Lab
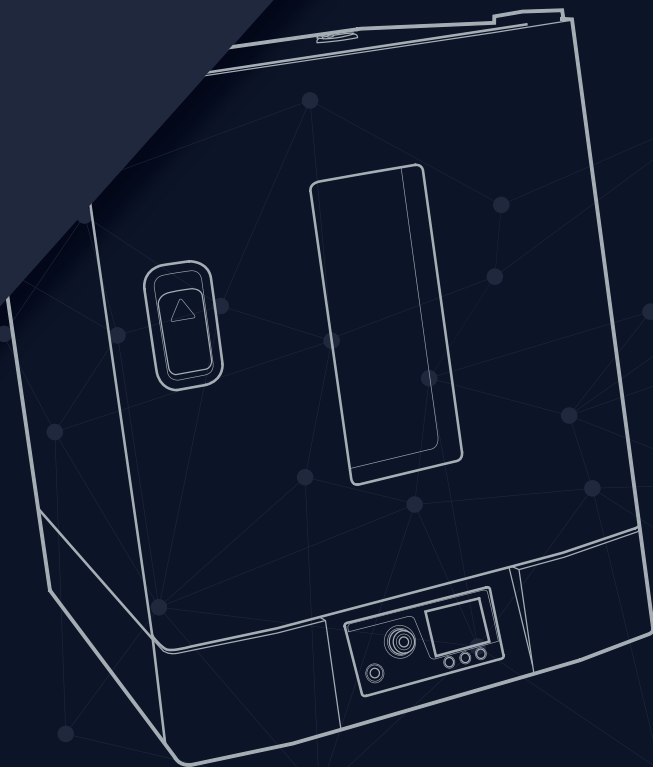## Companion

Since **1988,**

JEIO TECH offers reliable analytical solutions in the disciplines of biology, chemistry, medicine, pharmacology and so forth.

Our constant growth has been attributed to continuous management innovation, outstanding human resource cultivation, and advanced technological investments. As a result, we have built and expanded an extensive product line for areas in laboratory equipment, medical device, and environmental test equipment.

We promise to offer you differentiated solutions that help you make an impact in various research areas and make a positive difference for our world.

1988 to 1990

Company founded

Establishment of Jeio Tech Co., Ltd.

1991 to 2000

Growth and Consolidation

Business expansion to Environmental test equipment.

ISO 9001, CE, UL Certifications

Technology patents awarded in Korea and the USA

Establishment of Jeio Tech R&D Center

Launching of the Lab Companion brand

2001 to Now

Becoming a Global Player

Business expansion to lab essential

ISO 13485, CSA, RoHS, GD Certifications

Active participation in international exhibitions
• ACHEMA, PITTCON, ARAB LAB, ANALYTICA, MEDICA etc.

Strong worldwide network
• Lab Companion overseas branches in China, the USA, the UK,
  and Malaysia.
• More than 300 distributors and dealers worldwide.

Annual technical seminar and service training
Leading manufacturer of scientific and industrial instruments
• Leader of the Korean market and average 20% annual growth.
• Wide range of laboratory, industrial, medical products
  (thermal, refrigerating, pressurizing, shaking, humidity control,
  and cleaning conditions)

**The second high-tech manufacturing facility built in 2011 in
Daejeon Techno Valley, Korea.**

Lab
Companion

Best Products for RELIABLE RESULTS

One Stop Solution

Jeio Tech products are put through rigorous quality control from the most basic metal processing to final inspections. Based on over 29 years of technical experience in instrument manufacturing, our highly integrated team of engineers strive to deliver outstanding quality to our clients.
Our professional know-how will always keep our reputation as 'the primary partner for the customers research needs'.

International Standards & Certificates

CE, UL, CSA, RoHS, GD(Good Design Award)
Jeio Tech(Lab Companion) obtained ISO 9001, ISO 13485.
FDA establishment registered company.
FDA listed products.

Satisfactory Service

We also endeavor to enhance customer value through Customer-centered service to maintain the first choice of our customers.
Our ergonomically designed products minimize maintenance and mechanical issues.
Our worldwide service teams, made up of highly trained service engineers, are ready to provide you the best tailored customer service experience.

Global Leader 'Lab Companion'

Lab Companion is Jeio Tech's laboratory instrument brand. It has grown into an international brand thanks to its quality and service since 1989.
Our ultimate goal is to provide our clients with safe, high quality, and user-friendly products aimed at setting new standards for the global market.

Wide Product Range

Laboratory Equipment

Specialized and reliable laboratory equipment with accumulated professional know-how for over 29 years in laboratory equipment industry.

ISO 14644-1
DIN 12876 / DIN 12880
Heating / Cooling
Incubating / Filtering
Shaking / Stirring

Environmental Test Equipment

Reliable environmental test equipment designed and tested in accordance with the international standards.

IEC 60068-3-5 / DIN 12880
Temperature Chamber
Temperature & Humidity Chamber

Lab Essential

Various essential laboratory products for expending customers' selection range.

Plasticware
Consumable Goods
Accessory

Medical Device

Licensed medical equipment with precise temperature control and strict safety systems to meet the strict requirements of international standards.

ISO 13485 / DIN 58371 / DIN 58375 / DIN 58345
Blood Bank Refrigerator
Plasma Freezer
Pharmacy Refrigerator

Features at a glance

Performance

Jeio Tech Network Regardless of place and time, conveniently remote control of equipment through a mobile device(Android only). It is easy to establish Jeio Tech Network by Gateway or Software in your lab.

Three point Temp. Calibration Three point temperature calibration for increased accuracy and precise control.

Single point Temp. Calibration Single point temperature calibration for accuracy and precise control.

Speed Calibration Speed calibration for accuracy and precise control.

Agitator Patented agitator advances temperature stability by forming inner circulation.

One Mold Design Enables virtually no leakage and exceptional durability.

Diffusing Muffler Exclusive diffusing muffler structure forms high quality laminar flow.

Cartridge Chemical Filter The simplest way to purify chemicals or extract hazardous fumes.
It provides the best energy and space efficient filtering system.

Acid/Base Storage Optimally designed to store Acid/Base materials by durable and corrosion-resistant structure with efficient ventilation system.

Dual Defrost Efficient dual defrost system prevents frost formation. Auto-defrost system auto-activated on detecting amount of frost in the evaporator. Manual defrost operation for immediate frost removal.

500 rpm Highly competitive shaking speed with low vibration satisfying various application needs.

Best Effort Run Intelligently manages RPM to maintain operation even during workload is out of its capacity.

Lab Companion

Convenience

Computer Interface Convenient external control and data collection by connection to RS-232 or USB port. Optional RS-485 communication for operating multiple units.

Program Control Executes a segment group based on the user input value of temperature or humidity or speed or time.

Dual Timer
Wait on/off Timer : Select each mode or utilize both timer modes for convenient operation.

Temp-related Wait on/off Timer : Set timer to start immediately after timer set or only after reaching the set temp.

Color Touch Touch type color LCD controller enables intuitional control of various essential information.

Digital IN/OUT control Digital input and output function exchanges signals by interlocking external devices.

Smart Door System UV light, Fluorescent light and Blower operations are smartly interlocked with door opening.

Dual Display Located inside and outside of the workspace for user's convenience.

External Sensor Real time temp. sensing and displaying by accurate temperature probe.

External Controller Real time external monitor and control of the current operating condition without opening the door of the enclosure.

Level Indicator Bright LED fluid level indicator is easily identified in the front.

Safety

CLS-CS Custom Logical Safe Control System (Patent No. 0328729, 0397583)
Independent safety system to operate in environments that require perfect thermal safety. (CPU safety feature and logic controlling safety features)

CFC-free Refrigerant Eco-friendly HFC refrigerant use for protection of the ozone layer.

Over Temp. Protection Warning alarms and automatically power off against high temperature limit.

Low Fluid Level Warning alarms and automatically power off against low fluid level.

Auto Run Automatically runs unit after power recovery.

UV Cut Protects samples and users from UV exposure.

Backup Controllers Two temperature backup controllers are designed to counteract any failure.

Auto Dial System Auto-dialing remote alarm alerts abnormal temp. change or power failures.

Deviation Warning Warning alarms when there is a gap between set value and actual value.

Stalled Platform Check Warning alarms for stalled platform caused by foreign substances to shaking system.

Hot top warning indicator Warning indicator blinks when the top plate temperature is over 50 .
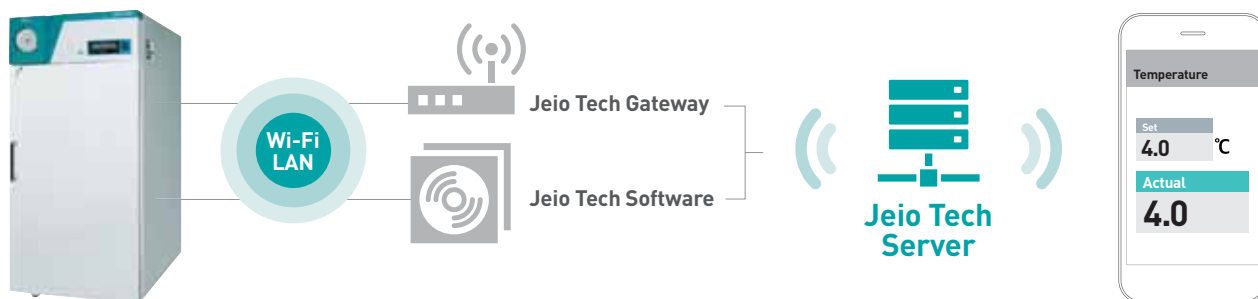
Network
Jeio Tech

Do you want to remote control equipment through a mobile device* ?

Regardless of time and place, you can simply monitor real-time status of equipment in your laboratory.

* Currently Android is only available.

Lab Companion

Jeio Tech Network

Wi-Fi LAN

Jeio Tech Gateway

Jeio Tech Software

Jeio Tech Server

Temperature

Set
4.0 ℃

Actual
4.0

Jeio Tech Gateway	- No computer use required.
	- Monitor through mobile app.
	  (JeiotechsoftM-Android only)
	- Max. 4 units connected by RS-232.
	- Optional purchase.
		Jeio Tech Software	- Test record storage.
			- Monitor through computer monitoring software
			  (Jeiotechsoft) and mobile app (JeiotechsoftM-Android only).
			- Various units connected by USB or RS-232.
			  Max. 255 units are available with use of USB hub.
			- Jeio Tech Network-compatible models come with
			  software CD and cable.

Great Compatibility

You can monitor single unit or various units at once by configuring Jeio Tech Network.
Below models are compatible with Jeio Tech Network.
* In case of overhead stirrers(MSH, MSD), Jeio Tech Network is available by only using computer monitoring software (Jeiotechsoft).

Baths & Circulators
CW3 | CW3-P
RW3 | RW3-P

Filtering Storage Cabinets
FSC

Incubated Shakers
IL3 | IL3-A   ISF | ISF-R
IST | IST-R   ISS | ISS-R

Ovens
OF-P
OF3 | OF3-P/H/HP
OFC | OFC-P/H/HP

Chillers
HS | HS-H
HS | HS-H

Shakers
OS

Overhead Stirrers
MSD | MSH

Contents

21 sections with 250 reliable products

The contents of this catalogue are based on the following conditions unless otherwise specified:

Products without refrigerators.
- Under room temperature of 25℃ and no load.
- Applicable operation temperature range: 15 to 40℃.

Products with refrigerators.
- Under room temperature of 20℃ and no load.
- Applicable operation temperature range: 18 to 30℃.
  Especially for Temperature Chambers or Temperature & Humidity Chambers, see P.184-245.

All specifications may be changed without prior notice subject to performance improvement.

Our website includes detailed information of all Jeio Tech products with up-to-date technical data.

Autoclaves (Vertical Type)

Microprocessor control with reliable safety functions guarantees optimum sterilization temperature.

ST-65G

Standard accessories • Baskets (2ea), Heater cover, Exhaust tank, Drain bucket

Optional accessories • Pressure sensor, Recorder
see page 13

Performance

• Microprocessor controller and temperature calibration function allows for high precision temperature control.
  - Sterilization temperature at 110 to 123°C
  - Melting* temperature at 60 to 100°C
    * Liquefaction of coagulated agar media.

• Automatic sterilization system for unattended operation.
  - Heating > Check safe > Sterilization > Sterilization safe
   > Exhausting > End

• Convenient operation modes for various uses.
  - Standard modes and program modes are listed in detail as below tables.

• Temperature calibration function.

Standard modes	Temp. (°C)	Time (min.)
Decontamination	121	35
Solids sterilization	121	20
Liquids sterilization	121	15
Melting	100	30

Program modes	Temp. (°C)	Time (min.)
Sterilization 1	110 to 123	1 to 999
Sterilization 2	110 to 123	1 to 999
Liquid sterilization	110 to 123	1 to 999
Melting	60 to 100	1 to 999

Over Temp.

Convenience

• Conveniently monitored by an independent control display, sterilization process display, and pressure gauge.
  - VFD for visualization of temp, pressure (optional), timer, warning alert checks.
  - LED lamps for sterilization process check.
  - Easy pressure check with the standard gauge attached to the front.

• Vertical type autoclaves which allow for top loading are suitable for high volume sterilization.
  - Baskets are stackable two high or even more levels, which secure inside the chamber space requirements.

• Low-maintenance
  - The chamber is constructed of stainless steel which is superiorly resistant to corrosion.
  - Easy to replace silicone gasket.

• Convenient documentation with the optional data recorder.
  - Dot type recorder(6 point) allows for precise documentation.

Safety

• Mechanical safety devices
  - Over current protection.
  - Over temperature protection by automatic power cutoff.
  - Over pressure protection by automatic and manual safety valve.

• Safety warning systems
  - Over temperature warning.
  - Low temperature warning.
  - Low water level warning.
  - Low heat warning if the temperature does not reach the sterilization or melting temperature.
  - Sterilization fail warning if the operation is unexpectedly stopped during sterilization process.

• Slide opening door with plastic cover of low thermal conductivity prevents burns from the contact.

Model		ST-50G	ST-65G	ST-85G	ST-105G
Control		Microprocessor PID control			
Chamber volume (L / cu ft)		50 / 1.8	65 / 2.3	85 / 3.0	105 / 3.7
Temperature [1]	Sterilization temp. (/)	110 to 123 / 198 to 221.4			
	Melting temp. (/)	60 to 100 / 108 to 180			
Pressure	Sterilization at 121 (kg/cm^2)	1.1 to 1.2			
	Gauge range in analog (Mpa)	- 0.1 to 0.6			
Safety		Over temperature protector / Pressure safety valve / Over current protector			
		Warning alert (over temp. / low temp. / low heat / sterilization fail / low water level)			
Timer		0 to 999 min.			
Dimension	No. of baskets (standard / max.)	2 / 2	2 / 2	2 / 2	2 / 2
	Load per baskets (Kg / lbs)	10 / 22.0			
	Basket (ØxH) (mm / inch)	380x180 / 14.9x7.1	380x230 / 14.9x9.1	380x330 / 14.9x13.0	380x405 / 14.9x15.9
	Interior (WxH) (mm / inch)	400x458 / 15.7x18.0	400x558 / 15.7x21.9	400x758 / 15.7x29.8	400x908 / 15.7x35.7
	Exterior (W×D×H) (mm / inch)	624x672x870 / 24.6x26.5x34.2	624x672x971 / 24.6x26.5x38.2	624x672x1083 / 24.6x26.5x42.6	624x672x1233 / 24.6x26.5x48.5
	Exterior with exhaust tank (W×D×H) (mm / inch)	722x672x870 / 28.4x26.5x34.2	722x672x971 / 28.4x26.5x38.2	722x672x1083 / 28.4x26.5x42.6	722x672x1233 / 28.4x26.5x48.5
	Net weight (Kg / lbs)	94.5 / 208.3	99.5 / 219.4	104 / 229.3	110 / 242.5
Electrical requirements (230V, 50 / 60 Hz)		14.3A	14.3A	14.3A	21.3
Cat. No.		**AAHL1015K**	**AAHL1025K**	**AAHL1035K**	**AAHL1045K**

1) Technical data according to EN 554 / BS EN 285:1997.
  Permissible environmental conditions: temperature (5-40) and relative humidity (10-80%).
  FDA establishment registered company. FDA listed products.

Max. Loading Capacity of Erlenmeyer Flask				
Capacity ml, (O.D.xH, mm)	ST-50G (ea x floor)	ST-65G (ea x floor)	ST-85G (ea x floor)	ST-105G (ea x floor)
250 (82x132)	14x3	14x4	14x5	14x6
500 (101x176)	8x2	8x3	8x4	8x4
1000 (129x216)	5x2	5x2	5x3	5x3
2000 (160x268)	3x1	3x2	3x2	3x3

Max. Loading Capacity of Media Bottle				
Capacity ml, (O.D.xH, mm)	ST-50G (ea x floor)	ST-65G (ea x floor)	ST-85G (ea x floor)	ST-105G (ea x floor)
250 (70x143)	20x3	20x3	20x5	20x6
500 (86x181)	14x2	14x3	14x4	14x4
1000 (101x230)	8x1	8x2	8x3	8x3
2000 (136x265)	5x1	5x1	5x2	5x3

Accessories & Options

Cat. No.	Description	Suitable for
AAAL1501	Recorder set; Recorder (dot type, 6 point) with Temp. sensor	All models
AAAL1511	Pressure sensor (0~3.5 bar)	All models

Cat. No.	Description	Suitable for
ATC0002	Basket (stainless steel, Ø380x180mm)	ST-50G
ATC0003	Basket (stainless steel, Ø380x230mm)	ST-65G
ATC0004	Basket (stainless steel, Ø380x330mm)	ST-85G
ATC0126	Basket (stainless steel, Ø380x405mm)	ST-105G
AAAL1521	Exhaust Tank	All models
ATC0091	Drain Bucket (490x291x107mm)	All models

02

Baths & Circulators

- › Heating Baths
- › Shaking & Heating Baths
- › Viscometer Heating Baths
- › Heating Bath Circulators
- › Refrigerated & Heating Bath Circulators
- › Cold Trap Bath

General Applications

Heating Baths

Routine laboratory applications, Coliform determinations, Sample thawing, Bacteriological examinations, Microbiological assays, Cell cultivation.

Bath Circulators

External/Internal temperature control, Photometers, Refractometers, Polarimeters, Viscometers, Fermentors, Electrophoresis chambers, Chromatography columns, Rotary evaporators.

Product Name		Heating Baths (Economy)			Heating Baths (General)	Shaking & Heating Baths	Viscometer Heating Baths
Model		BW-B	BW-H (Dual)		BW3-G	BS	VB-G
Bath volume (L)		3.5, 11.5, 20	3.5, 11.5, 20	3.5 & 3.5, 3.5 & 11.5, 11.5 & 11.5, 11.5 & 20	3.5, 11.5, 20	17, 25, 37, 55	25, 40
Temp. control	Temp. range (/)	Amb. +7 to 100 / Amb. +12.6 to 212	Amb. +5 to 100 / Amb. +9 to 212		Amb. +7 to 100 / Amb. +12.6 to 212	Amb. +5 to 100 / Amb. +9 to 212	Amb. +5 to 150 / Amb. +9 to 302
	Temp. stability at 50 [1] (± /)	0.5 / 0.9	0.1 / 0.18		0.4, 0.3 / 0.72, 0.54	0.2 / 0.36	0.05, 0.1 (at 70) / 0.09, 0.18 (at 158)
Control	Timer	-	-		Wait on/off	Wait on/off	Wait on/off
	Auto-tuning	-	O		O	O	O
	Program function	-	-		-	-	-
	Computer interface	-	-		-	-	RS-232 port
	JeioTech network	-	-		-	-	-
Safety	Over temp. limit	O	O		O	O	O
	Low fluid level alarm	-	-		O	-	O
	Over current limit	O	O		O	O	O
	Auto-run (power failure)	-	-		O	O	O

1) Technical data according to DIN 12876.

Technical Benefits

› Performance

- Designed and tested in accordance with the international standard DIN 12876.

- Microprocessor PID control for precise temperature control.

- Temperature calibration and auto-tuning functions for optimizing the unit to the various test environment.

- Bath circulators are suitable for both internal and external bath environments.

- Programmable models are specially designed for satisfying convenient sophisticated control.
  - Intelligent program and scheduler.
  - Digital input and output control.

› Convenience

- Wide selection covers all of your application needs.
  - Temperature / Volume / Control type / Circulation.

- Easy maintenance design.
  - Rounded corners for easy cleaning.
  - Corrosion resistant, seamless, leak-proof, stainless steel interior bath.
  - Dirt-repellent external surface with power coating.

- User-friendly functions for easy operating.
  - Wait on/off dual timer.
  (except for BW-B and BW-H / CTB)
  - Three commonly used temperature memories.

- Intuitive touch LCD controller with easy icons and logical menus for easy operating.(for programmable models)

› Safety

- Patented CLS-CS
  (Custom Logical Safe Control System)
  - Protection against low fluid level and dry running.
  - Automatic power cut-off system against overheating.
  - Protection system by fuses against overcurrent.
  - Automatic run or Manual run after power interruption.

- Eco-friendly CFC-free refrigerant use
  (for refrigerated models)

Heating Bath Circulators (General)	Heating Bath Circulators (Programmable)	Refrigerated & Heating Bath Circulators (General)		Refrigerated & Heating Bath Circulators (Programmable)		Cold Trap Bath
CW3	CW3-P	RW3		RW3-P		CTB
5, 10, 20, 30	5, 10, 20, 30	5, 10, 20, 30		5, 10, 20, 30		4.8
Amb. +5 to 150 / Amb. +9 to 302	Amb. +5 to 150 / Amb. +9 to 302	-25 to 150 / -13 to 302	-35 to 150 / -31 to 302	-25 to 150 / -13 to 302	-35 to 150 / -31 to 302	Down to -40 / -40
0.05, 0.08 / 0.09, 0.14	0.05, 0.08 / 0.09, 0.14	0.05 / 0.09		0.05 / 0.09		-
Wait on/off	Wait on/off	Wait on/off		Wait on/off		-
O	O	O		O		-
-	O	-		O		-
RS-232 port, USB port	RS-232 port, USB port	RS-232 port, USB port		RS-232 port, USB port		-
O	O	O		O		-
O	O	O		O		O
O	O	O		O		-
O	O	O		O		O
O	O	O		O		-

Heating Baths (Economy-Analog)

Economical water baths for optimal temperature control.

BW-10B
with optional transparent PP gable cover, Test tube rack

Optional accessories
see page 30-31
- Open-ring covers
- Spring wire racks
- Half-shelf adjusters

Performance
- Temperature range from ambient +7 to 100 .
- On/off temperature control.

Convenience
- Simple and quick control panel.
- Corrosion-resistant stainless steel construction allowing other bath fluids as well as water and silicone fluids.
- Low-profile design with sloped control panel for easier access and better safety.
- Variety of accessories are available to meet application demands.

Safety
- Isolated design of heater, and sensor by a baffle plate to protect users and samples against direct contact.
- Complete safety protection system with warning alarms.
  - Over-temperature, over-current protection.
- Splash-proof keypad.

Wide selection of accessories

Simple and quick control

Model	BW-05B		BW-10B		BW-20B	
Bath volume (L / cu ft)	3.5 / 0.1		11.5 / 0.4		20 / 0.7	
Working temperature range (/)	Amb. +7 to 100 / Amb. +12.6 to 212					
Temperature stability [1] (± /)	0.5 / 0.9					
Dimension — Bath opening / depth (W×L, D) (mm / inch)	240×136, 115 / 9.4×5.4, 4.5		300×240, 165 / 11.8×9.5, 6.5		498×300, 165 / 19.6×11.8, 6.5	
Dimension — Exterior (W×L×H) (mm / inch)	303×242×245 / 11.9×9.5×9.6		357×330×290 / 14.1×13×11.4		564×392×290 / 22.2×15.4×11.6	
Dimension — Net weight (kg / lbs)	6.5 / 14.3		10 / 22		18.5 / 40.8	
Electrical requirements (230V)	60Hz, 3A	50Hz, 3A	60Hz, 4.3A	50Hz, 4.3A	60Hz, 8.7A	50Hz, 8.7A
Cat. No.	AAH46011K	AAH46012K	AAH46021K	AAH46022K	AAH46031K	AAH46032K
Electrical requirements (120V)	60Hz, 5.8A		60Hz, 8.3A		60Hz, 8.3A	
Cat. No.	AAH46013U		AAH46023U		AAH46033U	

1) Technical data according to DIN 12876. (bath fluid : water at 50)
   FDA establishment registered company. FDA listed products.

Lab Companion
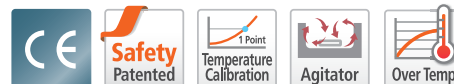
Performance

- Temperature range from ambient +5 to 100 .
- Microprocessor PID control / Automatic tuning / Calibration.
- Powerful circulation system using our patented agitator.

Convenience

- Two independently controlled reservoirs merged into a single unit for space saving. (for Dual models)
- Corrosion-resistant stainless steel construction allowing other bath fluids as well as water and silicone fluids.
- Digital LED displays with quick adjustable dial knob. (0.1 resolution)
- Low-profile design with sloped control panel for easier access and better safety. Also side handles for easy transport.

Safety

- Isolated design of heater, and sensor by a baffle plate to protect users and samples against direct contact.
- Complete safety protection system with warning alarms.
  - Over-temperature, over-current protection.
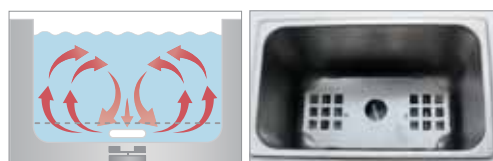- Keypad lock function prevents accidental changes.

Economical, digital heating baths.
Model selection between single and dual baths.

BW-10H / BW-0510H
with optional accessories

Optional accessories
see page 30-31

- Transparent PP gable covers
- Test tube racks, Open-ring covers

Powerful circulation by built in agitator

Accurate value setting and display

Digital Model		BW-05H	BW-10H	BW-20H
Bath volume (L / cu ft)		3.5 / 0.1	11.5 / 0.4	20 / 0.7
Working temperature range (/)		Amb. +5 to 100 / Amb. +9 to 212		
Temperature stability [1] (± /)		±0.1 / 0.18		
Dimension	Bath opening / depth (W×L, D) (mm / inch)	240×136, 150 / 9.4×5.4, 5.9	300×240, 200 / 11.8×9.5, 7.9	498×300, 200 / 19.6×11.8, 7.9
	Exterior(W×L×H) (mm / inch)	307×216×266 / 12.1×8.5×10.5	364×316×318 / 14.3×14.4×12.5	564×372×318 / 22.2×14.6×12.5
	Net weight (kg / lbs)	6.5 / 14.3	9.5 / 21	15.5 / 34.2
Electrical requirements (230V, 50 / 60Hz)		3.0A	4.3A	8.7A
Cat. No.		AAH45115K	AAH45125K	AAH45135K
Electrical requirements (120V, 60Hz)		5.8A	8.3A	8.3A
Cat. No.		AAH45113U	AAH45123U	AAH45133U

Dual Model		BW-0505H	BW-0510H	BW-1010H	BW-1020H
Bath volume (L / cu ft)		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
Working temperature range (/)		Amb. +5 to 100 / Amb. +9 to 212			
Temperature stability [1] (± /)		±0.1 / 0.18			
Dimension	Bath opening / depth (W×L, D & W×L, D) (mm / inch)	240×136, 150per chamber	240×136, 150 & 300×240, 200	300×240, 200 per chamber	300×240, 200 & 498×300, 200
		9.4×5.4, 5.9 per chamber	9.4×5.4, 5.9 & 11.8×9.5, 7.9	11.8×9.5, 7.9 per chamber	11.8×9.5, 7.9 & 19.6×11.8, 7.9
	Exterior (W×L×H) (mm / inch)	590×216×265 / 23.2×8.5×10.4	544×316×318 / 21.4×12.4×12.5	706×300×318 / 27.8×11.8×12.5	844×372×318 / 33.2×14.6×12.5
	Net weight (kg / lbs)	9.7 / 21.3	12.4 / 27.3	14 / 30.8	17.6 / 38.7
Electrical requirements (230V, 50 / 60Hz)		3 & 3A	3 & 4.3A	4.3A & 4.3A	4.3A & 8.7A
Cat. No.		AAH47115K	AAH47125K	AAH47135K	AAH47145K
Electrical requirements (120V, 60Hz)		5.8A & 5.8A	5.8A & 8.3A	8.3A & 8.3A	8.3A & 8.3A
Cat. No.		AAH47113U	AAH47123U	AAH47133U	AAH47143U

1) Technical data according to DIN 12876. (bath fluid : water, using agitator at 50)
   FDA establishment registered company. FDA listed products.

CE | Safety Patented | 1 Point Temperature Calibration | Dual Timer | Over Temp. | Low Level | Auto Run

Outstanding temperature control water baths for diverse applications.

Performance

- Temperature range from ambient +7 to 100 .
- Microprocessor PID control.
- Temperature calibration / Automatic tuning / Automatic run.

Convenience

- User friendly control panel
  - Bright VFD with membrane touch switch and control knob.
- Side handles for easy transportation.
- Dual wait on/off timer modes. (1 min. to 99 hr. 59 min.)
- Convenient memory function of up to three frequently set temperature.
- Corrosion-resistant stainless steel construction allowing other bath fluids as well as water and silicone fluids. Easy access drain valve for convenient handling.
- Low-profile design with sloped control panel for easier access and better safety.

Safety

- Isolated design of heater, and sensor by a baffle plate to protect users and samples against direct contact.
- Complete safety protection system with warning alarms.
  - Low fluid level and dry-running, over-temperature, over-current.
- Control lock function prevents accidental changes during operation.
- Splash-proof keypad.

BW3-05G

Optional accessories see page 30-31

- Open-rings covers, Test tube racks
- Spring wire racks, Half-shelf adjusters

User friendly control

Model	BW3-05G	BW3-10G	BW3-20G
Bath volume (L / cu ft)	3.5 / 0.1	11.5 / 0.4	20 / 0.7
Working temperature range (/)	Amb. +7 to 100 / Amb. +12.6 to 212		
Temperature stability [1](± /)	0.4 / 0.72	0.3 / 0.54	0.3 / 0.54
Dimension — Bath opening / depth (W×L, D) (mm / inch)	240×136, 150 / 9.4×5.4, 5.9	300×240, 200 / 11.8×9.5, 7.9	498×300, 200 / 19.6×11.8, 7.9
Dimension — Exterior (W×L×H) (mm / inch)	307×200×264 / 12.1×7.9×10.4	360×300×294 / 14.2×11.8×11.6	564×356×294 / 22.2×14×11.6
Dimension — Net weight (kg / lbs)	6.5 / 14.3	10 / 22	18.5 / 40.8
Electrical requirements (230V, 50 / 60Hz)	3A	4.3A	8.7A
Cat. No.	AAH41305K	AAH41315K	AAH41325K
Electrical requirements (120V, 60Hz)	5.8A	8.3A	8.3A
Cat. No.	AAH41306U	AAH41316U	AAH41326U

1) Technical data according to DIN 12876. (bath fluid : water at 50)
   FDA establishment registered company. FDA listed products.

CE | Safety Patented | 1 Point Temperature Calibration | Dual Timer | Over Temp. | Auto Run

Performance

- Temperature range from ambient +5 to 100 .

- Reciprocating shaking up to 180rpm while maintaining uniform temperature.

- Microprocessor PID control / Temperature calibration / Automatic tuning / Automatic run.

- Separate control keys for shaker mechanism allows the unit also to be used as heating bath.

Convenience

- Multiple LED displays (0.1 and 1 rpm resolution) for various values.

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

- Minimal shock to the samples thanks to the shaker's gentle feature.

- Spring wire rack is easy to equip and the height of the rack is easily adjustable.

- Gable cover minimizes of the liquid loss and prevents dripping of the bath liquid into the samples.

- Silent and anti-vibration BLDC motor.

- SUS 304 spring wire rack (two tier rack with flexible crossed spring) provides various ways of glassware settings.

Safety

- Isolated design of agitator, heater, and sensor by a baffle plate to minimize the turbulence in the bath fluid and also to protect users and samples against direct contact.

- Complete safety protection system with warning alarms.
  - Over-temperature, over-current protection.

Specially designed inner gable cover
for protection of sample contamination

Reciprocal shaking & heating baths.

Ideal for sample incubation conditions for DNA, tissue, or cell culture applications.

BS-31

Standard accessories
- Stainless steel gable cover
- Spring wire rack

Optional accessories
see page 29
- Universal platforms
- Dedicated platforms, Flask clamps

Baths & Circulators

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
Working temperature range (/)		Amb. +5 to 100 / Amb. +9 to 212			
Temperature stability [1] (± /)		0.2 / 0.36			
Shaking system	Motion / Speed range (rpm)	Reciprocating / 20 to 180			
	Recip stroke length (mm / inch)	30 / 1.2 (25, 35 / 1.0, 1.4 available)			
Dimension	Bath opening /depth (W×L, D) (mm / inch)	199×300, 235 / 7.8×11.8, 9.3	319×300, 235 / 12.6×11.8, 9.3	479×300, 235 / 18.9×11.8, 9.3	629×350, 235 / 24.8×13.8, 9.3
	Exterior (W×L×H) (mm / inch)	430×440×355 / 16.9×17.3×14	550×440×355 / 21.7×17.3×14	710×440×355 / 28×17.3×14.3	860×490×355 / 33.9×19.3×14
	Net weight (kg / lbs)	26 / 57	30 / 66	35 / 77	42 / 93
Electrical requirements (230V, 60Hz)		3.7A	4.6A	8.9A	8.9A
Cat. No.		AAH44061K	AAH44111K	AAH44211K	AAH44311K
Electrical requirements (230V, 50Hz)		3.7A	4.6A	8.9A	8.9A
Cat. No.		AAH44062K	AAH44112K	AAH44212K	AAH44312K
Electrical requirements (120V, 60Hz)		7.1A	8.8A	-	-
Cat. No.		AAH44063U	AAH44113U		

1) Technical data according to DIN 12876. (bath fluid : water at 50)
FDA establishment registered company. FDA listed products.

Viscometer Heating Baths

CE | Safety Patented | Computer Interface | Temperature Calibration 1 Point | Dual Timer | Over Temp. | Low Level | Auto Run

Ultra precise temperature control with excellent visibility.

VB-40G

Standard accessories
- Stainless steel covers for holes on the top
- Cooling coil

Optional accessories
see page 31
- Viscometer tube holdersl
- Cooling Circulators

Performance
- Temperature range from ambient +5 to 150 .
- Microprocessor PID control / Temperature calibration / Automatic tuning / Automatic run.
- Optimal temperature equilibrium achieved by a vane type stirrer with strong circulation power.

Convenience
- Easy readout digital LED displays.
  (0.01 resolution at 0 to 99.9 / 0.1 resolution at 100 to 150)
- Dual wait on/off timer modes. (1 min. to 99 hr. 59 min.)
- Convenient memory function of up to three frequently set temperature.
- Clear visibility provided by double tempered safety glass windows in front and rear sides.
- Operations at below or slightly above ambient temperature allowed by stainless steel cooling coil.
  (for operation from 10 , use an optional cooling circulator)
- Ø 51mm holes (for glass capillary viscometer tubes) and a Ø12.6 mm hole. (for a thermometer)
- RS-232 interface for external control and data collection.

Safety
- Isolated design of agitator, heater, and sensor by a baffle plate to minimize the turbulence in the bath fluid and also to protect users and samples against direct contact.
- Complete safety protection system with warning alarms.
  - Low fluid level and dry-running, over-temperature, over-current.
- Keypad lock function prevents accidental changes.

Ideal for application requiring high visibility

Easy holding of U-shaped viscometer glass tubes (optional)

Model	VB-25G		VB-40G	
Bath volume (L / cu ft)	25 / 0.9		40 / 1.4	
Working temperature range[2] (/)	Amb. +5 to 150 / Amb. +9 to 302			
Temperature stability [1] (± /)	0.05 / 0.09		0.1 / 0.18	
Dimension — Bath opening / depth (W×L, D) (mm / inch)	145×265, 330 / 5.7×10.4, 13		295×265, 330 / 11.6×10.4, 13	
Dimension — Cover lids / Hole for thermometer (mm)	5ea / ⌀51, 1ea / ⌀12.6		8ea / ⌀51, 1ea / ⌀12.6	
Dimension — Exterior (W×L×H) (mm / inch)	492×374×536 / 19.4×14.7×21.1		642×374×536 / 25.3×14.7×21.1	
Dimension — Net weight (kg / lbs)	28 / 61.7		37 / 81.6	
Electrical requirements (230V)	60Hz, 13A	50Hz, 13A	60Hz, 13A	50Hz, 13A
Cat. No.	AAH43301K	AAH43302K	AAH43401K	AAH43402K

1) Technical data according to DIN 12876. (bath fluid : water at 70)
2) If you want to operate the unit below Amb. + 5 , an optional cooling circulator is required.
   The lowest temperature when using an optional cooling circulator is 10 . For ordering information, see page 31.
   FDA establishment registered company. FDA listed products.

CE | Safety Patented | Computer Interface | 3 Points Temperature Calibration | Dual Timer | Over Temp. | Low Level | Auto Run | Deviation Warning

Performance

- Temperature range from ambient +5 to 150 .
- Microprocessor PID control.
- Three point temperature calibration / Automatic tuning / Automatic run.
- Accurate, stable, and efficient temperature management by using a powerful variable-speed pump. (1 to 3 steps of pump for internal circulation and 4 to 5 steps for external circulation)
- Powerful pump pressure and flow rate throughout the whole temperature range.

Convenience

- Bright VFD display with quick adjustable dial knob. (0.1 resolution)
- Dual wait on/off timer modes. (1 min. to 99 hr. 59 min.)
- Convenient memory function of up to three frequently set temperature.
- Corrosion-resistant, leak-proof, round-cornered, and easy-to-clean stainless steel bath with easy access drain valve.
- Built-in RS-232 port and USB port for external control and data collection.
- Side handles enables convenience handling and transport.

Safety

- Isolated design of agitator, heater, and sensor by a baffle plate to minimize the turbulence in the bath fluid and also to protect users and samples against direct contact
- Complete safety protection system with warning alarms.
  - Low fluid level and dry-running, over-temperature, over-current.
- Keypad lock function prevents accidental changes during operation.

External and internal circulation with powerful pumping capability

JeioTech Network | PV SV | **REMOTE CONTROL** with your **MOBILE DEVICE** see page 8-9

CW3-10

| **Standard accessories** | • Stainless steel flat cover
• Silicone rubber tubing (305mm length / 12mm inner dia.) |

| **Optional accessorie** see page 30-31 | • Test tube racks, Spring wire racks
• Gateway |

Pump Capacities
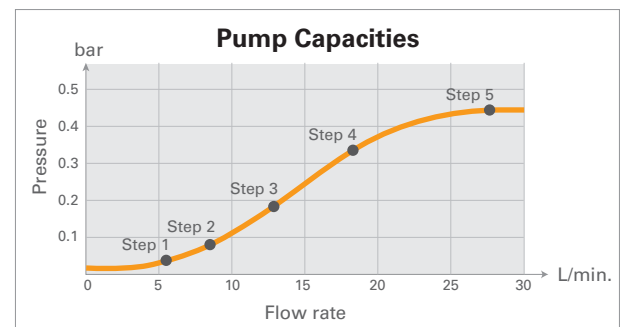
Bath fluid : Water at the normal temperature.

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
Working temperature range [2] (/)	Amb. +5 to 150 / Amb. +9 to 302			
Temperature stability [1] (± /)	0.05 / 0.09			0.08 / 0.144
Pump — Max. pressure	5.9 PSI (406.8 millibar)			
Pump — Max. flow rate	28 liters / minute (7.4 gallons / minute)			
Dimension — Bath opening / depth (W×L, D) (mm / inch)	150×99, 160 / 5.9×3.9, 6.3	211×154, 180 / 8.3×6.1, 7.1	290×214, 200 / 11.4×8.4, 7.9	300×264, 230 / 11.8×10.4, 9
Dimension — Exterior (W×L×H) (mm / inch)	228×395×424 / 8.9×15.6×16.7	289×450×444 / 11.4×17.7×17.5	368×510×464 / 14.5×20.1×18.3	378×560×494 / 14.9×22×19.4
Dimension — Net weight (kg / lbs)	12.5 / 27.6	15 / 33	17.5 / 38.6	19.5 / 43
Electrical requirements (230V, 50/60 Hz)	8.5A	8.5A	8.5A	8.5A
Cat. No.	**AAH52341K**	**AAH52351K**	**AAH52361K**	**AAH52371K**
Electrical requirements (120V, 60 Hz)	8.6A	8.6A	8.6A	8.6A
Cat. No.	**AAH52342U**	**AAH52352U**	**AAH52362U**	**AAH52372U**

1) Technical data according to DIN 12876. (bath fluid : water at 50)
2) If you operate the unit in 1 to 3 steps of pump, the temperature range can be from Amb. +5 but in 4 and 5 steps, the range will be from Amb. +15 .
   FDA establishment registered company. FDA listed products.

Highly intuitive user interface is insured by equipping the new smart programmable controller.

REMOTE CONTROL
with your **MOBILE DEVICE**
see page 8-9

JeioTech Network

CW3-P models

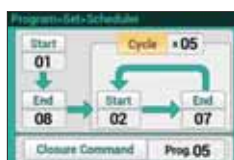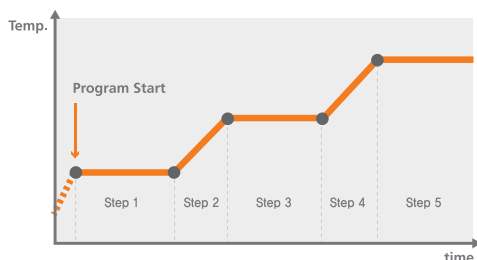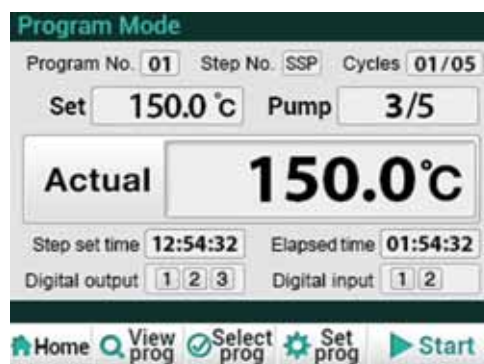|	
Standard accessories	• Stainless steel flat cover
	• Silicone rubber tubing (305mm length / 12mm inner dia.)
Optional accessories see page 30-31	• Test tube racks, Spring wire racks, Gateway

Intelligent program control

Convenient scheduler

Program view at a glance   Touch LCD Controller

Intelligent program control

- 10 programs available for temperature ramp up and dwell control.
- 10 steps per a program and 99 hours 59 minutes per a step.
- Stored programs are easily linkable.
- Programs can be repeated up to 99 cycles.
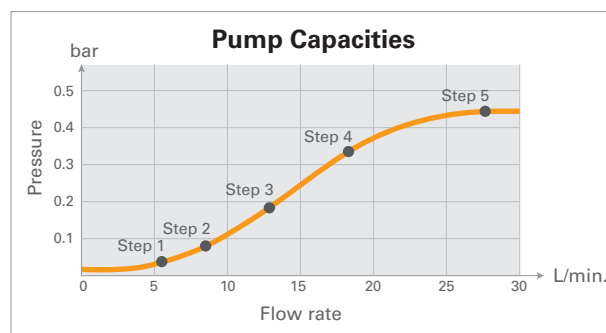- Pre-heating and heating time are settable before program starts.

Performance

- Temperature range from ambient +5 to 150.
- Microprocessor PID control.
- Three point temperature calibration / Automatic tuning / Automatic run.
- Accurate, stable, and efficient temperature management by using a powerful variable-speed pump. (1 to 3 steps of pump for internal circulation and 4 to 5 steps for external circulation)
- Powerful pump pressure and flow rate throughout the whole temperature range.

Convenience

- Intuitive touch screen LCD controller with easy icons and logical menus.
- Dual wait on/off timer modes. (1 min. to 99 hr. 59 min.)
- Digital input and output control function for interlocking external devices.
- Corrosion-resistant, leak-proof, round-cornered, and easy-to-clean stainless steel bath with easy access drain valve.
- Built-in RS-232 port and USB port for external control and data collection.
- Built-in casters and side handles for easy transport and installation.

Safety

- Isolated design of agitator, heater, and sensor by a baffle plate to minimize the turbulence in the bath fluid and also to protect users and samples against direct contact.
- Complete safety protection system with warning alarms. - Low fluid level and dry-running, over-temperature, over-current.
- Keypad lock function prevents accidental changes during operation.
- Splash-proof keypad.

Pump Capacities

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 at the normal temperature.

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
Working temperature range [2] (/)	Amb. +5 to 150 / Amb. +9 to 302			
Temperature stability [1] (± /)	0.05 / 0.09			0.08 / 0.14
Pump — Max. pressure	5.9 PSI (406.8 millibar)			
Pump — Max. flow rate	28 liters / minute (7.4 gallons / minute)			
Dimension — Bath opening / depth (W×L, D) (mm / inch)	150×99, 160 / 5.9×3.9, 6.3	211×154, 180 / 8.3×6.1, 7.1	290×214, 200 / 11.4×8.4, 7.9	300×264, 230 / 11.8×10.4, 9
Dimension — Exterior (W×L×H) (mm / inch)	228×395×424 / 8.9×15.6×16.7	289×450×444 / 11.4×17.7×17.5	368×510×464 / 14.5×20.1×18.3	378×560×494 / 14.9×22×19.4
Dimension — Net weight (kg / lbs)	12.5 / 27.6	15 / 33	17.5 / 38.6	19.5 / 43
Electrical requirements (230V, 50/60 Hz)	8.5A	8.5A	8.5A	8.5A
Cat. No.	AAH52741K	AAH52751K	AAH52761K	AAH52771K
Electrical requirements (120V, 60 Hz)	8.6A	8.6A	8.6A	8.6A
Cat. No.	AAH52742U	AAH52752U	AAH52762U	AAH52772U

1) Technical data according to DIN 12876. (bath fluid : water at 50)
2) If you operate the unit in 1 to 3 steps of pump, the temperature range can be from Amb. +5 but in 4 and 5 steps, the range will be from Amb. +15 .
   FDA establishment registered company. FDA listed products.

Rapid heating and cooling throughout the entire temperature range.
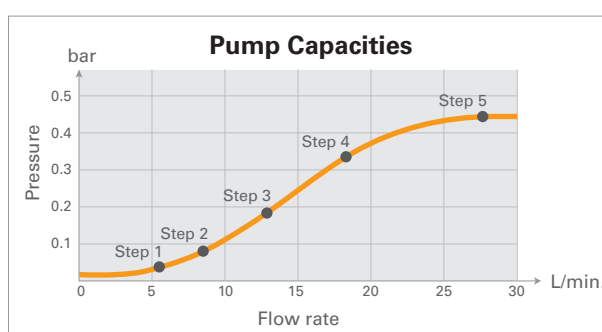
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Network

Pump Capacities

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 at the normal temperature.

RW3-2025

Standard accessories	• Stainless steel flat cover • Silicone rubber tubing (305mm length / 12mm inner dia.)
Optional accessories see page 30-31	• Test tube racks, Spring wire racks, Gateway

Easy maintenance of condenser by removable gridded vent

Condenser air-filter for refrigerating efficiency

Convenient side handles

CE | Safety Patented | Green CFC-Free | Computer Interface | Temperature Calibration | Dual Timer | Over Temp. | Low Level | Auto Run | Deviation Warning

Performance

- Temperature range.
  - RW3-35 models from -35 to 150 .
  - RW3-25 models from -25 to 150 .

- Optimum refrigeration system by Microprocessor PID control. Energy efficient refrigeration operation is available within full range of temperature control.

- Three point temperature calibration / Automatic tuning / Automatic run.

- Suitable for both internal and external bath environments due to reduced turbulence by using five-speed adjustable pump and built-in cooling Coil. (1 to 3 steps of the pump for internal circulation and 4 to 5 steps for external circulation)

Convenience

- Bright VFD display with quick adjustable dial knob. (0.1 resolution)

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

- Convenient memory function of up to three frequently set temperature.

- Corrosion-resistant, leak-proof, round-cornered, and easy-to-clean stainless steel bath with easy access drain valve.

- Detachable condenser air-filter for easy maintenance of refrigerating efficiency.

- CFC-free refrigerant (R-507, R-404A) and a double service valve for leakage prevention.

- Quick-release front grill for easy cleaning of the condenser.

- Built-in RS-232 port and USB port for external control and data collection.

- Side handles enables convenience handling and transport.

Safety

- Isolated design of agitator, heater, and sensor by a baffle plate to minimize the turbulence in the bath fluid and also to protect users and samples against direct contact.

- Complete safety protection system with warning alarms.
  - Low fluid level and dry-running, over-temperature, over-current.

- Keypad lock function prevents accidental changes during operation.

for temperature range from -25 to 150

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
Working temperature range (/)		-25 to 150 / -13 to 302			
Temperature stability [1] (± /)		0.05 / 0.09			
Cooling capacity [2] (bath fluid: ethanol)	at -20 (-4), W	140	180	310	465
	at 0 (+32), W	270	360	610	700
	at +20 (+68), W	400	560	850	980
	Refrigerator	1/3 LBP, R-507	1/3 LBP, R-507	1/2 LBP, R-404A	3/4 LBP, R-404A
Pump (bath fluid: water)	Max. pressure	5.9 PSI (406.8 millibar)			
	Max. flow rate	28 liters / minute (7.4 gallons / minute)			
Dimension	Bath opening / depth (W×L, D) (mm / inch)	150×99, 160 / 5.9×3.9, 6.3	211×154, 180 / 8.3×6.1, 7.1	290×214, 200 / 11.4×8.4, 7.9	300×264, 230 / 11.8×10.4, 9
	Exterior (W×L×H) (mm / inch)	308x480x733 / 12.1x18.9x28.9	366x532x780 / 14.4x20.9x30.7	386x602x825 / 15.2x23.7x32.5	446x662x895 / 17.6x26.1x35.2
	Net weight (kg / lbs)	38 / 83.8	44 / 97	60 / 132.2	67 / 147.7
Electrical requirements (230V, 60Hz)		11A	11A	12.5A	13.5A
Cat. No.		**AAH57041K**	**AAH57051K**	**AAH57061K**	**AAH57071K**
Electrical requirements (230V, 50Hz)		11A	11A	12.5A	13.5A
Cat. No.		**AAH57042K**	**AAH57052K**	**AAH57062K**	**AAH57072K**
Electrical requirements (120V, 60Hz)		12.6A	12.6A		
Cat. No.		**AAH57043U**	**AAH57053U**	-	-

for temperature range from -35 to 150

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
Working temperature range (/)		-35 to 150 / -31 to 302			
Temperature stability [1] (± /)		0.05 / 0.09			
Cooling capacity [2] (bath fluid: ethanol)	at -20 (-4), W	140	180	310	465
	at 0 (+32), W	270	360	610	700
	at +20 (+68), W	400	560	850	980
	Refrigerator	1/2 LBP, R-404A	1/2 LBP, R-404A	3/4 LBP, R-404A	1 LBP, R-404A
Pump (bath fluid: water)	Max. pressure	5.9 PSI (406.8 millibar)			
	Max. flow rate	28 liters / minute (7.4 gallons / minute)			
Dimension	Bath opening / depth (W×L, D) (mm / inch)	150×99, 160 / 5.9×3.9, 6.3	211×154, 180 / 8.3×6.1, 7.1	290×214, 200 / 11.4×8.4, 7.9	300×264, 230 / 11.8×10.4, 9
	Exterior (W×L×H) (mm / inch)	308x480x733 / 12.1x18.9x28.9	366x532x780 / 14.4x20.9x30.7	386x602x825 / 15.2x23.7x32.5	446x662x895 / 17.6x26.1x35.2
	Net weight (kg / lbs)	38 / 83.8	44 / 97	60 / 132.2	67 / 147.7
Electrical requirements (230V, 60Hz)		12.5A	12.5A	13.5A	14.5A
Cat. No.		**AAH57141K**	**AAH57151K**	**AAH57161K**	**AAH57171K**
Electrical requirements (230V, 50Hz)		12.5A	12.5A	13.5A	14.5A
Cat. No.		**AAH57142K**	**AAH57152K**	**AAH57162K**	**AAH57172K**

1) Technical data according to DIN 12876. (bath fluid : ethanol at -10)
2) The cooling capacity is measured under 230V / 60Hz electrical condition.
   FDA establishment registered company. FDA listed products.

Newly developed bath circulator with the intelligent programmable controller brings the best intuitive control performance to your laboratory.

REMOTE CONTROL with your **MOBILE DEVICE** see page 8-9
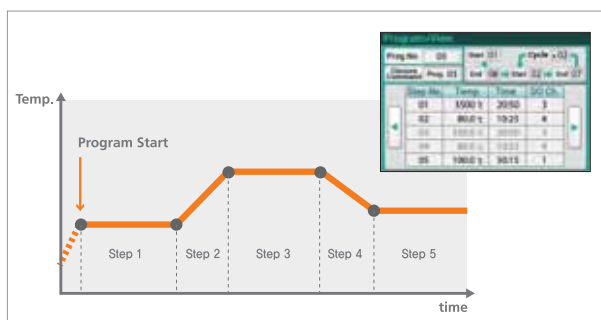
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Intelligent program control

· 10 programs available for temperature ramp up and dwell control.

· 10 steps per a program and 99 hours 59 minutes per a step.

· Stored programs are easily linkable.

· Programs can be repeated up to 99 cycles.

· Pre-heating and heating time are settable before program starts.

RW3-0525P

Standard accessories
· Stainless steel flat cover
· Silicone rubber tubing (305mm length / 12mm inner dia.)

Optional accessories
see page 30-31
· Suction function for pumps
· Test tube racks, Spring wire racks, Gateway
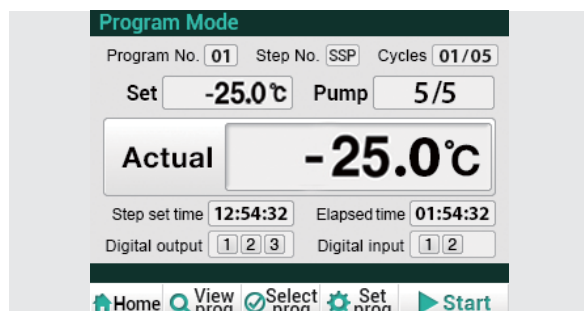
Touch LCD Controller
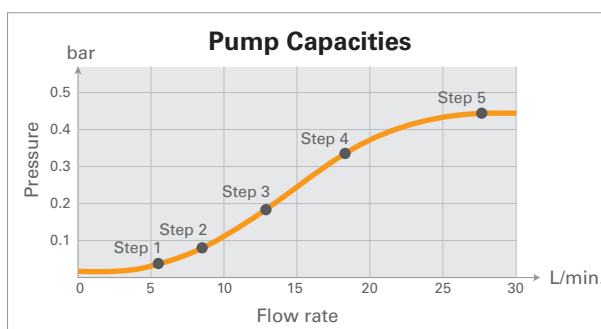
Pump Capacities

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 at the normal temperature.

CE | Safety Patented | Green CFC-Free | Computer Interface | Program | Color Touch | Digital IN/OUT | Temperature Calibration 3 Points | Dual Timer | Over Temp. | Low Level | Auto Run | Deviation Warning HI LOW

Performance

- Temperature range.
  - RW3-35P models from -35 ℃ to 150 ℃.
  - RW3-25P models from -25 ℃ to 150 ℃.

- Optimum refrigeration system by Microprocessor PID control. Energy efficient refrigeration operation is available within full range of temperature control.

- Three point temperature calibration / Automatic tuning / Automatic run.

- Suitable for both internal and external bath environments due to reduced turbulence by using five-speed adjustable pump and built-in cooling coil. (1 to 3 steps of the pump for internal circulation and 4 to 5 steps for external circulation)

Convenience

- Intuitive touch screen LCD controller with easy icons and logical menus.

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

- Digital input and output control function for interlocking external devices.

- Built-in RS-232 port and USB port for external control and data collection.

- Corrosion-resistant, leak-proof, round-cornered, and easy-to-clean stainless steel bath with front access drain valve.

- Detachable condenser air-filter for easy maintenance of refrigerating efficiency.

- Usage of CFC-free refrigerant (R-507, R-404A) and a double service valve for leakage prevention.

- Quick-release front grill for easy cleaning of the condenser.

- Built-in casters and side handles for easy transport and installation.

Safety

- Isolated design of agitator, heater, and sensor by a baffle plate to minimize the turbulence in the bath fluid and also to protect users and samples against direct contact.

- Complete safety protection system with warning alarms.
  - Low fluid level and dry-running, over-temperature, over-current.

- Keypad lock function prevents accidental changes during operation.

- Splash-proof keypad.

for temperature range from -25 ℃ to 150 ℃

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
Working temperature range (℃ / ℉)		-25 to 150 / -13 to 302			
Temperature stability [1] (± ℃ / ℉)		0.05 / 0.09			
Cooling capacity [2] (bath fluid: ethanol)	at -20 (-4 ℉), W	80	150	300	470
	at 0 (+32 ℉), W	230	270	420	630
	at +20 (+68 ℉), W	320	380	550	740
	Refrigerator	1/3 LBP, R-507	1/3 LBP, R-507	1/2 LBP, R-404A	3/4 LBP, R-404A
Pump (bath fluid: water)	Max. pressure	5.9 PSI (406.8 millibar)			
	Max. flow rate	28 liters / minute (7.4 gallons / minute)			
Dimension	Bath opening / depth (W×L, D) (mm / inch)	150×99, 160 / 5.9×3.9, 6.3	211×154, 180 / 8.3×6.1, 7.1	290×214, 200 / 11.4×8.4, 7.9	300×264, 230 / 11.8×10.4, 9
	Exterior (W×L×H) (mm / inch)	308×480×733 / 12.1×18.9×28.9	366×532×780 / 14.4×20.9×30.7	386×602×825 / 15.2×23.7×32.5	446×662×895 / 17.6×26.1×35.2
	Net weight (kg / lbs)	38 / 83.8	44 / 97	60 / 132.2	67 / 147.7
Electrical requirements (230V, 60Hz)		11A	11A	12.5A	13.5A
Cat. No.		AAH57641K	AAH57651K	AAH57661K	AAH57671K
Electrical requirements (230V, 50Hz)		11A	11A	12.5A	13.5A
Cat. No.		AAH57642K	AAH57652K	AAH57662K	AAH57672K
Electrical requirements (120V, 60Hz)		12.6A	12.6A		
Cat. No.		AAH57643U	AAH57653U	-	-

for temperature range from -35 ℃ to 150 ℃

| 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
Working temperature range (℃ / ℉)		-35 to 150 / -31 to 302			
Temperature stability [1] (± ℃ / ℉)		0.05 / 0.09			
Cooling capacity [2] (bath fluid: ethanol)	at -20 (-4 ℉), W	80	150	400	440
	at 0 (+32 ℉), W	150	330	660	700
	at +20 (68 ℉), W	280	450	800	880
	Refrigerator	1/2 LBP, R-404A	1/2 LBP, R-404A	3/4 LBP, R-404A	1 LBP, R-404A
Pump (bath fluid: water)	Max. pressure	5.9 PSI (406.8 millibar)			
	Max. flow rate	28 liters / minute (7.4 gallons / minute)			
Dimension	Bath opening / depth (W×L, D) (mm / inch)	150×99, 160 / 5.9×3.9, 6.3	211×154, 180 / 8.3×6.1, 7.1	290×214, 200 / 11.4×8.4, 7.9	300×264, 230 / 11.8×10.4, 9
	Exterior (W×L×H) (mm / inch)	308×480×733 / 12.1×18.9×28.9	366×532×780 / 14.4×20.9×30.7	386×602×825 / 15.2×23.7×32.5	446×662×895 / 17.6×26.1×35.2
	Net weight (kg / lbs)	38 / 83.8	44 / 97	60 / 132.2	67 / 147.7
Electrical requirements (230V, 60Hz)		12.5A	12.5A	13.5A	14.5A
Cat. No.		AAH57741K	AAH57751K	AAH57761K	AAH57771K
Electrical requirements (230V, 50Hz)		12.5A	12.5A	13.5A	14.5A
Cat. No.		AAH57742K	AAH57752K	AAH57762K	AAH57772K

1) Technical data according to DIN 12876. (bath fluid : ethanol at -10 ℃)
2) The cooling capacity is measured under 230V / 60Hz electrical condition.
   FDA establishment registered company. FDA listed products.

Cold Trap Bath

Green CFC-Free | **Over Temp.**

Effective capture of moisture or condensate. Also useful as quick cooling baths.

CTB-10

Standard accessories   • U-type glass traps (2ea)

Performance

· Temperature control down to ambient to -40 .

· Built-in dissolving system to easily remove ice or solid matter stuck on the bath.

Convenience

· LED temperature display.

· Easy installation and maintenance of glass traps.
(two glass traps provided)

· Quick-release front grill for easy cleaning of the condenser.

· Compact size and silent operation.

· Durable stainless steel bath.

· Transparent acrylic lids on top of the glass trap to check condensate level in the trap.

Safety

· Complete safety protection system with warning alarms.
   - Over-temperature, over-current protection.

Infomation of accessories

Cat. No.	Description
FCA1110	U-type glass trap (1ea)

Model		CTB-10
Temperature range (/)		Down to -40 / -40
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×H, mm / inch)	210×204 / 8.3×8
	Glass trap (Ø×H, mm / inch)	60×262 / 2.4×103
	Exterior (W×D×H) (mm / inch)	360×465×555 / 14.1×18.3×21.9
	Net weight (kg / lbs)	46 / 101.4
Electrical requirements (230V, 60Hz)		4.5 A
Cat. No.		**AAH62011K**
Electrical requirements (230V, 50Hz)		4.5 A
Cat. No.		**AAH62012K**

FDA establishment registered company. FDA listed products.

Lab Companion

for Shaking & Heating Baths

Universal platforms

Flask clamps

Dedicated platforms

Test tube racks

Universal platforms & Flask clamps

The universal platforms provide flexibility for mixing different size test tubes and glassware on a single platform. Various clamps or racks can be interchanged or added easily using mounting holes on the platform.

Model			BS-06	BS-11	BS-21	BS-31
Universal platform	Cat. No.		AAA44521	AAA44522	AAA44523	AAA44524
Flask clamps		Erlenmeyer flask size	Max. mountable flask clamps			
	AAA23550	for 50mL	9	12	20	32
	AAA23551	for 100mL	3	9	15	24
	AAA23552	for 250ml	2	4	8	12
	AAA23556	for 300mL	2	4	8	12
	AAA23553	for 500ml	2	4	6	12
	AAA23554	for 1L	1	2	4	6
	AAA23555	for 2L ◊	-	1	2	3
	AAA23557	for 2.8L ◊	-	1	1	2

◊ 2 and 2.8L flasks must be used while bath cover is opened due to height restrictions.
* Flask clamps for universal platforms are sold separately.

Dedicated platforms

When using glassware of the same size, dedicated platforms with preinstalled 250 mL or 500 mL clamps provide maximum capacity for each platform size. If you need to use different size glassware, purchase other suitable clamps separately.

Cat. No.	Description	Suitable for
AAA44531	Universal platform with 250mL flask clamps 2ea	BS-06
AAA44532	Universal platform with 500mL flask clamps 2ea	
AAA44541	Universal platform with 250mL flask clamps 4ea	BS-11
AAA44542	Universal platform with 500mL flask clamps 4ea	
AAA44551	Universal platform with 250mL flask clamps 8ea	BS-21
AAA44552	Universal platform with 500mL flask clamps 6ea	
AAA44561	Universal platform with 250mL flask clamps 12ea	BS-31
AAA44562	Universal platform with 500mL flask clamps 12ea	

Dedicated platforms are sold with maximum number of flask clamps pre-installed.

Test tube racks

Highly durable stainless steel test tube racks feature adjustable angle and tube height support without requiring any base plate.
You can easily mount and release test tube racks.

Cat. No.	Description		Insert capacity of racks*			
			BS-06	BS-11	BS-21	BS-31
AAA44581	for 86 test tubes	ø8mm / ø0.3″	1EA	2EA	3EA	4EA
AAA44582	for 86 test tubes	ø10mm / ø0.4″				
AAA44583	for 58 test tubes	ø12mm / ø0.5″				
AAA44585	for 32 test tubes	ø16mm / ø0.6″				
AAA44586	for 19 test tubes	ø25mm / ø1.0″				

* No declination.
  Customized accessories to meet your specific requirements can be also provided. For inquiries, please contact your dealer.

Accessories & Options

for Heating Baths & Bath Circulators

Transparent polypropylene gable covers

Stainless steel flat covers

Open-rings covers

Transparent polypropylene gable covers

Designed to protect samples from contamination due to direct dripping of the bath liquid.

Cat. No.	Suitable for
AAA45531	BW-05H / BW-05B / BW3-05G
AAA45532	BW-10H / BW-10B / BW3-10G
AAA45533	BW-20H / BW-20B / BW3-20G

Stainless steel flat covers

Made of stainless steel to prevent corrosion and rust.

Cat. No.	Suitable for
AAA45541	BW-05H / BW-05B / BW3-05G
AAA45542	BW-10H / BW-10B / BW3-10G
AAA45543	BW-20H / BW-20B / BW3-20G

Open-rings covers

Beakers or Erlenmeyer flasks can be placed directly onto the perforated stainless steel half-shelf adjuster or water tank bottom.
By adjusting ring size for each glassware, liquid loss due to evaporation is minimized.

Cat. No.	Description		Suitable for
AAA45521	with 2 openings	⌀80mm / ⌀3.1″	BW-05H / BW-05B / BW3-05G
AAA45524	with 1 opening	⌀110mm / ⌀4.3″	
AAA45522	with 4 openings	⌀80mm / ⌀3.1″	BW-10H / BW-10B / BW3-10G
AAA45525	with 2 openings	⌀110mm / ⌀4.3″	
AAA45526	with 1 opening	⌀185mm / ⌀7.3″	
AAA45523	with 8 openings	⌀80mm / ⌀3.1″	BW-20H / BW-20B / BW3-20G
AAA45527	with 6 openings	⌀110mm / ⌀4.3″	
AAA45528	with 2 openings	⌀185mm / ⌀7.3″	

Test tube racks

Highly durable stainless steel test tube racks feature adjustable angle and tube height support without requiring any base plate.
You can easily mount and release test tube racks.

Cat. No.	Description		Insert Capacity of Racks*	
AAA44581	for 86 test tubes	⌀8mm / ⌀0.3″	CW3-20/P, 30/P	
AAA44582	for 86 test tubes	⌀10mm / ⌀0.4″	RW3-2025/P, 2035/P	
AAA44583	for 58 test tubes	⌀12mm / ⌀0.5″	RW-33025/P, 3035/P	
AAA44585	for 32 test tubes	⌀16mm / ⌀0.6″		
AAA44586	for 19 test tubes	⌀25mm / ⌀1.0″	2ea	
AAA41531	for 50 test tubes	⌀8mm / ⌀0.3″	BW-05H	RW3-1025/P
AAA41532	for 50 test tubes	⌀10mm / ⌀0.4″	BW-05B	RW3-1035/P
AAA41533	for 33 test tubes	⌀12mm / ⌀0.5″	BW3-05G	CW3-10/P
AAA41535	for 16 test tubes	⌀16mm / ⌀0.6″		
AAA41539	for 10 test tubes	⌀25mm / ⌀1.0″	1ea	
AAA45551	for 176 test tubes	⌀8mm / ⌀0.3″	BW-10H	BW-20H
AAA45552	for 176 test tubes	⌀10mm / ⌀0.4″	BW-10B	BW-20B
AAA45554	for 84 test tubes	⌀12mm / ⌀0.5″	BW3-10G	BW3-20G
AAA45556	for 68 test tubes	⌀16mm / ⌀0.6″		
AAA45561	for 33 test tubes	⌀25mm / ⌀1.0″	1ea	2ea

* No declination.

Spring wire racks

Ideal for holding a wide variety of tubes, flasks, and other glassware.
All components are made of stainless steel.

Cat. No.	Suitable for
AAA45502	BW-10H / BW-10B / BW3-10G
AAA45503	BW-20H / BW-20B / BW3-20G
AAA51522	CW3-20/P / RW3-2025/P, 2035/P
AAA51523	CW3-30/P / RW3-3025/P, 3035/P

Spring wire racks (two tier rack with flexible crossed spring)

Half-shelf adjusters

Stainless steel perforated sample tray shelves with adjustable height support prevent leaks and guard against rust and contamination.

Cat. No.	Suitable for
AAA45511	BW-05H / BW-05B / BW3-05G
AAA45512	BW-10H / BW-10B / BW3-10G
AAA45513	BW-20H / BW-20B / BW3-20G

Half-shelf adjusters

Gateway

Establish Jeio Tech Network by Gateway. No computer use is required at all. Remote monitoring of operating status through a mobile device(Android only) is simply available when you place a Gateway in your laboratory. Maximum 4 units can be connected to Gateway by RS-232 cable.

Cat. No.	Description	Suitable for
AAAQ1011	Gateway (2.4GHz, 100~240V, 50/60Hz)	CW3, RW3 models

Gateway

for Viscometer Heating Baths

Viscometer tube holders

Specially designed to hold a two-opening viscometer glass tube and made of Bakelite, renowned for its high thermal endurance.

Cat. No.	Suitable for
AAA43501	VB-25G (need max. 5 holders)
	VB-40G (need max. 8 holders)

Viscometer tube holders

Cooling circulators

The temperature range of viscometer heating baths can be lowered up to +10 (+50) when used with an optional cooling circulator.

Cat. No.	Description	Suitable for
AAH57051K	RW3-1025 (230V, 60Hz)	VB-25G (230V, 60Hz)
AAH57651K	RW3-1025P (230V, 60Hz)	
AAH57052K	RW3-1025 (230V, 50Hz)	VB-25G (230V, 50Hz)
AAH57652K	RW3-1025P (230V, 50Hz)	
AAH57061K	RW3-2025 (230V, 60Hz)	VB-40G (230V, 60Hz)
AAH57661K	RW3-2025P (230V, 60Hz)	
AAH57062K	RW3-2025 (230V, 50Hz)	VB-40G (230V, 50Hz)
AAH57662K	RW3-2025P (230V, 50Hz)	

* Refer to p.24 to 27 for more information on the cooling circulators.

03

Desiccators

› Vacuum Desiccators
› Desiccators
› Auto-desiccator Cabinets

Product Name	Vacuum Desiccator			Desiccator	Auto-desiccator Cabinet	
	Cubic Model	Round Model	Cylindrical Model	Cubic Model		
Model	VDC	VDR	VDP	SDC	DCL	DC
Internal volume (L)	11, 23, 35, 45	6, 10, 20	16, 25	35, 50	150, 300, 600	
Control range	Maximum vacuum of 1 Torr (1.33×10⁻⁴ Mpa) for more than 72 hours.			-	1 to 10%RH (1% scale)	20 to 60%RH (1% scale)
Body material	Polycarbonate			Polycarbonate	Powder coated steel	
UV block model selection	O			O	-	
Vacuum gauge	O	O (optional)		-	-	
Description	• High quality silicone gasket for greaseless airtight seal. • Three different shapes for storing various samples.			• Stackable space saving design. • Efficient internal space use by the provided shelves.	• Designed for storing humidity-sensitive samples. • Built in electronic dry unit for maintaining constant interior humidity without desiccant use.	

RoHS Compliant   **UV Cut**   **One Mold**

Features

- Maximum vacuum of 1 Torr$(1.33 \times 10^{-4}$ Mpa) for more than 72 hours.

- High quality silicone gasket ensures greaseless airtight seal for the clean and cost effective test environment.

- Highly transparent, shatterproof, non-corrosive, and easy to clean polycarbonate construction.

- Three-way stopcock provides great convenience for consistent and uniform vacuum draw, vacuum release, or gas exchange. The barbed fitting on each side secures attachment of tubing. Additional three-way stopcocks are installable.
  (Max. 4 stopcocks for VDC-21/31/41 models, Max. 2 stopcocks for VDC-11 models)

- Maximized utilization of internal space using maximum four to six shelves depending on product sizes.

- Stackable space-saving design allowing efficient usage of cramped lab space.

- Easy vacuum level checking with the standard vacuum gauge attached to the front door.

- Minimizing damages or discoloration of light-sensitive samples.
  (for U models)

- Four built-in ports allowing easy attachment of tubing.

Integrally molded cubic box design enabling outstanding vacuum capability with virtually no leakage and exceptional durability.

Various models available with respect to sizes and UV-blocking effect.

VDC-31

Standard accessories
see page 37

- Vacuum gauge
- Drying agent tray
- Perforated sample trays
- Stopcock

Above products design can be changed without prior notice.

Desiccators

Model [1]	VDC-11/11U	VDC-21/21U	VDC-31/31U	VDC-41/41U
Internal volume (L / cu ft)	11 / 0.4	23 / 0.8	35 / 1.2	45 / 1.6
Gauge range (Mpa)	0 to -0.1			
Nozzle (mm / inch, Ø)	9.5 / 0.37			
Max. permissible vacuum (bodies)	1.33×10^{-4} Mpa			
Max. load (kg / lbs) per shelf	3 / 6.6	5 / 11		
Number of shelves (standard / max.)	2 / 4		3 / 5	3 / 6
Material — Body	Polycarbonate			
Material — Perforated sample tray				
Material — Drying agent tray / Locker	Polypropylene			
Material — Vacuum seal	Silicone rubber			
Dimension (W×D×H) — Interior (mm / inch)	248x254x238 / 9.8x10x9.4	346x365x246 / 13.6x14.4x9.7	355x375x345 / 14 x 14.8 x 13.6	355x374x445 / 14x14.7x17.5
Dimension (W×D×H) — Exterior (mm / inch)	322x285x271 / 12.7x11.2x10.7	420x397x281 / 16.5x15.6x11.1	420x397x381 / 16.5x15.6x15	420x397x491 / 16.5x15.6x19.3
Net weight (kg / lbs)	4.2 / 9.3	8.2 / 18.1	10.8 / 23.8	12.2 / 26.9
Cat. No. — without UV block effect	AAAD4001	AAAD4021	AAAD4011	AAAD4031
Cat. No. — with UV block effect (U)	AAAD4101	AAAD4121	AAAD4111	AAAD4131

1) U models are translucent(amber-colored) vacuum desiccators with ultraviolet block effect.
   RoHS except for VDC-U models.
   FDA establishment registered company. FDA listed products.

RoHS Compliant   **UV Cut**   **One Mold**

Round design featuring light weight yet high tensile strength.

High-quality silicone O-ring and specially designed 'Locking Clip' allowing outstanding vacuum capability with virtually no leakage.

Features

- Maximum vacuum of 1 Torr $(1.33 \times 10^{-4}$ Mpa) for more than 72 hours.

- High quality silicone gasket ensures greaseless airtight seal for the clean and cost effective test environment.

- Highly transparent, shatterproof, non-corrosive, and easy to clean polycarbonate construction.

- Three-way stopcock provides great convenience for consistent and uniform vacuum draw, vacuum release, or gas exchange. The barbed fitting on each side secures attachment of tubing. (Maximum 2 three-way stopcocks are installable if required when placing an order)

- Flange lock holding the top and the bottom together during non-vacuum conditions.

- Various models available with respect to sizes and UV-blocking effect.

- Minimizing damages or discoloration of light-sensitive samples (for U/UG models).

- A vacuum gauge attachable at the center of the lid for easy vacuum level checking (for G/UG models).

- The top and bottom of round vacuum desiccators and cylindrical vacuum desiccators are compatible with each other for diverse use.

VDR-25G

Standard accessories
see page 37

- Drying agent tray
- Perforated sample trays
- Flange locker
- Stopcock

Above products design can be changed without prior notice.

Model [1]	VDR-20/20G VDR-20U/20UG	VDR-25/25G VDR-25U/25UG	VDR-30/30G VDR-30U/30UG
Internal volume (L / cu ft)	6 / 0.2	10 / 0.4	20 / 0.7
Gauge range (Mpa)	0 to -0.1		
Nozzle (mm / inch, Ø)	9.5 / 0.37		
Max. permissible vacuum (Bodies)	1.33×10^{-4} Mpa		
Material — Lid / Bottom	Polycarbonate		
Material — Perforated sample tray	Polypropylene		
Material — Drying agent tray			
Material — Locker	Polypropylene		
Material — Vacuum seal	Silicone rubber		
Dimension (I.D. × H) — Exterior (mm / inch)	Ø242×279(354) / Ø9.5×11(13.9)	Ø308×325(400) / Ø12.1×12.8(15.7)	Ø385×399(475) / Ø15.2×15.7(18.7)
Dimension — Net weight (kg / lbs)	1.5 / 3.3	2.5 / 5.5	4.2 / 9.3
Cat. No. — Clear body	AAAD2011	AAAD2111	AAAD2211
Cat. No. — Clear body with vacuum gauge (G)	AAAD2021	AAAD2121	AAAD2221
Cat. No. — UV block effect body(U)	AAAD2031	AAAD2131	AAAD2231
Cat. No. — UV block effect body with Vacuum gauge(UG)	AAAD2041	AAAD2141	AAAD2241

1) G models come standard with a vacuum gauge
U models are translucent(amber-colored) vacuum desiccators with ultraviolet block effect.
RoHS except for VDR-U models.
FDA establishment registered company. FDA listed products.

Desiccators

Features

- Maximum vacuum of 1 Torr (1.33×10^{-4} Mpa) for more than 72 hours.

- High quality silicone gasket ensures greaseless airtight seal for the clean and cost effective test environment.

- Highly transparent, shatterproof, non-corrosive, and easy to clean polycarbonate construction.

- Three-way stopcock provides great convenience for consistent and uniform vacuum draw, vacuum release, or gas exchange. The barbed fitting on each side secures attachment of tubing.

- Flange lock holding the top and the bottom together during non-vacuum conditions.

- Various models available with respect to sizes and UV-blocking effect.

- Minimizing damages or discoloration of light-sensitive samples (for U/UG models).

- A vacuum gauge attachable at the center of the lid for easy vacuum level checking (for G/UG models).

- The top and bottom of cylindrical vacuum desiccators and round vacuum desiccators are compatible with each other for diverse use.

Newly designed cylindrical desiccators are used by ideal for storing tall equipment, gas substitution, general drying and preserving.

VDP-30

Standard accessories
see page 37

- Perforated sample trays
- Flange locker
- Stopcock

Above products design can be changed without prior notice.

Model[1]	VDP-25/25G VDP-25U/25UG		VDP-30/30G VDP-30U/30UG
Internal volume (L / cu ft)	16 / 0.6		25 / 0.9
Gauge range (Mpa)	0 to -0.1		
Nozzle (mm / inch, Ø)	9.5 / 0.37		
Max. permissible vacuum (Bodies)	1.33×10^{-4} Mpa		
Material — Body / Base	Polycarbonate		
Material — Perforated sample tray			
Material — Locker	Polypropylene		
Material — Vacuum seal	Silicone rubber		
Dimension (I.D. × H) — Exterior (mm / inch)	Ø308×374(449) / Ø12.1×14.7(17.7)		Ø385×384(459) / Ø15.2×15.1(18.1)
Dimension (I.D. × H) — Net weight (kg / lbs)	2.7 / 5.9		4.0 / 8.8
Cat. No. — Clear body	AAAD3011		AAAD3021
Cat. No. — Clear body with Vacuum gauge (G)	AAAD3111		AAAD3121
Cat. No. — UV block effect body(U)	AAAD3211		AAAD3221
Cat. No. — UV block effect body with Vacuum gauge(UG)	AAAD3311		AAAD3321

1) G models come standard with a vacuum gauge
   U models are translucent(amber-colored) vacuum desiccators with ultraviolet block effect.
   RoHS except for VDP-U models.
   FDA establishment registered company. FDA listed products.

UV Cut | One Mold

Stackable unit design provides space efficiency in daily use.

Transparent polycarbonate desiccators are designed for easy viewing of desiccant and vessels.

Features

- One molded design enables virtually no leakage and exceptional durability.
- High quality silicone gasket ensures greaseless airtight seal for the clean and cost effective test environment.
- Highly transparent, shatterproof, non-corrosive, and easy to clean polycarbonate construction.
- Maximized utilization of internal space using maximum three to five shelves depending on product sizes.
- Stackable space-saving design allowing efficient usage of cramped lab space.
- Easy humidity level checking with the hygrometer attached to the front door.
- Minimizing damages or discoloration of light-sensitive samples. (for U models)

SDC-45

Standard accessories
see page 37

- Hygrometer
- Drying agent tray
- Perforated sample tray
- Perforated sample drawer

Above products design can be changed without prior notice.

Model[1]		SDC-30/30U		SDC-45/45U	
Internal volume (L / cu ft)		35 / 1.2		50 / 1.8	
Max. load (kg / lbs) per shelf or drawer		5 / 11			
Number of shelves (Standard / max.)		1 / 3		2 / 5	
Number of drawers (Standard / max.)		1 / 3		1 / 5	
Material	Body	Polycarbonate			
	Perforated sample tray				
	Perforated sample drawer				
	Drying agent tray / Locker	Polypropylene / Stainless steel			
	Seal	Silicone rubber			
Dimension (W×D×H)	Internal (mm / inch)	322x367x302 / 12.7x14.4x11.9		322x367x422 / 12.7x14.4x16.6	
	Exterior (mm / inch)	360×410×326 / 14.1×16.1×12.8		360×410×447 / 14.1×16.1×17.6	
Net weight (kg / lbs)		4.9 / 10.8		6.2 / 13.7	
Cat. No.	without UV block effect	**AAAD5011**		**AAAD5021**	
	with UV block effect (U)	**AAAD5111**		**AAAD5121**	

1) U models are translucent(amber-colored) desiccators with ultraviolet block effect.
   FDA establishment registered company. FDA listed products.

Desiccators

Drying agent tray
for VDC

Perforated sample tray
for VDC

Drying agent tray
for VDR

Perforated sample tray
for VDR

for Vacuum Desiccators (Cubic models)

Cat. No.	Description	VDC-11/11U	VDC-21/21U	VDC-31/31U	VDC-41/41U
VDC0035	Perforated sample tray	•	-	-	-
VDC0003		-	•	•	•
VDC0037	Drying agent tray	•	-	-	-
VDC0005		-	•	•	•
VDC0032	Vacuum seal	•	-	-	-
VDC0033		-	•	-	-
VDC0015		-	-	•	-
VDC0034		-	-	-	•
AAAD4501	Stopcock	•	•	•	•
EDA4301	Vacuum gauge	•	•	•	•

for Vacuum Desiccators (Round & Cylindrical models)

Cat. No.	Description	VDR-20/20G VDR-20U/20UG	VDR-25/25G VDR-25U/25UG	VDR-30/30G VDR-30U/30UG	VDP-25/25G VDP-25U/25UG	VDP-30/30G VDP-30U/30UG
AAAD1501	Drying agent tray	•	-	-	-	-
AAAD1502		-	•	-	•	-
AAAD1503		-	-	•	-	•
AAAD1511	Perforated sample tray	•	-	-	-	-
AAAD1512		-	•	-	-	-
AAAD1513		-	-	•	-	-
AAAD3511		-	-	-	•	-
AAAD3512		-	-	-	-	•
VDR0001	Vacuum seal	•	-	-	-	-
VDR0002		-	•	-	•	-
VDR0003		-	-	•	-	•
VDR0015	Flange locker	•	-	-	-	-
VDR0016		-	•	-	•	-
VDR0017		-	-	•	-	•
AAAD1521	Stopcock	•	•	•	-	-
AAAD3501		-	-	-	•	•
EDA4302	Vacuum gauge	•	•	•	•	•

Auto-desiccator Cabinets

Humidity-sensitive samples are safely stored in our reliable auto-desiccator cabinet.

Suitable for storing various products such as historical document, optical lens and film, electronic components, seeds, all kinds of reference samples.

DCL/DC-11, DCL/DC-41

Standard accessories
- Shelves (epoxy powder coated steel)
- Door key

Optional accessories
- Shelves (stainless steel)

see page 39

Relative Humidity & Application

Relative Humidity	Application
45 to 60% RH	Painting, Stamps, Photographs, Antiques, Documents, etc.
40 to 45% RH	Camera, Lens, Microscopes, Films, Telescopes, Computer commodities, Audiotapes, Videotapes, Sliders, CDs, DVDs, etc.
30 to 40% RH	Semiconductor, Electronic components, IC components, PCB, Precision instruments, Electrical materials, Chemical materials, Industrial materials, etc.
Below 30% RH	Semiconductor components, Ceramic powders, Seeds, Spices, Reagents, Laboratory samples, etc.

Height-adjustable shelves

Clear observation

Display

Casters (for DCL/DC-41)

Door lock

Foot alignment grooves for stacking (for DCL/DC-11, 21S)
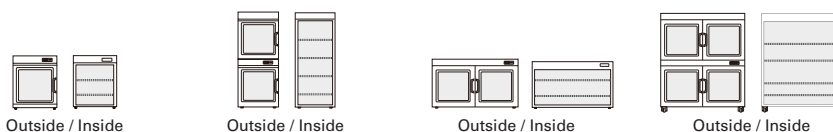
Lab Companion

Performance

- Auto-electronic dry unit.
  - Desiccant is not required at all. Interior humidity is automatically controlled by electronic dry unit, highly beneficial for easy maintenance.

- Two different humidity ranges.
  - In order to storing high humidity-sensitive samples pleasantly, DCL models are strongly recommended.
    Humidity can be reached down to 1% RH within 8 hours.
    (under Ambient temperature of 25 °C, 60% RH and no load)
  - DC models provide humidity range from 60% RH to 20% RH.
    Humidity can be reached down to 20% RH within 8 hours.
    (under Ambient temperature of 25 °C, 60% RH and no load)

- Setting humidity by 1% increment is available.

Convenience & Safety

- Temperature and humidity display.
  - Interior temperature and humidity are indicated on display in real time.
    * Temp. is only indicated, not for control. Humidity is indicated and also controlled as well.

- Easy installation and relocation.
  - Casters for easy mobility during installation or relocation.
    (for DCL/DC-41)

- Height-adjustable shelves.
  - High-grade steel with corrosion resistant epoxy power coated surface.
  - Maximized utilization of internal space by using height-adjustable shelves.
  - Sturdy heavy load shelves sustain maximum 20kg sample loading.

- Clear observation of samples.
  - Transparent acryl window provides a clear view of samples in the chamber.
  - DCL/DC-11 has transparent acryl windows on three sides, beneficial for wider view of inside chamber.

- Space saving double-stacked cabinets. (for DCL/DC-11, DCL/DC-21S)
  - Foot alignment grooves on the top of the cabinet enables stable stacking.
  - Stackable space-saving design allowing efficient usage of cramped space.

- Built in door lock device for safe sample storage.

Outside / Inside   Outside / Inside   Outside / Inside   Outside / Inside

Model	DCL-11	DC-11	DCL-21L	DC-21L	DCL-21S	DC-21S	DCL-41	DC-41
Control range	DCL models; 1 to 10%RH (1% scale), DC models; 20 to 60%RH (1% scale)							
Internal volume (L / cu ft)	150 / 5.3		300 / 10.6		300 / 10.6		600 / 21.2	
Number 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							
Dimension (W×D×H) (mm / inch) Interior	470x499x500 / 18.5x19.6x19.7		470x599x561 / 18.5x23.6x22.1 (upper) 470x499x561 / 18.5x19.6x22.1 (lower)		1070x499x498 / 42.1x19.6x19.6		1070x599x561 / 42.1x23.6x22.1 (upper) 1070x499x561 / 42.1x19.6x22.1 (lower)	
Dimension (W×D×H) (mm / inch) Exterior	550x700x653 / 21.7x27.6x25.7		547x700x1280 / 21.5x27.6x50.4		1140x700x653 / 44.9x27.6x25.7		1140x700x1140 / 44.9x27.6x44.9	
Net weight (kg / lbs)	36 / 79.4		56.5 / 124.6		58 / 127.9		110 / 242.5	
Electrical requirements (230V, 50/60Hz)	2.0A		2.0A		2.0A		2.0A	
Cat. No.	AAHF72115K	AAHF70115K	AAHF72125K	AAHF70215K	AAHF72135K	AAHF71215K	AAHF72145K	AAHF70415K
Electrical requirements (120V, 60Hz)	4.0A		4.0A		4.0A		4.0A	
Cat. No.	AAHF72116U	AAHF70115U	AAHF72126U	AAHF70215U	AAHF72136U	AAHF71215U	AAHF72146U	AAHF70415U

Temperature is only indicated in Celsius. Conversion to Fahrenheit is not available.

Accessories & Options

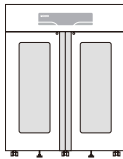| Cat. No.	Description		Suitable for
	Material	Dimension (WxD, mm / inch)	
AAAF7501	Shelves, Epoxy powder coated steel	462x479 / 18.2x18.9	DCL/DC-11 DCL/DC-21L lower chamber [1]
AAAF7502		462x579 / 18.2x22.8	DCL/DC-21L upper chamber [1]
AAAF7503		1063x465 / 41.9x18.3	DCL/DC-21S DCL/DC-41 lower chamber [1]
AAAF7504		1063x550 / 41.9x21.7	DCL/DC-41 upper chamber [1]
AAAF7511	Shelves, Stainless steel	462x479 / 18.2x18.9	DCL/DC-11 DCL/DC-21L lower chamber [1]
AAAF7512		462x579 / 18.2x22.8	DCL/DC-21L upper chamber [1]
AAAF7513		1063x465 / 41.9x18.3	DCL/DC-21S DCL/DC-41 lower chamber [1]
AAAF7514		1063x550 / 41.9x21.7	DCL/DC-41 upper chamber [1]

1) Due to the location of dry unit in the lower chamber, the size of shelves is different. (for DCL/DC-21L, DCL/DC-41)
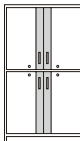
04

Furniture
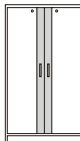
› Filtering Storage Cabinets
› Acid/Corrosive Cabinets
› General Storage Cabinets
› Gas Cylinder Cabinets

Filtering Storage Cabinets

	FSC-140	FSC-280
Internal volume(L)	604	1317
Width(mm)	930	1868
Height(mm)	1890	1890
Depth(mm)	636	636
Airflow rate (m³/min, CMM)	0.67	1.34
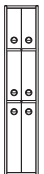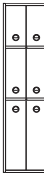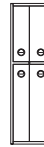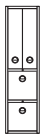
Acid/Corrosive Cabinets
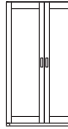
	SC-C1912D4	SC-C1912D2	SC-C1906D2	SC-C1906D1	SC-C0706D1
Internal volume(L)	852 (213 x 4 ea)	894 (447 x 2 ea)	426 (213 x 2 ea)	445	115
Width(mm)	1255		655		600
Height(mm)	1900				650
Depth(mm)	555				510

General Storage Cabinets

Base Cabinets	Tabletop type (DS-TT)			Tabletop type (DS-TW)			
Width(mm)	476	560	644	472	556	915	1083
Height(mm)	900			900			
Depth(mm)	700			-			
Model	09047-D2	09056-D2	09064-D2	-			
Depth(mm)	550			550			
Model	09047-N2	09056-N2	09064-N2	09047-N1	09055-N1	09091-N2	09108-N2

Base Cabinets	Under table type (DS-UT)			Under table type (DS-UD)			
Width(mm)	476	560	644	476		560	
Height(mm)	650			650			
Depth(mm)	700			700			
Model	06047-D2	06056-D2	06064-D2	06047-D2	06047-D3	06056-D2	06056-D3
Depth(mm)	550			550			
Model	06047-N2	06056-N2	06064-N2	06047-N2	06047-N3	06056-N2	06056-N3

Tall Cabinets	Stand type (DS-SL)			Stand type (DS-S)					Combi type (DS-C)			
Width(mm)	476	560	644	476	560	644	686	938	476		560	
Height(mm)	2400			1800					1800			
Depth(mm)	700			700					700			
Model	24047-D6	24056-D6	24064-D6	18047-D4	18056-D4	18064-D4	18068-D6	18093-D6	18047-D4	18047-D5	18056-D4	18056-D5
Depth(mm)	-			550					550			
Model	-			18047-N4	18056-N4	18064-N4	18068-N6	18093-N6	18047-N4	18047-N5	18056-N4	18056-N5

Tall Cabinets	Window type (DS-OW)				Open rack type (DS-OR)			
Width(mm)	472	556	915	1083	472	556	915	1083
Height(mm)	1800				1800			
Depth(mm)	-				550			
Model	-				18047-N1	18055-N1	18091-N2	18108-N2
Depth(mm)	550				550			
Model	18047-N1	18055-N1	18091-N2	18108-N2	18047-N1	18055-N1	18091-N2	18108-N2

Gas Cylinder Cabinets

|	DS-GC	
Width(mm)	740	1070
Height(mm)	1800	
Depth(mm)	550	
Model	18074-N2	18107-N2

Filtering Storage Cabinets

CE | Computer Interface | Filtering

Storing reagents in this filtering storage cabinet ensures clean lab environment for users.

Feel free to install the cabinet anywhere without any concern of your existing exhaust system. Conveniently place and remove the reagents with the full-extension sliding drawers. Air purification inside the cabinet prevents heating and cooling loss caused by ducted air exhaust systems.

PV SV | JeioTech Network

REMOTE CONTROL
with your **MOBILE DEVICE**

FSC-280 / FSC-140

Standard accessories

- Pre filter, LED lamp
- Slide drawers (5ea for FSC-140, 10ea for FSC-280)
- Spill tray (1ea for FSC-140, 2ea for FSC-280)
- Door key

Reliable filter efficiency

• Filtering efficiency of complex carbon filter is proved by 3rd independent institute which describes specification for the gas removal and deodorization efficiency. ;
Tested by NH_3, CH_3CHO, CH_3COOH, HCl, NO_2.

Cost-effective filtering system

Energy efficient and space saving filtering system.

• Flexible installation of the cabinet is possible and cost-intensive exhaust air ducts are no longer necessary.

• Air circulation inside the cabinet prevents heating and cooling loss due to the exhaust air, which causes high energy consumption.

Customized filter configuration.

• ISO class 4 (US class 10) HEPA filter for optimal protection against cross-contamination. (optional)

• 0.3 μm and larger particulates are removed with 99.99% efficiency, leak-tight HEPA filter which satisfying class 10. (US Federal Standard 209E) (average life span of HEPA filter: 3 years– it depends on the test room conditions) (optional)

• High-quality polyester fiber pre-filter (with minimal pressure loss and 85% arrestant on the A.F.I. test) for trapping larger particles and increasing the life of the main HEPA filter.

• Convenient filter saturation check and easy filter replacement by an intelligent front cover design.

• Various filters installable at once. Pre filter is built in as standard offer. Maximum two other optional filters are installable.

Multi-functional operation

• User-friendly functions.
 - Auto run on/off; In case of power failure, the unit starts automatically when the unit gets the power back.
 - Set each function's value to best suit the users.

• Safety warning alarms with LED indicators.
 - High temp. alarm with automatic fan stop.
 - Fan fail alarm for abnormal fan stop.
 - Door open alarm to protect users and clean environment.

• Economical and ecofriendly sleep mode.
 - You can set the operating time from 8am to 6pm if your official working hour is from 9am to 6pm. It saves 60% of energy consumption and extends the life span of the fan and filter.

• VOC level indication.
 - Clear and symbolic VOC level bar indicates VOC measurement of the inner cabinet.
 - Real time detecting and displaying are available with VOC sensor inside the cabinet.

• RS-232 interface for external control and data collection.
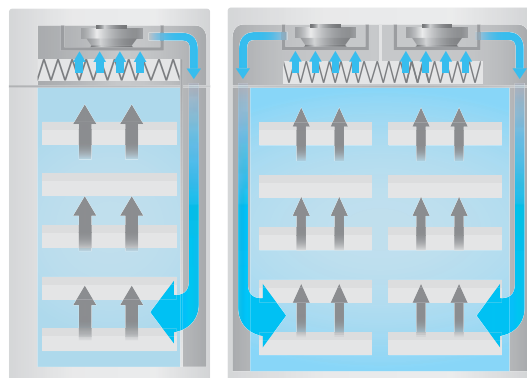
Smooth full-extension sliding drawer

Light-adjustable LED lamp

Spill tray for easy maintenance

Lockable casters for safe installation and easy transport

Built-in door lock for safe sample storage
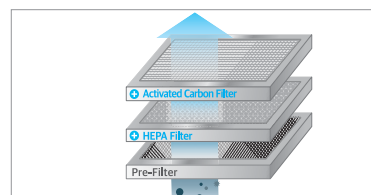
Various filters installable at once
(Pre filter is built in as standard offer. Maximum two other optional filters are installable)

Activated Carbon Filter
HEPA Filter
Pre-Filter

Filtering Storage Cabinets

Convenient and safe storage

- Door and drawer tested in accordance with SEFA.
  - It is designed and tested in accordance with SEFA for door hinge test and drawer static load test. The international standard guarantees users the quality and longer use of every unit. In addition, we autonomously conducted the overturning test for more safety.
  - Max. 40kg heavy load sustainable inner chamber and drawers. Imagine that just one drawer can dramatically sustain a ten-year-old boy.
- Chemical resistant epoxy coated steel and transparent tempered glass door.
  - Corrosion resistant epoxy coated steel for storage of toxic chemical samples.

- All parts of the unit are durably constructed of epoxy coated steel for prevention of corrosion.
  - Tempered glass door with LED lamps provides clear observation of stored samples.
  - Well designed full length handle let you feel totally relaxed by opening the door at any height.
- Wide inner space use.
  - Wide inner space use with the provided extremely smooth full-extension sliding drawers.
  - Spill tray and door lock key for clean and safe sample storage.

Outside / Inside   Outside / Inside
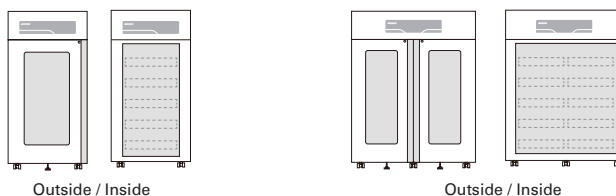
Model		FSC-140		FSC-280	
Internal volume (L / cu ft)		604 / 21.3		1317 / 46.5	
Capacity [1] (L / gal , 1L Bottle *ea)		140		280	
Airflow rate (m³/min, CMM)		0.67		1.34	
Pre-filter		Polyester fibers with filter efficiency of 85% (A·F·I TEST)			
No. of drawer shelf, Slide (included / max.)		5 / 10		10 / 20	
Max. load per shelf (kg / lbs)		40 / 88.2			
Materials	Main body	Epoxy powder coated steel, Glass			
	Display	VFD (vacuum fluorescent display)			
	Lamp	LED			
Noise level (dB)		< 50		< 55	
Dimension (W×D×H)	Internal (mm / inch)	795x578x1315 / 31.3x22.8x51.8		1733x578x1315 / 68.2x22.8x51.8	
	External (mm / inch)	930x636x1890 / 36.6x25.0x74.4		1868x636x1890 / 73.5x25.0x74.4	
	Drawer (mm / inch)	613x478x109 / 24.1x18.8x4.3		613x478x109 / 24.1x18.8x4.3	
	Spill tray (mm / inch)	670x526x34 / 26.4x20.7x1.3		670x526x34 / 26.4x20.7x1.3	
	Net weight (kg / lbs)	300 / 661.4		495 / 1091.3	
Electrical requirements (230V)		60Hz, 0.5A	50Hz, 0.5A	60Hz, 1.0A	50Hz, 1.0A
Cat. No.		**AAHF1121K**	**AAHF1122K**	**AAHF1131K**	**AAHF1132K**
Electrical requirements (120V)		60Hz, 1.0A		60Hz, 2.0A	
Cat. No.		**AAHF1123U**		**AAHF1133U**	

1) Basic condition for above capacity is when five drawers are built in.
   Permissible environmental conditions: temperature (5-40℃) and relative humidity (up to 80%).   FDA establishment registered company. FDA listed products.

Accessories & Options

Cat. No.	Description	Application
FSC0079	Pre filter	Larger particles and increasing the life of main filter
FSC0001	HEPA filter	Biohazardous aerosols and other visible and non-visible particles (filtration efficiency: 99.99% at 0.3 microns)
AAAF1537	Complex carbon filter (VOC + NH₃ + Acid)	Volatile organic compounds (VOC), Ammonia, Acidic solvents[1] (MA), Alkaline solvents (MB)
AAAF1539	Acid carbon filter [1]	An acidic solvent ; Acetic acid, etc
AAAF1541	Formaldehyde carbon filter	Formadehyde applications
AAAF1542	Ammonia / Amines carbon filter	Ammonia/Amines by chemisorptions

1) Please do not use high percentage of reactive acid such as perchloric acid.
   Each filter should be ordered two for FSC-280.
   Maximum installable filter quantity: 2 ea for FSC-140, 4 ea for FSC-280.

Cat. No.	Description
AAAB2531	Gas detector (KITAGAWA AP-20)
AAAB1550	Gas detecting tube (Benzene, GASTEC-121SP (0.5-10ppm))
AAAB1551	Gas detecting tube (Toluene, GASTEC-122L (1-100ppm))
AAAB1552	Gas detecting tube (Acetic acid, GASTEC-81L (0.125-25ppm))
AAAB1553	Gas detecting tube (Chloroform, GASTEC-137 (4-400ppm))
AAAB1554	Gas detecting tube (Formaldehyde, GASTEC-91LL (0.05-1ppm))
AAAB1555	Gas detecting tube (Ammonia, GASTEC-3L (0.5-60ppm))

Gateway

Establish Jeio Tech Network by Gateway.
No computer use is required at all.

Cat. No.	Description
AAAQ1011	Gateway (2.4GHz, 100~240V, 50/60Hz)

Acid/Base Filtering

Safety cabinets for long-term storage of corrosive substances.

Durable structure with corrosion-resistant interior non-steel materials.
Efficient ventilation system prevents noxious gas or chemical gas accumulation.

SC-C1912D4, SC-C1906D2
with optional extraction module

Standard accessories • Shelves, Trays, Door key
see page 47

Acid/Corrosive Cabinets

Reliable international standards.

- Designed and tested in accordance with DIN EN 14727.
  - Performance and durability of our cabinet (SC-C1906D2 only) is tested by DIN EN 14727 ensuring safe and reliable use of the acid/corrosive cabinet.

- Reliable chemical test in accordance with SEFA.
  - Chemical test regarding polyphenol resin coated interior, ventilation and exhaust holes are conducted, insuring safe storage of acid/corrosive samples.

Safe storage of corrosive substances.

- Corrosion-resistant interior material.
  - Melamine faced board is suitable for long-term storage of acid / base substance. Non-steel materials for shelves and racks, trays, bolts, ventilation and exhaust holes.

- Robust metal structure.
  - Sturdy steel frame prevents deformation.
  - Epoxy coated surface provides excellent chemical resistance.

- Space-efficient interior design.
  - Internal compartment structure is beneficial for practical and safe space use by organizing the inner space efficiently according to the characteristics of the stored samples. (except for SC-C0706D1)

Sturdy and secure shelf structure.

- Sturdy shelf structure.
  - Max. 80kg heavy load sustainable shelf.
  - Designed to perfectly fastened to both walls.

- Safe shelf design.
  - Shelf with the height of 30mm blocks spreading leakage from accidental sample spillage.

- Chemical-resistant shelves and trays are provided as standard offer.
  - The unit comes together with shelves (except for SC-C0706D1) and polypropylene tray for high chemical resistance.

Safe sample storage by independent gas-ventilation flow

Air-ventilation hole is independently built in each compartment to prevent gas mixture inside of cabinet. This structural benefit enables safe storage of your samples according to the characteristics of the stored samples.
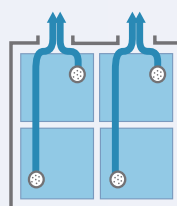
Patent :
10-2015-0141043

Convenient and safe ventilation system.

- Built-in ventilation hole.
  - Ventilation hole on the top and exhaust holes at the back prevent the accumulation of explosive gas.

- Exhaust system connection. (except for SC-C0706D1)
  - Cabinet can be connected to an in-house laboratory exhaust system to efficiently exhaust the vapor inside of the cabinet.
  - Optional extraction module is also available. If your laboratory has no exhaust system at all, you can simply install this compact extraction module to the cabinet for efficient and convenient exhausting. You can experience ductless filtering aicd/corrosive cabinet.

Extraction module (optional)

Built-in door lock for safe sample storage

Height-adjustable shelve and spill tray

Ergonomic designed toe space allows for easy access to the inner space

Specially designed forklift space and leveling feet for easy and stable installation

Easy arrangement and finding of each sample with pictogram sticker

Lab Companion
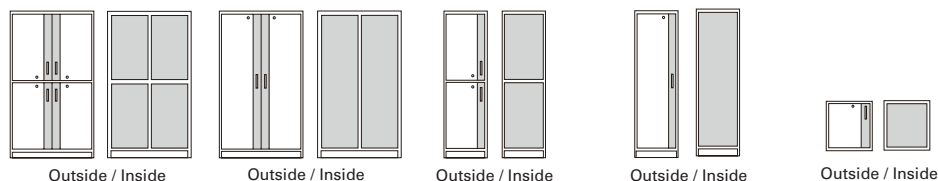
Model		SC-C1912D4	SC-C1912D2	SC-C1906D2	SC-C1906D1	SC-C0706D1
Internal volume (L / cu ft)		213 / 7.5 x 4ea	447 / 15.9 x 2ea	213 / 7.5 x 2ea	445 / 15.7	115 / 4.1
No. of tray (standard / max.)		8 / 12	8 / 14	4 / 6	4 / 7	1
No. of shelf (standard / max.)		4 / 8	6 / 12	2 / 4	3 / 6	-
Distance of between shelf (mm / inch)		120 / 4.7	100 / 3.9	130 / 5.1	100 / 3.9	-
Max. load per shelf (kg / lbs)		80 / 176.4				
Materials	Interior	Melamine faced board				
	Exterior	Epoxy powder coated steel				
Dimension (W×D×H)	Interior (mm / inch)	561x466x818 x 4ea / 22.1x18.3x32.2 x 4ea	561x466x1712 x 2ea / 22.1x18.3x67.4 x 2ea	561x466x818 x 2ea / 22.1x18.3x32.2 x 2ea	558x466x1712 / 21.9xx18.3x67.4	505x421x542 / 19.9x16.6x21.3
	Exterior (mm / inch)	1255x555x1900 / 49.4x21.9x74.8	1255x555x1900 / 49.4x21.9x74.8	655x555x1900 / 25.8x21.9x74.8	655x555x1900 / 25.8x21.9x74.8	600x510x650 / 23.6x20.1x25.6
	Spill tray (PP)	545x419x33 / 21.5x16.5x1.3				470x370x100 / 18.5x14.6x3.9
	Shelf (Melamine faced board)	552x424x18 / 21.7x16.7x0.7				-
	Net weight (kg / lbs)	284 / 626.1	257 / 566.6	160 / 352.7	146 / 321.9	52 / 114.6
Cat. No.		AAAF60043	AAAF60025	AAAF60023	AAAF60011	AAAF60012

It is recommended to use with an in-house ventilation system or extraction module(EM-33) to efficiently exhaust the vapor inside of the cabinet.
Using it alone may cause product durability affected from inflammable vapor stayed inside during acid/corrosive sample storage.

Accessories & Options

Extraction module
(pre filter built-in)

Cabinet with ventilation hole can be a (ductless) filtering storage cabinet after installing this extraction module. Add suitable filters for efficient vapor extraction.

Cat. No.	Description	Suitable for
AAAF1536	EM-33, Extraction module (pre filter built in) [1] (230V, 60Hz) (348x498x343mm / 13.7x19.6x13.5inch)	SC-C1912D4, SC-C1912D2, SC-C1906D2, SC-C1906D1
AAAF15362	Plinth [2] for extraction module (EM-33) (825x480x50mm / 32.5x18.9x2inch)	SC-C1912D4, SC-C1912D2

Cat. No.	Description	Application
AAAB6360	Pre filter	Larger particles and increasing the life of main filter
AAAB6353	HEPA filter	Biohazardous aerosols and other visible and non-visible particles (filtration efficiency: 99.99% at 0.3 microns)
AAAB6354	Complex carbon filter (VOC + NH3 + Acid)	Volatile organic compounds (VOC), Ammonia, Acidic solvents [1] (MA), Alkaline solvents (MB)
AAAB6356	Acid carbon filter [3]	An acidic solvent ; Acetic acid, etc
AAAB6358	Formaldehyde carbon filter	Formadehyde applications
AAAB6359	Ammonia / Amines carbon filter	Ammonia/Amines by chemisorptions

1) Maximum installable filter quantity: 2 ea.
2) In case of cabinet with two ventilation holes on the top (SC-C1912D4, SC-C1912D2), plinth is required to order for connecting two holes into one. With use of plinth, you only need one extraction module (EM-33).
3) Please do not use high percentage of reactive acid such as perchloric acid.

Spill Tray (polypropylene)

Shelf (Melamine faced board)

Cat. No.	Description	Suitable for
SCF0037	Spill Tray (polypropylene) (545x419x33mm / 21.5x16.5x1.3inch)	SC-C1912D4, SC-C1912D2, SC-C1906D2, SC-C1906D1
CBN0010	Spill Tray (polypropylene) (470x370x100mm / 18.5x14.6x3.9inch)	SC-C0706D1
AAAF65302	Shelf (Melamine faced board) (552x424x18 mm / 21.7x16.7x0.7inch)	SC-C1912D4, SC-C1912D2, SC-C1906D2, SC-C1906D1

Impressive range of cabinet models to choose from for creating the most ideal lab environments. (65 Duco - Slide storage cabinet)

Manufactured with PP trays and dividers

- 8 different tray dimensions.
- Impact resistant, durable, and excellent chemical resistance rating.
- Adjustable trays can be placed at different heights.
- The tray divider keeps stuff tidy and organized.

Locking mechanism

- Adopted self-lock handle convenient for keeping things secure, comes standard with lock for protection against unauthorized users.
- Comes standard with lock for protection against unauthorized personnel.

Easily removable name plates

- Convenient and useful for keeping track of inventory.
- 3 different sizes.

3 types of color choices.

🟦	Persian blue
🟨	Yellow
⬜	Light gray

Anchoring kit

- All tall cabinets include anchoring kits to fix the cabinet to the floor to prevent the cabinet from tipping over.

Gas cylinder storage

- Gas cylinder constructed for storage of gas cylinders inside building.
- DS-GC models.
  : Essentially convenient and standard safety functions are incorporated in the cabinets.

Ventilation system

- Hexagonal or trapezoidal ventilation space is formed between the innovatively designed cabinet side structures.

Scientific Equipment and Furniture Association

- The world professional organization for providing leadership in issues involving the design, specification and utilization of laboratory furniture and equipment.

Common features for Base Cabinets

Steel base cabinets are ideally convenient on top or underneath the lab benches. Also, these cabinets come with basic exhaust structures for safe storage of routinely used laboratory items.

Fully-extendable slide out drawers useful for getting at stored lab items placed in the back of the drawer.

Superiorly chemical resistant PP trays included with the drawers keep lab material safely tidy and organized.

Tray comes standard with four tray dividers.

The moveable cabinets (DS-UT/DS-UD) are designed to fit under the lab bench, counter, fume hood.

A1 - Magnetic name plate   **B1 - Name plate**

The removable name plate comes included with the cabinet to keep track of inventory.

ADA solutions

- DS-UT / DS-UD (only depth 550mm / 21.65inch) are made cognizant by the Americans with Disabilities Act.

Table top type cabinets

Glass door cabinets and pull-out drawers can also be used as a table top storage unit.

DS-TT

Standard accessories

- Trays, Tray dividers
- Name plates, Door key

Exterior height (mm / inch)		900 / 35.4	900 / 35.4	900 / 35.4
Exterior width (mm / inch)		476 / 18.7	560 / 22.1	644 / 25.4
Each drawer width (mm / inch)	Left	194 / 7.6	194 / 7.6	278 / 10.9
	Right	194 / 7.6	278 / 10.9	278 / 10.9
No. of tray (standard / max.)		3 / 4	3 / 4	3 / 4
Max. load per tray (kg / lbs)		30 / 66.1	30 / 66.1	30 / 66.1
No. of name plate		2	2	2
Exterior depth (mm / inch)		700 / 27.6	700 / 27.6	700 / 27.6
Net weight (kg / lbs)		61 / 134.5	67 / 147.7	73 / 160.9
Model		**DS-TT-09047D2**	**DS-TT-09056D2**	**DS-TT-09064D2**
Cat. No.		**AAAF1020**	**AAAF1021**	**AAAF1022**
Exterior depth (mm / inch)		550 / 21.6	550 / 21.6	550 / 21.6
Net weight (kg / lbs)		54 / 119.0	59 / 130.1	64 / 141.1
Model		**DS-TT-09047N2**	**DS-TT-09056N2**	**DS-TT-09064N2**
Cat. No.		**AAAF1023**	**AAAF1024**	**AAAF1025**

DS-TW

Standard accessories

- Trays, Tray dividers, Name plates

Exterior height (mm / inch)	900 / 35.4	900 / 35.4	900 / 35.4	900 / 35.4
Exterior width (mm / inch)	472 / 18.6	556 / 21.9	915 / 36.0	1083 / 42.6
Each drawer width (mm / inch)	418 / 16.5	502 / 19.8	418 / 16.5	502 / 19.8
No. of tray (standard / max.)	3 / 4	3 / 4	3 / 4	3 / 4
Max. load per tray (kg / lbs)	30 / 66.1	30 / 66.1	30 / 66.1	30 / 66.1
No. of name plate	2	2	2	2
Exterior depth (mm / inch)	550 / 21.6	550 / 21.6	550 / 21.6	550 / 21.6
Net weight (kg / lbs)	61 / 134.5	65 / 143.3	110 / 242.5	119 / 262.4
Model	**DS-TW-09047N1**	**DS-TW-09055N1**	**DS-TW-09091N2**	**DS-TW-09108N2**
Cat. No.	**AAAF1054**	**AAAF1055**	**AAAF1056**	**AAAF1057**

Accessories & Options

Cat. No.	Description		Suitable for
CBN0014	Tray (160×620×80mm / 6.3×24.4×3.1")	DS-TT-	09047D2, 09056D2
CBN0015	Tray (250×620×90mm / 9.8× 24.4×3.5")		09056D2, 09064D2
CBN0008	Tray (160×470×80mm / 6.3×18.5×3.1")		09047N2, 09056N2
CBN0009	Tray (250×470×90mm / 9.8×18.5×3.5")		09056N2, 09064N2
AAAF1501	Drawer set (epoxy painted steel, 388×504mm / 15.3×19.8")	DS-TW-	09047N1, 09091N2
AAAF1502	Drawer set (epoxy painted steel, 472×504mm / 18.6×19.8")		09055N1, 09108N2
AAAF1504	Drawer set (stainless steel, 388×504mm / 15.3×19.8")		09047N1, 09091N2
AAAF1505	Drawer set (stainless steel, 472×504mm / 18.6×9.8")		09055N1, 09108N2
CBN0016	Tray divider (160mm / 6.3" width)	DS-TT-	09047D2, 09056D2, 09047N2, 09056N2
CBN0017	Tray divider (250mm / 9.8" width)		09056D2. 09064D2, 09056N2, 09064N2
CBN0018	Tray divider (370mm / 14.6" width)	DS-TW-	09047N1, 09091N2
CBN0019	Tray divider (450mm / 17.7" width)		09055N1, 09108N2
AAAF1521	Magnetic name plate A1 (150×200mm / 5.9×7.9")	DS-TT-	09047D2, 09056D2, 09064D2, 09047N2, 09056N2, 09064N2
AAAF1523	Name plate B1 (320×115mm / 12.6×4.5")	DS-TW-	09047N1, 09091N2, 09055N1, 09108N2

Under table type cabinets

Movable and compact storage units useful for underneath the lab bench.

DS-UT

Standard accessories
- Trays, Tray dividers
- Name plates, Door key

Exterior height (mm / inch)		650 / 25.6	650 / 25.6	650 / 25.6
Exterior width (mm / inch)		476 / 18.7	560 / 22.1	644 / 25.4
Each drawer width (mm / inch)	Left	194 / 7.6	194 / 7.6	278 / 10.9
	Right	194 / 7.6	278 / 10.9	278 / 10.9
No. of tray (standard / max.)		3 /3	3 /3	3 /3
Max. load per tray (kg / lbs)		30 / 66.1	30 / 66.1	30 / 66.1
No. of name plate		2	2	2
Exterior depth (mm / inch)		700 / 27.6	700 / 27.6	700 / 27.6
Net weight (kg / lbs)		58 / 127.9	64 / 141.1	70 / 154.3
Model		**DS-UT-06047D2**	**DS-UT-06056D2**	**DS-UT-06064D2**
Cat. No.		**AAAF1010**	**AAAF1011**	**AAAF1012**
Exterior depth (mm / inch)		550 / 21.6	550 / 21.6	550 / 21.6
Net weight (kg / lbs)		50 / 110.2	55 / 121.3	60 / 132.3
Model		**DS-UT-06047N2**	**DS-UT-06056N2**	**DS-UT-06064N2**
Cat. No.		**AAAF1013**	**AAAF1014**	**AAAF1015**

DS-UD

Standard accessories
- Trays, Tray dividers
- Name plates, Door key
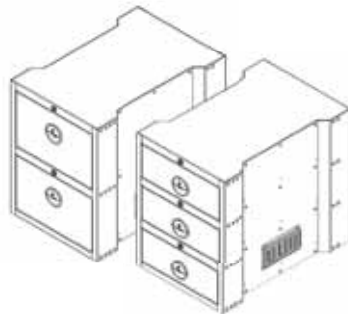
Exterior height (mm / inch)	650 / 25.6	650 / 25.6	650 / 25.6	650 / 25.6
Exterior width (mm / inch)	476 / 18.7	476 / 18.7	560 / 22.1	560 / 22.1
Each drawer width (mm / inch)	388 / 15.3	388 / 15.3	472 / 18.6	472 / 18.6
No. of tray (standard / max.)	1 / 1	1 / 1	1 / 1	1 / 1
Max. load per tray (kg / lbs)	30 / 66.1	30 / 66.1	30 / 66.1	30 / 66.1
No. of name plate	2	3	2	3
Exterior depth (mm / inch)	700 / 27.6	700 / 27.6	700 / 27.6	700 / 27.6
Net weight (kg / lbs)	50 / 110.2	61 / 134.5	57 / 125.7	69 / 152.1
Model	**DS-UD-06047D2**	**DS-UD-06047D3**	**DS-UD-06056D2**	**DS-UD-06056D3**
Cat. No.	**AAAF1040**	**AAAF1041**	**AAAF1042**	**AAAF1043**
Exterior depth (mm / inch)	550 / 21.6	550 / 21.6	550 / 21.6	550 / 21.6
Net weight (kg / lbs)	43 / 94.8	52 / 114.6	49 / 108	59 / 130
Model	**DS-UD-06047N2**	**DS-UD-06047N3**	**DS-UD-06056N2**	**DS-UD-06056N3**
Cat. No.	**AAAF1044**	**AAAF1045**	**AAAF1046**	**AAAF1047**

Accessories & Options

Cat. No.	Description		Suitable for
CBN0014	Tray (160×620×80mm / 6.3×24.4×3.1")		06047D2, 06056D2
CBN0015	Tray (250×620×90mm / 9.8× 24.4x3.5")	DS-UT-	06056D2, 06064D2
CBN0008	Tray (160×470×80mm / 6.3×18.5×3.1")		06047N2, 06056N2
CBN0009	Tray (250x470×90mm / 9.8×18.5×3.5")		06056N2, 06064N2
CBN0012	Tray (370×620×100mm / 14.6×24.4×3.9")		06047D2, 06047D3
CBN0013	Tray (450×620×110mm / 17.7×24.4×4.3")	DS-UD-	06056D2, 06056D3
CBN0010	Tray (370×470×100 / 14.6×18.5×3.9")		06047N2, 06047N3
CBN0011	Tray (450×470×110 / 17.7×18.5×4.3")		06056N2, 06056N3
CBN0016	Tray divider (160mm / 6.3" width)	DS-UT-	06047D2, 06056D2, 06047N2, 06056N2
CBN0017	Tray divider (250mm / 9.8" width)		06056D2, 06064D2, 06056N2, 06064N2
CBN0018	Tray divider (370mm / 14.6" width)	DS-UD-	06047D2, 06047D3, 06047N2, 06047N3
CBN0019	Tray divider (450mm / 17.7" width)		06056D2, 06056D3, 06056N2, 06056N3
AAAF1521	Magnetic name plate A1 (150×200mm / 5.9×7.9")	DS-UT-	06047D2, 06056D2, 06064D2, 06047N2, 06056N2, 06064N2
		DS-UD-	06047D2, 06056D2, 06047N2, 06056N2
AAAF1522	Magnetic name plate A2 (120×165mm / 4.7×6.5")	DS-UD-	06047D3, 06056D3, 06047N3, 06056N3

Furniture

Common features for Tall Cabinets

Tall cabinet models are useful for storing large amounts of liquid and solid substances.

The fully extendable drawers can be accessed from either left or right side of the cabinets.

Hidden wheels under the lower drawer for DS-SL and DS-S models easily support 60kg.

Connect multiple cabinets side by side to make the cabinets sturdy and balanced.

The air and vapor vented through both sides of the cabinet vent slits.

The removable name plates come included for keeping track of inventory.

35mm /1.38inch
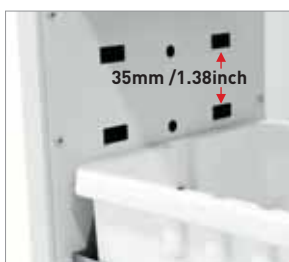
Adjustable bracket mounts in the cabinet, designed for placing PP trays at any height.

Each tray comes standard with four tray dividers.

Anchor
Four anchors are provided for ensuring the cabinet safely fixed on the floor.

Cat. No.	Description
CBN0036	Anchor

Extraction module (optional) (except for DS-OR)

Cabinet with ventilation hole can be a (ductless) filtering storage cabinet after installing this extraction module. Add suitable filters for efficient vapor extraction.

Cat. No.	Description
AAAF1536	EM-33, Extraction module (pre filter built in) [1] (230V, 60Hz) (348x498x343mm / 13.7x19.6x13.5inch)

Cat. No.	Description
AAAB6360	Pre filter
AAAB6353	HEPA filter
AAAB6354	Complex carbon filter (VOC + NH₃ + Acid)
AAAB6356	Acid carbon filter [2]
AAAB6358	Formaldehyde carbon filter
AAAB6359	Ammonia / Amines carbon filter

1) Maximum installable filter quantity: 2 ea.
2) Please do not use high percentage of reactive acid such as perchloric acid.

Filtering

Stand type cabinets

Large and tall dimensions with 3 tier pull-out storage drawers.
Cabinet can be either connected to in-house laboratory exhaust system or extraction module (optional, see page 52) in order to efficiently exhaust the vapor inside of the cabinet.
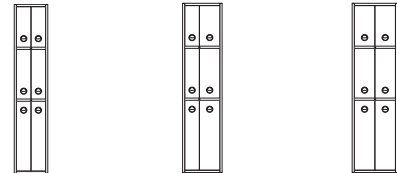
DS-SL

Standard accessories
- Trays, Tray dividers
- Name plates, Anchors, Door key

Optional accessories
- Extraction module

Exterior height (mm / inch)		2400 / 94.5	2400 / 94.5	2400 / 94.5
Exterior width (mm / inch)		476 / 18.7	560 / 22.0	644 / 26.1
Each drawer width (mm / inch)	Left	194 / 7.6	194 / 7.6	278 / 10.9
	Right	194 / 7.6	278 / 10.9	278 / 10.9
No. of tray (standard / max.)	Upper	3 / 3	3 / 3	3 / 3
	Middle	3 / 4	3 / 4	3 / 4
	Lower	4 / 6	4 / 6	4 / 6
Max. load per tray (kg / lbs)	Upper, Middle	30 / 66.1	30 / 66.1	30 / 66.1
	Lower	60 / 132.3	60 / 132.3	60 / 132.3
No. of name plate		6	6	6
Exterior depth (mm / inch)		700 / 27.6	700 / 27.6	700 / 27.6
Net weight (kg / lbs)		181 / 339.0	196 / 432.1	212 / 467.4
Model		**DS-SL-24047D6**	**DS-SL-24056D6**	**DS-SL-24064D6**
Cat. No.		**AAAF1080**	**AAAF1081**	**AAAF1082**

Accessories & Options

Trays

Cat. No.	Description		Suitable for
CBN0014	Tray (160×620×80mm / 6.3×24.4×3.1")	DS-SL-	24047D6, 24056D6
CBN0015	Tray (250×620×90mm / 9.8× 24.4x3.5")		24056D6, 24064D6

Tray dividers

Cat. No.	Description		Suitable for
CBN0016	Tray divider (160mm / 6.3" width)	DS-SL-	24047D6, 24056D6
CBN0017	Tray divider (250mm / 9.8" width)		24056D6, 24064D6

Name plates

Cat. No.	Description		Suitable for
AAAF1521	Magnetic name plate A1 (150×200mm / 5.9×7.9")	DS-SL-	24047D6, 24056D6, 24064D6

General Storage Cabinet (Tall - DS-S)

Filtering

Stand type cabinets

General height with 2 tier pull-out storage drawers.
Cabinet can be either connected to in-house laboratory exhaust system or extraction module (optional, see page 52) in order to efficiently exhaust the vapor inside of the cabinet.
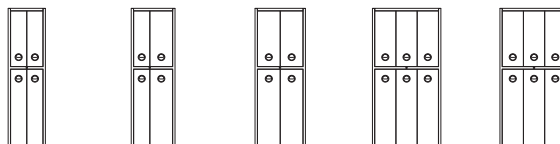
DS-S

Standard accessories
- Trays, Tray dividers
- Name plates, Anchors, Door key

Optional accessories
- Extraction module
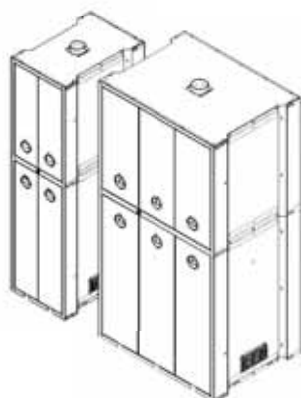
Exterior height (mm / inch)		1800 / 70.9	1800 / 70.9	1800 / 70.9	1800 / 70.9	1800 / 70.9
Exterior width (mm / inch)		476 / 18.7	560 / 22.1	644 / 25.4	686 / 27.0	938 / 36.9
Each drawer width (mm / inch)	Left	194 / 7.6	194 / 7.6	278 / 10.9	194 / 7.6	278 / 10.9
	Middle	-	-	-	194 / 7.6	278 / 10.9
	Right	194 / 7.6	278 / 10.9	278 / 10.9	194 / 7.6	278 / 10.9
No. of tray (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 tray (kg / lbs)	Upper	30 / 66.1	30 / 66.1	30 / 66.1	30 / 66.1	30 / 66.1
	Lower	60 / 132.3	60 / 132.3	60 / 132.3	60 / 132.3	60 / 132.3
No. of name plate		4	4	4	6	6
Exterior depth (mm / inch)		700 / 27.6	700 / 27.6	700 / 27.6	700 / 27.6	700 / 27.6
Net weight (kg / lbs)		124 / 273.4	137 / 302.0	146 / 321.9	172 / 379.2	206 / 454.2
Model		**DS-S-18047D4**	**DS-S-18056D4**	**DS-S-18064D4**	**DS-S-18068D6**	**DS-S-18093D6**
Cat. No.		**AAAF1000**	**AAAF1001**	**AAAF1002**	**AAAF1003**	**AAAF1004**
Exterior depth (mm / inch)		550 / 21.6	550 / 21.6	550 / 21.6	550 / 21.6	550 / 21.6
Net weight (kg / lbs)		107 / 235.9	119 / 262.4	126 / 277.8	148 / 326.3	178 / 392.4
Model		**DS-S-18047N4**	**DS-S-18056N4**	**DS-S-18064N4**	**DS-S-18068N6**	**DS-S-18093N6**
Cat. No.		**AAAF1005**	**AAAF1006**	**AAAF1007**	**AAAF1008**	**AAAF1009**

Accessories & Options

Trays

Cat. No.	Description		Suitable for
CBN0014	Tray (160×620×80mm / 6.3×24.4×3.1")	DS-S-	18047D4, 18056D4, 18068D6
CBN0015	Tray (250×620×90mm / 9.8× 24.4×3.5")		18056D4, 18064D4, 18093D6
CBN0008	Tray (160×470×80mm / 6.3×18.5×3.1")		18047N4, 18056N4, 18068N6
CBN0009	Tray (250x470×90mm / 9.8×18.5×3.5")		18056N4, 18064N4, 18093N6

Tray dividers

Cat. No.	Description		Suitable for
CBN0016	Tray divider (160mm / 6.3" width)	DS-S-	18047D4, 18056D4, 18068D6, 18047N4, 18056N4, 18068N6
CBN0017	Tray divider (250mm / 9.8" width)		18056D4, 18064D4, 18093D6, 18056N4, 18064N4, 18093N6

Name plates

Cat. No.	Description		Suitable for
AAAF1521	Magnetic name plate A1 (150×200mm / 5.9×7.9")	DS-S-	18047D4, 18056D4, 18068D6, 18064D4, 18093D6, 18047N4, 18056N4, 18068N6, 18064N4, 18093N6

Lab Companion

Filtering

Combi type cabinets

Variety of different size drawers, narrow and wide.
Cabinet can be either connected to in-house laboratory exhaust system or extraction module (optional, see page 52) in order to efficiently exhaust the vapor inside of the cabinet.

DS-C

Standard accessories
- Trays, Tray dividers
- Name plates, Anchors, Door key

Optional accessories
- Extraction module

Exterior height (mm / inch)		1800 / 70.9	1800 / 70.9	1800 / 70.9	1800 / 70.9
Exterior width (mm / inch)		476 / 18.7	476 / 18.7	560 / 22.1	560 / 22.1
Each drawer width (mm / inch)	Left	194 / 7.6	194 / 7.6	194 / 7.6	194 / 7.6
	Right	194 / 7.6	194 / 7.6	278 / 10.9	278 / 10.9
No. of tray (standard / max.)	Upper	3 / 4	3 / 4	3 / 4	3 / 4
	Lower	1 / 1	1 / 1	1 / 1	1 / 1
Max. load per tray (kg / lbs)		30 / 66.1	30 / 66.1	30 / 66.1	30 / 66.1
No. of name plate		4	5	4	5
Exterior depth (mm / inch)		700 / 27.6	700 / 27.6	700 / 27.6	700 / 27.6
Net weight (kg / lbs)		114 / 251.3	126 / 277.8	127 / 279.9	140 / 380.6
Model		**DS-C-18047D4**	**DS-C-18047D5**	**DS-C-18056D4**	**DS-C-18056D5**
Cat. No.		**AAAF1030**	**AAAF1031**	**AAAF1032**	**AAAF1033**
Exterior depth (mm / inch)		550 / 21.6	550 / 21.6	550 / 21.6	550 / 21.6
Net weight (kg / lbs)		100 / 220.5	108 / 238.1	110 / 242.5	120 / 264.6
Model		**DS-C-18047N4**	**DS-C-18047N5**	**DS-C-18056N4**	**DS-C-18056N5**
Cat. No.		**AAAF1034**	**AAAF1035**	**AAAF1036**	**AAAF1037**

Accessories & Options

Trays

Cat. No.	Description		Suitable for
CBN0014	Tray (160×620×80mm / 6.3×24.4×3.1")		18047D4, 18047D5, 18056D4, 18056D5
CBN0015	Tray (250×620×90mm / 9.8× 24.4x3.5")		18056D4, 18056D5
CBN0012	Tray (370×620×100mm / 14.6×24.4×3.9")		18047D4, 18047D5
CBN0013	Tray (450×620×110mm / 17.7×24.4×4.3")	DS-C-	18056D4, 18056D5
CBN0008	Tray (160×470×80mm / 6.3×18.5×3.1")		18047N4, 18047N5, 18056N4, 18056N5
CBN0009	Tray (250×470×90mm / 9.8×18.5×3.5")		18056N4, 18056N5
CBN0010	Tray (370×470×100 / 14.6×18.5×3.9")		18047N4, 18047N5
CBN0011	Tray (450×470×110 / 17.7×18.5×4.3")		18056N4, 18056N5

Tray dividers

Cat. No.	Description		Suitable for
CBN0016	Tray divider (160mm / 6.3" width)		18047D4, 18047D5, 18056D4, 18056D5, 18047N4, 18047N5, 18056N4, 18056N5
CBN0017	Tray divider (250mm / 9.8" width)	DS-C-	18056D4, 18056D5, 18056N4, 18056N5
CBN0018	Tray divider (370mm / 14.6" width)		18047D4, 18047D5, 18047N4, 18047N5
CBN0019	Tray divider (450mm / 17.7" width)		18056D4, 18056D5, 18056N4, 18056N5

Name plates

Cat. No.	Description		Suitable for
AAAF1521	Magnetic name plate A1 (150×200mm / 5.9×7.9")	DS-C-	18047D4, 18047D5, 18056D4, 18056D5, 18047N4, 18047N5, 18056N4, 18056N5
AAAF1522	Magnetic name plate A2 (120×165mm / 4.7×6.5")		18047D5, 18056D5, 18047N5, 18056N5

Furniture

Filtering

Open window type cabinet / Open rack type cabinets

Tempered glass cabinet door allow for easy viewing. (DS-OW)
- Cabinet can be either connected to in-house laboratory exhaust system or extraction module (optional, see page 52) in order to efficiently exhaust the vapor inside of the cabinet.

Multipurpose and stationary storage units. (DS-OR)

DS-OW

Standard accessories
- Trays, Tray dividers
- Name plates, Anchors, Door key

Optional accessories
- Extraction module
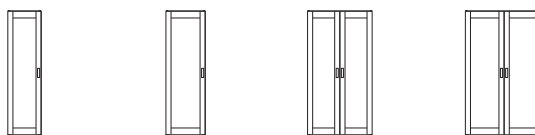
Exterior height (mm / inch)	1800 / 70.9	1800 / 70.9	1800 / 70.9	1800 / 70.9
Exterior width (mm / inch)	472 / 18.6	556 / 21.9	915 / 36.0	1083 / 42.6
Each drawer width (mm / inch)	418 / 16.5	502 / 19.8	418 / 16.5	502 / 19.8
No. of tray (standard / max.)	6 / 11	6 / 11	12 / 22	12 / 22
Max. load per tray (kg / lbs)	30 / 66.1	30 / 66.1	30 / 66.1	30 / 66.1
No. of name plate	6	6	12	12
Exterior depth (mm / inch)	550 / 21.6	550 / 21.6	550 / 21.6	550 / 21.6
Net weight (kg / lbs)	124 / 273.4	137 / 302.0	146 / 321.9	172 / 379.2
Model	DS-OW-18047N1	DS-OW-18055N1	DS-OW-18091N2	DS-OW-18108N2
Cat. No.	AAAF1050	AAAF1051	AAAF1052	AAAF1053

DS-OR

Standard accessories
- Trays, Tray dividers, Anchors

Exterior height (mm / inch)	1800 / 70.9	1800 / 70.9	1800 / 70.9	1800 / 70.9
Exterior width (mm / inch)	472 / 18.6	556 / 21.9	915 / 36.0	1083 / 42.6
Each drawer width (mm / inch)	418 / 16.5	502 / 19.8	418 / 16.5	502 / 19.8
No. of tray (standard / max.)	11 / 11	11 / 11	22 / 22	22 / 22
Max. load per tray (kg / lbs)	30 / 66.1	30 / 66.1	30 / 66.1	30 / 66.1
Exterior depth (mm / inch)	550 / 21.6	550 / 21.6	550 / 21.6	550 / 21.6
Net weight (kg / lbs)	110 / 242.5	120 / 264.6	215 / 473.9	244 / 537.9
Model	DS-OR-18047N1	DS-OR-18055N1	DS-OR-18091N2	DS-OR-18108N2
Cat. No.	AAAF1090	AAAF1091	AAAF1092	AAAF1093

Accessories & Options

Cat. No.	Description		Suitable for
AAAF1501	Drawer set (epoxy painted steel, 388×504mm / 15.3×19.8")	DS-OW-	18047N1, 18091N2
AAAF1502	Drawer set (epoxy painted steel, 472×504mm / 18.6×19.8")		18055N1, 18108N2
AAAF1504	Drawer set (stainless steel, 388×504mm / 15.3×19.8")		18047N1, 18091N2
AAAF1505	Drawer set (stainless steel, 472×504mm / 18.6×9.8")		18055N1, 18108N2
AAAF1507	Drawer set (epoxy painted steel, 388×504mm / 15.3×19.8")	DS-OR-	18047N1, 18091N2
AAAF1508	Drawer set (epoxy painted steel, 472×504mm / 18.6×19.8")		18055N1, 18108N2
AAAF1509	Drawer set (stainless steel, 388×504mm / 15.3×19.8")		18047N1, 18091N2
AAAF1510	Drawer set (stainless steel, 472×504mm / 18.6×9.8")		18055N1, 18108N2
CBN0018	Tray divider (370mm / 14.6" width)	DS-OW-	18047N1, 18091N2
CBN0019	Tray divider (450mm / 17.7" width)		18055N1, 18108N2
CBN0018	Tray divider (370mm / 14.6" width)	DS-OR-	18047N1, 18091N2
CBN0019	Tray divider (450mm / 17.7" width)		18055N1, 18108N2
AAAF1523	Name plate B1 (320×115mm / 12.6×4.5")	DS-OW-	18047N1, 18055N1, 18091N2, 18108N2

Constructed progressively strong, and for storage of gas cylinders inside of buildings.
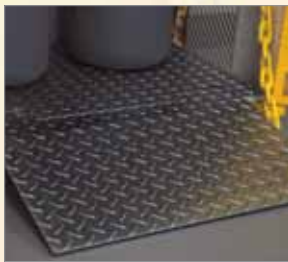
Large interior

Wide fold down ramp, safe and easy to maneuver gas cylinders in and out of the cabinet, easy to install gas fittings and pipes.

Spark-proof plastic chains

Convenient for securing gas cylinders in place, prevents gas cylinders from getting scratched.

Front and both side vent slits vents the cabinet effectively disperses the gas leak out of the cabinet in case there is damage to one of the gas cylinders.

Furniture
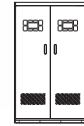
DS-GC

Standard accessories
• Door key
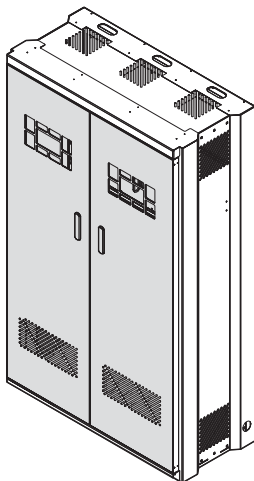
Exterior height (mm / inch)	1800 / 70.9	1800 / 70.9
Exterior width (mm / inch)	740 / 29.1	1070 / 42.1
Max. storage capacity of ⌀230mm gas cylinder	2	3
Exterior depth (mm / inch)	550 / 21.6	550 / 21.6
Net weight (kg / lbs)	107 / 235.9	140 / 308.6
Model	**DS-GC-18074N2**	**DS-GC-18107N2**
Cat. No.	**AAAF1070**	**AAAF1071**

05

Hoods

> Clean Benches
> Ductless Fume Hoods
> Movable Extraction Arm Hoods
> Extraction Arm Hoods
> Bench Top Fume Hoods
> PCR Workstations
> UV Sterilization Cabinets

General Applications

Clean Benches

Non-toxic IV solution, Preparation, Plant tissue culture, Media plate preparation, Electronics inspection, Medical device assembly, Pharmacy drug preparation.

Fume Hoods

Chemical sampling, Chemical preparation, Cosmetic Production, Numerous, Vapor-generating laboratory processes, Slide preparation, Welding fumes.

PCR Workstations

Medical device assembly, PCR, Staining with volatile, Sterile media preparation, Tissue fixation / Staining preparation.

UV Sterilization Cabinets

General sterilization in daily use.

Product Name		Clean Benches (Advanced)	Clean Benches (Basic)	Ductless Fume Hoods
Model		BC-H	BC-B	DLH-G
Description		Vertical laminar flow, Digital control	Vertical laminar flow, Analog control	Swing vane type, Digital control
Work space (W×D×H, mm)		945×570×670, 1245×570×670, 1845×570×670	945×570×670, 1245×570×670, 1845×570×670	880×640×800, 1180×640×800
Air volume (min. / max., cmh)		0 to 1020, 0 to 2040	0 to 1020, 0 to 2040	-
Airflow velocity (m/s)		0.3, 0.45	0.3, 0.45	Initial set point: 0.4m/s, 80fpm (face velocity)
Air flow				
Air cleanliness within workspace		ISO 14644-1 class 4 (US federal standard 209E class 10)		-
Filters (standard / optional)		Pre filter	Pre-filter	Pre-filter / Optional chemical filters
Construction	Work surface	Stainless steel grade 304, Hairline treatment	Stainless steel grade 304, Hairline treatment	Optional 6 different work surfaces
	UV lamp	O	O	-
Control	Display & Control interface	Dual, Digital-touch VFD	Analog-Switch, Knob	Digital-LED, Buttons
	Filter capacity check	Digital-Differential pressure sensor	Analog-Differential pressure guage	Analog-Gas detector (optional)
	Front access for filter replacement	O	O	O
	Diffusing muffler	O	O	-
	Blower speed adjustment	Digital	Analog	Digital
Safety	Door open level alarm	O	-	-
	Smart door system	O	-	-
	UV lamp auto off	O	O	-

Technical Benefits

› **Reliable international standard**

• ISO class 4 air cleanliness as per ISO 14644-1.
 - Equivalent to Class 10 as per US Federal Standard 209E
 - 99.99% efficient HEPA filter.

› **Chemical filters are selectable according to the application**

 - Complex carbon filter   - Formaldehyde filter
 - Acid filter   - Ammonia / Amines filter

Tips for Selection

› **Protection target**

• Clean benches / PCR workstations for sample protection.
 - HEPA-filtered environment protects the sample from air contamination. UV light enables effective sterilization of the sample.
  * Do not offer personnel protection.

• Fume hoods for personnel protection.
 - Efficiently designed to protect the user from harmful and toxic fumes generated from wide range of applications.
  * Ducted type and ductless type are available.

› **Usage environment**

• Ducted type for strong fume extraction.
 - In-lab exhaust system is essential to use the ducted fume hood. It guarantees strong and effective extraction of hazardous and toxic fumes.

• Ductless type for easy installation and maintenance.
 - Ventilation system in your lab is not required at all. Ductless fume hood with chemical filters enables effective fume extraction.

Movable Extraction Arm Hoods (with Filter System)		Extraction Arm Hoods (without Filter System)		Bench Top Fume Hoods	PCR Workstations	UV Sterilization Cabinets
EFS, AH		AH		PMH	PW	UVC
2 Joints	3 Joints	2 Joints	3 Joints	Compact size, Portable	Vertical laminar flow	UV lamp with timer control
Arm(LxØ,mm) 940x50, 1140x50, 1040x75	Arm(LxØ,mm) 1480x50, 1680x50, 1680x75	Arm(LxØ,mm) 940x50, 1140x50, 1040x75	Arm(LxØ,mm) 1480x50, 1680x50, 1780x50 1680x75	Entrance(WxD,mm) 560x300	700×585×602, 880×585×602, 1180×585×602	433×500×468, 583×500×468, 880×500×468
-	-	-	-	-	167 to 557, 209 to 697, 279 to 929	-
240 m³/h (tested with installing one arm)	-	-	-	-	0.3 / 60	-
-	-	-	-	-	ISO 14644-1 class 4 (US federal standard 209E class 10)	-
Standard Pre-filter / Optional HEPA filter, chemical filters	-	-	-	-	Standard HEPA filter, Pre-filter	-
-	-	-	-	Polyethylene	10mm thick acrylic resin (clear type)	Stainless steel grade 304
-	-	-	-	-	O	O
Analog-Button, Knob	-	-	-	-	Digital-LED, Buttons	Digital-VFD, Buttons
Analog-Gas detector (optional)	-	-	-	-	Analog-Gas detector (optional)	-
-	-	-	-	-	O	O
-	-	-	-	-	-	-
Analog	-	-	-	-	Digital	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	O	O

Vertical laminar flow clean benches with advanced digital control and various convenient features.

ISO class 4 air cleanliness as per ISO 14644-1.
Class 10 as per US Federal Standard 209E.
Nominal down flow velocity. (max. 0.45 m/sec)

Pre-Filter

Diffusing Muffler
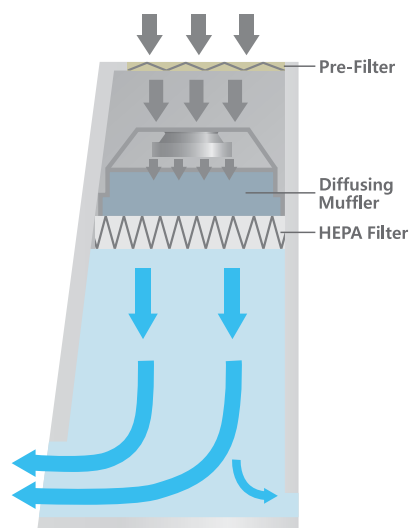
HEPA Filter

BC-11H
with optional stand and gas cock, HEPA filter

Standard accessories
see page 63

- Pre filter
- UV lamp, Fluorescent lamp
- Electrical socket

Automatic UV OFF

Fluorescent /Blower ON

Interlocking smart door system (patent pending)

Lab Companion

Performance

- ISO class 4 (US class 10) HEPA filter for optimal protection against cross-contamination.

- 0.3 µm and larger particulates are removed with 99.99% efficiency, leak-tight HEPA filter which satisfying class 10.
  (US Federal Standard 209E)
  (average life span of HEPA filter: 3 years – it depends on the test room conditions)

- High-quality polyester fiber pre filter (with minimal pressure loss and 85% arrestant on the A.F.I. test) for trapping larger particles and increasing the life of the main HEPA filter.

- Digital airflow rate sensor (microprocessor) for automated airflow speed control.
  - Offers continual airflow speed of same velocity and extends the HEPA filter life span.

- Exclusive diffusing muffler structure forms high quality laminar flow.

- Quiet and comfortable working environment. (less than 65dB)

Convenience

- Interlocking smart door system
  - Simply open the door while UV-lamp is on. Interlocking smart door system will automatically turn off UV-lamp, turn on fluorescent lamp and blower instead of your manual control.

- Two digital displays for the best convenience.
  - Even if any test is ongoing inside of the chamber, unit conditions such as velocity, temperature and humidity can be easily checked by the inner and outside displays.

- Digital differential pressure sensor allows for easy verification of HEPA filter condition great for knowing when to change HEPA filter.

- When UV light intensity is lower than 80%, UV warning lamp is automatically on to let users know when to change UV-lamp.

- Comfortable front access to cartridge type of filters for easy replacement.

- Highly durable, rust-free, and easy-to-clean grade 304 stainless steel work surface.

- The inner left side magnetic board allows some memos and small tools.

Safety

- UV-blocking and impact-resistant tempered glass door.

- If the sash is opened more than the recommended sash height level, during operation, warning alarm will activate and alarm users to lower the window to the recommended sash level to prevent contamination of samples.

- If the sash is opened during UV-lamp operation, UV lamp automatically turns off to protect users.

- Smoothly sliding front door stoppable at any height for user's safety and easy transport of equipment into the workspace.

- Protection against over-current.

Model		BC-01H		BC-11H		BC-21H	
Air flow type		Vertical laminar flow					
Air volume (minimum / maximum)		0 to 1020 cmh / 0 to 600 cfm		0 to 2040 cmh / 0 to 1200 cfm			
Laminar airflow velocity (m / s / fpm)		0.3 / 59		0.45 / 89		0.3 / 59	
Air cleanliness within work space		ISO 14644-1 class 4, US Federal Standard 209E class 10					
Filters	HEPA filter	Typical efficiency of 99.99% on 0.3　(US MIL-STD-282) ; Micro glass fiber Media, Particle board, AL separator, Neoprene gaskets					
	Pre filter	Polyester fibers with an filter efficiency of 85% (A-F-I TEST) ; Aluminum frame, Polyester fiber media					
Noise level		Typically < 65dB at blower speed					
Materials	Main body	Steel powder coating					
	Work surface	Stainless steel grade 304, Hairline treatment					
	Windows (front / side)	Colorless and transparent UV absorbing 5mm tempered glass					
Illumination	Intensity (lux)	> 650					
	Fluorescent lamp (W)	30 x 2ea				32 x 2ea	
		Electronically ballasted Fluorescent Lamp					
	UV lamp (W)	25 x 1ea		30 x 1ea		25 x 2ea	
		Electronically ballasted UV Lamp					
Electric socket outlets		230V socket					
Dimension (W×D×H)	Interior (mm / inch)	945×570×670 / 37.2×22.4×26.4		1245×570×670 / 49.0×22.4×26.4		1845×570×670 / 72.6×22.4×26.4	
	Exterior without stand (mm / inch)	1135×647×1150 / 44.7×25.5×45.3		1435×647×1150 / 56.5×25.5×45.3		2035×647×1150 / 80.1×25.5×45.3	
	Exterior with stand (mm / inch)	1135×647×1870 / 44.7×25.5×73.6		1435×647×1870 / 56.5×25.5×73.6		2035×647×1870 / 80.1×25.5×73.6	
	Net weight (body) (kg / lbs)	140 / 308.6		185 /407.9		225 / 496	
	Net weight (body + stand) (kg / lbs)	170 / 374.8		215 / 474		255 / 562.2	
Electrical requirements (230V, 1ph)		60Hz / 1.25 A	50Hz / 1.38 A	60Hz / 1.57 A	50Hz / 1.73 A	60Hz / 2.09 A	50Hz / 2.30 A
Cat. No.		AAHA5011K	AAHA5012K	AAHA5021K	AAHA5022K	AAHA5031K	AAHA5032K
Electrical requirements (120V, 1ph)		60Hz / 2.62 A		60Hz / 3.27 A		60Hz / 4.36 A	
Cat. No.		AAHA5013U		AAHA5023U		AAHA5033U	

FDA establishment registered company. FDA listed products.

Vertical laminar flow clean benches offer quick operation by simple-adjustable analog control.

ISO class 4 air cleanliness as per ISO 14644-1. Class 10 as per US Federal Standard 209E. Nominal down flow velocity. (max. 0.45 m/sec)

Pre-Filter
Diffusing Muffler
HEPA Filter
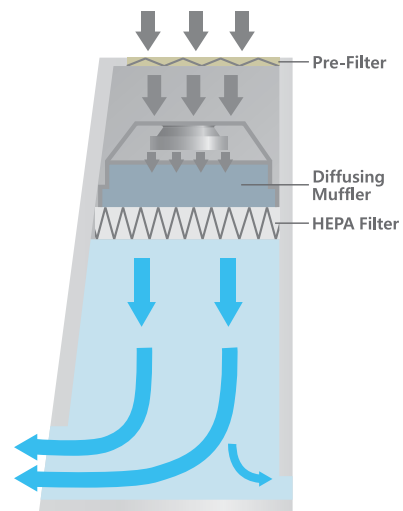
BC-11B
with optional stand, HEPA filter

Standard accessories
see page 63
- Pre filter
- UV lamp, Fluorescent lamp
- Electrical socket
- Differential pressure gauge

Performance

- ISO class 4 (US class 10) HEPA filter for optimal protection against cross-contamination.

- 0.3 μm and larger particulates are removed with 99.99% efficiency, leak-tight HEPA filter which satisfying class 10.
  (US Federal Standard 209E)
  (average life span of HEPA filter: 3 years – it depends on the test room conditions)

- High-quality polyester fiber pre filter (with minimal pressure loss and 85% arrestant on the A.F.I. test) for trapping larger particles and increasing the life of the main HEPA filter.

- Exclusive diffusing muffler structure forms high quality laminar flow.

- Quiet and comfortable working environment. (less than 65dB)

Convenience

- Built-in differential pressure gauge for easy checking HEPA filter condition.

- Comfortable front access to cartridge type of filters for easy replacement.

- Easy blower speed adjustment by the control panel.

- Highly durable, rust-free, and easy-to-clean grade 304 stainless steel work surface.

- The inner left side magnetic board allows some memos and small tools.

Safety

- UV-blocking and impact-resistant tempered glass door.

- If the sash is opened during UV-lamp operation, UV lamp automatically turns off to protect users.

- Lighting mode selection by 3-position toggle switch (UV / off / fluorescent) preventing harmful UV exposure.

- Smoothly sliding front door stoppable at any height for user's safety and easy transport of equipment into the workspace.

- Protection against over-current.

Lab Companion

CE | Diffusing Muffler

Model	BC-01B	BC-11B	BC-21B
Air flow type	Vertical laminar flow		
Air volume (minimum / maximum)	0 to 1020 cmh / 0 to 600 cfm	0 to 2040 cmh / 0 to 1200 cfm	
Laminar airflow velocity (m / s / fpm)	0.3 / 59	0.45 / 89	0.3 / 59
Air cleanliness within work space	ISO 14644-1 class 4, US Federal Standard 209E class 10		
Filters — HEPA filter	Typical efficiency of 99.99% on 0.3 (US MIL-STD-282) ; Micro glass fiber Media, Particle board, AL separator, Neoprene gaskets		
Filters — Pre filter	Polyester fibers with an filter efficiency of 85% (A·F·I TEST) ; Aluminum frame, Polyester fiber media		
Noise level	Typically < 65dB at blower speed		
Materials — Main body	Steel powder coating		
Materials — Work surface	Stainless steel grade 304, Hairline treatment		
Materials — Windows (front / side)	Colorless and transparent UV absorbing 5mm tempered glass		
Illumination — Intensity (lux)	> 650		
Illumination — Fluorescent lamp (W)	30 x 2ea		32 x 2ea
Illumination — Fluorescent lamp (W)	Electronically ballasted Fluorescent Lamp		
Illumination — UV lamp (W)	25 x 1ea	30 x 1ea	25 x 2ea
Illumination — UV lamp (W)	Electronically ballasted UV Lamp		
Electric socket outlets	230V socket		
Dimension (W×D×H) — Interior (mm / inch)	945×570×670 / 37.2×22.4×26.4	1245×570×670 / 49.0×22.4×26.4	1845×570×670 / 72.6×22.4×26.4
Dimension (W×D×H) — Exterior without stand (mm / inch)	1135×647×1150 / 44.7×25.5×45.3	1435×647×1150 / 56.5×25.5×45.3	2035×647×1150 / 80.1×25.5×45.3
Dimension (W×D×H) — Exterior with stand (mm / inch)	1135×647×1870 / 44.7×25.5×73.6	1435×647×1870 / 56.5×25.5×73.6	2035×647×1870 / 80.1×25.5×73.6
Dimension (W×D×H) — Net weight (body) (kg / lbs)	140 / 308.6	185 / 407.9	225 / 496
Dimension (W×D×H) — Net weight (body + stand) (kg / lbs)	170 / 374.8	215 / 474	255 / 562.2
Electrical requirements (230V, 1ph)	60Hz / 1.25 A | 50Hz / 1.38 A	60Hz / 1.57 A | 50Hz / 1.73 A	60Hz / 2.09 A | 50Hz / 2.30 A
Cat. No.	AAHA6011K | AAHA6012K	AAHA6021K | AAHA6022K	AAHA6031K | AAHA6032K
Electrical requirements (120V, 1ph)	60Hz / 2.62 A	60Hz / 3.27 A	60Hz / 4.36 A
Cat. No.	AAHA6013U	AAHA6023U	AAHA6033U

FDA establishment registered company. FDA listed products.

Accessories & Options

HEPA filter
- 99.99% efficient HEPA filter, industry standard size for economical replacement.

Stand with casters
- Mobile stand made of powder-coated steel ideal for easy relocation.

Pre filter
- Easy-to-replace pre-filter for trapping larger particles and extending the life of HEPA filters.

Filters

Cat. No.	Description	BC-01H/B	BC-11H/B	BC-21H/B
AAAB1601	HEPA filter	•	-	-
AAAB1602	HEPA filter	-	•	-
AAAB1603	HEPA filter	-	-	•
AAAB1611	Pre filter	•	-	-
AAAB1612	Pre filter	-	•	-
AAAB1613	Pre filter	-	-	•

Others

Cat. No.	Description	BC-01H/B	BC-11H/B	BC-21H/B
AAAB1621	Stand with casters	•	-	-
AAAB1622	Stand with casters	-	•	-
AAAB1623	Stand with casters	-	-	•
AAAB1631	UV lamp(230V)	•	-	-
AAAB1633	UV lamp(230V)	-	•	-
AAAB1635	UV lamp(230V)	-	-	•
AAAB1632	UV lamp(120V)	•	-	-
AAAB1634	UV lamp(120V)	-	•	-
AAAB1636	UV lamp(120V)	-	-	•
AAAB1561	Gas cock	•	•	•
AAAB1571	Differential pressure gauge (for BC-B)	•	•	•

Safe and energy-saving mobile workspace free from toxic vapors and fumes without the need of costly ductwork.

Main Filter
Pre-Filter
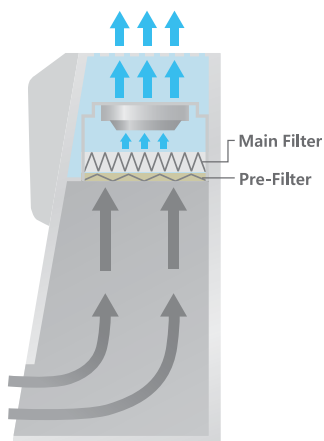
Digital controller

Anemometer

DLH-01G

with optional work surface and stand

Standard accessories
see page **65**
- Pre filter
- Fluorescent lamp

* DLH series do not come with any work surface. Please place an order one work surface among 6 optional different work surfaces for proper use.

Front cover

Performance

- A variety of filters and work surfaces available to suit your specific experimental needs. (refer to accessory section)
- High-quality polyester fiber pre-filter for trapping larger particles and increasing the life of the main HEPA filter.
- Large-capacity blower maintaining sufficient intake flow rate and reducing noise. (less than 55 dB under normal operation)
- Fluorescent light installed outside the workspace in order to prevent the airflow hindrance as well as the contamination while maintaining illumination intensity.

Convenience

- Easy monitoring of the internal airflow speed thanks to built-in anemometer.

- Comfortable front access to cartridge type of filters for easy replacement.
- Built-in utility hole for easily routing the cords or wires of the equipment placed inside the hood.
- Fully or half openable front door for convenient transport of experimental apparatuses and equipment into or out of the workspace.

Standards compliance

- Efficiency and capacity of activated carbon filters: BS 7989:2001
- Structure, electrical outlet, lighting, and sound level: BS 7258-1:1994
- Local smoke, large volume visualization, face velocity, and tracer gas: ANSI/ASHRAE 110-1995 and NF EN 14175-1

CE | Filtering

Model		DLH-01G		DLH-11G	
Controller		Microprocessor control			
Face velocity		Initial set point: 0.4m/s, 80fpm			
Air flow meter		Swing vane type			
Main filter		Chemical Filter (optional 6 different filters)			
Pre filter		Washable high efficiency nylon filter			
Materials	Main body, window (front / side)	2.0mm steel (epoxy powder-coated), 8mm / 6mm thick acrylic resin			
	Work surface	Optional 6 different work surfaces			
Fluorescent light intensity		> 600lux			
Noise level		55dB under normal operation			
Dimension (W×D×H)	Interior (mm / inch)	880×640×800 / 34.6×25.2×31.5		1180×640×800 / 46.5×25.2×31.5	
	Exterior without stand (mm / inch)	900×660×1250 / 35.4×26×49.2		1200×660×1250 / 47.2×26×49.2	
	Exterior with stand (mm / inch)	900×660×1985 / 35.4×26×78.1		1200×660×1985 / 47.2×26×78.1	
	Net weight (body) (kg / lbs)	100 / 220.5		118 / 260.1	
	Net weight (body + stand) (kg / lbs)	120 / 264.6		140 / 308.6	
Electrical requirements (230V)		50Hz, 0.6A	60Hz, 0.7A	50Hz, 0.6A	60Hz, 0.7A
Cat. No.		AAHB2002K	AAHB2001K	AAHB2012K	AAHB2011K
Electrical requirements (100V, 120V)		100V, 50Hz, 1.5A	120V, 60Hz, 1.3A	100V, 50Hz, 1.5A	120V, 60Hz, 1.3A
Cat. No.		AAHB2004U	AAHB2003U	AAHB2014U	AAHB2013U

FDA establishment registered company. FDA listed products.

Accessories & Options

Filters

Cat. No.	Description	Application	DLH-01G	DLH-11G
EDA9191	Activated carbon filter	All common laboratory chemicals, especially VOC, Organic, Benzene, Toluene, etc	•	-
EDA9192			-	•
EDA9199	Acid filter [1]	An acidic solvent ; Acetic acid, etc	•	-
EDA9200			-	•
EDA9203	Formaldehyde filter	Formadehyde applications	•	-
EDA9204			-	•
EDA9205	Ammonia / Amines filter	Ammonia/Amines by chemisorptions	•	-
EDA9206			-	•
EDA9193	HEPA filter	Biohazardous aerosols and other visible and non-visible particles (filtration efficiency: 99.99% at 0.3 microns)	•	-
EDA9194			-	•
EDA9196	Pre filter	-	•	-
EDA9198			-	•

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)	•	•
EAA1550	Gas detecting tube (benzene, GASTEC-121SP (0.5-10ppm))	•	•
EAA1551	Gas detecting tube (toluene, GASTEC-122L (1-100ppm))	•	•
EAA1552	Gas detecting tube (acetic acid, GASTEC-81L (0.125-25ppm))	•	•
EAA1553	Gas detecting tube (chloroform, GASTEC-137 (4-400ppm))	•	•
EAA1554	Gas detecting tube (formaldehyde, GASTEC-91LL (0.05-1ppm))	•	•
EAA1555	Gas detecting tube (ammonia, GASTEC-3L (0.5-60ppm))	•	•

Movable Extraction Arm Hoods

Filtering

In-lab ventilation system is no longer necessary with movable extraction arm hood. It can serve as the best mobile or fixed mounted fume extraction system.

Extraction filter system
(filter box with pre-filter)

EFS-33-50D with AH-50 (2ea)

Essential Components
see page 67

- Extraction filter system
  (filter box with pre-filter)
- Chemical filter
- Extraction arm hood

Make your own extraction hood by selecting each component.

Step 1. Extraction Filter Systems

- Single type and double type filter systems are available. Double type filter system can accommodate two arms, beneficial for space efficiency. If necessary, you can cover up one extraction hole in order to use it as single type filter system. In this case, you can also place filter system under table. Use of it alone without installing any arms can also perform as an air purifier.

- Durable BLDC motor provides quiet and comfortable working environment.

- Automatic fan malfunction warning alarm.

- Convenient air flow control.

- Airflow rate Max. 240m³/h. (tested with installing one arm)

- Compact body with built in castors for great mobility.
  (460x460x650mm / 18.1x18.1x25.6inch)
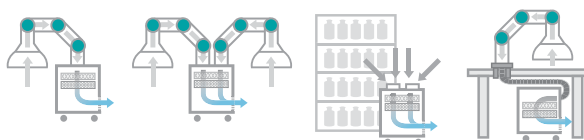
Various applications

Cat. No.	Description	Suitable for
AAHB6312	EFS-33-50S, Single hole	AH-50
AAHB6313	EFS-33-50D, Double holes	
AAHB6314	EFS-33-75S, Single hole	AH-75
AAHB6315	EFS-33-75D, Double holes	

230V, 50/60Hz, 1.5A.

Step 2. Filters

- Various filters are on your selection for safe and effective fume extraction.

- Gas detecting port for checking filter condition.

Cat. No.	Description
AAAB6354	Complex carbon filter
AAAB6356	Acid filter [1]
AAAB6358	Formaldehyde filter
AAAB6359	Ammonia / Amines filter
AAAB6353	HEPA filter
AAAB6360	Pre filter

1) Please do not use high percentage of reactive acid such as perchloric acid.
For chemical filters' application list and Gas Detector & Tubes ordering information, please refer to page 65.

Step 3. Extraction Arm Hoods

- 50mm and 75mm arms are available. Also 2 joints and 3 joints are selective. Arm joints are easily removable for simple adjustment of length of the arm. (removable parts : B)

- 360-degree rotatable joints in the arms provide exceptional flexibility for easy positioning.

- Chemical-resistant and heavy duty polypropylene extraction arm.

- Air flow rate is adjustable by the damper of the extraction arm.
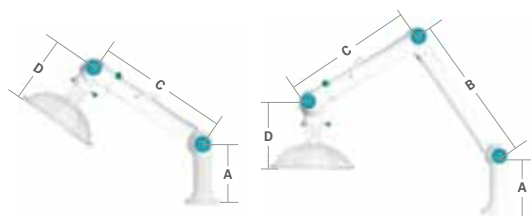
AH-50 with dome hood

Cat. No.	Joint	Length (mm / inch)				
		A	B	C	D	Total
AAAB6552	2	250/9.8	-	440/17.3	250/9.8	940/37
AAAB6554			-	640/25.2		1140/44.9
AAAB6562	3		540/21.3	440/17.3		1480/58.3
AAAB6563			640/25.2	540/21.3		1680/66.1
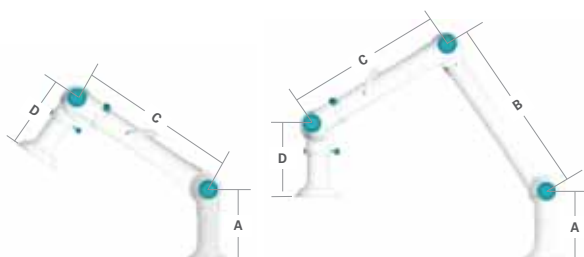
AH-75 with basic hood

Cat. No.	Joint	Length (mm / inch)				
		A	B	C	D	Total
AAAB6511	2	250/9.8	-	530/20.9	260/10.2	1040/40.9
AAAB6541	3		640/25.2			1680/66.1

Step 4. Additional Components

- Different shapes of hoods are available for effective fume extraction. Dome hood is suitable for extracting heated fumes or fumes lighter than air. Square hood is specially designed to face on the working surface, extracting fumes heavier than air.

- Table bracket set can fix arm to working table, beneficial for convenient user's experiments on the table. In addition to that, filter system can be located under table for space saving.

Dome hood
(transparent / white)

Square hood
(transparent / white)

Table bracket

Cat. No.	Description	Suitable for
AAAB6221	Dome hood (polypropylene, white, ØxH 400x140 mm / 15.7x5.5 inch)	AH-75
AAAB6211	Dome hood (styrene butadiene copolymer, transparent, ØxH 400x140 mm / 15.7x5.5 inch)	
AAAB6241	Square hood (polypropylene, white, WxDxH 494x390x245 mm / 19.4x15.4x9.6 inch)	
AAAB6231	Square hood (styrene butadiene copolymer, transparent, WxDxH 494x390x245 mm / 19.4x15.4x9.6 inch)	
AAAB6352	Table bracket set (bracket + flexible duct) (WxDxH 165x254x110mm / 6.5x10x4.3 inch)	AH-75
AAAB6351	Table bracket set (bracket + flexible duct) (WxDxH 165x254x110mm / 6.5x10x4.3 inch)	AH-50

The best solutions for eliminating dust and fume hazards at source.
Mountable on any surface such as ceiling, wall only when you have
a ventilation system in your lab.

AH-75 / AH-50(C)
with optional brackets and dome hood

Essential Components   • Extraction arm hood, Bracket
see page 69

Quick tilt-adjustable knob
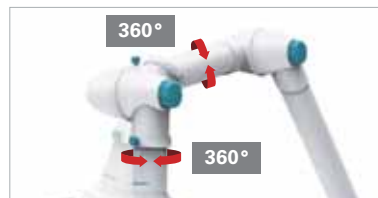
360° rotatable joint

Damper for airflow rate adjustment

Step 1. Extraction Arm Hood

- 50mm and 75mm arms are available. Also 2 joints and 3 joints are selective. Arm joints are easily removable for simple adjustment of length of the arm. (removable part : B)
- Chemical-resistant and heavy duty polypropylene extraction arm.
- 360-degree rotatable joints in the arms provide exceptional flexibility for easy positioning.
- Chemical-resistant and heavy duty polypropylene extraction arm.
- Air flow rate is adjustable by the damper of the extraction arm.

Step 2. Additional Components

- Different shapes of hoods are available for effective fume extraction. Dome hood is suitable for extracting heated fumes or fumes lighter than air. Square hood is specially designed to face on the working surface, extracting fumes heavier than air.
- One of the various brackets is essentially required for installing the extraction arm hood in your laboratory.

Brackets
(ceiling / ceiling column / wall)

Dome hood
(transparent / white)

Square hood
(transparent / white)
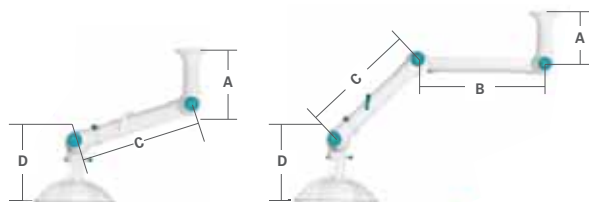
AH-50 with dome hood

Cat. No.	Joint	Length (mm / inch)				
		A	**B**	**C**	**D**	**Total**
AAAB6552	2	250/9.8	-	440/17.3	250/9.8	940/37
AAAB6554			-	640/25.2		1140/44.9

AH-50C with dome hood

Cat. No.	Joint	Length (mm / inch)				
		A	**B**	**C**	**D**	**Total**
AAAB6565	3	250/9.8	540/21.3	440/17.3	250/9.8	1480/58.3
AAAB6566			640/25.2	540/21.3		1680/66.1
AAAB6567			740/29.1	540/21.3		1780/70.1
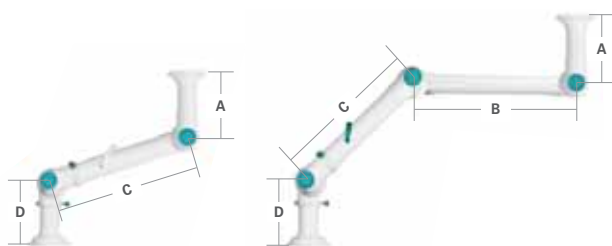
AH-75C with basic hood

Cat. No.	Joint	Length (mm / inch)				
		A	**B**	**C**	**D**	**Total**
AAAB6524	2	250/9.8	-	530/20.9	260/10.2	1040/40.9
AAAB6542	3		640/25.2			1680/66.1

Cat. No.	Description	Suitable for
AAAB6508	Ceiling bracket (WxDxH 260x260x2 mm / 10.2x10.2x0.1 inch)	All models
AAAB6512	Ceiling column (100x100x250 mm / 3.9x3.9x9.8 inch)	
AAAB6513	Ceiling column (100x100x500 mm / 3.9x3.9x19.7 inch)	
AAAB6514	Ceiling column (100x100x750 mm / 3.9x3.9x29.5 inch)	
AAAB6515	Ceiling column (100x100x1000 mm / 3.9x3.9x39.4 inch)	
AAAB6516	Ceiling column (100x100x1250 mm / 3.9x3.9x49.2 inch)	
AAAB6517	Ceiling column (100x100x1500 mm / 3.9x3.9x59.1 inch)	
AAAB6510	Wall bracket (158x259x81.7 mm / 6.2x10.2x3.2 inch)	
AAAB6221	Dome hood (polypropylene, white, ØxH 400x140 mm / 15.7x5.5 inch)	AH-75
AAAB6211	Dome hood (styrene butadiene copolymer, transparent, ØxH 400x140 mm / 15.7x5.5 inch)	
AAAB6241	Square hood (polypropylene, white, WxDxH 494x390x245 mm / 19.4x15.4x9.6 inch)	
AAAB6231	Square hood (styrene butadiene copolymer, transparent, WxDxH 494x390x245 mm / 19.4x15.4x9.6 inch)	

Bench Top Fume Hood

Filtering

Ideal for use in limited laboratory spaces.

Cost-effective, fully portable alternative to metal hoods.

PMH-720
with optional extraction module (EM-33)

Features

· Compact design for easy moving and space saving.

· Transparent polycarbonate front door for observation.

· The door opens to five positions for comfort and convenience.

· One-piece molded design for leak-tight and exceptional durability.

· Chemical resistance and spark-less polyethylene.
  - Whole body and every single part are made of anti-acid and corrosion material, optimum for storing chemical samples.

· An exhaust motor is required. The unit can be connected to an in-house laboratory exhaust system. Either 150mm (6") dia flexible duct can be used.

· Bench top fume hood can be also connected to optional fume extraction devices.
  - Extraction module (EM-33)
  - Movable extraction arm hood (EFS with AH)

· Rounded inner corners for continuous air flow and easy cleaning.

Information of accessories

Extraction module

Cat.No.	Description
AAAF1536	EM-33, Extraction module (pre filter built in) (230V, 60Hz) (348x498x343mm / 13.7x19.6x13.5inch)

Bracket

Cat.No.	Description
AAAB6411	Bracket for bench top fume hood (178x178x2mm / 7x7x0.1inch)

In case of using bench top fume hood (PMH-720) with movable extraction arm hood (EFS with AH), at least one bracket is required to order.

It is available to use with movable extraction arm hood.

Model	PMH-720
Permissible air velocity (m/s, fpm)	0.3 to 1 / 59.1 to 196.9
Permissible Environmental Condition	Temperature 2 to 60 , Maximum relative humidity 80%, Maximum altitude up to 2,000m
Material — Main body	Polyethylene
Material — Window	Polycarbonate
Dimension — Exterior (WxDxH, mm/inch)	720x450x560 / 28.3x17.7x22
Dimension — Entrance (WxD, mm/inch)	560x300 / 22x11.8
Dimension — Duct hole (O.D., mm/inch)	150 / 6
Dimension — Net weight (kg / lbs)	7 / 15.4
Cat. No.	AAAB5011

FDA establishment registered company. FDA listed products.

Performance

- ISO class 4 (US class 10) HEPA filter for optimal protection against cross-contamination.
  (average life span of HEPA filter: 3 years – it depends on the test room conditions)

- High-quality polyester fiber pre-filter (with minimal pressure loss and 85% arrestant on the A.F.I. test) for trapping larger particles and increasing the life of the main HEPA filter.

- Effective sterilization using a long-life 254 nm UV lamp.
  (average life span of UV lamp: 8,000 hours)

- Built in anti-glare fluorescent lamp minimizes shadows and relieves eye strain.

Convenience

- User-friendly microprocessor-based control panel.

- Large capacity blower and easy blower speed adjustment by the control panel.

- Easy-settable digital timer for UV light exposure to deactivate DNA and RNA contaminants. (wait off, max. 30min.)

- Comfortable front access to cartridge type of filters for easy replacement.

Safety

- Interlocking safety door system shuts off UV light automatically when opening the door.

- UV-blocking door and side panels made of transparent acrylic resin provides clear inside view.

- UV over-exposure alarm and over-current protection.

Specially designed to minimize the sample contamination during PCR

applications by combining ISO class 4 (US class 10) clean air environment.

PW-11

Standard accessories
see page 73

- HEPA filter
- Pre filter
- UV lamp
- Fluorescent lamp

Model		PW-01		PW-11		PW-21	
Air flow type		Vertical					
Max. air volume (cmh / cfm)		557 / 327		697 / 408		929 / 546	
Min. air volume (cmh / cfm)		167 / 97		209 / 121		279 / 162	
Laminar airflow velocity (m / s / fpm)		0.3 / 60					
Filter	Air cleanliness	ISO 14644-1 class 4					
	HEPA filter	Typical efficiency of 99.99% at 0.3　US MIL-STD-282 ; Micro glass fiber media, Particle board, Aluminum separator, Neoprene gaskets					
	Pre filter	Polyester fibers with an efficiency of 85% (A·F·I TEST); AL frame, Polyester fiber media					
Noise level (dBA)		Typically < 60 dBA at blower speed					
Material	Work surface	10mm thick acrylic resin (clear type)					
	Window (front, side / back)	8mm / 10mm thick acrylic resin (clear type)					
Illumination	Intensity	Fluorescent lamp (lux)	>1000				
		UV density (　/　)	165		185		330
	Capacity	Fluorescent lamp (w)	15 × 1ea		20 × 1ea		30 × 1ea
		UV lamp (w)	15 × 1ea		20 × 1ea		30 × 1ea
Dimension (W×D×H)	Interior (mm / inch)	700×585×602 / 27.5×23×23.7		880×585×602 / 34.6×23×23.7		1180×585×602 / 46.5×23×23.7	
	Exterior (mm / inch)	720×605×964 / 28×24×38		900×605×964 / 35.4×24×38		1200×605×964 / 47.2×24×38	
	Net weight (Body) (kg / lbs)	56.2 / 123.9		64.2 / 141.5		77.8 / 171.5	
Electrical requirements (230V)		60Hz, 1.3A	50Hz, 1.3A	60Hz, 1.4A	50Hz, 1.4A	60Hz, 1.5A	50Hz, 1.5A
Cat. No.		AAHB3001K	AAHB3002K	AAHB3011K	AAHB3012K	AAHB3021K	AAHB3022K
Electrical requirements (120V)		60Hz, 2.2A		60Hz, 2.7A		60Hz, 2.9A	
Cat. No.		AAHB3003U		AAHB3013U		AAHB3023U	

FDA establishment registered company. FDA listed products.

Hoods

UV Sterilization Cabinets

CE

Ideal for effective decontamination of apparatus before carrying out PCR experiments using a high-quality UV lamp with timer control.

Performance

· Effective sterilization using a long-life 254 nm UV lamp.
  (average life span of UV lamp: 8,000 hours)
· Built in anti-glare fluorescent lamp minimizes shadows and relieves eye strain.

Convenience

· User-friendly microprocessor-based control panel.
· Digital UV light timer for convenient use.
· Easy-settable digital timer for UV light exposure to deactivate DNA and RNA contaminants. (wait off, max. 30min.)
· Easy-to-clean grade 304 stainless steel work surface with high chemical resistance against various organic solvents.

Safety

· Interlocking safety door system shuts off UV light automatically when opening the door.
· UV-blocking door and side panels made of transparent acrylic resin provides clear inside view.
· UV over-exposure alarm and over-current protection.

UVC-11

Standard accessories
see page **73**

· UV lamp
· Fluorescent lamp

Model			UVC-01		UVC-11		UVC-21	
Illumination	Intensity	Fluorescent lamp (Lux)	>800		>900		>1000	
		UV density (/)	300 ± 10%		350 ± 10%		300 ± 20%	
	Capacity	Fluorescent lamp (W)	8×1ea		15×1ea		20×1ea	
		UV lamp (254nm, W)	8×1ea		15×1ea		20×1ea	
Material	Work surface		Stainless steel grade 304					
	Window (front, back / side)		5 mm thick acrylic resin					
Dimension (W×D×H)	Interior (mm / inch)		433×500×468 / 17.0×19.7×18.4		583×500×468 / 23×19.7×18.4		880×500×468 / 34.6×19.7×18.4	
	Exterior (mm / inch)		450×509×610 / 17.7×20×24		600×509×610 / 23.6×20×24		900×509×610 / 35.4×20×24	
	Net weight (kg / lbs)		15 / 33.1		17.5 / 38.6		20 / 44.1	
Electrical requirements (230V)			60Hz, 0.1A	50Hz, 0.1A	60Hz, 0.2A	50Hz, 0.2A	60Hz, 0.3A	50Hz, 0.3A
Cat. No.			**AAHB4001K**	**AAHB4002K**	**AAHB4011K**	**AAHB4012K**	**AAHB4021K**	**AAHB4022K**
Electrical requirements (120V)			60Hz, 0.2A		60Hz, 0.4A		60Hz, 0.6A	
Cat. No.			**AAHB4003U**		**AAHB4013U**		**AAHB4023U**	

FDA establishment registered company. FDA listed products.

for PCR workstaions / UV sterilization cabinets

General UV dose and time required

Pathogen	Average UV dose required (. s/)	Average UV time required (/ /sec.)					
		PW-01	UVC-01	PW-11	UVC-11	PW-21	UVC-21
		165	300 ± 10%	185	350 ± 10%	330	300 ± 20%
S. enteritidis	4,000	25	15	22	13	13	17
B. megatherium sp. (spores)	2,730	17	11	15	9	9	12
B. subtilis	7,100	43	27	39	23	22	30
Eberthella typhosa	2,140	13	8	12	7	7	9
Escherichia coli (E. coli)	3,000	19	12	17	10	10	13
Micrococcus candidus	6,050	37	23	33	20	19	26
Proteus vulgaris	2,640	16	10	15	9	8	11
Pseudomonas aeruginosa	5,500	34	21	30	18	17	23
Pseudomonas aeruginosa	3,500	22	13	19	12	11	15
S. typhimurium	8,000	49	30	44	26	25	34
Shigella paradysenteriae	1,680	101	7	10	6	6	7
Spirillum rubrum	4,400	27	17	24	14	14	19
Staphylococcus albus	1,840	12	17	10	6	6	8

Above listed applications are for general purpose use.

HEPA filter (for PW)

Fluorescent lamp

UV lamp

for PCR workstations

Cat. No.	Description	PW-01	PW-11	PW-21
AAAB3511	Pre filter	●	-	-
AAAB3512		-	●	-
AAAB3513		-	-	●
EDA9219	HEPA filter	●	-	-
EDA9220		-	●	-
EDA9221		-	-	●
CHE4436	Fluorescent lamp	●	-	-
CHE4410		-	●	-
CHE4409		-	-	●
CHE4431	UV lamp	●	-	-
CHE4427		-	●	-
CHE4423		-	-	●

for UV sterilization cabinets

Cat. No.	Description	UVC-01	UVC-11	UVC-21
CHE4435	Fluorescent lamp	●	-	-
CHE4436		-	●	-
CHE4410		-	-	●
CHE4434	UV lamp	●	-	-
CHE4431		-	●	-
CHE4427		-	-	●

Hoods

Incubators

- › Incubators
- › Low Temperature Incubators
- › Incubated Shakers
- › Mini Incubators
- › Hybridization Oven

General Applications

Incubators & Low Temp. Incubators

Antibody testing, Clinical science,
Hematological testing, Microbiological
determinations, Microorganism, Organism
germs for life science, Organism pharmacy,
Tissue culturing.

Incubated Shakers

Molecular biology, Plant and animal cells culture,
Fermentation, Hybridization studies,
Genetic research and drug discovery protocols.

Product Name		Incubators (General Model)	Incubators (Economy Model)	Incubators (2/4-Chamber Model)
Model		IB-G	IB-E	IB-G-C
Description		Natural convection (air-Jacket)	Natural convection, Film type heater	Forced convection, Multi chambers
Chamber volume (L)		60, 102, 151	65, 150, 205	60 x 2 Chambers, 60 x 4 Chambers
Temp. control	Temp. range (/)	Amb. +5 to 70 / Amb. +9 to 158	Amb. +3 to 60 / Amb. +5.4 to 140	Amb. +5 to 70 / Amb. +9 to158
	Temp. fluctuation (± /)	0.1, 0.2 at 37 / 0.18, 0.36 at 98.6	0.2, 0.3, 0.1 at 37 / 0.36, 0.54, 0.18 at 98.6	0.1 at 37 / 0.18 at 98.6
	Temp. variation (± /)	0.6, 0.2 at 37 / 1.08, 0.36 at 98.6	0.6, 0.8, 1.1 at 37 / 1.08, 1.44, 1.98 at 98.6	0.6 at 37 / 1.08 at 98.6
Control	Timer	Wait on /off	Wait on /off	Wait on /off
	Auto-tuning	O	O	O
	Program function	-	-	-
	Adjustable fan speed	-	-	-
	Computer interface	RS-232 port	-	-
	JeioTech network	-	-	-
Safety	Over temp. limit	O	O	O
	Door open alarm	O	O	O
	Over current limit	O	O	O
	Auto-run (power failure)	O	O	O

Product Name	Incubated Shaker (Benchtop Model)	Incubated Shaker (Floor Standing Model)	Incubated Shaker (Stackable Model)	Incubated Shaker (Chamber Model)
Model	IST-3075(R) / 4075(R)	ISF-7100(R) / 7200(R)	ISS-7100(R) / 7200(R)	ISS-3075(R) / 4075(R)
Platform size (WxD, mm)	350x350, 450x450	755x520	755x520	350x350, 450x450
Chamber volume (L)	53, 83	270	198	80, 150
Temp. control — Temp. range (/)	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. -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	Amb. +5 to 80 / Amb. +9 to 176, Amb. -20 (min. 4) to 80 / Amb. -36 (min. 7.2) to 176
Temp. fluctuation (± /) at 37 in flask	0.1 / 0.18	0.1 / 0.18	0.1 / 0.18	0.1 / 0.18
Temp. variation (± /) at 37 in flask	0.5 / 0.90	0.5 / 0.90	0.5 / 0.90	0.5 / 0.90
RPM control — Motion	Orbital	Orbital	Orbital	Orbital
Diameter (mm)	19.1	25.4, 50.8	25.4, 50.8	19.1
Speed range[1] (rpm)	20 to 500	30 to 500 / 30 to 300	30 to 400 (stackable [2] : 250), 30 to 300 (stackable [2] : 200)	20 to 500 (stackable : 250)
Control — PID feedback control	O	O	O	O
Timer	Wait off	Wait off	Wait off	Wait off
Auto-tuning	O	O	O	O
Computer interface	RS-232 port, USB port	RS-232 port, USB port	RS-232 port, USB port	RS-232 port, USB port
JeioTech network	O	O	O	O
Safety — Over temp. limit	O	O	O	O
Door open alarm	O	O	O	O
Over current limit	O	O	O	O
Auto-run (power failure)	O	O	O	O
Temp / Shaking deviation limit	O	O	O	O
Best effort run	O	O	O	O

1) Max. rpm is dependable by amplitude size.
2) Stacked with stand or products.

	Low Temp. Incubators (Forced Convection Model)	Low Temp. Incubators (Air-jacketed Model)	Low Temp. Incubators (Personal Model)	Low Temp. Incubators (2/4-Chamber Model)	Mini Incubator	Hybridization Oven
	IL3	IL3-A	ILP	IL-C	IM	HO
	Forced convection	Natural convection (air-Jacket)	Forced convection, Peltier technology	Forced convection, Multi chambers	Forced convection	Forced convection, Rocking shaking
	150, 242	156, 254	14, 48	150 x 2 chambers, 150 x 4 chambers	10	10
	0 to 80 / 32 to 176	4 to 70 / 39.2 to 158	+10 to 40 (at 25)	0 to 60 / 32 to 140	Amb. +5 to 65 / Amb. +9 to 140	Amb. +5 to 65 / Amb. +9 to 140
	0.1 at 37 / 0.18 at 98.6	0.2 at 37 / 0.36 at 98.6	0.1 at 25 / 0.18 at 77	0.1 at 25 / 0.18 at 77	0.5 at 37 / 0.9 at 98.6	0.5 at 50 , 9rpm / 0.9 at 122 . 9rpm
	0.8, 1.0 at 37 / 1.44, 0.18 at 98.6	0.7, 1.0 at 37 at / 1.26, 0.18 at 98.6	0.5 at 25 / 0.9 at 77	0.5 at 25 / 0.9 at 77	0.5 at 37 / 0.9 at 98.6	0.5 at 50 , 9rpm / 0.9 at 122 . 9rpm
	Wait on /off	Wait on /off	Wait on /off	Wait on /off	-	-
	O	O	O	O	-	-
	-	-	O	O	-	O
	-	-	O	O	-	-
	RS-232 port, USB port	RS-232 port, USB port	RS-232 port	-	-	-
	O	O	-	-	-	-
	O	O	O	O	O	O
	O	O	O	O	O	O
	O	O	O	O	O	O
	O	O	O	O	-	-

CE | Safety Patented | Computer Interface | Temperature Calibration 1 Point | Dual Timer | Over Temp. | Auto Run

Versatile air-jacketed natural convection incubators.

IB-05G

Standard accessories
Optional accessories
see page 94

- Wire shelves (2ea)
- Perforated shelves
- Stacking kits for stackable chambers

Performance

- Temperature range from ambient +5°C to 70°C.
- Microprocessor PID control / Temperature calibration / Automatic tuning.
- Vibration-free design ideal for yeast cultivation.
  - Air-jacked 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.

Convenience

- Intuitive control panel with bright LED display. (0.1 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.
- Corrosion-resistant stainless steel interior with rounded corners for easy cleaning and optimal airflow.
- Fully insulated dual-wall door with magnetic rubber gasket.
- Built-in cable port to use other instruments inside the chamber. (diameter: 38mm, provided silicon or rubber cap)
- RS-232 interface for external control and data collection.
- Stackable up to 2 units using the optional stacking kit. (optional)

Safety

- Automatic run after power interruption.
- Keypad lock function prevents accidental changes during operation.
- Over-temperature and over-current protection.
- Audible and visible open door alarms.

Model		IB-05G	IB-15G	IB-25G
Chamber volume (L / cu ft)		60 / 2.1	102 / 3.6	151 / 5.3
Temperature	Range (/)	Amb. +5 to 70 / Amb. +9 to 158		
	Fluctuation[1] at 37 (± /)	0.1 / 0.18	0.1 / 0.18	0.2 / 0.36
	Variation[1] at 37 (± /)	0.6 / 1.08	0.2 / 0.36	0.6 / 1.08
Dimension (W×D×H)	Interior (mm / inch)	400×360×420 / 15.7×14.2×16.5	480×410×520 / 18.9×16.1×20.5	610×460×540 / 24×18×21.3
	Exterior (mm / inch)	595×555×745 / 23×22×29	675×605×855 / 27×24×34	805×655×885 / 32×26×35
	No. of wire shelf (standard / max.)	2 / 7	2 / 11	2 / 11
	Net weight (Kg / lbs)	45 / 99	55 / 121	62 / 136
Electrical requirements (230V, 50 / 60Hz)		1.3A	2.2A	3.1A
Cat. No.		**AAH21162K**	**AAH21172K**	**AAH21182K**
Electrical requirements (120V, 60Hz)		2.8A	4.6A	6.4A
Cat. No.		**AAH21166U**	**AAH21176U**	**AAH21186U**

1) Technical data according to DIN 12880.
   FDA establishment registered company. FDA listed products.

CE | **Safety Patented** | **1 Point Temperature Calibration** | **Dual Timer** | **Over Temp.** | **Auto Run**

Affordable yet exceptionally reliable incubators featuring film type heaters.

Performance

· Temperature range from ambient +3°C to 60°C.

· Microprocessor PID control / Temperature calibration / Automatic tuning.

· Vibration-free design ideal for yeast cultivation.
  - Free from noise, vibration, and mechanical troubles by film type heating method.

Convenience

· Intuitive control panel with bright LED display. (0.1 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.

· Corrosion-resistant incoloy sheath heating element and stainless steel interior.

· Rounded inner chamber corners for easy cleaning and optimal airflow.

· Stackable up to 2 units using the optional stacking kit. (optional)

Safety

· Automatic run after power interruption.

· Keypad lock function prevents accidental changes during operation.

· Over-temperature and over-current protection.

· Audible and visible open door alarms.

IB-01E

Standard accessories · Wire shelves (2ea)

Optional accessories · Perforated shelves
see page 94 · Stacking kits for stackable chambers

Model	IB-01E	IB-11E	IB-21E
Chamber volume (L / cu ft)	65 / 2.3	150 / 5.3	205 / 7.2
Temperature — Range (/)	Amb. +3 to 60 / Amb. +5.4 to 140		
Temperature — Fluctuation[1] at 37 (± /)	0.2 / 0.36	0.3 / 0.54	0.1 / 0.18
Temperature — Variation[1] at 37 (± /)	0.6 / 1.08	0.8 / 1.44	1.1 / 1.98
Dimension (W×D×H) — Interior (mm / inch)	423×355×445 / 16.7×14×17.5	500×515×585 / 19.7×20.3×23	632×515×630 / 24.9×20.3×24.8
Dimension (W×D×H) — Exterior (mm / inch)	533×475×725 / 21×18.7×28.5	595×630×865 / 23.5×24.8×34	740×630×910 / 29.1×24.8×35.8
Dimension (W×D×H) — No. of wire shelf (standard / max.)	2 / 10	2 / 13	2 / 14
Dimension (W×D×H) — Net weight (Kg / lbs)	33 / 72.8	47 / 103.6	57 / 125.7
Electrical requirements (230V, 50 / 60Hz)	1.1A	2.2A	2.4A
Cat. No.	AAH26015K	AAH26025K	AAH26035K
Electrical requirements (120V, 60Hz)	2.1A	4.2A	4.6A
Cat. No.	AAH26016U	AAH26026U	AAH26036U

1) Technical data according to DIN 12880.
   FDA establishment registered company. FDA listed products.

Incubators (2 / 4-Chamber)

Temperature Calibration | Dual Timer | Over Temp. | Auto Run

Suitable for conducting independent experiment in two or four chamber incubators.

IB-02G-4C

Standard accessories
- Wire shelves (2ea per chamber)

Optional accessories
see page 94
- Perforated shelves

Performance

- Temperature range from ambient +5　to 70　.
- Independent temperature and timer control of each chamber using microprocessor PID.
- Temperature calibration.
- Automatic tuning.
- Forced air convection generated by a noiseless and powerful sirocco fan ensuring optimal air circulation, temperature uniformity.

Convenience

- Two or four independently controlled 60L chambers merged into a single unit for space saving.
- Intuitive control panel with bright LED display. (0.1　resolution)
- Dual wait on/off timer modes. (1 min. to 99 hr. 59 min.)
- Three most commonly used temperature settings programmable.
- Corrosion-resistant incoloy sheath heating element and stainless steel interior.
- Rounded inner chamber corners for easy cleaning and optimal airflow.
- Built-in cable port to use other instruments inside the chamber.
- Built-in casters for easy transport and installation.

Safety

- Automatic run after power interruption.
- Keypad lock function prevents accidental changes during operation.
- Over-temperature and over-current protection.
- Audible and visible open door alarms.

Model		IB-02G-2C	IB-02G-4C
Chamber volume (L / cu ft)		60 / 2.1 x 2 chambers	60 / 2.1 x 4 chambers
Temperature	Range (/)	Amb. +5 to 70 / Amb. +9 to 158	
	Fluctuation[1] at 37 (± /)	0.1 / 0.18	
	Variation[1] at 37 (± /)	0.6 / 1.08	
Dimension (W×D×H)	Interior (mm / inch)	400×360×420 / 15.7×14.2×16.5 x 2 chambers	400×360×420 / 15.7×14.2×16.5 x 4 chambers
	Exterior (mm / inch)	570×640×1360 / 22.4×25.2×53.5	1170×640×1360 / 46.1×25.2×53.5
	No. of wire shelf (standard / max.)	2 / 7 per chamber	2 / 7 per chamber
	Net weight (Kg / lbs)	110 / 242.5	168 / 370.4
Electrical requirements (230V, 50 / 60Hz)		4.1A	4.1A x 2EA
Cat. No.		AAH2A115K	AAH2A015K
Electrical requirements (120V, 60Hz)		7.5A	7.5A x 2EA
Cat. No.		AAH2A116U	AAH2A016U

1) Technical data according to DIN 12880.
   FDA establishment registered company. FDA listed products.

CE | Safety Patented | Green CFC-Free | Computer Interface | Temperature Calibration (3 Points) | Dual Timer | Over Temp. | Auto Run
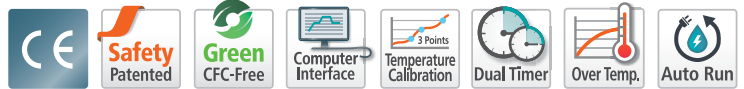
Performance

- Temperature range from 0°C to 80°C.
  - Silent cooling system reduces water evaporation within the chamber.
- Microprocessor PID control.
- Three point temperature calibration / Automatic tuning.
- Forced air convection using an optimal cross flow fan for chamber temperature uniformity.

Convenience

- Large chamber volume: maximum 242L.
- Bright VFD display (0.1   resolution) with heating level indication and quick adjustable dial knob.
- Dual wait on/off timer modes. (1 min. to 99 hr. 59 min.)
- Convenient preset function for 3 most commonly used temperature settings.
- Built-in electrical outlet with a safety cover inside the chamber.
- Convenient sample monitoring without affecting chamber temperature via inner tempered-glass door.
- Rounded corners for easy cleaning and optimal airflow.
- Quick-release front grill for easy cleaning of the condenser.
- Built-in RS-232 port and USB port for external control and data collection.

Safety

- Automatic run after power interruption.
- Over-current protection.
- Triple independent temperature monitor system.
  - Temperature deviation alarm (High/Low)
  - Electronic temperature limiter (High/Low)
  - Mechanical over-temperature limiter (High)
- Keypad lock function prevents accidental changes during operation.
- Audible and visible open door alarms.

Superb low temperature incubation by noiseless compressor cooling system.

JeioTech Network | PV SV | **REMOTE CONTROL** with your **MOBILE DEVICE** see page 8-9

IL3-25

Standard accessories • Wire shelves (2ea for IL3-15, 3ea for IL3-25)

Optional accessories • Perforated shelves
see page 94 • Gateway

Model		IL3-15		IL3-25	
Chamber volume (L / cu ft)		150 / 5.3		242 / 8.5	
Refrigerator (Hp)		1 / 6 HBP		1 / 6 HBP	
Temperature	Range (/)	0 to 80 / 32 to 176			
	Fluctuation[1] at 37 (± /)	0.1 / 0.18			
	Variation[1] at 37 (± /)	0.8 / 1.44		1.0 / 0.18	
Dimension (W×D×H)	Interior (mm / inch)	600×500×500 / 24×20×20		500×520×930 / 20×20.5×36.6	
	Exterior (mm / inch)	720×760×1070 / 28.3×29.9×42.1		620×770×1680 / 24.4×30.3×66.1	
	No. of wire shelf (standard / max.)	2 / 11		3 / 25	
	Net weight (Kg / lbs)	100 / 220		135 / 297	
Electrical requirements (230V)		60Hz, 4.5A	50Hz, 4.5A	60Hz, 6.4A	50Hz, 6.4A
Cat. No.		**AAH220422K**	**AAH220412K**	**AAH220522K**	**AAH220512K**
Electrical requirements (120V)		60Hz, 8.3A		60Hz, 10.6A	
Cat. No.		**AAH220462U**		**AAH220562U**	

1) Technical data according to DIN 12880.
   Temperature change may occur during automatic defrost.
   FDA establishment registered company. FDA listed products.

Low Temp. Incubators (Air-jacketed)

CE | Safety Patented | Green CFC-Free | Computer Interface | 3 Points Temperature Calibration | Dual Timer | Over Temp. | Auto Run

Specially designed for optimal temperature control as well as minimal sample contamination caused by external air intrusion.

JeioTech Network | PV / SV | **REMOTE CONTROL** with your **MOBILE DEVICE** see page 8-9

IL3-15A

Standard accessories
Optional accessories see page 94

- Wire shelves (2ea for IL3-15A, 3ea for IL3-25A)
- Perforated shelves
- Gateway

Performance

- Temperature range from 4°C to 70°C.
- Microprocessor PID control.
- Three point temperature calibration / Automatic tuning.
- Natural convection within the chamber induced by the heater and the fan located inside the air jacket.

Convenience

- Large chamber volume: maximum 254L.
- Bright VFD display (0.1   resolution) with heating level indication and quick adjustable dial knob.
- Dual wait on/off timer modes. (1 min. to 99 hr. 59 min.)
- Convenient preset function for 3 most commonly used temperature settings.
- Built-in electrical outlet with a safety cover inside the chamber.
- Convenient sample monitoring without affecting chamber temperature via inner tempered-glass door.
- Rounded corners for easy cleaning and optimal airflow.
- Quick-release front grill for easy cleaning of the condenser.
- Built-in RS-232 port and USB port for external control and data collection.

Safety

- Automatic run after power interruption.
- Over-current protection.
- Triple independent temperature monitor system.
  - Temperature deviation alarm (High/Low)
  - Electronic temperature limiter (High/Low)
  - Mechanical over-temperature limiter (High)
- Keypad lock function prevents accidental changes during operation.
- Audible and visible open door alarms.

Model		IL3-15A		IL3-25A	
Chamber volume (L / cu ft)		156 / 5.5		254 / 8.97	
Refrigerator (Hp)		1 / 6 HBP		1 / 6 HBP	
Temperature	Range (/)	4 to 70 / 39.2 to 158			
	Fluctuation[1] at 37 (± /)	0.2 / 0.36			
	Variation[1] at 37 (± /)	0.7 / 1.26		1.0 / 0.18	
Dimension (W×D×H)	Interior (mm / inch)	600x520x500 / 24×20.5×20		500x540x940 / 20×21.3×37	
	Exterior (mm / inch)	770x790x1115 / 30.3x31.1x43.9		670x805x1668 / 26.4x31.7x65.7	
	No. of wire shelf (standard / max.)	2 / 11		3 / 25	
	Net weight (Kg / lbs)	108 / 238.1		145 / 319.7	
Electrical requirements (230V)		60Hz, 6.6A	50Hz, 6.6A	60Hz, 8A	50Hz, 8A
Cat. No.		**AAH220622K**	**AAH220612K**	**AAH220722K**	**AAH220712K**
Electrical requirements (120V)		60Hz, 10.2A		60Hz, 12.3A	
Cat. No.		**AAH220632U**		**AAH220732U**	

1) Technical data according to DIN 12880.
   Temperature change may occur during automatic defrost.
   FDA establishment registered company. FDA listed products.

Low Temp. Incubators (Personal)

CE | Safety Patented | Computer Interface | Program | 1 Point Temperature Calibration | Dual Timer | Over Temp. | Auto Run

Performance

- Temperature range from 10 to 40 .
  - Contrary to conventional compressor-cooled incubators, peltier cooling technology generates little vibration, noise, and heat.
- Microprocessor PID control / Temperature calibration / Automatic tuning.
- Adjustable 3-step fan speed with defrosting time and period control.

Convenience

- Space-saving design allows even the smaller (14L) unit to hold two 1000mL Erlenmeyer flasks.
- Intuitive control panel with bright LED display. (0.1 resolution)
- Dual wait on/off timer modes. (1 min. to 99 hr. 59 min.)
- Convenient preset function for 3 most commonly used temperature settings.
- Up to 9 temperature steps and maximum 200 cycles of repetition programmable for each profile.
- Convenient sample monitoring without affecting chamber temperature via the inner tempered-glass door.
- Corrosion-resistant incoloy sheath heating element and stainless steel interior.
- Environment-friendly insulation material (EPDM) used for safety and convenience. (compliant with ASTM-C534 specification)
- RS-232 interface for external control and data collection.

Safety

- Automatic run after power interruption.
- Keypad lock function prevents accidental changes during operation.
- Over-temperature and over-current protection.
- Audible and visible open door alarms.

Compact, stackable, energy-efficient, and yet exceptionally reliable low temperature incubators using peltier technology.

ILP-02
stackable unit

Standard accessories • Wire shelves (1ea for ILP-02, 2ea for ILP-12)

Optional accessories • Perforated shelves
see page 94

Model		ILP-02		ILP-12	
Chamber volume (L / cu ft)		14 / 0.5		48 / 1.7	
Temperature	Range at 25 (/)	10 to 40 / 50 to 104			
	Fluctuation[1] at 25 (± /)	0.1 / 0.18			
	Variation[1] at 25 (± /)	0.5 / 0.9		0.4 / 0.72	
Dimension (W×D×H)	Interior (mm / inch)	315×200×230 / 12.4×7.9×9.1		334×334×430 / 13.1×13.1×17	
	Exterior (mm / inch)	430×495×400 / 17×19.4×15.7		430×665×620 / 17×26.2×24.4	
	No. of wire shelf (standard / max.)	1 / 5		2 / 10	
	Net weight (Kg / lbs)	27.5 / 60.6		49 / 108	
Electrical requirements (230V)		60Hz, 1.8A	50Hz, 1.8A	60Hz, 3.5A	50Hz, 3.5A
Cat. No.		**AAH24031K**	**AAH24032K**	**AAH24041K**	**AAH24042K**
Electrical requirements (120V)		60Hz, 3.4A		60Hz, 6.7A	
Cat. No.		**AAH24033U**		**AAH24043U**	

1) Technical data according to DIN 12880.
   FDA establishment registered company. FDA listed products.

Two or four incubation chambers in a single unit.

Designed to offer an ideal and cost-effective solution for laboratories with limited space and budget.

IL-11-4C

Standard accessories	• Wire shelves (2ea per chamber)
Optional accessories **see page 94**	• Perforated shelves

Performance

- Temperature range from 0 to 60 .
  - Silent cooling system reduces water evaporation within the chamber.
- Microprocessor PID control.
- Temperature calibration.
- Automatic tuning.
- Adjustable 3-step fan speed with defrosting time and period control.

Convenience

- Intuitive control panel with bright LED display. (0.1 resolution)
- Dual wait on/off timer modes. (1 min. to 99 hr. 59 min.)
- Convenient preset function for 3 most commonly used temperature settings.
- Up to 9 temperature steps and maximum 200 cycles of repetition programmable for each profile.
- Convenient sample monitoring without affecting chamber temperature via the inner tempered-glass door.
- Corrosion-resistant stainless steel interior with rounded corners for easy cleaning and optimal airflow.
- Built-in casters for easy transport and installation.

Safety

- Automatic run after power interruption.
- Keypad lock function prevents accidental changes during operation.
- Over-temperature and over-current protection.
- Audible and visible open door alarms.

Efficient lab space use with multi-chamber incubator

- Designed to offer an ideal and cost-effective solution for laboratories with limited space and budget.
  - Two or four 150L chambers merged into a single unit.
- Optimum model selection between two and four chamber unit according to application demand.
- Suitable for conducting each different experiment at once.
  - Independent temperature and timer control of each chamber using microprocessor PID.

Model		IL-11-2C	IL-11-4C
Chamber volume (L / cu ft)		150 / 5.3 x 2 chambers	150 / 5.3 x 4 chambers
Refrigerator (Hp)		1/8 HBP x 2EA	1/8 HBP x 4EA
Temperature	Range (/)	0 to 60 / 32 to 140	
	Fluctuation[1] at 25 (± /)	0.1 / 0.18	
	Variation[1] at 25 (± /)	0.5 / 0.9	
Dimension (W×D×H)	Interior (mm / inch)	600x500x500 / 23.6x19.7x19.7 x 2 chambers	600x500x500 / 23.6x19.7x19.7 x 4 chambers
	Exterior (mm / inch)	760x760x1690 / 29.9x29.9x66.1	1500x760x1690 / 59.1x29.9x66.1
	No. of wire shelf (standard / max.)	2 / 11 per chamber	2 / 11 per chamber
	Net weight (Kg / lbs)	180 / 397	350 / 772
Electrical requirements (230V, 60Hz)		9A	9A x 2EA
Cat. No.		AAH28111K	AAH28011K
Electrical requirements (230V, 50Hz)		9A	9A x 2EA
Cat. No.		AAH28112K	AAH28012K
Electrical requirements (120V, 60Hz)		16.5A	16.5A x 2EA
Cat. No.		AAH28113U	AAH28013U

1) Technical data according to DIN 12880.
Temperature change may occur during automatic defrost.
FDA establishment registered company. FDA listed products.

Digital incubating/ refrigerating benchtop shakers.

Transparent lid offers great visibility and gas spring supports ensure hand-down handling of the samples by allowing immediate and easy access to your samples.

REMOTE CONTROL with your MOBILE DEVICE.
see page 8-9

IST-3075 / IST-4075R
with optional dedicated platform and universal attachment

Optional accessories
see page 95-97

- Universal platforms, Rubber mats
- Flask clamps, Funnel clamps, Test tube racks, Gateway

Above products design can be changed without prior notice.

Control display

Gas spring lid

Performance

- Temperature range:
  - Ambient +5°C to 80°C for IST-3075 / 4075.
  - Ambient -15°C (Min. 15) to 80°C for IST-3075R / 4075R.

- Competitive high shaking speed up to 500 rpm.

- Orbital shaking motion in 19mm diameter.

- Microprocessor PID control.

- Three point temperature calibration / Automatic tuning.

- Wide speed range even with heavy workload.
  - Equipped with a maintenance-free BLDC motor to generate smooth, quiet, uniform, and yet powerful shaking motion.

- Best effort run function intelligently manages its rpm to keep shaking even workload is out of its capacity.
  - Automatic shaking speed adjustment in case of excessive workload such as unbalanced load placement, unusual vibrations caused from unstable floor or external shock.

- Pleasant test environment by the smooth acceleration and deceleration control.
  - Smooth start and smooth stop function prevents chemical spills from flasks or test tubes.

- High-velocity fan ensures uniform temperature distribution and rapid thermal recovery after door open.

- Air-tight silicone door seal to provide excellent temperature uniformity.

Convenience

- Intuitive touch screen LCD controller with easy icons and logical menus.

- Easy-set digital timer for shaking operation.
  (1 min. to 999 hr. 59 min.)

- Wide sample monitoring and convenient sample loading.
  - Convenient sample monitoring without affecting inside environment thanks to the three side transparent acryl lid with bright LED lamps.
  - Gas spring lid supports providing smooth motion, soft opening and closing.

- Repetitive task can be easily performed as the platform stops where it starts.
  - Stopping the shaking platform always at the same position is highly beneficial for automated dosing or sampling process.

- Corrosion resistance stainless steel interior.

- Built-in RS-232 port and USB port for external control and data collection.

Safety

- Automatic run after power interruption.

- Temperature and shaking speed deviation alarm.

- Over-current protection, Stalled platform check.

- Mechanical over-temperature protection device.

- Environment-friendly CFC-free refrigerant. (for IST-3075R / 4075R)

- Audible and visible open door alarms.

Model		IST-3075		IST-3075R	IST-4075		IST-4075R	
Temperature	Range (/)	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 in flask (± /)	0.1 / 0.18						
	Variation at 37 in flask (± /)	0.5 / 0.90						
	Refrigerator (Hp)	-		1 / 6 HBP	-		1 / 6 HBP	
Shaking system	Motion type	Orbital						
	Amplitude size (mm / inch, dia.)	19.1 / 0.75						
	Speed range (RPM)	20 to 500						
	Accuracy	±1% of set speed (>100rpm) / ±1 (≤100rpm)						
	Timer	1 min. to 999 hr 59 min.						
	Max. load (kg / lbs)	10 / 22.0 at 500 rpm 15 / 33.1 at 400 rpm			14 / 30.9 at 500 rpm 21 / 46.3 at 400 rpm				
Dimension	Volume (L / cu ft)	53 / 1.9			83 / 2.9			
	Platform (W×D) (mm / inch)	350×350 / 13.8×13.8			450×450 / 17.7×17.7			
	Interior (W×D×H) (mm / inch)	410×410×320 / 16.1×16.1×12.6			510×510×320 / 20.1×20.1×12.6			
	Exterior (W×D×H) (mm / inch)	440x785x510 / 17.3x30.9x20.1			540x 890 x510 / 21.3x35x20.1			
	Net weight (Kg / lbs)	65 / 143.3		73 / 160.9	81 / 178.6		90 / 198.4	
Electrical requirements (230V)		60Hz, 4A	50Hz, 4A	60Hz, 5.5A	50Hz, 5.5A	60Hz, 4A	50Hz, 4A	60Hz, 5.5A	50Hz, 5.5A
Cat. No.		AAH23411K	AAH23422K	AAH23511K	AAH23522K	AAH23611K	AAH23622K	AAH23711K	AAH23722K
Electrical requirements (120V)		60Hz, 7.5A		60Hz, 10.1A	60Hz, 7.5A		60Hz, 10.1A	
Cat. No.		AAH23465U		AAH23565U	AAH23665U		AAH23765U	

FDA establishment registered company. FDA listed products.

Large capacity up to five 6L flasks and heavy workload shaking with rapid heating and cooling performance.

Exclusive drive mechanism with ergonomic design delivers years of trouble-free service.

JeioTech
Network

PV
SV

ISF-7100R

Optional accessories

• Universal/Dedicated platforms
• Spring wire racks, Microplate holders, Gateway

Above products design can be changed without prior notice.

User-friendly design

Clear viewing window

Gas spring lid

Performance

- Temperature range:
  - Ambient +5°C to 80 °C for ISF-7100 / 7200
  - Ambient -20°C (Min. 4) to 80°C for ISF-7100R / 7200R

- Competitive high shaking speed up to 500 rpm.
  - from 30 to 500 rpm for ISF-7100(R)
  - from 30 to 300 rpm for ISF-7200(R)

- Orbital shaking motion in various diameter.
  - 25.4mm for ISF-7100(R)
  - 50.8mm for ISF-7200(R)

- Microprocessor PID control.

- Three point temperature calibration / Automatic tuning.

- Wide speed range even with heavy workload.
  - Ideal DD(Direct Drive) brushless motor and triple cam system support heavy load, quiet, maintenance free operation and deliver high torque at high speeds and smooth rotation.

- Best effort run function intelligently manages its rpm to keep shaking even workload is out of its capacity.
  - Automatic shaking speed adjustment in case of excessive workload such as unbalanced load placement, unusual vibrations caused from unstable floor or external shock.

- Pleasant test environment by the smooth acceleration and deceleration control.
  - Smooth start and smooth stop function prevents chemical spills from flasks or test tubes.

- High-velocity fan ensures uniform temperature distribution and rapid thermal recovery after door open.

- Air-tight silicone door seal with lockable door for safe storage of samples.

Convenience

- Intuitive touch screen LCD controller with easy icons and logical menus.

- Easy-set digital timer for shaking operation. (1 min. to 999 hr. 59 min.)

- Easy sample monitoring and convenient sample loading.
  - Clear observation of samples without affecting inner chamber's environment thanks to the transparent top viewing window with bright LED lamps.
  - The lid is inclined gently towards the front for easy observation of samples in the chamber.
  - Gas spring lid supports providing smooth motion, soft opening and closing.

- Repetitive task can be easily performed as the platform stops where it starts.
  - Stopping the shaking platform always at the same position is highly beneficial for automated dosing or sampling process.

- Corrosion resistance stainless steel interior.

- Easy-access drain system with a quick disconnect valve offers great convenience to clean up of spills.

- Built-in RS-232 port and USB port for external control and data collection.

- Sturdy foot caster, beneficial for easy mobility during installation or relocation.

Safety

- Automatic run after power interruption.

- Temperature and shaking speed deviation alarm.

- Over-current protection.

- Triple independent temperature monitor system.
  - Temperature deviation alarm (High/Low)
  - Electronic temperature limiter (High/Low)
  - Mechanical over-temperature limiter (High)

- Environment-friendly CFC-free refrigerant. (for ISF-7100R / 7200R)

- Audible and visible open door alarms.

Model		ISF-7100	ISF-7100R	ISF-7200	ISF-7200R
Temperature	Range (/)	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 in flask (± /)	0.1 / 0.18			
	Variation at 37 in flask (± /)	0.5 / 0.90			
	Refrigerator (Hp)	-	1/6Hp	-	1/6Hp
Shaking system	Motion type	Orbital			
	Amplitude size (mm / inch, dia.)	25.4 / 1		50.8 / 2	
	Speed range (rpm)	30 to 500		30 to 300	
	Accuracy	±1% of set speed (>100rpm) / ±1 (≤100rpm)			
	Timer	1 min. to 999 hr 59 min.			
	Max. load (kg / lbs)	15 / 33.1 at 500 rpm 25 / 55.1 at 400 rpm 35 / 77.2 at 300 rpm		20 / 44.1 at 300 rpm 35 / 77.2 at 200 rpm	
Dimension	Volume (L / cu ft)	270 / 9.5			
	Platform (W×D) (mm / inch)	755×520 / 29.7×20.5			
	Interior (W×D×H) (mm / inch)	894×634×480 / 35.2×25×18.9			
	Exterior (W×D×H) (mm / inch)	1128×854x1035 / 44.4x33.6x40.8			
	Net weight (Kg / lbs)	277 / 610.7	287 / 632.7	277 / 610.7	287 / 632.7
Electrical requirements (230V)		50 / 60Hz, 3.7A	60Hz, 5.6A / 50Hz, 5.6A	50 / 60Hz, 3.7A	60Hz, 5.6A / 50Hz, 5.6A
Cat. No.		AAH23342K	AAH23542K / AAH23541K	AAH23442K	AAH23642K / AAH23641K
Electrical requirements (120V)		60Hz, 7.3A	60Hz, 10A	60Hz, 7.3A	60Hz, 10A
Cat. No.		AAH23375U	AAH23575U	AAH23475U	AAH23675U

Temp. change may occur during automatic defrost. (for ISF-7100R/7200R)
FDA establishment registered company. FDA listed products.

Stackable up to three units for maximum utilization of lab spaces.

Multi-purpose incubated shakers feature a wide range of temperature control and large chamber volume.

REMOTE CONTROL with your **MOBILE DEVICE** see page 8-9

Advantages of Stackable Model

- Large shaking capacity chamber allows user to freely organize different size of samples.
  - 198L chamber can accommodate six of 4L flasks and also thirty nine of 250ml flasks. You can make the capacity triple, if you stack three units.
- Maximize your space with our triple stackable incubated shaker.
  - Highly recommended for users who want to maximize limited space. Have three units in your lab while taking up minimal space. In addition, high rpm is still guaranteed even when you stack up 3 units.
- Lift up opening door and slide out platform enables easy sample handling.
  - Door is opened upward and stayed open for hands-free handling. Slide type universal platform let you access to all samples, even ones placed at the back.
- Optional stand is available and highly recommended for comfort use. Setting your incubated shaker at your height let you feel totally relaxed when you use it anytime. (optional)

ISS-7100R / ISS-7200

with optional accessories

| **Standard accessories** | • Stacking kits, Retractable foot caster |
| **Optional accessories** see page 95-97 | • Universal platforms, Flask clamps, Universal attachments
 • Stands, Gateway |

Above products design can be changed without prior notice.

Control display

Lift up opening door

Performance

- Temperature range.
  - Ambient +10°C to 80°C for ISS-7100 / 7200.
  - Ambient -20°C (Min. 4) to 80°C for ISS-7100R / 7200R.

- Competitive high shaking speed up to 400 rpm. (Stackable up to 250rpm)
  - from 30 to 400 rpm (stackable : 30 to 250) for ISS-7100(R)
  - from 30 to 300 rpm (stackable : 30 to 200) for ISS-7200(R)

- Orbital shaking motion in various diameters.
  - 25.4mm for ISS-7100(R)
  - 50.8 mm for ISS-7200(R)

- Microprocessor PID control.

- Three point temperature calibration / Automatic tuning.

- Wide speed range even with heavy workload.
  - Ideal DD(Direct Drive) brushless motor and triple cam system support heavy load, quiet, maintenance free operation and deliver high torque at high speeds and smooth rotation.

- Best effort run function intelligently manages its rpm to keep shaking even workload is out of its capacity.
  - Automatic shaking speed adjustment in case of excessive workload such as unbalanced load placement, unusual vibrations caused from unstable floor or external shock.

- Pleasant test environment by the smooth acceleration and deceleration control.
  - Smooth start and smooth stop function prevents chemical spills from flasks or test tubes.

- High-velocity fan ensures uniform temperature distribution and rapid thermal recovery after door open.

- Air-tight silicone door seal to provide excellent temperature uniformity.

Convenience

- Intuitive touch screen LCD controller with easy icons and logical menus.

- Easy-set digital timer for shaking operation. (1 min. to 999 hr. 59 min.)

- Wide sample monitoring.
  - Clear observation of samples without affecting inner chamber's environment thanks to the transparent viewing window with bright LED lamps.

- Repetitive task can be easily performed as the platform stops where it starts.
  - Stopping the shaking platform always at the same position is highly beneficial for automated dosing or sampling process.

- Built-in electrical outlet with a safety cover inside the chamber.

- Corrosion resistance stainless steel interior.

- Easy-access drain system with a quick disconnect valve offers great convenience to clean up of spills.

- Built-in RS-232 port and USB port for external control and data collection.

- The unit comes with retractable foot caster, beneficial for easy mobility during installation or relocation.

Safety

- Automatic run after power interruption.

- Temperature and shaking speed deviation alarm.

- Over-current protection.

- Triple independent temperature monitor system.
  - Temperature deviation alarm (High/Low)
  - Electronic temperature limiter (High/Low)
  - Mechanical over-temperature limiter (High)

- Environment-friendly CFC-free refrigerant. (for ISS-7100R / 7200R)

	Model	ISS-7100		ISS-7100R		ISS-7200		ISS-7200R	
Temperature	Range (/)	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 in flask (± /)	0.1 / 0.18							
	Variation at 37 in flask (± /)	0.5 / 0.90							
	Refrigerator (Hp)	-		1/6Hp		-		1/6Hp	
Shaking system	Motion type	Orbital							
	Amplitude size (mm / inch, dia.)	25.4 / 1				50.8 / 2			
	Speed range (rpm)	30 to 400 (stackable2) : 30 to 250)				30 to 300 (stackable2) : 30 to 200)			
	Accuracy	±1% of set speed (>100rpm) / ±1 (≤100rpm)							
	Timer	1 min. to 999 hr 59 min.							
	Max. Load (kg / lbs)	20 / 44.1 at 400 rpm 15 / 33.1 at 250 rpm (stacked) 20 / 33.1 at 200 rpm (stacked)				20 / 44.1 at 300 rpm 15 / 33.1 at 200 rpm (stacked) 20 / 44.1 at 150 rpm (stacked)			
Dimension	Volume (L / cu ft)	198 / 7.0							
	Platform (W×D, mm / inch)	755x520 / 29.7x20.5							
	Interior (W×D×H, mm / inch)	809×624×393 / 31.9×24.6×15.5							
	Exterior1) (W×D×H, mm / inch)	1310x996×755 / 51.6x39.2x29.7							
	Net weight (kg / lbs)	365 / 804.7		375 / 826.7		365 / 804.7		375 / 826.7	
Electrical requirements (230V)		60Hz, 3.7A	50Hz, 3.7A	60Hz, 5.6A	50Hz, 5.6A	60Hz, 3.7A	50Hz, 3.7A	60Hz, 5.6A	50Hz, 5.6A
Cat. No.		AAH238131K	AAH238132K	AAH238231K	AAH238232K	AAH239131K	AAH239132K	AAH239231K	AAH239232K
Electrical requirements (120V)		60Hz, 7.1A		60Hz,10A		60Hz, 7.1A		60Hz,10A	
Cat. No.		AAH238115U		AAH238215U		AAH239115U		AAH239215U	

Temp. change may occur during automatic defrost. (for ISS-7100R/7200R)   FDA establishment registered company. FDA listed products.
1) Main body dimension with retractable foot caster.
2) Stacked with stand or products.

Specially designed to be double-stacked on the floor or located on the lab benches for space saving.

Multi-purpose incubated shakers feature a wide range of temperature control and large chamber volume.

JeioTech Network

REMOTE CONTROL
with your **MOBILE DEVICE**
see page 8-9

ISS-4075R / ISS-3075
with optional accessories

Standard accessories	• Wire shelves (2ea)
Optional accessories **see page 95-97**	• Universal platforms, Universal attachments, Flask clamps • Retractable foot caster, Stacking kits for stackable chambers, Gateway

Above products design can be changed without prior notice.

Control display

CE | **CSA** | **RoHS** Compliant | **Safety** Patented | **Green** CFC-Free | **Computer Interface** | **Color Touch** | **500 rpm** | **Best Effort Run** | **Temperature Calibration** | **Over Temp.** | **Auto Run** | **Deviation Warning** | **Stalled Platform**

Performance

- Temperature range:
  - Ambient +5°C to 80°C for ISS-3075 / 4075.
  - Ambient -20°C (Min. 4) to 80°C for ISS-3075R / 4075R.

- Competitive high shaking speed up to 500 rpm.
  (Stackable up to 250rpm)

- Orbital shaking motion in 19.1mm diameter.

- Microprocessor PID control.

- Three point temperature calibration / Automatic tuning.

- Wide speed range even with heavy workload.
  - Equipped with a maintenance-free BLDC motor to generate smooth, quiet, uniform, and yet powerful shaking motion.

- Best effort run function intelligently manages its rpm to keep shaking even workload is out of its capacity.
  - Automatic shaking speed adjustment in case of excessive workload such as unbalanced load placement, unusual vibrations caused from unstable floor or external shock.

- Pleasant test environment by the smooth acceleration and deceleration control.
  - Smooth start and smooth stop function prevents chemical spills from flasks or test tubes.

- High-velocity fan ensures uniform temperature distribution and rapid thermal recovery after door open.

- Air-tight silicone door seal to provide excellent temperature uniformity.

Convenience

- Intuitive touch screen LCD controller with easy icons and logical menus.

- Easy-set digital timer for shaking operation. (1 min. to 999 hr. 59 min.)

- Wide sample monitoring.
  - Clear observation of samples without affecting inner chamber's environment thanks to the transparent viewing window with bright LED lamps.

- Repetitive task can be easily performed as the platform stops where it starts.
  - Stopping the shaking platform always at the same position is highly beneficial for automated dosing or sampling process.

- Two adjustable-height shelves provided allow static incubation or refrigeration, which increase storage capacity.

- Built-in electrical outlet with a safety cover inside the chamber.

- Corrosion resistance stainless steel interior.

- Easy-access drain system with a quick disconnect valve offers great convenience to clean up of spills.

- Built-in RS-232 port and USB port for external control and data collection.

- Retractable foot caster, beneficial for easy mobility during installation or relocation. (optional)

- Chambers stackable, up to two levels.

Safety

- Automatic run after power interruption.

- Temperature and shaking speed deviation alarm.

- Over-current protection, Stalled platform check.

- Triple independent temperature monitor system.
  - Temperature deviation alarm (High/Low)
  - Electronic temperature limiter (High/Low)
  - Mechanical over-temperature limiter (High)

- Environment-friendly CFC-free refrigerant. (for ISS-3075R / 4075R)

- Audible and visible open door alarms.

Model		ISS-3075	ISS-3075R	ISS-4075	ISS-4075R
Temperature	Range (/)	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 in flask (± /)	0.1 / 0.18			
	Variation at 37 in flask (± /)	0.5 / 0.90			
	Refrigerator (Hp)	-	1/6Hp	-	1/6Hp
Shaking system	Motion type	Orbital			
	Amplitude size (mm / inch, dia.)	19.1 / 0.75			
	Speed range (rpm)	20 to 500 (stackable : 20 to 250)			
	Accuracy	±1% of set speed (>100rpm) / ±1 (≤100rpm)			
	Timer	1 min. to 999 hr 59 min.			
	Max. Load (kg / lbs)	10 / 22.0 at 500 rpm 15 / 33.1 at 400 rpm 15 / 33.1 at 250 rpm (stacked)		10 / 22.0 at 500 rpm 21 / 46.3 at 400 rpm 21 / 46.3 at 250 rpm (stacked)	
Dimension	Volume (L / cu ft)	80 / 2.8		150 / 5.3	
	Platform (W×D, mm / inch)	350×350 / 13.8×13.8		450×450 / 17.7×17.7	
	Interior (W×D×H, mm / inch)	440×440×418 / 17.3×17.3×16.5		540×540×518 / 21.3×21.3×20.4	
	Exterior (W×D×H, mm / inch)	578×815×854 / 22.8×32.1×33.6		678×895×934 / 26.7×35.2×36.8	
	No. of wire shelf (standard / max.)	2 / 8		2 / 11	
	Net weight (kg / lbs)	153 / 337.3	160 / 352.7	183 / 403.4	190 / 418.9
Electrical requirements (230V)		60Hz, 6.2A 50Hz, 6.2A	60Hz, 7.9A 50Hz, 7.9A	60Hz, 6.2A 50Hz, 6.2A	60Hz, 7.9A 50Hz, 7.9A
Cat. No.		AAH23431K AAH23432K	AAH23531K AAH23532K	AAH23631K AAH23632K	AAH23731K AAH23732K
Electrical requirements (120V)		60Hz, 9.5A	60Hz, 13A	60Hz, 9.5A	60Hz, 13A
Cat. No.		AAH23415U	AAH23515U	AAH23615U	AAH23715U

Temp. change may occur during automatic defrost. (for ISS-3075R/4075R)
FDA establishment registered company. FDA listed products.

Mini Incubator

Over Temp.

Compact design for efficient lab space use.

Maximum 8 microplates can be inserted to inner chamber for ELISA.

IM-10

Standard accessories • Wire shelves (2ea)

Optional accessories
see page 94 • Perforated shelves

Performance

· Temperature range from ambient +5 to 65 .
· Microprocessor PID feedback control of the heater and the fan ensuring temperature uniformity.
· Automatic temperature calibration.

Convenience

· Ease-of-operation provided by a bright VFD (vacuum fluorescent display), responsive touch buttons, and a jog dial.
· Wire shelves are provided for space saving of inner chamber. Maximum 4 wire shelves supporting 8 microplates is especially suitable for ELISA.
· Push buttons for easy opening of door.
· Transparent polycarbonate window providing a clear view of the chamber interior.
· Compact design for space saving of laboratory of the chamber interior.

Safety

· Open door alarm.
· Over-temperature protection, Over-current protection.

Model		IM-10
Temperature	Range (/)	Amb. +5 to 65 / Amb. +9 to 149
	Fluctuation at 37 (± /)	0.5 / 0.9
	Variation at 37 (± /)	0.5 / 0.9
Dimension	Volume (L / cu ft)	10 / 0.4
	Interior (W×D×H) (mm / inch)	278 x 262 x 160 / 11 x 10.4 x 6.3
	Exterior (W×D×H) (mm / inch)	400 x 410 x 264 / 15.7 x 16.1 x 10.4
	No. of wire shelf (standard / max.)	2 / 4
	Net weight (Kg / lbs)	12.8 / 28.2
Electrical requirements (230V, 50/60)		1.0A
Cat. No.		AAH24315K
Electrical requirements (120V, 60Hz)		2.1A
Cat. No.		AAH24316U

1) Technical data according to DIN 12880.
   FDA establishment registered company. FDA listed products.

Lab Companion

Program **Over Temp.**

Performance

- Temperature range from ambient +5 to 65
- Rocking motion: Tilt 8.5°.
- Speed range: 5 to 50 rpm.
- Microprocessor PID feedback control of the heater and the fan ensuring temperature uniformity.
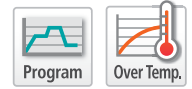- Automatic temperature calibration.

Convenience

- Ease-of-operation provided by a bright VFD, responsive touch buttons, and a jog dial.
- Memory function of programs allowing relevant parameters (such as temperature, rocking speed, time, etc.) of each program step to be stored.
  - Up to 10 program allowed for memory storage.
  - Up to 10 steps allowed for each program.
  - Preheating and precooling functions before hybridization.
- Built-in sliding shelf for quick and convenient insertion or removal of samples.
- Sticky pad on sliding shelf for preventing accidental movement or spills of samples during operation.
- Drying function for the hybridization and washed membranes or strips.
- Transparent polycarbonate window providing a clear view of the chamber interior.
- Compact design for efficient lab space utilization.

Safety

- Audible and visual alarms are activated as:
  - Preset temperature limit is reached.
  - Each step of any programmed mode is terminated.
  - Low humidity level is detected by the sensor.
  - Door is open.
- Over-temperature protection, Over-current protection.

Equipped with a precise rocker, this unit is offering ideal reproducibility for various molecular biology applications.

HO-10

Standard accessories • Water tray

Model		HO-10
Temperature	Range (/)	Amb. +5 to 65 / Amb. +9 to 149
	Fluctuation at 50 , 9RPM (± /)	0.5 / 0.9
	Variation at 50 , 9RPM (± /)	0.5 / 0.9
Shaking system	Motion type	Rocking Motion
	Speed range (RPM)	5 to 50
	Tilt angle	8.5°±1
	Max. load (kg / lbs)	1 / 2.2
Dimension	Volume (L / cu ft)	10 / 0.4
	Sliding shelf (W×D) (mm / inch)	256 x 198 / 10.1 x 7.8
	Interior (W×D×H) (mm / inch)	278 x 262 x 160 / 11 x 10.4 x 6.3
	Exterior (W×D×H) (mm / inch)	400 x 410 x 264 / 15.7 x 16.1 x 10.4
	Net weight (Kg / lbs)	14 / 30.9
Electrical requirements (230V, 60)		1.2A
Cat. No.		AAH1B011K
Electrical requirements (230V, 50)		2.4A
Cat. No.		AAH1B012K

1) Technical data according to DIN 12880.
   FDA establishment registered company. FDA listed products.

Accessories & Options

for Incubators
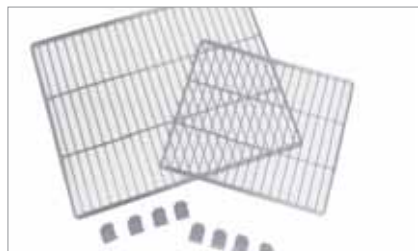
Wire shelves

Perforated shelves
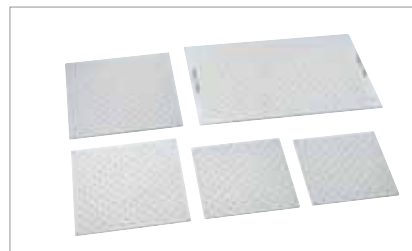
Universal platforms

Wire shelves

Stainless steel and electro-polished shelves are readily removed without using tools for easy cleaning.

Cat. No.	Description			Suitable for
	Included	Maximum	W×L (mm / inch)	
EDA8136	2	7	366×316 / 14.4×12.4	IB-05G
EDA8135	2	11	446×366 / 17.6×14.4	IB-15G
EDA8137	2	11	576×419 / 22.7×16.5	IB-25G
EDA8136	2	10	366×316 / 14.4×12.4	IB-01E
EDA8220	2	13	466×490 / 17.6×19.3	IB-11E
EDA8219	2	14	566×466 / 22.3×17.6	IB-21E
EDA8136	4	14	366×316 / 14.4×12.4	IB-02G-2C
	8	28		IB-02G-4C
EDA8219	2	11	566×466 / 22.3×17.6	IL3-15(A)
	4	22		IL-11-2C
	8	44		IL-11-4C
EDA8220	3	25	466×490 / 17.6×19.3	IL3-25(A)
EDA8223	1	5	195×310 / 7.7×12.2	ILP-02
EDA8221	2	10	305×299 / 12×11.8	ILP-12
EDA8235	2	8	416×406 / 16.4×16.0	ISS-3075(R)
EDA8233	2	11	516×506 / 20.3×19.9	ISS-4075(R)
EDA8244	2	4	247×247 / 9.7×9.7	IM-10

Perforated shelves

Stainless steel shelves are readily removed without using tools for easy cleaning.

Cat. No.	Description		Suitable for
	Maximum	W×L (mm / inch)	
AAA12531	7	366×316 / 14.4×12.4	IB-05G
AAA12532	11	446×366 / 17.6×14.4	IB-15G
AAA12535	11	576×419 / 22.7×16.5	IB-25G
AAA12531	10	366×316 / 14.4×12.4	IB-01E
AAA22522	13	466×490 / 17.6×19.3	IB-11E
AAA22521	14	566×466 / 22.3×17.6	IB-21E
AAA12531	14	366×316 / 14.4×12.4	IB-02G-2C
	28		IB-02G-4C
AAA22521	11	566×466 / 22.3×17.6	IL3-15(A)
	22		IL-11-2C
	44		IL-11-4C
AAA22522	25	466×490 / 17.6×19.3	IL3-25(A)
AAA24501	5	195×310 / 7.7×12.2	ILP-02
AAA24502	10	305×299 / 12×11.8	ILP-12
AAA24511	4	247×247 / 9.7×9.7	IM-10

Stacking kits

Stackable up to 2 units using exclusive stacking kits for space saving.

Cat. No.	Description	Suitable for
AAA21521	Stacking kits for stackable chambers	IB-05G
AAA21522	Stacking kits for stackable chambers	IB-15G
AAA21523	Stacking kits for stackable chambers	IB-25G
AAA26501	Stacking kits for stackable chambers	IB-01E
AAA26502	Stacking kits for stackable chambers	IB-11E
AAA26503	Stacking kits for stackable chambers	IB-21E

Lab Companion

for Incubated Shakers
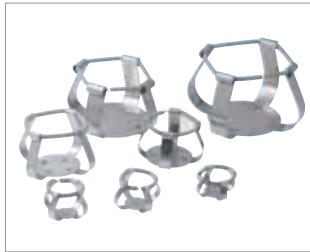
Flask clamps

Plastic clamps (plastic)

Funnel clamps

Dedicated platforms

Universal platforms / Flask clamps / Funnel clamps

Universal platforms provide flexibility for mixing assortments of test tubes and glassware of varying sizes on a single platform.
Various clamps for Erlenmeyer flasks and separatory funnels are available.

Description		Model	IST-3075(R)	IST-4075(R)	ISF-7100(R) ISF-7200(R)	ISS-7100(R) ISS-7200(R)	ISS-3075(R)	ISS-4075(R)
		Platform size	350×350mm / 13.8x13.8inch	450×450mm / 17.7×17.7inch	755×520mm / 29.7×20.5inch	755×520mm / 29.7×20.5inch	350×350mm / 13.8x13.8inch	450×450mm / 17.7×17.7inch
Universal platform			AAA23501-V3	AAA23502-V3	AAA23503-V3	AAA23503-V4	AAA23501-V3	AAA23502-V3
Flask clamps (Stainless steel)	Erlenmeyer flask size		Max. mountable flask clamps					
	for 50 ml	AAA23550	36	49	88	88	36	49
	for 100 ml	AAA23551	24	39	68	68	24	39
	for 250 ml	AAA23552	14	20	39	39	14	24
	for 300 ml	AAA23556	14	20	39	39	14	24
	for 500 ml	AAA23553	9	16	28	28	9	16
	for 1L	AAA23554	6	9	18	18	6	9
	for 2L	AAA23555	4	5	11	11	4	6
	for 2.8L	AAA23557	2	4	8	8	2	5
	for 4L	AAA23558	-	-	6	6	-	4
	for 6L	AAA23559	-	-	5	-	-	2
Flask clamps (plastic)	Erlenmeyer flask size		Max. mountable flask clamps					
	for 50 ml	AAA30570	36	49	88	88	36	49
	for 100 ~ 125 ml	AAA30571	19	29	48	48	19	29
	for 200 ml	AAA30572	13	21	35	33	13	21
	for 250 ml	AAA30573	13	19	35	33	13	19
	for 300 ml	AAA30574	12	19	35	33	12	19
	for 500 ml	AAA30575	9	12	24	24	9	12
	for 1L	AAA30576	4	9	12	12	5	9
	for 2L	AAA30577	2	4	8	8	4	5
Funnel clamps	separatory funnel size		Max. mountable funnel clamps					
	for 250 ml	AAA23562	4	6	15	15	4	6
	for 500 ml	AAA23563	2	4	10	10	3	4
	for 1L	AAA23564	-	3	7	7	-	3
	for 2L	AAA23565	-	-	5	5	-	-

Above accessories need to be mounted on a universal platform which is sold separately.

Dedicated platforms

When using a single flask size only, the dedicated platforms with pre-installed clamps provide maximum capacity.
250mL and 500mL clamps are standard but other sizes can be available.

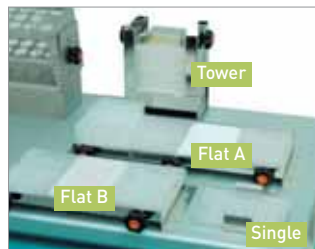| Description	IST-3075(R)	IST-4075(R)	ISF-7100(R) ISF-7200(R)	ISS-7100(R) ISS-7200(R)	ISS-3075(R)	ISS-4075(R)
Universal platform &250mL flask clamps	AAA23611-V1	AAA23623-V1	AAA23634	AAA23637	AAA23611-V1	AAA23621-V1
No. of flask clamps	14	20	39	39	14	20
Universal platform &500mL flask clamps	AAA23612-V1	AAA23622-V1	AAA23635	AAA23636	AAA23612-V1	AAA23622-V1
No. of flask clamps	9	16	28	28	9	16

* A dedicated platform is sold with setting each max. mountable amount of flask clamps on.

Accessories & Options

for Incubated Shakers

Test tube racks

Microplate holders
(universal platform is optional)

Rubber mats

Universal attachments

Test tube racks

Easy to release and mount racks made of durable stainless steel with adjustable angle and tube height support. Test tube racks are used with an optional universal platform.

Description		IST-3075(R)	IST-4075(R)	ISF-7100(R) ISF-7200(R)	ISS-7100(R) ISS-7200(R)	ISS-3075(R)	ISS-4075(R)
Universal platform		AAA23501-V3	AAA23502-V3	AAA23053-V3	AAA23503-V4	AAA31501-V3	AAA23502-V3
Test tube size		Mountable capacity of rack*					
for 86 test tubes, ø8mm / ø0.3″	AAA23581						
for 86 test tubes, ø10mm / ø0.4″	AAA23582						
for 58 test tubes, ø12mm / ø0.5″	AAA23583						
for 58 test tubes, ø14mm / ø0.6″	AAA23584						
for 32 test tubes, ø17mm / ø0.7	AAA23585	2	4	7	7	2	4
for 19 test tubes, ø25mm / ø1.0″	AAA23586						
for 10 test tubes, ø30mm / ø1.2″	AAA23587						
for 10 test tubes, ø35mm / ø1.4″	AAA23594						
for 4 test tubes, ø50mm / ø1.9″	AAA23593						

* No declination
  We can manufacture other size of test tube racks to meet your specific requirements. Contact us for details.

Microplate holders

Available in three styles: tower type, flat type (small and large), and single type. Tower type holder is for 10 standard or deep well plates. Large flat holder is for 4 standard or deep well plates. Small flat holder is for 3 standard or deep well plates. Single type holder is for 1 standard or deep well plate. (standard well plates' height: 14.7mm)

Description		IST-3075(R)	IST-4075(R)	ISF-7100(R) ISF-7200(R)	ISS-7100(R) ISS-7200(R)	ISS-3075(R)	ISS-4075(R)
Universal platform		AAA23501-V3	AAA23502-V3	AAA23053-V3	AAA23503-V4	AAA31501-V3	AAA23502-V3
Microplate holder type		Max. mountable microplate holders					
Single	AAA23654	8	15	25	25	8	15
Tower	AAA23651	5	8	21	21	6	10
Flat A(large)	AAA23652	-	2	4	4	-	2
Flat B(small)	AAA23653	2	2	6	6	2	3

* Microplate holders need to be mounted on an universal platform which is sold separately.

Rubber mats

Designed for low-speed applications, non-skid rubber mats allow quick addition or removal of flasks, plates or tubes.

Description	IST-3075(R)	IST-4075(R)	ISF-7100(R) ISF-7200(R)	ISS-7100(R) ISS-7200(R)	ISS-3075(R)	ISS-4075(R)
Cat. No.	AAA23531	AAA23532	AAA23534	AAA23535	AAA31531	AAA31532

Universal attachments (utility carriers)

Several adjustable clamping bars for quickly securing a variety of glassware or tubes on non-skid rubber mats. Suitable for flat-bottomed flasks of various sizes.

Description	IST-3075(R)	IST-4075(R)	ISF-7100(R) ISF-7200(R)	ISS-7100(R) ISS-7200(R)	ISS-3075(R)	ISS-4075(R)
Cat. No.	AAA23511-V1	AAA23512-V1	AAA23505	AAA23513	AAA23511-V1	AAA23512-V1

Lab Companion

Spring wire racks
(two tier rack with flexible crossed spring)
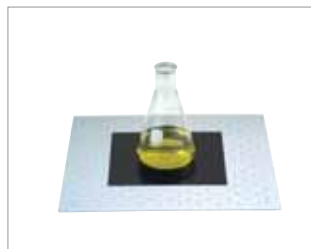
Lab sticker
(universal platform is optional)

Stand (stand 1 / stand 2)

Retractable foot caster

Spring wire racks

Ideal for holding a wide variety of tubes, flasks, and other glassware. All components are made of stainless steel.

Description	IST-3075(R)	IST-4075(R)	ISF-7100(R) ISF-7200(R)	ISS-7100(R) ISS-7200(R)	ISS-3075(R)	ISS-4075(R)
Cat.No.	AAA23521-V1	AAA23522-V2	AAA23514	AAA23526	AAA31521-V1	AAA31522-V1
Erlenmeyer flask size	Max. inserting flasks					
for 50 mL	16	25	45	45	16	25
for 100 mL	9	16	28	28	9	16
for 250 mL	4	9	18	18	4	9
for 300 mL	4	9	18	18	4	9
for 500 mL	4	5	15	15	4	5
for 1L	2	4	10	10	2	4
for 2L	1	2	6	6	1	2
for 2.8L	1	2	4	4	1	2

Lab sticker

An alternative method for securing vessels to a shaker platform. Ideal for containers such as bottles and dishes that cannot be held on the universal platform with conventional flask clamps. For safe operation, gradual RPM increase is recommended.

Cat. No.	Description (W×D×H) (mm / inch)
AAA30551	200×200×5 / 7.9×7.9×0.2

Stands

Perfectly designed to let users feel totally relaxed by leveling the height.

Cat. No.	Description	Suitable for
AAA23571	Stand 1 with Stacking kits (600mm / 23.6˝ height for stacking 1 unit)	ISS-7100(R), ISS-7200(R)
AAA23572	Stand 2 with Stacking kits (300mm / 11.8˝ height for stacking 2 units)	

Stacking kits

Units are stackable using exclusive stacking kits for space saving.

Cat. No.	Description	Suitable for
AAA23573	Stacking kits for stackable chambers	ISS-7100(R), ISS-7200(R)
AAA23811	Stacking kits for stackable chambers	ISS-3075(R)
AAA23812	Stacking kits for stackable chambers	ISS-4075(R)

Retractable foot caster

Highly beneficial for easy mobility during installation or relocation.

Cat. No.	Description	Suitable for
AAA23801	Retractable foot caster (700x733x145mm / 27.6x28.9x5.7˝)	ISS-3075(R)
AAA23802	Retractable foot caster (800x813x225mm / 31.5x32x8.9˝)	ISS-4075(R)

Gateway

Establish Jeio Tech Network by Gateway. No computer use is required at all. Remote monitoring of operating status through a mobile device (Android only) is simply available when you place a Gateway in your laboratory. Maximum 4 units can be connected to Gateway by RS-232 cable.

Cat. No.	Description	Suitable for
AAAQ1011	Gateway (2.4GHz, 100~240V, 50/60Hz)	IL3 models IST, ISF, ISS models

Gateway

Remote control through a mobile device (Android only)

Ovens

› Forced Convection Ovens
› Natural Convection Ovens
› Vacuum Ovens
› Clean Ovens, Class 100

General Applications

Forced Convection Ovens

General aging and curing, Agricultural genetic, Digestion of proteins and starches, General heating/ drying, Stability and QC/Batch testing, Sterilization.

Natural Convection Ovens

Annealing, Drying of plant tissue, Drug metabolism, Fine chemical precipitation, General heating/ drying, Serum protein analysis, Sterilization.

Vacuum Ovens

Agricultural genetic, Annealing, Desiccating, Out-gassing solids and liquids, Vacuum embedding, Volatile resins and polymers testing.

Clean Ovens, Class 100

Heat treatment and drying components in clean air requirements of Class 100 cleanliness.

Product Name		Forced Convection Ovens (Programmable Models)	Forced Convection Ovens (General Models)	Forced Convection Ovens (General Models / Programmable Models, Large)	
Model		OF-P	OF-G	OF3-P, OF3-HP	OF3, OF3-H
Chamber volume (L)		60, 102, 151	60, 102, 151	314, 450, 760	314, 450, 760
Temp. control	Temp. range (/)	Amb. +10 to 250 / Amb. +18 to 482	Amb. +10 to 250 / Amb. +18 to 482	Amb. +10 to 200 / Amb.+18 to 392 (OF3-P / OF3), Amb. +10 to 300 / Amb.+18 to 572 (OF3-HP / OF3-H)	
	Temp. fluctuation at 100 (± /)	0.5, 0.6, 0.8 / 0.9, 1.08, 1.44	0.5, 0.6, 0.8 / 0.9, 1.08, 1.44	0.2 / 0.36	0.2 / 0.36
	Temp. variation at 100 (± /)	1, 1.3, 1.7 / 1.8, 2.3, 3.1	1, 1.3, 1.7 / 1.8, 2.3, 3.1	2.0, 2.2, 2.5 / 3.6, 3.9 ,4.5	2.0, 2.2, 2.5 / 3.6, 3.9 ,4.5
Control	Timer	Wait on/off	Wait on/off	Wait on/off	Wait on/off
	Auto-tuning	O	O	O	O
	Program function	O	-	O	-
	Computer interface	RS-232 port	RS-232 port	RS-232 port, USB port	RS-232 port, USB port
	JeioTech network	O	-	O	O
Safety	Over temp. limit	O	O	O	O
	Door open alarm	O	O	O	O
	Over current limit	O	O	O	O
	Auto-run (power failure)	O	O	O	O

Technical Benefits

› Performance

- Designed and tested in accordance with the international standard DIN 12880.
  - Increase in reliability of accurate temperature implementation and test results. (27 points measurement data)

- Microprocessor PID control for precise temperature control.

- Temperature calibration and auto-tuning functions for optimizing the unit to the various test environment.

- Intelligent program and scheduler for satisfying any sophisticated control. (for OF-P, OF3-P/PH, OFC-P/PH)

- Reliable clean oven with HEPA filter guarantees class 100 cleanliness. (for OFC)
  - 0.3 μm and larger particulates are removed with 99.97% efficiency, leak-tight HEPA filter which satisfying class 100.

› Convenience

- Wide selection ovens cover all of your application needs.
  - Air flow type (Forced Convection / Natural Convection)
  - Heating type (General / Vacuum)
  - Filtering type (Clean Oven, Class 100)
  - Temperature (Ambient +5 to 300)
  - Sizes (28 Liters to 760 Liters)

- Easy maintenance design.
  - Rounded corners for easy cleaning.
  - Corrosion resistant stainless steel interior chamber.
  - Dirt-repellent external surface with power coating. (except for OV)

- User-friendly functions for easy operating.
  - Wait ON/OFF dual timer.
  - Three commonly used temperature memories.

› Safety

- Patented CLS-CS (Custom Logical Safe Control System)
  - Automatic power cut-off system against overheating.
  - Protection system by fuses against overcurrent. (except for OF3, OFC-large type)
  - Automatic run or manual run after power interruption.

- Fully insulated oven chamber maintains the exterior at a safe temperature.

- Safe door open system to minimize heat loss and protect the user.
  - Audible and visible open door alarms. (except for OV)
  - Automatic heater and fan stop (for OF) when door opening.

Forced Convection Ovens (2 / 4-Chamber Models)	Forced Convection Ovens (Economy Models)	Natural Convection Ovens (General Models)	Natural Convection Oven (Economy Models)	Vacuum Ovens	Clean Ovens, Class 100 (General / Programmable Models, Large)	
OF-G-C	OF-E	ON-G	ON-E	OV	OFC-P, OFC-HP	OFC, OFC-H
60 x 2 chambers, 60 x 4 chambers	52, 100, 150	52, 91, 135	52, 100, 150	28, 65	200, 400	200, 400
Amb. +10 to 200 / Amb. +18 to 392	Amb. +10 to 220 / Amb. +18 to 428	Amb. +15 to 250 / Amb. +27 to 482	Amb. +15 to 220 / Amb. +27 to 428	Amb. +5 to 250 / Amb. +9 to 482	Amb. +10 to 200 / Amb.+18 to 392 (OFC-P / OFC), Amb. +10 to 300 / Amb.+18 to 572 (OFC-HP / OFC-H)	
0.5 / 0.9	0.4 / 0.72	0.3 / 0.54	0.3, 0.4, 0.5 / 0.54, 0.72, 0.9	0.1, 0.3 / 0.18, 0.54	0.2 / 0.36	0.2 / 0.36
1.0 / 1.8	3.3, 2.3 / 5.94, 4.14	5.9, 7.5, 6.9 / 10.62, 13.5, 12.42	6.5, 4.1, 7.3 / 11.7, 7.38, 13.14	3.7 / 6.66	2.0, 2.2 / 3.6, 3.9	2.0, 2.2 / 3.6, 3.9
Wait on/off	Wait on/off	Wait on/off	Wait on/off	Wait on/off	Wait on/off	Wait on/off
O	O	O	O	O	O	O
-	-	-	-	-	O	-
-	-	RS-232 port	-	RS-232 port	RS-232 port, USB port	RS-232 port, USB port
-	-	-	-	-	O	O
O	O	O	O	O	O	O
O	O	O	O	O	O	O
O	O	O	O	O	O	O
O	O	O	O	O	O	O

Forced Convection Ovens (Programmable)

Safety Patented | Computer Interface | Program | Color Touch | Digital IN/OUT | Temperature Calibration 3 Points | Dual Timer | Over Temp. | Auto Run

Unattended operation is absolutely available with the intelligent programmable controller.

PV SV
JeioTech Network
REMOTE CONTROL with your **MOBILE DEVICE**

OF-12P
with optional viewing window

Standard accessories • Wire shelves (2ea)

Optional accessories
• Tempered viewing window
• Perforated shelves
• Gateway

Intelligent program control
· 10 programs available for temperature ramp up and dwell control.
· 10 steps per a program and 99 hours 59 minutes per a step.
· Stored programs are easily linkable.
· Programs can be repeated up to 99 cycles.
· Pre-heating and heating time are settable before program starts.

Performance
· Temperature range from ambient +10°C to 250°C.
· Microprocessor PID control.
· Three point temperature calibration / Automatic tuning.
· Forced air convection ensures optimal air circulation, temperature uniformity, and short heat-up time.
· Adjustable dual slide vents for inner vapor circulation.

Convenience
· Intuitive touch screen LCD controller with easy icons and logical menus.
· Dual wait on/off timer modes. (1 min. to 99 hr. 59 min.)
· Digital input and output control function for interlocking external devices.
· Corrosion-resistant incoloy sheath heating element and stainless steel interior.
· RS-232 interface for external control and data collection.

Safety
· Keypad lock function prevents accidental changes during operation.
· Automatic run after power interruption.
· Over-temperature and over-current protection.
· Audible and visible open door alarms.

Model		OF-02P	OF-12P	OF-22P
Chamber volume (L / cu ft)		60 / 2.1	102 / 3.6	151 / 5.3
Temperature	Range ( )	Amb. +10 to 250 / Amb. +18 to 482		
	Fluctuation[1] at 100 (± /)	0.5 / 0.9	0.6 / 1.08	0.8 / 1.44
	Variation[1] at 100 (± /)	1 / 1.8	1.3 / 2.3	1.7 / 3.1
Dimension (W×D×H)	Interior (mm / inch)	400×360×420 / 15.7×14.2×16.5	480×410×520 / 18.9×16.1×20.5	550×460×600 / 22×18×23.6
	Exterior (mm / inch)	577×642×760 / 22.7×25.3×30	657×692×870 / 25.9×27.2×34.3	727×742×974 / 28.7×29.2×38.3
	No. of wire shelf (standard / max.)	2 / 7	2 / 11	2 / 13
	Net weight (Kg / lbs)	53 / 117	63 / 139	72.5 / 160
Electrical requirements (230V, 50 / 60Hz)		4.4A	6.1A	7.4A
Cat. No.		**AAH12555K**	**AAH12565K**	**AAH12575K**
Electrical requirements (120V, 60Hz)		6.8A	8.4A	10.1A
Cat. No.		**AAH12553U**	**AAH12563U**	**AAH12573U**

1) Technical data according to DIN 12880.
   FDA establishment registered company. FDA listed products.

Lab Companion

CE | Safety Patented | Computer Interface | 1 Point Temperature Calibration | Dual Timer | Over Temp. | Auto Run
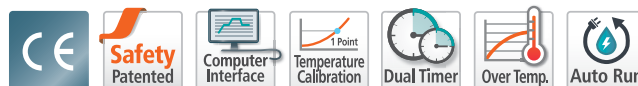
Performance

- 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. (optional)

- Adjustable dual slide vents for inner vapor circulation.

Convenience

- Intuitive control panel with bright LED displays. (0.1 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. (optional)

- RS-232 interface for external control and data collection.

Safety

- Keypad lock function prevents accidental changes during operation.

- Automatic run after power interruption.

- Over-temperature and over-current protection.

- Audible and visible open door alarms.

Superb air dispersion and uniform temperature distribution.

Provide superb drying performance especially suitable for samples with high moisture content.
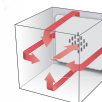
OF-22G
with optional viewing window

Standard accessories	• Wire shelves (2ea)
Optional accessories see page 112	• Tempered viewing window • Fan speed adjuster • Perforated shelves

Model		OF-02G	OF-12G	OF-22G
Chamber volume (L / cu ft)		60 / 2.1	102 / 3.6	151 / 5.3
Temperature	Range (/)	Amb. +10 to 250 / Amb. +18 to 482		
	Fluctuation[1] at 100 (± /)	0.5 / 0.9	0.6 / 1.08	0.8 / 1.44
	Variation[1] at 100 (± /)	1 / 1.8	1.3 / 2.3	1.7 / 3.1
Dimension (W×D×H)	Interior (mm / inch)	400×360×420 / 15.7×14.2×16.5	480×410×520 / 18.9×16.1×20.5	550×460×600 / 22×18×23.6
	Exterior (mm / inch)	577×642×760 / 22.7×25.3×30	657×692×870 / 25.9×27.2×34.3	727×742×974 / 28.7×29.2×38.3
	No. of wire shelf (standard / max.)	2 / 7	2 / 11	2 / 13
	Net weight (Kg / lbs)	53 / 117	63 / 139	72.5 / 160
Electrical requirements (230V, 50 / 60Hz)		4.4A	6.1A	7.4A
Cat. No.		**AAH12155K**	**AAH12165K**	**AAH12175K**
Electrical requirements (120V, 60Hz)		6.8A	8.4A	10.1A
Cat. No.		**AAH12156U**	**AAH12166U**	**AAH12176U**

1) Technical data according to DIN 12880.
FDA establishment registered company. FDA listed products.

Ovens

Specially designed for large volume and fast drying application. (max. 760L and 300)

Offering rapid heating performance as well as uniform temperature distribution, these heavy-duty ovens are ideal for obtaining quick test results.

JeioTech Network

REMOTE CONTROL with your **MOBILE DEVICE**
see page 8-9
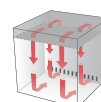
OF3-75P(HP), OF3-75(H)
with optional viewing window

Standard accessories	• Wire shelves (2ea for 314L chambers, 3ea for 450/760L chambers)
Optional accessories see page 112	• Perforated shelves • Digital recorders • Gateway

Programmable model (OF3-P/PH)
for intelligent program control

Color touch LCD display
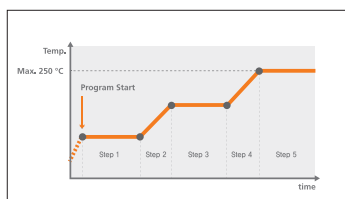
• 10 programs available for temperature ramp up and dwell control.

• 10 steps per a program and 99 hours 59 minutes per a step.

• Stored programs are easily linkable.

• Programs can be repeated up to 99 cycles.

• Pre-heating and heating time are settable before program starts.

General model (OF3/H)
for simple and quick control

Bright VFD display and quick adjustable dial knob

• Designed for offering the simplest control by user-friendly control panel.

• Set value and present value are shown on display at once.

• Easy adjustable knob for convenient set values and select functions.

• Intuitive heating level indication bar.

Performance

- Rapid heating performance up to maximum 300

- Microprocessor PID control.

- Three point temperature calibration / Automatic tuning.

- Forced air convection generated by two noiseless and powerful sirocco fans ensures optimal air circulation, temperature uniformity, and short heat-up time.

- Adjustable dual slide vents for inner vapor circulation.

- Energy efficiency is achieved thanks to optimization of the insulation system.
  - Even if the unit is operating at max. temperature, the surface of the unit doesn't allow high temperatures.

Convenience

- Optimum model selection is available according to two different types of control panel.
  - Intuitive touch screen LCD controller with easy icons and logical menus. (for OF3-P/HP)
  - Bright VFD display with quick adjustable dial knob. (for OF3/H)

- 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.

- Threefold tempered-glass window provides clear inside view of the chamber. (optional)

- USB port and RS-232 port for external control and data collection.

- Casters for easy mobility during installation or relocation.

Safety

- Automatic run after power interruption.

- Over-current protection.

- Triple independent temperature monitor system.
  - Temperature deviation alarm (High/Low)
  - Electronic temperature limiter (High/Low)
  - Mechanical over-temperature limiter (High)

- Alarms for open door status, temperature sensor error and temperature deviation.

- Keypad lock function prevents accidental changes during operation.

Programmable Model			OF3-30P	OF3-45P	OF3-75P	OF3-30HP	OF3-45HP	OF3-75HP
Chamber volume (L / cu ft)			314 / 11.1	450 / 15.9	760 / 26.8	314 / 11.1	450 / 15.9	760 / 26.8
Temperaure		Range (/)	Amb. +10 to 200 / Amb.+18 to 392			Amb. +10 to 300 / Amb.+18 to 572		
		Fluctuation [1] at 100 (± /)	0.2 / 0.36			0.2 / 0.36		
		Variation [1] at 100 (± /)	2.0 / 3.60	2.2 / 3.96	2.5 / 4.50	2.0 / 3.60	2.2 / 3.96	2.5 / 4.50
Dimension (W×D×H)		Interior (mm / inch)	645×750×650 / 25.4×29.5×25.6	645×750×930 / 25.4×29.5×36.6	745×850×1200 / 29.3×33.5×47.2	645×750×650 / 25.4×29.5×25.6	645×750×930 / 25.4×29.5×36.6	745×850×1200 / 29.3×33.5×47.2
		Exterior (mm / inch)	850×1100×1235 / 33.5×43.3×48.6	850×1100×1525 / 33.5×43.3×60	950×1200×1785 / 37.4×47.2×70.3	850×1100×1235 / 33.5×43.3×48.6	850×1100×1525 / 33.5×43.3×60	950×1200×1785 / 37.4×47.2×70.3
		Net weight (Kg / lbs)	200 / 440.9	240 / 529.1	300 / 661.4	200 / 440.9	240 / 529.1	300 / 661.4
Shelves		No. of wire shelf (standard / max.)	2 / 5	3 / 8	3 / 11	2 / 5	3 / 8	3 / 11
		Max. load per shelf (kg / lbs)	25 / 55.1			25 / 55.1		
Electrical requirements (230V, 50/60Hz, A)			1P, 13.2 A					
Cat No.		Solid door	AAH18615K	-	-	-	-	-
		Window door	AAH18715K	-	-	-	-	-
Electrical requirements (380V, 50Hz)				3P, 6.7 A	3P, 9.0 A	3P, 6.7 A	3P, 9.0 A	3P, 10.8 A
Cat No.		Solid door	-	AAH186214K	AAH186314K	AAH196114K	AAH196214K	AAH196314K
		Window door	-	AAH187214K	AAH187314K	AAH197114K	AAH197214K	AAH197314K
General Model			OF3-30	OF3-45	OF3-75	OF3-30H	OF3-45H	OF3-75H
Chamber volume (L / cu ft)			314 / 11.1	450 / 15.9	760 / 26.8	314 / 11.1	450 / 15.9	760 / 26.8
Temperaure		Range (/)	Amb. +10 to 200 / Amb.+18 to 392			Amb. +10 to 300 / Amb.+18 to 572		
		Fluctuation [1] at 100 (± /)	0.2 / 0.36			0.2 / 0.36		
		Variation [1] at 100 (± /)	2.0 / 3.60	2.2 / 3.96	2.5 / 4.50	2.0 / 3.60	2.2 / 3.96	2.5 / 4.50
Dimension (W×D×H)		Interior (mm / inch)	645×750×650 / 25.4×29.5×25.6	645×750×930 / 25.4×29.5×36.6	745×850×1200 / 29.3×33.5×47.2	645×750×650 / 25.4×29.5×25.6	645×750×930 / 25.4×29.5×36.6	745×850×1200 / 29.3×33.5×47.2
		Exterior (mm / inch)	850×1100×1235 / 33.5×43.3×48.6	850×1100×1525 / 33.5×43.3×60	950×1200×1785 / 37.4×47.2×70.3	850×1100×1235 / 33.5×43.3×48.6	850×1100×1525 / 33.5×43.3×60	950×1200×1785 / 37.4×47.2×70.3
		Net weight (Kg / lbs)	200 / 440.9	240 / 529.1	300 / 661.4	200 / 440.9	240 / 529.1	300 / 661.4
Shelves		No. of wire shelf (standard / max.)	2 / 5	3 / 8	3 / 11	2 / 5	3 / 8	3 / 11
		Max. load per shelf (kg / lbs)	25 / 55.1			25 / 55.1		
Electrical requirements (230V, 50/60Hz, A)			1P, 13.2 A					
Cat No.		Solid door	AAH18215K	-	-	-	-	-
		Window door	AAH18315K	-	-	-	-	-
Electrical requirements (380V, 50Hz)				3P, 6.7 A	3P, 9.0 A	3P, 6.7 A	3P, 9.0 A	3P, 10.8 A
Cat No.		Solid door	-	AAH182214K	AAH182314K	AAH192114K	AAH192214K	AAH192314K
		Window door	-	AAH183214K	AAH183314K	AAH193114K	AAH193214K	AAH193314K

1) Technical data according to DIN 12880.
CE for 380V, 50hz.   FDA establishment registered company. FDA listed products.

Forced Convection Oven (2 / 4-Chamber)

Two or four 60L forced convection chambers in a single unit.

Designed to offer an ideal and cost-effective solution for laboratories with limited space and budget.

OF-02G-2C/4C

Standard accessories	• Wire shelves (2ea per chamber)
Optional accessories **see page 112**	• Perforated shelves

Performance

- Temperature range from ambient +10°C to 200°C.
- Microprocessor PID control.
- Temperature calibration.
- Automatic tuning.
- Forced air convection generated by a noiseless and powerful sirocco fan ensures optimal air circulation, temperature uniformity, and short heat-up time.
- Adjustable slide vents for inner vapor circulation.

Convenience

- Intuitive control panel with bright LED displays. (0.1 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.
- Built-in casters for easy transport and installation.

Safety

- Keypad lock function prevents accidental changes during operation.
- Automatic run after power interruption.
- Over-temperature and over-current protection.
- Audible and visible open door alarms.

Efficient lab space use with multi-chamber oven

- Designed to offer an ideal and cost-effective solution for laboratories with limited space and budget.
  - Two or four 60L ovens merged into a single unit.
- Optimum model selection between two and four chamber unit according to application demand.
- Suitable for conducting each different experiment at once.
  - Independent temperature and timer control of each chamber using microprocessor PID.

Model		OF-02G-2C	OF-02G-4C
Chamber volume (L / cu ft)		60 / 2.1 x 2 chambers	60 / 2.1 x 4 chambers
Temperature	Range (/)	Amb. +10 to 200 / Amb. +18 to 392	
	Fluctuation[1] at 100 (± /)	0.5 / 0.9	
	Variation[1] at 100 (± /)	1 / 1.8	
Dimension (W×D×H)	Interior (mm / inch)	400×360×420 / 15.7×14.2×16.5x 2 Chambers	400×360×420 / 15.7×14.2×16.5x 4 Chambers
	Exterior (mm / inch)	570×640×1340 / 22.4×25.2×52.8	1170×640×1340 / 46.1×25.2×52.8
	No. of wire shelf (standard / max.)	2 / 7 per chamber	2 / 7 per chamber
	Net weight (Kg / lbs)	110 / 242.5	170 / 374.8
Electrical requirements (230V, 50 / 60Hz)		8.4A	8.4A x 2EA
Cat. No.		AAH1A115K	AAH1A015K
Electrical requirements (120V, 60Hz)		16.7A	16.7A x 2EA
Cat. No.		AAH1A116U	AAH1A016U

1) Technical data according to DIN 12880.
   FDA establishment registered company. FDA listed products.

Forced Convection Ovens (Economy)

CE | Safety Patented | 1 Point Temperature Calibration | Dual Timer | Over Temp. | Auto Run

Affordable multi-functional fast drying ovens with vertical airflow.

Performance

- Temperature range from ambient +10 to 220.
- Microprocessor PID control / Temperature calibration / Automatic tuning.
- Forced air convection generated by a circular fan provides high and uniform drying performance.
- Adjustable dual slide vents for inner vapor circulation.

Convenience

- Intuitive control panel with bright LED displays. (0.1 resolution)
- Dual wait on/off timer modes. (1 min. to 99 hr. 59 min.)
- Convenient presetting function for 3 most commonly used temperature settings.
- Corrosion-resistant incoloy sheath heating element and stainless steel interior.
- Easy-to-grip circular door handle.

Safety

- Keypad lock function prevents accidental changes during operation.
- Automatic run after power interruption.
- Over-temperature and over-current protection.
- Audible and visible open door alarms.

OF-11E

Standard accessories • Wire shelves (2ea)

Optional accessories • Perforated shelves
see page 112

Model		OF-01E	OF-11E	OF-21E
Chamber volume (L / cu ft)		52 / 1.8	100 / 3.5	150 / 5.3
Temperature	Range (/)	Amb. +10 to 220 / Amb. +18 to 428		
	Fluctuation [1] at 100 (± /)	0.4 / 0.72		
	Variation [1] at 100 (± /)	3.3 / 5.94	3.3 / 5.94	2.3 / 4.14
Dimension (W×D×H)	Interior (mm / inch)	375×370×370 / 14.8×14.6×14.6	455×430×510 / 18×17×20	585×460×555 / 23×18.1×21.9
	Exterior (mm / inch)	530×535×737 / 20.9×21.1×29	610×595×877 / 24×23.4×34.5	740×625×922 / 29.1×24.6×36.3
	No. of wire shelf (standard / max.)	2 / 9	2 / 13	2 / 14
	Net weight (Kg / lbs)	36 / 79.4	47 / 103.6	59 / 130
Electrical requirements (230V, 50 / 60 Hz)		4.3A	6 A	7.4A
Cat. No.		**AAH14012K**	**AAH14022K**	**AAH14032K**
Electrical requirements (120V, 60 Hz)		6.8A	8.4A	10.1A
Cat. No.		**AAH14016U**	**AAH14026U**	**AAH14036U**

1) Technical data according to DIN 12880.
   FDA establishment registered company. FDA listed products.

CE | Safety Patented | Computer Interface | 1 Point Temperature Calibration | Dual Timer | Over Temp. | Auto Run

Performance

- Temperature range from ambient +15 to 250

- Microprocessor PID control / Temperature calibration / Automatic tuning.

- 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.

- Adjustable dual slide vents for inner vapor circulation.

Convenience

- Intuitive control panel with bright LED displays. (1 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.

- Fully insulated dual-wall door with 180 degree hinges and a pull-down handle.

- Threefold tempered-glass window provides clear inside view of the chambers. (optional)

- RS-232 interface for external control and data collection.

Safety

- Keypad lock function prevents accidental changes during operation.

- Automatic run after power interruption.

- Over-temperature and over-current protection.
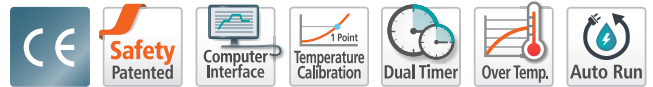
- Audible and visible open door alarms.

Specially designed for applications requiring gentle airflow.

ON-22G
with optional viewing window

Standard accessories	• Wire shelves (2ea)
Optional accessories **see page 112**	• Tempered viewing windows • Perforated shelves

Model	ON-02G	ON-12G	ON-22G
Chamber volume (L / cu ft)	52 / 1.8	91 / 3.2	135 / 4.8
Temperature — Range (/)	Amb. +15 to 250 / Amb. +27 to 482		
Temperature — Fluctuation[1] at 100 (± /)	0.3 / 0.54		
Temperature — Variation[1] at 100 (± /)	5.9 / 10.62	7.5 / 13.5	6.9 / 12.42
Dimension (W×D×H) — Interior (mm / inch)	400×360×365 / 15.7×14.2×14.4	480×410×465 / 18.9×16.1×18.3	610×460×485 / 24×18×19
Dimension (W×D×H) — Exterior (mm / inch)	577×542×760 / 22.7×21.3×30	657×592×870 / 25.9×23.3×34.3	785×642×897 / 30.9×25.3×35.3
Dimension (W×D×H) — No. of wire shelf (standard / max.)	2 / 7	2 / 11	2 / 13
Dimension (W×D×H) — Net weight (Kg / lbs)	49 / 108	59 / 130	68 / 150
Electrical requirements (230V, 50 / 60 Hz)	4.3 A	6 A	7.4 A
Cat. No.	**AAH11135K**	**AAH11145K**	**AAH11155K**
Electrical requirements (120V, 60 Hz)	6.7A	8.3A	10 A
Cat. No.	**AAH11136U**	**AAH11146U**	**AAH11156U**

1) Technical data according to DIN 12880.
   FDA establishment registered company. FDA listed products.

Ovens

Natural Convection Ovens (Economy)

CE | Safety Patented | Temperature Calibration 1 Point | Dual Timer | Over Temp. | Auto Run

Economical multi-function ovens with gentle airflow.

ON-11E

Standard accessories
- Wire shelves (2ea)

Optional accessories
see page 112
- Perforated shelves

Performance
- Temperature range from ambient +15 to 220 .
- Microprocessor PID control / Temperature calibration / Automatic tuning.
- Gravity flow convection for uniform sample heating.
- Adjustable dual slide vents for inner vapor circulation.

Convenience
- Intuitive control panel with bright LED displays. (1 resolution)
- Dual wait on/off timer modes. (1 min. to 99 hr. 59 min.)
- Convenient presetting function for 3 most commonly used temperature settings.
- Corrosion-resistant incoloy sheath heating element and stainless steel interior.
- Moderately sized, an easy to clean spacious chamber, and an easy to grip circular door handle.

Safety
- Keypad lock function prevents accidental changes during operation.
- Automatic run after power interruption.
- Over-temperature and over-current protection.
- Audible and visible open door alarms.

Model		ON-01E	ON-11E	ON-21E
Chamber volume (L / cu ft)		52 / 1.8	100 / 3.5	150 / 5.3
Temperature	Range (/)	Amb. +15 to 220 / Amb. +27 to 428		
	Fluctuation [1] at 100 (± /)	0.3 / 0.54	0.4 / 0.72	0.5 / 0.9
	Variation [1] at 100 (± /)	6.5 / 11.7	4.1 / 7.38	7.3 / 13.14
Dimension (W×D×H)	Interior (mm / inch)	375×370×370 / 14.8×14.6×14.6	455×430×510 / 18×17×20	585×460×555 / 23×18.1×21.9
	Exterior (mm / inch)	530×535×737 / 20.9×21.1×29	610×595×877 / 24×23.4×34.5	740×625×922 / 29.1×24.6×36.3
	No. of wire shelf (standard / max.)	2 / 9	2 / 13	2 / 13
	Net weight (Kg / lbs)	34 / 75	46 / 101.4	59 / 130
Electrical requirements (230V, 50 / 60 Hz)		4.3A	6A	7.4A
Cat. No.		AAH15015K	AAH15025K	AAH15035K
Electrical requirements (120V, 60 Hz)		6.7A	8.3A	10A
Cat. No.		AAH15016U	AAH15026U	AAH15036U

1) Technical data according to DIN 12880.
   FDA establishment registered company. FDA listed products.

CE | Safety Patented | 1 Point Temperature Calibration | Dual Timer | Over Temp. | Auto Run

Performance

- Temperature range from ambient +5 to 250

- Vacuum range: 0 to 0.1 MPa. (analog vacuum gauge)
  - Drying a solvent in vacuum lowers its boiling point, thereby making the separation process easier and eliminating the need to use high temperatures.

- Microprocessor PID control / Temperature calibration / Automatic tuning.

- Uniform heat distribution from block type heater attached to the chamber exterior to the anodized aluminum shelves.

Convenience

- Intuitive control panel with bright LED displays. (1 resolution)

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

- Convenient presetting function for 3 most commonly used temperature settings.

- Viton (fluorine rubber) door gasket also available for acidic applications. (optional)

- Heat tempered glass window provides clear inside view of the chambers

- Tight vacuum seal thanks to spring-loaded glass door, silicone gasket, and a push-button latch handle.

- Separate vacuum and vent ports.

- RS-232 interface for external control and data collection.

Safety

- Keypad lock function prevents accidental changes during operation.

- Automatic run after power interruption.

- Over-temperature and over-current protection.

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

OV-11

Standard accessories
- Plate shelves (2ea for OV-11, 3ea for OV-12)

Optional accessories
see page 113
- Safety cover, Viton gasket
- Vacuum pumps and oil mist trap
- Cold trap baths and U-type class trap

Ovens

Model	OV-11		OV-12
Chamber volume (L / cu ft)	28 / 1		65 / 2.3
Vacuum range	0~0.1MPa, Analog		
Nozzle size (mm / inch)	Vacuum ø10 / 0.4, Vent ø10 / 0.4		
Temperature	Range (/)	Amb. +5 to 250 / Amb. +9 to 482	
	Fluctuation [1] at 100 (± /)	0.1 / 0.18	0.3 / 0.54
	Variation [1] at 100 (± /)	3.7 / 6.66	
Dimension (W×D×H)	Interior (mm / inch)	302×305×302 / 11.9×12×11.9	402×405×402 / 15.8×15.9×15.8
	Exterior (mm / inch)	680×453×495 / 26.8×17.8×19.5	780×557×595 / 30.7×21.9×23.4
	No. of shelf (standard / max.)	2	3
	Net weight (Kg / lbs)	63 / 139	103 / 227
Electrical requirements (230V, 50 / 60 Hz)	5.3A		6.1A
Cat. No.	**AAH13115K**		**AAH13125K**
Electrical requirements (120V, 60 Hz)	10A		11.7A
Cat. No.	**AAH13116U**		**AAH13126U**

1) Technical data according to DIN 12880.
   FDA establishment registered company. FDA listed products.

Clean Ovens, Class 100 (Programmable / General)

Reliable HEPA filter guarantees class 100 cleanliness inside of our clean oven.
Ideal for specific use such as heat treatment and drying process.

OFC-40P(HP), OFC-20(H)
with optional viewing window, digital differential pressure gauge
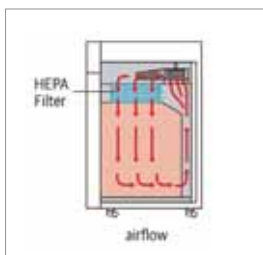
Standard accessories	• Wire shelves (2ea for 200L chambers, 3ea for 400L chambers) • HEPA filter, Analog differential pressure gauge
Optional accessories see page 113	• Gateway, Digital recorders • Digital differential pressure gauge • Tempered viewing window

Programmable model (OFC-P, OFC-PH)
for intelligent program control

· 10 programs available for temperature ramp up and dwell control.

· 10 steps per a program and 99 hours 59 minutes per a step.

· Stored programs are easily linkable.

· Programs can be repeated up to 99 cycles.

· Pre-heating and heating time are settable before program starts.

Class 100 cleanliness is achieved by HEPA filter.

· 0.3 μm and larger particulates are removed with 99.97% efficiency, leak-tight HEPA filter which satisfying class 100.

· Easy HEPA filter condition check by a built-in front differential pressure.

· Real time monitor of HEPA filter is available.
  - Optional digital differential pressure gauge let users know when filter needs replacement.

General model (OFC, OFC-H)
for simple and quick control

· Designed for offering the simplest control by user-friendly control panel.

· Set value and present value are shown on display at once.

· Easy adjustable knob for convenient set values and select functions.

· Intuitive heating level indication bar.

Safety Patented | Computer Interface | Program | Color Touch | Filtering | Temperature Calibration | Dual Timer | Over Temp. | Auto Run | Deviation Warning

Performance

- Rapid heating performance up to maximum 300
- Microprocessor PID control.
- Three point temperature calibration / Automatic tuning.
- Forced air convection generated by two noiseless and powerful sirocco fans ensures optimal air circulation, temperature uniformity, and short heat-up time.
- Adjustable dual slide vents for inner vapor circulation.
- Energy efficiency is achieved thanks to optimization of the insulation system.
  - Even if the unit is operating at max. temperature, the surface of the unit doesn't allow high temperatures.

Convenience

- Optimum model selection is available according to two different types of control panel.
  - Intuitive touch screen LCD controller with easy icons and logical menus. (for OFC-P/HP)
  - Bright VFD display with quick adjustable dial knob. (for OFC/H)
- 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 chamber. (optional)
- USB port and RS-232 port for external control and data collection.
- Casters for easy mobility during installation or relocation.

Safety

- Automatic run after power interruption.
- Over-current protection.
- Triple independent temperature monitor system.
  - Temperature deviation alarm (High/Low)
  - Electronic temperature limiter (High/Low)
  - Mechanical over-temperature limiter (High)
- Alarms for open door status, temperature sensor error and temperature deviation.
- Keypad lock function prevents accidental changes during operation.

Programmable Model		OFC-20P	OF3-40P	OFC-20HP	OFC-40HP
Chamber volume (L / cu ft)		200 / 7.1	400 / 14.1	200 / 7.1	400 / 14.1
Temperaure	Range (/)	Amb. +15 to 200 / Amb.+27 to 392		Amb. +15 to 300 / Amb.+27 to 572	
	Fluctuation[1] at 100 (± /)	0.2 / 0.36		0.2 / 0.36	
	Variation [1] at 100 (± /)	2.0 / 3.60	2.2 / 3.96	2.0 / 3.60	2.2 / 3.96
Dimension (W×D×H)	Interior (mm / inch)	645×750×412 / 25.4×29.5×16.2	645×750×866 / 25.4×29.5×34.1	645×750×412 / 25.4×29.5×16.2	645×750×866 / 25.4×29.5×34.1
	Exterior (mm / inch)	850x1100x1170 / 33.5x43.3x46.1	850x1100x1625 / 33.5x43.3x64	850x1100x1170 / 33.5x43.3x46.1	850x1100x1625 / 33.5x43.3x64
	Net weight (Kg / lbs)	190 / 418.9	250 / 551.2	190 / 418.9	250 / 551.2
Shelves	No. of wire shelf (standard / max.)	2 / 4	3 / 7	2 / 4	3 / 7
	Max. load per shelf (kg / lbs)	25 / 55.1		25 / 55.1	
Electrical requirements (230V, 50/60Hz)		1P, 12.0 A			
Cat No.	Solid door	AAH173115K	-	-	-
	Window door	AAH173125K	-	-	-
Electrical requirements (380V, 50Hz)			3P, 6.7 A	3P, 6.2 A	3P, 9.0 A
Cat No.	Solid door	-	AAH173214K	AAH174114K	AAH174214K
	Window door	-	AAH173224K	AAH174124K	AAH174224K
General Model		OFC-20	OFC-40	OFC-20H	OFC-40H
Chamber volume (L / cu ft)		200 / 7.1	400 / 14.1	200 / 7.1	400 / 14.1
Temperaure	Range (/)	Amb. +15 to 200 / Amb.+27 to 392		Amb. +15 to 300 / Amb.+27 to 572	
	Fluctuation[1] at 100 (± /)	0.2 / 0.36		0.2 / 0.36	
	Variation [1] at 100 (± /)	2.0 / 3.60	2.2 / 3.96	2.0 / 3.60	2.2 / 3.96
Dimension (W×D×H)	Interior (mm / inch)	645×750×412 / 25.4×29.5×16.2	645×750×866 / 25.4×29.5×34.1	645×750×412 / 25.4×29.5×16.2	645×750×866 / 25.4×29.5×34.1
	Exterior (mm / inch)	850x1100x1170 / 33.5x43.3x46.1	850x1100x1625 / 33.5x43.3x64	850x1100x1170 / 33.5x43.3x46.1	850x1100x1625 / 33.5x43.3x64
	Net weight (Kg / lbs)	190 / 418.9	250 / 551.2	190 / 418.9	250 / 551.2
Shelves	No. of wire shelf (standard / max.)	2 / 4	3 / 7	2 / 4	3 / 7
	Max. load per shelf (kg / lbs)	25 / 55.1		25 / 55.1	
Electrical requirements (230V, 50/60Hz)		1P, 12.0 A			
Cat No.	Solid door	AAH171115K	-	-	-
	Window door	AAH171125K	-	-	-
Electrical requirements (380V, 50Hz)			3P, 6.7 A	3P, 6.2 A	3P, 9.0 A
Cat No.	Solid door	-	AAH171214K	AAH172114K	AAH172214K
	Window door	-	AAH171224K	AAH172124K	AAH172224K

1) Technical data according to DIN 12880.
   FDA establishment registered company. FDA listed products.

for Forced / Natural convection ovens
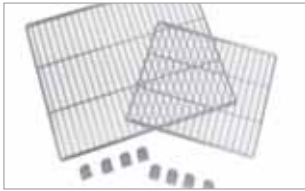
Wire shelves

Perforated shelves

Fan speed adjuster

Gateway

Wire shelves & Perforated shelves

Stainless steel and electro-polished shelf system is removed easily without using tools for easy cleaning.

Description	Wire shelves			Perforated shelves		Suitable for
W×L (mm / inch)	Standard/Maximum		Cat. No.	Maximum	Cat. No.	
366×316 / 14.4×12.4	2 / 7		EDA8136	7	AAA12531	OF-02G/P
	4 / 14			14		OF-02G-2C
	8 / 28			28		OF-02G-4C
446×366 / 17.6×14.4	2 / 11		EDA8135	11	AAA12532	OF-12G/P
516×416 / 20.3×16.4	2 / 13		EDA8134	13	AAA12533	OF-22G/P
366×316 / 14.4×12.4	2 / 9		EDA8136	9	AAA12531	OF-01E, ON-01E
446×366 / 17.6×14.4	2 / 13		EDA8135	13	AAA12532	OF-11E, ON-11E
576×419 / 22.7×16.5	2 / 14		EDA8137	14	AAA12535	OF-21E, ON-21E
708×608 / 27.9×23.9	2 / 5		RTD1196	5	AAA18501	OF3-30 models
	3 / 8			8		OF3-45 models
	3 / 11		RTD1197	11	AAA18502	OF3-75 models
366×316 / 14.4×12.4	2 / 7		EDA8136	7	AAA12531	ON-02G
446×366 / 17.6×14.4	2 / 11		EDA8135	11	AAA12532	ON-12G
576×419 / 22.7×16.5	2 / 13		EDA8137	13	AAA12535	ON-22G
366×316 / 14.4×12.4	2 / 9		EDA8136	9	AAA12531	ON-01E
446×366 / 17.6×14.4	2 / 13		EDA8135	13	AAA12532	ON-11E
576×419 / 22.7×16.5	2 / 13		EDA8137	13	AAA12535	ON-21E

Tempered viewing windows

Optimized sample monitoring with threefold, tempered safety glass window.

Cat. No.	Description (Thickness, W×L)	Suitable for
AAA12611	5, 150×280mm / 0.2, 5.9×11″	OF-02G/P, ON-02G
AAA12612	5, 150×380mm / 0.2, 5.9×15″	OF-12G/P, OF-22G/P ON-12G, 22G

Gateway

Establish Jeio Tech Network by Gateway. No computer use is required at all. Remote monitoring of operating status through a mobile device (Android only) is simply available when you place a Gateway in your lab. Maximum 4 units can be connected to Gateway by RS-232 cable.

Cat. No.	Description	Suitable for
AAAQ1011	Gateway (2.4GHz, 100~240V, 50/60Hz)	OF-P, OF3 models

Fan speed adjuster

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

Cat. No.	Description	Suitable for
AAA12701	Analog dial control	OF-02G, 12G, 22G

Recorders

Easy recognizable digital recorders for efficient temperature indicating.

Cat. No.	Description	Suitable for
AAA8T500	Recorder (6 point)	OF3 models
AAAE1503	Recorder (thermal line type)	

Ovens

for Vacuum ovens

Safety covers

Viton gaskets

Vacuum pumps

Cold trap baths

Safety covers

In case of the glass is destroyed, the netted steel frame and polycarbonate sheet cover prevent user from glass splinters.

Cat. No.	Description	Suitable for
AAA13603	Safety cover	OV-11
AAA13604	Safety cover	OV-12

Related products for vacuum ovens

Cat. No.	Vacuum pumps
BEH73205K	W2V10 (230V, 50/60Hz)
BEH73206U	W2V10 (120V, 60Hz)
BEA700351	Oil mist trap (PC)
BEA700355	Oil mist trap (metal)
BEA700353	Vacuum pump oil (1L)
BEA700354	Vacuum pump oil (20L)

Cat. No.	Cold trap baths
AAH62011K	CTB-10 (230V, 60Hz)
AAH62012K	CTB-10 (230V, 50Hz)
FCA1110	U-type glass trap (1ea)

In order to get rid of evaporated oil or to block oil in-flow, an optional oil mist trap is recommended. (refer to page 115 for additional information.)

Gaskets

Viton (fluorine rubber) door gaskets can be provided upon request.

Cat. No.	Description	Suitable for
FAA5146	Silicone gasket	OV-11
FAA5187	Viton (fluorine rubber) gasket	
FAA5147	Silicone gasket	OV-12
FAA5188	Viton (fluorine rubber) gasket	

Organization chart for use of vacuum oven with pump and cold trap bath
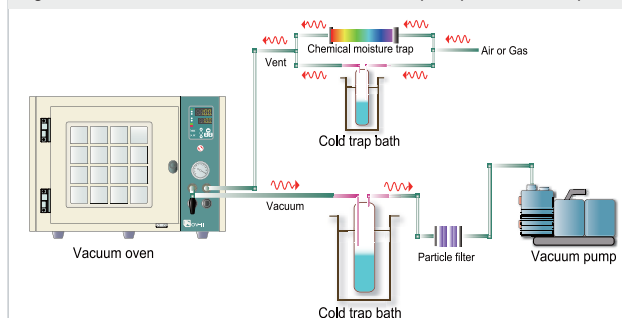
In addition to standard accessories, we can also provide customized accessories to meet your specific requirements. Please contact your local dealer for more details.

for Clean ovens

Wire shelves & Perforated shelves

Stainless steel and electro-polished shelf system is removed easily without using tools for easy cleaning.

Description	Wire shelves		Perforated shelves		Suitable for
W×L (mm / inch)	Standard/Maximum	Cat. No.	Maximum	Cat. No.	
708×608 / 27.9×23.9	2 / 4	RTD1196	4	AAA18501	OFC-20 models
	3 / 7		7		OFC-40 models

HEPA filter

Biohazardous aerosols and other visible and non-visible particles.
(filtration efficiency: 99.99% at 0.3 microns)

Cat. No.	Description	Suitable for
STT2791	HEPA filter (200 . 549x447x150mm / 21.6x17.6x5.9″)	OFC models, OFC-P models
STT2792	HEPA filter (300 549x447x150mm / 21.6x17.6x5.9″)	OFC-H models, OFC-HP models

Digital differential pressure gauge

Digital differential pressure sensor allows for easy verification of HEPA filter condition great for knowing when to change HEPA filter.

Cat. No.	Description
AAA17508	Digital differential pressure gauge

Gateway

Establish Jeio Tech Network by Gateway. No computer use is required at all. Remote monitoring of operating status through a mobile device (Android only) is simply available when you place a Gateway in your lab. Maximum 4 units can be connected to Gateway by RS-232 cable.

| Cat. No.	Description
AAAQ1011	Gateway (2.4GHz, 100~240V, 50/60Hz)

Recorders

Easy recognizable digital recorders for efficient temperature indicating.

Cat. No.	Description
AAA8T500	Recorder (6 point)
AAAE1503	Recorder (thermal line type)

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.

VACUUM CURVES

For all models
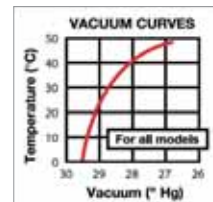
VE-11
with optional vacuum gauge / regulator

Standard accessories	• Water tank, aspirator pump, tank closure
	• Two aspirators
	• One 100cm long ø 8mm (0.3″) silicone rubber tube with tubing connector

W2V10

| **Optional accessories** | • Oil mist traps |

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
EFA9111	Aspirator (1 ea)
AAH71122	Aspirator (10 ea)

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) ×2ea		
Material (bath / aspirator)	Polypropylene / Nickel-coated brass × 2ea		
Bath interior (W×L , D) (mm / inch)	298×210, 227 / 11.7×8.3 ,8.9		
Exterior (W×L×H) (mm / inch)	330×265×390 / 13×10.4×15.4		
Inhale nozzle	External ⌀9.5mm (0.4″) ×2ea		
Drain cook, Over flow nozzle (Ø, mm / inch)	17 / 0.7		
Net weight (kg / lbs)	5.7 / 12.6		
Electrical requirements	230V, 60Hz / 0.7A	230V, 50Hz / 0.7A	120V, 60Hz / 1.4A
Cat. No.	AH71011K	AAH71015K	AAH71016U

FDA establishment registered company. FDA listed products.

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.	Description
BEA700351	Oil mist trap (PC)
BEA700355	Oil mist trap (metal)
BEA700353	Vacuum pump oil (1L)
BEA700354	Vacuum pump oil (20L)

Model		W2V10	
Pumping speed (L/min / gal/min)		100 / 26.4	
Max. pressure	Gas ballast open	5X10-3 Torr (6.7 Pa)	
	Gas ballast closed	1X10-3 Torr (1.3X10-1 Pa)	
Motor power (W / Hp)		400 / 0.5	
Motor speed (rpm)		1,700	
Oil capacity (cc / L)		500 / 0.5	
Inlet	Standard	NW25	
	Nipple (Ø, mm)	AL, ⌀12	
Exterior (W×L×H) (mm / inch)		150x392x250 / 5.9x15.4x9.8	
Net weight (kg / lbs)		22.5 / 49.6	
Electrical requirements		230V, 50/60Hz	120V, 60Hz
Cat. No.		BEH73205K	BEH73206U

09

Recirculating Coolers (chillers)

› General Recirculating Coolers
› Low Temp. Recirculating Coolers
› Advanced Low Temp. Recirculating Coolers
› High Temp. Recirculating Coolers
› Compact Recirculating Cooler

General Applications

Recirculating Cooler (HX)

Warming reagents, Routine laboratory applications, Coliform determinations, Sample thawing, Bacteriological examinations, Microbiological assays, Cell cultivation.

Recirculating Cooler (HL/HS/HH)

Temperature control, Incubations, Material testing, Increasing solubility rates, Corrosion tests, Cell cultivation, Histological studies.

Recirculating Cooler (RC)

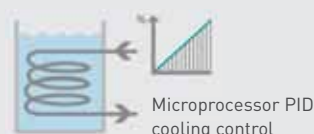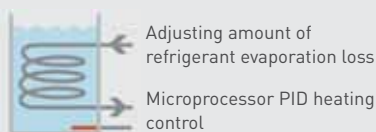Viscosity measurements, Fecal coliform testing, Plasma thawing, Histological studies.

Product Name		General Recirculating Coolers		Low Temp. Recirculating Coolers	
Model		HX	HX-H	HL	HL-H
Description		-		-	
Temp. control (/)		3 to 40 / 37.4 to 104		-20 to 40 / -4 to 104	
Temp. stability at 15 (± /)		1 / 1.8		1 / 1.8	
Cooling capacity at 20 (Kw)		1.9, 2.4	1.9, 2.4, 3.6, 4.7, 7.1	0.6, 0.7, 1.45, 1.8	1.45, 1.8, 2.5, 3.3, 6.5, 7.1
Heating capacity at 20 (Kw)		-	-	-	-
Pump (50Hz)	Max. flow rate (L / min)	40	28	50	40, 70
	Max. pressure (bar)	1.58	4.3	1	3.3, 6
Dimension	Max. filling capacity (L)	35, 45		7.5, 13.5, 25, 39	
	for tubing dia. (mm / inch)	20		20	
Control	Display & Control interface	LCD, Buttons		VFD, Touch buttons, Knob	
	Computer interface	-		-	
	JeioTech Network	-		-	
Safety	Over temp. limit	-		-	
	Low fluid level alarm	O		O	
	External sensor	-		-	

Technical Benefits

Wide model selection covers all of your application needs

- Excellent heating and cooling control from -10 to 80 .
- Cooling capacity of up to 7.7kW
- Circulating pumps up to 70 L/min and 6 bar.
- Energy-effective by-pass model and cost-effective general model.

Stand alone cooling performance

Adjusting amount of refrigerant evaporation loss

Microprocessor PID heating control

Microprocessor PID cooling control

HH models

- Broad cooling and heating task from -20 to 80 .
- Quick heat up time with the intergrated heater.
- Superb temperature stability of ±0.1 by microprocessor PID control.

HS models

- Smart cooling performance from with high temperature stability.
- No heater equipped, high temperature stability of ±0.2 is guaranteed with only using a refrigerating system.
  - Cooling capacity of refrigerator is adjustable from 1% to 100% by high-tech microprocessor PID control. (patent pending)

Advanced Low Temp. Recirculating Coolers		High Temp. Recirculating Coolers		Compact Recirculating Cooler
HS	HS-H	HH	HH-H	RC
• Precise temperature stability without heater.		• Broad temp. range. • Quick heat up time and precise temp. stability with intergrated heater.		• Compact size.
-20 to 40 / -4 to 104		-20 to 80 / - 4 to 176		-10 to 30 / 14 to 86
0.2 / 0.36		0.1 / 0.2		1 / 1.8
1.45, 1.8, 2.5, 3.3, 6.5, 7.1	6.5, 7.1	1.45, 1.8, 2.5, 3.3	6.5, 7.1	0.58
-	-	2, 4	8.4	-
40	70	40	70	26
3.3	6	3.3	6	0.7
13.5, 25, 39		13.5, 25, 39		5
20		20		9.5
VFD, Touch buttons, Knob		VFD, Touch buttons, Knob		LCD, Buttons
RS-232 port, Alarm output port		RS-232 port, Alarm output port		-
O		O		-
-		O		-
O		O		O
O (optional)		O (optional)		-

Providing a constant temperature control and high cooling efficiency.

LCD display

Pressure gauge

Level indicator

Performance

- Temperature range from 3 to 40 .
- High cooling capacity up to 7.1kW at 20 .
- Powerful circulating pumps up to 40L/min., 4.3 bar.
- Refrigerating system is designed to reduce energy consumption and maximize refrigerating efficiency.
- Pump pressure can be controlled using a by-pass function. (for H type)

Convenience

- Clear and easy-to-use LCD display. (resolution 0.1)
- Bright LED water level indicator can be seen from a distance.
- Built in pressure gauge for checking pump pressure at a glance.
- High/low pressure gauges for condition diagnosis of refrigerating system at a glance. (for H type)
- Wide filling inlet for easy and safe pouring of solution into the unit.
- Suitable model is selectable between magnetic pump, centrifugal pump.
- Double service valve prevents refrigerant leakage for easy maintenance.
- Removable gridded vent for easy maintenance of condenser.
- Built-in casters for easy transport and installation.

Safety

- Self-diagnostic function identifying errors.
- Complete safety protection system with warning alarms.
  - Low fluid level and dry-running protection; when triggered shows an error symbol on the display and an audible buzzer sound.
  - Over-temperature protection; If the equipment operates at over maximum temperature due to external environment, user can simply identify the error with a visual signal or an audible buzzer sound.
  - Over-current circuit breaker.
- Eco-friendly R-404A refrigerant use for environmental protection.
- Splash-proof keypad.
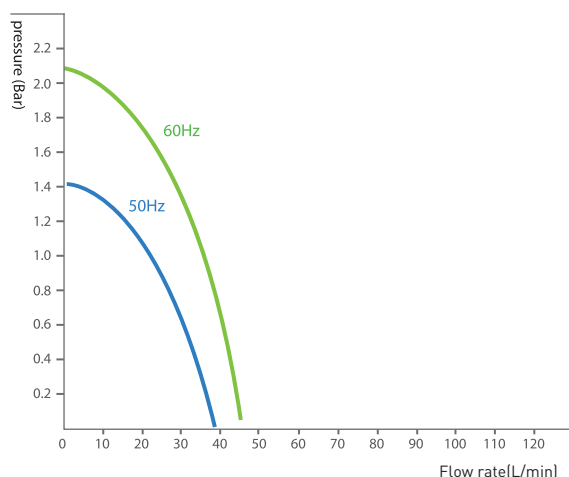
Testing in accordance with **DIN EN 12876**

Standard accessories
see page 128-129
- 3/4″ male to 3/4″ male adapters (2ea)
- Ball valves (2ea)

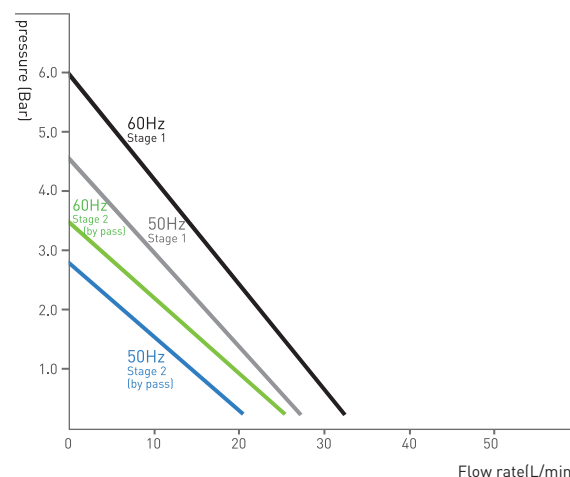**CE** **Green CFC-Free** **Level Indicator / Full Start**

Pumping capacities (bath fluid: water)

Magnetic pump

• HX-20, 25

Centrifugal pump

• HX-20H, 25H, 35H, 45H, 55H

	Model	HX-20	HX-25	HX-20H	HX-25H	HX-35H	HX-45H[2]	HX-55H[2]
Temperature[1] (bath fluid : water)	Working temperature range (/)	+3 to 40 / +37.4 to 104						
	Temperature stability at 15 (± /)	1 / 1.8						
Cooling capacity (bath fluid : water)	at 20 (kW)	1.9	2.4	1.9	2.4	3.6	4.7	7.1
	at 10 (kW)	1.4	1.7	1.4	1.7	3.1	3.6	5.1
	at 5 (kW)	1	1.4	1	1.4	2.4	2.9	4.2
Pump	Max. flow rate (L / min, gal / min)	40 / 10.6		28 / 7.39				
	Max. pressure (bar / psi)	1.43 / 20.74		4.3 / 62.37				
Dimension	Max. filling capacity (L / cu ft)	35 / 1.24					45 / 1.59	
	For tubing dia. (mm / inch)	20 / 3/4						
	Filling inlet (Ø, mm / inch)	50 / 1.9						
	Overall (W×L×H, mm / inch)	620×785×990 / 24.4×30.9×39					745×800×1095 / 29.3×31.5×43.1	
	Net weight (kg / lbs)	93 / 205	101 / 223	97 / 214	105 / 231	120 / 265	130 / 287	140 / 309
Electrical requirements (230V, 60Hz)		8.5A	9A	9.3A	9.8A	15A	19A	
Cat. No.		AAH64011K	AAH64021K	AAH64111K	AAH64121K	AAH64131K	AAH64141K	-
Electrical requirements (230V, 50Hz)		7A	7.6A	7.9A	8.8A	14A		
Cat. No.		AAH64012K	AAH64022K	AAH64112K	AAH64122K	AAH64132K	-	-
Electrical requirements (120V, 60Hz)		17A	22A					
Cat. No.		AAH64013U	AAH64023U	-	-	-	-	-
Electrical requirements (380V, 60Hz)							10A	11.5A
Cat. No.		-	-	-	-	-	AAH64149K	AAH64159K
Electrical requirements (380V, 50Hz)							7A	8.5A
Cat. No.		-	-	-	-	-	AAH64148K	AAH64158K

1) Technical data according to DIN 12876
2) HX-45H, 55H is recorded by 380V, 60Hz.
   Above specification value is recorded by 50Hz.
   Product performance may be affected by ambient temperatures.
   FDA establishment registered company. FDA listed products.

Powerful recirculating coolers.

Provide a wide range of cooling capacities with temperature reliability.

Performance

- Temperature range from -20 to 40 .
- High cooling capacity up to 7.1kW at 20 .
- Powerful circulating pumps up to70L/min., 6 bar.
- Refrigerating system is designed to reduce energy consumption and maximize refrigerating efficiency.

Convenience

- Designed to simplify operation with a touch screen type display.
  - Easy-to-read VFD display with interactive touch keys.
  - Setting and resolution indication 0.1 / .
  - Quick keypad lock prevents accidental parameter changes.
  - Signal indicator for operation status.
- Bright LED water level indicator can be seen from a distance.
- Built in pressure gauge for checking pump pressure at a glance.
- High/low pressure gauges for condition diagnosis of refrigerating system at a glance. (for H type)
- Wide filling inlet for easy and safe pouring of solution into the unit.
- Double service valve prevents refrigerant leakage for easy maintenance.
- Removable gridded vent for easy maintenance of condenser.
- Built-in casters for easy transport and installation.

Safety

- Self-diagnostic function identifying errors.
- Complete safety protection system with warning alarms.
  - Low fluid level and dry-running protection; when triggered shows an error symbol on the display and an audible buzzer sound.
  - Over-temperature protection; If the equipment operates at over maximum temperature due to external environment, user can simply identify the error with a visual signal or an audible buzzer sound.
  - Over-current circuit breaker.
- Eco-friendly R-404A / R-507 refrigerant use for environmental protection.
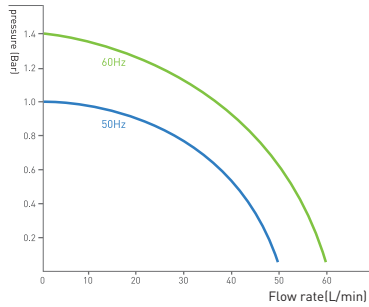- Splash-proof keypad.

Testing in accordance with **DIN EN 12876**

Standard accessories
see page **128-129**
- 3/4" male to 3/4" male adapters (2ea)
- Ball valves (2ea)

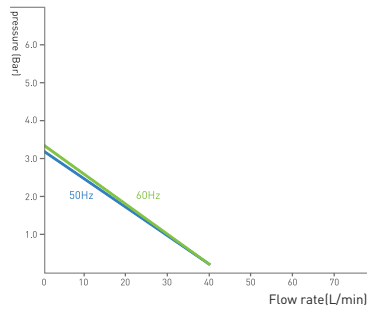CE | Green CFC-Free | Full Start Level Indicater

Pumping capacities (Bath fluid : ethylene glycol mix 1:1 water)

Submersible pump

• HL - 05, 10, 15, 2

• HL - 15H, 20H, 25H, 35H
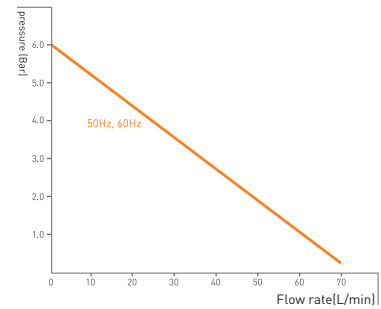
• HL - 45H, 55H

	Model	HL-05	HL-10	HL-15	HL-20	HL-15H	HL-20H	HL-25H	HL-35H	HL-45H [2]	HL-55H [2]
Temperature [1] (bath fluid : ethylene glycol mix 1:1 water)	Working temp. range (/)	-20 to 40 / -4 to 104									
	Temp. stability at 15 , (± /)	1 / 1.8									
Cooling capacity (bath fluid : ethylene glycol mix 1:1 water)	at 20 (kw)	0.6	0.7	1.45	1.8	1.45	1.8	2.5	3.3	6.5	7.1
	at 10 (kw)	0.5	0.6	1.15	1.5	1.15	1.5	1.8	2.3	4.5	6
	at 0 (kw)	0.35	0.42	0.86	1.15	0.86	1.15	1.1	1.7	3	4.1
	at -10 (kw)	0.18	0.32	0.62	0.85	0.62	0.85	0.65	1	2.1	2.5
	at -20 (kw)	0.04	0.14	0.3	0.40	0.3	0.4	0.4	0.55	1.2	1.5
Pump	Max. flow rate (L / min, gal / min)	50 / 13.2				40 / 10.57				70 / 18.49	
	Max. pressure (bar / psi)	1 / 14.5				3.3 / 47.9				6 / 87	
Dimension	Max,. filling Capacity (L, cu ft)	7.5 / 0.26		13.5 / 0.47				25 / 0.88		39 /1.37	
	For tubing dia. (mm / inch)	20 / 3/4									
	Filling inlet (Ø, mm / inch)	120 / 4.7									
	Overall (WxLxH, mm / inch)	405×620×710 / 15.9×24.4×28		515×715× 835 / 20.3×28.1×32.9				550×900×1140 / 21.7×35.4×44.9		605×1045×1300 / 23.8×41.4×51.2	
	Net weight (kg / lbs)	62.85 / 138.6	64.85 / 143	86.5 / 190.7	87.35 / 192.9	91.8 / 202.4	92.65 / 204.3	141.3 / 310.9	146.3 / 321.9	171 ±10 / 377 ±22	176 ±10 / 388 ±22
Electric requirement (230V, 60Hz)		5A	5.5A	6.5A	7.5A	6.5A	7.5A	9.5A	13.5A		
Cat. No.		AAH65001K	AAH65011K	AAH65021K	AAH65031K	AAH65121K	AAH65131K	AAH65141K	AAH65151K	-	-
Electric requirement (230V, 50Hz)		4.5A	5A	6A	7A	6A	7A	7.5A	12.5A		
Cat. No.		AAH65002K	AAH65012K	AAH65022K	AAH65032K	AAH65122K	AAH65132K	AAH65142K	AAH65152K	-	-
Electric requirement (120V, 60Hz)		10A	11A	13A	15A						
Cat. No.		AAH65003U	AAH65013U	AAH65023U	AAH65033U	-	-	-	-	-	-
Electric requirement (380V, 60Hz)										5.5A	7A
Cat. No.		-	-	-	-	-	-	-	-	AAH65169K	AAH65179K
Electric requirement (380V, 50Hz)										5A	6A
Cat. No.		-	-	-	-	-	-	-	-	AAH65168K	AAH65178K

1) Technical data according to DIN 12876.
2) HL-45H, 55H is recorded by 380V, 60Hz.
   Above specification value is recorded by 50Hz.
   Product performance may be affected by ambient temperatures.
   CE except for HL-45H/55H.
   FDA establishment registered company. FDA listed products.

Adjustable, precise PID temperature controller beneficial for various cooling tasks in the science, research, and industrial laboratories.

REMOTE CONTROL with your **MOBILE DEVICE** see page 8-9

JeioTech Network

Performance

· Temperature range from -20   to 40   .

· High cooling capacity up to 7.1kW at 20   .

· Powerful circulating pumps up to 70L/min., 6 bar.

· Precise temperature stability ± 0.2   (at 15   ) without heater.
  - Innovative and exclusive controller can adjust the cooling capacity from 1% to 100%.

· Refrigerating system is designed to reduce energy consumption and maximize refrigerating efficiency.

Convenience

· Designed to simplify operation with a touch screen type display.
  - Setting and resolution indication 0.1   /   .
  - Quick keypad lock prevents accidental parameter changes.

· Bright LED water level indicator can be seen from a distance.

· Optional external sensor can be connected for more actual temperature control.

· Built in pressure gauge for checking pump pressure at a glance.

· High/low pressure gauges for condition diagnosis of refrigerating system at a glance. (for H type)

· Wide filling inlet for easy and safe pouring of solution into the unit.

· Double service valve prevents refrigerant leakage for easy maintenance.

· Removable gridded vent for easy maintenance of condenser.

· Built-in casters for easy transport and installation.

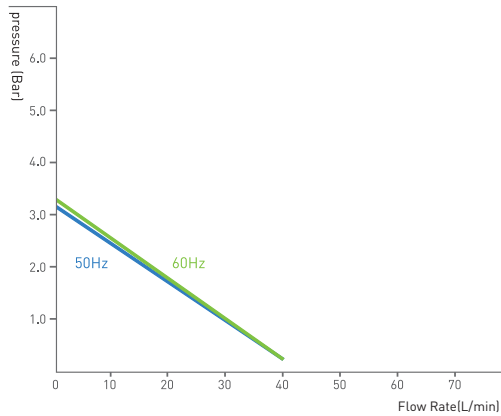· RS-232 interface for external control and data collection.

Safety

· Self-diagnostic function identifying errors.

· Complete safety protection system with warning alarms.
  - Low fluid level and dry-running protection; when triggered shows an error symbol on the display and an audible buzzer sound.
  - Over-temperature protection; If the equipment operates at over maximum temperature due to external environment, user can simply identify the error with a visual signal or an audible buzzer sound.
  - Over-current circuit breaker.

· Eco-friendly R-404A / R-507 refrigerant use for environmental protection.

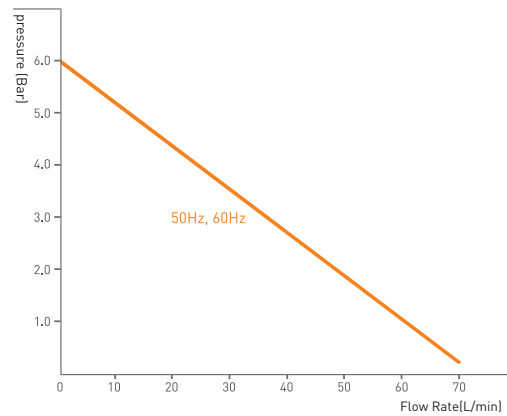· Splash-proof keypad.

External Sensor   Alarm Output   RS-232 Serial

Testing in accordance with **DIN EN 12876**

Standard accessories
· 3/4″ male to 3/4″ male adapters (2ea)
· Ball valves (2ea)

Optional accessories
see page 128-129
· Gateway

Green CFC-Free   Computer Interface   Level Indicater   Full Start

Pumping capacities (bath fluid: water)

Submersible pump

• HS -15, 20, 25, 35, 45, 55

• HS - 45H, 55H

	Model	HS-15	HS-20	HS-25	HS-35	HS-45	HS-55	HS-45H[2]	HS-55H[2]
Temperature[1] (bath fluid : ethylene glycol mix 1:1 water)	Working temperature range (/)	-20 to 40 / -4 to 104							
	Temperature stability at 15 , (± /)	0.2 / 0.36							
Cooling capacity (bath fluid : ethylene glycol mix 1:1 water)	at 20 (kw)	1.45	1.8	2.5	3.3	6.5	7.1	6.5	7.1
	at 10 (kw)	1.15	1.5	1.8	2.3	4.5	6	4.5	6
	at 0 (kw)	0.86	1.15	1.1	1.7	3	4.1	3	4.1
	at -10 (kw)	0.62	0.85	0.65	1	2.1	2.5	2.1	2.5
	at -20 (kw)	0.3	0.4	0.4	0.55	1.2	1.5	1.2	1.5
Pump	Max. flow rate (L / min, gal / min)	40 / 10.57						70 / 18.49	
	Max. pressure (bar / psi)	3.3 / 47.86						6 / 87	
Dimension	Max. filling Capacity (L, cu ft)	13.5 / 0.47		25 / 0.88		39 /1.37			
	For tubing dia. (mm / inch)	20 / 3/4							
	Filling inlet (Ø, mm / inch)	120 / 4.7							
	Overall (W×L×H, mm / inch)	515×715× 835 / 20.3×28.1×32.9		550×900×1140 / 21.7×35.4×44.9		605×1045×1300 / 23.8×41.4×51.2			
	Net weight (kg / lbs)	91.8 / 202.4	92.65 / 204.3	141.3 / 310.9	146.3 / 321.9	168 ±10 / 370 ±22	173±10 / 381 ±22	171 ±10 / 377 ±22	176 ±10 / 388 ±22
Electric Requirement (230V, 60Hz)		6.5 A	7.5 A	9.5 A	13.5 A				
Cat. No.		AAH66011K	AAH66021K	AAH66031K	AAH66041K	-	-	-	-
Electric Requirement (230V, 50Hz)		6 A	7 A	7.5 A	12.5 A				
Cat. No.		AAH66012K	AAH66022K	AAH66032K	AAH66042K	-	-	-	-
Electric Requirement (380V, 60Hz)						5.5 A	7 A	5.5 A	7 A
Cat. No.		-	-	-	-	AAH66259K	AAH66469K	AAH66359K	AAH66569K
Electric Requirement (380V, 50Hz)						5 A	6 A	5 A	6 A
Cat. No.		-	-	-	-	AAH66258K	AAH66468K	AAH66358K	AAH66568K

1) Technical data according to DIN 12876.
2) HS-45H, 55H is recorded by 380V, 60Hz.
   Above specification value is recorded by 50Hz.
   Product performance may be affected by ambient temperatures.
   FDA establishment registered company. FDA listed products.

Broad temperature ranging up to 80℃ for various applications.
Also integrated heaters greatly provides high temperature stability.

REMOTE CONTROL
with your **MOBILE DEVICE**
see page 8-9

JeioTech Network

External Sensor   Alarm Output   RS-232 Serial

Testing in accordance with **DIN EN 12876**

Standard accessories
- 3/4″ male to 3/4″ male adapters (2ea)
- Ball valves (2ea)

Optional accessories
see page 128-129
- Gateway

Performance

- Wide temperature range from -20℃ to 80℃.
- High cooling capacity up to 7.1kW at 20℃.
- Powerful circulating pumps up to to70L/min., 6 bar.
- Precise temperature stability ± 0.1℃ (at 15℃) with integrated heaters.
- Refrigerating system is designed to reduce energy consumption and maximize refrigerating efficiency.

Convenience

- Designed to simplify operation with a touch screen type display.
  - Setting and resolution indication 0.1℃ /.
  - Quick keypad lock prevents accidental parameter changes.
- Bright LED water level indicator can be seen from a distance.
- Optional external sensor can be connected for more actual temperature control.
- Built in pressure gauge for checking pump pressure at a glance.
- High/low pressure gauges for condition diagnosis of refrigerating system at a glance. (for H type)
- Wide filling inlet for easy and safe pouring of solution into the unit.
- Double service valve prevents refrigerant leakage for easy maintenance.
- Removable gridded vent for easy maintenance of condenser.
- Built-in casters for easy transport and installation.
- RS-232 interface for external control and data collection.

Safety

- Self-diagnostic function identifying errors.
- Complete safety protection system with warning alarms.
  - Low fluid level and dry-running protection; when triggered shows an error symbol on the display and an audible buzzer sound.
  - Over-temperature protection; If the equipment operates at over maximum temperature due to external environment, user can simply identify the error with a visual signal or an audible buzzer sound.
  - Over-current circuit breaker.
- Eco-friendly R-404A / R-507 refrigerant use for environmental protection.
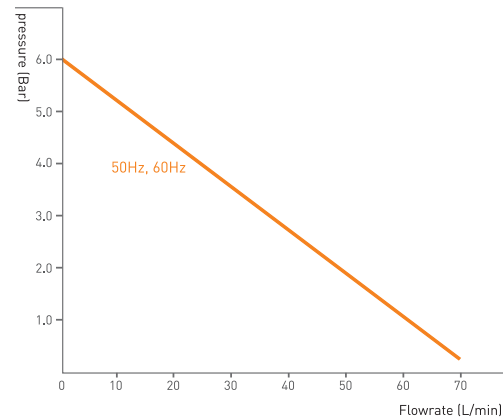- Splash-proof keypad.

Pumping capacities (bath fluid : ethylene glycol mix 1:1 water)

Submersible pump
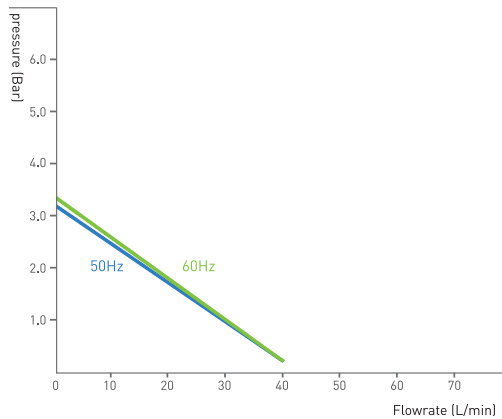
• HH - 15, 20, 25, 35

• HH - 45H, 55H

	Model	HH-15	HH-20	HH-25	HH-35	HH-45H[2]	HH-55H[2]
Temperature [1] (bath fluid : ethylene glycol mix 1:1 water)	Working temperature range (/)	-20 to 80 / - 4 to 176					
	Temperature stability at 15 (± /)	0.1 / 0.2					
Cooling capacity (bath Fluid : ethylene glycol mix 1:1 water)	at 80 (kw)	2	2.5	3.5	4	6	7.5
	at 40 (kw)	0.9	1	2.4	2.5	4.5	5
	at 20 (kw)	1.45	1.8	2.5	3.3	6.5	7.1
	at 0 (kw)	0.86	1.15	1.1	1.7	3	4.1
	at -20 (kw)	0.3	0.4	0.4	0.55	1.2	1.5
Heating capacity(kw)		2		4		8.4	
Pump	Max. flow rate (L / min, gal / min)	40 / 10.6				70 / 18.5	
	Max. pressure (bar / psi)	3.3 / 47.9				6 / 87.02	
Dimension	Max. filling capacity (L, cu ft)	13.5 / 0.47		25 / 0.88		39 / 1.37	
	For tubing dia. (mm / inch)	20 / 3/4					
	Filling inlet (Ø, mm / inch)	120 / 4.7					
	Overall (WxDxH, mm / inch)	515×715× 835 / 20.3×28.1×32.9		550×900×1140 / 21.7×35.4×44.9		605×1045×1300 / 23.8×41.4×51.2	
	Net weight (kg / lbs)	92 / 202.8	93 / 205	142 / 313	147 / 324	171±10 / 377±22	176±10 / 388±22
Electric requirement (230V, 60Hz)		15A	16A	27A	31A		
Cat. No.		AAH67011K	AAH67021K	AAH67031K	AAH67041K	-	-
Electric requirement (230V, 50Hz)		14.5A	15.5A	25A	30A		
Cat. No.		AAH67012K	AAH67022K	AAH67032K	AAH67042K	-	-
Electric requirement (380V, 60Hz)						18.3	19.8
Cat. No.		-	-	-	-	AAH67159K	AAH67169K
Electric requirement (380V, 50Hz)						17.8	19.3
Cat. No.		-	-	-	-	AAH67158K	AAH67168K

1) Technical data according to DIN 12876.
2) HH-45H, 55H is recorded by 380V, 60Hz.
   Above specification value is recorded by 50Hz.
   Product performance may be affected by ambient temperatures.
   Under the condition of no-load operation, cooling capacity should be lower than heating capacity.
   FDA establishment registered company. FDA listed products.

This compact designed model is ideal for cooling small laboratory equipment in daily use.

Performance

- Temperature range from -10 to 30 .
- Refrigerating system is designed to reduce energy consumption and maximize refrigerating efficiency.

Convenience

- Clear and easy-to-use LCD display. (resolution 0.1)
- Bright LED water level indicator can be seen from a distance.
- Wide filling inlet for easy and safe pouring of solution into the unit.
- Double service valve prevents refrigerant leakage for easy maintenance.
- Removable gridded vent for easy maintenance of condenser.
- Compact design for space saving. The unit is suitable for stable temperature cooling compact devices such as rotary evaporators in laboratory.
- Variety of accessories are available to meet application demands.

Safety

- Self-diagnostic function identifying errors.
- Complete safety protection system with warning alarms.
  - Low fluid level and dry-running protection; when triggered shows an error symbol on the display and an audible buzzer sound.
  - Over-temperature protection; If the equipment operates at over maximum temperature due to external environment, user can simply identify the error with a visual signal or an audible buzzer sound.
  - Over-current circuit breaker.
- Eco-friendly R-507 refrigerant use for environmental protection.
- Splash-proof keypad.
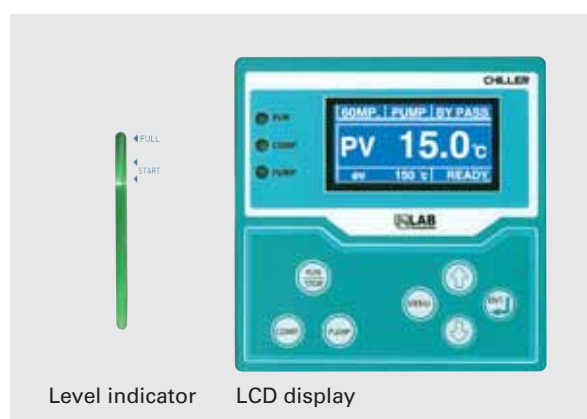
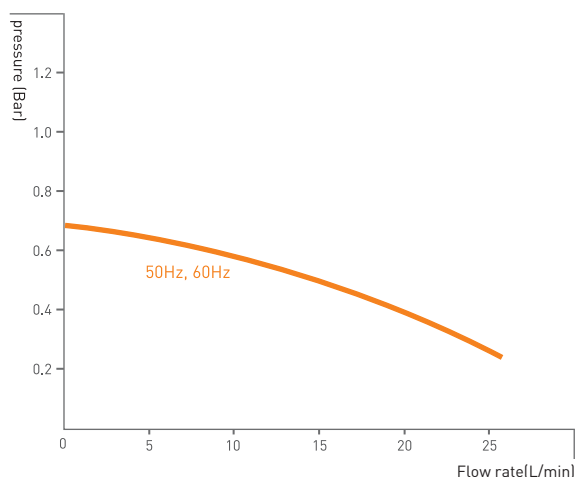Level indicator   LCD display

Testing in accordance with **DIN EN 12876**

Optional accessories
see page **128-129**

- Adapters
- Tubing, Insulations
- Tube clamps
- Bath fluid

Green CFC-Free

Full Start Level Indicater

Pumping capacities (bath fluid: ethanol)

Magnetic pump

• RC-05

Model		RC-05
Temperature[1]	Working temperature range (/)	-10 to 30 / 14 to 86
	Temperature stability at 15 (± /) (bath fluid : water)	1 / 1.8
Cooling capacity (bath fluid : ethanol)	at 20 (kW)	0.58
	at 10 (kW)	0.45
	at 0 (kW)	0.35
	at -10 (kW)	0.27
	at -20 (kW)	0.11
Pump	Max. flow rate (L / min, gal / min)	26 / 6.87
	Max. pressure (bar / psi)	0.7 / 10.15
Dimension	Max. filling capacity (L / cu ft)	5 / 0.18
	For tubing dia. (mm / inch)	9.5 / 3/8
	Filling inlet (Ø, mm / inch)	120 / 4.7
	Overall (W×L×H, mm / inch)	300×550×530 / 11.8×21.7×20.9
	Net weight (kg / lbs)	45 / 99.2
Electrical requirements (230V, 60Hz)		4A
Cat. No.		ACH651011K
Electrical requirements (230V, 50Hz)		4A
Cat. No.		ACH651012K

1) Technical data according to DIN 12876.
   Above specification value is recorded by 60Hz.
   Product performance may be affected by ambient temperatures.

Accessories & Options

Gateway

Cat. No.	Description	Suitable for
AAAQ1011	Gateway (2.4GHz, 100~240V, 50/60Hz)	HS, HH models

Gateway

Establish JeioTech Network by Gateway. No computer use is required at all.

Barbed fittings

Cat. No.	Description
HXE1066	3/4" male to barbed fitting for tubing 1" inner dia.
HXE1067	3/4" male to barbed fitting for tubing 3/4" inner dia.
HXE1068	3/4" male to barbed fitting for tubing 5/8" inner dia.
HXE1069	3/4" male to barbed fitting for tubing 1/2" inner dia.
HXE1070	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

Geared for quick connecting of various size type tubes using pipe fittings, tube fittings, and hose fittings without tools.

Connectors / Adapters

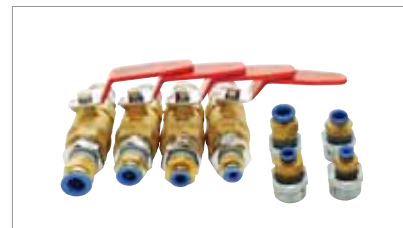| Cat. No.	Description
HXE1105	3/4" male to 3/4" female
HXE1106	3/4" male to 5/8" female
HXE1107	3/4" male to 1/2" female
HXE1108	3/4" male to 3/8" female
HXE1109	3/4" male to 3/4" male
HXE1110	3/4" male to 5/8" male
HXE1111	3/4" male to 1/2" male
HXE1112	3/4" male to 3/8" male

Connectors / Adapters

Connect tubing or other devices.

One touch adapters set

Cat. No.	Description	
HXE1075	12mm one touch adapter	ID. 9mm, OD. 12mm
HXE1076	10mm one touch adapter	ID. 6.5mm, OD. 10mm
HXE1077	8mm one touch adapter	ID. 5.5mm, OD. 8mm
HXE1078	6mm one touch adapter	ID. 4mm, OD. 6mm
AAA64531	12mm adapters set with ball valve	
AAA64532	10mm adapters set with ball valve	
AAA64533	8mm adapters set with ball valve	
AAA64534	6mm adapters set with ball valve	

One touch adapters set

Convenient to connect and exchange tubing.

Flexible fittings

Cat. No.	Description
HXE1071	3/4" male to 3/4" flexible fitting
HXE1072	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

Stainless steel tubing designed for superior flexibility and with good chemical resistance.

Lab Companion

Tubings

Cat. No.	Description	
HXE1079	1m 12mm urethane tubing	ID. 9mm, OD. 12mm
HXE1080	1m 10mm urethane tubing	ID. 6.5mm, OD. 10mm
HXE1081	1m 8mm urethane tubing	ID. 5.5mm, OD. 8mm
HXE1082	1m 6mm urethane tubing	ID. 4mm, OD. 6mm
HXE1083	1m 1" PVC tubing with thread	ID. 25mm, OD. 31mm
HXE1084	1m 3/4" PVC tubing with thread	ID. 19mm, OD. 24mm
HXE1085	1m 5/8" PVC tubing with thread	ID. 16mm, OD. 20.5mm
HXE1086	1m 1/2" PVC tubing with thread	ID. 12mm, OD. 16.0mm
HXE1087	1m 3/8" PVC tubing with thread	ID. 10mm, OD. 14mm
HXE1088	1m 1" PVC tubing with wire	ID. 25mm, OD. 33mm
HXE1089	1m 3/4" PVC tubing with wire	ID. 19mm, OD. 26mm
HXE1090	1m 5/8" PVC tubing with wire	ID. 15mm, OD. 22mm
HXE1091	1m 1/2" PVC tubing with wire	ID. 12mm, OD. 18mm
HXE1092	1m 3/8" PVC tubing with wire	ID. 9mm, OD. 15mm

Tubings

Excellent heat resistance and corrosion resistance urethane tubing.

Tubing insulations

Cat. No.	Description
HXE1093	EPDM insulation, 16mm inner dia. (9T)
HXE1094	EPDM insulation, 19mm inner dia. (9T)
HXE1095	EPDM insulation, 25mm inner dia. (9T)
HXE1096	EPDM insulation, 28mm inner dia. (9T)
HXE1097	EPDM insulation, 35mm inner dia. (9T)

Tubing insulations

EPDM insulation is used to reduce heat loss and condensation from cold water plumbing, chilled water, and refrigeration lines.

Flexible tubing

Cat. No.	Description
HXE1073	3/4" flexible tubing (SUS 304, m)
HXE1074	1/2" flexible tubing (SUS 304, m)

Tube clamps

Cat. No.	Description
HXE1098	1" clamp
HXE1099	3/4" clamp
HXE1100	5/8" clamp
HXE1101	1/2" clamp
HXE1102	3/8" clamp

Tube clamps

Corrosion resistant stainless steel clamps

Distributing fittings

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

External sensor (for HS, HH)

Cat. No.	Description
CFA1946	3m cable for Pt 100 sensor
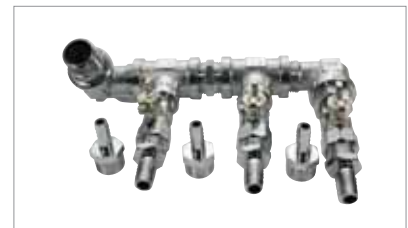
Distributing fittings

Distributing fittings connect even with small tubes with barb fittings.

Refrigerators & Freezers

> Laboratory Refrigerators
> Laboratory Freezers
> Blood Bank Refrigerators
> Plasma Freezers
> Pharmacy Refrigerators

General Applications

Laboratory Cooling

Chemical, Reagents, Culture storage.
Temperature Sensitive Material, Enzyme storage,
Pre-Freezing.

Medical Cooling

Valuable blood and blood plasma storage in life science.
Sensitive phamaceutical products and vaccine
storage in clinics, hospitals, retail pharmacies.

Product Name		Laboratory Refrigerators	Laboratory Freezers			
Model		CLG	FDG	FCG	FMG	FHG
International standard		DIN 58345	DIN 58375			
Chamber volume (L)		156, 303, 603, 805, 1327	303, 647	154, 303, 647		
Temp. control	Min. temp. (/)	2 / 35.6	-50 / -58	-35 / -31	-25 / -13	-15 / 5
	Max. temp. (/)	10 / 50	-35 / -31	-25 / -13	-15 / 5	0 / 32
Door type		Selectable - Solid door or Glass door	Solid door			
Shelf	Wire	O	O	O	O	O
	Wire, Slide	O (optional)	-	-	-	-
	Drawer, Slide	O (optional)	O (optional)	O (optional)	O (optional)	O (optional)
Recorder		O (optional)	O (optional)	O (optional)	O (optional)	O (optional)
Cable port		O (except for 156L)	-	-	-	-
Battery backup		-	-	-	-	-
Electronic remote alarm		O (optional)	O (optional)	O (optional)	O (optional)	O (optional)

Technical Benefits

> **Performance**

- Reliable cooling storage of laboratory and medical samples.
  - Designed and tested in accordance with the international standard (DIN 58345 / DIN 58375)
  - Satisfied the strict requirements of the International medical standards. (ISO13485 / DIN 58371)
- Optimizing temperature control system for high temperature stability.
  - Automatic defrost and intelligent dual refrigeration system minimizes temperature change. Manual defrost system is also available for immediate control. (except for CLG)
- Shock absorbing door construction.
  - Magnetic door seal and air-tight silicone door seal for absorbing impact from opening and closing the door.
- Fully insulated chamber ensures minimal chamber temperature fluctuation.

> **Convenience**

- Wide selection covers all of your application needs.
  - Storage sample (lab / medical)
  - Temperature down to 50
  - Chamber size (154L to 1327L)
- Easy maintenance design.
  - Rounded corners for easy cleaning.
  - Corrosion resistant stainless steel interior chamber.
  - Dirt-repellent external surface with power coating.
- Intuitive and easy operation by VFD display with touch-sensitive buttons and jog dial.
- Clear view of the storage samples without opening the door.
  (for the models with glass doors only)
- Precise and easy documentation.
  - Chart type recorder is built in the medical cooling devices.
  - Optional three types of recorder. (dot / chart / thermal line recorder)

> **Safety**

- Essential safety protection system.
  - High and low temperature limit alert.
  - Automatic power cut-off system against overheating.
  - Protection system by fuses against overcurrent.
  - Built-in door lock for safe sample storage.
  - Keypad lock button prevents inadvertent parameter changes.
- Advanced safety system to meet strict requirements of the medical cooling devices.
  - Dual temperature controllers.
  - Battery backup system.
  - Built in auto-dialing remote alarm to alert abnormal temperature change.
- Safe door open system to minimize heat loss and protect the stored sample.
  - Audible and visible open door alarms.
  - Automatic fan stop when door opening.
- Eco-friendly refrigerant protects the global environment.

Blood Bank Refrigerators	Plasma Freezers	Pharmacy Refrigerators
BSR	BSF	PSR
ISO13485 / DIN 58371	DIN 58375	DIN 58345
303, 614	303, 647	303, 614
4 / 39.2	-40 / -40	0 / 32
	-25 / -13	10 / 50
Glass door	Solid door	Glass door
-	-	O (optional)
-	-	O (optional)
O	O	O
O	O	O
-	-	-
O	O	O
O	O	O

Ideal for research and industrial laboratories.

Your laboratory space is efficiently managed with our various different size models.

CLG models
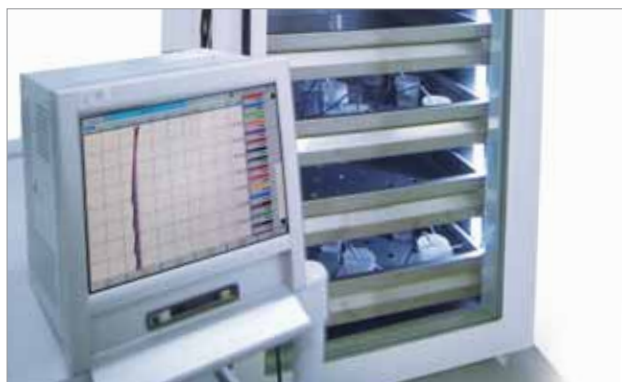with optional recorder

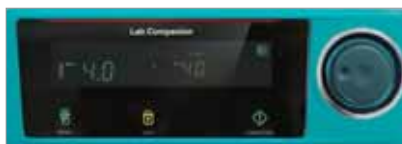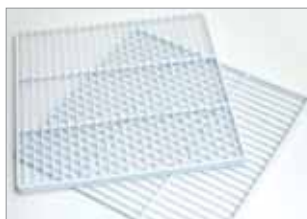|	
Standard accessories	• Wire shelves, Door key • Cable port (except for 150L chamber)
Optional accessories **see page 140**	• Slid wire shelves, Slid drawers • Auto dialing remote system

Reliable temperature control

Display

Wire shelves

Door key lock

Performance

- Fully insulated chamber ensuring minimal chamber's temperature fluctuation.
- High thermal efficiency evaporation system, made of low corrosive materials.
- Optimizing defrost systems
  - Innovation auto-defrost system automatically activated on detecting amount of frost accumulated in the evaporator for CLG-150, 300, 650, 850.
  - None defrost system needed for 1400 due to its dual refrigerating system.

Convenience

- Intuitive and easy-to-operate control panel with VFD and touch-sensitive buttons.
  - Easy temperature unit conversion between   and
- Clear observation of stored samples.
  - Tempered glass door with built in heating wire.
    (for the models with glass doors only)
  - Built-in bright fluorescent lighting. (except for CLG-150)
- High-quality 304 grade stainless steel interior.

- Efficient internal space use with height adjustable wire shelves.
- Built-in 50mm diameter cable port for external probes or wires. (except for CLG-150)
- Dedicated stand with casters and stacking kit for CLG-150 for use in labs with limited space. (optional)
- Three types of recorders to choose from (optional)
  - Dot recorder (6 point)
  - Chart recorder (6", 24hr/7days)
  - Thermal line recorder

Safety

- High/low temperature protection, Over current protection.
- Open door alarm and automatic fan stop interlocked with door opening for minimization of heat loss.
- Keypad lock function, Built in door lock with a key.

Model		CLG-150	CLG-300	CLG-650	CLG-850	CLG-1400
Chamber volume (L / cu ft)		156 / 5.5	303 / 10.7	603 / 21.3	805 / 28.4	1327 / 46.9
Temperature range (/)		2 to 10 / 35.6 to 50				
Refrigerator (Hp)	230V, 50/60Hz	1/6	1/6	1/4	1/3	1/4×2ea
	120V, 60Hz	1/6	1/6	1/6	1/6	1/6×2ea
No. of wire shelf (standard / max.)		2 / 6	3 / 11	3 / 17	3 / 17	6 / 34
No. of wire shelf, slide (max., optional)		4	7	11	11	22
No. of drawer shelf, slide (max., optional)		3	5	8	8	16
Max. load per shelf (kg / lbs)		26 / 57.3		30 / 66.1		
Material	Interior	Stainless steel #304				
	Exterior	Steel, 1 mm, powder coating				
	Insulation	60mm, Polyurethane foam				
Dimension (W×D×H)	Interior (mm / inch)	550×580×490 / 21.7×22.8×19.3	550×550×1000 / 21.7×21.7×39.4	650×640×1450 / 25.6×25.2×57.1	750×740×1450 / 29.5×29.1×57.1	1430×640×1450 / 56.3×25.2×57.1
	Exterior (mm / inch)	683×791×870 / 26.9×31.1×34.4	670×770×1515 / 26.4×30.3×59.6	770×865×1965 / 30.3×34.1×77.4	870×965×1965 / 34.3×37.9×77.4	1550×865×1965 / 61×34.1×77.4
	Net weight (kg / lbs)	100 / 220.4	130 / 286.6	210 / 463	260 / 573.2	350 / 771.6
Electrical requirements (230V, 60Hz)		2A	2.3 A	4A	5A	6A
Cat. No.	Solid door type	AAHE1001K	AAHE1011K	AAHE1021K	AAHE1031K	AAHE1041K
	Glass door type	AAHE1101K	AAHE1111K	AAHE1121K	AAHE1131K	AAHE1141K
Electrical requirements (230V, 50Hz)		2A	2.3 A	4A	4.2A	6A
Cat. No.	Solid door type	AAHE1002K	AAHE1012K	AAHE1022K	AAHE1032K	AAHE1042K
	Glass door type	AAHE1102K	AAHE1112K	AAHE1122K	AAHE1132K	AAHE1142K
Electrical requirements (120V, 60Hz)		4A	4.5 A	5 A	5.2A	9.5A
Cat. No.	Solid door type	AAHE1003U	AAHE1013U	AAHE1023U	AAHE1033U	AAHE1043U
	Glass door type	AAHE1103U	AAHE1113U	AAHE1123U	AAHE1133U	AAHE1143U

Technical data according to DIN 58345.
FDA establishment registered company. FDA listed products.

A variety of freezer models for subzero degree storage of your sensitive lab material with innovative defrost system.
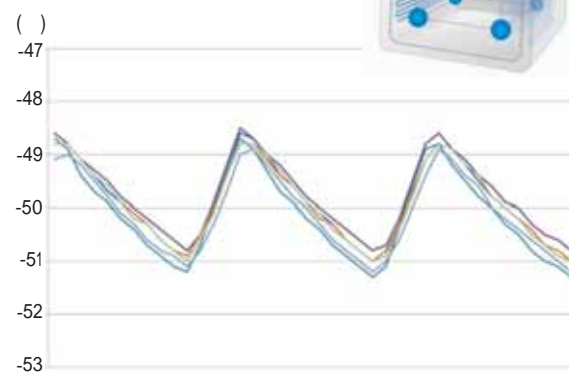
FDG/FCG/FMG/FHG models

with optional recorder
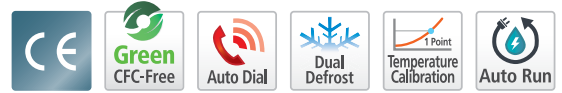
Standard accessories
- Wire shelves, Door key
- Cable port (except for 150L chamber)

Optional accessories
see page 140
- Three type recorders
  (dot / chart / thermal line)
- Auto dialing remote system

( )
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-50
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-53

Reliable temperature control

CE **Green** CFC-Free Auto Dial **Dual** Defrost 1 Point Temperature Calibration Auto Run

Performance

• Excellent freezing control down to minimum -50°C (model dependent)
  - FDG model down to -50°C
  - FCG model down to -35°C
  - FMG model down to -25°C
  - FHG model down to -15°C

• Fully insulated chamber ensuring minimal chamber's temperature fluctuation.

• High thermal efficiency evaporation system, made of low corrosive materials.

• Dual defrost systems
  - Innovation auto-defrost system automatically activated on detecting amount of frost accumulated in the evaporator.
  - Additional manual defrost system for immediate frost removal.

Convenience

• Four-temperature different freezing models cover various storage application.

• Intuitive and easy-to-operate control panel with VFD and touch-sensitive buttons.
  - Easy temperature unit conversion between   and

• Air-tight door seal and lockable door latch enhances tightness to door closure.

• High-quality 304 grade stainless steel interior.

• Efficient internal space use with height adjustable wire shelves.

• Dedicated stand with casters and stacking kit for FHG/FMG/FCG- 150 for use in labs with limited space. (optional)

• Three types of recorders to choose from (optional)
  - Dot recorder (6 point)
  - Chart recorder (6", 24hr/7days)
  - Thermal line recorder

Safety

• High/low temperature protection, Over current protection.

• Open door alarm and automatic fan stop interlocked with door opening for minimization of heat loss.

• Keypad lock function, Built in door lock with a key.

Door open button

Door key lock

Display

Enough storage space

Laboratory Freezers

FDG models (for temperature range from -50 to -35)

Model	FDG-300		FDG-650	
Chamber volume (L / cu ft)	303 / 10.7		647 / 22.8	
Temperature range (/)	-50 to -35 / -58 to -31			
Refrigerator (Hp)	1/3 x 2		1/2 x 2	
No. of wire shelf (standard / max.)	3 / 11		3 / 17	
No. of drawer shelf, slide (max., optional)	5		8	
Max. load per shelf (kg / lbs)	26 / 57.3		30 / 66.1	
Material	Interior / Exterior	Stainless steel #304 / Steel, 1 mm, powder coating		
	Insulation	120mm, Polyurethane foam		
Dimension (W×D×H)	Interior (mm / inch)	550x550x1000 / 21.7×21.7×39.4		700x675x1370 / 27.6x26.6x53.9
	Exterior (mm / inch)	805x800x1690 / 31.7x31.5x66.5		955x925x2060 / 37.6x36.4x81.1
	Net weight (kg / lbs)	180 / 396.8		280 / 617.3
Electrical requirements (230V, 60Hz)	5.0A		6.5A	
Cat. No.	**AAHE2411K**		**AAHE2421K**	
Electrical requirements (230V, 50Hz)	5.0A		6.5A	
Cat. No.	**AAHE2412K**		**AAHE2422K**	

1) Technical data according to DIN 12880.

FCG models (for temperature range from -35 to -25)

Model	FCG-150	FCG-300	FCG-650
Chamber volume (L / cu ft)	154 / 5.4	303 / 10.7	647 / 22.8
Temperature range (/)	-35 to -25 / -31 to -13		
Refrigerator (Hp)	3/4	1	1-1/2
No. of wire shelf (standard / max.)	2 / 6	3 / 11	3 / 17
No. of drawer shelf, slide (max., optional)	3	5	8
Max. load per shelf (kg / lbs)	26 / 57.3		30 / 66.1
Material — Interior / Exterior	Stainless steel #304 / Steel, 1 mm, powder coating		
Material — Insulation	100mm, Polyurethane foam		
Dimension (W×D×H) — Interior (mm / inch)	550x570x490 / 21.7x22.4x19.3	550x550x1000 / 21.7×21.7×39.4	700x675x1370 / 27.6x26.6x53.9
Dimension (W×D×H) — Exterior (mm / inch)	763x815x1055 / 30x32.1x41.5	765x760x1650 / 30.1x29.9x64.9	915x885x2020 / 36x34.8x79.5
Dimension (W×D×H) — Net weight (kg / lbs)	123 / 271.2	155 / 341.7	238 / 524.7
Electrical requirements (230V, 60Hz)	6A	7.5A	10.5A
Cat. No.	**AAHE2301K**	**AAHE2311K**	**AAHE2321K**
Electrical requirements (230V, 50Hz)	6A	7.5A	10.5A
Cat. No.	**AAHE2302K**	**AAHE2312K**	**AAHE2322K**

FMG models (for temperature range from -25 to -15)

Model	FMG-150	FMG-300	FMG-650
Chamber volume (L / cu ft)	154 / 5.4	303 / 10.7	647 / 22.8
Temperature range (/)	-25 to -15 / -13 to 5		
Refrigerator (Hp)	1/2	1/2	1/2
No. of wire shelf (standard / max.)	2 / 6	3 / 11	3 / 17
No. of drawer shelf, slide (max., optional)	3	5	8
Max. load per shelf (kg / lbs)	26 / 57.3		30 / 66.1
Material — Interior / Exterior	Stainless steel #304 / Steel, 1 mm, powder coating		
Material — Insulation	100mm, Polyurethane foam		
Dimension (W×D×H) — Interior (mm / inch)	550x570x490 / 21.7x22.4x19.3	550x550x1000 / 21.7×21.7×39.4	700x675x1370 / 27.6x26.6x53.9
Dimension (W×D×H) — Exterior (mm / inch)	763x815x1055 / 30x32.1x41.5	765x760x1650 / 30.1x29.9x64.9	915x885x2020 / 36x34.8x79.5
Dimension (W×D×H) — Net weight (kg / lbs)	120 / 264.6	150 / 330.7	233 / 513.7
Electrical requirements (230V, 60Hz)	4.5A	4.8A	5.5A
Cat. No.	**AAHE2201K**	**AAHE2211K**	**AAHE2221K**
Electrical requirements (230V, 50Hz)	4.5A	4.8A	5.5A
Cat. No.	**AAHE2202K**	**AAHE2212K**	**AAHE2222K**

FHG models (for temperature range from -15 to 0)

Model	FHG-150	FHG-300	FHG-650
Chamber volume (L / cu ft)	154 / 5.4	303 / 10.7	647 / 22.8
Temperature range (/)	-15 to 0 / 5 to 32		
Refrigerator (Hp)	1/3	1/3	1/3
No. of wire shelf (standard / max.)	2 / 6	3 / 11	3 / 17
No. of drawer shelf, slide (max., optional)	3	5	8
Max. load per shelf (kg / lbs)	26 / 57.3		30 / 66.1
Material — Interior / Exterior	Stainless steel #304 / Steel, 1 mm, powder coating		
Material — Insulation	100mm, Polyurethane foam		
Dimension (W×D×H) — Interior (mm / inch)	550x570x490 / 21.7x22.4x19.3	550x550x1000 / 21.7×21.7×39.4	700x675x1370 / 27.6x26.6x53.9
Dimension (W×D×H) — Exterior (mm / inch)	763x815x1055 / 30x32.1x41.5	765x760x1650 / 30.1x29.9x64.9	915x885x2020 / 36x34.8x79.5
Dimension (W×D×H) — Net weight (kg / lbs)	120 / 264.6	150 / 330.7	230 / 507.1
Electrical requirements (230V, 60Hz)	3.5A	3.8A	3.8A
Cat. No.	**AAHE2101K**	**AAHE2111K**	**AAHE2121K**
Electrical requirements (230V, 50Hz)	3.5A	3.8A	3.8A
Cat. No.	**AAHE2102K**	**AAHE2112K**	**AAHE2122K**

Technical data according to DIN 58375.   FDA establishment registered company. FDA listed products.

Performance

- Fully insulated chamber ensuring minimal chamber's temperature fluctuation.
- High thermal efficiency evaporation system, made of low corrosive materials.
- Auto-defrost system for automatic frost removal and manual defrost system for immediate frost removal.

Convenience

- Intuitive and easy-to-operate control panel with VFD and touch-sensitive buttons.
  - Easy temperature unit conversion between   and
- Air-tight door seal and lockable door latch enhances tightness to door closure.
- High-quality 304 grade stainless steel interior.
- Easy to store samples with smooth full-extension sliding drawers.
- Precise documentation is available by the provided chart type recorder.
- Clear observation of stored samples.
  - Tempered glass door with built in heating wire.
  - Energy efficiency, long life span LED lighting.

Safety Features

- Dual temperature controllers for safe blood storage.
  - If one controller fails to adjust temperature, then the other automatically activates to counteract the failure.
- Battery backup for emergency caused by power failures.
- Built in auto-dialing remote alarm to alert abnormal temperature changes or power failures.
- High/low temperature protection, Over current protection.
- Open door alarm and automatic fan stop interlocked with door opening for minimization of heat loss.
- Keypad lock function, Built in door lock with a key.

Ideal for safe storage of precious blood samples.

Precise temperature uniformity with various safety functions to meet the strict requirements of the International medical standards.
(ISO13485 / DIN 58371)

BSR-300

Standard accessories
see page 141

- Chart type recorder
- Auto dialing remote system
- Slide drawers, Door key

Model	BSR-300	BSR-650	
Chamber volume (L / cu ft)	303 / 10.7	614 / 21.7	
Temperature range (/)	4 / 39.2		
Refrigerator (Hp)	1/6	1/3	
No. of drawer shelf, slide (standard / max.)	4 / 4	6 / 6	
Max. load per shelf (kg / lbs)	26 / 57.3	30 / 66.1	
Material	Interior	Stainless steel #304	
	Exterior	Steel, 1 mm, powder coating	
	Insulation	60mm, Polyurethane foam	
Dimension (W×D×H)	Interior (mm / inch)	550x550x1000 / 21.7×21.7×39.4	700x640x1370 / 27.6×25.2×53.9
	Exterior (mm / inch)	670x770x1515 / 26.4×30.3×59.6	820x860x1885 / 32.3×33.9×74.2
	Net weight (kg / lbs)	130 / 286.6	210 / 463
Electrical requirements (230V)		50/60Hz, 2.8A	50Hz, 3.8A	60Hz, 3.8A
Cat. No.		AAHE4105K	AAHE4112K	AAHE4111K
Electrical requirements (120V)		60Hz, 5.5A	60Hz, 7.5A	
Cat. No.		AAHE4103U	AAHE4113K	

Technical data according to DIN 58371.
FDA establishment registered company. FDA listed products.

Plasma Freezers

ISO 13485 · **Green CFC-Free** · **Backup Control** · **Auto Dial** · **Dual Defrost** · **Temperature Calibration 1 Point** · **Auto Run**

The most suitable environments for sensitive plasma freezing.

Wide temperature range down to -40°C and high advanced safety functions satisfying the high medical standards. (ISO13485 / DIN 58375)

Performance

- Fully insulated chamber ensuring minimal chamber's temperature fluctuation.
- High thermal efficiency evaporation system, made of low corrosive materials.
- Auto-defrost system for automatic frost removal and manual defrost system for immediate frost removal.

Convenience

- Intuitive and easy-to-operate control panel with VFD and touch-sensitive buttons.
  - Easy temperature unit conversion between   and
- Air-tight door seal and lockable door latch enhances tightness to door closure.
- High-quality 304 grade stainless steel interior.
- Easy to store samples with smooth full-extension sliding drawers.
- Precise documentation is available by the provided chart type recorder.

Safety

- Dual temperature controllers for safe blood storage.
  - If one controller fails to adjust temperature, then the other automatically activates to counteract the failure.
- Battery backup for emergency caused by power failures.
- Built in auto-dialing remote alarm to alert abnormal temperature changes or power failures.
- High/low temperature protection, Over current protection.
- Open door alarm and automatic fan stop interlocked with door opening for minimization of heat loss.
- Keypad lock function, Built in door lock with a key.

BSF-650

Standard accessories see page 141

- Chart type recorder
- Auto dialing remote system
- Slide drawers, Door key

Model	BSF-300		BSF-650	
Chamber volume (L / cu ft)	303 / 10.7		647 / 22.8	
Temperature range (/)	-40 to -25 / -40 to -13			
Refrigerator (Hp)	1		1-1/2	
No. of drawer shelf, slide (standard / max.)	4 / 4		6 / 6	
Max. load per shelf (kg / lbs)	26 / 57.3		30 / 66.1	
Material — Interior	Stainless steel #304			
Material — Exterior	Steel, 1 mm, powder coating			
Material — Insulation	100mm, Polyurethane foam			
Dimension (W×D×H) — Interior (mm / inch)	550x550x1000 / 21.7×21.7×39.4		700×675×1370 / 27.6×26.6×53.9	
Dimension (W×D×H) — Exterior (mm / inch)	765x760x1650 / 30.1x29.9x64.9		915x885x2020 / 36x34.8x79.5	
Dimension (W×D×H) — Net weight (kg / lbs)	150 / 331		240 / 529	
Electrical requirements (230V)	50Hz, 5.5A	60Hz, 5.5A	50Hz, 7.5A	60Hz, 7.5A
Cat. No.	**AAHE5102K**	**AAHE5101K**	**AAHE5112K**	**AAHE5111K**
Electrical requirements (120V)	60Hz, 11A			
Cat. No.	**AAHE5103U**		-	

Technical data according to DIN 58375.
FDA establishment registered company. FDA listed products.

ISO 13485 | Green CFC-Free | Backup Control | Auto Dial | Dual Defrost | 1 Point Temperature Calibration | Auto Run

Performance

• Fully insulated chamber ensuring minimal chamber's temperature fluctuation.

• High thermal efficiency evaporation system, made of low corrosive materials.

• Auto-defrost system for automatic frost removal and manual defrost system for immediate frost removal.

Convenience

• Intuitive and easy-to-operate control panel with VFD and touch-sensitive buttons.
  - Easy temperature unit conversion between   and

• High-quality 304 grade stainless steel interior.

• Easy to store samples with smooth full-extension sliding drawers.

• Precise documentation is available by the provided chart type recorder.

• Clear observation of stored samples.
  - Tempered glass door with built in heating wire.
  - Energy efficiency, long life span LED lighting.

Safety

• Dual temperature controllers for safe pharmaceutical storage.
  - If one controller fails to adjust temperature, then the other automatically activates to counteract the failure.

• Battery backup for emergency caused by power failures.

• Built in auto-dialing remote alarm to alert abnormal temperature changes or power failures.

• High/low temperature protection, Over current protection.

• Open door alarm and automatic fan stop interlocked with door opening for minimization of heat loss.

• Keypad lock function, Built in door lock with a key.

Ideal for pharmaceutical, clinical laboratories

Eco-friendly lab refrigeration systems with advanced safety features providing stable refrigerated environments (ISO13485 / DIN 58345)


PSR-300

Standard accessories
see page 141

• Chart type recorder
• Auto dialing remote system
• Slide drawers, Door key

Model		PSR-300	PSR-650	
Chamber volume (L / cu ft)		303 / 10.7	614 / 21.7	
Temperature range (/)		2 to 10 / 35.6 to 50		
Refrigerator (Hp)		1/6	1/3	
No. of drawer shelf, slide (standard / max.)		4 / 4	6 / 6	
Max. load per shelf (kg / lbs)		26 / 57.3	30 / 66.1	
Material	Interior	Stainless steel #304		
	Exterior	Steel, 1 mm, powder coating		
	Insulation	60mm, Polyurethane foam		
Dimension (W×D×H)	Interior (mm / inch)	550x550x1000 / 21.7×21.7×39.4	700x640x1370 / 27.6×25.2×53.9	
	Exterior (mm / inch)	670x770x1515 / 26.4×30.3×59.6	820x860x1885 / 32.3×33.9×74.2	
	Net weight (kg / lbs)	130 / 286.6	210 / 463	
Electrical requirements (230V)		50/60Hz, 2.8A	50Hz, 3.8A	60Hz, 3.8A
Cat. No.		AAHE6015K	AAHE6022K	AAHE6021K
Electrical requirements (120Hz)		60Hz, 5.5A	60Hz, 7.5A	
Cat. No.		AAHE6013U	AAHE6023U	

Technical data according to DIN 58345.
FDA establishment registered company. FDA listed products.

Accessories & Options
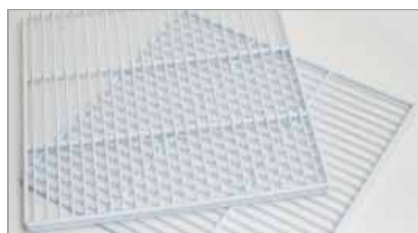
Wire shelves

Wire shelves (slide type)

Drawer shelves (slide type)

Dot recorder

Chart recorder

Thermal line recorder

for Laboratory Cooling

Cat. No.	Description	CLG-150	CLG-300	CLG-650	CLG-850	CLG-1400
AAAE1511	Wire shelves - flat type (included shelf bracket)	•	•	-	-	-
AAAE1512		-	-	•	-	•
AAAE1513		-	-	-	•	-
AAAE1514	Wire shelves - slide type (included guide rail)	•	•	-	-	-
AAAE1515		-	-	•	-	•
AAAE1516		-	-	-	•	-
AAAE1517	Drawer shelves - slide type (included guide rail)	•	•	-	-	-
AAAE1518		-	-	•	-	•
AAAE1519		-	-	-	•	-
AAAE1562	Recorder set; Recorder (dot type, 6 point) with Temp. sensor	•	•	•	•	•
AAAE1501	Recorder set; Recorder (chart type, 6", 24hr / 7day) with Temp. sensor	•	•	•	•	•
AAAE1502	Chart recorder paper (6", 60ea/1 package)	•	•	•	•	•
AAAE1563	Recorder set; Recorder (thermal line type) with Temp. sensor	•	•	•	•	•
AAAE1551	Auto dialing remote system	•	•	•	•	•
AAAE1521	Cable port	-	•	•	•	•
AAAE1531	Electric outlet (120V-US style)	-	•	•	•	•
AAAE1532	Electric outlet (230V-Korea style)	-	•	•	•	•

Cat. No.	Description	FHG-150 / FMG-150	FHG-300 / FMG-300	FHG-650 / FMG-650	FCG-150	FCG-300 / FDG-300	FCG-650 / FDG-650
AAAE1511	Wire shelves - flat type (included shelf bracket)	•	•	-	•	•	-
AAAE1512		-	-	•	-	-	•
AAAE1517	Drawer shelves - slide type (included guide rail)	•	•	-	•	•	-
AAAE1518		-	-	•	-	-	•
AAAE1562	Recorder set; Recorder (dot type, 6 point) with Temp. sensor	•	•	•	•	•	•
AAAE1501	Recorder set; Recorder (chart type, 6", 24hr / 7day) with Temp. sensor	•	•	•	•	•	•
AAAE1502	Chart recorder paper (6", 60ea/1 package)	•	•	•	•	•	•
AAAE1563	Recorder set; Recorder (thermal line type) with Temp. sensor	•	•	•	•	•	•
AAAE1551	Auto dialing remote system	•	•	•	•	•	•

for Medical Cooling

Cat. No.	Description	BSR-300	BSR-650
AAAE1517	Drawer shelves - slide type (included guide rail)	•	-
AAAE1518		-	•
AAAE1501	Recorder set; Recorder (chart type, 6", 24hr / 7day) with Temp. sensor	•	•
AAAE1502	Chart recorder paper (6", 60ea/1 package)	•	•
AAAE1551	Auto dialing remote system	•	•

Cat. No.	Description	BSF-300	BSF-650
AAAE1517	Drawer shelves - slide type (included guide rail)	•	-
AAAE1518		-	•
AAAE1501	Recorder set; Recorder (chart type, 6", 24hr / 7day) with Temp. sensor	•	•
AAAE1502	Chart recorder paper (6", 60ea/1 package)	•	•
AAAE1551	Auto dialing remote system	•	•

Cat. No.	Description	PSR-300	PSR-650
AAAE1511	Wire shelves - flat type (included shelf bracket)	•	-
AAAE1512		-	•
AAAE1514	Wire shelves - slide type (included guide rail)	•	-
AAAE1515		-	•
AAAE1517	Drawer shelves - slide type (included guide rail)	•	-
AAAE1518		-	•
AAAE1501	Recorder set; Recorder (chart type, 6", 24hr / 7day) with Temp. sensor	•	•
AAAE1502	Chart recorder paper (6", 60ea/1 package)	•	•
AAAE1551	Auto dialing remote system	•	•

Cryo box / Storage box

Cryo box is designed for ultra-low temperature storage of biological materials. (heat resistance : -196 to 121)
Storage box is suitable for storage of samples in general conditions. (heat resistance: 20 to 121)

Cryo box

Storage box

Cat. No.	Description	Dimension (W×D×H) (mm / inch)
AAAJ7001	Cryo box (PC, 1.2 to 2.0ml tubes x 25)	77×77×53 / 3.0×3.0×2.1
AAAJ7002	Cryo box (PC, 1.2 to 2.0ml tubes x 81)	132×132×54 / 5.2×5.2×2.1
AAAJ7003	Cryo box (PC, 5ml tubes x 81)	132×132×96 / 5.2×5.2×3.8
AAAJ7011	Storage box (PP, 1.2 to 2.0ml tubes x 100)	140×140×53 / 5.5×5.5×2.1

5ea for 1 set.

Rotator

Effective mixing of biological samples in a variety of vials.
Ideal for immune precipitations, prevention of blood coagulation,
latex diagnostics etc.

CRT-350
with optional accessories

Optional accessories
- Tube holder set with disk
- Disk for flask clamp
- Erlenmeyer flask clamp holders (disk for flask clamp & flask clamp)
- Post for double stacking

Disk, holders, tubes, flasks in above picture are all optional.

Max. mountable tubes when double stacking

Fully adjustable angle

Quick installable and removable disk (optional)

Tube	Quantity (ea)
1.5ml	120
5ml	36
15ml	36
50ml	24

CE

Performance

- Microprocessor PID control.

- Adjustable speed range from 2 to 70 rpm.

- Fully adjustable tilt angle up to 90°.
  - Horizontal for minimal mixing and vertical for full end-over-end mixing.

- Digital speed control providing gentle rotating even at low speed.

- Low-profile design with rubber feet for minimal vibration and noise.

Convenience

- Simple fixture of accessories equipped to disk for quick installation and removal.

- Various selection of optional tubes and flask clamp holder disks to accommodate most application.

- Available to rotary maximum 120 test tubes simultaneously with use of two tube holders by optional dual holder accessory.

- Vivid and colorful vacuum fluorescent display (VFD) with touch-sensitive keypad.

- One-touch timer range: 1 min. to 99 hr. 59 min.

Safety

- Stepping motor with self-protection function for advanced durability.

- Self-diagnostic function identifying errors.

- Its polypropylene main body is highly chemical-resistant and easy-to-clean.

- Over-current protection.

Model		CRT-350
Control system		PID feedback control
Display		VFD
Shaking system	Motion type	Orbital
	Speed range (rpm)	2 to 70
	Tilt angle	0 to 90°
	Max. load (kg / lbs)	4 / 8.8
Material	Disk (optional)	Aluminum
	Body	PP (polypropylene)
Dimension	Exterior with disk (optional) (W×D×H) (mm / inch)	320x325x463 / 12.6x12.8x18.2
	Net weight with disk (optional) (kg / lbs)	6.5 / 14.3
Electrical requirements		AC 100 to 240 V, 50/60 Hz
Cat. No.	KR plug	**AAH3E115K**
	US plug	**AAH3E115U**

Permissible environmental conditions: temperature (5-40℃) and relative humidity (up to 80%).
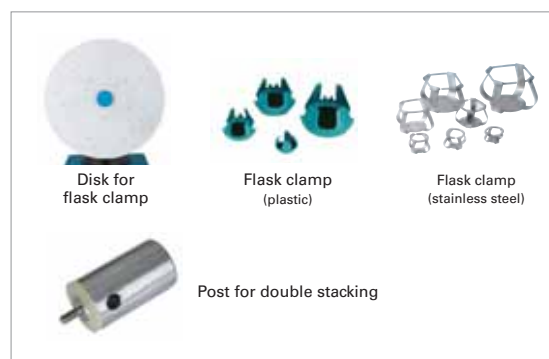
Tube holder set with disk

Description	Max. mountable tube	Cat. No.
1.5ml (Ø10mm / Ø0.39″)	60	**AAA3E501**
5ml (Ø12mm / Ø0.47″)	18	**AAA3E502**
15ml (Ø16.5mm / Ø0.65″)	18	**AAA3E503**
50ml (Ø29mm / Ø1.14″)	12	**AAA3E504**

Erlenmeyer flask clamp holders

Description	Max. mountable tube		Cat. No.
Disk for flask clamp	N/A		**AAA3E511**
Flask clamp (stainless steel)	50ml	13	**AAA23550**
	100ml	8	**AAA23551**
	300ml	6	**AAA23556**
Flask clamp (plastic)	50ml	13	**AAA30570**
	100ml to 125ml	8	**AAA30571**
	300ml	6	**AAA30574**

Post for double stacking

Description	Cat. No.
Post	**AAA3E521**

Tube holder set with disk (1.5ml / 5ml / 15ml / 50ml)

Disk for flask clamp

Flask clamp (plastic)

Flask clamp (stainless steel)

Post for double stacking

12

Shaker

› Open-air Shakers
  (Dual-action/General/Advanced Models)
› Mini Shaker
› Microplate Shaker
› Rocking Shaker
› Waving Shaker
› Heating Shaker
› Separatory Funnel Shaker

General Applications

Shakers
General mixing, Drug analysis, ELISA,
Enzyme immunoassays, Staining and Destaining,
Protein synthesis.

Heating Shaker
Useful for a variety of molecular biology
applications.

Separatory Funnel Shaker
Intensive vertical reciprocating agitation
for quick solvent extraction.

Product name		Open-air Shakers (Dual-action Model)	Open-air Shakers (General Model)	Open-air Shakers (Advanced Model)
Model		OS	OS	SKC
Platform size (WxD, mm)		320x260, 350x350	450x450, 755x520	580×520, 660×520, 755×520, 885×520
RPM control	Motion	Orbital, Reciprocating	Oribital	Oribital
	Amplitude size (mm)	12.7, 19.1, 25.4	19.1, 25.4, 50.8	19.1, 25.4, 50.8
	Speed range (rpm)	20 to 500	20 to 500 [1]	30 to 500
Control	PID feedback control	O	O	O
	Timer	Wait off	Wait off	Wait on/off
	Program function	-	-	O
	Computer interface	RS-232 port, USB port	RS-232 port, USB port	-
	JeioTech network	O	O	-
Safety	Over current limit	O	O	O
	Auto-run (power failure)	O	O	-
	Shaking speed deviation limit	O	O	-
	Automatic shaking speed adjustment	O	O	O

1) Max. and Min. rpm is dependable by amplitude size.
2) Max. rpm is dependable by loaded block.

Technical Benefits

Shaker (OS / SKC)

> **Performance**

- Incomparable 500 rpm (amplitude size dependant) even with heavy workload.
- Microprocessor PID control ensuring consistent shaking motion and precision accuracy.
- Smooth start and smooth stop function for pleasant test environment.
- In case of excessive workload, it automatically controls the shaking speed to the optimum rpm before safety system activation not to stop the operation in the middle of the test.
- Regardless of place and time, it is available to conveniently remote control of equipment through a smartphone. (for OS)

> **Convenience**

- Easy maintenance design.
  - Corrosion resistant stainless steel platform. (Optional)
  - Waterproof designed control panel.
- RS-232 port and USB port for simple external control and data collection. (for OS)

> **Safety**

- Patented CLS-CS(Custom Logical Safe Control System)
  - Protection system against overcurrent and stalled platform check.
  - Automatic Run or Manual Run after power interruption.
- Real time shaking speed deviation alarm. (for OS)

Shaker (CMS / CPS / CRS / CWS)

> **Performance**

- Microprocessor PID control ensuring consistent shaking motion and precision accuracy.
- Smooth start and smooth stop function for pleasant test environment.

> **Convenience**

- Bright VFD display with responsive touch buttons.
  - One-touch timer for time-dependent shaking operations.
- Compact and lightweight design allowing for use inside chambers.

> **Safety**

- Patented CLS-CS (Custom Logical Safe Control System)
  - Protection system against overcurrent.

Mini Shaker	Microplate Shaker	Rocking Shaker	Waving Shaker	Heating Shaker	Separatory Funnel Shaker
CMS-350	CPS-350	CRS-350	CWS-350	CBS-350	RS-1
250×250	269×185 (Tray)	276×276 (dimpled mat)	276×276 (dimpled mat)	-	6 funnel hoders
Oribital	Oribital	Rocking	Waving	Oribital	Vertical reciprocating
13	3	Adjustable tilt 7° to 13°	Adjustable tilt 0° to 13°	2	40
50 to 300	150 to 1200	5 to 100	8 to 100	150 to 1500 [2]	50 to 300
0	0	0	0	0	-
Wait off	Wait off	Wait off	Wait off	Wait on/off	Wait off
-	-	-	-	0	-
-	-	-	-	-	-
-	-	-	-	-	-
0	0	0	0	0	0
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Lab Companion's wide ranged shakers are covering almost all of your applications. Find a shaker suitable for your needs.

Shakers

Performance

- Dual-action shaking motion: Orbital / Reciprocating.

- Microprocessor PID control / Shaking speed calibration.

- Competitive high shaking speed up to 500 rpm. Also stable shaking is available even at low speed.

- Shaking motion in various amplitude.
  - 12.7mm or 19.1mm for OS-2000
  - 19.1mm or 25.4mm for OS-3000

- Wide speed range even with heavy workload.
  - Equipped with a maintenance-free BLDC motor to generate smooth, quiet, uniform, and yet powerful shaking motion.

- Best effort run function intelligently manages its rpm to keep shaking even workload is out of its capacity.

- Pleasant test environment by the smooth acceleration and deceleration control.

- Low-profile design minimizes vibration or sliding caused by the high speed shaking motion.

Convenience

- User friendly control panel.
  - Lab Companion's unique VFD-bright, clear, easy to read.
  - Durable membrane touch switch and control knob.

- Easy-set digital timer. (1 min. to 999 hr. 59 min.)

- Repetitive task can be easily performed as the platform stops where it starts.
  - Stopping the shaking platform always at the same position is highly beneficial for automated dosing or sampling process.

- Speed is basically set and displayed in increments of 1 rpm. Also speed increment interval can be set among 1, 5, 10 rpm according to users preference.

- RS-232 port and USB port for external control and data collection.

Safety

- Automatic run after power interruption.

- Shaking speed deviation alarm.

- Over-current protection, Stalled platform check.

Dual-action benchtop platform shakers accommodate flask up to 6L.

The most versatile shakers at a reasonable price offer an ideal solution for your mixing needs.

REMOTE CONTROL with your **MOBILE DEVICE** see page 8-9

OS-3000
with optional dedicated platform

Optional accessories
see page 158-159

- Rubber mats, Universal attachments
- Funnel clamps, Test tube racks
- Gateway

Control panel

Model		OS-2000	OS-3000
Shaking system	Motion type	Orbital or Reciprocating motion selectable	
	Amplitude size (mm / inch, dia.)	19.1 / 0.8 (12.7 / 0.5 available)	19.1 / 0.8 (25.4 / 1 available)
	Speed range [2] (rpm)	20 to 500	
	Accuracy	±1% of set speed (>100rpm) / ±1 (≤100rpm)	
	Timer	1 min. to 999 hr. 59 min.	
Max. load (kg / lbs)		10 / 22.0 at 500 rpm in orbital shaking motion 8.5 / 18.7 at 500 rpm in reciprocating shaking motion	
Dimension	Platform (W×D) (mm / inch)	320×260 / 12.6×10.2	350×350 / 13.8×13.8
	Body[1] (W×D×H) (mm/inch)	354x388x146/ 13.9x15.3x5.7	409x508x141/ 16.1x20x5.6
	Net weight (Kg / lbs)	22 / 48.5	28 / 61.7
Electrical requirements (230V, 50 / 60Hz)		0.3A	0.3A
Cat. No.		AAH3D1115K	AAH3D1215K
Electrical requirements (120V, 50 / 60Hz)		0.6A	0.6A
Cat. No.		AAH3D1165U	AAH3D1265U

1) Main body dimension without accessories.
2) In case of operating at high speed (350 to 500 rpm), it is recommended to be fixed on the working surface.
   Permissible environmental conditions: temperature (5-40℃) and relative humidity (up to 80%).
   FDA establishment registered company. FDA listed products.
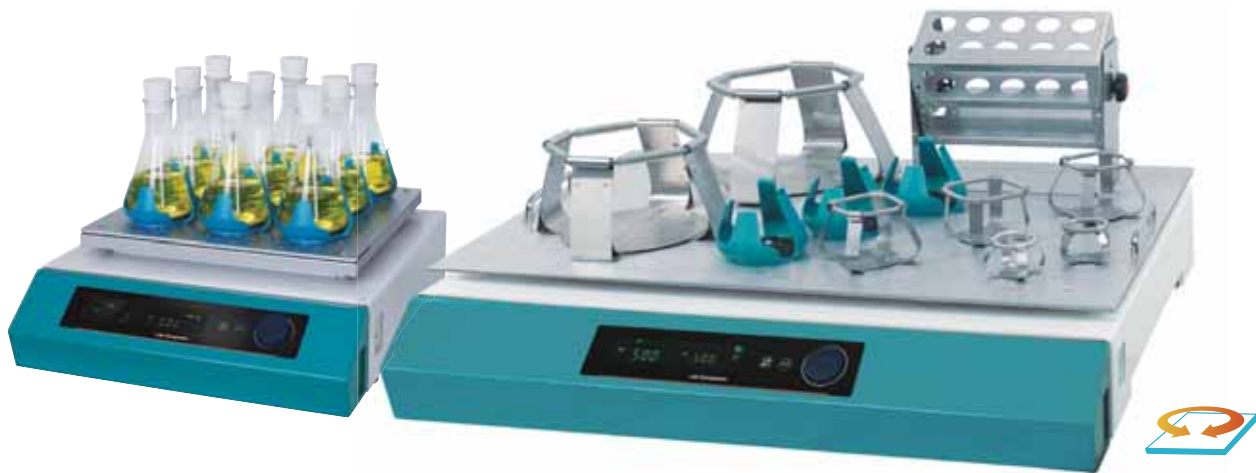
Powerful driving system with a durable body structure increases shaking capacity.

Suitable for larger or heavier workloads requiring accurate and reproducible results.

REMOTE CONTROL
with your **MOBILE DEVICE**
see page 8-9

OS-4000 / OS-7100
with optional accessories

Optional accessories
see page 158-159

• Dedicated platforms, Universal platforms
• Flask clamps, Test tube racks
• Gateway

Remote control through a mobile device
(Android only)

Control panel

Computer interface

Performance

- Microprocessor PID control.
  - Intelligent speed controller enables reproducible results.

- Shaking speed calibration enables matching the displayed rpm to the reference point.

- Competitive high shaking speed up to 500 rpm (amplitude size dependant). Also stable shaking is available even at low speed.

- Orbital shaking motion in various diameter.
  - 19.1mm or 25.4mm for OS-4000
  - 25.4mm for OS-7100
  - 50.8mm for OS-7200

- Wide speed range even with heavy workload.
  - Ideal DD(Direct Drive) Brushless Motor and triple cam system support heavy load, quiet, maintenance free operation and deliver high torque at high speeds and smooth rotation. (for OS-7100/7200)
  - Equipped with a maintenance-free BLDC motor to generate smooth, quiet, uniform, and yet powerful shaking motion. (for OS-4000)

- Best effort run function intelligently manages its rpm to keep shaking even workload is out of its capacity.
  - Automatic shaking speed adjustment in case of excessive workload such as unbalanced load placement, unusual vibrations caused from unstable floor or external shock.

- Pleasant test environment by the smooth acceleration and deceleration control.
  - Smooth start and smooth stop function prevent chemical spills from flasks or test tubes.

- Low-profile design minimizes vibration or sliding caused by the high speed shaking motion.

Convenience

- User friendly control panel.
  - Lab Companion's unique VFD-bright, clear, easy to read.
  - Durable membrane touch switch and control knob.

- Easy-set digital timer. (1 min. to 999 hr. 59 min.)

- Repetitive task can be easily performed as the platform stops where it starts.
  - Stopping the shaking platform always at the same position is highly beneficial for automated dosing or sampling process.

- Speed is basically set and displayed in increments of 1 rpm. Also speed increment interval can be set among 1, 5, 10 rpm according to users preference.

- Built-in RS-232 port and USB port for external control and data collection.

- Variety of accessories are available to meet application demands.

Safety

- Automatic run after power interruption.

- Shaking speed deviation alarm.

- Over-current protection, Stalled platform check.
  (stalled platform check is for OS-4000)

Model		OS-4000		OS-7100	OS-7200
Control system		PID feedback control			
Display		VFD			
Shaking system	Motion type	Orbital			
	Amplitude size (mm / inch, dia.)	19.1 / 0.75 (default)	25.4 / 1 (available)	25.4 / 1	50.8 / 2
	Speed range [2] (rpm)	20 to 500	20 to 450	30 to 500	30 to 300
	Accuracy	±1% of set speed (>100rpm) / ±1 (≤100rpm)			
	Timer	1 min. to 999 hr. 59 min.			
Max. load (kg / lbs)		14 / 30.9 at 500 rpm 21 / 46.3 at 400 rpm	10 / 22.0 at 450 rpm 21 / 46.3 at 300 rpm	10 / 22.0 at 500 rpm 25 / 55.1 at 400 rpm	23 / 50.7 at 300 rpm 35 / 77.2 at 200 rpm
Dimension	Platform (W×D) (mm / inch)	450×450 / 17.7×17.7		755×520 / 29.6×20.5	
	Body [1] (W×D×H) (mm/inch)	510×632×156 / 20.1×24.9×6.1		755×627×151 / 29.7×24.7×5.9	
	Net weight (Kg / lbs)	43 / 94.8		117 / 257.9	
Electrical requirements (230V, 50 / 60Hz)		0.3A		0.4A	
Cat. No.		**AAH3D1315K**		**AAH3D1415K**	**AAH3D1515K**
Electrical requirements (120V, 50 / 60Hz)		0.6A		0.8A	
Cat. No.		**AAH3D1365U**		**AAH3D1465U**	**AAH3D1565U**

1) Main body dimension without accessories.
2) In case of operating at high speed (350 to 500 rpm), it is recommended to be fixed on the working surface.
   Permissible environmental conditions: temperature (5-40℃) and relative humidity (up to 80%).
   CSA for OS-4000.   FDA establishment registered company. FDA listed products.

Innovative triple-cam shaking mechanism with offering reliable performance across a wide speed range.

Specially designed to carry out heavy-duty and trouble-free operations continuously.

SKC - 7075
with optional slide type dedicated platform
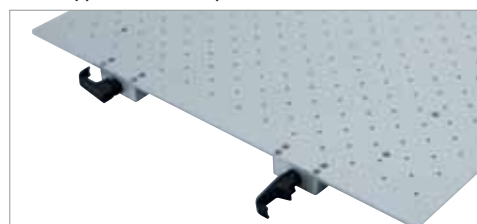
Optional accessories
see page   160

- Dual universal platforms, Rubber mats, Universal attachments
- Flask clamps, Funnel clamps, Test tube racks, Spring wire racks
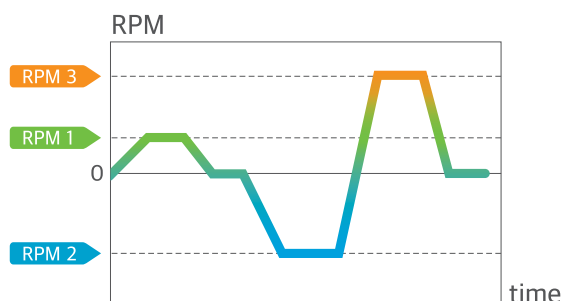
Control panel

Slide type universal platform (optional)

Progressive program operation

RPM

RPM 3
RPM 1
0
RPM 2

time

Programming parameters		
Max. number of segments in one (1) pattern (cycle)		20
Max. number of patterns (cycle) saved		20
Shaking motion - Forward & Backward, Pause	Time	1min. to 99hr. 59min.
	rpm	30 to 500

Performance

· Microprocessor PID control maintaining constant speed

· Competitive high shaking speed up to 500 rpm. Also stable shaking is available even at low speed.

· Orbital shaking motion in various diameter.
- 19mm for SKC-6075/7075
- 25mm for SKC-6100/7100
- 50mm for SKC-6200/7200

· Wide speed range even with heavy workload.
- Ideal DD(Direct Drive) Brushless Motor and triple cam system support heavy load, quiet, maintenance free operation and deliver high torque at high speeds and smooth rotation.

· Best effort run function intelligently manages its rpm to keep shaking even workload is out of its capacity.
- Automatic shaking speed adjustment in case of excessive workload such as unbalanced load placement, unusual vibrations caused from unstable floor or external shock.

· Pleasant test environment by the smooth acceleration and deceleration control.
- Smooth start and smooth stop function prevent chemical spills from flasks or test tubes.

· Exceptional low-profile design (only 12cm from bottom to platform) minimizes vibration or sliding caused by the high speed shaking motion.

Convenience

· It is available to equip 102 flasks (250ml) simultaneously on a dual universal platform. (optional)

· User friendly control panel.
- Lab Companion's unique VFD-bright, clear, easy to read.
- Durable membrane touch switch and control knob.

· Easy-exchangeable slide type universal platform reduces physical fatigue when handling the heavy load samples. (optional)

· Repetitive task can be easily performed as the platform stops where it starts.
- Stopping the shaking platform always at the same position is highly beneficial for automated dosing or sampling process.

· Variety of accessories are available to meet application demands.

Safety

· Shaking speed deviation alarm.

· Over-current protection.

Shakers

Model		SKC-6075	SKC-6100	SKC-6200	SKC-7075	SKC-7100	SKC-7200
Control system		PID feedback control					
Display		VFD					
Shaking system	Motion type	Orbital					
	Amplitude size (mm / inch, dia)	19 / 0.75	25 / 1	50 / 2	19 / 0.75	25 / 1	50 / 2
	Speed range 2) (rpm)	30 to 500					
	Accuracy at 100 rpm	±1					
Dimension	Platform (W×D) (mm / inch) Small	580×520 / 22.8×20.5			755×520 / 29.7×20.5		
	Large	660×520 / 26×20.5			885×520 / 34.8×20.5		
	Body 1) (W×D×H) (mm / inch)	582.8×618×122.2 / 22.9×24.3×4.8			754.8×662×122.2 / 29.7×26.1×4.8		
	Net weight (kg / lbs)	65 / 143.3			75 / 165.4		
Electric requirements (230V, 50 / 60Hz)		0.4A					
Cat. No.		AAH30105K	AAH30115K	AAH30125K	AAH30205K	AAH30215K	AAH30225K
Electric requirements (120V, 60Hz)		0.8A					
Cat. No.		AAH30106U	AAH30116U	AAH30126U	AAH30206U	AAH30216U	AAH30226U

1) Main body dimension without accessories.
2) In case of operating at high speed (350 to 500 rpm), it is recommended to use weight increaser on the working surface.
   Permissible environmental conditions: temperature (5-40℃) and relative humidity (up to 80%).
   FDA establishment registered company. FDA listed products.

Mini Shaker

Compact and lightweight design for space saving and portability with real-time responsive speed control knob.

CMS-350
with optional universal platform, flask clamp

Optional accessories
see page **158-161**

- Spring wire racks, Microplate tray
- Test tube racks, Funnel clamps
- Dimpled mat (tray, silicone pad)
- Rubber mat (tray, sticky pad)

Performance

- Suitable for low rpm sensitive applications.
  - Hybridization, immunocytochemistry, gel staining/destaining, and other bioscience applications.
- Microprocessor PID control.
- Wide speed range from 50 to 300 rpm.
- Orbital shaking motion in 13mm diameter.
- Equipped with a maintenance-free BLDC motor to generate smooth, quiet, uniform, and yet powerful shaking motion.

Convenience

- Vivid and colorful vacuum fluorescent display (VFD) with touch–sensitive keypad.
- One-touch timer for time-dependent shaking operation. (1 min. to 99 hr. 59 min.)
- Removable tray for easy transport of well-plates (max. 6 ea) and dishes. (optional)
- Compact and lightweight design allow for use in cold rooms or incubators.
- Variety of accessories are available to meet application demands.

Safety

- Self-diagnostic function identifying errors.
- Its polypropylene main body is highly chemical-resistant and easy-to-clean.
- Over-current protection.

Model		CMS-350
Control system		PID feedback control
Display		VFD
Shaking system	Motion type	Orbital
	Speed range (rpm)	50 to 300
	Accuracy at 100 rpm	±5
	Timer	1min. to 99hr. 59min.
	Orbit size (mm / inch, dia)	13 / 0.51
	Max. load (kg / lbs)	up to 5.2 / 11.46
Dimension	Tray (W×D) (mm / inch)	276×276 / 10.87×10.87
	Platform (W×D) (mm / inch)	250×250 / 9.8×9.8
	Body [1] (W×D×H) (mm / inch)	249×325×109 / 9.8×12.8×4.3
	Net weight (kg / lbs)	8 / 17.6
Electrical requirements		AC 100 ~ 240 V, 50 / 60 Hz
Cat. No.	KR Plug	**AAH3B1115K**
	US Plug	**AAH3B1115U**

1) Main body dimension without accessories.
 Permissible environmental conditions: temperature (5-40℃) and relative humidity (up to 80%).
 FDA establishment registered company. FDA listed products.

CE RoHS Compliant

Performance

- Optimally designed to shake four microplates simultaneously.
  - Ideal for applications that demand precise and repeatable mixing.
- Microprocessor PID control.
- Wide speed range from 150 to 1,200 rpm
- Orbital shaking motion in 3mm diameter.
- Smooth start feature to avoid sample contamination.
- Equipped with a maintenance-free BLDC motor to generate smooth, quiet, uniform, and yet powerful shaking motion.

Convenience

- Vivid and colorful vacuum fluorescent display (VFD) with touch–sensitive keypad.
- One-touch timer for time-dependent shaking operation. (1 min. to 99 hr. 59 min.)
- Compact and lightweight design allow for use in cold rooms or incubators.
- Variety of accessories are available to meet application demands.
  - Optional tube racks also available for 1.5ml micro-tubes, 15ml conical tubes, and 50ml conical tubes.

Safety

- Self-diagnostic function identifying errors.
- Its polypropylene main body is highly chemical-resistant and easy-to-clean.
- Over-current protection.

Fitted with 4 microplates and wider speed range to accommodate various sample testing.

CPS-350
with optional micro-tube rack

Optional accessories
see page 161

- Conical tube racks (1.5ml, 15ml, 50ml)

Model		CPS-350
Control system		PID feedback control
Display		VFD
Shaking system	Motion type	Orbital
	Speed range (rpm)	150 to 1,200
	Accuracy at 500 rpm	±15
	Timer	1min. to 99hr. 59min.
	Orbit size (mm / inch, dia)	3 / 0.12
	Max. load (kg / lbs)	4 / 8.8
Dimension	Tray (W×D) (mm /inch)	269×185 / 10.6×7.3
	Body [1] (W×D×H) (mm /inch)	269×325x128 / 10.6×12.8×5.0
	Net weight (kg / lbs)	7.7 / 17
Electrical requirements		AC 100 ~ 240 V, 50/60 Hz
Cat. No.	KR Plug	AAH3C1115K
	US Plug	AAH3C1115U

1) Main body dimension without accessories.
   Permissible environmental conditions: temperature (5-40℃) and relative humidity (up to 80%).
   FDA establishment registered company. FDA listed products.

Shakers

Rocking Shaker

Adjustable tilt angle and precise digital speed control providing desired rocking motion.

Performance

- Microprocessor PID control.

- Digital speed control providing gentle to vigorous motion.
  - Rocking shaker: 5 to 100 rpm

- Easy to adjust tilt angle.
  - Rocking shaker: 7 to 13°

- Smooth, quiet, uniform, and yet powerful shaking motion.

Convenience

- Vivid and colorful vacuum fluorescent display (VFD) with touch–sensitive keypad.

- One-touch timer for time-dependent shaking operation. (1 min. to 99 hr. 59 min.)

- Compact and lightweight design allow for use in cold rooms or incubators.

- Three types of removable tray for easy transport of well-plates, test tubes, etc. (standard dimpled mat, and optional rubber mat and universal harness)

- Variety of accessories are available to meet application demands.
  - Accommodates to be used in a variety of test tube size, beakers, vials, micro-well plates, culture dishes, plastic/glass trays.

Safety

- Self-diagnostic function identifying errors.

- Its polypropylene main body is highly chemical-resistant and easy-to-clean.

- Over-current protection.

CRS-350

Standard accessories
- Dimpled mat (tray, silicone pad)
- Rubber bands (2ea)

Optional accessories
see page 161
- Rubber mat (tray, sticky pad)
- Universal harness (tray, sticky pad, 6 rubber bands)

Model		CRS-350
Control system		PID feedback control
Display		VFD
Shaking system	Motion type	Rocking
	Speed range (rpm)	5 to 100
	Accuracy at 100 rpm	±5
	Tilt angle	7 to 13°
	Max. load (kg / lbs)	5 / 11.02
Material	Dimpled mat (standard)	PP (polypropylene), Silicone
	Body	PP (polypropylene)
Dimension	Tray (W×D) (mm / inch)	276×276 / 10.87×10.87
	Body [1] (W×D×H) (mm / inch)	249×325×138 / 9.8×12.8×5.4
	Net weight (kg / lbs)	3.7 / 8.16
Electrical requirements		AC 100 ~ 240 V, 50/60 Hz
Cat. No.	KR Plug	AAH391115K
	US Plug	AAH391115U

1) Main body dimension without accessories.
   Permissible environmental conditions: temperature (5-40℃) and relative humidity (up to 80%).
   FDA establishment registered company. FDA listed products.

CE **RoHS** Compliant

Performance

· Microprocessor PID control.

· Digital speed control providing gentle to vigorous motion.
  - Waving shaker: 8 to 100 rpm

· Easy to adjust tilt angle.
  - Waving shaker: 0 to 13°

· Smooth, quiet, uniform, and yet powerful shaking motion.

Convenience

· Vivid and colorful vacuum fluorescent display (VFD) with touch–sensitive keypad.

· One-touch timer for time-dependent shaking operation. (1 min. to 99 hr. 59 min.)

· Compact and lightweight design allow for use in cold rooms or incubators.

· Three types of removable tray for easy transport of well-plates, test tubes, etc. (standard dimpled mat, and optional rubber mat and universal harness)

· Variety of accessories are available to meet application demands.
  - Accommodates to be used in a variety of test tube size, beakers, vials, micro-well plates, culture dishes, plastic/glass trays.

Safety

· Self-diagnostic function identifying errors.

· Its polypropylene main body is highly chemical-resistant and easy-to-clean.

· Over-current protection.

Enhanced conveniences for tilt adjustment, removable tray, and digital control.

CWS-350

Standard accessories
· Dimpled mat (tray, silicone pad)
· Rubber bands (2ea)

Optional accessories
see page **161**
· Rubber mat (tray, sticky pad)
· Universal harness (tray, sticky pad, 6 rubber bands)

Model		CWS-350
Control system		PID feedback control
Display		VFD
Shaking system	Motion type	Waving
	Speed range (rpm)	8 to 100
	Accuracy at 100 rpm	±5
	Tilt angle	0 to 13°
	Max. load (kg / lbs)	5 / 11.02
Material	Dimpled mat (standard)	PP (polypropylene), Silicone
	Body	PP (polypropylene)
Dimension	Tray (W×D) (mm / inch)	276×276 / 10.87×10.87
	Body [1] (W×D×H) (mm / inch)	249×325×138 / 9.8×12.8×5.4
	Net weight (kg / lbs)	3.7 / 8.16
Electrical requirements		AC 100 ~ 240 V, 50/60 Hz
Cat. No.	KR Plug	AAH381115K
	US Plug	AAH381115U

1) Main body dimension without accessories.
  Permissible environmental conditions: temperature (5-40℃) and relative humidity (up to 80%).
  FDA establishment registered company. FDA listed products.

Heating Shaker

CE | RoHS Compliant | Program | Dual Timer | Over Temp.

Useful for a variety of molecular biology applications.

Interval mix function in program mode can be properly set according to user's experimental conditions.

CBS-350
with optional tube block and cover

Optional accessories
see page 161

- 96-well tube block set with cover
- Tube block set with cover

Performance

- Microprocessor PID control ensuring consistent shaking motion and precision accuracy.
- Wide speed range from 150 to 1500 rpm (block dependent)
- Automatic temperature calibration.

Convenience

- Bright VFD display with responsive touch buttons.
- Memory function of programs allowing relevant parameters (such as temp., rpm, time) of each program step to be stored.
  - Up to 10 programs allowed for memory storage.
  - Up to 10 steps allowed for each program.
  - Interval mix function
    (continuous switching between shaking and phasing)
- Advanced dual wait on/off timer modes.
  - User can set timer to starts immediately after the timer setting or only after reaching the set temp.
- Optimal heat transfer is achieved by the tight coupling design of the main body and the corrosion-resistant anodized aluminum blocks.

Safety

- Self-diagnostic function identifying errors.
- Its polypropylene main body is highly chemical-resistant and easy-to-clean.
- Low-profile design with rubber feet for minimal vibration and noise.
- Over-current protection.

Model		CBS-350	
Control		PID feedback control	
Display		VFD (0.1 resolution)	
Temperature	Range (/)	Amb. +5 to 100 / 41 to 212	
	Fluctuation at 80 (± /)	0.3 / 0.54	
	Variation at 80 (± /)	0.7 / 1.26	
	Heating power (W)	360	
Safety	Over temp.	Heating plate	
		PCB	
	Over current	Current limit protection	
Shaking system (WxDxH)	Motion type	Orbital	
	Speed range (rpm)	96-well tube block	150 to 1500
		0.5 tube block	150 to 1000
		1.5 tube block	150 to 1000
		15 tube block	150 to 900
		Ø12 tube block	150 to 850
		Ø13 tube block	150 to 850
		50 tube block	150 to 800
	Orbit size (mm / inch, dia.)	2 / 0.08	
Dimension (WxDxH)	Body [1] (mm/inch)	249 x 325 x 120 / 9.8 x 12.8 x 4.7	
	Net weight (Kg / lbs)	8.3 / 18.3	
Electrical requirements (230V,50Hz/60Hz)		1.7A	
Cat. No.		AAHJ4015K	
Electrical requirements (120V,60Hz)		3.4A	
Cat. No.		AAHJ4013U	

1) Main body dimension without accessories.
   FDA establishment registered company. FDA listed products.

Performance

- Shaking up to 10 samples in identical conditions for any series or comparative protocols in chemistry, biotech, and medical labs.

- Wide speed range from 50 to 300 rpm is suitable for most applications.

- Vertical reciprocating motion with maximum stroke length of 40mm.

Convenience

- Digital LED speed display.

- Simple and quick control panel.

- Quick adjustable timer for time-dependent shaking operation. (1 min. to 60m.)

- Easily adjustable funnel holders accomodate various capacity of funnels.

Safety

- Audible alarm and automatic shut down at the end of each shaking session.

- Over-current protection.

Intensive vertical reciprocating agitation for quick solvent extraction.

RS-1

Standard accessories • Funnel holders (6ea)

Max. funnel capacity (per each side)

Capacity	Round type funnel	Slim type funnel
under 500ml	3 to 5	5
500ml	3	3
1L	-	3

Information of accessories

Max. 5 funnel holders
can be installed on each side of the unit.

Cat. No.	Description
AAA32501	Funnel holder (1ea)

Model		RS-1	
Shaking system	Motion type	Vertical reciprocating	
	Speed range (rpm)	50 to 300	
	Timer	60 min or continuous operation	
	Vertical stroke length (mm / inch)	40 / 1.6	
Dimension	Exterior (W×D×H) (mm / inch)	445×730×505 / 17.5×28.7×19.9	
	Max. load per each side (kg / lbs)	3 / 6.6	
	Net weight (Kg / lbs)	53 / 116.8	
Electrical requirements (230V)		50Hz, 0.4A	60Hz, 0.4A
Cat. No.		AAH32012K	AAH32015K

Permissible environmental conditions: temperature (5-40℃) and relative humidity (up to 80%).
FDA establishment registered company. FDA listed products.

Accessories & Options

for Open-air Shakers (OS models) / Mini Shaker
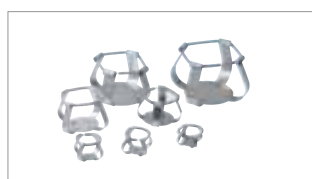

Universal platforms (OS models)
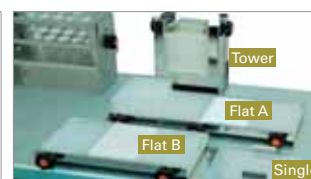

Universal platform (CMS-350)

Test tube racks

Flask clamps (stainless steel)

Flask clamps (plastic)

Funnel clamps

Microplate holders
(universal platform is optional)

Description		Model	OS-2000	OS-3000	OS-4000	OS-7100 OS-7200	CMS-350
		Platform size	320×260mm / 13.8x10.2″	350×350mm / 13.8x13.8″	450×450mm / 17.7×17.7″	755×520mm / 29.7×20.5″	276×276mm / 10.9x10.9″
Universal platform			AAA3A501-V2	AAA23501-V3	AAA23502-V3	AAA23503-V3	AAA3B501
Flask clamps (Stainless steel)	Erlenmeyer flask size		Max. mountable flask clamps				
	for 50 ml	AAA23550	20	36	49	88	16
	for 100 ml	AAA23551	16	28	39	68	9
	for 250 ml	AAA23552	8	14	24	39	9
	for 300 ml	AAA23556	8	14	24	39	9
	for 500 ml	AAA23553	6	10	16	28	5
	for 1L	AAA23554	3	6	9	18	4
	for 2L	AAA23555	-	4	6	11	1
	for 2.8L	AAA23557	-	3	5	8	-
	for 4L	AAA23558	-	1	4	6	-
	for 6L	AAA23559	-	1	3	5	-
Flask clamps (plastic)	Erlenmeyer flask size		Max. mountable flask clamps				
	for 50 ml	AAA30570	20	36	49	88	16
	for 100 ~ 125 ml	AAA30571	12	19	29	48	9
	for 200 ml	AAA30572	8	13	21	35	9
	for 250 ml	AAA30573	8	13	19	35	9
	for 300 ml	AAA30574	6	12	19	35	9
	for 500 ml	AAA30575	6	9	12	24	5
	for 1L	AAA30576	3	5	9	12	4
	for 2L	AAA30577	-	4	5	8	1
Funnel clamps	Separating funnel size		Max. mountable funnel clamps				
	for 250 ml	AAA23562	4	4	6	15	3
	for 500 ml	AAA23563	3	3	4	10	2
	for 1L	AAA23564	3	3	3	7	2
	for 2L	AAA23565	-	2	2	5	-
Test Tube Racks[1]	Test tube size		Mountable capacity of racks				
	for 86 test tubes, ø8″	AAA23581					
	for 86 test tubes, ø10″	AAA23582					
	for 58 test tubes, ø12″	AAA23583					
	for 58 test tubes, ø14″	AAA23584					
	for 32 test tubes, ø17″	AAA23585	2	2	4	7	2
	for 19 test tubes, ø25″	AAA23586					
	for 10 test tubes, ø30″	AAA23587					
	for 10 test tubes, ø35″	AAA23594					
	for 4 test tubes, ø50″	AAA23593					
Microplate holders	Microplate holders type		Max. mountable microplate holders				
	Single	AAA23654	6	8	15	25	6
	Tower	AAA23651	4	6	10	21	6
	Flat A (large)	AAA23652	-	-	2	4	-
	Flat B (small)	AAA23653	1	2	3	6	-

1) No declination.
   Above accessories need to be mounted on a universal platform which is sold separately.
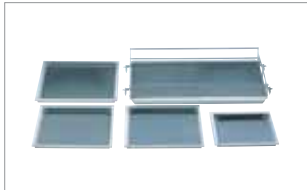
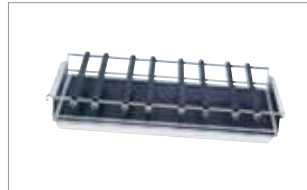## for Open-air Shakers (OS models) / Mini Shaker

Dedicated platform
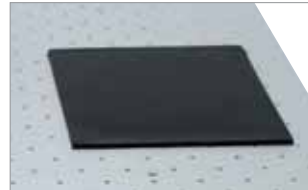(universal platform is optional)

Spring wire racks
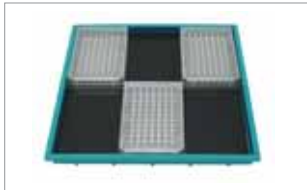(two tier rack with flexible crossed spring)

Rubber mats

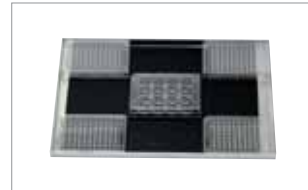Universal attachment

Lab sticker (200x200, mm)

Stage rack (OS models)

Rubber mat (CMS-350)

Dual stacking tray

Large tray

Description		OS-3000	OS-4000	OS-7100 OS-7200
Dedicated platform	Universal platform +250ml flask clamps	AAA23611-V1	AAA23621-V1	AAA23634
	No. of flask clamps	14	24	39
	Universal platform +500ml flask clamps	AAA23613-V1	AAA23622-V1	AAA23635
	No. of flask clamps	10	16	28

A dedicated platform is sold with setting each max. mountable amount of flask clamps on.

Gateway

Establish Jeio Tech Network by Gateway. No computer use is required at all. Remote monitoring of operating status through a device (Android only) is simply available when you place a Gateway in your laboratory. Maximum 4 units can be connected to Gateway by RS-232 cable.

Cat. No.	Description	Suitable for
AAAQ1011	Gateway (2.4GHz, 100~240V, 50/60Hz)	OS models

Description		OS-2000	OS-3000	OS-4000	OS-7100 OS-7200	CMS-350
Spring wire racks	-	AAA3A521	AAA31521-V1	AAA31522-V1	AAA23514	AAA3B511
	Erlenmeyer flask size	Max. inserting flasks				
	for 50 ml	15	16	25	45	15
	for 100 ml	9	9	16	28	9
	for 250 ml	4	4	9	18	4
	for 300 ml	4	4	9	18	4
	for 500 ml	4	4	5	15	4
	for 1L	2	2	4	10	2
	for 2L	-	1	2	6	-
	for 2.8L	-	1	2	4	-
Rubber mat		AAA3A531-V1	AAA31531	AAA31532	AAA23534	AAA38501
Universal attachments		AAA3A511-V1	AAA23511-V1	AAA23512-V1	AAA23505	AAA3B521
Lab sticker		AAA30551				
Dimpled mat		AAA3A532	-	-	-	AAA38502
Microplate tray	Dual stacking	AAA3A541	-	-	-	AAA3B531
	Large tray	AAA3A542	-	-	-	AAA3B532
Stage racks	4 stage rack	-	AAA31541-V1	AAA31542-V1	AAA31702-V1	-
	3 stage rack	-	-	-	AAA31703-V1	-

Shakers

Accessories & Options

for Open-air Shakers (SKC models)

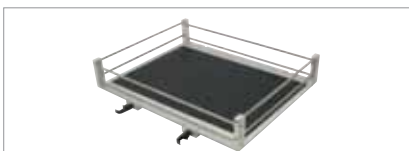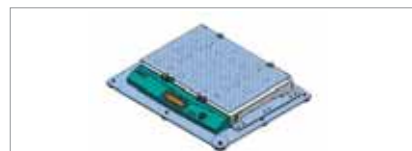Universal platforms

Dual universal platforms

Spring wire racks
(two tier rack with flexible crossed spring)

Universal attachments

Rubber mats

Weight increaser

Description			SKC - 6000 models		SKC - 7000 models	
			Small	Large	Small	Large
			580×520mm / 22.8×20.5″	660×520mm / 25×20.5″	755×520mm / 29.7×20.5″	885×520mm / 34.8×20.5″
Universal platform	Single		AAA30501	AAA30503	AAA30502	AAA30504
	Dual[1]		-	-	AAA30541	AAA30542
Flask Clamps (stainless steel)	-	Erlenmeyer flask size	Max. mountable flask clamps			
	AAA23550	for 50 ml	84	96	108 / 108 per each step[1]	126 / 126 per each step[1]
	AAA23551	for 100 ml	54	66	72 / 72 per each step[1]	84 / 84 per each step[1]
	AAA23552	for 250 ml	33	39	42 / 42 per each step[1]	51 / 51 per each step[1]
	AAA23556	for 300 ml	28	32	36	40
	AAA23553	for 500 ml	20	24	27	30
	AAA23554	for 1L	14	16	18	20
	AAA23555	for 2L	8	11	12	13
	AAA23557	for 2.8L	6	7	9	11
	AAA23558	for 4L	4	6	8	9
	AAA23559	for 6L	3	4	6	7
Flask clamps (plastic)	-	Erlenmeyer flask size	Max. mountable flask clamps			
	AAA30570	for 50 ml	56	64	72	80
	AAA30571	for 100 ~ 125 ml	42	48	54	60
	AAA30572	for 200 ml	25	39	30	32
	AAA30573	for 250 ml	25	30	30	32
	AAA30574	for 300 ml	25	30	30	32
	AAA30575	for 500 ml	20	20	24	28
	AAA30576	for 1L	10	12	12	15
	AAA30577	for 2L	6	6	6	9
Funnel clamps	-	Separating funnel size	Max. mountable funnel clamps			
	AAA23562	for 250 ml	14	16	18	20
	AAA23563	for 500 ml	9	10	11	14
	AAA23564	for 1L	7	8	9	12
	AAA23565	for 2L	5	6	7	8
Test Tube Racks[2]	-	Test tube size	Mountable capacity of racks			
	AAA23581	for 86 test tubes, ø8″	8	9	9	12
	AAA23582	for 86 test tubes, ø10″				
	AAA23583	for 58 test tubes, ø12″				
	AAA23584	for 58 test tubes, ø14″				
	AAA23585	for 32 test tubes, ø16″				
	AAA23586	for 19 test tubes, ø25″				
	AAA23594	for 10 test tubes, ø35″				
Microplate holders	-	Holder type	Max. mountable microplate holders			
	AAA23654	Single	20	23	25	28
	AAA23651	Tower	16	19	22	25
	AAA23652	Flat A(large)	3	4	4	5
	AAA23653	Flat B(small)	4	5	6	7

1) Under the dual universal platform are mounted only 50ml, 100ml 250ml - Refer to the above chart (Distance between platforms is 175mm).
2) No declination
  Above accessories need to be mounted on a universal platform which is sold separately.

Description	SKC - 6000 models		SKC - 7000 models	
	Small	Large	Small	Large
Spring wire rack	AAA30521	AAA30522	AAA30523	AAA30524
Universal attachment	AAA30511	AAA30512	AAA30513	AAA30514
Rubber mat	AAA30531	AAA30532	AAA30533	AAA30534

Description	SKC - 6000 models		SKC - 7000 models	
	Small	Large	Small	Large
Lab Sticker		AAA30551		
Weight increaser	AAA30562		AAA30561	

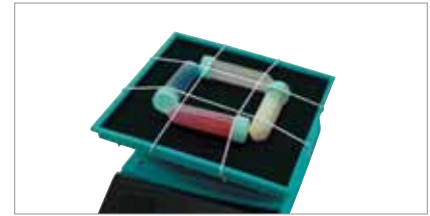## for Rocking Shaker / Waving Shaker / Mini Shaker
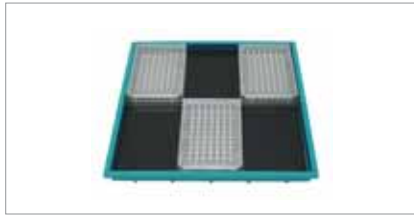
Rubber mat

Dimpled mat

Universal harness

Cat. No.	Description	Component
AAA38501	Rubber mat	Tray, Sticky pad
AAA38502	Dimpled mat	Tray, Silicone pad
AAA38503	Universal harness	Tray, Sticky pad, Rubber band (6ea)

for Microplate Shaker

1.5㎖ Micro-tube rack

15㎖ Conical tube rack

50㎖ Conical tube rack

Cat. No.	Description	Max. mountable tube
AAAJ2311	1.5㎖ Micro-tube rack with cap	80 (5 ×16)
CPS0011JT	15㎖ Conical tube rack	30 (3 ×10)
CPS0012JT	50㎖ Conical tube rack	12 (2 × 6)

for Heating Shaker

AAAJ4504

AAAJ4501

AAAJ4502

AAAJ4505

AAAJ4503

AAAJ4506

AAAJ4507

Cat. No.	Description	Max. mountable tube
AAAJ4504	96-well Tube block with cover	0.2ml x 96 holes (micro tube)
AAAJ4501	0.5㎖ Tube block with cover	0.5ml x 48 holes (micro tube)
AAAJ4502	1.5/2.0ml Tube block with cover	1.5/2.0ml x 24 holes (micro tube)
AAAJ4505	15ml Tube block with cover	15ml x 15holes (centrifuge tube)
AAAJ4503	50ml Tube block with cover	50ml x 6 holes (centrifuge tube)
AAAJ4506	ø12 Tube block with cover	ø12 x 24holes
AAAJ4507	ø13 Tube block with cover	ø13 x 24holes

13

Heating & Cooling Blocks

Indispensable for incubation and activation of cultures, culture enrichment, enzyme reactions, immunoassay, etc.

Heating & Cooling Block
with optional block

Heating Blocks
with optional block

Lab Companion

CE | RoHS Compliant | Program | Dual Timer | Temperature Calibration (1 Point) | Over Temp.

Performance

- Wide temperature control range from amb. -20 to 95°C with rapid cool down and heat-up times.

- Precision accuracy of ±0.1°C is ensured by PID controller.

- Temperature calibration.

- Memory function of programs allowing relevant parameters of each program step to be stored.
  - Up to 10 programs allowed for memory storage.
  - Up to 10 steps allowed for each program.

- Optimal heat transfer is achieved by the tight coupling design of the main body and the corrosion-resistant anodized aluminum blocks.

- Cooling is controlled by peltier elements for an energy efficient compact design.

Convenience

- Bright VFD display with responsive touch buttons.

- Advanced dual wait on/off timer modes.
  - User can set timer to starts immediately after the timer setting or only after reaching the set temperature.

- Transparent lid allows easy sample monitoring and even temperature distribution.

- Blocks can be easily interchanged by the included block lifter.

Safety

- Self-diagnostic function identifying errors.

- Over-temperature and over-current protection.

- Its polypropylene main body is highly chemical-resistant and easy-to-clean.

Outstanding temp. compensation function for precise temperature control.

Rapid cooling and heating in centrifuge tubes, sample vials, micro tubes within the broad temperature range.

CCB-350
with optional block

| Standard accessories | • Block lifters (2ea) |
| Optional accessories see page 165 | • Tube blocks |

Model		CCB-350
Control system		Feedback control PID
Display		VFD (0.1 resolution)
Temperature	Range (/)	Amb. -20 to 95 / Amb. -36 to 203
	Fluctuation at 37 (± /)	0.1 / 0.18
	Variation at 37 (± /)	0.5 / 0.90
Safety	Over temp.	Heating plate
		PCB
	Over current	Current limit protection
Dimension (W×D×H)	Interior (mm / inch)	99 x 77.5 x 36 / 3.9 x 3.1 x 1.4
	Exterior (mm / inch)	249×330×168 / 9.8×13×6.6
	Net weight (kg / lbs)	5.0 / 11.0
Electrical requirements (230V, 50 / 60Hz)		2 A
Cat. No.		AAHJ5015K
Electrical requirements (120V, 60Hz)		4 A
Cat. No.		AAHJ5013U

FDA establishment registered company. FDA listed products.

Heating Blocks

CE | Dual Timer | 1 Point Temperature Calibration | Over Temp.

Ideal for simultaneous sample heating of multiple vials or test tubes with uniform and precise temperature control.

Performance

- Precision accuracy of ±0.1°C is ensured by PID controller from ambient + 5°C to 130°C.
- Temperature calibration.
- Its built-in temperature limit setting feature (with max. 0.2°C overshooting) allows you to perform highly temp. sensitive reactions such as isothermal amplifications.
- Optimal heat transfer is achieved by the tight coupling design of the main body and the corrosion-resistant anodized aluminum blocks.

Convenience

- Bright VFD display with responsive touch buttons.
- Advanced dual wait on/off timer modes.
  - User can set timer to starts immediately after the timer setting or only after reaching the set temperature.
- Transparent lid allows easy sample monitoring and even temperature distribution.
- Blocks can be easily interchanged by the included block lifter.

Safety

- Self-diagnostic function identifying errors.
- Automatic power cutoff.
  - If the temperature of the main body exceeds 150°C.
  - If the internal circuit is overheated.
- Its polypropylene main body is highly chemical-resistant and easy-to-clean.

CHB-350S / CHB-350T
with optional block

Standard accessories • Block lifters (2ea)

Optional accessories • Tube blocks
see page 165

Model		CHB-350S	CHB-350T
Control system		Feedback control PID	
Display		VFD (0.1 resolution)	
Temperature	Range (/)	Amb. +5 to 130 / Amb. +41 to 266	
	Fluctuation at 80 (± /)	0.1 / 0.18	
	Variation at 80 (± /)	0.5 / 0.90	
Safety	Over temp.	Heating plate	
		PCB	
	Over current	Current limit protection	
Dimension (W×D×H)	Interior (mm / inch)	154×99×37 / 6.1×3.9×1.5	
	Exterior (mm / inch)	249×330×125 / 9.8×13×4.9	249×330×250 / 9.8×12.8×9.8
	Net weight (kg / lbs)	3.9 / 8.6	4.3 / 9.5
Electrical requirements (230V, 50 / 60Hz)		3.5A	
Cat. No.		**AAHJ1015K**	**AAHJ1115K**
Electrical requirements (120V, 60Hz)		6.7A	
Cat. No.		**AAHJ1013U**	**AAHJ1113U**

FDA establishment registered company. FDA listed products.

Block	Cat. No.	Description	Max. Mountable Tube	WxDxH (mm, inch)	Mountable Capacity of Blocks		
					CHB-350S	CHB-350T	CCB-350
	CHB0030	96-well Tube block (micro-tube)	0.2ml x 96 holes	153×98×41 / 6×3.9×1.6	1	1	-
	CHB0029	0.5 ml Tube block (micro-tube)	0.5ml x 48 holes	98×76.5×41 / 3.9×3×1.6	2	2	1
	CHB0045	1.5/2.0 ml Tube block (micro-tube)	1.5/2.0ml x 30 holes	98×76.5×41 / 3.9×3×1.6	2	2	1
	CHB0028	1.5/2.0 ml Tube block (micro-tube)	1.5/2.0ml x 48 holes	153×98×41 / 6×3.9×1.6	1	1	-
	CHB0031	15 ml Tube block (centrifuge tube)	15ml x 15 holes	98×76.5×51 / 3.9×3×2	2*	2	1*
	CHB0032	50 ml Tube block (centrifuge tube)	50ml x 6 holes	98×76.5×51 / 3.9×3×2	2*	2	1*
	CHB0033			98×76.5×87 / 3.9×3×3.4	2*	2	1*
	CHB0034	ø10 Tube block	ø10 x 35 holes	98×76.5×51 / 3.9×3×2	2*	2	1*
	CHB0035	ø12 Tube block	ø12 x 24 holes		2*	2	1*
	CHB0036	ø13 Tube block	ø13 x 24 holes		2*	2	1*
	CHB0037	ø15 Tube block	ø15 x 20 holes		2*	2	1*
	CHB0038	ø16 Tube block	ø16 x 16 holes		2*	2	1*
	CHB0039	ø18 Tube block	ø18 x 12 holes		2*	2	1*
	CHB0040	ø20 Tube block	ø20 x 12 holes		2*	2	1*

* Available to use only when the lid is opened.

Hotplates & Stirrers

› Hotplates
› Hotplate Stirrers
› Magnetic Stirrers
› Overhead Stirrers

General Applications

Hotplates

Acid and base digestions, trace metal analysis, sample drying, general reagent heating, heating TLC plates, evaporation

Hotplate Stirrers

Various heating and mixing applications that require accuracy, stability, and repeatability.

Magnetic Stirrers

Crystallization, solvent evaporation, chemical reactions, titration, distillation, media dissolution, food processing

Overhead Stirrers

Chemical and petrochemical applications, beverage production, dairy production, food processing, sugar and candy production

Product Name		Hotplates		Hotplate Stirrers (Basic)		Hotplate Stirrers (Advanced)	
Model		T-S, R	T-Q	TM-SB, RB	TM-Q	TS-S	TS-Q
Top plate	Material	Ceramic coated aluminum		Ceramic coated aluminum		Ceramic coated aluminum	
	Dimension (Ø or WxD, mm)	140, 170 Round top	180x180 Square top	140, 170 Round top	180x180 Square top	140, 170 Round top	180x180 Square top
Temp. Control	Max. temp. (/)	350 / 662		350 / 662		350 / 662	
	Heating power (W)	600	800	600	800	600	800
Speed control	Speed range (rpm)	-		50 to 2000		30 to 2000	
	Stirring position (250ml flask)	-		1		1	
	Capacity (L, H2O)	-		20		20	
Control	Display & Control interface	LED digital (0.1 resolution)		Analog-knob		LED digital (0.1 resolution)	
	PID feedback control	O		-		O	
	Timer	Wait on/off		-		Wait on/off	
	Auto-tuning	O		-		O	
	External temperature probe	-		-		O (PT100, max.250)	
Safety	Over temp. limit	O		O		O	
	Over current limit	O		O		O	
	Hot top warning lamp at 50	O		O		O	
	High/Low temperature limit	O		-		O	
	Protection class (DIN EN 60529)	-		-		-	

Product Name		Overhead Stirrers (Analog)	Overhead Stirrers (Digital)	Overhead Stirrers (Advanced)	
Model		MSA	MSD	MSH	
Speed control	Speed range (rpm)	80 to 2000	80 to 2000	50 to 1200	50 to 2000
	Stirring capacity, Max. (L, H2O)	20	20	100	60
	Torque, Max. (N·cm)	19	19	41.6	20.8
	Motor rating output (W)	40	40	48	
	Viscosity, Max. (cP) (using 3-bladed propeller impeller, Ø50)	5,000 (~2000 rpm) 10,000 (~1200 rpm) 30,000 (~300 rpm) 50,000 (~200 rpm)	5,000 (~2000 rpm) 10,000 (~1200 rpm) 30,000 (~300 rpm) 50,000 (~200 rpm)	5,000 (~1200 rpm) 10,000 (~1200 rpm) 30,000 (~1200 rpm) 50,000 (~700 rpm)	5,000 (~2000 rpm) 10,000 (~1600 rpm) 30,000 (~600 rpm) 50,000 (~300 rpm)
	Chuck range (mm)	3 to 10	3 to 10	3 to 10	
Control	Display & Control interface	Touch FND, Analog knob	Touch FND, Digital knob	Touch LCD, Digital knob	
	PID feedback control	O	O	O	
	Timer	-	Wait off	Wait off	
	External controller	-	-	O	
	Computer interface	-	USB port	USB port	
	JeioTech network	-	O	O	
Safety	Over temp. limit	O	O	O	
	Over current limit	O	O	O	
	Motor temp. warning	-	O	O	
	Best effort run	-	O	O	
	Protection class (DIN EN 60529)	IP 30	IP 30	IP 30	

Hotplate Stirrers (Multi-position)		Magnetic Stirrers (Scale)		Magnetic Stirrers (Digital)	Magnetic Stirrers (Multi-position)
MS-33MH	MS-53MH	MS-B	MS-T	MS-G	MS-M
Aluminum		Polypropylene with non-slip silicon cover		Polypropylene with non-slip silicon cover	Aluminum
385x328	385x493	120, 170, 200	115, 165	170, 220	-
120 / 248		-		-	-
600	1000	-		-	-
30 to 2000		150 to 2500		30 to 2000	30 to 2000
9	15	1		1	2x3, 3x2, 3x3, 5x1, 5x2, 5x3
0.5 per each point		2, 4, 5		4, 5	250ml per each point
VFD, LED position indicator, Knob		No display, Knob		VFD, Touch buttons, Knob	VFD, LED position indicator, Touch buttons, Knob
O		-		O	O
Wait off		-		Wait off	Wait off
-		-		-	-
-		-		-	-
O		-		-	-
O		O		O	O
-		-		-	-
-		-		-	-
-		IP42		IP42	IP 21

Hotplates

CE | CSA c US | RoHS Compliant | Dual Timer | 1 Point Temperature Calibration | Over Temp. | HOT TOP

Superior temperature control with various safety functions.

Two different shapes of top plate are available for your optimum use
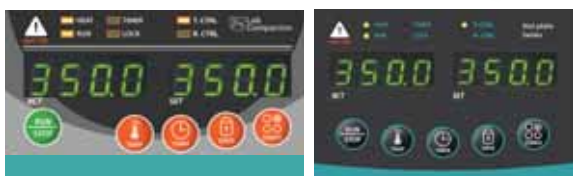
T-17S / 14R   T-18Q

Optional accessories
see page **174-175**

- Heating bath (for T-S/R)
- Transparent shield (for T-S/R)
- Support rods

Performance & Convenience

- Microprocessor PID temperature control.

- Auto-tuning and temperature calibration functions.

- Multi-functional temperature control modes.
  (optimal / fast / slow / user / point)

- Optimum heating level is adjustable from 0 to 100%.

- Integrated design of the heater and the top plate provides exceptional heat transfer rate and quick heat up capability.

- Precise temperature is set by digital display and optimum heating level is adjustable.

- Advanced dual wait on/off timer modes.
  - User can set timer to starts immediately after the timer setting or only after reaching the set temp.

- Separate operation RUN/STOP button.

- Non-slip heating bath with concavo-convex bottom prevents unintentional slips of the bath. (except for T-18Q, optional)

- A transparent safety shield protects users from liquid splashes. (except for T-18Q, optional)

- Support rod allows for diverse flexibility in configuring other test equipment and accessories. (optional)

Safety

- Built in thermal shut off and current limit protection.

- High and low temperature limit setting for user convenience and safety.

- Hot top warning indicator for preventing accidental injuries.

- Keypad lock function prevents accidental changes during operation.

	Model	T-14S	T-14R	T-17S	T-17R	T-18Q
Heating	Temperature range (/)	Max. 350 / 662				
	Control	Feedback control with PID				
	Display	LED digital (0.1 resolution)				
	Heating power (W)	600		800		
Safety	Hot top indicator (/)	Warning lamp (50 / 122)				
	Over temp.	Top plate / Main body / PCB				
	Over current	Current limit protection				
Timer		2 type, 1min. to 99 hr. 59 min.				
Load, Max. (kg / lbs)		25 / 55.1				
Top plate	Shape	Round type				Square type
	Material	Ceramic coated aluminum				
	Dimension (Ø or WxD) (mm / inch)	140 / 5.5		170 / 6.7		180x180 / 7.08x7.08
Body	Shape	Straight body	Round handles	Straight body	Round handles	Straight body
	Material	Aluminum				
	Dimension (WxDxH) (mm / inch)	161x290x100 / 6.34x11.42x3.94	210x294x99 / 8.27x11.57x3.90	191x330x101 / 7.52x12.99x3.98	240x324x100 / 9.45x12.76x3.94	209x326x102 / 8.22x12.83x4.0
Net weight (kg / lbs)		2.2 / 4.9	2.4 / 5.3	2.9 / 6.4	3 / 6.6	3.8 / 8.37
Electrical requirements (230V, 50/60Hz)		3.0 A		4.0 A		
Cat. No.		AAH35015K	AAH35115K	AAH35025K	AAH35125K	AAH35035K
Electrical requirements (120V, 60Hz)		5.0 A		6.7 A		
Cat. No.		AAH35013U	AAH35113U	AAH35023U	AAH35123U	AAH35033U

Permissible environmental conditions: temperature (5 - 40) and relative humidity (up to 80%).
CSA except for T-18Q.   RoHS for T-14S.
FDA establishment registered company. FDA listed products.

CE | C CSA US | RoHS Compliant | Over Temp. | HOT TOP
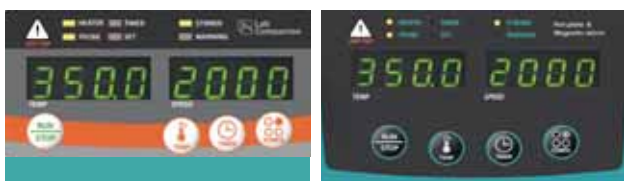
Performance & Convenience

- Integrated design of the heater and the top plate provides exceptional heat transfer rate and quick heat up capability.
- Fast and precise stirring operations are enabled by BLDC motor and special magnet with extremely strong magnetic coupling power.
- Instant halt of the stirring operation due to the exceptionally fast response characteristics.
- Smooth-start mechanism provides virtually no decoupling of stir bars even with viscous media.
- Large stirring capacity up to 20 liter in case of water.
- Non-slip heating bath with concavo-convex bottom prevents unintentional slips of the bath. (except for TM-18Q, optional)
- A transparent safety shield protects users from liquid splashes. (except for TM-18Q, optional)
- Support rod allows for diverse flexibility in configuring other test equipment and accessories. (optional)

Safety

- Built in thermal shutdown and current limit protection.
- Hot top warning Indicator for preventing accidental injuries.

Easy to control with simple dial knobs for general lab heating and stirring applications.
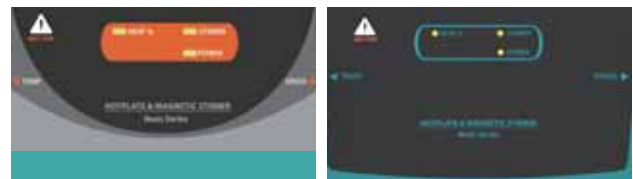
TM-14RB/17SB   TM-18Q

Optional accessories
see page **174-175**

- Heating bath (for TM-SB/RB)
- Transparent shield (for TM-SB/RB)
- Support rods, Magnetic stirring bars

	Model	TM-14SB	TM-14RB	TM-17SB	TM-17RB	TM-18Q
Heating	Temperature range (/)	Max. 350 / 662				
	Control	Scale				
	Heating power (W)	600		800		
Stirring	Speed range (rpm)	50 to 2,000				
	Capacity (L / cu ft, H₂O)	20 / 0.71				
	Magnetic bar, Max. (ØxL, mm / Inch)	8 x 40 / 0.31 x 1.57				
Safety	Hot top indicator (/)	Warning lamp (50 / 122)				
	Over temp.	Top plate / Main body / PCB				
	Over current	Current limit protection				
Motor		BLDC motor				
Load, Max. (kg / lbs)		25 / 55.12				
Top plate	Shape	Round type				Square type
	Material	Ceramic coated aluminum				
	Dimension (Ø or WxD) (mm / inch)	140 / 5.51		170 / 6.69		180x180 / 7.08x7.08
Body	Shape	Straight body	Round handles	Straight body	Round handles	Straight body
	Material	Aluminum				
	Dimension (WxDxH) (mm / inch)	161x290x100 / 6.34x11.42x3.94	210x294x99 / 8.27x11.57x3.9	191x330x101 / 7.52x12.99x3.98	240x324x100 / 9.45x12.76x3.94	209x326x102 / 8.22x12.83x4.0
Net weight (kg / lbs)		2.8 / 6.17	3 / 6.61	3.5 / 7.72	3.6 / 7.94	3.8 / 8.37
Electrical requirements (230V, 50/60Hz)		3.0 A			4.0 A	
Cat. No.		**AAH34215K**	**AAH34315K**	**AAH34225K**	**AAH34325K**	**AAH34235K**
Electrical requirements (120V, 60Hz)		5.0 A			6.7A	
Cat. No.		**AAH34213U**	**AAH34313U**	**AAH34223U**	**AAH34323U**	**AAH34233U**

Permissible environmental conditions: temperature (5-40) and relative humidity (up to 80%).
CSA except for TM-18Q.   RoHS for TM-14SB.
FDA establishment registered company. FDA listed products.

CE | CSA C US | RoHS Compliant | Dual Timer | External Sensor | 1 Point Temperature Calibration | Over Temp. | HOT TOP

Digital heating and stirring control with high advanced features such as auto-tuning and various control modes.

TS-17S   TS-18Q

Standard accessories
see page 174-175
• Temperature probe
(PT100, max.250)

Performance & Convenience

• Microprocessor PID temperature control.

• Feedback control allows constant stirring speed.

• Auto-tuning and temperature calibration functions.

• Multi-functional temperature control modes.
(optimal / fast / slow / user / point)

• Optimum heating level is adjustable from 0 to 100%.

• Integrated design of the heater and the top plate provides exceptional heat transfer rate and quick heat up capability.

• Fast and precise stirring operations are enabled by BLDC motor and special magnet with extremely strong magnetic coupling power.

• Smooth-start mechanism provides virtually no decoupling of stir bars even with viscous media.

• Instant halt of the stirring operation.

• Precise temperature is set by digital display and optimum heating level is adjustable.

• Advanced dual wait on/off timer modes.
- User can set timer to starts immediately after the timer setting or only after reaching the set temp.

• Separate operation RUN/STOP button.

• Provided temperature probe detects the actual temperature of media in real time. (PT100, max. 250 , SN-8-4 connector sensor)

Safety

• Hot top warning Indicator, built in thermal shut off, current limit protection.

• High and low temperature limit setting for user convenience and safety.

	Model	TS-14S	TS-17S	TS-18Q
Heating	Temperature range (/)	Max. 350 / 662		
	Control	Feedback control with PID		
	Display	LED digital (0.1 resolution)		
	Heating power (W)	600	800	800
Stirring	Speed range (rpm)	30 to 2,000		
	Capacity (L / cu ft, H₂O)	20 / 0.71		
	Magnetic bar, Max. (ØxL, mm / Inch)	8 x 40 / 0.31 x 1.57		
Safety	Hot top indicator (/)	Warning lamp (50 / 122)		
	Over temp.	Top plate / Main body / PCB		
	Over current	Current limit protection		
Motor		BLDC motor		
Timer		2 type, 1min. to 99 hr. 59 min.		
Load, Max (kg / lbs)		25 / 55.1		
Top plate	Shape	Round type		Square type
	Material	Ceramic coated aluminum		
	Dimension (Ø or WxD) (mm / inch)	140 / 5.51	170 / 6.69	180x180 / 7.08x7.08
Body	Shape	Straight body		
	Material	Aluminum		
	Dimension (WxDxH) (mm / inch)	161x290x100 / 6.34x11.42x3.94	191x330x101 / 7.52x12.99x3.98	209x326x102 / 8.22x12.83x4.0
Net weight (kg / lbs)		2.8 / 6.17	3.5 / 7.72	3.8 / 8.37
Electrical requirements (230V, 50/60Hz)		3.0 A	4.0 A	
Cat. No.		AAH34415K	AAH34425K	AAH34435K
Electrical requirements (120V, 60Hz)		5.0 A	6.7A	
Cat. No.		AAH34413U	AAH34423U	AAH34433U

Permissible environmental conditions: temperature (5-40) and relative humidity (up to 80%).
CSA except for TS-18Q.   RoHS except for TS-17S, 18Q.
FDA establishment registered company. FDA listed products.

Performance & Convenience

· Ideal for the multiple sample testing under the same condition.
  - Maximum 15 independently controlled stirring positions on one heated top plate.

· Speed and time setting modes allowing various ways of multi-position stirring to meet users' demands: single point, multiple point, whole row, whole column, etc.

· Integrated design of the heater and the top plate provides exceptional heat transfer rate and quick heat up capability.

· Fast and precise stirring operations are enabled by BLDC motor and special magnet with extremely strong magnetic coupling power.

· Smooth-start mechanism provides virtually no decoupling of stir bars even with viscous media.

· Instant halt of the stirring operation.

· Easy-to-read VFD and intuitive control panel.

· Bright and vivid LED stirring position indicating lamps and heating operation lamp for stable operations.

· High heat transfer aluminum top-plate.

Safety

· Unit is safely designed to protect internal components from accidental spills.

· Non-slip silicon plate mat is attached on the top plate to prevent unintended slips

· Built in thermal shut off and current limit protection.

Simultaneous independent stirring is available at max. 15 points with stable heating.

MS-33MH / MS-53MH

Optional accessories
see page **174-175**

· Magnetic stirring bars
· Plastic retrievers

Model		MS-33MH		MS-53MH	
Heating	Temperature range (/)	Max. 120 / 248			
	Control	Scale			
	Heating power (W)	600		1000	
Stirring	Speed range (rpm)	30 to 2,000			
	Control	Feedback control with PID			
	Stirring position	9		15	
	Stirring point distance (WxD, mm / inch)	117x90 / 4.61x3.54			
	Timer	1min. to 99 hr. 59 min.			
	Motor	BLDC motor			
	Motor rating input / output (W) per each point	2.9/1.6			
	Magnetic bar, Max. (ØxL, mm / inch)	8x30 / 0.31x1.18			
Safety	Over temp.	Top plate			
	Over current	Current limit protection			
Load, Max (kg / lbs)		30 / 66.14			
Top plate	Material	Aluminum			
	Dimension (WxD) (mm / inch)	385x328 / 15.16x12.91		385x493 / 15.16x19.41	
Body	Material	Powder coated steel			
	Dimension (WxDxH) (mm / inch)	395x450x104 / 15.55x17.72x4.09		395x614x104 / 15.55x24.17x4.09	
Net weight (kg / lbs)		10 / 22.05		15 / 33.06	
Electrical requirements (230V, 50/60Hz)		4.1 A		5.8 A	
Cat. No.		**AAHK34015K**		**AAHK34025K**	
Electrical requirements (120V, 60Hz)		8.0 A		11.2 A	
Cat. No.		**AAHK34013U**		**AAHK34023U**	

FDA establishment registered company. FDA listed products.

Powerful magnets and motors guarantee a high-speed and a good-management of the devices.

MS-B / T

MS-G

MS-M with optional plate mat

All models (MS-B/T, MS-G, MS-M)

- Ergonomic designed, lightweight, easy to operate, and low profile.
- Best-in-the-class with broad speed range and suitable for high-speed rotation experimental environment.
- Spark-less, silent and durable BLDC motor.
- Wide top plate.
- Two non-slip silicon plate covers (white & black) provided for MS-B, T, G.
- Non-slip strength rubber feet.
- Strong magnetic coupling to ensure constant stirring.

Digital models (MS-G)

- Digital PID feedback control for reproducible stirring results.
- Convenient program control.
- Gradual start-up to protect users against splashing of samples.
- Bright and vivid VFD and responsive touch buttons.
- Easy-settable digital timer (1 min. to 99hr. 59min.)
- M10 threaded hole to hold a support rod.

Multi-position models (MS-M)

- Digital PID feedback control for every single point, separately.
- Speed and time setting modes allowing various ways of multi-position stirring to meet users' demands: single point, multiple point, whole row, whole column, etc.
- Easy-to-read VFD and intuitive control panel.
- Bright and vivid LED position indicating lamps.
- Non-slip see-through silicon plate mat. (optional)
- Chemical-resistant #304 grade stainless steel top-plate.

Safety

- Unit is safely designed to protect internal components from accidental spills.
- Built-in thermal shutdown and current limit protection.

Standard accessories (except for MS-M)	• Plate covers(white & black) • Magnetic stirring bar
Optional accessories see page 174-175	• Silicone plate mats • Plastic retrievers

Model		MS-12B	MS-12T	MS-17B	MS-17T	MS-22B
Technical data	Speed control	Electronic speed control				
	Stirring capacity (Liter, H$_2$O)	2		4		5
	Speed range (rpm)	150 to 2,500				
	Speed display	None				
	Motor rating input / output (W)	2.9 / 1.6				
	Magnetic bar, Max. (Ø×L) (mm / inch)	8×30 / 0.31×1.18	8×30 / 0.31×1.18	8×40 / 0.31×1.57	8×30 / 0.31×1.18	10×50 / 0.39×1.97
	Load, max (kg / lbs)	15 / 33.07	10 / 22.05	20 / 44.09	20 / 44.09	25 / 55.12
Top plate	Material	Polypropylene with non-slip silicon cover				
	Dimension (Ø, mm / inch)	120 / 4.72	115 / 4.53	170 / 6.69	165 / 6.5	220 / 8.66
General data	Body shape	Round type	Triangle type	Round type	Triangle type	Round type
	Body material	Polypropylene				
	Dimension (W×D×H) (mm / inch)	130×133×65 / 5.1×5.2×2.56	181×176×64 / 7.1×6.9×2.5	180×186×65 / 7.1×7.3×2.6	246×243×64 / 9.7×9.6×2.5	230×235×65 / 9.1×9.3×2.6
	Net weight (kg / lbs)	0.6 / 1.32		0.9 / 1.98		1.1 / 2.43
	Electrical requirements	AC 100 ~ 240V, 50 / 60Hz with power adapter				
	Power consumption (W)	5		6		
	Protection class (DIN EN 60529)	IP42				
Cat. No.	Persian blue — KR plug	AAH330115BK	AAH333115BK	AAH330215BK	AAH333215BK	AAH330315BK
	Persian blue — US plug	AAH330115BU	AAH33316BU	AAH330215BU	AAH33326BU	AAH330315BU
	Orange — KR plug	AAH330115YK	AAH333115RK	AAH330215YK	AAH333215RK	AAH330315YK
	Orange — US plug	AAH330115YU	AAH33316RU	AAH330215YU	AAH33326RU	AAH330315YU

RoHS except for MS-T.
FDA establishment registered company. FDA listed products.

Model		MS-17G	MS-22G
Technical data	Speed control	Feedback control with PID	
	Stirring capacity (Liter, H$_2$O)	4	5
	Speed range (rpm)	30 to 2,000	
	Speed display	VFD	
	Motor rating input / output (W)	2.9 / 1.6	
	Magnetic bar, Max. (Ø×L) (mm / inch)	8×40 / 0.31×1.57	10×50 / 0.39×1.97
	Load, Max (kg / lbs)	20 / 44.09	25 / 55.12
Top plate	Material	Polypropylene with non-slip silicon cover	
	Dimension (Ø, mm / inch)	170 / 6.69	220 / 8.66
General data	Body material	Polypropylene	
	Dimension (W×D×H) (mm / inch)	210×280×72 / 8.3×11×2.8	260×355×72 / 10.2×14×2.8
	Net weight (kg / lbs)	1.35 / 2.98	1.75 / 3.86
	Electrical requirements	AC 100 ~ 240V, 50 / 60Hz	
	Power consumption (W)	6	
	Protection class (DIN EN 60529)	IP42	
Cat. No.	Persian blue — KR plug	AAH331215BK	AAH331315BK
	Persian blue — US plug	AAH331215BU	AAH331315BU
	Orange — KR plug	AAH331215YK	AAH331315YK
	Orange — US plug	AAH331215YU	AAH331315YU

FDA establishment registered company. FDA listed products.

Model			MS-23M	MS-32M	MS-33M	MS-51M	MS-52M	MS-53M
Technical data	Speed control		Feedback control with PID					
	Stirring	Position	6	6	9	5	10	15
		Speed range (rpm)	30 to 2,000					
	Stirring point distance (W×D) (mm / inch)		117×170 / 4.6×6.69	117×90 / 4.6×3.54	117×90 / 4.6×3.54	90 / 3.54	117×90 / 4.6×3.54	
	Timer		1 min. to 99 hr. 59 min.					
	Speed display		VFD					
	Motor rating input / output (W) per each point		2.9 / 1.6					
	Load, Max (kg / lbs)		30 / 66.14					
General data	Dimension (W×D×H) (mm / inch)		377×436×82 / 14.8×17.2×3.2	254×436×82 / 10×17.2×3.2	377×436×81 / 14.8×17.2×3.2	131×603×82 / 5.2×23.7×3.2	254×602×82 / 10×23.7×3.2	377×599×82 / 14.9×23.6×3.2
	Weight (kg / lbs)		6 / 13.23	5 / 11.02	7 / 15.43	4 / 8.82	8 / 17.64	11 / 24.25
	Electrical requirements		AC 100 ~ 240V, 50 / 60Hz					
	Power consumption (W)		45	45	54	45	85	135
	Protection class (DIN EN 60529)		IP 21					
Cat. No.	KR plug		AAH332115K	AAH332215K	AAH332315K	AAH332415K	AAH332515K	AAH332615K
	US plug		AAH332115U	AAH332215U	AAH332315U	AAH332415U	AAH332515U	AAH332615U

FDA establishment registered company. FDA listed products.

Accessories & Options

Magnetic stirring bars

Octahedral magnetic stirring bar

Cat. No.	Ø (mm / inch)	L (mm / inch)
BCW1513	8 / 0.31	13 / 0.51
BCW1515	8 / 0.31	15 / 0.59
BCW1522	8 / 0.31	22 / 0.86
BCW1525	8 / 0.31	25 / 0.98
BCW1528	8 / 0.31	28 / 0.10
BCW1538	8 / 0.31	38 / 1.49
BCW1541	8 / 0.31	41 / 1.61
BCW1551	8 / 0.31	51 / 2.00
BCW155110	10 / 0.39	51 / 2.00

Cylindrical magnetic stirring bar

Cat. No.	Ø (mm / inch)	L (mm / inch)
BCW11138	8 / 0.31	13 / 0.51
BCW11156	6 / 0.23	15 / 0.59
BCW11208	8 / 0.31	20 / 0.78
BCW11258	8 / 0.31	25 / 0.98
BCW11308	8 / 0.31	30 / 1.18
BCW1140	8 / 0.31	40 / 1.57
BCW1150	8 / 0.31	50 / 1.96

Oval magnetic stirring bar

Cat. No.	Ø (mm / inch)	L (mm / inch)
BCW1610	5 / 0.19	10 / 0.39
BCW1615	6 / 0.23	15 / 0.59
BCW1620	10 / 0.39	20 / 0.78
BCW162510	10 / 0.39	25 / 0.98
BCW1630	16 / 0.63	30 / 1.18
BCW1635	16 / 0.63	35 / 1.38
BCW1640	20 / 0.78	40 / 1.57
BCW1650	20 / 0.78	50 / 1.96

Plastic retrievers

Plastic retriever (PP)

Cat. No.	Ø (mm / inch)	L (mm / inch)
BCW41300	10 / 0.39	300 / 11.81
BCW41350	10 / 0.39	350 / 13.77
BCW41450	10 / 0.39	450 / 17.71

Plastic retriever (PTFE)

Cat. No.	Ø (mm / inch)	L (mm / inch)
BCW4150	10 / 0.39	150 / 5.90
BCW4250	10 / 0.39	250 / 9.84
BCW4350	10 / 0.39	350 / 13.77
BCW4450	10 / 0.39	450 / 17.71

Support rod / Clamp holders
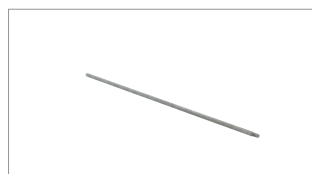
Support rod (M10)

Clamp holder (C-10)

Clamp holder (C-7)

Clamp holder (C-5)

Cat. No.	Description
MTT0132	Support rod, M10 (Ø12×400mm / Ø0.47x15.75″)
AAA37512	Clamp holder, C-10 (Al body, Ø17mm / Ø0.66″)
AAA37513	Clamp holder, C-7 (Al body, Ø12mm / Ø0.47″)
AAA37514	Clamp holder, C-5 (PP body, Ø12mm / Ø0.47″)
BEA1000014	2 Prong clamp (60mm / 2.36″ grip)

for Hotplates / Hotplate Stirrers
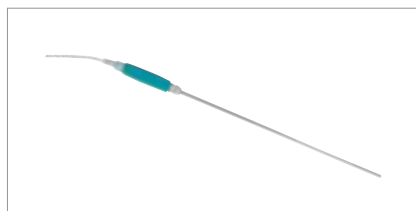
Temperature probe

Heating bath

Transparent safety shield

Cat. No.	Description	Suitable for
AAA34501	Temperature Probe (PT 100, Max. 250 , SN-8-4 connector sensor)	TS series
AAA34502	Temperature Probe (PT 100, Max. 350 , SN-8-4 connector sensor)	
HPS0012	Heating Bath	T-14S/R, TM-14SB/RB, TS-14S
HPS0015	Heating Bath	T-17S/R, TM-17SB/RB, TS-14S
HPS0059	Transparent Safety Shield (PC)	T-14S/R, TM-14SB/RB, TS-14S
HPS0039	Transparent Safety Shield (PC)	T-17S/R, TM-17SB/RB, TS-17S
HPS0137	Sensor Holder (PP body, Hole 1: Ø11mm / Ø0.43˝, Hole 2: Ø10mm / Ø0.39˝, Hole 3: Ø4.2mm / Ø0.16˝)	TS series

for Magnetic Stirrers

Plate covers (black & white)

Silicone pad

Power divider (5 channels[1])

Cat. No.	Description	Suitable for
MTT0144	Plate cover (White color, Silicone Ø115mm / Ø4.53˝)	MS-12T
MTT0146	Plate cover (White color, Silicone Ø165mm / Ø6.49˝)	MS-17T
MTT0002	Plate cover (White color, Silicone Ø120mm / Ø4.72˝)	MS-12B
MTT0003	Plate cover (White color, Silicone Ø170mm / Ø6.69˝)	MS-17B/G
MTT0004	Plate cover (White color, Silicone Ø220mm / Ø8.66˝)	MS-22B/G
MTT0143	Plate cover (Black color, Silicone Ø115mm / Ø4.53˝)	MS-12T
MTT0145	Plate cover (Black color, Silicone Ø165mm / Ø6.49˝)	MS-17T
MTT0005	Plate cover (Black color, Silicone Ø120mm / Ø4.72˝)	MS-12B
MTT0006	Plate cover (Black color, Silicone Ø170mm / Ø6.69˝)	MS-17B/G
MTT0007	Plate cover (Black color, Silicone Ø220mm / Ø8.66˝)	MS-22B/G
MTS0015	Silicone pad (355×475×1mm / 13.98x18.70x0.04˝)	MS-53M
MTS0016	Silicone pad (235×475×1mm / 9.25x18.70x0.04˝)	MS-52M
MTS0017	Silicone pad (115×475×1mm / 4.53x18.70x0.04˝)	MS-51M
MTS0041	Silicone pad (235×310×1mm / 9.25x12.20x0.04˝)	MS-32M
MTS0042	Silicone pad (355×310×1mm / 13.98x12.20x0.04˝)	MS-23M/33M
MTT0001	Power adapter (100~240V, 50/60Hz)	MS-12B/T, MS-17B/T
AAH33501	Power divider (5 channels) [1] with M10 rod, adapter(100~240V, 50/60Hz), five DC plugs	

1) Power supply to max. five units at the same time.

Hotplates & Stirrers

CE | Over Temp.

Powerful stirring and simple operation with sustainable economic benefits.

Performance & Convenience

- Years of vibration-free and silent operation.
  - Equipped with a maintenance-free BLDC motor to generate smooth, quiet, and yet powerful stirring.
- Powerful torque capable of handling high viscosity tasks.
- Maintenance of constant motor speed by PID feedback control system even under conditions of changing viscosity.
- Prevention of accidental spills or splashes thanks to micro-processor controlled smooth start and stop functions.
- Designed for simple and quick operation.
- Well illuminated digital display panel with sensitive touch buttons.
  - Set/present rpm are visible together on one screen.
- Compact and slim head design for diverse flexibility in configuring other test equipment and accessories. (optional)

Safety

- Sturdy aluminum main body efficiently absorbing and emitting the heat generated by the motor.
- Safety features against overload and overheating for continuous operation.

MSA-0420

Optional accessories
see page **180-181**

- Impellers
- Stands, Support rods
- Clamps, Stirring seals

Model	MSA-0420		
Speed control	PID feedback control		
Speed range (rpm)	80 to 2,000		
Chuck range (mm / inch, dia)	3 to 10 / 0.1 to 0.4		
Stirring capacity, Max. (L, H$_2$O)	20		
Viscosity, Max. (cP) [1]	5,000 (~2,000rpm) / 10,000 (~1,200rpm) / 30,000 (~300rpm) / 50,000 (~200rpm)		
Torque, Max. (N·cm)	19		
Motor rating input / output (W)	70 / 40		
Material	Body / Cover / Motor	Powder coated aluminum / Polypropylene / BLDC	
Dimension	Overall (W×D×H) (mm / inch)	75x215x150/ 2.9x8.5x5.9	
	Net weight (Kg / lbs)	2.8 / 6.2	
Protection class (DIN EN 60529)	IP30		
Electrical requirements (230V 50/60Hz)	0.5A		
Cat. No.	AAH373325K		
Electrical requirements (120V 60Hz)	0.5A		
Cat. No.	AAH373325U		

1) Silicone oil with using 3-bladed propeller impeller(Ø50) under room temperature of 26   , 60%RH.
  Permissible environmental conditions: temperature (5-40   ) and relative humidity (up to 80%).
  Main body comes together with chuck handle and attaching rod.
  Above specifications can be changed without prior notice.

CE Computer Interface Best Effort *Run* Over Temp.

Performance & Convenience

· Years of vibration-free and silent operation.
  - Equipped with a maintenance-free BLDC motor to generate smooth, quiet, and yet powerful stirring.

· Powerful torque capable of handling high viscosity tasks.

· Maintenance of constant motor speed by PID feedback control system even under conditions of changing viscosity.

· Best effort function intelligently manages its stirring speed to keep stirring even workload is out of its capacity.

· Prevention of accidental spills or splashes thanks to micro-processor controlled smooth start and stop functions.

· Well illuminated digital display panel with sensitive touch buttons.
  - Set/present rpm, power ratio (%) and run time are visible together on one screen.

· Stirring directions are selectable depending on each impeller's shape.

· Remote control and monitor of lab equipment through mobile devices. (Android base only)
  - JeioTech network can be configured by installing an included software (Jeiotechsoft). You can monitor your lab equipment through your mobile device regardless of place and time.

· Built-in USB port for external control and data collection.
  - Software CD and USB cable are provided as standard.

· Compact and slim head design for diverse flexibility in configuring other test equipment and accessories. (optional)

Safety

· Sturdy aluminum main body efficiently absorbing and emitting the heat generated by the motor.

· Safety features against overload and overheating for continuous operation.

· Keypad lock function prevents accidental changes.

Ideal for digital controlled high performance stirring task.

Intelligent speed controller enables reproducible results under varying viscosity condition.

PV SV JeioTech Network **REMOTE CONTROL** with your **MOBILE DEVICE**

CW CCW

MSD-0420

Standard accessories

· Impellers, Stands, Support rods
· Clamps, Stirring seals

Model		MSD-0420
Speed control		PID feedback control
Speed range (rpm)		80 to 2,000
Chuck range (mm / inch, dia)		3 to 10 / 0.1 to 0.4
Stirring capacity, Max. (L, H₂O)		20
Viscosity, Max. (cP) [1]		5,000 (~2,000rpm) / 10,000 (~1,200rpm) / 30,000 (~300rpm) / 50,000 (~200rpm)
Torque, Max. (N·cm)		19
Motor rating input / output (W)		70 / 40
Material	Body / Cover / Motor	Powder coated aluminum / Polypropylene / BLDC
Dimension	Overall (W×D×H) (mm / inch)	75x215x150 / 2.9x8.5x5.9
	Net weight (Kg / lbs)	2.8 / 6.2
Protection class (DIN EN 60529)		IP30
Electrical requirements (230V 50/60Hz)		0.5A
Cat. No.		AAH373225K
Electrical requirements (120V 60Hz)		0.5A
Cat. No.		AAH373225U

1) Silicone oil with using 3-bladed propeller impeller(Ø50) under room temperature of 26 , 60%RH.
 Permissible environmental conditions: temperature (5-40) and relative humidity (up to 80%).
 Main body comes together with chuck handle and attaching rod.
 Above specifications can be changed without prior notice.

Ideally perform your professional stirring tasks requiring high functionality, safety, and longevity.

Prestige touch LCD controller and remote control systems add it's superiority.

REMOTE CONTROL
with your **MOBILE DEVICE**
see page 8-9

JeioTech Network

Monitor and control overhead stirrers more convenient!

JeiotechsoftM
(Jeio Tech mobile APP)

Remote control through Internet-enabled devices. (Android only)

Anywhere and anytime! Even when you are out of your country, you can conveniently control and monitor MSH base on Internet connection.

Bluetooth broadcaster
(optional)

Remote control with Bluetooth-enabled devices. (Android only)

You can safely monitor and control MSH within Bluetooth-enabled area.

External controller
(optional)

No Internet and Bluetooth connection are required.

With use of this cable type external controller itself, real time external control of MSH without opening the enclosure's door is available.

MSH-0512

Standard accessories see page 180-181	• Bluetooth broadcaster, External controller (cable type)
	• Impellers, Stands, Support rods
	• Clamps, Stirring seals

Performance

• Years of vibration-free and silent operation.
  - Equipped with a maintenance-free BLDC motor to generate smooth, quiet, and yet powerful stirring.

• Powerful torque capable of handling high viscosity tasks.

• Maintenance of constant motor speed by PID feedback control system even under conditions of changing viscosity.

• Best effort function intelligently manages its stirring speed to keep stirring even workload is out of its capacity.

• Prevention of accidental spills or splashes thanks to microprocessor controlled smooth start and stop functions.

Convenience

• Touch type LCD controller.
  - Various essential information are visible at once and intuitionally controlled.
  - Set/present rpm and run time view, simple timer set. (max. 99 hr. 59 min.)
  - Varying motor torque is indicated on display in real time.
  - Motor temperature condition is indicated on display by three different colors to protect motor.
  - Stirring directions are selectable depending on each impeller's shape.

• Remote control and monitor of lab equipment through mobile devices. (Android only)
  - JeioTech network can be configured by installing an included software(Jeiotechsoft). You can monitor your lab equipment through your mobile device regardless of place and time.

  - Bluetooth broadcaster(optional) enables remote control and monitor of your lab equipment thought your mobile device within Bluetooth-enabled area.

• Practical external controller. (optional)
  - Intuitive and easy control with color touch LCD.
  - It enables convenient and safe external control without opening the sash of the fume hood or safety cabinet.

• Built-in USB port for external control and data collection.
  - Useful for PC control and data management task.
  - Software CD and USB cable are provided as standard.

• Compact and slim head design for diverse flexibility in configuring other test equipment and accessories. (optional)

Safety

• Sturdy aluminum main body efficiently absorbing and emitting the heat generated by the motor.

• Safety features against overload and overheating for continuous operation.
  - When it comes to heavy workload, it tries to activate best effort function.
    But if it determines that performing the work is harmful for it, than it stops stirring.
  - Equipped with a mini fan inside to minimize overheating of the motor.

• Separated adapter from the main body minimizes the risks of electrical hazards to the users.

• Screen lock function prevents accidental changes during operation.

Model		MSH-0512	MSH-0520
Speed control		PID feedback control	
Speed range (rpm)		50 to 1,200	50 to 2,000
Chuck range (mm / inch, dia)		3 to 10 / 0.1 to 0.4	
Stirring capacity, Max. (L, H₂O)		100	60
Viscosity, Max. (cP) [1]		5,000 (~1,200rpm) 10,000 (~1,200rpm) 30,000 (~1,200rpm) 50,000 (~700rpm)	5,000 (~2,000rpm) 10,000 (~1,600rpm) 30,000 (~600rpm) 50,000 (~300rpm)
Torque, Max. (N·cm)		41.6	20.8
Motor rating input / output (W)		71 / 48	
Material	Body / Cover / Motor	Powder coated aluminum / Polypropylene / BLDC	
Dimension	Overall (W×D×H) (mm / inch)	80x185x235 / 3.1x7.3x9.3	
	Net weight (Kg / lbs)	3.1 / 6.8	
Protection class (DIN EN 60529)		IP30	
Electrical requirements		AC 100 to 240V, 50/60Hz with power adapter	
Power consumption (W)		1.5 A	1.5 A
Cat. No.	KR Plug	**AAH371415K**	**AAH371515K**
	US Plug	**AAH371415U**	**AAH371515U**

1) Silicone oil with using 3-bladed propeller impeller(Ø50) under room temperature of 26 , 60%RH.
   Permissible environmental conditions : temperature (5-40) and relative humidity (up to 80%).
   Main body comes together with chuck handle and attaching rod.
   Above specifications can be changed without prior notice.

Accessories & Options

Impellers

Propeller impellers	Turbine impellers	Half-moon impellers / Centrifugal impellers	Anchor impellers / Paddle impellers
Standard grade stainless steel with Teflon shaft produces an-axial flow stir between the bot-tom and top levels of a sample with local shearing force. Used at medium or high speeds for mixing normal range level viscosity samples.	A radial flowing stir from the top and bottom levels of a sample with a powerful, high shearing turbulent force. Used ideally for the gassing of liquids and mixing medium to high range level viscosity samples.	Tiltable moon-shaped and blade shaft produces a normal axial flow percentage mixing of samples. Used with round bo-ttom shaped containers, medium mixing speed, and samples ranging from low to medium visco-sity levels.	An anchored shaft that prod-uces a strong tangential flow with a high shearing percentage force on samples with medium to high viscosity level with speed setting in the low to medium range.

Stainless steel impellers

Propeller (3-bladed / 4-bladed)

Turbine / Dissolver

Half-moon / Centrifugal
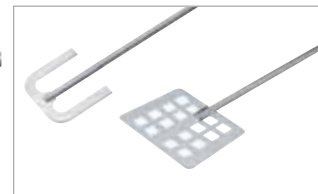
Anchor / Paddle

Cat. No.	Blade (WxH, mm / inch)	Shaft (Ø, mm / inch)	Length (mm / inch)
3-bladed propeller			
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 propeller			
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
Turbine			
AAA37561	40 / 1.57	8 / 0.31	500 / 19.69
AAA37562	70 / 2.76	8 / 0.31	500 / 19.69
Dissolver			
BEA0570031	55 / 2.17	8 / 0.31	350 / 13.78
BEA0570032	75 / 2.95	8 / 0.31	350 / 13.78

Cat. No.	Blade (WxH, mm / inch)	Shaft (Ø, mm / inch)	Length (mm / inch)
Half-moon			
AAA37541	65x20 / 2.56x0.79	8 / 0.31	300 / 11.81
AAA37542	90x25 / 3.54x0.98	8 / 0.31	500 / 19.69
Centrifugal			
AAA37551	50x15 / 1.97x0.59	8 / 0.31	500 / 19.69
AAA37552	80x15 / 3.15x0.59	8 / 0.31	500 / 19.69
Anchor			
AAA37571	45x45 / 1.77x1.77	8 / 0.31	300 / 11.81
AAA37572	60x60 / 2.36x2.36	8 / 0.31	500 / 19.69
Paddle A			
AAA37581	70x70 / 2.76x2.76	8 / 0.31	500 / 19.69

PTFE coated impellers

Propeller (4-bladed) / Turbine

Half-moon / Centrifugal

Anchor (Square / Round)

Paddle / Paddle A

Cat. No.	Blade (WxH, mm / inch)	Shaft (Ø, mm / inch)	Length (mm / inch)
4-bladed propeller			
BEA0570081	50 / 1.97	8 / 0.31	500 / 19.69
BEA0570082	70 / 2.76	8 / 0.31	500 / 19.69
Turbine			
BEA0570131	70 / 2.76	8 / 0.31	500 / 19.69
Half-moon			
BEA0570091	60x18 / 2.36x0.71	8 / 0.31	500 / 19.69
Centrifugal			
BEA0570101	76x17 / 2.99x0.67	8 / 0.31	500 / 19.69

Cat. No.	Blade (WxH, mm / inch)	Shaft (Ø, mm / inch)	Length (mm / inch)
Anchor (Square)			
BEA0570111	80x50 / 3.15x1.97	8 / 0.31	500 / 19.69
Anchor (Round)			
BEA0570121	80x40 / 3.15x1.57	8 / 0.31	500 / 19.69
Paddle			
BEA0570141	70 / 2.76	8 / 0.31	500 / 19.69
Paddle A			
BEA0570151	78x80 / 3.07x3.15	8 / 0.31	500 / 19.69

Monitor and control MSH more convenient!

Bluetooth broadcaster for remote control.

Monitor and control MSH through your mobile device with Bluetooth Broadcaster. Anyone can control MSH by android device. Also you can automatically receive safety alarm to your mobile device.

Cat. No.	Description
AAAQ1012	Bluetooth broadcaster (2.4GHz ISM band) (W×D×H, 140x54x18mm / 5.5x2.1x0.7″)

External controller for practical external control.

Real time external monitor and control of the current operating condition without opening the door of the enclosure.

Cat. No.	Description
AAA37591	External controller (3m cable) (W×D×H, 60x16x120mm / 2.4x0.6x4.7″)

Stands / Support rods
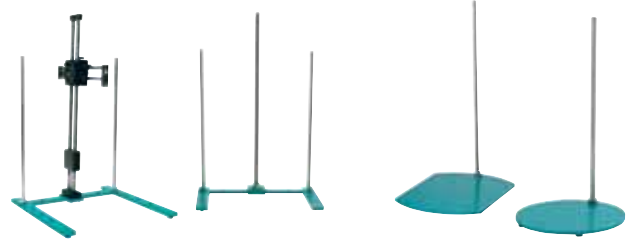
Dial stand / Basic stand 1
with two optional support rods

Basic stand 2

Basic stand 3

Cat. No.	Description
AAA37501	Dial stand (W×D×H, 400×400×700 / 15.75×15.75×27.56″)
AAA37502	Basic stand 1 (W×D×H, 400×400×700 / 15.75×15.75×27.56″)
AAA37503	Basic stand 2 (W×D×H, 300×400×700 / 11.81×15.75×27.56″)
AAA37504	Basic stand 3 (W×D×H, 250×350×700 / 9.84×13.78×27.56″)
MSS0051	Support Rod, M14 (Ø15x500mm / Ø0.59x19.68″)
MSS0052	Support Rod, M14 (Ø18x500mm / Ø0.71x19.68″)
MSS0053	Support Rod, M14 (Ø20x500mm / Ø0.79x19.68″)

Clamps / Others

Utility clamp 3 prong

Utility clamp plat

3 prong clamp

2 prong clamp

Fixing clamp

Clamp holder (C-10)

Clamp holder (C-20)

Flexible coupling

PTFE stirring seals
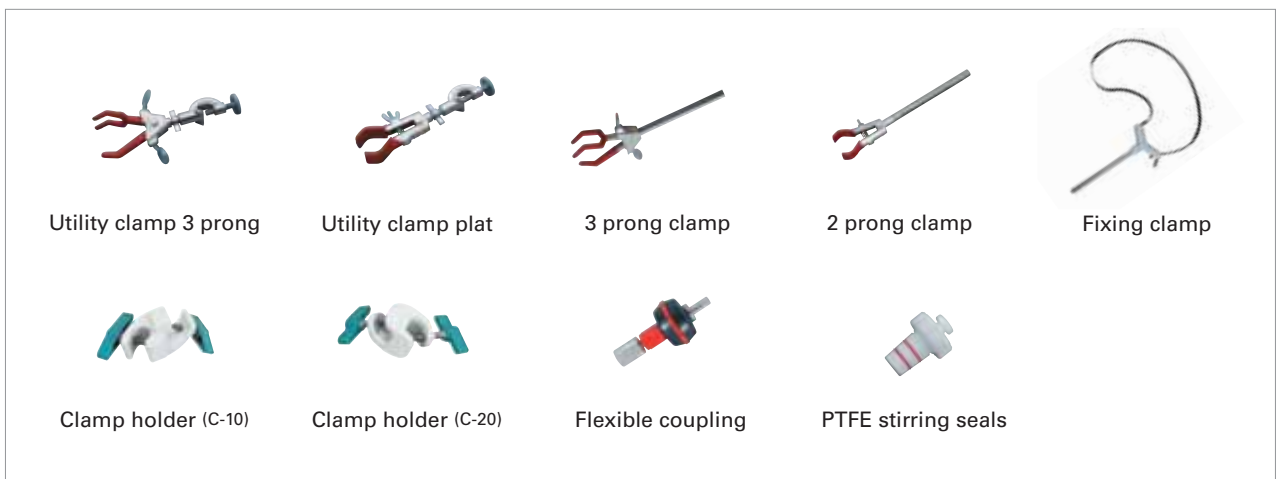
Cat. No.	Description
BEA1000001	Utility clamp 3 prong
BEA1000002	Utility clamp plat
BEA1000011	3 prong clamp (80mm / 3.15″grip)
BEA1000012	3 prong clamp (60mm / 2.36″grip)
BEA1000013	3 prong clamp (20mm / 0.79″grip)
BEA1000014	2 prong clamp (60mm / 2.36″grip)
BEA0570181	Fixing clamp

Cat. No.	Description
AAA37512	Clamp holder, C-10 (Al body, Ø17mm / 0.67″)
AAA37511	Clamp holder, C-20 (Al body, Ø27mm / 1.06″)
BEA0570191	Flexible coupling
BEA0570161	PTFE stirring seals (24 / 40)
BEA0570162	PTFE stirring seals (29 / 42)
BEA0570163	PTFE stirring seals (34 / 45)

Vortex Mixers

Low profile design and highly touch sensitive sensor reduce wrist stresses when pushing and holding experiment tools resulting in less fatigue and less unpleasant feeling .

VM-96T / VM-96A

Microplate tray in above picture is optional.

High-sensitive platform (standard accessory)

Rapid vortex formation
even touching anywhere on top plate.

Available to handle the several tubes
at the same time.

Various shape tubes can be used.
(centrifuge tube, conical tube, test tube, etc.)

CE | RoHS Compliant

Features

- Well-balanced design and optimized safety features.

- Low-profile with small footprint ideal for use on lab benches and within fume hoods or clean benches.

- On touch operation mode, real-time and dynamic mixing made even with gentle touch.
  - Every point of the top surface is highly reactive to gentle touch due to widely built in sensitive sensors.

- Selective mixing modes with variable speed control knob.
  - VM-96A: Touch / Continuous / High-continuous.
  - VM-96T: Touch / Continuous.

- Built-in LED lamps in case of VM-96A for easy recognition of the mixing mode selected.

- Sparkless BLDC motor adopted for safety, quick acceleration, and low maintenance.

- Built-in safety features against overload and over current.

- Chemically resistant polypropylene molded exterior.

- Wide range of accessories available.

Model		VM-96A	VM-96T	
Speed range (rpm)		Max. 3000		
Speed control		Scale		
Operating mode		Touch / Continuous / High-continuous	Touch / Continuous	
Motion		Orbital		
Orbit size (mm, inch, dia.)		4 / 0.16		
Max. load (kg / lbs)		0.5 / 1.1		
Motor rating input / output (W)		12 / 6		
Material	Platform	Silicone		
	Body	Polypropylene		
	Motor type	BLDC (Brushless Direct Current)		
Dimensions	Platform (W×D) (mm / inch)	76x76 / 3x3		
	Exterior [1] (W×D×H) (mm / inch)	154×210×84 / 6.1x8.3x3.3	148x159x77 / 5.8x6.3x3	
	Net weight (kg / lbs)	3 / 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

1) Exterior dimension without accessories.
   Permissible environmental conditions: temperature (5-40) and relative humidity (up to 80%)
   Protection class according to DIN EN 60529: Waterproof, dust production index based on the test level.
   RoHS only for VM-96A.
   FDA establishment registered company. FDA listed products.

Accessories & Options

VMS0058

Platform (standard)

VMS0063

Platform (pop-off)

VMS0008JT

Microplate tray

AAA36520

AAA36521

AAA36522

AAA36523

AAA36524

AAA36525

AAA36526

Tube holders with adhesive tray for stable vortexing.

Cat. No.	Description
VMS0058	Platform (standard)
VMS0063	Platform (pop-off)
VMS0008JT	Microplate tray
AAA36520	Tube holder with tray (up to 50mm)
AAA36521	Tube holder with tray (10mm x 16ea)
AAA36522	Tube holder with tray (12mm x 9ea)
AAA36523	Tube holder with tray (15mm x 9ea)
AAA36524	Tube holder with tray (20mm x 5ea)
AAA36525	Tube holder with tray (25mm x 4ea)
AAA36526	Tube holder with tray (8mm x 18ea & 10mm x 28ea)

16

Temperature Chambers

› **Heating Chambers**
  (Floor Standing Models)

› **Heating & Cooling Chambers**
  (Floor Standing Models)

› **Heating & Cooling Chambers**
  (Tabletop Models)

General Applications

Test for reliability, durability, climatic, freezing resistance, quality assurance, thermal endurance.

- Testing for electric and electronic component, sensors.
- Testing for semiconductor, PCB, LCD & LED.
- Pharmaceutical tests.
- Mechanical / Military / Aircraft engineering.
- Automobile, Transport / automobile supply industries.
- Chemical / Petrochemical industries.
- Construction materials / Plastic / Textile industries.
- Testing, liquor, cigar, paintings.
- Testing metal related industries like plating.

Product Name		Heating & Cooling Chambers (Floor Standing Models)		
Model		KBD	KMV	JMV
Air flow		Horizontal airflow	Horizontal airflow	Vertical airflow
Chamber volume (L)		125, 253, 420, 720, 1000	125, 253, 420, 720, 1000	125, 253, 420, 720, 990
Temp. control	Operating temp. range (/)	-70 to 180 / -94 to 356	-35 to 180 / -31 to 356	-35 to 180 / -31 to 356
	Fluctuation at 100 (± /)	0.2, 0.3, / 0.36, 0.54	0.3, 0.4 / 0.54, 0.72	0.5, 0.4 / 0.9, 0.72
	Variation at 100 (± /)	1.0, 0.9 / 1.8, 1.62	1.0, 0.9 / 1.8, 1.62	1.0, 0.8, 1.2, 0.9 / 1.8, 1.44, 2.16, 1.62
Control	Timer	Wait on/off	Wait on/off	Wait on/off
	Auto-tuning	O	O	O
	Program function	O	O	O
	Computer interface	RS-232 port, RS-485 port (optional)	RS-232 port, RS-485 port (optional)	RS-232 port, RS-485 port (optional)
Safety	Over temp. limit	O	O	O
	Door open alarm	O	O	O
	Over current limit	O	O	O
	Auto-run (power failure)	O	O	O

Product Name		Heating Chambers (Floor Standing Models)	
Model		LBV	LTV
Air flow		Horizontal airflow	Horizontal airflow
Chamber volume (L)		125, 253, 420, 720, 1000	125, 253, 420, 720, 1000
Temp. control	Operating temp. range (/)	Amb. +45 to 250 / Amb. +81 to 482	Amb. +45 to 350 / Amb. +81 to 662
	Fluctuation at 100 (± /)	0.3 / 0.54	0.4, 0.3, 0.5 / 0.72, 0.54, 0.90
	Variation at 100 (± /)	0.4, 1.3, 0.5 / 0.72, 2.34, 0.9	0.5, 0.6, 0.7, 0.4 / 0.9, 1.08, 1.26, 0.72
Control	Timer	Wait on/off	Wait on/off
	Auto-tuning	O	O
	Program function	O	O
	Computer interface	RS-232 port, RS-485 port (optional)	RS-232 port, RS-485 port (optional)
Safety	Over temp. limit	O	O
	Door open alarm	O	O
	Over current limit	O	O
	Auto-run (power failure)	O	O

Heating & Cooling Chambers (Floor Standing Models)				Heating & Cooling Chambers (Tabletop Models)	
PBV	PMV	LCH / LCH-G	LCH-2C / LCH-G-2C	TC-KE	TC-ME
Horizontal airflow	Horizontal airflow	Horizontal airflow		Vertical airflow	
125, 250, 400, 700, 1000	125, 250, 400, 700, 1000	150, 255, 485	150 x 2 chambers	25, 65, 100	
-25 to 100 / -13 to 212	-5 to 100 / 23 to 212	-20 to 100 / -4 to 212 (LCH / LCH-G), 0 to 100 / 32 to 212 (LCH-2C / LCH-G-2C)		-40 to 150 / -40 to 302	-20 to 120 / -4 to 248
0.3, 0.4, 0.2 / 0.54, 0.72, 0.36 at 25	0.3 / 0.54 at 25	0.3 / 0.54		0.5 / 0.9 at 50	0.4, 0.3 / 2.0, 1.9
0.6, 0.7, 0.8 / 1.08, 1.26, 1.44	1.0, 0.8, 0.7 / 1.8, 1.44, 1.26	0.8 / 1.44 at 80		1.0 / 1.8 at 50	2.0, 1.9, 1.8 / 3.6, 3.42, 3.24
Wait on/off	Wait on/off	Wait on/off		Wait on/off	
O	O	O		O	
O	O	O		O	
RS-232 port, RS-485 port (optional)	RS-232 port, RS-485 port (optional)	RS-232 port		RS-232 port, RS-485 port (optional)	
O	O	O		O	
O	O	O		O	
O	O	O		O	
O	O	O		O	

LBV-040 / LTV-040
with optional recorder

Standard accessories	• Wire shelves, Door key
Optional accessories **see page 212**	• Recorder, Interface converter, Warning signal lamps • Perforated shelves (max. load 40kg)

Reliable international standard

(27 point measurement)
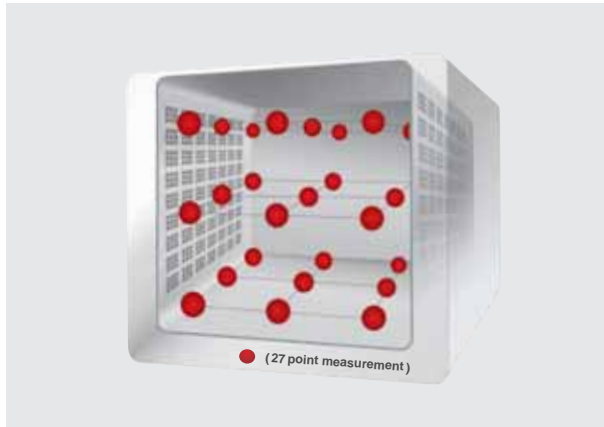
Designed and tested in accordance with the international standards.

Temperature values of all chambers are measured according to DIN 12880 and IEC 60068-3-5.

· Increase in reliability of accurate temperature implementation and test results. (27 point measurement data)

Uniform air circulation

Damper

Chamber

Heater

Horizontal airflow
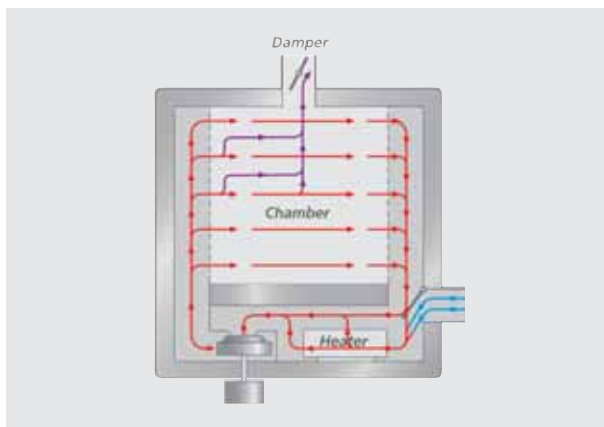
An unrivalled designed air circulation system boosts a uniform temperature distribution.

· Horizontal forced convection increases temperature uniformity by flowing heated air throughout the whole chamber.

· Air intake and exhaust damper rapidly cools-down and ventilates chamber.

· Various applications are available for higher air exchange.
  - Freely control of air volume by adjusting the air flap position with damper handle based on individual application needs.

· Safe damper guard protect users from overheated damper.
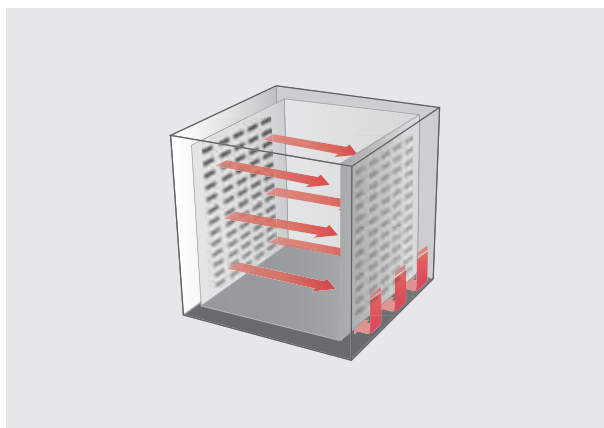
LBV series

· Amb.+45   to 250   / Amb. +113   to 482

· Horizontal airflow

LTV series

· Amb.+45   to 350   / Amb. +113   to 662

· Horizontal airflow

L - SERIES

Two-point door latch

Double sealed packings
(for LTV models)

Warning signal lamp
(optional)

Stainless steel chamber

Individual over temperature limiter

Performance

- Suitable for specific use such as heat treatment and drying process.

- Microprocessor PID control / Temperature calibration / Automatic tuning.

- Air-tight door closure with double sealed packing.
  - Heat-resistant silicone double packing completely blocks high heat leakage from the inner chamber. (for LBV)
  - Non-conducting ceramic and heat-resistant silicone packing completely blocks high heat leakage from the inner chamber. (for LTV)
  - Two-point door latch also enhances tightness to door closure.

- Energy efficiency is achieved thanks to optimization of the insulation system.
  - Even if the unit is operating at max. temperature, the surface of the unit doesn't allow high temperatures of over 51 . (DIN EN 563)

- Reliable design and production of door is guaranteed.
  - Evaluates the results after opening the door by 90 degrees and applying 50kg load to the point of 30cm from hinges.

Safety

- User selectable operation mode after power interruption
  - ether Automatic run or Manual run.

- Over-temperature protection.

- Over-current and current leakage protection.
  (ELCB, earth leakage circuit breaker)

- Independent safety circuit breaker.
  - Important parts such as controller and heaters are highly secured from short circuit. Especially each heater has an individual circuit breaker to completely break a short circuit.

- Reversed-phase protection.
  - Electrical connection error indicator helps user to rapidly fix the connection.

- Over-current protection of motor.
  - Automatic shut-off in situations where there is over-current to the motor.

- Open door warning.
  - Heater and fan stop when the door is the open state.

- Electric wiring panel access warning.
  - Automatic stop if the cover of electric wiring panel is opened.

- Built in door lock with a key.

Convenience

• Corrosion resistance stainless steel inner chamber.

• Space efficient and easy loading chamber design.
  - Included two shelves for loading of large amounts of samples.
  - Heavy load shelving, rated for 40kg are also available. (optional)

• User friendly LCD controller.
  - Colorful interactive touch type LCD controller.
  - Set point temperature and present temperature are clearly shown together on display.
  - Sufficient programmable control support.
  - Operating progress can be shown in graph mode for better data understanding.
  - Automatic start/stop can be programmed for unattended operations.
  - Display indicates abnormal temperature changes or power failures.
  - Selective bilingual language support.
    (Korean / English or English / Chinese, selectable only when placing an order)
  - Temperature and other operating parameters can be recorded using a six channel digital recorder.(optional)

• Computer interface.
  - RS-485 communication port (optional) enables connection up to maximum 32 units. Simultaneous monitoring and operating of multiple units is an available feature.
  - Program patterns are simple to set with the use of our software.
  - Easy to check status of real-time operations. Graph data supports easy understanding.
  - Storage and documentation of programs.
  - Data with saving capabilities in excel and text format.
  - Storage of program information, backup of value settings, recovery, and temperature values.
  - RS-232 communication port as standard offer.

Description	No
Programmable pattern capacity	100
Pattern repeat time	999
Part repeat time	255
Max. segments per a pattern	100
Available max. segments*	2000
Programmable process time per a segment	0 to 99 hr. 59 min.

* Even though the max. segments per pattern are 100, the total available segments are up to 2000 not 10000, therefore arrangement of the number of segment and patterns will need to be done properly.

Color LCD controller

Automatic start

End of program

Program control

Function setup

Program setup

Operating status

Graph display

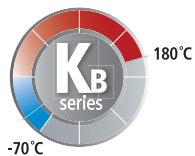| Model	LBV-012	LBV-025	LBV-040	LBV-070	LBV-100
Chamber volume (L / cu ft)	125 / 4.4	253 / 8.9	420 / 14.8	720 / 25.4	1000 / 35.3
Controller	Programmable, Touch screen type controller (3.5" color monitor)				
Temperature range (/) — intake/damper 100% close	Amb.+45 to 250 / Amb. +81 to 482				
Temperature range (/) — intake/damper 100% open	Max. 80 / Max. 176	Max. 80 / Max. 176	Max. 120 / Max. 248	Max. 80 / Max. 176	Max. 140 / Max. 284
Temperature fluctuation[1][2] at 100 (± /)	0.3 / 0.54	0.3 / 0.54	0.3 / 0.54	0.3 / 0.54	0.3 / 0.54
Temperature variation[2] (± /) — at 100	0.4 / 0.72	0.4 / 0.72	1.3 / 2.34	0.5 / 0.90	0.5 / 0.90
Temperature variation[2] (± /) — at 150	0.7 / 1.26	0.7 / 1.26	2.3 / 4.14	0.7 / 1.26	0.8 / 1.44
Temperature variation[2] (± /) — at 200	1.1 / 1.98	1.1 / 1.98	3.2 / 5.76	1.1 / 1.98	1.2 / 2.16
Temperature variation[2] (± /) — at 250	1.7 / 3.06	1.7 / 3.06	4.1 / 7.38	1.5 / 2.70	1.7 / 3.06
Heating time[2] (min.) from Amb. to 250	51	51	51	55	60
Recovery time[2] after door was opened (min.) — at 100	10.5	10.5	8	6.5	8
Recovery time[2] after door was opened (min.) — at 150	8	8	9	8	9.5
Recovery time[2] after door was opened (min.) — at 200	4.5	4.5	8.5	7	8.5
Recovery time[2] after door was opened (min.) — at 250	5	5	9.5	5.5	9.5
Air change rate (approx, L/h)	213	266	173	233	193
Air circulation (approx, L/h)	374	590	294	348	220
Exhaust air volume flow (approx, L/min)	380	1240	1400	1910	1560
Air flow velocity (m/s)	0.2 to 0.6	0.2 to 0.6	0.2 to 0.6	0.2 to 0.6	0.2 to 0.6
No. of wire shelves (standard / max.)	2 / 12	2 / 17	2 / 22	2 / 29	2 / 32
Distance of between shelves (mm / inch)	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
Dimension (W×D×H) — Interior (mm / inch)	500×500×500 / 19.7×19.7×19.7	600×650×650 / 23.6×25.6×25.6	750×700×800 / 29.5×27.6×31.5	900×800×1000 / 35.4×31.5×39.4	1000×910×1100 / 39.4×35.8×43.3
Dimension (W×D×H) — Exterior (mm / inch)	1100×745×1362 / 43.3×29.3×53.6	1200×995×1559 / 47.2×39.2×61.4	1350×1045×1712 / 53.1×41.1×67.4	1500×1145×1912 / 59×45.1×75.3	1600×1255×2012 / 62.9×49.4×79.2
Dimension (W×D×H) — Net weight (kg / lbs)	170 / 374.8	260 / 573.2	320 / 705.5	390 / 859.8	440 / 970
Interface port	Basically RS-232C [RS-485(maximum 32 units control)-optional]				
Electrical requirements (230V, 60Hz)	1ph / 14A	1ph / 21.3A			
Cat. No.	AAHK1011K	AAHK1021K	-	-	-
Electrical requirements (230V, 50Hz)	1ph / 14A	1ph / 21.3A			
Cat. No.	AAHK1012K	AAHK1022K	-	-	-
Electrical requirements (380V, 50Hz)			3ph / 9.4A	3ph / 12A	3ph / 14.2A
Cat. No.	-	-	AAHK1038K	AAHK1048K	AAHK1058K

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.
FDA establishment registered company. FDA listed products.

Model		LTV-012	LTV-025	LTV-040	LTV-070	LTV-100
Chamber volume (L / cu ft)		125 / 4.4	253 / 8.9	420 / 14.8	720 / 25.4	1000 / 35.3
Controller		Programmable, Touch screen type controller (3.5″ color monitor)				
Temperature range (/)	intake/damper 100% close	Amb.+45 to 350 / Amb. +81 to 662				
	intake/damper 100% open	Max. 115 / Max. 239	Max. 115 / Max. 239	Max. 180 / Max. 356	Max. 150 / Max. 302	Max. 210 / Max. 410
Temperature fluctuation [1) 2)] at 100 (± /)		0.4 / 0.72	0.4 / 0.72	0.3 / 0.54	0.5 / 0.90	0.4 / 0.72
Temperature variation [2)] (± /)	at 100	0.5 / 0.90	0.5 / 0.90	0.6 / 1.08	0.7 / 1.26	0.4 / 0.72
	at 150	0.7 / 1.26	0.7 / 1.26	1.0 / 1.80	1.1 / 1.98	0.6 / 1.08
	at 200	1.1 / 1.98	1.1 / 1.98	1.7 / 3.06	1.9 / 3.42	1.1 / 1.98
	at 250	1.6 / 2.88	1.6 / 2.88	2.5 / 4.5	2.7 / 4.86	1.6 / 2.88
	at 300	2.4 / 4.32	2.4 / 4.32	3.4 / 6.12	3.4 / 6.12	2.4 / 4.32
	at 350	3.4 / 6.12	3.4 / 6.12	3.4 / 6.12	4.1 / 7.38	3.2 / 5.76
Heating time [2)] (min.) from Amb. to 350		41	41	43	40	45
Recovery time [2)] after door was opened (min.)	at 100	8.5	8.5	6	6	7.5
	at 150	8.5	8.5	9	7.5	9.5
	at 200	3.5	3.5	8.5	8.5	8.5
	at 250	5	5	11.5	8.5	9.5
	at 300	7.5	7.5	12.5	8.5	9
	at 350	8.5	8.5	12.5	10	10
Air change rate (approx, L/h)		213	266	173	233	193
Air circulation (approx, L/h)		374	590	294	348	220
Exhaust air volume flow (approx, L/min)		380	1240	1400	1910	1560
Air flow velocity (m/s)		0.2 to 0.6	0.2 to 0.6	0.2 to 0.6	0.2 to 0.6	0.2 to 0.6
No. of wire shelves (standard / max.)		2 / 12	2 / 17	2 / 22	2 / 29	2 / 32
Distance of between shelves (mm / inch)		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
Dimension (W×D×H)	Interior (mm / inch)	500×500×500 / 19.7×19.7×19.7	600×650×650 / 23.6×25.6×25.6	750×700×800 / 29.5×27.6×31.5	900×800×1000 / 35.4×31.5×39.4	1000×910×1100 / 39.4×35.8×43.3
	Exterior (mm / inch)	1100×745×1362 / 43.3×29.3×53.6	1200×995×1559 / 47.2×39.2×61.4	1350×1045×1712 / 53.1×41.1×67.4	1500×1145×1912 / 59×45.1×75.3	1600×1255×2012 / 62.9×49.4×79.2
	Net weight (kg / lbs)	170 / 374.8	260 / 573.2	320 / 705.5	390 / 859.8	440 / 970
Interface port		Basically RS-232C [RS-485(maximum 32 units control)-optional]				
Electrical requirements (230V, 60Hz)		1ph / 27.6A				
Cat. No.		AAHK2011K	-	-	-	-
Electrical requirements (230V, 50Hz)		1ph / 27.6A				
Cat. No.		AAHK2012K	-	-	-	-
Electrical requirements (380V, 50Hz)			3ph / 13.9A	3ph / 18.5A	3ph / 23.4A	3ph / 27.9A
Cat. No.		-	AAHK2028K	AAHK2038K	AAHK2048K	AAHK2058K

1) According to IEC 60068-3-5
2) According to DIN 12880

Above specification value is recorded by 230V/50Hz, 380V/50Hz.
Above specifications can be changed without prior notice.
FDA establishment registered company. FDA listed products.

Heating & Cooling Chambers (Floor Standing - KBD)

Green CFC-Free | Computer Interface | Program | Temperature Calibration 1 Point | Over Temp. | Auto Run

KBD-040
with optional recorder

Standard accessories	• Wire shelves, Door key
	• Cable port
	(Ø50mm for 012/025 models or Ø80mm for 040/070/100 models)

| Optional accessories | • Recorder, Interface converter, Warning signal lamps |
| see page 212 | • Perforated shelves (max. load 40kg) |

Reliable international standard

(27 point measurement)

Designed and tested in accordance with the international standards.

Temperature values of all chambers are measured according to IEC 60068-3-5 and DIN 12880.

· Increase in reliability of accurate temperature implementation and test results. (27 point measurement data)

Uniform air circulation

Chamber

Evaporator   Heater

An unrivalled designed air circulation system boosts a uniform temperature distribution.

· Horizontal forced convection increases temperature uniformity by flowing heated air throughout the whole chamber.

KBD series

· -70   to 180   / -94   to 356
· Horizontal airflow

Horizontal airflow

K - SERIES

40kg

Perforated shelves for heavy load (optional)

Stainless steel chamber

Two-point door latch

Individual over temperature limiter
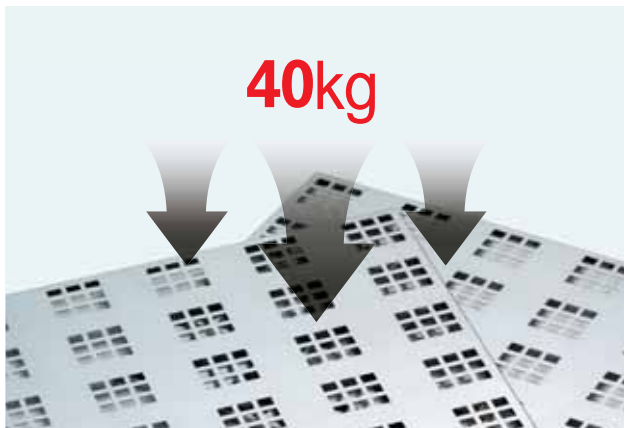
Warning signal lamp (optional)

Performance

- Suitable for specific use such as heat treatment and drying process.

- Microprocessor PID control / Temperature calibration / Automatic tuning.

- Air-tight door closure with double sealed packing.
  - Heat-resistant silicone double packing completely blocks high heat leakage from the inner chamber.
  - Two-point door latch also enhances tightness to door closure.

- Energy efficiency is achieved thanks to optimization of the insulation system.
  - Even if the unit is operating at max. temperature, the surface of the unit doesn't allow high temperatures of over 51 . (DIN EN 563)

- Reliable design and production of door is guaranteed.
  - Evaluates the results after opening the door by 90 degrees and applying 50kg load to the point of 30cm from hinges.

Safety

- User selectable operation mode after power interruption
  - ether Automatic run or Manual run.

- Over-temperature protection.

- Over-current and current leakage protection. (ELCB, earth leakage circuit breaker)

- Independent safety circuit breaker.
  - Important parts such as controller and heaters are highly secured from short circuit. Especially each heater has an individual circuit breaker to completely break a short circuit.

- Reversed-phase protection.
  - Electrical connection error indicator helps user to rapidly fix the connection.

- Over-current protection of motor.
  - Automatic shut-off in situations where there is over-current to the motor.

- Open door warning.
  - Heater and fan stop when the door is the open state.

- Electric wiring panel access warning.
  - Automatic stop if the cover of electric wiring panel is opened.

- Built in door lock with a key.

Convenience

- Corrosion resistance stainless steel inner chamber.

- Space efficient and easy loading chamber design.
  - Included two shelves for loading of large amounts of samples.
  - Heavy load shelving, rated for 40kg are also available. (optional)

- User friendly LCD controller.
  - Colorful interactive touch type LCD controller.
  - Set point temperature and present temperature are clearly shown together on display.
  - Sufficient programmable control support.
  - Operating progress can be shown in graph mode for better data understanding.
  - Automatic start/stop can be programmed for unattended operations.
  - Display indicates abnormal temperature changes or power failures.
  - Selective bilingual language support. (Korean / English or English / Chinese, selectable only when placing an order)
  - Temperature and other operating parameters can be recorded using a six channel digital recorder. (optional)

- Computer interface.
  - RS-485 communication port(optional) enables connection up to maximum 32 units. Simultaneous monitoring and operating of multiple units is an available feature.
  - Program patterns are simple to set with the use of our software.
  - Easy to check status of real-time operations. Graph data supports easy understanding.
  - Storage and documentation of programs.
  - Data with saving capabilities in excel and text format.
  - Storage of program information, backup of value settings, recovery, and temperature values.
  - RS-232 communication port as standard offer.

Description	No
Programmable pattern capacity	100
Pattern repeat time	999
Part repeat time	255
Max. segments per a pattern	100
Available max. segments*	2000
Programmable process time per a segment	0 to 99 hr. 59 min.

* Even though the max. segments per pattern are 100, the total available segments are up to 2000 not 10000, therefore arrangement of the number of segment and patterns will need to be done properly.

Color LCD controller

Automatic start

End of program

Program control

Function setup

Program setup

Operating status

Graph display

Model		KBD-012	KBD-025	KBD-040	KBD-070	KBD-100
Chamber volume (L / cu ft)		125 / 4.4	253 / 8.9	420 / 14.8	720 / 25.4	1000 / 35.3
Controller		Programmable, Touch screen type controller (5.7" color monitor)				
Temperature range (/)		-70 to 180 / -94 to 356				
Temperature fluctuation[1][2] at 25 (± /)		0.2 / 0.36	0.2 / 0.36	0.2 / 0.36	0.2 / 0.36	0.2 / 0.36
Temperature variation[2] (± /)	at -70	0.3 / 0.54	0.3 / 0.54	0.3 / 0.54	0.2 / 0.36	0.2 / 0.36
	at -50	0.4 / 0.72	0.5 / 0.90	0.4 / 0.72	0.3 / 0.54	0.3 / 0.54
	at -25	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72	0.3 / 0.54	0.3 / 0.54
	at -10	0.5 / 0.9	0.4 / 0.72	0.5 / 0.9	0.4 / 0.72	0.4 / 0.72
	at 25	0.5 / 0.9	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72
	at 70	0.6 / 1.08	0.7 / 1.26	0.6 / 1.08	0.7 / 1.26	0.7 / 1.26
	at 100	1.0 / 1.80	1.0 / 1.80	1.0 / 1.80	0.9 / 1.62	0.9 / 1.62
	at 150	1.0 / 1.80	1.1 / 1.98	1.0 / 1.80	0.8 / 1.44	0.8 / 1.44
	at 180	1.2 / 2.16	1.2 / 2.16	1.1 / 1.98	1.0 / 1.80	1.0 / 1.80
Heating time[2] (min.) from 25 to 180		54	55	55	56	58
Cooling time[2] (min.) from 25 to -70		79	78	80	76	77
Recovery time[2] after door was opened (min.)	at -70	12	12	13	9	9
	at -50	8	8	8	6	6
	at -25	6	6	6	5	5
	at -10	5	5	6	5	5
	at 70	6	6	6	6	6
	at 100	5	5	5	6	6
	at 150	7	7	10	10	10
	at 180	7	8	10	10	10
Program control	Temperature range (/)	-50 to 120 / -58 to 248				
	Heating rate (/ per min.) from -50 to 120	2.7 / 4.86	2.7 / 4.86	2.7 / 4.86	2.7 / 4.86	2.7 / 4.86
	Cooling rate (/ per min.) from 120 to -50	1.7 / 3.06	1.7 / 3.06	1.7 / 3.06	1.7 / 3.06	1.7 / 3.06
No. of wire shelves (standard / max.)		2 / 13	2 / 18	2 / 23	2 / 30	2 / 33
Distance of between shelves (mm / inch)		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
Dimension (W×D×H)	Interior (mm / inch)	500×500×500 / 19.7×19.7×19.7	600×650×650 / 23.6×25.6×25.6	750×700×800 / 29.5×27.6×31.5	900×800×1000 / 35.4×31.5×39.4	1000×910×1100 / 39.4×35.8×43.3
	Exterior (mm / inch)	1114×1360×1208 / 43.9×53.6×47.6	1240×1525×1308 / 48.8×60.0×51.5	1424×1600×1509 / 56.1×62.9×59.4	1575x1810x1819 / 62x71.3x71.6	1675x1920x1919 / 65.9x75.6x75.6
	Net weight (kg / lbs)	170 / 374.8	260 / 573.2	320 / 705.5	390 / 859.8	440 / 970
Interface port		Basically RS-232C [RS-485(maximum 32 units control)-optional]				
Electrical requirements (380V, 50Hz)		3ph / 10A	3ph / 12A	3ph / 16A	3ph / 23A	3ph / 23A
Cat. No.		**AAHKC1114K**	**AAHKC2114K**	**AAHKC3114K**	**AAHKC4114K**	**AAHKC5114K**

1) According to IE^C 60068-3-5
2) According to DIN 12880

Above specification value is recorded by 380V/50Hz.
Above specifications can be changed without prior notice.
FDA establishment registered company. FDA listed products.

Heating & Cooling Chambers (Floor Standing - KMV / JMV / PBV / PMV)

Green CFC-Free | **Computer Interface** | **Program** | **1 Point Temperature Calibration** | **Over Temp.** | **Auto Run**
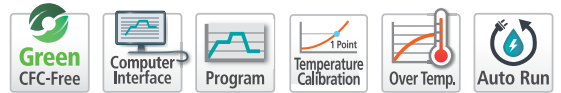
Please visit **JEIOTECH**.com

For further information on Jeio Tech´s Temperature Chamber products
Information is readily available on our website.

K_M series 180℃ -35℃

J series 180℃ -35℃

P_B series 100℃ -25℃

K / J / P series
with optional recorder

| **Standard accessories** | • Wire shelves, Door key |
| | • Cable port (Ø50mm for 012/025 models or Ø80mm for 040/070/100 models) |

| **Optional accessories**
see page 212 | • Recorder, Interface converter, Warning signal lamps |
| | • Perforated shelves (max. load 40kg) |

Heating & Cooling Chambers (Floor Standing - KMV / JMV / PBV / PMV)

Green CFC-Free | **Computer Interface** | **Program** | **Temperature Calibration** 1 Point | **Over Temp.** | **Auto Run**
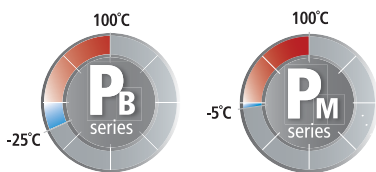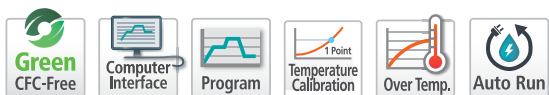
PBV-040 / PMV-040
with optional recorder

| Standard accessories | • Wire shelves, Door key |
| | • Cable port (Ø50mm for 012/025 models or Ø80mm for 040/070/100 models) |

Optional accessories
see page 212

• Recorder, Interface converter, Warning signal lamps
• Perforated shelves (max. load 40kg)

Reliable international standard

K / P series   J series
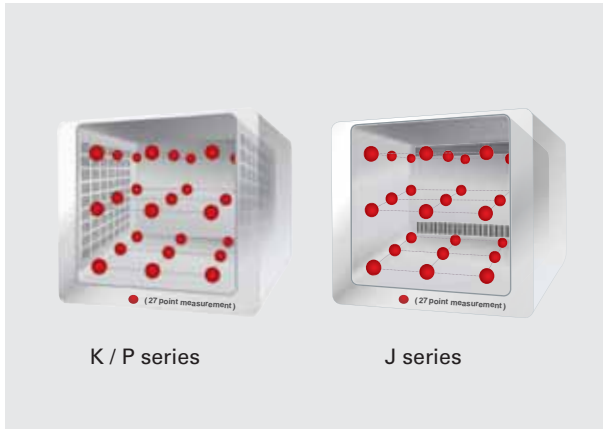
Designed and tested in accordance with the international standards.

Temperature values of all chambers are measured according to IEC 60068-3-5 and DIN 12880.

· Increase in reliability of accurate temperature implementation and test results. (27 point measurement data)

Uniform air circulation
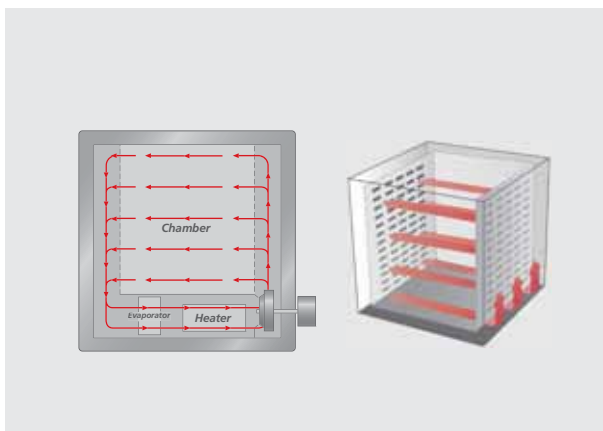
Horizontal airflow (K / P series)

Vertical airflow (J series)

Horizontal airflow and vertical airflow models can be selected depending on the volume and loading type of the sample.

· Forced convection increases temperature uniformity by flowing heated air throughout the whole chamber and all around samples.

KMV series
· -35　to 180　/ -31　to 356
· Horizontal airflow

JMV series
· -35　to 180　/ -31　to 356
· Vertical airflow

PBV / PMV series
· -25　to 100　/ -13　to 212
· -5　to 100　/ 23　to 212
· Horizontal airflow

K / J / P - SERIES

Two-point door latch

Stainless steel chamber

40kg

Perforated shelves for heavy load (optional)

Individual over temperature limiter (except for P series)

Performance

· Suitable for specific use such as heat treatment and drying process.

· Microprocessor PID control / Temperature calibration / Automatic tuning.

· Heat-resistant silicone packing completely blocks high heat leakage from the inner chamber.

· Two-point door latch also enhances tightness to door closure.

· Energy efficiency is achieved thanks to optimization of the insulation system.
  - Even if the unit is operating at max. temperature, the surface of the unit doesn't allow high temperatures of over 51   . (DIN EN 563)

· Reliable design and production of door is guaranteed.
  - Evaluates the results after opening the door by 90 degrees and applying 50kg load to the point of 30cm from hinges.

Safety

· User selectable operation mode after power interruption
  - ether Automatic run or Manual run.

· Over-temperature protection.

· Over-current and current leakage protection.
  (ELCB, earth leakage circuit breaker)

· Independent safety circuit breaker.
  - Important parts such as controller and heaters are highly secured from short circuit. Especially each heater has an individual circuit breaker to completely break a short circuit.

· Reversed-phase protection.
  - Electrical connection error indicator helps user to rapidly fix the connection.

· Over-current protection of motor.
  - Automatic shut-off in situations where there is over-current to the motor.

· Open door warning.
  - Heater and fan stop when the door is the open state.

· Electric wiring panel access warning.
  - Automatic stop if the cover of electric wiring panel is opened.

· Built in door lock with a key.

Convenience

· Corrosion resistance stainless steel inner chamber.

· Space efficient and easy loading chamber design.
  - Included two shelves for loading of large amounts of samples.
  - Heavy load shelving, rated for 40kg are also available. (optional)

· User friendly LCD controller.
  - Colorful interactive touch type LCD controller.
  - Set point temperature and present temperature are clearly shown together on display.
  - Sufficient programmable control support.
  - Operating progress can be shown in graph mode for better data understanding.
  - Automatic start/stop can be programmed for unattended operations.
  - Display indicates abnormal temperature changes or power failures.
  - Selective bilingual language support. (Korean / English or English / Chinese, selectable only when placing an order)
  - Temperature and other operating parameters can be recorded using a six channel digital recorder. (optional)

· Computer interface.
  - RS-485 communication port (optional) enables connection up to maximum 32 units. Simultaneous monitoring and operating of multiple units is an available feature.
  - Program patterns are simple to set with the use of our software.
  - Easy to check status of real-time operations. Graph data supports easy understanding.
  - Storage and documentation of programs.
  - Data with saving capabilities in excel and text format.
  - Storage of program information, backup of value settings, recovery, and temperature values.
  - RS-232 communication port as standard offer.

Description	No
Programmable pattern capacity	100
Pattern repeat time	999
Part repeat time	255
Max. segments per a pattern	100
Available max. segments*	2000
Programmable process time per a segment	0 to 99 hr. 59 min.

* Even though the max. segments per pattern are 100, the total available segments are up to 2000 not 10000, therefore arrangement of the number of segment and patterns will need to be done properly.

Color LCD controller

Automatic start

End of program

Program control

Function setup

Program setup

Operating status

Graph display

Model		KMV-012	KMV-025	KMV-040	KMV-070	KMV-100
Chamber volume (L / cu ft)		125 / 4.4	253 / 8.9	420 / 14.8	720 / 25.4	1000 / 35.3
Controller		Programmable, Touch screen type controller (3.5" color monitor)				
Temperature range (/)		-35 to 180 / -31 to 356				
Temperature fluctuation [1] [2] at 25 (± /)		0.4 / 0.72	0.4 / 0.72	0.3 / 0.54	0.2 / 0.36	0.2 / 0.36
Temperature variation [2] (± /)	at -35	0.6 / 1.08	0.6 / 1.08	0.7 / 1.26	0.4 / 0.72	0.4 / 0.72
	at -25	0.6 / 1.08	0.6 / 1.08	0.7 / 1.26	0.5 / 0.9	0.5 / 0.9
	at -10	0.8 / 1.44	0.8 / 1.44	0.7 / 1.26	0.5 / 0.9	0.5 / 0.9
	at 25	0.8 / 1.44	0.8 / 1.44	0.5 / 0.9	0.5 / 0.9	0.5 / 0.9
	at 70	0.8 / 1.44	0.8 / 1.44	0.9 / 1.62	0.8 / 1.44	0.8 / 1.44
	at 100	1.0 / 1.8	1.0 / 1.8	0.9 / 1.62	1.0 / 1.8	0.9 / 1.62
	at 150	1.1 / 1.98	1.1 / 1.98	1.7 / 3.06	1.6 / 2.88	0.9 / 1.62
	at 180	1.6 / 2.88	1.6 / 2.88	2.0 / 3.6	1.9 / 3.42	1.0 / 1.8
Heating time [2] (min.) from 25 to 180		64	64	66	51	78
Cooling time [2] (min.) from 25 to -35		56	56	60	62	96
Recovery time [2] after door was opened (min.)	at -35	8.0	8.0	6.5	7.0	6.0
	at -25	3.5	3.5	7.5	6.0	7.0
	at -10	2.5	2.5	6.5	6.5	6.5
	at 25	4.0	4.0	5.5	4.5	5.0
	at 70	4.0	4.0	5.5	5.0	8.0
	at 100	4.0	4.0	6.5	6.0	6.0
	at 150	4.0	4.0	4.5	4.5	3.5
	at 180	11.5	11.5	6.0	5.0	4.0
Program control	Temperature range (/)	-25 to 120 / -13 to 248				
	Heating rate (/ per min.) from -25 to 120	2.3 / 4.14	2.3 / 4.14	2.2 / 3.96	2.8 / 5.04	1.7 / 3.06
	Cooling rate (/ per min.) from 120 to -25	2.0 / 3.6	2.0 / 3.6	2.0 / 3.6	1.9 / 3.42	1.9 / 3.42
No. of wire shelves (standard / max.)		2 / 13	2 / 18	2 / 23	2 / 30	2 / 33
Distance of between shelves (mm / inch)		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
Dimension (W×D×H)	Interior (mm / inch)	500×500×500 / 19.7×19.7×19.7	600×650×650 / 23.6×25.6×25.6	750×700×800 / 29.5×27.6×31.5	900×800×1000 / 35.4×31.5×39.4	1000×910×1100 / 39.4×35.8×43.3
	Exterior (mm / inch)	1070×775×1385 / 42.1×30.5×54.5	1170×925×1585 / 46.1×36.4×62.4	1370×975×1780 / 53.9×38.4×70.1	1495×1625×1650 / 58.9×63.9×64.9	1595×1725×1800 / 62.8×67.9×70.9
	Net weight (kg / lbs)	170 / 374.8	260 / 573.2	320 / 705.5	390 / 859.8	440 / 970
Interface port		Basically RS-232C [RS-485(maximum 32 units control)-optional]				
Electrical requirements (230V, 60Hz)		1ph / 19.2A	1ph / 26A			
Cat. No.		**AAHK9011K**	**AAHK9021K**	-	-	-
Electrical requirements (230V, 50Hz)		1ph / 19.2A	1ph / 26A			
Cat. No.		**AAHK9012K**	**AAHK9022K**	-	-	-
Electrical requirements (380V, 50Hz)				3ph / 12.5A	3ph / 18A	3ph / 19.4A
Cat. No.		-	-	**AAHK9038K**	**AAHK9048K**	**AAHK9058K**

1) According to IEC 60068-3-5
2) According to DIN 12880

　Above specification value is recorded by 230v/50Hz, 380/50Hz.
　Above specifications can be changed without prior notice.
　FDA establishment registered company. FDA listed products.

Model		JMV-012	JMV-025	JMV-040	JMV-070	JMV-100
Chamber volume (L / cu ft)		125 / 4.4	253 / 8.9	420 / 14.8	720 / 25.4	990 / 34.9
Controller		Programmable, Touch screen type controller (3.5" color monitor)				
Temperature range (/)		-35 to 180 / -31 to 356				
Temperature fluctuation [1) 2)] at 25 (± /)		0.5 / 0.9	0.5 / 0.9	0.3 / 0.54	0.4 / 0.72	0.3 / 0.54
Temperature variation [2)] (± /)	at -35	0.7 / 1.26	0.7 / 1.26	0.5 / 0.9	1.0 / 1.8	0.7 / 1.26
	at -25	0.7 / 1.26	0.7 / 1.26	0.6 / 1.08	1.1 / 1.98	0.8 / 1.44
	at -10	0.8 / 1.44	0.8 / 1.44	0.6 / 1.08	1.2 / 2.16	0.9 / 1.62
	at 25	0.8 / 1.44	0.8 / 1.44	0.5 / 0.9	0.8 / 1.44	0.9 / 1.62
	at 70	0.9 / 1.62	0.9 / 1.62	0.7 / 1.26	1.2 / 2.16	0.8 / 1.44
	at 100	1.0 / 1.8	1.0 / 1.8	0.8 / 1.44	1.2 / 2.16	0.9 / 1.62
	at 150	1.2 / 2.16	1.2 / 2.16	1.3 / 2.34	1.1 / 1.98	1.1 / 1.98
	at 180	1.4 / 2.52	1.4 / 2.52	1.5 / 2.7	1.3 / 2.34	1.4 / 2.52
Heating time [2)] (min.) from 25 to 180		67	67	46	44	60
Cooling time [2)] (min.) from 25 to -35		48	48	35	35	58
Recovery time [2)] after door was opened (min.)	at -35	6.0	6.0	6.0	6.5	9.0
	at -25	5.0	5.0	6.5	7.0	6.5
	at -10	6.5	6.5	6.5	8.5	6.5
	at 25	5.5	5.5	4.5	2.0	7.0
	at 70	8.5	8.5	8.0	9.5	7.5
	at 100	5.5	5.5	4.5	6.0	5.5
	at 150	6.5	6.5	7.0	9.0	3.5
	at 180	6.5	6.5	6.5	8.0	4.0
Program control	Temperature range (/)	-25 to 120 / -13 to 248				
	Heating rate (/ per min.) from -25 to 120	2.0 / 3.6	2.0 / 3.6	2.0 / 3.6	2.0 / 3.6	2.0 / 3.6
	Cooling rate (/ per min.) from 120 to -25	2.0 / 3.6	2.0 / 3.6	2.0 / 3.6	2.0 / 3.6	1.6 / 2.88
No. of wire shelves (standard / max.)		2 / 13	2 / 18	2 / 23	2 / 30	2 / 33
Distance of between shelves (mm / inch)		30 / 1.2				
Max. 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
Dimension (W×D×H)	Interior (mm / inch)	500×500×500 / 19.7×19.7×19.7	600×650×650 / 23.6×25.6×25.6	750×700×800 / 29.5×27.6×31.5	900×800×1000 / 35.4×31.5×39.4	1000×910×1100 / 39.4×35.8×43.3
	Exterior (mm / inch)	890×1000×1200 / 35.0×39.4×47.2	990×1230×1350 / 38.9×48.4×53.1	1140×1380×1590 / 44.9×54.3×62.6	1290×1480×1940 / 50.8×58.3×76.4	1390×1580×2040 / 54.7×62.2×80.4
	Net weight (kg / lbs)	170 / 374.8	260 / 573.2	320 / 705.5	390 / 859.8	440 / 970
Interface port		Basically RS-232C [RS-485(maximum 32 units control)-optional]				
Electrical requirements (230V, 60Hz)		1ph / 19.2A	1ph / 26A			
Cat. No.		AAHKB011K	AAHKB021K	-	-	-
Electrical requirements (230V, 50Hz)		1ph / 19.2A	1ph / 26A			
Cat. No.		AAHKB012K	AAHKB022K	-	-	-
Electrical requirements (380V, 50Hz)				3ph / 12.5A	3ph / 18A	3ph / 19.4A
Cat. No.		-	-	AAHKB038K	AAHKB048K	AAHKB058K

1) According to IEC 60068-3-5
2) According to DIN 12880

Above specification value is recorded by 230v/50Hz, 380/50Hz.
Above specifications can be changed without prior notice.
FDA establishment registered company. FDA listed products.

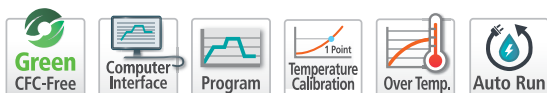| Model		PBV-012	PBV-025	PBV-040	PBV-070	PBV-100
Chamber volume (L / cu ft)		125 / 4.4	250 / 8.8	400 / 14.1	700 / 24.7	1000 / 35.3
Controller		Programmable, Touch screen type controller (3.5" color monitor)				
Temperature range (/)		-25 to 100 / -13 to 212				
Temperature fluctuation[1)2)] at 25 (± /)		0.3 / 0.54	0.3 / 0.54	0.3 / 0.54	0.4 / 0.72	0.2 / 0.36
Temperature variation[2)] (± /)	at -25	0.3 / 0.54	0.3 / 0.54	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72
	at -15	0.3 / 0.54	0.3 / 0.54	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72
	at -10	0.3 / 0.54	0.3 / 0.54	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72
	at 25	0.3 / 0.54	0.3 / 0.54	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72
	at 70	0.4 / 0.72	0.4 / 0.72	0.6 / 1.08	0.6 / 1.08	0.6 / 1.08
	at 100	0.6 / 1.08	0.6 / 1.08	0.7 / 1.26	0.8 / 1.44	0.8 / 1.44
Heating time[2)] (min.) from 25 to 100		34	34	52	35	38
Cooling time[2)] (min.) from 25 to -25		44	44	34	33	42
Recovery time[2)] after door was opened (min.)	at -25	5.0	5.0	5.0	4.0	7.0
	at -15	4.5	4.5	3.5	5.5	5.0
	at -10	6.0	6.0	4.5	4.0	5.0
	at 25	5.0	5.0	4.0	5.5	3.5
	at 70	5.0	5.0	9.5	5.0	7.5
	at 100	5.5	5.5	9.0	6.0	7.0
Program control	Temperature range (/)	-12.5 to 87.5 / 9.5 to 189.5				
	Heating rate (/ per min.) from -12.5 to 87.5	2.6 / 4.68	2.6 / 4.68	1.5 / 2.7	2.7 / 4.86	2.0 / 3.6
	Cooling rate (/ per min.) from 87.5 to -12.5	2.1 / 3.78	2.1 / 3.78	2.8 / 5.04	2.5 / 4.5	2.4 / 4.32
No. of wire shelves (standard / max.)		2 / 13	2 / 18	2 / 23	2 / 30	2 / 33
Distance of between shelves (mm / inch)		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
Dimension (W×D×H)	Interior (mm / inch)	500×500×500 / 19.7×19.7×19.7	600×650×650 / 23.6×25.6×25.6	750×700×800 / 29.5×27.6×31.5	900×800×1000 / 35.4×31.5×39.4	1000×910×1100 / 39.4×35.8×43.3
	Exterior (mm / inch)	1054×706×1380 /41.5×27.8×54.3	1154×856×1565 /45.4×33.7×61.6	1304×906×1750 /51.3×35.7×68.9	1454×1540×1628 / 57.2×60.6×64.1	1554×1650×1728 /61.2×65.0×68.0
	Net weight (kg / lbs)	160 / 352.7	260 / 573.2	320 / 705.5	390 / 859.8	440 / 970
Interface port		Basically RS-232C [RS-485(maximum 32 units control)-optional]				
Electrical requirements (230V, 60Hz)		1ph / 16.3A	1ph / 22.8A			
Cat. No.		**AAHK5011K**	**AAHK5021K**	-	-	-
Electrical requirements (230V, 50Hz)		1ph / 16.3A	1ph / 22.8A			
Cat. No.		**AAHK5012K**	**AAHK5022K**	-	-	-
Electrical requirements (380V, 50Hz)				3ph / 7.3A	3ph / 9.1A	3ph / 10.9A
Cat. No.		-	-	**AAHK5038K**	**AAHK5048K**	**AAHK5058K**

1) According to IEC 60068-3-5
2) According to DIN 12880

Above specification value is recorded by 230V/50Hz, 380V/50Hz.
Above specifications can be changed without prior notice.
FDA establishment registered company. FDA listed products.

Model		PMV-012	PMV-025	PMV-040	PMV-070	PMV-100
Chamber volume (L / cu ft)		125 / 4.4	250 / 8.8	400 / 14.1	700 / 24.7	1000 / 35.3
Controller		Programmable, Touch screen type controller (3.5" color monitor)				
Temperature range (/)		-5 to 100 / 23 to 212				
Temperature fluctuation [1] [2] at 25 (± /)		0.3 / 0.54	0.3 / 0.54	0.3 / 0.54	0.3 / 0.54	0.3 / 0.54
Temperature variation [2] (± /)	at -5	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72	0.3 / 0.54
	at 0	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72	0.3 / 0.54
	at 25	0.2 / 0.36	0.2 / 0.36	0.3 / 0.54	0.4 / 0.72	0.3 / 0.54
	at 40	0.3 / 0.54	0.3 / 0.54	0.3 / 0.54	0.4 / 0.72	0.3 / 0.54
	at 60	0.5 / 0.90	0.5 / 0.90	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72
	at 80	0.7 / 1.26	0.7 / 1.26	0.6 / 1.08	0.5 / 0.90	0.5 / 0.90
	at 100	1.0 / 1.80	1.0 / 1.80	0.8 / 1.44	0.7 / 1.26	0.7 / 1.26
Heating time [2] (min.) from 25 to 100		45	45	48	52	56
Cooling time [2] (min.) from 25 to -5		44	44	43	39	39
Recovery time [2] after door was opened (min.)	at -5	8.0	8.0	6.5	5.0	5.0
	at 0	6.0	6.0	6.0	6.0	8.0
	at 25	0.5	0.5	4.0	6.0	6.0
	at 40	2.5	2.5	2.5	2.5	2.5
	at 60	4.0	4.0	4.5	5.0	6.0
	at 80	5.0	5.0	5.0	5.5	6.0
	at 100	7.0	7.0	7.0	6.5	8.0
Program control	Temperature range (± /)	5.5 to 89.5 / 9.9 to 161.1				
	Heating rate (/ per min.) from 5.5 to 89.5	1.7 / 3.06	1.7 / 3.06	1.6 / 2.88	1.5 / 2.7	1.3 / 2.34
	Cooling rate (/ per min.) from 89.5 to 5.5	0.9 / 1.62	0.9 / 1.62	0.9 / 1.62	0.9 / 1.62	0.9 / 1.62
No. of wire shelves (standard / max.)		2 / 13	2 / 18	2 / 23	2 / 30	2 / 33
Distance of between shelves (mm / inch)		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
Dimension (W×D×H)	Interior (mm / inch)	500×500×500 / 19.7×19.7×19.7	600×650×650 / 23.6×25.6×25.6	750×700×800 / 29.5×27.6×31.5	900×800×1000 / 35.4×31.5×39.4	1000×910×1100 / 39.4×35.8×43.3
	Exterior (mm / inch)	1054×706×1380 / 41.5×27.8×54.3	1154×856×1565 / 45.4×33.7×61.6	1304×906×1750 / 51.3×35.7×68.9	1454×1540×1628 / 57.2×60.6×64.1	1554×1650×1728 / 61.2×65.0×68.0
	Net weight (kg / lbs)	160 / 352.7	260 / 573.2	320 / 705.5	390 / 859.8	440 / 970
Interface port		Basically RS-232C [RS-485(maximum 32 units control)-optional]				
Electrical requirements (230V, 60Hz)		1ph / 9.7A	1ph / 13.2A	1ph / 15.5A	1ph / 21.7A	
Cat. No.		AAHK4011K	AAHK4021K	AAHK4031K	AAHK4041K	-
Electrical requirements (230V, 50Hz)		1ph / 9.7A	1ph / 13.2A	1ph / 15.5A	1ph / 21.7A	
Cat. No.		AAHK4012K	AAHK4022K	AAHK4032K	AAHK4042K	-
Electrical requirements (380V, 50Hz)						3ph / 6A
Cat. No.		-	-	-	-	AAHK4058K

1) According to IEC 60068-3-5
2) According to DIN 12880

Above specification value is recorded by 230V/50Hz, 380V/50Hz.
Above specifications can be changed without prior notice.
FDA establishment registered company. FDA listed products.

Green CFC-Free | **Computer Interface** | **Program** | **Temperature Calibration** 1 Point | **Over Temp.** | **Auto Run**

High-performance horizontal air flow provides excellent uniformity and fast heat-up time.

Control range

- Temperature range from -20 to 100
  from 0 to 100
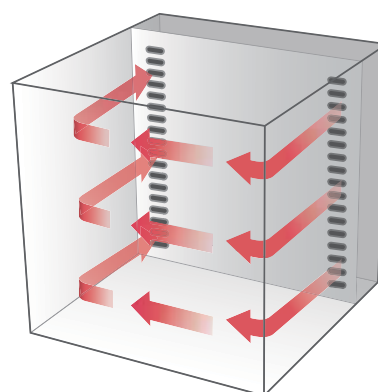
LCH-21 / LCH-11G-2C
with optional recorder

Standard accessories • Wire shelves, Cable port (Ø80mm)

Optional accessories • Warning signal lamps, Perforated shelves
see page 212

Performance

- Microprocessor PID control.

- Temperature calibration / Automatic tuning.

- Adjustable three-step fan speed with defrosting time and period control.

- Forced air convection using an optimal cross flow fan for chamber temperature uniformity.

- Energy efficiency is achieved thanks to optimization of the insulation system. The surface of the unit doesn't allow high temperatures of over 60 .

Convenience

- Two independently controlled chambers merged into a single unit for space saving.

- Intuitive control panel with bright LED display (0.1 resolution) and touch-sensitive keypad.

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

- Convenient preset function for 3 most commonly used temperature settings.

- Up to 9 temperature steps and maximum 200 cycles of repetition programmable for each profile.

- Built-in cable port to use other instruments inside the chamber. (diameter: 80mm)

- RS-232 interface for external control and data collection.

Safety

- Automatic shut off after overheat alarm.

- Power supply leakage breaker.

- Over current protection.

- Open door alarm.

for temperature range from -20 to 100

Model		LCH-11	LCH-21	LCH-31	LCH-11-2C
Chamber volume (L / cu ft)		150/5.3	255/9.0	485/17.1	150/5.3 x 2 chambers
Temperature	Range (/)	-20 to 100 / -4 to 212			
	Fluctuation (± /)[1]	0.3 / 0.54			
	Variation at 80°C (± /)[1]	0.8 / 1.44			
Time	Heating (min.)	80 (from 20 to100)			
	Cooling (min.)	60 (from100 to 40)			
No. of wire shelves (standard / max.)		2 / 12	2 / 24	2 / 29	2 / 12 per chamber
Distance of between shelves (mm / inch)		30 / 1.2			
Max. load per shelf (kg / lbs)		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 per chamber
Dimension (W×D×H)	Interior (mm / inch)	600x500x500 / 23.6x19.7x19.7	600x500x850 / 23.6x19.7x33.5	700x680x1020 / 27.6x26.8x40.2	600x500x500 / 23.6x19.7x19.7
	Exterior (mm / inch)	794x1070x1280 / 31.3x42.1x50.4	794x1070x1630 / 31.3x42.1x64.2	894x1250x1800 / 35.2x49.2x70.9	794x1070x1900 / 31.3x42.1x74.8
	Net weight (kg / lbs)	125/275.6	185/407.9	225/496.0	195/429.9
Cable Port (mm / inch)		⌀ 80 / ⌀ 3.15			
Interface port		RS-232C			
Electrical requirements (230V,60Hz)		6.3A	9.2A	11.1A	12.6A
Cat. No.		AAHK6111K	AAHK6211K	AAHK6311K	AAHK6411K
Electrical requirements (230V,50Hz)		6.3A	9.2A	11.1A	12.6A
Cat. No.		AAHK6112K	AAHK6212K	AAHK6312K	AAHK6412K
Electrical requirements (120V,60Hz)		11.6A			23.2A
Cat. No.		AAHK6113U	-	-	AAHK6413U

1) According to IEC 60068-3-5

for temperature range from 0 to 100

Model		LCH-11G	LCH-21G	LCH-31G	LCH-11G-2C
Chamber volume (L / cu ft)		150/5.3	255/9.0	485/17.1	150/5.3 x 2 chambers
Temperature	Range (/)	0 to 100 / 32 to 212			
	Fluctuation (± /)[1]	0.3 / 0.54			
	Variation at 80°C (± /)[1]	0.8 / 1.44			
Time	Heating (min.)	80 (from 20 to100)			
	Cooling (min.)	60 (from100 to 40)			
No. of wire shelves (standard / max.)		2 / 12	2 / 24	2 / 29	2 / 12 per chamber
Distance of between shelves (mm / inch)		30 / 1.2			
Max. load per shelf (kg / lbs)		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 per chamber
Dimension (W×D×H)	Interior (mm / inch)	600x500x500 / 23.6x19.7x19.7	600x500x850 / 23.6x19.7x33.5	700x680x1020 / 27.6x26.8x40.2	600x500x500 / 23.6x19.7x19.7
	Exterior (mm / inch)	740x1032x1280 / 29.1x40.6x50.4	740x1032x1630 / 29.1x40.6x64.2	840x1212x1800 / 33.1x47.7x70.9	740x1032x1900 / 29.1x40.6x74.8
	Net weight (kg / lbs)	120/264.6	180/396.8	220/485.0	190/418.9
Cable Port (mm / inch)		⌀ 80 / ⌀ 3.15			
Interface port		RS-232C			
Electrical requirements (230V,60Hz)		7.1A	10.6A	13.8A	14.2A
Cat. No.		AAHK6121K	AAHK6221K	AAHK6321K	AAHK6421K
Electrical requirements (230V,50Hz)		7.1A	10.6A	13.8A	14.2A
Cat. No.		AAHK6122K	AAHK6222K	AAHK6322K	AAHK6422K
Electrical requirements (120V,60Hz)		13A			26A
Cat. No.		AAHK6123U	-	-	AAHK6423U

1) According to IEC 60068-3-5.
   FDA establishment registered company. FDA listed products.

CE | Green CFC-Free | Computer Interface | Program | 1 Point Temperature Calibration | Over Temp. | Auto Run

The best choice for the limited laboratory space.
Tabletop chamber is beneficial for space efficiency.

Built-in viewing window and operating LED indicator for the advanced convenience.

TC-KE / TC-ME

Standard accessories
- Viewing window, Wire shelves
- Cable port (Ø50mm), Door key

Optional accessories
see page 213
- Recorders, Two step stands
- Perforated shelves

Above products design can be changed without prior notice.
Inner glass door is not equipped to the unit since 2013.

Control range

- Temperature range from -40 to 150
  from -20 to 120
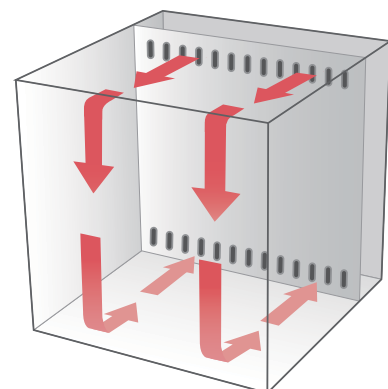
TC-KE/ME-25/65/100

Performance

- Microprocessor PID control / Temperature calibration / Automatic tuning.
- Uniform temperature control guarantees reliable test result.
- Air-tight door closure with perfect sealed packing.
  - Heat-resistant silicone packing completely blocks high heat leakage from the inner chamber.
- Clear observation of samples.
  - Tempered glass window with wire heater and lighting provides a clear view of samples in the chamber, beneficial for during testing.

Safety

- Built in door lock with a key.
- Automatic shut off after overheat alarm.
- Power supply leakage breaker.
- Over current protection.
- Open door alarm

LCD controller

Viewing window

Stand with caster (optional)

Convenience

- Compact design and quiet operation.
- Three different size models are available to suit user's need.
- Corrosion resistance stainless steel chamber.
- Operating condition is clearly noticed by front LED indicator.
  - Three different colored lights show each status of running, stop, and power off condition.
- Cable port for introduction of external probes or wires.
  - 50mm diameter cable port comes standard on the left side of the unit.
  - Additional 50mm or 80mm diameter cable ports, custom ordered. (optional)
- Two step stands for space-saving. (optional)
  - Single stand with a drawer provides enough storage space.
  - Two step stand accepts loading two units to save limited space.
- User friendly LCD controller.
  - Colorful interactive touch type LCD controller.
  - Set point temperature and present temperature are clearly shown together on display.
  - Sufficient programmable control support.
  - Operating progress can be shown in graph mode for better data understanding.
  - Automatic start/stop can be programmed for unattended operations.
  - Display indicates abnormal temperature changes or power failures.
  - Selective bilingual language support.
    (Korean / English or English / Chinese, selectable only when placing an order)
  - Temperature and other operating parameters can be recorded using a six channel digital recorder. (optional)
- Computer interface.
  - RS-485 communication port (optional) enables connection up to maximum 32 units. Simultaneous monitoring and operating of multiple units is an available feature.
  - Program patterns are simple to set with the use of our software.
  - Easy to check status of real-time operations. Graph data supports easy understanding.
  - Storage and documentation of programs.
  - Data with saving capabilities in excel and text format.
  - Storage of program information, backup of value settings, recovery, and temperature values.
  - RS-232 communication port as standard offer.

Description	No
Programmable pattern capacity	100
Pattern repeat time	999
Part repeat time	255
Max. segments per a pattern	100
Available max. segments*	2000
Programmable process time per a segment	0 to 99 hr. 59 min.

* Even though the max. segments per pattern are 100, the total available segments are up to 2000 not 10000, therefore arrangement of the number of segment and patterns will need to be done properly.

Heating & Cooling Chambers (Tabletop - TC-KE / TC-ME)

| Model		TC-KE-025	TC-KE-065	TC-KE-100
Chamber volume (L / cu ft)		25 / 0.9	65 / 2.3	100 / 3.53
Controller		PID control (LCD Type)		
Temperature	Range (/)	-40 to 150 / -40 to 302		
	Fluctuation [1] at 50 (± /)	0.5 / 0.9		
	Variation [1] at 50 (± /)	1.0 / 1.8		
Time	Heating (min.)	60 (-35 to 100)		
	Cooling (min.)	70 (25 to -35)		
Refrigeration	System	Mechanical single stage refrigerator system (air-cooled condenser)		
	Refrigerant	R-507A		
No. of wire shelves (standard / max.)		2 / 7	2 / 10	2 / 10
Distance of between shelves (mm / inch)		20 /1.6	20 /1.6	20 /1.6
Max. load per shelf (kg / lbs)		25 / 55.1	25 / 55.1	25 / 55.1
Permitted total load (kg / lbs)		65 / 143.3	65 / 143.3	65 / 143.3
Dimension (W×D×H)	Interior (mm / inch)	348×220×353 / 13.7×8.7×13.9	398×330×498 / 15.7×13×19.6	498×390×538 / 19.6×15.4×21.2
	Exterior (mm / inch)	611x878x911 / 24.1x34.6x36.2	660x1048x1056 / 23.7x41.2x41.6	761x1108x1096 / 30.0x43.6x43.1
	Viewing window (mm / inch)	220×300 / 8.7×11.8		
	Net weight (kg / lbs)	110 ±10 / 242.5 ±22	140 ±10 / 308.6 ±22	150 ±10 / 330.7 ±22
Cable port [2]		Basically one hole provided / Ø50mm (2") Optionally max. two holes available / Ø50 or 80mm (2 or 3.2")		
Interface port		Basically RS-232C, [RS-485:optional]		
Electrical requirements	AC230V, 1ph, 60Hz	7.4A	8.8A	10.8A
		AAH86111K	**AAH86121K**	**AAH86131K**
	AC230V, 1ph, 50Hz	7.4A	8.8A	10.8A
		AAH86112K	**AAH86122K**	**AAH86132K**

1) Technical data according to DIN 12880, IEC 60068.
2) 80mm cable access hole is NOT available for 25L chamber.

Permissible environmental conditions: temperature (18 to 30) and relative humidity (up to 85%).
All specifications are under ambient temperature 20 (68), no load.
FDA establishment registered company. FDA listed products.
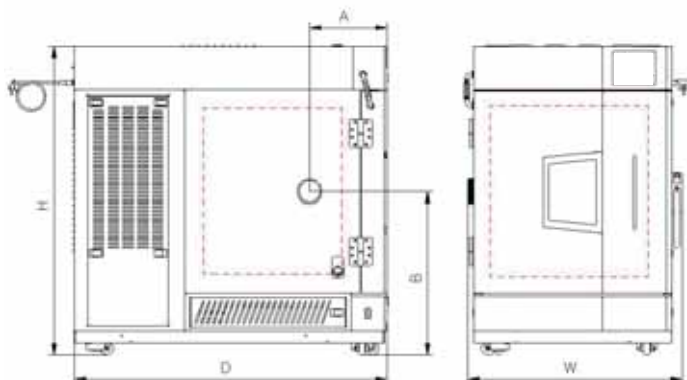
Dimension

Model	TC-KE-25	TC-KE-65	TC-KE-100
Capacity	25L(0.9 cu ft)	65L(2.3 cu ft)	100L(3.53 cu ft)
W	611mm(24.1")	660mm(26.0")	761mm(30.0")
D	878mm(34.6")	1048mm(41.3")	1108mm(43.6")
H	911mm(36.2")	1056mm(41.6")	1096mm(43.1")
A	211mm(8.3")	276mm(10.9")	276mm(10.9")
B	495mm(19.5")	580mm(22.8")	580mm(22.8")

Model	TC-ME-025	TC-ME-065	TC-ME-100
Chamber volume (L / cu ft)	25 / 0.9	65 / 2.3	100 / 3.53
Controller	Program controller (LCD type)		

Temperature	Range (/)	-20 to 120 / -4 to 248		
	Fluctuation[1] (± /) at 100	0.4 / 0.72	0.3 / 0.55	0.3 / 0.55
	Variation[1] (± /) at 100	2.0 / 3.60	1.9 / 3.42	1.8 / 3.24

Time	Heating (min.)	55 From -15 to 120 (5 to 248)		
	Cooling (min.)	60 From 20 to -15 (68 to 5) on singe point control *		

Refrigeration	System	Mechanical single stage refrigerator system (air-cooled condenser)		
	Refrigerant	R-507A		

No. of wire shelves (standard / max.)	2 / 7	2 / 10	2 / 10
Distance of between shelves (mm / inch)	20 /1.6	20 /1.6	20 /1.6
Max. load per shelf (kg / lbs)	25 / 55.1	25 / 55.1	25 / 55.1
Permitted total load (kg / lbs)	65 / 143.3	65 / 143.3	65 / 143.3

Dimension (W×D×H)	Interior (mm / inch)	348×220×353 / 13.7×8.7×13.9	398×330×498 / 15.7×13×19.6	498×390×538 / 19.6×15.4×21.2
	Exterior (mm / inch)	611x878x911 / 24.1x34.6x36.2	660x1048x1056 / 23.7x41.2x41.6	761x1108x1096 / 30.0x43.6x43.1
	Viewing window (mm / inch)	220×300 / 8.7×11.8		
	Net weight (kg / lbs)	80±5 / 176±11	110±5 / 242±11	130±5 / 286±11

Cable port[2]	Basically one hole provided / ∅ 50mm (2") Optionally max. two holes available / ∅ 50 or 80mm (2 or 3.2")		
Interface port	Basically RS-232C [RS-485 (maximum 9 units control) - optional]		

Electrical requirements	AC230V, 1ph, 60Hz	5.3A	6.1A	6.8A
		AAH86011K	**AAH86021K**	**AAH86031K**
	AC230V, 1ph, 50Hz	5.3A	6.1A	6.8A
		AAH86012K	**AAH86022K**	**AAH86032K**

1) Technical data according to DIN 12880, IEC 60068.
2) 80mm cable access hole is NOT available for 25L chamber.

Permissible environmental conditions: temperature (18 to 30) and relative humidity (up to 85%).
All specifications are under ambient temperature 20 (68), no load.
FDA establishment registered company. FDA listed products.
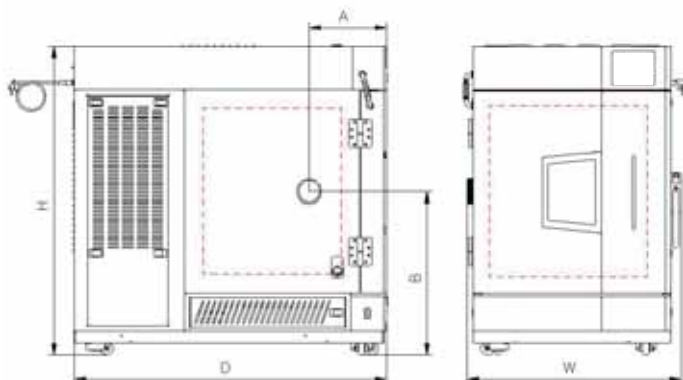
Dimension

Model	TC-ME-25	TC-ME-65	TC-ME-100
Capacity	25L(0.9 cu ft)	65L(2.3 cu ft)	100L(3.53 cu ft)
W	611mm(24.1")	660mm(26.0")	761mm(30.0")
D	878mm(34.6")	1048mm(41.3")	1108mm(43.6")
H	911mm(36.2")	1056mm(41.6")	1096mm(43.1")
A	211mm(8.3")	276mm(10.9")	276mm(10.9")
B	495mm(19.5")	580mm(22.8")	580mm(22.8")

Digital recorder

Perforated shelf

Warning signal lamp

for Floor Standing Chambers

Cat. No.	Description	Models						
		LBV	LTV	KBD	KMV	JMV	PBV/PMV	LCH
AAA8T505	Recorder (digital, 6 channels)	●	●	●	●	●	●	●
AAA8T540	Interface converter (RS - 485 232) included a cable (5m / 16.4ft)	●	●	●	●	●	●	-
AAA80550	Warning signal lamp	●	●	●	●	●	●	●
LTV0052	Wire shelf for LBV/LTV/KBD/KMV/JMV/PBV/PMV-012 (462x470mm / 18.2x18.5″)	●	●	●	●	●	●	-
LTV0053	Wire shelf for LBV/LTV/KBD/KMV/JMV/PBV/PMV-025 (562x620mm / 22.1x22.4″)	●	●	●	●	●	●	-
LTV0029	Wire shelf for LBV/LTV/KBD/KMV/JMV/PBV/PMV-040 (712x670mm / (28.0x26.4″)	●	●	●	●	●	●	-
LTV0030	Wire shelf for LBV/LTV/KBD/KMV/JMV/PBV/PMV-070 (862x770mm / 33.9x30.3″)	●	●	●	●	●	●	-
LTV0054	Wire shelf for LBV/LTV/KBD/KMV/JMV/PBV/PMV-100 (962x880 / 37.9x34.6″)	●	●	●	●	●	●	-
EDA8219	Wire shelf for LCH-11 models (566x466 / 22.3x17.6″)	-	-	-	-	-	-	●
EDA8220	Wire shelf for LCH-21 models (466x490 / 17.6x19.3″)	-	-	-	-	-	-	●
AAAK6531	Wire shelf for LCH-31 models (620x663 / 24.4x26.1″)	-	-	-	-	-	-	●
AAAK1501	Perforated shelf for LBV/LTV/KBD/KMV/JMV/PBV/PMV-012 (462x470mm / 18.2x18.5″) (max. load 40kg)	●	●	●	●	●	●	-
AAAK1502	Perforated shelf for LBV/LTV/KBD/KMV/JMV/PBV/PMV-025 (562x620mm / 22.1x22.4″) (max. load 40kg)	●	●	●	●	●	●	-
AAAK1503	Perforated shelf for LBV/LTV/KBD/KMV/JMV/PBV/PMV-040 (712x670mm / (28.0x26.4″) (max. load 40kg)	●	●	●	●	●	●	-
AAAK1504	Perforated shelf for LBV/LTV/KBD/KMV/JMV/PBV/PMV-070 (862x770mm / 33.9x30.3″) (max. load 40kg)	●	●	●	●	●	●	-
AAAK1505	Perforated shelf for LBV/LTV/KBD/KMV/JMV/PBV/PMV-100 (962x880 / 37.9x34.6″) (max. load 40kg)	●	●	●	●	●	●	-
AAA22521	Perforated shelf for LCH-11 models	-	-	-	-	-	-	●
AAA22522	Perforated shelf for LCH-21 models	-	-	-	-	-	-	●
AAAK6532	Perforated shelf for LCH-31 models	-	-	-	-	-	-	●
AAAK1521	Cable port(50,sus) for LBV, LTV models	●	●	-	-	-	-	-
AAAK1522	Cable port(80,sus) for LBV, LTV models	●	●	-	-	-	-	-
AAA80691	Gas nitrogen purge for LBV, LTV models	●	●	-	-	-	-	-

Recorder

Stand

Cable port

for Tabletop Chambers

Cat. No.	Description	TC-KE			TC-ME		
		25L	65L	100L	25L	65L	100L
AAA8T504	Portable recorder (6 points)	•	•	•	•	•	•
AAA8T506	Portable recorder (digital, 6 channels)	•	•	•	•	•	•
AAA8T540	Interface converter (RS - 485 232) included a cable (5m / 16.4ft)	•	•	•	•	•	•
AAA8T542	Interface cable (5m / 16.4ft)	•	•	•	•	•	•
AAA80550	Warning signal lamp	•	•	•	•	•	•
RTD679	Wire shelf (195×310mm / 7.7×12.2")	•	-	-	•	-	-
RTD680	Wire shelf (280×360mm / 11×14.2")	-	•	-	-	•	-
RTD681	Wire shelf (330×460mm / 13×18.1")	-	-	•	-	-	•
AAA80602-6	Perforated shelf (195×310mm / 7.7×12.2")	•	-	-	•	-	-
AAA80602-7	Perforated shelf (280×360mm / 11×14.2")	-	•	-	-	•	-
AAA80602-8	Perforated shelf (330×460mm / 13×18.1")	-	-	•	-	-	•
AAA8T612	Cable port (Ø 50mm / 2.0")	-	-	-	•	•	•
AAA8T613	Cable port (Ø 80mm / 3.2")	-	-	-	•	•	•
AAA8T610	Cable port (Ø 50mm / 2.0")	•	•	•	-	-	-
AAA8T611	Cable port (Ø 80mm / 3.2")	•	•	•	-	-	-
AAA80631	Stand for TC-KE/ME-025	•	-	-	•	-	-
AAA80632	Stand for TC-KE/ME-065	-	•	-	-	•	-
AAA80633	Stand for TC-KE/ME-100	-	-	•	-	-	•
AAA80634	Two step stand for TC-KE/ME-025	•	-	-	•	-	-
AAA80635	Two step stand for TC-KE/ME-065	-	•	-	-	•	-
CFA1910	Temperature sensor (RTD type)	•	•	•	•	•	•

80mm cable access hole is NOT available for 25L chamber.

Temperature & Humidity Chambers

17

- › Temp. & Humid. Chambers (Floor Standing)
- › Temp. & Humid. Chambers (Table Top)
- › Pharmaceutical Stability Test Chambers
- › Clean Temp. & Humid. Chamber
- › Plant Growth Chambers

General Applications

Temperature & Humidity Chambers

Test for reliability, durability, climatic, freezing resistance, quality assurance, thermal endurance.

Specific Purpose Chambers

- **Pharmaceutical Stability Test Chambers**
  Stability test in accordance with ICH Guideline Q1A (R2) and Q1B (option 2)

- **Clean Environmental Test Chamber**
  Designed for the process requiring environmental test in the clean condition.
  (ISO class 5 air cleanliness as per ISO 14644-1)

- **Plant Growth Chambers**
  Optimal photosynthesis condition for plant growth.

Product Name		Temperature & Humidity Chambers (Floor Standing Models)		
Model		TH-G	TH-I	TH-KH
Chamber volume (L)		189, 302, 408, 800, 1000, 1450	189, 302, 408	189, 302, 408
Temp. control	Operating temp. range (/)	-40 to 150 / -40 to 302	-40 to 150 / -40 to 302	-70 to 150 / -94 to 302
	Fluctuation (± /)	0.3 / 0.54 at 40 /75%RH	0.3 / 0.54 at 40 /75%RH	0.3 / 0.54 at 40 /75%RH
	Variation (± /)	0.5 / 0.9, 0.8 / 1.44 at 40 /75%RH	0.5 / 0.9 at 40 /75%RH	0.5 / 0.9 at 40 /75%RH
Humid. control	Operating humid. full range (%RH)	25 to 95	20 to 95	25 to 95
	Fluctuation (±%RH)	0.4, 1.0, 2.0 at 75%RH/40	0.4 at 75%RH/40	0.4 at 75%RH/40
	Variation (±%RH)	3.0 at 75%RH/40	3.0 at 75%RH/40	3.0 at 75%RH/40
Control	Timer	Wait on/off	Wait on/off	Wait on/off
	Auto-tuning	O	O	O
	Program function	O	O	O
	Computer interface	RS-232 port, RS-485 port (optional)	RS-232 port, RS-485 port (optional)	RS-232 port, RS-485 port (optional)
Safety	Over temp. limit	O	O	O
	Door open alarm	O	O	O
	Over current limit	O	O	O
	Auto-run (power failure)	O	O	O

Product Name		Pharmaceutical Stability Test Chambers	Clean Temp. & Humid. Chamber	Plant Growth Chambers
Model		TH-ICH	TH-CR	GC
Chamber volume (L)		300, 760	270	300, 1000
Temp. control	Operating temp. range (/)	-5 to 85 / 23 to 185	-35 to 100 / -31 to 212	5 to 50 / 41 to 122 - Lamp off 10 to 50 / 50 to 122 - Lamp on
	Fluctuation (± /)	0.3 / 0.54 at 40 /60%RH	0.5 / 0.9 at 40 /60%RH	0.4 / 0.72 at 25
	Variation (± /)	0.5, 0.7 / 0.9, 1.3 at 40 /60%RH	0.5 / 0.9 at 40 /60%RH	1.0 / 1.8 at 25
Humid. control	Operating humid. full range (%RH)	20 to 85	30 to 90	40 to 90
	Fluctuation (±%RH)	3.0 at 60%RH/40	3.0 at 60%RH/40	3 at 60% RH
	Variation (±%RH)	5.0 at 60%RH/40	3.0 at 60%RH/40	-
Control	Timer	Wait on/off	Wait on/off	Wait on/off
	Auto-tuning	O	O	O
	Program function	O	O	O
	Computer interface	RS-232 port, RS-485 port (optional)	RS-232 port, RS-485 port (optional)	-
Safety	Over temp. limit	O	O	O
	Door open alarm	O	O	O
	Over current limit	O	O	O
	Auto-run (power failure)	O	O	O

Temperature & Humidity Chambers (Floor Standing Models)			Temperature & Humidity Chambers (Tabletop Models)		
TH-TG		TH-DG (Dual)	TH-KE	TH-ME	TH-PE
180, 314, 419	770, 997, 1540	150 x 2 chambers, 288 x 2 chambers, 384 x 2 chambers	25, 65, 100		
-5 to 100 / 23 to 212		-5 to 100 / 23 to 212	-40 to 150 / -40 to 302	-20 to 150 / -4 to 302	0 to 120 / 32 to 248
0.3 / 0.54 at 40 /60%RH		0.3 / 0.54 at 40 /75%RH	0.4, 0.3 / 0.72, 0.54 at 50 /60%RH	03, 0.2 / 0.54, 0.36 at 25 /60%RH	0.2, 0.3 / 0.36, 0.54 at 25 /60%RH
0.5 / 0.9 at 40 /60%RH		0.5 / 0.9 at 40 /75%RH	0.3, 0.4 / 0.54, 0.72 at 50 /60%RH	0.6, 0.2 / 1.08, 0.36 at 25 /60%RH	0.3 / 0.54 at 25 /60%RH
10 to 95	20 to 95	15 to 90	20 to 95		30 to 95
2.0 at 60%RH/40		0.8 at 75%RH/40	4.1, 2.8, 1.8 at 60%RH/50	2.0, 2.7 at 60%RH/55	1.6, 0.4, 0.5 at 60%RH/55
3.0 at 60%RH/40		3.0 at 75%RH/40	0.9, 1.0, 1.2 at 60%RH/50	0.6, 1.1, 1.2 at 60%RH/55	3.0 at 60%RH/55
Wait on/off		Wait on/off	Wait on/off		
O		O	O		
O		O	O		
RS-232 port, RS-485 port (optional)		RS-485 port, RS-232 port (optional)	RS-232 port, RS-485 port (optional)		
O		O	O		
O		O	O		
O		O	O		
O		O	O		

CE · Green CFC-Free · Computer Interface · Program · 1 Point Temperature Calibration · Full Start Level Indicater · Over Temp. · Auto Run

Standard environmental test chamber.
Highly interactive LCD controller, beneficial for sophisticated long-term test cycles.

Control range

- Temperature range from -40 to 150
  Humidity range from 25 to 95% RH

Relative Humidity %RH

Unstable control range after 24 hours operation

TH-G-180/300/408   Temperature

Relative Humidity %RH

TH-G-1500

TH-G-800/1000

Unstable control range after 24 hours operation

TH-G-800/1000/1500   Temperature

TH-G
with optional recorder

Standard accessories	• Viewing window, Wire shelves, Cable port (Ø50mm) • Water container, Door key
Optional accessories **see page 242**	• Interface converter, Water purifiers, Direct water system

Performance

- Microprocessor PID control / Temperature calibration / Automatic tuning.

- 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.

- Water recycling and filtering system reduce water consumption for longer operation.

- Air-tight door closure with perfect sealed packing.
  - Heat-resistant silicone packing completely blocks high heat leakage from the inner chamber.
  - Two-point door latch also enhances tightness to door closure.

- Energy efficiency is achieved by optimization of the insulation system.
  - Even if the unit is operating at max. temperature, the surface of the unit doesn't allow high temperatures of over 60   .

Safety

- Built in door lock with a key.

- Automatic shut off after overheat alarm.

- Low and empty water level alarm.

- Power supply leakage breaker.

- Over current protection.

- Open door alarm.

Color LCD controller   Computer interface

Door handle   Portable water container

Convenience

- Spacious chamber volume with a maximum capacity of 1500L.
  - Various volume sizes, available to suit any users' need.

- Corrosion resistance stainless steel chamber and electric polished humidification tank.

- Maintenance of water supply are easily performed with a front water tank.
  - Portable water container makes supplying water convenient.

- Water supply during operation is also available for long term test purposes.

- Direct water system provides user great convenience when performing long-term tests. (optional)

- Clear observation of samples.
  - Tempered glass door with built in heating wire.
  - Energy efficient, long life span LED lighting.
  - Wider view, inner glass door is available for monitoring of samples. (optional)

- Cable port for introduction of external probes or wires.
  - 50mm diameter cable port comes standard on the left side of the unit.
  - Additional 50mm or 80mm diameter cable ports, custom ordered. (optional)

- Casters for easy mobility during installation or relocation.

- User friendly LCD controller.
  - 5.7 inch colorful interactive touch type LCD controller.
  - Set value and present value are clearly visible together on display.
  - Operating progress visible in graph mode allow for direct data interpretation.
  - Built-in SD card drive.
  - Trilingual support. (English / Chinese / Korean)
  - Temperature and other operating parameters recorded with use of selectable recorder. (optional)
  - Sufficient programmable control support.

Description	No
Programmable pattern capacity	120
Pattern repeat time	999
Max. segments per a pattern	100
Available max. segments*	1200
Programmable process time per a segment	0 to 999hr. 59 min. 59 sec.

* Even though the max. segments per a pattern are 100, available total segments are up to 1200 not 12000, so you need to arrange the number of segment an patterns properly.

- Computer interface.
  - RS-485 communication port enables connection of up to maximum 9 units. Simultaneous monitoring and operating of multiple units is an available feature. (optional)
  - Program patterns are simple to set with the use of our software.
  - Storage of program information, backup of value settings, recovery, temperature, humidity values.
  - RS-232 communication port comes standard.

Temperature & Humidity Chambers (Floor Standing - TH-G)

| Model		TH-G-180	TH-G-300	TH-G-408	TH-G-800	TH-G-1000	TH-G-1500
Chamber volume (L / cu ft)		189 / 7.4	302 / 11.9	408 / 14.4	800 / 28.3	1000 / 35.3	1450 / 51.2
Controller		Programmable, Touch screen type controller (5.7" color monitor)					
Temperature	Range (/)	-40 to 150 / -40 to 302 without humidity, 15 to 90 / 59 to 194 with humidity * Best programmable control range : -30 to 140 / -22 to 284					
	Fluctuation [1] (± /) at 40 / 75%RH	0.3 / 0.54					
	Variation [1] (± /) at 40 / 75%RH	0.5 / 0.9					0.8 / 1.44
Time	Heating - without humidity (min.)	70 from -40 to 120 (-40 to 248)			70 from -40 to 120 (-40 to 248)		90 from -40 to 120 (-40 to 248)
	Cooling - without humidity (min.)	75 from 20 to -40 (68 to -40)			85 from 20 to -40 (68 to -40)		90 from 20 to -40 (68 to -40)
Humidity	Range (%RH)	25 to 95 See page 216 for more detailed humidity range check.					
	Fluctuation [1] (±%RH) at 75%RH / 40	0.4			1.0		2.0
	Variation [1] (±%RH) at 75%RH / 40	3					
Refrigeration	System	Mechanical single stage refrigerator system (air-cooled condenser)			Mechanical dual stage refrigerator system (air-cooled condenser)		
	Refrigerant	R-507					
Water Supply	Capacity	15L (0.53cu ft) - Cartridge type					
	Water quality	pH6.2 to 7.2 / Electrical conductivity 20 /cm to below					
No. of wire 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
Dimension (W×D×H)	Interior (mm / inch)	500×630×600 / 19.7×24.8×23.6	600×630×800 / 23.6×24.8×31.5	600×850×800 / 23.6×33.5×31.5	1000×800×1000 / 39.4×31.5×39.4	1000×1000×1000 / 39.4×39.4×39.4	1000×1000×1450 / 39.4×39.4×57.1
	Exterior (mm / inch)	1003×1139×1468 / 39.5×44.8×57.8	1103×1139×1668 / 43.4×44.8×65.7	1103×1359×1668 / 43.4×53.5×65.7	1503×1319×1968 / 59.2×51.9×77.5	1503×1519×1968 / 59.2×59.8×77.5	1503×2065×2007 / 59.2×81.3×79
	Viewing windows (mm / inch)	200×330 / 7.9×13			270×330 / 10.6×13		
	Net weight (kg / lbs)	320 / 705.5	385 / 848.8	410 / 903.9	620 / 1366.9	680 / 1499.1	860 / 1895.9
Cable port		Basically one hole provided / Ø50mm (2") - Optionally max. two holes available / Ø 50 or 80mm (2 or 3.2")					
Interface port		Basically RS-232C [RS-485-optional]					
Electrical requirements (230V, 60Hz)		1ph / 26.3A	1ph / 26.7A				
Cat. No.		AAH80011K	AAH80021K	AAH80031K	-	-	-
Electrical requirements (230V, 50Hz)		1ph / 26.3A	1ph / 26.7A				
Cat. No.		AAH80013K	AAH80023K	AAH80033K	-	-	-
Electrical requirements (380V, 50Hz)		3ph / 9.1A	3ph / 9.2A		3ph / 12.2A		3ph / 15.5A
Cat. No.		AAH80018K	AAH80028K	AAH80038K	AAH80048K	AAH80058K	AAH80078K

1) Technical data according to DIN 12880, IEC 60068.

Permissible environmental conditions: temperature (18 to 30) and relative humidity (up to 85%).
All specifications are under ambient temperature 20 (68), No load.
FDA establishment registered company. FDA listed products.
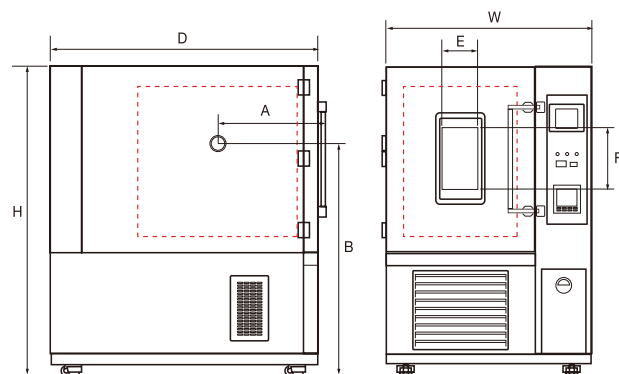
Dimension

Model	TH-G-180	TH-G-300	TH-G-408
Capacity	189L (7.4cu ft)	302L (11.9cu ft)	408L (14.4cu ft)
W	1003mm (39.5")	1103mm (43.4")	1103mm (43.4")
D	1139mm (44.8")	1139mm (44.8")	1359mm (53.5")
H	1468mm (57.8")	1668mm (65.7")	1668mm (65.7")
A	412mm (16.2")	432mm (17.0")	532mm (20.9")
B	1110mm (43.7")	1246mm (49.0")	1246mm (49.0")

Dimension

Model	TH-G-800	TH-G-1000	TH-G-1500
Capacity	800L (28.3cu ft)	1000L (35.3cu ft)	1450L (51.2cu ft)
W	1503mm (59.2")	1503mm (59.2")	1503mm (59.2")
D	1319mm (51.9")	1519mm (59.8")	2065mm (81.3")
H	1968mm (77.5")	1968mm (77.5")	2007mm (79.0")
A	509mm (20.0")	609mm (23.9")	482mm (19.0")
B	1465mm (57.7")	1465mm (57.7")	1500mm (59.0")

| CE | Green CFC-Free | Computer Interface | Program | 1 Point Temperature Calibration | Full Start Level Indicater | Over Temp. | Auto Run |
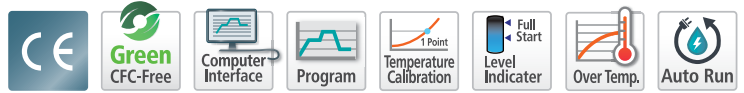
Great low temperature and humidity control performance.

Control range

- Temperature range from -40 to 150
  Humidity range from 20 to 95% RH

Relative Humidity %RH

☐ Unstable control range after 24 hours operation

TH-I-180/300/408   Temperature

TH-I
with optional recorder

Standard accessories
- Viewing window, Wire shelves, Cable port (Ø50mm)
- Water container, Door key

Optional accessories
see page 242
- Interface converter, Water purifiers, Direct water system

Temperature & Humidity Chambers (Floor Standing - TH-I)

Performance

- Microprocessor PID control / Temperature calibration / Automatic tuning.
- 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.
- Water recycling and filtering system reduce water consumption for longer operation.
- Air-tight door closure with perfect sealed packing.
  - Heat-resistant silicone packing completely blocks high heat leakage from the inner chamber.
  - Two-point door latch also enhances tightness to door closure.
- Energy efficiency is achieved by optimization of the insulation system.
  - Even if the unit is operating at max. temperature, the surface of the unit doesn't allow high temperatures of over 60 .

Safety

- Built in door lock with a key.
- Automatic shut off after overheat alarm.
- Low and empty water level alarm.
- Power supply leakage breaker.
- Over current protection.
- Open door alarm.

Convenience

- Three different volume sizes are available to suit any users'needs.
- Corrosion resistance stainless steel chamber and electric polished humidification tank.
- Maintenance of water supply are easily performed with a front water tank.
  - Portable water container makes supplying water convenient.
- Water supply during operation is also available for long term test purposes.
- Direct water system provides user great convenience when performing long-term tests. (optional)
- Clear observation of samples.
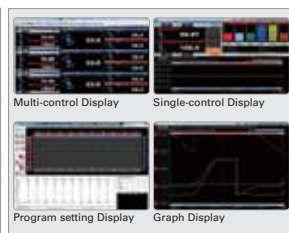 - Tempered glass door with built in heating wire.
  - Energy efficient, long life span LED lighting.
  - Wider view, inner glass door is available for monitoring of samples. (optional)
- Cable port for introduction of external probes or wires.
  - 50mm diameter cable port comes standard on the left side of the unit.
  - Additional 50mm or 80mm diameter cable ports, custom ordered. (optional)
- Casters for easy mobility during installation or relocation.
- User friendly LCD controller.
  - 5.7 inch colorful interactive touch type LCD controller.
  - Set value and present value are clearly visible together on display.
  - Operating progress visible in graph mode allow for direct data interpretation.
  - Built-in SD card drive.
  - Trilingual support. (English / Chinese / Korean)
  - Temperature and other operating parameters recorded with use of an selectable recorder. (optional)
  - Sufficient programmable control support.

Description	No
Programmable pattern capacity	120
Pattern repeat time	999
Max. segments per a pattern	100
Available max. segments*	1200
Programmable process time per a segment	0 to 999hr 59 min 59 sec

* Even though the max. segments per a pattern are 100, available total segments are up to 1200 not 12000, so you need to arrange the number of segment an patterns properly.

- Computer interface.
  - RS-485 communication port enables connection of up to maximum 9 units. Simultaneous monitoring and operating of multiple units is an available feature. (optional)
  - Program patterns are simple to set with the use of our software.
  - Storage of program information, backup of value settings, recovery, temperature, humidity values.
  - RS-232 communication port comes standard.

Color LCD controller

Multi-control Display   Single-control Display

Program setting Display   Graph Display

Computer interface

Portable water container

Door handle

Model	TH-I-180	TH-I-300	TH-I-408
Chamber volume (L / cu ft)	189 / 7.4	302 / 11.9	408 / 14.4
Controller	Programmable, Touch screen type controller (5.7" color monitor)		

Temperature	Range (/)	-40 to 150 / -40 to 302 without humidity, 15 to 90 / 59 to 194 with humidity * Best programmable control range : -30 to 140 / -22 to 284		
	Fluctuation [1] (± /) at 40 / 75%RH	0.3 / 0.54		
	Variation [1] (± /) at 40 / 75%RH	0.5 / 0.9		
Time	Heating - without humidity (min.)	70 from -40 to 120 (-40 to 248)		
	Cooling - without humidity (min.)	75 from 20 to -40 (68 to -40)		
Humidity	Range (%RH)	20 to 95 See page 219 for more detailed humidity range check.		
	Fluctuation [1] (±%RH) at 75%RH / 40	0.4		
	Variation [1] (±%RH) at 75%RH / 40	3		
Refrigeration	System	Mechanical single stage refrigerator system (air-cooled condenser)		
	Refrigerant	R-507		
Water Supply	Capacity	15L (0.53cu ft) - Cartridge type		
	Water quality	pH6.2 to 7.2 / Electrical conductivity 20 /cm to below		
No. of wire 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
Dimension (W×D×H)	Interior (mm / inch)	500×630×600 / 19.7×24.8×23.6	600×630×800 / 23.6×24.8×31.5	600×850×800 / 23.6×33.5×31.5
	Exterior (mm / inch)	1003×1139×1468 / 39.5×44.8×57.8	1103×1139×1668 / 43.4×44.8×65.7	1103×1359×1668 / 43.4×53.5×65.7
	Viewing windows (mm / inch)	200×330 / 7.9×13		
	Net weight (kg / lbs)	320 / 705.5	385 / 848.8	410 / 903.9
Cable port		Basically one hole provided / Ø50mm (2") - Optionally max. two holes available / Ø 50 or 80mm (2 or 3.2")		
Interface port		Basically RS-232C [RS-485-optional]		
Electrical requirements (230V, 60Hz)		1ph / 26.3A	1ph / 26.7A	
Cat. No.		**AAH80111K**	**AAH80121K**	**AAH80131K**
Electrical requirements (230V, 50Hz)		1ph / 26.3A	1ph / 26.7A	
Cat. No.		**AAH80113K**	**AAH80123K**	**AAH80133K**
Electrical requirements (380V, 50Hz)		3ph / 9.1A	3ph / 9.2A	
Cat. No.		**AAH80118K**	**AAH80128K**	**AAH80138K**

1) Technical data according to DIN 12880, IEC 60068.

Permissible environmental conditions: temperature (18 to 30) and relative humidity (up to 85%).
All specifications are under ambient temperature 20 (68), No load.
FDA establishment registered company. FDA listed products.
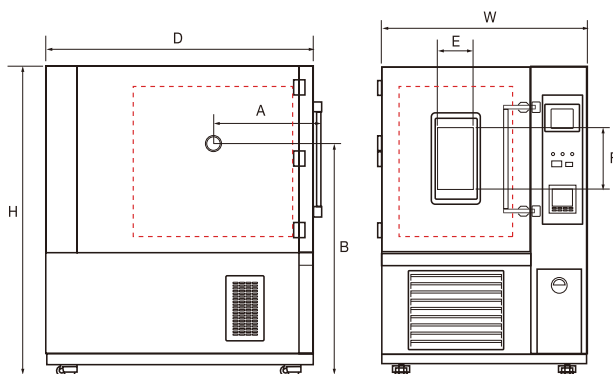
Dimension

Model	TH-I-180	TH-I-300	TH-I-408
Capacity	189L (7.4cu ft)	302L (11.9cu ft)	408L (14.4cu ft)
W	1003mm (39.5")	1103mm (43.4")	1103mm (43.4")
D	1139mm (44.8")	1139mm (44.8")	1359mm (53.5")
H	1468mm (57.8")	1668mm (65.7")	1668mm (65.7")
A	412mm (16.2")	432mm (17.0")	532mm (20.9")
B	1110mm (43.7")	1246mm (49.0")	1246mm (49.0")

| CE | Green CFC-Free | Computer Interface | Program | 1 Point Temperature Calibration | Full Start Level Indicater | Over Temp. | Auto Run |
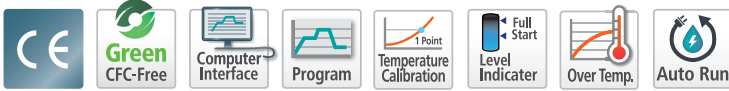
Wide temperature range down to -70°C and high advanced safety features for quality and reliability.

Control range

• Temperature range from -70 to 150
  Humidity range from 25 to 95% RH

☐ Unstable control range after 24 hours operation

TH-KH-180/300/408

TH-KH
with optional recorder

| **Standard accessories** | • Viewing window, Wire shelves, Cable port (Ø50mm)
• Water container, Door key |
| **Optional accessories**
see page 242 | • Interface converter, Water purifiers, Direct water system |

Performance

· Microprocessor PID control / Temperature calibration / Automatic tuning.

· 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.

· Water recycling and filtering system reduce water consump-tion for longer operation.

· Air-tight door closure with perfect sealed packing.
  - Heat-resistant silicone packing completely blocks high heat leakage from the inner chamber.
  - Two-point door latch also enhances tightness to door closure.

· Energy efficiency is achieved by optimization of the insulation system.
  - Even if the unit is operating at max. temperature, the surface of the unit doesn't allow high temperatures of over 60   .

Safety

· Built in door lock with a key.

· Automatic shut off after overheat alarm.

· Low and empty water level alarm.

· Power supply leakage breaker.

· Over current protection.

· Open door alarm.

Color LCD controller   Computer interface

Door handle   Portable water container

Convenience

· Three different volume sizes are available to suit any users'needs.
  - Various volume sizes, available to suit any users' need.

· Corrosion resistance stainless steel chamber and electric polished humidification tank.

· Maintenance of water supply are easily performed with a front water tank.
  - Portable water container makes supplying water convenient.

· Water supply during operation is also available for long term test purposes.

· Direct water system provides user great convenience when performing long-term tests. (optional)

· Clear observation of samples.
  - Tempered glass door with built in heating wire.
  - Energy efficient, long life span LED lighting.
  - Wider view, inner glass door is available for monitoring of samples. (optional)

· Cable port for introduction of external probes or wires.
  - 50mm diameter cable port comes standard on the left side of the unit.
  - Additional 50mm or 80mm diameter cable ports, custom ordered. (optional)

· Casters for easy mobility during installation or relocation.

· User friendly LCD controller.
  - 5.7 inch colorful interactive touch type LCD controller.
  - Set value and present value are clearly visible together on display.
  - Operating progressvisible in graph mode allow for direct data interpretation.
  - Built-in SD card drive.
  - Trilingual support. (English / Chinese / Korean)
  - Temperature and other operating parameters recorded with use of selectable recorder. (optional)
  - Sufficient programmable control support.

Description	No
Programmable pattern capacity	120
Pattern repeat time	999
Max. segments per a pattern	100
Available max. segments*	1200
Programmable process time per a segment	0 to 999hr 59 min 59 sec

* Even though the max. segments per a pattern are 100, available total segments are up to 1200 not 12000, so you need to arrange the number of segment an patterns properly.

· Computer interface.
  - RS-485 communication port enables connection of up to maximum 9 units. Simultaneous monitoring and operating of multiple units is an available feature. (optional)
  - Program patterns are simple to set with the use of our software.
  - Storage of program information, backup of value settings, recovery, temperature, humidity values.
  - RS-232 communication port comes standard.

Temperature & Humidity Chambers (Floor Standing - TH-KH)

Model		TH-KH-180	TH-KH-300	TH-KH-408
Chamber volume (L / cu ft)		189 / 7.4	302 / 11.9	408 / 14.4
Controller		Programmable, Touch screen type controller (5.7" color monitor)		
Temperature	Range (/)	-70 to 150 / -94 to 302 without humidity, 15 to 90 / 59 to 194 with humidity * Best programmable control range : -60 to 140 / -76 to 284		
	Fluctuation[1] (± /) at 40 / 75%RH	0.3 / 0.54		
	Variation[1] (± /) at 40 / 75%RH	0.5 / 0.90		
Time	Heating - without humidity (min.)	70 from -70 to 120 (96 to 248)		
	Cooling - without humidity (min.)	80 from 20 to -70 (68 to -96)		
Humidity	Range (%RH)	25 to 95 See page 222 for more detailed humidity range check.		
	Fluctuation[1] (±%RH) at 75%RH / 40	0.4		
	Variation[1] (±%RH) at 75%RH / 40	3.0		
Refrigeration	System	Mechanical dual stage refrigerator system (air-cooled condenser)		
	Refrigerant	R-507, R-23		
Water supply	Capacity	15L (0.53cu ft) - Cartridge type		
	Water quality	pH6.2 to 7.2 / Electrical conductivity 20 /cm to below		
No. of wire 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
Dimension (W×D×H)	Interior (mm / inch)	500×630×600 / 19.7×24.8×23.6	600×630×800 / 23.6×24.8×31.5	600×850×800 / 23.6×33.5×31.5
	Exterior (mm / inch)	1050×1615×1560 / 41.3×63.6×61.4	1150×1615×1760 / 45.3×63.6×69.3	1150×1835×1760 / 45.3×72.2×69.3
	Viewing windows (mm / inch)	200×330 / 7.9×13		
	Net weight (kg / lbs)	320 / 705.5	385 / 848.8	410 / 903.9
Cable port		Basically one hole provided / Ø50mm (2") - Optionally max. two holes available / Ø 50 or 80mm (2 or 3.2")		
Interface port		Basically RS-232C [RS-485-optional]		
Electrical requirements (380V, 50Hz)		3ph / 10.1A	3ph / 10.2A	
Cat. No.		**AAHC3014K**	**AAHC3114K**	**AAHC3214K**

1) Technical data according to DIN 12880, IEC 60068.

Permissible environmental conditions: temperature (18 to 30) and relative humidity (up to 85%).
All specifications are under ambient temperature 20 (68), No load.
FDA establishment registered company. FDA listed products.
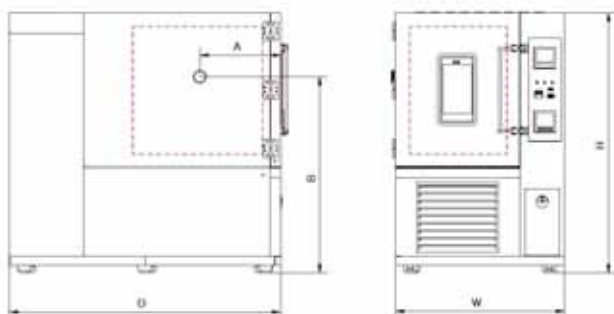
Dimension

Model	TH-KH-180	TH-KH-300	TH-KH-408
Capacity	189L (7.4cu ft)	302L (11.9cu ft)	408L (14.4cu ft)
W	1050mm (41.3")	1150mm (45.3")	1150mm (45.3")
D	1615mm (63.6")	1615mm (63.6")	1835mm (72.2")
H	1560mm (61.4")	1760mm (69.3")	1760mm (69.3")
A	550mm (21.7")	570mm (22.4")	670mm (26.4")
B	1225mm (48.2")	1325mm (52.2")	1325mm (52.2")

CE | Green CFC-Free | Computer Interface | Program | 1 Point Temperature Calibration | Full Start Level Indicater | Over Temp. | Auto Run

Economy environmental test chamber.
Stability test in accordance with ICH guidelines Q1A (R2)

TH-TG
with optional recorder

| **Standard accessories** | • Viewing window, Wire shelves, Cable port (Ø50mm) |
| | • Water container, Door key |

| **Optional accessories**
see page 242 | • Interface converter, Water purifiers, Direct water system |

Control range

• Temperature range from -5 to 100
  Humidity range from 10 to 95% RH

Relative Humidity %RH

☐ Unstable control range after 24 hours operation

TH-TG-180/300/408 Temperature

• Temperature range from -5 to 100
  Humidity range from 20 to 95% RH

Relative Humidity %RH

☐ Unstable control range after 24 hours operation

TH-TG-800/1000/1500 Temperature

Performance

- Microprocessor PID control / Temperature calibration / Automatic tuning.
- 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.
- Water recycling system reduce water consumption for longer operation.
- Air-tight door closure with perfect sealed packing.
  - Heat-resistant silicone packing completely blocks high heat leakage from the inner chamber.
  - Two-point door latch also enhances tightness to door closure.
- Energy efficiency is achieved by optimization of the insulation system.
  - Even if the unit is operating at max. temperature, the surface of the unit doesn't allow high temperatures of over 60℃.

Safety

- Built in door lock with a key.
- Automatic shut off after overheat alarm.
- Low and empty water level alarm.
- Power supply leakage breaker.
- Over current protection.
- Open door alarm.

LCD controller

Computer panel

Viewing window

Portable water container

Convenience

- Spacious chamber volume with a maximum capacity of 1500L.
  - Various volume sizes, available to suit any users' need.
- Corrosion resistance stainless steel chamber and electric polished humidification tank.
- Maintenance of water supply are easily performed with a front water tank.
  - Portable water container makes supplying water convenient.
- Water supply during operation is also available for long term test purposes.
- Direct water system provides user great convenience when performing long-term tests. (optional)
- Clear observation of samples.
  - Tempered glass door with built in heating wire.
  - Energy efficient, long life span LED lighting.
  - Wider view, inner glass door is available for monitoring of samples. (optional)
- Cable port for introduction of external probes or wires.
  - 50mm diameter cable port comes standard on the left side of the unit.
  - Additional 50mm or 80mm diameter cable ports, custom ordered. (optional)
- Casters for easy mobility during installation or relocation.
- User friendly LCD controller.
  - Colorful interactive touch type LCD controller.
  - Set point temperature and present temperature are clearly shown together on display.
  - Sufficient programmable control support.
  - Operating progress can be shown in graph mode for better data understanding.
  - Automatic start/stop can be programmed for unattended operations.
  - Display indicates abnormal temperature changes or power failures.
  - Selective bilingual language support.
    (Korean / English or English / Chinese, selectable only when placing an order)
  - Temperature and other operating parameters can be recorded using a six channel digital recorder. (optional)
- Computer interface.
  - RS-485 communication port (optional) enables connection up to maximum 32 units. Simultaneous monitoring and operating of multiple units is an available feature.
  - Program patterns are simple to set with the use of our software.
  - Easy to check status of real-time operations. Graph data supports easy understanding.
  - Storage and documentation of programs.
  - Data with saving capabilities in excel and text format.
  - Storage of program information, backup of value settings, recovery, and temperature values.
  - RS-232 communication port as standard offer.

Description	No
Programmable pattern capacity	100
Pattern repeat time	999
Part repeat time	255
Max. segments per a pattern	100
Available max. segments*	2000
Programmable process time per a segment	0 to 99 hr. 59 min.

* Even though the max. segments per pattern are 100, the total available segments are up to 2000 not 10000, therefore arrangement of the number of segment and patterns will need to be done properly.

Model			TH-TG-180	TH-TG-300	TH-TG-408	TH-TG-800	TH-TG-1000	TH-TG-1500
Chamber volume (L / cu ft)			180 / 6.4	314 / 11.1	419 / 14.8	770 / 27.2	997 / 35.2	1540 / 54.4
Controller			Program controller (LCD type)					
Temperature	Range	without humidity (/)	-5 to 100 / 23 to 212					
		with humidity (/)	10 to 90 / 50 to 194			20 to 90 / 68 to 194		
	Fluctuation [1] (± /) at 40 / 60%RH		0.3 / 0.55					
	Variation [1] (± /) at 40 / 60%RH		0.5 / 0.9					
Time	Heating (min.)		50 (-5 →100)			55 (-5 →100)		
	Cooling (min.)		120 (100 →-5)			145 (100 →-5)		
Humidity	Range (%RH)		10 to 95 See page 225 for more detailed humidity range check.			20 to 95 See page 225 for more detailed humidity range check.		
	Fluctuation [1] (±%RH) at 60%RH / 40		2					
	Variation [1] (±%RH) at 60%RH / 40		3					
Refrigeration	System		Air-cooled					
	Refrigerant		R-507A					
Water tank	Capacity (L / cu ft)		15 / 0.53					
	Water quality		pH6.2 ~ 7.2, Electrical conductivity 20 / cm to below					
No. of wire 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
Dimension (W×D×H)	Interior (mm / inch)		500×600×600 / 19.7×23.6×23.6	748×600×700 / 29.4×23.6×27.6	748×800×700 / 29.4×31.5×27.6	748×920×1120 / 29.4×36.2×44.1	748×1190×1120 / 29.4×46.9×44.1	1100×1000×1400 / 43.3×39.4×55.1
	Exterior (mm / inch)		952×907×1503 / 37.5×35.7×59.2	1201×907×1525 / 47.3×35.7×60.0	1201×1107×1525 / 47.3×43.6×60.0	120×1228×1993 /47.3×48.3×78.5	1201×1498 ×1993 / 47.3×59.0×78.5	1554×1872×1935 / 61.2×73.7×76.2
	Viewing window (mm / inch)		200×330 / 7.9×13					
	Net weight (kg / lbs)		220±10 / 485±22	250±10 / 551±22	280±10 / 617±22	360±10 / 794±22	410±10 / 904±22	480±10 / 1058±22
Cable port			Basically one hole provided / ∅ 50mm (2"), Optionally max. two holes available / ∅ 50 or 80mm (2 or 3.2")					
Interface port			Basically RS-232C, [RS-485 : optional]					
Electrical requirements	AC230V, 1ph, 60Hz		12.3 A	14.5 A	14.5 A	15.4 A	15.4 A	25.0A
	Cat.No.		AAHC2001K	AAHC2011K	AAHC2021K	AAHC2031K	AAHC2041K	AAHC2051K
	AC230V, 1ph, 50Hz		12.3 A	14.5 A	14.5 A	15.4 A	15.4 A	25.0A
	Cat.No.		AAHC2002K	AAHC2012K	AAHC2022K	AAHC2032K	AAHC2042K	AAHC2052K

1) Technical data according to DIN 12880, IE^C 60068.

Permissible environmental conditions: temperature (18 to 30) and relative humidity (up to 85%).
All specifications are under ambient temperature 20 (68), No load.
FDA establishment registered company. FDA listed products.

Dimension

Model	TH-TG-180	TH-TG-300	TH-TG-408
Capacity	180L (6.4 cu ft)	314L (11.1 cu ft)	419L (14.8 cu ft)
W	952mm (37.5")	1201mm (47.3")	1201mm (47.3")
D	907mm (35.7")	907mm (35.7")	1107mm (43.6")
H	1503mm (59.2")	1525mm (60.0")	1525mm (60.0")
A	321mm (12.6")	366mm (14.4")	366mm (14.4")
B	1004mm (39.5")	1016mm (40.0")	1016mm (40.0")
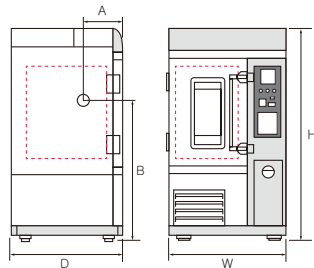
Dimension

Model	TH-TG-800	TH-TG-1000	TH-TG-1500
Capacity	770L (27.2 cu ft)	997L (35.2 cu ft)	1540L (54.4 cu ft)
W	1201mm (47.3")	1201mm (47.3")	1554mm (61.2")
D	1228mm (48.3")	1498mm (59.0")	1872mm (73.7")
H	1993mm (78.5")	1993mm (78.5")	1935mm (76.2")
A	385mm (15.2")	520mm (20.5")	447mm (17.6")
B	1335mm (52.6")	1335mm (52.6")	1384mm (54.5")

Temperature & Humidity Chambers (Floor Standing - TH-DG)

CE | **Green CFC-Free** | **Computer Interface** | **Program** | **Temperature Calibration 1 Point** | **Level Indicater Full Start** | **Over Temp.** | **Auto Run**
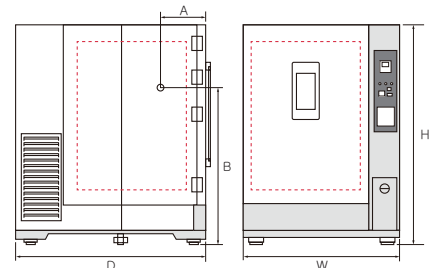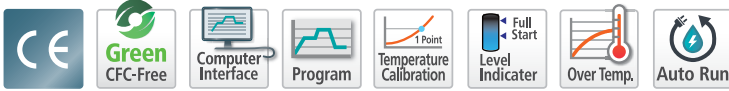
Environmental test equipment with dual chambers.

Specially designed for conducting each different experiment at once.
Stability test in accordance with ICH guidelines Q1A (R2)

Control range

· Temperature range from -5 to 100
  Humidity range from 15 to 90% RH

Relative Humidity %RH

☐ Unstable control range after 24 hours operation

TH-DG-150/300/400   Temperature
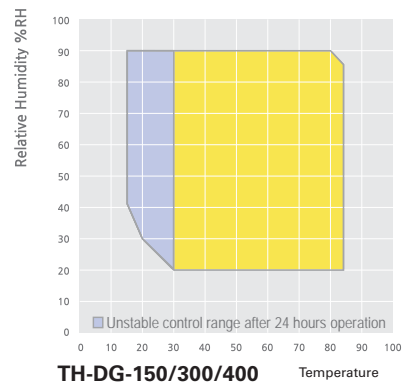
TH-DG
with optional recorder

Standard accessories	· Viewing window, Wire shelves, Cable port (Ø50mm) · Water container, Door key
Optional accessories **see page 242**	· Interface converter, Water purifiers, Direct water system

Efficient lab space use with dual chamber

· Designed to offer an ideal and cost-effective solution for
  laboratories with limited space and budget.
  - Two chambers merged into a single unit.

· Optimum model selection between three sized chambers
  according to application demand.

· Suitable for conducting each different experiment at once.
  - Independent temperature and humidity control of each chamber
    using microprocessor PID.

Performance

· Microprocessor PID control / Temperature calibration / Automatic tuning.

· 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.

· Water recycling system reduce water consumption for longer operation.

· Air-tight door closure with perfect sealed packing.
  - Heat-resistant silicone packing completely blocks high heat leakage from the inner chamber.
  - Two-point door latch also enhances tightness to door closure.

· Energy efficiency is achieved by optimization of the insulation system.
  - Even if the unit is operating at max. temperature, the surface of the unit doesn't allow high temperatures of over 60   .

Safety

· Built in door lock with a key.

· Automatic shut off after overheat alarm.

· Low and empty water level alarm.

· Power supply leakage breaker.

· Over current protection.

· Open door alarm.

Viewing window

Door key lock

Two-point door latch

Convenience

· Three different volume sizes are available to suit any users' needs.

· Corrosion resistance stainless steel chamber and electric polished humidification tank.

· Water supply during operation is also available for long term test purposes.

· Direct water system provides user great convenience when performing long-term tests. (optional)

· Clear observation of samples.
  - Tempered glass door with built in heating wire.
  - Energy efficient, long life span LED lighting.

· Cable port for introduction of external probes or wires.
  - 50mm diameter cable port comes standard on the unit.
  - Additional 50mm or 80mm diameter cable ports, custom ordered. (optional)

· Casters for easy mobility during installation or relocation.

· User friendly LCD controller.
  - Colorful interactive touch type LCD controller.
  - Set point temperature and present temperature are clearly shown together on display.
  - Sufficient programmable control support.
  - Operating progress can be shown in graph mode for better data understanding.
  - Automatic start/stop can be programmed for unattended operations.
  - Display indicates abnormal temperature changes or power failures.
  - Selective bilingual language support.
    (Korean / English or English / Chinese, selectable only when placing an order)
  - Temperature and other operating parameters can be recorded using a six channel digital recorder. (optional)

· Computer interface.
  - RS-485 communication port enables connection up to maximum 32 units. Simultaneous monitoring and operating of multiple units is an available feature.
  - Program patterns are simple to set with the use of our software.
  - Easy to check status of real-time operations. Graph data supports easy understanding.
  - Storage and documentation of programs.
  - Data with saving capabilities in excel and text format.
  - Storage of program information, backup of value settings, recovery, and temperature values.
  - RS-232 communication port (optional)

Description	No
Programmable pattern capacity	100
Pattern repeat time	999
Part repeat time	255
Max. segments per a pattern	100
Available max. segments*	2000
Programmable process time per a segment	0 to 99 hr. 59 min.

* Even though the max. segments per pattern are 100, the total available segments are up to 2000 not 10000, therefore arrangement of the number of segment and patterns will need to be done properly.

Temperature & Humidity Chambers (Floor Standing - TH-DG)

Model		TH-DG-150	TH-DG-300	TH-DG-400
Chamber volume (L / cu ft)		150 / 5.30 x 2 chambers	288 / 10.17 x 2 chambers	384 / 13.56 x 2 chambers
Controller		PID control (LCD Type)		
Temperature	Range (/)	-5 to 100 / 23 to 212 without humidity, 15 to 90 / 59 to 194 with humidity		
	Fluctuation [1] (± /) at 40 / 75%RH	0.3 / 0.55		
	Variation [1] (± /) at 40 / 75%RH	0.5 / 0.9		
Time	Heating - without humidity (min.) from -5 to 100	85		
	Cooling - without humidity (min.) from 100 to -5	100		
Humidity	Range (%RH)	15 to 90 See page 228 for more detailed humidity range check.		
	Fluctuation [1] (±%RH) at 75%RH / 40	0.8		
	Variation [1] (±%RH) at 75%RH / 40	3.0		
Refrigeration	System	Air - cooled		
	Refrigerant	R- 507A		
Water Supply	Capacity (L / cu ft)	20 / 0.70	24 / 0.84	
	Water quality	pH6.2 to 7.2 / Electrical conductivity 20 /cm to below		
No. of wire shelves (standard / max.)		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)		75 / 165.3	75 / 165.3	75 / 165.3
Dimension (W×D×H)	Interior (mm / inch)	600x500x500 / 23.6x19.7x19.7	800x600x600 / 31.5x23.6x23.6	800x600x800 / 31.5x23.6x31.5
	Exterior (mm / inch)	1055x1320x1725 / 41.5x52.0x67.9	1255x1470x1925 / 49.4x57.9x75.8	1255x1670x1925 / 49.4x65.7x75.8
	Viewing windows (mm / inch)	200×330 / 7.9×13 *2set		
	Net weight (kg / lbs)	420 / 925.9	516 / 1137.6	560 / 1234.6
Cable port		Basically one hole provided / Ø50mm (2") - Optionally max. two holes available / Ø 50 or 80mm (2 or 3.2")		
Interface port		Basically RS-485C [RS-232-optional]		
Electrical requirements (230V, 60Hz)		1ph / 13.6 A x 2ea	1ph / 17.5 A x 2ea	
Cat. No.		**AAHC6001K**	**AAHC6011K**	**AAHC6021K**
Electrical requirements (230V, 50Hz)		1ph / 13.6 A x 2ea	1ph / 17.5 A x 2ea	
Cat. No.		**AAHC6002K**	**AAHC6012K**	**AAHC6022K**

1) Technical data according to DIN 12880, IEC 60068.

Permissible environmental conditions: temperature (18 to 30) and relative humidity (up to 85%).
All specifications are under ambient temperature 20 (68), No load.
FDA establishment registered company. FDA listed products.
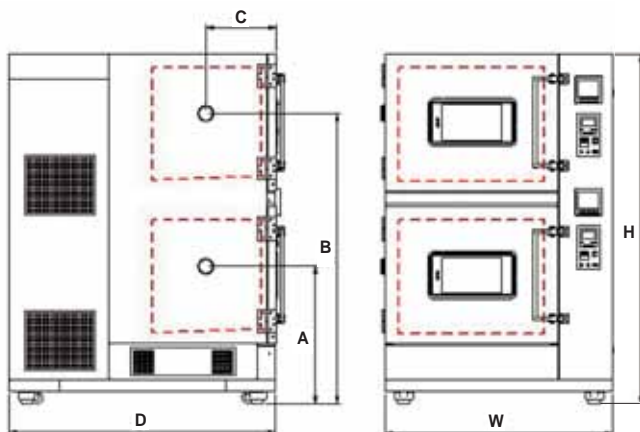
Dimension

Model	TH-DG-150	TH-DG-300	TH-DG-400
Capacity	150L (5.30cu ft)	288L (10.17cu ft)	384L (13.56cu ft)
W	1055mm (41.5")	1255mm (49.4")	1255mm (49.4")
D	1320mm (52.0")	1470mm (57.9")	1670mm (65.7")
H	1725mm (67.9")	1925mm (75.8")	1925mm (75.8")
A	710mm (28.0")	760mm (29.9")	760mm (29.9")
B	1450mm (57.1")	1600mm (63.0")	1600mm (63.0")
C	345mm (13.6")	385mm (15.2")	485mm (19.1")

Temperature & Humidity Chambers (Tabletop - TH-KE /TH-ME /TH-PE)

CE | Green CFC-Free | Computer Interface | Program | 1 Point Temperature Calibration | Full Start Level Indicater | Over Temp. | Auto Run
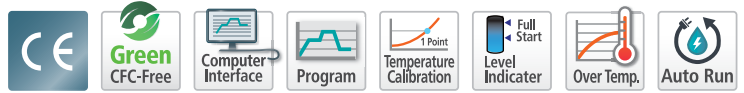
Light weight and compact design with high performance.

Various environmental tests can be performed due to wide temperature and humidity control range.

TH-KE / TH-ME / TH-PE

Standard accessories • Viewing window, Wire shelves, Cable port (Ø50mm), Door key

Optional accessories • Two step stands, Direct water system
see page 242

Above products design can be changed without prior notice.
Inner glass door is not equipped to the unit since 2013.

TH-KE

• Temperature range from -40 to 150
Humidity range from 20 to 95% RH

Relative Humidity %RH / Temperature
Unstable control range after 72 hours operation
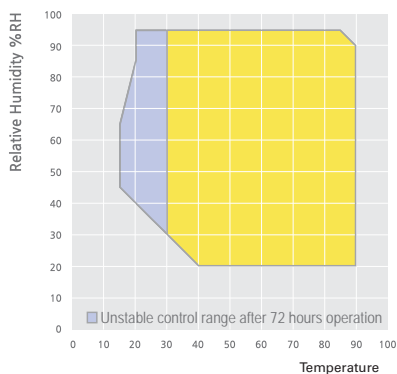
TH-ME

• Temperature range from -20 to 150
Humidity range from 20 to 95% RH

Relative Humidity %RH / Temperature
Unstable control range after 72 hours operation
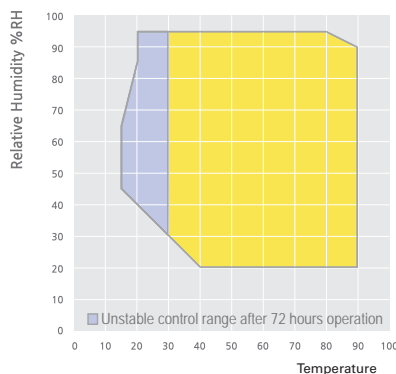
TH-PE

• Temperature range from 0 to 120
Humidity range from 30 to 95% RH
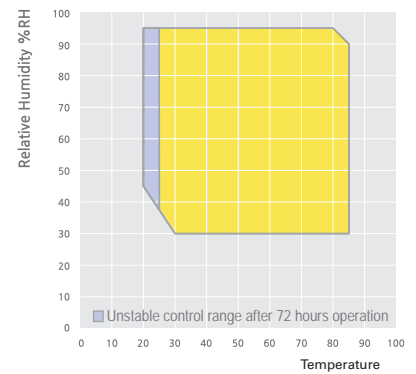
Relative Humidity %RH / Temperature
Unstable control range after 72 hours operation

Temperature & Humidity Chambers (Tabletop - TH-KE / TH-ME / TH-PE)

Performance

- Microprocessor PID control / Temperature calibration / Automatic tuning.
- Uniform temperature and humidity control guarantees reliable test result.
- Air-tight door closure with perfect sealed packing.
  - Heat-resistant silicone packing completely blocks high heat leakage from the inner chamber.
- Maintenance of water supply is easily performed.
  - Water level condition is easy to check by the water level indicator on the front control panel.
- Water supply during operation is also available for long term test purposes.
- Direct water system provides user great convenience when performing long-term tests. (optional)

Safety

- Built in door lock with a key.
- Automatic shut off after overheat alarm.
- Low and empty water level alarm.
- Power supply leakage breaker.
- Over current protection.
- Open door alarm.

LCD controller   Viewing window

Stand with caster (optional)

Convenience

- Compact design and quite operation.
- Three different size models are available to suit user's need.
- Corrosion resistance stainless steel chamber.
- Operating condition is clearly noticed by front LED indicator.
  - Three different colored lights show each status of running, stop, and power off condition.
- Clear observation of samples.
  - Tempered glass window with wire heater and lighting provides a clear view of samples in the chamber, beneficial for during testing.
- Cable port for introduction of external probes or wires.
  - 50mm diameter cable port comes standard on the left side of the unit.
  - Additional 50mm or 80mm diameter cable ports, custom ordered. (optional)
- Two type of stands for space-saving. (optional)
  - Single stand with a drawer provides enough storage space.
  - Two step stand accepts loading two units to save limited space.
- User friendly LCD controller.
  - Colorful interactive touch type LCD controller.
  - Set point temperature and present temperature are clearly shown together on display.
  - Sufficient programmable control support.
  - Operating progress can be shown in graph mode for better data understanding.
  - Automatic start/stop can be programmed for unattended operations.
  - Display indicates abnormal temperature changes or power failures.
  - Selective bilingual language support.
    (Korean / English or English / Chinese, selectable only when placing an order)
  - Temperature and other operating parameters can be recorded using a six channel digital recorder. (optional)
- Computer interface.
  - RS-485 communication port (optional) enables connection up to maximum 32 units. Simultaneous monitoring and operating of multiple units is an available feature.
  - Program patterns are simple to set with the use of our software.
  - Easy to check status of real-time operations. Graph data supports easy understanding.
  - Storage and documentation of programs.
  - Data with saving capabilities in excel and text format.
  - Storage of program information, backup of value settings, recovery, and temperature values.
  - RS-232 communication port as standard offer.

Description	No
Programmable pattern capacity	100
Pattern repeat time	999
Part repeat time	255
Max. segments per a pattern	100
Available max. segments*	2000
Programmable process time per a segment	0 to 99 hr. 59 min.

* Even though the max. segments per pattern are 100, the total available segments are up to 2000 not 10000, therefore arrangement of the number of segment and patterns will need to be done properly.

| Model		TH-KE-025	TH-KE-065	TH-KE-100
Chamber volume (L / cu ft)		25 / 0.9	65 / 2.3	100 / 3.5
Controller		Program controller (LCD type)		
Temperature	Range (/)	-40 to 150 / -40 to 302 without humidity 15 to 90 / 59 to 194 with humidity		
	Fluctuation[1] (± /) at 50 / 60%RH	0.4 / 0.72	0.4 / 0.72	0.3 / 0.54
	Variation[1] (± /) at 50 / 60%RH	0.3 / 0.54	0.4 / 0.72	0.4 / 0.72
Time	Heating - without humidity (min.) from -40 to 100	60		
	Cooling - without humidity (min.) from 20 to -40	65	92	90
Humidity	Range (%RH)	20 to 95 See page 231 for more detailed humidity range check.		
	Fluctuation[1] (±%RH) at 60%RH / 50	4.1	2.8	1.8
	Variation[1] (±%RH) at 60%RH / 50	0.9	1.0	1.2
Refrigeration	System	Mechanical single stage refrigerator system (air-cooled condenser)		
	Refrigerant	R-507A		
Water tank	Capacity (L / cu ft)	7.5 / 0.26	10 / 0.35	14.5 / 0.51
	Water quality	pH6.2 ~ 7.2, Electrical conductivity 20 / cm to below		
No. of wire shelves (standard / max.)		2 / 7	2 / 10	2 / 10
Distance of between shelves (mm / inch)		20 /1.6	20 /1.6	20 /1.6
Max. load per shelf (kg / lbs)		25 / 55.1	25 / 55.1	25 / 55.1
Permitted total load (kg / lbs)		65 / 143.3	65 / 143.3	65 / 143.3
Dimension (W×D×H)	Interior (mm / inch)	348×220×353 / 13.7×8.7×13.9	398×330×498 / 15.7×13×19.6	498×390×538 / 19.6×15.4×21.2
	External (mm / inch)	611x878x911 / 24.1x34.6x36.2	660x1048x1056 / 23.7x41.2x41.6	761x1108x1096 / 30.0x43.6x43.1
	Viewing window (mm / inch)	220×300 / 8.7×11.8		
	Net weight (kg / lbs)	110 ±10 / 242.5 ±22	140 ±10 / 308.6 ±22	150 ±10 / 330.7 ±22
Cable port [2]		Basically one hole provided / Ø 50mm (2") Optionally max. two holes available / Ø 50 or 80mm (2 or 3.2")		
Interface port		Basically RS-232C, [RS-485: optional]		
Electrical requirements (AC230V, 1ph, 60Hz)		10.1A	12.4A	16A
Cat. No.		**AAH82411K**	**AAH82421K**	**AAH82431K**
Electrical requirements (AC230V, 1ph, 50Hz)		10.1A	12.4A	16A
Cat. No.		**AAH82412K**	**AAH82422K**	**AAH82432K**

1) Technical data according to DIN 12880, IEC 60068.
2) 80mm cable access hole is NOT available for 25L chamber.
  Permissible environmental conditions: temperature (18 to 30) and relative humidity (up to 85%).
  All specifications are under ambient temperature 20 (68), No load.
  FDA establishment registered company. FDA listed products.
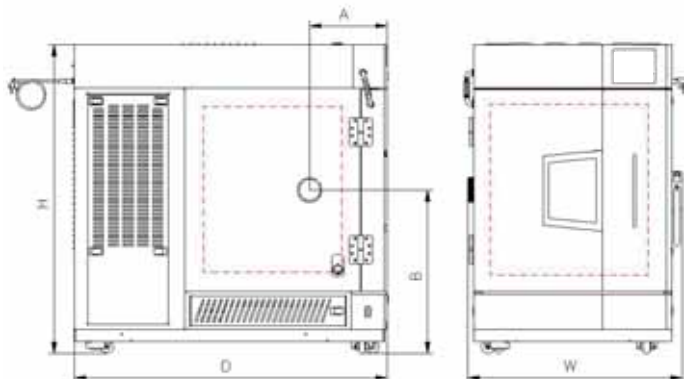
Dimension

Model	TH-KE-25	TH-KE-65	TH-KE-100
Capacity	25L(0.9 cu ft)	65L(2.3 cu ft)	100L(3.53 cu ft)
W	611mm(24.1")	660mm(26.0")	761mm(30.0")
D	878mm(34.6")	1048mm(41.3")	1108mm(43.6")
H	911mm(36.2")	1056mm(41.6")	1096mm(43.1")
A	211mm(8.3")	276mm(10.9")	276mm(10.9")
B	495mm(19.5")	580mm(22.8")	580mm(22.8")

Temperature & Humidity Chambers (Tabletop - TH-KE /TH-ME /TH-PE)

Model	TH-ME-025	TH-ME-065	TH-ME-100
Chamber volume (L / cu ft)	25 / 0.9	65 / 2.3	100 / 3.5
Controller	Program controller (LCD type)		
Temperature Range (/)	-20 to 150 / -4 to 302 without humidity 15 to 90 / 59 to 194 with humidity		
Fluctuation[1] (± /) at 25 / 60%RH	0.3 / 0.54	0.2 / 0.36	0.2 / 0.36
Variation[1] (± /) at 25 / 60%RH	0.6 / 1.08	0.2 / 0.36	0.2 / 0.36
Time Heating - without humidity (min.) from -20 to 120	60	67	73
Cooling - without humidity (min.) from 120 to -20	174	144	153
Humidity Range (%RH)	20 to 95 See page 231 for more detailed humidity range check.		
Fluctuation[1] (±%RH) at 60%RH / 55	2.0	2.7	2.7
Variation[1] (±%RH) at 60%RH / 55	0.6	1.1	1.2
Refrigeration System	Mechanical single stage refrigerator system (air-cooled condenser)		
Refrigerant	R-507A		
Water tank Capacity (L / cu ft)	7.5 / 0.26	10 / 0.35	14.5 / 0.51
Water quality	pH6.2 to 7.2 / Electrical conductivity 20 /cm to below		
No. of wire shelves (standard / max.)	2 / 7	2 / 10	2 / 10
Distance of between shelves (mm / inch)	20 / 1.6	20 / 1.6	20 / 1.6
Max. load per shelf (kg / lbs)	25 / 55.1	25 / 55.1	25 / 55.1
Permitted total load (kg / lbs)	65 / 143.3	65 / 143.3	65 / 143.3
Dimension (W×D×H) Interior (mm / inch)	348×220×353 / 13.7×8.7×13.9	398×330×498 / 15.7×13×19.6	498×390×538 / 19.6×15.4×21.2
External (mm / inch)	611x878x911 / 24.1x34.6x36.2	660x1048x1056 / 23.7x41.2x41.6	761x1108x1096 / 30.0x43.6x43.1
Viewing window (mm / inch)	220×300 / 8.7×11.8		
Net weight (kg / lbs)	80±5 / 176±11	110±5 / 242±11	130±5 / 286±11
Cable port [2]	Basically one hole provided / Ø 50mm (2") Optionally max. two holes available / Ø 50 or 80mm (2 or 3.2")		
Interface port	Basically RS-232C [RS-485-optional]		
Electrical requirements (230V, 1ph, 60Hz)	9.6A	12A	15.5A
Cat. No.	**AAH82111K**	**AAH82121K**	**AAH82131K**
Electrical requirements (230V, 1ph, 50Hz)	9.6A	12A	15.5A
Cat. No.	**AAH82112K**	**AAH82122K**	**AAH82132K**

1) Technical data according to DIN 12880, IEC 60068.
2) 80mm cable access hole is NOT available for 25L chamber.
   Permissible environmental conditions: temperature (18 to 30) and relative humidity (up to 85%).
   All specifications are under ambient temperature 20 (68), No load.
   FDA establishment registered company. FDA listed products.
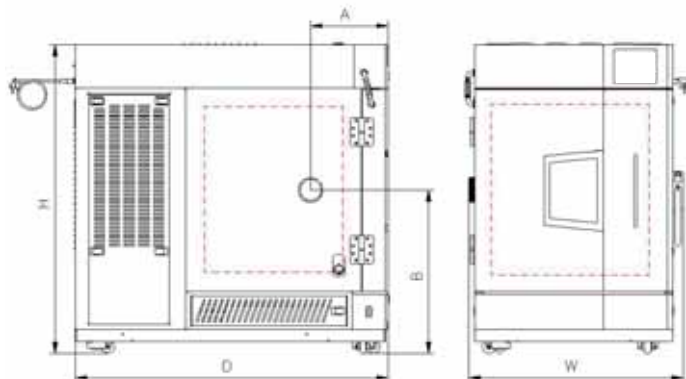
Dimension

Model	TH-ME-25	TH-ME-65	TH-ME-100
Capacity	25L(0.9 cu ft)	65L(2.3 cu ft)	100L(3.53 cu ft)
W	611mm(24.1")	660mm(26.0")	761mm(30.0")
D	878mm(34.6")	1048mm(41.3")	1108mm(43.6")
H	911mm(36.2")	1056mm(41.6")	1096mm(43.1")
A	211mm(8.3")	276mm(10.9")	276mm(10.9")
B	495mm(19.5")	580mm(22.8")	580mm(22.8")

Model		TH-PE-025	TH-PE-065	TH-PE-100
Chamber volume (L / cu ft)		25 / 0.9	65 / 2.3	100 / 3.5
Controller		Program controller (LCD type)		
Temperature	Range (/)	0 to 120 / 32 to 248 without humidity 15 to 90 / 59 to 194 with humidity		
	Fluctuation [1] (± /) at 25 / 60%RH	0.2 / 0.36	0.3 / 0.54	0.2 / 0.36
	Variation [1] (± /) at 25 / 60%RH	0.3 / 0.54		
Time	Heating - without humidity (min.) from 0 to 120	40		
	Cooling - without humidity (min.) from 20 to 0	30		
Humidity	Range (%RH)	30 to 95 See page 231 for more detailed humidity range check.		
	Fluctuation [1] (±%RH) at 60%RH / 55	1.6	0.4	0.5
	Variation [1] (±%RH) at 60%RH / 55	3.0		
Refrigeration	System	Mechanical single stage refrigerator system (air-cooled condenser)		
	Refrigerant	R-404A		
Water tank	Capacity (L / cu ft)	7.5 / 0.26	10 / 0.35	14.5 / 0.51
	Water quality	pH6.2 ~ 7.2, Electrical conductivity 20 / cm to below		
No. of wire shelves (standard / max.)		2 / 7	2 / 10	2 / 10
Distance of between shelves (mm / inch)		20 /1.6	20 /1.6	20 /1.6
Max. load per shelf (kg / lbs)		25 / 55.1	25 / 55.1	25 / 55.1
Permitted total load (kg / lbs)		65 / 143.3	65 / 143.3	65 / 143.3
Dimension (W×D×H)	Interior (mm / inch)	348×220×353 / 13.7×8.7×13.9	398×330×498 / 15.7×13×19.6	498×390×538 / 19.6×15.4×21.2
	External (mm / inch)	611x878x911 / 24.1x34.6x36.2	660x1048x1056 / 23.7x41.2x41.6	761x1108x1096 / 30.0x43.6x43.1
	Viewing window (mm / inch)	220×300 / 8.7×11.8		
	Net weight (kg / lbs)	80±5 / 176±11	110±5 / 242±11	130±5 / 286±11
Cable port [2]		Basically one hole provided / Ø 50mm (2") Optionally max. two holes available / Ø 50 or 80mm (2 or 3.2")		
Interface port		Basically RS-232C [RS-485 optional]		
Electrical requirements (230V, 1hp, 60Hz)		9.6A	12A	14.4A
Cat. No.		**AAH82211K**	**AAH82221K**	**AAH82231K**
Electrical requirements (230V, 1hp, 50Hz)		9.6A	12A	14.4A
Cat. No.		**AAH82212K**	**AAH82222K**	**AAH82232K**

1) Technical data according to DIN 12880, IEC 60068.
2) 80mm cable access hole is NOT available for 25L chamber.
Permissible environmental conditions: temperature (18 to 30) and relative humidity (up to 85%).
All specifications are under ambient temperature 20 (68), No load.
FDA establishment registered company. FDA listed products.
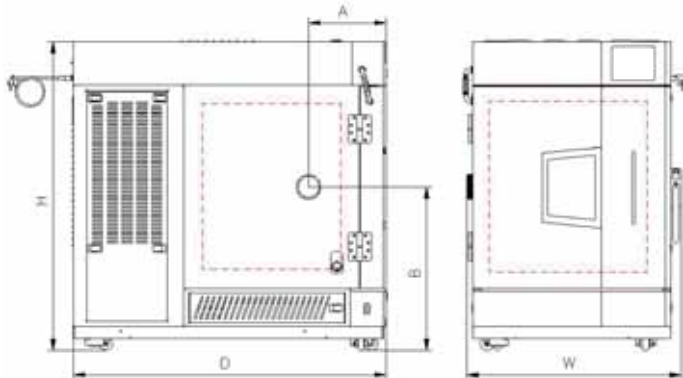
Dimension

Model	TH-PE-25	TH-PE-65	TH-PE-100
Capacity	25L (0.9 cu ft)	65L (2.3 cu ft)	100L (3.53 cu ft)
W	611mm (24.1")	660mm (26.0")	761mm (30.0")
D	878mm (34.6")	1048mm (41.3")	1108mm (43.6")
H	911mm (36.2")	1056mm (41.6")	1096mm (43.1")
A	211mm (8.3")	276mm (10.9")	276mm (10.9")
B	495mm (19.5")	580mm (22.8")	580mm (22.8")

Pharmaceutical Stability Test Chambers (TH-ICH)

| CE | GOOD DESIGN | Green CFC-Free | Computer Interface | Program | 1 Point Temperature Calibration | Level Indicater | Over Temp. | Auto Run |

Manufactured in accordance with ICH Guidelines Q1A-Stability test (R2), Q1B-Photostability test (Option 2).

▶ Optimum temperature and humidity control system for long-term stability test.
▶ Independent luminescence control system for photostability test.

Control range

· Temperature range from -5 to 85
  Humidity range from 20 to 85% RH

☐ Unstable control range after 24 hours operation

TH-ICH-300/800
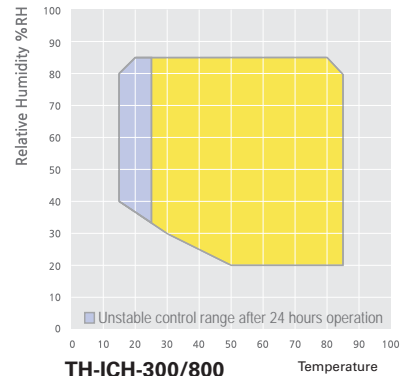
TH-ICH
with the optional recorder

Standard accessories	• Wire shelves, Cable port (Ø50mm)
Optional accessories see page 242	• Direct water system • Fluorescent lamp (cool white), UVA lamp, UV sensor, Illumination sensor, Door key

Performance

· Microprocessor PID control / Temperature calibration / Automatic tuning.

· Rapid humidity control is achieved by adapting the humidification tank interior to the chamber.

· Air-tight door closure with perfect sealed packing.
  - Heat-resistant silicone packing completely blocks high heat leakage from the inner chamber.

Convenience

· Two different sized models available to suit any users' needs.

· Corrosion resistant stainless steel chamber.

· Cable port for introduction of external probes or wires.
  - 50mm diameter cable port comes standard on the left side of the unit.
  - Additional 50mm or 80mm diameter cable ports, custom ordered. (optional)

· Inner glass door with entry ports for handling samples without affecting inner chamber temperature and humidity. (optional)

· Casters for easy mobility during installation or relocation.

· User friendly LCD controller.
  - Colorful interactive touch type LCD controller.
  - Set point temperature and present temperature are clearly shown together on display.
  - Sufficient programmable control support.
  - Operating progress can be shown in graph mode for better data understanding.
  - Automatic start/stop can be programmed for unattended operations.
  - Display indicates abnormal temperature changes or power failures.
  - Selective bilingual language support.
    (Korean / English or English / Chinese, selectable only when placing an order)
  - Temperature and other operating parameters can be recorded using a six channel digital recorder. (optional)

· Computer interface.
  - RS-485 communication port (optional) enables connection up to maximum 32 units. Simultaneous monitoring and operating of multiple units is an available feature.
  - Program patterns are simple to set with the use of our software.
  - Easy to check status of real-time operations. Graph data supports easy understanding.
  - Storage and documentation of programs.
  - Data with saving capabilities in excel and text format.
  - Storage of program information, backup of value settings, recovery, and temperature values.
  - RS-232 communication port as standard offer.

Description	No
Programmable pattern capacity	100
Pattern repeat time	999
Part repeat time	255
Max. segments per a pattern	100
Available max. segments*	2000
Programmable process time per a segment	0 to 99 hr. 59 min.

* Even though the max. segments per pattern are 100, the total available segments are up to 2000 not 10000, therefore arrangement of the number of segment and patterns will need to be done properly.

Stability test ICH guideline Q1A (R2)

· Operating progress visible through graph mode for better data analyzation.

· Cyclic defrost system, designed to work excellently for the long period stability test operation.
  (Temperature and humidity changes may occur during automatic defrost.)

· Maintenance of water supply are easily performed with a front water tank.
  - Water level check indicated by water level bar in the tank.

· Water supply during operation is also available for long term test purposes.

· Direct water system provides user great convenience when performing long-term test. (optional)

Photostability test ICH guidelineQ1B (Option 2)

· Built in UV and fluorescent lamps for uniformed luminescence.

· Equipped with movable UV and VIS sensors .

· Independent lamp controller
  - An indicator for Total usage time of UV and fluorescent lamps.

· Convenient set function of cumulative dosage and lamp Off.

Safety

· Built in door lock with a key.

· Automatic shut off after overheat alarm.

· Low and empty water level alarm.

· Power supply leakage breaker.

· Over current protection.

· Open door alarm.

Lamp controller

LCD controller

Digital recorder (optional)

Water level indicator

Pharmaceutical Stability Test Chambers (TH-ICH)

Model			TH-ICH-300	TH-ICH-800
Chamber volume (L / cu ft)			300 / 10.6	760 / 26.8
Controller			PID control (LCD Type)	
Temperature	Range	without humidity (/)	-5 to 85 / 23 to 185 without Light 0 to 85 / 32 to 185 with Light	
		with humidity (/)	+15 to 85 / 59 to185 with Light	
	Fluctuation [1] (± /) at 40 / 60%RH		0.3 / 0.55	0.3 / 0.55
	Variation [1] (± /) at 40 / 60%RH		0.5 / 0.9	0.7 / 1.3
Time	Heating		25min (20 →85)	30min (20 →85)
	Cooling		35min (20 →-5)	40min (20 →-5)
Humidity	Range (%RH)		20 to 85 See page 236 for more detailed humidity range check.	
	Fluctuation [1] (±%RH) at 60%RH / 40		3	
	Variation [1] (±%RH) at 60%RH / 40		5	
Light source (ICH Q1B option 2)	Cool white [2]		6,000 lux	6,500 lux
	Ultraviolet-A [2]		4.5 W/	5 W/
	Light uniformity		VIS. : ±10% UVA : ±15%	VIS. : ±15% UVA : ±15%
Typical time required to reach ICH Recommendation of 1.2 million lux-hr			200Hr	184Hr
Typical time required to reach ICH recommendation of 200 W-hr/m²			50Hr	40Hr
Refrigeration	System		Air-cooled	
	Refrigerant		R-404A	
Water tank	Capacity (L / cu ft)		15 / 0.53	
	Water quality		pH6.2 ~ 7.2, Electrical conductivity 20 / cm to below	
No. of wire 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
Dimension (W×D×H)	Interior (mm / inch)		750×650×650 / 29.5×25.6×25.6	750×880×1160 / 29.5×34.6×45.7
	Exterior (mm / inch)		1130×985×1520 / 44.5×38.8×59.8	1220×1215×1965 / 48×47.8×77.4
	Net weight (kg / lbs)		280±10 / 617±22	400±10 / 882±22
Cable port			Basically one hole provided / Ø 50mm (2″), Optionally max. two holes available / Ø 50 or 80mm (2 or 3.2″)	
Interface port			Basically RS-232C, [RS-485 : optional]	
Electrical requirements	AC230V, 1ph, 60Hz		15.4 A	24.5 A
	Cat.No.		**AAHC1001K**	**AAHC1011K**
	AC230V, 1ph, 50Hz		15.4 A	24.5 A
	Cat.No.		**AAHC1002K**	**AAHC1012K**

1) Technical data according to DIN 12880, IEC 60068.
2) The value is measured on the center of chamber at the point of vertical direction.

Permissible environmental conditions: temperature (18 to 30) and relative humidity (up to 85%).
All specifications are under ambient temperature 20 (68), No load.
FDA establishment registered company. FDA listed products.
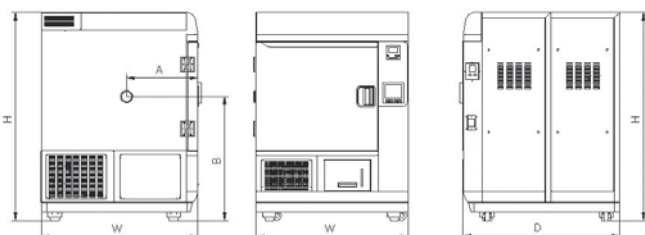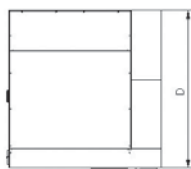
Dimension

Model	TH-ICH-300	TH-ICH-800
Capacity	300L (10.6 cu ft)	760L (26.8 cu ft)
W	1130mm (44.5″)	1220mm (48″)
D	985mm (33.8″)	1215mm (47.8″)
H	1520mm (59.8″)	1965mm (77.4″)
A	460mm (18.1″)	545mm (21.5″)
B	905mm (35.6″)	1185mm (46.7″)

Green CFC-Free | **Computer Interface** | **Program** | **Temperature Calibration** 1 Point | **Level Indicater** Full Start | **Over Temp.** | **Auto Run**

Specially designed for processes requiring clean and controlled environmental test conditions. (ISO class 5 air cleanliness as per ISO 14644-1)

► Heat-resisting HEPA filter provides clean environment.
  - 0.3 μm and larger particulates are removed with 99.99% efficiency

► ULPA filter provides for better air cleanliness of the chamber. (optional)
  - 0.1 μm and larger particulates are removed with 99.999% efficiency

► No external exhaust system required.

Control range

• Temperature range from -35 to 100
  Humidity range from 30 to 90% RH

Relative Humidity %RH / Temperature

☐ Unstable control range after 24 hours operation

TH-CR-270
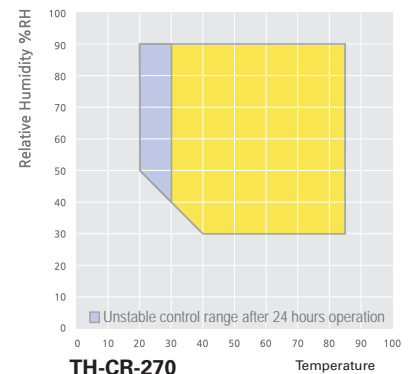
TH-CR
with optional recorder

Standard accessories	• Viewing window, Wire shelves, Cable port (Ø50mm), HEPA filter, Water container
Optional accessories **see page 242**	• ULPA filter, Water purifier, Direct water system

Clean Temp. & Humid. Chamber (TH-CR)

Performance

- Microprocessor PID control / Temperature calibration / Automatic tuning.
- Exhaust duct is located at the upper right side of the unit to avoid influence other devices.
- Built-in differential pressure gauge for easy observation of HEPA filter condition.

Convenience

- Silicone-free construction for clean environment.
- Corrosion resistance stainless steel chamber.
- Maintenance of water supply are easily performed with a front water tank.
  - Water level check indicated by water level bar in the tank.
- Water supply during operation is also available for long term test purposes.
- Direct water system provides user great convenience when performing long-term tests. (optional)
- Clear observation of samples.
  - Tempered glass window with wire heater and lighting provides a clear view of samples in the chamber, beneficial for during testing.
  - Inner glass door with entry ports for handling samples without affecting inner chamber temperature and humidity. (optional)
- Cable port for introduction of external probes or wires.
  - 50mm diameter cable port comes standard on the left side of the unit.
  - Additional 50mm or 80mm diameter cable ports, custom ordered. (optional)
- Casters for easy mobility during installation or relocation.
- User friendly LCD controller.
  - 5.7 inch colorful interactive touch type LCD controller.
  - Set value and present value are clearly visible together on display.
  - Operating progress visible in graph mode allow for direct data interpretation.
  - Temperature and other operating parameters recorded with use of selectable recorder. (optional)
  - Sufficient programmable control support.
  - Programming operation.

Description	No
Programmable pattern capacity	120
pattern repeat time	999
Max. Segments per a pattern	100
Available max. segments*	1200
Programmable process time per a segment	0 to 99 hr. 59 min.

* Even though the max. segments per a pattern are 100, available total segments are up to 1200 not 12000, so you need to arrange the number of segment and patterns properly.

Computer interface.
- RS-485 communication port enables connection of up to maximum 9 units. Simultaneous monitoring and operating of multiple units is an available feature. (optional)
- Program patterns are simple to set with the use of our software.
- Storage of program information, backup of value settings, recovery, temperature, humidity values.
- RS-232 communication port comes standard.

Safety Features

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

Control panel

Air-filter

Viewing window

Water level indicator

Lab Companion

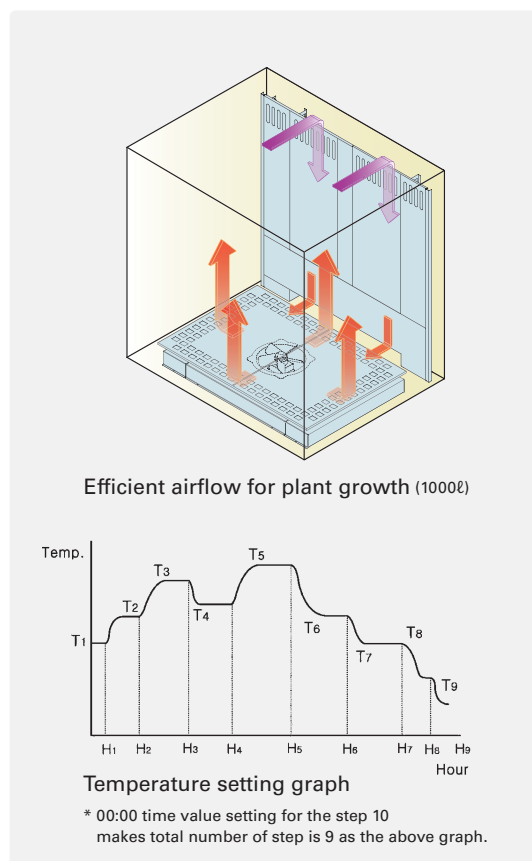| Model	TH-CR-270	
Chamber volume (L / cu ft)	270 / 9.5	
Controller	Programmable, Touch screen type controller (5.7" color monitor) Local controller (fixed - command control)	
Temperature	Range (/)	-35 to 100 / -31 to 212 without humidity 20 to 85 / 104 to 185 with humidity
	Fluctuation [1] (± /) at 40 / 60%RH	0.5 / 0.9
	Variation [1] (± /) at 40 / 60%RH	0.5 / 0.9
Time	Heating - without humidity (min.)	60 from -35 to 120 (-31 to 248)
	Cooling - without humidity (min.)	65 from 20 to -35 (68 to -31)
Humidity	Range (%RH)	30 to 90 See page 239 for more detailed humidity range check.
	Fluctuation [1] (±%RH) at 60%RH / 40	3
	Variation [1] (±%RH) at 60%RH / 40	3
Cleanliness	Class 100 (ISO 14644-1)	
Refrigeration	System	Mechanical single stage refrigerator system (air-cooled condenser)
	Refrigerant	R-404A
Water supply	Capacity	15L (0.53cu ft) - Cartridge type
	Water quality	pH6.2 to 7.2 / Electrical conductivity 20 /cm to below
No. of wire shelves (standard / max.)	2 / 10	
Distance of between shelves (mm / inch)	40 /1.6	
Max. load per shelf (kg / lbs)	25 / 55.1	
Permitted total load (kg / lbs)	65 / 143.3	
Dimension (W×D×H)	Interior (mm / inch)	600×700×648 / 23.6×27.6×25.4
	Exterior (mm / inch)	1180×1120×1935 / 46.5×44.1×76.2
	Viewing windows (mm / inch)	200×330 / 7.9×13
	Net weight (kg / lbs)	400±10 / 881.8±22
Cable port	Basically one hole provided / Ø 50mm (2") Optionally max. two holes available / Ø 50 or 80mm (2 or 3.2")	
Interface port	Basically RS-232C [RS-485-optional]	
Electrical requirements (230V, 1ph)	60Hz / 29A	50Hz / 29A
Cat. No.	**AAH83011K**	**AAH83012K**
Electrical requirements (380V, 3ph)	50Hz / 9.6A	
Cat. No.	**AAH83018K**	

1) Technical data according to DIN 12880, IEC 60068.

Permissible environmental conditions: temperature (18 to 30) and relative humidity (up to 85%).
All specifications are under ambient temperature 20 (68), No load.
Upon request, other sizes of chambers are available. Please contact with us.
FDA establishment registered company. FDA listed products.

Dimension

Model	TH-CR-270
Capacity	270L (9.5 cu ft)
W	1180mm (46.5")
D	1120mm (44.1")
H	1935mm (76.1")
A	325mm (12.8")
B	1155mm (45.5")

Accessories & Options

for Tabletop Chambers & Floor Standing Chambers

Accessory check list

□ **Standard**   ○ **Optional**

Description	TH-G	TH-I	TH-KH	TH-TG	TH-DG	TH-KE	TH-ME	TH-PE	TH-ICH	TH-CR
Recorder (6 points)										
Recorder (digital, 6 channels)										
Interface converter (RS-485C 232C included a cable, 5m / 16.4ft)										
Interface cable (5m / 16.4ft)										
Warning signal lamp										
Inner glass door						-	-	-		-
Viewing window									-	
Wire shelf										
Perforated shelf										
Cable port (Ø 50mm / 2")										
Cable port (Ø 80mm / 3.2")[1]										
Temperature sensor (RTD type)										
Humidity sensor										
Fluorescent lamp (Cool White)	-	-	-	-	-	-	-	-		-
UVA lamp	-	-	-	-	-	-	-	-		-
UV sensor	-	-	-	-	-	-	-	-		-
Illumination Sensor	-	-	-	-	-	-	-	-		-
HEPA filter	-	-	-	-	-	-	-	-	-	
ULPA filter	-	-	-	-	-	-	-	-	-	
Water cartridge tank (Water Container)					-	-	-	-	-	
Water purifier										
Direct water system										
Stand									-	-
Two step stand					-				-	-

1) 80mm cable access hole is NOT available for 25L chamber.

Ordering information

Cat. No.	Description	Suitable for
AAA8T504	Recorder (6 points)	Tabletop models
AAA8T500		Floor standing models
AAA8T506	Recorder (digital, 6 channels)	Tabletop models
AAA8T505		Floor standing models
AAA8T540	Interface converter (RS-485C 232C included a cable, 5m / 16.4ft)	All models
AAA8T542	Interface cable (5m / 16.4ft)	All models
AAA80550	Warning signal lamp	All models
AAA81552	Inner glass door	TH-G/I/KH-180
AAA81551		TH-G/I/KH-300, 408, CR-270
AAA81550		TH-G-800, 1000
AAAC2501		TH-TG-180
AAAC2502		TH-TG-300, 408
AAAC2503		TH-TG-800, 1000
AAAC6511		TH-DG-150
AAAC6512		TH-DG-300
AAAC6513		TH-DG-400
AAA81554		TH-ICH-300
AAA81555		TH-ICH-800
AAA8T610	Cable port (Ø 50mm / 2")	All models
AAA8T611	Cable port (Ø 80mm / 3.2")	All models
CFA1185	Temperature sensor (RTD type)	TH-G/I/DG, TH-TG/ICH/CR, TH-KE/ME/PE
CFA7113	Humidity sensor	All models
RTD1190	Fluorescent lamp (cool white)	TH-ICH-300
RTD1191		TH-ICH-800
RTD1188	UVA lamp	TH-ICH-300
RTD1189		TH-ICH-800
AAA80680	THE-680 UV sensor	TH-ICH-300/800
AAA80681	THE-681 Illumination sensor	TH-ICH-300/800
AAA80661	Door lock device	TH-ICH-300/800
EDA9184	HEPA filter	TH-CR-270
EDA9175	ULPA filter	TH-CR-270
AAA80622	Water cartridge tank	All models
AAA8T621	Water purifier	All models
AAA80620	Direct water system	All models
AAA80631	Stand	TH-KE/ME/PE-025
AAA80632		TH-KE/ME/PE-065
AAA80633		TH-KE/ME/PE-100
AAA80634	Two step stand	TH-KE/ME/PE-025
AAA80635		TH-KE/ME/PE-065

Cat. No.	Description	Suitable for
RTD679	Wire shelf	TH-KE/ME/PE-025
RTD680		TH-KE/ME/PE-065
RTD681		TH-KE/ME/PE-100
EDA8212		TH-G/I/KH-180
EDA8213		TH-G/I/KH-300
EDA8214		TH-G/I/KH-408
EDA8215		TH-G-800
EDA8216		TH-G-1000
RTD1302		TH-TG-180
RTD1303		TH-TG-300
RTD1300		TH-TG-408
RTD1304		TH-TG-800
RTD1301		TH-TG-1000
RTD1305		TH-G/TG-1500
EDA8251		TH-DG-150
RTD1280		TH-DG-300
EDA8250		TH-DG-400
RTD1196		TH-ICH-300
RTD1198		TH-ICH-800
STT1040		TH-CR-270
AAA80602-6	Perforated shelf	TH-KE/ME/PE-025
AAA80602-7		TH-KE/ME/PE-065
AAA80602-8		TH-KE/ME/PE-100
AAA80602-1		TH-G/I/KH-180
AAA80602-2		TH-G/I/KH-300
AAA80602-3		TH-G/I/KH-408
AAA80602-4		TH-G-800
AAA80602-5		TH-G-1000
AAA80604-11		TH-TG-180
AAA80604-12		TH-TG-300
AAA80604-13		TH-TG-408
AAA80604-14		TH-TG-800
AAA80604-15		TH-TG-1000
AAA80604-16		TH-G/TG-1500
AAAC6501		TH-DG-150
AAAC6502		TH-DG-300
AAAC6503		TH-DG-400
AAA80604-2		TH-ICH-300
AAA80604-4		TH-ICH-800
AAA80603-1		TH-CR-270

| CE | Green CFC-Free | Program | 1 Point Temperature Calibration | Full Start Level Indicater | Over Temp. | Auto Run |

Optimal photosynthesis condition guaranteed when using our plant growth chamber.

Ample capacity, maximum capacity of 1000L to satisfy user's plant growth needs

GC-1000TLH / GC-300TLH

with optional recorder

| **Standard accessories** | • Inner glass door, Wire shelves |
| **Optional accessories**
 see page 245 | • Perforated shelves, CO_2 sensors |

Optimal photosynthesis condition for plant growth.

▶ Uniform temperature and humidity.
  (TLH models)

▶ Reinforced Blue and Red spectrums lighting system for plant photosynthesis.

▶ Optional CO_2 sensor (optional)

▶ Programmable temperature, humidity, and lighting.

▶ Progressive temperature, humidity, illumination program control for optimization of plant growth environment for night and day.

Plant Growth Chambers (GC)

Performance

General control system

- 5 to 50 (lamp off) / 10 to 50 . (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)
  50 to 90% RH for GC-1000TLH. (at 20 to 35)

- Max. 5,000ppm CO_2 on/off system. (optional)

- 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.

Convenience

- 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 shelve 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.

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.
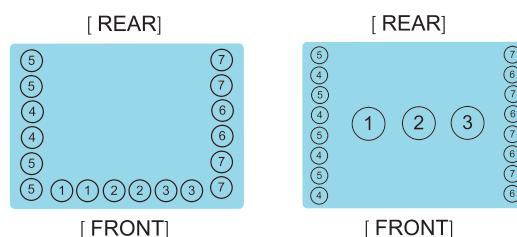
GC-300 lamp arrangement   GC-1000 lamp arrangement

Efficient airflow for plant growth (1000ℓ)

Temperature setting graph

* 00:00 time value setting for the step 10
  makes total number of step is 9 as the above graph.

Model		GC-300TL		GC-300TLH		GC-1000TLH	
Chamber volume (L / cu ft)		300 / 10.6				1000 / 35.3	
Control system		Microprocessor PID controller					
Temperature	Range (/)	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	0.4 / 0.72 - without humidity					
	Variation (± /) at 25	1.0 / 1.8 - without humidity					
Illumination	Range (Lux)	0 to 20,000				0 to 35,000	
	Control (steps)	10				11	
	Lamp	Fl lamp (32W×18ea)				FL lamp (32W×16ea)	
						Metal lamp (400W×3ea)	
Humidity	Range (% RH)	-		40 to 80 at 20 to 35		50 to 90 at 20 to 35	
				70 to 90 at 36 to 50		60 to 90 at 36 to 50	
	Fluctuation (±RH) at 60% RH	-		3			
CO_2 (optional)	Range (ppm)	Max. 5,000					
	Sensor	NDIR CO_2 sensor					
Refrigerant (HP)		1/2				3/4	
Temp. heater power (W)		750×2ea				1,500×2ea	
Humid. heater power (W)		-		1800			
Dimension (W×D×H)	Interior (mm / inch)	510×540×1100 / 20×21.3×43.3				1200×800×1080 / 47.2×31.5×42.5	
	Exterior (mm / inch)	700x760x1930 / 27.6x29.9x76		700x920x1930 / 27.6x36.2x76		1410x1068x2160 / 55.5x42x85	
	Net weight (kg / lbs)	250 / 551.2				550 / 1212.5	
Electrical requirements (230V)		60Hz / 15A	50Hz / 15A	60Hz / 15A	50Hz / 15A	60Hz / 17A	50Hz / 17A
Cat. No.		AAHA1011K	AAHA1012K	AAHA1021K	AAHA1022K	AAHA1031K	AAHA1032K

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Accessories & Options
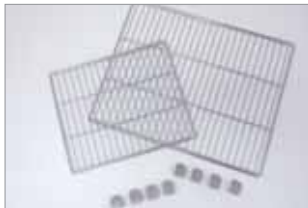
Wire shelves

Perforated shelves

Recorder (dot type)

CO₂ sensor

Model	Wire shelves			Perforated shelves		
	Cat. No.	Dimension (W×L, mm / inch)	No. of shelves (standard/max.)	Cat. No.	Dimension (W×L, mm / inch)	No. of shelves (max.)
GC-300TL	EDA8220	466×490 / 18.3×19.3	3 / 14	AAA22522	466×490 / 18.3×19.3	14
GC-300TLH	EDA8220		3 / 14	AAA22522		14
GC-1000TLH	EDA8222	580×770 / 2.8×30.3	6 / 29	AAAA1512	580×770 / 22.8×30.3	29

Model	Recorder	CO₂ sensor
	Cat. No.	Cat. No.
GC-300TL	AAAA1501	AAAA1521
GC-300TLH	AAAA1501	AAAA1521
GC-1000TLH	AAAA1502	AAAA1521

18

Electrophoresis Systems

Three systems for different sized gels, satisfying your need for a more detailed DNA/RNA analysis.

EP-10 with optional power supply

Feature

- The electrophoresis system is a molded transparent polycarbonate product with superior shock-resistance, transparent, and durability to acrylic adhesives.

- Detachable electrode assembly allows for easy cleaning and maintenance.

- Each unit comes with one banana cable. Black & red cables are coupled together and can be inserted or extracted at the same time.

- UV-transparent gel trays allow for viewing bands on the UV-transilluminator without removing gel tray.

- Diverse-sized molded gel trays and casters for leak-free casting
  - EP-5 : 82x81mm (1ea) and 82x58mm (2ea) gel trays with one comb position.
  - EP-10 : 181x103mm (2ea) gel trays with max. four comb positions.
  - EP-18 : 181x206mm (1ea) gel tray with max. six comb positions.

- Double-sided combs are provided depending on each model.
  - EP-5 : 1mm thick 27-and 40-well comb (1ea)
  - EP-10, 18 : 1.5mm thick 20-and 31-well comb (2ea),
    1mm thick 20-and 31-well comb (2ea),
    1.5mm thick 16-and 20-well comb (2ea),
    1mm thick 16-and 20-well comb (2ea),
    1.5mm thick 25-and 34-well comb (2ea),
    1mm thick 25-and 34-well comb (2ea)

- 31-well comb and 16-well comb for matching multichannel pipettes. Suitable for large amounts of sample screening- up to 186 samples at once using 6 combs in EP-18 gel tray.

- Comb-setting grooves in gel trays or caster prevents sliding of combs.

- Adjustable gel length.

- Flat, uniformly thick gels are formed by built in level maker on the gel tray and level bubble on the gel castor.

Model		EP-05	EP-10	EP-18
Buffer capacity (L / cu ft)		0.5 / 0.02	1.0 / 0.04	1.8 / 0.07
Material	Tank, Lid, Gel tray, Gel caster	PC (polycarbonate)		
	Comb	ABS (acrylonitrile-butadienestyrene)		
	Electrode	Platinum wire		
Dimension	Electrophoresis tank (mm / inch)	219x134x71 / 8.6x5.3x2.8	219x214x71 / 8.6x8.4x2.8	387x214x71 / 15.2x8.4x2.8
	Gel caster (W×D×H) (mm / inch)	254x87x18 / 10x3.4x0.7	167x264x30 / 6.6x10.4x1.2	167x264x30 / 6.6x10.4x1.2
	Gel tray (W×D×H) (mm / inch)	82x81x17 / 3.2x3.2x0.7 82x58x17 / 3.2x2.3x0.7	180x103x29 / 7.1x4.1x1.1	180x206x29 / 7.1x8.1x1.1
	Comb (W×D) (mm / inch)	225x45 / 8.9x1.8	158x46 / 6.2x1.8	158x46 / 6.2x1.8
	Net weight (Kg / lbs)[1]	0.39 / 0.86	0.60 / 1.32	0.93 / 2.05
Cat. No.		**AAAJ6011**	**AAAJ6021**	**AAAJ6031**

1) Electrophoresis unit's weight
* Included Electrophoresis unit, Gel caster unit, Comb in one system. (power supply is not included)
 FDA establishment registered company. FDA listed products.

Accessories & Options

Electrophoresis unit

Gel caster unit

Electrode assembly

Comb
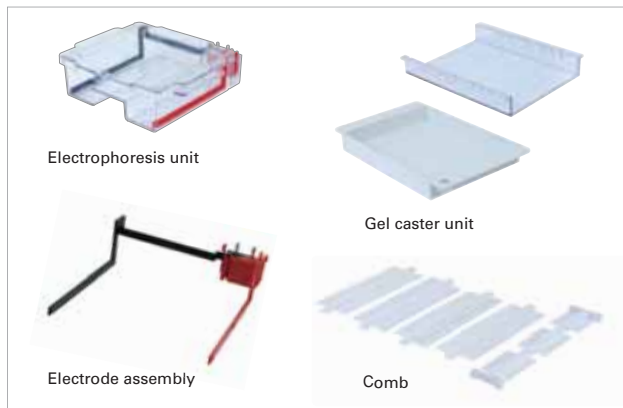
Power supply

- Four pairs of outlet terminals enable running 4 cells simultaneously.
- Folding front legs obtain wider viewing angle.
- Compact and stackable design.
- EPS-300 comes with one banana cable together.

C E

Cat. No.	Description	Suitable for
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/tray)	EP-05
AAAJ6512	Gel caster unit (gel caster/tray)	EP-10
AAAJ6513	Gel caster unit (gel caster/tray)	EP-18
AAAJ6521	Electrode assembly	EP-05
AAAJ6522	Electrode assembly	EP-10
AAAJ6523	Electrode assembly	EP-18
AAAJ6531	Comb 27/40 well, thickness 1.0mm (5ea)	EP-05
AAAJ6536	Comb 25/34 welll, thickness 1.0mm (5ea)	EP-10/18
AAAJ6537	Comb 25/34 well, thickness 1.5mm (5ea)	
AAAJ6532	Comb 20/31 well, thickness 1.0mm (5ea)	
AAAJ6533	Comb 20/31 well, thickness 1.5mm (5ea)	
AAAJ6534	Comb 16/20 well, thickness 1.0mm (5ea)	
AAAJ6535	Comb 16/20 well, thickness 1.5mm (5ea)	

Model	EPS-300
Output range	5–250 V, fully adjustable in 1 V steps 20mA–3000mA, fully adjustable in 10mA steps Max. 300 W
Type of output	Constant voltage, Constant current
Output terminals	4pair recessed banana jack in parallel
Timer	1min to 99hr 59min, Continuous (elapsed time display)
Pause/Resume function	Yes
Display	7-segment 4 digit LED, 2 line
Safety features	No-load detection, Rapid resistance change detection, Ground leak detection, Over current protection, Overvoltage protection, Overpower protection, Over temperature protection
Dimensions (WxDxH) (mm / inch)	230x307x92 / 9.1x12.1x3.6
Material	ABS
Net weight (Kg / lbs)	2.5 / 5.5
Electrical requirements	AC 100 to 240V, 50/60Hz
Power consumption	4.0A at 100V, 1.7A at 240V (max voltage & max power)
Cat. No.	**AAAJ6541**

19

Pipettes

Comprehensive selection of quality pipettes designed to fit your needs.
They are uniquely designed and made of
high quality material to ensure their longevity.

Mechanical Pipettes

Electronic Pipettes

Pipette Controller/Aid

Mechanical Pipettes

- Volume locking device.
- Volume on the knob is fully visible during both left and right handed operation.
- The only pipette with fixed and variable exchangeable counter mechanism.
- Single-channel models:
  Lightweight handle for ease of tip ejection with finger rest.
- Multi-channel models:
  Large handle for comfortable grip and soft-touch tip ejection.
- Entire pipette can be steam autoclaved. (no disassemble required)
- Double O-ring for optimal tip seal.

Cat No.	Description	Inaccuracy %	Imprecision %	Color Code	
Single, Variable vol.					
BCPC021S	0.2-2	12 / 2	6/ 1	Violet	
BCPC101	0.5-10	2.5 / 1	1.8 / 0.5	White	
BCPC201	2-20	5/ 1	1.5 / 0.3	Gray	
BCPC501	5-50	2 / 1	1.2 / 0.3	Red	
BCPC1001	10-100	2 / 0.7	0.8 / 0.2	Orange	
BCPC2001	20-200	1.5 / 0.6	0.5 / 0.15	Yellow	
BCPC10001	100-1000	1.5 / 0.8	0.4 / 0.15	Blue	
BCPC50001	1000-5000	1.2 / 0.6	0.3 / 0.15	Green	
Multi, 8-channel					
BCPC108	0.5-10	5 / 2	3.6 / 1	White	
BCPC208	2-20	5 / 2	3.6 / 1	Gray	
BCPC508	5-50	3.2 / 1.4	1.6 / 0.6	Red	
BCPC1008	10-100	2.5 / 1.3	1.2 / 0.5	Orange	
BCPC2008	20-200	1.8 / 1.2	0.8 / 0.4	Yellow	
BCPC3008	30-300	1.66 / 1.4	0.6 / 0.3	Black	

FDA establishment registered company. FDA listed products.

Electronic Pipettes

- Easy electronic setting and pipetting without hand fatigue.
- Automatic calibration.
- Large easy-to-read display.
- Aspirating and dispensing speed : 5 steps.
- Pipetting mode :
  - Auto : automatic pipetting.
  - MD : multi dispensing with reverse pipetting.
  - Mix : mixing
  - SE : sequential aspirating and dispensing.
- Acoustic signals, tip ejection alarm, Blow-out function.
- Program recall : maximum 9 protocols can be stored.
- Lower half of the pipette is autoclavable.
- Double O-ring for optimal tip seal.
- Left and right handed operation available for multi-channel models.

Cat No.	Description	Inaccuracy %	Imprecision %	Color Code	
Single, 1-channel					
BCPE201BA	2-20	1	0.3	Red	
BCPE2001BA	10-200	0.6	0.15	Yellow	
BCPE10001BA	100-1000	0.5	0.15	Blue	
Multi, 8-channel					
BCPE208BA	2-20	1	0.3	Red	
BCPE2008BA	10-200	0.6	0.15	Yellow	
BCPE12008BA	100-1200	0.5	0.15	Blue	

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Pipette Controller/Aid

- Light and fatigue free: weights only 167g, including the battery.
- Powerful : 50ml pipette is filled in less than 10 seconds.
- Gravity delivery, blow-out dispensing and fully adjustable speed-setting.
- Exchangeable 0.2 μm PTFE disc filter acts as effective shut-down system if overfill occurs.
- Vapour outlet for venting out corrosive liquids or fumes.
- Autoclavable : nose cone, pipette holder and filter.

Model		Pipette Controller
Pipette range		0.1~100ml
Aspirating and dispensing speed		6ml/sec
Material	Body	UV-resistant ABS housing
	Filter	25 mm diameter, PTFE(external), Hydrophobic(internal), 0.2 ,
	Nose cone	Polypropylene
	Pipette holder	Silicon
Electrical requirement	Battery	600 mAh / 3.6V (up to 12 hours of continuous use of Lithium battery)
	Power adapter	AC 100~240V, AC-DC 3.6V
Cat. No.		**BCPPA100**

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Accessories & Options

Pipette tips

Volume controller knobs

Combi stands

Pipette Tips

- Variety of pipette tips
  - Standard tips, Low retention tips and Low retention filter tips.

- Filter tips eliminate opportunities for cross contamination.
  - No detectable nucleic acid contamination, no detectable PCR inhibitors, no detectable endonucleases, no detectable endotoxin, sterile.

- Superiority of low retention tips.
  - Low retention tips deliver volumes within 0.1 % of the set volume, versus 0.5-0.7% for standard tips.

- Cost saving reload system.
  - Unique reload system makes re-filling the racks easier than ever, and is designed to cut down on both cost and waste.

Cat. No.	Type	Size( )	Sterile	Packaging	Qty/Unit	Description
BCP5130010C	Standard tips	10	-	Bag	1000 Tips × 20	Clear
BCP5130070C		200	-	Bag	1000 Tips × 10	Clear
BCP5130100C		300	-	Bag	1000 Tips × 10	Clear
BCP5130130C		1000	-	Bag	1000 Tips × 5	Clear
BCP5130160C		5000	-	Bag	250 Tips × 10	Clear
BCP5130105C		300	-	Hinged racks	10x96 Tips × 5	-
BCP5130135C		1000	-	Hinged racks	16x60 Tips	-
BCP5130165C		5000	-	Racks	10x50 Tips	-
BCP5130110C		300	Pre-sterile	Hinged racks	10x96 Tips × 5	-
BCP5130140C		1000	Pre-sterile	Hinged racks	16x60 Tips	-
BCP5030010C	Low retention tips (without filter)	10	-	Bag	1000 Tips × 20	Clear
BCP5030070C		200	-	Bag	1000 Tips × 10	Clear
BCP5030015C		10	-	Hinged racks	10x96 Tips × 5	-
BCP5030075C		200	-	Hinged racks	10x96 Tips × 5	-
BCP5030020C		10	Pre-sterile	Hinged racks	10x96 Tips × 5	-
BCP5030080C		200	Pre-sterile	Hinged racks	10x96 Tips × 5	-
BCP5030035C		10	Pre-sterile	-	20x96 Tips × 4	Reload
BCP0530095C		200	Pre-sterile	-	10x96 Tips × 10	Reload
BCP5131030C	Low retention tips (with filter)	10	Pre-sterile	Bag	1000 Tips × 20	-
BCP5131062C		20	Pre-sterile	Bag	1000 Tips × 10	-
BCP5131066C		100	Pre-sterile	Bag	1000 Tips × 10	-
BCP5131090C		200	Pre-sterile	Bag	1000 Tips × 10	-
BCP5131150C		1000	Pre-sterile	Bag	1000 Tips × 10	-
BCP5030030C		10	Pre-sterile	Hinged racks	10x96 Tips × 5	-
BCP5030062C		20	Pre-sterile	Hinged racks	10x96 Tips × 5	-
BCP5030066C		100	Pre-sterile	Hinged racks	10x96 Tips × 5	-
BCP5030090C		200	Pre-sterile	Hinged racks	10x96 Tips	-
BCP5130150C		1000	Pre-sterile	Hinged racks	8x60 Tips × 10	-
BCP5130155C		1000	Pre-sterile	-	10x96 Tips × 5	Reload

Carousel stands

Wall holders

Stand for electronic pipettes

for Mechanical Pipettes

Cat. No.	Description	Models	
		Single	Multi
BCP2VZ	Variable volume controller knob for 0.2-2 pipettes	•	-
BCP10VZ	Variable volume controller knob for 0.5-10 pipettes	•	•
BCP20VZ	Variable volume controller knob for 2-20 pipettes	•	•
BCP50VZ	Variable volume controller knob for 5-50 pipettes	•	•
BCP100VZ	Variable volume controller knob for 10-100 pipettes	•	•
BCP200VZ	Variable volume controller knob for 20-200 pipettes	•	•
BCP1000VZ	Variable volume controller knob for 100-1000 pipettes	•	-
BCP5000VZ	Variable volume controller knob for 1000-5000 pipettes	•	-
BCP300VZ1	Variable volume controller knob, 30-200 , for 30-300 pipettes	-	•
BCP300VZ	Variable volume controller knob, 125-300 , for 30-300 pipettes	-	•
BCP02FE1	1 fixed volume controller knob for 0.2-2 pipettes	•	-
BCP02FE2	2 fixed volume controller knob for 0.2-2 pipettes	•	-
BCP10FE5	5 fixed volume controller knob for 0.5-10 pipettes	•	-
BCP10FE10	10 fixed volume controller knob for 0.5-10 pipettes	•	-
BCP20FE10	20 fixed volume controller knob for 2-20 pipettes	•	-
BCP20FE20	20 fixed volume controller knob for 2-20 pipettes	•	-
BCP50FE20	20 fixed volume controller knob for 5-50 pipettes	•	-
BCP50FE25	25 fixed volume controller knob for 5-50 pipettes	•	-
BCP50FE50	50 fixed volume controller knob for 5-50 pipettes	•	-
BCP100FE30	30 fixed volume controller knob for 10-100 pipettes	•	-
BCP100FE50	50 fixed volume controller knob for 10-100 pipettes	•	-
BCP100FE100	100 fixed volume controller knob for 10-100 pipettes	•	-
BCP200FE100	100 fixed volume controller knob for 20-200 pipettes	•	-
BCP200FE200	200 fixed volume controller knob for 20-200 pipettes	•	-
BCP1000FE500	500 fixed volume controller knob for 100-1000 pipettes	•	-
BCP1000FE1000	1000 fixed volume controller knob for 100-1000 pipettes	•	-
BCPC10001FT	Disposable filter for use with 100-1000 pipettes, bag w/ 50 pcs	•	-
BCPC50001FT	Disposable filter for use with Capp 1000-5000 pipettes, bag w/ 25 pcs	•	-
BCP003921	Block for 4 volume controllers	•	•
BCPC01	Combi stand (2 modules) for up to 3 mechanical pipettes	•	•
BCPS06	Carousel stand for up to 6 mechanical pipettes	•	•
BCPW1M	Wall holder for mechanical pipettes	•	•
BCP001691	Bench top stand for multichannel pipettes	-	•

for Electronic Pipettes

Cat. No.	Description	Models	
		Single	Multi
BCPESTAND	Stand for 3 units of electronic pipettes	•	•

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

Standard accessories • Cover, Basket, Drain valve
(except for UCP-02)

UCS-20

Standard accessories • Cover, Basket, Drain valve

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)

CE

Model		UCP - 02	UCP - 10	UCP - 20
Bath volume (L / cu ft)		2 / 0.07	10 / 0.35	20 / 0.70
Temperature range (/)		-	Amb. to 70 / Amb. to 158	
Ultrasonic power (W)		100	300	500
Dimension	Bath interior (W×L, D) (mm / inch)	142×132, 104 / 5.6×5.2, 4.1	295×240, 160 / 11.6×9.4, 6.3	500×290, 160 / 19.7×11.4, 6.3
	Exterior (W×L×H) (mm / inch)	290×210×200 / 11.4×8.4×7.9	490×368×297 / 19.3×14.5×11.7	721×451×297 / 28.4×17.8×11.7
	Net weight (kg / lbs)	2 / 4.4	11 / 24.3	17 / 37.5
Electrical requirements (230V, 50 / 60Hz)		0.6A	1.3A	2.2A
Cat. No.		**BDH532011K**	**BDH532012K**	**BDH532013K**
Electrical requirements (120V, 60Hz)		1A	1.7A	4.2A
Cat. No.		**BDH532011U**	**BDH532012U**	**BDH532013U**

FDA establishment registered company. FDA listed products.

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.

CE

Model		UCS-05	UCS-10	UCS-20
Bath volume (L / cu ft)		5.7 / 0.20	10 / 0.35	20 / 0.70
Temperature range (/)		Amb. to 70 / Amb. to 158		
Ultrasonic power (W)		200	300	500
Dimension	Bath interior (W×L, D) (mm / inch)	295×160, 160 / 11.6×6.3, 6.3	295×240, 160 / 11.6×9.4, 6.3	500×290, 160 / 19.7×11.4, 6.3
	Exterior (W×L×H) (mm / inch)	325×230×320 / 12.8×9.1×12.6	325×330×320 / 12.8×12.9×12.6	530×330×297 / 20.9×12.9×11.7
	Net weight (kg / lbs)	8 / 17.6	11 / 24.3	15 / 33.1
Electrical requirements (230V, 50 / 60Hz)		0.9A	1.3A	2.2A
Cat. No.		**BDH532031K**	**BDH532032K**	**BDH532033K**
Electrical requirements (120V, 50 / 60Hz)		1.7A	2.5A	4.2A
Cat. No.		**BDH532031U**	**BDH532032U**	**BDH532033U**

FDA establishment registered company. FDA listed products.

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Plasticware & Other

Plastic Beakers with handle

PP/PMP Beakers

- Sturdy handle for comforatable and safe pouring. Large volume can be conveniently handled by holding it one hand.
- Round inner design of handle to deliever less patigue to your hand.
- Material selection between polypropylene and polymethylpentene.
- Autoclavable for reuse.
- Unbreakable with normal use. (ISO 7056)
- Sharp pouring spout enables dripless pouring for accurate handling even high viscocity media.
- Efficient space saving stackable design. Handle can be located in any direction when stacking beaker.
- High chemical resistance against acids, alkali.
- Graduated with easy to read markings.
- Flat bottom for use with magnetic stirrer.

Model			Plastic Beakers with handle		
Capacity (ml)			500	1000	2000
Graduation (ml)			10	20	50
Dimension (øxH, mm / inch)			148x95x134 / 5.8x3.7x5.3	183x121x166 / 7.2x4.8x6.5	221x149x212 / 8.7x5.9x8.3
Autoclavable			○ (121 for PP, 135 for PMP)		
Cat. No.	PP (polypropylene)	1ea	PER0041	AAAM20411	AAAM20511
		5ea	PER0041-5	AAAM20412	AAAM20512
	PMP (polymethylpentene)	1ea	PER0042	AAAM30411	AAAM30511
		5ea	PER0042-5	AAAM30412	AAAM30512

Beakers

Disposable Beakers

- Disposable or autoclaved for reuse.
- Unbreakable with normal use.
- Molded with three special lips.
  - Dripless pouring high viscosity media.
  - Easily stacking and unstacking.
- Transparent polypropylene material for excellent clarity and high chemical resistance.
- Graduated with easy to read markings.
- Flat bottom for use with magnetic stirrer.

Model			Disposable Beakers			
Capacity (ml)			50	100	250	500
Graduation (ml)			5	5	10	20
Dimension (øxH, mm / inch)			45x55 / 1.8x2.2	56x69 / 2.2x2.7	77x92 / 3.0x3.6	96x116 / 3.8x4.6
Autoclavable			O (121)			
Cat. No.	PP (polypropylene)	10ea	**AAAM1002**	**AAAM1012**	**AAAM1022**	**AAAM1032**
		100ea	**AAAM1003**	**AAAM1013**	**AAAM1023**	**AAAM1033**

Plastic Beakers

PP Beakers

PMP Beakers

- Material selection between polypropylene and polymethylpentene.
- Autoclaved for reuse.
- Unbreakable with normal use. (ISO 7056)
- Easy stacking and unstacking.
- Excellent clarity and high chemical resistance.
- Graduated with easy to read markings.
- Flat bottom for use with magnetic stirrer.

Model			Plastic Beakers				
Capacity (ml)			100	250	500	1000	2000
Graduation (ml)			5	10	20	50	100
Dimension (øxH, mm / inch)			61x72 / 2.4x2.8	81x95 / 3.2x3.7	101x119 / 3.9x4.7	125x148 / 4.9x5.8	157x186 / 6.2x7.3
Autoclavable			O (121 for PP, 135 for PMP)				
Cat. No.	PP (polypropylene)	1ea	**AAAM2011**	**AAAM2021**	**AAAM2031**	**AAAM2041**	**AAAM2051**
		10ea	**AAAM2012**	**AAAM2022**	**AAAM2032**	-	-
		5ea	-	-	-	**AAAM2042**	**AAAM2052**
	PMP (polymethylpentene)	1ea	**AAAM3011**	**AAAM3021**	**AAAM3031**	**AAAM3041**	**AAAM3051**
		10ea	**AAAM3012**	**AAAM3022**	**AAAM3032**	-	-
		5ea	-	-	-	**AAAM3042**	**AAAM3052**

Tubing Connectors
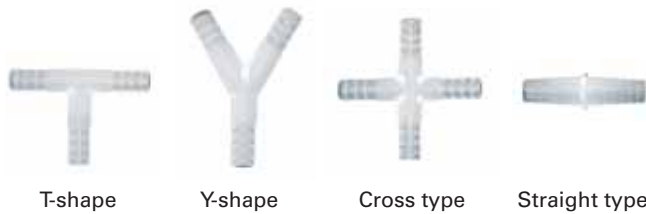
- Chemical resistant polypropylene.
- Autoclavable (121)
- Barbed fitting on each side secures attachment of tubing.
- Four different types tubing connectors.
  - T-shape, Y-shape, Cross type, Straight type.
- Various sizes from 3.2mm to 12.7mm.

T-shape   Y-shape   Cross type   Straight type

Outer Dia. (mm / inch)		Quantity (ea)	T-shape	Y-shape	Cross type	Straight type
3.2	1/8	50	AAAM5002	AAAM5072	AAAM5142	AAAM5212
		100	AAAM5003	AAAM5073	AAAM5143	AAAM5213
4	5/32	50	AAAM5012	AAAM5082	AAAM5152	-
		100	AAAM5013	AAAM5083	AAAM5153	-
4.7	3/16	50	AAAM5022	AAAM5092	AAAM5162	AAAM5222
		100	AAAM5023	AAAM5093	AAAM5163	AAAM5223
6	1/4	50	AAAM5032	AAAM5102	AAAM5172	AAAM5232
		100	AAAM5033	AAAM5103	AAAM5173	AAAM5233
8	5/16	50	AAAM5042	AAAM5112	AAAM5182	-
		100	AAAM5043	AAAM5113	AAAM5183	-
9.5	3/8	50	AAAM5052	AAAM5122	AAAM5192	AAAM5242
		100	AAAM5053	AAAM5123	AAAM5193	AAAM5243
12.7	1/2	50	AAAM5062	AAAM5132	AAAM5202	AAAM5252
		100	AAAM5063	AAAM5133	AAAM5203	AAAM5253

Carboys

- Great for storing and dispensing solutions.
- Sturdy carboys have a spigot which is molded in to the body for convenience and strength.
- Space-saving design for storing liquid solvent.
- HDPE container features durable and excellent chemical resistance.
- Spigot provides easy dispensing and leak resistance.
- The amount of liquid solvent is easily adjustable by spigot tap's angle.
- Molded in shoulder handles provide great convenience and strength.
- Gradations for easy checking.
  - DBR models : gradations on the side and front of the body are great for checking the volume of media at any side of view.
  - DBC models : gradations on the front and bottom for convenience of storing media even when you stand the carboy up.

Round type (DBR-10 / DBR-20)

Rectangular type (DBC-05 / DBC-10)

Model	DBR-10	DBR-20	DBC-05	DBC-10
Description	Round type		Rectangular type	
Material (body / cap / spigot)	HDPE (High-density polyethylene)			
Volume (L / gal)	10 / 2.64	20 / 5.28	5 / 1.32	10 / 2.64
Tubing inner dia. (mm / inch)	15.9 / 5/8 (when used with provided spigot adapter : 6.35 to 7.94 / 1/4to 5/16)			
Filling inlet inner dia. (mm / inch)	73 / 2.9	74 / 2.9	49 / 1.9	ø 72 / 2.8
Dimension (WXDXH, 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
Net weight (kg / lbs)	1.5 / 3.3	2.1 / 4.6	1.4 / 3.1	1.8 / 4
Cat. No.	AAAJ3021	AAAJ3031	AAAJ3111	AAAJ3121

Flask Supports / Ice Pan / On-ice Rack

Flask Supports

- It's concave recessed, secure, and safe multi-volume flask holder.
- Polypropylene body is chemically resistant to various organic solvents.
- Convenient grip for easy carrying
- Noticeable name tag for classification
- Able to hold ice Multi-purpose holder
- Heat Resistance: -30 to 121

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.xH) (mm / inch)	70×91 / 2.76×3.58	70×91 / 2.76×3.58	98×122 / 3.86×4.8	98×122 / 3.86×4.8	121×128 / 4.76×5.04	148×156 / 5.83×6.14	183×188 / 7.2×7.4
Dimension (WxDxH)(mm / inch)	310×100×100 / 12.2×3.94×3.94	384×265×98 / 15.12×10.43×3.86	280×125×130 / 11.02×4.92×5.12	389×239×130 / 15.31×9.41×5.12	360×146×135 / 14.17×5.75×5.31	415×192×165 / 16.34×7.56×6.5	503×223×199 / 19.8×8.78×7.83
Cat. No.	AAA23706	AAA23701	AAA23707	AAA23702	AAA23706	AAA23701	AAA23707

Ice Pan / On-ice Rack

- Ice pan keeps bottles, test tubes, and temperature-sensitive samples cool for hours.
- Rigid one molded urethane foam construction provides high durability and excellent insulating properties.
- Water proof, leak proof, unbreakable with normal use.
- Rim enables safe handling and transport.
- Ice pan can be used with on-ice racks (optional) for higher heat transfer. Scratch-proof and high heat transfer aluminum rack with easy tube identification. (numbers carved into the rack)
- Heat resistance: -196 to 80

Ice Pan

Model	IBS-310
Material	Urethane foam
Volume (L / cu ft)	4 / 0.14
Dimension (WxDxH) (mm / inch)	347x257x132 / 13.7x10.1x5.2
Net weight (kg / lbs)	1.4 / 3.1
Cat. No.	AAAJ2801

Optional Accessory - On-ice Rack

Model	JCB-150
Material	Aluminum
Dimension (WxDxH, mm)	157.5 x 151.5 x 21.1
Max. mountable tube	1.5ml micro tube x 50ea / 0.2ml micro tube x 64ea
Cat. No.	AAAJ2011
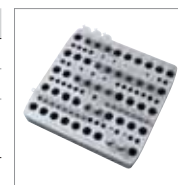
Conical Tube Racks

- Chemical resistance ABS racks and PC rack are available.
- Use each rack itself alone and also it is suitable for use with Microplate Shakers. (for ABS racks)
- Autoclavable (for PC rack)

Model	15ml Conical Tube Rrack	50ml Conical Tube Rack	
Material	ABS (acrylonitrile-butadienestyrene)	ABS (acrylonitrile - butadienestyrene)	PC (polycarbonate)
Capacity (ml)	15	50	
Dimension (WxDxH) (mm / inch)	269x85x72 / 10.6x3.3x2.8	269x85x72 / 10.6x3.3x2.8	263x55x55 / 10.4x2.2x2.2
Max. mountable tube	30 (3 x 10)	12 (2 x 6)	6 (1 x 6)
Autoclavable	-	-	O
Cat. No.	CPS0011JT	CPS0012JT	AAAJ2211

Centrifuge Tube Rack

- Autoclavable and chemical resistance PC rack.
- Hold six 30 ml centrifuge tubes.

Model	30ml Centrifuge Tube Rack
Material	PC (polycarbonate)
Capacity (ml)	30
Dimension (WxDxH) (mm / inch)	263x55x55, Ø25.7 / 10.4x2.2x2.2, Ø1.0
Max. mountable tube	6 (1 x 6)
Autoclavable	O
Cat. No.	AAAJ2111

Micro Tube Rack

- Autoclavable and chemical resistance PC rack.
- Included transparent cap has a recessed area allowing stacking.
- Use each rack itself alone and also it is suitable for use with Microplate Shakers.
- Hold eighty 1.5/2.0 ml micro tubes on one side or eighty 1.2/0.5 ml micro tubes on the other.

Model	Micro Tube Rack with Cap
Material	PC (polycarbonate)
Capacity (ml)	1.5/2.0, 0.5/1.2 on each side
Dimension (WxDxH) (mm / inch)	269x90x50 (cap included) / 10.6x3.5x2.0
Max. mountable tube	80 (5x16), each side
Autoclavable	O
Cat. No.	AAAJ2311

Plasticware & Others

Cryo Boxes / Storage Boxes

Cryo Boxes

- Designed for ultra-low temperature storage of biological materials.
- Ideal for use in mechanical freezers and liquid nitrogen tanks.
- Autoclavable and polycarbonate chemical resistance materials.
- Rack can be disassembled from the tray for easy maintenance. (for CRB-81S/T)
- Storage inside of the liquid nitrogen tank is available.
- Transparent lid with alphanumerical inscription is beneficial for clear sample's monitoring and easy sample arrangement.
- Heat Resistance : -196 to 121

Model	CRB-25	CRB-81S	CRB-81T
Material	PC (polycarbonate)		
Tube size (ml)	1.2 to 2.0	1.2 to 2.0	5
Max. mountable tube	25 (5×5)	81 (9×9)	81 (9×9)
Dimension (W×D×H) (mm / inch)	77×77×53 / 3.0×3.0×2.1	132×132×54 / 5.2×5.2×2.1	132×132×96 / 5.2×5.2×3.8
Cat. No.	AAAJ7001	AAAJ7002	AAAJ7003

5ea for 1 set.

Storage Boxes

- Suitable for storage of samples in general conditions.
- Autoclavable and polypropylene chemical resistance materials.
- Transparent lid with locking clasp keeps samples secure while offering a clear view of samples.
- Each groove on the bottom assists settling each tube stable and tight inside of the body.
- Alphanumerical grid on the lid for easy handling and identifying samples.
- Heat Resistance: -20 to 121

Model	SRB-100
Material	PP (Polypropylene)
Tube size (ml)	1.2 to 2.0
Max. mountable tube	100 (10×10)
Dimension (W×D×H) (mm / inch)	140×140×53 / 5.5×5.5×2.1
Cat. No.	AAAJ7011

5ea for 1 set.

Clamp Holders

C-20

C-10

C-7

C-5

- Clamp holders are ideal for use with overhead stirrers and hotplate stirrers.
- Adjustable to fit support rods up to 5/8" in. diameter.
- Lightweight, also selectable aluminum or polypropylene clamp holders.
- One-molded knob with fixing screw for strong support
- Nonskid contact surface tightens stand rod stably.
- C-20, C-10 for overhead stirrers and C-10, C-7, C-5 for hotplate stirrers.

Model	C-20	C-10	C-7	C-5
Max. dia. (Ø, mm)	27	17	12	12
Opening dia. (Ø, mm)	20	15	-	-
Material (body / knob / bolt)	Aluminum / Polypropylene / Stainless steel			Polypropylene
Cat. No.	AAA37511	AAA37512	AAA37513	AAA37514

Magnetic Drives

Application of magnetic drive

- Magnetic drives are designed for agitating a fully vacuumed flask. Multi-functional easy to replace impeller.
- Use of rare-earth elements which is Neodymium (Nd), Samarium (Sm-Co) magnet.
- High-speed rpm, vibration free.
- Specifically designed with permanent magnets which has a dynamic torque rating.
- Small size and powerful rotating magnetic drive is useful both for laboratory and manufacturing applications.

Model		MD-T6-24	MD-T6-29	MD-T6-34
Ground joint		24 / 40	29 / 42	34 / 45
Material	Body / Housing	SUS316L / CR-PLATE		
	Bushing / Seal	PTFE / Viton		
Driving	Vacuum	Max. 1×10-4 mmHg		
	Pressure	Max. 5kg / cm2		
	Temp	Max. 70 (without cooling), Max. 300 (with cooling)		
Shaft dia. (Ø, mm / inch)		8 / 5/16		
Cooling in/out dia. (Ø, mm / inch)		3.2 / 1/8		
Dimension (Ø×L, mm / inch)		50×200 / 2x7.9		
Net weight (kg / lbs)		1.02 / 2.25	1.04 / 2.29	1.08 / 2.38
Cat. No.		BEA511001	BEA511002	BEA511003

APPENDIX

Lab Companion
2017 - 18 Product Catalog

APPENDIX

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Lab Companion

Best Products for Reliable Results

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