

# **Selection Guide**

### **Incubators**

Descri	ption	Operating Temp. Range (°C/°F)	Chamber Volume (L /cu ft)	Temperature Fluctuation at 37°C[±°C/°F]	Temperature Variation at 37°C[±°C/°F]	Page
General Purpose	IB-05G IB-15G	Amb. +5 to 70 / Amb. +9 to 158	60 / 2.1 102 / 3.6	0.1 / 0.18	0.6 / 1.08	36
Economy	IB-25G IB-01E IB-11E	Amb. +3 to 60	151 / 5.3 65 / 2.3 150 / 5.3	0.2 / 0.36 0.2 / 0.36 0.3 / 0.54	0.6 / 1.08 0.6 / 1.08 0.8 / 1.44	37
	IB-21E	/ Amb. +5.4 to 140	205 / 7.2	0.1 / 0.18	1.1 / 1.98	

## **Low Temperature Incubators**

Descrip	otion	Operating Temp. Range (°C/°F)	Chamber Volume (L/cuft)	Temperature Fluctuation at $25\%[\pm\%/\%]$	Temperature Variation at 25°C[±°C/°F]	Page	
Forced (Mechanical	IL-11	0 to 60	150 / 5.3	0.1 / 0.18	0.5 / 0.9	38	
Convection]	IL-21	/ +32 to 140	224 / 8.6	0.17 0.10	0.4 / 0.72	00	
Natural (Gravity)	IL-11A	+4 to 60	162 / 5.7	0.2 / 0.36	0.5 / 0.9	40	
Convection- Air Jacketed	IL-21A	/ +39.2 to 140	254 / 9.0	0.2 / 0.30	0.3 / 0.7	40	
Personal	ILP-02	10~40°C at	14 / 0.5	0.1 / 0.18	0.5 / 0.9	/ 1	
(Compact)	ILP-12	ambient temperature 25℃	48 / 1.7	0.4 / 0.72	0.4 / 0.72	41	

### **Incubated & Refrigerated & Illuminated Shakers**

	Desci	ription.	Operating Temp, Range [°C/°F]		Maximum Orbit Size	Page
Benchtop	SI-300 SI-600	Incubated Shakers	Amb. +5 to 60 / Amb. +9 to 140		40mm dia	/2
type SI-300R SI-600R		Incubated & Refrigerated Shakers	+15 to 60 / +59 to 140		(1.6" dia)	42
	IS-971	Incubated Shakers	Amb. +5 to 60 / Amb. +9 to 140	10 to 300	70mm dia (2.8" dia)	
1 1001 17,00	IS-971R	Incubated & Refrigerated Shakers	+4 to 60			44
	IS-971RF	Incubated & Refrigerated & Illuminated Shakers	/ +40 to 140			

### **Accessories & Options**

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for Incubated & Refrigerated & Illuminated Shakers	78-81

# **General Applications**

General applications	Ge & Low ter	neral, Low ter np. personal I	Incubated & Refrigerated & Illuminated Skakers		
_	IB series	IL series	ILP series	SI series	IS series
Antibody Testing	•	•	•		
Bacterial Research	•		•		
Bacterial suspensions				•	•
Chemical Storage	•	•			
Chick Embryo Studies	•		•		
Clinical Science	•	•	•		
Cultivating Low Temperature Microbes and Plant Cells		•			
Crystallization Studies	•	•			
Cultivating Thermophilic Bacteria	•				
Drying And Staining Procedures	•	•			
Denaturalizing Tests for Food	•	•			
Environmental technology (waste water and soil analysis)				•	•
Enzyme Digestion Studies	•	•			
Extraction procedures				•	•
Fermentation (Pharmacy and biotech -DNA and Enzymes)				•	•
General mixing				•	•
Hematological Testing	•	•	•		
Histochemical Procedures	•	•			
Measuring COD/ BOD		•			
Medical researches. (Diagnostic tests)				•	•
Microbiological Determinations	•	•	•		
Microorganism	•	•	•		
Molecular biology				•	•
Organism Germs for Life Science	•	•	•		
Organism Pharmacy	•	•	•		
Paraffin Embedding	•	•			
Pharmaceutical Stability Testing		•			
Plasmid purification				•	•
Protein expression in bacteria				•	•
Solubility				•	•
Staining and destaining				•	•
Tissue Culturing	•	•	•		

<sup>\*</sup>General purpose use and storage applications

# **Technical Benefits**

### Safety functions

- 1) Self-protecting cut-off function and signal: (Without IS series)
  - For over temperature, automated cut the power supply for heater and controller orderly before the unit shuts down.
  - 2 separated over-current fuses for user safety.
- 2) Time setting function for automated run/off: (Without IS series)
  - Integrated time setting: Delayed ON / OFF. (from 1 min to 99 hr 59 min)
  - Operating settable function: After a power interruption, select automated run or manual run.
- 3) Door-open warning alarm:
  - Intermittent tone and optical signal alarm 5 min. after automated cut-off.
  - Heating element and fan automatically stop when door opening to minimize heat loss and protect operator. (Without IS series)
  - The door is opened, after 5 min refrigerator is automated cut-off with intermittent tone. (Only SI series)

### **Optimum control performance**

- 1) Professional control electronics and program control:
  - Microprocessor PID temperature control with very simple calibration and auto-tuning
  - Frequently use 3 different temperatures memorable for convenient use.
  - Selectable measuring temperature in °C or °F.

- Self-diagnostic function identifies any errors and advises correction procedures.
- 2) Applicable control display considering MMI (Man Machine Interface) network system:
  - Very similar key arrangement throughout the whole temperature chambers, bath circulators and shakers series.
  - Operator-friendly controller with the splash-proof / easy-to-clean keypads and clear LED displays.
  - A speed lock key prevents accidental resetting of parameters conveniently. [Only incubatator series]
  - Shaker and lamp mechanism have their own on/off buttons for independent incubating use. (Only incubated shakers)

### Ideal construction

- 1) High quality 304 stainless steel inner chamber and dirt-repellent powder coating external surface.
- 2) Perfectly sealed door gasket minimizes heat loss and fully insulated chambers keep exterior at a safe temperature.

  [Only incubated shakers] (Only incubated shakers)
  3) Adjustable stainless steel and electro
- polished wire shelves for better air-flowing and easy cleaning, (Dnly incubated shakers)

BBBBBBB



# **General Incubators**

# Exclusive gravity convection type incubators for all laboratory purposes.

air-jacketed convection style for excellent variation without outside air disturbances.



### **IB-05G**

Included Accessories • 2 wire shelves Optional Accessories • Perforated shelves

- O see page 53
- Stacking kits for stackable chambers

### Operating features

- $+5^{\circ}$ C above room temperature to 70°C.
- MicroprocessPID control/ Auto-tuning/ Calibration.
- Digital timer: 1 min ~ 99 hr 59 min, delayed ON/ OFF.
- Over-temperature limiter/ Door opening alarm.
- 3 different temperature values memorable.
- Digital LED display (0.1℃ resolution) using touch-sensitive keypads.
- RS-232 interface available.

#### Constructional features

- Fully insulated dual-wall door with rubber magnetic seal gasket keeps setting temperature.
- Stackable 2 steps up with exclusive stacking kits.
- Optimized sample inspection through a tempered inner glass door without affecting chamber temperature.
- Separable shelves and rounded inner chamber corners for easy cleaning.
- Highly durable incoloy heating element with fins quarantee better radiation.
- Connectable other electric instruments to the inside of a chamber through a side cable port.
- Cable port to control the amount of airflow in the chamber. (dia 38mm/1.5", Provided silicon or rubber cap)



	Model	IB-05G	IB-15G	IB-25G		
Chamber Volum	e (L / cu ft)	60 / 2.1	102 / 3.6	151 / 5.3		
	Range (°C / °F)		Amb. +5 to 70 / Amb. +9 to 158			
Temperature	Fluctuation $^{1)}$ ( $\pm^{\circ}_{\mathbb{C}}$ / $^{\circ}_{\mathbb{F}}$ ) at $37^{\circ}_{\mathbb{C}}$	0.1 / 0.18	0.1 / 0.18	0.2 / 0.36		
	Variation¹¹( $\pm$ $^{\circ}$ / $^{\circ}$ F) at 37 $^{\circ}$ C	0.6 / 1.08	0.2 / 0.36	0.6 / 1.08		
	Interior dimensions	400×360×420	480×410×520	610×460×540		
	$(W \times D \times H)$ (mm / inch)	/ 15.7×14.2×16.5	/ 18.9×16.1×20.5	/ 24×18×21.3		
Dimensions	Exterior dimensions	595×555×745	675×605×855	805×655×885		
	$(W \times D \times H)$ (mm / inch)	/ 23×22×29	/ 27×24×34	/32×26×35		
	Net weight (Kg / lbs)	45 / 99	55 / 121	62 / 136		
Electrical Requi	rements (230V)	50 / 60Hz, 1.3A	50 / 60Hz, 2.2A	50 / 60Hz, 3.1A		
Cat. No.		AAH21162K	AAH21172K	AAH21182K		
Electrical Requirements (120V)		50 / 60Hz, 2.8A	50 / 60Hz, 4.6A	50 / 60Hz, 6.4A		
Cat. No.		AAH21166U	AAH21176U	AAH21186U		

# Incubators

# **Economy Incubators**

# Space saving design and dependable, trouble-free heating system.

### Operating features

- +3 $^{\circ}$ C above room temperature to 60 $^{\circ}$ C.
- Microprocess PID control/ Auto-tuning/ Calibration.
- Digital timer: 1 min ~ 99 hr 59 min, delayed ON/ OFF.
- Over-temperature limiter/ Door opening alarm.
- 3 different temperature values memorable.
- Digital LED display (0.1℃ resolution) using touch-sensitive keypads.

#### Constructional features

- Completely safe anti-vibration design is helpful to cultivate yeast and not to disturb nearly use of other instruments like a microscope.
- Space saved dimension, lightweight and compact design with fully sealed gasket.
- Stackable 2 steps up with exclusive stacking kits.
- Optimized sample inspection through tempered inner glass door without affecting chamber temperature.
- Separable shelves and rounded inner chamber corners for easy cleaning.



### IB-01E

Included Accessories • 2 wire shelves

- · Perforated shelves

O see page 53

· Stacking kits for stackable chambers



	Model	IB-01E	IB-11E	IB-21E		
Chamber Volum	ie (L / cu ft)	65 / 2.3	150 / 5.3	205 / 7.2		
	Range (°C / °F)		Amb. +3 to 60 / Amb. +5.4 to 140			
Temperature	Fluctuation $^{1)}$ ( $\pm^{\circ}$ C / $^{\circ}$ F ) at $37^{\circ}$ C	0.2 / 0.36	0.3 / 0.54	0.1 / 0.18		
	Variation¹¹ ( $\pm$ $^{\circ}$ C / $^{\circ}$ F) at 37 $^{\circ}$ C	0.6 / 1.08	0.8 / 1.44	1.1 / 1.98		
	Interior dimensions	423×355×445	500×515×585	632×515×630		
	$(W \times D \times H)$ (mm / inch)	/ 16.7×14×17.5	/ 19.7×20.3×23	/ 24.9 × 20.3 × 24.8		
Dimensions	Exterior dimensions	533×475×725	595×630×865	740×630×910		
	$(W \times D \times H)$ (mm / inch)	/ 21×18.7×28.5	/ 23.5×24.8×34	/ 29.1×24.8×35.8		
	Net weight (Kg / lbs)	33	47	57		
Electrical Requi	rements (230V)	50 / 60Hz, 1.1A	50 / 60Hz, 2.2A	50 / 60Hz, 2.4A		
Cat. No.		AAH26015K	AAH26025K	AAH26035K		
Electrical Requi	rements (120V)	50 / 60Hz, 2.1A	50 / 60Hz, 4.2A	50 / 60Hz, 4.6A		
Cat. No.		AAH26016U	AAH26026U	AAH26036U		

# **Low Temperature Incubators**



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# **Low Temperature Incubators - Forced Convection**

# Intensive low temperature incubating performance with compressor cooling system.

IL series has an excellent HBP type compressor cooling system which is noiseless and

### Operating features

- 0°C to 60°C.
- Microprocess PID control / Auto-tuning / Calibration.
- Digital timer: 1 min ~ 99 hr 59 min, delayed ON / OFF.
- Over-temperature limiter / Door opening alarm.
- 3 different temperature values memorable.
- 9 steps of temperature profiles programmable and repeat up to 200 cycles.
- Adjustable fan speed within 3 steps and defrosting time / period control.
- Digital LED display (0.1℃ resolution) using touch-sensitive keypads.
- RS-232 interface available.

#### Constructional features

- Forced-air convection with an optimal cross flow type fan for excellent variation.
- Enough capacity large size of chambers with maximum 244L. (8.6cu ft)
- One electrical outlet with safety cover allows use of other electric instruments in the chamber.
- Optimized sample inspection through tempered inner glass door without affecting chamber temperature.
- Separable shelves and rounded inner chamber corners for easy cleaning.







Model		IL-11	IL-21	
Chamber Volum	e (L / cu ft)	150 / 5.32	244 / 8.6	
Refrigerator (Hp	0)	1/8 HBP	1 / 6 HBP	
	Range (°C / °F)	0 to 60 /	+32 to 140	
Temperature	Fluctuation $^{1)}$ ( $\pm^{\circ}$ C / $^{\circ}$ F ) at 25 $^{\circ}$ C	0.1 / 0.18		
	Variation $^{11}$ ( $\pm$ $^{\circ}$ / $^{\circ}$ F ) at 25 $^{\circ}$ C	0.5 / 0.9	0.4 / 0.72	
	Interior dimensions	600×500×500	500×520×940	
	(W $\times$ D $\times$ H) (mm / inch)	/ 24.0×20.0×20.0	/ 20.0×20.5×37.0	
Dimensions	Exterior dimensions	735×742×1010	635×740×1630	
	$(W \times D \times H)$ (mm / inch)	/ 28.9×29.0×40.0	/ 25.0×29.0×64.0	
	Net weight (Kg / lbs)	100 / 220.0	135 / 297.0	
Electrical Requirements (230V)		50 / 60Hz, 4.5A	50 / 60Hz, 6.4A	
Cat. No.		AAH22042K / AAH22041K	AAH22052K / AAH22051K	
Electrical Requi	rements (120V)	60Hz, 8.3A	60Hz, 10.6A	
Cat. No.		AAH22046U	AAH22056U	

# **Low Temperature Incubators - Natural Convection**

Exclusive air-jacketed convection type incubators prevent the inner chamber with excellent variation from outside air disturbance.

IL-A series is perfectly safe from water-evaporations by evaporator of cooling system or blower, especially ideal for incubating test of an easily drying medium.



# IL-11A Included Accessories • 2 wire shelves for IL-11A • 3 wire shelves for IL-21A Optional Accessories • Perforated shelves • see page 53

### Operating features

- +4°C to 60°C.
- Microprocess PID control / Auto-tuning / Calibration.
- Digital timer: 1 min ~ 99 hr 59 min, delayed ON / OFF.
- Over-temperature limiter / Door opening alarm.
- 3 different temperature values memorable.
- 9 steps of temperature profiles programmable and repeat up to 200 cycles.
- Adjustable defrosting time / period control.
- $^{\rm a}$  Digital LED display (0.1% resolution) using touch-sensitive keypads.
- RS-232 interface available.

#### Constructional features

- Air-jacketed type: outer heat exchange and inner gravity convection independently.
- Enough capacity large size of chambers with maximum 254L. (9cu ft)
- One electrical outlet with safety cover allows use of other electric instruments in the chamber.
- Optimized sample inspection through tempered inner glass door without affecting chamber temperature.
- Separable shelves and rounded inner chamber corners for easy cleaning.



	Model	IL-11A	IL-21A	
Chamber Volum	e (L / cu ft)	162 / 5.7	254 / 9.0	
Refrigerator (Hp	0)	1/6 HBP	1 / 4 HBP	
	Range (°C / °F)	+4 to	60 / +39.2 to 140	
Temperature	Fluctuation $^{1)}$ ( $\pm^{\circ}_{\mathbb{C}}$ / $^{\circ}_{\mathbb{F}}$ ) at 25 $^{\circ}_{\mathbb{C}}$	0.2 / 0.36		
	Variation¹¹ (± $^{\circ}$ C / $^{\circ}$ F) at 25 $^{\circ}$ C	0.5 / 0.9		
	Interior dimensions	600×540×500	500×540×940	
	$(W \times D \times H)$ (mm / inch)	/ 24×21.3×20	/ 20×21.3×37	
Dimensions	Exterior dimensions	770×772×1060	670x×760×1680	
	$(W \times D \times H)$ (mm / inch)	/30×30×42	/26×30×66	
	Net weight (Kg / lbs)	108 / 238.1	145 / 319.7	
Electrical Requir	rements (230V)	50 / 60Hz, 6.9A	50 / 60Hz, 8.4A	
Cat. No.		AAH22062K / AAH22061K	AAH22072K / AAH22071K	
Electrical Requi	rements (120V)	60Hz, 10.2A	60Hz, 12.3A	
Cat. No.		AAH22063U	AAH22073U	

# Low Temperature Personal Incubators

## Compact, lightweight with exclusive incubating performance for valuable tests.

ILP series has a thermal electric module-Peltier cooled type which is very quiet, antivibration and small generation of heat to just fit a bench-top personal incubator!

### Operating features

- +10 $^{\circ}$ C to 40 $^{\circ}$ C at room temperature 25 $^{\circ}$ C.
- Microprocess PID control / Auto-tuning / Calibration.
- Digital timer: 1 min ~ 99 hr 59 min, delayed ON / OFF.
- Over-temperature limiter.
- 3 different temperature values memorable.
- 9 steps of temperature profiles programmable and repeat up to 200 cycles.
- Adjustable fan speed within 3 steps and defrosting time / period control.
- Digital LED display (0.1℃ resolution) using touch-sensitive keypads.
- RS-232 interface available.

#### Constructional features

- Tempered inner glass door is equipped for all models! (14L / 48L)
- Maximum 2 X 1000mL Erlenmeyer flasks can be stored in the smallest chamber. (14L)
- Environment-friendly insulation material-EPDM used for safe and convenient operating. (ASTM-C534)
- Space-saving compact size on bench-top and can simply be stacked up.



### ILP-02 stackable chambers

Included Accessories • 1 wire shelf for ILP-02

- 2 wire shelves for ILP-12
  - Perforated shelves

see page 53



Model		ILP-02	ILP-12	
Chamber Volum	e (L / cu ft)	14 / 0.5	48 / 1.7	
Range (°C / °F)		10~40°C (50~104°F) at ambient temperature 25°C		
Temperature	Fluctuation $^{1)}$ ( $\pm$ $^{\circ}$ / $^{\circ}$ F ) at 25 $^{\circ}$ C	0.1 / 0.18		
	Variation¹¹ (±°C / °F) at 25°C	0.5 / 0.9	0.4 / 0.72	
	Interior dimensions	315×200×230	334×334×430	
	$(W \times D \times H)$ (mm / inch)	/ 12.4×7.9×9.1	/ 13.1×13.1×17	
Dimensions	Exterior dimensions	430×495×400	430×665×620	
	$(W \times D \times H)$ (mm / inch)	/ 17×19.4×15.7	/ 17×26.2×24.4	
	Net weight (Kg / lbs)	27.5 / 60.6	49 / 108	
Electrical Requi	rements (230V)	50 / 60Hz, 1.8A	50 / 60Hz, 3.5A	
Cat. No.		AAH24032K / AAH24031K	AAH24042K / AAH24041K	
Electrical Requi	rements (120V)	60Hz, 3.4A	60Hz, 6.7A	
Cat. No.		AAH24033U	AAH24043U	

# Incubated Shakers - Benchtop type



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### SI-600R

- Universal/ Dedicated platforms, Rubber mats, Universal attachments
- Flask clamps, Funnel clamps O see page 78-81
  - Test tube racks, Spring wire racks
  - Microplate holders (three styles)
  - Lab sticker

### SI-600R Control Display



# Incubated Shakers - Benchtop type

# Digital incubating/refrigerating benchtop shakers.

Combines a benchtop incubator, refrigerator with dual-action in *orbital and reciprocating* shakers. Fulfills a variety of molecular biology, general incubation, and cell culture applications.

# Lab Comp

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### Shaking features

- Select between orbital or reciprocating action.
- Speed range: 10 to 300 rpm.
- Programmable shaking motion.
- Run time: 10 sec to 999 hr 59 min 59 sec.
- Forward & Backward, Pause: 10 sec to 59 min 50 sec.
- Maximum orbit size: 40mm dia. (1.6" dia.)

: Inside fo SI series

### Operating features

- +5 $^{\circ}$ C above room temperature to 60 $^{\circ}$ C for SI-300, 600.
- +15°C to 60°C for SI-300R, 600R.
- Microprocess PID control / Auto-tuning / Calibration.
- Digital timer: 1 min to 99 hr 59 min, delayed ON / OFF.
- Over-temperature limiter / Door opening alarm.
- 3 different temperature values memorable.
- 9 steps of temperature profiles programmable and repeat up to 200 cycles.
- Adjustable fan speed within 3 steps.
- RS-232 interface available.

#### Constructional features

- Brushless DC motor for long maintenance-free operation.
- \* High-velocity fan ensures rapid thermal recovery and excellent variation.
- Gas spring door and lid guard against sudden closures.
- \* Transparent acryl lid and inner lamp functions allow observation of flask contents.
- Use CFC-free refrigerant. (for SI- 300R, 600R)
- Attaching fluorescent lamp offered bright observation in a chamber.



	Model	SI-300	SI-30	OOR .	SI-600	S	I-600R
	Range (°C / °F)	Amb. +5 to 60 (Amb. +9 to 140) for SI-300, 600 +15 to 60 (+59 to 140) for SI-300R, 600R					
T	Fluctuation <sup>1)</sup> at $37^{\circ}$ ( $\pm^{\circ}$ / °F)	0.3 / 0.54	0.6 / 1.08		0.1 / 0.18	0.2 / 0.36	
Temperature	Variation <sup>1)</sup> at $37\%$ ( $\pm\%$ / $\%$ )	1.6 / 2.88	1.5 / 2.7		0.7 / 1.26	0.3 / 0.54	
	Defriesentes (Un)		1 / 8 HBP (220)	/,230V)		1/8 HBP (	220V,230V)
	Refrigerator (Hp)	<u> </u>	1 / 6 HBP (100)	/,120V)	-	1/6 HBP (	100V,120V)
	Motion type		Orbita	al or Reciproca	ting motion selectabl	.e	
	Frequency (RPM)			10 t	o 300		
Shaking system	Timer	Run time: 10 sec to 999 hr 59 min 59 sec Forward & Backward, Pause: 10 sec to 59 min 50 sec					
Зузсти	Orbit size (mm / inch, dia.)	20, 30, 40 / 0.8, 1.2, 1.6 Available - Standard 30 / 1.2					
	Recip stroke length (mm / inch)	20, 30, 40 / 0.8, 1.2, 1.6 Available - Standard 30 / 1.2					
	Volume (L / cu ft)	53 / 1.9 83 / 2.9					
	Platform (W $\times$ D) (mm / inch)	350×350 / 13.8×13.8			450×450 / 17.7×17.7		
Dimensions	Internal (W $\times$ D $\times$ H) (mm / inch)	410×410×320 / 16.1×	16.1×12.6		510×510×320 / 20.1×20.1×12.6		
	Overall (W $\times$ D $\times$ H) (mm / inch)	442×740×622 / 17.4×	29.1×24.5		542×850×622/2	$1.4 \times 33.5 \times 24.5$	
Net weight (Kg / lbs)		74 / 163	85 / 187		91 / 200	102 / 225	
Electrical Requirements (230V)		50 / 60Hz, 4.0A	60Hz, 5.5A	50Hz, 5.5A	50 / 60Hz, 4.0A	60Hz, 5.5A	50Hz, 5.5A
Cat. No.		AAH23105K	AAH23111K	AAH23112K	AAH23205K	AAH23211K	AAH23212K
Electrical Req	uirements (120V)	50 / 60Hz, 7.5A	60Hz, 10.1A		50 / 60Hz, 7.5A	60Hz, 10.1A	
Cat. No.		AAH23106U	AAH23113U		AAH23206U	AAH23213U	

# Incubated Shakers - Floor type



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### IS-971R

see page 78-81

- Universal / Dedicated platforms, Rubber mats, Universal attachments
- Flask clamps, Funnel clamps
  - Test tube racks, Spring wire racks
  - Microplate holders (three styles)
  - Lab sticker

#### IS-971R Control Display



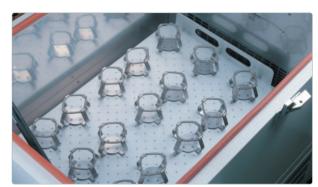
# Incubated Shakers - Floor type

# Large and heavy capacity shaking with rapid heating / cooling performance.

Advanced shaking for heavy workload and flask up to maximum  $4 \times 6L$  Exclusive drive mechanism delivers years of dependable service.

### Shaking features

- Select between orbital or reciprocating action.
- Speed range: 10 to 300 rpm.
- Programmable shaking motion.
- Run time: 10 sec to 999 hr 59 min 59 sec.
- Forward & Backward, Pause: 10 sec to 59 min 50 sec.
- Maximum orbit size: 70mm dia. (2.8" dia.)



. Inside of IS series

### Operating features

- $^{\bullet}$  +5  $^{\circ}$ C above room temperature to 60  $^{\circ}$ C for IS-971
- +4°C to 60°C for IS-971R, 971RF.
- Microprocess PID control / Auto-tuning / Calibration.
- Digital timer: 1 min to 99 hr 59 min, delayed ON / OFF.
- Over-temperature limiter / Door opening alarm.
- $\bullet$  Digital LED display for temperature (0.1  $\!\!\!^{\circ}_{\circ}$  resolution), speed, and shaking motions.
- 3 different temperature values memorable.
- 9 steps of temperature profiles programmable and repeat up to 200 cycles.
- Adjustable fan speed within 3 steps and defrosting time / period control.
- RS-232 interface available.

#### Constructional features

- Brushless DC motor for long maintenance-free operation.
- High-velocity fan ensures rapid thermal recovery and excellent variation.
- Viewing window in top-opening provides clear chamber visibility, minimizing the need to open.
- Illumination lamp available. (only for IS-971RF)
- Gas spring door and lid guard against sudden closures.
- Casters easily transport the unit.
- Door can be secured with a key and locked.
- Use CFC-free refrigerant. (for IS-971R, IS-971RF)

# (Certification only for the IS-97/97IR

	Model	IS-971	IS-97	1R	IS	-971RF
	Range (°C / °F)	Amb. +5 to 60 (Amb. +9 to 140) for IS-971, +4 to 60 (+40 to 140) for IS-971R, IS-971RF				
Tomporatura	Fluctuation <sup>1)</sup> at $37\%$ ( $\pm\%$ / $\%$ )		0	.2 / 0.36		
Temperature	Variation¹¹at 37°C (±°C / °F)		0	.8 / 1.44		
	Refrigerator	-	- 1 / 3 LBP (AC 120V) - 1 / 6 HBP (AC 230V)			_BP (AC 120V) HBP (AC 230V)
	Motion type		Orbital or Recipro	cating motion sel	ectable	
	Frequency (RPM)		1	0 to 300		
Shaking system	Timer	Fo	in 59 sec o 59 min 50 sec			
	Orbit size (mm / inch, dia.)	30, 40, 50	le - Standard 30 / 1.2			
	Recip stroke length (mm / inch)	30, 40, 50, 60, 70 / 1.2, 1.6, 2.0, 2.4, 2.8 Available - Standard 30 / 1.2				
	Volume (L / cu ft)	270 / 9.5				
	Platform (W $\times$ D) (mm / inch)	755×481 / 29.7×18.9				
D:	Internal (W $\times$ D $\times$ H) (mm / inch)	894×634×480 / 35.2×25.0×18.9				
Dimensions	Overall (W $\times$ D $\times$ H) (mm / inch)	1,132×810×1,045 / 44.6×31.9×41.1			1,132×810×1,055 44.6×31.9×41.5	
	Net weight (Kg / lbs)	180.0 / 396.8	195.0 / 429.9		210.0 / 462.9	
Electrical Requirements (230V)		50 / 60Hz, 5.2A	60Hz, 7.3A	50Hz, 7.3A	60Hz, 8.1A	50Hz, 8.1A
Cat. No.		AAH23306K	AAH23321K	AAH23322K	AAH23351K	AAH23352K
Electrical Requir	ements (120V)	60Hz, 11.2A 60Hz, 13.8A		60Hz, 15.3A		
Cat. No.		AAH23336U	AAH23346U		AAH23356U	