

PR570 Series Standard Thermostatic Bath

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1. Overview

PR570 Series Standard Thermostatic Bath adopts the Panran's new-generation temperature control technology, with the PR2602 temperature controller as its core. By integrating novel thermostatic and logic control algorithms with an innovative medium circulation structure, it demonstrates exceptional temperature metrological characteristics and an outstanding intelligent operation experience. The entire series includes four temperature-range models, covering a temperature range of -80°C to 300°C . Compared with traditional thermostatic baths, it has significant advantages in metrological performance, usability, networking capabilities, and intelligence.

1.1 Appearance



Front View of PR570 Series Standard Thermostatic Bath

Applied Patent Technology: ZL 2017 1 1055504.3

1.2 Technical Features (Concise Edition)

- Compact volume with expanded capacity;
- Fixed-rate heating/cooling function (Model A);
- Superior temperature uniformity & stability;
- Temperature control range of standard thermostatic oil bath covering $50^{\circ}\text{C} \sim 300^{\circ}\text{C}$;
- Fourth-generation PR2602 controller enabling highly intelligent control;
- Full-screen display mode for easy remote monitoring of real-time temperature;
- Panran Smart Metrology App support for real-time remote working condition monitoring;

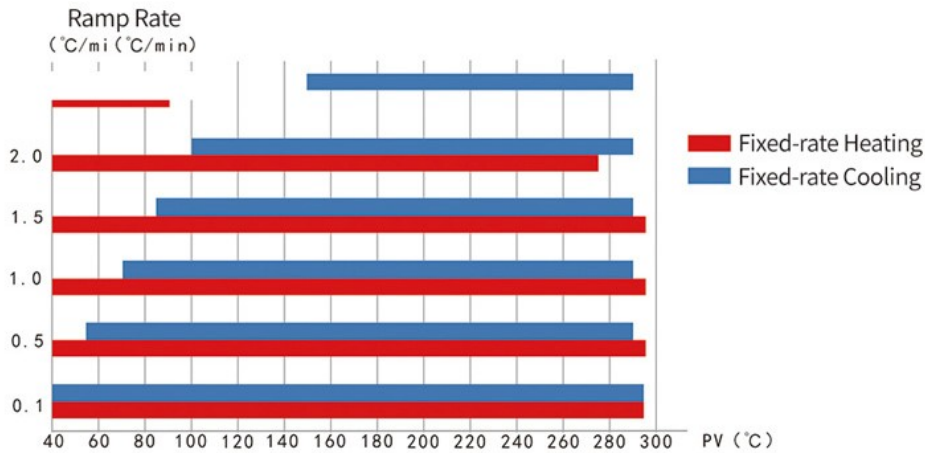
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- Extensive optional accessories for users' differentiated needs;
- Real-time multi-parameter monitoring for enhanced operational safety.

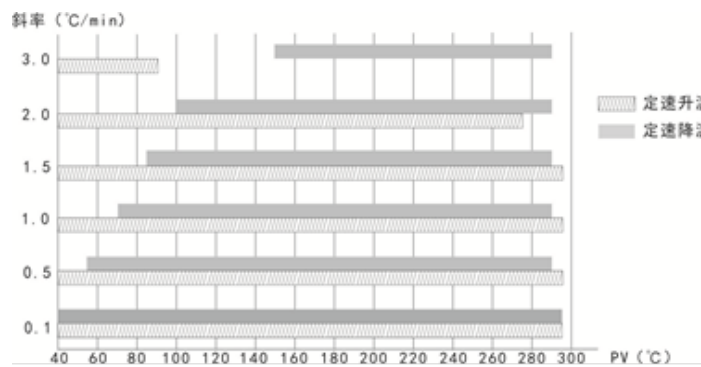
1.3 Technical Features (Comprehensive Edition)

- Compact volume with expanded capacity: The PR570 series features a compact structure. To calibrate more temperature sensors simultaneously, all models adopt a square working cavity that increases effective workspace by 30% versus circular cavity of equivalent size. Compact and innovative structural design reduces external dimensions by 40% volume and 30% footprint compared to traditional thermostatic baths, more units to be placed in the same laboratory space, which improves work efficiency.
- Superior temperature uniformity: As the most critical metrological characteristic of thermostatic sources, temperature uniformity faces new challenges with square-profile working cavity. By designing an innovative high-torque DC stirring system and optimized internal structure, the working medium achieves more thorough homogenization during circulation, thus forming a more uniform and stable temperature field within the working cavity.
- Superior temperature stability: Circulation and thermal equilibrium structure typically exert significant impact on this parameter. The PR570 series can automatically adjust parameters such as stirring motor speed and heat dissipation according to different set values (SV) and ambient temperatures to optimize current working conditions. Take the PR573 series products as an example, temperature stability remains $<0.003^{\circ}\text{C}$ when working in the range of $50^{\circ}\text{C}\sim 100^{\circ}\text{C}$.
- Wider temperature range: The PR573 Series Standard Thermostatic Bath is equipped with an auxiliary heat dissipation system, enabling adjustment of thermal insulation and heat dissipation capabilities of the working cavity under different operating conditions. This allows thermal equilibrium to be achieved over a broader temperature range. Using a universal working medium, the controllable temperature range reaches $50^{\circ}\text{C}\sim 300^{\circ}\text{C}$.
- Fixed-rate heating/cooling function: All models in the series feature fixed-rate heating function. Model A additionally support fixed-rate cooling, enabled by the use of precision mechanical pumps and auxiliary cooling circuits. Take the PR573A series products as an example, Fixed-rate heating/cooling are configurable from $0.1^{\circ}\text{C}/\text{min}$ to $3.0^{\circ}\text{C}/\text{min}$, and the temperature range supporting $1.0^{\circ}\text{C}/\text{min}$ rate can cover

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● PR573A Standard Thermostatic Bath Ramp Rate Temperature Working Range



- PR573A Standard Thermostatic Bath Ramp Rate Temperature Working Range
- The intelligent control and safety system features Panran's self-developed fourth-generation PR2602 temperature controller as its core. This controller intelligently manages the start and stop of components such as compressors, solenoid valves, and power supplies, while also regulating the rotation speed of various pumps, fans, and motors based on operating conditions to achieve optimal temperature control. By monitoring multiple sensors distributed at key locations and continuously calculating whether all input parameters remain within normal ranges, the controller ensures the thermostatic bath remains in a safe operating state at all times.
- Rich software functions, in addition to displaying and setting real-time temperature, curves, fluctuations, and temperature control parameters, the software offers multiple practical features, such as full-screen display function, which can clearly observe the current real-time temperature from a distance. And cloud

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metrology function, allows remote monitoring of operating status via a mobile APP, with alert functions configurable based on parameters like temperature and fluctuations.

- Rich optional accessories for users' differentiated needs. A sensor turnover rack is designed on the left side of the working cavity for temporary placement of calibrated sensors. Additionally, a variety of flange types are included as standard to accommodate different calibrated sensors. The flange sockets feature three-point locking for sensors, eliminating the need for additional fixtures. Optional add-ons include the PR5701 aluminum folding workbench, PR5702 aluminum tri-axis fixture, and PR5703 fume extraction kit, addressing challenges such as non-standard sensor fixing, workspace optimization, and high-temperature fume exhaust.

1.4 Main Function List

Software Functions	Hardware Functions
<ul style="list-style-type: none"> ■ Setting and display of temperature control parameters (PV, SV, etc.) ■ Auto-tuning function for temperature control parameters ■ Real-time temperature and power curve display ■ Temperature fluctuation calculation ■ User-defined upper and lower limits of temperature alarm ■ Automatic/manually medium refill ■ Full-screen display mode ■ Safety alarms based on temperature and power ■ Triple Point of Water Cells Frozen (PR571, PR572) 	<ul style="list-style-type: none"> ■ Square working cavity ■ Self-priming gear pump for medium refill ■ DC speed-Regulated motor for stirring ■ Auxiliary heat dissipation system ■ Sensor turnover rack ■ Multiple flange types ■ Over-temperature protection switches for stirring motor and oil tank ■ Optional components

1.5 Other Details



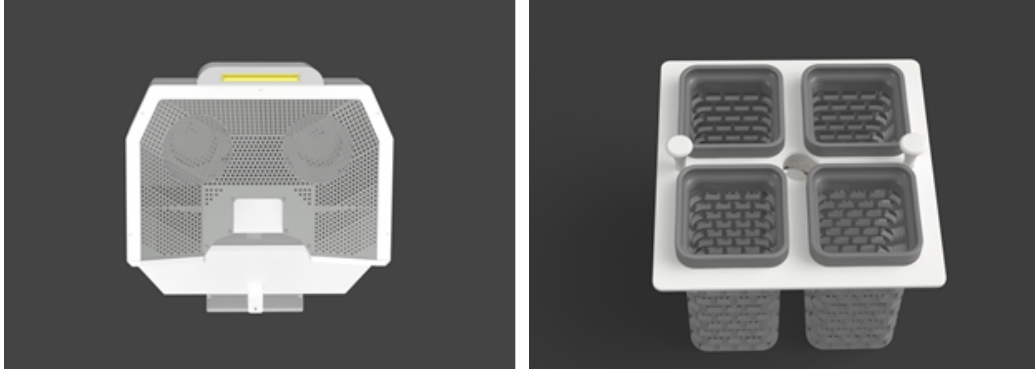
Cable Organizer Bracket, PR5702 Aluminum Tri-Axis Fixture



PR5701 Aluminum Folding Workbench(520mm x 350mm)

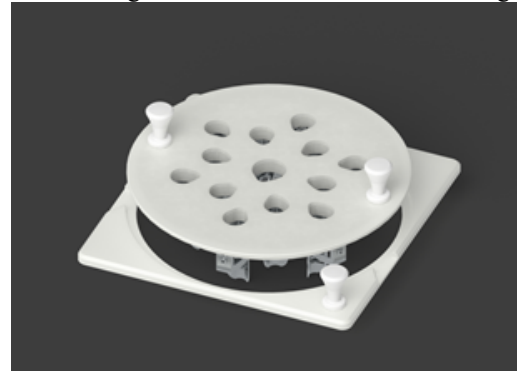
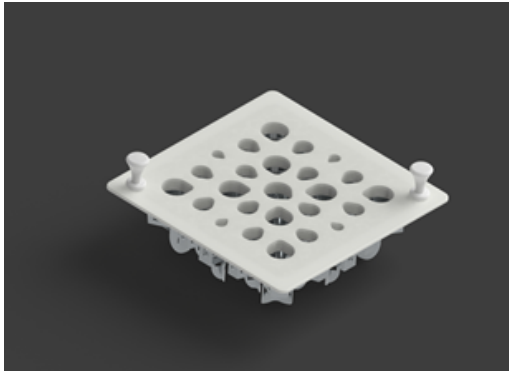
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PR570 Series Standard Thermostatic Bath



PR5703 Fume Extraction Kit

PR5704 Four-grid Thermometer Calibration Flange



Refrigeration Bath Square Flange

Refrigeration Bath Round Flange



Oil Bath Round Flange

PR5705 Triple Point of Water Cells Fixing Flange



PR5706 Dust Cover

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PR573A/B Optional Accessories Installation Visualization (PR5703 Fume Extraction Kit, PR5702 Aluminum Tri-Axis Fixture, PR5701 Aluminum Folding Workbench)



PR5703 Fume Extraction Kit Operation Demo

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PR571A Standard Thermostatic Bath and PR5711 Cooling Module Kit



PR571B Standard Thermostatic Bath

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PR570B Standard Thermostatic Bath

2. Technical Parameters

2.1 General Technical Parameters

Item/Model	PR570B	PR571A	PR571B	PR572B	PR573A	PR573B
Fixed-rate Heating	●	●	●	●	●	●
Fixed-rate Cooling	(Note 5)	●			●	
Cloud Metrology Function	○	○	○	○	○	○
RS232 Communication	●	●	●	●	●	●
Temperature Control Range	-80°C~100°C	-40°C~100°C (Note 3)		-10°C~100°C (Note 3)	(RT+20°C)~300°C (Note 1)	
Working Medium	Anhydrous ethanol / soft water (Antifreeze)	Antifreeze		Antifreeze	Methyl silicone oil	
Volume	20L(Note 2)				20L+10L (oil storage tank)	
External Dimensions (H×L×W)	1138×856×617(mm)	1150×516×516(mm) (Note 2)		1130×516×516(mm)	1150×516×516(mm)	
Weight(excluding medium)	200 kg	120kg (Note 2)	105kg	100kg	115 kg	100kg
Rated Power	5.2kW	3.6kW		3.1kW	2.3kW	
Working Cavity Dimensions(H×L×W)	450mm×130mm×130mm (Maximum height at center position: 530mm)					

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Display Screen	6.8-inch industrial-grade touch screen resolution: 1280 × 480 pixels
Operating Environment	Operating temperature range: (5~30) °C, non-condensing
Power Supply	220VAC±10%, 50Hz

Note 1: The minimum settable temperature for PR573 is 35°C.

Note 2: Dimensions/weight/volume are exclusive of PR5711 Cooling Module Kit.

Note 3: PR571/PR572 can be customized with an extended temperature range up to 160°C. For temperatures exceeding 100°C, low-temperature heat transfer oil must be used as the working medium.

Note 4: ● Standard accessory, ○ Optional accessory.

Note 5: When the room temperature is below 23°C, PR570B can achieve a constant cooling rate of (0.1~1)°C/min in the range of (room temperature~-25)°C.

2.2 Temperature Technical Parameters(Simplified) (Note 1)

Item\Model	PR570B	PR571A/B	PR572B	PR573A/B
Temperature Control Accuracy	0.05°C+0.07%RD			
Temperature Uniformity (Note 2)	≤0.01°C	0.006°C@ -40°C 0.006°C@ 0°C 0.008°C@ 100°C	0.004°C	0.003°C@ 50°C 0.005°C@100°C 0.010°C@300°C
Temperature Stability/10min	≤0.01°C	0.008°C@ -40°C 0.008°C@ 0°C 0.006°C@ 100°C	0.006°C	0.003°C@ 50°C 0.005°C@100°C 0.010°C@300°C
Fixed-rate Heating/Cooling Rate	0.1~1°C/min	(0.1~1.0) °C/min	/	(0.1~3.0) °C/min
Heating Time	0°C~50°C 25min -80°C~0°C 40min	0°C~50°C 25min -40°C~0°C 20min	0°C~50°C 25min	23°C~100°C 30min 100°C~300°C 90min
Model A Cooling Time	/	90°C~50°C 21min 50°C~0°C 38min 0°C~40°C 80min	/	300°C~200°C 12min 200°C~100°C 28min 100°C~50°C 23min
Model B Cooling Time (Note 3)	23°C~-80°C: 120min	45°C~0°C 35min 0°C~-40°C 80min	45°C~0°C 40min	300°C~200°C 15min 300°C~100°C 85min 300°C~50°C 195min

Note 1: The test environment temperature for the above technical parameters is 23°C.

Note 2: The maximum value of vertical and horizontal temperature uniformity includes the four corners of the working cavity. Uniformity may vary slightly due to external environment and power supply stability.

Note 3: For PR573B cooling, maintain auxiliary oil tank level ≥ minimum mark, and ensure media temperature equals ambient temperature before initiation. No manual intervention is required during the cooling process.

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2.3 Temperature Technical Parameters(Detailed) (Note 1)

Item\Model	PR570B	PR571A/B	PR572B	PR573A/B
Temperature Control Accuracy	0.05°C+0.07%RD			
Temperature Uniformity (Note 2)	0.003°C~0.006°C@ -80°C 0.005°C~0.008°C@ 0°C	0.002°C~0.005°C@ -40°C 0.001°C~0.005°C@ 0°C 0.002°C~0.007°C@100°C	0.002°C~0.003°C@ 0°C 0.002°C~0.003°C@100°C	0.001°C~0.002°C@ 50°C 0.002°C~0.004°C@100°C 0.004°C~0.008°C@300°C
Temperature Stability/10min	0.005°C~0.007°C@ -80°C 0.006°C~0.010°C@ 0°C	0.004°C~0.007°C@ -40°C 0.004°C~0.007°C@ 0°C 0.003°C~0.005°C@100°C	0.003°C~0.004°C@ 0°C 0.004°C~0.005°C@100°C	0.002°C~0.003°C@ 50°C 0.003°C~0.005°C@100°C 0.004°C~0.007°C@200°C 0.006°C~0.010°C@300°C
Heating Time	0°C~50°C 25min -80°C~0°C 40min	0°C~50°C 25min -40°C~0°C 20min	0°C~50°C 25min	23°C~100°C 30min 100°C~300°C 90min
Model A Cooling Time	/	90°C~50°C 21min 50°C~0°C 38min 0°C~40°C 80min	/	300°C~200°C 12min 200°C~100°C 28min 100°C~50°C 23min
Model B Cooling Time (Note 3)	23°C~0°C: 20min 0°C~40°C: 40min -40°C~-80°C: 60min	45°C~0°C 35min 0°C~40°C 80min	45°C~0°C 40min	300°C~200°C 15min 300°C~100°C 85min 300°C~50°C 195min

Note 1: The test environment temperature for the above technical parameters is 23°C.

Note 2: The maximum value of vertical and horizontal temperature uniformity includes the four corners of the working cavity. Uniformity may vary slightly due to external environment and power supply stability.

Note 3: For PR573B cooling, maintain auxiliary oil tank level ≥ minimum mark, and ensure media temperature equals ambient temperature before initiation. No manual intervention is required during the cooling process.

3. Accessory Configuration

Model	PR570B	PR571A	PR571B	PR572B	PR573A	PR573B
Standard Accessories	Square Flange	●	●	●	●	●
	Round Flange	●	●	●	●	●
	PR5711 Cooling Module Kit		●			
	Fluorine Hose (φ10 × 1m)		2pcs			
	Small Oil Storage Tank	2pcs		2pcs	2pcs	
	PR5706 Dust Cover	●				
	Cable Organizer Bracket	●	●	●	●	●
	PR232 Communication Cable (2m)	●	●	●	●	●
	Fixture	5pcs	5pcs	5pcs	5pcs	5pcs
	Three-core Power Cable(7m)	●	●	●	●	●
Optional	PR5702 Aluminum Tri-Axis Fixture	○	○	○	○	○

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Accessories	PR5701 Aluminum Folding Workbench	○	○	○	○	○	○
	PR5706 Dust Cover		○	○	○		
	PR5703 Fume Extraction Kit					○	○
	PR5704 Four-grid Thermometer Calibration Flange	○	○	○	○		
	PR5705 Triple Point of Water cells Fixing Flange	○	○	○	○		
Remark: ● Standard accessory ○ Optional accessory							

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