East Tester®

ET3916 Multi-Channel Temperature Detector

User Manual

Hangzhou Zhongchuang Electron Co., Ltd

Hangzhou Zhongchuang Electron Co., Ltd.

Adress: NO. 3 Kangle Road, Gongshu District, Hangzhou,Chiaa

Postcode: 310015

Telephone: 0086-571-56861333

Fax: 0086-571-56861355

Website: http://www.cnheader.com

http://www.easttester.com

Catalog

一、 General Introduction

With the characteristic of simple content, easy operation, large temperature data storag, ET3916 multi channel data recorder supports thermocouple input, such as J、K、T、E、S、N、B、R type, to reach the requirement of production line, laboratory and measurement development department.

Its widely used in Lighting appliances, power tools, household appliances, electric motors, electric heating appliances, pharmaceutical, petroleum, chemical, metallurgy, electric power and other industries and scientific research units and other fields of production enterprises, laboratories, quality supervision departments

二、 Main Features

- Adopt 5 inches industrial true-color display LCD display screen;
- Adopt high speed and high performance 32 bits ARM microprocessor, fast response speed; It supports multi channel signals' acquisition, recording, display, alarm;
- Each measurement module supports measurement of 8 channels, the max to 64 channels; Modules quantity can be equipped according to customers' requirement.
- Support 4/8/16/32 multi-interface real-time numerical display, support cylindrical chart, real-time curve to display the measurement data.
- The data can be displayed at most 6 bits, and the display range can be from -999.99 to 9999.99
- Equipped GB2312 Chinese Character Library with full input method;
- Each channel supports parameter setting separately(including upper/ lower alarm, temperature calibration, display unit) and arbitrary naming;
- When the measured temperature excesses upper/ lower alarm, it will alarm (optional: relay alarm output Module)
- Real-time clock: adopt hardware real-time clock, lithium battery power; the max time error is ±1 min/year
- Each channel is isolated, disturb of high frequency and isolated voltage peak value reach 400V
- Supports thermocouple measurement: J、K、T、E、S、N、B、R
- The 8GB FLASH memory chip is used to store historical data, and the data can be exported through the U disk;
- Measurement speed for option: slow speed: 1 s/channel, medium speed: 0.5 s/channel;
- USB-HOST and USB-DEVICE communication port; USB-HOST to export the historical data through U-Disk; USB-DEVICE to communicate with computer;

三、 Performance Index

3.1. Main Technical Index

MODEL	ET3916 Series	ET3916-T Series
	ET3916-08、ET3916-16 ET3916-24、ET3916-32 ET3916-48、ET3916-64	ET3916-08T、ET3916-16T ET3916-24T、ET3916-32T ET3916-48T、ET3916-64T
Channels	8 channels ~ 64 channels	
Measurement Range	60mV	
Accuracy	0.05%FS	0.02%FS
Temperature Display Resolution	0.1℃	0.01℃
Supported Thermocouple Type	K、J、T、E、S、N、B、R (please check thermocouple sheet for details indicators）	
Cold Compensation Accuracy	±0.5℃	
Measuring Speed	Slow speed: 1 s/channel, medium speed: 0.5 s/channel	
Display Mode	numerical , curve, bar charts	
Calibration	isolated correction factor of each channel	
Alarm	Isolated alarm setting(upper upper limit, upper limit, lower limit, lower lower limit)	
Data Record Interval	1s	
Data Storage	8G	

3.2. Thermocouple Sheet

Themocouple type	Temperature Range	ET3916 Series		ET3916-T Series		N/M
		Accuracy	Resolution rate	Accuracy	Resolution rate	
K	-200~1372℃	±0.8℃	0.1℃	±0.3℃	0.01℃	Exclude the error of thermocouple an cold junction compensation
J	-200~1100℃	±0.7℃		±0.25℃		
T	-100~400℃	±0.5℃		±0.2℃		
E	-50~830℃	±0.5℃		±0.2℃		
S	-50~1760℃	±2℃		±0.8℃		
N	-200~1300℃	±1℃		±0.4℃		
B	600~1820℃	±2.4℃		±0.95℃		
R	-50~1768℃	±2.1℃		±0.82℃		

3.3. General Technical Index

- Power Voltage:220V.AC±10%，or110V.AC±10%，45~65Hz；

- Display: 5 inches industrial true-color display, 854×480
- Working Temperature:0℃~40℃
- Storage Temperature:-10℃~70℃
- Relative Humidity:＜80%
- Communication port: USB Device、USB Host(standard)；
  RS232、rely alarm output(optional)；
- Dimension:260mm×300mm×100mm（L×W×H）；

3.4. Standard Accessory

- Power Plug*1
- K type (2 meters long), 1 for each channel
- User manual*1
- **USB Square Line* 1**

四、 Appearance

4.1. Front Panel

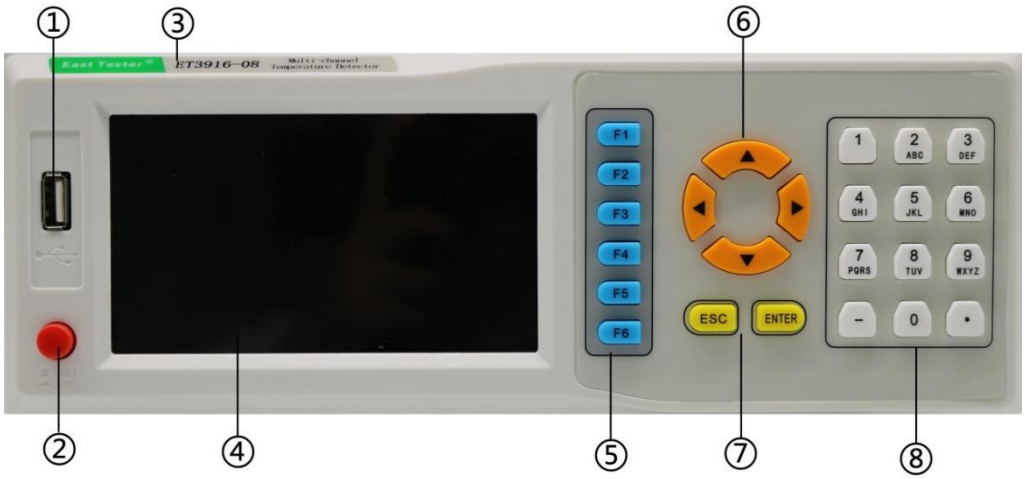


Fig 4-1 Diagram of front panel

① USB-HOST Communication port
② Power Switch
③ Company logo and model
④ Display screen
⑤ Functions key
⑥ Direction key
⑦ Confirm/ Enter key
⑧ Numerical key

4.2. Back Panel

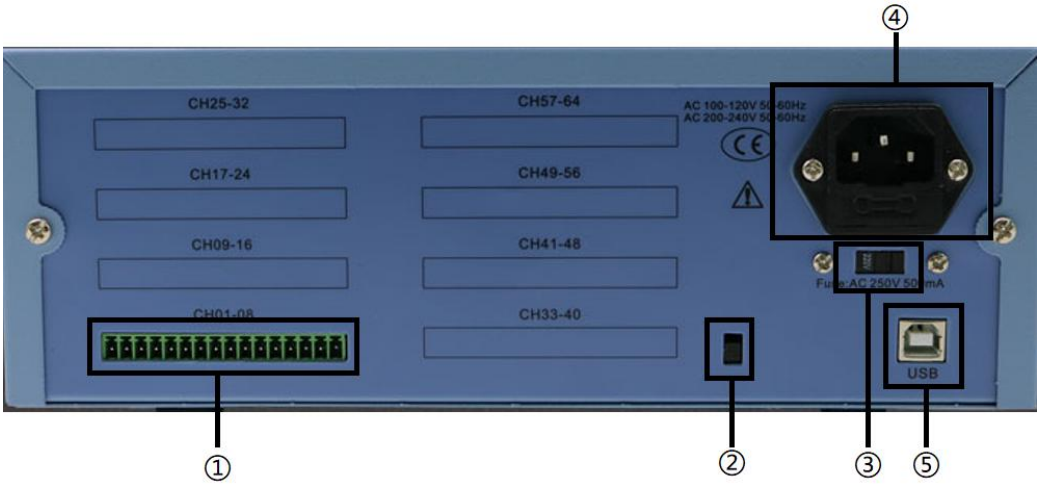


Fig 4-2 Diagram of back panel

① Connection port of 8 channels
② Thermocouple reference terminal
③ Power Voltage Switch(110V/ 220V)
④ Power plug
⑤ USB-DEVICE conneciton port

五、 Display and Operation

5.1. Numerical Interface

5.1.1. Numerical diaplay Interface of 4、8、16、32 channels

Fig 5-1 Numerical Interface of 4 channels

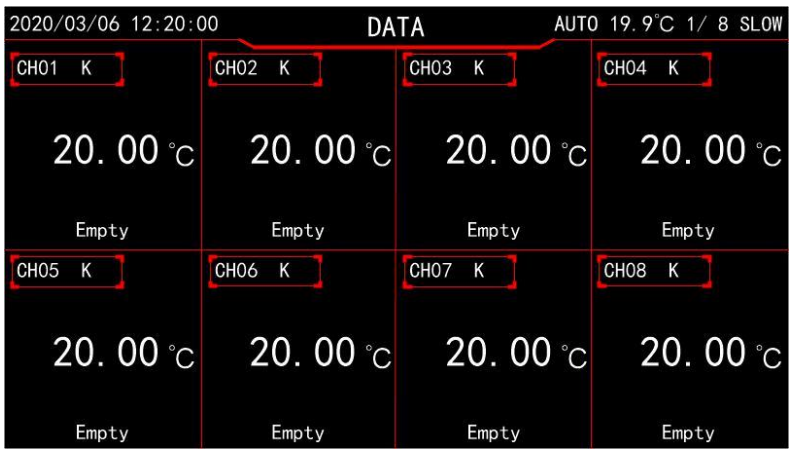


Fig 5-2 Numerical Interface of 8 channels

Fig 5-3 Numerical Interface of 16 channels

Fig 5-4 Numerical Interface of 32 channels

The numerical interface can display the measurement data of multiple measurement channels at the same time. The display interface can display data of channels 4, 8, 16 and 32 at the same time.

Press direction key to pop out the selection box, and press direction key to move the selection box, so as to realize the page turning function. To hide the selection box, press ESC.

Press direction key to call out selection

5.1.2. Functions key（F1~F6）Popup menu and hide

Fig 5-5 Functions key menu in Numerical Interface of 16 channels

Take the 16-channel numeric display interface as an example. Press ENTER to display the function key menu as shown in the figure above. To hide the function key menu, press ESC. If the function key menu fails to pop out, press the function key (F1 to F6), the corresponding function can still be realized.

5.1.3. Setting interface of Numerical Interface

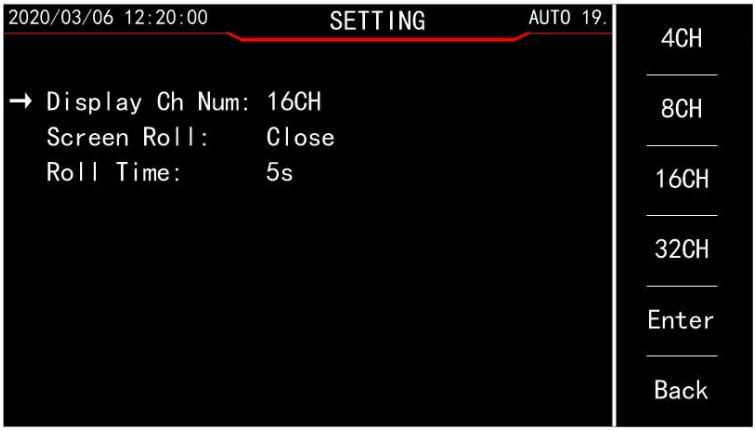


Fig 5-6 Setting Interface of Numerical Interface

Press F3 on the numerical display interface to enter the setting interface of the numerical display interface, where you can set the display channels number, scrolling function and rolling time interval.

Press ↑ or ↓ to move the arrow in left screen to select the items and then modify by ← and → or functions key F1 ~ F4 ;

After setting, press F5 to save the Settings and return to the numerical interface (the saved Settings will still be valid after restarting the device)If you press F6 or ESC, the Settings are not modified.

5.1.4. Channel Setting Interface

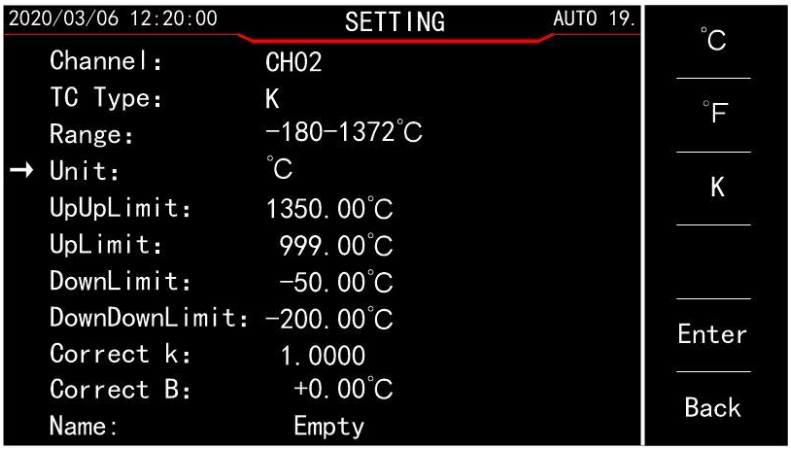


Fig 5-7 Channel Setting Interface

Selecting target setting channel by pressing the arrow key in the numerical interface, and press the F4 key to enter the channel setting interface, which displays eight items: unit, upper upper limit, upper limit, lower limit, lower lower limit, compensation K, compensation B, and channel name.

Press ↑ or ↓ to move the arrow on the left screen to confirm the selected item. When the arrow points to "Display unit", you can adjust it by pressing ← or → or function keys F1 ~ F3 . When the arrow points to the other six items, you can input the setting values by using arrow keys or number keys.

When the arrow points to the channel name, press the ENTER key to ENTER the T9 Pinyin input interface, used to customize the channel name, support Chinese, English, numbers, symbols input.

Press F5 to save the Settings. If you press F6 or ESC , the Settings are not modified.

5.1.5. Customize Channel Name

Selecting the channel name by move ↑ or ↓ key in channel setting interface, and press ENTER to enter into the T9 Pinyin input interface, its shown as belowed:

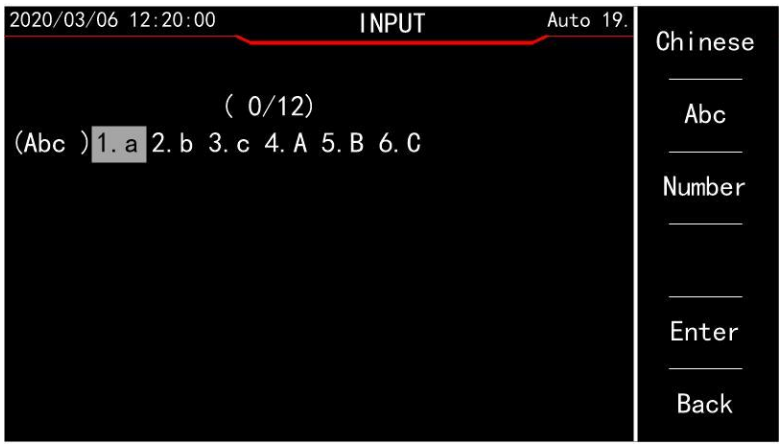


Fig 5-8 T9 Pinyin input interface

In this interface, press F1~F3 key and numerical key to realize the input of Chinese, English, numerical digits and symbol.

5.2. Curve Interface

5.2.1. Curve Interface

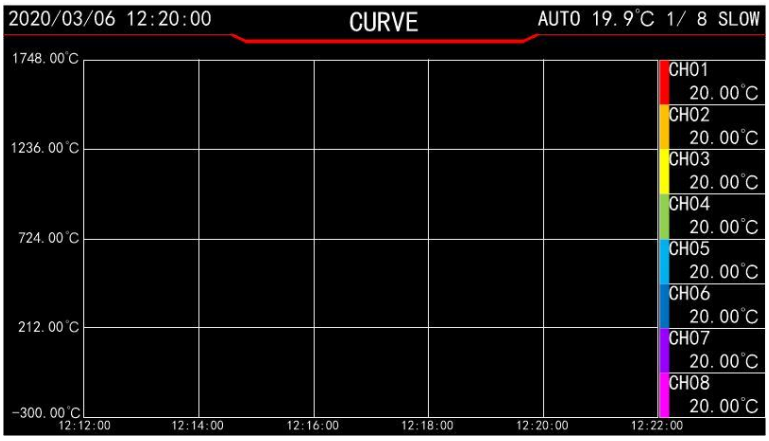


Fig 5-9 Curve Interface

5.2.2. Curve interface popup function menu

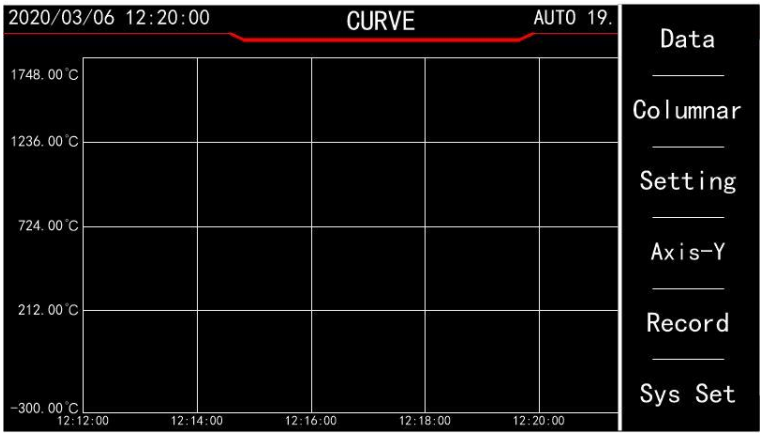


Fig 5-10 Curve Interface with Functions Menu

Press [F4] key to switch between “Axis-Y” and “Axis-x”. When it displays “Axis-Y” in function menu, press [↑] or [↓] 键 to move the Y axis display area up and down, press [←] or [→] 键 to enlarge or shrink the Y axis display area. When it shows “Axis-x” in functional menu, press [←] or [→] 键 to enlarge or shrink the X axis display area. [↑] and [↓] don’t take effect.

5.2.3. Setting Interface in Curve Interface

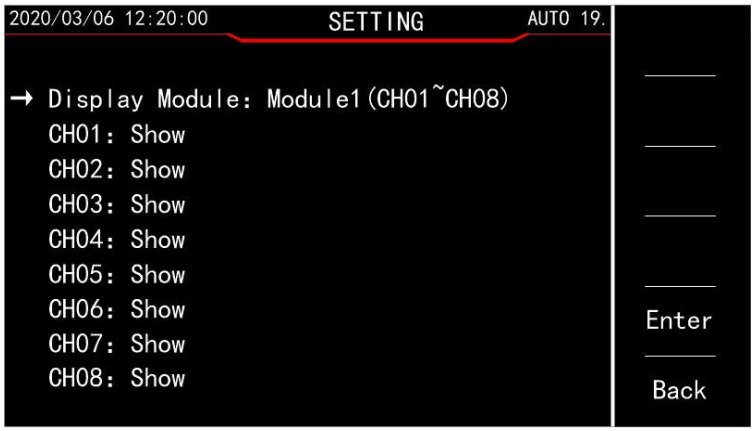


Fig 5-11 Setting Interface in Curve Interface

In the curve setting interface, you can set the display module of the curve interface, and set the display status of each curve.

Press ↑ or ↓ to move the arrow on the left of the screen to confirm the current selection. You can modify the selected item by using the ← and → or function keys F1 ~ F4

When you press F5 , the information about the display area and temperature range of Y axis in the curve setting interface, the current display module in the curve setting interface, and the hidden information about the curve will be saved. (After the device is restarted, the previously saved Settings still exist). Press F6 or ESC to cancel the Settings and return to the curve screen.

5.3. Cylindrical Interface

5.3.1. **Cylindrical Interface**

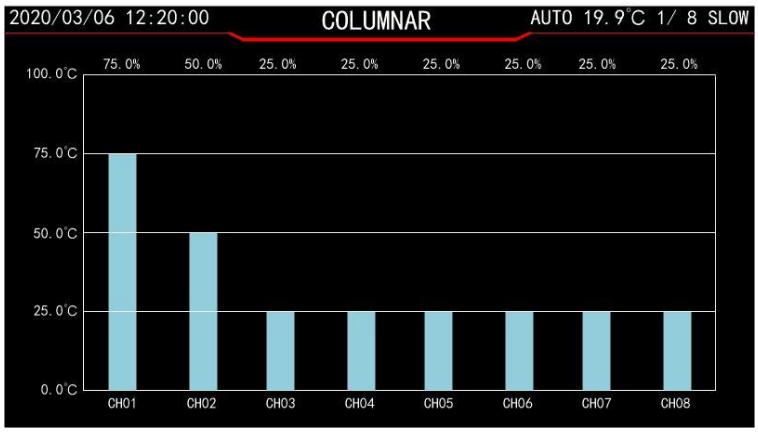


Fig 5-12 Cylindrical Interface

5.3.2. Cylindrical Interface Popup Menu

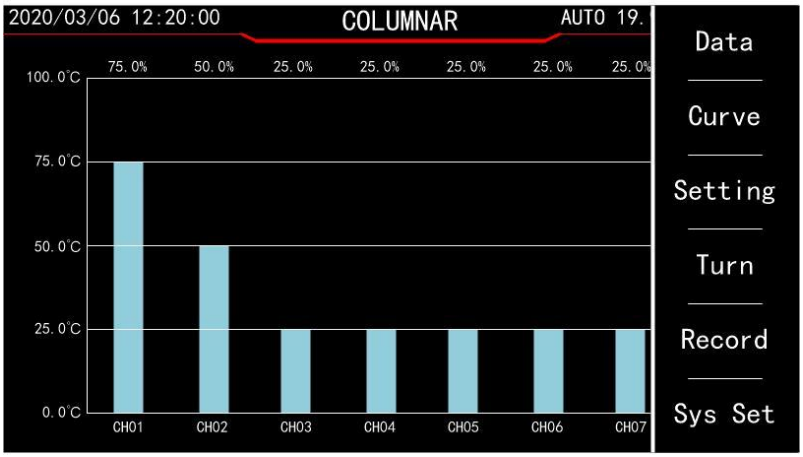


Fig 5-13 Cylindrical Interface with Function Keys' Menu

Press F4 to switch the module data displayed on the current interface. Press F3 to enter the setting interface of the cylindrical interface.

5.3.3. Setting Interface in Cylindrical Interface

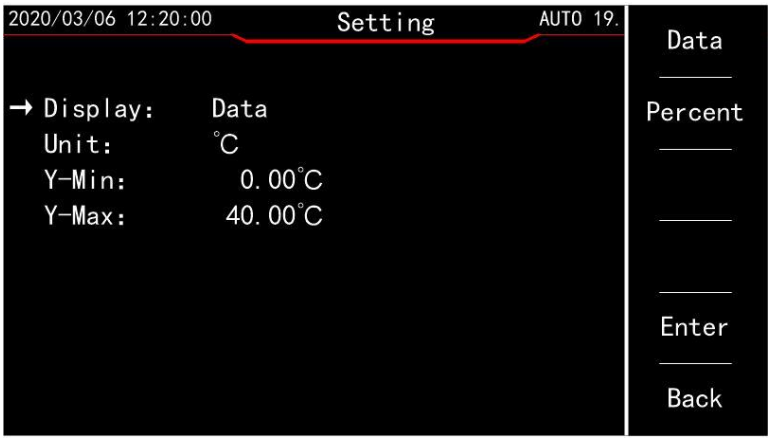


Fig5-14 Setting Interface in Cylindrical Interface

Press ↑ or ↓ to move the arrow on the left screen to confirm the current modification.

If the item "Display"or "Unit" is selected in the left screen, press ← and → or function keys F1 ~ F4 to modify the selected item.

Select "Y-Min"or "Y-Max"on left screen, and input the setting value by direction key and numerical key.

Press F5, the information of display, unit, Y-Min and Y-Max will be saved.(After the device is restarted, the previously saved Settings still exist). Press F6 or ESC to cancel the Settings and return to the cylindrical interface.

5.4. System Interface

5.4.1. System Setting Interface

Press F6 to enter system setting interface when in the numerical interface, curve interface and cylindrical interface.

Fig 5-15 System Setting Interface

The upper part of the interface displays the device model, serial number, and program version. The lower part is used to enter the interface of basic Settings, module Setup, reference Setup, and boot update interface.

Press ↑ or ↓ to move the cursor and select the item in left screen.

Press ENTER to enter into the item selected, such as “Basic setup”, “Mod Setup”, “REF Setup”, “Boot update”

When the “Mod Setup”is selected, the date in this item can be modified by ← or → .

5.4.2. Basic Settings

Fig 5-16 Basic Setting Interface

Press ↑ or ↓ to move the arrow on the left screen to select the item. You can modify the selected item by using the← and → or function keys F1 ~ F4

5.4.3. Module Settings

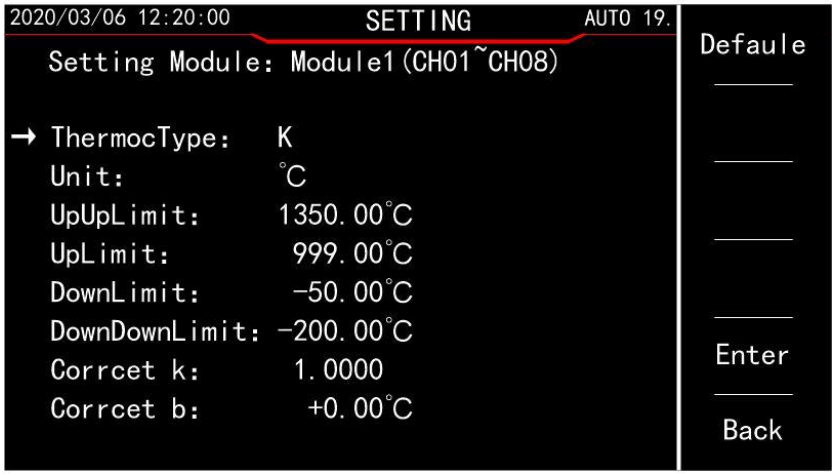


Fig 5-17 Module Setting Interface

Press ↑ or ↓ to move the arrow on the left screen to select the item. The items"ThermocType"and "Unit, only could be modified by ← or → , and for rest 6 items, the input value could be modified by direction keys or numerical keys.

Press F1 to back to default value.

After the Settings are complete, press F5 to save the Settings and modify the Settings of the eight channels in the corresponding module. If you do not want to save the Settings, press F6 or ESC to exit.

5.4.4. Reference Settings

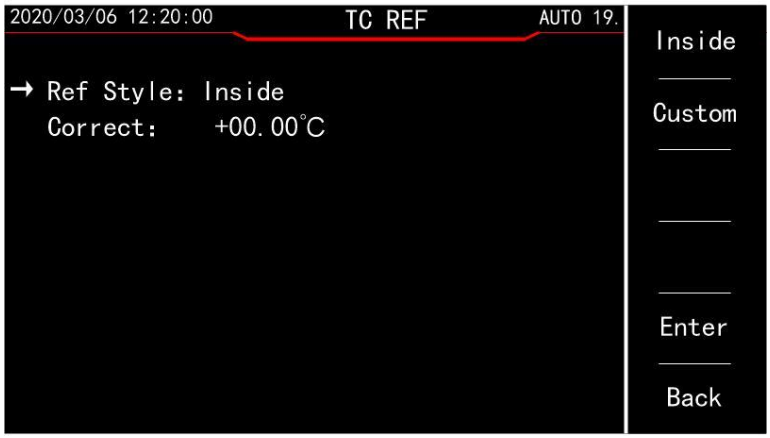


Fig 5-18 System Settings- Reference Setting

Press ↑ or ↓ to move the arrow on the left screen. When the arrow points to Reference Settings, press ← and → to set the reference terminal mode to built-in or custom. When the arrow points to "Correct", you can enter the modified value in the built-in mode of the reference terminal or the customized value in the customized mode of the reference terminal through the numerical key.

There are two kinds of settings in TC reference terminal: Built-in and Custom. When its in built-in, there is the correction value to correct the temperature value of built-in 18B20. When its in custom, can input a setting value as temperature value of TC reference terminal.

5.5. Record Interface

In numerical interface, curve interface, columnar interface, Press F5 to enter into the Record interface, see as followed.

In record interface, users can select the items “Warning”,“Record”,“CVS” by direction key and press ENTER to enter the item selected.

Fig 5-19 Record Interface

5.5.1. Warning Record Interface

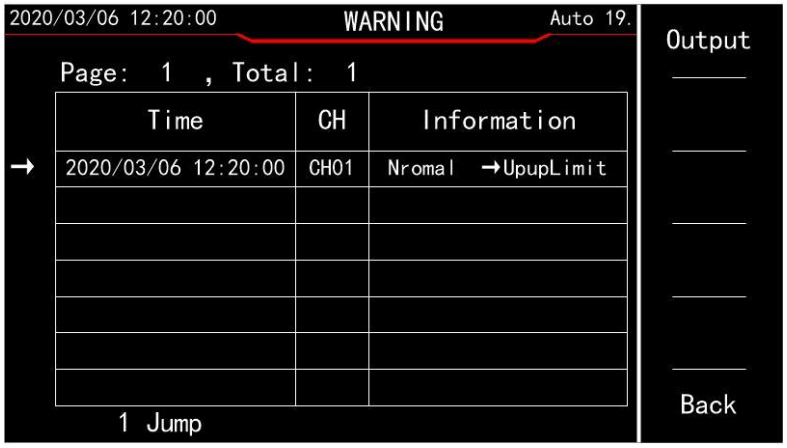


Fig 5-20 Warning Information Browsing Information

When the arrow appoints to “Warning”,press ENTER to browse the related information about the warning record.

Press F1 in this interface to delete and export its warning record.

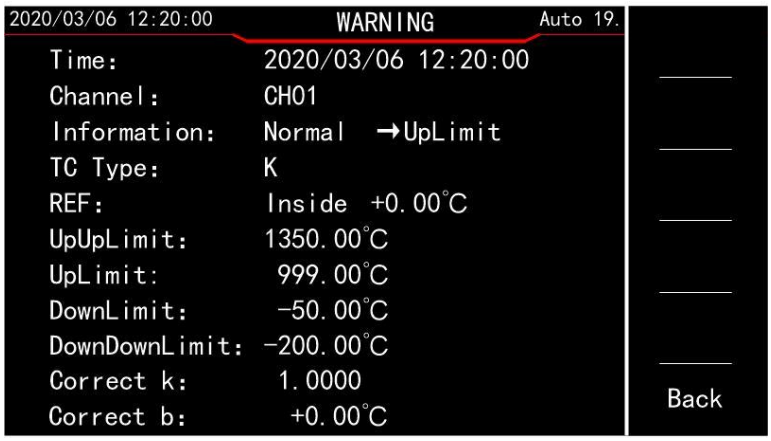


Fig 5-21Waring Information Detail Interface

Fig5-22 Warning Record Management Interface

5.5.2. History Record Interface

On the history interface, select year, month, and date, and enter the time setting interface of the history curve. On this interface, you can see the start time and end time of the selected date. After setting start time and display range of history curve, make the arrow points to "load curve by direction key , and press ENTER, then it will show the history curve. History curve interface support only Y operation, does not support the X-axis scaling, moving, need to adjust the time axis, return to the time setting screen of historical curves and reset the start time and display range of curves.

On the history record interface, press F1 to ENTER the history data management page. After a time period is set,move the arrow to" Export History", and press ENTER to export history data (usb flash drive is required). The exported data is binary data, which needs to be analyzed by the upper computer to browse the data.

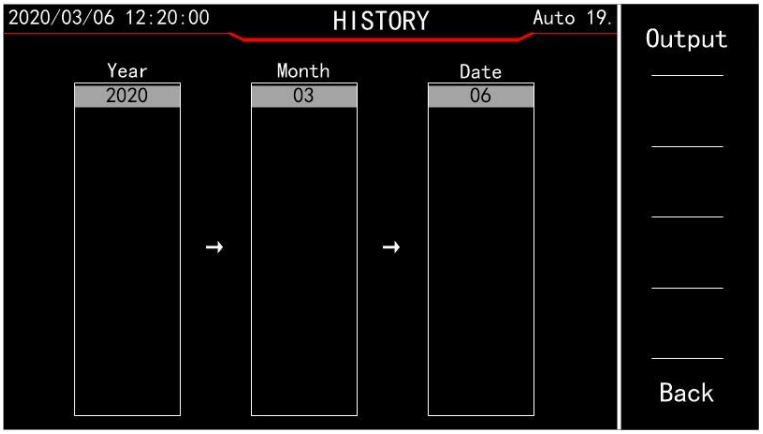


Fig 5-23History Record Interface

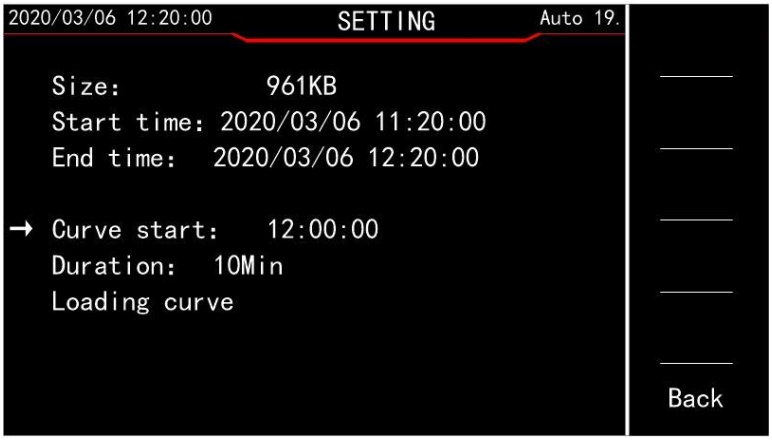


Fig 5-24 History Curve Time Setting Interface

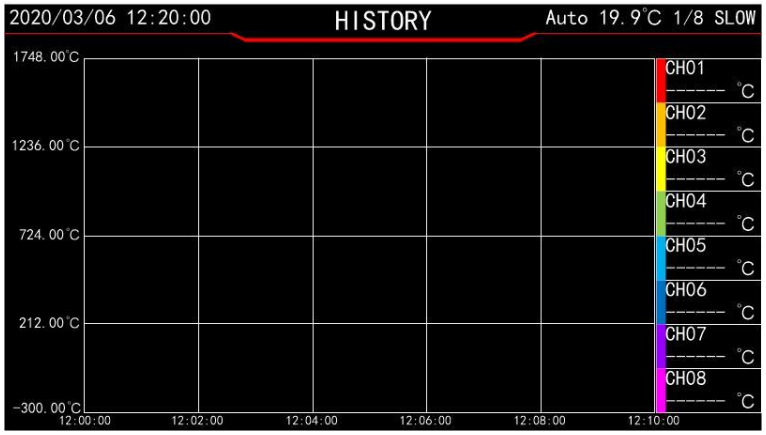


Fig 5-25 History Curve Interface

Fig 5-26 History Record Export Interface

5.5.3. CSV Record Interface

On the CSV record interface, when the arrow points to the file name, press ENTER to enter into the CSV file management interface, on which you can delete or export. CSV files.

On the CSV record interface, press F1 to enter the interface for creating a new CSV file. On this interface, the file name is automatically generated based on the year, month, day, hour, minute, second and cannot be modified. You can set the record saving interval. After setting, move the arrow keys to point to "New File" and press ENTER to start recording data, then press F2 to stop recording data. CSV file. The records of the file cannot be started again after stopping.

The CSV record interface supports to record a maximum of 50 .CSV files. If the records meet

upper limit, users can delete unnecessary or exported .csv files to creat new files.

The exported .csv files can be opened in excel to browse the record information directly.

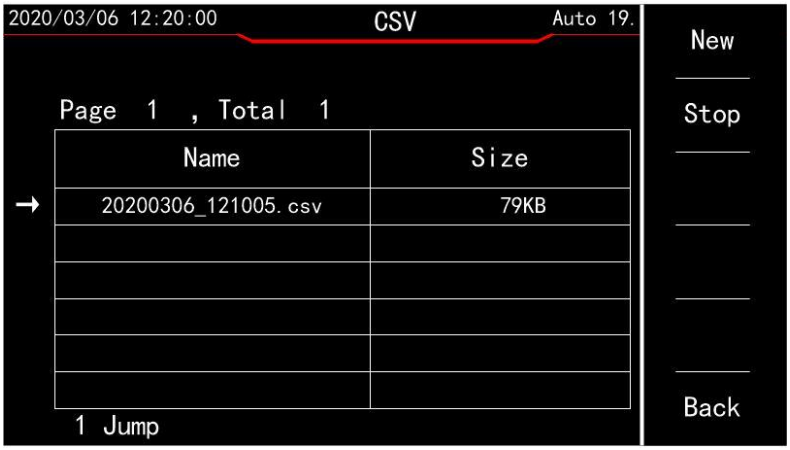


Fig 5-27 CSV Record Interface

Fig 5-28 CSV Record Creation Interface

Fig 5-29 CSV Record Interface+Record Save Status

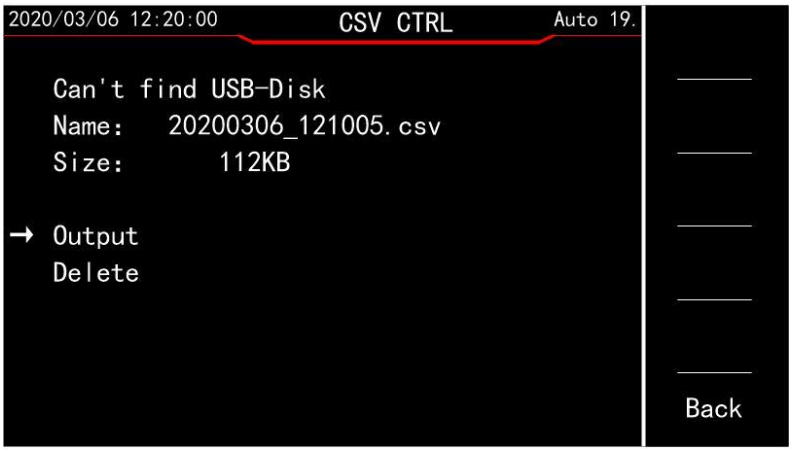
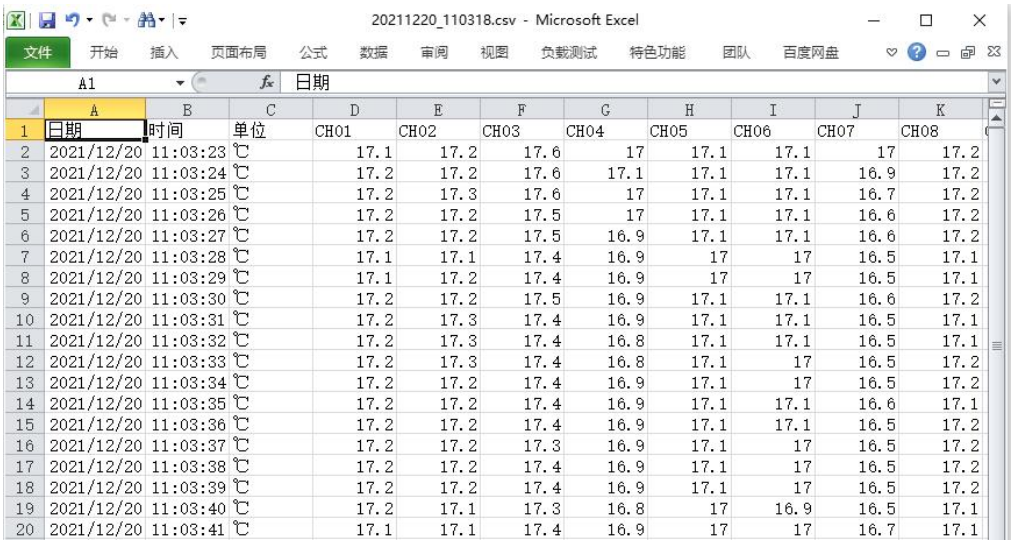


Fig 5-30 CSV Record Management Interface



	A	B	C	D	E	F	G	H	I	J	K
1	日期	时间	单位	CH01	CH02	CH03	CH04	CH05	CH06	CH07	CH08
2	2021/12/20	11:03:23	℃	17.1	17.2	17.6	17	17.1	17.1	17	17.2
3	2021/12/20	11:03:24	℃	17.2	17.2	17.6	17.1	17.1	17.1	16.9	17.2
4	2021/12/20	11:03:25	℃	17.2	17.3	17.6	17	17.1	17.1	16.7	17.2
5	2021/12/20	11:03:26	℃	17.2	17.2	17.5	17	17.1	17.1	16.6	17.2
6	2021/12/20	11:03:27	℃	17.2	17.2	17.5	16.9	17.1	17.1	16.6	17.2
7	2021/12/20	11:03:28	℃	17.1	17.1	17.4	16.9	17	17	16.5	17.1
8	2021/12/20	11:03:29	℃	17.1	17.2	17.4	16.9	17	17	16.5	17.1
9	2021/12/20	11:03:30	℃	17.2	17.2	17.5	16.9	17.1	17.1	16.6	17.2
10	2021/12/20	11:03:31	℃	17.2	17.3	17.4	16.9	17.1	17.1	16.5	17.1
11	2021/12/20	11:03:32	℃	17.2	17.3	17.4	16.8	17.1	17.1	16.5	17.1
12	2021/12/20	11:03:33	℃	17.2	17.3	17.4	16.8	17.1	17	16.5	17.2
13	2021/12/20	11:03:34	℃	17.2	17.2	17.4	16.9	17.1	17	16.5	17.2
14	2021/12/20	11:03:35	℃	17.2	17.2	17.4	16.9	17.1	17.1	16.6	17.1
15	2021/12/20	11:03:36	℃	17.2	17.2	17.4	16.9	17.1	17.1	16.5	17.2
16	2021/12/20	11:03:37	℃	17.2	17.2	17.3	16.9	17.1	17	16.5	17.2
17	2021/12/20	11:03:38	℃	17.2	17.2	17.4	16.9	17.1	17	16.5	17.2
18	2021/12/20	11:03:39	℃	17.2	17.2	17.4	16.9	17.1	17	16.5	17.2
19	2021/12/20	11:03:40	℃	17.2	17.1	17.3	16.8	17	16.9	16.5	17.1
20	2021/12/20	11:03:41	℃	17.1	17.1	17.4	16.9	17	17	16.7	17.1

Fig 5-31 CSV files in excel

六、 SCPI and Software

Please contact manufacturer for SCPI and Software if necessary.

七、 Notes and warranty

7.1. Packaging

The measuring instrument with its accessories, components, instruction, and production qualification certification should be placed in the plastic bag and stored in the solid box against dust, vibration and moisture.

7.2. Transport

Handle the measuring instrument with care during transport. Keep it away from moisture and rain.

7.3. Storage

The measuring instrument should be stored in a ventilated room with a temperature of -10°C ~ 50°C and a relative humidity of 15% to 85%. There should be no harmful impurities in the air to corrode the instrument.

7.4. Warranty

The maintenance of the instrument should be conducted qualified by technicians; please do not

replace the internal components of each instrument during maintenance; after the maintenance, the instrument needs recalibration, so as not to affect test accuracy. The user shall undertake the maintenance fees for the damage not within the scope of warranty which is caused by the arbitrary maintenance by the user or the replacement of the components.