

PR600 series Heat Pipe Thermostatic Bath



Ideal substitute of traditional oil bath

PR600 series is a new generation of calibration bath and its technical specifications are at the advanced level.

Based on the heat pipe technology, this kind of bath have a series of characteristics such as wide temperature range, excellent uniformity, fast rise and fall speed, no fumes, etc. They are very suitable for verification and calibration of temperature sensor.

PANRAN has taken the lead in formulating the enterprise standard 《Q/0900TPR002 Heat Pipe Calibration Baths》 and organized production in strict accordance with the standard and ISO9001:2008.

About heat pipe

"Heat pipe" is a kind of high-efficiency heat transfer component. Its thermal resistance is much lower than the metal materials in the same size because of its medium phase change. It is a "superconductor" of heat. The excellent thermal conductance capacity of the heat pipe means it an extremely excellent temperature equalizing performance, or an "temperature flattening ability".

● *Products Feature:*

1. Eco-friendly, pollution-free

In the operation of traditional oil baths, even if air exhausting devices are taken, the volatilization of the medium at high temperature will cause pollution to the working environment and affect the health of operators. The medium of the PR630 is sealed in the core of the heat pipe, and the core is subjected to the air tightness test of pressure above 5 MPa, so the environmental pollution caused by medium volatilization is avoided in principle.

2. The working temperature up to 500 °C

The working temperature range of the oil bath is (90~300) °C: considering factors such as medium volatilization, fumes

and safety, the upper limit of the temperature in the actual working process generally does not exceed 200°C. PR631-400, PR631-500 products can extend the above working temperature to 400°C and 500°C respectively, and a temperature uniformity is not more than 0.05°C is guaranteed, so the heat pipe thermostatic bath is very ideal thermostatic equipment.

3. Excellent temperature uniformity

As a "superconductor" of heat, the phase change process is the source of power for the medium to circulate inside the heat pipe. The fast internal circulation makes the heat exchange inside the heat pipe very fast, which gives the PR630 series heat pipe products an excellent temperature uniformity. Even at an operating temperature of 400°C and 500°C, a temperature uniformity of no more than 0.05°C can be guaranteed.

4. No need to change media

After a period of time, the conventional liquid bath need to update the medium in the bath to ensure the function specification. The inside of the PR630 series is highly vacuumed, and there is no aging or deterioration of the medium, so there is no need to replace the medium.

5. Display resolution 0.001 °C

By using the PR2601 precision temperature controller module, the PR630 series have a temperature resolution of 0.001°C and an optimum temperature stability of 0.01°C/10 minutes.

6. Simple structure and reliable operation

The PR630 series relies on the cyclic operation of the medium phase change without the need for a mechanical motion unit. It improves the reliability of the operation.

7. Two over-temperature protection functions

In addition to the over-temperature protection of the main controller, the PR630 series also have a completely independent temperature monitoring loop, which can still achieve over-temperature protection in case the first-level protection fails.

8. AC power abrupt change feedback

The PR630 series has the function of grid voltage feedback, which can effectively suppress the temperature fluctuation caused by the abrupt change of AC power.

9. Grid voltage abrupt suppression

The PR600 series heat pipe thermostat has a grid voltage feedback function, which can effectively suppress the temperature disturbance caused by the sudden change of the grid voltage.

● Achievement & Application:

1. PR600 series was listed as a science and technology project of the State Administration of Quality Supervision, Inspection and Quarantine in February 2008, The main technical indicators are at the international leading level.
2. Listed in the Eleventh Five-Year Scientific Research Project of the National Defense Military Industry Metrology completed the short-range temperature sensor calibration of air crafts.
3. Platinum resistance thermometer calibration for nuclear reactors in Daya Bay Nuclear Power Plant.
4. Transformer oil surface temperature controller and winding temperature in power and power grid industry Controller calibration.

5. Verification and calibration of thermocouples, resistance thermometers, bimetallic Thermometers, and pressure thermometers by temperature instrument manufacturers.
6. "JG684-2003 Surface Platinum Thermal Resistance Calibration Regulations" and "JF1262-2010 Armored Thermocouple Calibration Specifications" have included heat pipe temperature sources in supporting constant temperature equipment. "JF1030-2010 thermostat technology performance test specification" clearly states that "heat pipe can also be tested with reference to this specification." Therefore, the heat pipe thermostat has a very broad application prospect.

● **Basic parameters**

Model	Temp range(°C)	Temp field Uniformity(°C)		Temp stability (°C/10min)	Working depth (mm)	Dimension (mm)	Weight (kg)	Power	Optional Parts
		Level	Vertical						
PR632-400	80~200	0.02	0.03	0.04	100~450	715*650*1015	121	3.3	S: standard jack F: Non-standard jack N: No communication C: RS-485 communication
	100°C point	0.01	0.02	0.03					
	200~400	0.03	0.04	0.04	150~450				
PR631-200	80~200	0.02	0.03	0.04	100~450	615*630*1015	90.3	1.0	
PR631-400	200~400	0.03	0.04	0.04	150~450				