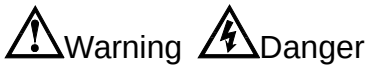
CHT3541X Multi-channel DC Resistance Meter

User Manual

Jun, 2013

Rev1.0.0

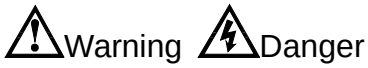
Safety Tips



When the following abnormal situations occur, do stop operating and turn off the power immediately, otherwise, fire and electric shock would be caused. Call your dealer or Hope Electronics representative for help.

- Improper device operation
- Abnormal noise, odors, smoke or flash occurred in operation
- The device produces a high temperature or electric shocks during the operation
- Damage of power cord, power switch or power socket
- Impurities or liquid enter the device

Safety Information



Mishandling during using could result in injury or death, as well as damage to the product. Be certain that you understood the instructions and precautions in the manual before use.

Disclaimer	Before using the product, be sure to carefully read the following safety notes. If users do not observe the following instructions, Hope Electronic Science and Technology will not blame for any of users' loss.
Instrument grounding.	In order to avoid electric shock, please ground the instrument.
Avoid using instrument in the environment with explosive gas	Avoid using the instrument in the environment with explosive gas, vapor or dust environment. Using any electronic instrument in such environment is dangerous.
Do not open the instrument cover	Only authorized service personnel should remove the cover and have internal access to the instrument for repairing. The instrument still has residual charge, which may cause electric shock, after it's shut down in a period of time.

Do not use damaged the instrument	If the instrument has been damaged, the risk will be unpredictable. Please disconnect the power cord and no longer use the instrument. Do not attempt to maintenance the device by yourself.
Do not use unusual instrument work	If the instrument is not working properly, the risk will be unpredictable. Please disconnect the power cord and no longer use the instrument, Do not attempt to maintenance the device by yourself.
Do not exceed the designated use of instrument in manual	Beyond the scope, the protection of instrument provided will be ineffective.

Statement

Table of Content

Limited Security and Responsibility Scope

Hope Electronics Science and Technology Co., Ltd ensure that each HK3563 you purchased is fully qualified in terms of quality and measurement. This guarantee does not include fuses.

Hope Electronics commits that the instrument has no defects in materials and process, such as product quality problems under warranty. If the product is proved to be defective, Hope Electronics will repair or replace it free of charge.

Since the date of delivery, Hope Electronics commits that the product has two years guarantee, while other accessories have one year. Under warranty, any failure of hardware or software of the product will be due to the quality of the product itself. Users provide the product warranty and maintenance card to get free maintenance which provides from the maintenance department or its authorized maintenance agent of Hope Electronics. Any maintenance beyond the warranty period should be at user's own expense.

For free maintenance product, Hope Electronics commits that it would be repaired and returned to customer within five working days on receipt of the equipment unless otherwise specified. Hope Electronics affords the cost of the return transportation.

Any of the following circumstances occurred; Hope Electronics will not repair for free.

1) Accidental damage caused by transportation
2) Improper installation or instrument failure or damage is caused by non-use work environment
3) Artificial damage to the appearance of the products (such as surface scratches, deformation, etc.)
4) Unauthorized repair, alteration, replacement of instrument and product has been tearing up the warranty seal
5) The fault or damage is caused by irresistible factors (such as lightning strikes)
6) Directly or indirectly damage is caused by improper operation of the user

If mismeasurement or immeasurable is caused by the improper operation of the user, but not the problem of the instrument itself, the cost of transit should be paid by user.

Installation and Setup Wizard

Chapter 1	Thank you for purchasing our products. Please read this manual before use, and keep it handy for future reference. In this chapter you will learn the following: ❙ Primary function packing list ❙ Power Requirements ❙ Fuse replacement

	❙ Operating Environment ❙ Cleaning

1.1 Packing List

Before initial use of the product, please carefully check it to ensure that there are no damages occurred during shipping. If there are any damages, call your dealer or Hope Electronics representative.

Table1-1 Instrument accessories

NAME	AMOUNT	REMARK
Instruction manual	1	
Three-core power cord	1	
RS232 cable	1	CHT9800
Test Report	1	
Product Certificate	1	
Warranty Certificate	1	

1.2 Power Requirement

Only be used in the following power conditions:
Voltage: 85-252 V AC
Frequency: 47.2-62.5 Hz
Power: 15VA (max)

	**Danger**: In order to avoid electric shock, please connect the power ground carefully. If you have replaced the power cord, make sure that the power cord grounded.

1.3 Operating Environment

CHT3541X must be used under the following conditions:
Temperature: 0°C~55°C,
Humidity: less than 95%RH at 40 °C

1.4 Clearing

In order to prevent risk of electric shock, please unplug the power cord before washing. Please use a clean cloth moistened with water to wipe the device gently.

Do not clean the equipment internal.

	**Warning:** Do not use solvents (alcohol or gasoline, etc.) to clean the instrument.

Overview

Chapter 2	In this chapter, you will learn the following: l Introduction l Model Description l Main Specifications l Main function

2.1 Introduction

Thank you for purchasing CHT354X!

The CHT3541X is a band new design multi-channel resistance meter with high precision, wide measurement range and compact plug-in card design. The customer can configure a capture card or alarm card according to the different meets. Each test card can scan and test 8 channels resistance. The CHT3541X adopts high performance ARM microprocessor control design. 48 channels of resistance can be indicated simultaneously in the true-color 4.3 inches LCD display and each channel can set the comparator separately.

The CHT3541X provides DC resistance measurement range of 300mΩ~300KΩ, giving a maximum display value of 32000 counts, the fastest speed of 30 meas/sec. Its temperature compensation function can adapt different testing requirements.

The CHT3541X supports MODBUS protocol. Its RS232C and HANDLER interfaces can be used to output GD/NG signal, to improve automatic measurement ability on production line.

CHT3541X has wide application in a variety of high, medium and low value resistors, switch contact resistance, socket contact resistance, relay contact resistance, lead resistance, transformers, inductors, motors, deflection winding resistance riveted metal resistance for cars, ships, planes, PCB line resistance and so on.

2.2 Main Specifications

CHT3541X technical specifications include the basic technical indicators and equipment allowable scope of measurement. These specifications have been achieved before delivery.

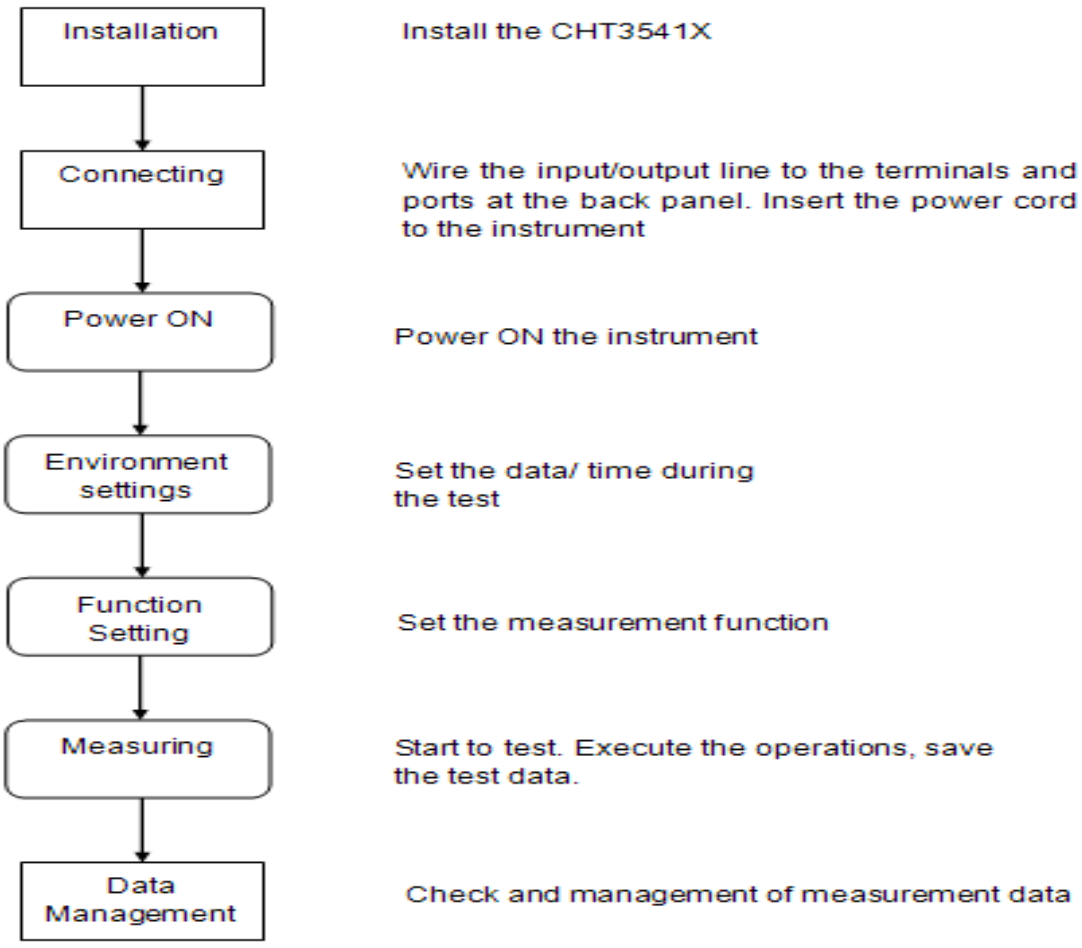
Reference:	The whole technical specifications in Appendix A refer to page 29.

Resistance measurement

- Basic resistance accuracy: 0.05%
- Maximum displayed number: 32,000 count.
- Seven automatically or manually measurement ranges
- Providing range from 10μΩ to 320kΩ
- High speed and high precision test, at the test speed of 30 meas/sec, the meter accuracy keeps the accuracy of 0.1% and maximum readings 32,000 count.
- Four point method measurement
- Temperature test
  Temperature test can be carried out by an external resistor Pt
- Multi trigger
  Internal trigger, manual trigger, external trigger and remote trigger.
- All channels display the measurement results simultaneously

2.3 Basic Operation

When you use the CHT3541X for the first time, please operate it as the following steps:

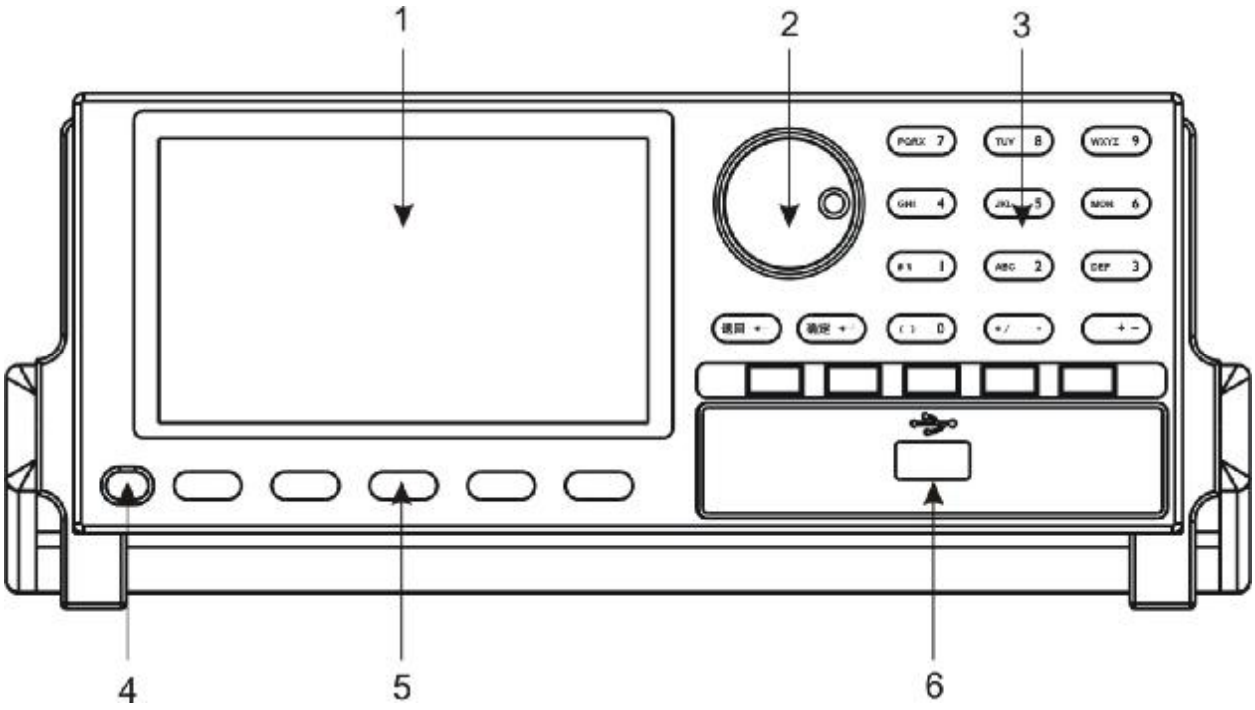


Starting

Chapter 3	In this chapter, you will learn the following: l Front panel introduction: keys, VFD and measurement terminals l Back panel introduction: power source and interface l Instrument handle: teach you how to use the handle l Power to start: including the power on and self-check process, equipment default and warm-up time l Display information: the message encountered on the process of starting and using equipment l Preparation before measurement: how to connect to the measurement terminal, equipment feature set

3.1 Front Panel

3.1.1 Front Panel Description



Picture 3-1 the front panel

1: Display window

Reference:	Details refer to the TFT section.

2: Encoder knob

Used to select values

3: Keypad 2

A group of multi-function keys including the main function keys, the second function keys and numeric keys

Reference:	Details please refer to Section 3.1.2 "key area".

4: Power switch

Press: Open; Pop: customs.

	Warning: Do not fast and continuously switch power, the instantaneous impact current may shorten the equipment life or even damage the equipment.

5: Keypad 1

A group of soft keys. Their function is not fixed but has different function in different display page.

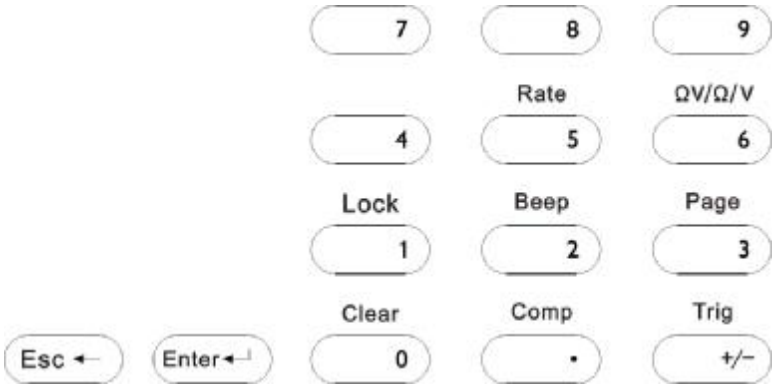
Reference:	Details please refer to Section 3.1.2 "key area".

6: USB port

Used to save measurement data

3.1.2 Key areas

Picture 3-2 Keypad 1



Picture 3-3 Keypad 2

2. Main function keys

Character / numeric keypad: Inputting the character and numbers

***Esc**:* return to the previous menu

Enter: only valid in setting pages
Used to confirm to selected setup

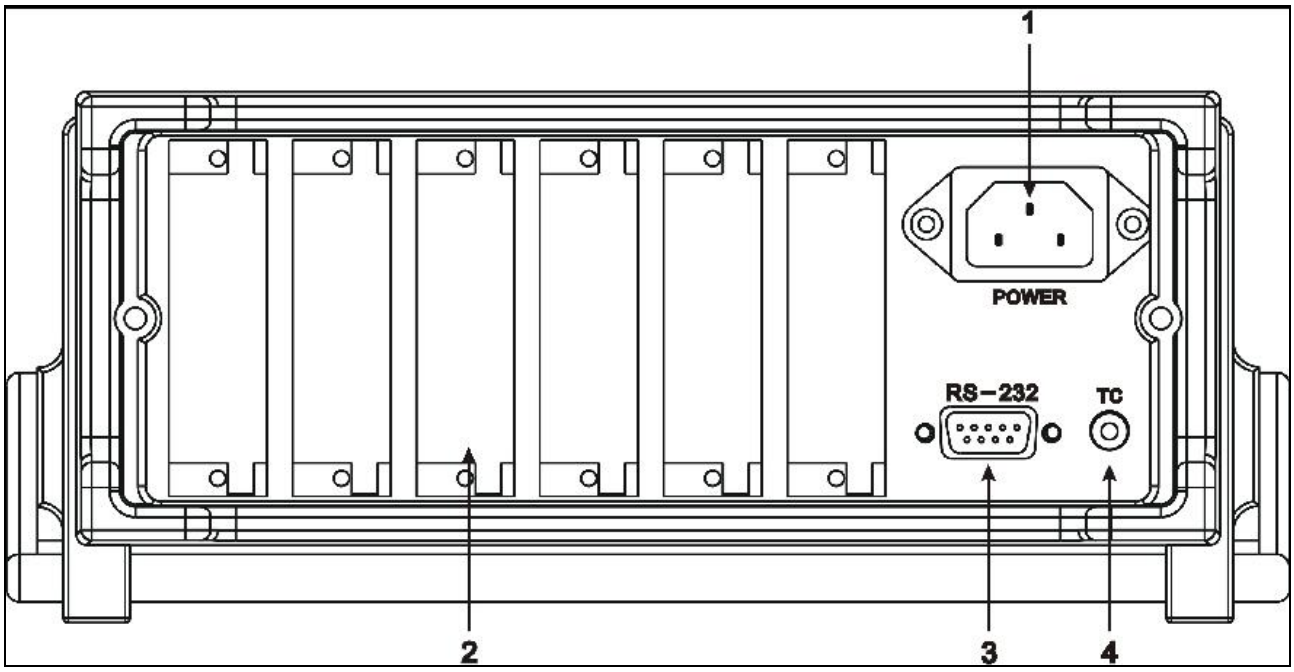
3. Soft key

Note:	The keys in keypad 1 area are soft. Their function is not fixed but has different function in different display page. Their specific function is accordingly displayed on the soft keys area in the LCD.

4. Numeric keypad

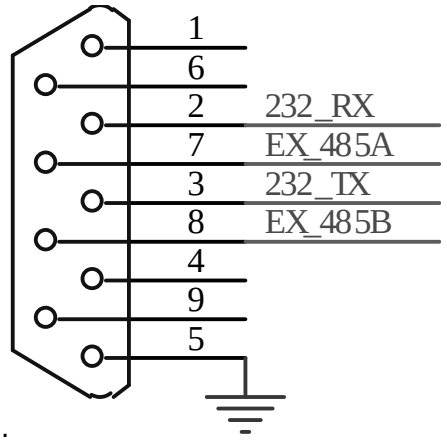
Note:	The white number in keys is the numeric keypad The numeric keypad is used to set the date, time, measurement range, input tag, setup information and password etc.

3.2 Back Panel



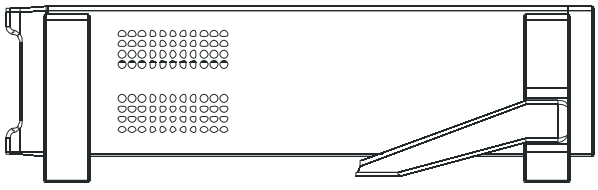
Picture 3-5 Keypads

Button	Name	Function
1	Power socket	Connect the power cord and GND protection wire.
2	Card slot	The measurement card slot and binout-export port connect the input signal wire and analog current output wire of the object to be measured
3	RS232C interface	Use straight-hole DB-9 cable, communication Shielded cable The channel address can be set in Remote

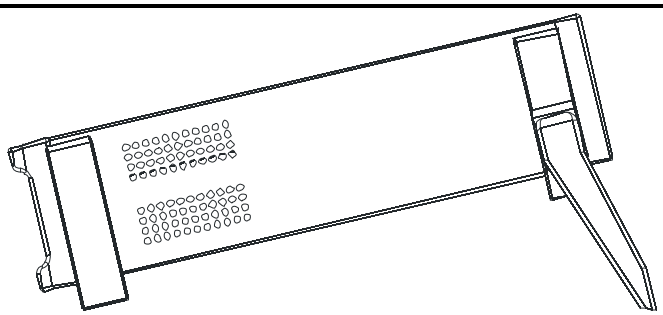
		 menu.
4	Temperature sensor	

3.3 Bench Operation

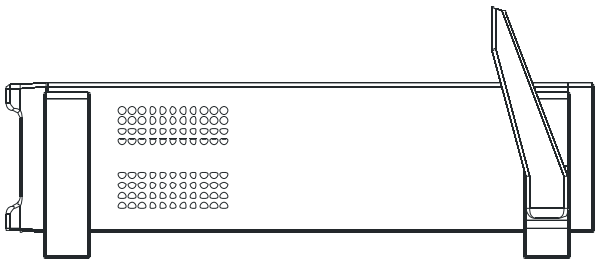
The CHT3541X is provided with a carrying handle. The following pictures show various ways to the use of the handle. The handle may be removed if desired.



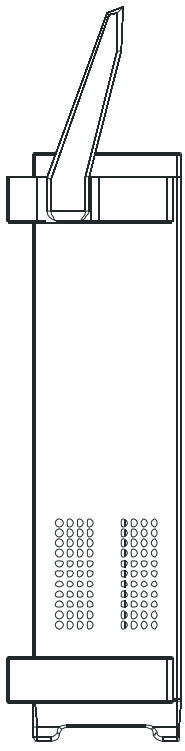
Visual position 1



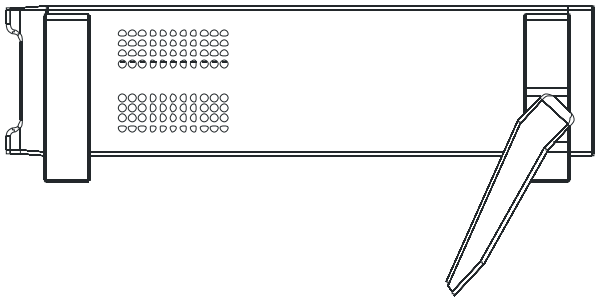
Visual position 2



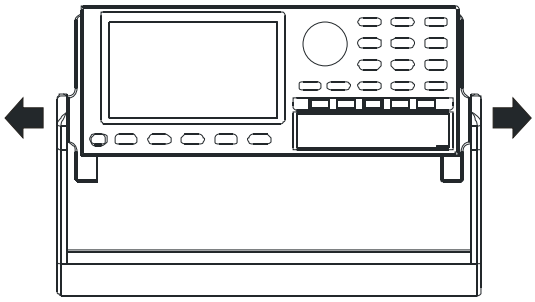
Visual position 3



Mobile location



Remove location side view



Remove location front view

3.4 Powering On/Off

3.4.1 Powering ON

The key"⏻" on the bottom left side of the panel is the power switch.

Powering on

Powering off

3.4.2 The boot sequence

Turn on CHT3541X, a self-test process runs to test devices for errors.

- You will hear a beep sound after turn on the CHT3541X
- Equipment self-test.

3.4.3 Default boot

The default value will be loaded in the boot after the instrument complete the self-test.
Boot default value is composed of two parts, part of the inherent value of equipment and the value of previous settings.
The inherent value of equipment:

Range: Automatic

Remote control: off

Keyboard lock: Off
Comparators: Off
User clear value: on
Trigger Mode: internal.

Inherit previous value settings:

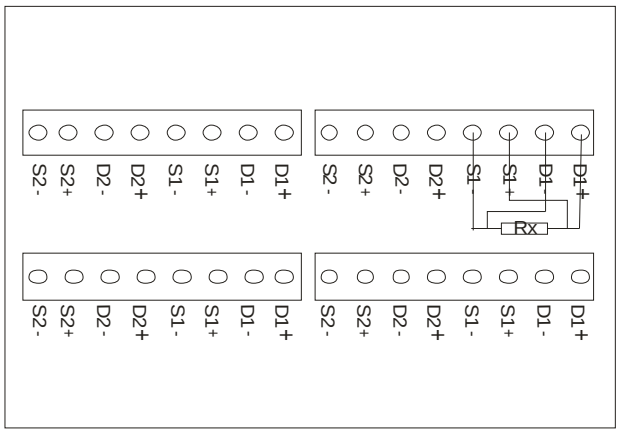
Measurement speed
Current mode
Record number of comparator
set the value of comparator
Buzzer setting

3.4.4 Warm-up Time

In order to reach the specified accuracy, the instrument needs to be preheated at least 15 minutes.

3.5 Connecting the Measuring Card Ends

This description is for measuring the input signal lines connection.
Be sure to read this section before connecting the measuring input signal line.



Picture 3-1

Note: Dx+ Dx- Sx+ Sx- means driver+ driver- sampling+ sampling – of the number X channel. Please refer to the above method to connect the device under test.

3.6 The Binout-export Card Output Ends Connection

The description is for binout-export ends connecting.

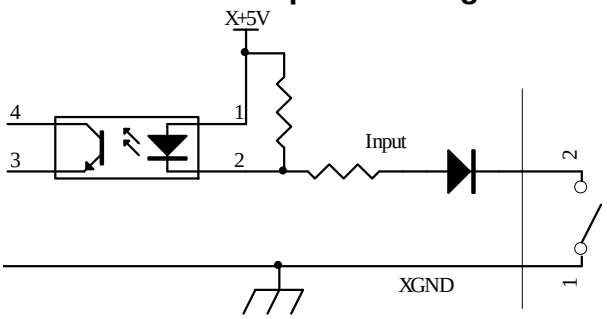
CHT3541X provides users with a powerful processor interface. The interface includes sorting output, EOC (end of complement), TRIG (external trigger) signal. Through this interface, it is convenient for users to complete the automatic controlling in their system control modules.

The binout-export card output ends connection

Number	Name of test end	Description
1	CH1	Sorting output signal from No. 1 channel of No. 1 measuring card
2	CH2	Sorting output signal from No. 2 channel of No. 1 measuring card
3	CH3	Sorting output signal from No. 3 channel of No. 1 measuring card
4	CH4	Sorting output signal from No. 4 channel of No. 1 measuring card
5	CH5	Sorting output signal from No. 5 channel of No. 1 measuring card
6	CH6	Sorting output signal from No. 6 channel of No. 1 measuring card
7	CH7	Sorting output signal from No. 7 channel of No. 1 measuring card
8	CH8	Sorting output signal from No. 8 channel of No. 1 measuring card
9	CH9	Sorting output signal from No. 9 channel of No. 1 measuring card
10	CH10	Sorting output signal from No. 10 channel of No. 1 measuring card
11	CH11	Sorting output signal from No. 11 channel of No. 1 measuring card
12	CH12	Sorting output signal from No. 12 channel of No. 1 measuring card
13	CH13	Sorting output signal from No. 13 channel of No. 1 measuring card
14	CH14	Sorting output signal from No. 14 channel of No. 1 measuring card
15	CH15	Sorting output signal from No. 15 channel of No. 1 measuring card
16	CH16	Sorting output signal from No. 16 channel of No. 1 measuring card
17	CH17	Sorting output signal from No. 17 channel of No. 1 measuring card
18	CH18	Sorting output signal from No. 18 channel of No. 1 measuring card
19	CH19	Sorting output signal from No. 19 channel of No. 1 measuring card
20	CH20	Sorting output signal from No. 20 channel of No. 1 measuring card
21	CH21	Sorting output signal from No. 21 channel of No. 1 measuring card
22	CH22	Sorting output signal from No. 22 channel of No. 1 measuring card
23	CH23	Sorting output signal from No. 23 channel of No. 1 measuring card
24	CH24	Sorting output signal from No. 24 channel of No. 1 measuring card
25	CH25	Sorting output signal from No. 25 channel of No. 1 measuring card
26	CH26	Sorting output signal from No. 26 channel of No. 1 measuring card
27	CH27	Sorting output signal from No. 27 channel of No. 1 measuring card
28	CH28	Sorting output signal from No. 28 channel of No. 1 measuring card
29	CH29	Sorting output signal from No. 29 channel of No. 1 measuring card
30	CH30	Sorting output signal from No. 30 channel of No. 1 measuring card
31	CH31	Sorting output signal from No. 31 channel of No. 1 measuring card

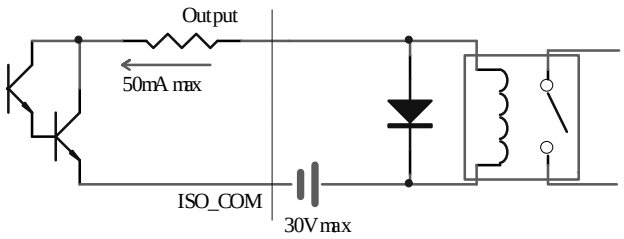
32	CH32	Sorting output signal from No. 32 channel of No. 1 measuring card
33	CH33	Sorting output signal from No. 33 channel of No. 1 measuring card
34	CH34	Sorting output signal from No. 34 channel of No. 1 measuring card
35	CH35	Sorting output signal from No. 35 channel of No. 1 measuring card
36	CH36	Sorting output signal from No. 36 channel of No. 1 measuring card
37	CH37	Sorting output signal from No. 37 channel of No. 1 measuring card
38	CH38	Sorting output signal from No. 38 channel of No. 1 measuring card
39	CH39	Sorting output signal from No. 39 channel of No. 1 measuring card
40	CH40	Sorting output signal from No. 40 channel of No. 1 measuring card
41	NC1	empty/spare end
42	NC2	empty/spare end
43	NC3	empty/spare end
44	XTRG	external trigger (falling edge trigger)
45	XEOC	EOC-end of complement(After the test is completed, the low voltage level is output)
46	X+5V	External power supply (5V-24V) (Note: When the external power supply voltage is over 5V, the built-in isolated 5V power supply works when there is no external power supply.
47	XGND	Isolated power output
48		

The input end diagram

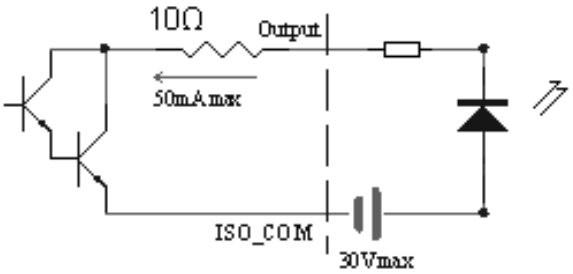


Inside of instrument User switch controlling input

The output end diagram



Output control relay

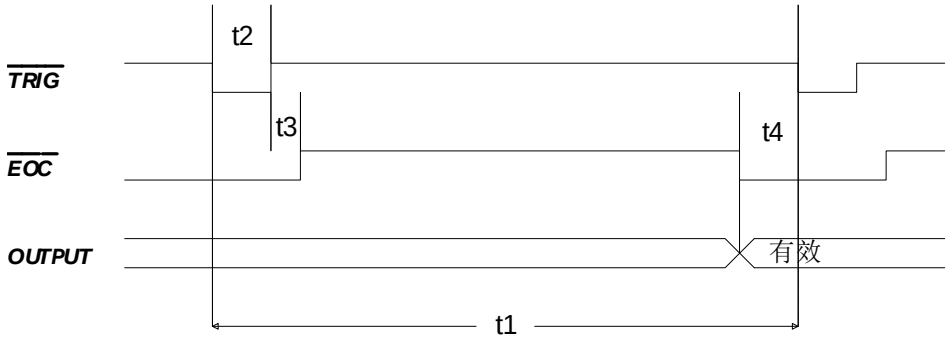


Output driving LED lighten

Note: The users need to provide the external power supply. Please refer to the above wiring method.

All the sorting signals can be configured as a NG/GN output. The low-voltage level is effective.

Sequence chart



- t1: the measuring time of the measurement card
- Measuring time for each card:
  FAST speed: 30 meas/sec
  MIDDLE speed: 18 meas/sec
  SLOW speed: 7 meas/sec

Note: While several cards measuring at a time, the EOC signal is decided by the slowest measurement speed.

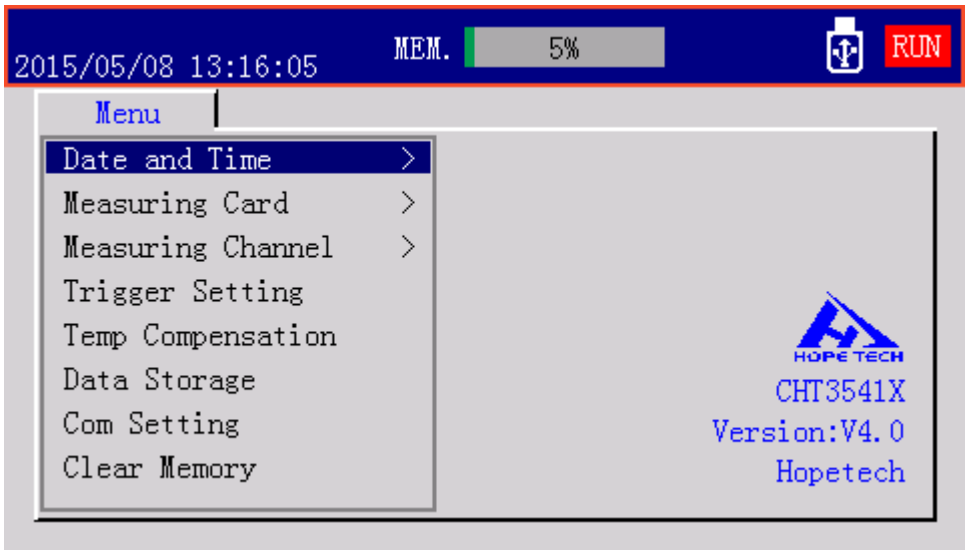
t2: 1μs falling edge trigger test
t3: 200μs
t4: 0μs

3.7 Modifying the Time/Date

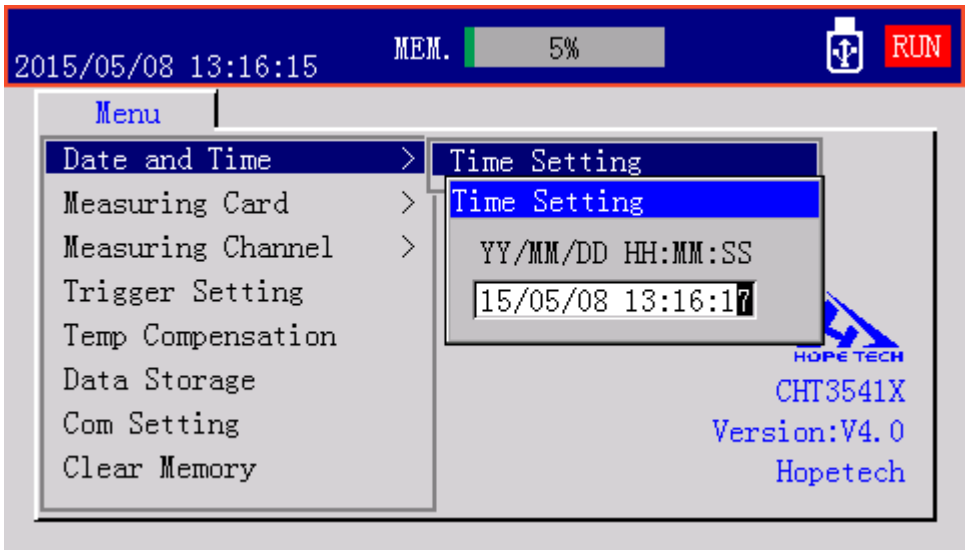
We will take modifying the date as 05/MM/YEAR for example to explain how to modify the pointed.

Step1: In the operation mode window, press any key, you will get following display.

Step2: Press the corresponding key to ***MENU*** to enter the following window, and then move the cursor to the menu item ***DATA/TIME.***



Step3: Press the key ***Enter***, the window shows ***DATA/TIME*** setting.



Step4: Set the date at **YY/MM/05.**

Select your input position by rotating the encoder, and then change the value by the keys character or numeric input.

- Press the key ***ENTER*** to determine your input
- Or press the key ***ESC*** to cancel your input

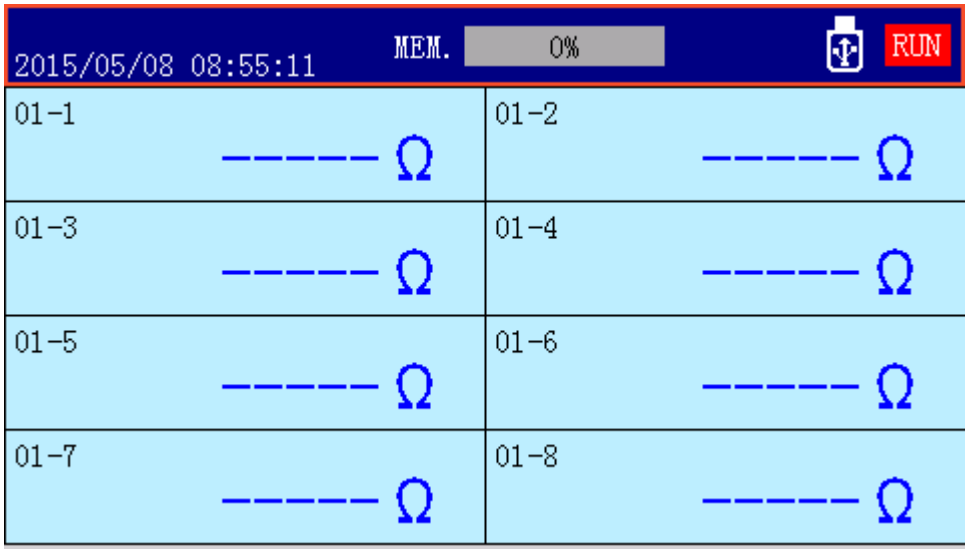
Step5: Press the key ***ESC*** twice to return the operation window

Step6: operation is over.

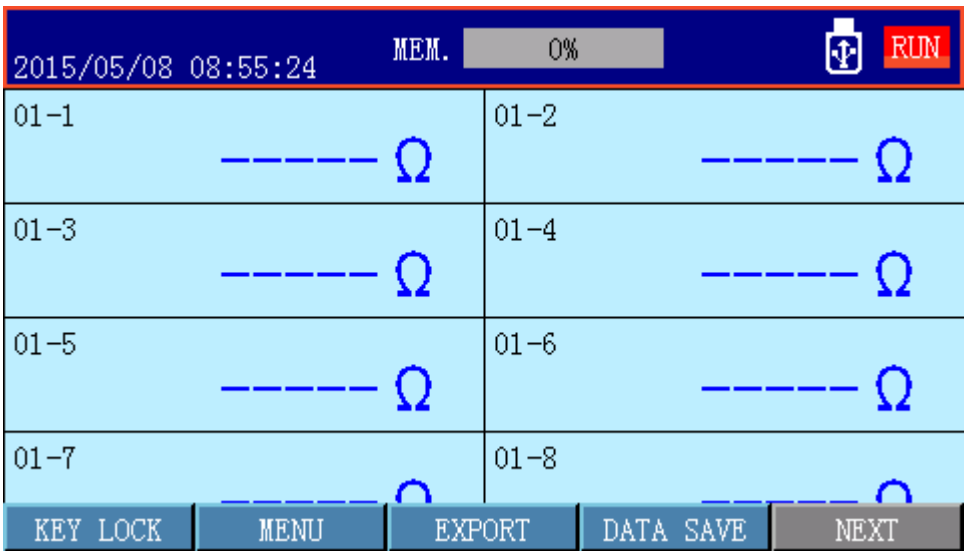
3.8 How to Change the Measurement Card Speed and Measurement Range in Setting Mode

Example: set the measurement range of card 1 as auto range

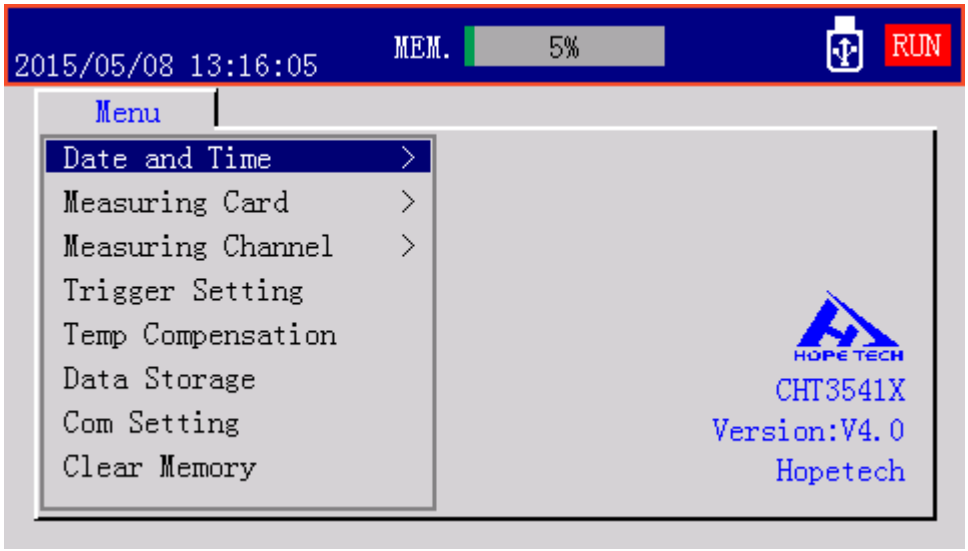
Step1: Enter the operation mode window



Step2: press any soft key, at the bottom of LCD will show you the following items, such as ***KEY LOCK, MENU, EXPORT, DATA SAVE, NEXT.***

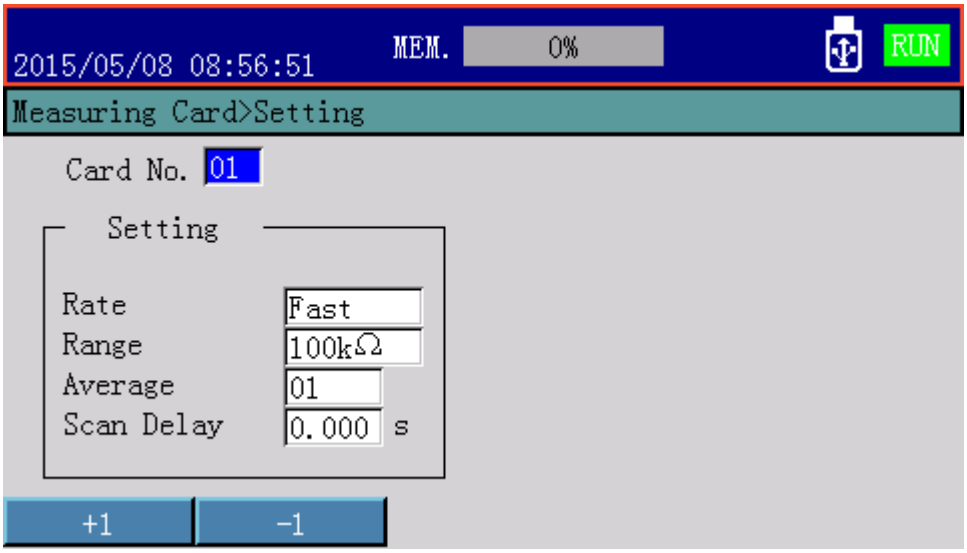


Step3: Press the key of ***MENU*** to enter the operation window as follows.



Step4: Rotating the encoder to select the ***Measurement Card,*** press the key ***ENTER*** to go to the following window.

Step5: Rotating the encoder to move the cursor to the menu item ***Card No. 01***



Step6: Press the soft key ***+1*** once; set the channel number as **02**.The default card number is **01**.

Step7: Rotating the encoder to move the cursor to the menu item ***Scan Delay*** at the bottom of LCD will show you the following items, such as ***FAST, MIDDLE, SLOW.*** Press the soft key to select the ***SLOW.***

Measurement speed:

Fast speed: 30 meas/sec

Middle speed: 13 meas/sec

Slow speed: 5 meas/sec

Step8: Rotating the encoder to move the cursor to the menu item **Range,** at the bottom of LCD will show you the following items, such as ***Auto, 0, 1, 2, NEXT*** Press the soft key to select the ***NEXT,*** at the bottom of LCD will show you the following items, such as 3,4,5,6, ***NEXT.***

Step 9: Press the soft auto key to select range at ***AUTO,*** or press the numeric key to select manual auto range.

When the range is selected as ***AUTO,*** CHT3541X will automatically select a proper range according to the following table:

Table 3-1 Range No, Resistance Range and Range Change Process

Range No.	Range	Rising Range	Falling range
0	100mΩ	320mΩ **ê** 3.2Ω **ê** 32Ω	**é** 280mΩ **é** 2.8Ω **é**
1	1Ω		
2	10Ω		

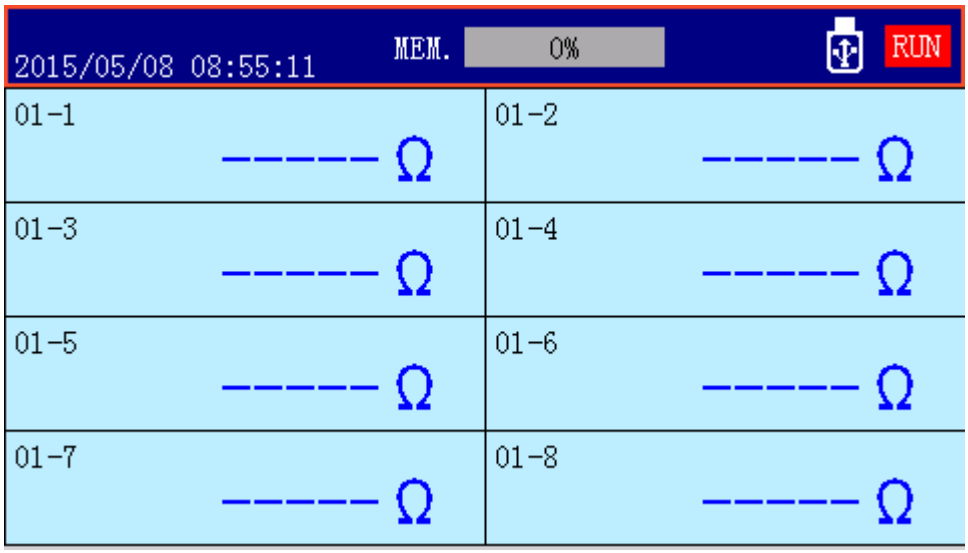
3	100Ω	ê 320Ω ê 3.2kΩ ê 32kΩ ê 320kΩ ê	28Ω é 280Ω é 2.8kΩ é 28kΩ é 280kΩ
4	1kΩ		
5	10kΩ		
6	100kΩ		

Step10: Press the key ***ESC*** twice to return the operation window

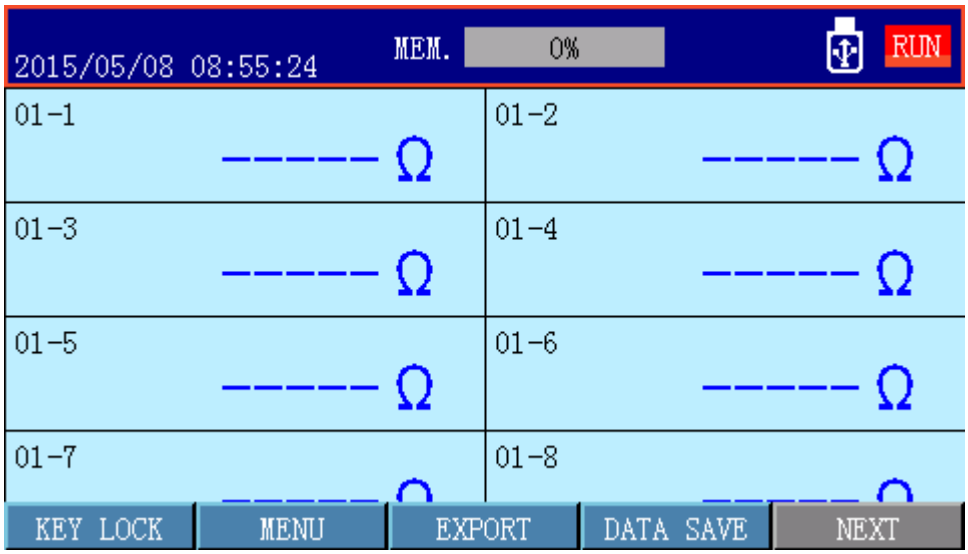
Step11: operation is over.

3.8 How to Set the Measurement Channel in Setting Mode

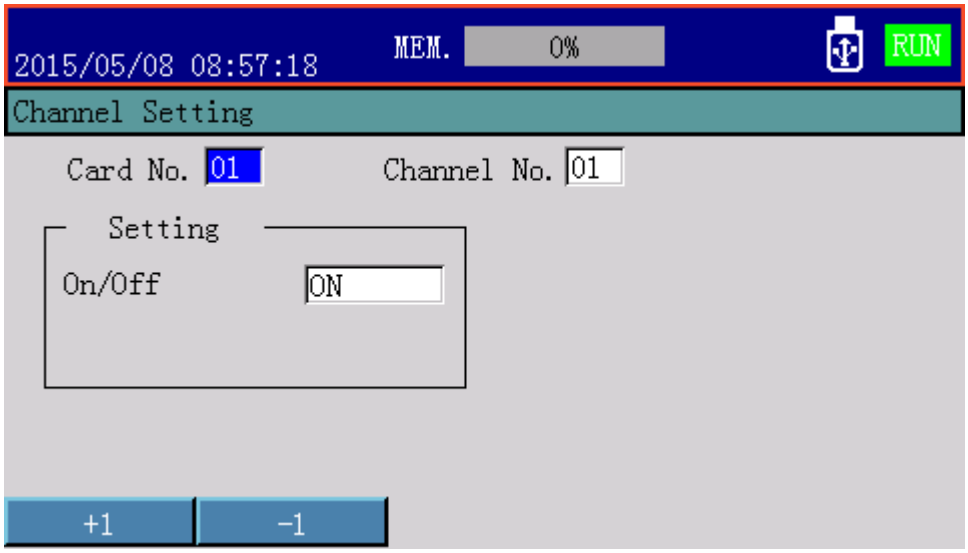
Step1: In the operation mode window, press any key, you will get following display.



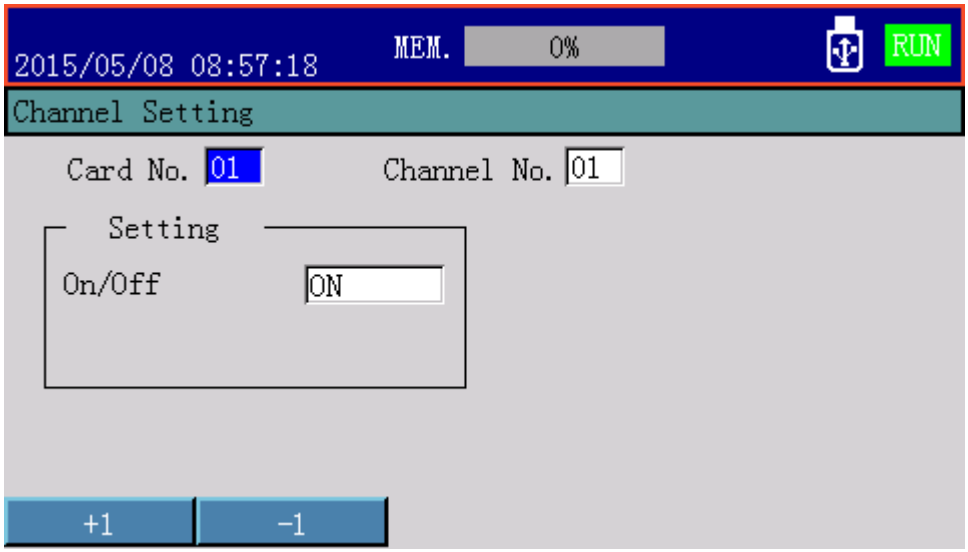
Step2: press any soft key, at the bottom of LCD will show you the following items, such as ***KEY LOCK, MENU, EXPORT, DATA SAVE, NEXT.***



Step3: Press the key of ***MENU*** to enter the operation window of ***Measuring Channel.*** The cursor locates **Channel Setting.**



Step4: Press the key of ***ENTER,*** rotating the encoder to select ***Channel Setting*****,** press the key ***ENTER*** to go to the following window:



Step5: Rotating the encoder to move the cursor to the menu item ***Card No.*** at the bottom of LCD will show you ***+1, -1.*** Press the soft key corresponding to ***+1*** ***or*** ***-1*** to select and set the #01 card.

Step6: Rotating the encoder to move the cursor to the menu item ***Channel No.*** at the bottom of LCD will show you ***+1, -1.*** Press the soft key corresponding to ***+1*** ***or*** ***-1*** to select the No.01 channel.

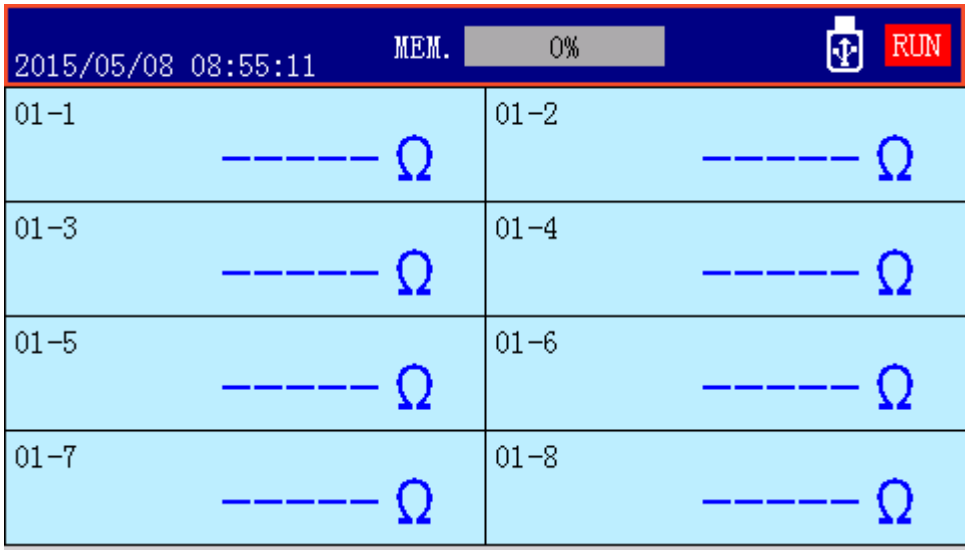
Step7: Rotating the encoder to move the cursor to the menu item ***Card No.*** at the bottom of LCD will show you ***OFF, ON.*** Press the soft key corresponding to ***ON*** to open # 01 channel of #01 card; Press the soft key corresponding to ***OFF*** to close # 01 channel of #01 card.
Step8: Press the key ***ESC***, the window shows the message ***'save the setting or not'***, Press the key ***ENTER*** to save your settings.

Step 9: Press the key ***ESC*** twice to return the operation window

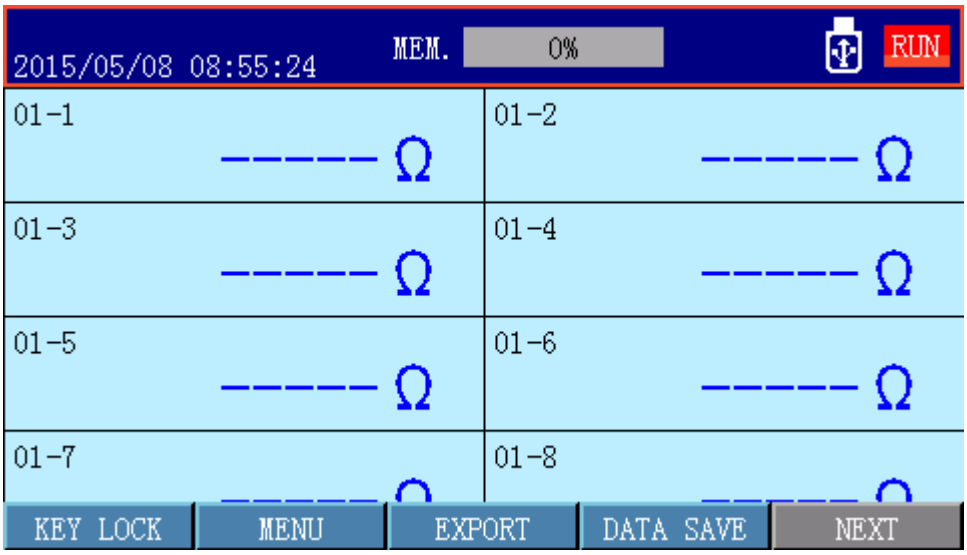
Step 10: Operation is over.

3.10 How to Set the Trigger Mode and Binout in Setting Mode

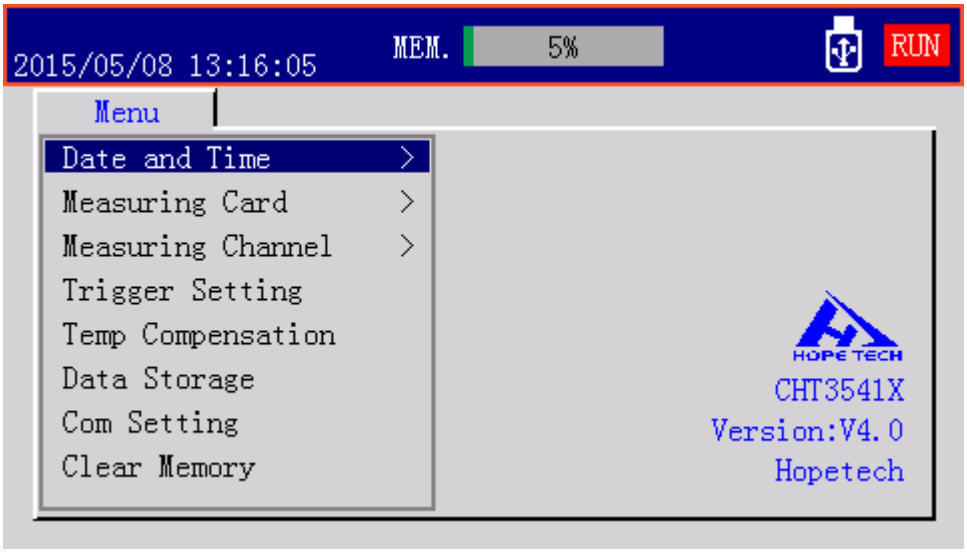
Step1: Enter the operation mode window



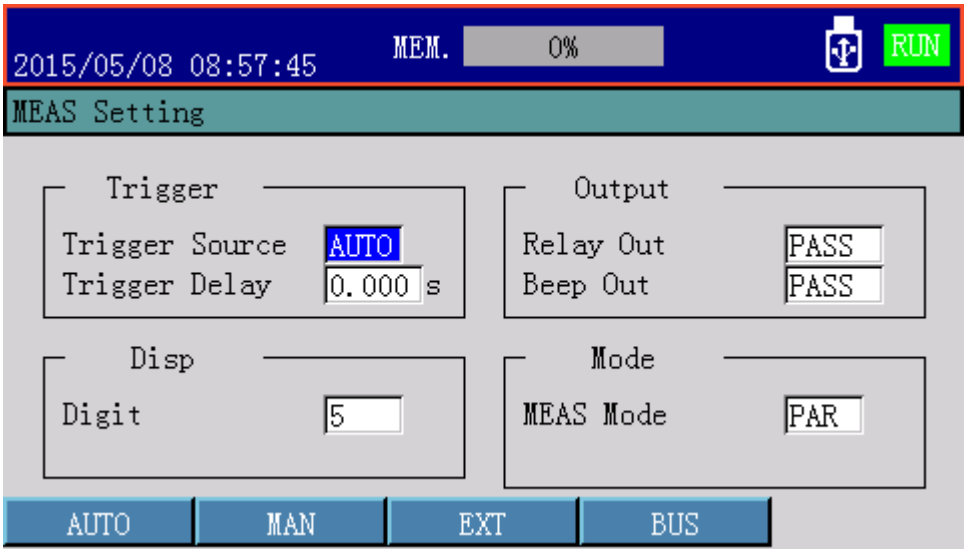
Step2: press any soft key, at the bottom of LCD will show you the following items in order, ***KEY LOCK, MENU, EXPORT, DATA SAVE, NEXT.***



Step3: Press the key of ***MENU*** to go to the item ***Trigger Setting***.



Step4: Press key ***ENTER*** to get the ***MEAS Setting*** window, *as shown below:*



Step 5: Rotating the encoder to move the cursor to the menu item ***Trigger source,*** at the bottom of LCD will show you the following items in order, ***AUTO, MAN EXT,*** and ***BUS.***

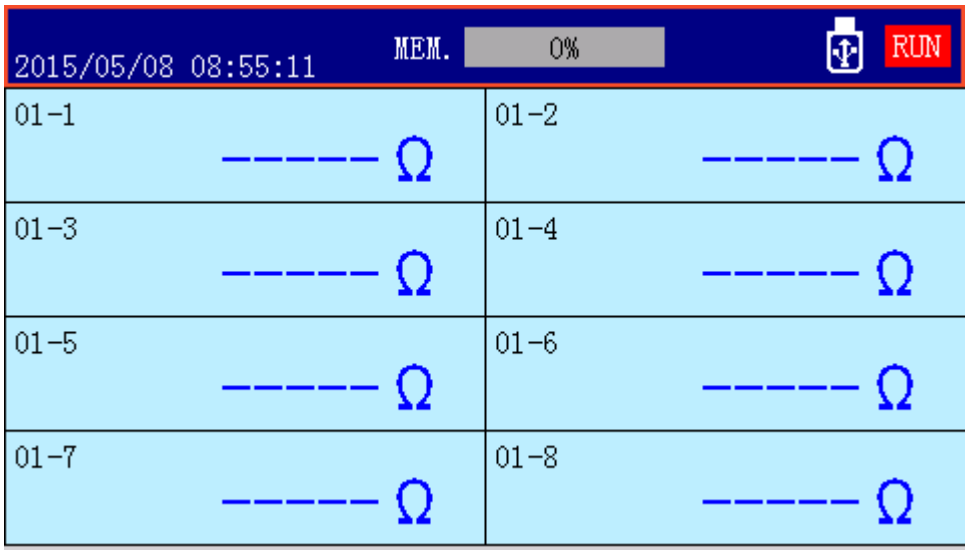
- Press the soft key corresponding to ***AUTO*** to select auto trigger mode.
- Press the soft key corresponding to ***MAN*** to select manual trigger mode. In this mode, each time you press the soft key ***MAN,*** the instrument gets triggered once.
- Press the corresponding key to set the meter in external trigger mode. In this mode, a new measurement will be excuted when the falling edge signal is applying to the trigge r port of the binout card.
- Press the soft key corresponding to ***BUS*** to select bus trigger mode. In bus trigger mode, you need to send the specific command to get the bus trigger.

Step6: Rotating the encoder to move the cursor to the menu item ***Binout,*** at the bottom will show you the following items ***Good, No good.***

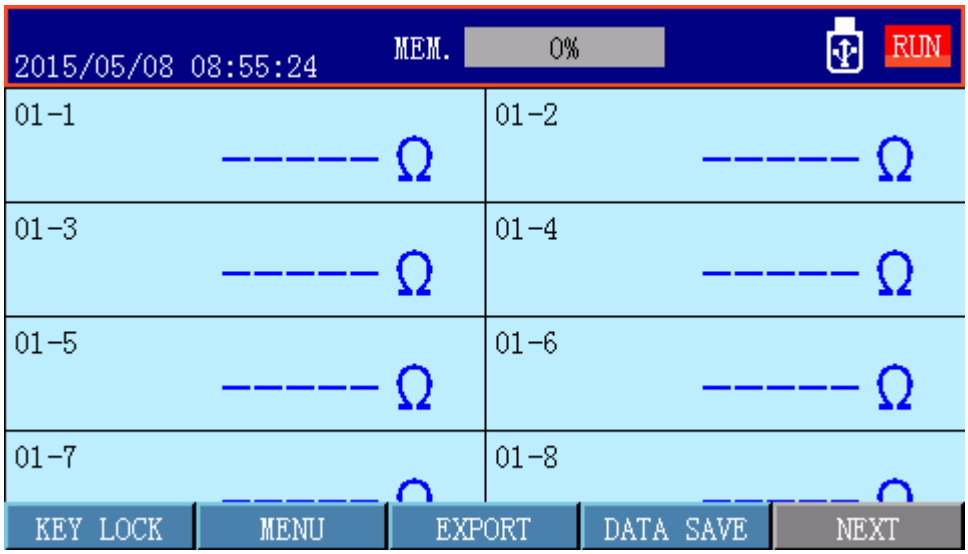
- Press the soft key corresponding to ***Good*** to binout the pass signal.
- Press the soft key corresponding to ***No good*** to binout the failed signal.

3.11 How to Set the Measurement Channel Binout in Setting Mode

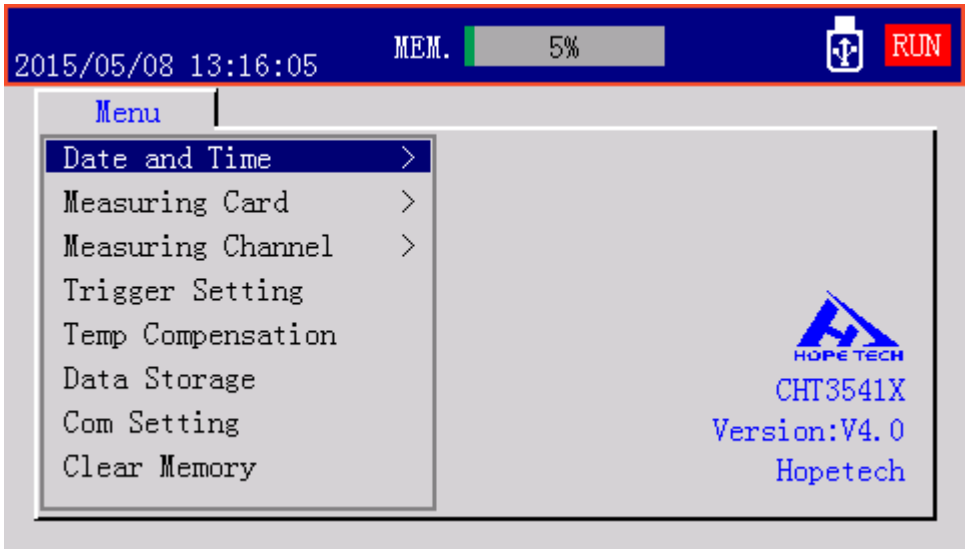
Step1: Enter the operation mode window



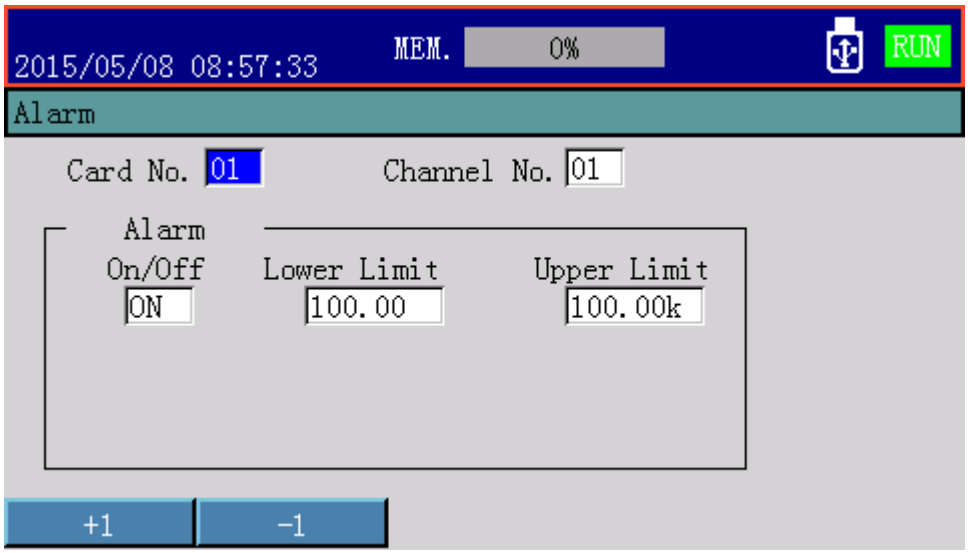
Step2: press any soft key, at the bottom of LCD will show you the following items in order, ***KEY LOCK, MENU, EXPORT, DATA SAVE, NEXT.***



Step3: Press the key of ***MENU,*** rotating the encoder to move the cursor to the menu item to select the operation window of ***Measurement Channel***.



Step4: Press the key ***ENTER*** to go to the ***Alarm*** window.



Step5: Rotating the encoder to move the cursor to the menu item ***Card No.*** at the bottom of

LCD will show you ***+1, -1.*** Press the soft key corresponding to ***+1*** or ***-1*** to select and set the #01 card.

Step6: Rotating the encoder to move the cursor to the menu item ***Channel No.*** at the bottom of LCD will show you ***+1, -1.*** Press the soft key corresponding to ***+1 or -1 to*** select the No. 01 channel.

Step7: Rotating the encoder to move the cursor to the menu item ***Card No.*** at the bottom of LCD will show you ***OFF, ON.*** Press the soft key corresponding to ***ON*** to open # 01 channel of #01 card; Press the soft key corresponding to ***OFF*** to close # 01 channel of #01 card.

Step 8: Rotating the encoder to move the cursor to the menu item ***Lower Limit.*** At the bottom of LCD will show you the input box. Press the soft key to input the lower limit value as desired. Presses the key ***ENTER*** to save the input value.

Rotating the encoder to move the cursor to the menu item ***Upper Limit,*** at the bottom of LCD will show you the input box. Press the soft key to input the upper limit value as desired. Presses the key ***ENTER*** to save the input value.

After open the binout-export switch, the current measurement value will be compared with the set upper limit value and lower limit value separately.

Binout-export process:

Lower limit value < Current measurement value < Upper limit value

Good product, the measurement data shows normally, the test product is good.

Current measurement value ≤ Lower limit value

No good product, the measurement data indicates in red, the test product is failed.

Current measurement value v ≥ Upper limit value

No good product, the measurement data indicates in red, the test product is failed.

Step 9: Press the key ***ESC,*** the window show message ***'save the settings or not'***, press the key ***ENTER*** to save the settings.

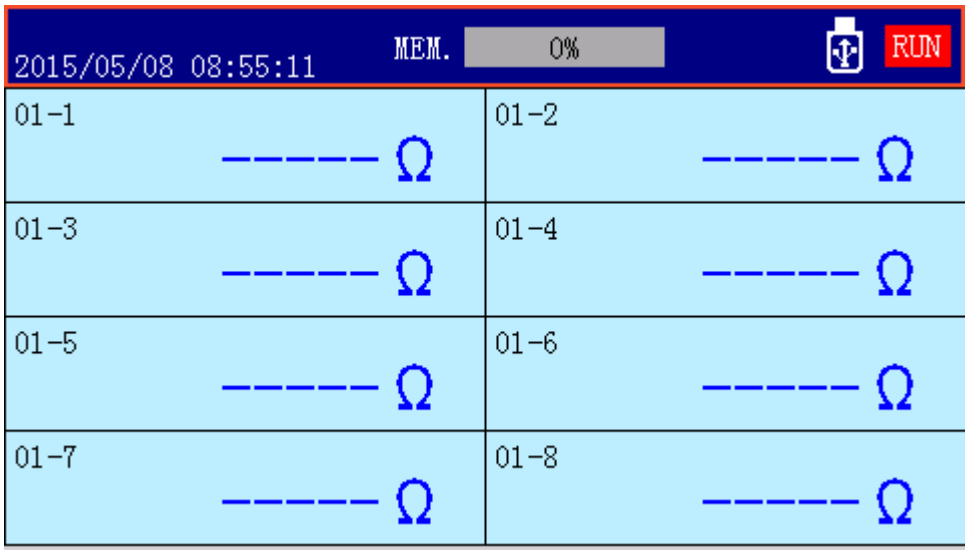
Step 10: Press the key ***ESC*** twice to return the operation window

Step 11: Operation is over.

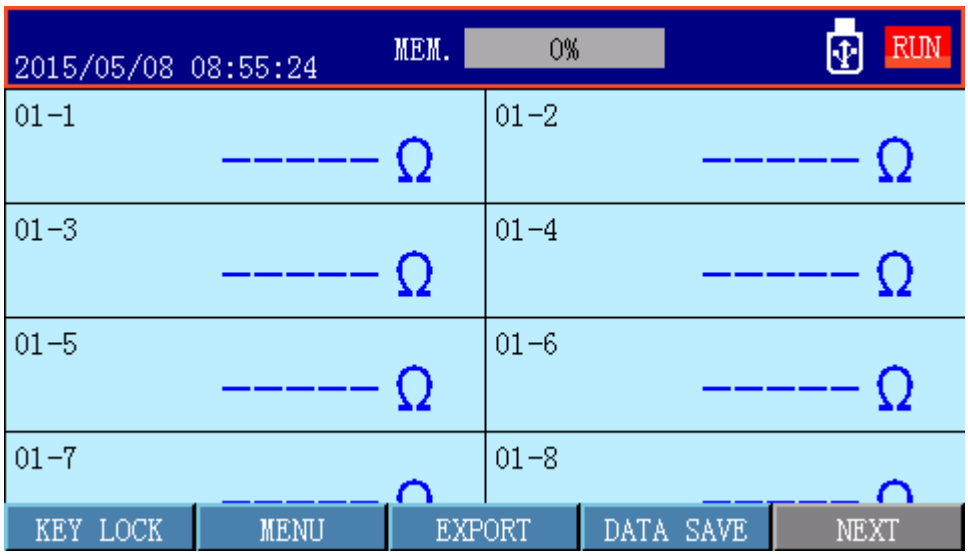
3.12 How to View the Measurement Card in Setting Mode

The following example describes how to view the measurement card in setting mode.

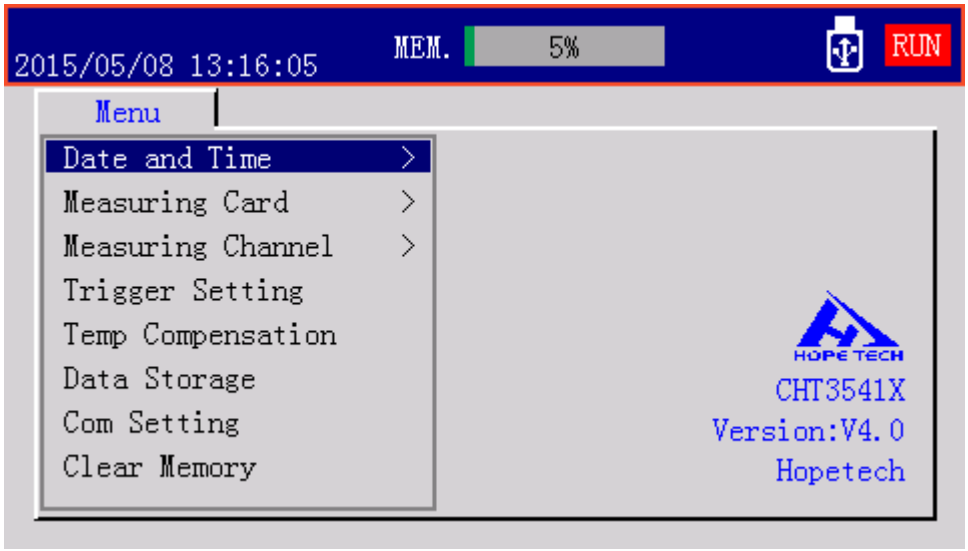
Step1: Enter the operation mode window.



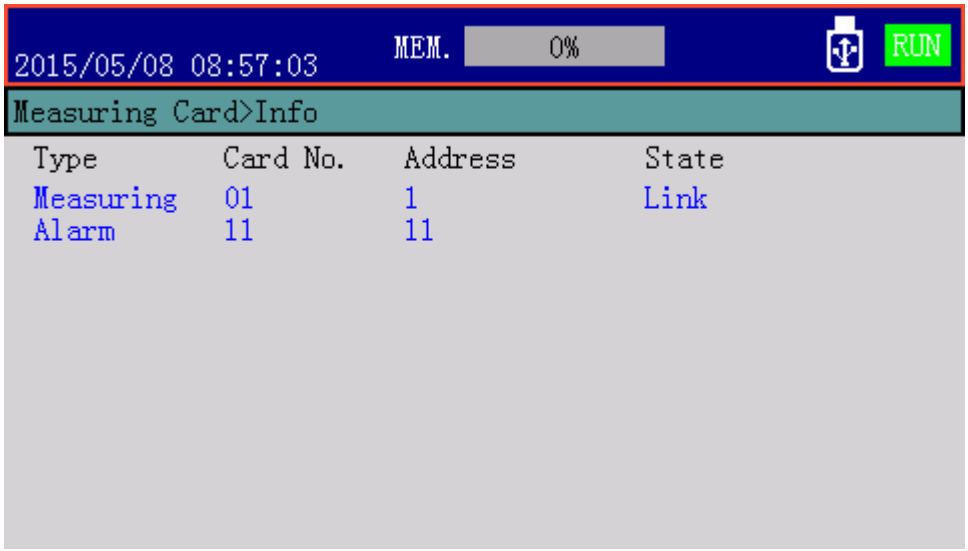
Step2: Press any soft key, the bottom of LCD will show you the following items, such as ***KEY LOCK, MENU, EXPORT, DATA SAVE, NEXT.***



Step3: Press the soft key of ***MENU,*** rotating the encoder to the item ***Measuring Card***.



Step4: Press the key ***ENTER*** to go to the ***Measuring Card>Info*** window. You can view the measuring card type, number, physical address and connection status, as shown below.



Note:	If the connection state is OFF. Turn off the instrument and check to ensure the measuring card is plugged in the device, and then reboot the instrument.

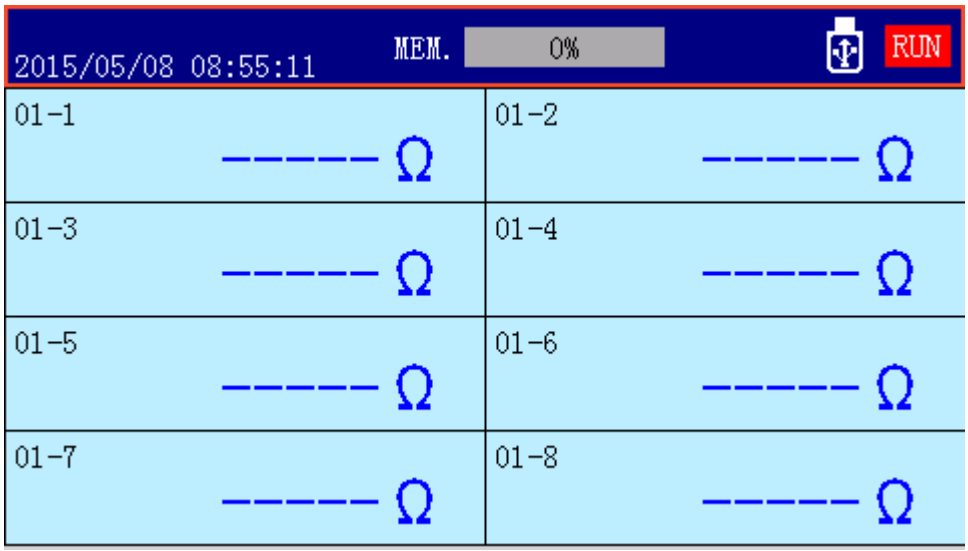
Step5: Press the key ***ESC*** to back to the operation mode window of ***MENU***.

Step6: Press the key ***ESC*** twice to back to the operation mode window. Now you've viewed the measurement card in setting mode.

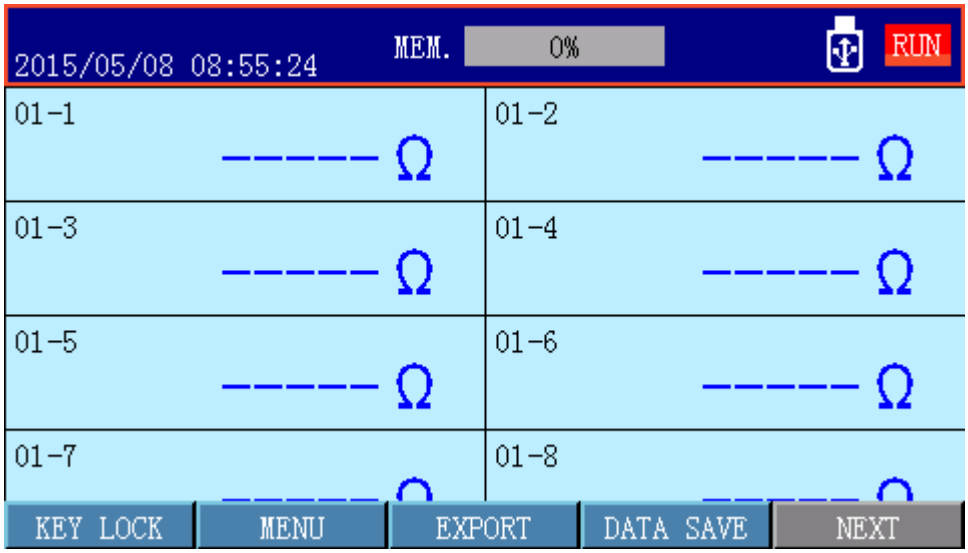
3.13 How to Clear Memory from the Instrument

The following example describes how to clear memory from the instrument step by step.

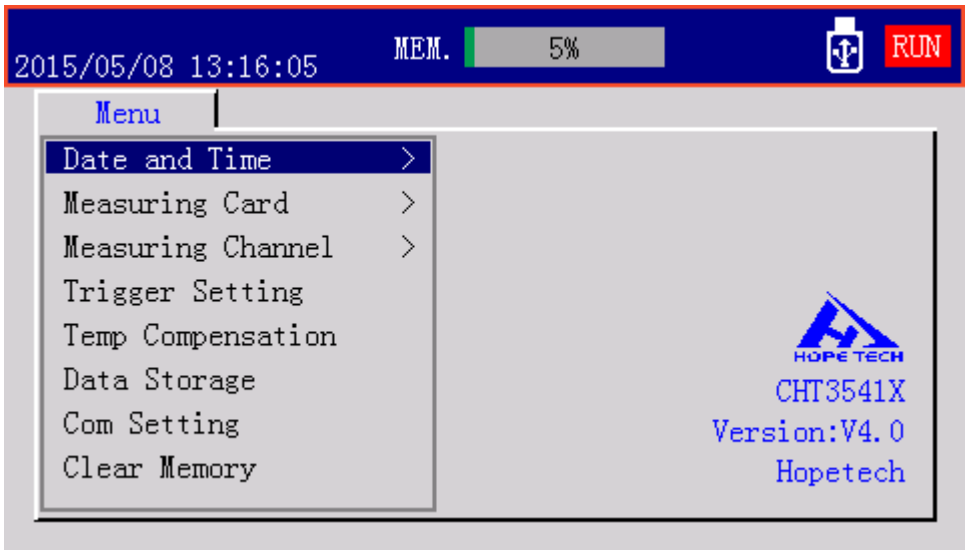
Step1: Enter the operation mode window.



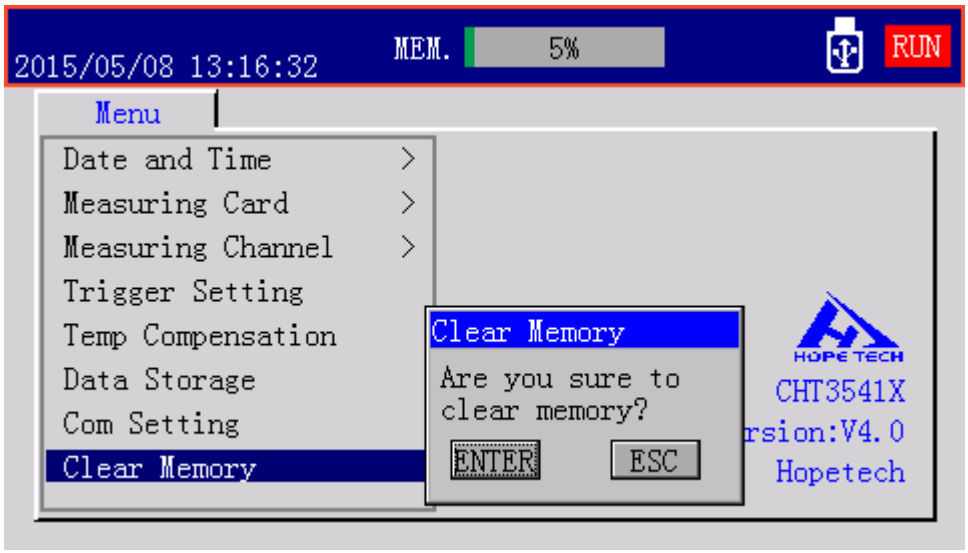
Step2 press any soft key; at the bottom of LCD will show you the following items, such as ***KEY LOCK, MENU, EXPORT, DATA SAVE, NEXT.***



Step3: Press the key of ***MENU,*** rotating the encoder to the item ***Clear Memory.***.



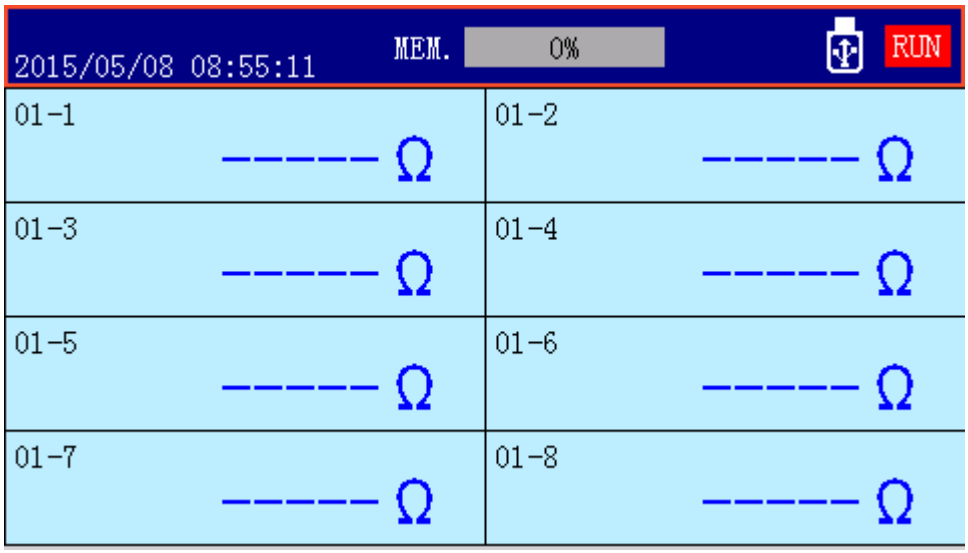
Step4: Press the key ***ENTER*** to clear the data in the memory from the instrument.



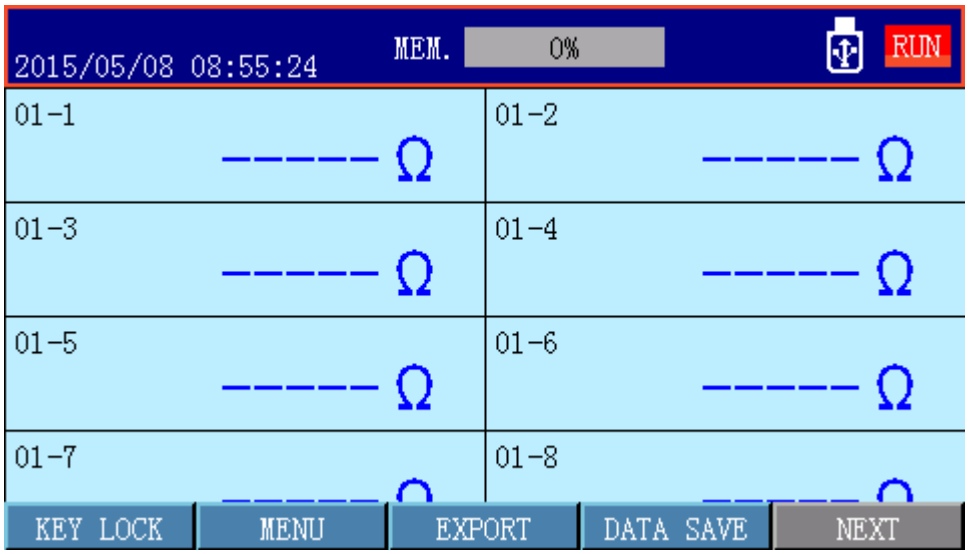
3.14 Zero Adjustment

The following steps show how to do the zero adjustment.

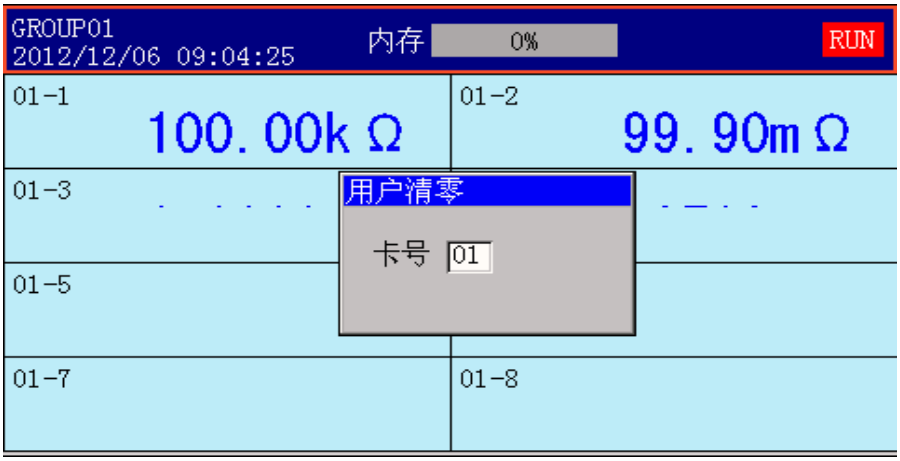
Step1: Enter the operation mode window.



Step2 press any soft key; at the bottom of LCD will show you the following items, such as ***KEY LOCK, MENU, EXPORT, DATA SAVE, NEXT.***

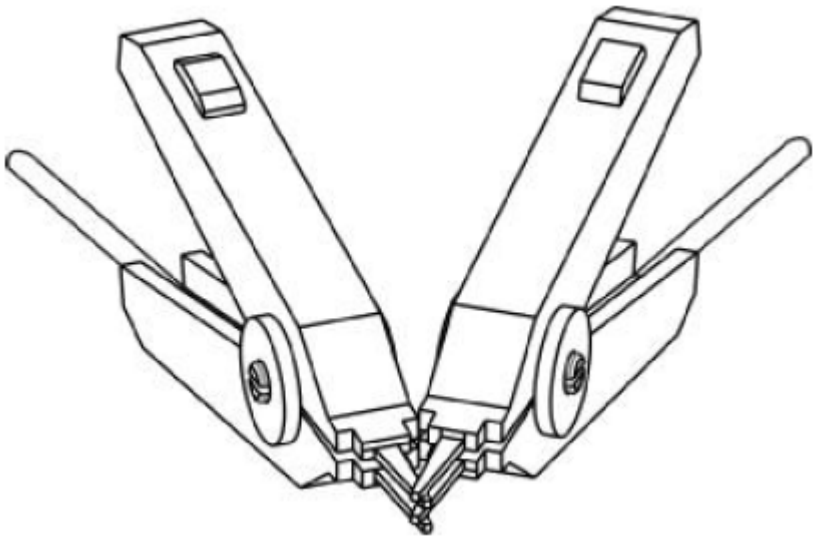


Step3: Press the soft key corresponding to ***NEXT,*** the bottom of LCD will show you the following items, such as ***BEEPER, ZERO, NEXT.*** Press the key ***ZERO,*** as shown below



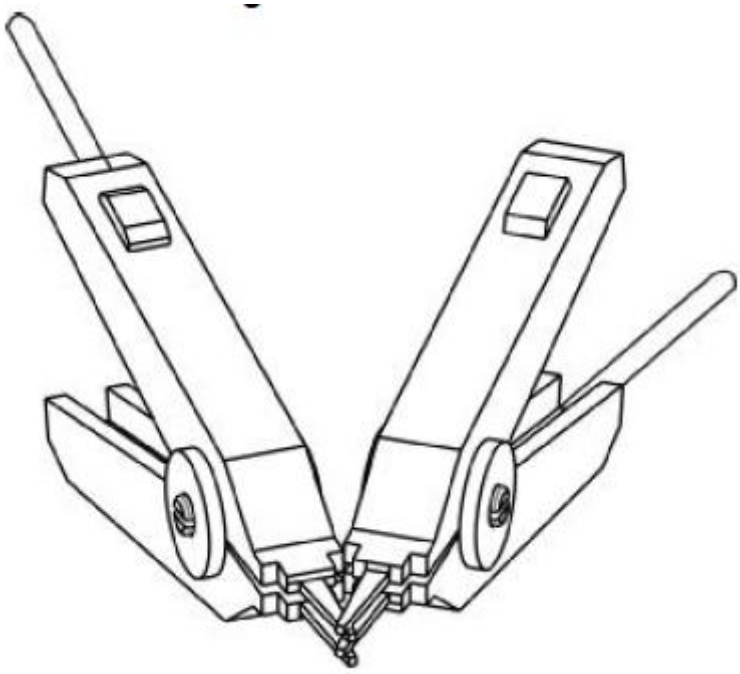
For accurate measurements, zero-adjustment needs to be performed before measurement.

Rotate the encoder to select the card need to be cleared. For example: to clear #01 card, Please make the #01 channel of 01# card shorted-connected its test clip. Connecting the leads is as below.



Pic. 4-6 Correct connection

Wrong connection!



Pic. 4-7 Wrong connection

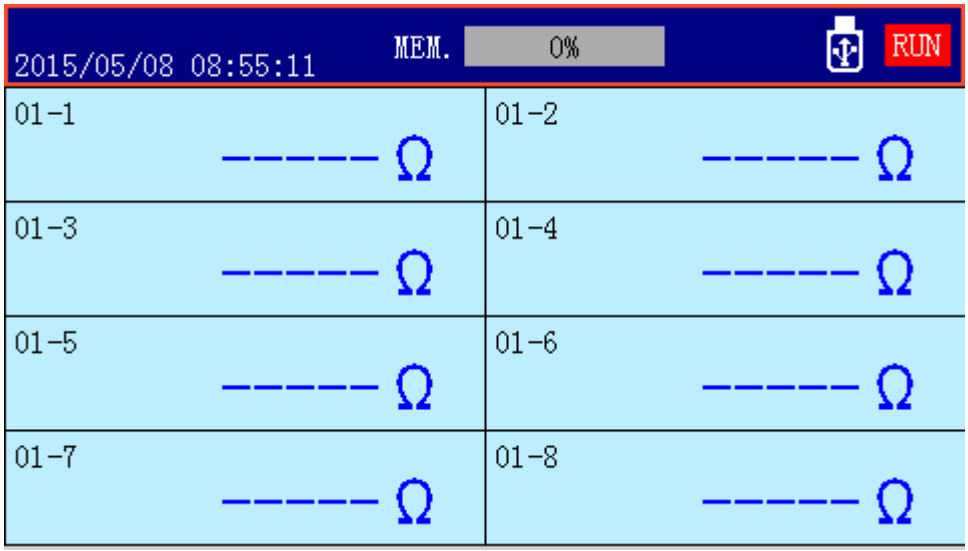
5. Click the key ***Enter*** to start zero-adjust. In the automatic measurement mode, the instrument will do zero-adjust for all measurement ranges. In manual mode, the instrument only does zero-adjust for current mode.

After zero-adjust is completed, the data will be stored in nonvolatile memory.

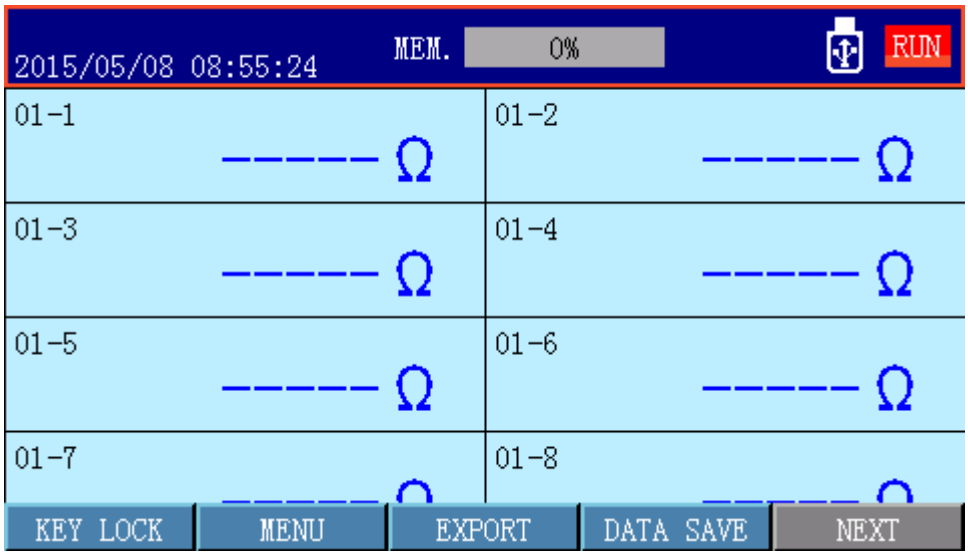
6. After zero-adjustment, the instrument returns to the measurement mode automatically.

3.15 Keyboard Lock

Step1: Enter the operation mode window.



Step2: Press any soft key, the bottom of LCD will show you the following items, such as ***KEY LOCK, MENU, EXPORT, DATA SAVE, NEXT.***



Step3: Press the soft key corresponding to ***KEY LOCK*** to lock the keyboard**,** press the key ***ENTER*** to unlock the keyboard

Instructing keyboard has been locked.

Appendix A Specification

Chapter 4	Appendix A, you will learn the following: I Specifications I General specifications I Dimensions

4.1 Specifications

The following data was obtained under the following conditions:

Temperature condition: 23 °C ± 5 °C
Humidity condition: 80% R.H.
Zero-adjustment: Zeroed before measurement
Warm-up time: > 15 minutes
Calibration Time: 1 year

High Current Test:

Sampling rate

Fast-speed: about 30 times / sec
Middle-speed: about 13 times / sec
Slow-speed: 5 times / sec

Test current accuracy: 10%

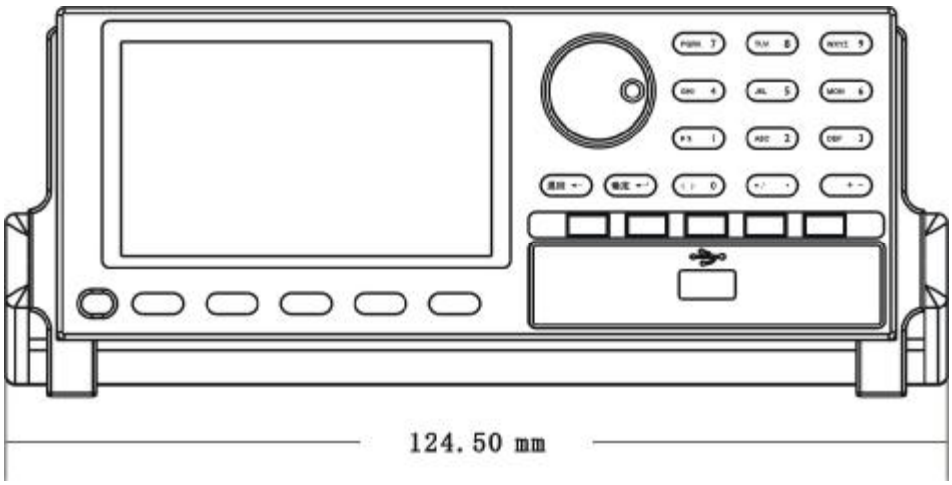
Max. reading		**Resolution**		**Measured current**	**Open circuit voltage between the test terminals**
300mΩ	300.00mΩ	10μΩ	0.05%±5 count	100mA	<4V
3Ω	3.0000Ω	100μΩ	0.05%±3 count	100mA	<4V
30Ω	30.000Ω	1mΩ	0.05%±3 count	10mA	<4V
300Ω	300.00Ω	10mΩ	0.05%±3 count	1mA	<4V
3kΩ	3.000kΩ	100mΩ	0.05%±3 count	1mA	<4V
30kΩ	30.000kΩ	1Ω	0.05%±3 count	100uA	<4V
300kΩ	300.00kΩ	10Ω	0.05%±3 count	10uA	<4V

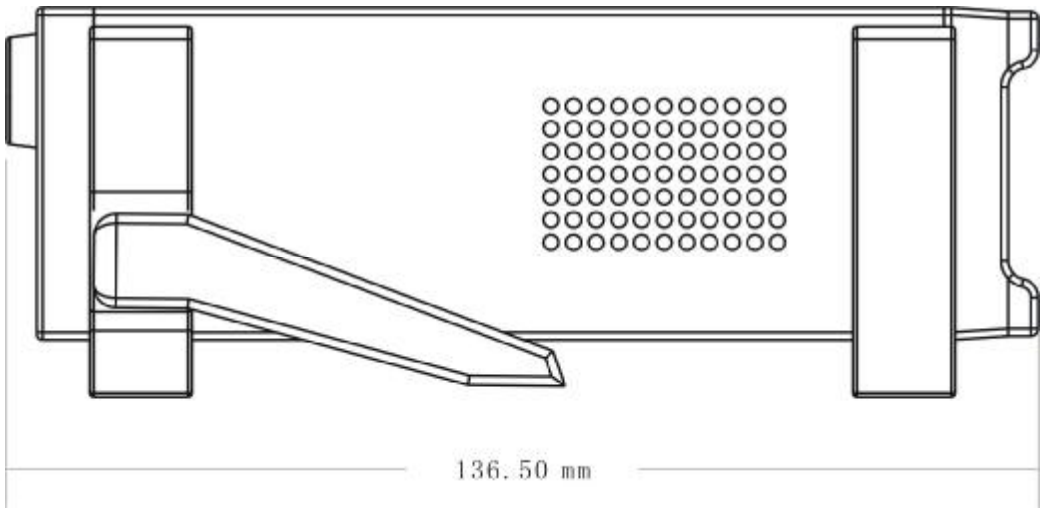
4.2General Specification

Screen:	TFT, the screen size: 98mmx55mm.
Display parameters	Multi-channel resistance
Maximum readings	Resistance 32000
Display and resolution	0.01mΩ ~ 320KΩ,0.1μΩ
Measurement signal	0~6 range constant current test, 7 ranges constant voltage test

Trigger	Internal, manual, external, remote trigger.
Range	Automatic and manual.
Zero-adjustment	Short-circuit clear.
Measurement point	4-terminals.
Interface	RS232/RS485(Communication) interface Processor (Handler) interface
Programming languages	SCPI
Menu languages	Chinese / English
Environment	Indicators: 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
Power supply	85V ~ 260VAC 48.5Hz ~ 52.5Hz
Power	15VA maximum
Weight	3.5kg approx.
Accessories	Manual, CHT9700 temperature probe, CHT9800 communications cable, AC power cord, warranty certificate, test report

4.3 Dimensions




136.50 mm