OPERATION MANUAL

User Manual

JK4000 Series

Multi-channel Temperature Recorder

An instruction manual

Ver1.0

Catalog

Preface

Summary

The new multi-channel temperature recorder has ultra-thin chassis, light weight, small volume and easy to carry.At the same time, the digital synchronous sampling technology has the advantages of fast measuring speed, high precision, easy to use, light and beautiful and so on. The instrument test precision is 0.5. This product is widely used in scientific research colleges and universities, electric power, chemical industry, petroleum, steelmaking, glass, ceramics, heat treatment and plastic, rubber, printing and dyeing, packaging and food machines. Temperature measurement and temperature control in the machinery industry.
The disposal of old packaging boxes and the disposal of old packaging boxes should be carried out in accordance with relevant national environmental regulations.
Please pay attention to separate the plastic and paper packaging products.

Maintenance of the instrument

◆ The surface of instrument should be dust in time,The interior of the instrument is best not to accumulate dust.
◆ The instrument should be calibrated once a year, so as to ensure the accuracy of the instrument, so that it can be used normally.

Warning: be sure to disconnect the power before cleaning.

Announcement
The contents of this manual are subject to change without notice. Excuse

Chapter One

Security

Do not install on your instrument instead of parts, or execute any unauthorized modification.Please send the instrument to the maintenance department of the company to maintain it, so as to ensure its safety characteristics.

Security rules

In order to prevent electric shock, not authorized personnel of the company, it is strictly forbidden to disassemble the instrument and strictly prohibit the use of the equipment on the life maintenance system or any other equipment with safety requirements.We are not responsible for direct or indirect financial losses that may occur when using this product.

Certification and quality assurance

The multichannel temperature recorder has achieved all the technical indicators mentioned in the manual.

Warranty

The company of materials and manufacturing of this product, from the date of shipment to the quality warranty for one year.

Warranty service

If you need the product warranty service or repair, must be the product to the maintenance unit. The customer must pay the one-way freight to the maintenance department, and the company will be responsible for paying the return freight. If the product is returned to factory maintenance from other countries, all freight, duties and other taxes shall be borne by the customer.

Guarantee restriction

The warranty does not apply to the damage caused by the following circumstances:

The customer is incorrect or improper in repairing products.

Customers use their own software or interface;

Unauthorized modification or misuse;

Operating this product or not in the specified environment or repair and repair at unsuitable places,Damage caused by the circuit of the customer's own installation.Or a defect caused by a customer's use of its own product.

Brief introduction

JK4000 is a high performance, low price temperature recorder. It can watch multi-channel temperature changes at the same time.It is very suitable for application of temperature acquisition and temperature recording.It has the RS232 interface to upload data directly to the PC, and also has the USB interface to save the measured data directly to the U disk when it is inconvenient to connect to the PC, and then transfer the data to the PC when needed.It is a half frame wide host with a top 64 channel direct slot on the back of which can be measured with a thermocouple, and 1 infinite expansion slots, which can be assembled by a module.Whether you need only a few simple data recording channels or hundreds of thousands of performance channels, you can meet your temperature collection at a reasonable price.

Meet the measurement of 7 different thermocouple types
Includes temperature recording software for measurements you can rely on
Unique design allows, you can enter the setting interface to switch the required thermocouple type at will in order to achieve maximum flexibility and quickly and easily set the internal automatic range conversion. Change the configuration as needed
There are up to 24 channels of direct slots and 1 unlimited expansion slot on the back to meet your unique needs. You can buy only the parts you need at the time, and add more modules later as your application develops. Up to hundreds of thousands of inputs can be measured with a half -rack unit.

Free software simplifies data collection
If you require PC-based data logging capabilities, but don't want to spend time programming, software can solve this problem. Use this software to set up your test, collect and archive measurement data, and perform real-time display and analysis of the obtained data and curves. The familiar electronic meter environment can be easily configured and controlled for testing, and the rich color graphics provide many options for displaying your data. In addition, the software can easily send data to other applications for further analysis, or include it in your displays and reports.

Module introduction
The module can be used directly by connecting to the infinite expansion slot on the back of the instrument and connecting the thermocouple cable. When more modules are needed, just connect it to the reserved slot of the first module (this function is especially It is especially practical when the instrument needs to be far away from the measured point. It can not only reduce the measurement accuracy drop caused by the too long thermocouple, but also save a lot of money needed to purchase the thermocouple)..

Application

Instrument safety index

◆Insulation resistance: the outer part of the housing and the power input are larger than 20MΩ.

◆ Withstand voltage: the power input terminal and the housing are 2 seconds withstanding voltage 1800V, and the rated current is 10mA.

◆Grounding: the power grounding pole, and the resistance between the outer shells is less than 0.2Ω。

◆ security: conforms to CSA,UL-1244,IEC1010 Cat I regulations RFI and ESD:CISPR11,IEC801/2/3/4

Precautions before use of the instrument

◆ The instrument should be placed smoothly And where the dust is less.

◆ The temperature conditions that ensure the accuracy of the test:20℃±5℃。

◆ Working temperature range:0~40℃，Air relative humidity：30%~90%。

◆ No corrosion, detonable gas in the room.

◆ Protect ground.

◆ Power supply: AC90-240V/50/60HZ，Power waste ≤15W。

◆ Fuse：0.5A

◆ weight ：Net weight 3.6kg

◆ accuracy :±0.3%(the highest temperature measured at the time)
   When using the "T" thermocouple, the accuracy can reach as high as 0.1%.

Chapter Two

A list of functional difference of each thermometer

Serial number	Model	The largest number of channel	temperature range①	Flip the screen	U DISK ②	RS232 communication interface
1	JK4000-8	8	7 kinds of thermocouples +PT100 thermal resistance	One screen	yes	yes
2	JK4000-16	16	7 kinds of thermocouples +PT100 thermal resistance	One screen	yes	yes
3	JK4000-24	24	7 kinds of thermocouples +PT100 thermal resistance	One screen	yes	yes
4	JK4000-32	32	7 kinds of thermocouples +PT100 thermal resistance	One screens	yes	yes
5	JK4000-40	40	7 kinds of thermocouples +PT100 thermal resistance	Two screens	yes	yes
6	JK4000-48	48	7 kinds of thermocouples +PT100 thermal resistance	Two screens	yes	yes
7	JK4000-64	64	7 kinds of thermocouples +PT100 thermal resistance	Two screens	yes	yes
8	108 way acquisition module	108	7 kinds of thermocouples +PT100 thermal resistance			

The specification and measurement range of JK4000 series input type

Input type	Specifications	measuring range
Thermal resistance（RTD）	Pt100	-200~850℃
Thermocouple	B	600~1800℃
	E	-30~800℃
	J	-100~1200℃
	K	-100~1350℃
	S	-0~1750℃
	T	-200~400℃
	R	0~1750℃

U disk: the instrument does not connect to PC. It can store data on the U disk, and save data permanently in the computer by transferring data.

The 4000-8 in Table 8 is that the acquisition module with 8 channels can be used in conjunction with each of the above instruments. After the customer has purchased any instrument, if you want to increase the acquisition channel, the 8 channel can choose 108 modules for one unit.

In table 10, 4000+108 indicates that customers can choose how many channels to collect temperature according to their needs and choose a 108 acquisition module with 8 channels as a unit in the case of a host. If you need 80 channels, you can choose a 64 way host and 2 108 acquisition modules.

Technical parameter ：

Model	JK4000
Input type	Thermocouple: J/K/T/E/S/N/B type PT100
Measuring range	Measurement accuracy: 0～1000℃: ±(reading value×0.5%+1)℃, -100～0℃:±(reading value×0.5%+2)℃;
Number of channels	8~64 channels can be expanded to 128 channels
Display	4.3 inch TFT color screen
Display resolution	0.1℃
U disk storage	Yes
Scan speed	100ms/channel
Internal storage	No
Curve drawing	Yes
Communication interface	RS232 port or USB port
Supporting software	2015 version V1.3 software
Alarm mode	One public alarm (relay output) (optional)
Voltage output	Internal independent power supply output
Anti-dry winding	Anti-high frequency interference
Single screen display	32 channels
Temperature correction	Yes
Other functions	Clock function Calendar function
Terminal type	M3 screw type
Allowable environmental conditions	1. Power supply: AC 220V±10%, 50Hz±2%; 2. Use environment: working temperature: -20-70℃, relative humidity: 20%-90%;
Accessories	Standard configuration: K-type thermocouple (-50℃ to 200℃) 8 pieces (2 meters/piece), data acquisition software
Dimensions	Length×Width×Height: 36cm×26cm×16cm Overall weight: about 5kg

The above information is measured under the following conditions:

- Temperature conditions: 23℃±5℃

- Humidity conditions: 65% R.H.

- Warm-up time: >10 minutes

- Calibration time: 12 months

Measurement environment:

- Index: Temperature 15℃~35℃ Humidity <80%RH

- Operation: temperature 10℃~40℃ humidity 10~90%RH

- Storage: temperature 0℃~50℃ humidity 10~90%RH

.

Chapter three

Product introduction

front panel
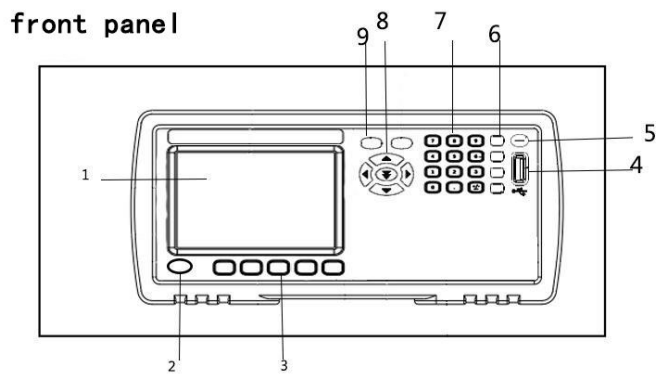
front panel

Introduction of front panel

1 ： display screen

2 ： power

3 ： System function key

4 ： USB disk interface

5 ： Qualified / unqualified

6 ： Lock key

7 ： Digital keyboard

8： Cursor key

9： show key

Display area schematic:
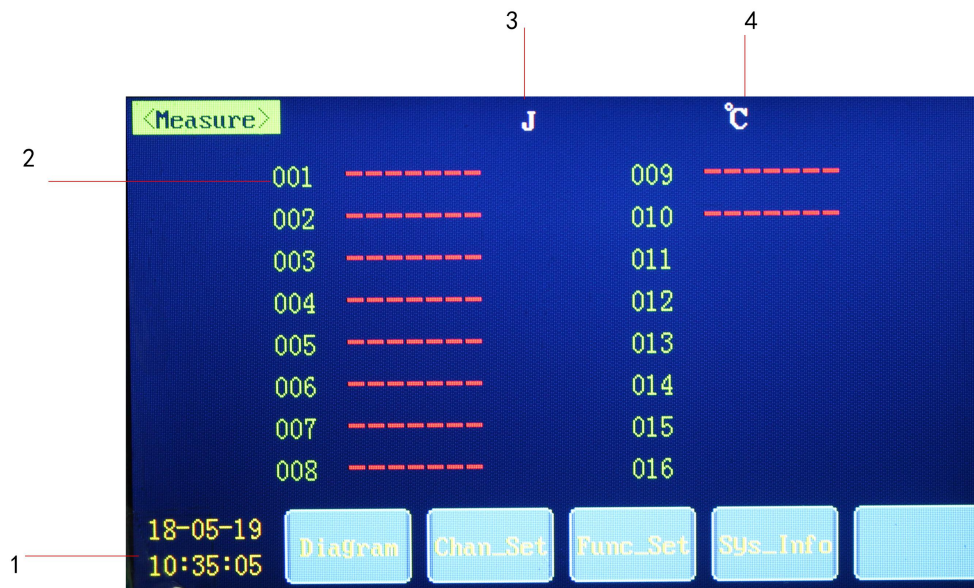
1 ：Display date / time: as shown in the picture 1th January,2007,At 20:26 00 seconds

2 ： Show the temperature of each channel, respectively（001 represents the first channels,
002 represents the second channels), and so on.
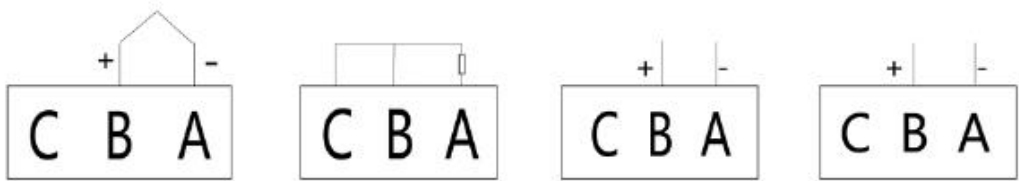
3：Thermocouple model

4: Unit of temperature

Rear panel schematic:

As shown in the picture.

1：Indicating the interface definition of each channel number and input signal（01 represents 1 channels, 02 represents 2 channels, and so on.）

Signal wiring method：

3-3 Terminal description

B	Thermocouple positive terminal
A	Thermocouple negative terminal
C	Ground

*Other channel connections are the same as above

⚠ The isolation voltage between channels is DC 350V, AC 230V

2：The input voltage of the power outlet is AC220V   50Hz 0.5A

3：The USB interface is used for computer USB port connection (RS232 and USB choose one).

4：The RS232 interface can directly upload the data measured to the PC through the RS232 cable line and the host computer software (RS232 and USB choose one).

5:CASCADING: Used for channel expansion and alarm relay contact output terminal, when alarm relay output, contact signal as shown in the figure:
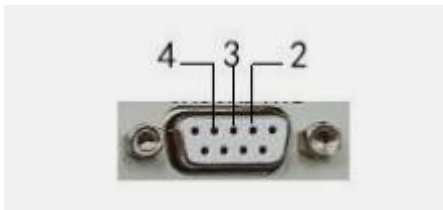

2,3 are normally closed contacts
3,4 are normally open contacts
Contact load capacity is DC 24V/1A

Channel setting ：

1, Select the required setup items, press the "parameter settings" key, and use the "up and down" key to set the value or function.For example, setting the number of channels: after moving the cursor to the number of channels, press the key of "parameter", change the parameters with "up and down" key, then press the "set to finish" button.

2, Type setting of thermocouple: move cursor to the type of thermocouple, select thermocouple type with "up and down" key, and press "set up" to exit.

3, The other projects are like this,

When the settings are completed, press "MENU" to save the settings and exit; press the exit key, do not save the settings and exit.
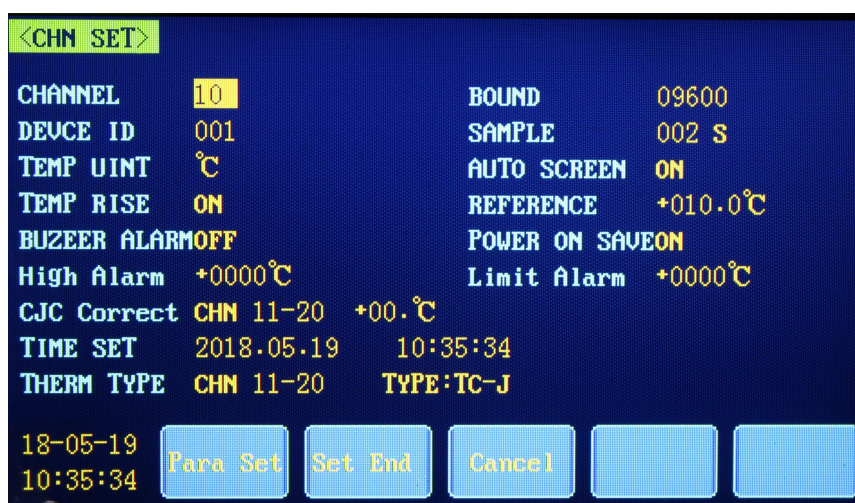
Equipment parameter page introduction:

Channel number: number of test instruments

Baud rate: communication rate between instrument and host computer

Device address: the host computer inquires the address of the machine

Sampling time: speed of reading temperature and data

Unit of temperature: a unit of temperature:（℉，℃）

Automatic screen change: when the number of passages exceeds 32, the temperature needs

multi page display.

Multi page automatic rotation display at ON

Temperature rise: no function at present

Time setting: instrument clock

Buzzer alarm: the buzzer opens or closes the choice

Power saving: no function at present

Upper limit alarm value: high temperature alarm value. Every 8 channels is an adjustment base, and can be switched through thermocouple type.

The lower limit alarm value is low temperature alarm value. Every 8 channels are adjusted base and can be switched through thermocouple type.

Reference value: no function at present

CJC calibration: adjust the channel deviation value, each 8 channels as an adjustment base.

Type of thermoelectric coupler: Type: choose the probe type of the instrument test, each 8 channels as an adjustment base.

Functional selection:

1. When displaying the channel parameters, press the "MENU" button to switch to the digital bar.Then, through the upper and lower keys to adjust the number you need, and then switch to the next digit through the left and right keys.When the settings are completed, press "MENU" to save the settings and exit; press the exit key, do not save the settings and exit.。

2. Baud rate：1200，2400，4800，9600，19200，38400 According to your different needs, you can set it on your own. The default is 9600 when you start the machine.

3. Device address: according to the COM port of different PC, that is to choose to several. The default is 001.

4. Sampling time: how long is it needed to collect, how long it takes to tune up, the minimum time is 1 second, the maximum is 9999 seconds.

5. Temperature unit：℃/℉ Switch.

6. Automatic screen switching：ON/OFF Switch.

7.Time settings: set the year, month, hour, minute and seconds that you need to display.

8. Buzzer alarm: when the temperature is adjusted to "ON", if the temperature exceeds the upper limit or lower limit set by you, there is a sound of sound. If it is adjusted to "OFF", there is no sound hint.

9. In the measurement, you can set an upper limit of temperature and a lower limit of a temperature. When the measured temperature exceeds the range you set, if the buzzer alarm is in the "ON" state, there will be a sound warning to you. The "+" on the display represents the positive temperature "-" representing the negative temperature.

10. Type of thermocouple: it can be arranged from 8 to one, and different thermocouple types are set for a unit.

11. After all settings are finished, press "set up" to exit the parameter settings.

Curve parameter page introduction:

At any interface, just press the "DISP" button to return to the measurement display interface.

According to the "graph" key, the curve display interface is displayed, as shown in the figure.

According to the "curve setting" key, enter the "curve setting" display interface, as shown in the figure.

X axis length: X axis time value, 1min~999min can be set freely.

Y axis range: Y axis temperature range, -1999~+1999,If you want to set negative numbers, you

need to make sure that when the number is not 0 Change+/-.

X axis grid number: X axis grid number, 1~9 can be set freely.

Y axis grid number: Y axis grid number, 1~9 can be set freely.

Background color: curve background color value, 000~255 can be set freely.

Raster color: curve grid line color, 000~255 can be set freely.

Font color: the color of the word on the curve page, 000~255 can be set freely.

Curve color: set the color value of each channel curve, 000~255 can be set freely.

Channel display: channel curve opening and closing settings, 0 passes, 1 open, every 8 channels
is a set base.

Introduction of function settings interface

At any interface, just press the "DISP" button to return to the measurement display interface.

Press the function setting key to enter the function setting interface, as shown in the figure.
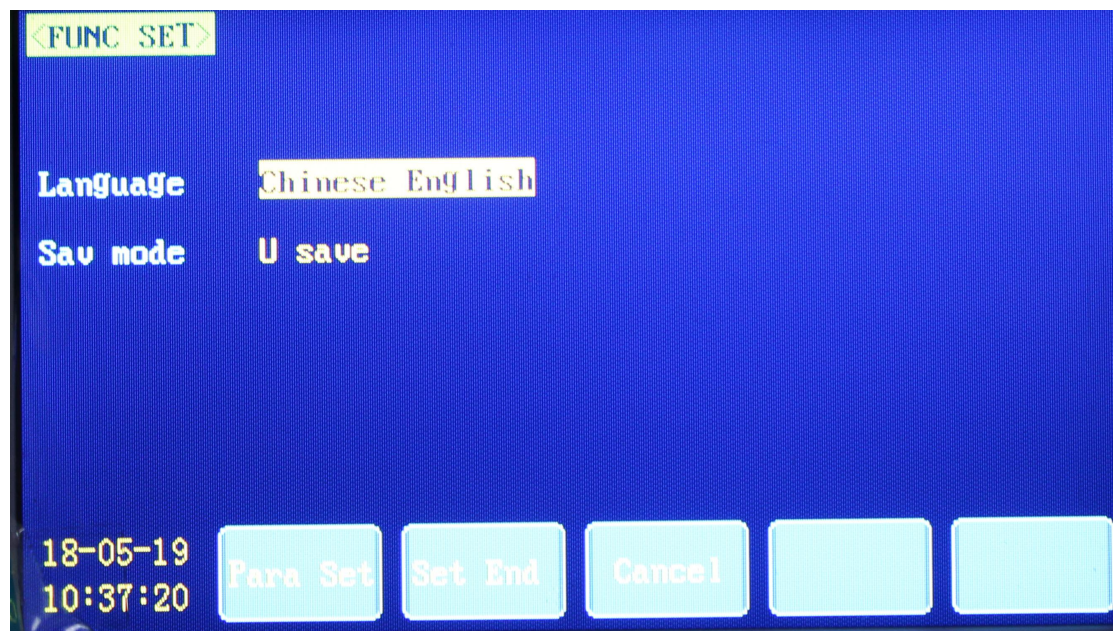
Language: language includes two languages, Chinese and English.

Set steps: the cursor area moves to Chinese and English, click the "parameter setting" key, switch

the language, click "set up" key, if you need to cancel the setting, click "cancel the setting" key.

Storage mode: U disk storage and internal storage of 2.

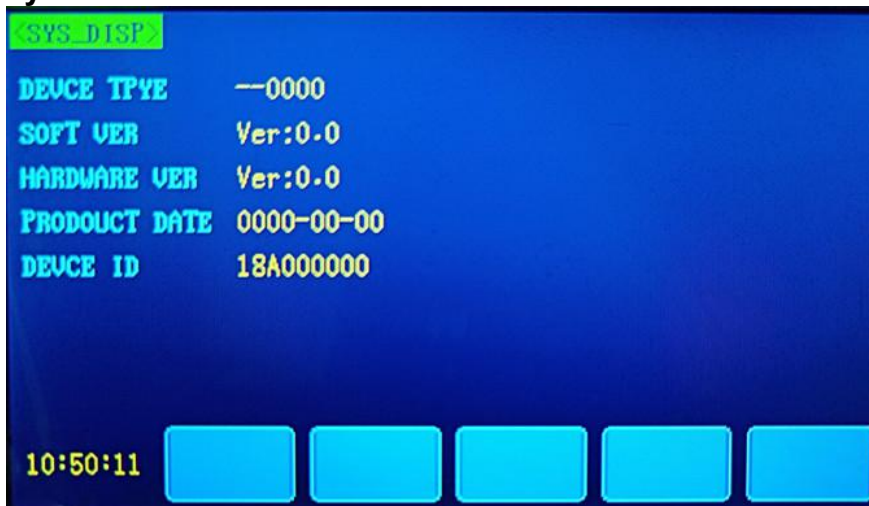## Introduction of Function setting interface

At any interface, just press the "DISP" button to return to the Function setting interface.

According to the U disk , you can enter the Function setting interface, as shown in the figure.
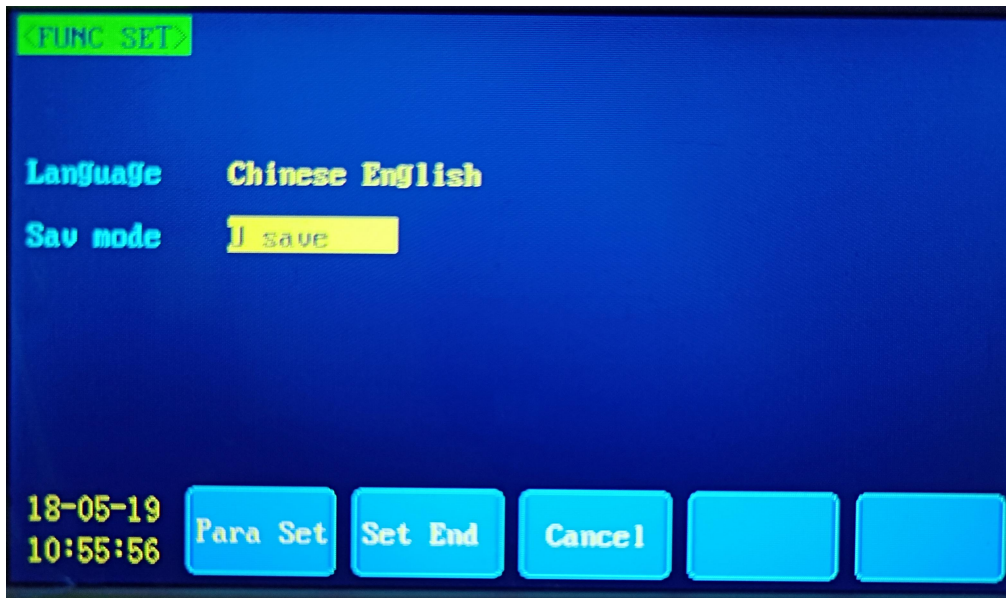
Press the up and down button to select the U save and click Set End .

system information

The system information interface includes:

Instrument model
Software version
Hardware version
Date of manufacture
Instrument number

Chapter Four

Install

Make sure that you receive the following components when you receive multiple

temperature records. If there is any shortage, please contact your dealer as soon as

possible.

Power line (one)	JK-E171 JK-E172 JK-E173 JK-E174	Users can choose different power lines according to the specifications of the power outlets in the area.	1 piece
User's Manual		Including the installation of information, operation information	1 piece
Software CD-ROM			1 piece
Test Report		Test report on the instrument before the factory	1 piece
RS232 Cable	JK-R1		1 piece

Chapter Five: instrument communication

Communication interface reference for multichannel temperature recorder

To facilitate users, there are two optional interfaces for instrument communication: RS232 interface (DB9 port) and USB port.

Baud rate: range 1200 - 38400

Instrument communication data format: 1 start bits, 8 data bits, 1 stop bits (corresponding to 8051, 8096 serial mode 1).

Serial connection:Standard RS 232 level, DB9 pin definition,2 - RXD, 3 - TXD, 5 - GND

USB communication interface: the inside is a 232 turn USB module, and the outlet is located on

the back side of the instrument (the front panel is the U disk socket).

USB communication requirements: we need to install USB driver software on the U disk to be used.

Connect with the computer: connect the USB communication line with the instrument to the computer USB port. After the USB driver is installed, the computer will detect the USB communication interface of the instrument. The resource manager can check the port number, and the port number of the communication software can be communicated to the secondary port number.

Instrument communication command:

1，Start a real time acquisition handshake：01 11 c0 2c
01 Instrument address，11 command，C02c is the CRC check value.
Instrument return：01 11 0a 49 44 41 51 38 35 31 38 30 30 5b d6
5bd6 is a CRC check value
2，Reading upper and lower limits：01 03 00 50 00 03 05 da
05da is a CRC check value
Instrument return：01 03 06 00 01 00 32 00 0b fc bd
0001 represents the first set of parameters, the upper limit of 0032, and the lower limit of 00 0b.fcbd is a CRC check value

3,Read the data：01 03 00 00 00 50 45 f6
50 Data length，45 f6 is a CRC check value
return：01 03 a0   00b4 00b5 00b3………………CRC
The data is 2 bytes with a symbol number, a decimal point

4，Write set data 01 10 00 50 00 03 06 00 01 00 32 00 0b 38 09(CRC)

The 03 is 3 sets of data, 06 is 6 bytes, 0032 is the upper limit value, the 000b lower limit value.

The data is 2 bytes with symbols, no decimal point.


Software operation interface
1, after ensuring the connection of RS232 communication cables between PC and instruments, After installing the software provided by our company, click on the JK5080 icon and you will enter

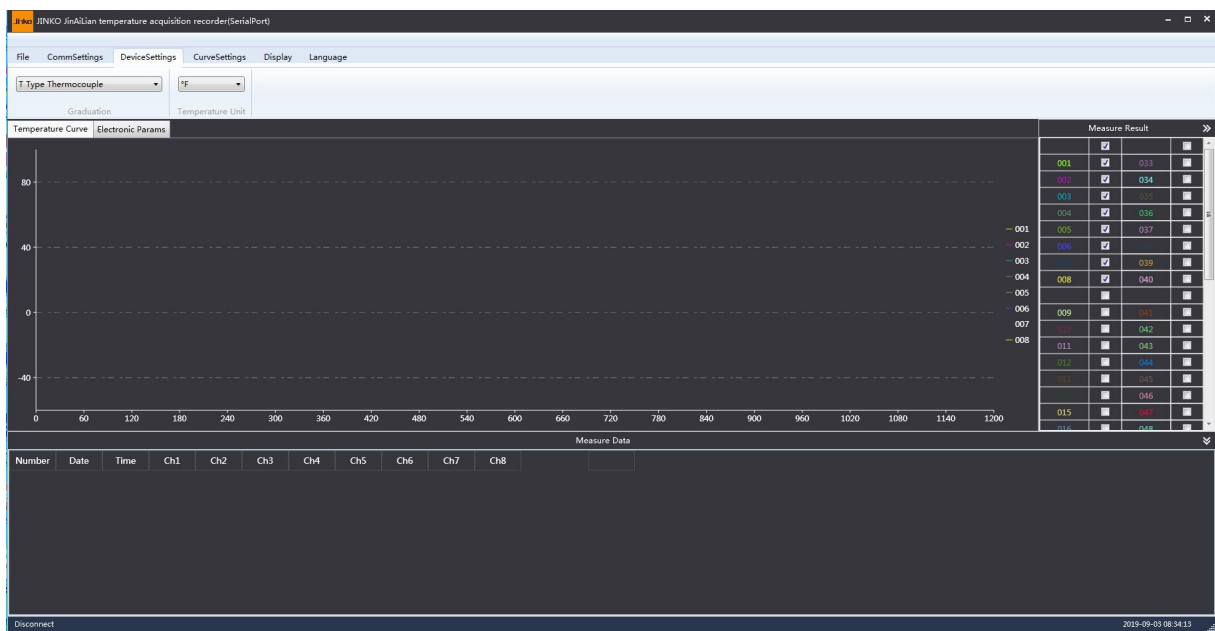it. In the "File" column, click on the " " Select the save path:
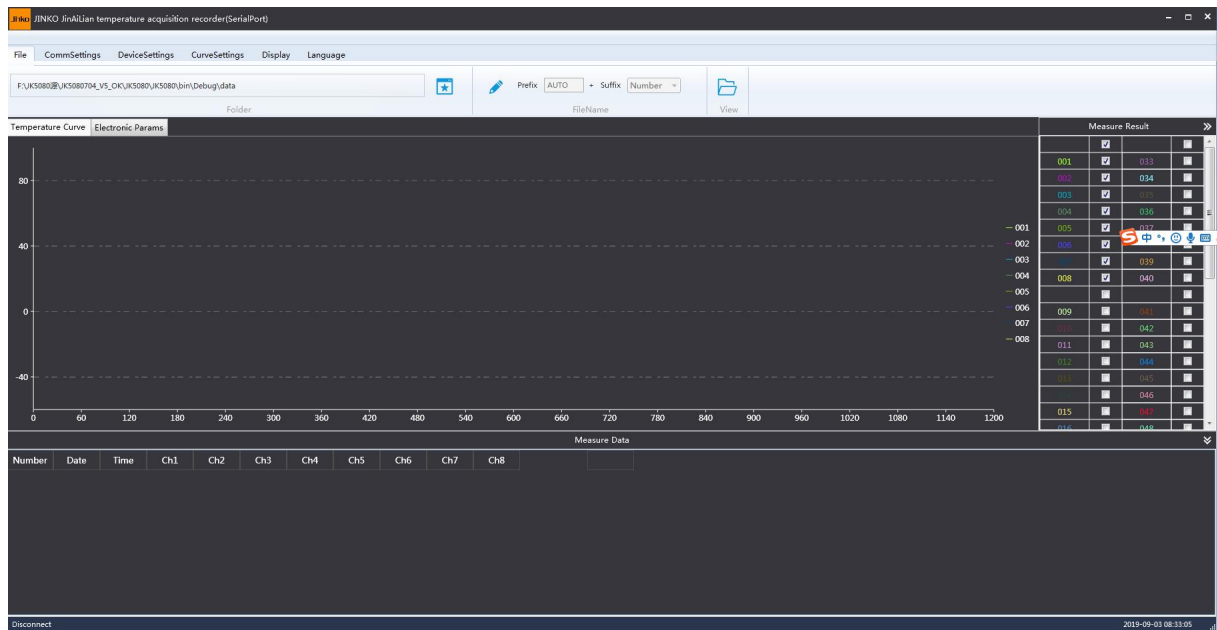
2. Click on the communication settings option to refresh the serial password. The baud rate of 9600 remains unchanged.
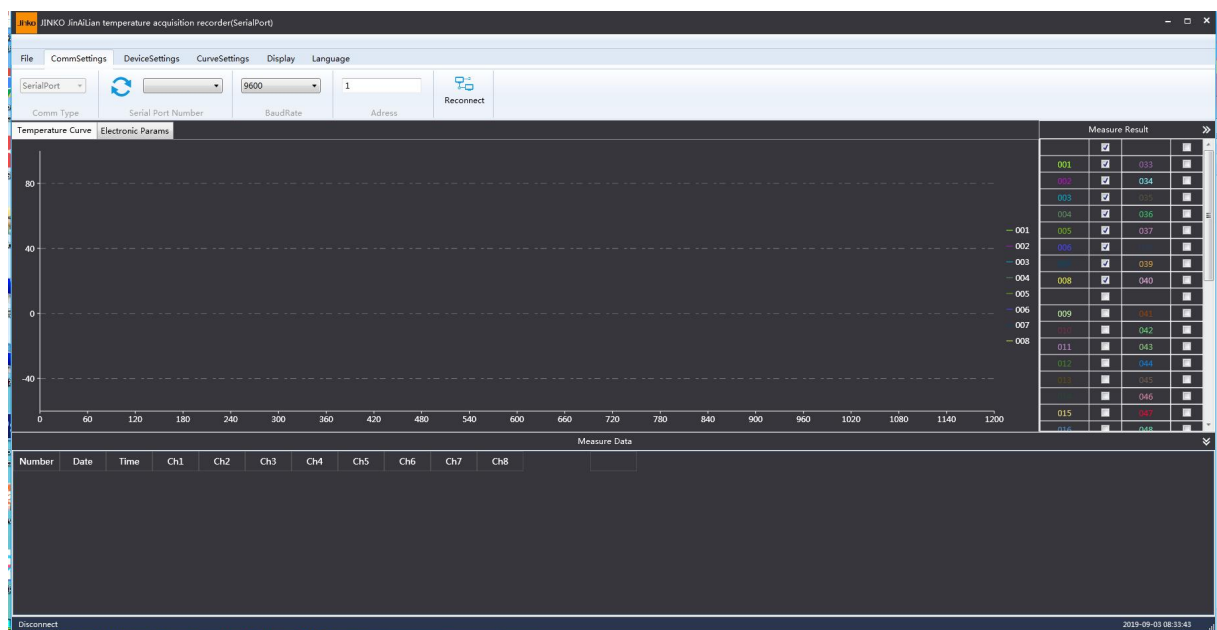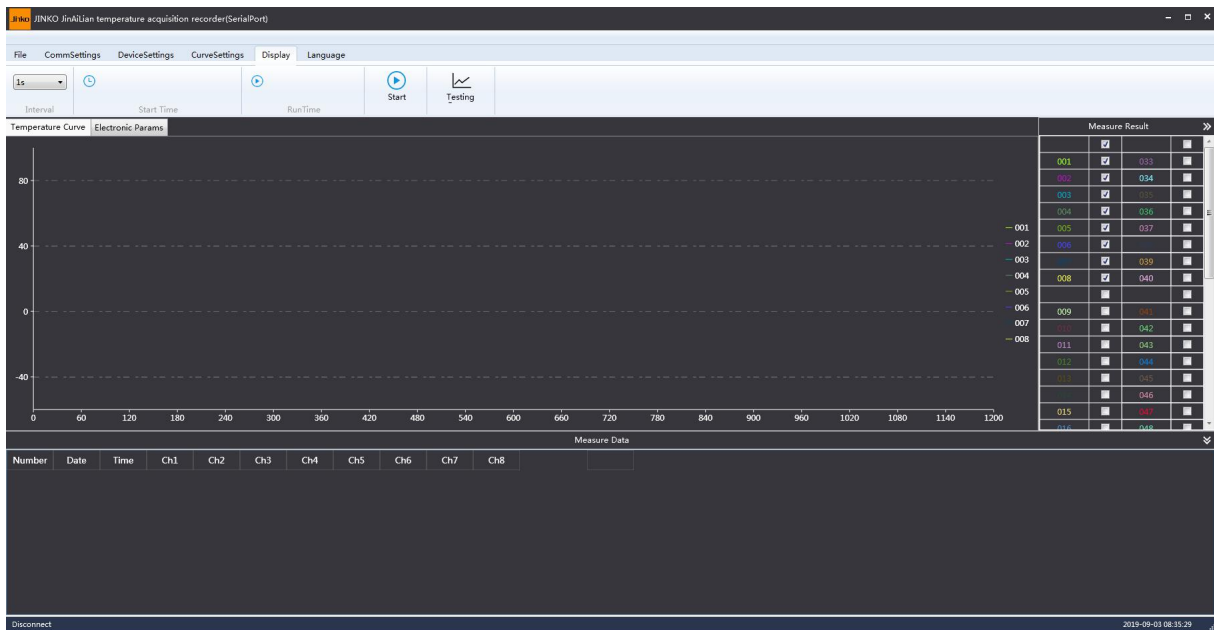

3. Click on the instrument settings option to select the thermocouple model.
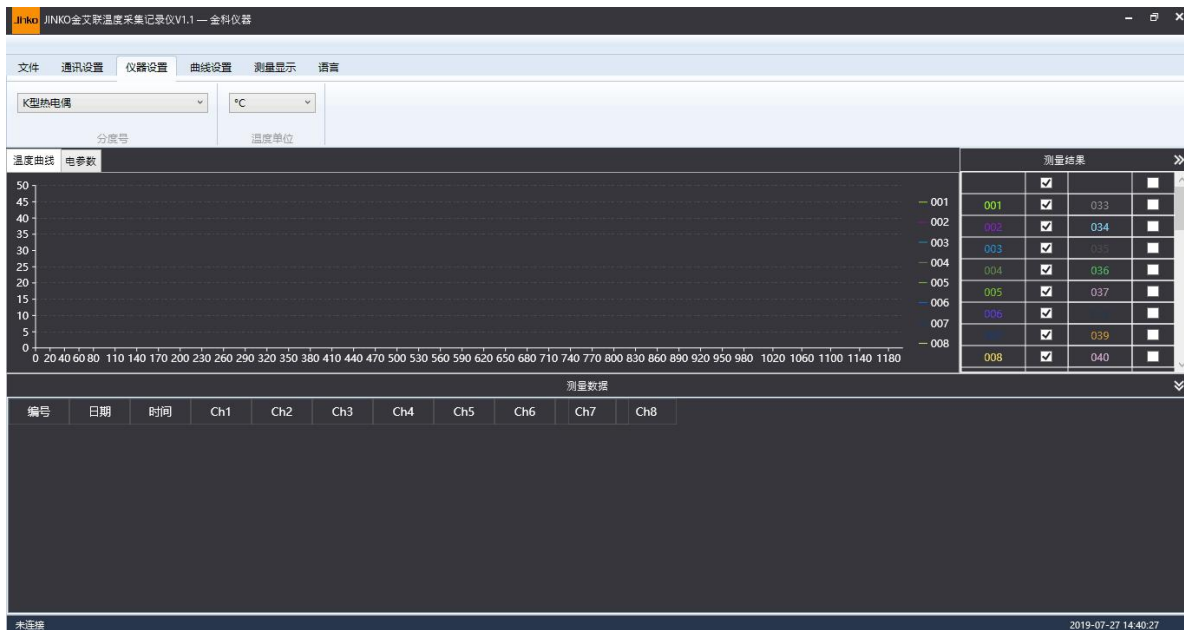
4. Click on the choice of curve settings, select the upper and lower limits.

5. Click on the measurement display, click on the start of the test, a curve appears.

In the measurement display interface, click on the [Testing icon] testing, select the Excel file in the save path and view the historical data.
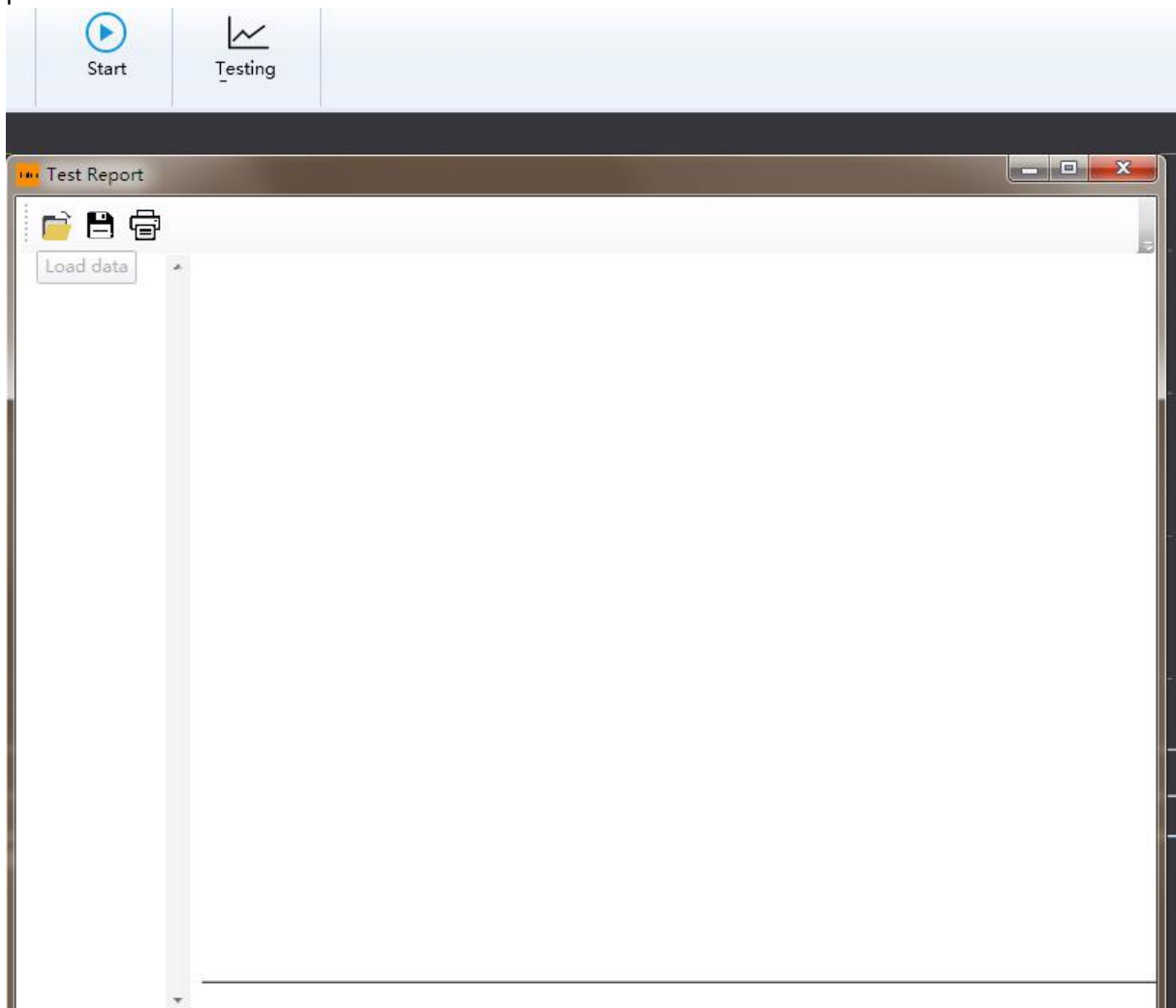
In the File Options Interface, click View to view historical data and graphs in the save path, as well as data stored on the U disk from the instrument.
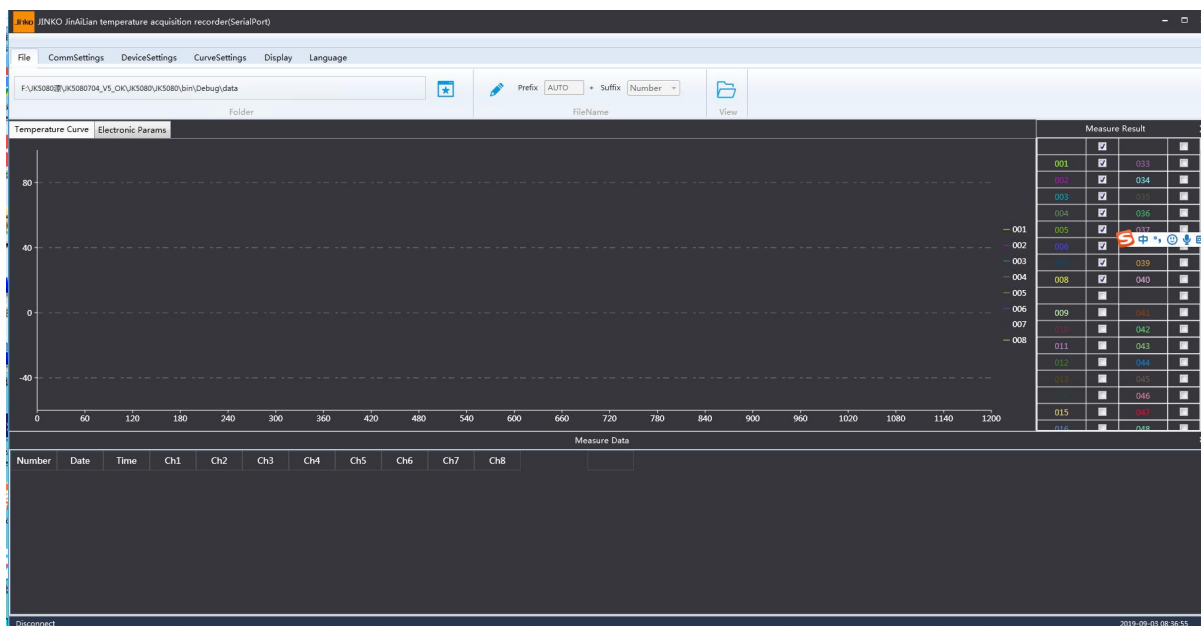
Wireless mode transmission:

Supporting virtual serial port, the computer must have wireless receiving function, and install virtual serial port software. After installation, open virtual software and add a serial port.
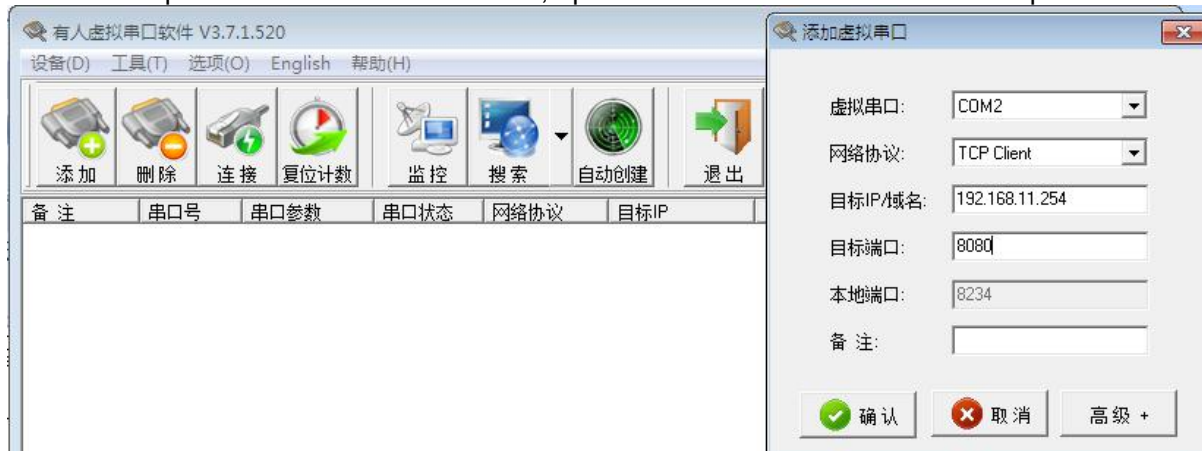
Set up the back point to determine.

The instrument is manufactured in wireless AP (TCP server) mode with wireless name:JK5000, IP :192.168.11.254

If a laptop is connected to an instrument, the network connection of the laptop should be changed to the JK5000 network in order to achieve wireless communication.

Open the temperature acquisition software, change COM port to virtual serial port in the settings, and then data can be processed