

## PR710 Series Precision Digital Thermometer

### Operation Instructions



## 1. Overview

PR710 series Handheld Precision Digital Thermometer, the characteristics of high accuracy and high stability. It is a precision thermometers customized for metrology industries. The measurement range covers  $-80^{\circ}\text{C}\sim 300^{\circ}\text{C}$ , the temperature data can be displayed directly on the LCD screen, and it has powerful human interaction and communication functions. The PR710 series products are compact and portable, making them suitable for laboratory and field use.

## 2. Features

- Excellent accuracy with annual change better than  $0.05^{\circ}\text{C}$ .
- Can be traced to other standard temperature device;
- It can be connected to the host computer through 2.4G wireless communication.
- With the function of clearing, it is suitable for temperature difference measurement.
- Warning when the temperature is over-temperature.
- Temperature fluctuation calculation function.
- Working continuously for more than 1400 hours with ultra-low power consumption.
- The screen can suit the sight with its built-in gravity sensor.
- Small in size, light in weight, easy to carry.

## 3. Technical Parameters

### 3.1 Model Selection Chart

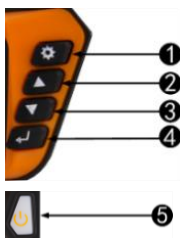
Model	PR710A	PR711A	PR713A	PR712A
Product Name	Precision Digital Thermometer			Standard Digital Thermometer
Temperature Range( $^{\circ}\text{C}$ )	$-40\sim 160$	$-80\sim 300$	$-40\sim 160$	$-5\sim 50$
Accuracy ( $^{\circ}\text{C}$ )	0.05	$0.05+0.01\%$ RD	0.05	0.01
Sensor size (mm)	$\varphi 5*300$	$\varphi 5*500$	$\varphi 5*1300$	$\varphi 5*400$
Sensor characteristic	Metal probe	Metal probe	Waterproof flexible cord	Metal probe
Host dimensions (mm)	104×46×30			
Complete weight (g)	145	160	160	150

### 3.2 General parameters

Item	Specification
Communication method	2.4G (using ZIGBEE protocol)
Wireless communication distance	In the same space, the linear distance from the transmitter is more than 30m
Battery type	3 AAA alkaline batteries
Operation environment	(-10~50) °C
Sampling speed	1 second / 3 seconds optional
Display resolution	0.01°C / 0.001°C optional
Number of data records	16 sets of data can be stored, a total of 16000 data points, and a single set of data has up to 8000 data points
Duration	When wireless communication and backlight are turned off: ≥1400 hours; When wireless communication automatically send is turned on: ≥700 hours
Calibration period	1 Year
Warm-up time	Valid after 1 minute of warm-up

## 4 Operation Instructions

### 4.1 Introduction to the Function of Buttons



1. Setting button
2. Up arrow button
3. Down arrow button
4. OK button
5. Power on button, in the off state, press the 2S device to turn on, in the on state, press the 2S device to turn off. In the power-on state and the auto backlight off, short press to control the turn-on and turn-off of the backlight.

*Note: Please refer to the operation block diagram for the description of button operation.*

### 4.2 Main Interface Introduction

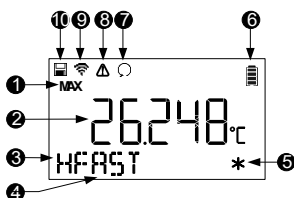


Figure 1 Main interface

1. Temperature peak (divided into maximum-MAX, average-AVG, minimum-MIN).
2. Temperature value (battery value).
3. The current display value or battery value is locked and remains unchanged.
4. Measurement speed.
5. Stability indication, flashes when its stable, the flashing frequency is related to the measurement speed, and the stability is determined by the threshold value.
6. Battery display.
7. Screen rotation on sign.
8. The measured temperature exceeds the set temperature range or there is no recorded data.
9. The communication function is turned on: the signal flashes once, indicating that a group of data has been successfully sent.
10. The recording function is turned on: the signal flashes once, indicating that a group of data has been successfully recorded.

### 4.3 Setting Interface Introduction

On the main interface, short press the "Settings" button to enter the setting interface, short press the "Settings" button to switch the setting items, and short press the direction keys to switch the setting values, see the operation block diagram for details.



Figure 2 Setting interface

- 1.Setting item (show in the figure is screen orientation )
- 2.Indicates that the current selection is the content indicated in Figure 3, and as shown in the figure, it means that the screen orientation is off.
- 3.The specific setting content in this setting item.

In the setting interface, you can set multiple contents. The specific setting items and corresponding setting contents are shown in the following table.

Setting items	Corresponding settings
Auto Backlight(backlit)	OFF, ON
Orientation settings (rattion)	OFF, ON
Threshold setting (thrshold)	OFF, 0.005, 0.01, 0.03, 0.05, 0.1(Unit:°C)
Threshold time (thldtime)	1, 5, 10, 30(Unit:min)
Sampling speed setting (speed)	H(High-speed), L(Low-speed)
Decimal setting (decimal)	0.001 (three) , 0.01 (two)
Unit setting (unit)	°C, F, K
Recording time interval setting (rectime)	5, 10, 30, 60, 120, 300, 600 (Unit:S)
Alarm type setting(alarm)	OFF (Turn off alarm) 、 U(Upper limit alarm) L(Lower limit alarm)、on(Upper and lower limit alarm)
Alarm upper limit (value----)	Value can be set by the operator
Alarm lower limit (value____)	Value can be set by the operator
Communication settings(comm)	OFF、 ARS232 (the serial port can be sent automatically) ARAD10 (automatically send via wireless) RS232 (RS232 communication) RAD10 (wireless communication)
Address(address)	1-99

*Note: The time interval of data send in communication is related to the recording time interval setting. The time of volatility is determined by the set threshold time.*

#### 4.4 Data Recording Interface Introduction

On the main interface, long press the "Settings" button to enter the data recording interface, short press the "Settings" button to switch the data group number, and long press the "Settings" button to return to the main interface, see the operation block diagram for details.

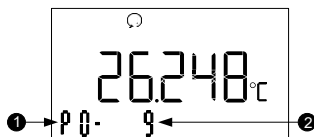

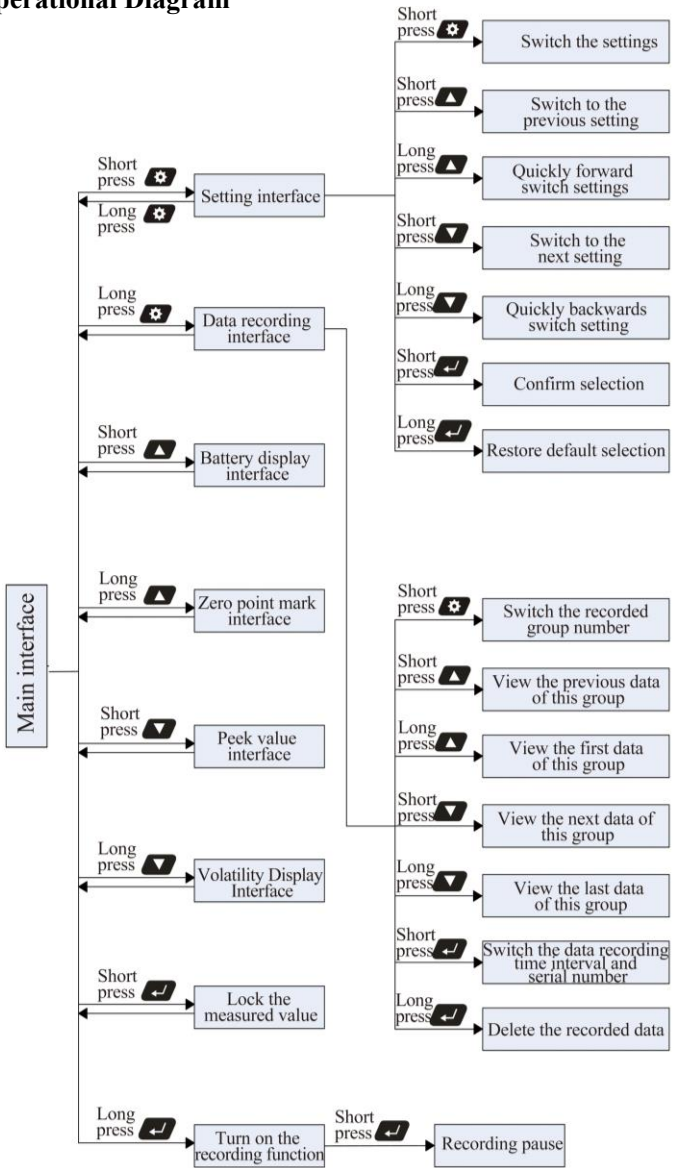


Figure 3 Data Recording Interface

- 1.The group number of the recorded data.
  - 2.The data logging interval or the logged data sequence number.
- The precision digital thermometer can record 10 sets of data in total, each set of data can record up to 8192 numbers, and the total of all data does not exceed 10240. When the recorded data exceeds the range, the device will automatically delete the first set of data and record the latest data.
  - Long press the "Settings" button in the main interface, if the  symbol flashes, it means that there is no recorded data and cannot enter the data recording interface.

### 5. Operational Diagram



**Note:** When you press and hold the "OK" button to restore the default settings or delete the current recorded data, the screen will flash, prompting you to confirm to avoid misoperation, press the "OK" button to confirm, and press the "Settings" button to cancel.

## **Attentions**

- 1.The measured environment temperature with high fluctuation should be avoided, otherwise the precision platinum resistance element of the PR710 series thermometer will be irreversibly damaged. The limit change value of the measured environment temperature should be less than 30°C/10 seconds .
- 2.If the temperature difference between the measured temperature and the present temperature of the thermometer is high, following operations can be carried out: insert the thermometer into the measured environment for about 1 second, then quickly pull it out, repeat several times until the value of the digital thermometer is close to the measured temperature. Then the thermometer can be completely inserted into the measured environment. During the whole operation, ensure that the change of the value of the thermometer is less than 30°C/10 seconds.
- 3.If the device accidentally falls into the liquid during operation, please turn off the power immediately, take out the battery, and contact our company's after-sales service personnel, and do not continue to perform other operations.
- 4.Please do not disassemble this device without authorization, otherwise it will be deemed as a waiver of warranty service.