

11

Incubator

Index	P.133
Incubator SLI-220•400•700•1200	P.134
Low Temperature Incubator LTE-500•1000	P.131
(Forced air flow type)	
Low Temperature Incubator LTI-400E•700E•1200E (Forced air flow & natural convection type)	
Environmental Chamber KCL-2000A•2000W	P.136
Illuminated Incubator FLI-2010A•2010H•2010T•2010HT	P.137
Light Stability Testing Device LST-2010	P.138
Multi Thermo Incubator MTI-201B•202B.....	P.139
Optional Accessories for Incubator.....	P.140

Incubator SLI-220·400·700·1200

Basic type incubator for growing colon bacilli and microorganism in cultures.



Features

- Space saving, slim type incubator.
- Air jacket natural convection ensures accurate temperature distribution and stable temperature control. It is suitable for growing colon bacilli and microorganisms in cultures.
- Culturing using stirrer placed inside of incubator is possible (option)
- Alarm display and buzzer are provided.
- Timer (Auto start/Auto stop) function is provided.
- Open side of the door can be changed (option)

Independent overheat protector



Shut off heater circuit independently from microprocessor circuit.

Left or right side door opening (except SLI-220)



Standard: Left side opening

Specifications

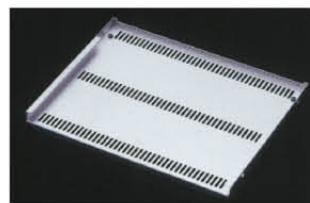
Product Name		Incubator				
Model	SLI-220	SLI-400	SLI-400C	SLI-700	SLI-700C	SLI-1200
Air circulation	Air jacket type natural convection					
Temp. control range	RT+5~60°C					
Temp. control accuracy	±0.5°C at 37°C	±0.1°C at 37°C	±0.1°C at 37°C	±0.2°C at 37°C		
Timer setting range	0~99h59min					
Temp. setting & display	Micro processor P.I.D. control, Sheetkey input • Digital display					
Timer function	Auto start/Auto stop					
Safety functions	Alarm functions (Door open, Sensor brake, Overheat, Power failure, Watchdog), Leak/overcurrent failure, Independent overheat protector, Fuse					
Heater	100W	280W		600W		
Chamber dimensions & capacity	16L	434Wx400Dx450H 78L	434Wx400Dx700H 121L	434Wx400Dx1200H 206L		
Chamber material	SUS 304					
Shelf	2 pcs	3 pcs	5 pcs			
Shelf pitch & step	60mm 3 steps	30mm 8 steps	40mm 12 steps	40mm 20 steps		
Overall dimensions(mm)	395W x 355D x 420H	526W x 550D x 800H	526W x 550D x 1050H	550W x 590D x 1600H		
Weight	14kg	41kg	47kg	82kg		
Power source	345VA AC115V 690VA AC230V	345VA AC115V/690VA AC230V		700VA AC100V		

Options

Recorder signal outlet
(SLI-400 · 700 · 1200)
Cat. No. 210560



Shelf for stirrer HSI-1
(SLI-400 · 700 · 1200)
Cat. No. 197270



Two-tier fixer HSD



HSD-220 (for SLI-220)
Cat. No. 198010

HSD-400 (for SLI-400)
Cat. No. 197230

Adjuster castor HAC-1
(for SLI-400 · 700)
For floor mounting
Cat. No. 197240

Low Temperature Incubator LTE-500·1000

Forced air flow type incubator equipped with inverter refrigeration unit.



Features

- Wide temperature control range; -10~60°C
- Inverter system realizes energy saving operation and reduction of Co2 emission.
- Step program function brings the chamber temperature back to preservation temperature when cultivation is over.
- Timer (Auto start/Auto stop) function is provided.
- Accurate temperature control of less $\pm 0.2^{\circ}\text{C}$ and distribution accuracy of $\pm 1^{\circ}\text{C}$.
- Equipped with overheat protector which works independently from temperature controller.

Specifications

Product Name	Low Temperature Incubator	
Model	LTE-500	LTE-1000
Cat. No.	257780	257790
Air circulation	Forced air convection	
Temp. control system	Inverter frequency control	
Temp. control range / accuracy	$-10\sim60^{\circ}\text{C} / \pm 0.1\sim0.2^{\circ}\text{C}$	
Chambar capacity	600W x 500D x 500H 150L	600W x 500D x 1000H 300L
Program function	Max. 8 steps, 24 hour cycling operation, auto start, auto stop, Auto start•stop, Temp. gradient control	
Shelf pitch & step	30mm 13 steps	30mm 26 steps
Dimensions(mm) & weight	700W x 650D x 930H 82kg	700W x 650D x 1615H 116kg
Power source	900VA AC100V	950VA AC100V

Low Temperature Incubator LTI-400E·700E·1200E

Forced air flow & natural convection type.



Features

- 2 way air circulationis feasible: Air jacket natural convection / Forced air convection
- All day operation and repeated operation is possible by 24H program.
- Timer (Auto start/Auto stop) function is provided.
- Long time continuous operation (2 months or 1500h at 4°C) is possible

Specifications

Product Name	Low Temperature Incubator		
Model	LTI-400E	LTI-700E	LTI-1200E
Cat. No.	210400	210410	210420
Air circulation	Air jacket natural convection + Forced air convection		
Temp. control range	$4\sim60^{\circ}\text{C}$		
Temp. control accuracy	$\pm 0.2^{\circ}\text{C}$ (CONT. mode); $\pm 1.0^{\circ}\text{C}$ (INT. mode)		
Chamber dimensions & capacity	500W x 400D x 450H 90L	500W x 400D x 700H 140L	600W x 500D x 1000H 300L
Dimensions(mm) & weight	630W x 705D x 900H 85kg	630W x 685D x 1185H 98kg	740W x 720D x 1600H 142kg
Power source	900VA AC100V	1.1kVA AC100V	1.3kVA AC100V

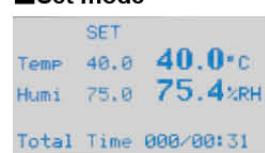
Environmental Chamber KCL-2000A・2000W

Temperature and humidity control for environmental testing and cultivation.
Gradient temperature control.



KCL-2000A

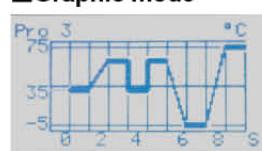
KCL-2000W

Wagon with castor (standard)**Overheat protector****Alarm display****Water level indicator****Easy to understand display****■ Set mode**

Set temp.

Measured temp.

Total time

■ Graphic mode

Programm process can be confirmed by graphic display.

■ Maintenance mode

MAINTENANCE MODE	
1.Temp.Cali	0.0°C
2.Humi.Cali	0.0%RH
3.Humi.Pan	21h
4.Wet-bulbwick	21h
5.E.Filter	21h
6.TotalRuntime	21h

Cleaning and exchange requirement can be confirmed at a glance.

Features

- Precise environmental testing condition is feasible at -15~85°C, 25~98% together with ramp temperature control.
- Recorder signal outlet, Alarm signal outlet and RS-232 communication terminal are equipped as standard.
- Though compact and slim design, large chamber capacity of 140L is realized.
- Rack with castor is prepared as standard.
- KCL-2000W comes with observation window attached with a heater to prevent frost.
- Software to manipulate trend data of different parameter is provided.

Specifications

Product Name	Environmental Chamber	
Model	KCL-2000A	KCL-2000W
Cat. No.	204580	204590
Air circulation	Forced air convection	
Temp. control range	-15~85°C	
Temp. control accuracy	±0.5°C	
Humidity control range	25~98% RH	
Humidity control accuracy	±0.3% RH	
External input/output	RS-232C communication terminal	
Dehumidification	Normal: Microprocessor automatic control (Interval defrost) Forced defumidification (Manual; Auto/manual stop)	
Heater	Heating: 650W	Humidification 200Wx2
Refrigerator·coolant	Air cooling 200W R134a	
Chamber dimensions(mm)	500W x 400D x 700H	
Chamber capacity	140L	
Chamber material	SUS 304	
Shelf	2 pcs	
Shelf pitch & step	40mm 10 steps	
Overall dimensions(mm)	600W x 752D x 1695H (with wagon) 1285H (w/o wagon)	
Weight	145kg	153kg
Power source	1.5kVA AC100V	

**Supports validation work**

Recorder signal outlet, Alarm signal outlet and RS-232 communication terminal are provided as standard.

Illuminated Incubator FLI-2010A·2010H·2010T·2010HT

Illuminated incubator with control program of light, temperature, and humidity for environmental testing and plant cultivation.



FLI-2010A

Features

- Wide application: Photostability testing of cosmetics
Deterioration and acceleration test of packing materials
Irradiation on drinks
Culturing and growing of cell and tissue of plants
- Step program of illumination and ramp program of temperature/humidity realize natural environment.
- Progress of the program can be graphically confirmed.
- Temperature, humidity, illumination and total time are displayed in one screen.
- Downward airflow prevents mist and air to adhere to backside of leaves.
- Air curtain minimizes temp. and humidity change when inner door is opened.
- Sterilizing lamp prevents germs and bacteria contamination.

Specifications

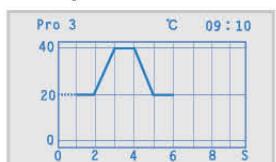
Product Name	Illuminated Incubator					
Model	FLI-2010A	FLI-2010H	FLI-2010T	FLI-2010HT		
Cat. No.	260270	260280	260290	260300		
Air circulation	Forced air convection, descending air flow					
Temp. control range	0~50°C (No illumination), 10~50°C (All illumination ON), 15~50°C (With upper illumination unit)					
Temp. control and distribution accuracy	Mode 1: ±0.5°C • ±3.5°C, Mode 2: ±1.5°C • ±4°C					
Humidity control range and accuracy	—	50~90%RH Mode1:±5%RH, Mode2:±10%RH	—	50~90%RH Mode1:±5%RH, Mode2:±10%RH		
Illumination control range•accuracy	0~30000 Lx 6 steps, step control		0, 500~25000Lx , stepless control (10Lx), • ±100Lx			
	Option: High illumination unit 0~55000Lx 7 steps		—			
	Option: Upper illumination unit 0~40000Lx 7 steps		Option: Upper illumination unit 0~35000Lx			
Illumination	White fluorescent lamp 40W x 15					
	Heater					
Refrigerator & coolant	900W					
	Air cooling, 400W, R404A					
Safety functions	Self diagnosis (Sensor fault, Ramp control error, SSR malfunction, Heater brake, Overheat/overcool)					
	Refrigerator protection timer, Refrigerator overload relay, Independent overheat protector, Leak/overcurrent braker					
Humidifier	—	Ultrasonic humidifier	—	Ultrasound humidifier		
Chamber dimensions & capacity	520W x 520D x 1085H 290L					
Shelf & Shelf pitch & step	3 pcs / 50mm 17 steps					
Overall dimensions(mm)	720W x 858D x 1810H					
Weight	235kg	243kg	240kg	248kg		
Power source	2.5kVA AC100V					

Display Mode

Set mode

SET	MEA 09 : 10
Temp	30.0 25.0°C
Light	3 L
Humi	70.0 40.0%RH
Total Time	000/00:00

Graphic mode



Maintenance mode

Maintainance Mode (1)	
1.FL.Light	50h
2.UV.Light	40h
3.Hi.Light	20h
4.C.Filter	200h
5.Humidifier	5h
6.Humi.Water	10m
7.TotalRunTime	180h

Set temperature
Measured temperature
Total time

Program process can be confirmed by graphic display.

Cleaning and exchange requirement can be confirmed at a glance.

Point! Air curtain



Light Stability Testing Device LST-2010

Stable light testing of pharmaceuticals and light-proof test of various materials.



LST-2010

Option



Sample rotating table

LST-7

Cat. No. 11100

Rotation speed: 4rpkm

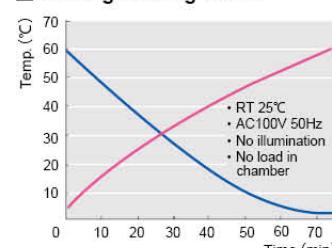
Sample plate: ID108mm x 7

Max. load: 0.5kg/plate

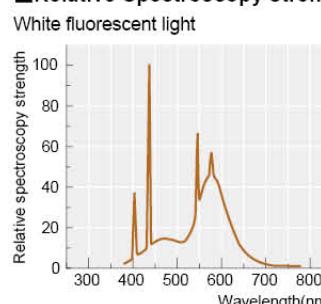
Dimensions: 380W x 380D x 135Hmm

Data

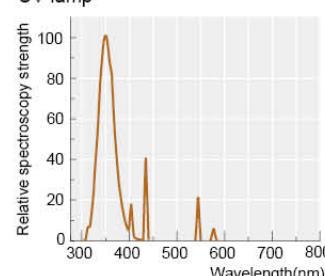
■ Cooling/heating curve



■ Relative Spectroscopy strength

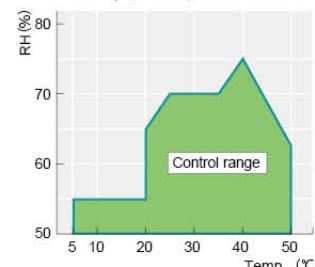


UV lamp

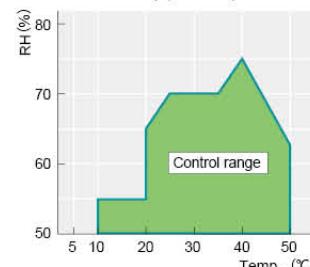


■ Humidification control range

Without lamp (RT 20)



fluorescent lamp (RT 20)



Features

- Features stable and precise control of illuminance, temperature, humidity and near infrared light. Illumination control up to 17000Lx, temperature control up to 60°C, humidity control up to 80% RH.
- Illumination is controlled by light sensor and minimizes illumination degradation by lamp deterioration.
- Two operation modes available; fixed value mode and program mode. Program operation with auto start/stop is feasible.
- Adjustable air flow volume is suitable for powder samples.
- Integrated operation time of fluorescent lamp, humidifier and filter can easily be confirmed to help proper timing cleaning or exchange.
- Communication terminal to RS-232C is provided as standard.

Specifications

Product Name	Light Stability Testing Device
Model	LST-2010
Cat. No.	261570
Air circulation	Forced air convection, descending air flow
Temp. control range	5 ~ 80°C
Temp control accuracy	±0.5°C
Humidity control range and accuracy	50 ~ 80% RH ± 5.0% RH
Illumination control range and accuracy	500 ~ 17000 Lx stepless control (10Lx) ± 100Lx
Near ultraviolet light	0 ~ 1.2mW/cm ²
Temp. Humidity control	Mode 1: Heater P.I.D. control, SSR output Mode 2: Refrigerator ON-OFF, P.I.D. control
Illumination	White fluorescent lamp 40W x 12 Near ultraviolet lamp 40W x 3
Humidifier	Ultrasound humidifier (transducer life 10,000h)
Chamber capacity	520W x 520D x 1085H 290L
Dimensions(mm) & weight	720W x 888D x 1810H 220kg
Power source	2.4kVA AC100V

Multi Thermo Incubator MTI

For cultivating and multi-temperature testing.
Separate temperature setting for 5 chambers.



Specifications

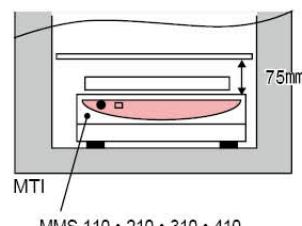
Product Name	Multi Thermo Incubator	
Model	MTI-201B	MTI-202B
Cat. No.	139700	139720
Air circulation	Forced air convection	
Chamber	5 chambers	
Temp. setting	Fixed value	2 step control
Temp. control range	5 ~ 50°C	
Temp control accuracy	Chamber 1: ±2.5°C ~ Chamber 2~5: ±1.0°C	
Temp. control	Chamber 1: Refrigerator ON-OFF(NORM mode) Refrigerator ON-OFF + Timer(INT. mode) Chamber 2~5: Heater P.I.D. control	
Illumination time setting	24h timer (Min. setting 15 min)	
Heater	850 (Chamber 2~4; 200W, Chamber 5 250W)	
Refrigerator & coolant	400W R404A	
Safety functions	Overheat protector, Leak/overcurrent protector	
Chamber dimensions (mm)	400W x 470D x 195H	
Overall dimensions (mm) & Weight	560W x 670D x 1780H 159kg	560W x 710D x 1780H 159kg
Power source	1.75kVA AC100V	

■ Shaker can be placed inside chamber

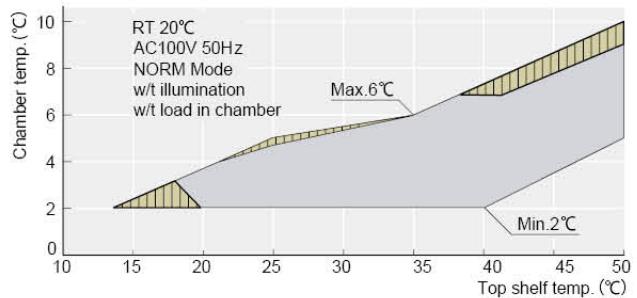


Shaker MMS-110 • 210 • 310 • 410 can be placed inside chamber:

- ※ one unit on bottom shelf
- ※ Space between shaker and upper shelf will be 75mm



■ Temp. setting range



Optional Accessories for Incubators

■ Shelf
(SLI • LTI • KCL • LTE • FLI • LST)



LTI-1200E • LTE

Applicable model	Cat. No.
SLI-220	198000
SLI-400 • 700 • 1200	197290
LTI-400 • 700E, KCL	197540
LTE-500 • 1000, LTI-1200E	214530
FLI-2010, LST-2010	208130
KCL-2000, LTI-400 • 700E	241630

■ Shelf support
(SLI • LTI • KCL • LTE)



■ Rack
(SLI • LTI • LTE)



■ Recorder
(LTI • SLI • KCL • FLI • LST)



Applicable model	Model	Cat. No.
SLI-400 • 700 • 1200		
LTI	μR-10000	217060
KCL-2000, FLI-2010		
LST-2010		

■ Recorder signal outlet cable

Applicable model	Cat. No.
SLI-400 • 700 • 1200	
LTI	147570
KCL-2000	

■ Cable hole septum
(LTE • LTI • SLI • KCL)

Applicable model	Cat. No.
LTI	111690
LTI, SLI, KCL	170240

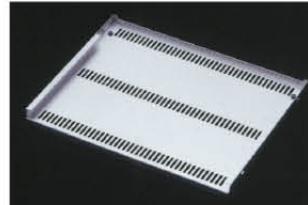
■ Vacuum valve connection unit
(KCL-2000A • W)
Cat. No. 190860

■ Related product
Stirrer to be placed in incubator



Incubator	Stirrer	MMS-	
		110•210•310•410•510	3010•4010•5010
SLI	1 unit	—	
LTI • LTE	1 unit	—	
FLI	2 unit	2 units	
MTI	1 unit	—	

■ Shelf for stirrer



- Necessary when placing stirrer in SLI-400 ~ 1200, LTE-500 • 1000, LTI.
- Max. stirring speed 150/min.
- Max. load for 400: 500mL flask x 4
Max. load for 700 • 1200:
1L flask x 2 or 3L flask x 1

Applicable model	Model	Cat. No.
SLI-400 • 700 • 1200	HIS-1	197270
LTI-400E • 700E	HIS-2	197560
LTI-1200E	HIS-3	210440
LTE-500 • 1000	HIS-4	261340