

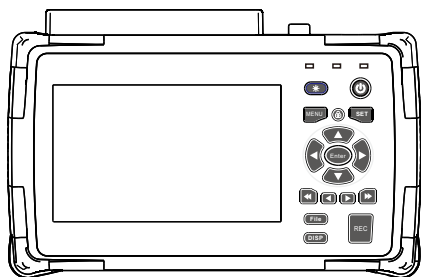


Multi-channel temperature analyzer

WT310

# User's manual

V1.3



Foshan HZK Electronic Technology Co., Ltd

Thank you for purchasing our products, in order to ensure that the user can use this product correctly, please read this product manual carefully before use, and check the packing list against this manual to confirm the product and accessories. If there is any inconsistency, please contact our company or agent.

## — Representations —

The warranty period of the instrument is 2 year from the date of purchase. During the warranty period, the instrument will not be repaired free of charge due to malfunctions caused by abnormal use. After the instrument exceeds the warranty period, our company can provide paid maintenance.

Instrument repair should be carried out by our authorized professional technicians.

If you want to know the news about the appearance or function improvement of our instruments, you can follow our official public number or our authorized platform to get it without prior notice.

For sales service, please contact your local dealer.

## — Caveat —

1. Please use a suitable power supply and connect the wires correctly;
2. Please make sure the instrument is connected to the power supply when the power is switched off;
3. Do not open the shell of the instrument by yourself;
4. Do not use the instrument in explosive, corrosive environment;
5. Please keep the instrument away from interference sources.

## —Packing List—

Main unit x1; Adapter & power cord x1; User's manual x1; Certificate of Conformity/Warranty card x1; Type K TC wire x10 ( Pt100 x10) .

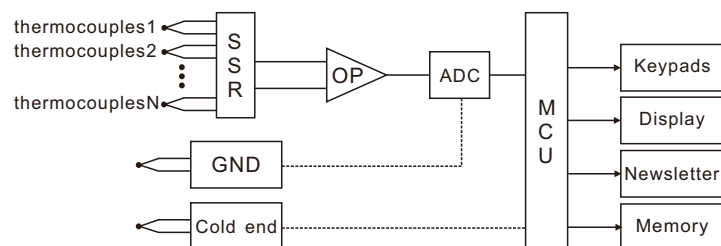
## —Instrument Description—

The multi-channel temperature recorder adopts 32-bit high-speed MCU for data processing, adopts 5-inch industrial display, supports K, J, E, T, N, S, R, B type thermocouple input, there are three kinds of display modes: list, curve and bar graph, so that the user can read each parameter more intuitively, and the instrument has a perfect function to satisfy the needs of production, laboratory and R&D measurement.

This instrument is widely used in lighting appliances, electric tools, household appliances, motors, electric heating appliances medicine, petroleum, chemical, metallurgy, electric power and other industries, scientific research units and other fields, as well as production lines, laboratories and quality inspection departments of production enterprises.

It can be ordered with various measurement functions according to different needs to meet more complex application scenarios.

## —Basic Principle—



The components of the instrument are shown in the figure.

WT310 selects the corresponding channel signal by the photoelectric switch selector, the signal is amplified by the signal amplifier, and then the analogue signal is converted into data signal by the AD converter, and then transmitted to the MCU for data processing. The cold end compensation circuit carries out room temperature measurement to get the cold end temperature value. The measured signal and the cold end temperature value are processed by the single-chip microcomputer for data processing, and the correct measured temperature value is shown on the display.

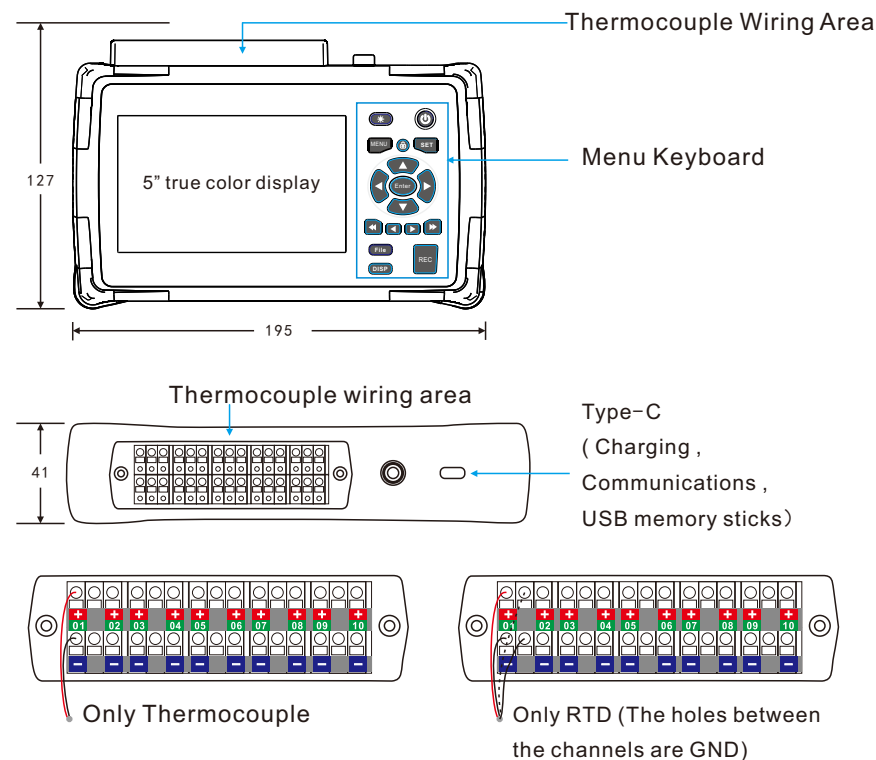
Keypads, communication, memory can be set on the display of data, storage to be analyse. Can also be connected to the computer through the communication interface directly from the computer for data analysis.

## — Technical Indicators—

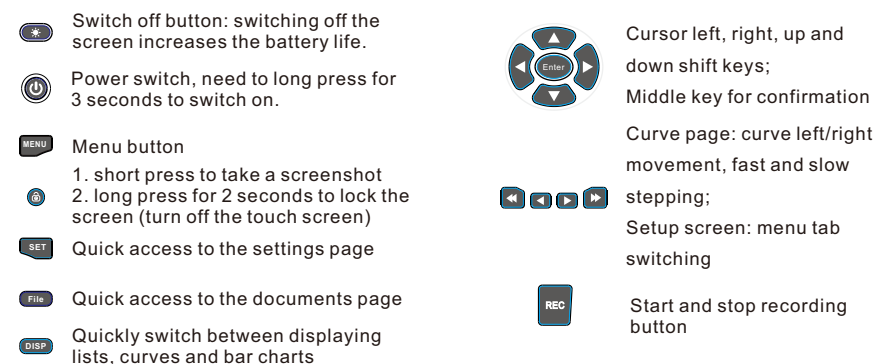
Display Mode	5' IPS industrial grade LCD touch screen
Display Forms	Real-time list values, real-time bar charts, real-time graphs
Records search	It can be analyzed and queried in the host computer and computer software.
Number of channels	10 channels
Sensor type	TC : K J E T N S R B ; RTD : Pt100
Basic accuracy	0.2°C + 2 digits (without thermocouple error)
Measurement range	Subject to sensor measurement range
Cold End Compensation	Accuracy: $\pm 0.5^{\circ}\text{C}$
Resolution	0.01°C

Number of files	20
File size	One file can record 200K groups (regardless of the number of channels)
Recording time	Total length of recording = recording interval x 46.29 days.
Sampling rate	30mS per channel
Channel-to-Channel Isolation	AC/DC 350V High Voltage Banding Measurement
Control Outputs	None
Alarm tone	Buzzer sound (sound at any alarm, can be set to mute)
Recording interval	Any setting from 1-300 seconds
Communication interface	USB
Power	Built in 5000mA lithium battery, TPYE-C charger ; DC5V <2W
Thermocouple	2m type K thermocouple per channel is standard.
Size	195.0mm x 127.0mm x 41.0mm
Weight	About 1.5Kg
Usage environment	5~40°C,20%~80%RH (no condensation)

## — Appearance and Function —

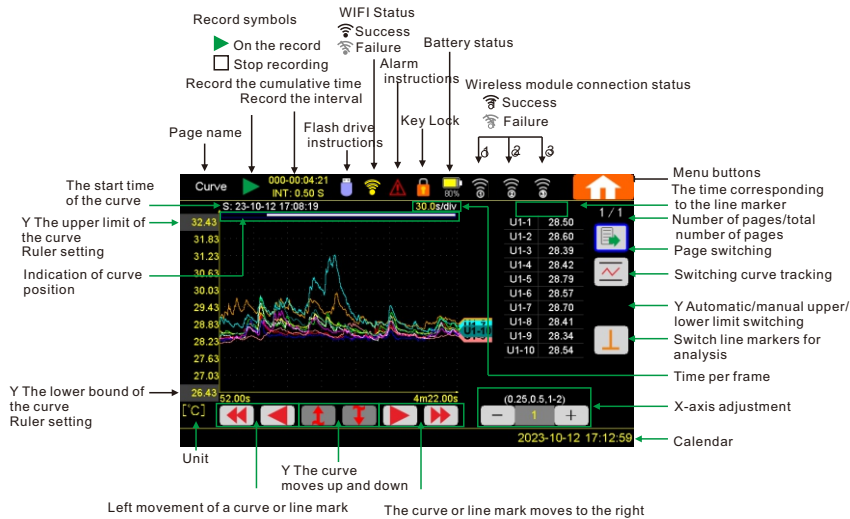


## — Keyboard Instructions —



# — Operation Guide —

## Interface icon description



## Boot interface



After powering on and pressing the on/off key, the instrument screen displays the power-on interface, which shows the company LOGO, product model and other information.

## Real-time parameter list display

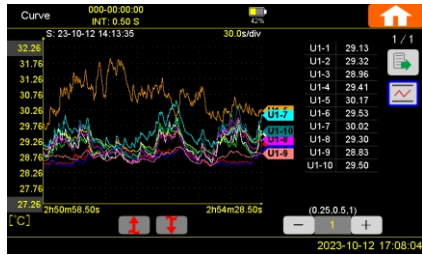
Real-time parameter list, you can display multiple measurement parameters at the same time, the display interface is divided into 10, 20, 40 channel data display, you can turn the page to display each channel data.

Use up and down arrow keys to switch 10/20/40 channels display page. Use the left and right arrow keys to turn the page. You can also switch to the statistics page to view the maximum, minimum, average, peak and peak values.

Menu key can be used to enter into the menu selection, respectively, file, data list, curve graph, bar graph, alarm, setup button, you can also press the keyboard shortcut keys can quickly enter the corresponding page.



## Curve display



### Real-time curves:

Real-time curves are displayed for real-time viewing only. Only 10 channels can be displayed per page. And can display the real-time measurement value.

Touch curve move key to adjust the Y-axis curve upward or downward movement, automatic range key to switch the Y scale automatic and manual range, X-axis zoom key to adjust the X curve zoom in and zoom out.



### Recording Curve:

The recording curve is the real-time curve displayed when recording is started. Use the left, right, up and down keys in the touch screen to move the curve to zoom in and out. It is possible to turn the page.

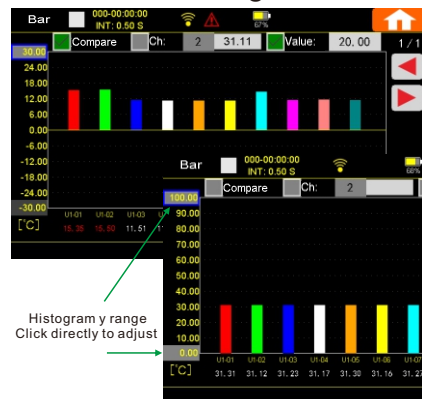
It is possible to analyze the recorded data in the recording process, display the time and temperature values corresponding to the line markers, track and update the data in real time.



### Analyze Curve:

Analyze Curve is to directly open the recorded file for analysis, you can zoom in and out of the curve, move left and right up and down, and display the time and temperature values corresponding to the line markers.

## Real-time histogram



Utilizes a bar graph representation of the temperature change for each channel, with the option of a comparison function to quickly compare temperature differences, use a particular channel or a fixed value as a comparison.

Histogram y range  
Click directly to adjust

- Page number/total number of pages
- Number of pages to switch
- Switch to the 10/20 bar chart page

## File list page

No.	File name	Starting time	Quantity	1/1
1	1012170819	2023-10-12 17:08:19	24	
2	1012141342	2023-10-12 14:13:42	18893	
3	1011141733	2023-10-11 14:17:33	135	

- Page number/total number of pages
- Number of pages to switch
- Custom file name (default is start time)
- Curve analysis
- File export
- File deletion
- Second to U disk  
(turn the instrument into a virtual U disk)

File list display, maximum support for 20 files, each file 120,000 groups of data, after recording the number of 120,000 groups automatically start the next file, cyclic recording, the file is CSV format.

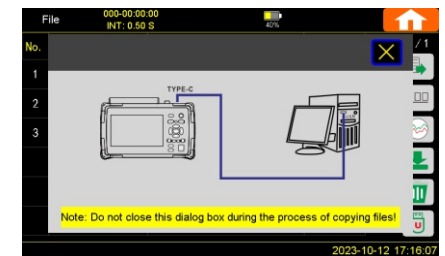
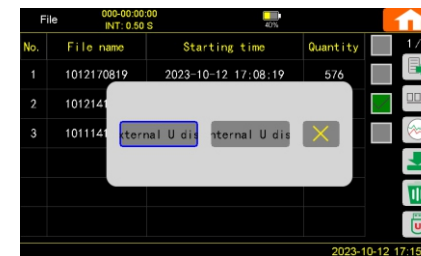
Customize file name: check the file to be changed, click the customize file name button, the keyboard will pop up for recording.

File curve analysis: check the file to be analyzed, click the curve analysis button, switch to the curve analysis page, analyze the curve with detailed capabilities.

File export: single-select, multi-select, select all on the page, and then click the file export button, you can choose to export to external U disk, or internal virtual U disk. External U disk requires TYPE-C interface, below 32G, FAT32 format, after exporting to the virtual U disk, you need to use the function of U disk in seconds to turn the instrument into a virtual U disk and connect it to the computer to view it as if it is directly plugged into the U disk.

File deletion: single-selected, multi-selected, select all on the page, and then click the file deletion button to delete.

Seconds into a U disk: turn the instrument into a virtual U disk, the data cable connected to the TYPE-C port to the PC, the computer detects the U disk access, high-speed transmission, up to the USB2.0 standard, to achieve rapid reading of data.





## Alarm interface



Alarm 000-00:00:00 INT: 0.50 S

No.	Src	Type	Set	Start time
1	U1-03	H	3.00	23-10-12 18:12:56
2	U1-02	H	5.00	23-10-12 18:12:52
3	U1-01	H	2.00	23-10-12 18:12:50

2023-10-12 18:13:19

### Current Alarm:

In the alarm interface, you can view all the current alarm status information, including channel number, type, threshold of overrun, and time of occurrence, and after the alarm is reset, it will be automatically transferred to the list of historical alarms. Press the page switch button to switch to the history alarm.



Alarm 000-00:04:28 INT: 0.50 S

No.	Src	Type	Set	Start time	Release time
1	U1-02	H	5.00	23-10-12 17:12:02	23-10-12 17:12:48
2	U1-01	H	0.00	23-10-12 17:12:00	23-10-12 17:12:45
3	U1-05	H	0.00	23-10-09 15:10:26	23-10-09 15:10:31

2023-10-12 17:13:06

### Historical Alarms:

You can view the status information of all the alarms that have been restored, including channel number, type, threshold, occurrence time, and restoration time, and you can perform batch clearing in Setup-System-Initialization.

## System settings



Setup 000-00:02:40 INT: 0.50 S

Unit	Compensate	Record	Alarm	Com	System
Info	U-CH	Measure	Type	Name	Color
Host	U1-01	ON	K	自定义名字1	Red
	U1-02	ON	K	自定义名字2	Green
	U1-03	ON	K	自定义名字3	Blue
	U1-04	ON	K	自定义名字4	White
	U1-05	ON	K	自定义名字5	Orange
	U1-06	ON	K	自定义名字6	Yellow

2023-10-12 17:11:08

Rich setup menu, clear and easy to use. Unit, Compensation, Recording, Alarm, Communication, System, categorized in great detail.

The unit includes management and host setup.

Management is used to configure the communication parameters of the wireless module, including the module serial number, identification number, and communication address information.

Host indicates the configuration of the unit, channel, whether to turn on measurement, selection of thermocouple type, custom communication name, and selection of curve color.

## Compensation Settings



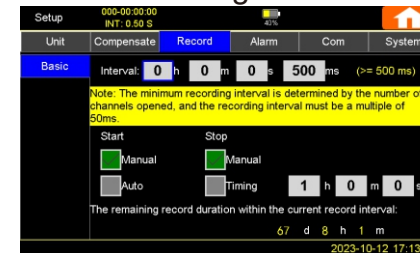
Setup 000-00:00:00 INT: 0.50 S

Unit	Compensate	Record	Alarm	Com	System
Host	Cold end1(°C)	32.43	U1-01	27.58	1.00 0.00
	Cold end2(°C)	32.81	U1-02	27.85	1.00 0.00
	Cold Comp1(°C)	0.000	U1-03	27.80	1.00 0.00
	Cold Comp2(°C)	0.000	U1-04	27.82	1.00 0.00
	Filter	1	U1-05	27.61	1.00 0.00
			U1-06	27.90	1.00 0.00

2023-10-18 16:39:37

Compensation is included in the cold end and each channel of the independent compensation, filter coefficients range from 1-64, the larger the data, the greater the filter depth, the more stable, but the measurement will be slower. The use of corresponding filter coefficients on occasions of interference will help to stabilize the measurement data.

## Record Setting



Setup 000-00:00:00 INT: 0.50 S

Unit	Compensate	Record	Alarm	Com	System
Basic	Interval:	0 h 0 m 0 s 500 ms	(>= 500 ms)		
Note: The minimum recording interval is determined by the number of channels opened, and the recording interval must be a multiple of 50ms.					
Start	Manual	Stop	Manual		
	Auto		Timing	1 h 0 m 0 s	
The remaining record duration within the current record interval: 67 d 8 h 1 m					

2023-10-12 17:13:59

Set the recording interval time, the minimum recording interval time is determined by the number of channels open, and the recording interval needs to be a multiple of 50mS, the minimum recording interval is 0.1S/(2 channels), and 0.05 seconds will be added for each additional channel. The maximum setting interval time is: 2 hours, 59 minutes, 59 seconds, 950 milliseconds.

The start recording condition can be set to manual and power-on automatic recording, and the stop condition can be set to manual and fixed recording duration, and the remaining recording duration can be automatically calculated according to the set recording interval.

## Alarm Settings



Setup 000-00:00:00 INT: 0.50 S

Unit	Compensate	Record	Alarm	Com	System
Basic	Alarm	ON			
Host	Alarm sound	ON			
	Low battery	OFF	10 %		
	Wireless interruption	OFF			

Alarm basic settings, including whether to open the alarm, whether to sound when the alarm, whether to open the battery power alarm, and can set the alarm threshold, whether to alarm when the wireless single complete communication is interrupted.



Setup 000-00:00:00 INT: 0.50 S

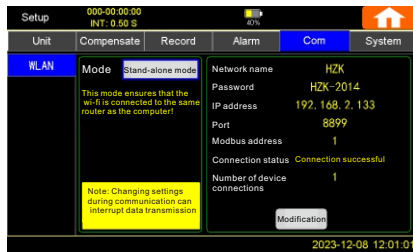
Unit	Compensate	Record	Alarm	Com	System
Basic	U-CH	ON/OFF	H	L	DeLay (S)
Host	U1-01	ON	100.00	0.00	0.0
	U1-02	ON	100.00	0.00	0.0
	U1-03	ON	100.00	0.00	0.0
	U1-04	ON	100.00	0.00	0.0
	U1-05	ON	100.00	0.00	0.0
	U1-06	ON	100.00	0.00	0.0

2023-10-12 17:14:17

Alarm host setting is the setting of whether the alarm function is enabled for each channel of this host, the upper and lower limit alarm values, and the alarm delay value.

When the measured value crosses the limit, the buzzer will sound and change different background color on the corresponding channel in the temperature list page.

## Communication Settings



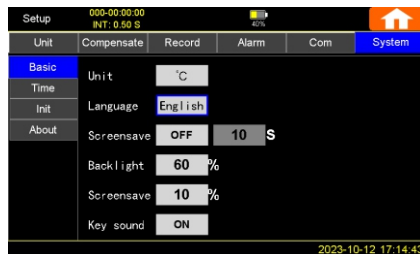
The wireless communication setup contains three modes.

1. Stand-alone mode, which is to communicate with PC via router to realize upper computer recording and control.
2. Expansion mode 1, is the host and the module directly connected to realize the wireless expansion function, up to 3 modules can be connected, with stable connection and fast speed advantage.
3. Expansion module 2, is the host and the wireless module are connected to the router or AP to realize wireless expansion function, the advantage lies in the relay to realize the advantage of transmission distance farther.



You can set the WIFI parameter information by modifying it. Click the network name to find the WIFI information, select the corresponding name, and enter the password, IP, and address. When multiple units are used in parallel, you need to set different addresses. Save the settings and connect to the network cable automatically.

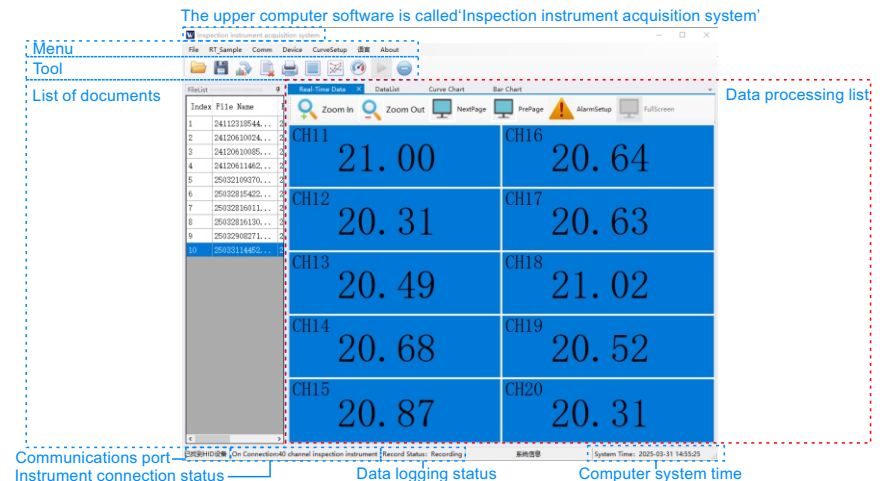
## System Settings



The system provides detailed basic settings, including information on units, language, screen saver, backlight brightness, screen saver brightness, key sounds, time settings, initialization (clearing log files, alarm logging, restoring system defaults), factory code and version number.

## Upper computer program

The instrument can be used in conjunction with the supplied host computer, which is called 'Inspection instrument acquisition system'.



The menu bar has seven menus: File, Real-time acquisition, Communication, Device, Curve, Language and About.

1. File menu has open (open the specified data file), save (save the data file to the specified location), import (the specified data file into the host computer), print preview (preview list of printed drawings) and exit (exit the host computer) a total of five functions.
2. Real-time acquisition menu can start and stop real-time acquisition.
3. Communication menu can specify the host computer and the instrument communication interface type, there are serial port (optional COM port), network port and USB.
4. the device menu has time synchronisation (host computer synchronization computer time), alarm settings (set data alarm upper and lower limits) and read files from the instrument (host computer to read the instrument's internal files).
5. Language menu can set the upper computer display language.
6. About menu can display the information of the upper computer.

The toolbar has ten shortcut tools: open file, save file, import file, delete file, print file, data list, curve, real-time data list, start real-time acquisition and stop real-time acquisition.

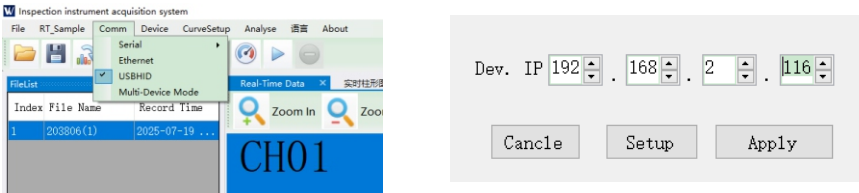
The file list shows the name and number of files recorded by the upper computer, which can be quickly opened or deleted by right-clicking after selecting the file in the list.

Connectivity \_\_\_\_\_

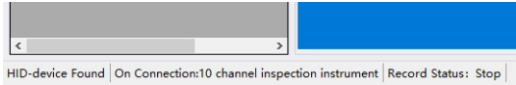
The instrument can be connected to the host computer by USB or WIFI.

In non-USB mode, after selecting USBHID communication mode in the host computer, the instrument can communicate with the host computer by connecting to the computer with the USB cable (if it fails to connect, you can try to check the connection status or update the driver to solve the problem).

When the instrument is in stand-alone mode, it can be connected to the router via WIFI and then connected to the host computer via the network. The host computer selects the Ethernet communication mode and inputs the IP set by the instrument to communicate.



When the host computer communicates successfully with the instrument, the lower left corner of the host computer will display successful connection.





## Certificate of Conformity

Product Name: Multi-channel temperature analyzer

Product Model: WT310

Product Number: \_\_\_\_\_

Date: \_\_\_\_\_

Inspector: \_\_\_\_\_

Inspection Conclusion: \_\_\_\_\_

## Product Warranty Card

● Warranty Description:

- 1, The warranty period is within 24 months from the date of purchase;
- 2, the warranty equipment in the warranty period, in the normal use and maintenance of the case, the instrument has a problem with the verification is true, the Division to provide free repair and replacement parts.

● The following cases will not be repaired free of charge:

- 1.The product is repaired, altered, modified by a technician other than our company, or the user replaces any internal parts on his/her own;
- 2.The number of the machine is altered or does not correspond to that listed in this certificate;
- 3.Damage caused by water or other substances penetrating into the machine.

● Equipment exceeding the free warranty and not covered by the free warranty regulations can be repaired by the Division, subject to a charge for spare parts and repairs where appropriate.

Name		Models	
Telephones		Purchase date	
Address		Number	
Date of testing	Service record		Examiner

# WASITES

Foshan HZK Electronic Technology Co. , Ltd

Please contact your local dealer for sales and service