深圳天圆数码科技有限公司
TZONE DIGITAL TECHNOLOGY CO.,LTD

Handheld Thermometer and Hygrometer

HTD701 HTD702

---User Manual V1.1

Contents

1. Notes

Warning:

- Only operate the product properly for its intended purpose and within the parameters specified in the technical data.
- Dangers may also arise from objects to be measured or the measuring environment. Always comply with the locally valid safety regulations when carrying out measurements.
- Do not store the product together with solvents.
- Only perform maintenance and repair work on this instrument that is described in this documentation. Follow the prescribed steps exactly when doing the work.

2. Features

HTD701/HTD702 is a calibrated high-precision measuring instrument used to measure temperature and humidity. It has the following features:

- Using SHT45 sensor, high measurement accuracy and fast response speed
- Able to measure temperature, humidity,dew point temperature and wet bulb temperature
- Good stability
- Excellent performance, such as the temperature and humidity overrun alarm, calibration, maximum value/minimum value/average display, and more information display of oversized line screens.

3. Application Field

HTD701/HTD702 can be widely used in various fields, such as:

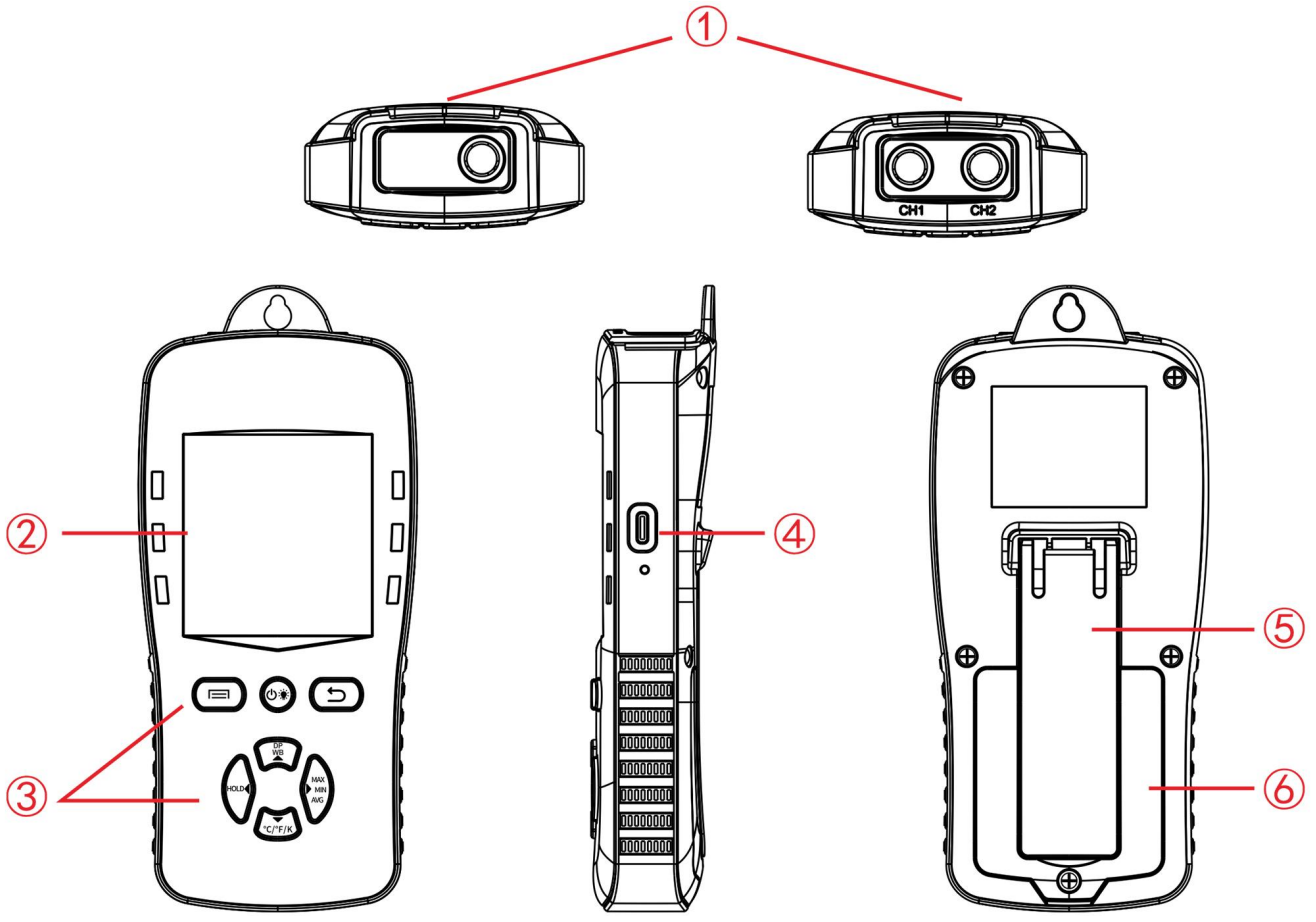
- HVAC field
- Measurement of surface temperature and humidity
- Animal Husbandry
- Warehousing
- Laboratory

4. Device Descriptions

This section describes the outlines of device structure and its functions.

4.1 Display and Control Components

Device Overview



Description of instrument parts

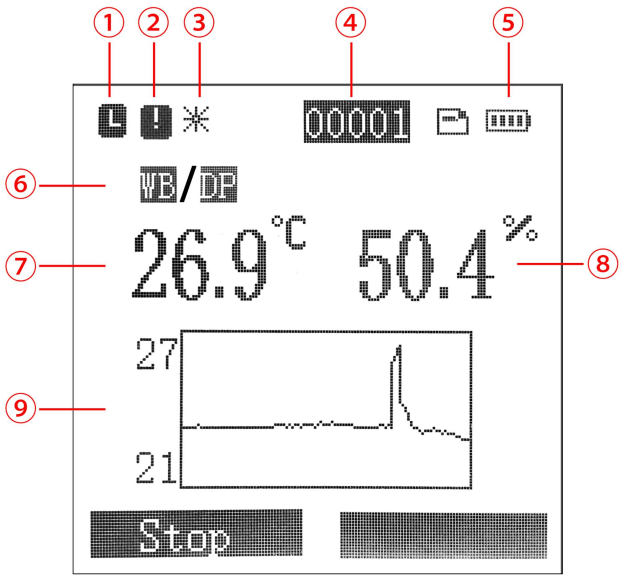
Parts	Illustrate
①	Probe interface
②	LCD screen
③	Button
④	USB interface, you can connect the instrument to a computer or other 5V output USB power supply device through a Type-C cable.
⑤	Support frame, users can flexibly adjust the support angle, easy to use.
⑥	Battery compartment, the instrument is powered by three 1.5V AA batteries.

Button Function

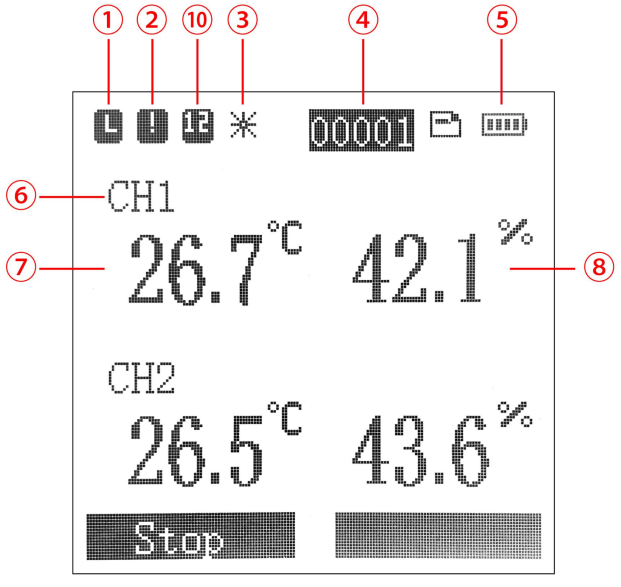
Button	Function
	Multi-function key 1, its function will be displayed at the bottom left of the screen.
	Turn on the device; turn off the device (Long press); Turn on/off the backlight.
	Multi-function key 2, its function will be displayed at the bottom right of the screen.
DP WB	Switch between ambient temperature,dew point temperature and wet bulb temperature. (Only supported by HTD701) Ambient temperature: refers to the temperature in the air. Dew point temperature: refers to the temperature when the air is cooled to saturation under the condition that the water vapor content and air pressure remain unchanged. Wet bulb temperature: refers to the air temperature when the water vapor in the air reaches saturation under the same enthalpy value air state.
HOLD	Keep the current reading.
MAX/MIN/AVG	Display maximum/minimum/average value.
℃/℉/K	Switch the unit of reading.

Important display

HTD701



HTD702



Display instructions

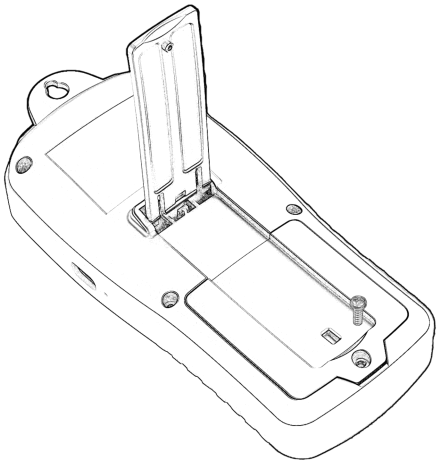
Display	Illustrate
①	Auto Power Off: Displayed when the auto power off function is turned on.
②	Alarm enable: Displayed when the alarm function is turned on.
③	Backlight mode: Displayed when the backlight mode is on.
④	Number of recorded data: Displayed when the device starts recording.
⑤	Battery Capacity: Displayed when the instrument is powered by batteries.
⑥	HTD701: Show ambient temperature/dew point temperature/wet bulb temperature. HTD702: Show current channel.
⑦	Temperature value
⑧	Humidity value
⑨	Single channel mode: Display the temperature curve of the current channel.
⑩	Alarm channel: Displayed when the channel alarm function is turned on.

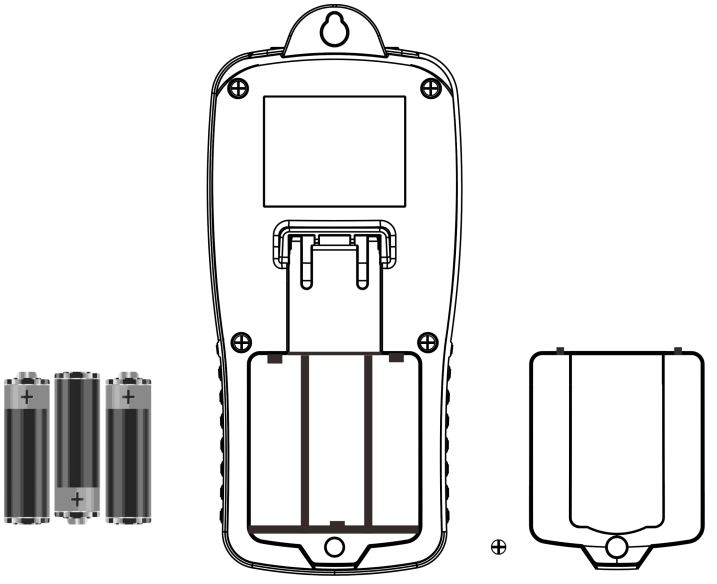
5. Installation and Maintenance

5.1 Install

Users need to install the battery and probe before using the instrument, as shown in the figure:

Install battery





1. Take the screw of the battery cover with a screwdriver and remove the battery.
2. Take out the battery and put the new battery into the battery room. Please pay attention to the polarity of the battery.
3. Put back the battery cover and lock the battery cover with a screw.

Install the probe

1. After installing the battery, turn on the power, and take out the probe..
2. Insert the probe into the probe interface, and pay attention to align the probe with the interface.

5.2 Maintain

- **Cleaning the shell:**

If the shell becomes dirty, use a clean wet cloth to clean the shell. Do not use corrosive detergents or solutions!

- **Replacement battery:**

When the battery power is too low, the instrument needs to replace the battery, and the instrument must be turned off before the replacement. The replacement steps are the same as "Installing the battery"

6. Operations

6.1 On/Off Device

- **Turn on the device**

  1. Short press the  key. The device enters the power-on state.

- **Turn off the device**

  1. Long press the  key. Release the  key when you see "Goodbye" on the screen.

6.2 Backlight

- **Turn On/Off the Backlight**

  ✓ Turn on the device.

  1. Short press the  key. The display icon  indicates that the backlight is on.
  2. Short press the  key again to turn off the backlight.

6.3 Measurement

- **In the start-up state, put the probe in the temperature and humidity environment to be tested and read the current temperature and humidity**

➢ Keep reading

1. Short press the HOLD key to keep the main screen readings.
2. Short press the  key(Exit)exit the maintenance mode.

➢ View maximum, minimum value and average value

1. Press the MAX/MIN/AVG key multiple times under the execution of the measurement interface to switch the display values.

   - The following values are displayed in turns: max (maximum value); min (minimum value); avg (average value); current reading.

2. Check the maximum value, minimum value, and average value, and press the  RESET key to remove the statistical value and re -calculate the maximum value/minimum value/average value. Short press the  (exit) key exit maximum/minimum value/average mode.

➢ Switching unit

Short press the ℃/℉/K key to switch between the degree Celsius, Fahrenheit and Kelvin.

➢ Switching temperature

Short press the DP WB key to switch between ambient temperature, dew point temperature and wet bulb temperature. (Only supported by HTD701)

6.4 Read report

After setting the record data (see 7.3 setting the record data), the USB cable connection device and computer can generate temperature and humidity data report with our supporting USB cable connection device, and the report format supports TXT, XLS, CSV, PDF.

7. Set up

7.1 Set overview

➢ **Open the menu interface**

✓ The device is turned on and the instruction area display Menu .

1. Short press the  (menu) and enter the menu interface for configuration.

!! All the functions in the menu can use  /  key (hereinafter referred to as the up/down key) to select the function， Use  /  key (hereinafter referred to as left /right) to adjust the value.

!! After selecting, you can confirm through the  key (hereinafter referred to as OK key), and exit through the  key (hereinafter referred to as the return key).

!! The settings related to the attributes of the device itself are in the menu interface, as shown below:

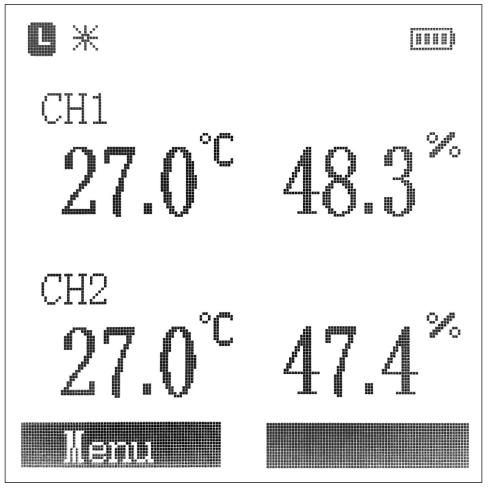
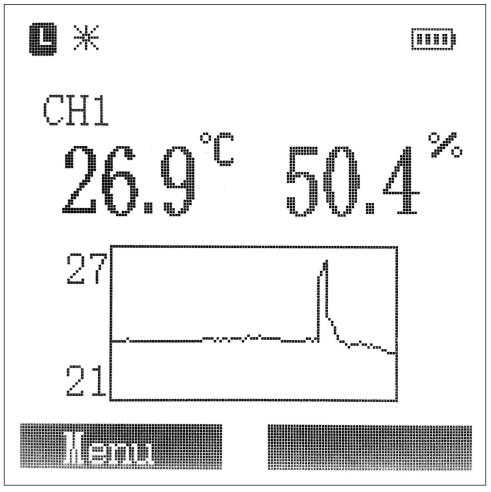
Function	Illustrate
Channel Mode	Set the channel mode
Sound	Set the sound mode
Logging	Record data
Auto Off	Set automatic off
Alert	Set up alarm
Calibration	Set calibration
Backlight	Set backlight time
Recovery	Reset
Machine Info	View device information

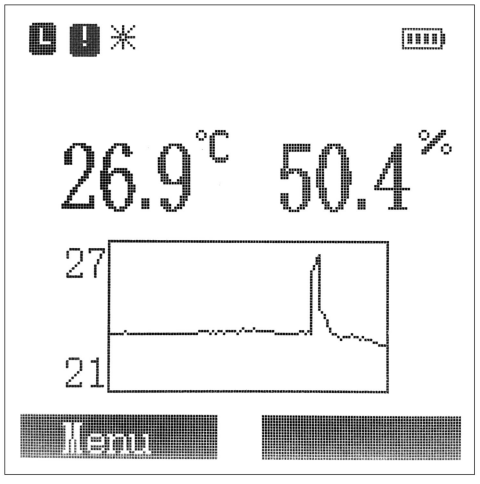
➢ Set the channel mode

!! HTD702 supports four channel modes: CH1 and CH2, CH1, CH2, CH1-CH2.

!! HTD701 supports single channel mode.

There are two measurement channels in this series of device, and there are multiple channel modes, which can meet various measurement needs. As shown in the table below:

Model	Dual channel merger mode	Single channel mode
HTD702		
	Two channels work at the same time and LCD screen displays their data simultaneously.	It displays single channel's value, which is suitable for tracking the temperature changes of a certain channel.

Model	Single channel mode
HTD701	
	It displays single channel's value, which is suitable for tracking the temperature changes of a certain channel.

➢ Set the key sound

!! Support the two modes of turning on the sound and turning off sound.

➢ Set automatic off

!! Support the two modes of opening and turning off. After opening, automatically shut down at the main screen interface for 10 minutes without operation

➢ Set backlight mode

!! Support five modes: 5mins, 10mins, 30mins, 60mins, and Always.

7.2 Set up alarm

➢ Set upper/lower limit alarm values for temperature and humidity

!! The value of the upper and lower limit of the temperature and humidity can be adjusted, and the upper and lower keys can adjust the symbol and value.

!! The value of the upper limit must be higher than the lower limit value, otherwise the setting is unsuccessful.

➢ Set the temperature and humidity alarm switch

!! Support two modes: on and off.

!! After the alarm function of the channel is turned on, the status area will display the corresponding channel value. As shown in 

, which means all 2 channel alarm functions are turned on.

!! When the temperature and humidity collected by the device exceeds the upper and lower limits of the settings, the buzzer will sound an alarm, and the main screen area will be displayed 

/ 

reminded.It will stop after 5 minutes of continuous beeping or stop by manually pressing a key (any key) or the temperature and humidity return to normal.

➢ Set calibration

!! Before using the calibration function, please select a reference target.

!! The calibration scope of this series of device is -9.9 ~+9.9℃ or %.

7.3 Set record data

➢ Open the record mode

1. Select "**Logging**" with the upper and lower keys on the menu interface, and press OK key to determine to enter the "**Logging**" interface.

➢ Enter the settings interface

1. Select "**Setting**" with the upper and lower keys, and press the OK key to enter the "**Log Setting**" interface.

➢ Set time

1. Use the upper and lower keys to select "**Set Time**", and press the OK key to enter the "**Set Time**" interface.
2. Set the time through the up, down, left and right, and press OK key to confirm.

➢ Set the sampling rate

!! The sampling rate is set from 1 second to 65535 seconds.

1. Select "**Set Sample Rate**" with the upper and lower keys, and press the OK key to enter the "**Set Sample Rate**" interface.
2. Set the sampling rate through the up, down, left and right, and press the OK key to confirm.

➢ Set the data file format

!! This series of devices support four data file formats: TXT, CSV, XLS, and PDF.

1. Select "**Set File Format**" with the upper and lower keys, and press the OK key to enter the "**Set Sample Rate**" interface.
2. Select the required data file format through the upper and lower keys, and press the OK key to confirm.

➢ Start recording

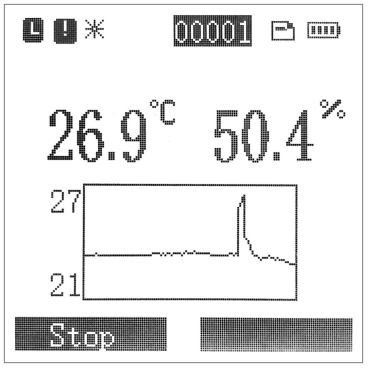
!! HTD701 HTD702 can store 49920 pieces of data.

!! When the memory space is full, the record function will not be used normally. Please delete the record before using it.

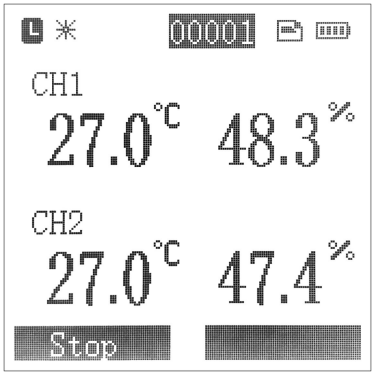
!! In the record mode, the screen will be turned on after 10min without operation, and the instrument will still record data after the screen is turned off.

!! When recording starts, the number of records will be displayed on the main screen, as shown in the figure below:

HTD701



HTD702



1. Select "Start Logging" on the "**Logging**" interface, and press the OK key to confirm.

➢ Stop recording/saving results

!! After stopping the record, the current record data will be automatically saved into the internal storage. You can view the data through a USB connection computer.

!! In addition to manual stop, low -power shutdown and memory fully recorded will also result in stopping recording.

1. In the record mode, press OK key to enter the confirmation stop recording interface.
2. After waiting for 5 seconds, press the OK key to stop the record.

➢ View record information

1. Use the upper and lower keys to select "**View**" into the viewing information interface.
2. Use the upper and lower keys to switch the page, and press the back key to exit.

➢ View disk information

1. Select "Disk" with the upper and lower keys, and press the OK key to enter the disk information interface.
2. The disk interface will display disk information: Total, Used, Free, and press the back button to exit the disk information interface.

➢ Delete Record

!! It is recommended to backup the data file before deleting records to avoid permanently deleting data files.

1. Use the upper and lower keys to select "**Delete Log**", and press the OK key to enter the confirmation delete record interface.
2. Wait for 5 seconds to press the OK key to delete the record.

➢ Re -generate files

!! This function is mainly used to restore data that is recently recorded or deleted.

!! When the device stops the record due to low -power shutdown in the record mode, the file needs to be re -generated to view the data file of the previous record in the disk

1. Use the up and down key to select "**Regenerate File**", and press the OK key to confirm the re -generating file.

7.4 Reset

➢ Reset

!! Restore the factory setting will restore the settings in the instrument to the default state.

1. Select "**Recovery**" with the upper and lower keys on the menu interface, and press the OK key to enter the confirmation to restore the factory setting interface.
2. After waiting for 5 seconds, press the OK key to confirm the restoration of the factory settings.

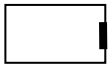
7.5 Device Information

➢ Device Information

!! Device information displays device model, device ID, and firmware version.

1. Select "**Device Info**" with the upper and lower keys on the menu interface, and press the OK key to enter the "**Device Info**" interface.
2. After viewing the device information, short press the Exit key to exit.

8. FAQ

Question	Possible Reason	Possible Solution
Battery grid display 	● Device battery is too low.	● Replacement battery
The device shuts off automatically.	● Auto power off turned on. ● The battery is dead. ● The operating temperature and humidity exceeds the specified value. ● Component damage.	● Turn off the auto power off function. ● Replacement battery. ● Move to compliant location for measurement. ● Please contact supplier for after sales.
Channel interface display“- - - - - -”	● Unplugged probe. ● Probe error. ● The temperature and humidity exceeds the measuring range.	● Plug in the probe ● Replace with the correct probe. ● Please use the probe corresponding to the measuring range
Inaccurate measurement data.	● Probe not up to standard. ● Calibration value set incorrectly. ● The internal circuit of the instrument is damaged.	● Please use the specified probe ● Clear all calibration values ● Please contact supplier for after sales.

9. Technical Parameters

Sensor Type	SHT45
Measurement Object	HTD701: ambient temperature, dew point temperature, wet bulb temperature, relative humidity HTD702: ambient temperature, relative humidity
Measurement method	HTD701: Single channel HTD702: Dual Channel
Measurement Range	Ambient temperature: -40~125℃ Dew point temperature:-40~80℃ Wet bulb temperature:-40~80℃ Relative humidity: 0%~100%RH
Unit	Temperature: ℃/℉/K Humidity: %
Temperature Measurement Accuracy	Ambient temperature: ±0.2℃ (-40~90℃); ±0.3℃ (other range) Dew point temperature: ±0.4℃, ±1℉ Wet bulb temperature: ±0.4℃, ±1℉
Humidity Measurement Accuracy	±2%RH
Resolution	0.1
Power Supply	3 pieces of 1.5V AA batteries
Storage	49920 pieces
Measurement Rate	1 time/second
Log Sample Rate Interval	1~65535 seconds (adjustable)
Operating Temperature	-10~+50℃
Stored Temperature	-20~60℃ (without battery)
Protection level	IP52
Dimensions	183 x 83 x 35mm
Weight	HTD701: 290g (Without probe) HTD702: 295g (Without probe)

System accuracy is affected by the quality of probe! The above is the accuracy of this device.