



# Constant temperature water bath



Efficient Low noise Accurate

- Process temperature control system
- Constant temperature reaction bath
- Thermostatic bath
- Low temperature cooling circulation pump

## Innovation Service Science

Stock code: 430685



Address: No. 65 , Mujin Road, High-tech park of Ningbo city ,

Zhejiang province,China

Web : [www.scientzbio.com](http://www.scientzbio.com)

E-mail: [info@scientz.com](mailto:info@scientz.com)

NINGBO SCIENTZ BIOTECHNOLOGY CO., LTD



## Constant temperature circulation bath instruments

### Introduction

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SCIENTZ constant temperature water bath series instruments use environmentally friendly refrigerant. The main components are imported. The performance is stable and reliable. The control adopts computer microcomputer and PID automatic control. It provides users with a liquid environment with controlled hot and cold temperature and uniform and constant temperature to meet the user's requirements for experiments or calibrations. It can also be used as a cold and heat source to control the temperature of external loads.

SCIENTZ constant temperature water bath products are widely used in petroleum, chemical industry, electronic instrumentation, physics, chemistry, bioengineering, medicine and health, life sciences, light industry food, physical property testing, chemical analysis and other research departments, colleges and universities, enterprise quality inspection and production departments.

#### What is the operating temperature range?

The operating temperature range refers to the temperature range that can be reached by the thermostat itself in the absence of external heat transfer (the ambient temperature is +20 ° C).

The operating temperature range of the heating type constant temperature tank generally starts from room temperature +8 ° C, and if the cooling device is added, the temperature of the equipment can be near room temperature.

For single refrigeration type cooling circulator, the highest temperature refers to the temperature that can start the refrigeration operation, and the lowest temperature refers to the temperature that can be reached without the heat exchange constant temperature tank itself.

#### What is temperature fluctuation?

Temperature fluctuation refers to the maximum fluctuation value of temperature when measuring the temperature at a certain point in the constant temperature tank within a certain time

#### What is heating power?

Heating power refers to the maximum electrical power of the heating coil in the equipment. The heating power is continuously controllable, and when the actual temperature is close to the set temperature, the heating power will become smaller.

#### How to calculate the required cooling or heating power?

It can be calculated by the following formula:

$$P=(M*c*dT) /t$$

P= Cooling/heating power, unit kW

M= Weight of material, unit kg

c= specific heat capacity (water =4.2, alcohol =2.5, silicone oil =1.8)

dT= change in temperature in ° C

t= cooling/heating time, unit S

It should be taken into account that the total mass M is the sum of different parts, including the inside of the thermostatic tank, the pipeline, the jacket of the reactor, the inside of the reactor, etc. The simple calculation of the power required for cooling/heating according to the above calculation formula does not include the quality of different parts of the bath or other factors that can cause power loss (including pipeline length and diameter, insulation performance, reactor material, thickness, surface heat exchange area, ambient temperature, thermostatic tank opening, it is recommended to introduce 20-30% cooling capacity loss).

# Application of thermostatic bath

## University research institute laboratory

In the field of research and development, temperature control has a unique and typical application importance in sample pretreatment and quality control. As part of sample preparation, many applications require temperature treatment in advance of sample preparation. Many quality control processes require the sample to be carried out at a defined temperature point or temperature change over a specific period of time.

## Life science field laboratory

In the field of life science research, temperature control is widely used in temperature-sensitive biological experiments. Temperature plays a decisive role in some typical applications such as drug research, biological experiments and nucleic acid research. The constant temperature control of bioreactor plays an important role in the successful bioreactor production. As an integral part of sample preparation, there are many samples that require reliable temperature control.

## Chemistry and Chemical Industry Laboratory

In many reaction processes in the field of chemistry and chemical engineering, temperature control plays an important role in process research and reaction control. Chemical reactions, synthesis, production of the essential components of drugs, polymerization and crystallization are carried out in temperature-controlled reactors.

## Pharmaceutical industry

In the pharmaceutical field, the temperature control process is all over the research and production scale-up process, in order to obtain high-quality reaction products, the temperature control system needs to carry out stable and reliable process temperature control on the external reaction cap.

## Semiconductor industry

In semiconductor production and the testing of electronic devices, there are many processes requiring precise temperature control, including the production of metal-organic chemical vapor deposition (MOCVD) for the production of LED wafers. Other typical applications in the semiconductor industry include functional stress testing and load testing, simulation of environmental conditions, and online integrated circuit performance testing.

## Aviation field

Temperature simulation and temperature testing of materials is a very important part of the aerospace industry. The cyclic temperature change stress test ensures that the components used are free of any failures. The constant temperature bath can simulate some of the extreme space temperature environments on Earth.

## Medical technology field

In the field of medical technology, temperature control is mainly used in sample preparation in laboratories, as well as in medical equipment such as imaging equipment, medical lasers or equipment in pharmaceutical and medical laboratories.

## Automotive field

The requirements for temperature control in the automotive industry are generally in the test bench and material testing. All car parts are subjected to extremely high temperature fluctuations. A special bench for testing components is particularly important. It is also very important to simulate the environmental conditions in which the material is used, whether it is low or high temperature.

Area	Application
Chemistry	Separation and extraction experiments, condensation; Metal element detection, constant temperature, chemical synthesis. Equipped with small rotary evaporation instrument, atomic absorption spectrophotometer, double jacket, reaction kettle and so on
Materials, oil	Liquid viscosity measurement, research and development measurement, constant temperature, material structure detection.
Microorganism food	Winemaking, enzyme engineering and environmental thermostats. Supporting fermenter, etc Fat extraction, condensation, determination of protein in food, brewing, development and determination. Supporting Soxhlet extraction, Kjeldahl nitrogen analyzer, beer aging tester, etc
General domain	Calibration of thermometers, compound materials to provide heat source, column temperature control. Equipped with thermometer, vacuum drying oven, chromatographic analyzer, etc

# Instrument Buying Guide

## Process temperature control system



Also known as high and low temperature integrated machine, refrigeration and heating circulator. The product can achieve continuous temperature control of -120~350°C without the need for pressurization; it adopts a fully sealed pipeline design to reduce the demand for thermal fluid, while improving the heat utilization of the system and achieving rapid temperature rise and fall. The heat transfer medium in the expansion vessel does not participate in circulation, which can reduce the risk of the heat transfer medium absorbing moisture and evaporating during operation.

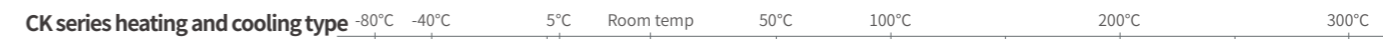
## Low temperature cooling circulating pump

### DLK series single cooling type



Low temperature cooling circulation pump is also known as cooling water circulation pump, chiller. With compressor and circulating pump, cooling capacity range 0.3kW-10kW to meet various cooling requirements, the maximum pump pressure of 1.2bar. Can support a variety of need temperature control and cooling equipment.

## High and low temperature programmed thermostat



With microcomputer intelligent program control, to meet the different needs of the experiment for different periods of temperature, the program temperature control function can complete the slope heating and cooling within the set time (the slope time is not greater than the maximum of the equipment Rising and cooling rate), 200 ° C high temperature can be directly opened refrigeration, to achieve rapid cooling.

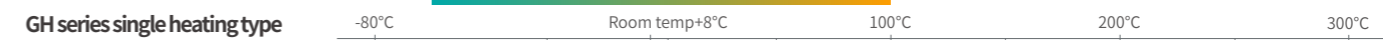
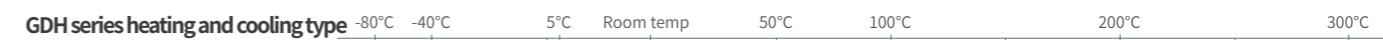
## Thermostatic bath



Also known as low temperature constant temperature bath, constant temperature water (oil) bath, super constant temperature water (oil) bath

The heating and refrigeration type constant temperature tank is composed of a temperature control head and a refrigeration bath with a compressor, and the single heating type constant temperature tank is composed of a temperature control head and a tank body, with a circulating pump, which can heat or cool the bath liquid of the tank body, and can also be connected to external equipment to heat or cool the bath liquid of the tank body.

## High precision thermostatic bath



The temperature control accuracy is  $\pm 0.005 \sim \pm 0.02^\circ\text{C}$ , and the deviation of the temperature measurement value can be corrected ( $\pm 0.001^\circ\text{C} \sim \pm 3^\circ\text{C}$ ), which has a high temperature control accuracy, and can be better applied in the laboratory precision experiment temperature control.

## Thermostatic reaction bath



Also known as low temperature constant temperature stirring reaction bath, low temperature constant temperature tank, constant temperature water bath, cold trap, low temperature circulation stirring water bath. Used for low temperature experiments in scientific research, biology, physics, medicine, chemical and other departments, it can replace dry ice and liquid nitrogen for low temperature reaction, or provide low temperature conditions for relevant test equipment, and can be used as a low temperature bath to complete the test of viscosity.



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# HL series high and low temperature control system (-25°C~200°C)



- **Control system:** PID control
- **Heat transfer medium temperature control accuracy:**  $\pm 0.5^{\circ}\text{C}$
- **Temperature control accuracy of reaction material:**  $\pm 1^{\circ}\text{C}$
- **Shell material:** cold plate spray
- **Communication protocol:** MODBUS RTU protocol RS 485 interface
- **Medium temperature range:**  $-25^{\circ}\text{C}\sim 200^{\circ}\text{C}$  (high temperature can be extended to  $250^{\circ}\text{C}$ )
- **Operation panel:** 7 inch color touch, temperature curve display, record
- **Temperature control object:** material temperature control and thermal media outlet temperature control can be freely selected
- **Temperature difference control:** The temperature difference between the reactor jacket temperature and the material temperature can be controlled and set
- **Program editing:** 5 programs can be programmed, and each program can program 30 steps.
- **Temperature feedback:** the heat conduction medium of the equipment local temperature, outlet temperature, reactor material temperature (external temperature sensor) three point temperature PT100
- **Safety protection:** with self-diagnosis function, refrigerator overload protection, high pressure pressure switch, overload relay, thermal protection device, low level protection, high temperature protection, sensor fault protection and other safety guarantee functions.
- **Closed circulation system:** The entire system is a closed system. There will be no oil mist at high temperatures and no moisture in the air absorbed at low temperatures. The system will not increase pressure due to high temperatures during operation. The heat transfer medium will be automatically replenished at low temperatures.

Model	HL25-220	HL35-220	HL55-220	HL75-220	HL100-220
Heating power	2.5kW	3.5kW	5.5kW	7.5kW	10kW
Cooling capacity	200°C	2.5kW	3.5kW	5.5kW	7.5kW
	100°C	2.5kW	3.5kW	5.5kW	7.5kW
	20°C	2.5kW	3.5kW	5.5kW	7.5kW
	-5°C	2kW	3kW	4.5kW	6.6kW
	-20°C	1.0kW	1.8kW	2.8kW	3.8kW
Circulating pump	Flow	Max30L/min	Max30L/min	Max42L/min	Max56L/min
	Pressure	1.5bar	1.5 bar	2.0 bar	2.0 bar
Compressor	SECOP	EMERSON COPELAND			
Expansion valve	DANFOSS				
Thermal medium interface size	DN15	DN20	DN20	DN20	DN25
20°C cooling water demand	0.6m <sup>3</sup> /h	0.8m <sup>3</sup> /h	1m <sup>3</sup> /h	1.2m <sup>3</sup> /h	1.6m <sup>3</sup> /h
	1.5bar~4bar	1.5bar~4bar	1.5bar~4bar	1.5bar~4bar	1.5bar~4bar
Cooling water interface size	G1/2	G1/2	G3/4	G3/4	G3/4
Dimension mm	Water-cooling	400*600*1150	400*600*1150	500*680*1250	550*700*1600
	Air-cooled	400*600*1250	450*650*1300	550*750*1400	570*750*1500
Weight	Water-cooling	100kg	135kg	160kg	205kg
	Air-cooled	115kg	165kg	285kg	230kg
Power supply/Voltage	AC 220V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ
Total power	4kW(max)	6kW(max)	8kW(max)	11kW(max)	14kW(max)

Model	HL150-220	HL250W-220	HL380W-220	HL600W-220	HL950W-220
Heating power	15kW	25kW	38kW	60kW	95kW
Cooling capacity	200°C	15kW	25kW	38kW	60kW
	100°C	15kW	25kW	38kW	60kW
	20°C	15kW	25kW	38kW	60kW
	-5°C	12kW	19kW	30kW	46kW
	-20°C	7kW	12kW	16kW	22kW
Circulating pump	Flow	Max110L/min	Max120L/min	Max150L/min	Max300L/min
	Pressure	2.5bar	2.5bar	2.5bar	2.5bar
Compressor	EMERSON COPELAND			DORIN/BITZER/FRASCOLD	
Expansion valve	DANFOSS	EMERSON COPELAND/DANFOSS			
Thermal medium interface size	DN32	DN32	DN40	DN40	DN50
20°C cooling water demand	2m <sup>3</sup> /h	6m <sup>3</sup> /h	10m <sup>3</sup> /h	14m <sup>3</sup> /h	20m <sup>3</sup> /h
	1.5bar~4bar	1.5bar~4bar	1.5bar~4bar	1.5bar~4bar	1.5bar~4bar
Cooling water interface size	G1	DN32	DN40	DN50	DN65
Dimension mm	Water-cooling	700*800*1650	1000*950*1650	1000*950*1750	2000*1250*1750
	Air-cooled	750*750*1800	/	/	/
Weight	Water-cooling	280kg	480kg	750kg	1000kg
	Air-cooled	300kg	/	/	/
Power supply/Voltage	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	A C380V 50HZ	AC 380V 50HZ
Total power	21kW(max)	34kW(max)	51 kW(max)	78kW(max)	120kW(max)

· **Optional:** SUS 304 shell, ExdII BT4 explosion-proof, ExdII CT4 explosion-proof, positive pressure explosion-proof (positive pressure explosion-proof can only use water cooling)

# HL series high and low temperature control system (-40°C~200°C)



- **Control system:** PID control
- **Heat transfer medium temperature control accuracy:**  $\pm 0.5^{\circ}\text{C}$
- **Temperature control accuracy of reaction material:**  $\pm 1^{\circ}\text{C}$
- **Shell material:** cold plate spray
- **Communication protocol:** MODBUS RTU protocol RS 485 interface
- **Medium temperature range:**  $-40^{\circ}\text{C}\sim 200^{\circ}\text{C}$  (high temperature can be extended to  $250^{\circ}\text{C}$ )
- **Operation panel:** 7 inch color touch, temperature curve display, record
- **Temperature control object:** material temperature control and thermal media outlet temperature control can be freely selected
- **Temperature difference control:** The temperature difference between the reactor jacket temperature and the material temperature can be controlled and set
- **Program editing:** 5 programs can be programmed, and each program can program 30 steps.
- **Temperature feedback:** the heat conduction medium of the equipment local temperature, outlet temperature, reactor material temperature (external temperature sensor) three point temperature PT100
- **Safety protection:** with self-diagnosis function, refrigerator overload protection, high pressure pressure switch, overload relay, thermal protection device, low level protection, high temperature protection, sensor fault protection and other safety guarantee functions.
- **Closed circulation system:** The entire system is a closed system. There will be no oil mist at high temperatures and no moisture in the air absorbed at low temperatures. The system will not increase pressure due to high temperatures during operation. The heat transfer medium will be automatically replenished at low temperatures.

Model		HL25-420	HL35-420	HL55-420	HL75-420	HL100-420
Heating power		2.5kW	3.5kW	5.5kW	7.5kW	10kW
Cooling capacity	200°C	2.5kW	3.5kW	5.5kW	7.5kW	10kW
	20°C	2.5kW	3.5kW	5.5kW	7.5kW	10kW
	0°C	2kW	3kW	5kW	7kW	10kW
	-20°C	0.9kW	1.5kW	2.9kW	4.2kW	6kW
	-35°C	0.25kW	0.45kW	0.9kW	1.5kW	2kW
Circulating pump	Flow	Max20L/min	Max35L/min	Max35L/min	Max50L/min	Max60L/min
	Pressure	2bar	2 bar	2 bar	2 bar	2 bar
Compressor		TECUMSEH/HIGHLY	EMERSON COPELAND			
Expansion valve		DANFOSS				
Thermal medium interface size		DN15	DN20	DN20	DN20	DN25
20°C cooling water demand		0.6m <sup>3</sup> /h	1.2m <sup>3</sup> /h	1.5m <sup>3</sup> /h	1.8m <sup>3</sup> /h	2.6m <sup>3</sup> /h
		1.5bar~4bar	1.5bar~4bar	1.5bar~4bar	1.5bar~4bar	1.5bar~4bar
Cooling water interface size		G1/2	G1/2	G3/4	G3/4	G1
Dimension mm	Water-cooling	400*600*1150	400*600*1150	500*680*1250	550*700*1600	500*680*1250
	Air-cooled	400*600*1250	450*650*1300	550*650*1400	570*700*1550	650*700*1650
Weight	Water-cooling	100kg	135kg	160kg	205kg	250kg
	Air-cooled	115kg	165kg	285kg	230kg	280kg
Power supply/Voltage		AC 220V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380 V50HZ
Total power		4.5kW(max)	6.5kW(max)	9kW(max)	11.5kW(max)	16kW(max)

Model		HL150-420	HL250W-420	HL380W-420	HL600W-420	HL950W-420
Heating power		15kW	25kW	38kW	60kW	95kW
Cooling capacity	200°C	15kW	25kW	38kW	60kW	95kW
	20°C	15kW	25kW	38kW	60kW	95kW
	0°C	15kW	25kW	38kW	60kW	95kW
	-20°C	11kW	16kW	26kW	34kW	50kW
	-35°C	3.8kW	4.7kW	9kW	12kW	18kW
Circulating pump	Flow	Max110L/min	Max150L/min	Max200L/min	Max250L/min	Max400L/min
	Pressure	2.5bar	2.5bar	2.5bar	2.5bar	2.5bar
Compressor		EMERSON COPELAND			DORIN/BITZER/FRASCOLD	
Expansion valve		DANFOSS				
Thermal medium interface size		DN25	DN32	DN40	DN40	DN50
20°C cooling water demand		3.2m <sup>3</sup> /h	7m <sup>3</sup> /h	12m <sup>3</sup> /h	17m <sup>3</sup> /h	24m <sup>3</sup> /h
		1.5bar~4bar	1.5bar~4bar	1.5bar~4bar	1.5bar~4bar	1.5bar~4bar
Cooling water interface size		G1	DN40	DN50	DN65	DN65
Dimension mm	Water-cooling	700*800*1650	1000*950*1650	1000*950*1750	2000*1250*1750	2000*1250*1750
	Air-cooled	750*750*1800	/	/	/	/
Weight	Water-cooling	280kg	620kg	820kg	1100kg	1350kg
	Air-cooled	300kg	/	/	/	/
Power supply/Voltage		AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	A C380V 50HZ	AC 380V 50HZ
Total power		23kW(max)	36kW(max)	55 kW(max)	89kW(max)	135kW(max)

· **Optional:** SUS 304 shell, ExdII BT4 explosion-proof, ExdII CT4 explosion-proof, positive pressure explosion-proof (positive pressure explosion-proof can only use water cooling)

# HL series high and low temperature control system (-60°C~200°C)



- **Control system:** PID control
- **Heat transfer medium temperature control accuracy:**  $\pm 0.5^{\circ}\text{C}$
- **Temperature control accuracy of reaction material:**  $\pm 1^{\circ}\text{C}$
- **Shell material:** cold plate spray
- **Communication protocol:** MODBUS RTU protocol RS 485 interface
- **Medium temperature range:**  $-60^{\circ}\text{C}\sim 200^{\circ}\text{C}$
- **Operation panel:** 7 inch color touch, temperature curve display, record
- **Temperature control object:** material temperature control and thermal media outlet temperature control can be freely selected
- **Temperature difference control:** The temperature difference between the reactor jacket temperature and the material temperature can be controlled and set
- **Program editing:** 5 programs can be programmed, and each program can program 30 steps.
- **Temperature feedback:** the heat conduction medium of the equipment local temperature, outlet temperature, reactor material temperature (external temperature sensor) three point temperature PT100
- **Safety protection:** with self-diagnosis function, refrigerator overload protection, high pressure pressure switch, overload relay, thermal protection device, low level protection, high temperature protection, sensor fault protection and other safety guarantee functions.
- **Closed circulation system:** The entire system is a closed system. There will be no oil mist at high temperatures and no moisture in the air absorbed at low temperatures. The system will not increase pressure due to high temperatures during operation. The heat transfer medium will be automatically replenished at low temperatures.

Model	HL25W-620	HL35W-620	HL55W-620	HL75W-620	HL100W-620
Heating power	2.5kW	3.5kW	5.5kW	7.5kW	10kW
Cooling capacity	200°C	2.5KW	3.5KW	5.5KW	7.5KW
	100°C	2.5KW	3.5KW	5.5KW	7.5KW
	20°C	2.5KW	3.5KW	5.5KW	7.5KW
	-40°C	0.95KW	1.45KW	2.3KW	3.1KW
	-55°C	0.25KW	0.5KW	0.75KW	0.9KW
Circulating pump	Flow	Max35L/min	Max35L/min	Max50L/min	Max60L/min
	Pressure	2bar	2 bar	2 bar	2 bar
Compressor	EMBRACO	EMERSON COPELAND			
Expansion valve	DANFOSS				
Thermal medium interface size	DN15	DN20	DN20	DN20	DN25
20°C cooling water demand		1.2m <sup>3</sup> /H	1.5m <sup>3</sup> /H	1.8m <sup>3</sup> /H	2.6m <sup>3</sup> /H
		1.5bar~4bar	1.5bar~4bar	1.5bar~4bar	1.5bar~4bar
Cooling water interface size		G1/2	G1/2	G3/4	G3/4
		G1	G1	G1	G1
Dimension mm	Water-cooling	400*600*1150	550*700*1350	550*700*1350	650*700*1650
	Air-cooled	400*600*1150	550*700*1450	650*700*1650	650*700*1650
Weight	Water-cooling	170kg	185kg	265kg	305kg
	Air-cooled	200kg	225kg	300kg	340kg
Power supply/Voltage	AC 220V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ
Total power	5kW(max)	7.5kW(max)	10kW(max)	14kW(max)	20kW(max)

Model	HL150W-620	HL250W-620	HL380W-620	HL600W-620	HL950W-620
Heating power	15kW	25kW	38kW	60kW	95kW
Cooling capacity	200°C	15.0KW	25kW	38kW	60kW
	100°C	15.0KW	25kW	38kW	60kW
	20°C	15.0KW	25kW	38kW	60kW
	-40°C	7.75KW	18kW	22kW	30kW
	-55°C	2.8KW	6kW	7.5kW	11kW
Circulating pump	Flow	Max150L/min	Max200L/min	Max250L/min	Max400L/min
	Pressure	2.5bar	2.5bar	2.5bar	2.5bar
Compressor	EMERSON COPELAND			DORIN/BITZER/FRASCOLD	
Expansion valve	DANFOSS				
Thermal medium interface size	DN25	DN32	DN40	DN40	DN50
20°C cooling water demand		7m <sup>3</sup> /H	10m <sup>3</sup> /h	14m <sup>3</sup> /h	20m <sup>3</sup> /h
		1.5bar~4bar	1.5bar~4bar	1.5bar~4bar	1.5bar~4bar
Cooling water interface size		G1	DN40	DN50	DN65
		DN65	DN65	DN65	DN65
Dimension mm	Water-cooling	1000*950*1650	1250*950*1650	2000*1250*1750	2300*1450*1750
	Air-cooled	/	/	/	/
Weight	Water-cooling	380kg	980kg	1150kg	1380kg
	Air-cooled	/	/	/	/
Power supply/Voltage	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ
Total power	26kW(max)	38kW(max)	58kW(max)	85kW(max)	130kW(max)

• **Optional:** SUS 304 shell, ExdII BT4 explosion-proof, ExdII CT4 explosion-proof, positive pressure explosion-proof (positive pressure explosion-proof can only use water cooling)

# HL series high and low temperature control system (-80°C~200°C)



- **Control system:** PID control
- **Heat transfer medium temperature control accuracy:**  $\pm 0.5^{\circ}\text{C}$
- **Temperature control accuracy of reaction material:**  $\pm 1^{\circ}\text{C}$
- **Shell material:** cold plate spray
- **Communication protocol:** MODBUS RTU protocol RS 485 interface
- **Medium temperature range:**  $-80^{\circ}\text{C}\sim 200^{\circ}\text{C}$
- **Operation panel:** 7 inch color touch, temperature curve display, record
- **Temperature control object:** material temperature control and thermal media outlet temperature control can be freely selected
- **Temperature difference control:** The temperature difference between the reactor jacket temperature and the material temperature can be controlled and set
- **Program editing:** 5 programs can be programmed, and each program can program 30 steps.
- **Temperature feedback:** the heat conduction medium of the equipment local temperature, outlet temperature, reactor material temperature (external temperature sensor) three point temperature PT100
- **Safety protection:** with self-diagnosis function, refrigerator overload protection, high pressure pressure switch, overload relay, thermal protection device, low level protection, high temperature protection, sensor fault protection and other safety guarantee functions.
- **Closed circulation system:** The entire system is a closed system. There will be no oil mist at high temperatures and no moisture in the air absorbed at low temperatures. The system will not increase pressure due to high temperatures during operation. The heat transfer medium will be automatically replenished at low temperatures.

Model	HL25W-820	HL35W-820	HL55W-820	HL75W-820	HL100W-820
Heating power	2.5kW	3.5kW	5.5kW	7.5kW	10kW
Cooling capacity	200°C	2.5KW	3.5KW	5.5KW	7.5KW
	100°C	2.5KW	3.5KW	5.5KW	7.5KW
	20°C	2.5KW	3.5KW	5.5KW	7.5KW
	-60°C	1.0KW	1.4KW	1.6KW	3.0KW
	-75°C	0.3KW	0.42W	0.7KW	1.3KW
Circulating pump	Flow	Max20L/min	Max35L/min	Max35L/min	Max50L/min
	Pressure	2bar	2 bar	2 bar	2 bar
Compressor	EMBRACO	EMERSON COPELAND			
Expansion valve	DANFOSS				
Thermal medium interface size	DN15	DN20	DN20	DN20	DN25
20°C cooling water demand		1.2m <sup>3</sup> /H	1.5m <sup>3</sup> /H	1.8m <sup>3</sup> /H	2.6m <sup>3</sup> /H
		1.5bar~4bar	1.5bar~4bar	1.5bar~4bar	1.5bar~4bar
Cooling water interface size	DN15	DN20	DN20	DN20	DN25
Dimension mm	Water-cooling	400*600*1150	400*600*1150	500*680*1250	550*700*1600
	Air-cooled	400*600*1250	450*650*1300	550*650*1400	500*680*1450
Weight	Water-cooling	170kg	185kg	265kg	305kg
	Air-cooled	200kg	225kg	300kg	340kg
Power supply/Voltage	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ
Total power	6.5kW(max)	10kW(max)	13kW(max)	17kW(max)	22kW(max)

Model	HL150W-820	HL250W-820	HL380W-820	HL600W-820	HL950W-820
Heating power	15kW	25kW	38kW	60kW	95kW
Cooling capacity	200°C	15.0KW	25kW	38kW	60kW
	100°C	15.0KW	25kW	38kW	60kW
	20°C	15.0KW	25kW	38kW	60kW
	-60°C	5.8KW	10kW	16kW	23kW
	-75°C	2.4KW	5kW	8kW	11kW
Circulating pump	Flow	Max110L/min	Max150L/min	Max200L/min	Max250L/min
	Pressure	2.5bar	2.5bar	2.5bar	2.5bar
Compressor	EMBRACO			DORIN/BITZER/FRASCOLD	
Expansion valve	DANFOSS				
Thermal medium interface size	DN25	DN32	DN40	DN40	DN50
20°C cooling water demand		7m <sup>3</sup> /H	10m <sup>3</sup> /h	14m <sup>3</sup> /h	20m <sup>3</sup> /h
		1.5bar~4bar	1.5bar~4bar	1.5bar~4bar	1.5bar~4bar
Cooling water interface size	DN25	DN32	DN40	DN40	DN50
Dimension mm	Water-cooling	700*800*1650	1000*950*1650	1000*950*1750	2000*1250*1750
	Air-cooled	750*750*1800	/	/	/
Weight	Water-cooling	380kg	980kg	1150kg	1380kg
	Air-cooled	/	/	/	/
Power supply/Voltage	AC380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	A C380V 50HZ	AC 380V 50HZ
Total power	33kW(max)	56kW(max)	90kW(max)	140kW(max)	180kW(max)

· **Optional:** SUS 304 shell, ExdII BT4 explosion-proof, ExdII CT4 explosion-proof, positive pressure explosion-proof (positive pressure explosion-proof can only use water cooling)

# HL series high and low temperature control system (-100°C~100°C)



- **Control system:** PID control
- **Heat transfer medium temperature cc**
- **Temperature control accuracy of reaction material:**  $\pm 1^{\circ}\text{C}$
- **Shell material:** cold plate spray
- **Communication protocol:** MODBUS RTU protocol RS 485 interface
- **Medium temperature range:**  $-100^{\circ}\text{C}\sim 100^{\circ}\text{C}$
- **Operation panel:** 7 inch color touch, temperature curve display, record
- **Temperature control object:** material temperature control and thermal media outlet temperature control can be freely selected
- **Temperature difference control:** The temperature difference between the reactor jacket temperature and the material temperature can be controlled and set
- **Program editing:** 5 programs can be programmed, and each program can program 30 steps.
- **Temperature feedback:** the heat conduction medium of the equipment local temperature, outlet temperature, reactor material temperature (external temperature sensor) three point temperature PT100
- **Safety protection:** with self-diagnosis function, refrigerator overload protection, high pressure pressure switch, overload relay, thermal protection device, low level protection, high temperature protection, sensor fault protection and other safety guarantee functions.
- **Closed circulation system:** The entire system is a closed system. There will be no oil mist at high temperatures and no moisture in the air absorbed at low temperatures. The system will not increase pressure due to high temperatures during operation. The heat transfer medium will be automatically replenished at low temperatures.

Model		HL35-1010	HL55W-1010	HL75W-1010	HL100W-1010	HL150W-1010	HL250W-1010	HL380W-1010
Heating power		3.5kW	5.5kW	7.5kW	10kW	15kW	25kW	38kW
Cooling capacity	200°C	3.5kW	5.5kW	7.5kW	10kW	15kW	25kW	38kW
	100°C	3.5kW	5.5kW	7.5kW	10kW	15kW	25kW	38kW
	20°C	3.5kW	5.5kW	7.5kW	10kW	15kW	25kW	38kW
	-80°C	1.9KW	2.8KW	3.3KW	4.1KW	5.5kW	8.2kW	11.6kW
	-95°C	0.45KW	0.7KW	0.9KW	1.2KW	1.6kW	2.2kW	3kW
Circulating pump	Flow	Max35L/min	Max50L/min	Max50L/min	Max50L/min	Max100L/min	Max100L/min	Max150L/min
	Pressure	2 bar	2 bar	2 bar	2 bar	2.5bar	2.5bar	2.5bar
Compressor		TECUMSEH	DORIN/BITZER/FRASCOLD					
Expansion valve		DANFOSS						
Thermal medium interface size		DN20	DN20	DN20	DN25	DN25	DN32	DN40
20°C cooling water demand		2.4m <sup>3</sup> /H	3.4m <sup>3</sup> /H	4m <sup>3</sup> /H	5m <sup>3</sup> /H	10m <sup>3</sup> /h	14m <sup>3</sup> /h	20m <sup>3</sup> /h
		1.5bar~4bar	1.5bar~4bar	1.5bar~4bar	1.5bar~4bar	1.5bar~4bar	1.5bar~4bar	1.5bar~4bar
Cooling water connector		DN15	DN20	DN20	DN20	/	/	/
Dimension mm	Water-cooling	700*800*1650	700*800*1650	1000*950*1750	1000*950*1750	1000*950*1750	2000*1250*1750	2000*1250*1750
	Air-cooled	/	/	/	/	/	/	/
Weight	Water-cooling	435kg	565kg	705kg	820kg	1150kg	1380kg	1750kg
	Air-cooled	/	/	/	/	/	/	/
Power supply		AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ
Total power		12kW(max)	17kW(max)	22kW(max)	27kW(max)	36kW(max)	55kW(max)	82 kW(max)

· **Optional:** SUS 304 shell, ExdII BT4 explosion-proof, ExdII CT4 explosion-proof, positive pressure explosion-proof (positive pressure explosion-proof can only use water cooling)

# HL series high and low temperature control system(-25°C~200°C)



- **Control system:** PID control
- **Heat transfer medium temperature control accuracy:**  $\pm 0.5^{\circ}\text{C}$
- **Temperature control accuracy of reaction material:**  $\pm 1^{\circ}\text{C}$
- **Shell material:** cold plate spray
- **Communication protocol:** MODBUS RTU protocol RS 485 interface
- **Medium temperature range:**  $-25^{\circ}\text{C}\sim 200^{\circ}\text{C}$  (high temperature can be extended to  $250^{\circ}\text{C}$ )
- **Operation panel:** 7 inch color touch, temperature curve display, record
- **Temperature control object:** material temperature control and thermal media outlet temperature control can be freely selected
- **Temperature difference control:** The temperature difference between the reactor jacket temperature and the material temperature can be controlled and set
- **Program editing:** 5 programs can be programmed, and each program can program 30 steps.
- **Temperature feedback:** the heat conduction medium of the equipment local temperature, outlet temperature, reactor material temperature (external temperature sensor) three point temperature PT100
- **Safety protection:** with self-diagnosis function, refrigerator overload protection, high pressure pressure switch, overload relay, thermal protection device, low level protection, high temperature protection, sensor fault protection and other safety guarantee functions.
- **Closed circulation system:** The entire system is a closed system. There will be no oil mist at high temperatures and no moisture in the air absorbed at low temperatures. The system will not increase pressure due to high temperatures during operation. The heat transfer medium will be automatically replenished at low temperatures.

Model		HL25-220-2T	HL35-220-2T	HL55-220-2T	HL75-220-2T	HL100-220-2T
Heating power		2.5kw	3.5kW	5.5kW	7.5kW	10kW
Cooling capacity	200°C	2.5kW	3.5kW	5.5kW	7kW	10kW
	100°C	2.5kW	3.5kW	5.5kW	7kW	10kW
	20°C	2kW	3kW	5kW	6kW	8.5kW
	-5°C	1.5kW	2.5kW	3kW	5kW	7kW
	-20°C	1kW	1.6kW	2kW	3kW	3.6kW
Circulating pump	Flow	Max15L/min	Max15L/min	Max35L/min	Max50L/min	Max50L/min
	Pressure	lbar	2.5bar	2.5bar	2.5bar	2.5bar
Compressor		SECOP	EMERSON COPELAND			
Expansion valve		DANFOSS				
Thermal medium interface size		DN15	DN20	DN20	DN25	DN25
20°C cooling water demand		0.7m <sup>3</sup> /H	1.2m <sup>3</sup> /H	1.4m <sup>3</sup> /H	1.7m <sup>3</sup> /H	2.1m <sup>3</sup> /H
		1.5bar~4bar				
Cooling water interface size		DN15	DN20	DN20	DN25	DN25
Dimension mm	Water-cooling	500*680*1250	500*680*1450	700*800*1650	1000x950x1650	1000x950x1650
	Air-cooled	550*650*1400	550*700*1600	750*750*1800	/	/
Weight	Water-cooling	180kg	245kg	300kg	360kg	400kg
	Air-cooled	205kg	280kg	340kg	/	/
Power supply/Voltage		AC220V 50HZ	AC380V 50HZ	AC380V 50HZ	AC380V 50HZ	AC380V 50HZ
Total power		6.2kW(max)	10.5kW(max)	15kW(max)	21kW(max)	28.5kW(max)

Model		HL150-220-2T	HL250-220-2T	HL380-220-2T	HL600-220-2T	HL950-220-2T
Heating power		15kW	25kW	38kW	60kW	90kW
Cooling capacity	200°C	15kW	25kW	38kW	60kW	90kW
	100°C	15kW	25kW	38kW	60kW	90kW
	20°C	11kW	18kW	26kW	42kW	68kW
	-5°C	7.5kW	13kW	18k	30kW	50kW
	-20°C	4.5kW	7.5kW	11kW	18kW	26kW
Circulating pump	Flow	Max110L/min	Max110L/min	Max150L/min	Max250L/min	Max250L/min
	Pressure	2.5bar	2.5bar	2.5bar	2.5bar	2.5bar
Compressor		EMERSON COPELAND			DORIN/BITZER/FRASCOLD	
Expansion valve		DANFOSS				
Thermal medium interface size		DN25	DN32	DN40	DN50	DN50
20°C cooling water demand		5.5m <sup>3</sup> /h	9m <sup>3</sup> /h	12m <sup>3</sup> /h	20m <sup>3</sup> /h	30m <sup>3</sup> /h
		1.5bar~4bar				
Cooling water interface size		DN25	DN32	DN40	DN50	DN50
Dimension mm	Water-cooling	2000x1250x1750	2000x1250x1750	2300x1450x1750	2300x1450x1750	2300x1450x1750
	Air-cooled	/	/	/	/	/
Weight	Water-cooling	680kg	850kg	1120kg	1550kg	1880kg
	Air-cooled	/	/	/	/	/
Power supply/Voltage		AC380V 50HZ	AC380V 50HZ	AC380V 50HZ	AC380V 50HZ	AC380V 50HZ
Total power		40kW(max)	65kW(max)	95kW(max)	150kW(max)	230kW(max)

• **Optional:** SUS 304 shell, ExdII BT4 explosion-proof, ExdII CT4 explosion-proof, positive pressure explosion-proof (positive pressure explosion-proof can only use water cooling)

# H series heating type circulator

(50°C~200°C)

- **Control system:** PID control
- **Heat transfer medium temperature control accuracy:** ±0.5°C
- **Temperature control accuracy of reaction material:** ±1°C
- **Shell material:** cold plate spray
- **Communication protocol:** MODBUS RTU protocol RS 485 interface
- **Medium temperature range:** 50°C~200°C
- **Operation panel:** 7 inch color touch, temperature curve display, record
- **Temperature control object:** material temperature control and thermal media outlet temperature control can be freely selected
- **Temperature difference control:** The temperature difference between the reactor jacket temperature and the material temperature can be controlled and set
- **Program editing:** 5 programs can be programmed, and each program can program 30 steps.
- **Temperature feedback:** the heat conduction medium of the equipment local temperature, outlet temperature, reactor material temperature (external temperature sensor) three point temperature PT100
- **Safety protection:** with self-diagnosis function, refrigerator overload protection, high pressure pressure switch, overload relay, thermal protection device, low level protection, high temperature protection, sensor fault protection and other safety guarantee functions.
- **Closed circulation system:** The entire system is a closed system. There will be no oil mist at high temperatures and no moisture in the air absorbed at low temperatures. The system will not increase pressure due to high temperatures during operation. The heat transfer medium will be automatically replenished at low temperatures.



Model	H25W-20	H35W-20	H55W-20	H75W-20	H100W-20	H150W-20	H250W-20	H380W-20	H600W-20	H950W-20
Heating power	2.5kW	3.5kW	5.5kW	7.5kW	10kW	15kW	25kW	38kW	60kW	95kW
Cooling capacity	2kW	3kW	5.5kW	7.5kW	10kW	15kW	25kW	38kW	60kW	95kW
	1.3kW	2kW	4kW	5kW	8kW	12kW	20kW	30kW	48kW	76kW
	0.6kW	1kW	1.8kW	2.2kW	3.4kW	5kW	8.5kW	12kW	19kW	30kW
Circulating pump	Max10L/min	Max20L/min	Max35L/min	Max50L/min	Max50L/min	Max75L/min	Max110L/min	Max110L/min	Max250L/min	Max250L/min
	1.5bar	1.5bar	2bar	2bar	2bar	2.5BAR	2.5BAR	2.5BAR	2.5BAR	2.5BAR
Cooler interface	DN20	DN20	DN20	DN20	DN20	DN20	DN20	DN20	DN20	DN20
Interface size	DN15	DN20	DN20	DN20	DN20	DN25	DN32	DN32	DN40	DN50
Dimension mm	350*560*750	400*600*1050	400*600*1050	400*600*1050	400*600*1050	600*600*1250	600*600*1250	600*600*1250	1500*1000*1650	2050*1250*2050
Weight	35kg	65kg	78kg	80kg	88kg	100kg	130kg	240kg	360kg	480kg
Power supply	AC 220V50HZ	AC 220V50HZ	AC 380V50HZ	AC 380V50HZ	AC 380V50HZ	AC 380V50HZ	AC 380V50HZ	AC 380V50HZ	AC 380V50HZ	AC 380V50HZ
Total power	2.5kW(max)	3.5kW(max)	5.9kW(max)	8.3kW(max)	10.8kW(max)	15.7kW(max)	26.5kW(max)	39.5kW(max)	63kW(max)	98kW(max)

· **Optional:** SUS 304 shell, ExdII BT4 explosion-proof, ExdII CT4 explosion-proof, positive pressure explosion-proof (positive pressure explosion-proof can only use water cooling)

# H series heating type circulator

(50°C~300°C)

- **Control system:** PID control
- **Heat transfer medium temperature control accuracy:** ±0.5°C
- **Temperature control accuracy of reaction material:** ±1°C
- **Shell material:** cold plate spray
- **Communication protocol:** MODBUS RTU protocol RS 485 interface
- **Medium temperature range:** 50°C~300°C
- **Operation panel:** 7 inch color touch, temperature curve display, record
- **Temperature control object:** material temperature control and thermal media outlet temperature control can be freely selected
- **Temperature difference control:** The temperature difference between the reactor jacket temperature and the material temperature can be controlled and set
- **Program editing:** 5 programs can be programmed, and each program can program 30 steps.
- **Temperature feedback:** the heat conduction medium of the equipment local temperature, outlet temperature, reactor material temperature (external temperature sensor) three point temperature PT100
- **Safety protection:** with self-diagnosis function, refrigerator overload protection, high pressure pressure switch, overload relay, thermal protection device, low level protection, high temperature protection, sensor fault protection and other safety guarantee functions.
- **Closed circulation system:** The entire system is a closed system. There will be no oil mist at high temperatures and no moisture in the air absorbed at low temperatures. The system will not increase pressure due to high temperatures during operation. The heat transfer medium will be automatically replenished at low temperatures.



Model		H35W-30	H55W-30	H75W-30	H100W-30	H150W-30	H250W-30	H380W-30	H600W-30	H950W-30
Heating power		3.5kW	5.5kW	7.5kW	10kW	15kW	25kW	38kW	60kW	95kW
Cooling capacity	300°C	3kW	5.5kW	7.5kW	10kW	15kW	25kW	38kW	60kW	/
	100°C	1.3kW	4kW	5kW	7kW	10kW	7kW	27kW	40kW	76kW
	65°C	0.6kW	1.8kW	2.2kW	3kW	4kW	6kW	11kW	16kW	30kW
Circulating pump	流量	Max15L/min	Max35L/min	Max40L/min	Max50L/min	Max75L/min	Max110L/min	Max110L/min	Max250L/min	Max250L/min
	压力	2bar	2bar	2bar	2bar	2.5BAR	2.5BAR	2.5BAR	2.5BAR	2.5BAR
Cooler interface		DN20	DN20	DN20	DN20	DN20	DN20	DN20	DN20	DN20
Interface size		DN15	DN20	DN20	DN20	DN25	DN32	DN32	DN40	DN50
Dimension mm		600*600*1250	600*600*1250	600*600*1250	600*600*1250	700*800*1650	700*800*1650	1500*1000*1650	2050*1250*2050	2050*1250*2050
Weight		85kg	95kg	100kg	105kg	115kg	195kg	325kg	680kg	480kg
Power supply		AC 380V50HZ	AC 380V50HZ	AC 380V50HZ	AC 380V50HZ	AC 380V50HZ	AC 380V50HZ	AC 380V50HZ	AC 380V50HZ	AC 380V50HZ
Total power		3.7kW(max)	5.9kW(max)	8kW(max)	10.8kW(max)	16kW(max)	26.5kW(max)	39.5kW(max)	63kW(max)	98kW(max)

· **Optional:** SUS 304 shell, ExdII BT4 explosion-proof, ExdII CT4 explosion-proof, positive pressure explosion-proof (positive pressure explosion-proof can only use water cooling)

# L series cooling type circulator

## (-25~RT)

- **Medium temperature range:** -25~RT
- **Shell material:** cold plate spray
- **Control system:** PID control
- **Operation panel:** 7 inch color touch, temperature curve display, record
- **Temperature control object:** material temperature control and thermal media outlet temperature control can be freely selected
- **Temperature difference control:** The temperature difference between the reactor jacket temperature and the material temperature can be controlled and set
- **Program editing:** 5 programs can be programmed, and each program can program 30 steps.
- **Communication protocol:** MODBUS RTU protocol RS 485 interface
- **Temperature feedback:** the heat conduction medium of the equipment local temperature, outlet temperature, reactor material temperature (external temperature sensor) three point temperature PT100
- **Safety protection:** with self-diagnosis function, refrigerator overload protection, high pressure pressure switch, overload relay, thermal protection device, low level protection, high temperature protection, sensor fault protection and other safety guarantee functions.



Model	L1.5-2	L3-2	L4-2	L6-2	L8-2	L13-2	
Cooling capacity	0°C	2.5kW	4kW	7.5kW	10kW	15kW	20kW
	-10°C	1.5kW	2.7kW	6.3kW	8kW	12kW	15.5kW
	-20°C	0.8kW	1.5kW	3.5kW	5kW	7.3kW	10kW
Circulating pump	Flow	Max20L/min	Max35L/min	Max35L/min	Max75L/min	Max75L/min	Max100L/min
	Pressure	1.5bar	1.5bar	1.5bar	1.5bar	1.5bar	1.5bar
Liquid storage capacity	17L	25L	25L	40L	60L	80L	
Compressor	EMBRACO	EMERSON COPELAND					
Interface size	DN20	DN20	DN20	DN25	DN25	DN32	
Dimension mm/Air-cooled	400*600*1150	500*680*1350	500*680*1350	650*700*1650	750*750*1800	850*850*1850	
Weight	145kg	180kg	225kg	290kg	340kg	385kg	
Power supply/Voltage	AC220V50HZ	AC220V50HZ	AC380V50HZ	AC380V50HZ	AC380V50HZ	AC380V50HZ	
	1.8kW(max)	2.5kW(max)	3.5kW(max)	5kW(max)	6.5kW(max)	8.5kW(max)	

· **Optional:** SUS 304 shell, ExdII BT4 explosion-proof, ExdII CT4 explosion-proof, positive pressure explosion-proof (positive pressure explosion-proof can only use water cooling)

# L series cooling type circulator

## (-40~RT)

- **Medium temperature range:** -40~RT
- **Shell material:** cold plate spray
- **Control system:** PID control
- **Operation panel:** 7 inch color touch, temperature curve display, record
- **Temperature control object:** material temperature control and thermal media outlet temperature control can be freely selected
- **Temperature difference control:** The temperature difference between the reactor jacket temperature and the material temperature can be controlled and set
- **Program editing:** 5 programs can be programmed, and each program can program 30 steps.
- **Communication protocol:** MODBUS RTU protocol RS 485 interface
- **Temperature feedback:** the heat conduction medium of the equipment local temperature, outlet temperature, reactor material temperature (external temperature sensor) three point temperature PT100
- **Safety protection:** with self-diagnosis function, refrigerator overload protection, high pressure pressure switch, overload relay, thermal protection device, low level protection, high temperature protection, sensor fault protection and other safety guarantee functions.



Model	L1.5-4	L3-4	L5-4	L7.5-4	L13-4	L17-4	
Cooling capacity	-10°C	1.5kW	3.5kW	6.2kW	8.3kW	12kW	20kW
	-20°C	1.2kW	2.7kW	5.5kW	7kW	10kW	14kW
	-35°C	0.4kW	0.75kW	1.5kW	2.1 kW	3kW	5kW
Circulating pump	Flow	Max20L/min	Max20L/min	Max35L/min	Max75L/min	Max75L/min	Max140L/min
	Pressure	0.7bar	0.7bar	1bar	1bar	1bar	1bar
Liquid storage capacity	15L	17L	25L	40L	60L	100L	
Compressor	EMBRACO	EMERSON COPELAND					
Interface size	DN15	DN20	DN20	DN25	DN25	DN25	
Dimension mm/Air-cooled	400*600*1250	500*680*1350	500*680*1450	650*700*1650	750*750*1800	750*750*1800	
Weight	145kg	185kg	275kg	340kg	380kg	380kg	
Power supply/Voltage	AC 220V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	
	1.6kW(max)	2.5kW(max)	4.8kW(max)	6kW(max)	8kW(max)	8kW(max)	

· **Optional:** SUS 304 shell, ExdII BT4 explosion-proof, ExdII CT4 explosion-proof, positive pressure explosion-proof (positive pressure explosion-proof can only use water cooling)

# L series cooling type circulator

(-60°C~-20°C)

- **Medium temperature range:** -60°C~-20°C
- **Control system:** PID control
- **Communication protocol:** MODBUS RTU protocol RS 485 interface
- **Operation panel:** 7 inch color touch, temperature curve display, record
- **Program editing:** 5 programs can be programmed, and each program can program 30 steps.
- **Temperature control object:** material temperature control and thermal media outlet temperature control can be freely selected
- **Temperature difference control:** The temperature difference between the reactor jacket temperature and the material temperature can be controlled and set
- **Temperature feedback:** the heat conduction medium of the equipment local temperature, outlet temperature, reactor material temperature (external temperature sensor) three point temperature PT100
- **Safety protection:** with self-diagnosis function, refrigerator overload protection, high pressure pressure switch, overload relay, thermal protection device, low level protection, high temperature protection, sensor fault protection and other safety guarantee functions.



Model		L1.5-6	L2-6	L3-6	L4-6	L5-6	L8-6
Cooling capacity	-20°C	0.85kW	1.45kW	2.5kW	3.4kW	4.8kW	7.2kW
	-40°C	0.7kW	1.2kW	2.1 kW	2.8kW	4kW	6kW
	-55°C	0.4kW	0.6kW	1.2kW	1.6kW	2kW	3kW
Circulating pump	Flow	Max20L/min	Max20L/min	Max35L/min	Max35L/min	Max75L/min	Max75L/min
	Pressure	0.7bar	0.7bar	1bar	1bar	1bar	1bar
Liquid storage capacity		15L	17L	25L	25L	40L	60L
Compressor		TECUMSEH				DORIN/BITZER	
Interface size		DN15	DN20	DN20	DN20	DN25	DN25
Dimension mm/Air-cooled		400*600*1150	500*680*1350	650*700*1650	650*700*1650	650*700*1650	750*750*1800
Weight		145kg	185kg	230kg	275kg	340kg	380kg
Power supply/Voltage		AC 220V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ
		2.5kW(max)	3kW(max)	4kW(max)	5.8kW(max)	7kW(max)	9kW(max)

· **Optional:** SUS 304 shell, ExdII BT4 explosion-proof, ExdII CT4 explosion-proof, positive pressure explosion-proof (positive pressure explosion-proof can only use water cooling)

# L series cooling type circulator

(-80°C~-20°C)

- **Medium temperature range:** -80°C~-20°C
- **Control system:** PID control
- **Communication protocol:** MODBUS RTU protocol RS 485 interface
- **Operation panel:** 7 inch color touch, temperature curve display, record
- **Program editing:** 5 programs can be programmed, and each program can program 30 steps.
- **Temperature control object:** material temperature control and thermal media outlet temperature control can be freely selected
- **Temperature difference control:** The temperature difference between the reactor jacket temperature and the material temperature can be controlled and set
- **Temperature feedback:** the heat conduction medium of the equipment local temperature, outlet temperature, reactor material temperature (external temperature sensor) three point temperature PT100
- **Safety protection:** with self-diagnosis function, refrigerator overload protection, high pressure pressure switch, overload relay, thermal protection device, low level protection, high temperature protection, sensor fault protection and other safety guarantee functions.



Model		L1.5-8	L3-8	L6-8	L8-8	L15-8	L25-8
Cooling capacity	-40°C	0.6kW	1.4kW	2.8kW	3.4kW	4.8kW	7.2kW
	-60°C	0.4kW	0.8kW	1.6kW	2.1kW	4kW	6kW
	-75°C	0.2kW	0.5kW	0.9kW	1.2kW	2kW	3kW
Circulating pump	Flow	Max20L/min	Max20L/min	Max35L/min	Max35L/min	Max75L/min	Max75L/min
	Pressure	0.7bar	0.7bar	1bar	1bar	1bar	1bar
Liquid storage capacity		15L	17L	25L	25L	40L	60L
Compressor		TECUMSEH				DORIN/BITZER	
Interface size		DN15	DN20	DN20	DN20	DN25	DN25
Dimension mm/Air-cooled		500*680*1350	500*680*1350	650*700*1650	650*700*1650	750*750*1800	850*850*1850
Weight		185kg	230kg	275kg	340kg	380kg	470kg
Power supply/Voltage		AC 220V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ
		3kW(max)	4kW(max)	5.5kW(max)	7kW(max)	8.7kW(max)	11.5kW(max)

· **Optional:** SUS 304 shell, ExdII BT4 explosion-proof, ExdII CT4 explosion-proof, positive pressure explosion-proof (positive pressure explosion-proof can only use water cooling)

# L series cooling type circulator

(-100°C~-60°C)

- **Medium temperature range:** -100°C~-60°C
- **Control system:** PID control
- **Communication protocol:** MODBUS RTU protocol RS 485 interface
- **Operation panel:** 7 inch color touch, temperature curve display, record
- **Program editing:** 5 programs can be programmed, and each program can program 30 steps.
- **Temperature control object:** material temperature control and thermal media outlet temperature control can be freely selected
- **Temperature difference control:** The temperature difference between the reactor jacket temperature and the material temperature can be controlled and set
- **Temperature feedback:** the heat conduction medium of the equipment local temperature, outlet temperature, reactor material temperature (external temperature sensor) three point temperature PT100
- **Safety protection:** with self-diagnosis function, refrigerator overload protection, high pressure pressure switch, overload relay, thermal protection device, low level protection, high temperature protection, sensor fault protection and other safety guarantee functions.



Model		L6-10	L12-10	L22-10
Cooling capacity	-60°C	2.5kW	5kW	8.6kW
	-75°C	1.3kW	3kW	5kW
	-95°C	0.7kW	1.4kW	2.3kW
Circulating pump	Flow	Max20L/min	Max35L/min	Max75L/min
	Pressure	0.7bar	1 bar	1 bar
Liquid storage capacity		17L	25L	40L
Compressor		TECUMSEH	DORIN/BITZER	
Thermal medium interface size		DN15	DN20	DN25
Dimension mm/Air-cooled		550*700*1650	700*800*1650	700*800*1650
Weight		235kg	320kg	455kg
Power supply/Voltage		AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ
		5.5kW(max)	7.5kW(max)	11 kW(max)

· **Optional:** SUS 304 shell, ExdII BT4 explosion-proof, ExdII CT4 explosion-proof, positive pressure explosion-proof (positive pressure explosion-proof can only use water cooling)

# L series cooling type circulator

(-120°C~-70°C)

- **Medium temperature range:** -120°C~-70°C
- **Control system:** PID control
- **Communication protocol:** MODBUS RTU protocol RS 485 interface
- **Operation panel:** 7 inch color touch, temperature curve display, record
- **Program editing:** 5 programs can be programmed, and each program can program 30 steps.
- **Temperature control object:** material temperature control and thermal media outlet temperature control can be freely selected
- **Temperature difference control:** The temperature difference between the reactor jacket temperature and the material temperature can be controlled and set
- **Temperature feedback:** the heat conduction medium of the equipment local temperature, outlet temperature, reactor material temperature (external temperature sensor) three point temperature PT100
- **Safety protection:** with self-diagnosis function, refrigerator overload protection, high pressure pressure switch, overload relay, thermal protection device, low level protection, high temperature protection, sensor fault protection and other safety guarantee functions.



Model		L15-12	L20-12	L25-12
Cooling capacity	-75°C	1.2kW	2.4kW	4kW
	-95°C	0.7kW	1.4kW	2.1kW
	-110°C	0.3kW	0.55kW	0.95kW
Circulating pump	Flow	Max20L/min	Max35L/min	Max35L/min
	Pressure	0.7bar	1 bar	1 bar
Liquid storage capacity		17L	25L	40L
Compressor		TECUMSEH	DORIN/BITZER	
Thermal medium interface size		DN20	DN20	DN20
Dimension mm/Air-cooled		550*700*1650	700*800*1650	700*800*1650
Weight		340kg	380kg	480kg
Power supply/Voltage		AC 380V 50HZ	AC 380V 50HZ	AC 380V 50HZ
		6kW(max)	9.5kW(max)	14kW(max)

· **Optional:** SUS 304 shell, ExdII BT4 explosion-proof, ExdII CT4 explosion-proof, positive pressure explosion-proof (positive pressure explosion-proof can only use water cooling)

# Positive pressure explosion-proof/ isolated explosion-proof



## ABOUT POSITIVE PRESSURE EXPLOSION PREVENTION

The water-cooled models in this catalog can all be customized with EXPXdmbIBT4 and EXPXdmbICt4. It is designed, manufactured and inspected in accordance with the national standard GB3836.5-2004 (Positive pressure type "P" for electrical equipment for explosive gas environments). It can be widely used in dangerous places with explosive gas and dust such as petroleum, chemical industry, medicine and so on. The explosion-proof mark is ExpXdmbICT4. Explosion-proof certificate number: GYB091118.

### Structure overview

The positive pressure cabinet consists of two parts: a positive pressure chamber and a control chamber. The positive pressure chamber is used to install various non-explosion-proof instruments or electrical appliances. The control chamber is composed of an explosion-proof control box and a pressure control system. The positive pressure cabinet shell is welded with 2~3mm cold-rolled steel plates, the ventilation pipes are made of galvanized steel pipes, and the incoming and outgoing cables are made of through-plate pipe joints and cable introduction compression devices. The front door is equipped with a glass display window to display instruments, indicators, etc.

### Security indicators

- Automatic exhaust when the positive pressure value in the cabinet is greater than 280Pa
- When the positive pressure value in the cabinet is less than 80Pa and greater than 50Pa, it will automatically alarm.
- If the positive pressure value in the cabinet is less than 50Pa, the power supply will be automatically cut off.

### Working principle

The working principle of the positive pressure cabinet is shown in the figure. After the 220 volt flow is introduced into the explosion-proof control box, press the "starting button", the electromagnetic threshold excitation will open the intake pipe, the compressed air will enter the positive pressure chamber after filtering and reducing pressure, and the dangerous gas in the positive pressure chamber will discharge the positive pressure chamber through the exhaust. When the dangerous gas in the positive pressure chamber changes to the safe value, the air exchange ends, and the interlock contact will automatically close. At this time, the electrical apparatus and instrument in the positive pressure chamber can work.

### Adjustment of positive pressure value

Adjust the positive pressure value adjustment handle at the lower end of the one-way throttle. Turn the positive pressure value clockwise to increase, otherwise the positive pressure value will decrease. It is appropriate to adjust the positive pressure value to 250Pa. If the pressure is too low and cannot be adjusted to this pressure, check whether the air intake is Fully open, whether the positive pressure chamber is sealed from the outside world.

### Interlock function selection

When the positive pressure cabinet is used in dangerous places in zone 1, if the positive pressure value is less than 50Pa, the interlock contact must be disconnected; If used in zone 2 dangerous places, if the positive pressure value is less than 50Pa, the interlock contact can be continuously opened; However, it is necessary to deal with it in time to ensure that the pressure is greater than 50Pa. This function is adjusted by the third position of the switch U2. The third position is disconnected at the upper interlock contact, and the lower interlock contact is constantly open.

### Positive pressure explosion-proof cabinet constant temperature cooling system

The water cooling method is used to automatically control the cooling water to enter the air conditioning heat exchanger inside the system, taking away the heat inside the positive pressure cabinet, ensuring that the inside of the positive pressure system is in a constant temperature state, and ensuring the safety of internal components.

## ABOUT ISOLATION EXPLOSION-PROOF EXDIIBT4/EXDIICT4

### Electrical cabinet (flameproof type)

A has a separate wiring cavity

B Heating power is greater than 7.5kW, with independent heat dissipation aluminum fin explosion-proof cabinet

C electrical cabinet adopts all-aluminum mold

D is equipped with an explosion-proof mouse for operating displays of 7 inches and above.

### Compressor

A Explosion-proof or explosion-proof silicone seal explosion-proof treatment

B Adopts the wiring terminal packaging process

### Circulating fan

A Explosion-proof type

B blade adopts aluminum blade

### The circulating pump adopts flameproof motor

A heater adopts flameproof type

B The temperature sensor adopts flameproof type

C The pressure sensor adopts flameproof type

D Various protection areas are installed in flameproof boxes

## Explosion-proof Isolation CT4

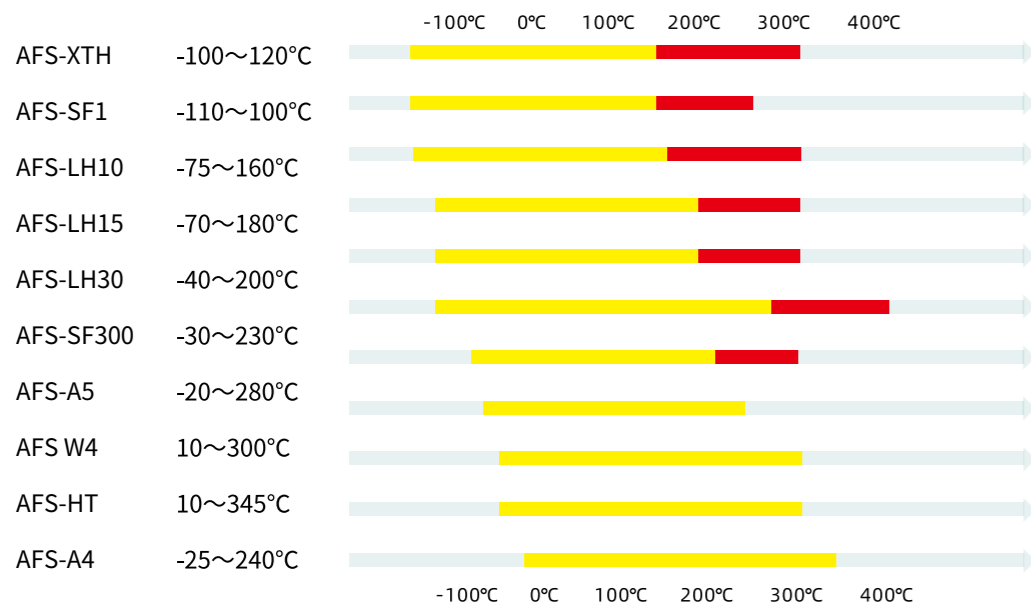


## Explosion-proof Isolation BT4



## THERMAL CONDUCTIVE MEDIUM

Due to differences in thermal stability and low-temperature fluidity of different media, their physical properties in each temperature range are not linearly distributed. The most appropriate heat transfer medium should be selected based on the actual operating temperature range of the equipment.



Note: The temperature range is yellow for atmospheric operating temperature and red for gas-phase operating temperature

Model	AFS-XTH	AFS-SF1	AFS-LH10	AFS-LH5	AFS-LH30	AFS-SF300	AFS-A5	AFS-W4	AFS-HT	AFS-A4
Liquid phase °C	-100~120	-110~100	-75~160	-70~180	-40~200	-30~230	-20~280	10~300	room temp~345	-25~240
color	colourless	colourless	colourless	colourless	colourless	colourless	colourless	colourless	yellowish	colourless
Smell	odourless	odourless	odourless	odourless	odourless	odourless	odourless	odourless	odourless	odourless
Pour point °C	<-110	<-110	<-90	<-85	<-85	<-60	<-65	<-65	<-25	<-65
Flash point °C (COC)	62	57	70	90	110	160	155	200	181	122
Food grade	×	×	×	×	×	×	×	×	×	×

## THERMAL INSULATION PIPE







Stainless steel corrugated pipe	4 points, 6 points, 1 inch, 1.2 inch, 1.5 inch, 2 inch (customizable length and various joints)
Silicone tube	Wall thickness: 2mm, inner diameter 20mm, outer diameter 24mm, high and low temperature resistance -60C~+220C
Fluorine rubber tube	Wall thickness: 4mm, inner diameter 16mm, outer diameter 24mm, high and low temperature resistance -60°C~+220 °C







Name	Material	Interface type	Specifications of 304 braided corrugated pipe	Temp range°C	Internal and external diameter of insulation layer	Standard size/ Customizable size
High and low temp silicone foam insulation pipe	304 braided corrugated pipe + 304 connector + silicone	Flat end, bell mouth, welded flange, disk, ferrule	Dn15	-100°C~300°C	60MM*20MM	200CM
			Dn20	-100°C~300°C	70MM*25MM	200CM
			Dn25	-100°C~300°C	80MM*32mm	200CM

Note: Insulation pipe can effectively prevent condensation or high temperature, suitable for ethanol mixture, silicone oil, thermal oil medium



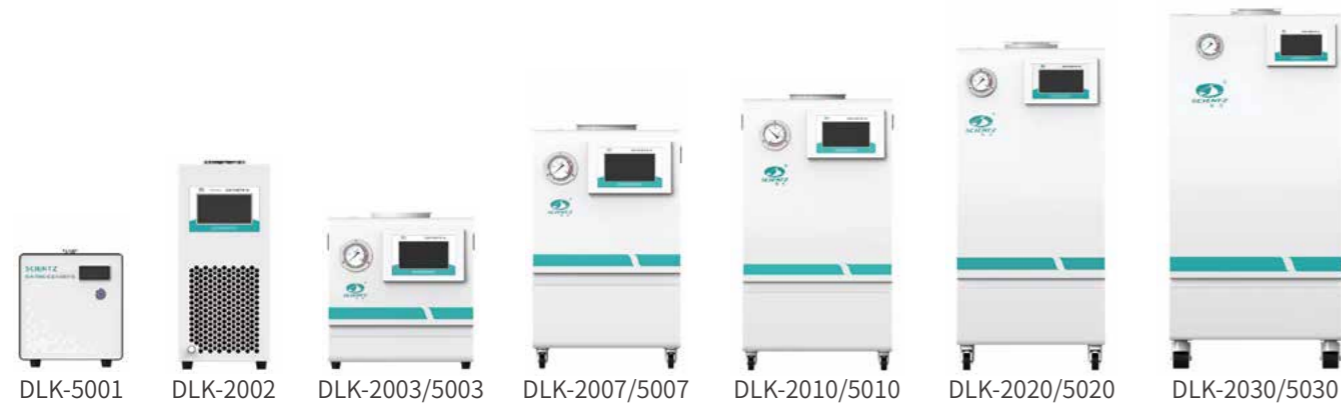
## JOINT, VALVE, REDUCER

Name	Specifications	Picture	Remarks
Pagoda connector	G1/2 inner wire turn 8-25mm pagoda connector		For connecting hoses
	G3/4 inner wire to 14-25mm pagoda connector		
	G1 inner wire to 15-32mm pagoda connector		
Stainless steel flange	DN15/PL15-16R HG/T20592		Equipment inlet and outlet and connecting pipe
	DN20/PL20-16R HG/T20592		
	DN25/PL25-16RF HG/T20592		
	DN32/PL32-16RF HG/T20592		
	DN40/PL40-16RF HG/T20592		
	DN50/PL50-16RF HG/T20592		
Quick connection chuck	50.5mm turn G1/2,G3/4,G1 outer wire connector		It is used to convert the inlet and outlet of the device into a chuck
	50.5mm welding chuck		Used for connecting pipe selection
Ball head quick connect	External thread G1/2", working temperature: -150C~300C, material: stainless steel Medium: water, oil, non-corrosive gas, product pressure: <1.6Mpa		Used for connecting pipe selection
	External thread G3/4", working temperature: -150°C~300C, material: stainless steel, medium: water, oil, non-corrosive gas, product pressure: <1.6Mpa		
	External thread G1", working temperature: -150°C-300C, material: stainless steel,Medium: water, oil, non-corrosive gas, product pressure: <1.6Mpa		

Name	Specifications	Picture	Remarks
Flat mouth loose joint	External thread G1/2, working temperature: -40C-200C, material: stainless steel, Medium: water, oil, non-corrosive gas, product pressure: <1.6Mpa		Used for connecting pipe selection
	External thread G3/4, working temperature: -40C-200C, material: stainless steel, Medium: water, oil, non-corrosive gas, product pressure: <1.6Mpa		
	External thread G1 "", working temperature: -40C~200C, material: stainless steel, Medium: water, oil, non-corrosive gas, product pressure: <1.6Mpa		
Card sleeve straight connector	Working temperature: -80°C-350°C, material: stainless steel, medium: water, oil, Non-corrosive gas, product pressure: <40.0Mpa		Used for selecting connecting pipes
Self-closing joint	Internal thread G1/2",SF connector, length 72mm, PF connector, length 44mm, 304 stainless steel, corrosion resistance, high temp, self-closed, steel ball locking, -20°C - +220°C		Used for pipeline connection selection
High temp ball valve	DN20, working temperature: 5C-350C, Material: stainless steel, Medium: water, oil, non-corrosive gas, product pressure :<1.6Mpa		
Reducing diameter inner wire joint	4 points to 6 points. 6 points to 1 inch, 1 inch to 1.2 inches, 1.2 inches to 1.5 inches,1.5 inch to 2 inch (Customizable adapters of various sizes)		
Diameter of external thread of reducing pipe	4 points to 6 points. 6 points to 1 inch, 1 inch to 1.2 inches, 1.2 inches to 1.5 inches,1.5 inch to 2 inch (Customizable adapters of various sizes)		

# DLK series Low temperature cooling circulating bath (single cooling)

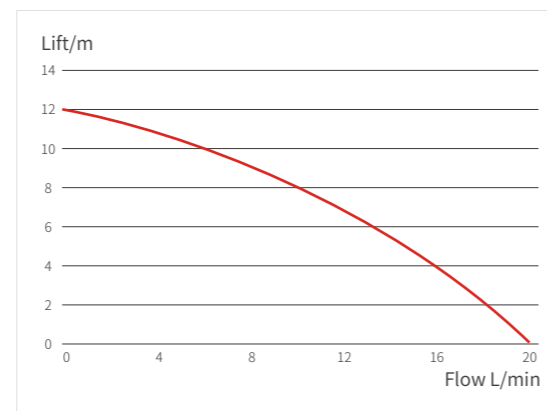
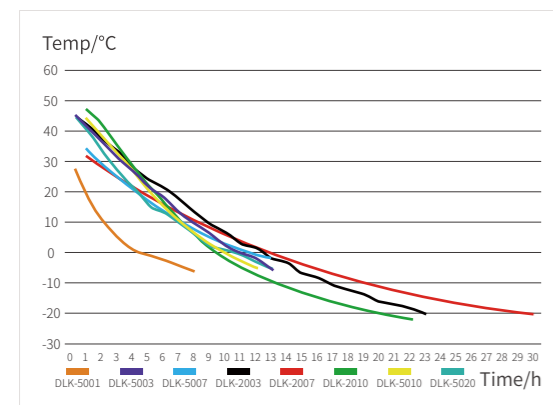
## LOW TEMPERATURE COOLING CIRCULATION PUMP



### Features

- Clear: 7-inch touch screen, bevel design, display temperature, time and other parameters
- Environmental protection: The system uses environmentally friendly refrigerants
- Timing: Working time timing function, stop working after the end
- Quiet: Fully enclosed imported compressor (Panasonic and Taikang), low noise of refrigeration system
- Wide range: internal and external circulation can be switched, high pump pressure, suitable for a variety of different needs of the experiment
- Compact: Compact design saves laboratory space
- Safety: The refrigeration compressor has automatic protection functions such as overheating and overload
- Self-start: The parameters remain unchanged after power failure, and the customer can set the power-on state to self-start and standby

### Cooling curve/pump pressure flow curve



Note: The cooling curve is based on the ambient temperature of 26 °C, an 80% liquid addition, and the data obtained from the ethanol test as the liquid medium.

### Technical Parameter

Model	DLK-5001	DLK-2002	DLK-5003	DLK-2003	DLK-5007	DLK-2007	DLK-5010	DLK-2010	DLK-5020	DLK-2020	DLK-5030	DLK-2030	
Cooling temp range(°C)	-5~45	-20~45	-5~45	-20~45	-5~45	-25~45	-5~45	-25~45	-5~45	-25~45	-5~45	-25~45	
Display resolution(°C)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Temp Accuracy(°C)	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	
Filling volume(L)	0.9	2	3	3	7	7	10	10	20	20	30	30	
Rated cooling capacity	(45°C /kW)	/	/	0.76	0.76	1.36	1.36	2.6	2.6	4.5	4.5	6.4	
	(25°C /kW)	0.35	0.55	0.63	0.63	1.27	1.27	2.1	2.1	3.8	3.8	5.8	
	(20°C /kW)	0.3	0.53	0.58	0.56	1.15	1.15	2	2	3.4	3.4	5.4	
	(15°C /kW)	0.25	0.5	0.55	0.51	1.05	1.05	1.75	1.75	2.8	2.8	4.8	
	(10°C /kW)	0.2	0.48	0.5	0.45	0.9	0.9	1.5	1.5	2.2	2.2	4.2	
	(5°C /kW)	0.18	0.44	0.45	0.41	0.82	0.82	1.15	1.15	1.7	1.7	3.7	
	(0°C /kW)	0.15	0.43	0.39	0.37	0.65	0.65	0.9	0.9	1.35	1.35	3	
	(-5°C /kW)	0.1	0.39	0.28	0.33	0.5	0.5	0.7	0.7	1.05	1.05	2.2	
	(-10°C /kW)	/	0.36	/	0.27	/	0.38	/	0.52	/	0.8	/	1.7
	(-15°C /kW)	/	0.29	/	0.2	/	0.23	/	0.35	/	0.65	/	1.2
(-20°C /kW)	/	0.23	/	0.15	/	0.11	/	0.26	/	0.4	/	0.9	
Circulating pump	Maximum flow (L/min)	20	20	20	20	20	20	20	20	20	20	20	
	Maximum pump pressure(bar)	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	
Connecting size	G1/2 internal thread	G1/2 internal thread	G1/2 internal thread	G1/2 internal thread	G1/2 internal thread	G1/2 internal thread	G1/2 internal thread	G1/2 internal thread	G1/2 internal thread	G1/2 internal thread	G1/2 internal thread	G1/2 internal thread	
Noise(dB)	≤ 55	≤ 63	≤ 57	≤ 57	≤ 60	≤ 60	≤ 62	≤ 62	≤ 65	≤ 65	≤ 70	≤ 70	
Weight(kg)	18	32	29	29	35.5	35.5	46	46	64	64	122	122	
External dimensions L/W/H(mm)	260	222	390	390	390	390	430	430	447	447	557	557	
	340	450	423	423	410	410	470	470	553	553	675	675	
	300	505	445	445	630	630	820	820	960	960	1193	1193	
Total power(kW)	0.2	0.43	0.55	0.55	0.65	0.65	0.77	0.77	1.2	1.2	2.4	2.4	
Power supply	220V/50Hz~1												

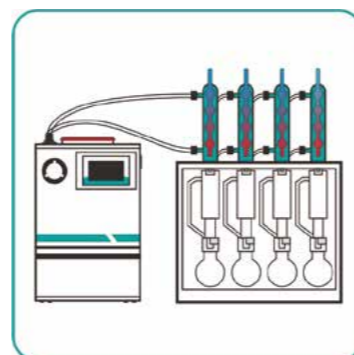
Note: All models above DLK-5007 can be equipped with a pressure regulating high-pressure circulation pump, with the high-pressure version model suffix marked with "G".

## Applications

### extraction

Applied to laboratory quality control, determination of fat content and extractable substances in food, animal feed, etc., for feed, Animal nutrition and dairy industry. There is no need to consume cooling water during extraction, and the condensation temperature is always repeatable, not affected by environmental or seasonal temperature fluctuations

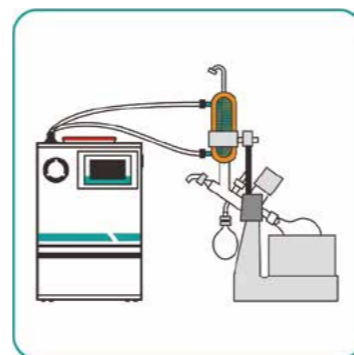
Model	DLK-5001	DLK-2003 DLK-5003	DLK-2003 DLK-5003	DLK-2007 DLK-5007	DLK-5007 DLK-5010	DLK-5010	DLK-5020
Number of condensers	2	4	6	8	12	18	24



### Evaporation and condensation

Commonly used in synthetic chemistry, organic chemistry, scale-up laboratories, or research and development laboratories for pharmaceutical, chemical, cosmetic and nutritional chemistry.

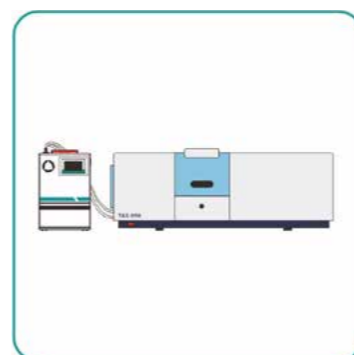
Model	DLK-5001	DLK-5003	DLK-5007	DLK-5007	DLK-5010	DLK-5020	DLK-5030
Flask size	0.5~1L	2L	2L	4L	20L	50L	
Number of rotary evaporators	1	2	3~4	1	2	1~2	1



### Atomic absorption

Atomic absorption is a very important spectral analyzer in the field of analytical chemistry, which is widely used in metallurgical industry, food safety, environmental monitoring and other fields.

Model	DLK-5007



### Connecting Pine

Name	Specification
silicone tube	Inner diameter 10mm outer diameter 15mm silicone rubber natural transparent length 1m
Reinforced silicone tube	Inner diameter 10mm outer diameter 15mm silicone rubber glass fiber reinforced length 1m
PE tube	3/8 Inner diameter 6.35mm Outer diameter 9.53mm white transparent



### Pagoda, adapter, tee

Name	Specification
External wire pagoda connector	Brass Straight through ZG1/2 (4 points) External thread Maximum outer diameter of pagoda 12mm Inner hole diameter 9mm
Internal wire pagoda connector	Brass straight-through ZG1/2 (4 points) Internal thread Maximum outer diameter of pagoda 12mm Inner hole diameter 9mm
Straight-through quick-twist connector	Brass straight-through ZG1/2 (4 points) Internal thread Maximum outer diameter of pagoda 12mm Inner hole diameter 9mm
Same path pagoda tee	Brass straight-through ZG1/2 (4 points) Internal thread Maximum outer diameter of pagoda 12mm Inner hole diameter 9mm



### Fasteners, valves, insulation pipes, gaskets

Name	Specification
American clamp	Diameter 13~19mm stainless steel adjustable head bandwidth 8mm
Manual ball valve	Brass material, four-point inner and outer wire, red handle, mini type
PTFE gasket	4 points 18mm* 10mm3mm
Rubber and plastic insulation pipe	Inner diameter 16mm, wall thickness 9mm, length 1800mm, black
Rubber and plastic insulation pipe	Inner diameter 10mm Wall thickness 9mm Length 1800mm Black

# SLC series constant temperature cooling circulator (Single cooling)

CONSTANT TEMPERATURE COOLING CIRCULATOR



## Features

- Corrosion resistance: all stainless steel evaporator sink, Polish hose, corrosion resistance, high pressure resistance
- High efficiency: Using parallel flow microchannel technology, the heat exchanger efficiency is high
- Maintenance-free: The condenser adopts maintenance-free technology to avoid equipment performance degradation or damage due to dust
- Refrigeration system: electronic expansion valve control, according to the external load adaptive output cooling capacity
- Precise temperature control: the temperature control accuracy is 0.1°C, and the temperature control accuracy is not decreased due to the change of external pipe diameter
- Circulation system: circulation pump pressure 0~6bar adjustable pressure,
- Maximum flow rate: 30L/min



SLC-2006

SLC-2030

## Applications

- Atomic absorption spectrophotometer
- scanner
- ICP
- ICP-MS
- transmission electron microscope

## Technical Parameter

Model	Temperature range (°C)	Temperature Stability (°C)	Max. Flow(L/min)	Max. Pump Pressure(bar)	Rated cooling capacity (25°C/kW)	Total power (kW)	Dimensions L/W/H(mm)	Volume (L)
SLC-2006	-25~45	±0.1	20	1.2	0.6	0.4	220*450*500	0.7
SLC-2030	-25~45	±0.1	30	6	3.0	1.6	428*620*890	8~15

# CK series intelligent fast high and low temperature program control thermostat (heating, cooling)

RAPID LOW-TEMPERATURE COOLING CIRCULATING BATH

## Features

- Storage: 32 programming, multi-time period setting, saving time, easy to use
- Programming: Computer intelligent control, can edit the temperature/time curve
- Quiet: fully enclosed imported compressor, low noise of refrigeration system
- Environmental protection: The system uses environmentally friendly refrigerants
- Accurate: Temperature fluctuation is  $\pm 0.1^{\circ}\text{C}$
- Timing: working time timing function, stop working after the end
- Self-start: The parameters remain unchanged after power failure, and the customer can set the power-on state to self-start and standby
- Safety: The refrigeration compressor has automatic protection functions such as overheating and overload



## Applications



chemical synthesis



wine making  
R&D Assays

## Technical Parameter

Model	Temp range (°C)	Segments (bit)	Working voltage	Volume (L)	Temp Stability (°C)	Pump flow(L/min)	Pump pressure (bar)	Rated cooling capacity (20°C/kW)	Heating power (kW)	Total power (kW)	Dimensions L/W/H(mm)
CK-2003GD	-20~200	32	220V/50Hz	3	±0.1	15	0.45	0.35	0.6	1.0	535*395*750
CK-4005GD	-40~200	32	220V/50Hz	5	±0.1	15	0.45	0.75	1.5	2.3	590*435*770
CK-4007GD	-40~200	32	220V/50Hz	7	±0.1	15	0.45	1.24	2.1	3.1	615*505*845
CK-4010GD	-40~200	32	220V/50Hz	10	±0.1	15	0.45	1.65	2.5	3.5	615*505*895

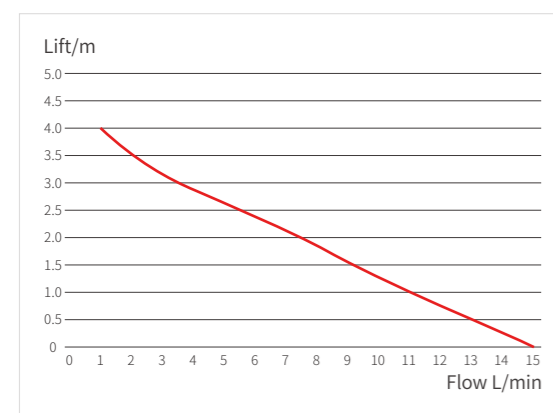
# DC series constant temperature bath (heating and cooling)

## CONSTANT TEMPERATURE BATH






### Features

- Low noise: closed imported compressor (SiKop), low noise of refrigeration system
- Environmental protection: The system uses environmentally friendly refrigerants
- Clear: 7-inch touch screen, bevel design, display temperature, time and other parameters, clearly visible in the distance
- Timing: The device automatically stops running after reaching the set time
- Self-start: The parameters remain unchanged after power failure, and the customer can set the power-on state to self-start and standby
- Precision: Temperature fluctuation  $\pm 0.1^{\circ}\text{C}$
- Wide range: internal and external circulation can be switched, pump flow rate can be adjusted, suitable for a variety of different needs of the experiment
- Safety: The refrigeration compressor has automatic protection functions such as overheating and overload

### Pump pressure flow curve



### Applications

-  Rotary evaporation condenser
-  Non-contact ultrasound Temperature control of crusher
-  Chemical reaction Temperature control
-  Biological experiment Biological sample
-  Electronic component Semiconductor inspection

### Technical Parameter

Model	Temp Range (°C)	Top opening size(mm <sup>2</sup> )	Tank size (mm <sup>3</sup> )	Volume (L)	Temp Stability (°C)	Pump flow (L/Min)	Pump pressure (bar)	Rated cooling capacity (25°C /kW)	Heating power (kW)	Total power (kW/h)	Dimensions L/W/H(mm)
SDC-6	-5~100	180*140	260*200*140	6	±0.1	0~15	0.45	0.42	1.0	1.3	390*340*652
DC-1006	-10~100	180*140	260*200*140	6	±0.1	0~15	0.45	0.32	1.0	1.3	390*340*652
DC-2006	-20~100	180*140	260*200*140	6	±0.1	0~15	0.45	0.42	1.0	1.4	390*340*652
DC-3006	-30~100	180*140	260*200*140	6	±0.1	0~15	0.45	0.42	1.0	1.6	455*388*845
DC-4006	-40~100	180*140	260*200*140	6	±0.1	0~15	0.45	0.48	1.0	1.9	455*388*845
DC-0510	-5~100	180*140	260*200*200	10	±0.1	0~15	0.45	0.52	1.0	1.3	395*336*715
DC-1010	-10~100	180*140	260*200*200	10	±0.1	0~15	0.45	0.42	1.0	1.3	395*336*715
DC-2010	-20~100	180*140	260*200*200	10	±0.1	0~15	0.45	0.62	1.0	1.5	395*336*715
DC-3010	-30~100	180*140	260*200*200	10	±0.1	0~15	0.45	0.54	1.0	1.5	455*388*845
DC-4010	-40~100	180*140	260*200*200	10	±0.1	0~15	0.45	0.46	1.0	1.9	455*388*845
DC-0515	-5~100	235*160	300*250*200	15	±0.1	0~15	0.45	0.76	1.55	2.1	455*388*845
DC-1015	-10~100	235*160	300*250*200	15	±0.1	0~15	0.45	0.76	1.55	2.1	455*388*845
DC-2015	-20~100	235*160	300*250*200	15	±0.1	0~15	0.45	0.76	1.55	2.4	455*388*845
DC-3015	-30~100	235*160	300*250*200	15	±0.1	0~15	0.45	0.73	1.55	2.5	455*430*865
DC-4015	-40~100	235*160	300*250*200	15	±0.1	0~15	0.45	1.24	1.55	2.5	455*430*865
DC-2020	-20~100	235*160	300*250*260	20	±0.1	0~15	0.45	1.55	2.5	3.6	455*430*935
DC-0530	-5~100	310*280	440*325*200	30	±0.1	0~15	0.45	1.80	2.5	3.6	625*500*990
DC-1030	-10~100	310*280	440*325*200	30	±0.1	0~15	0.45	2.00	2.5	3.7	625*500*990
DC-2030	-20~100	310*280	440*325*200	30	±0.1	0~15	0.45	2.40	2.5	4.1	625*500*990
DC-3030	-30~100	310*280	440*325*200	30	±0.1	0~15	0.45	2.50	2.5	4.3	625*500*990
DCW-1015	-10~100	235*160	280*250*220	15	±0.1	0~15	0.45	0.76	1.0	1.5	725*440*555
DCW-2008	-20~100	235*160	260*200*140	10	±0.1	0~15	0.45	0.62	1.0	1.4	725*440*555
DCW-3506	-35~100	180*140	260*200*140	7	±0.1	0~15	0.45	0.75	1.0	1.8	725*440*555
DCW-3510	-35~100	180*140	250*200*200	10	±0.1	0~15	0.45	0.75	1.0	1.8	725*440*555
DCW-0506	-5~100	180*140	260*200*140	7	±0.1	0~15	0.45	0.52	1.0	1.4	725*440*555
DCW-4006	-40~100	180*140	260*200*140	7	±0.1	0~15	0.45	0.75	1.0	1.6	725*440*555

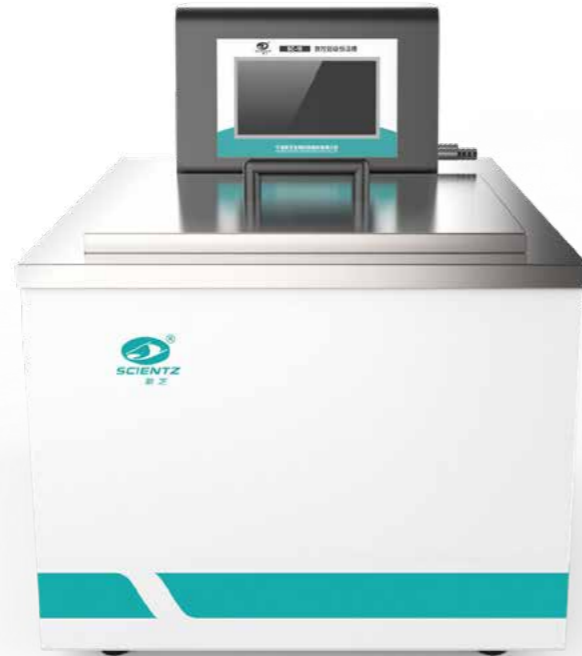
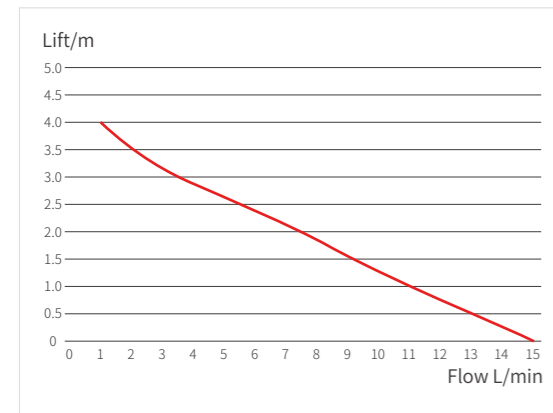
# SC series constant temperature bath (single heating)

## CONSTANT TEMPERATURE BATH

### Features

- Clear: 7-inch touch screen, bevel design, display temperature, time and other parameters, clearly visible in the distance
- Timing: The device automatically stops running after reaching the set time
- Self-start: The parameters remain unchanged after power failure, and the customer can set the power-on state to self-start and standby
- Precision: Temperature fluctuation  $\pm 0.1^{\circ}\text{C}$
- Wide range: internal and external circulation can be switched, pump flow rate can be adjusted, suitable for a variety of different needs of the experiment

### Pump pressure flow curve



### Technical Parameter

Model	Temp range( $^{\circ}\text{C}$ )	Top opening size( $\text{mm}^2$ )	Tank size ( $\text{mm}^3$ )	Capacity (L)	Constant temp fluctuation ( $^{\circ}\text{C}$ )	Pump flow (L/Min)	Pump pressure (bar)	Total power (kW/h)	Heating power (kW)	Inner Tank size L/W/H(mm)	Drain
SC-5A	RT+8~95	130*130	260*140*140	5	$\pm 0.1$	0~15	0.45	0.75	0.6	380*318*445	√
SC-15	RT+8~100	235*160	300*240*200	15	$\pm 0.1$	0~15	0.45	1.8	1.55	422*348*500	√
SC-15A	RT+8~200	235*160	300*240*200	15	$\pm 0.1$	cycle	/	1.8	1.55	482*375*490	-
SC-15B	RT+8~200	235*160	300*240*200	15	$\pm 0.1$	0~15	0.45	1.8	1.55	482*375*490	-
SC-20	RT+8~100	310*280	500*300*150	20	$\pm 0.1$	0~15	0.45	2.2	1.95	620*395*445	√
SC-20A	RT+8~200	310*280	500*300*150	20	$\pm 0.1$	cycle	/	2.2	1.95	642*404*440	-
SC-20B	RT+8~200	310*280	500*300*150	20	$\pm 0.1$	0~15	0.45	2.2	1.95	642*404*440	-
SC-25	RT+8~100	235*160	280*250*300	25	$\pm 0.1$	0~15	0.45	2.2	2.1	410*330*600	√
SC-25A	RT+8~200	235*160	280*250*300	25	$\pm 0.1$	cycle	/	2.8	2.5	450*375*600	-
SC-25B	RT+8~200	235*160	280*250*300	25	$\pm 0.1$	0~15	0.45	2.8	2.5	450*375*600	-
SC-30	RT+8~100	310*280	400*330*230	30	$\pm 0.1$	0~15	0.45	2.8	2.5	530*450*525	√
SC-30A	RT+8~200	310*280	400*330*230	30	$\pm 0.1$	cycle	/	2.8	2.5	605*425*490	-
SC-30B	RT+8~90	$\Phi 150$	300*300	30	$\pm 0.1$	6	0.15	2.8	2.5	$\Phi 306$ *585	√
SC-30C	RT+8~200	310*280	400*330*230	30	$\pm 0.1$	0~15	0.45	2.8	2.5	605*425*490	-

### Applications



Biological sample temperature control



Viscometer constant temperature environment



Constant temperature application in hospital field



A particular chemical reaction is at a constant temperature



Cosmetic product testing

# GDH series high precision Thermostat (heating and cooling)

HIGH PRECISION CONSTANT TEMPERATURE BATH

## Functional characteristics

- Quiet: fully enclosed imported compressor, low noise of refrigeration system
- Environmental protection: The system uses environmentally friendly refrigerants
- Self-starting: the customer can set, the parameters will not change after power failure, and it will start to work by default when powered on
- Timing: working time timing function, stop working after the end
- Wide range: internal and external circulation can be switched, pump flow rate can be controlled, suitable for a variety of different needs of the experiment
- Safety: The refrigeration compressor has automatic protection functions such as overheating and overload
- High precision: temperature fluctuation  $\pm 0.01^{\circ}\text{C}$  (part  $\pm 0.02^{\circ}\text{C}$ )



## Applications



Calibrate the thermometer



calibrate the temperature sensor

## Technical Parameter

Model	Temp range (°C)	Top opening size(mm <sup>2</sup> )	Tank size (mm <sup>3</sup> )	Volume (L)	Temp fluctuation (°C)	Display Resolution(°C)	Heating power (kW)	Pump flow(L/min)	Dimensions L/W/H(mm)
GDH-2006	-20~100	180*140	260*200*140	6	$\pm 0.01$	0.001	1	0-15	455*388*845
GDH-4006	-40~100	180*140	260*200*140	6	$\pm 0.01$	0.001	1	0-15	455*388*845
GDH-2010	-20~100	180*140	260*200*200	10	$\pm 0.01$	0.001	1	0-15	455*388*845
GDH-2015	-20~100	235*160	300*250*200	15	$\pm 0.01$	0.001	1.5	0-15	455*388*845
GDH-0530	-5~100	310*280	440*325*200	30	$\pm 0.01$	0.001	2.5	0-15	625*500*900
GDH-2030	-20~100	310*280	440*325*200	30	$\pm 0.01$	0.001	2.5	0-15	625*500*900
GDH-2008W	-20~100	235*160	280*250*140	8	$\pm 0.01$	0.001	1	0-15	725*440*555

# GH series high precision thermostat (single heating)

HIGH PRECISION CONSTANT TEMPERATURE BATH

## Features

- Self-start: The parameters remain unchanged after power failure, and the customer can set the power-on state to self-start and standby
- Timing: working time timing function, stop working after the end
- Wide range: internal and external circulation can be switched, pump flow rate can be controlled, suitable for a variety of different experiments
- High precision: temperature fluctuation is  $\pm 0.1^{\circ}\text{C}$  (part  $\pm 0.02^{\circ}\text{C}$ )



## Applications



Calibrate the thermometer



calibrate the temperature sensor

## Technical Parameter

Model	Temp range (°C)	Top opening size(mm <sup>2</sup> )	Tank size (mm <sup>3</sup> )	Volume (L)	Temp fluctuation (°C)	Display Resolution(°C)	Heating power (kW)	Pumping flow (L/min)	Dimensions L/W/H(mm)
GH-15	Ambient+8~100	235*160	300*240*200	15	$\pm 0.01$	0.001	1.55	0-15	482*375*490
GH-15A	Ambient+8~200	235*160	300*240*200	15	$\pm 0.01$	0.001	1.55	cycle	482*375*490
GH-30	Ambient+8~100	310*280	400*330*230	30	$\pm 0.01$	0.001	2.5	0-15	605*425*490
GH-30A	Ambient+8~200	310*280	400*330*230	30	$\pm 0.01$	0.001	2.5	cycle	605*425*490

# DLBC series constant temperature reaction bath (heating, cooling)



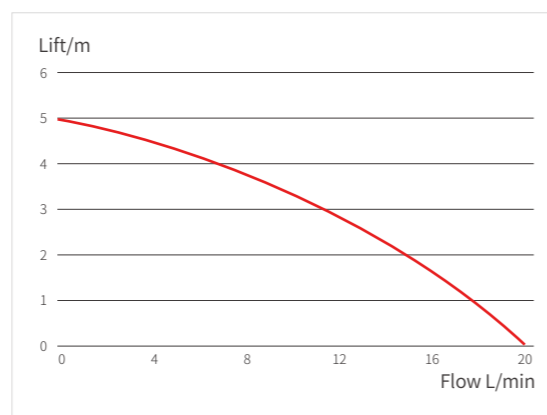
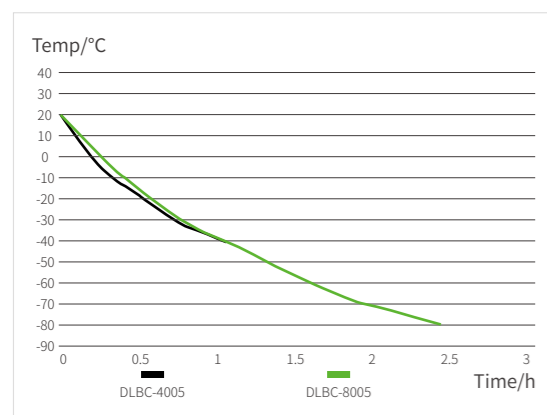
## CONSTANT-TEMPERATURE REACTION BATH

### Features

- The bottom is equipped with a heating system, which uses heating to balance refrigeration, avoiding frequent start-up of the compressor and increasing the life of the compressor
- Adopt fully enclosed compressor for refrigeration, which has the characteristics of fast cooling speed, low noise, advanced performance and reliable quality
- Intelligent PID digital temperature control, accuracy control at  $\pm 0.2^{\circ}\text{C}$
- Magnetic stirring is provided at the bottom, which can drive the secondary magnetic stirring disk at the bottom of the tank to stir the medium, so that the temperature of the medium is fully uniform, and the distance between the secondary magnetic stirring and the mixer in the flask is closer to increase the stirring force
- All parts in contact with the liquid are made of stainless steel, with anti-corrosion, anti-rust, anti-low-temperature liquid pollution functions



### Cooling curve/pump pressure flow curve



### Technical Parameter

Model	DLBC-4005	DLBC-8005	DLBC-4010	DLBC-8010	DLBC-4020	DLBC-8020	DLBC-4030	DLBC-8030	DLBC-4050	DLBC-8050	DLBC-4080	DLBC-8080
Temp range (°C)	-40~98	-83~98	-40~98	-83~98	-40~98	-83~98	-40~98	-83~98	-40~98	-83~98	-40~98	-83~98
Tank size (mm <sup>3</sup> )	230 150	230 150	290 200	290 200	290 350	290 350	290 350	290 350	350 400	350 400	500 450	500 450
Temp Accuracy (°C)	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.5	±0.5	±0.5	±0.5
Volume (L)	5	5	10	10	20	20	30	30	50	50	80	80
Heating power (kW)	1.2	1.2	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2.5	2.5
Refrigeration capacity (25°C /W)	1420~ 462	1938~ 200	2548~ 980	2900~ 230	3635~ 980	4530~ 360	4080~ 1270	4679~ 422	10256~ 2300	11200~ 1480	10860~ 2830	11670~ 1800
Overall dimension L/W/H(mm)	maximum flow (L/min)	35	35	35	35	35	35	35	70	70	70	70
		Maximum pump pressure (bar)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Overall dimension L/W/H(mm)	520	430	580	720	630	940	940	1030	760	1030	1000	1220
	350	350	450	650	520	710	710	810	610	860	800	830
	720	960	730	900	1000	1010	1010	1020	1030	1030	1100	1350
Whole machine power (kW/h)	1.3	3.19	2.6	3.8	4.8	5.9	5.2	6.1	7.6	9.8	11.4	13.8
Power supply	220V/50Hz~1						380V/50Hz~3					