

**PR750/751 series high precision temperature and  
humidity data-recorder and calibrator**

**PANRAN**

**Changsha Panran Technology Co., Ltd.**

## PR750/751系列

H I G H - P R E C I S I O N

高精度温湿度  
记录器

- ✓ 高低温大空间环境温湿度测量
- ✓ 远程数据监测
- ✓ 内置存储及U盘模式
- ✓ 无线温湿度测量



## ● Overview

PR750 / 751 series high precision temperature and humidity data-recorder and calibrator is suitable for temperature and humidity test and calibration in large space from - 30 °C to 60 °C. It integrates temperature and humidity measurement, display, storage and wireless communication. It is compact in appearance and easy to carry. It can be combined with PC, PR2002 repeater and PR190A portable data server to form the various testing systems that are suitable for temperature and humidity measurement in different environment.

## ● Features

### ■ Distributed temperature and humidity measurement

PR750 / 751 series recorders are specially designed for temperature and humidity measurement and calibration in large space environment. One 2.4G WLAN is established by connecting the PC transmitter or PR190A portable data server (integrated transmitter) . One WLAN can hold 254 temperature and humidity recorders at most. Just place or hang the recorder at the

corresponding position when it is operated, and the recorder will automatically collect and store the temperature and humidity data according to the preset time interval.

#### ■ Signal blind spots can be eliminated

The reliable communication distance between a single recorder and the host is more than 30 meters without the repeaters and partial occlusion, which can meet the test requirements of ordinary constant temperature and humidity space. If the measurement space is large or there are many obstructions in the space, the signal strength of WLAN can be improved by adding some repeaters (PR2002 wireless repeaters). According to the different environment, each repeater can increase the effective communication distance within 50-100 meters, which can effectively solve the problem of wireless signal coverage in large space or irregular space.

#### ■ Special software and hardware for the reliability of test data

In the process of sending data to the host computer, the low-power wireless recorder sometimes encounters the problem of accidental data loss. When the PR750 / 751 series recorder receives error data or missing data, it will automatically check and update the missing data. Even if the whole recording process of the recorder is offline, it can also be prompted by the software wizard through wireless or USB flash disk. The mode is used to complete the data, thus providing users with higher integrity of the original data.

#### ■ Excellent full range temperature and humidity accuracy

In order to meet the diversified calibration requirements of users, different types of PR750 / 751 series recorders adopt different principles of temperature and humidity measurement elements, which have excellent measurement accuracy in the full range, providing reliable guarantee for

temperature and humidity traceability and calibration. Taking PR750A recorder as an example, the accuracy of full range is better than  $\pm 0.15\text{ }^{\circ}\text{C}$  and 1.5% RH, and the accuracy can reach  $\pm 0.1\text{ }^{\circ}\text{C}$  and 0.8% RH at  $5\text{ }^{\circ}\text{C}$ ,  $20\text{ }^{\circ}\text{C}$  and  $50\text{ }^{\circ}\text{C}$ .

#### ■ Low power

PR750 / 751 series recorders have the characteristics of ultra-low power consumption. According to different models, rechargeable lithium batteries with different capacities are used. PR750A can work continuously for more than 130 hours under the setting of one minute sampling period, while PR750B and PR751 series products can work continuously for more than 200 hours. The working time can be further increased by configuring longer sampling period.

#### ■ Built in storage and USB

PR750 / 751 series recorder has built-in 2MB flash memory, which can store more than 50 days of measurement data according to the calculation of recording and sending a group of data per minute. In addition, PR750 / 751 series recorder is designed with standard micro USB interface, through which charging or data transmission can be carried out. The recorder can copy and edit the data as a U-disk after connecting to the PC with the conventional USB cable, which is convenient for processing the test data quickly under the abnormal condition of the local wireless network.

#### ■ Flexible in use, easy to operate

Despite its size is quite small, PR750 / 751 series recorders also design display screens and buttons to satisfy the most basic human interface demands for users. No other peripherals are needed to view the current temperature and humidity value, power, network number, address

and other information, which is convenient for users to debug before networking. Furthermore, users can easily configure different environmental temperature and humidity calibration systems by using recorder, wireless repeater, wireless data server and PC according to the actual needs.

#### ■ **Excellent software features**

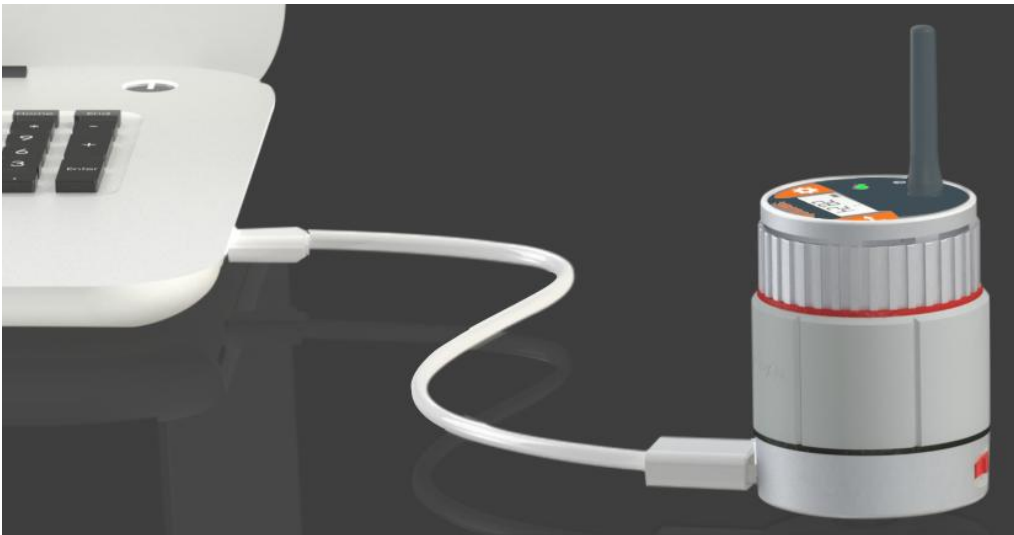
PR750 / 751 series recorder and PC or portable data server constitute the temperature and humidity test system. No matter what combination mode is used, PANRAN provides professional temperature and humidity acquisition software. In addition to the basic functions of conventional display of various real-time data, curves and data storage. Furthermore, visual point layout configuration, real-time temperature and humidity cloud chart display, data processing and report output function are also qualified.

#### ■ **Remote monitoring can be realized with PANRAN Smart Meter**

When the PR190A portable data server is used as the host, all the original data in the whole test process will be sent to the cloud server through 4G network in real time, and any internet terminal authorized by the user can be used to view. The user can monitor the test data, test status and data quality in real time on the PANRAN Smart Meter App, and can also view and output historical test data to establish a cloud data center, and provide users with long term data cloud storage, cloud computing and other services.



Picture 1 : From left to right are PR750A, PR750B, PR751B (PR751A and PR750B have the same appearance)



Picture 2 : Connect to laptop using Micro USB



Picture 3 : PR750B Show some close-ups



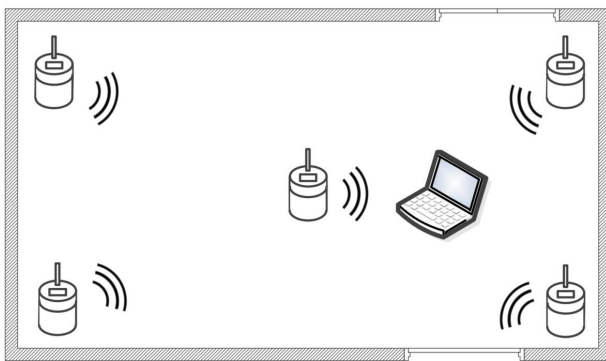
Picture 3 : Close-up of bottom mechanical switch

- Specifications

Model	PR750A	PR750B	PR751A	PR751B	Remarks
Product Name	High precision temperature and humidity recorder		High precision temperature and recorder		
Measuring range	-20℃～60℃ 0%RH～100%RH	-20℃～60℃ 30%RH～90%RH	-20℃～60℃		The whole recorder should be put into the measured environment
5℃/20℃/50℃ Accuracy	±0.1℃ 1.0%RH	±0.2℃ 2.0%RH	±0.07℃	±0.15℃	One year calibration period
Full range accuracy	±0.15℃ 1.5%RH	±0.3℃ 4.0%RH	±0.1℃	±0.25℃	
Dimensions	φ38×86mm	φ38×57mm	φ38×57mm	φ38×48mm	Excluding antenna height
weight	80g	77g	77g	75g	Weight includes battery
Battery duration	130hours (5.5days)	240hours (10days)	200hours (8days)		Collect and send data at one minute
Charging time	1.5hours	3hours	3hours		charging to 95% with DC5V 2A
Battery specifications	3.7V 650mAh	3.7V 1300mAh	3.7V 1300mAh		Rechargeable lithium batteries
Data storage capacity	2MB(store 60K sets of data)		2MB (store 80K sets of data)		Include time information
Effective communication distance	Linear distance from transmitter≥ 30m				In the same space
Wireless communication	2.4G （using ZIGBEE protocol）				
Charging interface	Standard Micro USB				Charging / data

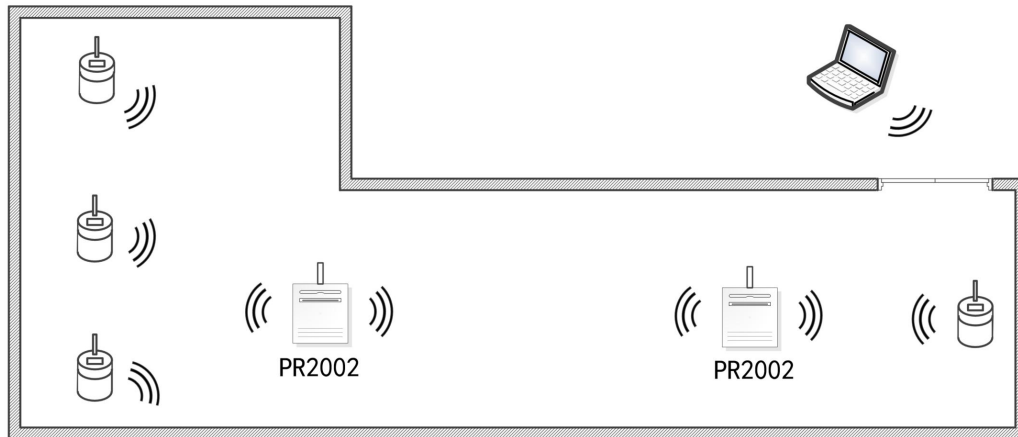
## ● Application Examples

- Scenario 1: Use the PC as the host and place multiple temperature and humidity recorders in the same space to be measured. The PC is connected to the PR2000 transmitter through the USB interface, and the transmitter establishes a wireless local area network. The recorder with the same temperature and humidity as the transmitter will automatically join the wireless local area network and automatically send temperature and humidity data to the PC software according to the set sampling period. This scenario is suitable for the space under test with an area of less than 400 m<sup>2</sup>.

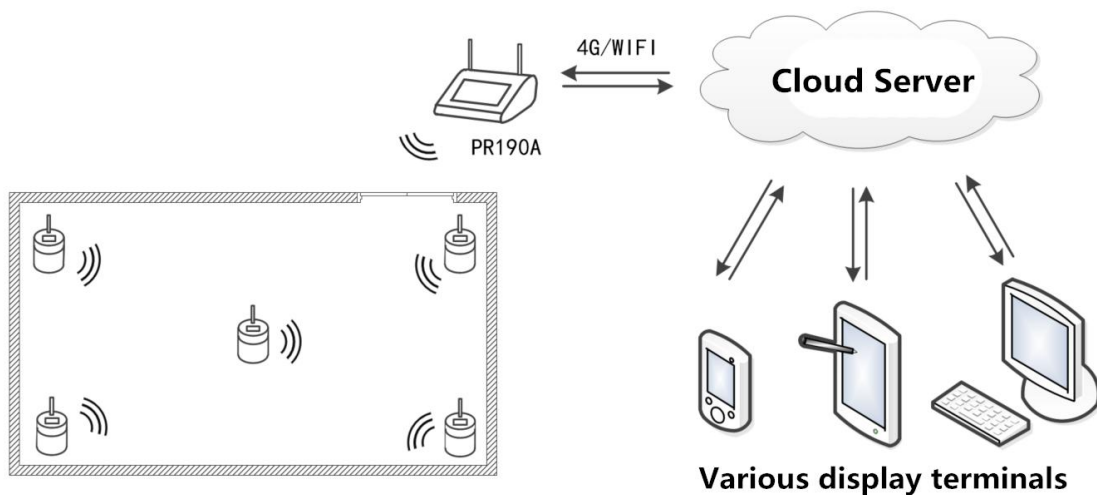


- Scenario 2: Use the PC as the host, and measure the temperature and humidity in a large space/special-shaped space by adding one or more wireless repeaters. The wireless repeater can automatically identify and join the local wireless local area network with the same network number, and has a higher transmission power and gain, which can greatly expand the coverage space of the wireless local area network and improve the wireless signal quality. At this time, the PC terminal can be placed outside the space under test to facilitate users to view test data in real time.





- Scenario 3: Use the PR190A portable data server as the host, and cooperate with the data support of the cloud server to realize remote real-time monitoring and data processing.
- After the PR190A is started, it can automatically establish a local wireless local area network, and has all the functions of the PC software. It has a built-in 4G module, and can send temperature and humidity data to the cloud server in real time during the work process. The user can view real-time data and for the data processing on any authorized mobile phone, PAD , and PC.



## ● Related Products and Introduction

No.	Related Products Name	Remarks
1	PR190A Portable data server	With cloud service function, it can be used as host instead of PC in local mode.
2.	PR2002 Wireless repeater	Expand the coverage space of local wireless LAN.
3.	PR2000 Wireless transmitter	The PC can be used as the host of the local wireless LAN after connecting with it.

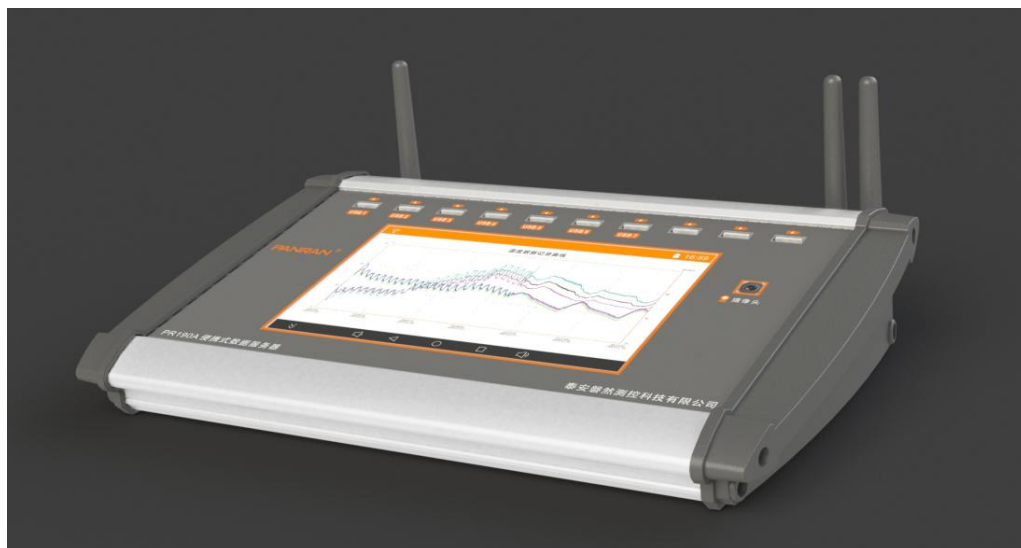
### ■ PR190A Portable data server

PR190A data server is a key component to realize the data interaction between PR750/751 series recorder and cloud server. It adopts Linux operating system, has basic functions such as recorder parameter setting, task management, temperature and humidity data recording, storage, curve display, data processing, etc. , can be used as the host of the local area network and replace the general PC. The PR190A data server has a built-in 4G communication module and a WiFi module, which can upload temperature and humidity data to the cloud server in real time for remote data monitoring and data processing.

In addition, the PR190A data server also has 10 independent USB2.0 ports with a current output capability of up to 2A, which can connect 10 pcs of PR750/751 series recorders for charging at the same time, and 7 of the USB ports have data connection functions.

Model and product name	PR190A Portable data server
Processor	Cortex-A17 quad-core, clocked at 1.8GHz
RAM	2GB
FLASH memory	8GB
Screen size	7-inch color touch screen, 1024*600 resolution
Other peripherals	Front standard USB2.0×7, USB charging port×3, rear standard USB2.0×2, RS485, RJ45 Gigabit Ethernet port, HDMI port, WIFI port, ZIGBEE port, 13 million pixel camera

Rated power	130W Standard external AC adapter
Dimensions	300×165×50mm ( L×W×H )
Weight	1.5kg with external AC adapter
Working/storage temperature	-10 ~ 60°C , 10 ~ 90%RH Non-condensing

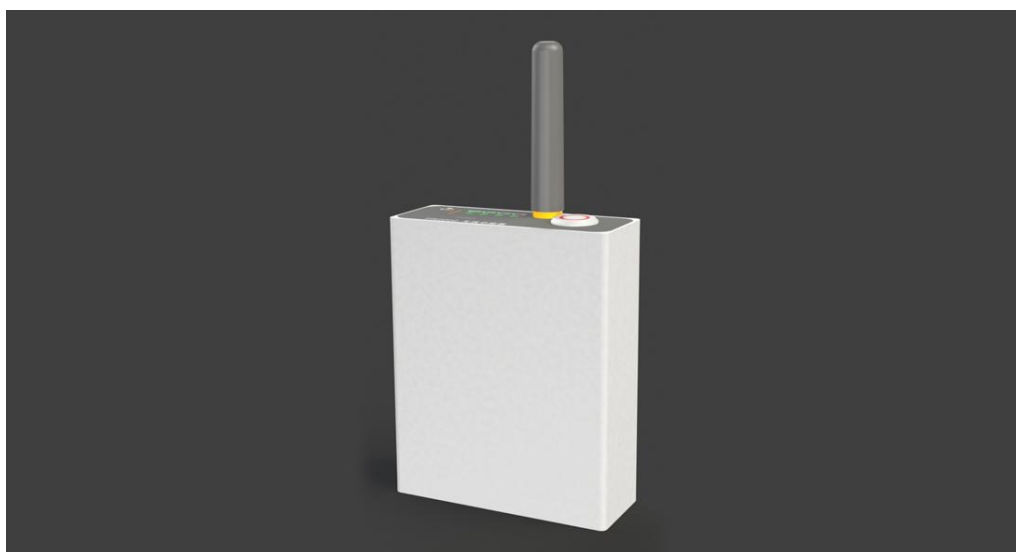


## ■ PR2002 Wireless repeater

The PR2002 wireless repeater is used to extend the communication distance of the 2.4G wireless network based on the zigbee communication protocol. It has a built-in 6400mAh large-capacity lithium battery, which can work continuously for about 7 days using battery power. The PR2002 wireless repeater will automatically join the network with the same network number, and the recorder in the network will automatically connect to the repeater according to the strength of the signal. The effective communication distance of the PR2002 wireless repeater is much longer than the low-power transmitter module built in the PR750/751 series recorder. In open conditions, the limit

communication distance between of two PR2002 wireless repeaters can reach 500m.

Model and product name	PR2002 Wireless repeater
Wireless transmit power	23dBm
Maximum transmission rate	250kbps
Battery specifications	3.7V 6800mAH
Charging port	Micro USB
Dimensions ( Does not include antenna )	71×27×88mm ( L×W×H )
Weight	220g
Working/storage temperature	-10 ~ 60°C , 10 ~ 90%RH Non-condensing



#### ■ PR6002 Wireless transmitter

The PR6002 wireless transmitter is used to establish a wireless network based on the zigbee communication protocol. It uses a standard USB2.0 interface and can be used after connecting to the USB interface on the PC.



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