

# Cooling Water Circulator (Externally Opened Circulation)

## CLS302 • CLH302/401/610

Operating temp. range	-10°C~RT CLS302	-10~80°C CLH302	-15~80°C CLH401/610
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1.5L  
CLS302



1.5L  
CLH302



3L  
CLH401



3L  
CLH610

### ■ CLS302

- Low temperature type with an operating temperature range of -10°C to room temperature and a temperature control accuracy of  $\pm 1.5$  to 2.0°C (refrigerator ON-OFF control)

### ■ CLH302/401/610

- Wide range and precision temperature control with an accuracy of  $\pm 0.1^\circ\text{C}$  for use from -10°C (-15°C) to 80°C (refrigerator+heater control).
- The flow rate of the circulation pump can be set freely by using a flow adjustment valve.
- The flow sensor detects the low flow rate of the piping system, turns on the alarm lamp to stop operation and protect the device.

- Quick auto stop, auto stop, auto start operation, and Various functions such as calibration offset function, temperature output terminal, RS485 external communication function, etc. It is equipped as standard.

### Safety features

- Self-diagnostic function, overcurrent leak breaker, key lock function, power failure compensation function, low-flow monitoring, etc. refrigeration monitoring, refrigeration operation indicator, delay timer function for refrigeration protection, flow rate error, high pressure error, etc.

### ■ Specifications

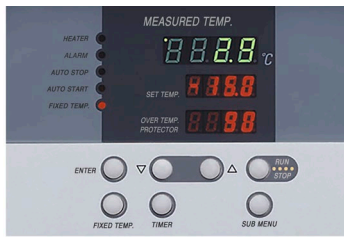
Product code	221347	221346	221564	221622
Model	CLS302	CLH302	CLH401	CLH610
Method	External opened circulation by pump			
Operating temperature range*1	-10°C to room temp.	-10°C to 80°C(Refrigerator operation~40°C)	-15°C to 80°C(Refrigerator operation~40°C)	
Temperature control accuracy/ Temperature fluctuation *1	$\pm 1.5$ to 2°C	$\pm 0.1^\circ\text{C}$ ~(JTM K05) at 10°C	0.2°C~(JTM K05/JIS) at 10°C	$\pm 0.1^\circ\text{C}$ ~(JTM K05), 0.4°C~(JIS) at 10°C
Temperature indicating unit	1°C	0.1°C		
Cooling capacity*1	Approx.450W (387Kcal/h), at fluid temp.15°C		Approx.600W (517Kcal/h), at fluid temp.15°C	Approx.785W (676 Kcal/h), at fluid temp.15°C
Temperature control	Refrigerator ON-OFF control	PID control		
Temperature sensor	T thermocouple	Pt100 (for temperature control)+K thermocouple (for overheat protection)		
Temperature setting, display	Digital setting and display			
Heater	--	900W	1,000W	1.5kW
Refrigerator, refrigerant	Air cooling 250W, R404A		Air cooling 350W, R404A	Air cooling 600W, R404A
Circulating pump	Magnetic drive pump			
Unit circulation ability (50/60Hz)	Max. flow	5.4 / 6.2L/min	5.4 / 6.3L/min	6.7 / 7.8L/min
	Pump capacity	(10.0 / 11.0L/min)	(10.0 / 11.0L/min)	(15.0 / 17.0L/min)
	Max. lift	3.5 / 5.0m	3.7 / 5.3m	6.2 / 8.7m
	Pump capacity	(4.9 / 6.9m)	(4.9 / 6.9m)	(8.0 / 11.0L/min)
Circulation nozzle	O.D.13mm			
Operating ambient temp. range	5 to 30°C			
Safety device	Self-diagnostic function, Overcurrent ELB, Refrigerator overload relay protection circuit, Refrigerator protection delay timer function, Refrigeration pressure switch, Flow sensor, Bypass for circulation pump protection, Pump thermal protector, Overheat protector			
Other functions	Flow adjustment valve, Drain cock, Dust filter, Temperature output terminal, Refrigerator pressure indicator, Calibration offset, Key lock, Power failure compensation, RS485 communication function			
Bath dimension*2	I.D. $\phi 120 \times D200$ mm		I.D. $\phi 150 \times D200$ mm	
Bath capacity	1.5L		3L	
External dimensions*2	W410×D460×H550mm		W380×D513×H725mm	W380×D615×H725mm
Power supply (50/60Hz)	AC115V / AC220V Single phase with step-down transformer			AC220V Single phase with step-down transformer
Weight	Approx. 40kg		Approx. 55kg	Approx. 65kg
Accessories	Insulated circulation hose 1m (1pc), Insulated circulation hose with priming pump 1m (1pc.), wire clamps (4 pcs), Drain hose (1pc)			

\*1 The performance data are for a room temp. of 20°C with no load and a rated power supply voltage of 50Hz. It varies depending on the Ambient temp. and usage conditions.

\*2 Protrusions not included.

The length of the power cord is about 2 meters outside the unit.

## Control Panel



Low water level monitoring,  
Compressor monitoring,  
Compressor operation indicator  
Circulation Pump Indicator

## Back



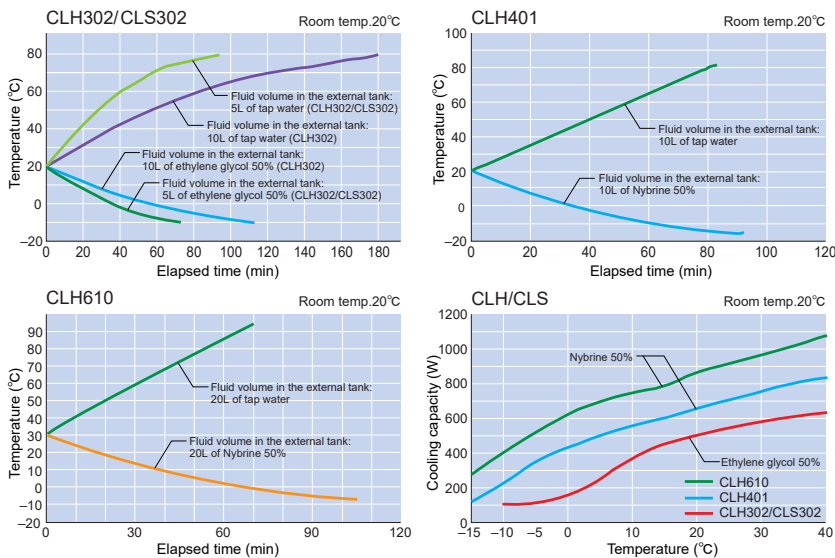
- The flow rate adjusting valve (fully closed) is installed on the discharge side.
- Discharge/return port ( $\phi 13$ )
- Air release valve ( $\phi 10.5$ )
- RS485 external communication
- Temperature output terminal

## Use example

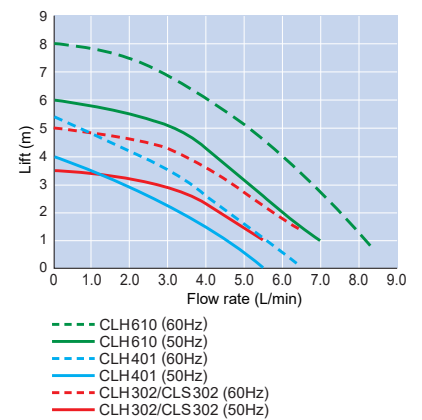


Optional testing bath CTB-6A

## Cooling curve



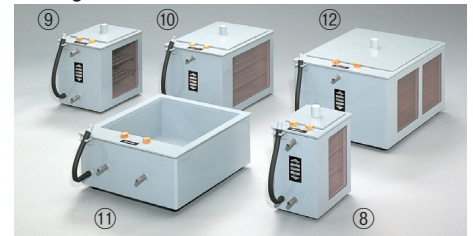
## Flow / lift curve



## Optional Items

No.	Description	Specifications	Product code	
①	Straight circulation nozzle	$\phi 10.5\text{mm}$ , Connecting screw: Rc3/8	221394	
②		$\phi 13.0\text{mm}$ , Connecting screw: Rc3/8	221399	
③		$\phi 16\text{mm}$ , Connecting screw: Rc3/8	221395	
④		$\phi 10.5\text{mm}$ , Connecting screw: Rc3/8	221396	
⑤		L-shaped circulation nozzle	$\phi 13.0\text{mm}$ , Connecting screw: Rc3/8	221397
⑥			$\phi 16.0\text{mm}$ , Connecting screw: Rc3/8	221398
⑦	External communication adapter	RS485-RS232C conversion	281388	
⑧	Testing bath Heat resistant to 60°C	CTB-3A Capacity: 3L	221801	
⑨		CTB-6A Capacity: 6L	221802	
⑩		CTB-12A Capacity: 12L	221803	
⑪		CTB-12S Capacity: 12L	221805	
⑫	CTB-24A Capacity: 24L	281804		
⑬	Caster fixing holder	Set of 4pcs (for CLH401/610)	281440	

## Testing bath



## L-shaped circulation nozzle



## Straight circulation nozzle

## Dimensions (mm)

