

Temperature Control System



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Dynamic Temperature Control System

Applications

Dynamic temperature control system is a hermetic refrigerated heating circulator which is designed for fast heat-up and cool-down times in external applications. It is widely used to provide cold source and heat source to jacketed reaction vessel, tanks or other demanding applications in fields like pharmaceutical, chemical and biological industries etc.

Features

- Wide working temperature ranges using one bath fluid: -80°C~200°C.
- Refrigeration system, Heating system and Pre-cooling system can work independently or work together continuously.
- Rapid heat-up or cool-down.
- Cool down directly from high temperature.
- The bath fluid runs in a closed loop.It is not likely to volatilize and oxidize under high temperature, or absorb water from ambient air under low temperature, which increased bath fluid life.
- Maintenance-free heat exchanger provides powerful heat exchanging.
- Designed with bath fluid monitoring window, avoid shortage of liquid.
- Multi safety protections: Over temperature cut-off, electrical leakage protection, over-current protection etc.
- It is available with air cooling and water cooling.

Patents

Touchscreen Control



Advantages

- Multi-way of control**
Two ways of control: Set value and segmented program control.
Program code range: 1-120
Segment code range: 0-99
- Rapid Heat Transfer**
Powerful circulating pumps and a large hose cross section ensure maximized flow rates and optimum heat transfer.
- Space Saving Design**
Compact design requiring little space.
- Safety Protections**
Over-temperature protection, electricity leakage protection, over-current protection etc.
- Pre-cooling Function**
Specially designed pre-cooling function for rapid cool-down with less power consumption, which is very efficient and energy saving.
- Reservation Function**
Set the start time and related parameters in advance, the machine will start running automatically when time is due.



- Process Safety**
Pre-cooling system and powerful circulating pump ensure safe cooling down, which extends the service life of the machine.
- De-Gassing Design**
This design helps exhaust the air in the tubing and jacket easily after application set up, which makes the bath fluid flow fast and smoothly into the jacket.
- Completely Closed Circulating Loop**
The bath fluid runs in a closed loop, which increased its service life.
- Touchscreen Color Display**
5.7" Touchscreen for easy operation and shows the working process.Graphic curve of material temperature and time are always in view.
- Precise Temperature Control**
PID intelligent temperature control stability ± 0.5
- Convenient Data-Communication**
Designed with Rs485, USB interface and external temperature sensor interface.

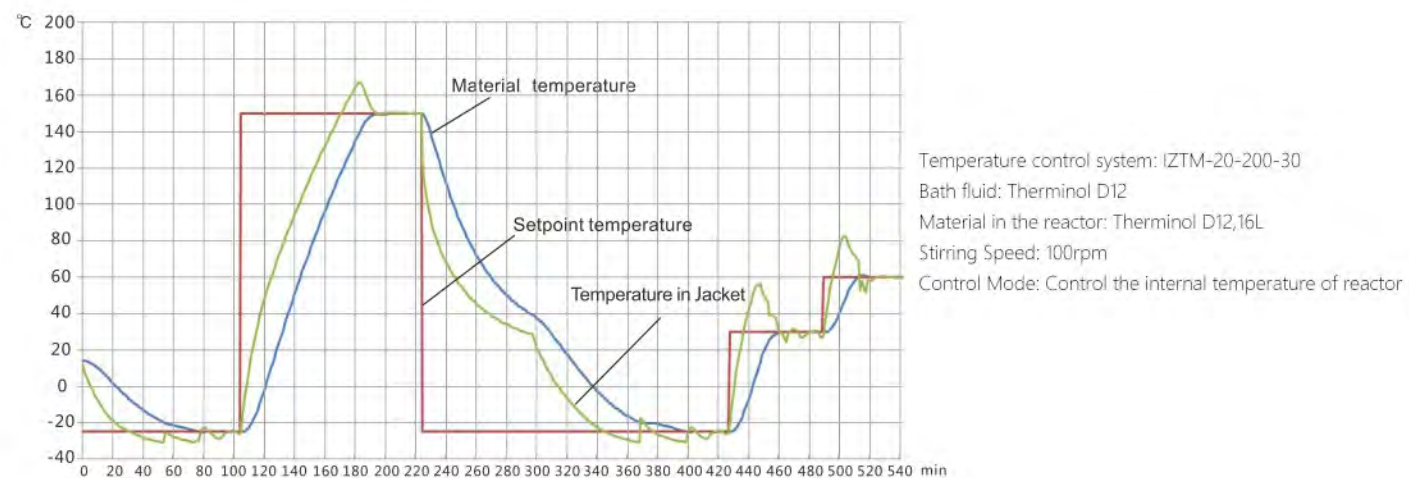
Technical Specifications

Model	Temperature Range(°C)	Temperature Stability(°C)	Overall Power (kW)	Heating Power (kW)	Refrigerant	Cooling capacity(kW)							Bath fluid filling volume(L)	Circulating pump		Power Supply	Dimensions (W×D×H) (mm)	Net weight (kg)	
						200°C	100°C	25°C	-10°C	-20°C	-30°C	-40°C		Flow rate (L/min)	Pressure (bar)				
IZTM-20-200-30	-30~200°C	±0.5°C	4.9	3	R404A	3	2.4	1.2	0.8	0.6	0.36	-	3	30	1	1PH 220V50Hz;	554×796×1050	170	
IZTM-20-200-40	-40~200°C		5.7	3		3	3	2.4	1.4	1.2	0.85	0.25	4			3PH 380V50Hz;			
IZTM-50-200-30	-30~200°C		9.4	6		6	5	3	1.7	1.2	0.6	-	8			1PH 220V60Hz;	640×860×1130	200	
IZTM-50-200-40	-40~200°C		11.1	6		6	6	4.5	4.2	3.2	2	1.1	10			3PH 380V50Hz;			
IZTM-100-200-30	-30~200°C		18	12		12	8.5	6	4.7	3.4	2	-	12			45	1.4	750×1100×1420	320
IZTM-100-200-40	-40~200°C		18.6	12		12	8.6	5.8	4.5	3.5	2	1.1	12			45	1.4	750×1100×1420	
IZTM-100-200-40	-40~200°C	18.6	12	12	8.6	5.8	4.5	3.5	2	1.1	12	45	1.4	750×1100×1420	380				

Model	Temperature Range(°C)	Temperature Stability(°C)	Overall Power (kW)	Heating Power (kW)	Refrigerant	Cooling capacity(kW)							Bath fluid filling volume(L)	Circulating pump		Power Supply	Dimensions (W×D×H) (mm)	Net weight (kg)	
						200°C	10°C	-10°C	-20°C	-30°C	-35°C	-60°C		-78°C	Flow rate (L/min)				Pressure (bar)
IZT-5-200-30H	-30~200°C	±0.5°C	3	2	R404A	0.6	0.6	0.4	0.3	0.2	-	-	-	3.5	25	1.5	1PH 220V50Hz;	420×640×850	106
IZT-20-200-80H	-20~200°C		7.9	3		1.7	4.3	3.1	2.3	1.2	2	1.4	0.45	12	30	1	3PH 380V50Hz;	885×1315×1565	393
IZT-50-200-80H	-80~200°C		15	6	R404A, R23	3	8.2	6.2	4.5	2.5	5	3	1	17	30	1	1PH 220V60Hz;	885×1340×1580	465
IZT-100-200-80H	-80~200°C		35.1	12		3	18	12	7.3	4	10	6	2.5	25	40	1.2	220V60Hz	960×1860×1720	714

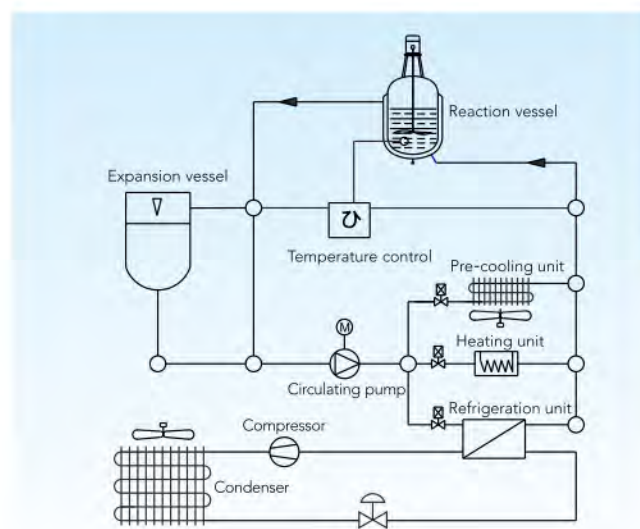
Typical Applications

- Temperature control of jacketed or double jacketed reactors used in Chemical, Pharmaceutical and Biological industries.
- Temperature control of material testing.
- Temperature control during distillation process.
- Analog control of temperature changes during a certain process.
- Thermostatic control system.
- Temperature control of semiconductor device.
- Temperature control of thermal testing platform.
- Temperature control of vacuum chambers.



Case Study of IZTM-20-200-30 & 20L jacketed glass reactor

Working Theory



The bath fluid is cooled down by compressor, and heated up by electrical heating, and it is transferred by circulating pump. The temperature of whole system is controlled by electronic control parts.

IDL Series Recirculating Chiller

Applications

Chiller is usually used to provide constant low temperature condition for inspections, chemical, biological and physical experiments which need to be carried on under low temperature, mainly used for medicine and health care, food process, chemical industry and teaching in colleges and research institutes.

Advantages

- Applications in Chemistry and Biology, like biological fermenter, chemical synthetic vessel etc.
- Equipped with world famous brand compressor, ensure low noise, high reliability, stable performance and long life span.
- Completely closed circulation system prevents bath fluid from evaporation or contamination.
- Built-in filters in circulation hose avoids possible blockage.
- Environmental friendly CFC-free refrigerant meets international standards.
- Compact design with good-looking appearance.
- Designed with liquid level monitor, which make it easier to check the bath fluid left in the tank.
- Pressure of bath fluid can be measured by the pressure gauge which is fixed near the fluid outlet.
- Variable models to meet customer's different requirements.
- Removable side panels for quick and easy cleaning and maintenance.

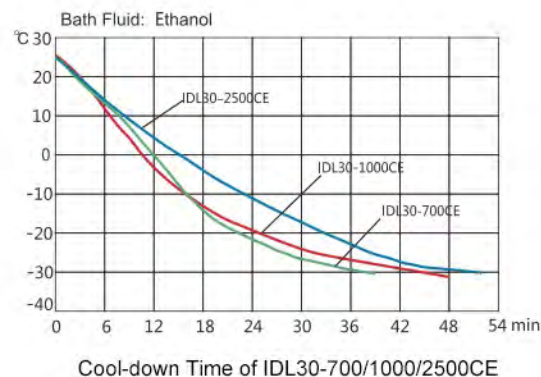
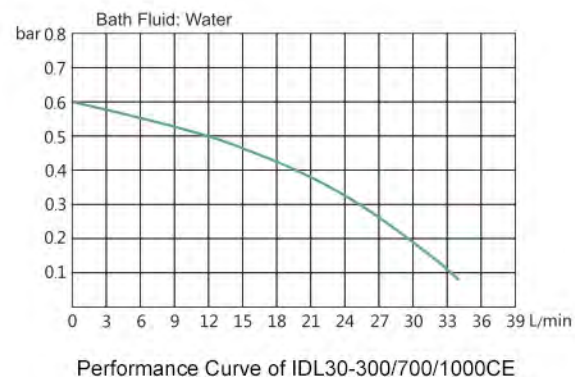


- Eco-friendly refrigerant meets international environmental protection standard; Intelligent control system will prevent compressor from overloading which will extend its service life; closed circulation system reduced evaporation of refrigerant.

Typical Application Sample



Pump Capacity



Technical Specifications

Model	IDL20-900 (CE)	IDL30-300 (CE)	IDL30-700 (CE)	
Temperature Range (°C)	-20~25°C	-30~5°C		
Temperature stability (°C)	±2°C			
Circulating pump flow rate (L/min)	20			
Pressure (bar)	0.4			
Bath fluid filling volume (L)	10	10	17	
Cooling Capacity (W)	@0°C	1650	1250	1750
	@-10°C	950	800	1100
	@-20°C	500	300	700
	@-25°C	—	150	300
Refrigerant	R410A			
Hose connecting size	1/2"			
Dimensions (W×D×H) (mm)	435×690×720	435×690×720	465×690×820	
Net weight (kg)	70	73	86	
Power Supply	1PH 220-240V/50Hz			

Model	IDL30-1000 (CE)	IDL30-1800 (CE)	IDL30-2500 (CE)	
Temperature Range (°C)	-30~5°C			
Temperature stability (°C)	±2°C			
Circulating pump flow rate (L/min)	20	30		
Pressure (bar)	0.4	1		
Bath fluid filling volume (L)	30	40		
Cooling Capacity (W)	@0°C	2800	5000	6000
	@-10°C	1800	3000	4000
	@-20°C	1000	1800	2500
	@-25°C	500	1000	1100
Refrigerant	R410A	R404A		
Hose connecting size	1/2"	3/4"		
Dimensions (W×D×H) (mm)	495×760×860	635×1105×1066	650×1055×1070	
Net weight (kg)	108	180	195	
Power Supply	1PH 220-240V/50Hz	1PH 220-240V/60Hz	3PH 380V50Hz	

* Working Temperature ≤ Room Temp-5°C

IDL- 400 Recirculating Chiller

Applications

This compact chiller is particularly designed for lab scale Rotary Evaporator. It is reasonably structured with small foot-print, which can be placed on bench or on floor.

Advantages

- Circulating joint nozzle can be rotated 360°which makes it easy to connect with corollary equipment.
- All parts contacting refrigerant is made of stainless steel 304 and macromolecule anti-corrosive material.
- World famous brand compressor ensures high reliability and long life-span.

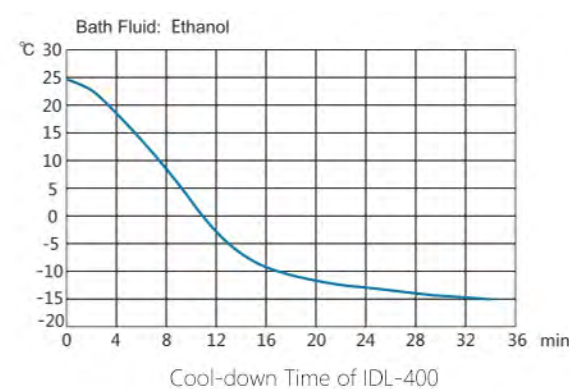
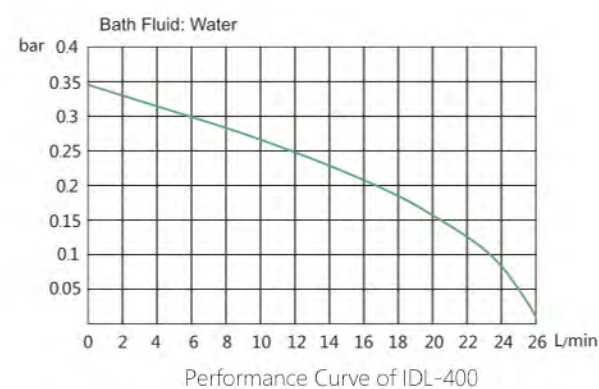


IDL-400

Rotary evaporator

Vacuum pump

Pump Capacity



Technical Specifications

Model	Working Temperature Range (°C)*	Power Supply	Overall Power (W)	Cooling Capacity (W)	Refrigerant	Bath Fluid Filling Volume (L)	Material of bath fluid tank	Circulating Pump Flow Rate	Pressure (bar)	Dimensions (W×D×H) (mm)	Net Weight (Kg)
IDL-400	-15~25	220-240V~, 50Hz	450	400	R134a	3	Stainless Steel 304	17L/min	0.2	246×408×550	26

* Working Temperature ≤ Room Temp-5°C

Heating Circulator

Applications

This is a water-cooled type heating circulator. The bath fluid is heated up by electricity and transferred to reactors by circulating pump, which can be applied to pharmaceutical plants, chemical industry and petrochemical industry.

Advantages

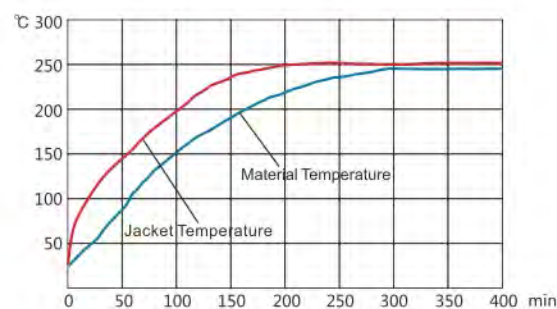
- Designed with exhaust valve, which makes it easy and smooth when filling in bath fluid.
- Using oil as bath fluid will extend the service life of circulator.
- Over-temperature alarm, overload protection, overcurrent protection
Intelligent PID control with high precision
- Bath fluid tank is made of anti-corrosive stainless steel.
- Heating bath fluid circulates in a closed system, which extends its service time.
- Tap water cooling design can cool down the high temperature bath fluid rapidly.



IHB-20-250

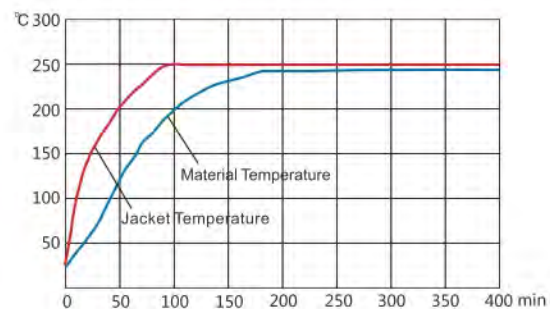
Heat - up Time

Heating Circulator: IHB-20-250
 Bath Fluid: Polydimethyl Siloxane (PMX-200-50cst)
 Material in Reactor: Polydimethyl Siloxane (PMX-200-50cst,16L)
 Stirring Speed:100rpm



IHB-20-250 & 20L glass reactor

Heating Circulator: IHB-100-250
 Bath Fluid: Polydimethyl Siloxane (PMX-200-50cst)
 Material in Reactor: Polydimethyl Siloxane (PMX-200-50cst,80L)
 Stirring Speed:100rpm



IHB-100-250 & 100L glass reactor

Technical Specifications

Model	IHB-20-250	IHB-50-250	IHB-100-250
Working temperature range (°C)	RT+5~250°C		
Temperature stability (°C)	±0.5°C		
Circulating pump	Power (W)	370	750
	Max. flow rate (L/min)	42	75
	Max. pressure (bar)	2.8	1.5
Ambient temperature (°C)	5~35°C	5~40°C	
Ambient humidity	≤ 70%	≤ 60%	
Connection size	3/4"		
Bath fluid filling volume (L)	9	13	17
Dimensions (W×D×H) (mm)	430×690×1075	430×690×1225	640×940×1585
Net weight (kg)	60	120	260
Power supply	220-240V/50Hz	3PH 380V/50Hz	

Tubing: Insulated stainless steel, hose length is 2 m.

Thermostatic Magnetic Stirring Bath

Features

It can be used as water bath or oil bath. Built-in strong magnetic stirrer in the bath.

- Stainless steel 304 heater.
- The magnetic stirring system drives the stirrer to rotate synchronistically, so that the solution in the bath can be heated and stirred evenly.
- DC brushless motor ensures stable performance and continuous working.
- High temperature magnet can continuously work at 300°C without losing magnetism.
- PID temperature controller ensures accurate temperature control.
- Key setting and digital display make it easy to operate.
- Equipped with two sensors make bath temperature and container temperature display alternately.



Technical Specifications

Model	IMS-3	IMS-3S	IMS-5
Temperature range (°C)	Water bath: Room Temp+5~95 Oil bath: Room Temp+5~200°C		
Temperature stability (°C)	±1°C		
Temperature display	Keypad Input, Digital Display		
Stirring speed setting	Knob Setting		
Stirring speed (rpm)	0~2000		
Bath dimensions (mm)	Φ220×110	Φ220×160	Φ254×130
Bath capacity (L)	4	6	6.5
Heating power (W)	500	500	1050
Max.Flask can be placed (mL)	3000	3000	5000
Power supply (V/Hz)	110V, 60Hz or 220~240V, 50/60Hz		
Dimensions (W×D×H) (mm)	260×300×440	260×300×490	280×290×470
Net weight (Kg)	5	5.5	6