

CONTINUATION

Dear user,

Description in the manual is based on newest products.owing to improvement or other changes, contents of manual may differ from practical situation. our company will reserve the right of recension at any moment,please kindly forgive not to notify the revised place one by one.

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GY-4
User Manual

数 显 式 果 实 硬 度 计
DIGITAL FRUIT SCLEROMETER

制造商：温州山度仪器有限公司

MANUFACTURER: WENZHOU SUNDOO INSTRUMENTS CO.,LTD

地址：浙江省温州市龙湾区西台工业区西工西路5号

Add:No.5, Xigongxi Road,Xitai Industrial Zone,Wenzhou China

Zip: 325011

Tel: +86 577 88609905 Fax:+86 577 88390155

Http://www.sundoo.com E-mail:export@sundoo.com



We are pleased for your patronage of purchasing GY-4 digital fruit sclerometer.

This sclerometer is small and handy to test the maturity of fruit , please read the manual carefully before use, in order to take full advantage of all function, to get correct test value during test.

CONTENT

Specification	2
Caution and Warning	3
Function	4
Characteristics	4
Work Environment	4
Dimension	5
Test stand	6
Name and function of parts	7
Preparation before use	11
Test	11
About memory, deposited value and minimum adopting value	13
Serial output and print	14
Charging battery	16
Maintenance	17
Packing List	18

Packing list

Number	Name	Quantity
1	Body	1
2	Power adaptor	1
3	M3×8 screw	5
4	Test hand	2
5	Test accessories	1
6	Matching CD	1
7	Manual	1
8	Factory Inspection Certificate	1
9	Qualification Certificate	1

Attention:

- 1、Frequent charging and long time charging will shorten the life of battery;
- 2、Do as you can to charge battery as the electricity runs out, it can cancel remember effect;
- 3、It can test when charging;
- 4、Battery life:under normal using, charging/discharging about 300 times

Maintenance

- 1、Clean dirt and dust from gauge with soft cloth after dipping cloth in the detergent water and squeeze out water, then clean dirt with the cloth. Do not use volatile chemical liquid to clean gauge, such as bezene,thinner, alcohol,etc;
- 2、Handle carefully when using and carrying;
- 3、Never disassemble, repair or remodel the gauge by yourself;
- 4、If malfunction, please contact original sale department or our company.

Specification

Model	GY-4	
Test head dimesnion	1# Test head ϕ 11.1mm	2# Test head ϕ 7.9mm
Capacity	1MPa	2MPa
Resolution	0.0005Mpa	
Test Range	10%~100%FS	
Accuracy	\pm 1%	
Unit	Mpa、kg/cm2	
Power	Adaptor:DC 12V/300mA Battery inside:Ni-MH 8.4V 1200mAh	
Use time	Continuous use for about 40 hours	
Standby time	About 3 months	
Battery life	\geq 300 Times	

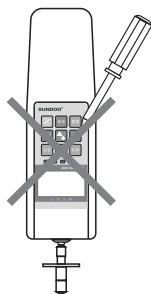
Caution and warning



If wrong operation, that may destroy the instrument or lead to grave accident. This manual teaches you how to avoid accidents happen and how to use this instrument. Please carefully read this manual before testing and save it. The effective testing range is 10%-100%FS.



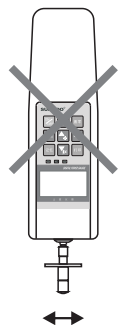
- 1、 Please wear protective mask and glove to protect you from scattering pieces when in testing.
- 2、 Don't overload the gauge. When the "ERROR" appears on screen, it means that the load cell already exceeds rated capacity and immediately reduce the load.



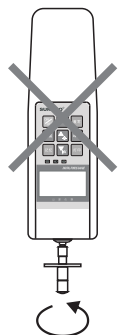
Picture 1



Picture 2



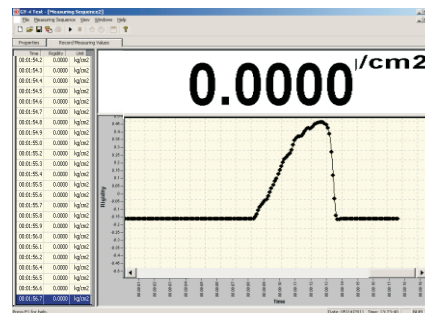
Picture 3



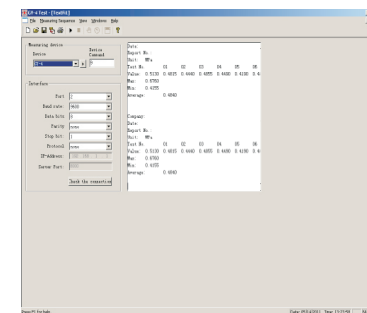
Picture 4

- 3、 Do not use cuspidal tool to press operating key (picture1).
- 4、 This instrument is just applied to vertically test fruit hardness (picture2). Do not give force to it when test stick is bent. (picture3、 4).
- 5、 Do not use overload, overload using, overload shock and the load from directions (except the direction of push and pull) will damage sensor.
- 6、 Do not use damaged or deformed test head.
- 7、 Do not put this instrument in the place that water, oil or other liquid may splash on it. Please put it in shady, dry and stable place.
- 8、 Do not use other adapter which is not provided with the sclerometer. If other adapter be used, possible fault may be in the circuitry that may cause fire.
- 9、 Insert AC adapter into receptacle socket and it should be snugly fitted.

- I、 After test, press "■" to stop (picture 17);
- J、 Click on saving option in the file to save data;
- K、 If select text file in dialog box, it is the derived saving data. Then select the model that corresponding to the instrument in device type, select the matching serial port for computer; click "▶", open serial port, then press "PRINT", the saving data will be imported to computer. (picture 18)



Picture 17



Picture 18

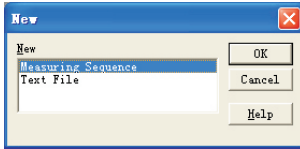
Symbol illustration:

- : Import the adopting data into EXCEL;
- : Open serial port, start to test;
- : Shutdown serial port to stop;
- : Collect the present data by hand;
- : Continue collect data timed.

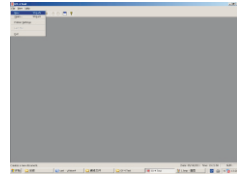
Charging battery

This gauge uses Ni-Hi batteries with 8.4V/1200mAh as power. The fully charged battery can work about 40 hours continuously. It can be used about 3 months in a state of power off. If Ni-Hi batteries power are low, "☐" will flicker on LCD. Please charge battery by adapter DC12V/300mA and it will count the time of charging and stop charging after full, to keep the battery durable.

- B、Power on, make the gauge be in working state, set serial output as “PC” (details as “setting” part);
- C、Put the accessory CD into CD driver, open serial software path:CD driver\Chinese\test software\GY-4 Test\GY-4 Test.exe;
- D、Click new paper option(picture13);
- E、The pop up dialogue box has two mode can afford you to choose:test curve file and text file(picture14);

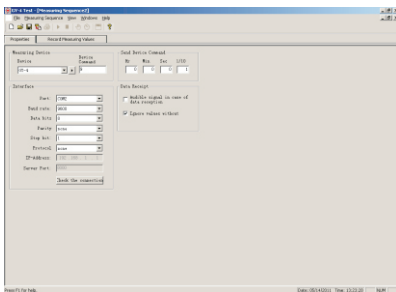


Picture14

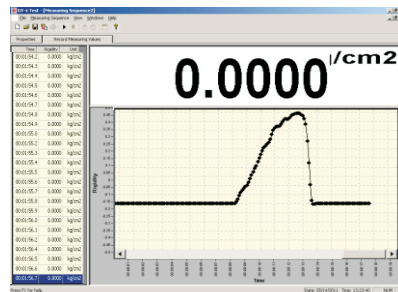


Picture13

- F、After choose test curve file, select the model which corresponding to the instrument in device type, select computer matched serial port, select 9600, select 8 as data bits, 1 as stop bits. last, in device send command, set the time of computer adopting testing data signal, 1/10 as 0.1sec(picture 15: hour is 0, minute is 0, second is 0,1/10 is 1, so the access point=0.1 second);
- G、After set parameter, click on the option of record measurements, change into curve interface;
- H、Click on, then press TIMER, start to adopt test data curve(picture16);



Picture15



Picture16

- fitting may cause electric shorted that may lead to electric shock or fire.
- 10、Do not charge or operate the sclerometer in other voltage,which is not applied with it, may cause electric shock or fire.
- 11、When your hand is wet, please do not plus or insert the adapter, to avoid electrical shock.

Function

GY-4 fruit hardness sclerometer is a new generation of common using and handy instrument designed by our company for testing maturity of fruit. Small, light, easy to carry, multi-function and high resolution, it is applied to test the hardness of apples, pears, potatoes and so on.

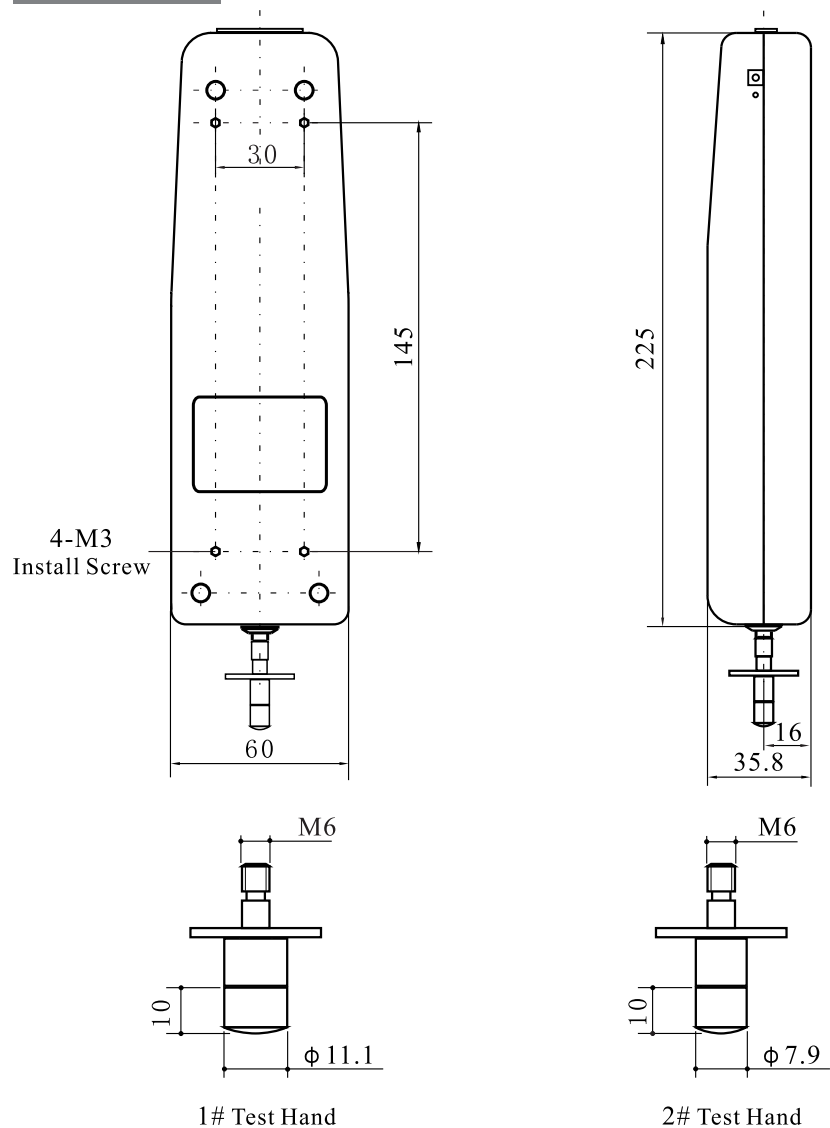
Characteritics

- 1、High accuracy and high resolution;
- 2、Settign upper and lower limit. The gauge will auto compare the sample. The sresult is indeicated by red, green lamp and alarm with buzzer;
- 3、Indicate the direction of force;
- 4、The blue background illumination can be choosed;
- 5、Memory 10 testing data, and count the average automatically ;
- 6、Two units Mpa, kg/cm²and auto inter-convert ;
- 7、Peak holding function,peak holding will be auto cancelled and the hold time; can be set from 1-10 seconds.
- 8、Auto power off, and the time can be set by user;
- 9、RS-232C output, connect to computer can realise curve testing, connect to micro-printer, can print 10groups deposited testing data report.

Work environment

- 1、Work temperature:20°C ± 10°C ;
- 2、Relative humidity:35%RH~65%RH;
- 3、No shock and corrossivity materials around.

Dimension



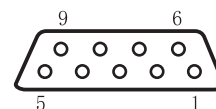
Picture 5

Serial output and print

Serial output is RS-232C, is used to connect outer equipment like micro printer and computer, the matched micro printer must support RS-232C.

- When serial output mode set as Print, press "PRINT", LCD shows "Print", instrument print 10 groups saved data and analysis report.

Serial needle illustration



Needle	Signal	Illustration
2	TxD	Output signal of scm
3	RxD	Incept signal of scm
5	GND	Earth
6	+2V	Over upper limit
7	+2V	Lower than low limit
8	+2V	OK is the eligible

Picture 11

Print paper illustration

Title	GY-4 TEST REPORT	
Date for memo	DATE:	
No	NO:	
Unit	UNIT:kg/cm ²	
Upper limit	HDT:5.365	
Low limit	LODT:4.80	
Minimnn acquisition value	LE.SET:0.200	
	DI:11.1 mm	
	-01 5.350	ok
	-02 5.200	ok
	-03 5.600	+
Test value	-04 5.150	ok
+: Over upper limit	-05 4.365	-
-: Lower than low limit	-06 4.465	-
OK: Lligible value	-07 5.550	+
	-08 4.510	-
	-09 4.475	-
	-10 5.135	ok
Max value	Max: 5.600	
Min value	Min: 4.365	
Average	Average: 4.980	

Picture 12

- When serial output mode set as PC, connect to computer could watch test curve by serial software or derive 10 groups saved data, the needed configuration and operation as follow:

(1)Hardware enviroment

- ①CPU: More than 1G;
- ②Internal storage: 256MB or over;
- ③Capacity of HDD: 300MB or over;
- ④CD driver: CD-ROM or DVD-ROM.


(2)Software enviroment

Operating system: Windows XP (32 figure)

(3)Specific operation

- A、Connect communication interface to computer with serial prolong cable;

6、 Test

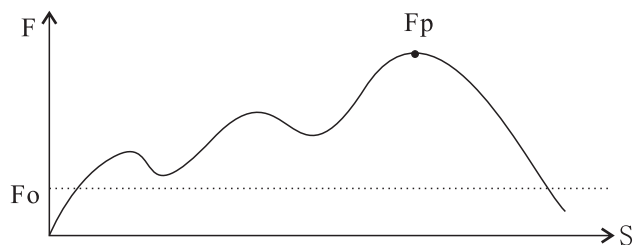
Check instrument whether in the condition of save value, if LCD show “AVERAGE”, press “

Right hand hold gauge tightly or install it on test stand, change test mode into peak holding mode, press the tip vertically onto fruit surface by steady force, (10mm inside fruit), now the reading data is testing hardness.



When it finished, slowly remove load, shutdown, disassemble the tip, clean all the parts of instrument and put into the box carefully for next time to use.


About memory, deposited value and minimum adopting value

When using memory function, please according to hardness to choose proper min acquisition value of deposited “Fo”, when test value is bigger than “Fo”, memory function starts to work to memory the biggest value, when value of hardness is smaller than “Fo”, finish a test (picture10), the biggest value of this test “Fp” will be saved, the left of memory location in LCD show “√”, “▶” auto forward one case waiting for next time memory test. When min acquisition value is bigger than test value, memory function doesn't work.



Picture 10

This instrument can deposit 10 testing value, when the 11th test, the 1th deposited value will be substituted, press “*

See the average of all saved data, press “

- 13 -

Test stand

This series sclerometer can be matched with different test stands, and it will be more convenient, stable, and accurate to test the hardness of apples, pears, potatoes and so on.



SPJ manual pressure test stand

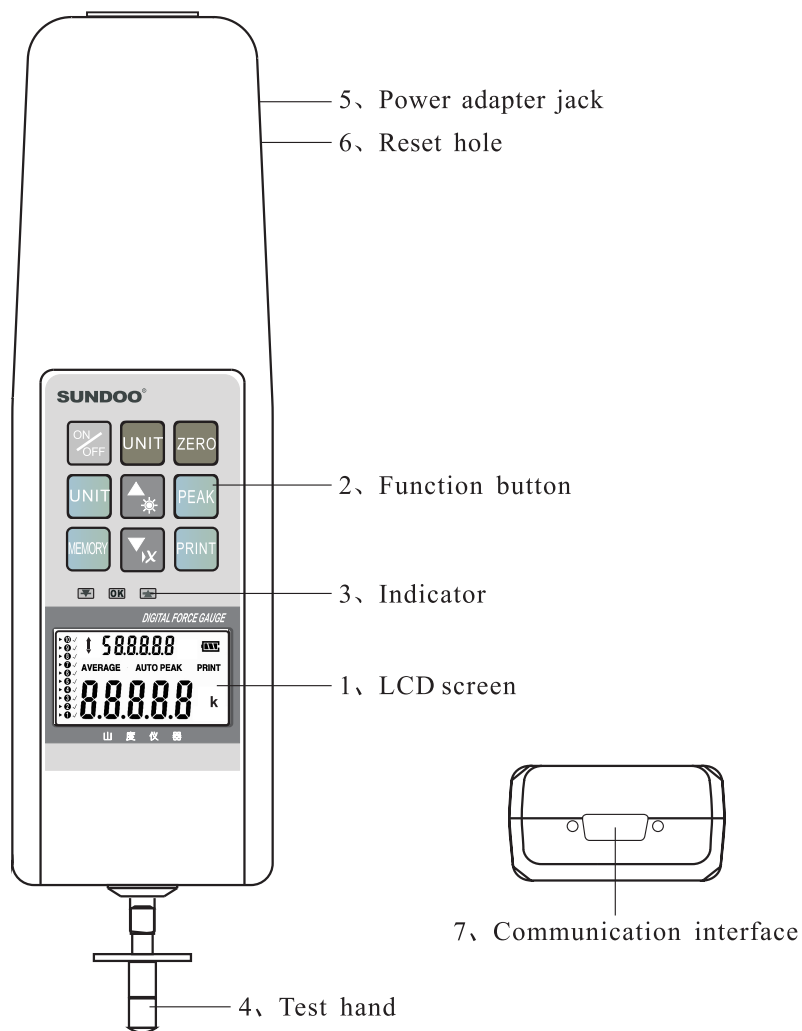


SJY-500 electric test stand

Pictures 6

Note: The above test stands need to purchase additionally.

Name and function of parts



Picture 7

Real time value of load/ maintain peak/ peak maintain automatic lifting of state's three models to choose: after the start of default mode for real-- time tracking mode, there is no "ZERO" press "PEAK", LCD will display "PEAK", it is in maintain peak, equipment to read the numerical test is in process of testing under load to bear the greatest value. in maintain peak state, press "PEAK" can clean the value on LCD, it is peak maintain automatic lifting state, in this state the gauge automatically cleared after maintain peak setting time and wait for the next peak.

4、 Select suitable unit

There are two kind of unit: Mpa and kg/cm press "UNIT" to choose suitable unit. Can change unit before or during testing.

5、 Upper and lower limit, min adopting value for deposit, auto power off time, peak hold and auto releasing time, serial out put mode and diameter of measuring tips:

1th, press "SET", LCD shows "HidT", digital box shows upper limit value press "▲*▼x" can change;

2th, press "SET", LCD shows "LodT", digital box shows lower limit value press "▲*▼x" can change it;

3th, press "SET", LCD shows "LE.SET", digital box shows min adopting value for saving, press "▲*▼x" can change;

4th, press "SET", LCD shows "P.OFF", digital box shows the setting time of power off, press "▲*▼x" can change;

5th, press "SET", LCD shows "A.PE", digital box shows peak releasing time, press "▲*▼x" can change current value;

6th, press "SET", LCD shows "Rs232", digital box shows Print or PC, press "▲*▼x" can change the state. "PC" as serial output mode, connect to computer seeing test curving or export test data; "Print" connect to micro printer to print 10 groups of deposited test data report.

7th, press "SET", LCD shows "DI", digital box shows diameter of measuring tip press "▲*▼x" can change it, diameter of instrument measuring tip whether conform to the installing one, otherwise you can not get the right test value.

8th, press "SET", all the changed setting are be saved, and return to test mode.

Note: In setup process, press "ZERO" can save settings and return to test condition

Universal power adapter 12V DC, 300mA.

6、Reset hole



When the instrument is disturbed, it is to restart the sclerometer.

7、Communication port

Serial (RS-232C) output, connect to computer to realise curve testing function, connect to micro-printer to print 10 groups testing data report (details “serial output and print”)

Preparation before use

1、Check power


Power on to check power, if screen shows “” that lack of electricity, please support the power adapter to insert the output of charging machine interface, 220V/50HZ AC plug, “” indicate that they are charging full and automatically stop charging. When power on/off, it can be charged, even in charging, it also can do test.

2、Installing measuring tips

After installing measuring tip, check the diameter of instrument measuring tip whether conform to the installing one, otherwise you can not get the right value. (Details in setting part, installation in picture 5)




Test

1、Power on

Power on: Under the condition of turning off the gauge, on power and press “”, instrument come into self checking program, LCD screen shows “SUNDOO” and model, the gauge come into normal working state.

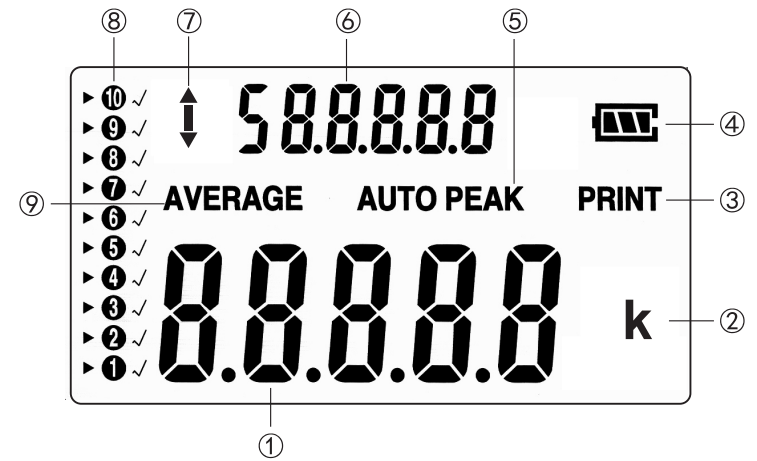
Power off: When power on and no working, the gauge will auto power off according to setting time or press “”.

2、Clear zero



After switch on, when the data is steady, press “” to clear zero, note: range of clear zero is $\pm 5\%$ of rated load). In peak holding mode, press “” can clean peak value. in setting mode, press “” can save setting value and be back to working state.

3、Choose test mode

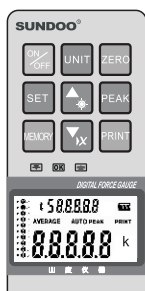
1、LCD screen










Picture 8

- ① Test value of fruit hardness, setting value in setting mode.
- ② Test unit. When no showing, it consents to Mpa, shows “K” unit is kg/cm^2 , auto count of two different unit value.
- ③ When print test value, it shows the mark.
- ④ Indicate quantity of power
When quantity low, show “” or glimmer, need to be charged, when charging, “” glimmer, indicate charging.
- ⑤ Indicate test condition, when show “PEAK”, means peak holding; when show “AUTO PEAK”, indicate peak auto releasing; no showing, means test value track.
- ⑥ In save test data state, indicate dimension of test head, auto count average of test data, when “▶” point to test value, to be function indication in setting mode.
- ⑦ Indicate the direction of force.
- ⑧ Save test data
“**1 2 3 4 5 6 7 8 9 10**” total 10 case, one case one test value mean this case is present deposited.
▶ : Means this case to deposit and to read.
√ : Means this case is deposited.
- ⑨ Symbol for average.

2、Function button








Picture 9

-  Power on/off
-  Return zero, clear peak.
-  Inter-convert the units
When no showing, it consents to mpa, press the button, show “k”, means the unit is kg/cm².
-  Peak button
Peak holding, peak auto releasing, test value track it consent to peak holding when power on.
-  Print button
Connect to computer or micro-printer to transmit or print all test data. (Details “serial output and print”)
-  Memory button
Memory test data and auto count the average, consent to save test value mode when power on, in this state, press the button, “AVERAGE” showing, it auto counts the average; press it again, the mark disappear, it return to saving state.
-  Set button
 - A.used to set alarm value of upper and lower limits;
 - B.storing the value of minimum value set collection;
 - C.set up automatic shutdown time(1-60minutes is free to set up, 0 for not automatically shut down);
 - D.set auto discharge of peak time(1-10seconds is free to set up);

- E. set serial output mode;
- F. set dimension of test head.







Plus key/background lights switch




- A. In memory mode, press “”, “▶” will forward one case when press “”, the data has already saved once, the case appears “√”, if go on to test, the data will be instead of originally deposited data. If no “√” appear, it proved that the case is empty, new test data will be saved in this case.
- B. In setting mode, press “” one time, the value will increase, hold down “” the value will continuously increase.
- C. In average mode, press “”, it is the switch of background illumination.






Reduce key/delete key

- A. In memory mode, press “”, “▶” symbol will backward one case. When press “”, the data has already saved once, the case appear “√”, if go on to test, the new test data will be instead of the originally deposited data in this case. if no “√” appear in this case, it means the case is empty, new data will be saved in it.
- B. In setting mode, press “” one time, value will decrease one. Press it for a little while, data will decrease continuously.
- C. In auto count average mode, press “”, all memoried data will be deleted.

3、Auto alarm indicator for outer limited value.

-  Alarm indicator of upper limit
-  Indicator for normal
-  Alarm indicator of lower limit

Work in the state apparatus, when the measured value in the set, the minimum range of deviation, the normal indicator “” light, that qualified; when value exceed the upper limit, the upper limit of light “”, said a failure. When the value below low limit, “” light, said a failure test. it is to remind user that it is not the scope of test results.

4、Test head

This sclerometer be with 2 test head,dimension in picture5.

5、Power adapter jack