

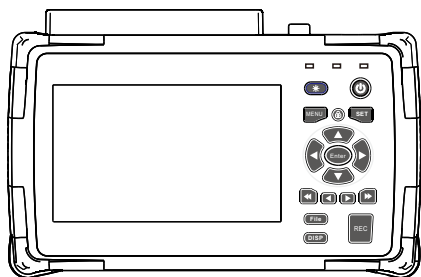


Multi-channel Temperature Logger

WS31

User's manual

V1.8



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 .

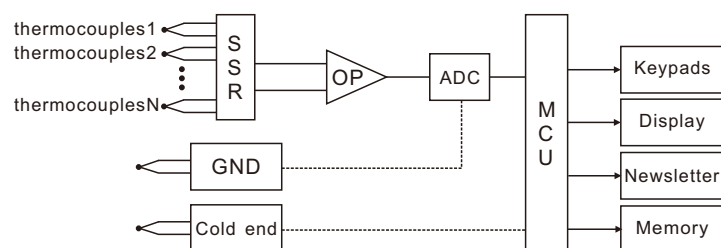
—Instrument Description—

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.

Ws31 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.

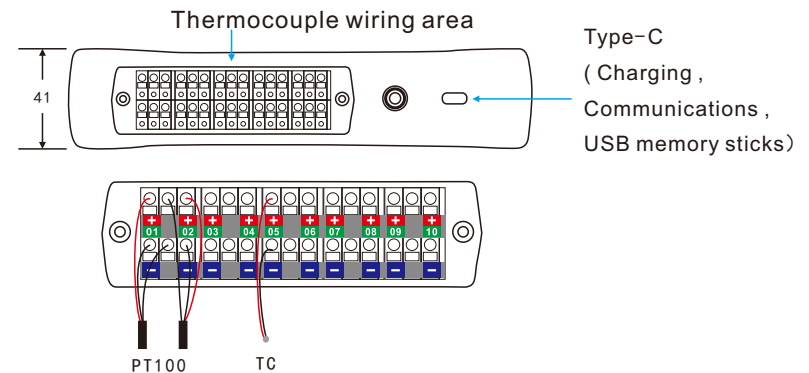
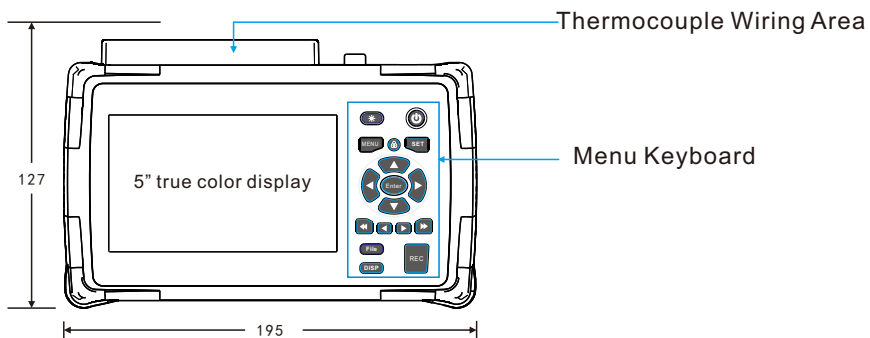
Keypads, communication, memory can be set on the display of data, storage to be analyse. Can also be connected to the computer through the communication interface directly from the computer for data analysis.

— 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	Queries can only be analysed in 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	TC: -200 ~ 1820°C, (Subject to sensor measurement range) ; Pt100 : -200 ~ 650°C
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	0.1S per channel
Recording interval	Any setting from 1-300 seconds
File Export Method	USB Flash Drive/PC Host Software
Alarm tone	Buzzer sound (sound at any alarm, can be set to mute)
Channel-to-Channel Isolation	AC/DC 350V High Voltage Banding Measurement
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 —

- Switch off button: switching off the screen increases the battery life.
- Power switch, need to long press for 3 seconds to switch on.
- Menu button
- long press for 2 seconds to lock the screen (turn off the touch screen)
- Quick access to the settings page
- Quick access to the documents page
- Quickly switch between displaying lists, curves and bar charts
- Cursor left, right, up and down shift keys; Middle key for confirmation
- Standby Key
- Start and stop recording button

— Operation Guide —

Power on + Switch



Turn on the power supply as well as turn on the switch, the instrument turns on, checks the LOGO and hardware function. The function of normal work shows white, otherwise the function shows red.

Instrument Hardware Testing

Temperature rise
Recording time
Access to USB stick detected
Battery remaining
Close Touch

The instrument automatically enters the list interface after the detection is completed.

Unit: °C/°F/K
TC type: K J E T N S R B

Measured values for each channel

Current time

Display interface

List interface + **DISP** Display

Press Display key in the list screen to switch to the curve screen.

The curve interface shows the real-time display curve graph without record saving.

Press Up key or Down key to move the curve.

Press Setup key to enter Y-axis setting interface.

Setup + **Enter** Enter

Press Setup in the curve interface to enter the Y-axis setting interface.

Click the lower limit checkbox to enter the numeric keyboard to set the lower limit value.

Click the lower limit checkbox to enter the upper limit setting by numeric keyboard.

Press Return to return to the curve interface.

Numeric keypad

Cancel modification and return

Confirm changes and return

Cursor left and right

Curve Interface + **DISP** Display

Press Display key in the Curve screen to switch to the Column screen.

The Bar Graph screen displays a bar graph of real-time data.

Press Up key or Down key to move the bar graph.

Press Setup key to enter Y-axis setting interface.

MENU Menu Key

Press Menu key to cycle through the three screens of File, Display and Setup.

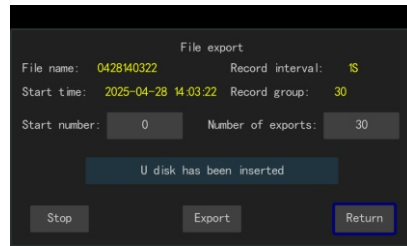
File → Display → Setup

File File / **MENU** Menu

Switch with the Menu key or press File key to enter the file interface. The file interface displays the recorded files and real-time recording file size respectively. It can record 20 files, each file can record up to 200000 data.

Press the Record button to start recording data, the recording time appears and starts timing, and the Record button turns into Stop button.

File Export



Press Export key to enter the file export interface.

Recorded files can be exported with start point and end point set according to requirements.

Press Page turn key to turn the file list down one page, in which every 5 recorded files are one page.

SET Set / MENU Menu



Date and time: separate page; enter and select the checkbox to bring up the numeric keypad for modification, press the save button to save and exit after modification is completed.

Use menu key to switch or press setup key to enter system setting.

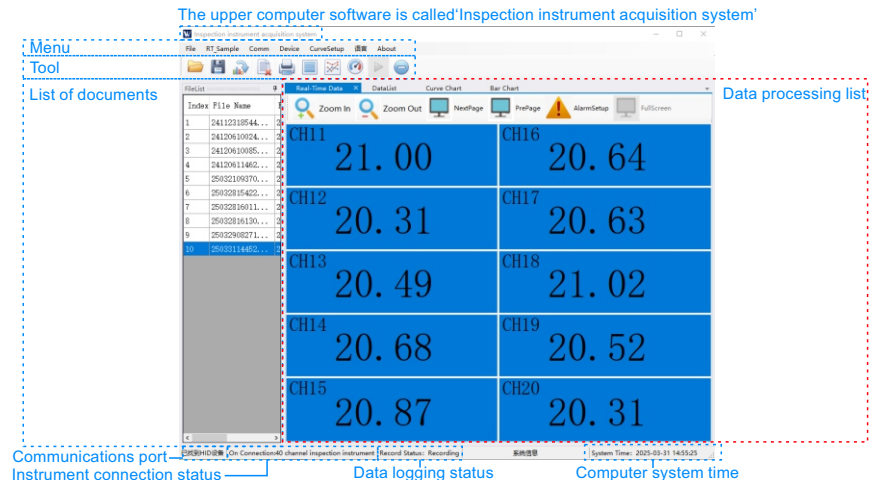
Use the left and right keys to select the object to be changed, press the up and down keys to open the drop-down menu or confirm the key to enter the modification, use the arrow keys to select the target option or call up the numeric keypad to modify it, and when the modification is completed, press the confirm key to save and exit the modification.

(The following table shows the modification method and selection content of each checkbox)

Temperature rise: on/off.	Language: 中文/EN.
Type: K/J/E/T/N/S/R/B/Pt100 .	
Unit: °C / °F / K .	Buzzer: On/Off.
Filter coefficients: 1 to 64.	
Backlight : 1 to 100.	
Record: 1 to 300.	

—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.

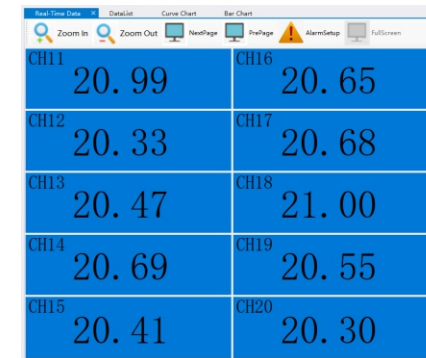
6. About menu can display the information of the upper computer.

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.

Data processing list can display data list, curve list, real-time data list and bar chart list at the same time.

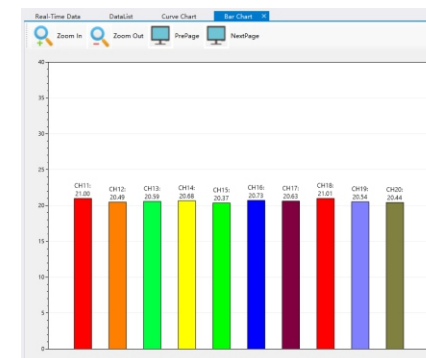
The curve list can be zoomed in or out by using the mouse wheel.



Real-Time data

Index	Record Time	CH1	CH2	CH3	CH4	CH5	CH6	CH7
626	2025-03-31 14:55:54.0	20.26	20.2	20.32	20.43	OL	21.2	20.79
627	2025-03-31 14:55:55.0	20.25	20.28	20.32	20.4	OL	21.21	20.79
628	2025-03-31 14:55:56.0	20.26	20.28	20.32	20.38	OL	21.2	20.79
629	2025-03-31 14:55:57.0	20.28	20.28	20.32	20.4	OL	21.2	20.79
630	2025-03-31 14:55:58.0	20.28	20.27	20.31	20.39	OL	21.18	20.79
631	2025-03-31 14:55:59.0	20.29	20.27	20.31	20.37	OL	21.2	20.8
632	2025-03-31 14:56:00.0	20.3	20.27	20.26	20.37	OL	21.2	20.75
633	2025-03-31 14:56:01.0	20.31	20.24	20.23	20.35	OL	21.2	20.74
634	2025-03-31 14:56:02.0	20.32	20.23	20.23	20.34	OL	21.2	20.72
635	2025-03-31 14:56:03.0	20.31	20.21	20.21	20.32	OL	21.2	20.71
636	2025-03-31 14:56:04.0	20.31	20.2	20.21	20.3	OL	21.2	20.66
637	2025-03-31 14:56:05.0	20.31	20.23	20.18	20.31	OL	21.19	20.61
638	2025-03-31 14:56:06.0	20.33	20.23	20.16	20.32	OL	21.19	20.63
639	2025-03-31 14:56:07.0	20.34	20.23	20.16	20.32	OL	21.19	20.67
640	2025-03-31 14:56:08.0	20.32	20.24	20.21	20.31	OL	21.19	20.69
641	2025-03-31 14:56:09.0	20.32	20.23	20.2	20.31	OL	21.19	20.68
642	2025-03-31 14:56:10.0	20.31	20.24	20.25	20.33	OL	21.18	20.7
643	2025-03-31 14:56:11.0	20.32	20.24	20.24	20.33	OL	21.18	20.7
644	2025-03-31 14:56:12.0	20.31	20.25	20.24	20.34	OL	21.18	20.73
645	2025-03-31 14:56:13.0	20.31	20.25	20.24	20.35	OL	21.18	20.74
646	2025-03-31 14:56:14.0	20.33	20.27	20.25	20.37	OL	21.17	20.75
647	2025-03-31 14:56:15.0	20.35	20.28	20.25	20.39	OL	21.17	20.78

List

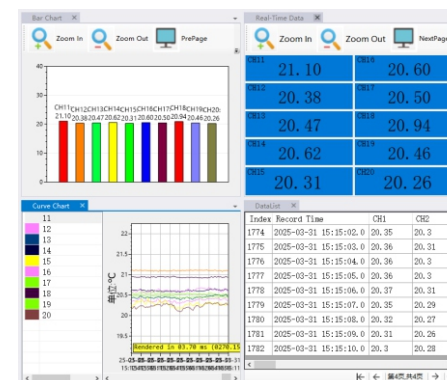


Bar

Individual data lists can be moved in list position and size as needed.



Curve



Certificate of Conformity

Product Name: Multi-channel Temperature Logger

Product Model: WS31

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