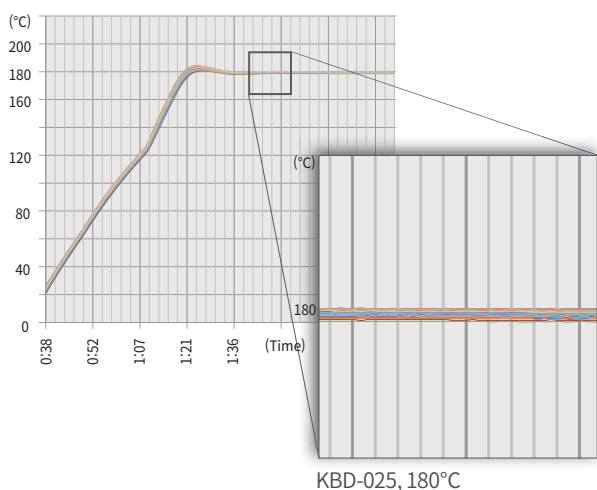
Description	No.
Pattern	100
Repeat time	999
Part repeat time	255
Max. segments / pattern	100
Available max. segments	6000
Programmable process time / segment	99 hr. 59 min.

\* 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.

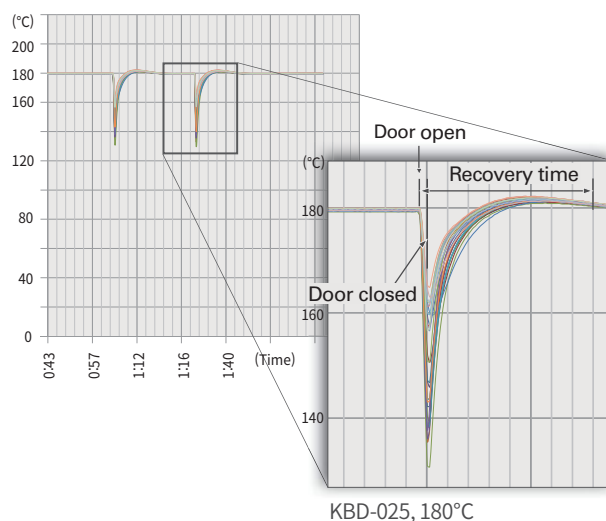
## Outstanding Safety

- 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

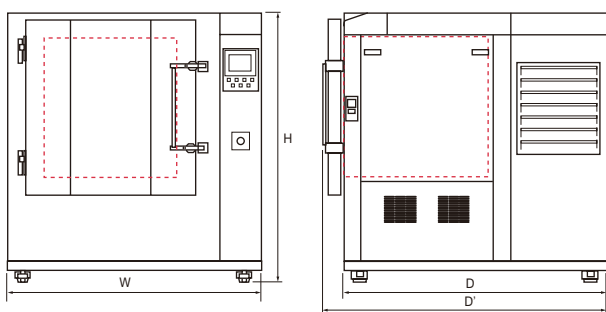
Model	KBD-012	KBD-025	KBD-040	KBD-070	KBD-100
<b>Temperature data</b>					
Range (°C / °F)	-70 to 180 / -94 to 356	-70 to 180 / -94 to 356	-70 to 180 / -94 to 356	-70 to 180 / -94 to 356	-70 to 180 / -94 to 356
<b>Fluctuation (±°C / °F) <sup>1), 2)</sup></b>					
at -70°C	0.2 / 0.36	0.2 / 0.36	0.2 / 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 - 52.2 / 53.5	1492 / 1525 - 58.7 / 60	1567 / 1600 - 61.7 / 63	1777 / 1810 - 70 / 71.3	1887 / 1920 - 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

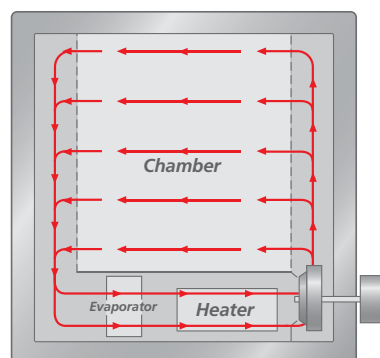


#### KMOV-040

with 2ea wire shelves (standard), Recorder, Signal lamp (option)

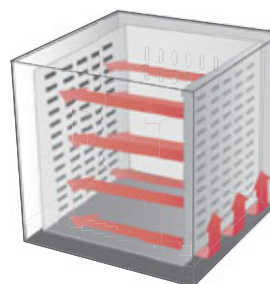
#### Completion of Temperature Verification According to Strict International Standard

- 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.

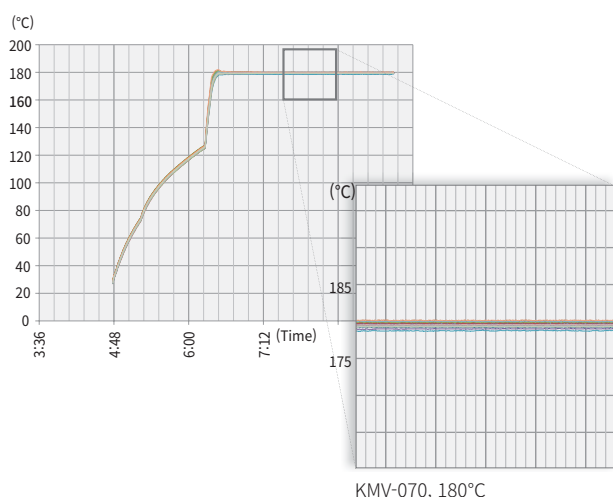
Description	No.
Pattern	100
Repeat time	999
Part repeat time	255
Max. segments / pattern	100
Available max. segments	2000
Programmable process time / segment	99 hr. 59 min.

\* 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.

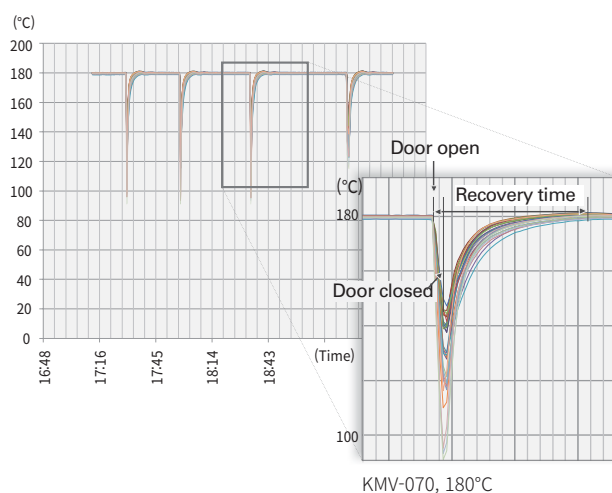
## Outstanding Safety

- 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

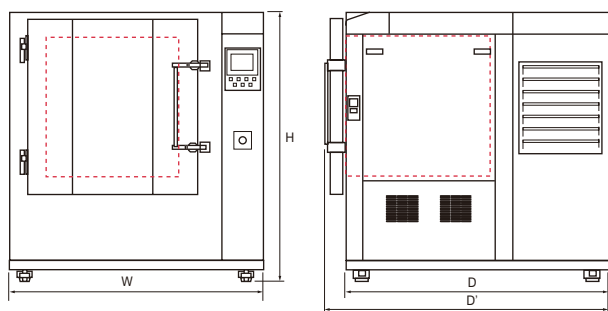
Model	KMV-012	KMV-025	KMV-040	KMV-070	KMV-100
<b>Temperature data</b>					
Range (°C / °F)	-35 to 180 /-31 to 356	-35 to 180 /-31 to 356	-35 to 180 /-31 to 356	-35 to 180 /-31 to 356	-35 to 180 /-31 to 356
<b>Fluctuation (±°C / °F) <sup>1), 2)</sup></b>					
at -40°C	0.5 / 0.9	0.5 / 0.9	0.3 / 0.54	0.2 / 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 - 29.1 / 30.5	890 / 925 - 35 / 36.4	940 / 975 - 37 / 38.4	1595 / 1625 - 62.8 / 64	1695 / 1725 - 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)

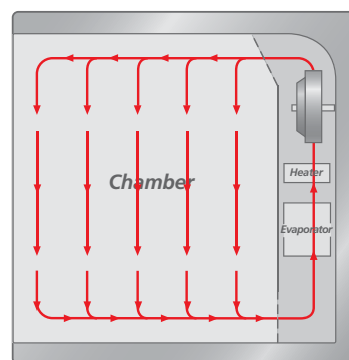


### Completion of Temperature Verification According to Strict International Standard

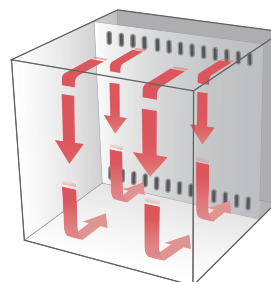
- Temperature verification in accordance with DIN 12880 and IEC 60068-3-5 provides excellent reliability and reproducibility.
- Provided specification the fluctuation and gradient in typical temperature point.
- Provided heating / cooling time data to help select the right model for testing purposes.
- 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.

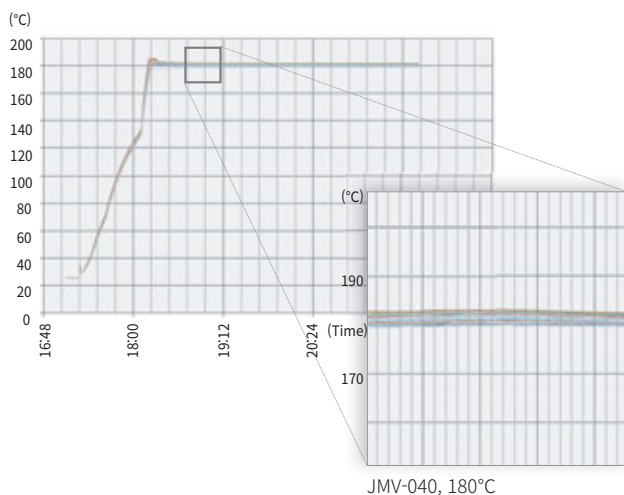
Description	No.
Pattern	100
Repeat time	999
Part repeat time	255
Max. segments / pattern	100
Available max. segments	2000
Programmable process time / segment	99 hr. 59 min.

\* 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.

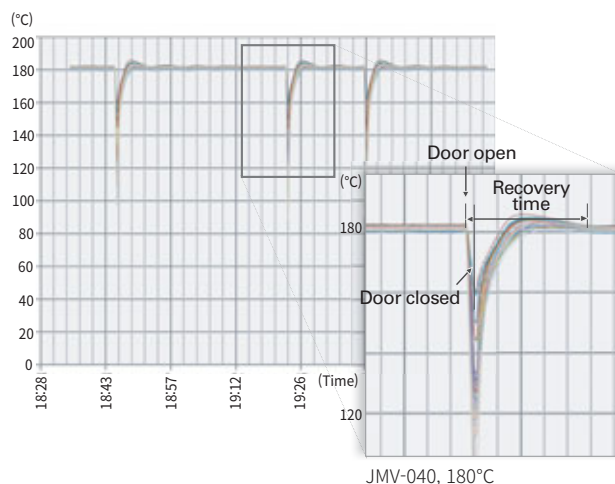
## Outstanding Safety

- 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 / -31 to 356	-35 to 180 / -31 to 356	-35 to 180 / -31 to 356	-35 to 180 / -31 to 356	-35 to 180 / -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>

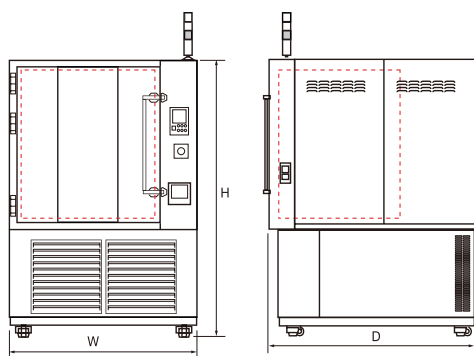
1) According to IEC 60068-3-5

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



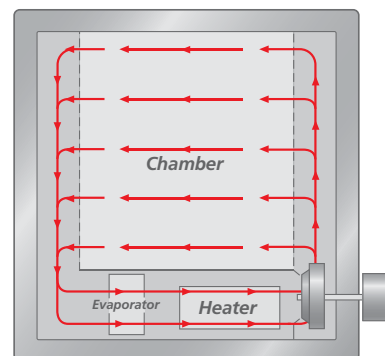
**PBV-040**

with 2ea wire shelves (standard), Recorder, Signal lamp (option)



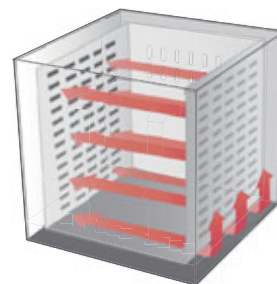
### Completion of Temperature Verification According to Strict International Standard

- 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.

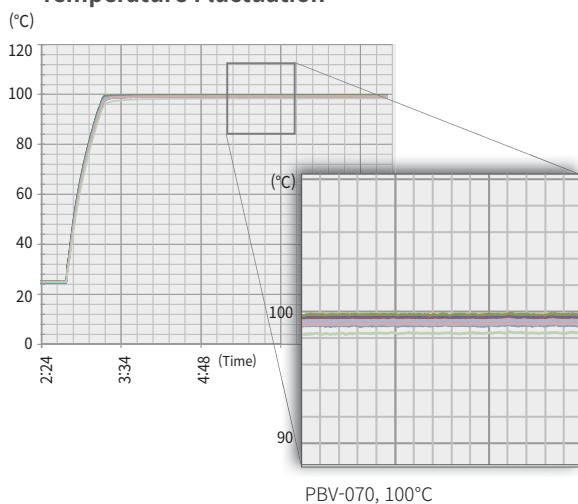
Description	No.
Pattern	100
Repeat time	999
Part repeat time	255
Max. segments / pattern	100
Available max. segments	2000
Programmable process time / segment	99 hr. 59 min.

\* 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.

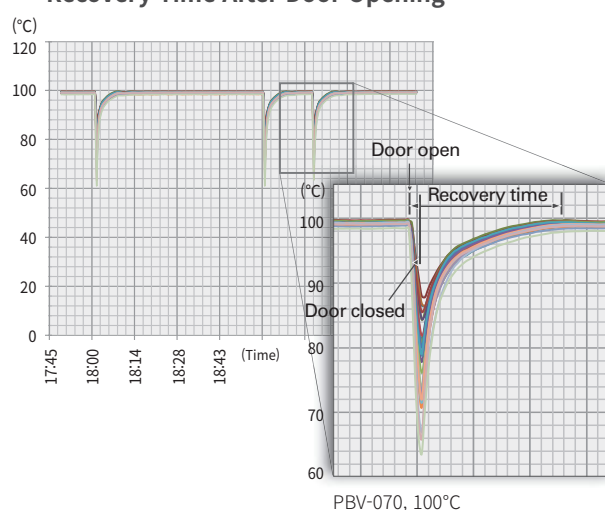
## Outstanding Safety

- 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

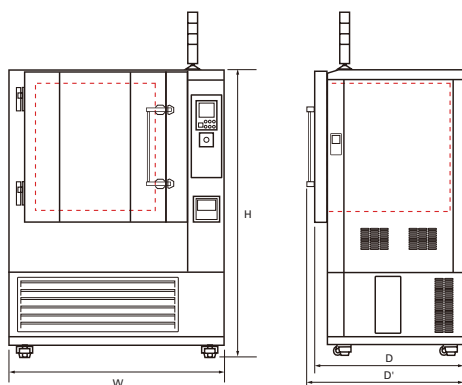
Model	PBV-012	PBV-025	PBV-040	PBV-070	PBV-100
<b>Temperature data</b>					
Range (°C / °F)	-25 to 100 / -13 to 212	-25 to 100 / -13 to 212	-25 to 100 / -13 to 212	-25 to 100 / -13 to 212	-25 to 100 / -13 to 212
<b>Fluctuation (±°C / °F)<sup>1), 2)</sup></b>					
at -25°C	0.2 / 0.36	0.2 / 0.36	0.2 / 0.36	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 - 26.5 / 27.6	822 / 852 - 32.4 / 33.5	872 / 902 - 34.3 / 35.5	1510 / 1540 - 59.4 / 60.6	1620 / 1650 - 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**



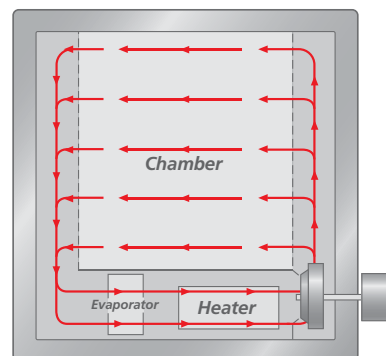
**PMV-040**

with 2ea wire shelves (standard), Recorder, Signal lamp (option)



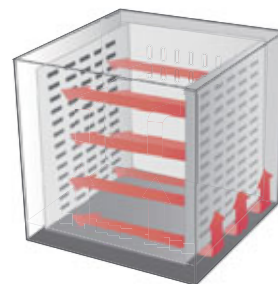
### Completion of Temperature Verification According to Strict International Standard

- 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.





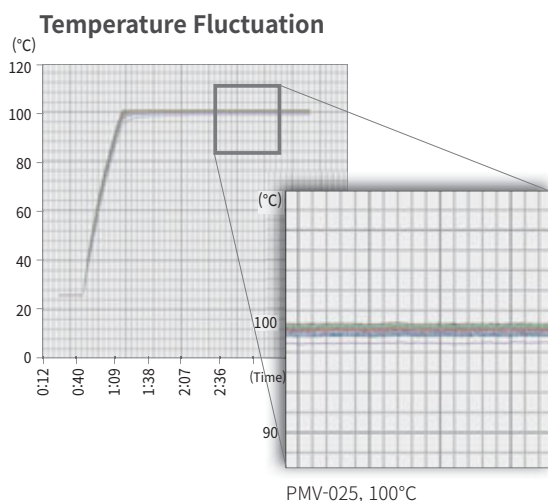


## Optimized Dedicated Control System

- 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.

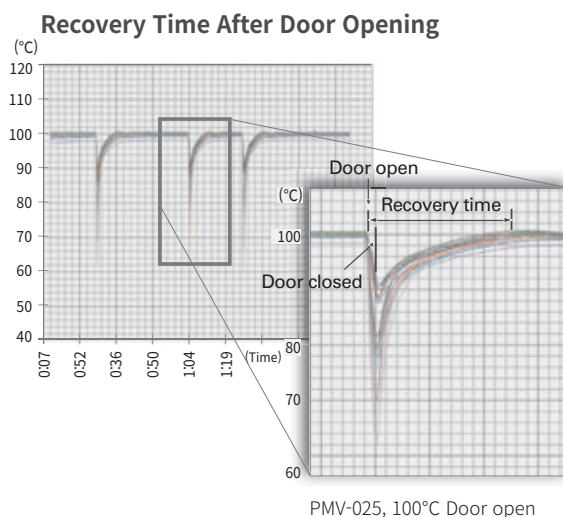


Description	No.
Pattern	100
Repeat time	999
Part repeat time	255
Max. segments / pattern	100
Available max. segments	2000
Programmable process time / segment	99 hr. 59 min.

\* 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

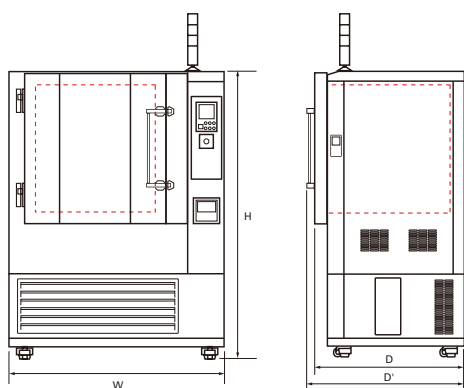
Model	PMV-012	PMV-025	PMV-040	PMV-070	PMV-100
<b>Temperature data</b>					
Range (°C / °F)	-5 to 100 / 23 to 212	-5 to 100 / 23 to 212	-5 to 100 / 23 to 212	-5 to 100 / 23 to 212	-5 to 100 / 23 to 212
<b>Fluctuation (±°C / °F)<sup>1), 2)</sup></b>					
at -5°C	0.3 / 0.54	0.3 / 0.54	0.2 / 0.36	0.2 / 0.36	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 - 26.5 / 27.6	822 / 852 - 32.4 / 33.5	872 / 902 - 34.3 / 35.5	1510 / 1540 - 59.4 / 60.6	1620 / 1650 - 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.

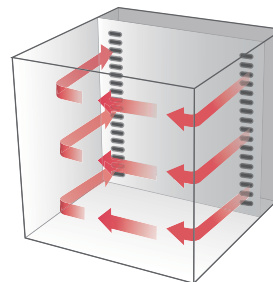


**LCH-21**

with 2EA wire shelves(standard)  
Recorder (option)

**LCH-11G-2C**

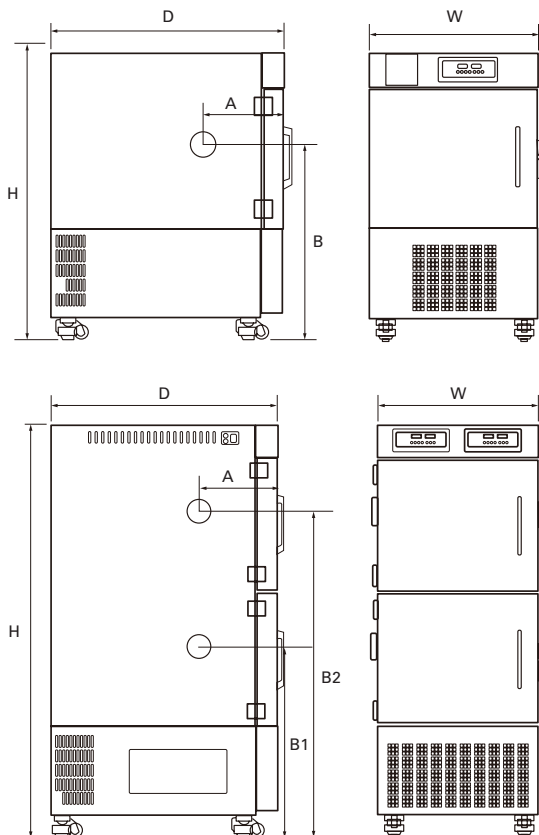
with 2EA wire shelves (standard)  
per chamber



## 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 (Ø, 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 LCH-11	LCH-21G LCH-21	LCH-31G LCH-31
W (mm / inch)	740 / 29.1	740 / 29.1	840 / 33.1
D (mm / inch)	1032 / 40.6	1032 / 40.6	1212 / 47.7
H (mm / inch)	1280 / 50.4	1630 / 64.2	1800 / 70.9
A (mm / inch)	355 / 14	355 / 14	445 / 17.5
B (mm / inch)	845 / 33.3	1050 / 41.3	1155 / 45.5

## Dimension

Model	LCH-11G-2C
	LCH-11-2C
W (mm / inch)	740 / 29.1
D (mm / inch)	1032 / 40.6
H (mm / inch)	1900 / 74.8
A (mm / inch)	355 / 14
B1 (mm / inch)	875 / 34.4
B2 (mm / inch)	1495 / 58.9

## Accessories Page 330

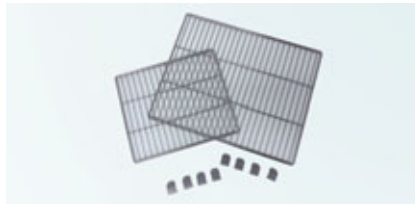
Cable Port, Shelves, Recorder

# 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.

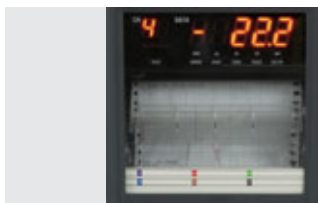


## LC GreenBox

- 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))

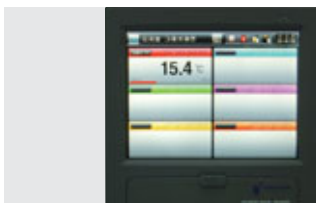
Model	Standard	Cable Port ø50	Cable Port ø80	Wire Shelf	Perforated Shelf	Viewing Window	Signal Lamp
TC3-KE-025	ø50 Cable Port	AAA8T610	N/A	00RTD0000679	AAA80602-6	N/A	AAA80550
TC3-KE-065	ø50 Cable Port	AAA8T610	AAA8T611	00RTD0000680	AAA80602-7	N/A	AAA80550
TC3-KE-100	ø50 Cable Port	AAA8T610	AAA8T611	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.



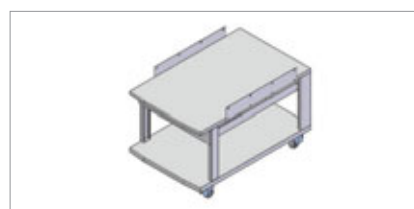
#### Hour Meter

- 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.

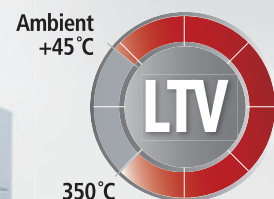
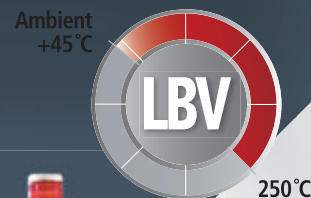


#### Stand (2 Stage)

- 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

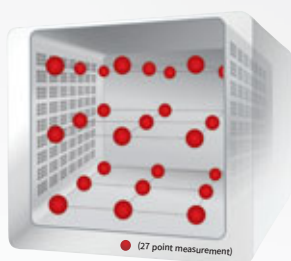
Air into Intake maintains precise control while supplying circulatory fresh air throughout the heater.

### > Excellent chamber structure with sealing and insulation

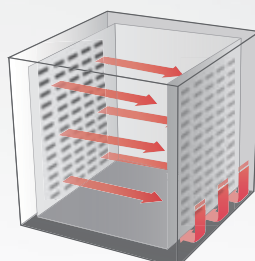
Excellent insulation and sealing to minimize energy loss and reduce test costs.

### > Model provided based on temperature range and capacity

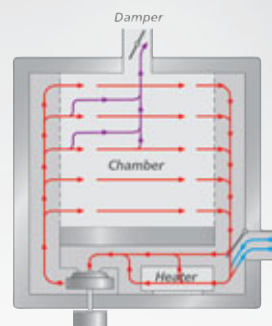
10 standard models up to 350°C and 1000L.  
Customized model can be provided according to user requirements.



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

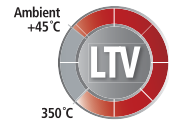
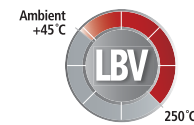
**Suitable for test of temperature feature such as heat treatment and drying.**

## 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.

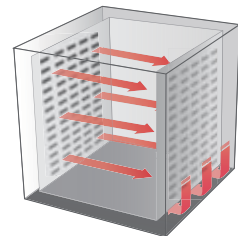
## Structural Functional Features

- 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.



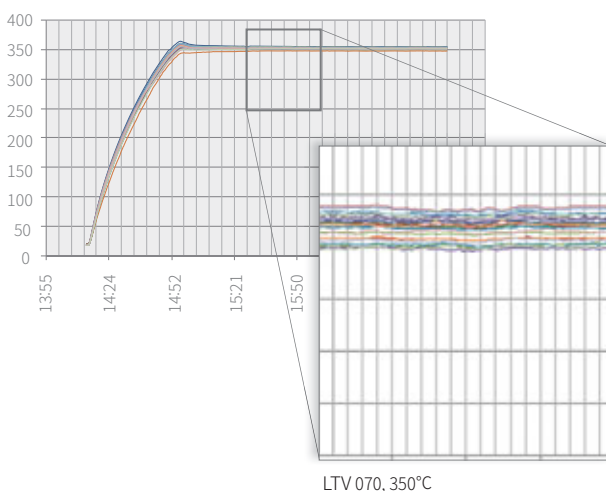
### LTV-012

with Wire Shelves 2ea (standard)  
Recorder (option)

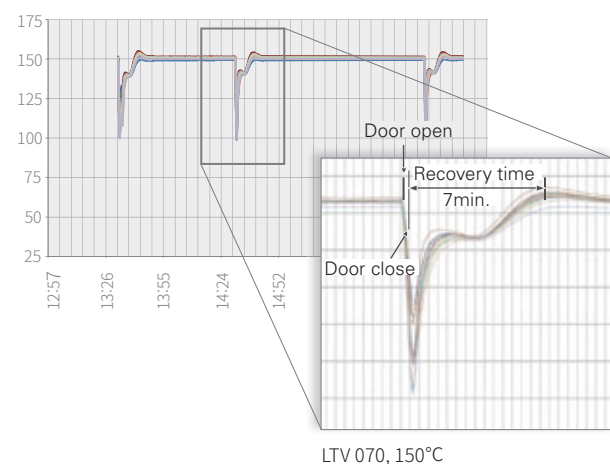


Uniform horizontal air flow

### 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.



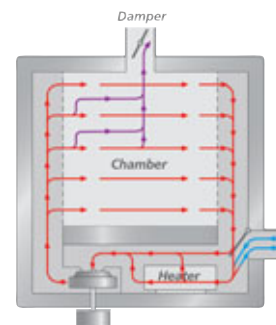
## Use Convenience Features

- 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.

## 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>										
<b>Range (intake/damper 100% close, °C / °F)</b>	Amb.+45 ~ 250 / Amb.+81 ~ 482					Amb.+45 ~ 350 / Amb.+81 ~ 662				
<b>Range (intake/damper 100% open, °C / °F)</b>	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>										
<b>Air change rate (approx, x/h)</b>	213	266	173	233	193	213	266	173	233	193
<b>Air circulation (approx, x/h)</b>	374	590	294	348	220	374	590	294	348	220
<b>Exhaust air volume flow (approx, L/min)</b>	380	1240	1400	1910	1560	380	1240	1400	1910	1560
<b>Air flow velocity (m/s)</b>	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				
<b>Cat. No.</b>	AAHK1011K	AAHK1021K	-	-	-	AAHK2011K	-	-	-	-
Electrical requirement (230V, 50Hz, 1P, A)	14	21.3				27.6				
<b>Cat. No.</b>	AAHK1012K	AAHK1022K	-	-	-	AAHK2012K	-	-	-	-
Electrical requirement (380V, 50Hz, 1P, A)			9.4	12	14.2		13.9	18.5	23.4	27.9
<b>Cat. No.</b>	-	-	AAHK1038K	AAHK1048K	AAHK1058K	-	AAHK2028K	AAHK2039K	AAHK2048K	AAHK2058K

1) According to IEC 60068-3-5

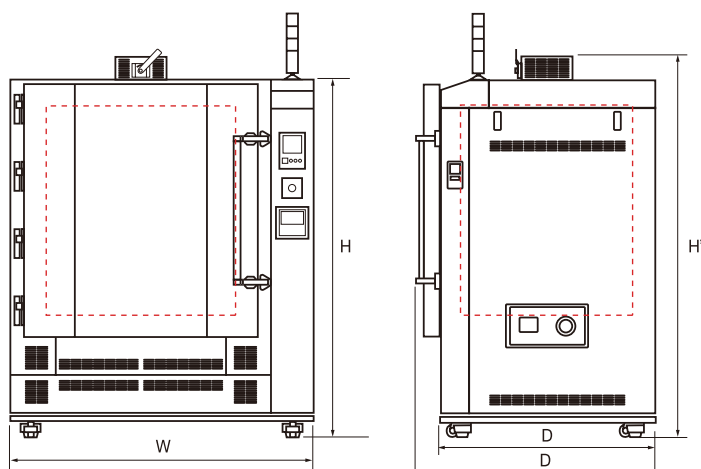
2) According to DIN 12880

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)

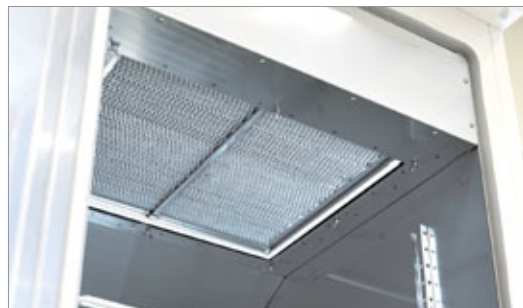
### ▮ Outstanding Safety

- 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

Specification			Max. 200°C		Max. 300°C	
Model	Basic Controller		OFC-20	OFC-40	OFC-20H	OFC-40H
	Program Controller		OFC-20P	OFC-40P	OFC-20HP	OFC-40HP
Chamber volume (L / cu ft)			200 / 7.1	400 / 14.1	200 / 7.1	400 / 14.1
Temperature	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
Dimensions	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
Electrical requirements (230V, 50/60Hz, 1P, A)			12.0	-	-	-
Cat No.	Basic Controller	Solid door	AAH171115K	-	-	-
		Window door	AAH171125K	-	-	-
	Program Controller	Solid door	AAH173115K	-	-	-
		Window door	AAH173125K	-	-	-
Electrical requirements (380V, 50Hz, 3P, A)			-	6.7	6.2	9.0
Cat No.	Basic Controller	Solid door	-	AAH171214K	AAH172114K	AAH172214K
		Window door	N/A	AAH171224K	AAH172124K	AAH172224K
	Program Controller	Solid door	-	AAH173214K	AAH174114K	AAH174214K
		Window door	-	AAH173224K	AAH174124K	AAH174224K

## Accessories

Model	OFC-20	OFC-40	OFC-20H	OFC-40H
	OFC-20P	OFC-40P	OFC-20HP	OFC-40HP
Viewing window	AAA17505	AAA17509	AAA17505	AAA17509
Perforated shelf	00RTD0001196			
Dot recorder	AAA8T500			
Thermal line recorder	AAAE1503			
Digital recorder	AAA8T505			
Digital differential pressure gauge	AAAB1571(Analog, OFC) 00STT0002793(Digital, OFC-P)			
HEPA filter	00STT0002792			

# APPENDIX

 **Lab Companion 2020-2021 Catalog**

A	
Acid/Corrosive Cabinet	210
Acid/Corrosive Cabinet-Small type	209
Arm Hood	191
Autoclave (Vertical Type)	170
Aspirator	172
Aspirator [Water jet type]	172
Electric Aspirator	172

B	
Baths & Circulator	22
Chiller	34
Cold Trap Bath	59
General Heating Bath	50
Heating Bath Circulator	26
Heating Bath Circulator, Programmable	26
Refrigerating & Heating Bath Circulator, Programmable	22
Shaking Water Bath	56
Thermal Bath	50
Thermal Bath Circulator	26
Ultrasonic Cleaner	174
Visible Bath	54
Water Bath	50
Water Bath Circulator	22, 26
Bench Top Fume Hood	188
Beaker	256
Blood Bank Refrigerator	248

C	
Cabinet	200
Acid/Corrosive Cabinet	210
Acid/Corrosive Cabinet-Small type	209
Carboy	259
Clean Bench	180
Ductless Fume Hood	186
Electrophoresis System	164
Low temperature Incubator	88~89
Laboratory Refrigerator	240

Laminar Flow Cabinet	180
Mini Incubator	84
PCR Workstation	183
Pharmacy Refrigerator	249
Filtering Storage Cabinet	214
UV Sterilization Cabinet	184
Cell Culture	
Clean Bench	180
Heating Shaker	161
Ice Pan & On-ice Rack	262
Incubator	82~90
Incubated Shaker	98~104
Low temperature Incubator	86~89
Laboratory Refrigerator	240
Laboratory Freezer	244
Mini Incubator	84
Plasma Freezer	250
Open-air Shaker	112~118
Stirrer	134~147
Rotator	120
Chamber	
Blood Bank Refrigerator	248
Environmental Test Chamber	272~299
Growth Chamber	90
Hybridization Oven	158
Incubator	82~91
Laboratory Refrigerator	240
Laboratory Freezer	244
Mini Incubator	84
Oven	64~76
Pharmacy Refrigerator	249
Pharmaceutical Stability Chamber	293
Plasma Freezers	250
Plant Growth Chamber	90
Temperature & Humidity Chamber	272~299
Temperature & Humidity Chamber, Dual	286
Chiller	
Chiller	34~42
Circulator	
Heating Bath Circulator	26
Heating Bath Circulator, Programmable	26

Refrigerated & Heating Bath Circulator	22
Refrigerating & Heating Bath Circulator, Programmable	22
Clean Bench	
Clean Bench	180
PCR Workstation	183
UV Sterilization Cabinet	184
Clean Oven, Class 100	338
Ultrasonic Cleaner	174
Cold Trap Bath	59

D	
Desiccator	230
Desiccator	230
Vacuum Desiccator (Cubic)	231
Vacuum Desiccator (Round)	231
Vacuum Desiccator (Cylindrical)	231
Drying	
Clean Ovens, Class 100	338
Forced Convection Oven, General	66
Forced Convection Oven, Programmable	64
Forced Convection Oven, Economy	70
Forced Convection Oven, Large	68
Forced Convection Oven, 4/2-chambers	71
Natural Convection Oven, General	72
Natural Convection Oven, Economy	74
Vacuum Oven	76
Ductless Fume Hood	186
Dry Cabinet	228

E	
Enclosure	
Clean Bench	180
Electrophoresis System	164
Hood	186~189
PCR Workstation	183

# Index

UV Sterilization Cabinet	184
Fume Hood-Small type	188
<b>Environmental Test (Chamber)</b>	
Clean Temperature & Humidity Chamber	299
Pharmaceutical Stability Chamber	293
Temperature & Humidity Chamber, Dual	286
Temperature & Humidity Chamber	272~299

<b>F</b>	
<b>Flask Support</b>	262
<b>Forced Convection</b>	66~70
Blood Bank Refrigerator	248
Clean Ovens, Class 100	338
Forced Convection Oven, Programmable	64
Forced Convection Oven, General	66
Forced Convection Oven, Economy	70
Forced Convection Oven, Large	68
Forced Convection Oven, 4-chambers	71
Laboratory Refrigerator	240
Laboratory Freezer	244
Low Temperature Incubator (IL3)	86
Low Temp. Incubator, 4-chamber	89
Low Temperature Incubator, Personal	88
Shaking Incubator	98~104
Pharmacy Refrigerator	249
Plant Growth Chamber	90
Plasma Freezers	250
<b>Freezer</b>	
Laboratory Freezer	244
<b>Fume Hood</b>	
Ductless Fume Hood	186
Fume Hood-Small type	188
<b>Funnel</b>	
Funnel Shaker	119
Furniture	200~220

Storage Cabinet	200~220
Filtering Storage Cabinet	214
<b>Furnace</b>	
Muffle Furnace	76

<b>G</b>	
<b>Gravity Convection</b>	
Natural Convection Oven, General	72
Natural Convection Oven, Economy	74
General Incubator	82
Economy Incubator	83
Low Temperature Incubator (IL3-A)	86
<b>Growth Chamber</b>	
Plant Growth Chamber	90

<b>H</b>	
<b>Heating</b>	
Bath	50~56
Bath Circulator	22~26
Heating Block	159
Heating & Cooling Block	160
Hotplate	131
Hotplate & Magnetic Stirrer	128
Incubator	82~90
Mini Incubator	84
Oven	64~76
Heating Shaker	159
Incubated Shaker	98~104
Temperature Chamber	304~338
<b>HEPA Filtered</b>	
Clean Bench	180
Clean Oven, Class 100	338
Clean Temperature & Humidity Chamber	299
Ductless Fume Hood	186
Arm Hood	191
PCR Workstation	183
<b>Hood</b>	
Arm Hoods	191

Clean Bench	180
Ductless Fume Hood	186
Fume Hood	180~191
Fume Hood-Small type	188
PCR Workstation	183
UV Sterilization Cabinet	184
<b>Hotplate</b>	
Hotplate	131
Hotplate & Magnetic Stirrer	128
<b>Humidity</b>	
Plant Growth Chamber	90
Temperature & Humidity Chamber	272~299

<b>I</b>	
<b>ICH (guideline) Chamber</b>	293
<b>Incubator</b>	82~90
Air-jacket Incubator	86
Bench Top Shaking Incubator	102
General Purpose Incubator	82~85
Low Temperature Incubator	86~89
Low Temperature Incubator, 4-chambers	89
Mini Incubator	84
Personal Low Temperature Incubator	88
Shaking Incubator	98~104
Shaking Incubator, Stackable type	98, 100
Shaking Incubator, Chamber type	98
Plant Growth Chamber	90

<b>M</b>	
<b>Magnetic</b>	
Hotplate & Magnetic Stirrer	128
Magnetic Stirrer	134
Multi-Position Magnetic Stirrer	134
<b>Medical Cooling</b>	
Blood Bank Refrigerators	248
Pharmacy Refrigerators	249
Plasma Freezers	250



<b>Mechanical Convection</b>	
Blood Bank Refrigerators	248
Clean Ovens, Class 100	338
Forced Convection Oven, Programmable	64
Forced Convection Oven, General	66
Forced Convection Oven, Economy	70
Forced Convection Oven, Large	68
Forced Convection Oven, 4/2-chambers	71
Laboratory Refrigerator	240
Laboratory Freezer	244
Low Temperature Incubator (IL3)	86
Low Temp. Incubator, 4-chambers	89
Low Temperature Incubator, Personal	88
Pharmacy Refrigerator	249
Plasma Freezers	250
Shaking Incubator	98~104
<b>Mixer</b>	
Overhead Stirrer	144~147
Vortex Mixer	154
<b>Muffle Furnace</b>	76

<b>N</b>	
<b>Natural Convection</b>	72
Natural(Gravity) Convection Oven, General	72
Natural(Gravity) Convection Oven, Economy	74
General Incubator	82
Economy Incubator	83
Low Temperature Incubator (IL3-A)	86
<b>Network</b>	12

<b>O</b>	
<b>Orbital Shaker</b>	
Open-air Shaker	112~128
Heating Shaker	161

Mini Shaker	116
Microplate Shaker	117
Shaking Incubator	98~104
<b>Oven</b>	
Clean Ovens, Class 100	338
Forced Convection Oven	64~71
Forced Convection Oven, 4/2-chambers	71
Gravity Convection Oven	72
High Temperature Oven	68
Hybridization Oven	158
Large Forced Convection Oven	68
Mechanical Convection Oven	64~71
Natural Convection Oven	72
Temperature Chamber	304~338
Vacuum Oven	76
<b>Overhead Stirrer</b>	144~147

<b>P</b>	
<b>PCR</b>	
PCR Workstation	183
UV Sterilization Cabinet	184
Pharmaceutical Stability Chamber	293
Pharmacy Refrigerator	249
<b>Plant Growth Chamber</b>	90
<b>Plasma Freezer</b>	250
<b>Plasticware</b>	
Beaker	257~258
Flask Support	262
Cryo Box	260
Storage Box	260
Tubing connector	264
<b>Pump</b>	172
Aspirator	172
Rotary Vacuum Pump	172

<b>R</b>	
<b>Reciprocating Shaker</b>	112
Open-air Shaker	112~118
Funnel Shaker	119

Reciprocating Shaking Bath	56
Shaking Heating Bath	56
Shaking Incubator	98~104
Recirculating Cooler	34~42
<b>Refrigerated</b>	
<b>Laboratory Refrigerator</b>	
Low Temp. Incubator	86~89
Low Temp. Incubator, 4/2-chambers	89
Low Temp. Incubator, Personal	88
Refrigerated & Heating Bath Circulator	22
Refrigerating & Heating Bath Circulator, Programmable	22
Shaking Incubator	98~104
<b>Rocking Shaker</b>	118
<b>Rotary Vacuum Pump</b>	172
<b>Rotator</b>	120

<b>S</b>	
<b>Safety</b>	
Flask Support	262
Ice Pan & On-ice Rack	262
<b>Shaker</b>	112~119
Open-air Shaker	112~118
Funnel Shaker	119
Heating Shaker	161
Mini Shaker	116
Mixer	128~154
Microplate Shaker	117
Orbital/Reciprocating Shaker	112
Reciprocating Shaking Bath	56
Rocking Shaker	118
Shaking Incubator	98~104
Shaking Water Bath	56
Waving Shaker	118
<b>Stirrer</b>	128~147
Magnetic Stirrer	134
Multi-Position Magnetic Stirrer	134
Hotplate & Magnetic Stirrer	128
Overhead Stirrer	144~147
Stirring Hotplate	128

# Index

T	
<b>Table top</b>	
Acid/Corrosive Cabinet-Small type	209
Bath	22~26, 50~59
Bath & Circulator	22, 26
Circulator	22, 26
Clean Bench (Vertical type Laminar Flow)	180
Desiccator	228~230
Electric Aspirator	170
Fume Hood-Small type	188
Heating Shaker	161
Hotplate Stirrer	128
Incubator	82~89
Magnetic Stirrer	134
Oven	64~76
Overhead Stirrer	144~147
Pump	170
Open-air Shaker	112~117
Shaking Incubator	98~104
Temperature Test Chamber	304~338
<b>Temperature &amp; Humidity Chamber</b>	
Temperature & Humidity Chamber	272~299
Temperature & Humidity Chamber, Dual	286
Clean Temperature & Humidity Chamber	338
Floor Standing Model	276~293
Table top	272
Pharmaceutical Stability Chamber	293
Plant Growth Chamber	90
<b>Thermal</b>	
Thermal Bath	50
Thermal Bath Circulator	26
<b>Tissue Culture</b>	
Freezer	244, 250
Heating Shaker	161
Ice Pan & On-ice Rack	262
Incubated Shaker	98~104
Incubators	82~89
Open-air Shaker	112~117
Stirrer	128~147

Mixer	128~154
Multi-Position Magnetic Stirrer	134
Orbital/Reciprocating Shaker	112
Overhead Stirrer	114~147
Rocking Shaker	118
Waving Shaker	118
<b>Tubing connector</b>	264

PCR Workstation	183
UV Sterilization Cabinet	184

U	
<b>Ultrasonic</b>	174
Ultrasonic Cleaner	174

V	
<b>Vacuum</b>	
Cold Trap Bath	59
Electric Aspirator	170
Desiccator	228~230
Oven	66~76
Pump	170
Rotary Pump	170
<b>Viscosity</b>	
Visible Bath	54
<b>Vortex Mixer</b>	154

W	
<b>Washer</b>	
Ultrasonic Cleaner	174
<b>Water Bath</b>	
Chiller	34~42
Circulator	22, 26
General Bath	50
Shaking Water Bath	56
Waving Shaker	118
<b>Workstation</b>	
<b>Bench Top Fume Hood</b>	
Clean Bench	180
Ductless Fume Hood	186
Fume Hood-Small type	188

# 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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