

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.

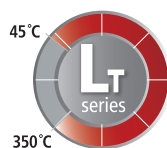
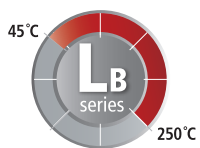
- Testing for electric and electronic component, sensors.
- Testing for semiconductor, PCB, LCD & LED.
- Pharmaceutical tests.
- Mechanical / Military / Aircraft engineering.
- Automobile, Transport / automobile supply industries.
- Chemical / Petrochemical industries.
- Construction materials / Plastic / 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 (°C/°F)	-70 to 180 / -94 to 356	-35 to 180 / -31 to 356	-35 to 180 / -31 to 356
	Fluctuation at 100°C (±°C/°F)	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°C (±°C/°F)	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	0	0	0
	Program function	0	0	0
	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	0	0	0
	Door open alarm	0	0	0
	Over current limit	0	0	0
	Auto-run (power failure)	0	0	0

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 (°C/°F)	Amb. +45 to 250 / Amb. +81 to 482	Amb. +45 to 350 / Amb. +81 to 662
	Fluctuation at 100°C (±°C/°F)	0.3 / 0.54	0.4, 0.3, 0.5 / 0.72, 0.54, 0.90
	Variation at 100°C (±°C/°F)	0.4, 0.5 / 0.72, 0.90	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	0	0
	Program function	0	0
	Computer interface	RS-232 port, RS-485 port (optional)	RS-232 port, RS-485 port (optional)
Safety	Over temp. limit	0	0
	Door open alarm	0	0
	Over current limit	0	0
	Auto-run (power failure)	0	0

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°C	0.3 / 0.54 at 25°C	0.3 / 0.54		0.5 / 0.9 at 50°C	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°C		1.0 / 1.8 at 50°C	2.0, 1.9, 1.8 / 3.6, 3.42, 3.24
Wait on/off	Wait on/off	Wait on/off		Wait on/off	
0	0	0		0	
0	0	0		0	
RS-232 port, RS-485 port (optional)	RS-232 port, RS-485 port (optional)	RS-232 port		RS-232 port, RS-485 port (optional)	
0	0	0		0	
0	0	0		0	
0	0	0		0	
0	0	0		0	

Heating Chambers (Floor Standing - LBV / LTV)



LBV-040 / LTV-040

with optional recorder

Standard accessories

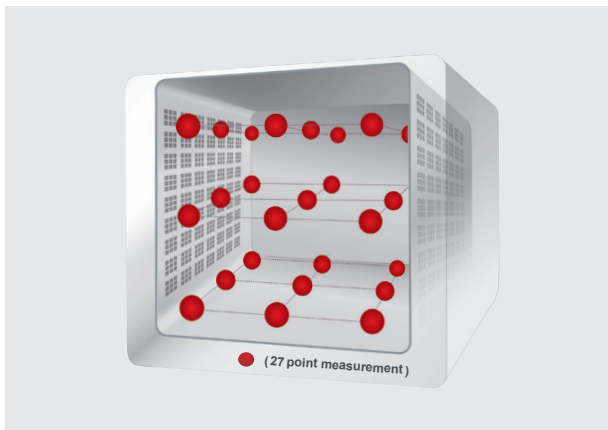
- Wire shelves, Door key

Optional accessories

see page 212

- Recorder, Interface converter, Warning signal lamps
- Perforated shelves (max. load 40kg)

Reliable international standard

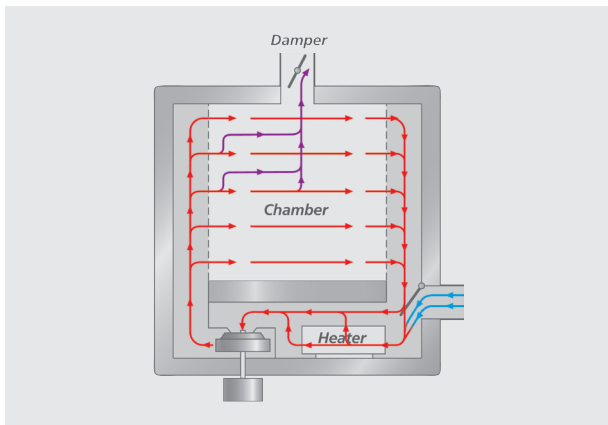


Designed and tested in accordance with the international standards.

Temperature values of all chambers are measured according to DIN 12880 and IEC 60068-3-5.

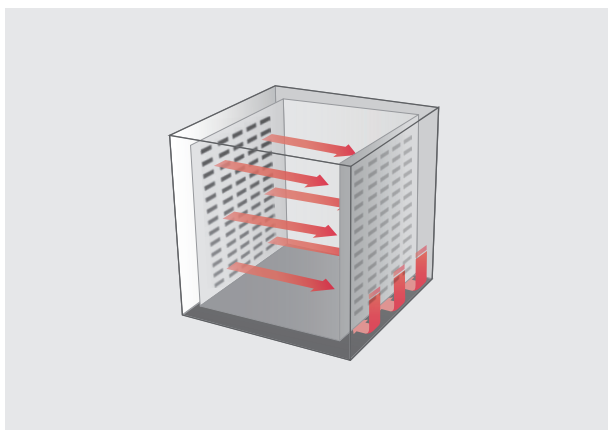
- Increase in reliability of accurate temperature implementation and test results. (27 point measurement data)

Uniform air circulation



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.



Horizontal airflow

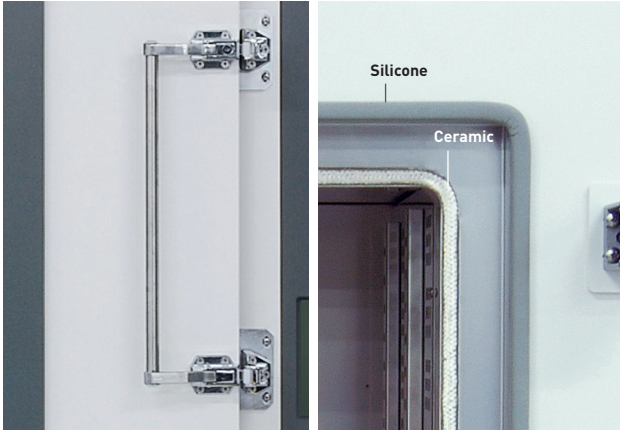
LBV series

- Amb.+45°C to 250°C / Amb. +113°F to 482°F
- Horizontal airflow

LTV series

- Amb.+45°C to 350°C / Amb. +113°F to 662°F
- 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°C. (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

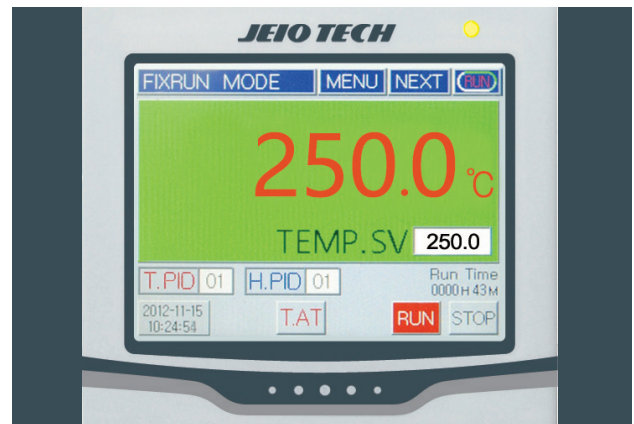
- User selectable operation mode after power interruption
 - ether Automatic run or Manual run.
- Over-temperature protection.
- Over-current and current leakage protection. (ELCB, earth leakage circuit breaker)
- Independent safety circuit breaker.
 - Important parts such as controller and heaters are 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

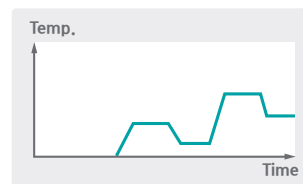
- Corrosion resistance stainless steel inner chamber.
- Space efficient and easy loading chamber design.
 - Included two shelves for loading of large amounts of samples.
 - Heavy load shelving, rated for 40kg are also available. (optional)
- User friendly LCD controller.
 - Colorful interactive touch 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.

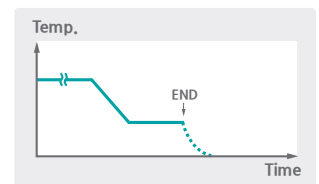
* Even though the max. segments per pattern are 100, the total available segments are up to 2000 not 10000, therefore arrangement of the number of segment and patterns will need to be done properly.



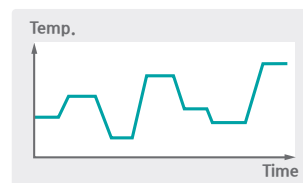
Color LCD controller



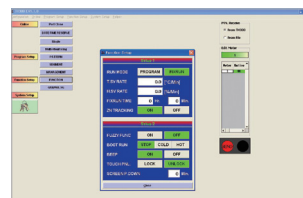
Automatic start



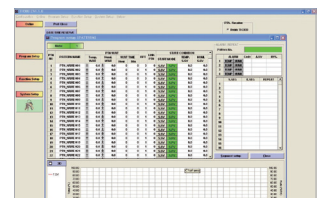
End of program



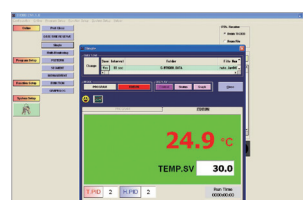
Program control



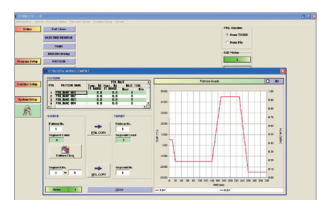
Function setup



Program setup



Operating status



Graph display

Heating Chambers (Floor Standing - LBV / LTV)

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 (°C / °F)	intake/damper 100% close	Amb. +45 to 250 / Amb. +81 to 482				
	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°C (±°C / °F)		0.3 / 0.54	0.3 / 0.54	0.3 / 0.54	0.3 / 0.54	0.3 / 0.54
Temperature variation ²⁾ (±°C / °F)	at 100°C	0.4 / 0.72	0.4 / 0.72	0.5 / 0.90	0.5 / 0.90	0.5 / 0.90
	at 150°C	0.7 / 1.26	0.7 / 1.26	1.0 / 1.80	0.7 / 1.26	0.8 / 1.44
	at 200°C	1.1 / 1.98	1.1 / 1.98	1.7 / 3.06	1.1 / 1.98	1.2 / 2.16
	at 250°C	1.7 / 3.06	1.7 / 3.06	2.6 / 4.68	1.5 / 2.70	1.7 / 3.06
Heating time ²⁾ (min.) from Amb. to 250°C		51	51	51	55	60
Recovery time ²⁾ after door was opened (min.)	at 100°C	10.5	10.5	8	6.5	8
	at 150°C	8	8	9	8	9.5
	at 200°C	4.5	4.5	8.5	7	8.5
	at 250°C	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 (WxDxH)	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 / 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 (°C / °F)	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°C (±°C / °F)		0.4 / 0.72	0.4 / 0.72	0.3 / 0.54	0.5 / 0.90	0.4 / 0.72
Temperature variation ²⁾ (±°C / °F)	at 100°C	0.5 / 0.90	0.5 / 0.90	0.6 / 1.08	0.7 / 1.26	0.4 / 0.72
	at 150°C	0.7 / 1.26	0.7 / 1.26	1.0 / 1.80	1.1 / 1.98	0.6 / 1.08
	at 200°C	1.1 / 1.98	1.1 / 1.98	1.7 / 3.06	1.9 / 3.42	1.1 / 1.98
	at 250°C	1.6 / 2.88	1.6 / 2.88	2.5 / 4.5	2.7 / 4.86	1.6 / 2.88
	at 300°C	2.4 / 4.32	2.4 / 4.32	3.4 / 6.12	3.4 / 6.12	2.4 / 4.32
	at 350°C	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°C		41	41	43	40	45
Recovery time ²⁾ after door was opened (min.)	at 100°C	8.5	8.5	6	6	7.5
	at 150°C	8.5	8.5	9	7.5	9.5
	at 200°C	3.5	3.5	8.5	8.5	8.5
	at 250°C	5	5	11.5	8.5	9.5
	at 300°C	7.5	7.5	12.5	8.5	9
	at 350°C	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 (WxDxH)	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 / 276A				
Cat. No.		AAHK2011K				
Electrical requirements (230V, 50Hz)		1ph / 276A				
Cat. No.		AAHK2012K				
Electrical requirements (380V, 50Hz)		3ph / 13.9A				
Cat. No.		AAHK2028K				
Electrical requirements (380V, 50Hz)		3ph / 18.5A				
Cat. No.		AAHK2038K				
Electrical requirements (380V, 50Hz)		3ph / 23.4A				
Cat. No.		AAHK2048K				
Electrical requirements (380V, 50Hz)		3ph / 27.9A				
Cat. No.		AAHK2058K				

1) According to IEC 60068-3-5

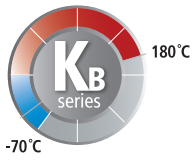
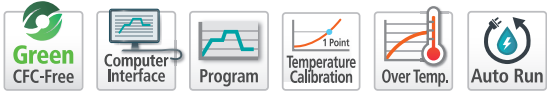
2) According to DIN 12880

※ 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)



KBD-040

with optional recorder

Standard accessories

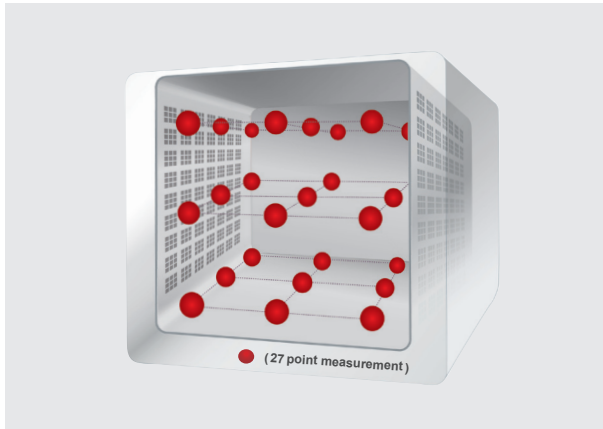
- Wire shelves, Door key
- Cable port (Ø50mm for 012/025 models or Ø80mm for 040/070/100 models)

Optional accessories

see page 212

- Recorder, Interface converter, Warning signal lamps
- Perforated shelves (max. load 40kg)

Reliable international standard

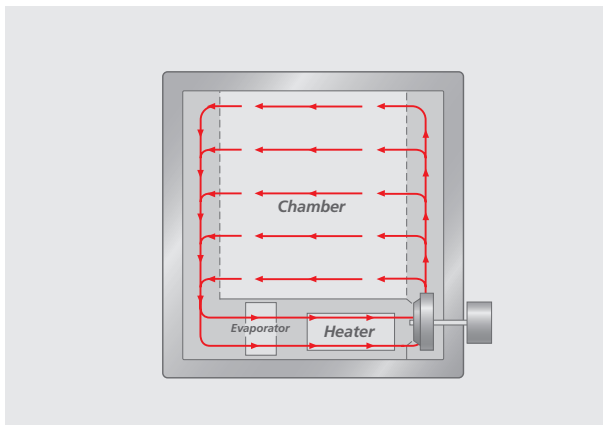


Designed and tested in accordance with the international standards.

Temperature values of all chambers are measured according to IEC 60068-3-5 and DIN 12880.

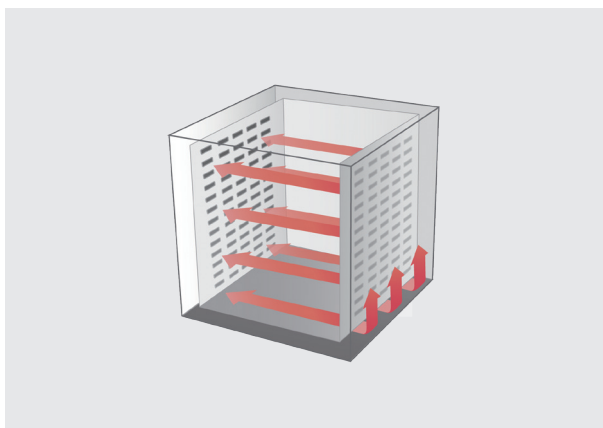
- Increase in reliability of accurate temperature implementation and test results. (27 point measurement data)

Uniform air circulation



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.

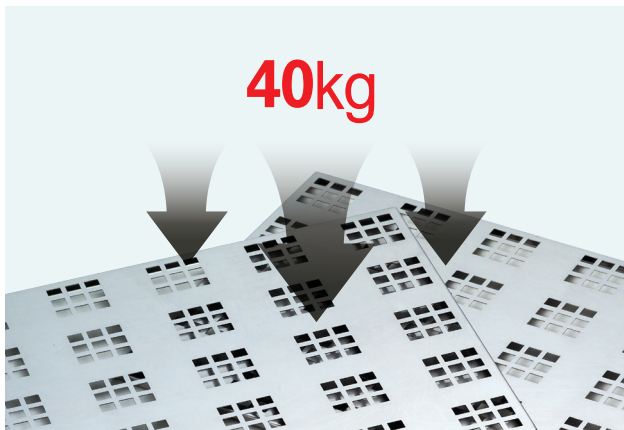


Horizontal airflow

KBD series

- -70°C to 180°C / -94°F to 356°F
- Horizontal airflow

K - SERIES



Perforated shelves for heavy load (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°C. (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.



Stainless steel chamber



Two-point door latch

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.



Individual over temperature limiter



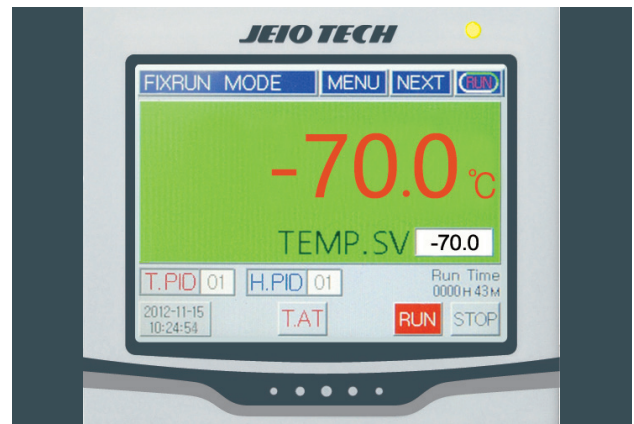
Warning signal lamp (optional)

Convenience

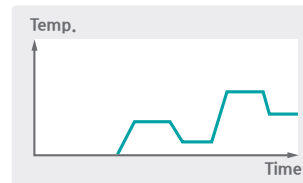
- Corrosion resistance stainless steel inner chamber.
- Space efficient and easy loading chamber design.
 - Included two shelves for loading of large amounts of samples.
 - Heavy load shelving, rated for 40kg are also available. (optional)
- User friendly LCD controller.
 - Colorful interactive touch 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.

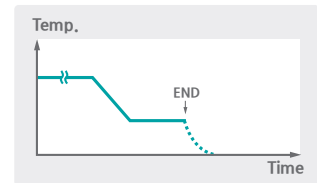
* Even though the max. segments per pattern are 100, the total available segments are up to 2000 not 10000, therefore arrangement of the number of segment and patterns will need to be done properly.



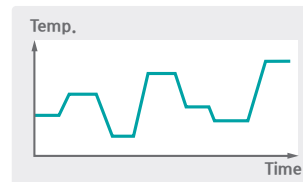
Color LCD controller



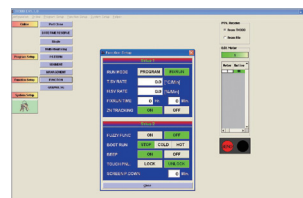
Automatic start



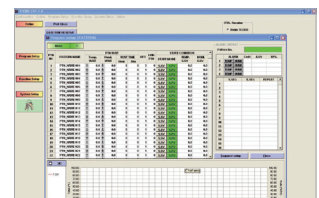
End of program



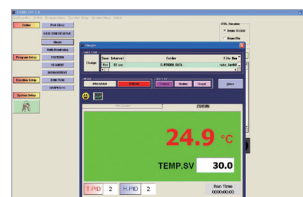
Program control



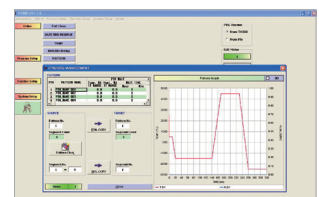
Function setup



Program setup



Operating status



Graph display

Heating & Cooling Chambers (Floor Standing - KBD)

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 (°C / °F)		-70 to 180 / -94 to 356				
Temperature fluctuation ¹⁾²⁾ at 25°C (±°C / °F)		0.2 / 0.36	0.2 / 0.36	0.2 / 0.36	0.2 / 0.36	0.2 / 0.36
Temperature variation ²⁾ (±°C / °F)	at -70°C	0.3 / 0.54	0.3 / 0.54	0.3 / 0.54	0.2 / 0.36	0.2 / 0.36
	at -50°C	0.4 / 0.72	0.5 / 0.90	0.4 / 0.72	0.3 / 0.54	0.3 / 0.54
	at -25°C	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72	0.3 / 0.54	0.3 / 0.54
	at -10°C	0.5 / 0.9	0.4 / 0.72	0.5 / 0.9	0.4 / 0.72	0.4 / 0.72
	at 25°C	0.5 / 0.9	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72
	at 70°C	0.6 / 1.08	0.7 / 1.26	0.6 / 1.08	0.7 / 1.26	0.7 / 1.26
	at 100°C	1.0 / 1.80	1.0 / 1.80	1.0 / 1.80	0.9 / 1.62	0.9 / 1.62
	at 150°C	1.0 / 1.80	1.1 / 1.98	1.0 / 1.80	0.8 / 1.44	0.8 / 1.44
at 180°C	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°C		54	55	55	56	58
Cooling time ²⁾ (min.) from 25°C to -70°C		79	78	80	76	77
Recovery time ²⁾ after door was opened (min.)	at -70°C	12	12	13	9	9
	at -50°C	8	8	8	6	6
	at -25°C	6	6	6	5	5
	at -10°C	5	5	6	5	5
	at 70°C	6	6	6	6	6
	at 100°C	5	5	5	6	6
	at 150°C	7	7	10	10	10
	at 180°C	7	8	10	10	10
Program control	Temperature range (°C / °F)	-50 to 120 / -58 to 248				
	Heating rate (°C / °F per min.) from -50°C to 120°C	2.7 / 4.86	2.7 / 4.86	2.7 / 4.86	2.7 / 4.86	2.7 / 4.86
	Cooling rate (°C / °F per min.) from 120°C to -50°C	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 (WxDxH)	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	1575×1810×1819 / 62×71.3×71.6	1675×1920×1919 / 65.9×75.6×75.6
	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

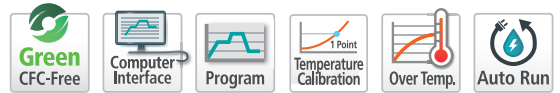
1) According to IEC 60068-3-5

2) According to DIN 12880

* Above specification value is recorded by 380V/50Hz.

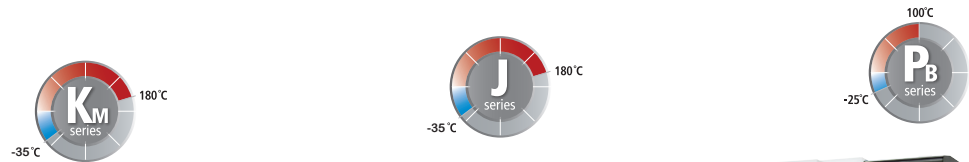
* Above specifications can be changed without prior notice.

* FDA establishment registered company. FDA listed products.



Please visit JEIOTECH.com

For further information on Jeio Tech's Temperature Chamber products Information is readily available on our website.



K / J / P series

with optional recorder

Standard accessories

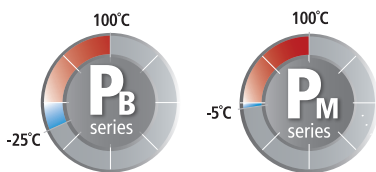
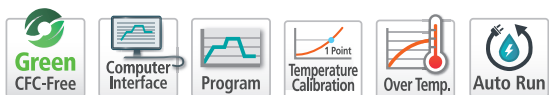
- Wire shelves, Door key
- Cable port (Ø50mm for 012/025 models or Ø80mm for 040/070/100 models)

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)



PBV-040 / PMV-040

with optional recorder

Standard accessories

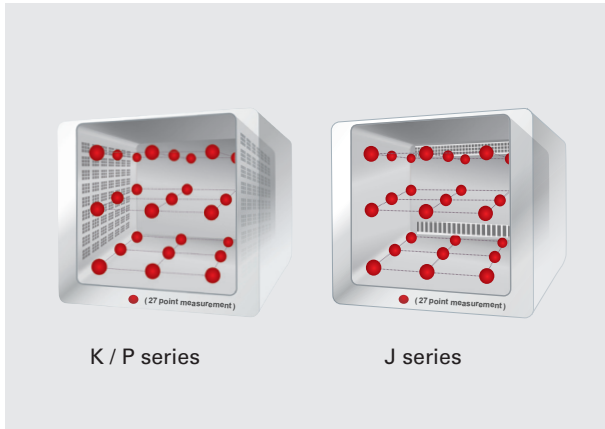
- Wire shelves, Door key
- Cable port (Ø50mm for 012/025 models or Ø80mm for 040/070/100 models)

Optional accessories

see page 212

- Recorder, Interface converter, Warning signal lamps
- Perforated shelves (max. load 40kg)

Reliable international standard

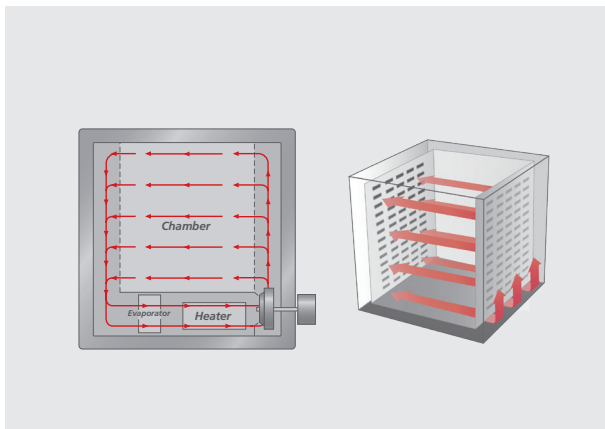


Designed and tested in accordance with the international standards.

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)

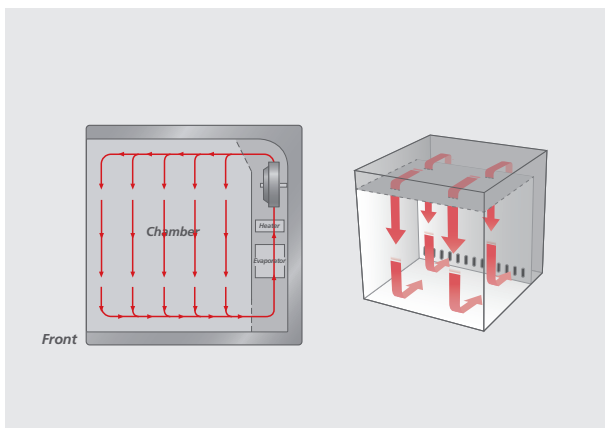
Uniform air circulation



Horizontal airflow (K / P series)

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.



Vertical airflow (J series)

KMV series

- -35°C to 180°C / -31°F to 356°F
- Horizontal airflow

JMV series

- -35°C to 180°C / -31°F to 356°F
- Vertical airflow

PBV / PMV series

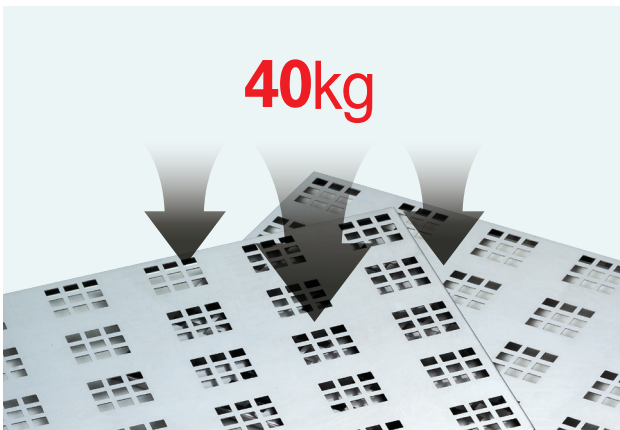
- -25°C to 100°C / -13°F to 212°F
- -5°C to 100°C / 23°F to 212°F
- Horizontal airflow

K / J / P - SERIES



Two-point door latch

Stainless steel chamber



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 °C. (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

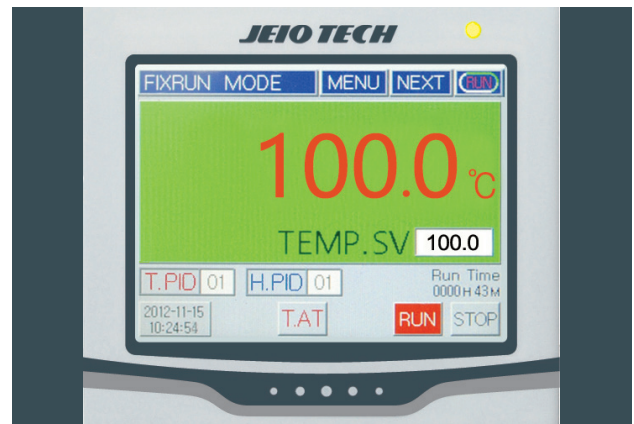
- User selectable operation mode after power interruption
 - either Automatic run or Manual run.
- Over-temperature protection.
- Over-current and current leakage protection.
 - (ELCB, earth leakage circuit breaker)
- Independent safety circuit breaker.
 - Important parts such as controller and heaters 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

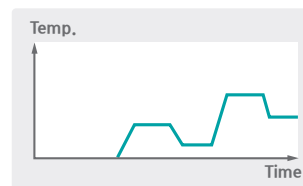
- Corrosion resistance stainless steel inner chamber.
- Space efficient and easy loading chamber design.
 - Included two shelves for loading of large amounts of samples.
 - Heavy load shelving, rated for 40kg are also available. (optional)
- User friendly LCD controller.
 - Colorful interactive touch 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.

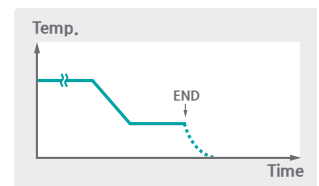
* Even though the max. segments per pattern are 100, the total available segments are up to 2000 not 10000, therefore arrangement of the number of segment and patterns will need to be done properly.



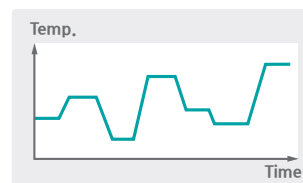
Color LCD controller



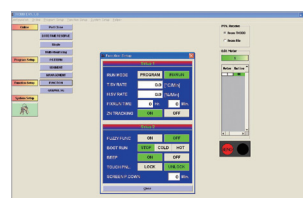
Automatic start



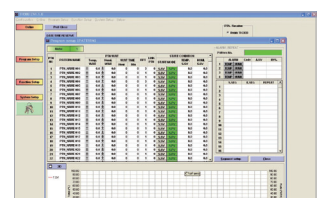
End of program



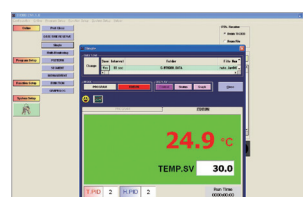
Program control



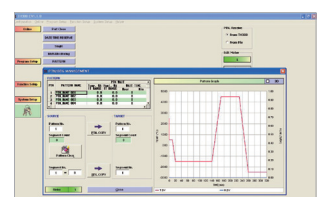
Function setup



Program setup



Operating status



Graph display

Heating & Cooling Chambers (Floor Standing - KMV / JMV / PBV / PMV)

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 (°C / °F)		-35 to 180 / -31 to 356				
Temperature fluctuation ¹⁾²⁾ at 25°C (±°C / °F)		0.4 / 0.72	0.4 / 0.72	0.3 / 0.54	0.2 / 0.36	0.2 / 0.36
Temperature variation ²⁾ (±°C / °F)	at -35°C	0.6 / 1.08	0.6 / 1.08	0.7 / 1.26	0.4 / 0.72	0.4 / 0.72
	at -25°C	0.6 / 1.08	0.6 / 1.08	0.7 / 1.26	0.5 / 0.9	0.5 / 0.9
	at -10°C	0.8 / 1.44	0.8 / 1.44	0.7 / 1.26	0.5 / 0.9	0.5 / 0.9
	at 25°C	0.8 / 1.44	0.8 / 1.44	0.5 / 0.9	0.5 / 0.9	0.5 / 0.9
	at 70°C	0.8 / 1.44	0.8 / 1.44	0.9 / 1.62	0.8 / 1.44	0.8 / 1.44
	at 100°C	1.0 / 1.8	1.0 / 1.8	0.9 / 1.62	1.0 / 1.8	0.9 / 1.62
	at 150°C	1.1 / 1.98	1.1 / 1.98	1.7 / 3.06	1.6 / 2.88	0.9 / 1.62
at 180°C	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°C to 180°C		64	64	66	51	78
Cooling time ²⁾ (min.) from 25°C to -35°C		56	56	60	62	96
Recovery time ²⁾ after door was opened (min.)	at -35°C	8.0	8.0	6.5	7.0	6.0
	at -25°C	3.5	3.5	7.5	6.0	7.0
	at -10°C	2.5	2.5	6.5	6.5	6.5
	at 25°C	4.0	4.0	5.5	4.5	5.0
	at 70°C	4.0	4.0	5.5	5.0	8.0
	at 100°C	4.0	4.0	6.5	6.0	6.0
	at 150°C	4.0	4.0	4.5	4.5	3.5
at 180°C	11.5	11.5	6.0	5.0	4.0	
Program control	Temperature range (°C / °F)	-25 to 120 / -13 to 248				
	Heating rate (°C / °F per min.) from -25°C to 120°C	2.3 / 4.14	2.3 / 4.14	2.2 / 3.96	2.8 / 5.04	1.7 / 3.06
	Cooling rate (°C / °F per min.) from 120°C to -25°C	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 (WxDxH)	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 (°C / °F)		-35 to 180 / -31 to 356				
Temperature fluctuation ¹⁾²⁾ at 25°C (±°C / °F)		0.5 / 0.9	0.5 / 0.9	0.3 / 0.54	0.4 / 0.72	0.3 / 0.54
Temperature variation ²⁾ (±°C / °F)	at -35°C	0.7 / 1.26	0.7 / 1.26	0.5 / 0.9	1.0 / 1.8	0.7 / 1.26
	at -25°C	0.7 / 1.26	0.7 / 1.26	0.6 / 1.08	1.1 / 1.98	0.8 / 1.44
	at -10°C	0.8 / 1.44	0.8 / 1.44	0.6 / 1.08	1.2 / 2.16	0.9 / 1.62
	at 25°C	0.8 / 1.44	0.8 / 1.44	0.5 / 0.9	0.8 / 1.44	0.9 / 1.62
	at 70°C	0.9 / 1.62	0.9 / 1.62	0.7 / 1.26	1.2 / 2.16	0.8 / 1.44
	at 100°C	1.0 / 1.8	1.0 / 1.8	0.8 / 1.44	1.2 / 2.16	0.9 / 1.62
	at 150°C	1.2 / 2.16	1.2 / 2.16	1.3 / 2.34	1.1 / 1.98	1.1 / 1.98
at 180°C	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°C to 180°C		67	67	46	44	60
Cooling time ²⁾ (min.) from 25°C to -35°C		48	48	35	35	58
Recovery time ²⁾ after door was opened (min.)	at -35°C	6.0	6.0	6.0	6.5	9.0
	at -25°C	5.0	5.0	6.5	7.0	6.5
	at -10°C	6.5	6.5	6.5	8.5	6.5
	at 25°C	5.5	5.5	4.5	2.0	7.0
	at 70°C	8.5	8.5	8.0	9.5	7.5
	at 100°C	5.5	5.5	4.5	6.0	5.5
	at 150°C	6.5	6.5	7.0	9.0	3.5
at 180°C	6.5	6.5	6.5	8.0	4.0	
Program control	Temperature range (°C / °F)	-25 to 120 / -13 to 248				
	Heating rate (°C / °F per min.) from -25 °C to 120°C	2.0 / 3.6	2.0 / 3.6	2.0 / 3.6	2.0 / 3.6	2.0 / 3.6
	Cooling rate (°C / °F per min.) from 120°C to -25°C	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 (WxDxH)	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.

Heating & Cooling Chambers (Floor Standing - KMV / JMV / PBV / PMV)

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 (°C / °F)		-25 to 100 / -13 to 212				
Temperature fluctuation ¹⁾²⁾ at 25°C (±°C / °F)		0.3 / 0.54	0.3 / 0.54	0.3 / 0.54	0.4 / 0.72	0.2 / 0.36
Temperature variation ²⁾ (±°C / °F)	at -25°C	0.3 / 0.54	0.3 / 0.54	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72
	at -15°C	0.3 / 0.54	0.3 / 0.54	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72
	at -10°C	0.3 / 0.54	0.3 / 0.54	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72
	at 25°C	0.3 / 0.54	0.3 / 0.54	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72
	at 70°C	0.4 / 0.72	0.4 / 0.72	0.6 / 1.08	0.6 / 1.08	0.6 / 1.08
	at 100°C	0.6 / 1.08	0.6 / 1.08	0.7 / 1.26	0.8 / 1.44	0.8 / 1.44
Heating time ²⁾ (min.) from 25°C to 100°C		34	34	52	35	38
Cooling time ²⁾ (min.) from 25°C to -25°C		44	44	34	33	42
Recovery time ²⁾ after door was opened (min.)	at -25°C	5.0	5.0	5.0	4.0	7.0
	at -15°C	4.5	4.5	3.5	5.5	5.0
	at -10°C	6.0	6.0	4.5	4.0	5.0
	at 25°C	5.0	5.0	4.0	5.5	3.5
	at 70°C	5.0	5.0	9.5	5.0	7.5
	at 100°C	5.5	5.5	9.0	6.0	7.0
Program control	Temperature range (°C / °F)	-12.5 to 87.5 / 9.5 to 189.5				
	Heating rate (°C / °F per min.) from -12.5°C to 87.5°C	2.6 / 4.68	2.6 / 4.68	1.5 / 2.7	2.7 / 4.86	2.0 / 3.6
	Cooling rate (°C / °F per min.) from 87.5°C to -12.5°C	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 (WxDxH)	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 (°C / °F)		-5 to 100 / 23 to 212				
Temperature fluctuation ¹⁾²⁾ at 25°C (±°C / °F)		0.3 / 0.54	0.3 / 0.54	0.3 / 0.54	0.3 / 0.54	0.3 / 0.54
Temperature variation ²⁾ (±°C / °F)	at -5°C	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72	0.3 / 0.54
	at 0°C	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72	0.3 / 0.54
	at 25°C	0.2 / 0.36	0.2 / 0.36	0.3 / 0.54	0.4 / 0.72	0.3 / 0.54
	at 40°C	0.3 / 0.54	0.3 / 0.54	0.3 / 0.54	0.4 / 0.72	0.3 / 0.54
	at 60°C	0.5 / 0.90	0.5 / 0.90	0.4 / 0.72	0.4 / 0.72	0.4 / 0.72
	at 80°C	0.7 / 1.26	0.7 / 1.26	0.6 / 1.08	0.5 / 0.90	0.5 / 0.90
Heating time ²⁾ (min.) from 25°C to 100°C		45	45	48	52	56
Cooling time ²⁾ (min.) from 25°C to -5°C		44	44	43	39	39
Recovery time ²⁾ after door was opened (min.)	at -5°C	8.0	8.0	6.5	5.0	5.0
	at 0°C	6.0	6.0	6.0	6.0	8.0
	at 25°C	0.5	0.5	4.0	6.0	6.0
	at 40°C	2.5	2.5	2.5	2.5	2.5
	at 60°C	4.0	4.0	4.5	5.0	6.0
	at 80°C	5.0	5.0	5.0	5.5	6.0
Program control		Temperature range (±°C / °F) 5.5 to 89.5 / 9.9 to 161.1				
Heating rate (°C / °F per min.) from 5.5°C to 89.5°C		1.7 / 3.06	1.7 / 3.06	1.6 / 2.88	1.5 / 2.7	1.3 / 2.34
Cooling rate (°C / °F per min.) from 89.5°C to 5.5°C		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 (WxDxH)	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

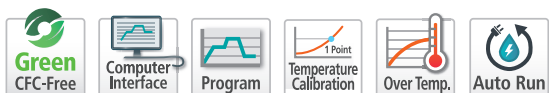
2) According to DIN 12880

※ 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.

Heating & Cooling Chambers (Floor Standing - LCH / LCH-G)

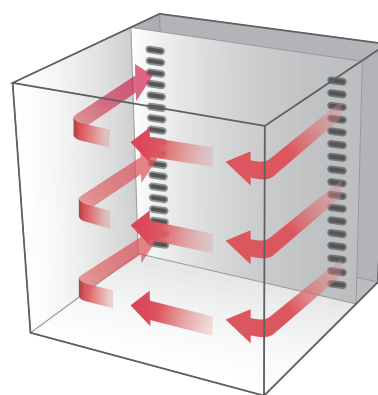


High-performance horizontal air flow provides excellent uniformity and fast heat-up time.



Control range

- Temperature range from -20 to 100°C
from 0 to 100°C



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°C.

Convenience

- Two independently controlled chambers merged into a single unit for space saving.
- Intuitive control panel with bright LED display (0.1°C 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°C to 100°C

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 (°C / °F)	-20 to 100 / -4 to 212			
	Fluctuation (±°C / °F) ¹⁾	0.3 / 0.54			
	Variation at 80°C (±°C / °F) ¹⁾	0.8 / 1.44			
Time	Heating (min.)	80 (from 20°C to 100°C)			
	Cooling (min.)	60 (from 100°C to 40°C)			
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 (WxDxH)	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)		ø 80 / ø 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°C to 100°C

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 (°C / °F)	0 to 100 / 32 to 212			
	Fluctuation (±°C / °F) ¹⁾	0.3 / 0.54			
	Variation at 80°C (±°C / °F) ¹⁾	0.8 / 1.44			
Time	Heating (min.)	80 (from 20°C to 100°C)			
	Cooling (min.)	60 (from 100°C to 40°C)			
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 (WxDxH)	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)		ø 80 / ø 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.

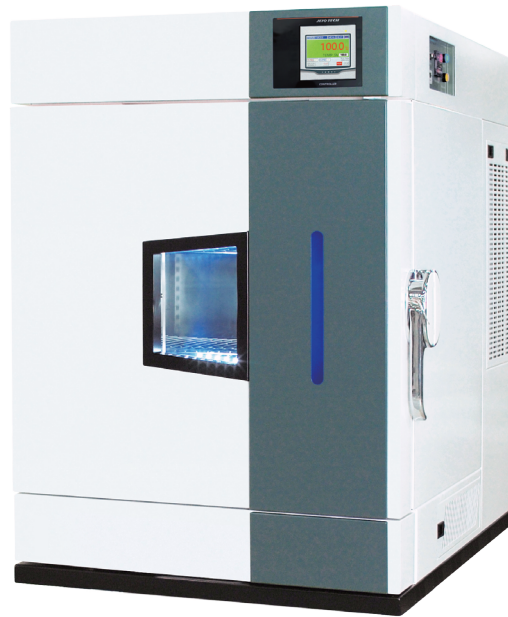
※ FDA establishment registered company. FDA listed products.

Heating & Cooling Chambers (Tabletop - TC-KE /TC-ME)



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

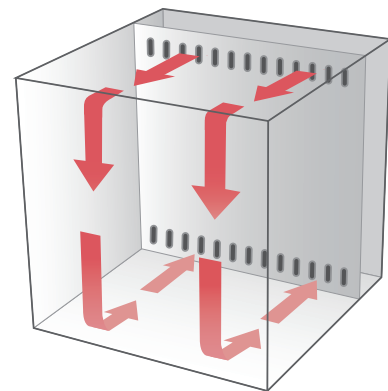
Optional accessories see page 213

- 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°C
from -20 to 120°C



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

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.



LCD controller



Viewing window



Stand with caster (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.

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 (°C / °F)	-40 to 150 / -40 to 302		
	Fluctuation ¹⁾ at 50°C (±°C / °F)	0.5 / 0.9		
	Variation ¹⁾ at 50°C (±°C / °F)	1.0 / 1.8		
Time	Heating (min.)	60 (-35°C to 100°C)		
	Cooling (min.)	70 (25°C to -35°C)		
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 (WxDxH)	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)	611×878×911 / 24.1×34.6×36.2	660×1048×1056 / 23.7×41.2×41.6	761×1108×1096 / 30.0×43.6×43.1
	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

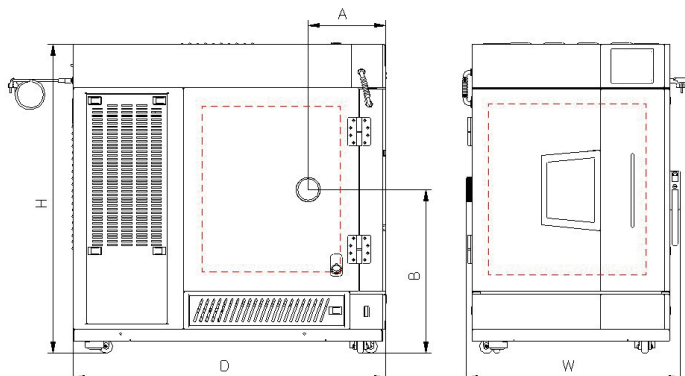
1) Technical data according to DIN 12880, IEC 60068.

2) 80mm cable access hole is NOT available for 25L chamber.

* Permissible environmental conditions: temperature (18 to 30°C) and relative humidity (up to 85%).

* All specifications are under ambient temperature 20°C (68°F), 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 (°C / °F)	-20 to 120 / -4 to 248		
	Fluctuation ¹⁾ (±°C / °F) at 100°C	0.4 / 0.72	0.3 / 0.55	0.3 / 0.55
	Variation ¹⁾ (±°C / °F) at 100°C	2.0 / 3.60	1.9 / 3.42	1.8 / 3.24
Time	Heating (min.)	55 From -15°C to 120°C (5°F to 248°F)		
	Cooling (min.)	60 From 20°C to -15°C (68°F to 5°F) on single 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 (WxDxH)	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)	611×878×911 / 24.1×34.6×36.2	660×1048×1056 / 23.7×41.2×41.6	761×1108×1096 / 30.0×43.6×43.1
	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 (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

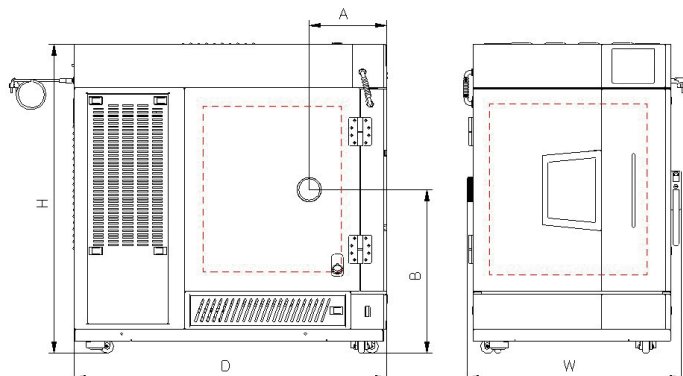
1) Technical data according to DIN 12880, IEC 60068.

2) 80mm cable access hole is NOT available for 25L chamber.

* Permissible environmental conditions: temperature (18 to 30°C) and relative humidity (up to 85%).

* All specifications are under ambient temperature 20°C (68°F), no load.

* FDA establishment registered company. FDA listed products.



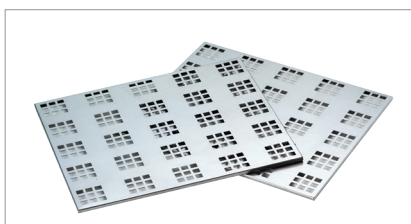
Dimension

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")

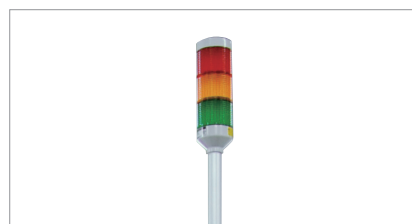
Accessories & Options



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(Φ50,sus) for LBV, LTV models	•	•	-	-	-	-	-
AAAK1522	Cable port(Φ80,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.