

**Professional Temperature Measuring Instrument
User Manual**

V1.8.4

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Document Description

This section provides important information for using this document.

This document contains the information of using this product safely and effectively. Please read the this document carefully and be familiar with the operation.


Pressing Button Description

Short Press: Press the button and then lift it, there will be a prompt sound when pressed.

Long Press: Press and hold the button for about 2 seconds, then lift it up after hearing the prompt.

There will be a prompt sound when the function corresponding to the key is activated. No sound means that currently the function is not available or the key sound is turned off.

Document Identification Description

Sign	Meaning	Description
!!	Attention	Provide important tips and information
✓	Condition	A condition that must be met before performing an operation
➤, 1, 2...	Target	Indicates what you want to achieve. The number is the sequence of the steps required to achieve the goal, and this sequence must always be followed
	Button	Short press/ long press the button
-	Additional Instructions	Additional instructions for certain operations/ projects
●	Example	List some details or examples related to the project
◆	Result	The obtained results when performing certain operations

1. Safety Instructions

This section describes the general rules that must be obeyed and followed to use this product safely.

Avoid Personal Injury/ Equipment Damage

- Do not use this device to measure on or near live parts (especially high voltage).
- The probe cannot be used to measure corrosive solvents unless it is designated anti-corrosion.

Statement of Safety/ Warranty Validity of this Product

- Operate the device only within the range specified in the technical parameters of this document.
- Always use the device in the correct way and its intended purpose.
- Do not place the handle and cable above 80°C, unless they are expressly allowed to be used at high temperatures. The temperature measured by the probe is only related to the measuring range of the sensor.
- The device should only be disassembled if it is clearly stated in the documentation for maintenance and repair purposes. Only perform the maintenance and repair work described in the documentation. Perform maintenance and repair work in accordance with the prescribed steps. For safety, please use the original accessories.

Dispose Correctly Statement

- Dispose waste batteries to battery recycling points.
- At the end of the service life of this product, please return the product to the original factory. We promise to dispose of these recycled products in an environmentally friendly manner.

2. Intended Use

This section describes the intended use range of this product.

Use this product only for those applications for which it is designed.

This product is a four-channel high-precision device with calibration for temperature measurement.

Accurate Measurement: Whether it is a low-temperature cold storage or a high-temperature boiler, using the corresponding thermocouple sensor can ensure you accurate measurement across the entire range.

Safe and Reliable: Provide you with a safe and reliable experience during the measurement process.

High Scalability: Users can be compatible with more types of probes through the calibration function, such as Type-K, Type-T, Type-J.

Outstanding Performance: Large backlight display, temperature limit alarm, maximum/minimum/average value display, large dot matrix screen to display more information.

Practical Accessories: Protective soft cover, waterproof and oil-proof, when connected with temperature probe, it can reach IP52 protection level.

This product can be used for (including but not limited to) the following tasks/applications:

- Standard reference for other temperature measuring device
- Science experiment
- Medical treatment
- Food
- Chemical industry
- HVAC industry

This product cannot be used for (including but not limited to) the following tasks/applications:

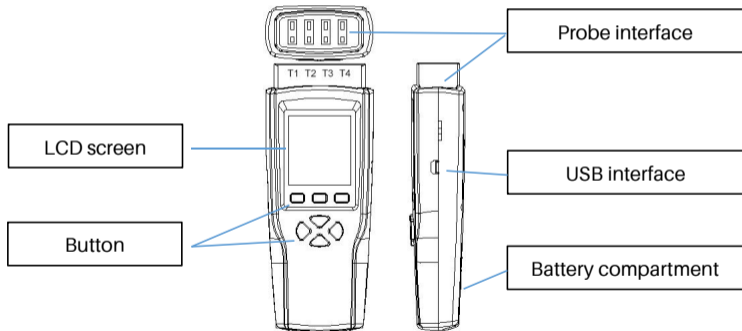
- Use in potentially explosive areas
- Use in high-voltage areas
- Smelting industry

3. Product Description










This section describes an overview of the product components and their functions.

3.1 Display and Control Elements







Device Overview



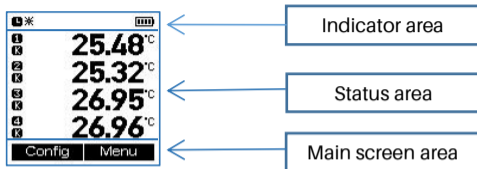
Function of Button

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
	Switch the type of probe
	Maintain the current reading
	Display maximum/ minimum/average value
	Switch the unit of reading
	Specific functions depend on usage

Important Sign

Sign	Meaning
	Enable alarm : Displays when the alarm function is enabled, and the number in the icon indicates the channel that turned on the alarm
	High and lower limit alarm: Displays when the temperature is higher than the high limit or lower than the low limit
	Auto shut down: Displays when the auto shut down function is enabled
	Battery capacity: Displays when the device is powered by batteries
	Displays when the device is connected to the computer
	In single-channel mode, displays the current probe type

Display Area Division



The division of the area is to facilitate you to quickly locate the position of the icon or reading you want to view.

3.2 Interface

- **Probe Interface**
 - The separated probe can be connected to the measuring device through the probe interface.
- **USB Interface**
 - The measuring instrument can be connected to a computer through a Micro USB cable.

3.3 Power Supply

- The instrument uses 3 1.5V AAA batteries or 1.2V AAA rechargeable batteries for power supply under normal conditions.

4. Operation



This section describes operations frequently performed when using this product.

4.1 Preparation Before Start

- Remove the protective film from the display.
- Insert the battery/ rechargeable battery and pay attention to the polarity of the battery.
- Connect the probe to the probe interface of device.

4.2 Turn on/ off Device

➤ Turn on the Device/ View the Version Number and Serial Number



1. Short press the key . The instrument enters the power-on state, press and hold the  key in the power-on state, you can see the version number and serial number on the screen.

➤ Turn off the Device

1. Long press the key . Release the  key when you see "Shut down!" displayed on the screen.

4.3 Backlight

➤ Turn on/ off the Backlight

- ✓ Turn on the device.
- 1. Short press  key to switch the backlight. The display icon  indicates that the backlight is on. After the backlight is automatically turned off due to power saving, press any key to turn on the backlight.



4.4 Multi-function Button

- The device has two multi-function buttons: **F1** and **F2**. Their specific functions will be displayed in the indicator area!

Commonly used F1 key function analysis		Commonly used F2 key function analysis	
Config	Enter the configuration interface	Menu	Enter the menu interface
Enter	Enter the next level option interface	Exit	Exit the configuration interface or menu
Set	Change the setting of the current option	Back	Return to the previous interface or exit the editing interface
Ok	Confirm the change of an option or value	No	Cancel an action
Yes	Perform an action		
Edit	Edit a value		

4.5 Channel Mode

- This device has four thermocouple measurement channels and two channel modes, which can be used flexibly to meet various needs. As shown in the following table:

Channel mode	Four-channel combined mode	Single channel mode
Sample graph		
Features	Simultaneous measurement and simultaneous display of four channels	It is suitable for tracking the change trend of single channel temperature

4.6 Device Settings

➤ Enter the Configuration Interface

- ✓ Turn on the device and the indicator area displays **Config** **Menu**.
- 1. Press **F1** (Config) to enter the configuration interface.
 - !! The configuration interface is shown on the right. Press **▲** / **▼** to move the cursor.
 - !! The settings related to the properties of the device are all in the configuration interface.
 - !! Press **F2** (Exit) to exit configuration mode at any time. The changed settings will be saved when exiting the configuration mode.



➤ Channel Mode

- ✓ Enter the configuration interface, move the cursor to "Channel Mode".
- 1. Short press **F1** (Enter) to enter. Press **▲** / **▼** to select mode. Short press **F1** (Ok) to confirm or short press **F2** (Back) to exit.

➤ Button Sound

- ✓ Enter the configuration interface and move the cursor to "Sound".
- 1. Press **F1** (Set) to switch settings.

➤ Automatic Shutdown

- ✓ Enter the configuration interface and move the cursor to "Auto Off".
 - !! After the automatic shutdown function is enabled, if no operation within 10 minutes, the device will automatically shut down.
- 1. Press **F1** (Set) to switch settings.

➤ System Language

- ✓ Enter the configuration interface, and move the cursor to "Language".

1. Short press **F1** (Enter) to enter, and then press **▲**/**▼** to switch settings.

➤ **Restore Factory Configuration**

- ✓ Enter the configuration interface and move the cursor to "Recovery".
 - !! For the model with recording function, the record file will be deleted when it is restored to the factory, so it needs to be operated with caution.
- 1. Press **F1** (Enter) to enter and wait for 5 seconds. Press **F1** (Yes) to restore factory configuration, press **F2** (No) to return to the configuration interface.

4.7 Data Settings

➤ **Enter the Menu Interface**

- ✓ Turn on the device and the indicator area displays **Config** **Menu**.
- 1. Press **F2** (Menu) to enter the menu interface.
 - !! Press **▲**/**▼** to toggle menu options. If there is a triangle icon at the right end of the cursor, it means that there are sub-options, press **◀**/**▶** to switch sub-option.
 - !! The options related to measurement data are in the menu interface.
 - !! Press **F2** (Exit) to exit configuration mode at any time. The changed settings will be saved when exiting the menu mode.

➤ **Set the Temperature High Limit Alarm Value**

- ✓ Turn on the device and enters the menu interface.
- 1. Move the cursor to "High Limit", press **F1** (Edit) to enter the channel selection interface.
- 2. Move the cursor to the target channel, press **F1** (Edit) to set high temperature limit.

➤ **Set the Temperature Low Limit Alarm Value**

- ✓ Turn on the device and enters the menu interface.
- 1. Move the cursor to "Low Limit", press **F1** (Set) to enter the channel selection interface.
- 2. Move the cursor to the target channel, press **F1** (Edit) to set low temperature limit.

➤ **Set the Temperature Alarm Switch**

- ✓ Turn on the device and enters the menu interface.
 - !! The status of the alarm enable will be directly displayed on the option. “Beep” means that the way of the alarm is the buzzer sound alarm.
- 1. Move the cursor to “Alarm”, press **F1** (Set) to enter the channel selection interface.
- 2. Move the cursor to the target channel, press **F1** (Edit) to turn on or off the temperature alarm of the channel.

4.8 Calibration

➤ **Enter the Calibration Mode**


- ✓ Turn on the instrument and then enter the menu interface.
 - !! This product has 4 measurement channels, and each channel can be calibrated independently. The calibration operation of all channels is the same, and each channel supports up to 10 calibration data points. Calibration will directly affect the measurement data. Please make sure that the calibration value is the result of correct measurement by a higher precision instrument.
- 1. Cursor to “Calibration”, then press **F1** (Enter).

➤ **Start Calibration/ View the Total Number of Calibration Points**




- ✓ Open the calibration mode, then enter the surface of “Select channel”.
 - !! The number of calibration points is displayed on the behind of each channel. For example, if there are 2 calibration points of the channel 1, it will display “T1: 2 points”.
 - !! All channel operations are the same, so the following operation takes calibration channel 1 as an example.
- 1. Cursor to “T1”, then press **F1** (Enter) to start calibration the channel 1.

➤ **Edit a Calibration Point**










- ✓ Open the calibration mode, select the channel to be calibrated in the “Select channel” interface and then short press **F1** enter the “Select Data” interface.
- 1. If a certain calibration point is entered incorrectly, for example, the second calibration point is

wrong, you can move the cursor to the second calibration point and press directly  (Edit) to enter the edit mode to modify the calibration point data.

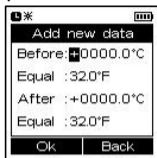
➤ **Remove a Calibration Point**

- ✓ Open the calibration mode, select the channel that needs to be calibrated in the “Select channel” interface and then short press  enter the “Select Data” interface.
- 1. If user no longer needs a certain calibration point, such as the second calibration point, user can move the cursor to the second calibration point, then press  to make the option “Delete data”, and press  (Ok) to confirm to remove the calibration point data.

➤ **Add a Calibration Point**

- ✓ Open the calibration mode, select the channel that needs to be calibration in the surface of “Select channel” and then short press  enter the “Select Data”.
- !! After each calibration point, the temperature value before calibration is displayed, such as “Point 1: -100.00°C”, which means the temperature value before calibration of the first calibration point is -100.00°C. When a calibration is added each time, it will be automatically sorted according to the temperature value before calibration from small to large.
- 1. Cursor to “Add new data”, then press  (Ok) to enter the calibration point edit mode. The interface to edit calibration points is shown in the figure below as “Calibration Point Editing Interface”.
- 2. Press  /  to cursor, press  /  to increase or decrease the number under the cursor. Enter the temperature value before calibration in the before column and the temperature value after calibration in the after column.
- 3. Press  (Ok) to save the data of calibration point, then press  (Back) to return to the previous interface.
- !! When the calibration point is in effect, the affected channel number displays the icon  or displays in

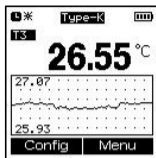
reversed color. As shown in the figure below, channel 3 and channel 4 in “four channels”, T3 of “single channel”.



Calibration Point Editing Interface





Four Channels



Single Channel

➤ **Delete All Calibration Points of a Channel**

- ✓ Open the calibration mode, then enter the surface of “Select channel”.
- !! The operation of all channels are same, so the following operations will calibrate a “T1” as an example.
- 1. Cursor to “T1”, then press , when the option is changed to “T1: delete” then press  (Ok) to delete all the calibration points of channel 1 (The calibration points of other channel will not be deleted).


4.9 Record Data (Models with Recording Function)




➤ **Turn on Recording Mode**

- ✓ Turn on the instrument and then enter the menu interface, please ensure the instrument is with sufficient power.
- !! 20000 data points are supported by this instrument.
- 1. Cursor to “Logging”, and then press  (Enter).


➤ **Start Recording/ Discard Recording**

- ✓ Open the logging mode and enter the Logging interface.
- !! The internal storage will be cleared first when the instrument starts recordings, so the last recorded data will be cleared. At the same time, the automatic shutdown function is disabled. During recording, the




number of recorded data points will be displayed in real time in the middle of the screen, and displays  .

1. Cursor to "Start Logging", press  (Enter) back to the main interface. Then press  (Start) to start recording, and press  (Exit) to discard recording.


➤ **Stop Recording/ Save Data**

- ✓ The instrument will start recording once users enter the recording mode.
 - !! The current data will be saved automatically to the internal storage when the recording is stopped. Data can be viewed by connecting to a computer via USB.
 - !! In addition to be stopped by user, the recording will also be stopped when the PC software stops, the battery is low, the battery is loose, the instrument is turned off, and the number of recorded points reaches 20000 points.
1. Press  (Stop) to stop recording.

➤ **View Recording Information**


- ✓ Open the logging mode and enter the Logging interface. Before viewing, data recording is required for at least once.
 - !! The user can view the instrument record file through a USB connection to the computer.
 - !! If the user formats the U disk on the computer, the instrument must be restarted, otherwise the newly recorded data cannot be saved.
1. Cursor to "View", press  (View) to enter the view information interface. Press  /  to switch display content.

➤ **View Disk Information**

- ✓ Open the logging mode and enter the Logging interface.
1. Move cursor to "Flash", short press  (View) button enter into the disk usage information interface.









Enter the Setting Interface

- ✓ Open the logging mode and enter the Logging interface.
- 1. Cursor to "Settings", press  (Set) to enter the Log Setting interface.









Set Time

- ✓ Open the logging mode and enter the Log Setting interface.
- 1. Cursor to "Set Time", press  (Set) to enter the set time interface.
- 2. Press  /  to select the option, press  /  to modify the value of the option. Press  (Ok) to save the setting.







Set Sample Rate

- ✓ Open the logging mode and enter the Log Setting interface.
 - !! The range of sample interval is from 1 second to 86399 seconds, which is 23 hours 59 minutes and 59 seconds.
- 1. Cursor to "Set Sample Rate", press  (Set) to enter the set sample rate interface.
- 2. Press  /  to select the option, press  /  to modify the value of the option. Press  (Ok) to save the sample rate.



Set the File Format

- ✓ Open the record mode and enter the Log Setting interface.
- 1. Move the cursor to "Set File Format", short press the key  (Set) enter into the text format setting interface.
- 2. Short press the key  /  to select the desired file format. Short press the button  (Set) to save the file format.

- **Regenerate File**
 - ✓ Open the logging mode and enter the Logging interface.
 - !! When an abnormal shutdown occurs due to a loose battery, this option can be used to regenerate file.
 - 1. Cursor to "Regenerate File", press **F1** (Ok) to generate the file again.

5. Measurement

This section describes the steps required to perform measurements with this product.

- ✓ Turn on the instrument and enter the measurement interface. Insert the probe.
- **Start Measuring and Read the Current Temperature Reading on the Screen**
 - When the alarm function is turned on, once the temperature is higher than the upper limit or lower than the lower limit, the instrument starts to alarm.
 - When the reading is lower than the upper limit or higher than the lower limit, the alarm stops.
 - In order to save the battery power, the alarm will be stopped automatically in 10 minutes after the alarm starts.
- **Hold the Reading**
 - 1. Press **HOLD** to hold the reading on the main interface.
- **View/ Reset Maximum, Minimum and Average Values**
 - 1. In the four-channel interface, press **MAX/MIN/AVG** repeatedly to switch various value.
 - The following values will be displayed alternately: MAX (maximum), MIN (minimum), AVG (average), current reading.
 - 2. In the process of viewing the maximum, minimum and average values, press **F1** (Reset) to clear the statistical values.

➤ **Switch Unit**

1. Press **°C/°F** to switch the unit between Celsius and Fahrenheit.

➤ **Switch Probe**

1. In the four-channel mode, press **PROBE** to enter the switch probe interface, the word PROBE will be flashing in the status area. Press **F1** (Probe) to switch current channel probe type, press **F2** (Channel) to switch channel, and the selected channel will be flashing. In the single channel mode, press **PROBE** to switch the probe, and the current type will be displayed in the status area.

6. Maintenance

This section describes steps that help to maintain the functions of this product and extend its life.

➤ **Clean the Instrument Case**


1. If the case gets dirty, please clean the case with a clean damp cloth. Do not use aggressive cleaning agents or solutions!

➤ **Replaceable Battery/ Rechargeable Battery**

- ✓ Turn off the instrument.
1. Remove the battery cover in the direction of the arrow marked on the battery cover.
 2. Take out the used battery/ rechargeable battery and put the new battery/ rechargeable battery in the battery compartment. Please pay attention to the battery polarity.
 3. Put back the battery cover, push and fasten it in the opposite direction of the arrow.

7. FAQ

This section gives answers to frequently asked questions.

Questions	Possible Reason	Possible Solution
 When this icon is bright and flashing	<ul style="list-style-type: none">● The instrument is with low battery power	<ul style="list-style-type: none">● Replace battery
The Instrument is turned off automatically	<ul style="list-style-type: none">● Automatic shutdown function is turned on● Out of battery● The operating temperature exceeds the specified value● Component damage	<ul style="list-style-type: none">● Turn off the automatic shutdown function● Replace battery● Measure in a location that meets the requirements● Please send it back to the original factory for repair
Display "Error" in single channel mode	<ul style="list-style-type: none">● Probe error● The temperature exceeds the measuring range	<ul style="list-style-type: none">● Replace probe● Please use the probe corresponding to the measuring range
Other functions are working well but the buttons are silent	<ul style="list-style-type: none">● The buzzer is damaged	<ul style="list-style-type: none">● Please send it back to the original factory for repair
Inaccurate measuring data	<ul style="list-style-type: none">● The probe does not meet the standard● Calibration point is set in error● The internal circuit of the instrument is damaged	<ul style="list-style-type: none">● Please use the designated probe● Clear all the calibration points● Please send it back to the original factory for repair
Display "FLASH Error!"	<ul style="list-style-type: none">● The internal FLASH of the instrument is damaged	<ul style="list-style-type: none">● Please send it back to the original factory for repair

8. Specification

Probe Type	Type-K	Type-T	Type-J
Channel Number	4		
Measuring Parameter	Temperature (°C/°F)		
Measuring Range	-200~1370°C	-200~400°C	-200~1200°C
Resolution	0.01°C (-200.00~999.99°C); 0.1°C (1000.0~1370.0°C)		
Accuracy	±(0.3% t +0.40)°C		
Measuring Speed	2 times/second		
Storage Capacity	20000 groups of measurement readings (Model with data recording function)		
Sample Interval	Adjustable from 1~86399 seconds (Models with data recording function)		
Operation Temperature	-10~50°C (Non-condensing)		
Storage Temperature	-20~60°C (Without battery)		
Power Supply	3 pcs 1.5V AAA batteries; 3 pcs 1.2V AAA rechargeable batteries		
Protection Class	IP52		
Size	176*73*40mm		
Weight	About 216g (Not including battery and probe)		

The accuracy of the system is affected by the quality of the probe! The above listed is the accuracy of the machine. More detailed parameters, please check the product data sheet.

Standard: JJF1171-2007 National Standard "Calibration Specification for Temperature Circuit Detector",
JJG (Mechanical) 94-1992 Metrological Verification Regulation "Digital Temperature Measuring Instrument".

