

UNI-T®

UT3200 Series Benchtop Thermometer



Preface

Thank you for purchasing this brand new product. In order to use this product safely and correctly, please read this manual thoroughly, especially the safety notes.

After reading this manual, it is recommended to keep the manual at an easily accessible place, preferably close to the device, for future reference.

Copyright Information

UNI-T is the registered trademark of Uni-Trend Technology (China) Co., Ltd.

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UNI-T products are protected by patent rights in China and other countries, including obtained patents and pending patents. The company reserves the right to change the product specifications and prices.

Limited Warranty and Liability

Uni-Trend guarantees that the product is free from any defect in material and workmanship within three years from the purchase date. This warranty does not apply to damages caused by accident, negligence, misuse, modification, contamination or improper handling. The dealer shall not be entitled to give any other warranty on behalf of Uni-Trend. If you need warranty service within the warranty period, please contact your seller directly.

Uni-Trend will not be responsible for any special, indirect, incidental or subsequent damage or loss caused by using this device.

Safety Instructions

Disclaimer: Please read safety instruction carefully, UNI-T shall not be liable for any loss of personal safety or property caused by users' failure to comply with the following terms and conditions.

- Connect the power ground wire correctly to avoid of electric shock.
- Do not open Instrument cover. It may have charge didn't run out after turn off. There is a potential danger of electric shock.
- Do not use Instrument in wrong situation.

	WARNING: Do not add DC voltage of more than 350V or AC voltage of more than 220V to the test end, otherwise the Instrument will be damaged.
	Environment-friendly use period (EFUP): The period during which the hazardous substances do not leak or mutate under normal use. The Instrument EFUP is 40 year. It should be recycle when time
	Waste Electrical & Electronic Equipment (WEEE): Directive 2002/96/EC

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1. PRODUCT INTRODUCTION

- Product series
- Specifications and functions
- Instrument accuracy
- Front-panel and back-panel

1.1 Product series

UT3200 Series Benchtop Thermometer have four models: UT3208, UT3216, UT3224, and UT3232. The four models correspond to number of 8, 16, 24 and 32 thermocouple test channels. User can purchase temperature tester according to their needs.

Model	Number of Channels
UT3208	8
UT3216	16
UT3224	24
UT3232	32

4.3 inch LCD display, support J, K, T, E, S, N, B, R thermocouple input, collect multi-channel temperature data at the same time. It will display data in numerical reading, histogram and curve figure. Data can record on the USB memory. Instrument has the over high and low temperature alarm and communication transmission function. Its great performance, easy operation can satisfy production, laboratory and research requirements.

Instrument has RS232 interface to connect computer to collect, analysis and print data. It support USB real-time storage. User can amend each channel values independently. UT3200 Series Benchtop Thermometer can widely use in the fields of lighting appliances, electric tools, household appliances, electric motors, electric heating appliances, medicine, petroleum, chemical metallurgy, electric power industry, factory production, laboratory, quality inspection and scientific research department.

1.2 Specifications and functions

Specifications	Functions
Display	Numerical reading
	Curve figure
	Histogram figure
Test	Thermocouple input: J, K, T, E, S, N, B, R
	Testing range: -200.0°C-1800.0°C (different model)
	Resolution ratio: 0.1°C
	Number of channel: 8-32 (different model)
	Speed: fast, slow
Major functions	Sorting: each channel can set upper and lower limits
	Beep: high/low temperature
	Correction: amend each channel values independently
	Lock button
	Print Screen
Storage	FAT(File Allocation Table): allow to create format .csv document, every channel data can save into USB (Hard drives are not supported)
Interface & Protocol	RS232 communication interface
	USB communication interface
	Compatible with SCPI instruction set
Remote control	Support up to 115200bps baud rate, compatible with SCPI protocol, ASCII transport
System config	Chinese, English switch
	Date, time, button sound
	Administrator / User account, Administrator can set the password
Environmental temperature	Indicator: temperature 15°C-35°C humidity < 80%RH
	Operation: temperature 10°C-40°C humidity 10-90%RH
	Storage: temperature 0°C-50°C humidity 10-90%RH
Size	L340mm × W214mm × H89mm
Weight	3.5kg (net weight)

1.3 Instrument accuracy

Instrument accuracy does not include standard contact compensation accuracy. Standard contact compensation adds ± 0.5 °C to the thermocouple accuracy of measuring temperature. The measurement accuracy of thermocouple sensors should be based on the sensor manufacturer's standard.

Sensor Model	Temperature (°C)	Accuracy (°C)
T thermocouple	-150°C-0°C	±1.0°C
	0°C-400°C	±0.8°C
K thermocouple	-100°C-0°C	±1.2°C
	0°C-1350°C	±0.8°C
J thermocouple	-100°C-0°C	±1.0°C
	0°C-1200°C	±0.7°C
N thermocouple	-100°C-0°C	±1.5°C
	0°C-1300°C	±0.9°C
E thermocouple	-100°C-0°C	±0.9°C
	0°C-850°C	±0.7°C
S thermocouple	0°C-100°C	±4.5°C
	100°C-300°C	±3.0°C
	300°C-1750°C	±2.2°C
R thermocouple	0°C-100°C	±4.5°C
	100°C-300°C	±3.0°C
	300°C-1750°C	±2.2°C
B thermocouple	600°C-800°C	±5.5°C
	800°C-1000°C	±3.8°C
	1000°C-800°C	±2.5°C

1.4 Front Cover

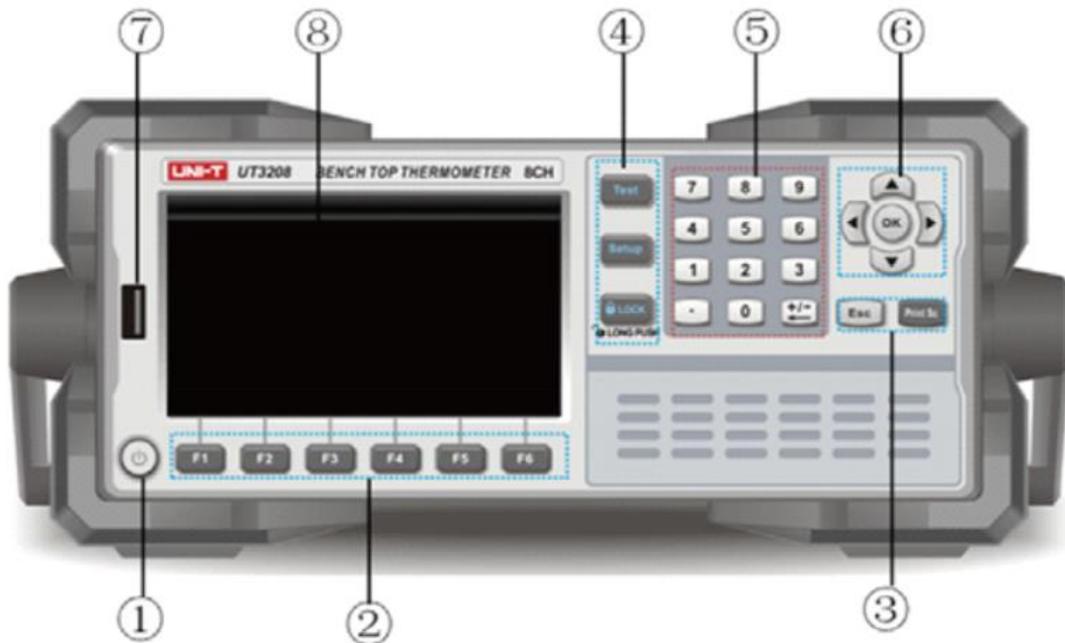


Figure 1-4-1 UT3208 as example

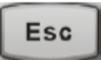
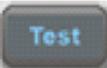
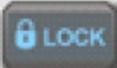
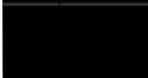
Number	Button	Description
①		On/Off button: turn on is yellow color. Turn off is red color
②		Function button F1-F6
③		Cancel / Return
		Screenshot can store in USB
④		Test button is display measurement result
		Setup button is used for set measurement parameters
		When press LOCK button others can't work. Long press 1 second to unlock
⑤		Number button to input numbers and values add, subtract and delete button.
⑥		Cursor button is used for move up, down, left, right
		Enter button is used for confirm
⑦		USB interface
⑧		4.3 inch LCD display

Figure 1-4-1 Function

Symbol	Description
	Save data and screenshot
	Alarm reminder
COMP	Comparator function
	Lock model
°C, K, °F	Temperature UNIT
	Collecting data

Figure 1-4-2 Symbol

1.5 Back front

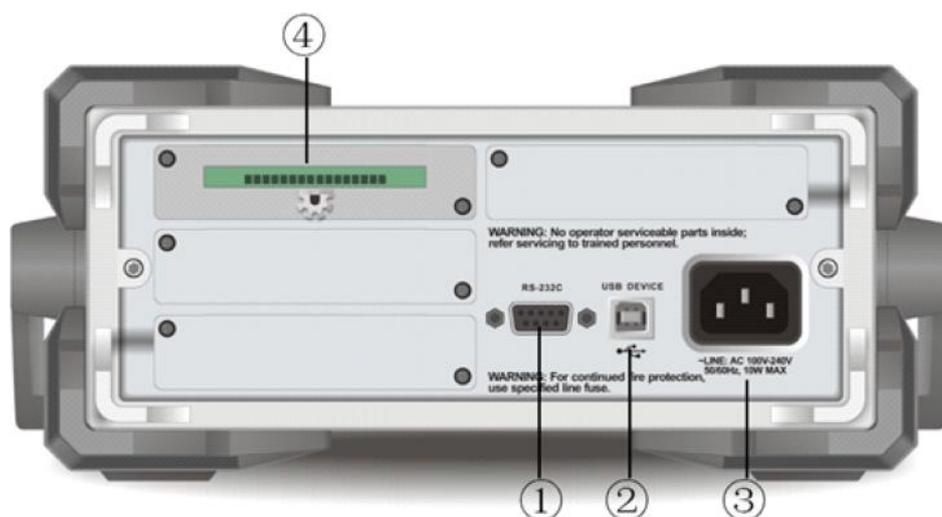


Figure 1-5-1 Back front UT3208 as example

Number	Description
①	RS232 interface
②	USB interface
③	AC power socket (without fuses, the fuses installed in Instrument interior)
④	A set of data acquisition modules (UT3208) UT3216/24/32 are equipped with 2/3/4 test modules

2. INSTALLATION AND SETUP

- Packing list
- The power supply requirements
- Operation environment
- Cleaning
- Instrument lift handle

2.1 Packing list

Please check pack list before use Instrument

1. Check the appearance if there is any damage, scratch and other adverse phenomena
2. Check Instrument packing list if there is something missing

Parts	Quantity	Notes
Instrument	1	
Power cord	1	Use only a specified power cord which is authorized in the country of use
8G USB	1	
8-channel temperature test module	x /set	temperature test module is equipped with Instrument model. UT3208/16/24/32 are equipped with 1/2/3/4 test modules
USB communication cable	1	
Channel identification sticker	1	
Certificate and warranty license	1	
Manual	1	Electronic file, download from official website

2.2 The power supply requirements

UT3200 Series Benchtop Thermometer can only use in 100-240VAC, 50/60Hz, 10VA

WARNING: Make sure Instrument connect the power ground wire correctly to avoid of electric shock.

2.3 Operation environment

UT3200 Series Benchtop Thermometer can only use in environment Temperature 10°C-40°C, Humidity 10-90%RH, Altitude 0-2000 meter

2.4 Cleaning

Do not clean Instrument inside

Use a clean cloth to wipe cover

WARNING: Do not use solvent (alcohol or gasoline) to clean Instrument

2.5 Instrument lift handle

Lift handle is adjustable, hold both sides then pull, see Figure as below

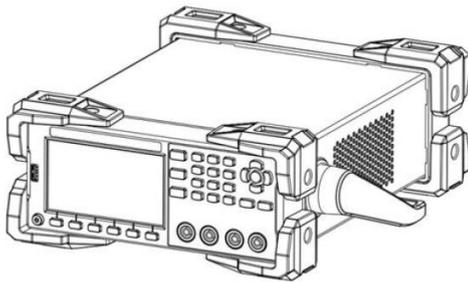


Figure 2-5-1 original position

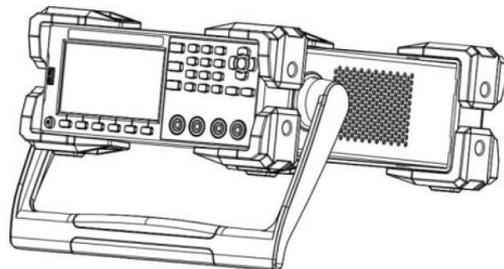


Figure 2-5-2 Test position

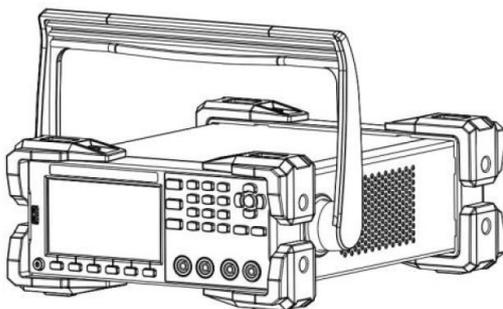


Figure 2-5-3 Undock position

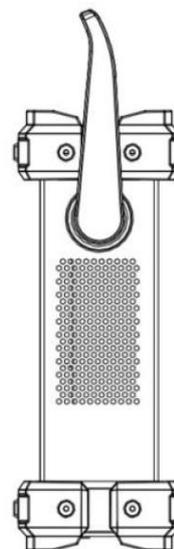


Figure 2-5-4 Lift position

3. TEST PREPARATION

- Plug in
- Test line and installation
- Channel mark
- USB
- Operation guide

3.1 Plug in

Connect standard power line to test Instrument is work on. Turn on on-off button, it will display yellow light. On is yellow color, Off is red color.

WARNING: Make sure power voltage is consistent with the supply voltage, otherwise Instrument will burn out. Do not use patch panel without ground connection.

3.2 Test line and installation

Instrument is equipped with K-type thermocouple test lines, as shown in Figure 3-3-1, each of 8-way temperature test modules contains 8 test lines, which can measure the temperature of 8 channels at most at the same time. The specific model and specifications of each set of test modules are as follows,

- Model and name: UT-T21M 8-way temperature test modules
- Sensor model: K thermocouple
- Length: 2 meter × 8 line
- Temperature range: -100-200°C

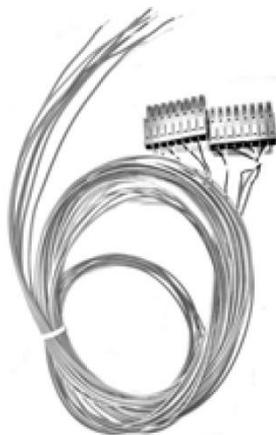


Figure 3-3-1 8-way temperature test modules

WARNING: Make sure test temperature within test line range. UT3208/16/24/32 is equipped with set of 1/2/3/4

Installation step:

Make sure the power of Instrument is turned off. Please set up as follows,

1. As figure 2-6-1 shown, test line interface face up on same level
2. Insert the test lead in the direction indicated by the arrow of Figure 2-6-1
3. Other channel connect steps is the same

WARNING: The isolation voltage between channels is 350V DC and 230V AC

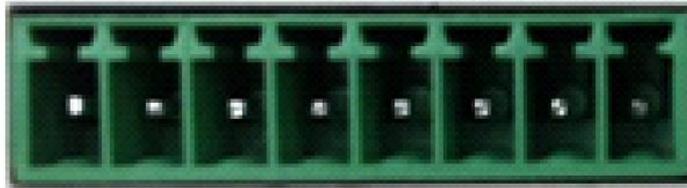


Figure 2-6-1 Instrument data collect port

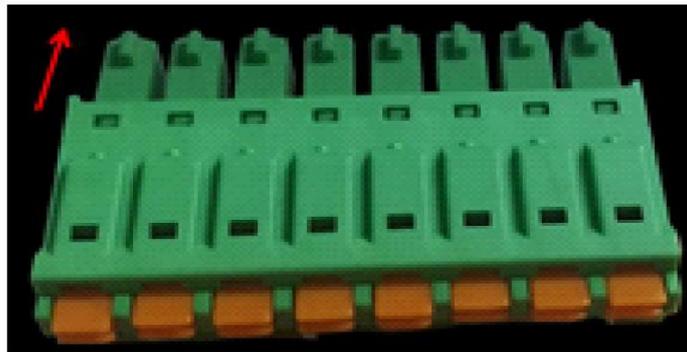


Figure 2-6-2 Test line interface

3.3 Channel mark

Instrument is equipped with paster to distinguish different channels which printed with channel number CH01, CH02 etc. User can past it on different test lines upon their needs.

Figure 3-4-1 Benchtop Thermometer, take UT3232 as an example

Data acquisition module in the first row on the left, from left to right, correspond to CH01 CH02 CH03...CH08 channel

Data acquisition module in the second row on the left, from left to right, correspond to CH09 CH10 CH11...CH16 channel

Data acquisition module in the third row on the left, from left to right, correspond to CH17 CH10 CH19...CH24 channel

Data acquisition module in the first row on the right, from left to right, correspond to CH25 CH26 CH27...CH32 channel

Other model data acquisition module of other Instrument are also sorted in the same way.

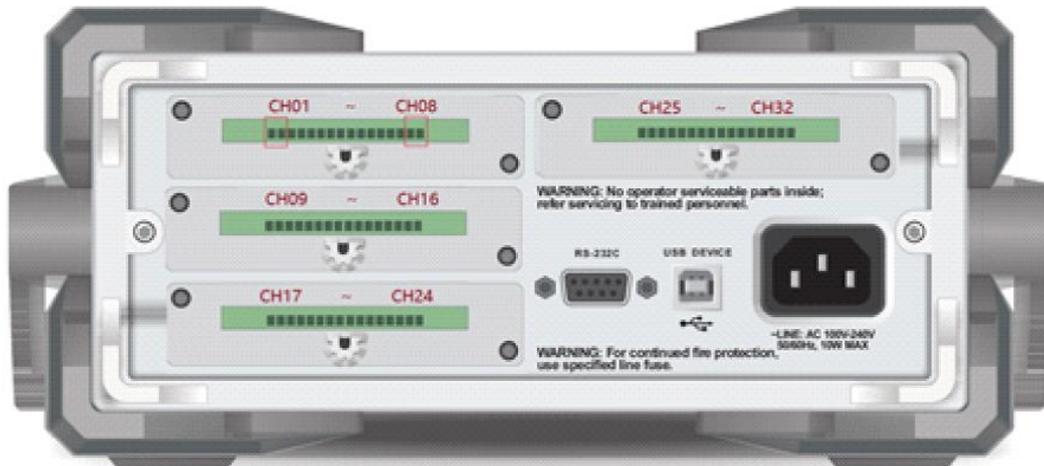


Figure 3-4-1 UT3232

3.4 USB

Instrument is equipped with an 8G USB, USB recording function only use Test, Histogram figure, Curve figure page. Before starting data collection, insert the USB into Instrument interface.

About USB recording function, you can refer to the contents of section 6.1.4-6.1.6

It is recommended to use brand USB to avoid the problem of incompatible identification. The format and capacity of the USB can be referred to FAT, FAT32 and EXFAT, with the maximum capacity of 128G.

3.5 Operation guide

- Connect power correctly
- Turn on Instrument switch, the screen will light up. Check the contact lines of each temperature are connected well. Start to collect data, if the connection is wrong, there is no temperature display on this connection line; if the connection is normal, temperature will display.
- Inter USB into Instrument interface
- Select the test part to fix the temperature connection line layout with glue. The layout must be attached to the test surface to avoid the value precision. You can use the channel identification sticker to distinguish different test lines

- After fix the temperature connection line layout, turn on to start test. Do not move Instrument as testing, it will affect the value precision
- After the test is completed, disconnect the test cable and unplug USB
- Arrange the lines then turn off Instrument

4. TEST

- Numerical reading
- Curve figure
- Histogram figure
- USB recording function
- Print screen

4.1 Numerical reading

Press Test button to enter. If you need to record data, insert the USB into Instrument interface before data collection. There are three way to display measurement result: numerical reading, histogram figure and curve figure.

Numerical reading is the best way to read one or more channel values at some point in time. Press Start button, Instrument will start to collect data. A green flashing cursor at the top of the screen indicates that the data is being collected, test values will show in blue. Press Stop button to terminate data collect. Refer to Figure 4-1-1.

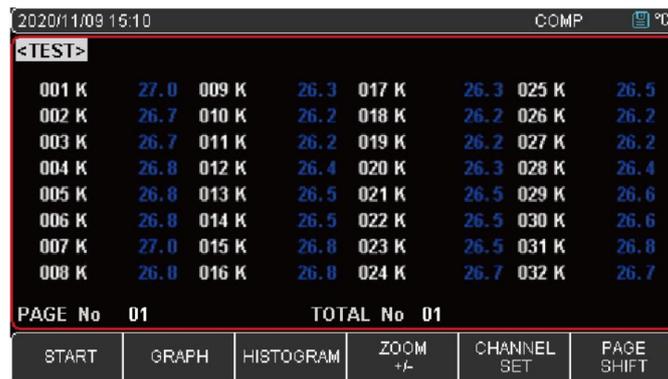


Figure 4-1-1

Turn on/off channel

Turn off specific channel, press direction button ▼, choose 002 K then press Stop, 002 K channel value will be close. 002 K display grey color, test value disappear. See Figure 4-1-2
 Press Start button, test values will return. After setting, press Test button to return to the measurement page.

001 K	27.2
002 K	
003 K	27.1
004 K	28.8
005 K	27.1
006 K	27.1
007 K	26.9
008 K	28.6

Figure 4-1-2

Different font: +/- function button to switch font size. When press function button, 8 channels of data will be added or decreased on the screen accordingly. Users can switch font size depend on their own needs.

4.2 Curve figure

Curve figure is the direct way to read temperature trends. Refer to Figure 4-2-1

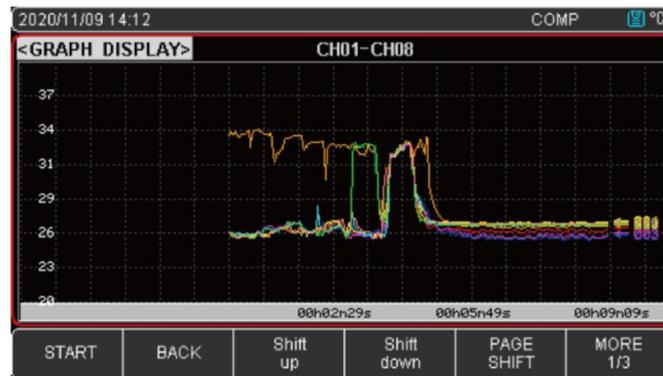


Figure 4-2-1

Figure 4-2-1 is an example of the temperature change with different time of Channel CH01-CH08. The horizontal axis represents time and the vertical axis represents temperature. The vertical axis range is based on the set of high and low temperature. You can evaluate object temperature before test to narrow the range of vertical axis graph.

4.2.1 Curve figure the high and lower limit set up

1. Press Setup button to enter Function page
2. Use the cursor key to the high or lower limit, use the numeric keypad to enter the high and lower limit values and press OK button to confirm. When the temperature display unit is $^{\circ}\text{C}$, the initial default lower to high limit of the instrument is -200°C and 1800°C . If the temperature of the object is between 20°C - 40°C , the lower limit can be set as 20°C and the upper limit as 40°C

- The horizontal axis equal to the time axis, the range can be set between 500ms-2mins. This function is related to the speed. Slow speed and fast speed correspond to different time ratios.

Function Button		Description
Low speed	Fast speed	The horizontal axis equal to the time axis
1s	500ms	The horizontal axis equal to the time axis
2s	1s	The horizontal axis equal to the time axis
5s	2s	The horizontal axis equal to the time axis
10s	5s	The horizontal axis equal to the time axis
20s	10s	The horizontal axis equal to the time axis
30s	20s	The horizontal axis equal to the time axis
1min	30s	The horizontal axis equal to the time axis
2min	1min	The horizontal axis equal to the time axis

- Press Test button, then press Function button to enter curve figure page. Press Start, Instrument will start to collect data and record the curve of temperature change.

4.2.2 Curve figure set up

Function Button	Description
Stop	Stop data collect
Return	Return to test value page
Up	The curve goes up in parallel
Down	The curve goes down in parallel
Switch	The original page is display 8 channel, use Switch button to enter other channel page
X axis shift to the left	To read the curve of the next time point
X axis shift to the right	To read the curve of the last time point
Y axis zoom in	Zoom in the curve of temperature range
Y axis zoom out	Zoom out the curve of temperature range
X axis zoom in	Zoom in time axis
X axis zoom out	Zoom out time axis
Trace	X axis will not update, automatically, use Trace enter to refresh data
Reset	Restore the initial Settings.

4.3 Histogram figure

Histogram figure is used to read the temperature of the same group of data or you can set specific channel temperature to read the current value. The following is a detailed introduction of the two display methods:

4.3.1 Automatic mode

Automatic mode is the comparison of temperature values of 8 channels on the same set of test modules. Instrument factory default set is automatic mode.

- 8 channel values $\geq 0^{\circ}\text{C}$;

Percentage of each channel
$$\frac{\text{the measure temperature value}}{\text{the maximum value of the same set of test modules}}$$

- 8 channel values $\leq 0^{\circ}\text{C}$;

Percentage of each channel
$$\frac{\text{the measure temperature value}}{\text{the absolute value of the same set of test modules}}$$

- 8 channel values of positive percentage =
$$\frac{\text{the measure temperature value}}{\text{the maximum value of the same set of test modules}}$$

- 8 channel values of negative percentage =
$$\frac{\text{the measure temperature value}}{\text{the absolute value of the same set of test modules}}$$

Set up

1. Press Setup to enter Function page
2. Move the cursor key to the histogram figure, press Function to enter Automatic mode
3. Press Test to choose histogram figure. Press Start button to collect data and record the histogram change of temperature

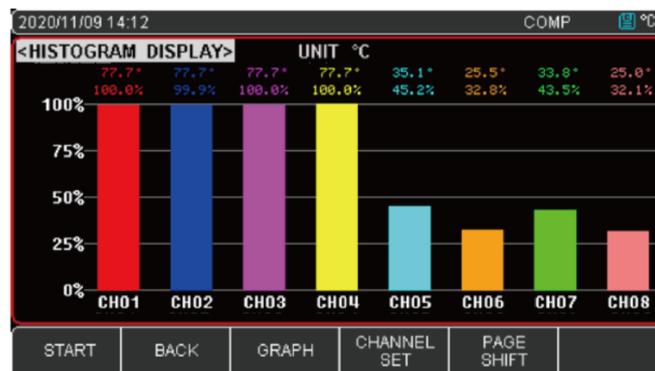


Figure 4-3-1A CH01-08 Histogram figure (Temperature value > 0)

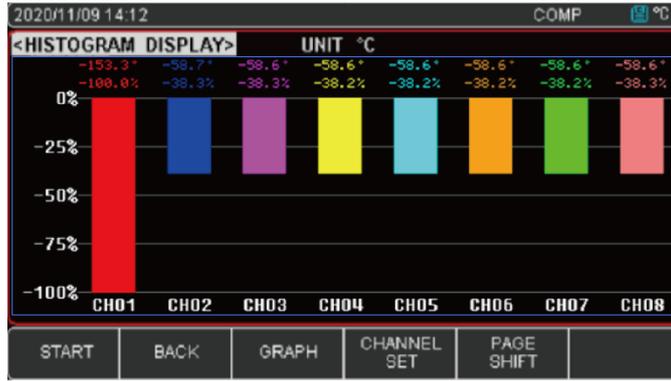


Figure 4-3-1B CH01-08 Histogram figure (Temperature value <0)

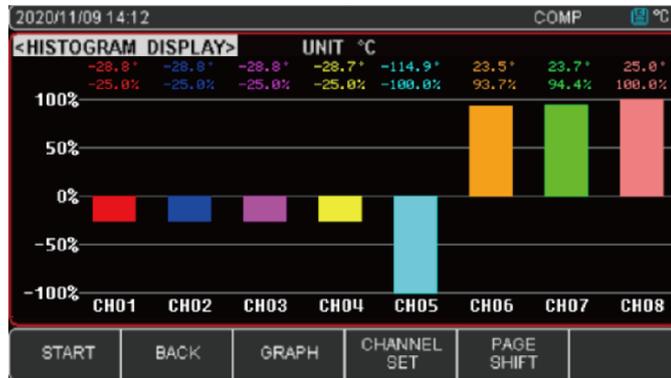


Figure 4-3-1C CH01-08 Histogram figure (Positive and negative temperature)

When the current temperature value over the high limit of the range, it will display



. At this time, the system will judge the channel value as positive value

to divide the column into upward and downward display in this situation. The temperature reading is not displayed in the bar chart and the percentage is invalid as 0.0%. Refer to Figure4-3-1D

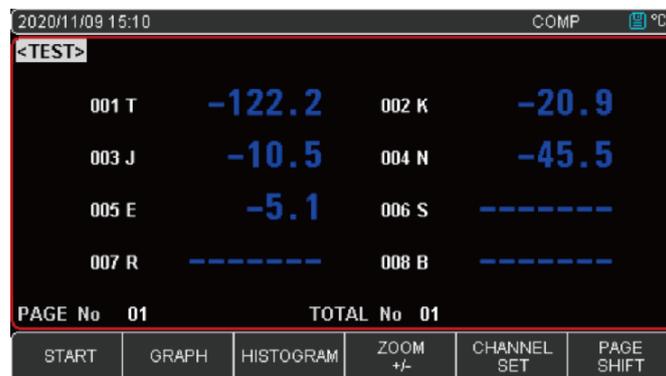


Figure 4-3-1D Out of test range histogram figure value

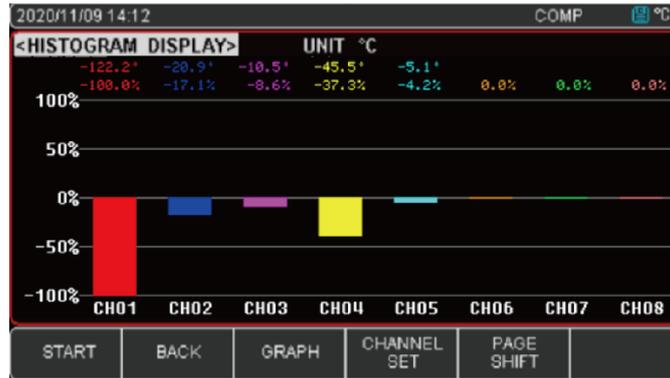


Figure 4-3-1D Out of test range histogram figure value

4.3.2 Manual mode

Manual mode is the specific gravity of the temperature of the current test channel in the set temperature range. If the temperature range is set, this ratio can be used to visually observe the distance exceeding the limit of the measured temperature distance

Percentage of each channel

$$\frac{\text{the measure temperature value} - \text{current temperature of lower limit value}}{\text{current temperature of upper limit value} - \text{current temperature of lower limit value}}$$

Setup steps:

1. Press Setup button to enter Function page
2. Move the cursor key to the histogram figure, use Function button to enter Manual mode
3. Use Function button to enter Channel setting, move the cursor to set the upper and lower limit temperature of a specific channel, use the numeric key enter the upper and lower limit value then press OK to confirm
4. Press Test button to choose histogram figure. Press Start button to collect data and record the histogram change of temperature

4.4 USB recording function

USB recording only use in Test, Histogram figure, Curve figure page. USB recording time is based on Instrument internal clock. When Instrument time stop work, it will affect data recording. When Instrument clock does not work, the battery should be changed. It is recommended to return to the factory for replacement.

Data includes two parts: Instrument information (file name, product model, product software version and number of product channel); corresponding channel temperature (temperature unit, time, channel type, and each channel test value) Example: file path UT3232/ 2019-08-13/UNIT 10001.csv

The data format is floating point, split by“,”

FILE NAME	UNIT10001.csv	Multi-channel Temp. Meter								
IDN	UT3232	REV A1.10	UT3232019	4						
TRIGGER TIME	2019/8/21 9:16									
CHANNELS	32									
UNIT	°C									
			TC-K	TC-K	TC-K	TC-K	TC-K	TC-K	TC-K	TC-K
NO.		DATE TIME	CH01	CH02	CH03	CH04	CH05	CH06	CH07	CH08
0		2019/8/21 9:16	24.8	25.4	25.3	25.1	24.7	25	25.2	25.2
1		2019/8/21 9:16	25.1	25.4	25.4	25.1	24.7	25	25.1	25.2
2		2019/8/21 9:16	24.9	25.4	25.4	25.1	24.6	25	25.1	25.2
3		2019/8/21 9:16	24.9	25.4	25.4	25.1	24.6	24.9	25.2	25.2
4		2019/8/21 9:16	24.9	25.4	25.4	25.1	24.6	25	25.1	25.1
5		2019/8/21 9:16	24.8	25.3	25.3	25.1	24.6	24.9	25.1	25.1
6		2019/8/21 9:16	24.8	25.3	25.3	25.1	24.6	24.9	25.1	25.1
7		2019/8/21 9:16	24.9	25.3	25.3	25.1	24.6	25	25.1	25.1
8		2019/8/21 9:16	24.9	25.3	25.3	25.1	24.6	25	25.1	25.1
9		2019/8/21 9:16	24.9	25.3	25.3	25.1	24.6	25	25.1	25.1

4.5 Print screen

Insert USB, use “Print Sc” to screenshot. During data collect, “Print Sc” cannot be use. You need to stop data collection before use ““Print Sc” to screenshot test value or histogram figure. Screenshot image will stored in USB drive file  Screen automatically.

5. TEMPERATURE ALAR

Set the temperature limit of each channel, when test temperature over the set limit temperature, Instrument will display alarm.

5.1 Comparator set up

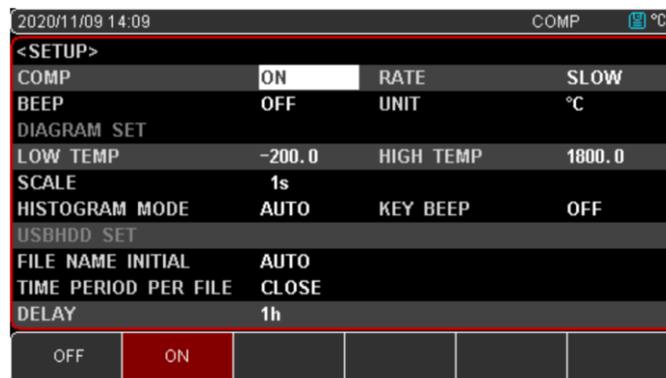


Figure 5-1-1 Comparator

Open comparator steps:

1. Press Setup enter Function page
2. Move the cursor key to the high and lower limit temperature of specific channel. Choose start to open comparator, screen will display COMP
3. Move the cursor key to turn on/off audible alarm, when test value exceed comparator range, audible alarm will alert you
4. User can also set the corresponding sampling rate or temperature unit according to their needs. Specific setting steps can refer to the section on Functional Settings

5.2 Channel setting

Open comparator to set the high and lower temperature limit. Refer to Figure 5-2-1



Figure 5-2-1

Steps:

1. Through Function page or Test page to enter Channel Setting
2. Move the cursor key to the upper and lower limit temperature of specific channel, use the numeric key enter the upper and lower limit value then press OK to confirm. See Figure 5-2-1
3. User can use Function button to make set according to their needs

Function	Description
Rest	The upper limit of the current channel return to the factory setting
One key setting	Set the upper limit of other channel as same as current channel

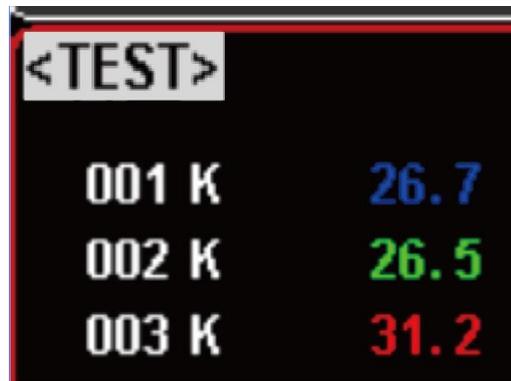
4. The steps for setting up other channels are the same as above
5. Tc model setting is for other temperature connection line replacement for each channel sensor. User can set refer to the following table information to make set

Function	Description
TC-K	K thermocouple
TC-T	T thermocouple
TC-J	J thermocouple

TC-N	N thermocouple
TC-E	E thermocouple
TC-S	S thermocouple
TC-R	R thermocouple
TC-B	B thermocouple
One key setting	Set other channel sensor as same as current channel sensor

5.3 High or lower limit indication

The comparator is open and the upper and lower limits settled, press Test enter measure page



- Test value within the upper and lower limits range, test result is blue font.
- Test value exceed the upper limit, test result is red font
- Test value under the lower limit, test result is green font

When comparator function turn on, alarm bell will alert you if the test result is not at the upper and lower limit range. Return Setup page to turn off Beep function.

Attention: The sorting results are only display on Test page

6. SETUP

- Setup page
- Channel set page (refer to Section 5.2)
- Guest cal

6.1 Setup page

Press Setup is short way to enter Setup page. This page can complete all the set of Test function, including

- Comparator
- Beep
- Curve figure of low temperature
- Curve figure of high temperature
- Scale - Curve figure timeline
- Histogram mode
- Key beep
- Rate
- Unit
- File name initial
- Time period per file
- Delay – record time interval

2020/11/10 13:49 °C			
<SETUP>			
COMP	OFF	RATE	SLOW
BEEP	OFF	UNIT	°C
DIAGRAM SET			
LOW TEMP	-200.0	HIGH TEMP	1800.0
SCALE	1s		
HISTOGRAM MODE	AUTO	KEY BEEP	OFF
USBHDD SET			
FILE NAME INITIAL	AUTO		
TIME PERIOD PER FILE	CLOSE		
DELAY	1h		
CHANNEL SET	GUEST CAL	SYSTEM CONFIG	FILE

Figure 6-1-1 Setup page

6.1.1 RATE

Press Setup to enter Setup page, move the cursor key to RATE then use Function button to choose slow or fast

Function button	Description
SLOW	collecting period 1s
FASR	collecting period 0.5s

6.1.2 UNIT

Press Setup to enter Setup page, move the cursor key to UNIT then use Function button to choose

Function button	Description
°C	degrees Celsius
K	Kelvin degrees
°F	degrees Fahrenheit

6.1.3 KEY BEEP

Press Setup to enter Setup page, move the cursor key to KEY BEEP then use Function button to choose

Function button	Description
ON	Turn on
OFF	Turn off

6.1.4 USB - File name initial

1. Press Setup enter Setup page
2. Move the cursor key to FILE NAME INITIAL
3. Use Function button to enter file name, create new file prefix. Example enter file name "UNIT", actual file name is " UNIT0001.csv"

6.1.5 USB - TIME PERIOD PER FILE

1. Press Setup enter Setup page
2. Move the cursor key to TIME PERIOD PER FILE

3. Use Function button to choose

Function button	Description
CLOSE	Turn off time period per file function
10mins	After collecting 10 minute, it will create a new file and save it automatically
20mins	After collecting 20 minute, it will create a new file and save it automatically
30mins	After collecting 30 minute, it will create a new file and save it automatically
1h	After collecting 1 hour, it will create a new file and save it automatically

6.1.6 DELAY – record time interval

USB record time interval can set 1s, 5s, 10s, 20s, 1min, 2min, 5min, 10min, 20min, 30min, 1h
Steps:

1. Press Setup enter Setup page
2. Move the cursor key to turn off TIME PERIOD PER FILE
3. Move the cursor key to DELAY then use Function button to set time interval

6.2 Channel set page

This page can set channel's model name, the low and high temperature limit. It is related to 4.3.2 section Histogram mode and 5.2 section Comparator

6.3 GUEST CAL

This page is used to adjust abnormal temperature. User can input actual temperature to amend.

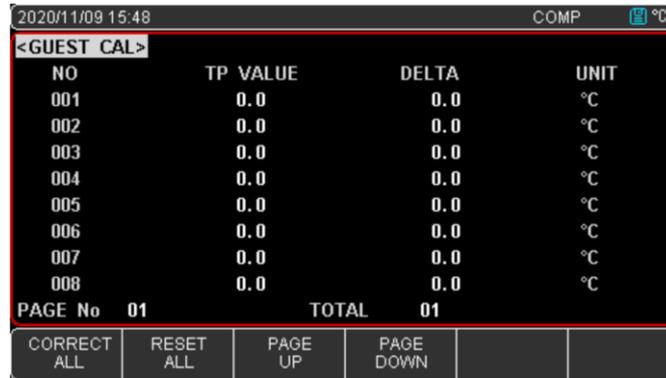


Figure 6-3-1 GUEST CAL page

001 channel as example, press Setup enter Setup page, use Function button to choose GUEST CAL, move the cursor key to [0.0], use Function button to choose

Function button	Description
CORRECT ALL	Enter amendment value, use numeric keyboard to input value then enter OK to confirm
RESET ALL	Delete channel's amendment value

RESET ALL

Press Setup enter Setup page, use Function button to choose GUEST CAL

Function button	Description
YES	Delete all the amendment value
NO	Cancel delete, exit
CANCEL	Cancel delete, exit

Switch to Channel Set page

Press Setup enter Setup page, use Function button to choose GUEST CAL and then to choose PAGE UP or PAGE DOWN to switch page

7. SYSTEM CONFIG

- Language
- Date/Time
- Account
- Com mode
- System information
- System services

7.1 Setup page

Press Setup shortcut to enter Setup page, use Function to choose SYSTEM CONFIG

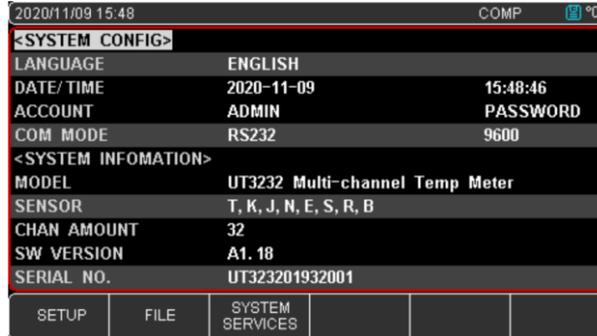


Figure 7-1-1 System config page

7.1.1 LANGUAGE

1. Press Setup shortcut to enter Setup page, use Function button to choose SYSTEM CONFIG
2. Move the cursor key to LANGUAGE
3. Use Function button to choose CHS (Chinese) or ENGLISH

7.1.2 Date/Time

Instrument time is 24 hour

Steps:

1. Press Setup shortcut to enter Setup page, use Function button to choose SYSTEM CONFIG
2. Move the cursor key to choose date or time
3. Use Function button to set date and time

Function button	Description
YEAR INCR+	+ one year
YEAR DECR-	- one year
MONTH INCR+	+ one month
MONTH DECR-	- one month
DAY INCR+	+ one day
DAY DECR-	- one day
Function button	Description
HOUR INCR+	+ one hour
HOUR DECR-	- one hour
MINUTE INCR+	+ one minute
MINUTE DECR-	- one minute
SECOND INCR+	+ one second
SECOND DECR-	- one second

Attention: The clock will stop if the battery is run out. You need to change battery.

7.1.3 ACCOUNT

Two mode can choose

- ADMIN, all function can use except SYSTEM SERVICES
- USER, all function can use except SYSTEM SERVICES and FILE, the data will not save

Set account steps:

1. Press Setup shortcut to enter Setup page, use Function to choose SYSTEM CONFIG
2. Move the cursor key to ACCOUNT
3. Use Function button to set password

Set account password steps:

1. Press Setup shortcut to enter Setup page, use Function to choose SYSTEM CONFIG
2. Move the cursor key to PASSWORD
3. Use Function button to set password

Function button	Description
CHANGE PASSWORD	The password is consists of digits and symbols only, up to 9 digits. If you forget password, you can call UNI-T company's sales department
DELETE PASSWORD	Administrator will not protected by password

7.1.4 Com mode

The Instrument is equipped with Mini-USB interface and RS232 interface. When Instrument sensing interface signal change, it will connect with the host machine as the set of baud rate and the keyboard will be locked. It should confirm the set of baud rate is right to make sure Instrument communication is work correctly. Mini-USB and RS232 are use SCPI language to program, configuration as follow

- Data bits: 8 bits
- Stop bit: 1 bit
- Parity check: no
- Baud rate: configurable

Com mode set steps:

1. Press Setup shortcut to enter Setup page, use Function button to choose SYSTEM CONFIG
2. Move the cursor key to COM MODE
3. Use Function button to choose RS232 or USB
4. Move the cursor key to number filed and then use Function button to choose baud rate

Function button	Description
9600	If you use opto-isolator, please choose 9600 baud rate
19200	
38400	
57600	
115200	If you use computer communicate with Instrument, please choose 115200 high-speed baud rate

7.2 System information

MODEL, SENSOR, CHAN AMOUNT, SW VERSION, SERIAL NO.

7.3 System service

Warning: This function is use to calibration data before out of factory. Non-professionals cannot enter by force. Otherwise the data may lost, resulting in large deviation of measurement data.

8. FILE

8.1 File page

Press Setup shortcut to enter Setup page, use Function button to enter FILE page

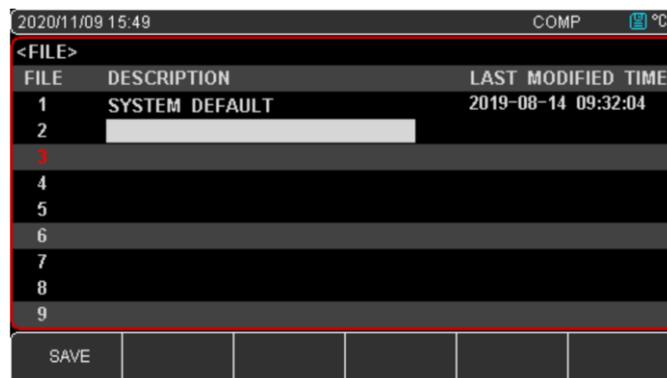


Figure 8-1-1 File

Steps:

1. When Setup, System config and Channel are set up, press FILE button to save the current setting
2. Move the cursor key to specific line, press SAVE button and then use cursor key to enter file name. Example "UNIT" (Figure 8-1-1 for reference)
3. Use Function button to choose SAVE, RECALL, RESET

Function button	Description
SAVE	Save the current setting
RECALL	Recall the saved settings
RESET	Delete settings

9. COM MODE

9.1 RS-232C

You can use UNI-T RS-232 DB-9 serial communication line to connect the RS-232 interface of a controller (such as PC and PLC). The serial port is RS-232 standard TXD (transmit external data) RXD (receive external data) and GND (signal ground) lines. Hardware handshake CTS and RTS lines are not used.

Attention: Only UNI-T DB-9 cable (null modem) can be used. The cable length should not exceed 2 meters.

NAME	DB-25	DB-9	NOTE
DCD	8	1	NC
RXD	3	2	Data sender
TXD	2	3	Data receiver
DTR	20	4	NC
GND	7	5	Ground wire
DSR	6	6	NC
RTS	4	7	NC
CTS	5	8	NC

RS-232 Interface

Figure 9-1 RS-232 Interface and connector

Make sure the controller is connected to the UT3200 series Benchtop Thermometer and use these settings. RS-232 interface for data transmission

- Data bits: 8 bits
- Stop bit: 1 bit
- Parity check: no
- Baud rate: recommend 115200 (refer to 7.1.4 section)

9.2 USB

RS232 interface has been canceled on some newer computers and laptops. You need to use USB interface to communicate. The Instrument is equipped with USB-232 interface, this function is the same as RS232.

Turn on USB function

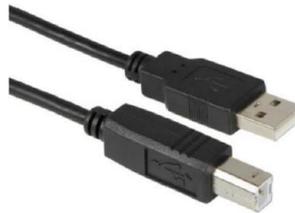
There are two options USB/RS232. If you need use USB interface, enter SYSTEM CONFIG, move the cursor key to COM MODE and then use Function button to choose USB

Install drive on the computer

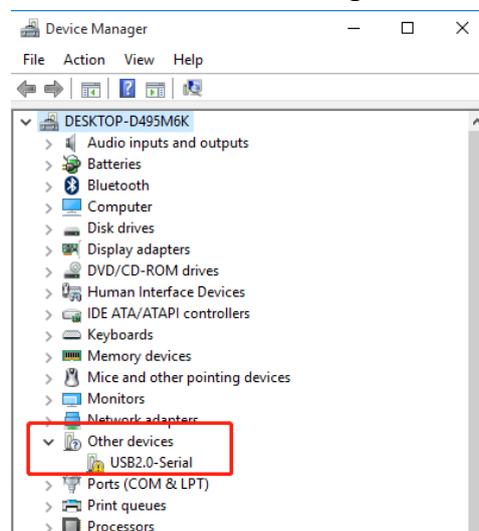
The USB interface needs to install a driver to work.

Install drive steps:

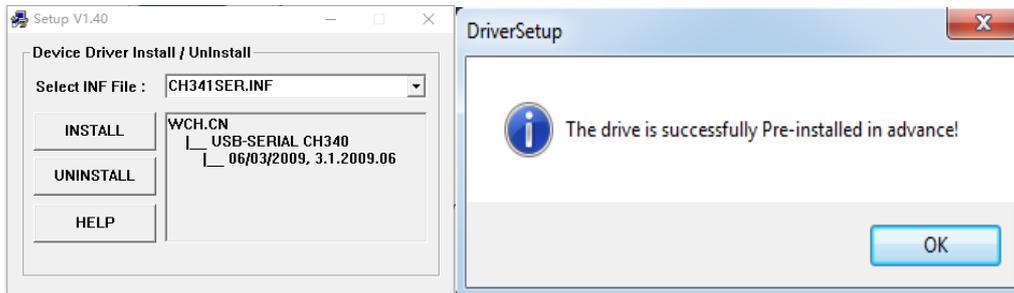
1. Insert USB interface to computer and Instrument



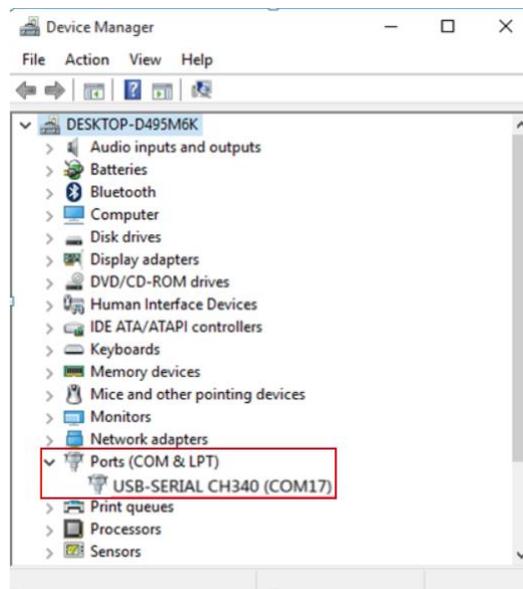
2. It will prompt “other device” in the device manager on the computer



3. Download CH340 drive from UNI-T official website, file name: CH341SER.EXE.
When the installation is complete, it will display “Driver is successfully installed”



4. Open device manager on the computer, record the interface number COM17, it will be used for communication.



9.3 SCPI Language

Instrument interface uses SCPI language, which fully supports the standard command SCPI of programmable instruments.

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