

# LNEYA<sup>®</sup>

Dynamic Temperature Control systems, Refrigerated heating circulator, Refrigerant Control Unit  
Chemical synthesis process control system ,ultra-low temperature freezer, Low temperature circulator  
Plate freezer, Industrial refrigerator, Ultra-low temperature freezer, Low temperature thermostatic bath



Apply to laboratory, pilot plant and industrial production.

**LNEYA<sup>®</sup>**

**WUXI GUANYA REFRIGERATION TECHNOLOGY CO., LTD.**

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\* Due to the need for continuous improvement of products, so the appearance and specification of products contained here shall be a little different from practicality. Please understand.

\* As the brief introduction of the product is presswork, so the products' color shall be a little different from practicality. Please understand.

\* The brand mentioned in catalogue,LNEYA is the brand of wuxi guanya refrigeration technology co.,ltd. Other trademarks are hold by brand company.

**Wuxi Guanya Refrigeration Technology Co., Ltd.**

Our success comes from assiduously to help customers improve productivity

## Company profile

Wuxi Guanya Refrigeration Technology Co., Ltd. Specialized in refrigeration equipment, Ultra-low temperature freezer, cooling and heating temperature control system, heating circulation system, explosion-proof electric equipment. Automatic integrated disparate control system, laboratory apparatus. We are the technology leader for high precision thermoregulation solutions in Research and Development Industry. Our products ensure precise temperature control throughout the whole world in laboratories, pilot plants and production processes. Our product range offers temperature control solutions for applications from -152 to +350°C.

We make market and user need oriented products, focusing on science and technology applying international advanced technology, endlessly get rid of the stale and bring forward the fresh following the market step & meet market demand. The company always insists on standardised management in accordance with ISO9001-2008 international quality certification requirement from product design, purchase and selection of components, to production process flow, packaging and transportation etc, try to keep improving products, and keep reasonable price and satisfactory service.

Company Name	Wuxi Guanya Refrigeration Technology CO.,Ltd
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Capital	20 million RMB
Number of employees	70 By May. 2016
President	Jack Yan



## The development process of the company

- 2006** Start production of refrigeration and heating system equipments.
- 2007** Developed the first generation of refrigeration and heating thermostat and establish the LNEYA CO., LTD.
- 2008** Developed the first generation of refrigeration and dynamic temperature control system.
- 2009** Developed the second generation of refrigeration and heating thermostat.
- 2010** Established WUXI GUANYA REFRIGERATION TECHNOLOGY CO., LTD. Developed the second generation of refrigeration and heating dynamic temperature control system. Developed the refrigeration and heating dynamic temperature control system & low temperature freezer for industry use.
- 2011** Developed new technology with single compressor having multiple circulation systems (can reach to -80 degree with single compressor) Upgraded the second generation of refrigeration and heating dynamic temperature control system.
- 2012** Single compressor having multiple circulation systems is applied in production of SUNDI-4, SUNDI-5, SUNDI-6, and SUNDI-7, SUNDI-8 and LT series. Upgraded the second generation of refrigeration and heating dynamic temperature control system for the second time and developing the third generation of refrigeration and heating dynamic temperature control system.
- 2013** Developed new product one operating multi refrigeration and heating temperature control system(the third generation of refrigeration and heating dynamic temperature control system).At the same time testing the large capacity of ultra-low temperature freezer.
- 2014** Developed with large capacity of ultra-low temperature freezer which used for industrial production,new goods will be research.
- 2015** Test ultra-low temperature freezer & Plate freezer.
- 2016** New products launch



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# Dynamic Temperature Control systems

## Typical Applications

- Reactor Systems Autoclaves
- Pilot Systems
- Mini Plant Systems
- Scale up for Operational Development
- Double wall reactors
- Advanced-Flow Reactors
- Distillation Systems
- Material Testing
- Combinational Chemistry
- Semiconductor Industry
- Vacuum Chambers

## Advantages & Functions

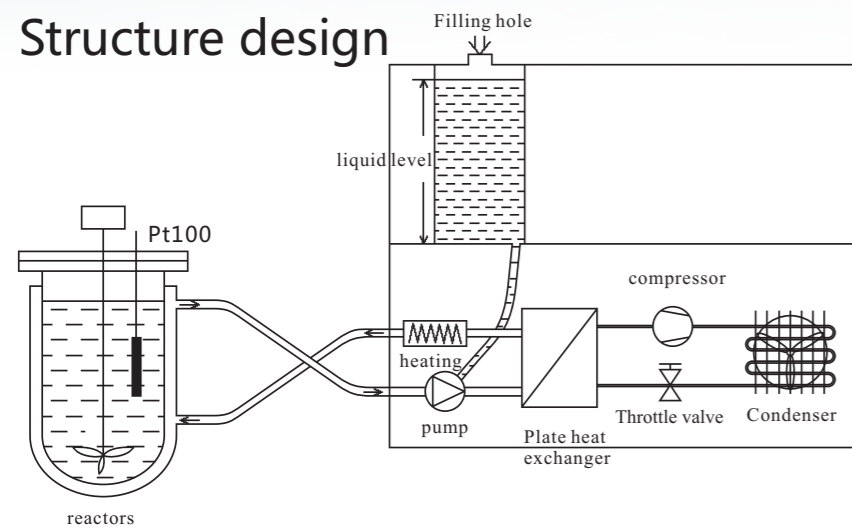
- Working temperatures from -100°C to +350°C
- Previously unachievable performance
- Intelligent temperature control
- Maximum process stability and reproducibility
- Adop plate heat exchanger, Pipeline heating, the fastest heating and cooling rates.
- High cooling power from 0.5 to 1200kW
- Large temperature range without fluid change
- Closed system, extend thermal fluid lifetime
- Incredibly compact
- 7-inch, 10-inch color TFT touch screen display
- Comprehensive warning and safety functions
- Rapid cooling down from high temperature (from 300 °C)
- Use magnetic drive pump, solve the circulation pump leakage



Scan QR code for more information

- TFT Touch**  
7/10" Colour Display
- Easy Control**  
User friendly operation
- Protection+**  
Multi-species safety strains

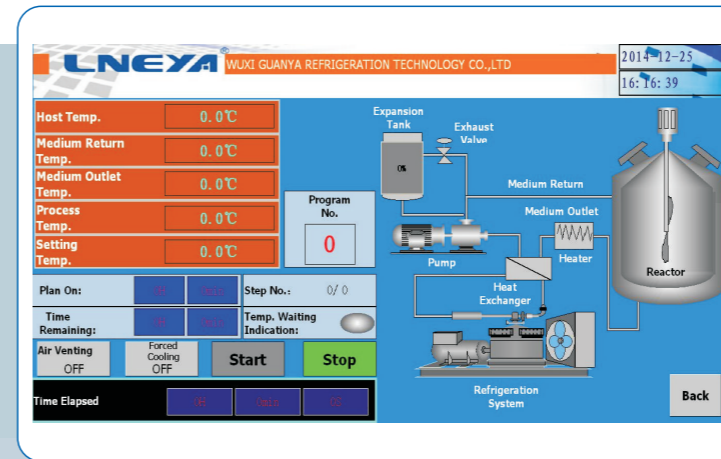
## Structure design



- Only the heat conduction medium in the expansion container touches the oxygen in the air. (The container temperature is limited to 60°C).
  - No volatilization of the heat conducting medium at high temperature.
  - No need to change the heat conducting medium.
- Continuous control of the temperature of the below range can be done without rising the pressure: -80°C~190°C, -70°C~220°C, -88°C~170°C, -55°C~250°C, -30°C~300°C.

# Display function

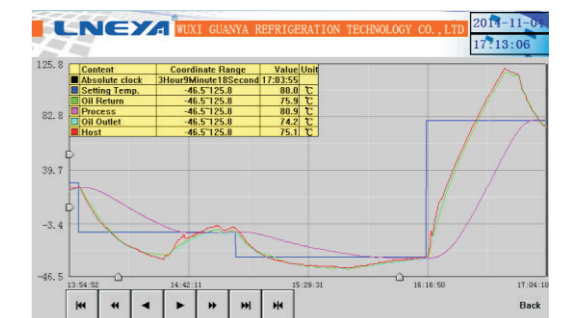
Cooling heating Temperature Control System Display – The Refrigeration system's multi – image display displays various information



1. Displays all the kind of process control temperatures.
2. Shows the liquid level of the heat conducting medium in the expansion vessel.
3. Shows indication for refrigeration system working.
4. Shows indication for heater working.
5. Shows indication for circulation pump working.
6. Displays the temperature control ( materials temperature control pattern, heat conducting medium temperature control ).
7. The temperature upper limit, lower limit control can be set.
8. The temperature difference between jacket & reactor material can be set.
9. Shows the alarm to add the liquid when it is empty.
10. The refrigeration compressor can be set to operate manually or automatically.
11. Simple Menu to use.

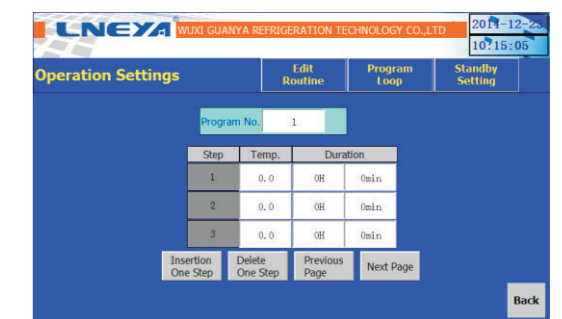


## Displays Clear Curves



Can enlarge or shrink the curve and support U disk data exporting and export file as list form.

## Simple way to Set Temperature Profiles

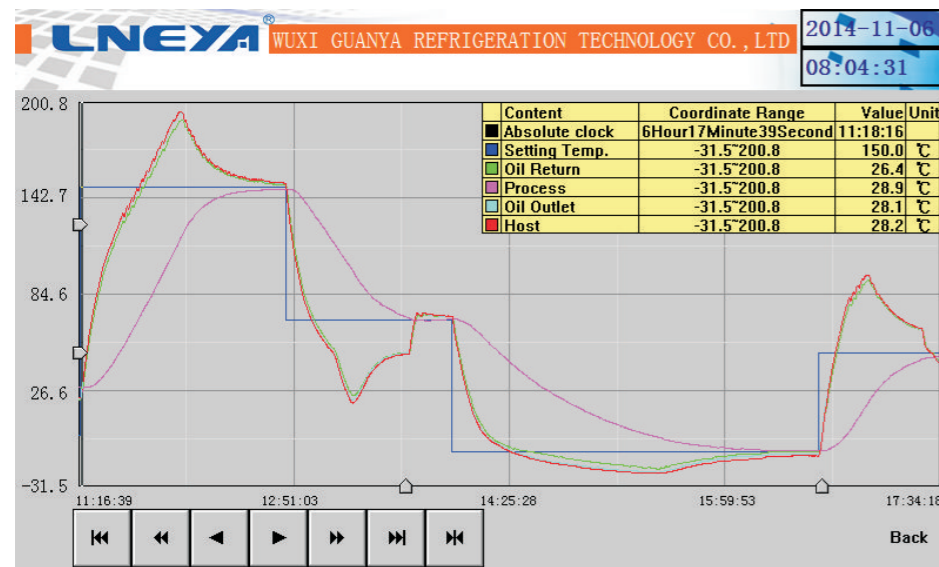
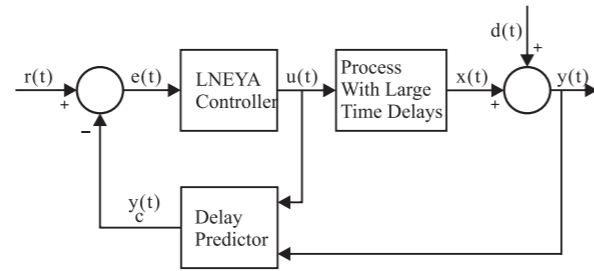


## Shows detail information of Alarm Record

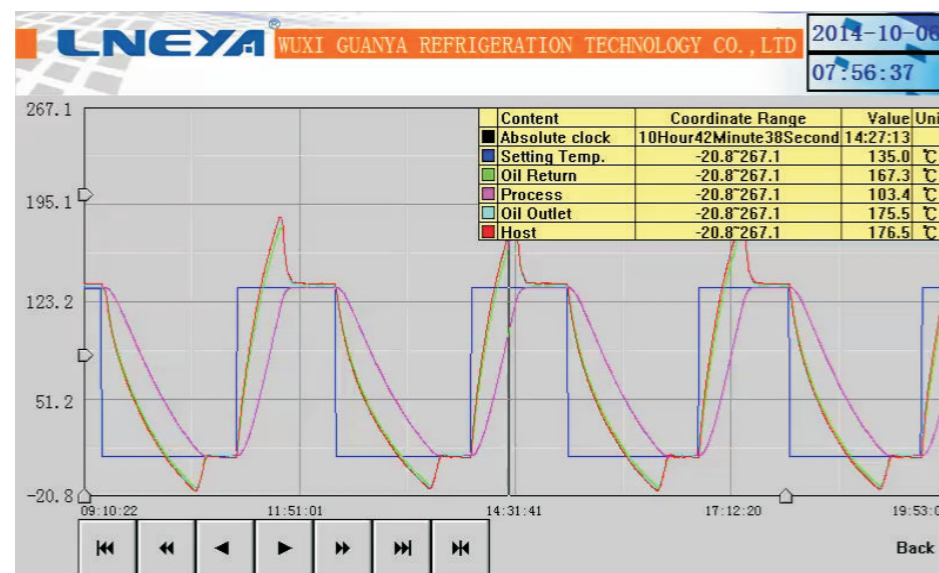
Date	Time	Value	Description	End Time
2014/12/23	10:11:12	350.000	Process Temp. sensor circuit	
2014/12/23	10:10:47	350.000	Process Temp. sensor circuit	
2014/12/23	10:02:10	350.000	Process Temp. sensor circuit	
2014/12/23	14:44:00	350.000	Process Temp. sensor circuit	
2014/12/22	14:42:18	350.000	Process Temp. sensor circuit	
2014/12/22	14:20:15	4	Communication failure	2014/12/22 14:20:27
2014/12/22	14:19:24	4	Communication failure	2014/12/22 14:19:35
2014/12/22	13:56:03	4	Communication failure	2014/12/22 13:56:15
2014/12/22	13:45:41	350.000	Process Temp. sensor circuit	
2014/12/22	13:45:17	8	Communication failure	2014/12/22 13:45:20
2014/12/22	13:44:08	350.000	Process Temp. sensor circuit	2014/12/22 13:45:23
2014/12/22	13:12:22	350.000	Process Temp. sensor circuit	
2014/12/22	13:09:22	350.000	Process Temp. sensor circuit	

## Process Control

Change the control settings of the method, the response as soon as possible in the process of the system lags behind, be the smallest system overshoot. Controlled by two PID (PID is a variable in each group) control loop structure, known as the two sets of control loops: the main circuit and from the circuit, the main control loop from the loop output as the settings. System with feedforward with PV, the master PID loop operation results of the PV output and feedforward signals as the composite of the settings from the control loop, through such control of the temperature gradient to ensure the accuracy of temperature control system.

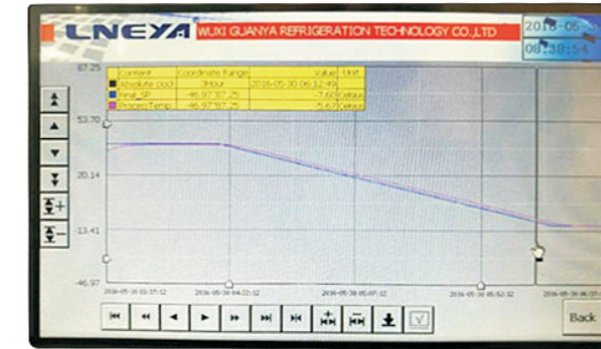


## High repeatability of results control



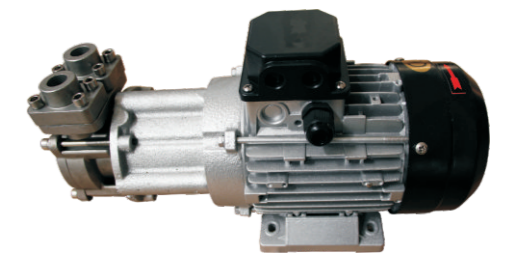
## Reactor material temperature ramp slope of control effect.

Test Conditions: SUNDI-555 applied to 30L reactor with 25L heat transfer fluid, large temperature hysteresis control effect is close to a straight line.



## Circulation Pump

High temperature resistant low temperature magnetic drive pump or a leak-free high and low temperature shield-driven pump, reduce the risk of system leakage. At the same time the system has the advantages of low noise and big traffic flow.



## Electronic expansion valve

Wide temperature range of dynamic temperature control system with electronic expansion valve produced by Emerson company, It can monitor and adjust the number of steps into the motor, precise control the liquid volume from the refrigerant, Improve control accuracy.



## Configuration software (Optional)

All dynamic temperature control system SUNDI-Series can be connected with the computer. You can install and record the picture of display on the computer via the configuration software.

- Communication distance less than 200m.
- Easily temperature setting
- Real time control screen
- Curve Records
- Program selection
- Alarm screen recording



## Security

Many additional features to ensure the safe operation of the system. For the operation to run not normally appear in the alarm in time and displayed on the touch screen. Phase sequence, leakage protection, refrigeration system high and low voltage protection, overload the pump, compressor overload, high and low level, two independent over-temperature protection, water protection, protection of the circulation line shut.

## Connecting Pipe

Items	Temper range	Interface Dimensions		
Fluorine rubber hose	-30~200	Φ12*16	Φ16*22	Φ20*26
Metal thermal insulation pipe	-60~250	DN15	DN20	DN25 M24*1.5 M30*1.5 M38*1.5



## Data interface and software

Standard configuration:

- 1、PT100 Temperature sensor input interface
- 2、USB Export data interface
- 3、RS485 communication interface (MODBUS protocol)
- 4、Alarm output

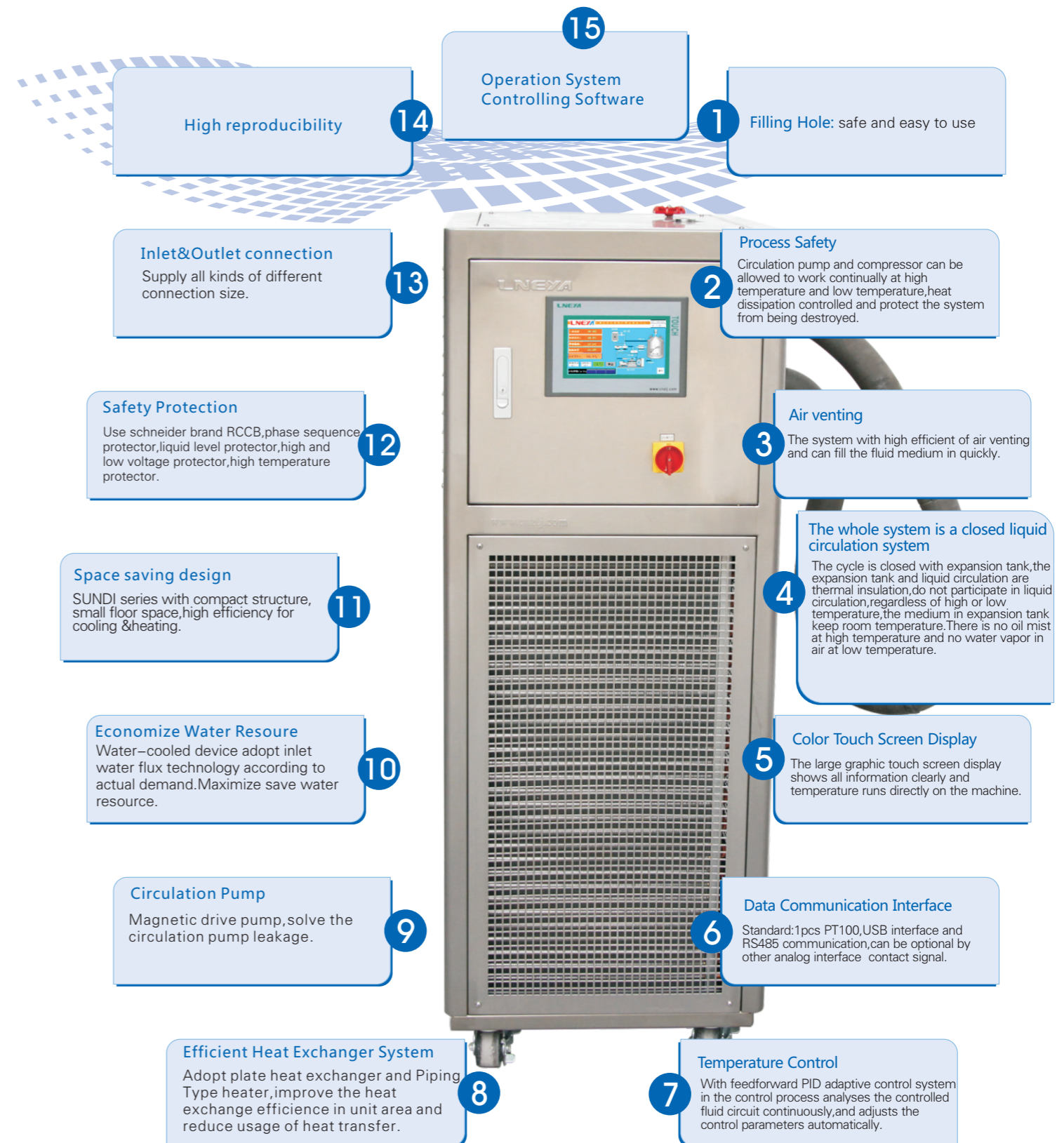
Optional

- 1、4~20mA Input interface for temperature measurement
- 2、4~20mA Input interface for setting temperature
- 3、Ethernet interface
- 4、RS232 communication interface (MODBUS protocol)
- 5、PC operation software (Must choose Ethernet interface)

Optional: External touch screen

## LNEYA Dynamic Temperature Control systems in practice

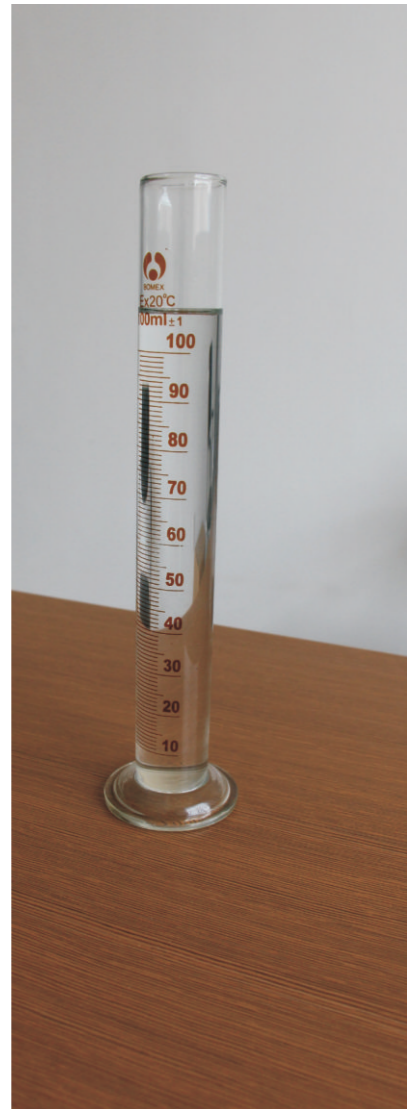
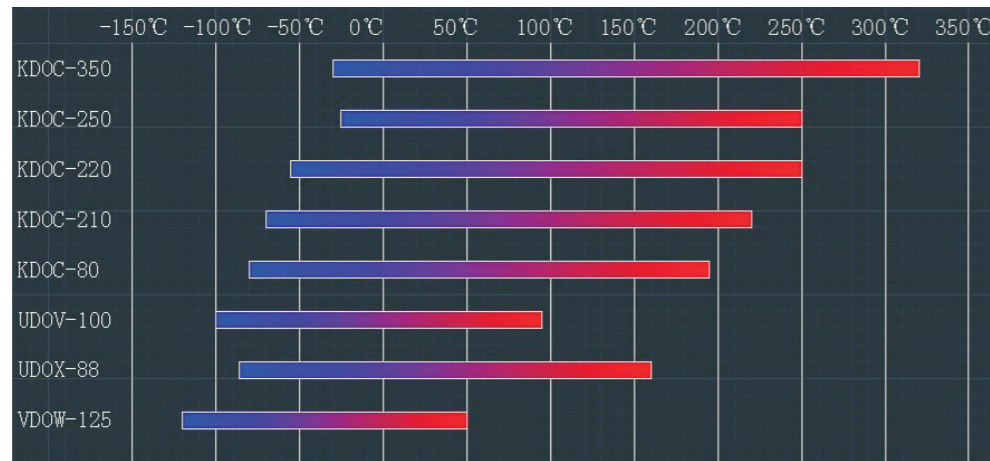
In comparison to other thermal control systems, Dynamic Temperature Control systems differ sometimes considerably in their thermodynamic characteristics. In practice Dynamic Temperature Control systems offer definite advantages in your work: noticeably shorter heating and cooling times, better stability and reproducibility through the entire process chain, greater safety for expensive glass reactors and the contained substances, together with simple and easy operation.



# Heat Conduction Medium

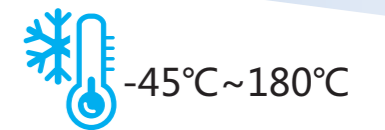
It is important to choose the suitable heat conduction medium, to make sure that system works stably. To choose the suitable medium according to the working temperature of the system is essential.

The package kinds of LNEYA heat conduction medium are 10L, 25L, 30L, 200L. when ordering the heat conduction medium, the heat conduction medium for constant temperature control system, channel, and external circulation equipments.



Model	KDOC-350	KDOC-250	KDOC-220	KDOC-210	KDOC-80	UDOV-100
Temperature Range °C	-30~320	-25~250	-55~250	-70~220	-85~195	-105~100
Color	Colorless	Colorless	Colorless	Colorless	Colorless	Colorless
Smell	No harsh	No harsh	No harsh	No harsh	No harsh	Kerosene
Density kg/m <sup>3</sup>	1000	1000	935	880	820	750
Freeze point °C	-60	-60	-90	-100	-100	-134
Flash point °C	280	200	211	134	87	9
Boiling point °C	330	260	255	230	200	105
Flammable Temperature	No data	No data	No data	No data	No data	No data
Decomposition Temperature	No data	No data	No data	No data	No data	No data
Main Composition	$(CH_3)_3SiO[SiO(CH_3)_2]_nSi(CH_3)_3$					alkyl instead of aromatic hydrocarbon
Harmful	No harmful					
Ecotoxicological Toxicity	It is no harmful for aquatic organisms					
Personal Protection	Avoid oral, avoid contact with eyes: If contact with eyes, clean with clear water repeatedly.					
Skin	Clean before a meal and off duty properly.					
Proper fire extinguishing media	Use dry chemical, foam or water spray when big fire; Use co <sub>2</sub> , dry chemical, water mist when small fire.					
Chemical Reaction	Will not incur harmful gathering reaction, can react with strong oxidant.					

## SUNDI -320/420W/430W



Model	SUNDI-320	SUNDI-420W	SUNDI-430W
Temperature range °C	-30°C~180°C	-45°C~180°C	-45°C~180°C
Control Mode	Feedforward PID +Our special dynamic control calculation,PLC controller		
Temp. control	Option: process temperature control or jacket oil temperature control		
Temp. difference	Set or control the temperature difference between jacket oil and raw material process		
Program Editor	20 programs, each program can edit 45 steps.		
Communication protocol	MODBUS RTU Protocol, RS 485 Interface		
Temperature feedback	Heat-conducting medium :PT100		Raw material process:PT100
Temp. accuracy	±1°C	±1°C	±1°C
Heating power	2kW	2kW	3kW
Cooling capacity	180°C	1.5kW	1.8kW
	50°C	1.5kW	1.8kW
	0°C	1.5kW	1.8kW
	-5°C	0.9kW	1.2kW
	-20°C	0.6kW	1kW
		0.3kW	0.5kW
Circulation pump	Max10L/min 0.8bar	Max10L/min 0.8bar	Max20L/min 2bar
Compressor	Embraco	Embraco	France
Expansion valve	Danfoss	Danfoss	Danfoss
Evaporator	KAORI Plate heat exchanger		
Operation Panel	7-inch color touch screen controller,temperature curve record,data export to excel format.		
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.		
Closed circulation system	The whole system is full closed circulation,there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running.The system will supplement oil automatically at low temperature.		
Refrigerant	R404A	R404A	R404A
Connection size	DN-15 or M24*1.5	DN-15 or M24*1.5	DN-15 or M24*1.5
Water-cooled type W (cooling water at 20°C)		450L/H 1.5bar~4bar	550L/H 1.5bar~4bar
Dimension	350*560*750mm	350*560*750mm	400*600*1150mm
Weight	55kg	55kg	85kg
Power	AC 220V 50HZ 2.9kW(max)	AC 220V 50HZ 3.3kW(max)	AC 380V 50HZ 4.5kW(max)
Case material	SUS 304	SUS 304	SUS 304
Optional	Optional Ethernet interface , configure PC operating software		
Optional	Optional outside touch screen display controller (separated),the communication line distance is 10 meter.		
Optional power	Optional power100V 50HZsingle-phase,110V 60HZ single-phase, 230V 60HZ single-phase, 220V 60HZ three-phase, 440V~480V 60HZ three-phase		



## SUNDI -10°C ~ 200°C



Model	SUNDI-125	SUNDI-135W SUNDI-135	SUNDI-155W SUNDI-155	SUNDI-170W SUNDI-170	SUNDI-1A10W SUNDI-1A10	SUNDI-1A15W SUNDI-1A15
Temperature range °C	-10°C~200°C	-10°C~200°C	-10°C~200°C	-10°C~200°C	-10°C~200°C	-10°C~200°C
Control Mode	Feedforward PID +Our special dynamic control calculation, PLC controller					
Temp. control	Option: process temperature control or jacket temperature control					
Temp. difference	Set or control the temperature difference between jacket and material process					
Program Editor	20 programs, each program can edit 45 steps.					
Communication protocol	MODBUS RTU Protocol, RS 485 Interface					
Temperature feedback	Jacket:PT100 Material process:PT100					
Temp. accuracy	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C
Heating capacity	2.5kW	3.5kW	5.5kW	7kW	10kW	15kW
Cooling capacity	200°C	2.5kW	3.5kW	5.5kW	7kW	10kW
	0°C	2.5kW	3.5kW	5.5kW	7kW	10kW
	-10°C	1.5kW	2.1kW	3.3kW	4.2kW	6kW
Circulation pump	Max20L/min 2bar	Max35L/min 2bar	Max50L/min 2bar	Max50L/min 2bar	Max75L/min 2.5bar	Max75L/min 2.5bar
Compressor	Tecumseh	Tecumseh	Copeland	Copeland	Copeland	Copeland
Expansion valve	Sanhua	Sanhua	Sanhua	Danfoss	Danfoss	Danfoss
Oil separator	LNEYA	LNEYA	LNEYA	LNEYA	LNEYA	LNEYA
Evaporator	KAORI Plate heat exchanger					
Operation Panel	Optional 7-inch color touch screen controller,temperature curve record,data export to excel format.					
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection,high temperature protection and temperature fault protection.					
Closed circulation system	The whole system is full closed circulation,there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running.The system will supplement oil automatically at low temperature.					
Refrigerant	R-404A	R-404A	R-404A	R-404A	R-404A	R-404A
Connection size	DN15 or M24*1.5	DN20 or M30*1.5	DN20 or M30*1.5	DN20 or M30*1.5	DN20 or M30*1.5	DN25 or M38*1.5
Water-cooled type W (cooling water at 20°C)		800L/H 1.5bar~4bar	1000L/H 1.5bar~4bar	1200L/H 1.5bar~4bar	1600L/H 1.5bar~4bar	2000L/H 1.5bar~4bar
	air-cooled	400*600*1150	500*680*1450	500*680*1450	500*680*1250	650*700*1650
Weight	water-cooled	135kg	160kg	205kg	250kg	280kg
	air-cooled	115kg	165kg	185kg	230kg	300kg
Power	AC 220V 50HZ 3.6kW(max)	AC 220V 50HZ 5.6kW(max)	AC 220V 50HZ 7.5kW(max)	AC 380V 50HZ 10kW(max)	AC 380V 50HZ 13kW(max)	AC 380V 50HZ 20kW(max)
Case material	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304
Optional	Optional Ethernet interface , configure the computer operating software					
Optional	Optional outside touch screen display controller (separated),the communication line distance is 10 meter.					
Optional power	100V 50HZ three-phase, 110V 60HZ three-phase, 230V 60HZ single-phase, 220V 60HZ three-phase, 440V~480V 60HZ three-phase					

## SUNDI-1 series



## SUNDI -10°C ~ 200°C

Model	SUNDI-1A25W	SUNDI-1A38W	SUNDI-1A60W	SUNDI-1A95W	SUNDI-1A130W
Temperature range °C	-10°C ~ 200°C				
Controller	Feedforward PID +Our special dynamic control calculation, PLC controller				
Temp. control	Option: process temperature control or jacket oil temperature control				
Temp. difference	Set or control the temperature difference between jacket oil and raw material process				
Program Editor	20 programs, each program can edit 45 steps.				
Communication	MODBUS RTU Protocol, RS 485 Interface				
Temperature feedback	Heat-conducting medium feedback PT100,(oil outlet temperature,oil inlet temperature and heater temperature) , Three temperature measuring points.				
Process Temperature feedback	Raw material process feedback PT100 or 4 ~ 20mA input (optional)				
Temp. accuracy	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C
Heating capacity	25kW	38kW	60kW	95kW	130kW
Cooling capacity	200°C	25kW	38kW	60kW	95kW
	0°C	25kW	38kW	60kW	95kW
	-10°C	15kW	22.8kW	36kW	57kW
Circulation pump	Max150L/min 2.5bar	Max250L/min 2.5bar	Max250L/min 2.5bar	Max250L/min 2.5bar	Max400L/min 2.5bar
Compressor	Copeland	Copeland	Copeland	Copeland	Copeland
Evaporator	Shell and-tube evaporator				
Expansion valve	Emerson				
Operation panel	Optional 7-inch color touch screen controller,temperature curve record,data export to excel format.				
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.				
Closed circulation system	The whole system is full closed circulation,there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running.The system will supplement oil automatically at low temperature.				
Refrigerant	R-404A				
Connection size	DN25 PN10	DN32 PN10	DN40 PN10	DN40 PN10	DN40 PN10
Water-cooled type W (cooling water at 30°C)	8m³/h 1.5bar~4bar	10m³/h 1.5bar~4bar	15m³/h 1.5bar~4bar	20m³/h 1.5bar~4bar	28m³/h 1.5bar~4bar
	Dimension	700 × 800 × 1650	1000 × 950 × 1650	2000 × 1000 × 1750	2000 × 1000 × 1750
Weight	640kg	900kg	1150kg	1400kg	1700kg
Power	AC380V 50HZ 32kW(max)	AC380V 50HZ 48kW(max)	AC380V 50HZ 75kW(max)	AC380V 50HZ 125kW(max)	AC380V 50HZ 155kW(max)
	Case material	SUS 304	SUS 304	SUS 304	SUS 304
Optional	Optional Ethernet interface , configure the computer operating software				
Optional	Optional outside touch screen display controller (separated), the communication line distance is 10 meter.				
Optional	Optional explosion-proof touch screen control system (ExdellBT4), the communication line distance is 15 meter.				
Optional power	440V~480V 60HZ three-phase source				



SUNDI -25°C ~ 200°C  
SUNDI -25°C ~ 300°C



Model	SUNDI-225	SUNDI-235W SUNDI-235	SUNDI-255W SUNDI-255	SUNDI-270W SUNDI-270	SUNDI-2A10W SUNDI-2A10	SUNDI-2A15W SUNDI-2A15
Temperature range °C	-25°C~200°C					
Control Mode	Feedforward PID +Our special dynamic control calculation, PLC controller					
Temp. control	Option: process temperature control or jacket oil temperature control					
Temp. difference	Set or control the temperature difference between jacket oil and raw material process					
Program Editor	20 programs, each program can edit 45 steps.					
Communication protocol	MODBUS RTU Protocol, RS 485 Interface					
Temperature feedback	Heat-conducting medium:PT100 Raw material process:PT100					
Temp. accuracy	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C
Heating power	2.5kW	3.5kW	5.5kW	7kW	10kW	15kW
Cooling capacity	200°C	2.5kW	3.5kW	5.5kW	7kW	10kW
	100°C	2.5kW	3.5kW	5.5kW	7kW	10kW
	20°C	2.5kW	3.5kW	5.5kW	7kW	10kW
	-5°C	2kW	3kW	4.5kW	6.6kW	8kW
	-20°C	1.0kW	1.8kW	2.8kW	3.8kW	4.6kW
Circulation pump	Max35L/min 2bar	Max35L/min 2bar	Max50L/min 2bar	Max50L/min 2bar	Max50L/min 2bar	Max110L/min 2.5bar
Compressor	Copeland	Copeland	Copeland	Copeland	Copeland	Copeland
Expansion valve	Danfoss	Danfoss	Danfoss	Danfoss	Danfoss	Danfoss
Oil separator	LNEYA	LNEYA	LNEYA	LNEYA	LNEYA	LNEYA
Evaporator	KAORI Plate heat exchanger					
Operation Panel	7-inch color touch screen controller,temperature curve record,data export to excel format.					
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.					
Closed circulation system	The whole system is full closed circulation,there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running.The system will supplement oil automatically at low temperature.					
Connection size	DN15 or M24*1.5	DN20 or M30*1.5	DN20 or M30*1.5	DN20 or M30*1.5	DN20 or M30*1.5	DN25 or M38*1.5
Refrigerant	R-404A					
Water-cooled type W (cooling water at 20°C)		800L/H 1.5bar~4bar	1000L/H 1.5bar~4bar	1200L/H 1.5bar~4bar	1600L/H 1.5bar~4bar	2000L/H 1.5bar~4bar
Dimension	water-cooled	400 × 600 × 1150	500 × 680 × 1250	500 × 680 × 1250	500 × 680 × 1250	550 × 700 × 1350
	air-cooled	400 × 600 × 1150	500 × 680 × 1450	500 × 680 × 1450	500 × 680 × 1450	650 × 700 × 1650
Weight	water-cooled	115kg	135kg	160kg	205kg	280kg
	air-cooled	115kg	165kg	285kg	230kg	300kg
Power	AC220V 50HZ 4kW(max)	AC380V 50HZ 6kW(max)	AC380V 50HZ 8kW(max)	AC380V 50HZ 11kW(max)	AC380 V50HZ 14kW(max)	AC380 V50HZ 21kW(max)
Case material	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304
Optional	Optional Ethernet interface , configure PC operating software					
Optional	Optional outside touch screen display controller (separated),the communication line distance is 10 meter.					
Optional	Extend temperature range to -25°C~250°C Model will add T					
Optional	Extend temperature range to -25°C~300°C Model will add V					
Optional power	220V 60HZ three-phase, 440V~480V 60HZ three-phase					

## SUNDI-2 series



SUNDI -25°C ~ 200°C  
SUNDI -25°C ~ 300°C

Model	SUNDI-2A25W	SUNDI-2A38W	SUNDI-2A60W	SUNDI-2A95W	SUNDI-2A130W
Temperature range °C	-25°C ~ 200°C				
Controller	Feedforward PID +Our special dynamic control calculation, PLC controller				
Temp. control	Process temperature control mode				
Program Editor	20 programs, each program can edit 45 steps.				
Communication	MODBUS RTU Protocol, RS 485 Interface				
Temperature feedback	Heat-conducting medium feedback PT100,(oil outlet temperature,oil inlet temperature and heater temperature) , Three temperature measuring points.				
Process Temperature feedback	Raw material process feedback PT100 or 4~20mA input (optional)				
Temp. accuracy	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C
Heating power	25kW	38kW	60kW	95kW	130kW
Cooling capacity	200°C	25kW	38kW	60kW	95kW
	100°C	25kW	38kW	60kW	95kW
	20°C	25kW	38kW	60kW	95kW
	-5°C	19kW	30kW	46kW	70kW
	-20°C	12kW	16kW	22kW	32kW
Circulation pump	Max110L/min 2.5bar	Max150L/min 2.5bar	Max250L/min 2.5bar	Max250L/min 2.5bar	Max250L/min 2.5bar
Compressor	Copeland	Copeland	Copeland	Copeland	Copeland
Evaporator	KAORI Plate heat exchanger				
Oil separator	Emerson				
Expansion tank	Emerson				
Operation panel	Optional 7-inch color touch screen controller,temperature curve record,data export to excel format.				
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.				
Closed circulation system	The whole system is full closed circulation,there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running.The system will supplement oil automatically at low temperature.				
Refrigerant	R-404A				
Connection size	DN25 PN10	DN32 PN10	DN40 PN10	DN40 PN10	DN40 PN10
Water-cooled type W (cooling water at 30°C)	6m³/h 1.5bar~4bar	10m³/h 1.5bar~4bar	14m³/h 1.5bar~4bar	20m³/h 1.5bar~4bar	28m³/h 1.5bar~4bar
Dimension	700 × 800 × 1650	1000 × 950 × 1650	2000 × 1000 × 1750	2000 × 1000 × 1750	2300 × 1450 × 1750
Weight	480kg	750kg	1000kg	1250kg	1580kg
Power	AC380V 50HZ 34kW(max)	AC380V 50HZ 51kW(max)	AC380V 50HZ 78kW(max)	AC380V 50HZ 120kW(max)	AC380 V50HZ 160kW(max)
Case material	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304
Optional	Optional Ethernet interface , configure the computer operating software				
Optional	Optional outside touch screen display controller (separated), the communication line distance is 10 meter.				
Optional	Optional explosion-proof touch screen control system (ExdellBT4), the communication line distance is 15 meter.				
Optional	The temperature range -25°C ~ 250°C				
Optional	The temperature range -25°C ~ 300°C				
Optional	Water condenser use plate heat exchanger (request for high quality water)				
Optional power	220V 60HZ three-phase, 440V~480V 60HZ three-phase				



# SUNDI-4 series



SUNDI -45°C ~ 250°C

Model	SUNDI-4A25W	SUNDI-4A38W	SUNDI-4A60W	SUNDI-4A95W	SUNDI-4A130W	
Temperature range °C	-45°C ~ 250°C					
Controller	Feedforward PID +Our special dynamic control calculation, PLC controller					
Temp. control	Process temperature control mode					
Program Editor	20 programs, each program can edit 45 steps.					
Communication	MODBUS RTU Protocol, RS 485 Interface					
Temperature feedback	Heat-conducting medium feedback PT100,(oil outlet temperature,oil inlet temperature and heater temperature) , Three temperature measuring points.					
Process Temperature feedback	Raw material process feedback PT100 or 4 ~ 20mA input (optional)					
Temp. accuracy	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C	
Heating power	25kW	38kW	60kW	95kW	130kW	
Cooling capacity	250°C	25kW	38kW	60kW	95kW	130kW
	100°C	25kW	38kW	60kW	95kW	130kW
	20°C	25kW	38kW	60kW	95kW	130kW
	0°C	25kW	38kW	60kW	95kW	130kW
	-20°C	16kW	26kW	34kW	45kW	60kW
	-35°C	4.7kW	9kW	11.5kW	15kW	18.5kW
Circulation pump	Max110L/min 1.5bar	Max150L/min 2.5bar	Max250L/min 2.5bar	Max250L/min 2.5bar	Max250L/min 2.5bar	
Compressor	Copeland	Copeland	Copeland	Bock	Bock	
Evaporator	KAORI Plate heat exchanger					
Oil separator	Emerson					
Expansion valve	Emerson					
Operation panel	Optional 7-inch color touch screen controller,temperature curve record,data export to excel format.					
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.					
Closed circulation system	The whole system is full closed circulation,there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running.The system will supplement oil automatically at low temperature.					
Refrigerant	R-404A					
Connection size	DN25 PN10	DN32 PN10	DN40 PN10	DN40 PN10	DN40 PN10	
Water-cooled type W (cooling water at 30°C)	7m³/h 1.5bar~4bar	12m³/h 1.5bar~4bar	17m³/h 1.5bar~4bar	24m³/h 1.5bar~4bar	32m³/h 1.5bar~4bar	
water-cooled condenser	Shell and tube exchanger (standard)					
Dimension	700 × 800 × 1650	1000 × 950 × 1650	2000 × 1000 × 1750	2300 × 1450 × 1750	2300 × 1450 × 1750	
Weight	680kg	950kg	1300kg	1550kg	1880kg	
Power	AC380V 50HZ 36kW(max)	AC380V 50HZ 53kW(max)	AC380V 50HZ 80kW(max)	AC380V 50HZ 122kW(max)	AC380V 50HZ 165kW(max)	
Case material	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304	
Optional	Optional Ethernet interface , configure the computer operating software					
Optional	Optional outside touch screen display controller (separated), the communication line distance is 10 meter.					
Optional	Optional explosion-proof touch screen control system (ExdellBT4), the communication line distance is 15 meter.					
Optional	Water condenser use plate heat exchanger ( request for high quality water )					
Optional power	220V 60HZ three-phase,440V-480V 60HZ three-phase					



SUNDI -50°C ~ 250°C

Model	SUNDI-525W N	SUNDI-535W N SUNDI-535 N	SUNDI-555W SUNDI-555	SUNDI-575W SUNDI-575	SUNDI-5A10W SUNDI-5A10	SUNDI-5A15W
Temperature range °C	-50°C~250°C	-50°C~250°C	-50°C~250°C	-50°C~250°C	-50°C~250°C	-50°C~250°C
Control Mode	Feedforward PID +Our special dynamic control calculation, PLC controller					
Temp. control	Option: process temperature control or jacket oil temperature control					
Temp. difference	Set or control the temperature difference between jacket oil and raw material process					
Program Editor	20 programs, each program can edit 45 steps.					
Communication protocol	MODBUS RTU Protocol, RS 485 Interface					
Temperature feedback	Heat-conducting medium:PT100 Raw material process:PT100					
Temp. accuracy	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C
Heating power	2500W	3500W	5500W	7500W	10000W	15000W
Cooling capacity	250°C	2000W	3500W	5000W	7000W	10000W
	100°C	2000W	3500W	5000W	7000W	10000W
	20°C	2000W	3500W	5000W	7000W	10000W
	0°C	1800W	3000W	5000W	7000W	10000W
	-20°C	850W	1500W	2850W	4200W	6000W
	-40°C	250W	450W	900W	1500W	3750W
Circulation pump	Max20L/min 1bar	Max35L/min 1bar	Max50L/min 1.5bar	Max75L/min 1.5bar	Max110L/min 1.5bar	Max110L/min 1.5bar
Compressor	Tecumseh	Copeland	Copeland	Copeland	Copeland	Copeland
Expansion valve	Danfoss	Danfoss	Danfoss	Danfoss	Danfoss	Danfoss
Oil separator	Emerson	Emerson	Emerson	Emerson	Emerson	Emerson
Evaporator	KAORI Plate heat exchanger					
Operation Panel	7-inch color touch screen controller,temperature curve record, data export to excel format.					
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.					
Closed circulation system	The whole system is full closed circulation,there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running.The system will supplement oil automatically at low temperature.					
Connection size	DN15 or M24*1.5	DN20 or M30*1.5	DN20 or M30*1.5	DN20 or M30*1.5	DN20 or M30*1.5	DN25 or M38*1.5
Water-cooled type W (cooling water at 20°C)	600L/H 1.5bar~4bar	800L/H 1.5bar~4bar	1500L/H 1.5bar~4bar	1800L/H 1.5bar~4bar	2600L/H 1.5bar~4bar	3200L/H 1.5bar~4bar
Dimension	water-cooled	400*600*1150 mm	550*700*1350 mm	550*700*1350 mm	550*700*1350 mm	550*700*1350 mm
	air-cooled		550*700*1450 mm	550*700*1450 mm	550*700*1450 mm	650*700*1650 mm
Weight	water-cooled	160kg	185kg	245kg	285kg	320kg
	air-cooled		200kg	280kg	320kg	360kg
Power	AC 220V 50HZ 4.5kW(max)	AC 380V 50HZ 5.5kW(max)	AC 380V 50HZ 9kW(max)	AC 380V 50HZ 11.5kW(max)	AC 380V 50HZ 16kW(max)	AC 380V 50HZ 23kW(max)
Case material	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304
Optional	Optional Ethernet interface , configure PC operating software					
Optional	Optional outside touch screen display controller (separated),the communication line distance is 10 meter.					
Optional power	220V 60HZ three-phase, 440V~480V 60HZ three-phase					

 SUNDI -60°C~200°C



Model	SUNDI-625W	SUNDI-635WN SUNDI-635N	SUNDI-655W SUNDI-655	SUNDI-675W SUNDI-675	SUNDI-6A10W SUNDI-6A10	SUNDI-6A15W
Temperature range °C	-60°C~200°C	-60°C~200°C	-60°C~200°C	-60°C~200°C	-60°C~200°C	-60°C~200°C
Control Mode	Feedforward PID +Our special dynamic control calculation, PLC controller					
Temp. control	Option: process temperature control or jacket oil temperature control					
Temp. difference	Set or control the temperature difference between jacket oil and raw material process					
Program Editor	20 programs, each program can edit 45 steps.					
Communication protocol	MODBUS RTU Protocol, RS 485 Interface					
Temperature feedback	Heat-conducting medium:PT100 Raw material process:PT100					
Temp. accuracy	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C
Heating power	2500W	3500W	5500W	7500W	10000W	15000W
Cooling capacity	200°C	2500W	3500W	5500W	7500W	10000W
	100°C	2500W	3500W	5500W	7500W	10000W
	20°C	2500W	3500W	5500W	7500W	10000W
	0°C	2500W	3500W	5500W	7500W	10000W
	-20°C	2000W	3000W	4850W	6000W	8200W
	-40°C	950W	1450W	2300W	3100W	4800W
-55°C	250W	500W	750W	900W	1500W	2800W
Circulation pump	Max20L/min 1bar	Max35L/min 1bar	Max50L/min 1.5bar	Max75L/min 1.5bar	Max110L/min 1.5bar	Max110L/min 1.5bar
Compressor	Copeland	Copeland	Copeland	Copeland	Copeland	Copeland
Expansion valve	Danfoss	Danfoss	Danfoss	Danfoss	Danfoss	Danfoss
Oil separator	Emerson	Emerson	Emerson	Emerson	Emerson	Emerson
Evaporator	KAORI Plate heat exchanger					
Operation Panel	7-inch color touch screen controller,temperature curve record,data export to excel format.					
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.					
Closed circulation system	The whole system is full closed circulation,there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running.The system will supplement oil automatically at low temperature.					
Refrigerant	R-404A R23	R-404A R23	R-404A R23	R-404A R23	R-404A R23	R-404A R23
Connection size	DN15 or 24*1.5	DN20 or 30*1.5	DN20 or 30*1.5	DN20 or 30*1.5	DN20 or 30*1.5	DN25 or 38*1.5
Water-cooled type W (cooling water at 20°C)	900L/H 1.5bar~4bar	1200L/H 1.5bar~4bar	1800L/H 1.5bar~4bar	2100L/H 1.5bar~4bar	3000L/H 1.5bar~4bar	4000L/H 1.5bar~4bar
Dimension	water-cooled	400*600*1150 mm	550*700*1350 mm	550*700*1350	550*700*1600	550*700*1600
	air-cooled		550*700*1450 mm	650*700*1650	650*700*1650	750*750*1800
Weight	water-cooled	170kg	185kg	265kg	305kg	340kg
	air-cooled		225kg	300kg	340kg	380kg
Power	AC 220V 50HZ 5kW(max)	AC 380V 50HZ 7.5kW(max)	AC 380V 50HZ 10kW(max)	AC 380V 50HZ 14kW(max)	AC 380V 50HZ 18kW(max)	AC 380V 50HZ 26kW(max)
Case material	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304
Optional	Optional Ethernet interface , configure PC operating software					
Optional	Optional outside touch screen display controller (separated),the communication line distance is 10 meter.					
Optional power	220V 60HZ three-phase, 440V~480V 60HZ three-phase					

**SUNDI-6 series**



SUNDI -60°C ~ 250°C

Model	SUNDI-6A25W	SUNDI-6A38W	SUNDI-6A60W	SUNDI-6A95W	SUNDI-6A130W
Temperature range °C	-60°C ~ 250°C				
Controller	Feedforward PID +Our special dynamic control calculation, PLC controller				
Temp. control	Process temperature control mode				
Program Editor	20 programs, each program can edit 45 steps.				
Communication	MODBUS RTU Protocol, RS 485 Interface				
Temperature feedback	Heat-conducting medium feedback PT100,(oil outlet temperature,oil inlet temperature and heater temperature) , Three temperature measuring points.				
Process Temperature feedback	Raw material process feedback PT100 or 4 ~ 20mA input (optional)				
Temp. accuracy	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C
Heating power	25kW	38kW	60kW	95kW	130kW
Cooling capacity	250°C	25kW	38kW	60kW	95kW
	100°C	25kW	38kW	60kW	95kW
	20°C	25kW	38kW	60kW	95kW
	0°C	25kW	38kW	60kW	95kW
	-20°C	25kW	38kW	56kW	80kW
	-40°C	18kW	22kW	30kW	45kW
-55°C	6kW	7.5kW	11kW	15kW	19kW
Circulation pump	Max110L/min 1.5bar	Max150L/min 2.5bar	Max250L/min 2.5bar	Max250L/min 2.5bar	Max250L/min 2.5bar
Compressor	Copeland	Copeland	Copeland	Bock	Bock
Evaporator	KAORI Plate heat exchanger				
Oil separator	Emerson				
Expansion valve	Emerson				
Operation panel	Optional 7-inch color touch screen controller,temperature curve record,data export to excel format.				
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.				
Closed circulation system	The whole system is full closed circulation,there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running.The system will supplement oil automatically at low temperature.				
Refrigerant	R-404A R23 mixed Refrigerant				
Connection size	DN25 PN10	DN32 PN10	DN40 PN10	DN40 PN10	DN40 PN10
Water-cooled type W (cooling water at 30°C)	8.5m³/h 1.5bar~4bar	14m³/h 1.5bar~4bar	20m³/h 1.5bar~4bar	29m³/h 1.5bar~4bar	38m³/h 1.5bar~4bar
water-cooled condenser	Shell and tube exchanger (standard)				
Dimension	1000 × 950 × 1650	2000 × 1000 × 1750	2300 × 1450 × 1750	2300 × 1450 × 1750	2750 × 1600 × 2000
Weight	980kg	1150kg	1380kg	1750kg	2280kg
Power	AC380V 50HZ 38kW(max)	AC380V 50HZ 58kW(max)	AC380V 50HZ 85kW(max)	AC380V 50HZ 130kW(max)	AC380V 50HZ 180kW(max)
Case material	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304
Optional	Optional Ethernet interface , configure the computer operating software				
Optional	Optional outside touch screen display controller (separated), the communication line distance is 10 meter.				
Optional	Optional explosion-proof touch screen control system (ExdelIBT4), the communication line distance is 15 meter.				
Optional	Water condenser use plate heat exchanger ( request for high quality water )				
Optional power	440V - 480V 60HZ three-phase				



SUNDI -70°C~250°C

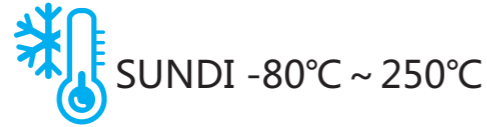


Model	SUNDI-725WN	SUNDI-735WN SUNDI-735N	SUNDI-755W SUNDI-755	SUNDI-775W SUNDI-775	SUNDI-7A10W	SUNDI-7A15W
Temperature range °C	-70°C~250°C	-70°C~250°C	-70°C~250°C	-70°C~250°C	-70°C~250°C	-70°C~250°C
Control Mode	Feedforward PID +Our special dynamic control calculation, PLC controller					
Temp. control	Option: process temperature control or jacket oil temperature control					
Temp. difference	Set or control the temperature difference between jacket oil and raw material process.					
Program Editor	20 programs, each program can edit 45 steps.					
Communication protocol	MODBUS RTU Protocol, RS 485 Interface					
Temperature feedback	Heat-conducting medium :PT100			Raw material process:PT100		
Temp. accuracy	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C
Heating power	2500W	3500W	5500W	7500W	10000W	15000W
Cooling capacity	250°C	2500W	3500W	5500W	7500W	10000W
	100°C	2500W	3500W	5500W	7500W	10000W
	20°C	2500W	3500W	5500W	7500W	10000W
	0°C	2500W	3500W	5500W	7500W	10000W
	-20°C	2000W	3000W	4850W	6000W	8500W
	-40°C	1300W	1750W	2300W	3100W	4000W
-60°C	400W	550W	750W	900W	1200W	2800W
Circulation pump	Max20L/min 2bar	Max35L/min 1bar	Max50L/min 1bar	Max75L/min 1.5bar	Max110L/min 1.5bar	Max110L/min 1.5bar
Compressor	Copeland	Copeland	Copeland	Copeland	Copeland	Copeland
Expansion valve	Danfoss	Danfoss	Danfoss	Danfoss	Danfoss	Danfoss
Oil separator	Emerson	Emerson	Emerson	Emerson	Emerson	Emerson
Evaporator	KAORI Plate heat exchanger					
Operation Panel	7-inch color touch screen controller,temperature curve record,data export to excel format.					
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.					
Closed circulation system	The whole system is full closed circulation,there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running.The system will supplement oil automatically at low temperature.					
Refrigerant	R-404A R23	R-404A R23	R-404A R23	R-404A R23	R-404A R23	R-404A R23
Connection size	DN15 or 24*1.5	DN20 or 30*1.5	DN20 or 30*1.5	DN20 or 30*1.5	DN20 or 30*1.5	DN25 or 38*1.5
Water-cooled type W (cooling water at 20°C)	900L/H 1.5bar~4bar	1200L/H 1.5bar~4bar	1800L/H 1.5bar~4bar	2300L/H 1.5bar~4bar	3200L/H 1.5bar~4bar	4500L/H 1.5bar~4bar
Dimension	water-cooled	500*680*1250 mm	550*700*1350 mm	550*700*1350	550*700*1600	550*700*1600
	air-cooled		550*680*1450 mm	650*700*1650	650*700*1650	
Weight	water-cooled	190kg	235kg	275kg	325kg	420kg
	air-cooled		275kg	320kg	370kg	
Power	AC 220V 50HZ 5.2kW(max)	AC 380V 50HZ 8kW(max)	AC 380V 50HZ 11kW(max)	AC 380V 50HZ 15kW(max)	AC 380V 50HZ 20kW(max)	AC 380V 50HZ 28kW(max)
Case material	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304
Optional	Optional Ethernet interface , configure PC operating software					
Optional	Optional outside touch screen display controller (separated),the communication line distance is 10 meter.					
Optional power	220V 60HZ three-phase, 440V~480V 60HZ three-phase					



SUNDI -80°C ~ 250°C

Model	SUNDI-825W	SUNDI-835W	SUNDI-855W	SUNDI-875W	SUNDI-8A10W	SUNDI-8A15W
Temperature range °C	-80°C~250°C	-80°C~250°C	-80°C~250°C	-80°C~250°C	-80°C~250°C	-80°C~250°C
Control Mode	Feedforward PID +Our special dynamic control calculation, PLC controller					
Temp. control	Option: process temperature control or jacket oil temperature control					
Temp. difference	Set or control the temperature difference between jacket oil and raw material process.					
Program Editor	20 programs, each program can edit 45 steps.					
Communication protocol	MODBUS RTU Protocol, RS 485 Interface					
Temperature feedback	Heat-conducting medium :PT100			Raw material process:PT100		
Temp. accuracy	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C
Heating power	2500W	3500W	5500W	7500W	10000W	15000W
Cooling capacity	250°C	2500W	3500W	5500W	7500W	10000W
	100°C	2500W	3500W	5500W	7500W	10000W
	20°C	2500W	3500W	5500W	7500W	10000W
	0°C	2500W	3500W	5500W	7500W	10000W
	-20°C	2500W	3500W	5500W	7500W	8500W
	-40°C	1800W	2550W	3300W	5800W	6300W
	-60°C	1000W	1400W	1600W	3000W	3300W
	-75°C	300W	420W	700W	1300W	1400W
Circulation pump	Max20L/min 1bar	Max35L/min 1bar	Max50L/min 1.5bar	Max75L/min 1.5bar	Max110L/min 1.5bar	Max110L/min 1.5bar
Compressor	Copeland	Copeland	Copeland	Copeland	Copeland	Copeland
Expansion valve	Danfoss	Danfoss	Danfoss	Danfoss	Danfoss	Danfoss
Oil separator	Emerson	Emerson	Emerson	Emerson	Emerson	Emerson
Evaporator	KAORI Plate heat exchanger					
Operation Panel	7-inch color touch screen controller,temperature curve record,data export to excel format.					
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.					
Closed circulation system	The whole system is full closed circulation,there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running.The system will supplement oil automatically at low temperature.					
Refrigerant	R-404A R23	R-404A R23	R-404A R23	R-404A R23	R-404A R23	R-404A R23
Connection size	DN15 or 24*1.5	DN20 or 30*1.5	DN20 or 30*1.5	DN20 or 30*1.5	DN20 or 30*1.5	DN25 or 38*1.5
Water-cooled type W (cooling water at 20°C)	900L/H 1.5bar~4bar	1200L/H 1.5bar~4bar	1800L/H 1.5bar~4bar	2300L/H 1.5bar~4bar	3200L/H 1.5bar~4bar	4500L/H 1.5bar~4bar
Dimension	water-cooled	500*680*1250 mm	550*700*1650 mm	550*700*1650	700*800*1650	700*800*1650
	air-cooled					
Weight	water-cooled	240kg	285kg	345kg	500kg	750kg
	air-cooled					
Power	AC 380V 50HZ 6.5kW(max)	AC 380V 50HZ 10kW(max)	AC 380V 50HZ 13kW(max)	AC 380V 50HZ 17kW(max)	AC 380V 50HZ 22kW(max)	AC 380V 50HZ 33kW(max)
Case material	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304
Optional	Optional Ethernet interface , configure PC operating software					
Optional	Optional outside touch screen display controller (separated),the communication line distance is 10 meter.					
Optional power	220V 60HZ three-phase, 440V~480V 60HZ three-phase					

**SUNDI-8 series**


Model	SUNDI-8A25W	SUNDI-8A38W	SUNDI-8A60W	SUNDI-8A80W
Temperature range °C	-80°C~250°C			
Control Mode	Feedforward PID +Our special dynamic control calculation, PLC controller			
Temp. difference	Process temperature control mode			
Program Editor	20 programs, each program can edit 45 steps.			
Communication protocol	MODBUS RTU Protocol, RS 485 Interface			
Temperature feedback	Heat-conducting medium feedback PT100,(oil outlet temperature,oil inlet temperature and heater temperature) , Three temperature measuring points.			
Process Temperature feedback	Raw material process feedback PT100 or 4 ~ 20mA input (optional)			
Temp. accuracy	± 1°C	± 1°C	± 1°C	± 1°C
Heating power	25kW	38kW	60kW	80kW
Cooling capacity	250°C	25kW	38kW	60kW
	100°C	25kW	38kW	60kW
	20°C	25kW	38kW	60kW
	-20°C	25kW	38kW	60kW
	-40°C	20kW	31kW	48kW
	-60°C	10kW	16kW	23kW
	-75°C	5kW	8kW	11kW
Circulation pump	Max110L/min 1.5bar	Max150L/min 2bar	Max250L/min 2bar	Max250L/min 2bar
Compressor	Copeland	Copeland	Copeland	Copeland
Evaporator	Emerson			
Oil separator	Emerson			
Expansion valve	KAORI Plate heat exchanger			
Operation Panel	7-inch color touch screen controller,temperature curve record,data export to excel format.			
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.。			
Closed circulation system	The whole system is full closed circulation,there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running.The system will supplement oil automatically at low temperature.			
Refrigerant	R-404A R508B mixed Refrigerant			
Connection size	DN25 PN10	DN32 PN10	DN40 PN10	DN40 PN10
Water-cooled type W (cooling water at 25°C)	8m³/h 1.5bar~4bar	12m³/h 1.5bar~4bar	20m³/h 1.5bar~4bar	30m³/h 1.5bar~4bar
water-cooled condenser	Shell and tube exchanger (standard)			
Dimension	water-cooled 2000*1000*1750	2300*1450*1750	2300*1450*1750	2700*1450*2050
Weight	water-cooled 1000kg	1350kg	1800kg	2600kg
Power	AC 380V 50HZ 44kW(max)	AC 380V 50HZ 62kW(max)	AC 380V 50HZ 100kW(max)	AC 380V 50HZ 138kW(max)
Case material	SUS 304			
Optional	Optional Ethernet interface , configure PC operating software			
Optional	Optional outside touch screen display controller (separated),the communication line distance is 10 meter.			
Optional	Optional explosion-proof touch screen control system (ExdellBT4), the communication line distance is 15 meter.			
Optional	Water condenser use plate heat exchanger ( request for high quality water )			
Optional power	440V~480V 60HZ three-phase			


**SUNDI -90°C ~ 250°C**

Model	SUNDI-935WN	SUNDI-955W	SUNDI-975W	SUNDI-9A10W
Temperature range °C	-90°C~250°C			
Control Mode	Feedforward PID +Our special dynamic control calculation, PLC controller			
Temp. control	Option: process temperature control or jacket oil temperature control			
Temp. difference	Set or control the temperature difference between jacket oil and raw material process.。			
Program Editor	20 programs, each program can edit 45 steps.			
Communication protocol	MODBUS RTU Protocol, RS 485 Interface			
Temperature feedback	Heat-conducting medium :PT100		Raw material process:PT100	
Temp. accuracy	± 1°C	± 1°C	± 1°C	± 1°C
Heating power	3500W	5500W	7500W	10000W
Cooling capacity	250°C	3500W	5500W	7500W
	100°C	3500W	5500W	7500W
	20°C	3500W	5500W	7500W
	0°C	3500W	5500W	7500W
	-20°C	3500W	5500W	7500W
	-40°C	2800W	5000W	5800W
	-60°C	1900W	2800W	3200W
	-80°C	500W	800W	1200W
	-85°C	300W	500W	700W
Circulation pump	Max50L/min 1.5bar	Max50L/min 1.5bar	Max110L/min 1.5bar	Max110L/min 1.5bar
Compressor	Copeland	Copeland	Copeland	Copeland
Expansion valve	Danfoss	Danfoss	Danfoss	Danfoss
Oil separator	Emerson	Emerson	Emerson	Emerson
Evaporator	KAORI Plate heat exchanger	KAORI Plate heat exchanger	KAORI Plate heat exchanger	KAORI Plate heat exchanger
Operation Panel	7-inch color touch screen controller,temperature curve record,data export to excel format.			
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.。			
Closed circulation system	The whole system is full closed circulation,there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running.The system will supplement oil automatically at low temperature.			
Refrigerant	R-404A R508B	R-404A R508B	R-404A R508B	R-404A R508B
Connection size	DN20 or M30*1.5	DN20 or M30*1.5	DN20 or M30*1.5	DN20 or M30*1.5
Water-cooled type W (cooling water at 20°C)	1900L/H 1.5bar~4bar	2400L/H 1.5bar~4bar	3200L/H 1.5bar~4bar	4000L/H 1.5bar~4bar
Dimension	water-cooled 550*700*1600 mm	700*800*1650 mm	700*800*1650	1000*950*1650
Weight	water-cooled 305kg	425kg	585kg	750kg
Power	AC 380V 50HZ 10kW(max)	AC 380V 50HZ 13kW(max)	AC 380V 50HZ 17kW(max)	AC 380V 50HZ 21kW(max)
Case material	SUS 304			
Optional	Optional Ethernet interface , configure PC operating software			
Optional	Optional outside touch screen display controller (separated),the communication line distance is 10 meter.			
Optional power	220V 60HZ three-phase, 440V~480V 60HZ three-phase			



SUNDI -100°C~100°C



Model	SUNDI-1035WN	SUNDI-1055W	SUNDI-1075W	SUNDI-10A10W
Temperature range °C	-100°C~100°C	-100°C~100°C	-100°C~100°C	-100°C~100°C
Control Mode	Feedforward PID +Our special dynamic control calculation, PLC controller			
Temp. control	Option: process temperature control or jacket oil temperature control			
Temp. difference	Set or control the temperature difference between jacket oil and raw material process.			
Program Editor	20 programs, each program can edit 45 steps.			
Communication protocol	MODBUS RTU Protocol, RS 485 Interface			
Temperature feedback	Heat-conducting medium :PT100		Raw material process:PT100	
Temp. accuracy	± 1°C	± 1°C	± 1°C	± 1°C
Heating power	3500W	5500W	7500W	10000W
Cooling capacity	100°C	3500W	5500W	10000W
	20°C	3500W	5500W	10000W
	0°C	3500W	5500W	10000W
	-20°C	3500W	5500W	10000W
	-40°C	3500W	5500W	10000W
	-60°C	2800W	5000W	8000W
	-80°C	1900W	2800W	4100W
	-100°C	700W	1200W	2000W
Circulation pump	Max50L/min 1.5bar	Max50L/min 1.5bar	Max110L/min 1.5bar	Max110L/min 1.5bar
Compressor	Copeland	Copeland	Copeland	Copeland
Expansion valve	Danfoss	Danfoss	Danfoss	Danfoss
Oil separator	Emerson	Emerson	Emerson	Emerson
Evaporator	KAORI Plate heat exchanger	KAORI Plate heat exchanger	KAORI Plate heat exchanger	KAORI Plate heat exchanger
Operation Panel	7-inch color touch screen controller,temperature curve record,data export to excel format.			
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.			
Closed circulation system	The whole system is full closed circulation,there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running.The system will supplement oil automatically at low temperature.			
Refrigerant	R-404A R508B R14	R-404A R508B R14	R-404A R508B R14	R-404A R508B R14
Connection size	DN20 or M30*1.5	DN20 or M30*1.5	DN20 or M30*1.5	DN20 or M30*1.5
Water-cooled type W (cooling water at 20°C)	2400L/H 1.5bar~4bar	3400L/H 1.5bar~4bar	4000L/H 1.5bar~4bar	5000L/H 1.5bar~4bar
Dimension	water-cooled 700*800*1650 mm	700*800*1650 mm	1000*950*1650	1000*950*1650
Weight	water-cooled 435kg	565kg	705kg	820kg
Power	AC 380V 50HZ 12kW(max)	AC 380V 50HZ 17kW(max)	AC 380V 50HZ 22kW(max)	AC 380V 50HZ 27kW(max)
Case material	SUS 304	SUS 304	SUS 304	SUS 304
Optional	Optional Ethernet interface , configure PC operating software			
Optional	Optional outside touch screen display controller (separated),the communication line distance is 10 meter.			
Optional power	220V 60HZ three-phase, 440V~480V 60HZ three-phase			



SUNDI -90°C ~ 250°C  
SUNDI -100°C ~ 100°C

## SUNDI-9/10 series

Model	SUNDI-9A15W	SUNDI-9A25W	SUNDI-9A38W	SUNDI-9A60W	SUNDI-10A15W	SUNDI-10A25W	SUNDI-10A38W
Temperature range °C	-90°C~250°C				-100°C~100°C		
Controller	Feedforward PID +Our special dynamic control calculation, PLC controller						
Temp. control	Process temperature control mode						
Program Editor	20 programs, each program can edit 45 steps.						
Communication	MODBUS RTU Protocol, RS 485 Interface						
Temperature feedback	Heat-conducting medium feedback PT100,(oil outlet temperature,oil inlet temperature and heater temperature) , Three temperature measuring points.						
Process Temperature feedback	Raw material process feedback PT100 or 4 ~ 20mA input (optional)						
Temp. accuracy	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C
Heating power	15kW	25kW	38kW	60kW	15kW	25kW	38kW
Cooling capacity	250°C	15kW	25kW	38kW	60kW		
	100°C	15kW	25kW	38kW	60kW	15kW	25kW
	20°C	15kW	25kW	38kW	60kW	15kW	25kW
	-20°C	15kW	25kW	38kW	60kW	15kW	25kW
	-40°C	12kW	20kW	31kW	48kW	15kW	25kW
	-60°C	6kW	10kW	16kW	23kW	9kW	15kW
	-80°C	2.1kW	3.4kW	5.3kW	11.5kW	5kW	8kW
	-90°C					3kW	4.8kW
Circulation pump	Max110L/min 1.5bar	Max110L/min 1.5bar	Max250L/min 2.5bar	Max250L/min 2.5bar	Max110L/min 1.5bar	Max110L/min 1.5bar	Max110L/min 2.5bar
Compressor	Bock	Bock	Bock	Bock	Bock	Bock	Bock
Evaporator	Emerson						
Oil separator	Emerson						
Expansion valve	KAORI Plate heat exchanger						
Operation panel	Optional 7-inch color touch screen controller,temperature curve record,data export to excel format.						
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.						
Closed circulation system	The whole system is full closed circulation,there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running.The system will supplement oil automatically at low temperature.						
Refrigerant	R-404A R23 R14 mixed Refrigerant						
Connection size	DN25 PN10	DN32 PN10	DN40 PN10	DN40 PN10	DN25 PN10	DN32 PN10	DN40 PN10
Water-cooled type W (cooling water at 25°C)	8m³/h 1.5bar~4bar	12m³/h 1.5bar~4bar	20m³/h 1.5bar~4bar	30m³/h 1.5bar~4bar	12m³/h 1.5bar~4bar	20m³/h 1.5bar~4bar	30m³/h 1.5bar~4bar
water-cooled condenser	Shell and tube exchanger (standard)						
Dimension	water cooled 1000*900*1650	2000*1000*1750	2300*1450*1750	2300*1450*1750	2000*1000*1750	2300*1450*1750	2300*1450*1750
Weight	water cooled 780kg	1150kg	1480kg	1950kg	950kg	1300kg	1700kg
Power	AC 380V 50HZ 29kW(max)	AC 380V 50HZ 47kW(max)	AC 380V 50HZ 67kW(max)	AC 380V 50HZ 106kW(max)	AC 380V 50HZ 34kW(max)	AC 380V 50HZ 53kW(max)	AC 380V 50HZ 75kW(max)
Case material	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304
Optional	Optional Ethernet interface , configure the computer operating software						
Optional	Optional outside touch screen display controller (separated), the communication line distance is 10 meter.						
Optional	Optional explosion-proof touch screen control system (ExdelIBT4), the communication line distance is 15 meter.						
Optional	Water condenser use plate heat exchanger ( request for high quality water )						
Optional power	440V ~ 480V 60HZ three-phase						

## SUNDI -25°C~200°C

### One machine for two reactors



Model	SUNDI-225W-2T N SUNDI-225-2T N	SUNDI-235W-2T N SUNDI-235-2T N	SUNDI-255W-2T N SUNDI-255-2T N	SUNDI-275W-2T N SUNDI-275-2T N	SUNDI-2A10W-2T N SUNDI-2A10-2T N
Temperature range °C	-30°C~180°C	-25°C~200°C	-25°C~200°C	-25°C~200°C	-25°C~200°C
Control Mode	Feedforward PID +Our special dynamic control calculation, PLC controller				
Temp. control	Option: process temperature control or jacket oil temperature control				
Temp. difference	Set or control the temperature difference between jacket oil and raw material process.				
Communication protocol	MODBUS RTU Protocol, RS 485 Interface				
Temperature feedback	Heat-conducting medium :PT100 Raw material process:PT100 or 4~20mA				
Temp. accuracy	± 1°C				
Heating power	2.5kW	2.5kW	3.5kW	3.5kW	5.5kW
Cooling capacity	200°C	2.5kW	2.5kW	3.5kW	3.5kW
	100°C	2.5kW	2.5kW	3.5kW	3.5kW
	20°C	2kW	2kW	3kW	3kW
	0°C	1.5kW	1.5kW	2.5kW	2.5kW
	-20°C	1kW	1kW	1.6kW	1.6kW
Circulation pump	Max15L/min 1bar	Max15L/min 1bar	Max35L/min 2.5bar	Max35L/min 2.5bar	Max35L/min 2.5bar
Compressor	Tecumseh		Copeland		Copeland
Expansion valve	Danfoss				
Oil separator	LNEYA				
Evaporator	KAORI Plate heat exchanger				
Operation Panel	7-inch color touch screen controller,temperature curve record,data export to excel format.				
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.				
Closed circulation system	The whole system is full closed circulation,there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running.The system will supplement oil automatically at low temperature.				
Refrigerant	R-404A				
Connection size	DN15 or 24*1.5				
Water-cooled type W (cooling water at 20°C)	1000L/H 1.5bar~4bar				
Dimension	water-cooled	400 × 600 × 1250			
	air-cooled	450 × 600 × 1350			
Weight	water-cooled	180kg			
	air-cooled	205kg			
Power	AC220V 50HZ 6.2kW(max)				
Case material	SUS 304				
Optional	Optional Ethernet interface , configure PC operating software				
Optional	Optional outside touch screen display controller (separated),the communication line distance is 10 meter.				
Optional power	220V 60HZ three-phase , 440V~480V 60HZ three-phase				

## SUNDI-2

### One machine for two reactors



SUNDI -25°C ~ 200°C

Model	SUNDI-2A15W-2T N	SUNDI-2A25W-2T N	SUNDI-2A38W-2T N	SUNDI-2A60W-2T N	SUNDI-2A95W-2T N
Temperature range °C	-25°C ~ 200°C				
Controller	Feedforward PID +Our special dynamic control calculation, PLC controller				
Temp. control	Option: process temperature control or jacket oil temperature control				
Program Editor	Set or control the temperature difference between jacket oil and raw material process				
Communication	MODBUS RTU Protocol, RS 485 Interface				
Temperature feedback	Heat-conducting medium :PT100 Raw material process:PT100 or 4 ~ 20mA				
Temp. accuracy	± 1°C				
Heating power	15kW	15kW	25kW	25kW	38kW
Cooling capacity	200°C	15kW	15kW	25kW	25kW
	100°C	15kW	15kW	25kW	25kW
	20°C	11kW	11kW	18kW	18kW
	0°C	7.5kW	7.5kW	13kW	13kW
	-20°C	4.5kW	4.5kW	7.5kW	7.5kW
Circulation pump	Max110L/min 2.5bar	Max110L/min 2.5bar	Max110L/min 2.5bar	Max110L/min 2.5bar	Max150L/min 2.5bar
Compressor	Copeland		Copeland		Copeland
Evaporator	KAORI Plate heat exchanger				
Oil separator	Copeland				
Expansion valve	Copeland				
Operation panel	10-inch color touch screen controller,temperature curve record,data export to excel format.				
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.				
Closed circulation system	The whole system is full closed circulation,there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running.The system will supplement oil automatically at low temperature.				
Refrigerant	R-404A				
Connection size	DN-25 PN10				
Water-cooled type W (cooling water at 20°C)	5.5m³/h 1.5bar~4bar				
Dimension	water cooled	700*700*1700			
	Weight	680kg			
Power	AC380V 50HZ	40kW(max)			
	Case material	SUS 304			
Optional	Optional Ethernet interface , configure the computer operating software				
Optional	Optional outside touch screen display controller (separated), the communication line distance is 10 meter.				
Optional	Optional explosion-proof touch screen control system (ExdellBT4), the communication line distance is 15 meter.				
Optional power	220V 60HZ three-phase source , 440V ~ 480V 60HZ three-phase source				

## SUNDI -40°C~200°C One machine for two reactors



Model	SUNDI-425W-2T N SUNDI-425-2T N	SUNDI-435W-2T N SUNDI-435-2T N	SUNDI-455W-2T N SUNDI-455-2T N	SUNDI-475W-2T N SUNDI-475-2T N	SUNDI-4A10W-2T N SUNDI-4A10-2T N
Temperature range °C	-40°C~200°C	-40°C~200°C	-40°C~200°C	-40°C~200°C	-40°C~200°C
Control Mode	Feedforward PID +Our special dynamic control calculation, PLC controller				
Temp. control	Option: process temperature control or jacket oil temperature control				
Temp. difference	Set or control the temperature difference between jacket oil and raw material process.				
Communication protocol	MODBUS RTU Protocol, RS 485 Interface				
Temperature feedback	Heat-conducting medium :PT100 Raw material process:PT100 or 4~20mA				
Temp. accuracy	± 1°C		± 1°C		± 1°C
Heating power	2.5kW	2.5kW	3.5kW	3.5kW	5.5kW
Cooling capacity	200°C	2.5kW	2.5kW	3.5kW	3.5kW
	100°C	2.5kW	2.5kW	3.5kW	3.5kW
	20°C	2kW	2kW	3kW	3kW
	0°C	1.5kW	1.5kW	2.5kW	2.5kW
	-20°C	1kW	1kW	1.6kW	1.6kW
-35°C	0.45kW	0.45kW	0.75kW	0.75kW	1kW
Circulation pump	Max25L/min 1bar	Max25L/min 1bar	Max35L/min 1bar	Max35L/min 1bar	Max50L/min 1.5bar
Compressor	Tecumseh		Copeland		Copeland
Expansion valve	Danfoss		Danfoss		Danfoss
Oil separator	Emerson		Emerson		Emerson
Evaporator	KAORI Plate heat exchanger		KAORI Plate heat exchanger		KAORI Plate heat exchanger
Operation Panel	7-inch color touch screen controller,temperature curve record,data export to excel format.				
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.				
Closed circulation system	The whole system is full closed circulation,there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running.The system will supplement oil automatically at low temperature.				
Refrigerant	R-404A				
Connection size	DN20 or 24*1.5		DN20 or 30*1.5		DN20 or 30*1.5
Water-cooled type W (cooling water at 20°C)	1200L/H 1.5bar~4bar		1400L/H 1.5bar~4bar		1700L/H 1.5bar~4bar
Dimension	water-cooled	400 × 600 × 1250		550 × 700 × 1350	
	air-cooled	600 × 680 × 1350		750 × 750 × 1450	
Weight	water-cooled	220kg		295kg	
	air-cooled	255kg		330kg	
Power	AC220V 50HZ 7.6kW(max)		AC380V 50HZ 10.5kW(max)		AC380V 50HZ 16.5kW(max)
Case material	SUS 304		SUS 304		SUS 304
Optional	Optional Ethernet interface , configure PC operating software				
Optional	Optional outside touch screen display controller (separated),the communication line distance is 10 meter.				
Optional power	220V 60HZ three-phase, 440V~480V 60HZ three-phase				

## Heating Circulator (with water cooling) UST-series Product description:

1. UST series with function of cooling down from high temperature and the temperature range from 250°C to 50°C.
2. Equipped with heating and cooling system, large heat exchange area, rapid speed of heating-cooling, small demand of heat conducting medium.
3. Can heating and cooling continuously.
4. The whole system is closed, there is no oil mist at high temperature, no volatilization of heat conducting medium at high temperature.
5. With inter temperature sensor PT-100 to adjust internal circulation temperature.
6. The whole system is a closed liquid circulation system with expansion tank, the expansion tank and liquid circulation are thermal insulation, do not participate in liquid circulation, regardless of high or low temperature, the medium in expansion tank is limited to 60°C.
7. Allow fill in 15°C cooling water , to enlarge temperature range of 25°C to 250°C.



### Dynamic temperature control system consistent with SUNDI-series

Model	UST-3525	UST-5525	UST-7525	UST-A1025	UST-A1525	UST-A2525	UST-A3825	UST-A6025	UST-A9525	UST-A13025	UST-A20025
Medium Temperature range °C	50°C ~ 250°C										
Controller	Feed forward PID +Our special dynamic control calculation, PLC controller										
Communication	MODBUS RTU Protocol, RS 485 Interface										
Temp. control	Option: process temperature control or jacket oil temperature control										
Program Editor	Can edit 20 programs, each program can edit 45 steps.										
Temperature feedback	Heat-conducting medium feedback PT100, (oil outlet temperature, oil inlet temperature and heater temperature), Three temperature measuring points.										
Process Temperature feedback	Process feedback PT100 or 4~20mA input (optional)										
Temp. accuracy	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C	± 1°C
Heating power	3.5kW	5.5kW	7.5kW	10kW	15kW	25kW	38kW	60kW Two loop heating	95kW Three loop heating	130kW Three loop heating	200kW Three loop heating
	Large heating power heater can be divided into many loops. When the testing temperature reached (setting temperature -5°C), most of heater can be closed and leave one group to control.										
Cooling capacity	250°C	3.5kW	5.5kW	7.5kW	10kW	15kW	25kW	38kW	60kW	95kW	130kW
	200°C	3.5kW	5.5kW	7.5kW	10kW	15kW	25kW	38kW	60kW	95kW	130kW
	100°C	2.8kW	4kW	5kW	7kW	12kW	20kW	30kW	48kW	76kW	100kW
	65°C	1kW	1.8kW	2.2kW	3kW	5kW	8.5kW	12kW	19kW	30kW	40kW
	The system has heat exchanger,need to flow in water for cooling ,it can automatically open the inlet valve according to the situation.										
Circulation pump	Max35L/min 1.5BAR	Max35L/min 1.5BAR	Max35L/min 1.5BAR	Max75L/min 1.5BAR	Max75L/min 1.5BAR	Max110L/min 1.5BAR	Max110L/min 1.5BAR	Max250L/min 2.5BAR	Max250L/min 2.5BAR	Max400L/min 2.5BAR	Max400L/min 2.5BAR
Capacity of liquid storage	15L	15L	20L	35L	65L	90L	160L	240L	300L	500L	850L
Coolers	Plate heat exchanger,High temperature cooling scaling prevention techniques to ensure long-term durability of the heat exchanger										
Operation panel	Optional 7-inch color touch screen controller, temperature curve record, data export to excel format.										
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.										
Closed circulation system	The whole system is full closed circulation, there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running. The system will supplement oil automatically at low temperature.										
Connection size	DN-20	DN20	DN20	DN20	DN25	DN-25	DN-25	DN-40	DN-40	DN-40	DN-40
Dimension	500*600*1250	500*600*1250	600*600*1250	600*600*1250	600*600*1650	700*800*1650	1200*800*1650	1500*1000*1750	2050*1450*2050	2050*1450*2050	2600*1450*2050
Weight	70kg	75kg	90kg	100kg	125kg	165kg	195kg	315kg	420kg	600kg	850kg
Power	AC380V 50HZ 4.5kW (max)	AC 380V 50HZ 6.5kW (max)	AC380V 50HZ 8.5kW (max)	AC 380V 50HZ 12kW (max)	AC 380V 50HZ 17kW (max)	AC 380V 50HZ 27.5kW (max)	AC 380V 50HZ 40.5kW (max)	AC 380V 50HZ 64kW (max)	AC 380V 50HZ 99kW (max)	AC380V 50HZ 136kW (max)	AC 380V 50HZ 206kW (max)
Case material	SUS 304, SUS304 Pipeline, SUS304 heater, SUS304 Expansion tank, some copper pipe fittings										

## Suitable for large heat release

### Refrigeration heating temperature control system

- AH series - is applied to SUS Reactor, temperature difference >150°C
- Rapid cooling at high temperature reaction
- Polymerization reaction
- Rapid heat-up and cool-down temperature



Model	AH-235W AH-235	AH-255W AH-255	AH-270W AH-270	AH-2A0W AH-2A0
Temperature range °C	-25°C~200°C			
Control Mode	Feedforward PID +Our special dynamic control calculation, PLC controller			
Temp. control	Material process control			
Program Editor	20 programs, each program can edit 45 steps.			
Communication protocol	MODBUS RTU Protocol, RS 485 Interface			
Temperature feedback	Heat-conducting medium :PT100 Raw material process:PT100			
Refrigeration host	Can set refrigeration host temperature independently			
Temp. accuracy	± 1°C	± 1°C	± 1°C	± 1°C
Heating power	3.5kW	5.5kW	7kW	10kW
Cooling capacity	200°C	3.5kW	5.5kW	7kW
	100°C	3.5kW	5.5kW	7kW
	20°C	3.5kW	5.5kW	7kW
	-5°C	3kW	4.5kW	6.6kW
	-20°C	1.8kW	2.8kW	3.8kW
Circulation pump	Max35L/min 2bar	Max50L/min 2bar	Max50L/min 2bar	Max50L/min 2bar
Compressor	Copeland	Copeland	Copeland	Copeland
Expansion valve	Danfoss	Danfoss	Danfoss	Danfoss
Evaporator	KAORI Plate heat exchanger	KAORI Plate heat exchanger	KAORI Plate heat exchanger	KAORI Plate heat exchanger
Operation Panel	7-inch color touch screen controller, temperature curve record, data export to excel format.			
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.			
Closed circulation system	The whole system is full closed circulation, there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running. The system will supplement oil automatically at low temperature.			
Refrigerant	R-404A			
Connection size	DN20	DN20	DN20	DN20
Water-cooled type W (cooling water at 20°C)	800L/H 1.5bar~4bar	1200L/H 1.5bar~4bar	2000L/H 1.5bar~4bar	2900L/H 1.5bar~4bar
Dimension	water-cooled	500 × 680 × 1250	500 × 680 × 1250	500 × 680 × 1250
	air-cooled	500 × 680 × 1450	500 × 680 × 1450	650 × 700 × 1650
Weight	water-cooled	160kg	235kg	315kg
	air-cooled	195kg	265kg	355kg
Power	AC380V 50HZ 6kW(max)	AC380V 50HZ 8kW(max)	AC380V 50HZ 11kW(max)	AC380V 50HZ 14kW(max)
Case material	SUS 304			

Note: All water-cooled type model in the catalogue can be produced EXPXdmb II BT4 / EXPXdmb II CT4

## Positive Pressure Explosion-proof Cabinet(PXK)

It is designed and examined according to the national standard GB3836.5-2004 《Electrical equipments positive pressure "P" used in explosive gas environment》. Can be widely used in petroleum, chemical industry, medicine etc. in which dangerous area with explosive gas and dust. Ex-mark is ExpXdmb II CT4. Certification : GYB091118

The PXK bring the clean and security of compressed air in positive pressure cavity by intelligent control system matching pressure control system of explosion-proof control box and to be a micro-positive pressure to prevent the dangerous gases, dust in, which reached to the purpose of explosion-proof.

This product with the function of intelligent centralized control, LCD text display, automatic ventilation, automatic delay power-up, air supply for pressure loss, fault alarm and automatically cut off power supply in danger, etc

## Structure Description

Positive pressure cabinet is composed of positive pressure cavity and control cavity; Positive pressure cavity is used for installing various of instrument or electronics which with non-explosion-proof. The control cavity has explosion-proof control box and pressure control system. The case material of positive pressure cabinet with 2~3mm Cold rolled steel sheet welding and the Air-duct with galvanized steel pipe; Adopt bulkhead connector and tightening device for in&out of the cable. There is a glass display in the front of door and display the information of instrument and indicator light.

## Safety Instruction

1. PXK value >280Pa, Automatic vent
2. 50pa <PXK value <80pa, automatic alarm
3. PXK value <50Pa, Automatically power off

## Operation Principle

The operation principle please refer to picture  
1. Please press the "Start Button" after outside voltage 220V AC in explosion-proof control box; Open air-intake casing by magnetic valve 4 excitation, the compressed air come into the positive pressure cavity by filtering and decompression; the dangerous gas of positive pressure cavity is discharged by exhaust valve 8; When the dangerous gas of positive pressure cavity reached to safety value, the ventilation will be finished as well as interlocking contact closed automatically. In that case, electric appliance & instrument in positive pressure cavity can start to work.



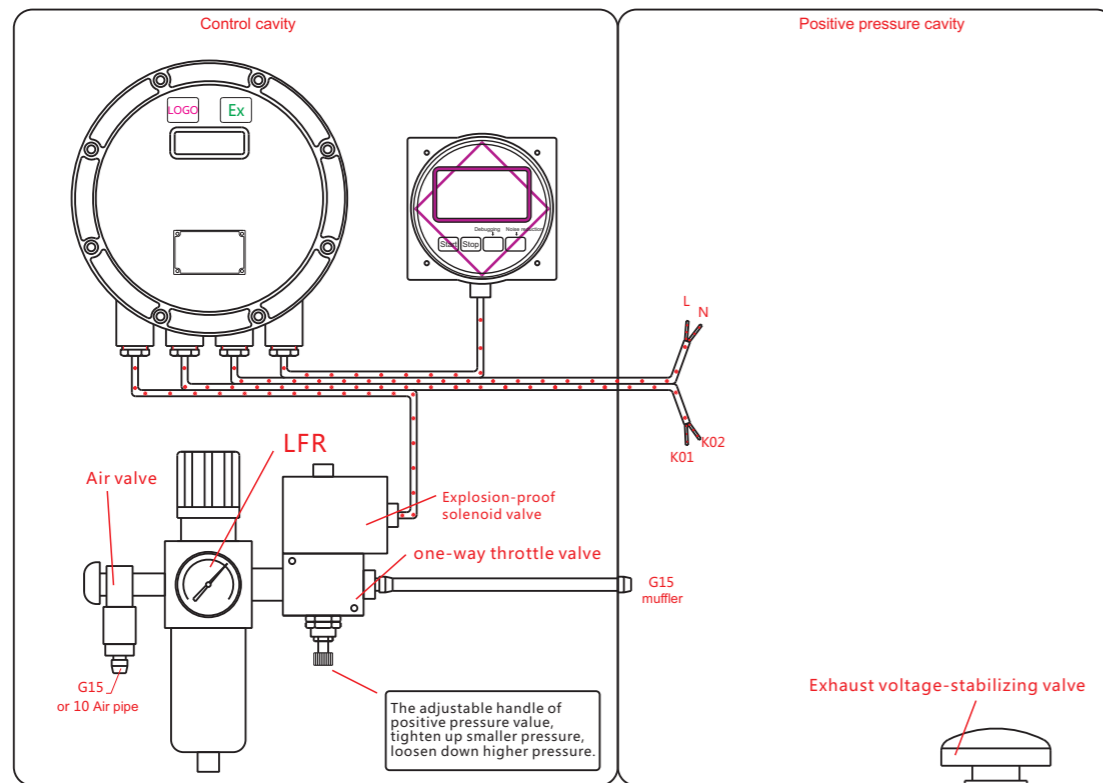


## The adjustment for positive pressure values

Adjust the bottom of positive pressure value regulating handle of one-way throttle valve, PXX value will be higher by Clockwise, on the contrary, be lower. It is reasonable to adjust the PXX value to be 250Pa, if the pressure is low and can not be reached to this fine pressure, please kindly check whether the air inlet valve is open totally or not, and if the positive pressure chamber is sealed with the outside and so on.

## Interlock Function Selection

PXX used in the dangerous area 1, if PXX value < 50Pa, interlocking contact must be off; If operating in the dangerous area 2, PXX value < 50Pa, interlocking contact can be open; But you must deal with in time and ensure the pressure > 50Pa, this function by DIP SWITCH U2 the 3rd to adjust, which in the condition of up interlocking contact off, below interlocking contact do not disconnect and to operate in off-state.



## Integrated Temperature Control systems for 2-20 reactors

### Advantages & Functions

- ◆ Working temperature range from -100 °C to +300 °C.
- ◆ Centralized control of 2~20 reactors, each reactor's material temperature and jacket temperature can be set independently. One system control multiple reactors of target temperature is realized.
- ◆ Maximum process stability and reproducibility.
- ◆ Under the system control, energy-saving efficiency is improved. The freezing medium and heating medium flowing through the conduction angle of the reactors are controlled accurately.
- ◆ Previously unachievable performance.
- ◆ High-accuracy and intelligent temperature control.
- ◆ Adopt Plate heat exchanger & Piping heater to improve the heating and cooling rates.
- ◆ High Cooling Power to 200KW ( Using freezer to realize larger cooling and heating capacity)
- ◆ Factory's existing refrigeration system and heating system can be used together with this system in order to reduce the input cost.
- ◆ Large temperature range without fluid change.
- ◆ Increased thermal fluid life.
- ◆ 10 inch TFT touchscreen with graphic display.
- ◆ Comprehensive warning and safety functions.
- ◆ Rapid cooling down from high temperature (from 300 °C).
- ◆ Using Magnetic drive pump with no leakage of the shaft seal.
- ◆ With USB interfaces, RS485 interfaces, industrial control configuration software.
- ◆ It can be produced explosion-proof function according to customer's requirement.

### Structure Design

The whole system we adopt is fully closed piping design, high efficiency plate heat exchanger used to reduce the demand of thermal fluid as well as greatly increase utilization of heat in order to achieve rapid ups and downs in temperature. The system with an expansion vessel, and the heat-conducting medium in the expansion vessel does not participate in liquid circulation, whatever the temperature is high temperature or low temperature, the expansion tank is limited to 60°C. The working life and properties of the thermal fluid are also protected, by avoiding direct contact between the hot fluid and atmosphere.

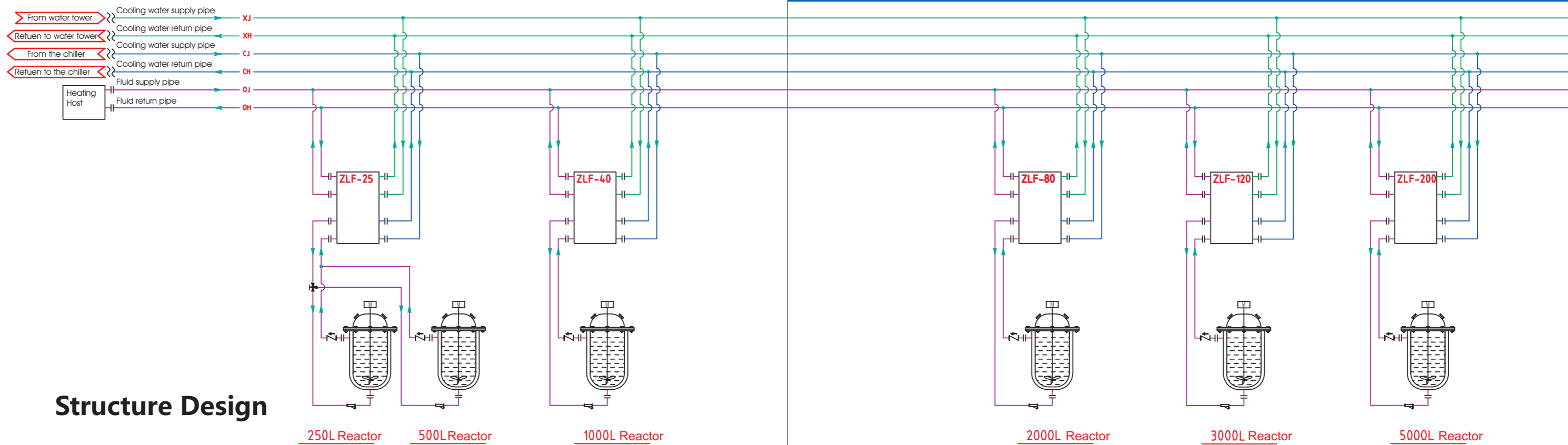
### There following advantages for the users:

- ◆ Volume changes due to fluid temperature fluctuations are equalised by the expansion vessel. The fluid in the expansion vessel hydraulically seals the fluid circuit and prevents early Oxidation.
- ◆ No volatilization of heat conducting medium at high temperature.
- ◆ No need to change the heat-conducting medium, meantime, continuous control of the temperature of the below range can be achieved without any pressure: -80°C-195°C, -70°C-220°C, -88°C-170°C, -55°C-250°C, -30°C-300°C.

One system can control up to 2~20 sets different sizes of reactors and each reactors can be controlled at different temperature.

### Energy Saving Design

Under the system control, the freezing medium and heating medium flowing through the conduction angle of the reactors are controlled accurately. Energy-saving is maximized.



## Structure Design

250L Reactor    500L Reactor    1000L Reactor    2000L Reactor    3000L Reactor    5000L Reactor

The temperature feedback points of each reactor are unanimous basically.

A. The whole system we adopt is fully closed piping design, high efficiency plate heat exchanger used to reduce the demand of thermal fluid as well as greatly increase utilization of heat in order to achieve rapid ups and downs in temperature.

B. The system with an expansion vessel, and the heat-conducting medium in the expansion vessel does not participate in liquid circulation.

C. The expansion tank with automatic cooling constant temperature system, even though the temperature of heat conducting medium up to 250°C, a part of heat medium runs to expansion tank and also much of the heat is carried away to keep the expansion tank always at room temperature, which can reduce the heat conducting medium absorb water and volatilize, oxidative Browning in running process, in order to improve the lifetime.

- A. Control the low temp. heat conducting medium or high temp. heat conducting medium of the host into reactor flow.
- B. Distribute the heat conducting medium which comes out from reactor back to refrigeration host system or heating host system.
- C. Distinguish the feedback of temp. signal on outlet/inlet measurement.
- D. Open the angle of motorized valve according to the indication of PLC system, control the flow rate of cryogenic liquid into jacket of reactor, so as to achieve energy efficiency. All the signals feedback in the process is based on temperature.
- E. Safety operation is ensured and all the electric valves can be manually opened completely.

One operating multi-reactors can not only control reactor, but also the low temperature host can distribute the cryogenic medium for condenser cooling.

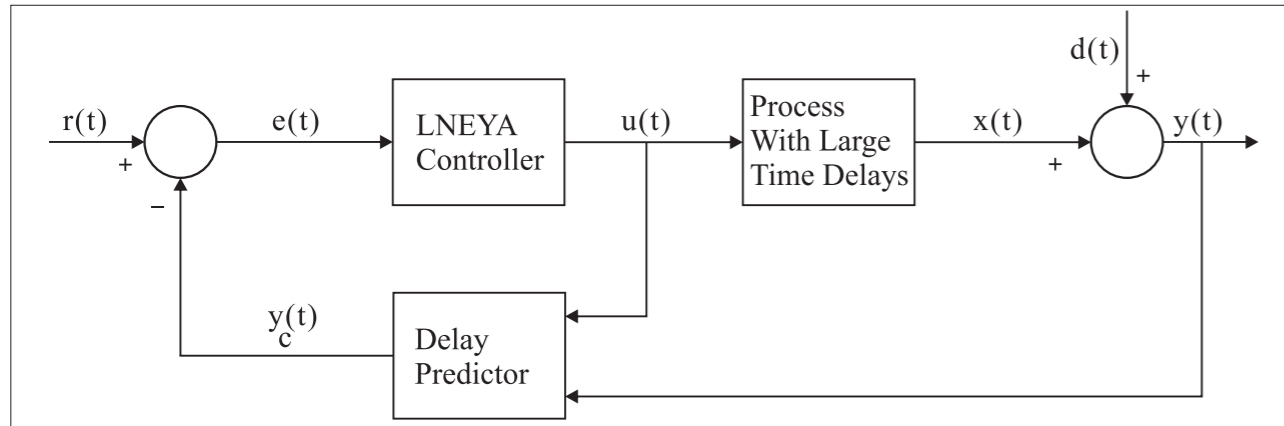
NO.1 reactor heat up constant temperature control: Heating output from the host and circulating operation; Open the heat electric control valve of secondary refrigerant control unit, bring heat conducting medium into NO.1 reactor, meantime, the electric control valve of secondary refrigerant control unit in main loop is open. At this time, we can test the outlet/inlet of process and jacket temperature by our special calculation to adjust the angle of heat electric control valve so as to control the flow of high temperature fluid of jacket reactor, to realize the purpose of process temperature control.

NO.1 reactor heat release control: The sensor in material of reactor will measure the rise up temperature when heat release, and it will be responded by our special calculation, meantime, open the angle of cooling electric control valve according to the temperature.

## 2、Secondary Refrigerant Control Unit

Model	ZLF-25	ZLF-40	ZLF-80	ZLF-120	ZLF-200
Medium temp. range	-25°C~ 200°C (can be -50~250 °C according to demand)				
Control mode	Feedforward PID+Our special dynamic control calculation, process temp. Control				
Controller system	LNEYA dynamic control system				
Communication protocol	MODBUS RTU protocol, RS485 interface				
Temp. control select	Material/process temp. Control				
Temperature feedback	Heat-conducting medium :PT100 Raw material process:PT100 Optional: reactor process temp. 4 points measurement, in this case, the machine can work as long as one material temp. sensor is normal. If a sensor has fault, alarm will appear, but machine won't stop.				
Temp. accuracy	Process temp. accuracy ± 1°C( evenly stirring)				
Cooling exchanger	2.5m <sup>2</sup>	4m <sup>2</sup>	8m <sup>2</sup>	12m <sup>2</sup>	20m <sup>2</sup>
Circulation pump	Max 110L/min 2.5BAR	Max 150L/min 2.5BAR	Max 250L/min 2.5BAR	Max 400L/min 2.5BAR	Max 600L/min 2.5BAR
Display	7-inch colour touch screen, temperature graph display				
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch; overload relay; thermal protection device; liquid low level protection; high temp. Protection and temp. fault protection.				
Pipe case	SUS304				
Connection size	DN25	DN32	DN40	DN-50	DN-65
Dimension	600 × 900 × 1450			800 × 1250 × 1600	
EX dimension	600 × 1000 × 1450			800 × 1350 × 1600	
Power	AC380V 50HZ 2kW(max)	AC380V 50HZ 3kW(max)	AC380V 50HZ 4.5kW(max)	AC380V 50HZ 7kW(max)	AC380V 50HZ 9kW(max)
Case	SUS 304				

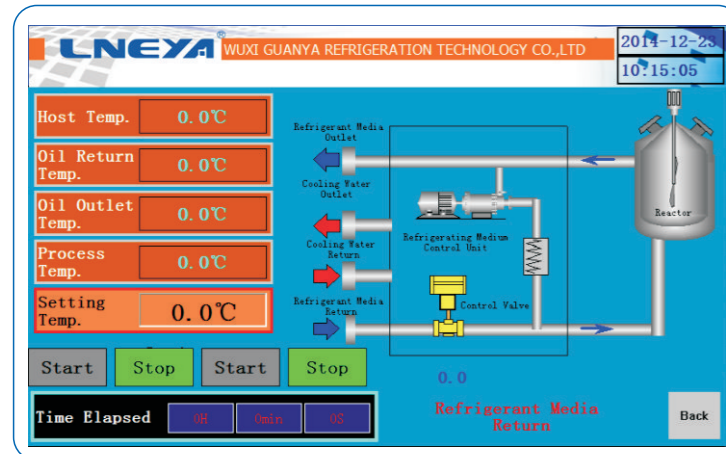
## Temperature Process Control Principle (control the temperature of material in reactor)



1. Adopt changing the control setting method, the system can response the process lag behind as soon as possible, to get the smallest system overshoot. Controlled by two PID (PID is a variable in each group) control loop structure, known as the two sets of control loops: the main circuit and from the circuit, the main control loop from the loop output as the settings. System with feedforward PV, the master PID loop operation results of the PV output and feedforward signals as the composite of the settings from the control loop, through such control of the temperature gradient to ensure the accuracy of temperature control system.
2. Our special design predictor will come about a dynamic signal  $y_c(t)$  which instead of PV  $y(t)$  as a feedback signal. And will take a signal  $e(t)$  for controller to make the anticipation of control not too big delay, so that the controller will always make a reasonable control signal. In other word, the dynamic signal  $y_c(t)$  will be in normal work even though with big delay. However, using common PID control will become obviously time delay in process, and will not get the reasonable feedback signal in the time of delay when controller output, in that case, totally result in system response overshoot even out of control.
3. By three points for sampling (material process temp. point, outlet temp. point and inlet temp. point) and with our company special dynamic control calculation combine with resist feedforward concatenation algorithm.

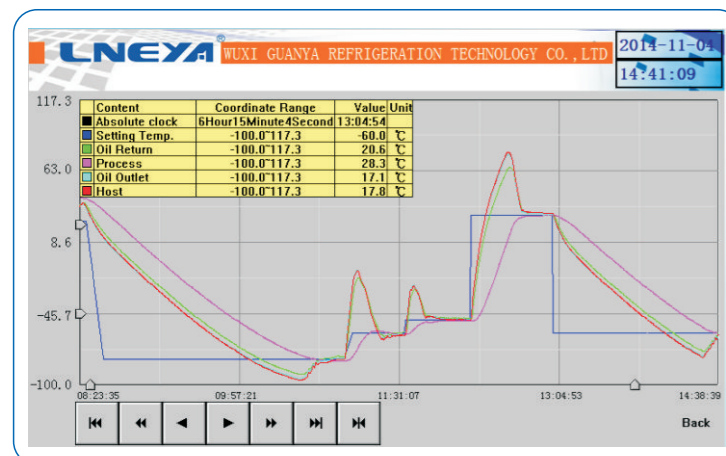
## Display Functions

Dynamic temperature control system can control system's images and display various relating information.



Touchscreen Color Display Functions

Clearly show the real time control of various temperatures. Shows the liquid level of the heat conducting medium in the expansion vessel. Displays the temperature control (materials temperature control pattern, heat conducting medium temperature control). There is the function of setting refrigeration temperature and heating temperature individually. It can be set control the temperature difference between the jacket and reactor material. Shows the notice to add the liquid when it is empty. Simple Menu to use. Shows the clear curve in the process.



Clear Temperature Curve Display

Can enlarge or shrink the curve and support U drive data exporting and list form.

## Equipment Picture



Each module is independent and placed beside reactor

- Heating Power and Secondary Refrigerant Control Unit Model Selection
- Heating system host select 250KW Liquid storage tank volume 1500L
  - 250L 500L reactor select ZLF-25 two group secondary refrigerant temp. control system
  - 1000L reactor select ZLF-40 secondary refrigerant temp. control system
  - 2000L reactor select ZLF-80 secondary refrigerant temp. control system
  - 3000L reactor select ZLF-120 secondary refrigerant temp. control system
  - 5000L reactor select ZLF-200 secondary refrigerant temp. control system

This type of Refrigerated Heating System is produced specially due to which there is no standard model of this system. In case of your requirement please kindly send us the following information:

1	Quantities of reactors
2	The volume of each reactor, jacket volume of each reactor, reactor jacket inlet and outlet sizes.
3	Specific heat capacity of the main materials.
4	Height of reactor from ground level.
5	Temperature controlling range for the reactor material.
6	Whether the reaction exothermic or endothermic during the process control. What is the approximate exothermic, endothermic capacity?
7	Any request about the speed of ups and downs in the temperature of material.
8	The refrigeration control unit which is at the side of the reactor whether need the function of explosion protection or not?
9	If the dynamic temperature control system need the function of explosion or not?
10	If there exists steam, boiler heat, cooling water, frozen source in the operation area (power, temperature, flow, pressure, pipe diameter)?
11	Installation conditions: based on environment temperature and water quality conditions, there are air cooling and water cooling type for choice.
12	Distance between the system and the reactor and how many quarter turns of the pipeline?
13	If need to provide the system engineering: include the service of installation and running test of the system, reactor, pipeline?
14	Besides temperature, If controlling of PH value, mixing speed is required?
15	Whether need configuration software or not?

## Two-level compressor single liquid temperature control system

### Decription:

Two -level compressor single liquid temperature control system uses heat energy (steam, cooling water and ultra-low temperature liquid ---that is primary system) integrated into single liquid system or two-level return circuit to control the temperature of machine, that is only one heat oil flows into jacket of reactor. It controls the temperature by operation.


### Features :

It is a closed system, operate the program repeatedly, temperature range is -120~300°C.  
 No need to change the heat oil; low capacity also can realize the fast reaction of control return circuit, shorten the time of delay of heat reaction.  
 Inbuilt air-heated heat oil assistant system, open assistant heating system, decrease steam usage pressure according the demands.  
 Fast running and accuracy matching of heat demands can get the purpose of saving energy.  
 Precisely control the reaction process temperature by accurate operation and make repaid reaction to endothermic and exothermic reaction.  
 Spare standard connection according to demands.  
 Options: control reaction process temperature or single liquid temperature, moreover set the DELTA temperature.  
 Record of recipe management and production.



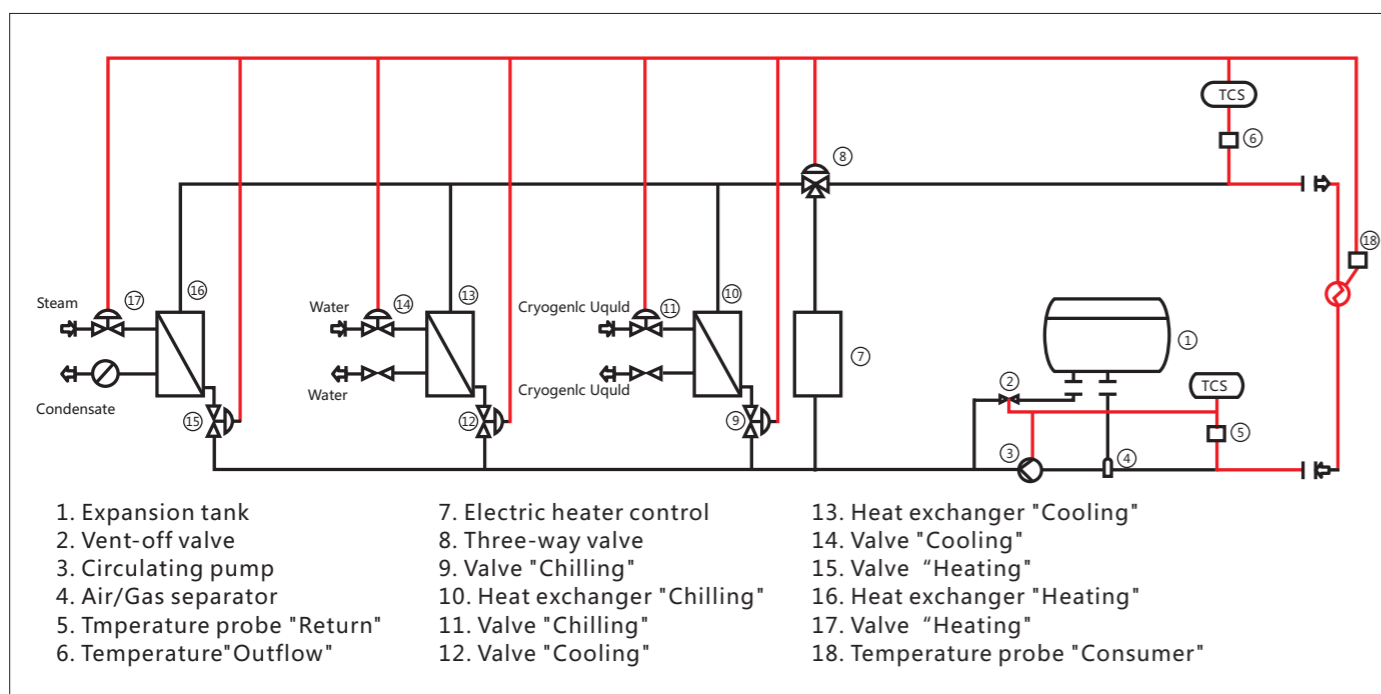
Scan QR code for more information



 -120°C~300°C

**TFT Touch**  
7"/10" Colour Display

**Easy Control**  
User friendly operation



- |                               |                               |                                  |
|-------------------------------|-------------------------------|----------------------------------|
| 1. Expansion tank             | 7. Electric heater control    | 13. Heat exchanger "Cooling"     |
| 2. Vent-off valve             | 8. Three-way valve            | 14. Valve "Cooling"              |
| 3. Circulating pump           | 9. Valve "Chilling"           | 15. Valve "Heating"              |
| 4. Air/Gas separator          | 10. Heat exchanger "Chilling" | 16. Heat exchanger "Heating"     |
| 5. Temperature probe "Return" | 11. Valve "Chilling"          | 17. Valve "Heating"              |
| 6. Temperature "Outflow"      | 12. Valve "Cooling"           | 18. Temperature probe "Consumer" |

Model	SR-10	SR-20	SR-38	SR-60	SR-95
Operating temp range	-120 ~ 200°C	-120 ~ 200°C	-120 ~ 200°C	-120 ~ 220°C	-120 ~ 220°C
Capacity of reactor	50L~250L	100L~500L	300L~1000L	500L~2000L	1000L~5000L
Pump flow	3m <sup>3</sup> /h 1.5bar	2.4~6.6m <sup>3</sup> /h 1.5bar	5~12m <sup>3</sup> /h 2.5bar	11~25m <sup>3</sup> /h 2.5bar	20~50m <sup>3</sup> /h 2.5bar
Pump control	Speed regulation (NO)		Frequency conversion		
Heating power	10kW	20kW	38kW	60kW	95kW
Connection	DN-25	DN-25	DN-40	DN-65	DN-80
Primary energy	Electricity, steam, hot oil, hot water, cooling water, frozen water, ultra-low medium				
Energy transfer	Heat exchanger, electric heating				
Temperature control	PID				
Temp control mode	Option: 1.process temperature control. 2.Jacket temperature control.				
Process control accuracy	± 1°C				
Program edit	20 programs, each program has 45 steps (except EX model)				
Input and display	7-inch / 10-inch colour touch screen				
Closed system (single liquid)	Closed-loop liquid system without absorbing water vapor at low temperature and producing oil mist at high temperature. the pressure of liquid will not go up under high temperature, and automatically add the heat oil under low temperature				
Power	380V 50HZ				

# Chemical Synthetic Proess Control System

Chemical synthetic process is mainly involved with high temperature and high pressure, inflammable and explosive toxic harmful medium,as some chemical synthetic process be of complex and with enormous energy,it will result in serious consequences of personal and property safety once control unusally or abnormal in the production process.

Automatic control system not only can control the production process,but also can protect and give response timely for the worsening condition when operating unsuitable or danger for chemical experiment production device and equipment,in order to reduce the danger acceptably and to ensure the safety of personnel, equipment and production device.

In order to meet the demand of users,our company develop chemical synthetic process control system and security protection of distributed instrument control system,which upgraded with second extension by our existing dynamic temperature control system.The system not only can auto-control,but also with function of safety interlock protection for dangerous key parameters in the process of production.

## Introduction s7-200/s7-300 Series

The system with Siemens S7-300 PLC as control station processing unit,to complete the whole process of data acquisition, processing and field control.

With 10-inch color touch screen display.

The connection between operator and control station of processing units, complete information and transmission of control instruction is realized.And accurately control the temperature,pressure,pump flow, quality, stirring speed, electric valve, charge pump, vacuum, electronic balance and various types of transformation input display.

## Field Control And Operation

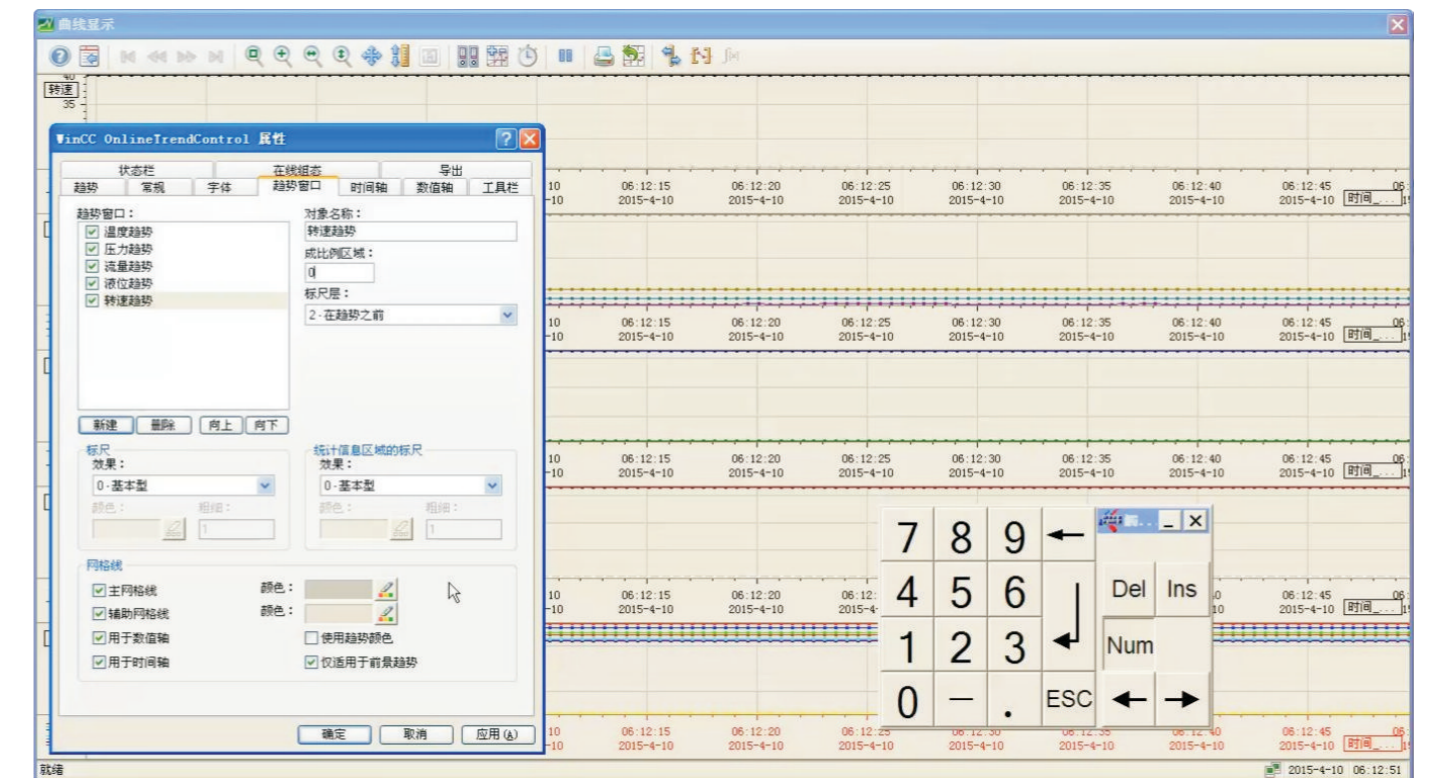
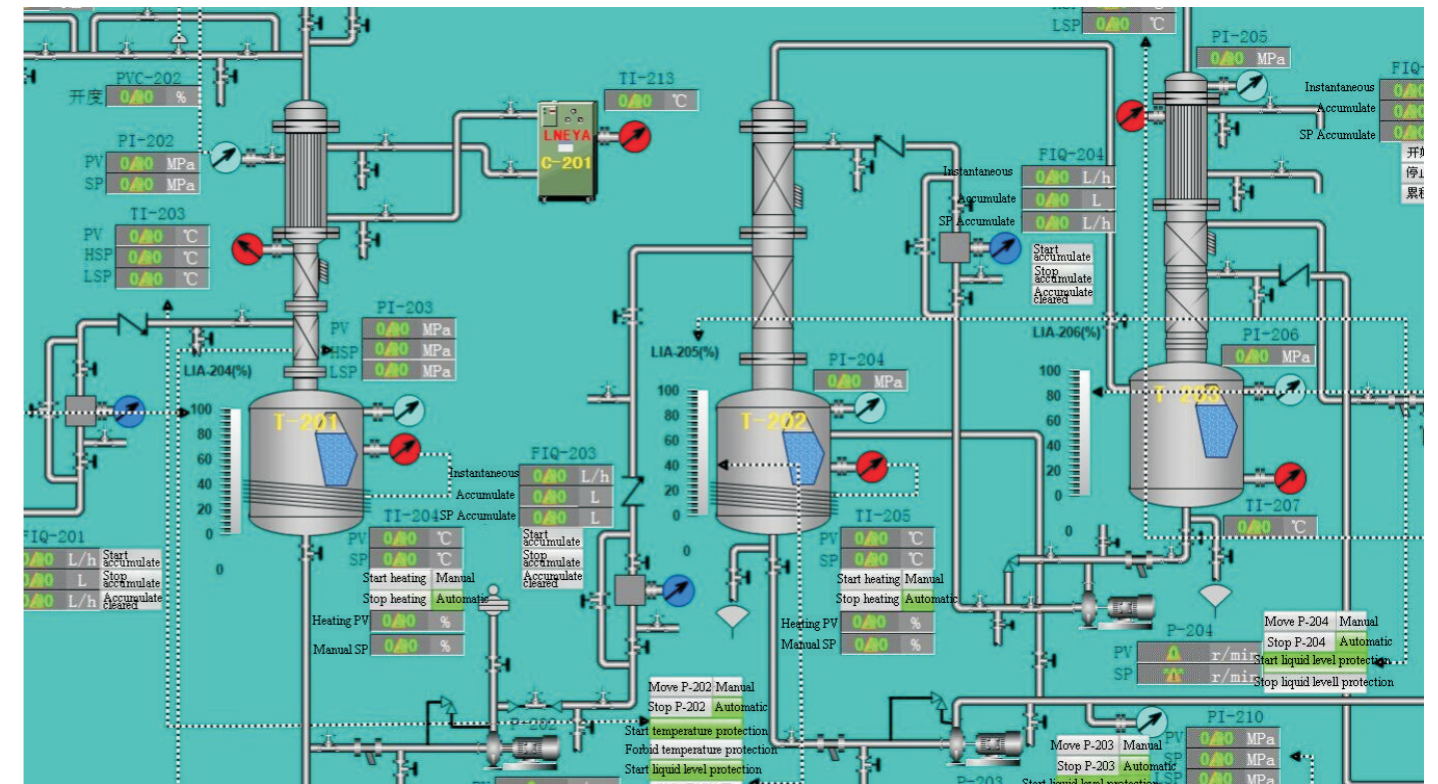
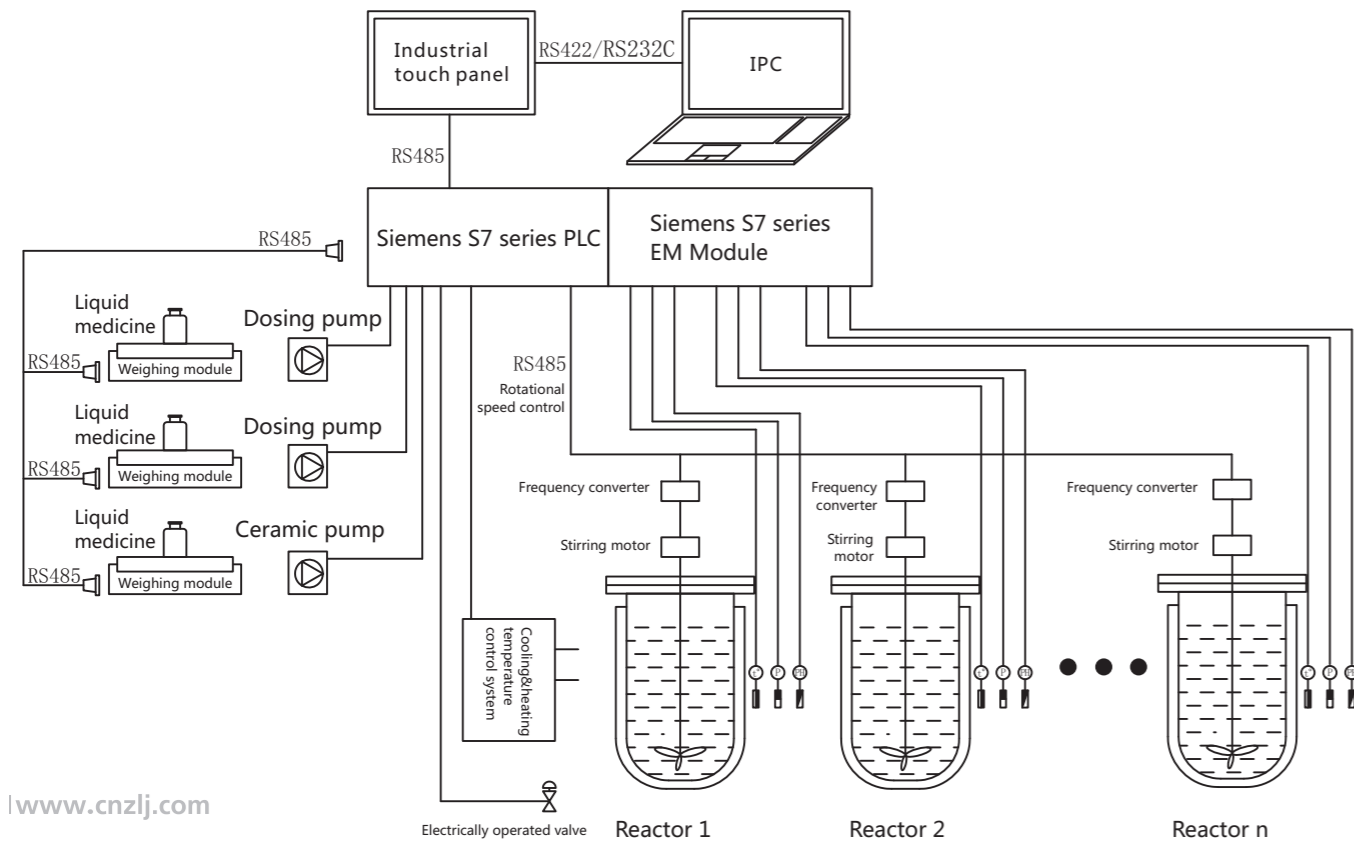
In many cases,proess control is required with operation function in the production site,especially in the process of batch-type process,about start-stop of system,the change of parameters which is decided according to the scene of the production readiness and actual production status.It is required that it also need the function of operation control in the production site besides centralized monitoring by control room.

## Flexible Function, Control Scheme Can Be Customized

Engineer can invoke more than 30 types of operation control function and the function block by simple programm method to satisfy the specific and actual control.

## Save Cost

The system is specially designed for small and medium-sized monitoring points,with simple configuration,reasonable price which compared with the control system products of medium large scale.Meantimes,because of distributed system structure,it does not need to connect amount of input/output singnal cables to central control room,and greatly reduce the user cost.



## Refrigerated heating circulator SST-15/20

The whole system is a closed liquid circulation system with the expansion of container, expansion of the container and the liquid circulation is adiabatic, and did not participate in liquid circulation, only mechanical connection, regardless of the temperature of liquid circulation is a high temperature or low temperature expansion of the medium container of low at 60 degrees. Throughout the liquid circulation system is sealed, low temperature did not absorb water vapor, high temperature did not produce the oil miss. The entire circulatory system is not used in machinery and electronic valves.

- FEATURES:**
1. Wide working temperature range with cooling and heating function, temperature range: -30~180°C.
  2. With 2pcs of LED display controller, can show the setting temperature & actual value, and alarm value for over-temperature.
  3. Efficient fast, simple topping up liquid.
  4. Ensure fast cooling at high temperature and can achieve 180°C~-25°C temperature control continuously.
  5. The cycle system is closed, there is no oil mist and water vapor, to assure the lab safety and heat transfer fluid lifetime.
  6. Use copeland brand compressor, circulation pump, stable performance and reliable quality.
  7. Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.
  8. control heat conducting medium temperature, Use the same kind of heat conducting in the whole heating-cooling cycle.
  9. High-lift design and meet the long-distance transportation of heat conducting medium.
  10. With environment friendly refrigerant R404A.



Scan QR code for more information



-30°C~180°C

Model	SST-15	SST-20
Temperature range	-25°C~180°C	-30°C~180°C
Model control	Intelligent PID	Intelligent PID
Temperature accuracy	± 0.5°C	± 0.5°C
Heating power	1500W	2000W
Cooling power	1000W AT 180°C	1300W AT 180°C
	800W AT 50°C	1300W AT 50°C
	500W AT 0°C	1000W AT 0°C
	415W AT -10°C	850W AT -10°C
	280W AT -20°C	600W AT -20°C
Circulating pump	Max15L/min 0.8bar	Max15L/min 0.8bar
Input and display	Touch key input, LED display	Touch key input, LED display
Security	Self-diagnostic function; freezer overload; high-pressure pressure switch, overload relays, thermal protection device and other security features	
Refrigerant	R-404A	R-404A
Outlet	DN15	DN15
Inlet	DN15	DN15
Dimension	350x560x750 mm	350x560x750 mm
Weight	50kg	52kg
Power	AC 220V 50HZ 2000W (max)	AC 220V 50HZ 2900W (max)
Case material	SUS 304	SUS 304
Application of glass reactor	1L -20°C~180°C	1L -30°C~180°C
	2L -20°C~170°C	2L -30°C~180°C
	5L -10°C~145°C	5L -20°C~165°C
		10L -10°C~145°C

## Refrigerated Heating Circulator (HR series)

### Description:

The whole system is a closed liquid circulation system with the expansion of container, expansion of the container and the liquid circulation is adiabatic, and do not participate in liquid circulation, only mechanical connection, regardless of the temperature is a high temperature or low temperature, the tank temperature is limited to 60°C.

The cycle is closed, there is no oil mist at high temperature and no water vapor at low temperature; Wide working temperature range of heat transfer oil; The entire circulation system without use of mechanical and electric valve.

### FEATURES:

1. Wide working temperature range with cooling and heating function, temperature range: -25~200°C.
2. With 2pcs of LED display controller, can show the setting temperature & actual value, and alarm value for overtemperature.
3. Efficient fast, simple topping up liquid.
4. Ensure fast cooling at high temperature and can achieve 200°C~-25°C temperature control continuously.
5. The cycle system is closed, there is no oil mist and water vapor happen, so as to assure the lab safety and heat transfer fluid lifetime.
6. Use copeland brand compressor, circulation pump, stable performance and reliable quality.
7. Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.
8. Use the same kind of heat conducting in the whole heating-cooling cycle when control heat conducting medium temperature.
9. High-lift design and meet the long-distance transportation of heat conducting medium.



-25°C~200°C



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-25°C~200°C

Model	HR-25 N	HR-35 N	HR-50 N	HR-70 N	HR-100 N	HR-150 N
Temperature range °C	-25°C~200°C					
Controller	PID adaptive controller					
Temp. control	Heat-conducting medium outlet temp.control					
Communication protocol	MODBUS RTU Protocol, RS 485 Interface					
Temperature feedback	Heat-conducting medium temperature feedback PT100					
Temp. accuracy	± 0.5°C	± 0.5°C	± 0.5°C	± 0.5°C	± 0.5°C	± 0.5°C
Heating power	2.5kW	3.5kW	5.5kW	7kW	10kW	15kW
Cooling capacity	200°C	2.5kW	3.5kW	5.5kW	7kW	10kW
	100°C	2.5kW	3.5kW	5.5kW	7kW	10kW
	20°C	2.5kW	3.5kW	5.5kW	7kW	10kW
	-5°C	2kW	3kW	4.5kW	6.6kW	8kW
	-20°C	1kW	1.8kW	2.8kW	3.8kW	4.6kW
Circulation pump	Max25L/min 2bar	Max35L/min 2bar	Max35L/min 2bar	Max35L/min 2bar	Max50L/min 2bar	Max50L/min 2bar
Tank volume	8L	13L	15L	18L	22L	25L
Compressor	Copeland	Copeland	Copeland	Copeland	Copeland	Copeland
Evaporator	Plate heat exchanger					
Operation Panel	Display setting temperature and testing temperature; outlet and inlet temperature, 7-inch color touch screen					
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.					
Closed circulation system	The whole system is full closed circulation, there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running. The system will supplement oil automatically at low temperature.					
Refrigerant	R-404A	R-404A	R-404A	R-404A	R-404A	R-404A
Connection size	DN15	DN20	DN20	DN20	DN20	DN20
Dimension	air-cooled 400*600*1150	500*680*1450	500*680*1450	500*680*1450	650*700*1650	750*750*1800
Weight	air-cooled 150kg	165kg	235kg	265kg	290kg	320kg
Power	AC 220V 50HZ 4kW(max)	AC 380V 50HZ 5.5kW(max)	AC 380V 50HZ 7.5kW(max)	AC 380V 50HZ 10kW(max)	AC 380V 50HZ 14kW(max)	AC 380V 50HZ 21kW(max)
Case material	Cold rolled steel					
Optional	Optional 7-inch color touch screen controller, temperature curve record, data export to excel format.					
Optional	SUS304 case material					
Optional power	220V 60HZ three-phase, 440V ~ 480V 60HZ three-phase					



-50°C ~ 250°C

Model	HRT-25N	HRT-35N	HRT-50N	HRT-70N	HRT-100N	HRT-150N
Temperature range °C	-50°C~250°C					
Controller	PID adaptive controller					
Temp. control	Heat-conducting medium outlet temp.control					
Communication protocol	MODBUS RTU Protocol, RS 485 Interface					
Temperature feedback	Heat-conducting medium :PT100					
Temp. accuracy	± 0.5°C	± 0.5°C	± 0.5°C	± 0.5°C	± 0.5°C	± 0.5°C
Heating power	2500W	3500W	5500W	7500W	10000W	15000W
Cooling capacity	250°C	2000W	3500W	5500W	7500W	10000W
	100°C	2000W	3500W	5000W	7000W	10000W
	20°C	2000W	3500W	5000W	7000W	10000W
	0°C	1800W	3000W	5000W	7000W	10000W
	-20°C	850W	1500W	2850W	4200W	6000W
	-40°C	250W	450W	900W	1500W	2000W
Circulation pump	Max25L/min 1bar	Max50L/min 1bar	Max50L/min 1bar	Max50L/min 1bar	Max75L/min 1.5bar	Max110L/min 1.5bar
Tank volume	8L	13L	15L	18L	22L	25L
Compressor	Tecumseh	Copeland	Copeland	Copeland	Copeland	Copeland
Evaporator	Cold rolled steel					
Operation Panel	Display setting temperature and testing temperature; outlet and inlet temperature, 7-inch color touch screen					
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.					
Closed circulation system	The whole system is full closed circulation, there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running. The system will supplement oil automatically at low temperature.					
Refrigerant	R-404A	R-404A	R-404A	R-404A	R-404A	R-404A
Connection size	DN15	DN20	DN20	DN20	DN20	DN20
Dimension	air-cooled 400*600*1150 mm	500*700*1450 mm	500*700*1450 mm	500*700*1450 mm	650*700*1650 mm	750*750*1850 mm
Weight	air-cooled 160kg	185kg	245kg	285kg	320kg	360kg
Power	AC 220V 50HZ 4.5kW(max)	AC 380V 50HZ 5.5kW(max)	AC 380V 50HZ 9kW(max)	AC 380V 50HZ 11.5kW(max)	AC 380V 50HZ 16kW(max)	AC 380V 50HZ 23kW(max)
Case material	Cold rolled steel					
Optional	SUS304 case material					
Optional power	220V 60HZ three-phase, 440V~480V 60HZ three-phase					

# Low temperature circulator

## Description:

1. Saving resources; closed cycle pipeline design, highly prevent circulating liquid pollution and extend the lifetime of circulation liquid.
2. Multi-safety protection, easy operation.
3. Human design, more convenient and flexible.
4. Efficient two-condensate system.
5. Computer-cascade temperature controller, temperature figures display, adjust unit is 0.1°C.
6. PT100 temperature sensor.
7. Can set the temperature difference of compressor on/off.
8. A variety of fault alarm (overtemperature alarm, sensor alarm, high pressure alarm, compressor overheat alarm, liquid level alarm).
9. Power on delay protection.
10. All parts are safety grounding.
11. High-performance circulating pump, can guarantee 24 hours continuously running a day.



**Easy Control**  
User friendly operation

**Protection+**  
Multi-species safety strains



-15°C ~ 30°C

Mini Chiller FL-800	
Mode	FL-800
Circulation	open system
Temp. range	-15°C ~ 30°C
Temperature accuracy	2°C
Cooling power	900W AT 20°C 760W AT 10°C 600W AT 0°C 470W AT -10°C
Pump L/min bar	Max10L/min 0.7bar
Input, display	Touch key input, LED display
Security protection	freezer overload; sensor fault protection, overload relays and other security features
Refrigerants	R-404A
Cooling pipe	Nickel-plated copper
Outlet / Return	External diameter 15mm
Tank volume	7L
Dimensions /Weight	350×560×750mm about 50kg
Power	AC 220V 50/60HZ 950W



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# Chiller/Cooling Circulator



5°C ~ 50°C



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## Typical Applications:

### Semiconductor Manufacturing Device Cooling :

Single chip cleaning, printing machine, automatic clamp installation equipment, spraying equipment, ion plating equipment, etching device, single chip processing device, slicing machine, packaging machine, the temperature of the developer management, exposure device, magnetic part of the heating device, etc.

### Laser Equipment Cooling:

Laser processing, heating part of the welding machine, laser marking device, chemical reaction plant, carbon dioxide laser processing machine, etc.

### Other Industries Cooling:

Plasma welding, automatic packaging machine, mold cooling, washing machine, gold-plated groove, resin molding machine, precision grinding machine, injection molding machine of molding parts, etc.

### Analysis Of Testing Machine Cooling:

Electronic microscope, ICP lighting light source part of the spectrum analysis device, heating part of the spectrophotometer, X-ray analytical device of heat source, automatic pulse heating part of the banner, the light source of atomic absorption spectrophotometer, etc  
CNC machine, machining center cooling of cooling medium



## FEATURES:

1. Temperature of heat transfer fluid can be adjustable.
2. Adopt ASPERA, DANFOSS, MANEUROP, COPELAND etc. Brand compressor, stable performance and can work continuously.
3. Human design, more convenient and flexible.
4. Microcomputer temperature controller, temperature figures display, adjustable unit is 0.1°C, temperature range is 5°C ~ 50°C.
5. Use hot gas bypass, save energy and improve the control precision.
6. A variety of fault alarm (overtemperature alarm, high pressure alarm, sensor alarm, compressor overheat alarm)
7. Power on delay protection.
8. All parts are safety grounding.
9. High-performance circulating pump, can guarantee 24 hours continuously running a day.

Model	FL-0250 FL-0250H	FL-0500 FL-0500H	FL-0700 FL-0700H	FL-1000 FL-1000H	FL-1500 FL-1500H	FL-2000 FL-2000H	FL-2600 FL-2600H	
Temperature range °C	Standard FL-series temperature range 5°C ~ 35°C (only with cooling function) FL with H-series temperature range 5°C ~ 50°C (both with cooling function and heating performance)							
Temp. control	ASET multifunctional controller							
Temp. control optional	Heat-conducting medium outlet temp. control							
communication protocol	MODBUS RTU Protocol, RS 485 Interface							
Temp. feedback	Heat-conducting medium temperature feedback PT100							
Cooling capacity	20°C	2.5kW	5kW	7kW	10kW	15kW	20kW	26kW
	10°C	1.8kW	3.6kW	5kW	7.2kW	11kW	14.5kW	18.5kW
Cooling capacity (H series)	10°C	2.5kW	5kW	7kW	10kW	15kW	20kW	26kW
	20°C	2kW	4kW	5.6kW	8kW	12kW	16kW	20kW
	45°C	1kW	2kW	2.8kW	4kW	6kW	8kW	11kW
Circulation pump	Max25L/min 2bar	Max35L/min 2.5bar	Max35L/min 2.5bar	Max50L/min 2.5bar	Max75L/min 2.5bar	Max75L/min 2.5bar	Max110L/min 2.5bar	
Capacity of liquid storage	15L	17L	25L	25L	40L	60L	80L	
Compressor	Tecumseh	Copeland	Copeland	Copeland	Copeland	Copeland	Copeland	
Evaporator	Plate heat exchanger							
Operation panel	Display setting temperature and testing temperature; Touch key display							
Security protection	Self-diagnosis function; freezer overload protection; high pressure switch; overload relay, thermal protection device etc. security protection function.							
Refrigerants	R-410A/R-407C							
Connection size	DN15	DN20	DN20	DN20	DN20	DN20	DN25	
Product size	air-cooled	400*600*1150 mm	500*680*1350 mm	500*680*1450 mm	500*680*1450 mm	650*700*1650 mm	750*750*1800 mm	850*850*1850 mm
Weight	air-cooled	115kg	145kg	180kg	225kg	290kg	340kg	380kg
Power	AC 220V 50HZ 1.3kW(max)	AC 220V 50HZ 1.8kW(max)	AC 220V 50HZ 2.5kW(max)	AC 380V 50HZ 3.5kW(max)	AC 380V 50HZ 4.5kW(max)	AC 380V 50HZ 6.5kW(max)	AC 380V 50HZ 8.5kW(max)	
Material	Cold rolled steel							
Optional	Optional 7-inch color touch screen controller, temperature curve record, data export to excel format.							
Optional	SUS304 material							
Optional	Pressure ≤10 bar circulating pump							
Optional Power	220V 60HZ three-phase, 440V~480V 60HZ three-phase							
Remark	Can make the bigger capacity of water storage as required.							



## Low Temperature Circulator/Cooling Circulator

(Use high power equipment for industrial production, please refer to industrial production catalogue)

### Description

1. Saving resources; closed cycle pipeline design highly prevent circulating water pollution and extend the lifetime of circulation liquid.
2. Multi-safety protection, more reliable operation
3. Brand compressor, cascade refrigeration colling technologies
4. Human design, more convenient and flexible
5. Efficient two-condensate system
6. Computer-cascade temperature controller, temperature figures display, adjustable unit is 0.1°C, temperature range is -125°C ~ -20°C, PT100 temperature sensor.
7. Use of cold technology, can guarantee the stability of temperature at low temperature.
8. Can set the temperature difference of compressor on/off.
9. Monitoring the ambient temperature, prevent temperature to be higher in the running system.
10. A variety of fault alarm (overtemperature alarm, sensor alarm, high pressure alarm, compressor overheat alarm, liquid level alarm).
11. Power on delay protection, three-level cascade system protectors.
12. All parts are safety grounding.
13. Adopt full closed circulation design, no water vapor at low temperature and ensure the purity of cooling medium, in case of ice crystals, provide a long timelife of heat transfer liquid.
14. High-performance circulating pump, can guarantee 24 hours continuously running a day.
15. Use plate cool-heat-exchanger, heat transfer efficiency is provided.



Model	FL-3500 FL-3500H	FL-5000 FL-5000H	FL-10000W FL-10000WH	FL-16000W FL-16000WH	FL-24000W FL-24000WH	FL-36000W FL-36000H	
Temperature Range	Standard FL-series temperature range 5°C ~ 35°C (only with cooling function) FL with H-series temperature range 5°C ~ 50°C (both with cooling function and heating performance)						
Temp. control	ASET multifunctional controller						
Temp. control optional	Heat-conducting medium outlet temp. control						
Communication protocol	MODBUS RTU Protocol, RS 485 Interface						
Temperature feedback	Heat-conducting medium temperature feedback PT100						
Cooling capacity	20°C	35kW	50kW	100kW	160kW	240kW	360kW
	10°C	28kW	40kW	80kW	128kW	192kW	288kW
Cooling capacity (H series)	10°C	35kW	50kW	100kW	160kW	240kW	360kW
	20°C	28kW	40kW	80kW	128kW	192kW	288kW
	45°C	17kW	24kW	48kW	77kW	115kW	173kW
Circulation pump	9m³/h 2.5bar max	15m³/h 2.5bar max	15m³/h 2.5bar max	25m³/h 2.5bar max	25m³/h 2.5bar max	35m³/h 2.5bar max	
Capacity of liquid storage	200L	400L	650L	1000L	1200L	1800L	
Compressor	Copeland	Copeland	Copeland	Copeland	Copeland	Copeland	
Evaporator	Plate heat exchanger						
Operation Panel	Display setting temperature and testing temperature; Touch key display						
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.						
Refrigerant	R-410A						
Connection size	DN-25	DN40	DN40	DN40	DN40	DN-50	
Dimension air-cooled	950*1700*1700	1100*2000*2000	1800*1200*1750	2050*1450*1750	2350*1450*1750	2450*1450*2050	
Weight air-cooled	800kg	1000kg	1350kg	1500kg	1800kg	2400kg	
Power	AC 380V 50HZ 12kW(max)	AC 380V 50HZ 18kW(max)	AC 380V 50HZ 26kW(max)	AC 380V 50HZ 43kW(max)	AC 380V 50HZ 63kW(max)	AC 380V 50HZ 92kW(max)	
Case material	Cold rolled steel						
Optional	Optional 7-inch color touch screen controller, temperature curve record, data export to excel format.						
Optional	SUS304 material						
Optional	Optional outside touch screen display controller (separated), the communication line distance is 10 meter.						
Optional power	220V 60HZ three-phase, 440V-480V 60HZ three-phase						
Remarks	Can make the bigger capacity of water storage as required.						



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Model	LX-0250N	LX-0400N	LX-0700N	LX-1000N	LX-1450N	LX-2000N	LX-2600N
Medium Temperature Range	-15°C~30°C	-25°C~30°C	-25°C~30°C	-25°C~30°C	-25°C~30°C	-25°C~30°C	-25°C~30°C
Temp. control and display	ASET multifunctional controller 7-inch touch screen display						
Temp. control optional	Heat-conducting medium outlet temp.control						
communication protocol	MODBUS RTU Protocol, RS 485 Interface						
Temp. feedback	Heat-conducting medium temperature feedback PT100						
Cooling capacity	0°C	1.5kW	2.4kW	4kW	7.5kW	10kW	20kW
	-10°C	1kW	1.5kW	2.7kW	6.3kW	8kW	15.5kW
	-20°C	0.55kW	0.8kW	1.5kW	3.5kW	5kW	7.3kW
	-20°C	0.55kW	0.8kW	1.5kW	3.5kW	5kW	7.3kW
Circulation pump	Max20L/min 1.5bar	Max20/min 1.5bar	Max35L/min 2.5bar	Max35L/min 2.5bar	Max75L/min 2.5bar	Max75L/min 2.5bar	Max110L/min 2.5bar
Capacity of liquid storage	15L	17L	25L	25L	40L	60L	80L
Compressor	Tecumseh	Tecumseh	Copeland	Copeland	Copeland	Copeland	Copeland
Evaporator	Copper tube						
Operation panel	7-inch color touch screen, temperature curve record, excel-format export.						
Security protection	Self-diagnosis function;freezer overload protection;high pressure switch;overload relay,thermal protection device etc.security protection function.						
Refrigerants	R-404A						
Connection size	DN15	DN20	DN20	DN20	DN20	DN20	DN25
Product size	air-cooled 400*600*1150 mm	400*600*1150 mm	500*680*1350 mm	500*680*1350 mm	650*700*1650 mm	750*750*1800 mm	850*850*1850 mm
Weight	air-cooled 115kg	145kg	180kg	225kg	290kg	340kg	385kg
Power	AC 220V 50HZ 1.5kW(max)	AC 220V 50HZ 1.8kW(max)	AC 220V 50HZ 2.5kW(max)	AC 380V 50HZ 3.5kW(max)	AC 380V 50HZ 5kW(max)	AC 380V 50HZ 6.5kW(max)	AC 380V 50HZ 8.5kW(max)
Material	Cold rolled steel						
Optional	SUS304 material						
Optional	Pressure ≤10 bar circulating pump						
Optional Power	220V 60HZ three-phase, 440V~480V 60HZ three-phase						
Remark	Can make the bigger capacity of water storage as required.						

Model	LT-5018N	LT-5040N	LT-5062N	LT-5090N	LT-50A1N	LT-50A2N
Medium Temperature Range	-50°C~30°C	-50°C~30°C	-50°C~30°C	-50°C~30°C	-50°C~30°C	-50°C~30°C
Temp. control and display	ASET multifunctional controller 7-inch touch screen display					
Temp. control optional	Heat-conducting medium outlet temp.control					
communication protocol	MODBUS RTU Protocol, RS 485 Interface					
Temp. feedback	Heat-conducting medium temperature feedback PT100					
Cooling capacity	-10°C	1.5kW	3.2kW	4.5kW	6.2kW	8.3kW
	-20°C	1.2kW	2.7kW	3.8kW	5.5kW	7kW
	-40°C	0.4kW	0.75kW	1.15kW	1.5kW	2.1kW
	-40°C	0.4kW	0.75kW	1.15kW	1.5kW	2.1kW
Circulation pump	Max20L/min 0.7bar	Max20/min 0.7bar	Max35L/min 1bar	Max35L/min 1bar	Max75L/min 1bar	Max75L/min 1bar
Capacity of liquid storage	15L	17L	25L	25L	40L	60L
Compressor	Tecumseh	Copeland	Copeland	Copeland	Copeland	Copeland
Evaporator	Copper tube					
Operation panel	Match 7-inch color touch screen controller,temperature curve record,data export to excel format.					
Security protection	Self-diagnosis function;freezer overload protection;high pressure switch;overload relay,thermal protection device etc.security protection function.					
Refrigerants	R-404A					
Connection size	DN15	DN20	DN20	DN20	DN20	DN20
Product size	air-cooled 400*600*1250 mm	500*680*1350 mm	500*680*1450 mm	500*680*1450 mm	650*700*1650 mm	750*750*1800 mm
Weight	air-cooled 145kg	185kg	230kg	275kg	340kg	380kg
Power	AC 220V 50HZ 1.6kW(max)	AC 380V 50HZ 2.5kW(max)	AC 380V 50HZ 3.5kW(max)	AC 380V 50HZ 4.8kW(max)	AC 380V 50HZ 6kW(max)	AC 380V 50HZ 8kW(max)
Material	Cold rolled steel painting					
Optional	SUS304 material					
Optional	Pressure ≤6 bar circulating pump					
Optional Power	220V 60HZ three-phase, 440V~480V 60HZ three-phase					
Remark	Can make the bigger capacity of water storage as required.					

Model	LT-6518N	LT-6530N	LT-6562N	LT-6590N	LT-65A1N	LT-65A2N
Medium Temperature Range	-65°C~-20°C	-65°C~-20°C	-65°C~-20°C	-65°C~-20°C	-65°C~-20°C	-65°C~-20°C
Temp. control and display	ASET multifunctional controller 7-inch touch screen display					
Temp. control optional	Heat-conducting medium outlet temp.control					
communication protocol	MODBUS RTU Protocol, RS 485 Interface					
Temp. feedback	Heat-conducting medium temperature feedback PT100					
Cooling capacity	-20°C	0.85kW	1.45kW	2.5kW	3.4kW	4.8kW
	-40°C	0.7kW	1.2kW	2.1kW	2.8kW	4kW
	-55°C	0.4kW	0.6kW	1.2kW	1.6kW	2kW
	-55°C	0.4kW	0.6kW	1.2kW	1.6kW	2kW
Circulation pump	Max20L/min 0.7bar	Max20/min 0.7bar	Max35L/min 1bar	Max35L/min 1bar	Max75L/min 1bar	Max75L/min 1bar
Capacity of liquid storage	15L	17L	25L	25L	40L	60L
Compressor	Tecumseh	Copeland	Copeland	Copeland	Copeland	Copeland
Evaporator	Copper tube					
Operation panel	7-inch color touch screen, temperature curve record, excel-format export.					
Security protection	Self-diagnosis function;freezer overload protection;high pressure switch;overload relay,thermal protection device etc.security protection function.					
Refrigerants	R-404A/R23					
Connection size	DN15	DN20	DN20	DN20	DN20	DN20
Product size	air-cooled 400*600*1150 mm	500*680*1350 mm	650*700*1650 mm	650*700*1650 mm	650*700*1650 mm	750*750*1800 mm
Weight	air-cooled 145kg	185kg	230kg	275kg	340kg	380kg
Power	AC 220V 50HZ 2.5kW(max)	AC 380V 50HZ 3kW(max)	AC 380V 50HZ 4kW(max)	AC 380V 50HZ 5.8kW(max)	AC 380V 50HZ 7kW(max)	AC 380V 50HZ 9kW(max)
Material	Cold rolled steel painting					
Optional	Circulation Pump Optional: 35L/min 2.5bar 50L/min 2.5bar 110L/min 2.5bar					
Optional	SUS304 material					
Optional	Pressure ≤6 bar circulating pump					
Optional Power	220V 60HZ three-phase, 440V~480V 60HZ three-phase					
Remark	Can make the bigger capacity of water storage as required.					

Model	LT-8018N	LT-8030N	LT-8062N	LT-8090N	LT-80A1N	LT-80A2N
Medium Temperature Range	-80°C~-20°C	-80°C~-20°C	-80°C~-20°C	-80°C~-20°C	-80°C~-20°C	-80°C~-20°C
Temp. control and display	ASET multifunctional controller 7-inch touch screen display					
Temp. control optional	Heat-conducting medium outlet temp.control					
communication protocol	MODBUS RTU Protocol, RS 485 Interface					
Temp. feedback	Heat-conducting medium temperature feedback PT100					
Cooling capacity	-40°C	0.6kW	1.4kW	2.8kW	3.4kW	4.8kW
	-60°C	0.4kW	0.8kW	1.6kW	2.1kW	4kW
	-75°C	0.2kW	0.5kW	0.9kW	1.2kW	2kW
	-75°C	0.2kW	0.5kW	0.9kW	1.2kW	2kW
Circulation pump	Max20L/min 0.7bar	Max20/min 0.7bar	Max35L/min 1bar	Max35L/min 1bar	Max75L/min 1bar	Max75L/min 1bar
Capacity of liquid storage	15L	17L	25L	25L	40L	60L
Compressor	Tecumseh	Copeland	Copeland	Copeland	Copeland	Copeland
Evaporator	Copper tube					
Operation panel	7-inch color touch screen, temperature curve record, excel-format export.					
Security protection	Self-diagnosis function;freezer overload protection;high pressure switch;overload relay,thermal protection device etc.security protection function.					
Refrigerants	R-404A/R23					
Connection size	DN15	DN20	DN20	DN20	DN20	DN20
Product size	air-cooled 500*680*1350 mm	500*680*1350 mm	650*700*1650 mm	650*700*1650 mm	750*750*1800 mm	850*850*1850 mm
Weight	air-cooled 185kg	230kg	275kg	340kg	380kg	470kg
Power	AC 220V 50HZ 3kW(max)	AC 380V 50HZ 4kW(max)	AC 380V 50HZ 5.5kW(max)	AC 380V 50HZ 7kW(max)	AC 380V 50HZ 8.7kW(max)	AC 380V 50HZ 11.5kW(max)
Material	Cold rolled steel painting					
Optional	Circulation Pump Optional: 35L/min 2.5bar 50L/min 2.5bar 110L/min 2.5bar					
Optional	SUS304 material					
Optional	Pressure ≤6 bar circulating pump					
Optional Power	220V 60HZ three-phase, 440V~480V 60HZ three-phase					
Remark	Can make the bigger capacity of water storage as required.					

Model	LT-A025WN	LT-A050WN	LT-A080WN	LT-A215WN	LT-A230WN	LT-A255WN
Medium Temperature Range	-105°C~-60°C	-105°C~-60°C	-105°C~-60°C	-120°C~-70°C	-120°C~-70°C	-120°C~-70°C
Temp. control and display	ASET multifunctional controller 7-inch touch screen display					
Temp. control optional	Heat-conducting medium outlet temp.control					
communication protocol	MODBUS RTU Protocol, RS 485 Interface					
Temp. feedback	Heat-conducting medium temperature feedback PT100					
Cooling capacity	-60°C	2.5kW	5kW	8.6kW		
	-75°C	1.3kW	3kW	5kW	1.2kW	2.4kW
	-95°C	0.7kW	1.4kW	2.3kW	0.7kW	1.4kW
	-110°C				0.3kW	0.55kW
Circulation pump	Max20L/min 0.7bar	Max35/min 1bar	Max75L/min 1bar	Max20L/min 0.7bar	Max35/min 1bar	Max35/min 1bar
Capacity of liquid storage	17L	25L	40L	17L	25L	40L
Compressor	Tecumseh	Copeland	Copeland	Copeland	Copeland	Copeland
Evaporator	Plate heat exchanger					
Operation panel	7-inch color touch screen, temperature curve record, excel-format export.					
Security protection	Self-diagnosis function; freezer overload protection; high pressure switch; overload relay, thermal protection device etc. security protection function.					
Refrigerants	R-404A/R23/R14					
Connection size	DN15	DN20	DN20	DN20	DN20	DN20
Product size air-cooled	550*700*1650 mm	700*800*1650 mm	700*800*1650 mm	550*700*1650 mm	700*800*1650 mm	700*800*1650 mm
Weight air-cooled	235kg	320kg	455kg	340kg	380kg	480kg
Power	AC 380V 50HZ 5.5kW(max)	AC 380V 50HZ 7.5kW(max)	AC 380V 50HZ 11kW(max)	AC 380V 50HZ 6kW(max)	AC 380V 50HZ 9.5kW(max)	AC 380V 50HZ 14kW(max)
Material	Cold rolled steel painting					
Optional	Circulation Pump Optional: 35L/min 2.5bar 50L/min 2.5bar 110L/min 2.5bar					
Optional	SUS304 material					
Optional	Pressure ≤6 bar circulating pump					
Optional Power	220V 60HZ three-phase, 440V~480V 60HZ three-phase					
Remark	Can make the bigger capacity of water storage as required.					

# Heating Circulator

## Description:

1. UC series with function from high temperature to cooling process, from 300°C~50°C.
2. Equipped with heating cooling container, with large heat transfer area, fast heat-up and cool-down, small heat transfer oil demand.
3. Can heat-up and cool-down continuously.
4. The whole cycle is full closed, there is no oil mist at high temperature, heat transfer oil can not be oxidized and browning.
5. With function of internal PT100 for correcting internal circulation.
6. The whole system is closed with expansion tank, the expansion tank and liquid circulation are thermal insulation, do not participate in liquid circulation, regardless of high or low temperature, the medium in expansion tank is limited to 60°C.



300°C~50°C

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Model	LY-5020	LY-A020	UC-1820	UC-3020	UC-5020	UC-A020	UC-3030	UC-5030	UC-A030
Temperature range	50°C~200°C	50°C~200°C	50°C~200°C	50°C~200°C	50°C~200°C	50°C~200°C	50°C~300°C	50°C~300°C	50°C~300°C
Controller	PID adaptive controller								
Temp. Control optional	Heat-conducting medium outlet temp.control								
Communication protocol	MODBUS RTU Protocol, RS 485 Interface								
Temperature feedback	Heat-conducting medium temperature feedback PT100								
Temp. accuracy	± 0.5°C	± 0.5°C	± 0.5°C	± 0.5°C	± 0.5°C	± 0.5°C	± 0.5°C	± 0.5°C	± 0.5°C
Heating power	5.5kW	10kW	2kW	3kW	5.5kW	10kW	3kW	5.5kW	10kW
Cooling capacity	300°C						3kW	5.5kW	10kW
	200°C		2kW at 200°C	3kW at 200°C	5.5kW	10kW	2.5kW	5kW	9kW
	100°C		1.3kW	2kW	4kW	8kW	1.3kW	4kW	7kW
	65°C		0.6kW	1kW	1.8kW	3.4kW	0.6kW	1.8kW	3kW
Circulation pump	Max35L/min 2bar	Max50L/min 2bar	Max10L/min 1.5bar	Max20L/min 1.5bar	Max35L/min 2bar	Max50L/min 2bar	Max15L/min 2bar	Max35L/min 2bar	Max50L/min 2bar
Heater	Orient electric heater								
Independent Temperature limiter	LNEYA								
Cooler	KAORI Plate heat exchanger								
Operation panel	Display setting temperature and testing temperature; Touch screen display								
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.								
Closed circulation system	The whole system is full closed circulation, there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running. The system will supplement oil automatically at low temperature.								
Connection size	DN20	DN20	DN15	DN20	DN20	DN-20	DN15	DN20	DN-20
Dimension	400*600*1050	400*600*1050	350*560*750	400*600*1050	400*600*1050	400*600*1050	600*600*1250	600*600*1250	600*600*1250
Weight	70kg	80kg	35kg	65kg	78kg	88kg	85kg	95kg	105kg
Power	AC 220V 50HZ 5.9kW (max)	AC 380V 50HZ 10.8kW (max)	AC 380V 50HZ 2.2kW (max)	AC 220V 50HZ 3.5kW (max)	AC 380V 50HZ 5.9kW (max)	AC 380V 50HZ 10.8kW (max)	AC 380V 50HZ 3.2kW (max)	AC 380V 50HZ 5.9kW (max)	AC 380V 50HZ 10.8kW (max)
Case material	Cold rolled steel								
Optional	Optional 7-inch color touch screen controller, temperature curve record, data export to excel format.								
Optional	SUS304 case material								
Optional power	220V 60HZ three-phase, 440V~480V 60HZ three-phase								

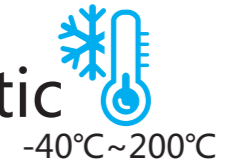
The general configuration of the explosion-proof product is Ex d IIB T4

# Heating Circulator (industrial production)



Model	UC-A1520	UC-A2520	UC-A3820	UC-A6020	UC-A9520	UC-A13020	UC-A20020	UC-A1530	UC-A2530	UC-A3830	UC-A6030	
Temperature range	50°C ~ 200°C							50°C ~ 300°C				
Controller	PID adaptive controller											
Temp. Control optional	Heat-conducting medium outlet temp.control											
Communication protocol	MODBUS RTU Protocol, RS 485 Interface											
Temperature feedback	Heat-conducting medium temperature feedback PT100											
Temp. accuracy	± 0.5°C	± 0.5°C	± 1°C	± 1°C	± 1°C	± 1°C	± 2°C	± 0.5°C	± 1°C	± 1°C	± 1°C	
Heating power	15kW	25kW	38kW	60kW Divide to two groups heating	95kW Divide to three groups heating	130kW Divide to three groups heating	200kW Divide to four groups heating	15kW	25kW	38kW	60kW Divide to two groups heating	
Heater can be divided into groups. When the testing temperature reached to (setting temperature -5°C), it can close the most of heating duty and leave the next group to be PID fuzzy control.												
Cooling capacity	300°C							15kW	25kW	38kW	60kW	
	200°C	15kW	25kW	38kW	60kW	95kW	130kW	200kW	13kW	22kW	32kW	
	100°C	12kW	20kW	30kW	48kW	76kW	100kW	160kW	10kW	17kW	27kW	
	60°C	5kW	8.5kW	12kW	19kW	30kW	40kW	64kW	4kW	6kW	11kW	
There is a heat exchanger in the system and it needs water to cool. Open the water valve automatically according to demand.												
Circulation pump	Max50L/min 2.5BAR	Max110L/min 2.5BAR	Max110L/min 2.5BAR	Max250L/min 2.5BAR	Max250L/min 2.5BAR	Max400L/min 2.5BAR	Max400L/min 2.5BAR	Max50L/min 2.5BAR	Max110L/min 2.5BAR	Max110L/min 2.5BAR	Max250L/min 2.5BAR	
Expansion tank volume	35L	65L	90L	160L	240L	300L	500L	50L	80L	120L	220L	
Heater	Orient electric heater											
Independent temperature limiter	LNEYA											
Cooler	Plate heat exchanger											
Operation panel	Display setting temperature and testing temperature; Touch screen display											
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.											
Closed circulation system	The whole system is full closed circulation, there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running. The system will supplement oil automatically at low temperature.											
Connection size	DN-25	DN25	DN25	DN40	DN40	DN-50	DN-50	DN-25	DN-25	DN-25	DN-40	
Dimension	600*600*1250	700*800*1350	1500*1000*1650	1500*1000*1650	2050*1250*2050	2050*1450*2050	2350*1450*2050	700*800*1650	700*800*1650	1500*1000*1650	2050*1250*2050	
Weight	100kg	130kg	240kg	360kg	480kg	600kg	850kg	115kg	195kg	325kg	680kg	
Power	AC 380V 50HZ 15.7kW (max)	AC 380V 50HZ 26.5kW (max)	AC 380V 50HZ 39.5kW (max)	AC 380V 50HZ 63kW (max)	AC 380V 50HZ 98kW (max)	AC 380V 50HZ 135.5kW (max)	AC 380V 50HZ 206kW (max)	AC 380V 50HZ 16kW (max)	AC 380V 50HZ 26.5kW (max)	AC 380V 50HZ 39.5kW (max)	AC 380V 50HZ 63kW (max)	
Case material	Cold rolled steel painting											
Optional	Optional 7-inch color touch screen controller, temperature curve record, data export to excel format.											
Optional	SUS304 SUS304 case material											
Optional	Optional outside touch screen display controller (separated), the communication line distance is 10 meter.											
Optional	Optional explosion-proof touch screen control system (ExdellBT4), the communication line distance is 15 meter.											
Optional power	220V 60HZ three-phase, 440V ~ 480V 60HZ three-phase											

# Cooling Heating Thermostatic



## Description

It is widely applied to the field of bioengineer, medicine, food, chemical industry, metallurgy and petroleum, offering ideal constant temperature Equipment for the research institute, high-education institute, quality Control department and lab of the factory.

## Features

1. With self-diagnosis function, freezer overload protection, high pressure switches, overload relays, thermal protection device and other security functions.
2. Use the French compressor Tecumseh, filter drier Danfoss, solenoid valve Emerson, expansion valve.
3. LED display, clear, easy to operate.
4. Succeed in making the temperature decrease successively.
5. The liquid container is made by stainless steel, the volume is very suitable.
6. Adopt the environmental refrigerant to meet environmental requirements without using fluorine.
7. Multi-safety protection, more reliable operation.
8. Use the pump stir up to make the temperature in the container uniformly.
9. The function of correcting the temperature.
10. Independent automatic overheat preventive device.



Model	FC-1020	FC-2020	FC-1040	FC-2040	FC-1060	FC-2060	
Temperature range	-20.0°C ~ 200.0°C		-40.0°C ~ 200.0°C		-60.0°C ~ 200.0°C		
Temperature accuracy	± 0.03°C						
Temperature resolution	0.01K						
Volume of container	25*20*20	40*25*20	25*20*20	40*25*20	25*20*20	40*25*20	
Tank volume	10L	20L	10L	20L	10L	20L	
Way of temperature control	PID adaptive controller						
Way of circulation	20L/min, 1bar The default is internal recycle, it can be made with external recycle mode.						
Input and display	7-inch color touch screen display						
Data record	Temperature curve record, data export to excel format and USB output interface						
Function of alarm	Over-temperature alarm, sensor alarm, independent automatic overheat preventive device and alarm for refrigerator abnormality.						
Sensor	PT100						
Heating power	1200W	2500W	1200W	2500W	1200W	2500W	
Cooling power	200°C	1200W	2500W	1200W	2500W	2500W	
	50°C	1200W	2500W	1200W	2500W	2500W	
	20°C	1200W	2500W	1200W	2500W	2500W	
	0°C	1200W	2500W	1200W	2500W	2500W	
	-10°C	600W	1250W	1200W	2000W	1200W	2500W
	-25°C			720W	1200W	1200W	2500W
-35°C			380W	800W	960W	2000W	
-55°C					400W	900W	
Material	SUS304						
Case material	SUS304						
Circulation connection size	External cycle connection size M24*1.5						
Compressor	Embraco						
Dry filter	Danfoss						
Expansion valve	Danfoss						
Refrigerants	R404A			R404A R508B			
Size	45*55*85	50*65*95	45*55*105	50*65*125	45*55*135	50*65*145	
Power	220V 50HZ 2500W MAX	220V 50HZ 4000W MAX	220V 50HZ 2700W MAX	220V 50HZ 4300W MAX	220V 50HZ 3000W MAX	220V 50HZ 5000W MAX	
Weight	85kg	100kg	130kg	150kg	145kg	185kg	

# Low temperature thermostatic bath

## Product Application

- Widely used in petrochemical, chemical, pharmaceutical, bioengineering, life science, Light industry and food Industry, sample testing and so on, providing a high-precision constant temperature liquid environment.

## Product description

### Refrigeration System

- Single compressor cascade refrigeration technology.
- Faster cooling speed, energy saving, high efficient, low noise.
- Brand compressor.

### Evaporator

- Using nickel-plated copper

### Control system and data records

- 7-inch color touch screen display
- Real-time temperature record
- Temp. curve records, export to USB (Excel format)

### Safety System

- Refrigeration system of high and low pressure protection and display
- Condensing temperature display and protection
- A variety of fault alarm (over-temperature alarm, sensor alarm, high pressure alarm, compressor overheating alarm;)
- Boot delay protection;
- All parts are safety grounding.



## Technical Parameters

Model	SC-5005	SC-8005
Temperature range	-50.00°C ~ 100.00°C	-80.00°C ~ 100.00°C
Temperature accuracy	±0.03°C at -40°C	±0.03°C at -70°C
Temperature resolution	0.01K	0.01K
Tank volume	Diameter 200mm*150mm	Diameter 200mm*150mm
Slot opening size	Diameter 200mm	Diameter 200mm
Effective volume	5L	5L
Temperature control mode	PID adaptive controller	
Circulation pump flow rate	10L/min 0.7bar (Standard is inside the loop, but it can receive into the outer loop mode)	
Input Display	7-inch color touch-screen input and display	
Data record	Temperature curve records, USB data export (Excel format)	
Alarm function	Over-temperature alarm, sensor malfunction alarm, independent overheat prevention device, refrigeration unit abnormal alarm	
Sensor	PT100	PT100
Heating power	600W	600W
Cooling capacity	20°C	600W
	-20°C	400W
	-35°C	300W
	-45°C	200W
	-60°C	200W
	-75°C	100W
	Warning: Do not open refrigerator when the system defined above 30°C	
Material tank	SUS304	
Case material	SUS304	
Interface size	12mm (Outer diameter)	12mm (Outer diameter)
Compressor	SECOP	SECOP
Dry filter	Emerson	Emerson
Refrigerant	LNEYA mixed refrigerant	
Machine size (mm)	400mm*550mm*750mm	400mm*550mm*750mm
Power supply	220V 50HZ 1200W max	220V 50HZ 1350W max
Weight	55kg	62kg

# Freezer

Medium-sized low-temperature freezer, refrigeration temperature range from -5 °C ~ -150 °C, safe, reliable, rapid cooling for the liquid, widely used in petrochemical, medical, pharmaceutical, biochemical and freeze-dried, military and other high-tech industries.

## Product features:

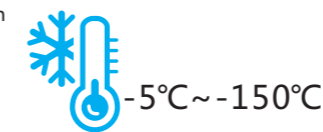
- Temperature ranges from -5 ~ -150 degrees, can meet different temperature;
- Adopt environmental protection refrigerants;
- Famous brand semi-closed piston compressor, semi-closed bipolar piston compressor, semi-hermetic screw compressor, main brand are BOCK, Bitzer, Copeland, Hanbell, fusheng; Plate heat exchanger, Small volume, High efficiency;
- Top imported cold controller(DANFOSS pressure controller, balance valve, expansion valve, solenoid valve, filter drier, Emerson oil separator, ALCO liquid mirror, check valve, etc.);
- Generator cooling water circuit use intermediate heat exchanger, improve system reliability and safety;
- DANFOSS electronic expansion valve, high precision control;
- Adopt Siemens PLC S7-200/300, LNEYA touch screen, automatic control, temperature curve display, temperature record U disk, fault alarm;
- Large cooling capacity adopts semi-hermetic screw compressor, electronic expansion valve control, high efficiency and energy saving;
- Offer machine installation and system test, users only need to finish the installation of refrigerant and cooling water;
- Factory testing: each refrigerating unit is on load test of not less than 12 hours in the factory.

## Application field:

Chemical, pharmaceutical, biochemical industry and such low temperature reaction.



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Model	LC-12W	LC-20W	LC-30W	LC-40W	LC-60W	LC-80W	LC-120W	LC-180W	LC-240W	LC-360W
Temperature Range	-25°C ~ 5°C									
Cooling Capacity At -20°C	12kW 10320Kcal/h	20kW 17200Kcal/h	30kW 25800Kcal/h	40kW 34400Kcal/h	60kW 51600Kcal/h	80kW 68800Kcal/h	120kW 103200Kcal/h	180kW 154800Kcal/h	240kW 206400Kcal/h	360kW 309600Kcal/h
Cooling Capacity At -40°C	6kW 5160Kcal/h	10kW 8600Kcal/h	15kW 12900Kcal/h	20kW 17200Kcal/h	30kW 25800Kcal/h	40kW 34400Kcal/h	60kW 51600Kcal/h	80kW 68800Kcal/h	120kW 103200Kcal/h	180kW 154800Kcal/h
Circulation Pump	6.6m³/h 2.5bar max	9m³/h 2.5bar max	15m³/h 2.5bar max	15m³/h 2.5bar max	25m³/h 2.5bar max	25m³/h 2.5bar max	25m³/h 2.5bar max	35m³/h 2.5bar max	35m³/h 2.5bar max	50m³/h 2.5bar max
Inlet&outlet connection size	DN-25 PN-10	DN-25 PN-10	DN-32 PN-10	DN-32 PN-10	DN-40 PN-10	DN-40 PN-10	DN-40 PN-10	DN-50 PN-10	DN-50 PN-10	DN-65 PN-10
Water-cooled type W (cooling water at 30°C)	6.5m³/h	8m³/h	13m³/h	16m³/h	20m³/h	24m³/h	31m³/h	44m³/h	56m³/h	80m³/h
Cold storage tank (optional)	200L	350L	500L	750L	1000L	1200L	1500L	2200L	3000L	4000L
Expansion tank (standard)	100L	175L	250L	350L	500L	600L	750L	1000L	1350L	1800L
Compressor	Standard: Copeland Optional: BOCK piston compressor					Standard: HANBELL screw compressor Optional: Bitzer screw compressor				
Operation Panel	7-inch color touch screen display, temperature curve record, data export to excel format.									
Control System	Standard: Single-chip microcomputer controller; Stepping control; Set temperature difference of refrigeration on & off. Optional: SIEMENS S7-200PLC & Module									
Closed circulation system	The whole system is a full closed circulation, there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running. The system will supplement oil automatically at low temperature.									
Circulation pump	Standard: Direct type magnetic pump    Optional: Increase the pipeline magnetic pump pressure in the pipeline									
Evaporator	Standard: Braze welding plate heat exchanger (BPHE)    Optional: Stainless steel tube heat exchanger									
Condenser	Shell and tube type water cooled condenser									
Intermediate heat exchanger	KAORI Plate heat exchanger									
Dry Filter	Emerson									
Drying filter core	Emerson									
Expansion tank	Emerson									
FDF	Emerson									
Oil separator	Emerson									
Pressure protector	Emerson									
Reservoir	Standard: RSP    Optional: Emerson									
Sight glass	Standard: SANHUA    Optional: Danfoss									
Refrigeration ball valve	Standard: SANHUA    Optional: Danfoss									
Electric	Schneider AC contactor, Schneider intermediate relay									
Refrigerant	R404A									
Secondary refrigerant	No corrosive liquid, ethanol water, ethylene glycol aqueous solution, heat transfer oil etc.									
Safety protection	High pressure protect; Water supply cut-off protection; Over-current protection; Leakage protection; Sequential and phase failure protection; High temperature protection; Sensor Failure protection; Liquid low level protection etc. multi-safety protection.									
Level Indicator	Adpot glass liquid level indication									
Piping material	SUS304									
Expansion tank material	SUS304									
Case material	Steel channel + Square tube + Cold-rolled blanking plate painting									
Product size (cm.)	160*100*165	160*100*165	180*120*175	180*120*175	205*145*205	245*145*205	245*145*205	350*150*235	350*150*235	450*200*235
Power	380V 50HZ 10kW max	380V 50HZ 14kW max	380V 50HZ 22kW max	380V 50HZ 31kW max	380V 50HZ 45kW max	380V 50HZ 61kW max	380V 50HZ 86kW max	380V 50HZ 127kW max	380V 50HZ 167kW max	380V 50HZ 247kW max
dB	Within 75dB			Within 80dB			Within 90dB			
Weight	800kg	950kg	1200kg	1350kg	1500kg	1800kg	2400kg	3100kg	3600kg	5000kg
Optional	Optional outside touch screen display controller (separated), the communication line distance is 10 meter.									
Optional	Optional explosion-proof touch screen control system (ExdellBT4), the communication line distance is 15 meter.									

Model	LJ-6W	LJ-10W	LJ-15W	LJ-20W	LJ-30W	LJ-40W	LJ-60W	LJ-90W	LJ-120W	LJ-180W
Temperature Range	-45°C ~ -10°C									
Cooling Capacity At -20°C	12kW 10320Kcal/h	20kW 17200Kcal/h	30kW 25800Kcal/h	40kW 34400Kcal/h	60kW 51600Kcal/h	80kW 68800Kcal/h	120kW 103200Kcal/h	180kW 154800Kcal/h	240kW 206400Kcal/h	360kW 309600Kcal/h
Cooling Capacity At -40°C	6kW 5160Kcal/h	10kW 8600Kcal/h	15kW 12900Kcal/h	20kW 17200Kcal/h	30kW 25800Kcal/h	40kW 34400Kcal/h	60kW 51600Kcal/h	90kW 77400Kcal/h	120kW 103200Kcal/h	180kW 154800Kcal/h
Circulation Pump	6.6m³/h 2.5bar max	9m³/h 2.5bar max	15m³/h 2.5bar max	15m³/h 2.5bar max	25m³/h 2.5bar max	25m³/h 2.5bar max	25m³/h 2.5bar max	35m³/h 2.5bar max	35m³/h 2.5bar max	50m³/h 2.5bar max
Inlet&outlet connection size	DN-25 PN-10	DN-25 PN-10	DN-32 PN-10	DN-32 PN-10	DN-40 PN-10	DN-40 PN-10	DN-40 PN-10	DN-50 PN-10	DN-50 PN-10	DN-65 PN-10
Water-cooled type W (cooling water at 30°C)	6.5m³/h	8m³/h	13m³/h	16m³/h	20m³/h	24m³/h	31m³/h	44m³/h	56m³/h	80m³/h
Cold storage tank (optional)	200L	350L	500L	750L	1000L	1200L	1500L	2200L	3000L	4000L
Expansion tank (standard)	100L	175L	250L	350L	500L	600L	750L	1000L	1350L	1800L
Compressor	Standard: Copeland Optional: BOCK piston compressor					Standard: HANBELL screw compressor Optional: Bitzer screw compressor				
Operation Panel	7-inch color touch screen display, temperature curve record, data export to excel format.									
Control System	Standard: Single-chip microcomputer controller; Stepping control; Set temperature difference of refrigeration on & off. Optional: SIEMENS S7-200PLC & Module									
Closed circulation system	The whole system is a full closed circulation, there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running. The system will supplement oil automatically at low temperature.									
Circulation pump	Standard: Direct type magnetic pump    Optional: Increase the pipeline magnetic pump pressure in the pipeline									
Evaporator	Standard: Braze welding plate heat exchanger (BPHE)    Optional: Stainless steel tube heat exchanger									
Condenser	Shell and tube type water cooled condenser									
Intermediate heat exchanger	KAORI Plate heat exchanger									
Dry Filter	Emerson									
Drying filter core	Emerson									
Expansion tank	Emerson									
FDF	Emerson									
Oil separator	Emerson									
Pressure protector	Emerson									
Reservoir	Standard: RSP    Optional: Emerson									
Sight glass	Standard: SANHUA    Optional: Danfoss									
Refrigeration ball valve	Standard: SANHUA    Optional: Danfoss									
Electric	Schneider AC contactor, Schneider intermediate relay									
Refrigerant	R404A									
Secondary refrigerant	No corrosive liquid, ethanol water, ethylene glycol aqueous solution, heat transfer oil etc.									
Safety protection	High pressure protect; Water supply cut-off protection; Over-current protection; Leakage protection; Sequential and phase failure protection; High temperature protection; Sensor Failure protection; Liquid low level protection etc. multi-safety protection.									
Level Indicator	Adpot glass liquid level indication									
Piping material	SUS304									
Expansion tank material	SUS304									
Case material	Steel channel + Square tube + Cold-rolled blanking plate painting									
Product size (cm.)	160*100*165	180*120*175	180*120*175	205*145*205	205*145*205	245*145*205	245*145*205	350*150*235	350*150*235	450*200*235
Power	380V 50HZ 10kW max	380V 50HZ 14kW max	380V 50HZ 22kW max	380V 50HZ 31kW max	380V 50HZ 45kW max	380V 50HZ 61kW max	380V 50HZ 86kW max	380V 50HZ 127kW max	380V 50HZ 167kW max	380V 50HZ 247kW max
dB	Within 75dB			Within 80dB			Within 90dB			
Weight	800kg	950kg	1100kg	1350kg	1500kg	1800kg	2400kg	3100kg	3600kg	5000kg
Optional	Optional outside touch screen display controller (separated), the communication line distance is 10 meter.									
Optional	Optional explosion-proof touch screen control system (ExdellBT4), the communication line distance is 15 meter.									

Model	LN-6W	LN-10W	LN-15W	LN-20W	LN-30W	LN-40W	LN-60W	LN-90W	LN-120W	LN-180W
Temperature Range	-60°C ~ -10°C									
Cooling Capacity At -40°C	12kW 10320Kcal/h	20kW 17200Kcal/h	30kW 18920Kcal/h	40kW 34400Kcal/h	60kW 51600Kcal/h	80kW 34400Kcal/h	120kW 103200Kcal/h	180kW 154800Kcal/h	240kW 206400Kcal/h	360kW 309600Kcal/h
Cooling Capacity At -55°C	6kW 5160Kcal/h	10kW 8600Kcal/h	15kW 12900Kcal/h	20kW 17200Kcal/h	30kW 25800Kcal/h	40kW 34400Kcal/h	60kW 51600Kcal/h	90kW 77400Kcal/h	120kW 103200Kcal/h	180kW 154800Kcal/h
Circulation Pump	6.6m³/h 2.5bar max	9m³/h 2.5bar max	15m³/h 2.5bar max	15m³/h 2.5bar max	25m³/h 2.5bar max	25m³/h 2.5bar max	25m³/h 2.5bar max	35m³/h 2.5bar max	35m³/h 2.5bar max	50m³/h 2.5bar max
Inlet&outlet connection size	DN-25 PN-10	DN-25 PN-10	DN-32 PN-10	DN-32 PN-10	DN-40 PN-10	DN-40 PN-10	DN-40 PN-10	DN-50 PN-10	DN-50 PN-10	DN-65 PN-10
Water-cooled type W (cooling water at 30°C)	7m³/h	10m³/h	14m³/h	18m³/h	21m³/h	25m³/h	35m³/h	50m³/h	63m³/h	84m³/h
Cold storage tank (optional)	200L	350L	500L	750L	1000L	1200L	1500L	2200L	3000L	4000L
Expansion tank (standard)	100L	175L	250L	350L	500L	600L	750L	1000L	1350L	1800L
Compressor	Standard: Copeland Optional: BOCK piston compressor					Standard: HANBELL screw compressor Optional: Bitzer screw compressor				
Operation Panel	7-inch color touch screen display, temperature curve record, data export to excel format.									
Control System	Standard: Single-chip microcomputer controller; Stepping control; Set temperature difference of refrigeration on & off. Optional: SIEMENS S7-200PLC & Module									
Closed circulation system	The whole system is a full closed circulation, there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running. The system will supplement oil automatically at low temperature.									
Circulation pump	Standard: Direct type magnetic pump Optional: Increase the pipeline magnetic pump pressure in the pipeline									
Evaporator	Standard: Braze welding plate heat exchanger (BPHE) Optional: Stainless steel tube heat exchanger									
Condenser	Shell and tube type water cooled condenser									
Intermediate heat exchanger	KAORI Plate heat exchanger									
Dry Filter	Emerson									
Drying filter core	Emerson									
Expansion tank	Emerson									
FDF	Emerson									
Oil separator	Emerson									
Pressure protector	Emerson									
Reservoir	Standard: RSP Optional: Emerson									
Sight glass	Standard: SANHUA Optional: Danfoss									
Refrigeration ball valve	Standard: SANHUA Optional: Danfoss									
Electric	Schneider AC contactor, Schneider intermediate relay									
Refrigerant	R404A									
Secondary refrigerant	No corrosive liquid, ethanol water, ethylene glycol aqueous solution, heat transfer oil etc.									
Safety protection	High pressure protect; Water supply cut-off protection; Over-current protection; Leakage protection; Sequential and phase failure protection; High temperature protection; Sensor Failure protection; Liquid low level protection etc. multi-safety protection.									
Level Indicator	Adpot glass liquid level indication									
Piping material	SUS304									
Expansion tank material	SUS304									
Case material	Steel channel + Square tube + Cold-rolled blanking plate painting									
Product size (cm.)	180*120*175	205*145*205	205*145*205	205*145*205	245*145*205	245*145*205	350*150*235	350*150*235	400*180*235	450*200*235
Power 380V 50HZ	10kW-15kW	14kW-20kW	21kW-30kW	24.5kW-35kW	36.5kW-60kW	56kW-80kW	85kW-120kW	112kW-160kW	168kW-240kW	252kW-360kW
dB	Within 75dB			Within 80dB			Within 90dB			
Weight	850kg	1000kg	1200kg	1450kg	2000kg	2400kg	3000kg	3600kg	4200kg	5600kg
Optional	Optional outside touch screen display controller (separated), the communication line distance is 10 meter.									
Optional	Optional explosion-proof touch screen control system (ExdellBT4), the communication line distance is 15 meter.									

Model	LD-4W	LD-6W	LD-8W	LD-12W	LD-20W	LD-30W	LD-40W	LD-60W	LD-90W	LD-120W	LD-180W	
Temperature Range	-80°C ~ -30°C											
Cooling Capacity At -60°C	6kW 5160Kcal/h	9kW 7740Kcal/h	12kW 10320Kcal/h	18kW 15480Kcal/h	30kW 25800Kcal/h	45kW 38700Kcal/h	60kW 51600Kcal/h	90kW 77400Kcal/h	135kW 116100Kcal/h	180kW 154800Kcal/h	270kW 232200Kcal/h	
Cooling Capacity At -75°C	4kW 3440Kcal/h	6kW 5160Kcal/h	8kW 6880Kcal/h	12kW 10320Kcal/h	20kW 17200Kcal/h	30kW 25800Kcal/h	40kW 34400Kcal/h	60kW 51600Kcal/h	90kW 77400Kcal/h	120kW 103200Kcal/h	180kW 154800Kcal/h	
Circulation Pump	6.6m³/h 2.5bar max	6.6m³/h 2.5bar max	9m³/h 2.5bar max	15m³/h 2.5bar max	25m³/h 2.5bar max	25m³/h 2.5bar max	25m³/h 2.5bar max	35m³/h 2.5bar max	35m³/h 2.5bar max	50m³/h 2.5bar max	65m³/h 2.5bar max	
Inlet&outlet connection size	DN-25 PN-10	DN-25 PN-10	DN-32 PN-10	DN-32 PN-10	DN-40 PN-10	DN-40 PN-10	DN-40 PN-10	DN-50 PN-10	DN-50 PN-10	DN-65 PN-10	DN-65 PN-10	
Water-cooled type W (cooling water at 30°C)	7m³/h	10m³/h	14m³/h	18m³/h	25m³/h	32m³/h	46m³/h	63m³/h	84m³/h	126m³/h	175m³/h	
Water-cooled type W (cooling water at +7°C)	2m³/h	2.8m³/h	4m³/h	5m³/h	7m³/h	9m³/h	13m³/h	18m³/h	24m³/h	36m³/h	50m³/h	
Cold storage tank (optional)	200L	350L	500L	750L	1000L	1200L	1500L	2200L	3000L	4000L	5000L	
Expansion tank (standard)	100L	175L	250L	350L	500L	600L	750L	1000L	1350L	1800L	2200L	
Compressor	Standard: Copeland Optional: BOCK piston compressor					Standard: HANBELL screw compressor Optional: Bitzer screw compressor						
Operation Panel	7-inch color touch screen display, temperature curve record, data export to excel format.											
Control System	Standard: Single-chip microcomputer controller; Stepping control; Set temperature difference of refrigeration on & off. Optional: SIEMENS S7-200PLC & Module											
Closed circulation system	The whole system is a full closed circulation, there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running. The system will supplement oil automatically at low temperature.											
Circulation pump	Standard: Direct type magnetic pump Optional: Increase the pipeline magnetic pump pressure in the pipeline											
Evaporator	Standard: Braze welding plate heat exchanger (BPHE) Optional: Stainless steel tube heat exchanger											
Condenser	Shell and tube type water cooled condenser											
Intermediate heat exchanger	KAORI Plate heat exchanger											
Dry Filter	Emerson											
Drying filter core	Emerson											
Expansion tank	Emerson											
FDF	Emerson											
Oil separator	Emerson											
Pressure protector	Emerson											
Reservoir	Standard: RSP Optional: Emerson											
Sight glass	Standard: SANHUA Optional: Danfoss											
Refrigeration ball valve	Standard: SANHUA Optional: Danfoss											
Electric	Schneider AC contactor, Schneider intermediate relay											
Refrigerant	R404A R23											
Secondary refrigerant	Ethanol, Dichloromethane, heat transfer fluid											
Safety protection	High pressure protect; Water supply cut-off protection; Over-current protection; Leakage protection; Sequential and phase failure protection; High temperature protection; Sensor Failure protection; Liquid low level protection etc. multi-safety protection.											
Level Indicator	Adpot glass liquid level indication											
Piping material	SUS304											
Expansion tank material	SUS304											
Case material	Steel channel + Square tube + Cold-rolled blanking plate painting											
Product size (cm.)	180*120*175	205*145*205	205*145*205	245*145*205	245*145*205	350*180*235	350*180*235	400*180*235	450*200*235	550*200*235	750*220*255	
Power 380V 50HZ	10kW-15kW	14kW-25kW	22kW-35kW	35kW-50kW	56kW-80kW	85kW-120kW	112kW-160kW	168kW-240kW	252kW-360kW	336kW-480kW	500kW-720kW	
dB	Within 75dB			Within 80dB			Within 90dB					
Weight	950kg	1100kg	1400kg	1800kg	2200kg	3000kg	3500kg	4000kg	5000kg	6000kg	8000kg	
Optional	Optional outside touch screen display controller (separated), the communication line distance is 10 meter.											
Optional	Optional explosion-proof touch screen control system (ExdellBT4), the communication line distance is 15 meter.											



-115°C ~ -50°C

Model	CDLJ-2W	CDLJ-3W	CDLJ-4W	CDLJ-6W	CDLJ-10W	CDLJ-15W	CDLJ-20W	CDLJ-30W	CDLJ-45W	CDLJ-60W	CDLJ-90W
Temperature Range	-115°C ~ -50°C										
Cooling Capacity At -90°C	3kW 2580Kcal/h	4.5kW 3870Kcal/h	6kW 5160Kcal/h	9kW 7740Kcal/h	15kW 12900Kcal/h	22.5kW 19350Kcal/h	30kW 25800Kcal/h	45kW 38700Kcal/h	67.5kW 58050Kcal/h	90kW 77400Kcal/h	135kW 116100Kcal/h
Cooling Capacity At -110°C	2kW 1720Kcal/h	3kW 2580Kcal/h	4kW 3440Kcal/h	6kW 5160Kcal/h	10kW 8600Kcal/h	15kW 12900Kcal/h	20kW 17200Kcal/h	30kW 25800Kcal/h	45kW 38700Kcal/h	60kW 51600Kcal/h	90kW 77400Kcal/h
Circulation Pump	6.6m³/h 2.5bar max	6.6m³/h 2.5bar max	6.6m³/h 2.5bar max	15m³/h 2.5bar max	15m³/h 2.5bar max	15m³/h 2.5bar max	25m³/h 2.5bar max	25m³/h 2.5bar max	35m³/h 2.5bar max	35m³/h 2.5bar max	35m³/h 2.5bar max
Inlet&outlet connection size	DN-25 PN-10	DN-25 PN-10	DN-25 PN-10	DN-32 PN-10	DN-32 PN-10	DN-32 PN-10	DN-40 PN-10	DN-40 PN-10	DN-50 PN-10	DN-50 PN-10	DN-50 PN-10
Water-cooled type W (cooling water at 30°C)	7m³/h	10m³/h	14m³/h	18m³/h	25m³/h	32m³/h	46m³/h	63m³/h	84m³/h	126m³/h	175m³/h
Water-cooled type W (cooling water at +7°C)	2.5m³/h	3m³/h	4m³/h	5m³/h	7m³/h	9m³/h	13m³/h	18m³/h	24m³/h	36m³/h	50m³/h
Cold storage tank (optional)	100L	150L	150L	250L	300L	500L	500L	750L	1000L	1500L	2000L
Expansion tank (standard)	50L	75L	100L	150L	200L	300L	300L	400L	550L	800L	1000L
Compressor	Standard: Copeland Optional: BOCK piston compressor					Standard: HANBELL screw compressor Optional: Bitzer screw compressor					
Operation Panel	7-inch color touch screen display, temperature curve record, data export to excel format.										
Control System	Standard: Single-chip microcomputer controller;Stepping control; Set temperature difference of refrigeration on & off. Optional: SIEMENS S7-200PLC & Module										
Closed circulation system	The whole system is a full closed circulation, there is no oil mist at high temperature and no water vapor at low temperature, pressure do not rise up when system is running. The system will supplement oil automatically at low temperature.										
Circulation pump	Standard: Direct type magnetic pump    Optional: Increase the pipeline magnetic pump pressure in the pipeline										
Evaporator	Standard: Direct type magnetic pump    Optional: Increase the pipeline magnetic pump pressure in the pipeline										
Condenser	Shell and tube type water cooled condenser										
Intermediate heat exchanger	KAORI Plate heat exchanger										
Dry Filter	Emerson										
Drying filter core	Emerson										
Expansion tank	Emerson										
FDF	Emerson										
Oil separator	Emerson										
Pressure protector	Emerson										
Reservoir	Standard: RSP    Optional: Emerson										
Sight glass	Standard: SANHUA    Optional: Danfoss										
Refrigeration ball valve	Standard: SANHUA    Optional: Danfoss										
Electric	Schneider AC contactor, Schneider intermediate relay										
Refrigerant	R404A										
Secondary refrigerant	Ethanol, Dichloromethane,heat transfer fluid										
Safety protection	High pressure protect; Water supply cut-off protection; Over-current protection; Leakage protection; Sequential and phase failure protection; High temperature protection; Sensor Failure protection; Liquid low level protection etc. multi-safety protection.										
Level Indicator	Adpot glass liquid level indication										
Piping material	SUS304										
Expansion tank material	SUS304										
Case material	Steel channel + Square tube + Cold-rolled blanking plate painting										
Product size (cm)	205*145*205	205*145*205	205*145*205	300*150*235	350*150*235	350*180*235	400*180*235	450*180*235	500*200*235	550*220*235	750*220*255
Power 380V 50HZ	10kW ~15kW	14kW ~25kW	22kW ~35kW	35kW ~50kW	56kW ~80kW	85kW ~120kW	112kW~160kW	168kW~240kW	252kW~360kW	336kW~480kW	500kW~720kW
dB	Within 75dB		Within 80dB			Within 90dB					
Weight	950kg	1100kg	1400kg	1800kg	2200kg	3000kg	3500kg	4000kg	5000kg	6000kg	8000kg
Optional	Optional outside touch screen display controller (separated), the communication line distance is 10 meter.										
Optional	Optional explosion-proof touch screen control system (ExdellBT4), the communication line distance is 15 meter.										

## Direct-cooled ultra-low temperature freezer

### Application Principle:

There must be residual gas existing in high vacuum environment where the oil diffusion pump is used, and more than 80% is water vapor, oil vapour and other high-boiling oil vapor steam. But pumping gas is difficult and time-spent and the residual gas will pollute the workpiece, so the yield and quality of products will be influenced. Ultra-Low temperature freezer can solve all these problems.

The working principle of direct-cooled ultra-low temperature freezer is placing a cooling coil up which cooling to -120°C at a vacuum chamber or pump entrance. Through condensation effects, rapidly collect the residual gas in the vacuum system, thus greatly shortening the vacuum time (can reduce 60% to 90% of the extraction time), to obtain a clean vacuum environment.

Our company developed the production of -135°Cdirect-cooled ultra-low temperature freezer, using a single compressor, auto cascade refrigeration mode, DORIN compressors and refrigeration parts, environmental mixed refrigerant production. With specific cooling speed, high efficiency, low temperature, easy maintenance and other specific, rapid cooling, the temperature can be cooled to -120 °C within three minutes, the minimum temperature is -150°C.

Model	SLJ-3W SLJ-3	SLJ-4W SLJ-4	SLJ-6W SLJ-6	SLJ-11W SLJ-11	
Temperature Range	-110°C ~ -150°C				
Cooling capacity	-120°C	3kW	4kW	6kW	11kW
	-135°C	2.5kW	3.3kW	5kW	9kW
Evaporator space	2m²	2.8m²	4m²	7.8m²	
Evaporator	Φ 16 × 40m	Φ 22*40m	Φ 28*45m	Φ 28*45m *2	
Connection size	Φ 16 ball mouth	Φ 22 ball mouth	Φ 28 ball mouth	Φ 35 ball mouth	
Compressor	DORIN	DORIN	DORIN	DORIN	
Operation Panel	7-inch color touch screen controller, temperature curve record, data export to excel format.				
Control system	Standard: Single-chip microcomputer controller; Stepping control; Set temperature difference of refrigeration on & off. Optional: SIEMENS S7-200PLC&Module				
Condenser	KAORI Plate heat exchanger				
Intermediate heat exchanger	KAORI Plate heat exchanger				
Drying filter core	Danfoss				
Expansion tank	Emerson				
FDF	Emerson				
Oil separator	Emerson				
Pressure protector	Emerson				
Reservoir	Standard: RSP    Optional: Emerson				
Sight glass	Standard: SANHUA    Optional: Danfoss				
Refrigeration ball valve	Standard: SANHUA    Optional: Danfoss				
Electric	Schneider AC contactor, Schneider intermediate relay				
Refrigerant	R404A R508B R14 R50 mixed refrigerant				
Safety protection	High pressure protect; Water supply cut-off protection; Over-current protection; Leakage protection; Sequential and phase failure protection; High temperature protection; Sensor Failure protection; Liquid low level protection etc. multi-safety protection.				
Piping material	Copper pipe				
Case material	SUS304				
Water-cooled type W (cooling water at 20°C)	3m³/h	4m³/h	6m³/h	10m³/h	
Power	380V 50HZ 12kW	380V 50HZ 16kW	380V 50HZ 24kW	380V 50HZ 36kW	
Connection	750*750*1750	750*750*1750	1000*950*2050	1200*1100*2050	
Weight	350kg	400kg	600kg	950kg	
dB	Within 75dB		Within 80dB		



# Refrigerated heating recirculating air control system

## Description&Application

1. Widely used in semiconductor device for testing high and low temperature.
2. Independent refrigerated air recirculating unit.
3. Can work for a long time continuously, defrosting automatically and it will not affect the storage temperature in the process of defrosting.
4. Modular design and replace easily for standby machine, (if there are 10 sets of machines, only one standby machine is enough)
5. Solve the problems of open or close the door frequently and frosting problem in evaporation system, it will not effect the temperature of cold storage & cryogenic box in the process of defrost in evaporation system.
6. Easy installation (joint the box according to mechanical drawing, connect the electricity and water and set temperature completely to work)



Model	AI-635W	AI-655W	AI-6A10W	AI-835W	AI-805W	AI-810W
Recirculating air temperature range	-65°C~125°C	-65°C~125°C	-65°C~125°C	-85°C~125°C	-85°C~125°C	-85°C~125°C
Control Mode	PID adaptive controller					
Communication protocol	MODBUS RTU Protocol, RS 485 Interface					
Temperature feedback	PT100					
Input&display	7-inch color touch screen controller, temperature curve record, data export to excel format.					
Temp. accuracy	± 0.2°C					
Heating power	3.5kW	5.5kW	10kW	3.5kW	5.5kW	10kW
Cooling capacity	125°C	3.5kW	5.5kW	10kW	3.5kW	5.5kW
	50°C	3.5kW	5.5kW	10kW	3.5kW	5.5kW
	20°C	3.5kW	5.5kW	10kW	3.5kW	5.5kW
	0°C	3.5kW	5.5kW	10kW	3.5kW	5.5kW
	-20°C	3kW	4.2kW	7.8kW	3.5kW	5.5kW
	-40°C	2.1kW	3.2kW	4.6kW	2.5kW	3.9kW
	-55°C	0.8kW	1.2kW	2.2kW	1.6kW	2.4kW
-75°C				0.9kW	1.3kW	2.2kW
Circulating air flow	900m³/h	1300m³/h	2600m³/h	900m³/h	1300m³/h	2600m³/h
Compressor	Scroll Copeland Compressor					
Evaporator	Copper pipe aluminium fin (LNEYA)					
Safety protection	Self-diagnosis function; freezer overload protection; high pressure switch, overload relay, thermal protection device, liquid low level protection, high temperature protection and temperature fault protection.					
Defrosting device	There are installed defrosting device and condensate drain inside					
Continuous work	Can work continuously					
Timing on&off operation	Can set a key time for starting up & stop					
Refrigerant	R404A R508B	R404A R508B	R404A R508B	R404A R508B	R404A R508B	R404A R508B
Air pressure	4bar	5bar	5bar	4bar	5bar	5bar
Water-cooled W (temp.20 degree)	1200L/H 1.5bar~4bar	1800L/H 1.5bar~4bar	3200L/H 1.5bar~4bar	1600L/H 1.5bar~4bar	2600L/H 1.5bar~4bar	3400L/H 1.5bar~4bar
Product Dimension	650*750*1500	700*800*1650	700*800*1650	650*750*1500	700*800*1650	700*800*1650
Weight	water cooled 280kg	315kg	380kg	300kg	360kg	420kg
Power	AC 380V 50HZ 7.5kW(max)	AC 380V 50HZ 10.5kW(max)	AC 380V 50HZ 19kW(max)	AC 380V 50HZ 9kW(max)	AC 380V 50HZ 12kW(max)	AC 380V 50HZ 22kW(max)
Case material	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304	SUS 304
Optional	High temperature to -65°C~165°C -85°C~165°C					

# Industry Cryogenic Refrigerator

## Overview:

- Microcomputer control, cascade temperature controller, digital temperature display, the regulation of unit 0.1°C, inside the temperature range -20 °C ~ -125 °C adjustable.
- Multi-safety protection, more reliable operation.
- France TECUMSEH compressor, Germany DANFOSS compressor, EMERSON compressor, automatic cascade refrigeration technology.
- With self-diagnosis function, freezer overload protection, high pressure switches, overload relays, thermal protection device and other security functions, and fully guarantee the use of safety.
- Three sealed mold layer of insulation, Extra-thick high-density polyurethane foam insulation layer, the effect of good insulation; Inline vacuum insulation panels.
- Human design, more convenient and flexible.
- Suitable for mechanical producing plant use.
- Large condenser design, fully guaranteed plant environment cooling effect.
- Wide volume ratio design, large load capacity design.
- Can be set to open compressors and compressor off temperature.
- Fault alarm (over-temperature alarm, sensor alarm, high alarm, overheat alarm compressor).
- Delay boot protection.
- So grounding components safely.
- LED display, clear display inside temperature and the desire temperature; can set the overtemperature alarm and the inside temperature, fault prompt functions.
- Non-standard sizes can be customized, Ultra-low temperature freezer (can be produced within -100°C 100 cubic).
- Optional equipments: PLC controller, color touch-screen, temperature recorder etc.



Scan QR code for more information

## Application:

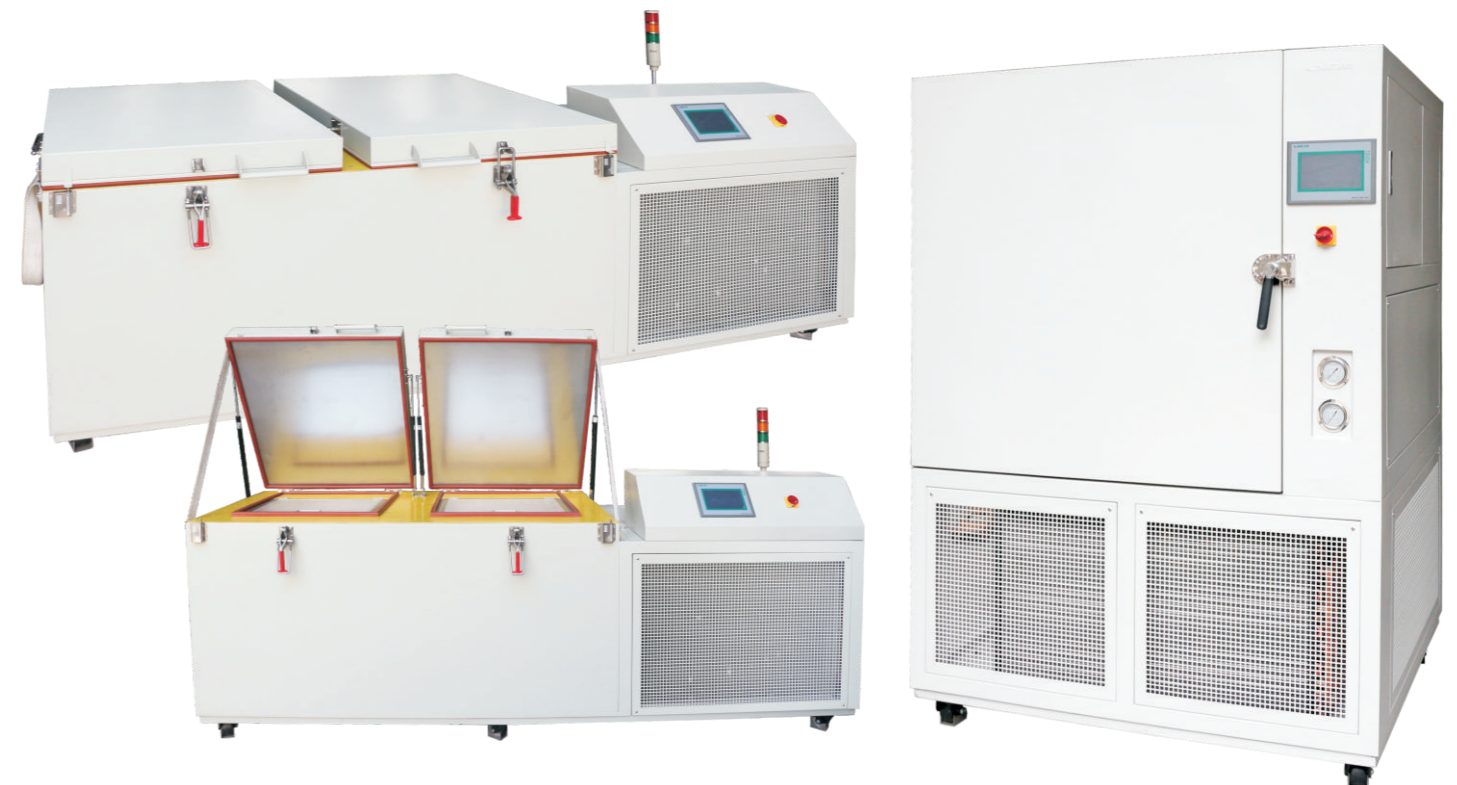
It is mainly used in industrial refrigerating treatment, so that the matrix of the metal structure to generate a uniform, fine and dispersed precipitation. The precipitation of carbide will improve the abrasion resistance, friction performance and increase hardness of metal. The carbide is the ideal alternative to liquid nitrogen. For the copper sleeve and bearings contracting, it is widely used in precise mechanical assembly. Applied to large scale equipment (cars, large engineering machineries, aircraft component, Aerospace equipment parts, Military equipment parts etc.) lower temperature test.

As the refrigerating treatment equipment is produced specially, please provide us the following information:

1. Maximum Loading.
2. Liner Size : L/W/H
3. Full load cooling to the time of the target value.

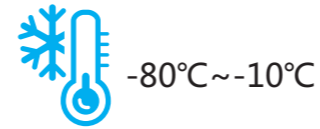


Can be used in touch screen, screen frozen degumming or disassembly





Model	GX-6528N	GX-6550N	GX-6580N	GY-6528N	GY-6550N	GY-6580N	GY-65A16N
Volume	280L	500L	800L	280L	500L	800L	1600L
Inner dimension	610*600*760	800*735*850	1000*800*1000	800*600*600	1200*650*650	1350*800*750	2000*900*900
Type	( Vertical )			( Chest / Horizontal )			
Capacity carrying	150kg	220kg	300kg	150kg	220kg	300kg	650kg
Temp. range	-65 °C~-10°C or Optional -65°C ~-60°C						
Cooling capacity at -60°C	1kW	1.5kW	2.5kW	1kW	1.5kW	2.5kW	4kW
Temp. accuracy	± 2°C	± 2°C	± 2°C	± 2°C	± 2°C	± 2°C	± 2°C
Heating power	2kW	3kW	5kW	2kW	3kW	5kW	8kW
Cooling rate	Nickel-chromium alloy electric heating heater, the controller has double safety protection, with independent temperature limiter protection.						
Controller	ASET multifunctional controller						
Operation panel	7-inch color touch screen , display set temperature, measured temperature.						
Temp. record	Temperature curve and fault record , U-disk data export, excel format.						
Inside circulating air	1650m³/h	2100m³/h	2750m³/h	2100m³/h	2750m³/h	3500m³/h	6000m³/h
Compressor	Emerson Copeland , adopt cascade refrigeration technology						
Intermediate heat exchanger	KAORI Plate heat exchanger						
Dry filter	Emerson						
Expansion valve	Electronic expansion valve						
Evaporator	Copper-tube with aluminum-fin						
Cooling Type	Air-cooled with water-cooled auxiliary functions (Ensure good cooling capacity when temp. above 30 degree)						
Means of insulation	Polyurethane foam insulation, thermal insulation layer 125 mm, with embedded FIR boards						
Safety Protection	Self-diagnosis function;Phase sequence phase failure protection; leakage protector; cooling unit overload protection; high and low pressure switch, overload relay, thermal protection device, high temperature protection and temperature fault protection.						
Case material	Outside is cold rolled steel painting, internal is SUS304 wire drawing board.						
Refrigerant	R404A R23						
Dimension	1150*1150*1850	1350*1300*1850	1550*1300*2100	2200*1150*1150	2700*1200*1200	2900*1300*1250	3700*1400*1350
Power 380V 50HZ	5.5kW MAX	7.5kW MAX	13.5kW MAX	5.5kW MAX	7.5kW MAX	13.5kW MAX	19kW MAX
Weight	380kg	480kg	650kg	385kg	485kg	650kg	780kg
Optional	High temperature reaches 150degree and temperature accuracy is ± 0.5degree; the input power will be changed ( When select this model, the thickness of thermal insulation layer will be 150mm, thermal insulation material will be silicate and vacuum plate )						
Optional	Closed circulating oil heating system, no direct electric heating element inside the box, suitable for flammable products test						
Optional	Temp. accuracy ± 0.5°C						
Optional	Cooling and heating with program controlled, meet cold treatment process requirements(can set 5 programs, each program can edit 45 steps.)						
Optional	Interior door, reduce cooling capacity lost when pick small workpieces (temperature below 60 degree optional)						
Optional	Outside SUS304 wire drawing board case						
Optional	Diameter 50mm cable hole						
Optional	Electric heating vacuum glass observation window (with lighting) 200mm*300mm						
Optional	Low temperature automatic defrost (can be once per hour or use manual button to defrost), ensure it can work at low temperature for long time even the door is open and close frequently )						



Model	GX-8028N	GX-8050N	GX-80A10N	GY-8028N	GY-8050N	GY-8080N	GY-80A16N
Volume	280L	500L	1000L	280L	500L	800L	1600L
Inner dimension	610*600*760	800*735*850	1000*1000*1000	800*600*600	1200*650*650	1350*800*750	2000*900*900
Type	( Vertical )			( Chest / Horizontal )			
Capacity carrying	150kg	220kg	300kg	150kg	220kg	300kg	650kg
Temp. range	-80°C~-10°C or Optional -80°C ~-60°C						
Cooling capacity at -75°C	1kW	1.5kW	2.5kW	1kW	1.5kW	2.5kW	4kW
Temp. accuracy	± 2°C	± 2°C	± 2°C	± 2°C	± 2°C	± 2°C	± 2°C
Heating power	2kW	3kW	5kW	2kW	3kW	5kW	8kW
Cooling rate	Nickel-chromium alloy electric heating heater, the controller has double safety protection, with independent temperature limiter protection.						
Controller	ASET multifunctional controller						
Operation panel	7-inch color touch screen , display set temperature, measured temperature.						
Temp. record	Temperature curve and fault record , U-disk data export, excel format.						
Inside circulating air	1650m³/h	2100m³/h	2750m³/h	2100m³/h	2750m³/h	3500m³/h	6000m³/h
Compressor	Emerson Copeland , adopt cascade refrigeration technology						
Intermediate heat exchanger	KAORI Plate heat exchanger						
Dry filter	Emerson						
Expansion valve	Electronic expansion valve						
Evaporator	Copper-tube with aluminum-fin						
Cooling Type	Air-cooled with water-cooled auxiliary functions (Ensure good cooling capacity when temp. above 30 degree)						
Means of insulation	Polyurethane foam insulation, thermal insulation layer 125 mm, with embedded FIR boards						
Safety Protection	Self-diagnosis function;Phase sequence phase failure protection; leakage protector; cooling unit overload protection; high and low pressure switch, overload relay, thermal protection device, high temperature protection and temperature fault protection.						
Case material	Outside is cold rolled steel painting, internal is SUS304 wire drawing board.						
Refrigerant	R404A R23						
Dimension	1150*1150*1850	1350*1300*1850	1550*1500*2100	2200*1150*1150	2700*1200*1200	2900*1300*1250	3700*1400*1350
Power 380V 50HZ	7kW MAX	11.5kW MAX	15kW MAX	7kW MAX	11.5kW MAX	15kW MAX	21kW MAX
Weight	400kg	500kg	690kg	415kg	525kg	710kg	840kg
Optional	High temperature reaches 150°C and temperature accuracy is ± 0.5°C; the input power will be changed ( When select this model, the thickness of thermal insulation layer will be 150mm, thermal insulation material will be silicate and vacuum plate )						
Optional	Closed circulating oil heating system, no direct electric heating element inside the box, suitable for flammable products test						
Optional	Temp. accuracy ± 0.5°C						
Optional	Cooling and heating with program controlled, meet cold treatment process requirements(can set 5 programs, each program can edit 45 steps.)						
Optional	Interior door, reduce cooling capacity lost when pick small workpieces (temperature below 60 degree optional)						
Optional	Outside SUS304 wire drawing board case						
Optional	Diameter 50mm cable hole						
Optional	Electric heating vacuum glass observation window (with lighting) 200mm*300mm						
Optional	Low temperature automatic defrost (can be once per hour or use manual button to defrost), ensure it can work at low temperature for long time even the door is open and close frequently )						



Model	GX-A028N	GX-A050N	GX-A0A10N	GY-A028N	GY-A050N	GY-A080N	GY-A0A16N
Volume	280L	500L	1000L	280L	500L	800L	1600L
Inner dimension	610*600*760	800*735*850	1000*1000*1000	800*600*600	1200*650*650	1350*800*750	2000*900*900
Type	( Vertical )			( Chest / Horizontal )			
Capacity carrying	150kg	220kg	300kg	150kg	220kg	300kg	650kg
	Designed bearing capacity is two times of the standard one, ( refrigeration system is designed according to the standard capacity, when target artifact weight is greater than the standard capacity, the cooling rate will decrease )						
Temp. range	-100°C~-30°C or Optional -100°C ~-60°C						
Cooling capacity at -90°C	0.7kW	1kW	2kW	0.7kW	1kW	2kW	3kW
Temp. accuracy	± 2°C	± 2°C	± 2°C	± 2°C	± 2°C	± 2°C	± 2°C
Heating power	2kW	3kW	5kW	2kW	3kW	5kW	8kW
	Nickel-chromium alloy electric heating heater, the controller has double safety protection, with independent temperature limiter protection.						
Cooling rate	(Ambient temperature of 25°C, no-load, from normal temperature to -95 °C about 1 hour), cooling rate will be a little different for temperature changes.						
Controller	ASET multifunctional controller						
Operation panel	7-inch color touch screen , display set temperature, measured temperature.						
Temp. record	Temperature curve and fault record , U-disk data export, excel format.						
Inside circulating air	1650m³/h	2100m³/h	2750m³/h	2100m³/h	2750m³/h	3500m³/h	6000m³/h
	When it is open, the internal circulation fan automatically turns off. The touch screen displays open state.						
Compressor	Emerson Copeland , adopt cascade refrigeration technology						
Intermediate heat exchanger	KAORI Plate heat exchanger						
Dry filter	Emerson						
Expansion valve	Electronic expansion valve						
Evaporator	Copper-tube with aluminum-fin						
Cooling Type	Air-cooled with water-cooled auxiliary functions (Ensure good cooling capacity when temp. above 30°C)						
Means of insulation	Polyurethane foam insulation, thermal insulation layer 125 mm, with embedded FIR boards						
Safety Protection	Self-diagnosis function;Phase sequence phase failure protection; leakage protector; cooling unit overload protection; high and low pressure switch, overload relay, thermal protection device, high temperature protection and temperature fault protection.						
Case material	Outside is cold rolled steel painting, internal is SUS304 wire drawing board.						
Refrigerant	R404A R23 R14						
Dimension	1150*1150*1850	1350*1300*1850	1550*1500*2100	2200*1150*1150	2700*1200*1200	2900*1300*1250	3700*1400*1350
Power 380V 50HZ	9kW MAX	13.5kW MAX	18kW MAX	12kW MAX	16.5kW MAX	20kW MAX	30kW MAX
Weight	470kg	580kg	750kg	495kg	625kg	810kg	940kg
Optional	High temperature reaches 150°C and temperature accuracy is ± 0.5°C; the input power will be changed ( When select this model, the thickness of thermal insulation layer will be 150mm, thermal insulation material will be silicate and vacuum plate )						
Optional	Temp. accuracy ± 0.5°C						
Optional	Cooling and heating with program controlled, meet cold treatment process requirements(can set 5 programs, each program can edit 45 steps.)						
Optional	Interior door, reduce cooling capacity lost when pick small workpieces (temperature below 60°C optional)						
Optional	Outside SUS304 wire drawing board case						
Optional	Diameter 50mm cable hole						
Optional	Electric heating vacuum glass observation window (with lighting) 200mm*300mm						
Optional	Low temperature automatic defrost (can be once per hour or use manual button to defrost), ensure it can work at low temperature for long time even the door is open and close frequently )						



Model	GY-A228N	GY-A250N	GY-A2A10N	GY-A350N	GY-A3A10N	GY-A550N	GY-A5A10N
Volume	280L	500L	1000L	500L	1000L	500L	1000L
Inner dimension	800*600*600	1200*650*650	1550*800*750	1200*650*650	1550*800*750	1200*650*650	1550*800*750
Type	( Vertical )						
Capacity carrying	150kg	220kg	300kg	220kg	300kg	220kg	300kg
	Designed bearing capacity is two times of the standard one, ( refrigeration system is designed according to the standard capacity, when target artifact weight is greater than the standard capacity, the cooling rate will decrease )						
Temp. range	-120°C~-50°C or Optional -120°C ~-20°C						
Cooling capacity	0.7kW -110°C	1kW -110°C	2kW -110°C	1kW -125°C	2kW -125°C	1kW -140°C	2kW -140°C
Temp. accuracy	± 2°C	± 2°C	± 2°C	± 2°C	± 2°C	± 2°C	± 2°C
Heating power	2kW	3kW	5kW	3kW	5kW	3kW	5kW
	Nickel-chromium alloy electric heating heater, the controller has double safety protection, with independent temperature limiter protection.						
Cooling rate	Ambient temperature of 25°C, no-load, ( from normal temperature to -110°C about 1 .5 hour; from 0°C to -140°C about 2 hours, cooling rate will be a little different for ambient temperature changes.						
Controller	ASET multifunctional controller						
Operation panel	7-inch color touch screen , display set temperature, measured temperature.						
Temp. record	Temperature curve and fault record , U-disk data export, excel format.						
Inside circulating air	2100m³/h	2750m³/h	4500m³/h	2750m³/h	4500m³/h	2750m³/h	4500m³/h
	When it is open, the internal circulation fan automatically turns off. The touch screen displays open state.						
Compressor	Emerson Copeland , adopt cascade refrigeration technology						
Intermediate heat exchanger	KAORI Plate heat exchanger						
Dry filter	Emerson						
Expansion valve	Electronic expansion valve						
Evaporator	Copper-tube with aluminum-fin						
Cooling Type	Air-cooled with water-cooled auxiliary functions (Ensure good cooling capacity when temp. above 30°C)						
Means of insulation	Polyurethane foam insulation, thermal insulation layer 150 mm, with embedded FIR boards						
Safety Protection	Self-diagnosis function;Phase sequence phase failure protection; leakage protector; cooling unit overload protection; high and low pressure switch, overload relay, thermal protection device, high temperature protection and temperature fault protection.						
Case material	Outside is cold rolled steel painting, internal is SUS304 wire drawing board.						
Refrigerant	Mix Refrigerant from LNEYA						
Dimension	2200*1150*1150	2700*1200*1200	3100*1300*1250	2900*1200*1200	3200*1300*1250	3000*1200*1200	3300*1300*1250
Power 380V 50HZ	12kW MAX	16.5kW MAX	20kW MAX	18kW MAX	25kW MAX	23kW MAX	30kW MAX
Weight	570kg	680kg	850kg	750kg	900kg	800kg	980kg
Optional	High temperature reaches 80°C and temperature accuracy is ± 0.5°C; the input power will be changed.						
Optional	Temp. accuracy ± 0.5°C						
Optional	Cooling and heating with program controlled, meet cold treatment process requirements(can set 5 programs, each program can edit 45 steps.)						
Optional	Interior door, reduce cooling capacity lost when pick small workpieces (temperature below 60°C optional)						
Optional	Outside SUS304 wire drawing board case						
Optional	Diameter 50mm cable hole						
Optional	Electric heating vacuum glass observation window (with lighting) 200mm*300mm						
Optional	Low temperature automatic defrost (can be once per hour or use manual button to defrost), ensure it can work at low temperature for long time even the door is open and close frequently )						

# Cryogenic freezer

超低温保存箱

## Product applications

It is mainly used for scientific research, special materials of low temperature test and preservation; freezing of red blood cells, white blood cells, skin, bacteria, semen, biological products, ocean products and electronic components; special glue, special materials low temperature preservation and test.

It is mainly used in blood stations, hospitals, health and epidemic prevention departments, research institutes, electronics industry, chemical medicine, biological engineering, laboratory, military industrial enterprises etc.

## Refrigeration system



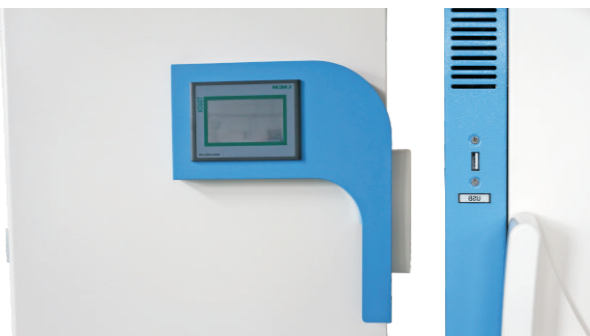
- Adopt new generation single compressor cascade refrigeration technology.
- Faster cooling speed, energy saving, high efficient, low noise.
- With famous brand compressor, EBM fan.

## Door seal, interior door design



- Adopt double removable door sealing strip, ensure easy replace of the sealing strip after aging.
- Interior door design
- Reduce cooling capacity loss when doors open frequently.

## Control system and data record



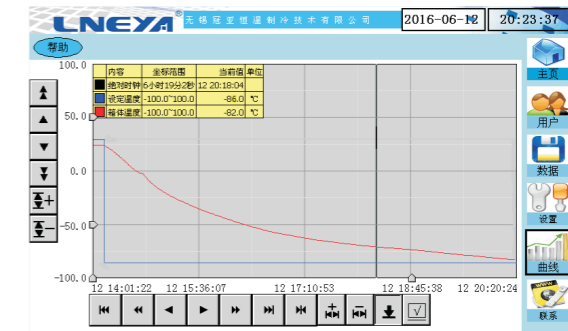
- 7- inch color touch screen input and display
- Real-time temperature record
- UPS control system spare power (16AH)
- Temperature curve record, export to USB (Excel format)

## Gas pressure relief port

- Ensure simple and easy open of the door



## Temperature drop curve



## Safety system

- With electronic lock, only be authorized can open the door
- Electronic lock with password, 6 group authorization, independent user name and password, each time open the door, the user name and time will be recorded.
- Equipped with mechanical padlock hole
- Refrigeration system with high and low pressure protection and display
- Ambient and condensation temperature display and protection
- All kinds of fault alarm (over-temp. alarm, sensor alarm, high pressure alarm, compressor overheat alarm);
- Boot time delay protection;
- All parts are safety grounding



## Technical Parameters

Model	DW-8L158S	DW-8L398S	DW-8L598S	DW-8L930S	DW-8W58S	DW-8W118S	DW-8W258S	DW-8W458S
Temp.range	-30°C ~ -86°C							
Inner volume	158L	398L	598L	930L	58L	118L	258L	458L
Inner dimension	460*455*800	550*630*1140	700*680*1255	1000*700*1335	410*410*355	500*400*560	780*500*600	1380*500*660
Input power	650W	700W	1200W	1200W	500W	650W	700W	700W
Inner doors	2	3	3	4	None			
Type	Vertical				Chest type			
Compressor	SECOP SC system compressor							
Fan	EBM							
Refrigeration technology	Using single compressor cascade technology, simple structure, low energy consumption, low failure rate							
Refrigerant	Fluoride-free environment friendly mixed refrigerant							
Control system	LNEYA control system							
Display	7-inch color touch screen							
Temp. record	Real-time curve records of tank, ambient and set temperature, 18 months curve record, Can export to U disk (in EXCEL format)							
Lock	Standard equipped with electromagnetic lock and a padlock hole							
Doors open records	Can allocate 6 group authorization, each group with independent user name and password, to ensure that each time it can record the user name and time of opening doors.							
Dimension (mm)	770*700*1500	920*930*1990	1020*950*2050	1300*1000*2150	7450*760*1080	1350*780*1050	1600*890*1100	2200*890*1150
Power	220V 50HZ/ 230V 60HZ							
Noise	58db							
Material	Inner SUS304, cold rolled steel case							
Climate type	Natural							
UPS	Standard machine with 24V 12AH control system spare power							
Safety Protection	High and low pressure protection and display, Electric leakage protection, Power outage alarm, ambient temperature monitoring, sensor fault alarm, control system UPS power							

Model	DW-A0W118S	DW-A0W258S	DW-A0W458S	DW-A0L398S	DW-A3W258S	DW-A3W458S	DW-A5W118S	DW-A5W258S
Temp.range	-50°C ~ -105°C			-90°C ~ -135°C			-120°C ~ -150°C	
Inner volume	118L	258L	458L	398L	258L	458L	118L	258L
Inner dimension	500*400*560	780*500*600	1380*500*660	500*400*560	780*500*600	1380*500*660	500*400*560	780*500*600
Input power	650W	650W	800W	800W	1600W	2500W	2500W	3000W
Type	Vertical			Vertical	Chest			
Compressor	SECOP			Tecumseh			Dorin	
Fan	EBM							
Refrigeration technology	Using single compressor cascade technology, simple structure, low energy consumption, low failure rate							
Refrigerant	Fluoride-free environment friendly mixed refrigerant							
Control system	LNEYA							
Display	7-inch color touch screen							
Temp. record	Real-time curve records of tank, ambient and set temperature, 18 months curve record, Can export to U disk (in EXCEL format)							
Lock	Standard equipped with electromagnetic lock and a padlock hole							
Doors open records	Can allocate 6 group authorization, each group with independent user name and password, to ensure that each time it can record the user name and time of opening doors.							
Dimension (mm)	1350*780*1050	1600*890*1100	2200*890*1100	920*930*1990	1600*890*1100	2200*890*1150	1350*780*1050	1600*890*1100
Power	220V 50HZ				380V 50HZ			
Noise	58db			65db				
Material	Inner SUS304, cold rolled steel case							
Climate type	Natural							
UPS	Standard machine with 24V 12AH control system spare power							
Safety Protection	High and low pressure protection and display, Electric leakage protection, Power outage alarm, ambient temperature monitoring, sensor fault alarm, control system UPS power							

## Plate freezer

### Product Application

- All kinds of laptop, mobile phone touch screen degumming, quick-frozen of blood plasma and blood, food quick-frozen and sizing, continuous low-temp. testing of the blade and steel strip.

### Product description

#### Refrigeration system

- Single compressor cascade refrigeration technology.
- Fast cooling, energy saving, high efficient, low noise
- Brand compressor

#### Control systems and data records

- 7-inch color touch screen display
- Real-time temperature record
- Temp. curve recording, export to USB (Excel format)

#### Safety System

- Refrigeration system high and low pressure protection and display
- Condensing temperature display and protection
- A variety of fault alarm (Over-temperature alarm, sensor alarm, high pressure alarm, compressor overheating alarm;)
- Boot time delay protection;
- All components are safe grounding

#### Evaporator

- Using aluminum plate + air cooled binary cycle refrigeration
- Improve heat transfer and heat exchange



Product model	MC-7006	MC-7015	MC-8506	MC-8515	MC-A106	MC-A115	MC-A306	MC-A316
Temp. range	-40°C ~ -70°C		-50°C ~ -85°C		-70°C ~ -115°C		-90°C ~ -130°C	
Circulating air flow rate	600m³/h	1200m³/h	600m³/h	1200m³/h	600m³/h	1200m³/h	600m³/h	1200m³/h
Tablet size	900*600	1500*900	900*600	1500*900	900*600	1500*900	900*600	1500*900
Tablet material	Aluminum 5000-Series							
Doors open form	Top-open							
Compressor	Tecumseh					DORIN		
Refrigeration Technology	Using single compressor cascade refrigeration technology, flat-panel frozen and circulating air cooling							
Refrigerant	LNEYA mixed refrigerant							
Control system	LNEYA automation system							
Input and display	7-inch color touch screen							
Temp. record	Real-time curve record (cold plate, circulating air and setting temperature), 18 months records, export to USB (Excel format)							
Power	Standard with 380V 50HZ		Optional 220V 60HZ/ 415V 50HZ/ 440 ~ 480V 60HZ (220V 50HZ for -70°C)					
Input power (max)	2.2kW	3.2kW	3.5kW	4.8kW	4.8kW	6kW	6kW	8.5kW
Noise	Within 68dB					Within 72dB		
Case material	Cold rolled steel, Liner SUS304, Evaporator: Copper							
Operating temperature	Room temperature (-5~32°C)							
Cooling method	Air-cooled condenser							
Safety protection	High and low pressure protection and display, Electric leakage protection, power failure alarm, condensing temperature monitoring, sensor failure alarm							

LNEYA's SUNDI series is different from other kinds of heat transfer oil system and refrigerator system on the thermodynamic properties.

	LNEYA Dynamic temperature control system SUNDI series	General cooling circulator,heating oil furnace
Whether it is closed system	Use patent closed liquid circulation system and expansion system, regardless of high or low temperature, the heat transfer oil inside the expansion tank will keep room temperature, so it can be used in a wide temperature range. You can safely use it if the boiling point of the heat conduction oil is within 10 °C. At low temperature, the heat conduction medium won't contact with or absorb the moisture in the air, this closed system can improve the stability of the cryogenic system.	Generally open systems. The heat transfer oil will react with oxygen in the air at high temperature and turn brown even becomes deeper and darker in a short time with terrible smell. Because of open system at low temperature, it can reach the target temperature for a few times, but accompanied by absorbing the moisture in the air, its viscosity will keep increasing and can't drop to the target temperature.  There may be some closed loop systems, in the process of running, some medium inside the expansion tank will recycle, the above problems will appear.
Whether the high-level heat transfer system	The system adopts pipeline heating and cooling. There is little liquid participated in circulating. Plate heat exchanger is used in refrigeration ,and pipeline flange heater is used in heating, the whole system volume is (The volume of plating heat exchange+ The volume of pipeline heater+The volume of circulating pump + The volume of circulation loop )  Such as to control a 100L reactor, choose model SUNDI-5A10W; heating power 10 kw ; cooling capacity 10 kw; temperature -5°C.  The volume of the whole system participated in the circulation is only 5.5 L Comparing with the 100 L of reactor jacket + material, the 5.5 L internal system volume is very small. The 10KW heater is almost all used on reactor.  Use big flow circulation pump, heat transfer relies on circulation pump to transfer the liquid regardless of how large the outside storage tank is.	With open system, the same 10 kw heating or cooling ability, it can concert with 100L trough. This system loading is 100L + 25L jacket reactor+100L material. The relative efficiency is much lower. They tend to use relatively small circulation pump, the heat transfer on reactor is even less.  Some closed system: Because some liquid in expansion tank involved in circulation, the medium will be added. There is no heat preservation in expansion system, increase the heat dissipation and reduce the thermal efficiency.
whether there has valve in circulatory system	The entire circulatory system without mechanical or electronic valve. This can avoid the broken of valve at high or low temperature for long time.	Use high and low temperature precooling control, system with mechanical or solenoid valve. Any mechanical or electronic valve will be broken easily after long time cold and hot shock. And a small amount of impurity in the system will cause valve broken.(we cannot avoid a small amount of impurity into the circulatory system in production and operation process)
Ultra high temperature cooling technology	Use ultra high temperature cooling technology, the system can directly start the compressor at max 300°C.  This system can easily take away heat when exothermic reaction taken place under high temperature. The unique temperature control system can always keep the system temperature maintain at moderate reactor's temperature.  Look at the control effect	The general refrigeration cycle trough can't be cooled at high temperature or cool high temperature heat conduction medium to room temperature by circulation fan (this is often exchanged through the valve). After 2 ~ 3 months, the valve can't be tightly shut and cold energy loss is serious, the temperature can't drop down.  Exothermic reaction at high temperature will often need people to pipe in low temperature liquid. Temperature control problems will take place easily for careless operation. Too much of the cryogenic liquid will lower the temperature of reaction system too much, which can't reach the reaction temperature. What's worse, the reaction kettle may be broken .
Temperature control system	The method of changing the control settings can response to the system delays as soon as possible, and gets the smallest system overshoot. The system consists of two PID (PID is changeable in each group) control loop structures. We call these two sets control loops the main circuit and from the circuit, the output of the Main loop as the set point of from loop.  The system with feed-forward PV, the master PID loop operation results of the PV output and feed-forward signals as the composite of the settings from the control loop. Through such control of the temperature gradient to ensure the accuracy of temperature control.  The specially designed lag forecasts ( special dynamic control calculation) create a dynamic signal yc(t) to replace the process variable y(t) to serve as the feedback signal. It sends an e (t) signal to the controller, the controller will predict whether the control function has large time delays. So the controller can always produce appropriate control signals.That is to say, even if there may be large time delays, the dynamic signal yc (t) can make the feedback loop keep working.  By taking sample at three temperature points (material temperature, outlet and input temperature of the temperature control system), our special dynamic control calculation combine with the common resistance lag cascade algorithm. Look at the control effect	For example, reaction material reacts at 100 °C. Operators firstly set the temperature of thermal oil at 135 °C or higher, this process will continue for a period of time, then operators will set heat conduction medium temperature at 105 °C according to their experience, to control the reaction temperature to about 100 °C.  This process with large temperature range, so skilled and responsible operators will be needed. No complete temperature curve record of the whole process.  If just set the temperature of heat conduction medium at 105 °C, there will be long time before the reaction material temperature reach 100 °C. (Because the temperature difference between the jacket and material is too small).  How about using temperature measuring points to directly sample the temperature of the reaction material? What's the result?  Use common PID or simple cascade algorithm to control the process with significant time delays, the output of controller will keep increasing without getting appropriate feedback signal within the delay time, this will lead to large system response overshoot and even make the system out of control.  Chemical reaction is often unpredictable,the 50L reactor is fixed, but the volume of the reaction materials will be different each time, and the hot hot melting will be different too, it can't be co controlled by PID self-tuning.

	LNEYA Dynamic temperature control system SUNDI series	General cooling circulator,heating oil furnace
Repetitive control results	Based on advanced dynamic control system, each time it can achieve consistent control effect, it greatly improves the stability of the products.  Look at the control effect	Because the operation with human intervention, It doesn't keep consistent in effect every time and influence the stability of produced products.
Control exothermic reaction	The material temperature is rising when testing of reactor. The system will rapid heat-up and cool-down temperature with good result to meet your demand. Based on the algorithm, make the right choice to maintain moderate heat conduction oil temperature; take away the released heat and maintain reaction system at required temperature.  Look at the control effect	Because jacketed reactor with large time delay. The heat conduction medium response time-delay, and the actual temperature is too high.  Can't be better controlled without human intervention. This system needs experienced operators, or the system temperature will be too low or too high, greatly affect the stability of the products.
Smaller amplification effect	Based on precise control of reactor temperature,It can control the process temperature. This is most important in process control with protecting thermostatically controlled environment.  Look at the control effect	With small dose of laboratory experiment and higher yield. It has problems if it will be blew up. Need to grope for temperature process curve. It is high cost. No good result in extreme condition.
safety protection	1.It can control and set the temperature of outlet temperature and material temperature.  2. Heating security protection, control protection, solid state relay power protection, independent temperature limiter.  3.Conventional protection: high temperature protection, refrigeration system high and low pressure protection, compressor circulating pump overheating protection, the high cooling water temperature protection, phase sequence protection, leakage circuit breaker, sensor fault protection, liquid level protection	Conventional protection: high temperature protection, refrigeration system high and low pressure protection, compressor circulating pump overheating protection, the high cooling water temperature protection, phase sequence protection, leakage circuit breaker, sensor fault protection, liquid level protection
Circulating pump	With magnetic resistance to high temperature and low temperature circulation , without shaft seal, no leakage problems for using 2 to 3 years.	With shaft seal circulating pump, there will be leakage problems after being used for a long time.
Program Editor	It can edit 25 programs, each program can edit 45 steps.	With program Without program
Heat Conduction Medium	Use colorless and tasteless heat conduct medium, wide temperature range( Look at the heat-conducting medium parameter table) ,with LNEYA temperature control system and the service life of more than 6 years.	In the process of using the color change, terrible smell of transfer fluid for a period of time. Firstly, the heat conduction medium itself has problems. Secondly, the system design has problems, lead to the oxidation of heat conduction oil at high temperature.
Display	Use 7-inch or 10-inch color touch screen.	With instrument display
Data recording	Clearly records material temperature,setting temperature, inlet and outlet temperature of heat conduction medium and alarm record of system.	Without data record ,only display
Temperature curve	With real time temperature curve record, it can record temperature curve of 18 months.	Without
Temperature data export	With U disk derived data curve, it can select the export time.	Without
Configuration software	It can be easily configured. You can install and record the picture of display on the computer.	Without
Communication	Adopt good Modbus RTU communication protocols, can easily communicate with other equipment like DCS.	without or no special communication protocol, poor scalability
Testing	All dynamic temperature control systems with load testing of 24 hours. Confirm and record the whole process of load testing process.	
Intellectual property	Wuxi Guanya Refrigeration Technology Co, Ltd,We have successfully applied for 10 patents in China.	

## 1L~100L Model selection guide for jacketed reactor assort with cooling and heating system

### 1L 2L 5L Model selection guide for jacketed reactor assort with cooling and heating system

Temperature range	Model for supporting cooling and heating system
-10~200°C	SUNDI-125
-25~180°C	SST-15 SST-20 SUNDI-320
-50~250°C	SUNDI-525WN HRT-25
-60~200°C	SUNDI-625W
-70~250°C	SUNDI-725WN HRS-25W
-80~250°C	SUNDI-825W
-15°C cooling only	1L FL-400 2L FL-800 5L LX-0250
-40°C cooling only	LT-5018
-60°C cooling only	LT-6018
-80°C cooling only	LT-8012
-100°C cooling only	LT-A012
180°C heating	UC-1820 LY-1820
300°C heating	UC-3030

### 10L Model selection guide for jacketed reactor assort with cooling and heating system

Temperature range	Model for supporting cooling and heating system
-10~200°C	SUNDI-125 SUNDI-135 SUNDI-135W
-25~200°C	HR-25 SUNDI-225 HR-35 SUNDI-235 SUNDI-235W
-50~250°C	SUNDI-535WN HRT-35
-60~200°C	SUNDI-635WN
-70~250°C	SUNDI-735WN SUNDI-735N HRS-35
-80~250°C	SUNDI-825W SUNDI-835W
-90~250°C	SUNDI-935WN
-100~100°C	SUNDI-1035WN
5°C cooling only	FL-0250
5~50°C cooling with heating	FL-0250H
-15°C cooling only	LX-0250
-40°C cooling only	LT-5040
-60°C cooling only	LT-6030
-80°C cooling only	LT-8030
-100°C cooling only	LT-A025
180°C heating	UC-1820 LY-1820

This model selection guide is just for suggestion, users can select more powerful model according to your actual requirements. If you need to use for industrial production, need calculate to select suitable model.

### 20L Model selection guide for jacketed reactor assort with cooling and heating system

Temperature range	Model for supporting cooling and heating system
-10~200°C	SUNDI-135 SUNDI-135W
-25~200°C	HR-35 SUNDI-235 SUNDI-235W
-50~250°C	SUNDI-535 SUNDI-535WN HRT-35
-60~200°C	SUNDI-635 SUNDI-635WN
-70~250°C	SUNDI-735WN SUNDI-735N HRS-35W
-80~250°C	SUNDI-835W
-90~250°C	SUNDI-935WN
-100~100°C	SUNDI-1035WN
5°C cooling only	FL-0500
5~50°C cooling with heating	FL-0500H
-25°C cooling only	LX-0400
-40°C cooling only	LT-5040
-60°C cooling only	LT-6030 LT-6062
-80°C cooling only	LT-8030 LT-8062
-100°C cooling only	LT-A025 LT-A050
200°C heating	LY-5020 UC-5020
300°C heating	UC-5030

This model selection guide is just for suggestion, users can select more powerful model according to your actual requirements. If you need to use for industrial production, please ask for the industrial product catalogue.

### 30L Model selection guide for jacketed reactor assort with cooling and heating system

Temperature range	Model for supporting cooling and heating system
-10~200°C	SUNDI-135 SUNDI-135W SUNDI-155 SUNDI-155W
-25~200°C	HR-35 HR-50 SUNDI-235 SUNDI-235W SUNDI-255
-50~250°C	SUNDI-535WN SUNDI-555W HRT-35 HRT-50
-60~200°C	SUNDI-635WN SUNDI-635N
-70~250°C	SUNDI-755 SUNDI-755W HRS-50W
-80~250°C	SUNDI-855W SUNDI-855
-90~250°C	SUNDI-955W
-100~100°C	SUNDI-1055W
5°C cooling only	FL-0500 FL-0700
5~50°C cooling with heating	FL-0500H FL-0700H
-25°C cooling only	LX-0700
-40°C cooling only	LT-5062
-60°C cooling only	LT-6062
-80°C cooling only	LT-8062
-100°C cooling only	LT-A050
200°C heating	LY-5020 UC-5020
300°C heating	UC-5030

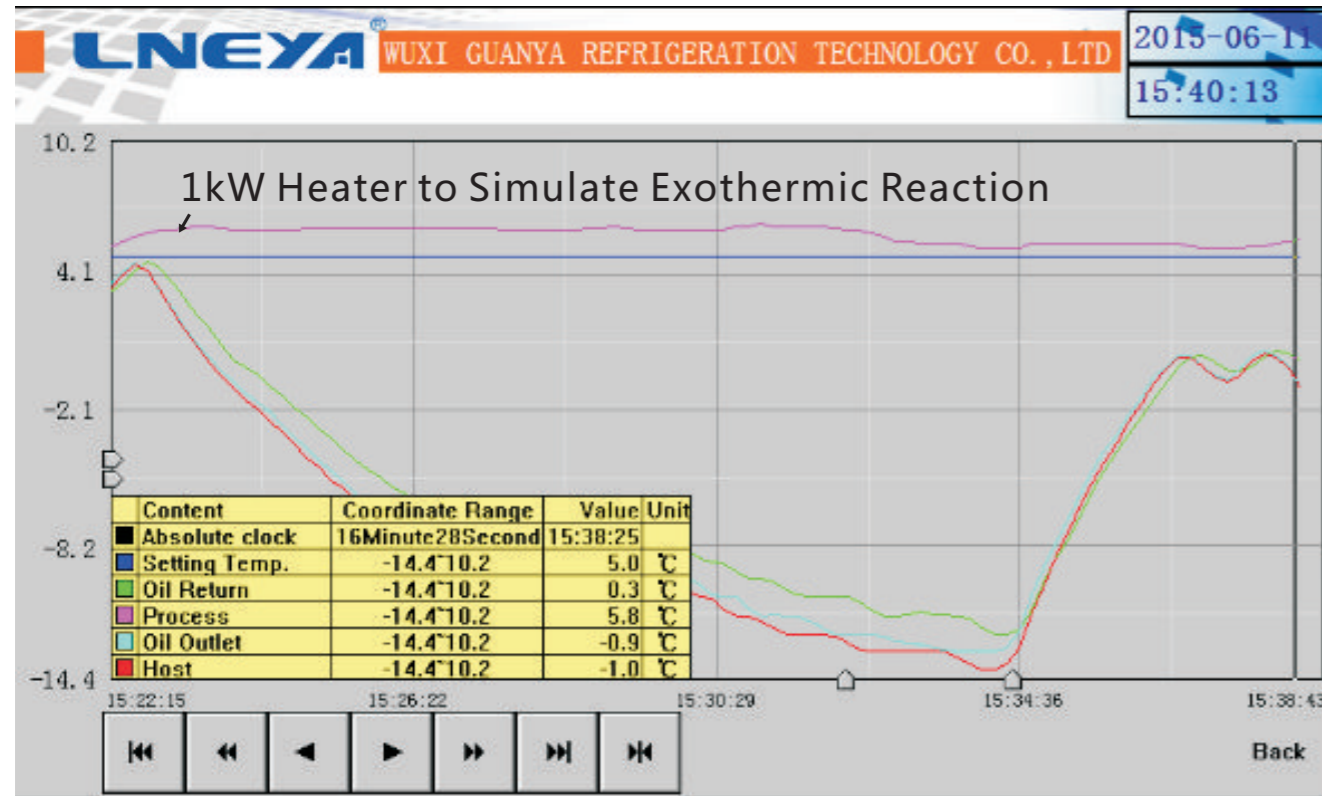
### 50L Model selection guide for jacketed reactor assort with cooling and heating system

Temperature range	Model for supporting cooling and heating system
-10~200°C	SUNDI-155W SUNDI-155
-25~200°C	HR-50 HR-70 SUNDI-255 SUNDI-270 SUNDI-255W
-50~250°C	SUNDI-555W SUNDI-575W HRT-70
-60~200°C	SUNDI-655W SUNDI-675W
-70~250°C	SUNDI-775 SUNDI-775W HRS-70W
-80~250°C	SUNDI-875W
-90~250°C	SUNDI-975W
-100~100°C	SUNDI-1075W
5°C cooling only	FL-0700 FL-1000
5~50°C cooling with heating	FL-0700H FL-1000H
-25°C cooling only	LX-0700 LX-1000
-40°C cooling only	LT-4062 LT-5090
-60°C cooling only	LT-6062 LT-60A1
-80°C cooling only	LT-8090
-100°C cooling only	LT-A050
200°C heating	LY-5020 UC-5020
300°C heating	UC-5030 UC-A030

### 100L Model selection guide for jacketed reactor assort with cooling and heating system

Temperature range	Model for supporting cooling and heating system
-10~200°C	SUNDI-1A10 SUNDI-1A10W
-25~200°C	HR-70 HR-100 SUNDI-270W SUNDI-2A10W
-50~250°C	SUNDI-575W SUNDI-5A10W SUNDI-5A10 HRT-100
-60~200°C	SUNDI-675W SUNDI-6A10W SUNDI-6A10
-70~250°C	SUNDI-7A10W HRS-100W
-80~250°C	SUNDI-8A10W
-90~250°C	SUNDI-9A10W
-100~100°C	SUNDI-10A10W
5°C cooling only	FL-1500
5~50°C cooling with heating	FL-1500H
-25°C cooling only	LX-1000 LX-1450
-40°C cooling only	LT-50A1
-60°C cooling only	LT-60A1
-80°C cooling only	LT-80A1
-100°C cooling only	LT-A080
200°C heating	LY-A020 UC-A020 UC-A520 LY-A520
300°C heating	UC-A030 UC-A530

Exothermic reaction of analog applications

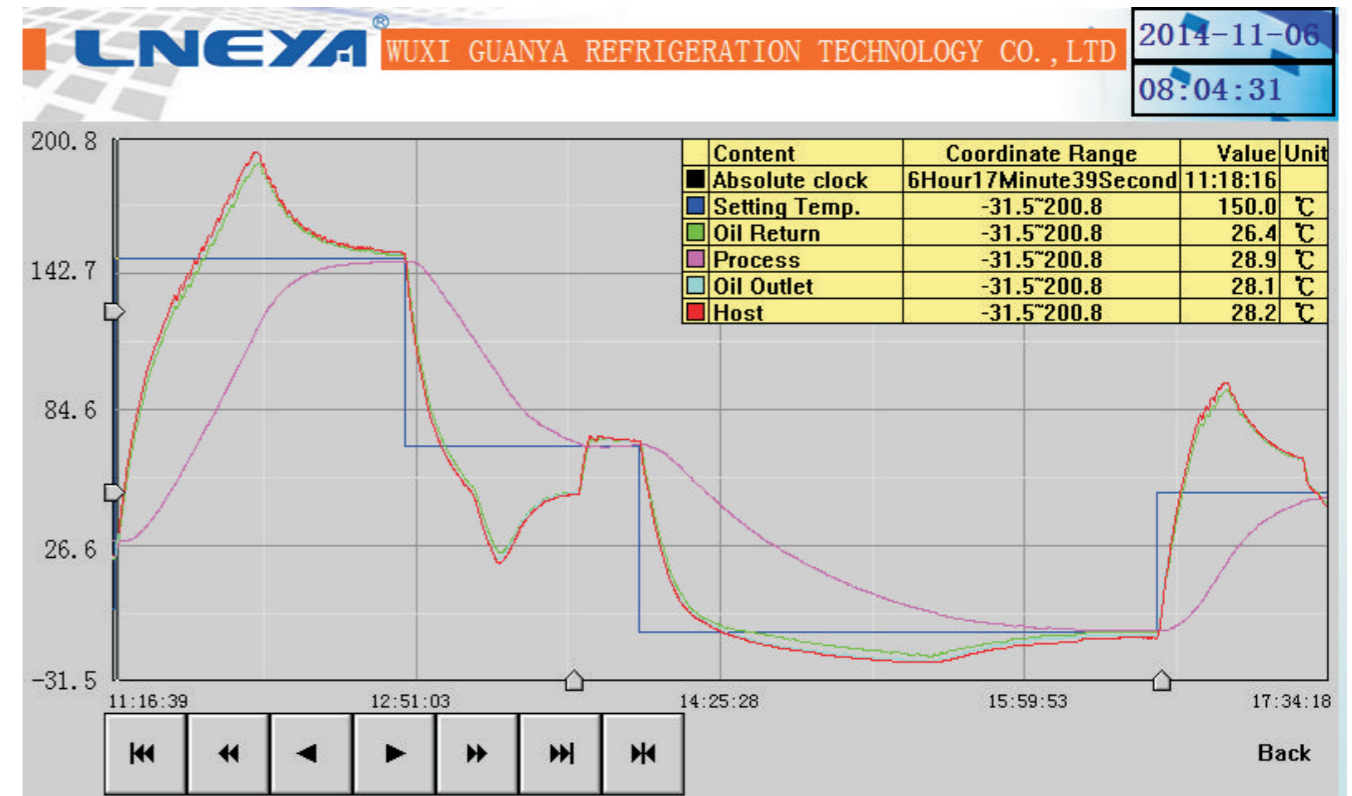


Test Condition:

- Test Model: SUNDI-270
- Test temperature: 5 °C, with 1kW heater to simulate exothermic reaction
- Material: 25L
- Reactor: 30 Liter Stainless Steel Reactors
- Stirring rate: 200R / min
- Heat preservation: Vacuum insulation

Please visit our website [www.cnzlj.cc](http://www.cnzlj.cc) to see the application examples and the video of controlling effect.

Application Example Graph  
Application 1



SUNDI-270 is applied to SENCO 50 Liter Jacketed Glass Reactors, this graph shows the process temperature from 29°C heat up to 150°C for 78 minutes. It can be seen that the jacket temperature reached to 194.5°C. Therefore, the process of 150°C is reached rapidly and there is no overshoot phenomenon of the process (material) from the dynamic display of adaptive control. It needs 54 minutes from high temperature 150°C cool down to 70°C, and the jacket temperature get to 22°C. The lowest temperature of heat conducting medium can go down to -20°C, there is no overshoot occurred for reaction material in the whole process, the heat conducting medium from 70°C go down to -10°C needs 25 minutes.

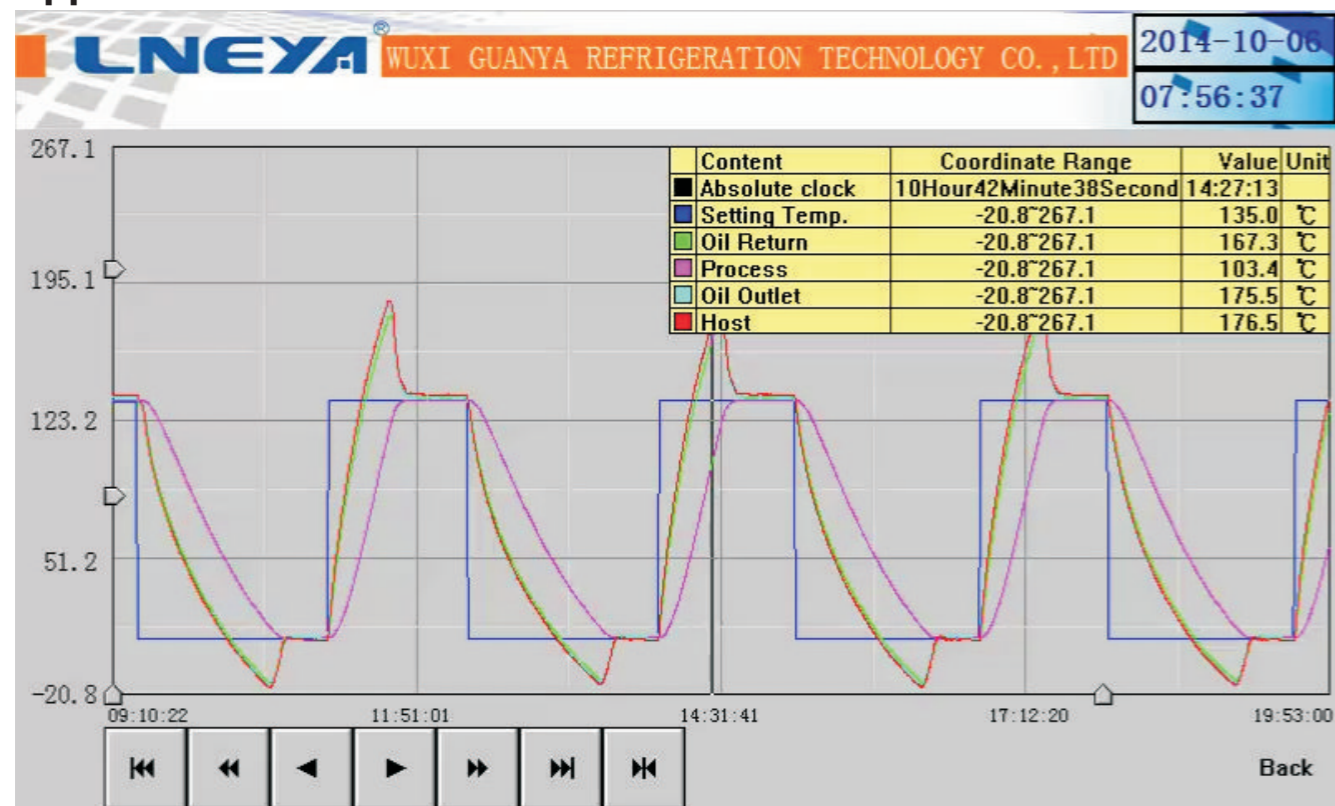
Test Condition

- Temperature Range: -25~200°C
- Cooling Capacity: 7KW 200°C.....0°C  
3.8KW -20°C
- Heat Conducting Medium: KDOC-250 35L
- Reactor: SENCO 50 Liter Jacketed Glass Reactors
- Stirring rate: 115R / min
- Heat preservation: without

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## Application Example Graph Application 2



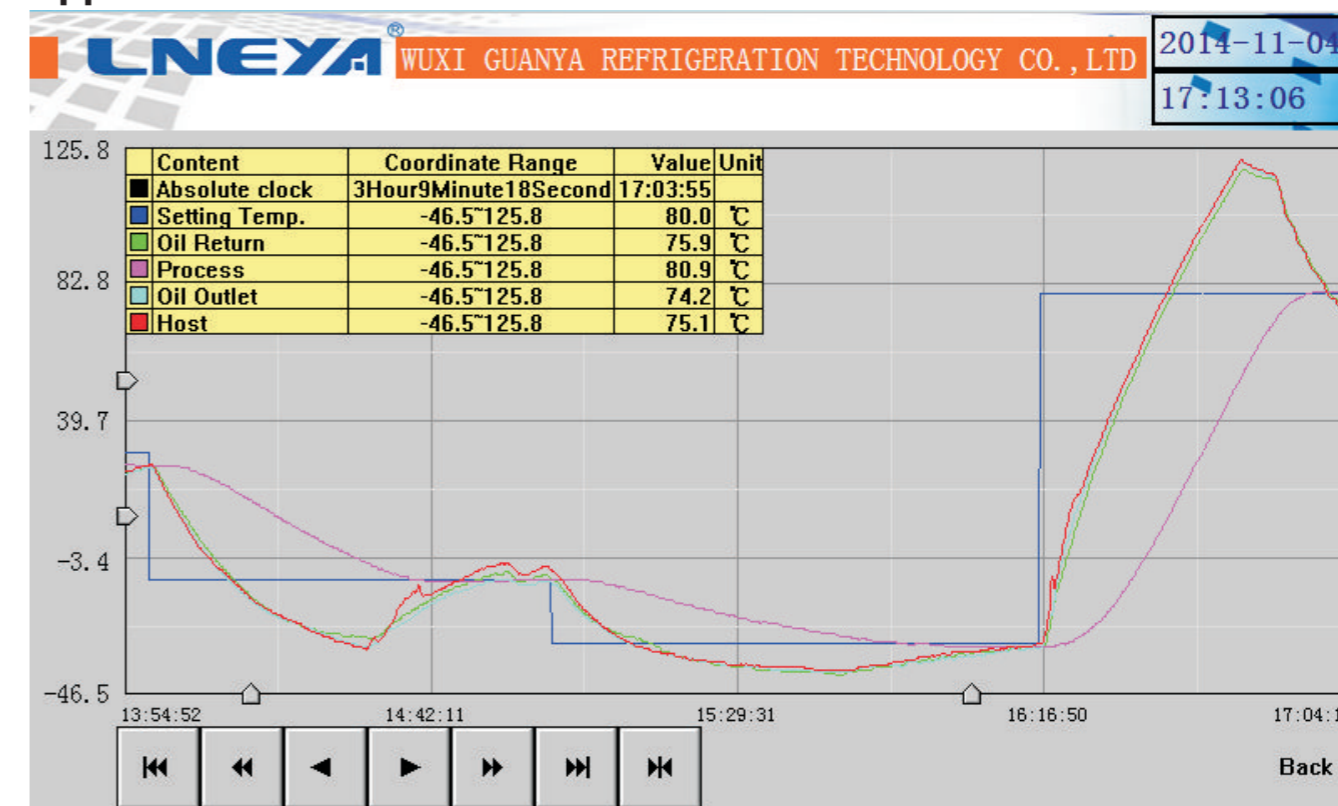
**SUNDI-270** is applied to SENCO 50 Liter Jacketed Glass Reactors, we made a typical 10°C~135°C cycle control, this graph shows the reproducibility of the result control, each cycle curve slope is consistent and greatly improve the consistency of the production thermostatically controlled environment. There is no overshoot occurred for reaction material and with fast and stable in the whole process.

### Test Condition

Temperature Range: -25~200°C  
 Cooling Capacity: 7KW 200°C.....0°C  
                           3.8KW -20°C  
 Heat Conducting Medium: KDOC-250 38L  
 Reactor: SENCO 50 Liter Jacketed Glass Reactors  
 Stirring rate: 155R / min  
 Heat preservation: simple insulation

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## Application Example Graph Application 3



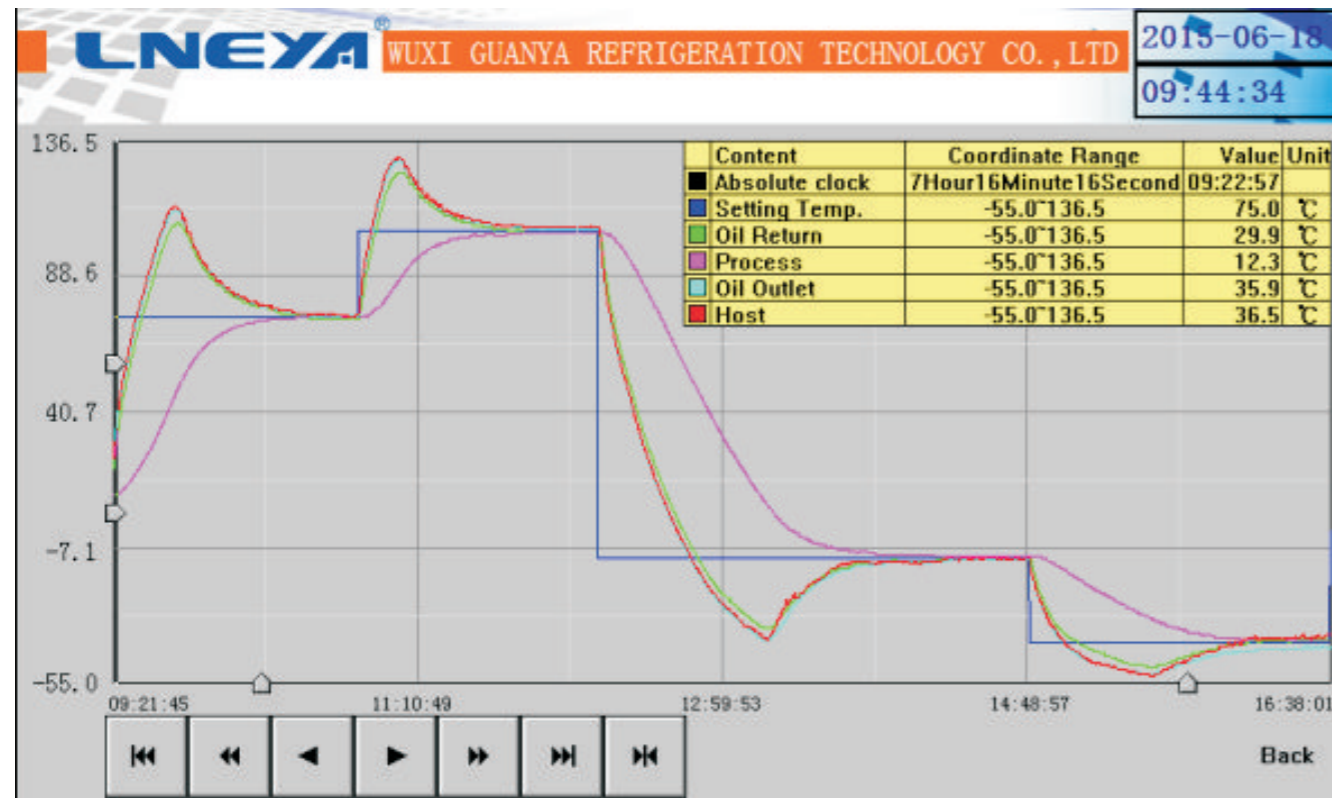
**SUNDI-420W** is applied to SENCO 10 Liter Jacketed Glass Reactors, this graph shows the process temperature from 26.2°C cool down to -10°C for 40 minutes. It can be seen that the jacket temperature reached to -31.6°C. Therefore, the cooling process is fast and also there is no overshoot phenomenon of the process (material) from the dynamic display of adaptive control. The whole process needs 50 minutes from -10°C cool down to -30°C. The lowest temperature of heat conducting medium can go down to -40°C. There is no overshoot occurred for reaction material in the whole process and the heat conducting medium from -30°C heat up to 80°C needs 19 minutes.

### Test Condition

Temperature Range: -45~180°C  
 Cooling Capacity: 1.8KW 180°C.....0°C  
                           1KW -20°C  
 Heat Conducting Medium: KDOC-220 7L  
 Reactor: SENCO 10 Liter Jacketed Glass Reactors  
 Stirring rate: 135R / min  
 Heat preservation: simple insulation

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### Application Example Graph Application 3



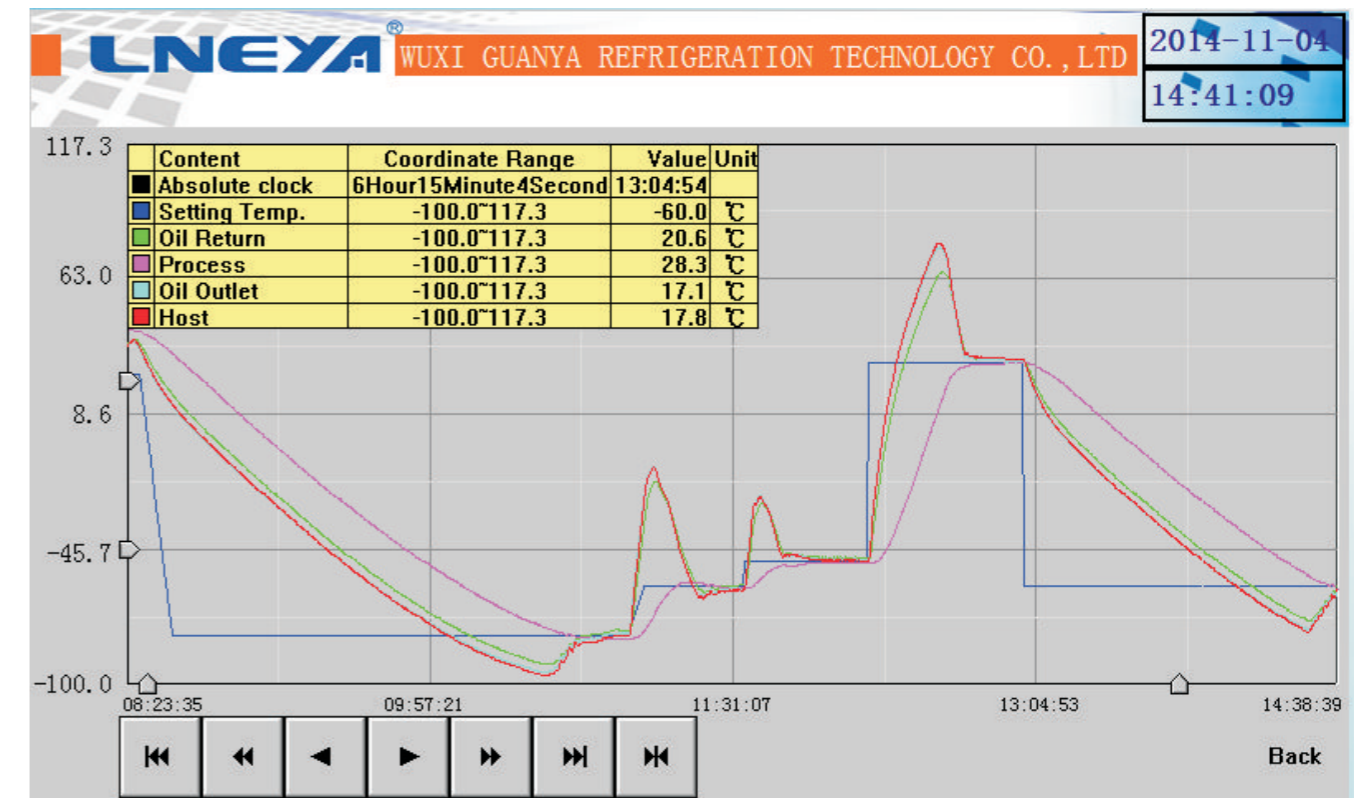
**SUNDI-575W** is applied to 50 Liter Stainless Steel Reactors, this graph shows the process temperature from 12.1 °C up to 75 °C needs 50 minutes. It can be seen that the jacket temperature reached 112.2 °C. The heating speed is fast, there is no overshoot phenomenon of the process (material) for our dynamic adaptive control. The whole process needs 80 minutes from 104.5 °C drop to -10 °C. The jacket temperature has already reached -38.2 °C. The lowest temperature of heat conducting medium can go down to -50°C. There is no material overshoot occur in the whole process and the heat conducting medium from 75°C heat up to 130°C needs only 10 minutes.

#### Test Condition

- Temperature Range: -50~250°C
- Cooling Capacity: 7KW 100°C.....0°C  
4.2KW -20°C
- Heat Conducting Medium: KDOC-220 35L
- Reactor: 50 Liter Stainless Steel Reactors
- Stirring rate: 120R / min
- Heat preservation: simple insulation

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### Application Example Graph Application 4



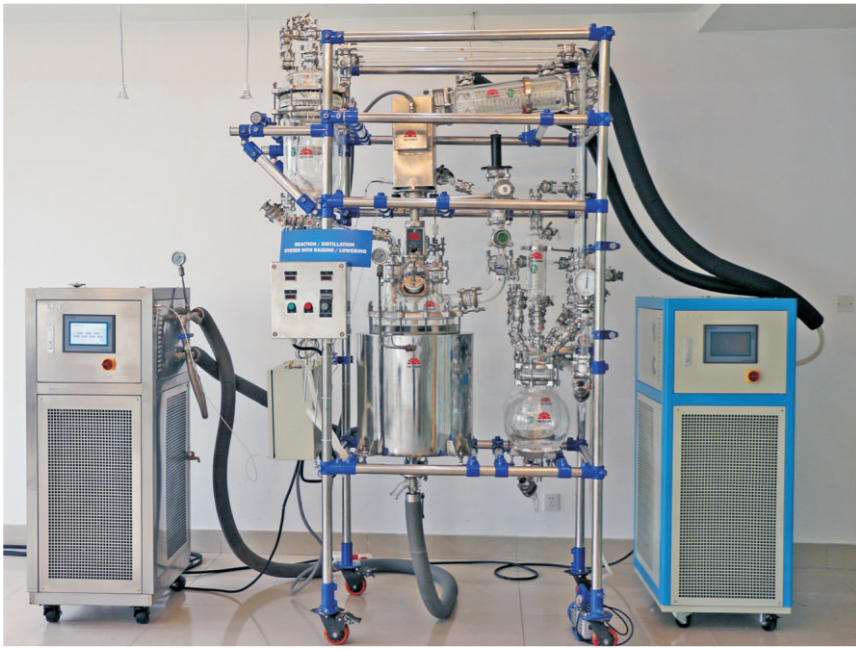
**SUNDI-1010W** is applied to 100L stainless steel reactors, this graph shows the process temperature from 42.4°C cool down to -80°C for 130 minutes. It can be seen that the jacket temperature reached -95.8°C. Therefore, the cooling process is fast and also there is no overshoot phenomenon of the process (material) from the dynamic display of adaptive control. The whole process needs 15 minutes from -80°C heat up to -60°C. As can be seen the jacket temperature reached to -12.2°C. The lowest temperature of heat conducting medium can go down to -100°C. There is no overshoot occurred for reaction material in the whole process and the heat conducting medium from 30°C cool down to -60°C needs 65 minutes.

#### Test Condition

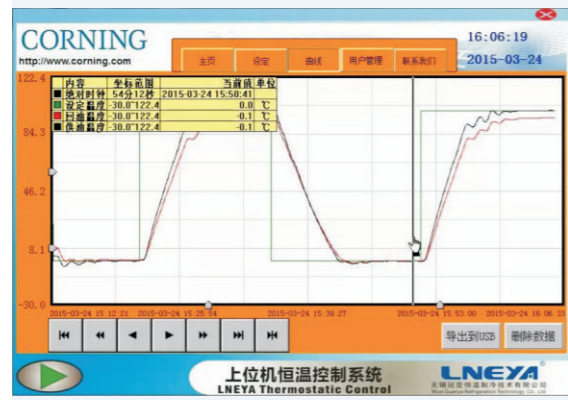
- Temperature Range: -100~100°C
- Cooling Capacity: 10KW 100°C.....-40°C  
8KW -60°C  
1.2KW -100°C
- Heat Conducting Medium: Absolute ethyl alcohol 80L
- Reactor: 100L stainless steel reactors
- Stirring rate: 95R / min
- Heat preservation: 6cm Rubber insulation

Please visit our website [www.cnzlj.cc](http://www.cnzlj.cc) to see the application examples and the video of controlling effect.

**Ancillary use**



Dynamic temperature control system apply to Corning Advanced-Flow™ glass reactor



**Test area**



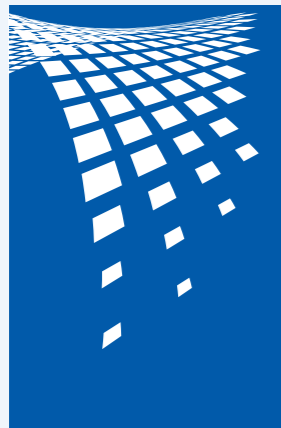
Sweep to online visit the factory

workshop



Load test, data online recording





**Non-standard equipment**



IMPORTANCE  
PERFECT  
**SERVICE**  
BRAND  
COMPETITION

**After sale Service**

**Quality assurance**  
Guarantee that the goods are sold to be conform to the provisions of the contract and qualified new products by factory inspection, quality performance, technical indicators and configured are in accordance with manufacturers and technical documents stipulated in the contract.

**Installation and debugging**  
After the arrival of the goods, my company or my company agent is responsible for installation and debugging of equipment need on-site installation and debugging.

**Inspection and acceptance**  
After installation and debugging, acceptance by the customer to confirm the goods to be conform to the provisions of the contract and qualified new products, quality performance, technical indicators and configured are in accordance with manufacturers and technical documents stipulated in the contract, and after the confirmation of a full set of technical documents, sign the installation acceptance report and confirm acceptance.

**Training**  
At the same time of installation and debugging of equipment, my company's after-sales service engineer is responsible for technical training for user until user can be skilled of operation. In the process of using equipment by customer, customer can consult relevant technical issues to after-sales service personnel of our company at any time, according to the situation, my company will arrange training on site or remote.

**After service**  
a full free one year warranty since the date of acceptance, during the warranty period , all repairs and spare parts are free of charge (instrument malfunction caused by human factors will be charged of cost price of spare parts); After the warranty period, we will be responsible for maintenance of equipment for lifetime, according to the actual maintenance fees, appropriate fee will be charged.

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