Dynamic Temperature Control System

Characteristic:

The fully enclosed pipeline design and high-efficiency plate heat exchanger reduce the demand for heat transfer fluid while improving the heat utilization rate of the system to achieve rapid temperature rise and fall. The heat transfer medium is in a closed system with an expansion vessel, and the heat transfer medium in the expansion vessel does not participate in the circulation, effectively reducing the risk of the heat transfer medium absorbing moisture and volatilizing during operation.

- Continuous temperature control from -100°C-300°C,can be provided according to process requirements, and the temperature control accuracy can reach to ±0.5°C.
- The high temperature cooling adopts the compressor to directly cool down, which can realize rapid heating and cooling.
- The evaporator is a fully brazed plate heat exchanger.
- The liquid level tube can monitor in real time to avoid lack of heat transfer fluid.
- Cooling type can choose air-cooled/water-cooled, also supports customized PLC control system.
- For explosive environments of type IIB, the equipment can be customized as EXd II BT4 / EXd II CT4 explosion-proof products.

GDX-20/30 GDX-30/30 GDX-50/40 GDX-100/40

Advantage

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Danfoss expansion valve

Immediately control the flow of refriger-ant to ensure the cooling capacity

Circulation pump

Using magnetic pump, low heat, simple structure, lift and flow can be customized

Plate heat exchanger

Heat exchange efficiency, reduce the use of heat transfer medium

Compressor

Use brand compressors, such as Tecumseh/Danfoss/Copeland

Safety appliances

Using Schneider controller, with leak-age protection, overcurrent various safety protection measures

Quality assurance

Provide 18-month warranty after received equipment

Customizable PLC

Using Siemens PLC+HMI to program the PLC control system, you can write 5 pro-grams, each with up to 40 segments

Data interface

Support Modbus communication protocol, optional， RS485/RS232 communication interface

Cooling type

The default is air cooling, and the water cooling system can be customized according to user needs

Closed circulation system

It is not easy to absorb moisture at low temperature, prolonging the service life of heat transfer fluid

Optional explosion-proof

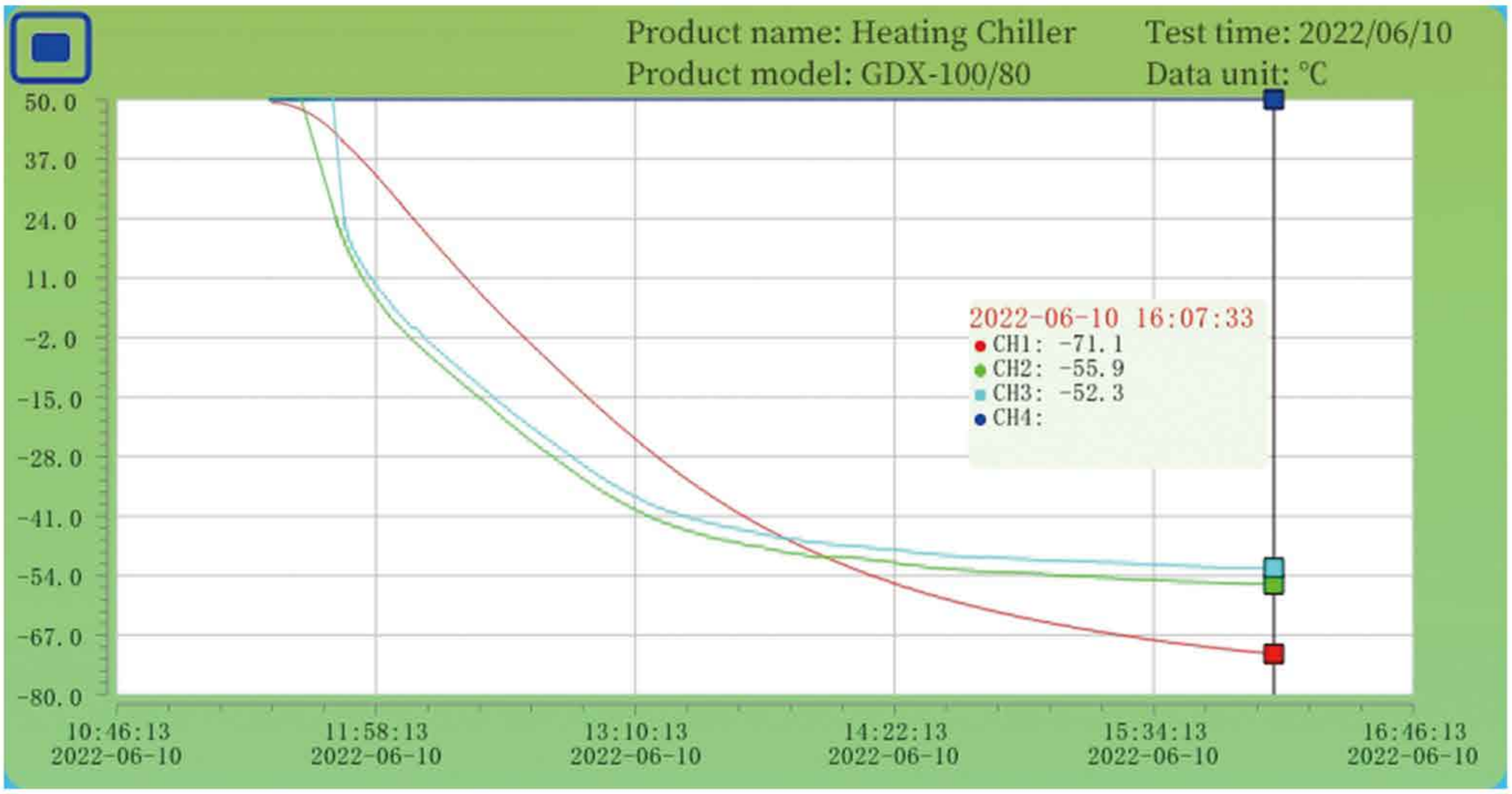
For explosive atmospheres of type IIB, the equip-ment can use EXd II BT4 / EXd II CT4 grade explo-sion-proof products

Temp.control accuracy

Adopt PID control mode to optimize tem-perature control and accuracy can reach ±0.5°C

Temp. Curve And Model Description

Temperature Curve



GDX-100/80 and GR-100L supporting combination test case

output temperature　　material temperature

Model Description

GDX - 100 / 40 + 200

- GDX — Product code
- 100 — Adaptable to the Volume of the reactor
- 40 — Minimum subzero temperature without load
- 200 — No-load heating maximum temperature

EXd II BT4
Isolation explosion-proof type

EXd II CT4
Positive pressure explosion-proof type

Common Combinations

Jacketed glass reactor dynamic constant temp. control

Microchannel reactor constant temp. control

Small thermostatic control system

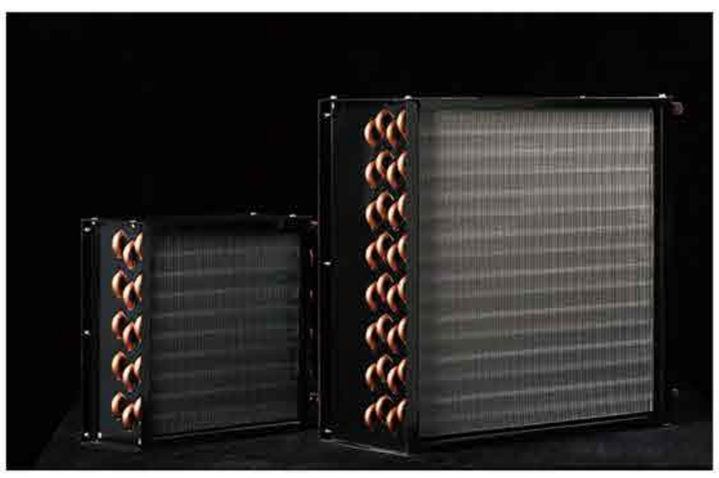
Distillation system temp. control

Low temp. and high temp. aging test of materials

PLC Heating Chiller | Stainless Steel Reactor | Heating Chiller | Microchannel Reactor

Accessories Details

Outer rotor fan



Condenser

Circulation pump

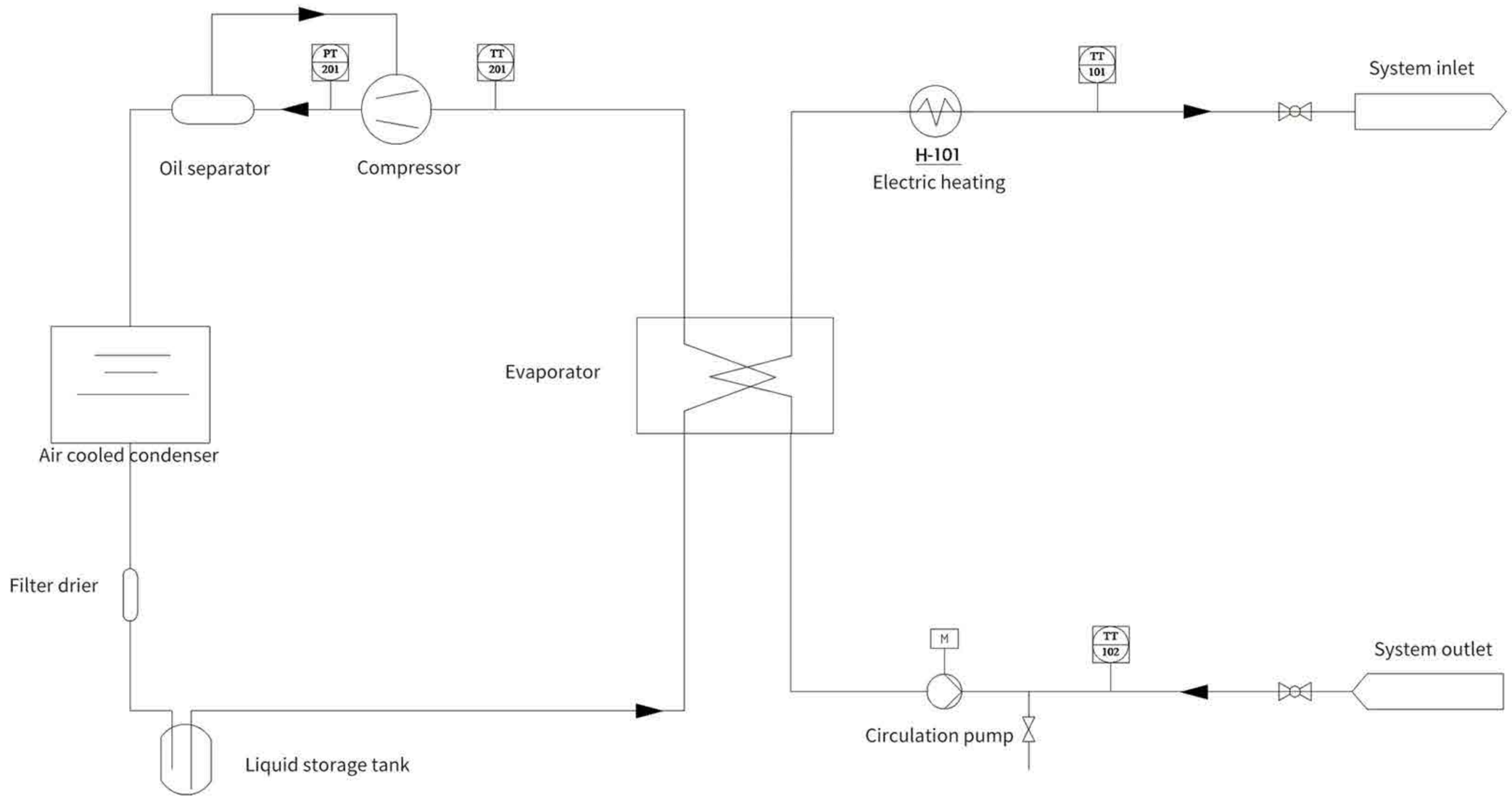
Brand compressor

Stainless Steel Ball and Globe Valves

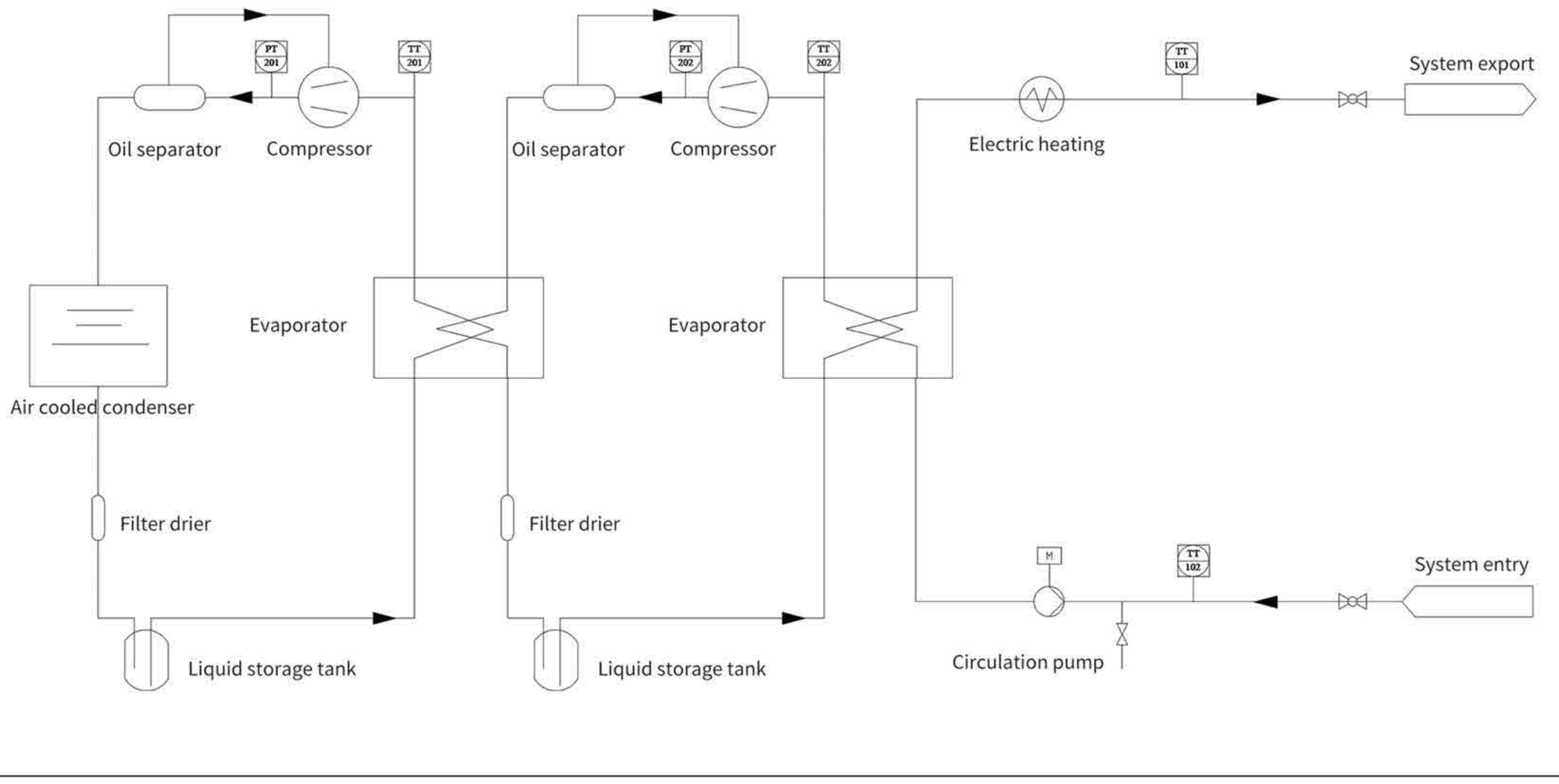
Schneider electric

PID Schematic Diagram

Single Compressor



Cascade Unit



Technical Parameters

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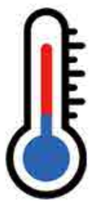
-30℃~200℃

(Temp. control range)

Model number		GDX-10/30+200	GDX-20/30+200	GDX-30/30+200	GDX-50/30+200	GDX-100/30+200	GDX-200/30+200
Temp.range		-30℃~200℃；±0.5℃					
Voltage		220V ~50/60Hz	3Phase -220V/380V/460V ~50/60Hz				
Power(kW)		2.8	4.5	7.7	12	15	23
Heating power (kW)		2	3	4.5	6	9	15
Cooling capacity (w)	RT	2200	3400	7500	11500	15750	31428
	0℃	1600	2100	5500	8600	11000	20214
	-25℃	1000	1800	2100	3200	4300	7000
Temp.sensor		PT100					
Safety protection		Overvoltage, time delay, overcurrent, overheating, leakage					
Refrigerant		R404					
Cooling type		Air cooling (water cooling is optional)					
Circulation pipe size (DN)		15	15	15	20	20	25
Compressor power (kW)		0.73	1.25	2.25	3.75	4.5	6
Tank volume (L)		7	7	10	17	35	50
Lift (m)		6	6	8	12	12	12
Flow (L/min)		25	25	25	35	35	70
Dimensions (mm)		540*420*800	620*540*920	710*580*1090	770*670*1180	970*800*1350	1200*970*1580
Weight (Kg)		60	90	130	170	220	340
PLC	Control system	Siemens S7-200 smart PLC					
	Programming	Can write 5 programs, each with up to 40 steps					
	Control mode	Material temperature and equipment outlet temperature can be switched					
	Protocol	Modbus RTU protocol RS485 interface (optional RS232 Ethernet)					
	Operation panel	7-inch Siemens color touch screen (10-inch optional)					
	Data output	Support U disk data export, can export temperature data in TXT format					
Install list		2 sets of matching valves, a roll of raw material belt / 2 stainless steel insulation hoses / an operation manual					

Technical Parameters



-40°C~200°C

(Temp. control range)

Model number		GDX-10/40+200	GDX-20/40+200	GDX-30/40+200	GDX-50/40+200	GDX-100/40+200	GDX-200/40+200
Temp.range		-40°C~200°C；±0.5°C					
Voltage		220V ~50/60Hz	3Phase -220V/380V/460V ~50/60Hz				
Power(kW)		2.8	4.5	7.7	12	15	23
Heating power (kW)		2	3	4.5	6	9	15
Cooling capacity (w)	RT	1900	2800	7500	12775	15750	31428
	0°C	1200	1900	5500	10500	11000	25214
	-40°C	250	600	800	850	900	2584
Temp.sensor		PT100					
Safety protection		Overvoltage, time delay, overcurrent, overheating, leakage					
Refrigerant		R404A					
Cooling type		Air cooling (water cooling is optional)					
Circulation pipe size (DN)		15	15	15	20	20	25
Compressor power (kW)		0.73	1.25	3	5.25	4.5	7.5
Compressor brand		Compressors of different brands can be customized according to user needs					
Tank volume (L)		7	7	10	17	35	100
Lift (m)		6	6	8	12	12	12
Flow (L/min)		25	25	25	35	35	70
Dimensions (mm)		540*420*800	620*540*920	710*580*1090	770*670*1180	970*800*1350	1200*970*1580
Weight (Kg)		60	90	130	170	220	340
PLC	Control system	Siemens S7-200 smart PLC					
	Programming	Can write 5 programs, each with up to 40 steps					
	Control mode	Material temperature and equipment outlet temperature can be switched					
	Protocol	Modbus RTU protocol RS485 interface (optional RS232 Ethernet)					
	Operation panel	7-inch Siemens color touch screen (10-inch optional)					
	Data output	Support U disk data export, can export temperature data in TXT format					
Install list		2 sets of matching valves, a roll of raw material belt / 2 stainless steel insulation hoses / an operation manual					

Technical Parameters

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-80°C~200°C

(Temp. control range)

Model number		GDX-10/80+200	GDX-30/80+200	GDX-50/80+200	GDX-100/80+200
Temp.range		-80°C~200°C； ±0.5°C			
Voltage		220V ~50/60Hz	3Phase -220V/380V/460V ~50/60Hz		
Power(kW)		5.5	11	17	20
Heating power (kW)		3	4.5	6	9
Cooling capacity (w)	RT	3650	9000	15750	18375
	0°C	3150	7900	14800	16500
	-40°C	2300	4800	8550	11150
	-80°C	550	600	900	1100
Temp.sensor		PT100			
Safety protection		Overvoltage, time delay, overcurrent, overheating, leakage			
Refrigerant		R404A / R23			
Cooling type		Air cooling (water cooling is optional)			
Circulation pipe size(DN)		15	15	20	20
Compressor power (kW)		2.25	6	10.5	11.25
Compressor brand		Compressors of different brands can be customized according to user needs			
Tank volume (L)		7	10	17	35
Lift (m)		6	6	12	12
Flow (L/min)		25	25	35	35
Dimensions (mm)		700*670*1180	810*710*1240	970*800*1250	970*800*1350
Weight (Kg)		220	255	335	355
PLC	Control system	Siemens S7-200 smart PLC			
	Programming	Can write 5 programs, each with up to 40 steps			
	Control mode	Material temperature and equipment outlet temperature can be switched			
	Protocol	Modbus RTU protocol RS485 interface (optional RS232 Ethernet)			
	Operation panel	7-inch Siemens color touch screen (10-inch optional)			
	Data output	Support U disk data export, can export temperature data in TXT format			
Install list		2 sets of matching valves, a roll of raw material belt / 2 stainless steel insulation hoses / an operation manual			

Heat Transfer Medium And Connecting Pipe

When confirming the order of heat transfer medium, it should include the heat transfer medium required by the constant temperature system, the heat transfer medium required by the pipeline and the heat transfer medium required by the external circulation equipment.

Heat Transfer Fluid Data Sheet

Model	LB30	LB40	LB50	LB80	LB100	LB250
Temp. range °C	-30°C~200°C	-40°C~270°C	-50°C~250°C	-80°C~180°C	-100°C~110°C	-30°C~320°C
Exterior	colorless	colorless	colorless	colorless	colorless	colorless
Smell	tasteless	tasteless	tasteless	tasteless	tasteless	tasteless
Density kg/m^3	1000	935	890	762	788	1030
Flash point °C	-60	-90	115	65	36	280
Boiling point °C	195	190	265	191	132	350
Pour point °C	-40	-90	-100	-100	-110	-50

Connecting Pipe

Foam silicone insulation hose (-120°C~200°C)

Viton tube (-20°C~200°C)

Stainless steel circulation tube (-120°C~300°C)

Related Unit Conversion Table

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Cooling Capacity Unit Conversion Table

W	kJ/h	kcal/h	Cold tons U.S.	Cold tons Japan	Cold tons UK	Btu/h
1	3.6	0.85985	2.843×10^{-4}	2.5899×10^{-4}	2.395×10^{-4}	3.4119
0.2778	1	0.23885	7.8983×10^{-5}	7.1942×10^{-5}	6.6542×10^{-5}	0.9478
1.163	4.1868	1	3.3069×10^{-4}	3.012×10^{-4}	2.786×10^{-4}	3.9684
3516.9	12660.9	3024	1	0.91084	0.84246	1.2×10^{4}
3861.1	13900.2	3320	1.09788	1	0.92495	1.3175×10^{4}
4171.5	15028.1	3589.4	1.187	1.08117	1	1.4244×10^{4}
0.29307	1.05507	0.252	8.33×10^{-5}	7.59×10^{-5}	7.02034×10^{-5}	1

Work, Energy And Heat Unit Conversion Table

j	kgf/.h	kW.h	kW.h Metric system	kW.h Imperial	kcal	BTU	16f.ft
1	0.102	$2.778*10^{-7}$	$3.723*10^{-7}$	$3.723*10^{-7}$	$2.389*10^{-4}$	$9.48*10^{-4}$	0.7376
9.80665	1	2.724*10-^{6}	$3.704*10^{-6}$	$3.653*10^{-6}$	$2.342*10^{-3}$	$9.295*10^{-3}$	7.233
$3.6*10^{6}$	$3.671*10^{5}$	1	1.36	1.341	859.9	3412	$2.665*10^{6}$
$2.648*10^{6}$	$2.7002*10^{5}$	0.7355	1	0.9858	632.4	2510	$1.953*10^{6}$
$2.685*10^{6}$	$2.737*10^{5}$	0.7457	1.014	1	641.6	2546.4	$1.98*10^{6}$
4186.8	426.935	$1.163*10^{-3}$	$1.581*10^{-3}$	$1.558*10^{-3}$	1	3.968	3088
1055.06	107.6	$2.93*10^{-4}$	$3.984*10^{-4}$	$3.93*10^{-4}$	0.252	1	778.2
1.3558	0.1383	$3.766*10^{-7}$	$5.12*10^{-7}$	$5.05*10^{-7}$	$3.24*10^{-4}$	$1.285*10^{-3}$	1