

# **PR721 Series Precision Digital Thermometer**

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**PANRAN**

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## China National Explosion-proof

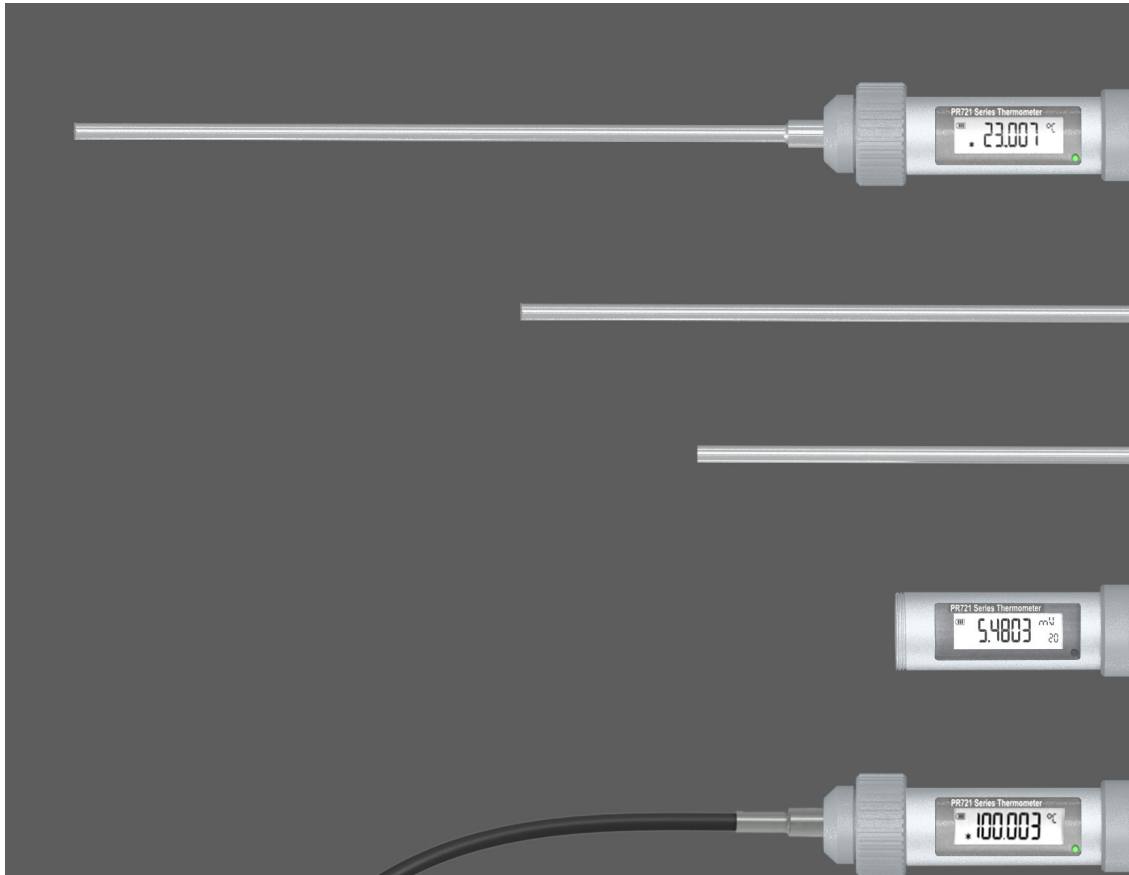
Keywords:

- Intelligent Sensor
- High Accuracy
- Wireless Communication
- U Disk Mode
- Ingress Protection Rating: IP64

## 1. Overview

PR721 series precision digital thermometer adopts intelligent sensor with locking structure, which can be replaced with sensors of different specifications to meet different temperature measurement needs. The supported sensor types include wire-wound platinum resistance, thin-film platinum resistance, thermocouple and humidity sensors, which can automatically identify and load the type, temperature range and correction value of the connected sensor. The thermometer as a whole adopts an aluminum alloy structure, has obtained the national explosion-proof safety certificate (CNEx22.3596X), and has an IP64 protection rating, enabling reliable use in harsh environments.

## 1.1 Appearance



## 1.2 Technical Features

1. Intelligent sensor: The temperature measurement range covers  $-200^{\circ}\text{C}$  to  $1300^{\circ}\text{C}$ . It uses high-temperature-resistant locking components. After the host is connected to the intelligent sensor, it can automatically load the type, temperature range and correction value of the current sensor, improving the accuracy of temperature traceability and work efficiency.
2. Low temperature drift: Within the range of  $5^{\circ}\text{C}$  to  $50^{\circ}\text{C}$ , the electrical measurement accuracy is better than class 0.01, and the temperature resolution is  $0.001^{\circ}\text{C}$ , which can meet high-standard temperature calibration requirements.
3. USB flash drive mode: It can be charged or transfer data through the Micro USB interface, facilitating quick editing of test data.
4. Gravity sensing: It supports automatic screen rotation, and ideal reading experience can be

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obtained whether placed horizontally on the left or right.

5. Supports Bluetooth or ZigBee communication. The Panran Smart Metrology APP can be used for data synchronization or expanding other applications.

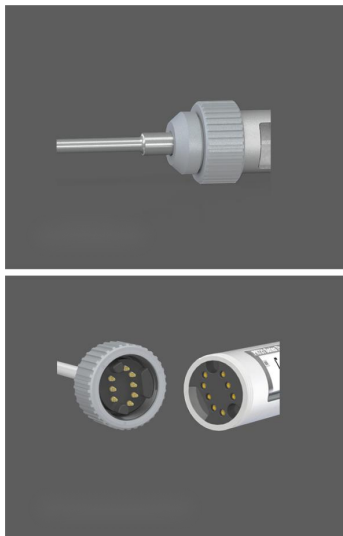
6. Protection rating IP64: It can be used reliably in complex environments.

7. Ultra-low power consumption: Built-in rechargeable lithium battery, with a continuous working time of more than 80 hours.

**1.3 Other Functions**

Function List	
■	Fluctuation measurement with settable time intervals
■	Relative temperature measurement
■	Calculation of maximum, minimum and average values
■	Conversion between electrical values and temperature values
■	Editing of sensor correction values
■	Over-temperature alarm
■	Built-in high-precision real-time clock
■	Optional °C, °F, K

**1.4 Typical Applications**



▲ Sensor locking assembly



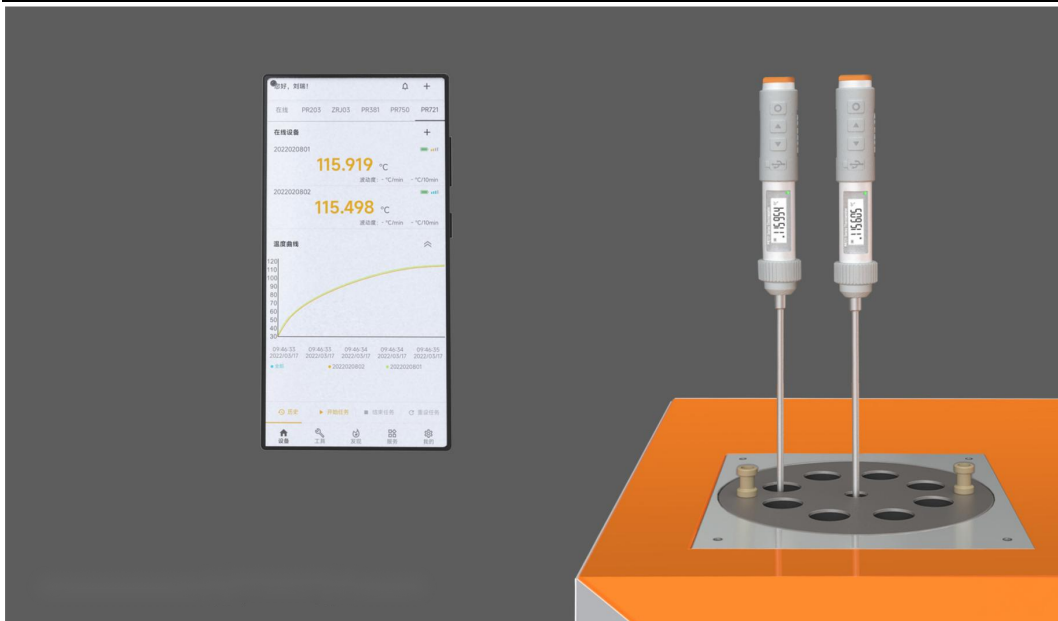
▲ Edit data and charging

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▲ Two thermometers were connected to the mobile APP for temperature difference test.

## 2. Technical Parameters

### 2.1 General Parameters

Model	PR721A	PR722A	PR721B	PR722B	Remark
External Dimensions	φ29mm×145mm				Excluding the sensor
Weight	80g				Weight including battery
Data Storage Capacity	8MB(stores 320,000 sets of data)				Including time information
External Interface	Micro USB				Charging/data
Battery Specifications	3.7V 650mAh				Rechargeable lithium battery
Charging Time	1.5hours				DC5V 2A charging
Battery Duration	≥80hours		≥120hours		
Wireless Communication	Bluetooth		ZigBee		Built-in communication module
Effective Communication Distance	≥10m		≥30m		Within the same space

### 2.2 Electrical Accuracy (1-year calibration interval)

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Measuring Range	PR721 Series	PR722 Series	Remark
0.0000~400.0000Ω	0.01%RD+5mΩ	0.004%RD+3mΩ	1mA Excitation current
0.000~20.000mV	0.01%RD+3μV		Input impedance≥100MΩ
0.000~50.000mV	0.01%RD+5μV		
0.00000~1.00000V	0.015%RD+20μV		
Temperature Coefficient	Resistance: 5ppm/°C Voltage: 10ppm/°C	Resistance: 2ppm/°C Voltage: 5ppm/°C	5°C~50°C

### 2.3 Temperature Accuracy (1-year calibration interval)

Sensor Type	PR721 Series	PR722 Series	Resolution
Pt100	±0.04°C@0°C ±0.05°C@100°C ±0.07°C@300°C	±0.02°C@0°C ±0.02°C@100°C ±0.03°C@300°C	0.001°C
Type S Thermocouple	±0.6°C@0°C ±0.4°C@600°C ±0.5°C@1000°C		0.01°C
Type N thermocouple	±0.2°C@300°C ±0.3°C@600°C ±0.3°C@1000°C		0.01°C
Reference Junction Compensation	±0.15°C@0°C ±0.20°C@20°C ±0.30°C@50°C		0.01°C

Note 1: Temperature accuracy is converted from electrical accuracy.

## 3. Sensor Selection

**3.1 Reference Sensor** (Uses Pt100 wire-wound resistance elements, and is only compatible with PR722 series precision digital thermometers)

Temperature Range	Model	Specification (mm)	One Year Accuracy	Remark
-40°C~160°C	APSK1403000	φ4*300	0.05°C	
	APSK1500401	φ5*45	0.05°C	1.5m silicone wire
-80°C~300°C	APSK2605000	Φ6*500	0.05°C+0.01%RD	

Note 1: The specifications do not include the dimensions of the connector; the overall dimensions of the sensor need an additional 40mm.

Note 2: The accuracy refers to the overall accuracy of the sensor and the thermometer.

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**3.2 Platinum Resistance Sensor** (Uses Pt100 wire-wound or thin-film elements, compatible with the full range of precision digital thermometers)

Temperature Range	Model	Specification(mm)	Accuracy	Remark
-200°C~300°C	APSK0605000	φ6*500	0.10°C+0.07%RD	
-40°C~160°C	APPG1500403	φ5*40	0.07°C+0.1%RD	3m silicone wire
-80°C~260°C	APPG2400403	φ4*40	0.07°C+0.1%RD	3m PTFE cable, usable at 300°C for short periods
-80°C~300°C	APPK2504000	φ5*400	0.10°C+0.1%RD	
	APPK2505000	φ5*500	0.10°C+0.1%RD	
0°C~500°C	APPK3605000	φ6*500	0.15°C+0.1%RD	
0°C~700°C	APSK4302700	φ3*270	0.15°C+0.07%RD	
	APSK4304300	φ3*430	0.15°C+0.07%RD	
0°C~800°C	APSK5605000	φ6*500	0.15°C+0.07%RD	

Note 1: The specifications do not include the dimensions of the connector; the overall dimensions of the sensor need an additional 40mm.

Note 2: The accuracy refers to the overall accuracy of the sensor and the thermometer.

Note 3: APSK sensor adopts wire-wound platinum resistance.

**3.3 Thermocouple Sensor** (Type N thermocouple, compatible with the full range of precision digital thermometers)

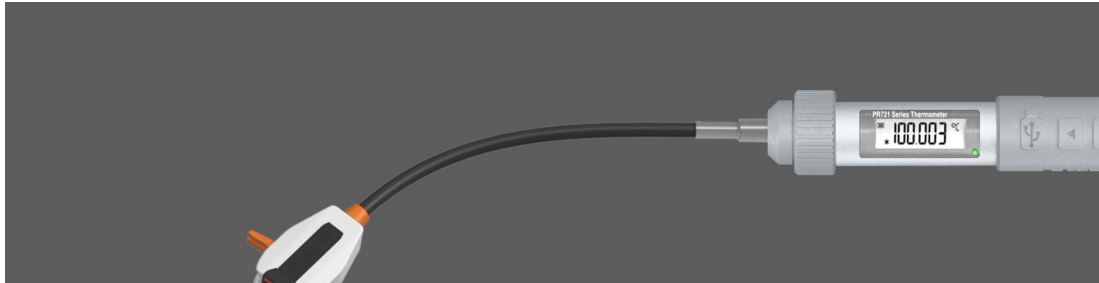
Temperature Range	Model	Specification(mm)	Accuracy	Remark
RT~800°C	ANPK5107000	φ1.5*700	0.6°C+0.1%RD	Usable at 1300°C for short periods
RT~800°C	ANPK5307000	φ3*700		
RT~1250°C	ANPK8310200	φ3*1000		
RT~1250°C	ANPK8320200	φ3*2000		
RT~1250°C	ANPK8330200	φ3*3000		

Note 1: The accuracy includes the reference junction compensation error.

Note 2: The accuracy refers to the overall accuracy of the sensor and the thermometer.

Note 3: Thermocouple length can be customized.

## 4. Optional Accessories



The PR7200 multi-functional connector adopts a self-locking wiring method, allowing users to freely connect bare-wire or pin-type sensors with this accessory. The connector integrates a temperature sensor and a memory inside, which are used for measuring the reference junction of thermocouples and storing data such as sensor type and correction value. An intelligent sensor can be formed once connected. This accessory is applicable to PR721A/PR722A digital thermometers with Bluetooth function. The digital thermometer connects to the smart metrology APP on the mobile phone via Bluetooth, enabling easy reading or writing of sensor type and correction value information from the mobile phone.

The PR7200 multi-functional connector supports the following sensor types: Pt100/ Pt1000/ S/R/B/T/K/E/J/N.

## 5. Packaging Information

### 5.1 Packaging List

No.	Item Description	Qty	Remark
1	PR721/ PR722 Series Precision Digital Thermometer	1	Host
2	Micro USB Cable	1	Charging/data transmission
3	Quick Operation Guide	1	
4	Portable Transport Case	1	Optional
5	Sensor	Optional	Optional

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**5.2 Portable Transport Case**

Item\Model	PR7215A	PR7215B	PR7215C	PR7215D
External Dimensions (L×W×H mm)	700×130×70	700×100×70	350×260×130	295×205×91
Weight(kg)	2.5	2	1.3	0.9
Material	Aluminum alloy	Aluminum alloy	PP	PP
Contents	2 sets of digital thermometers (with metal rod sensors) + 1 flexible cable or metal rod sensor	1 set of digital thermometer (with metal rod sensor) + 1 metal rod sensor	1 set of digital thermometer (with flexible cable sensor)	3 digital thermometers host

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