CONTINUATION

Dear User,

Description in the manual is based on the 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 places one by one.

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SUNDOO
ADVANCED PRECISION INSTRUMENT

HP SERIES USER'S MANUAL

HP Series

User Manual

高 速 冲 击 扭 矩 测 试 仪

HIGH-SPEED IMPACT TORQUE METER

For
HP-1
HP-2
HP-5
HP-10
HP-20
HP-50
HP-100
HP-200
HP-500

CE CNAS

温州山度仪器有限公司
WENZHOU SUNDOO INSTRUMENTS CO., LTD

Packing List

Itwm	Name	Quantity
1	Main Body	1
2	Sensor	1
3	Sensor Connector Wire	1
4	Hexagon Interface Accessories(HP-200~500: without those accessories)	4
5	Connector 6 mm (HP-200~500: without that accessory)	1
6	Connector 6.3 mm (HP-200~500: without that accessory)	1
7	1/4' Tetragonal Mortise	1
8	3/8' Tetragonal Mortise	1
9	1/2' Tetragonal Mortise	1
10	M6×20 (HP-200~500: M10×40) Hexagon Socket Head Cap Screw	4+1
11	M6 (HP-200~500: M10) Hexagon Spanner	1
12	Power Adapter	1
13	Straight-through RS-232 Cable with Two-sided Holes	1
14	Software CD	1
15	Manual	1
16	Factory Inspection Report	1
17	Qualification Card	1

Thank you for your patronage to purchase HP Series High-speed Impact Torque Meter.

This High-speed Impact Torque Meter is an intelligent and multifunctional metrologic instrument which is designed for various torque testing and measuring. Please read the manual carefully before using the Torque Meter, in order to get correct torque value in the test.

CONTENT

Maintainance

1. Do not exceed the capacity, otherwise the meter may be damaged,even danger will happen.
2. Do not hit or put something on the LCD.
3. Do not press the button with nail, pointed tool or objects.
4. Do not use the meter near water, oil or other liquids. Keep the meter in a dry, shady and stable place.
5. Do not open the rear cover or adjust the resistance.
6. Do not loose the fixed screws on the torque test head.
7. Use matched charger, otherwise it will cause electrical faults or fire.
8. Before using, please insert the AC charger into the socket fully. Otherwise, it may cause a short circuit, even electric shock or fire.
9. Do not use power exceeding the capacity of charger, otherwise electric shock or fire may happen.
10. In order to avoid electric shock, do not use wet hands to touch the power adapter.
11. Clean the gauge with soft cloth. First put the dry cloth in the water with detergent and then dry the cloth and clean the instrument. Do not use volatile chemical liquids, such as volatile oil, thinner, alcohol, etc.
12. Handle carefully while carrying and using the meter.
13. Do not disassemble, repair or modify the meter by yourself. It may cause the malfunction of the meter.
14. If there is something wrong with the meter, please contact the original sales department or our company.
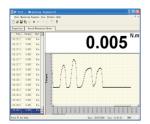
data of the instrument. Please choose the matched model and corresponding serial port, then click the start button " ▶ " to open the serial port and press " PRINT " on the instrument to import the stored data to the computer (See Picture 17).

Icon instruction

" 🖳 ": The collection data is imported into EXCEL file;

" ▶ ":　Open serial port to start test;

" ■ ":　Close serial port to stop test;

" ✋ ":　Collect current value manually;

" 🕒 ":　Collect the data continuously and regularly.

Picture 16　　　　Picture 17

Rechargeable Battery

During using the gauge, if the mark " ▭ "flicker, it means that the battery is very low and need to be charged. Please use matched " DC 12V/400mA" charger. With smart charging technology, it will stop charging automatically after charging fully.Practically protect the battery durability.

Cautious

1、Frequent and long-playing charging will shorten battery life

2、Please charge when the battery only has a grid or less a grid power to avoid not to charge fully because of very low power

3、Charge the battery fully at least once three months

Parameter

Model	HP-1	HP-2	HP-5	HP-10	HP-20	HP-50	HP-100	HP-200	HP-500
Capacity	1N.m	2N.m	5N.m	10N.m	20N.m	50N.m	100N.m	200N.m	500N.m
Resolution	0.0005 N.m	0.001 N.m	0.002 N.m	0.005 N.m	0.01N.m	0.02N.m	0.05N.m	0.1N.m	0.2N.m
Accuracy	Within ±0.5%FS								
Peak Collection Frequency	2000 Hz								
Test Speed	≤10000rpm								
Unit	N.m、kgf.cm、lbf.in								
Sensor Type	Sensor outside								
Power	Adaptor: DC 12V/300mA Rechargeable Battery inside: Ni-MH 8.4V 1200mAH								
Use Time	Continuous use for about 16 hours								
Standby Time	About 3 months								
Battery Life	≥300 times								

Function

HP Series High-speed Impact Torque Meter is an intelligent and multifunc-tional metrological instrument, which is designed for testing various torque. It is mainly used to detect and calibrate the torque of various electric & pne-umatic screwdrivers, torque driver, torque wrench, the products which inv-olve tightening force testing, destructive test for parts torque, etc. It has the characteristics of easy operation, high accuracy, overall functions and con-venient taking. It is widely applied in the fields of electric, light industry, machinery manufacture, research institution and so on.

Main Features

1. High accuracy and high resolution.
2. Set and judge the upper and lower limit deviation value; red/green indi-cator lamp and buzzer can alarm automatically with sound and light.
3. Torque direction display.
4. Blue background light.
5. Memorize and print 10 groups of test data.
6. Print real-time tested curve of single time.
7. Calculate the average of stored data automatically.
8. Automatic converting three units(N.m, kgf.cm, lbf.in).
9. Peak-holding function.
10. Peak automatic discharge function and discharge time can be set freely.
11. It can turn off automatically if it has no operation, and the shutdown time can be set freely;
12. RS-232C output. Connecting to computer can realize curve test function; connecting to printer can print 10 groups of stored test data report or the current test curve.

Work Environment

1. Work temperature:20℃ ±10℃.
2. Relative humidity:35%RH～65%RH.
3. No vibrancy and no cautery around.

B. Turn on the power, make the instrument in working status, then set the serial port output mode as PC state.
C. Put CD into computer drive and open software route: CD-ROM/English/ Measuring software/HP/HP Test/HP Test.exe.
D. Click "New" in the "File" option (See Picture 12).
E. There are two modes to choose in new dialog box: Measuring Sequence and Text File (See Picture 13).
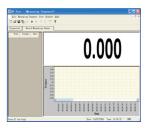
Picture 12　　　　　　　　　　　Picture 13

F. After choosing "Measuring Sequence", please choose correspon-ding model and serial port, and set the time of capturing the signal of test value in Send Device Command. 1/10 means 0.1 second (See Picture 14:When Hr is 0, Min is 0, Sec is 0, 1/10 is 1, then the capturing time is 0.1 second).
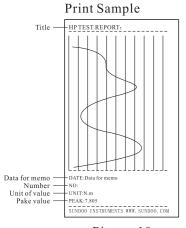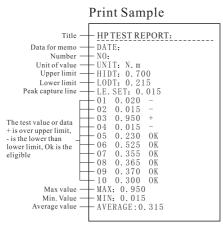
Picture 14　　　　　　　　　　　Picture 15

G. After setting the parameters, please click "Record Measuring values" option, and switch to curve display interface. After clicking start button " ▶ ", then click "TIMER" (⊚) to collect test data curve (See Picture 15).
H. After finishing test, please click stop button " ■ " to stop testing(See Picture 16).
I. Click save button to save the data.
J. If you choose the Text File, it means that you can import the stored

1. When the RS-232C output is set at Pr.1, it can output to the micro-printer and print single test value curve. Press " PRINT " button, the display screen shows "Print" and print the test curve synchronously. The print sample is shown as Picture 10.

2. When the RS-232C output is set at Pr.2, it can output to micro-printer and print 10 groups of stored data. Press " PRINT " button, the display screen shows flickering "Print" and prints the test report synchronously. The print sample is shown as Picture 11.

Print Sample

Title — HP TEST REPORT:

Data for memo — DATE:Data for memo
Number — NO:
Unit of value — UNIT:N.m
Pake value — PEAK:7.805

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Picture 10

Print Sample

Title — HP TEST REPORT:
Data for memo — DATE:
Number — NO:
Unit of value — UNIT: N.m
Upper limit — HIDT: 0.700
Lower limit — LODT: 0.215
Peak capture line — LE.SET: 0.015

01 0.020 −
02 0.015 −
03 0.950 +
04 0.015 −
05 0.230 OK
06 0.525 OK
07 0.355 OK
08 0.365 OK
09 0.370 OK
10 0.300 OK

The test value or data + is over upper limit, - is the lower than lower limit, Ok is the eligible

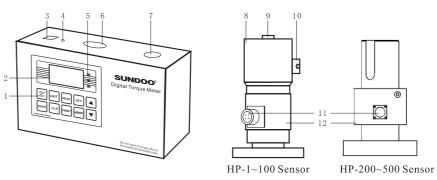Max value — MAX: 0.950
Min. Value — MIN: 0.015
Average value — AVERAGE:0.315

Picture 11

3. When serial port output mode is PC, you can view force curve by software or input 10 groups of stored data to computer by connecting to computer. The required configuration and specific operation are as follow :

（1）Hardware environment
    A. CPU: Celeron 1G or above.
    B. Memory: 256MB or above.
    C. Hard disk available capacity: 300MB or above.
    D. Drive: CD-ROM or DVD-ROM.
（2）Software environment
    Operating system: Windows XP (32bit).
（3）Specific operation
    A. Connect the instrument to computer with straight-through RS-232 cable, which has two-sided holes.
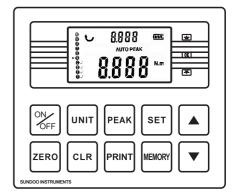
Parts and Functions

HP-1~100 Sensor　　　HP-200~500 Sensor

Picture 1

1.Function Buttons
2.LCD
3.Power Adapter Socket
4.Reset Hole

5.Indicator Lamps
6.RS-232 Port
7.Sensor Port
8.Test Head

9.Connector 6mm or 6.3mm
10. M8 Cylindrical Head Screw
11.Sensor Cable Port
12.Sensor

Note: HP-200~500: without cylindrical head screw, test head, connector 6 mm or connector 6.3 mm.

1. Function Buttons

Picture 3

ON/OFF　ON/OFF Button

ZERO Zero Button
Be used for cleaning to zero, cleaning peak value and saving set value.

UNIT Unit Conversion Button
→ N.m → kgf.cm → lbf.in

CLR Clear Button
In the test state, pressing " CLR " can delete the data which " ▶ " points at. Pressing " CLR " all the time can delete all the stored data.

PEAK Peak Button
Convert three states: peak-holding, peak-holding automatic discharge and real-time tracking of the torque. The state of real-time tracking of the torque is default.

PRINT Print Button
Print the current data (See Page 9).

MEMORY Memory Button
It can be used to memorize the test values and calculate the average of stored data. Pressing the button makes the test value store into the meter. Pressing it all the time makes the screen display "AVERAGE", and the average of all the stored values can be seen.

SET Set Button
A. Set upper and lower limit automatic alarm values.
B. Set automatic shutdown time (1-60 minutes can be set freely, and 0 means not automatic shutdown).
C. Set peak automatic discharge time (1-30 seconds can be set freely).
D. Set serial port output mode.
E. Set the state of background light.

▲ Plus Button
A. In the state of storing test values, pressing " ▲ " can make the " ▶ " forward one location. Now pressing " MEMORY " can store the test value into this location. If there is " √ " on the right of this location, it

Note：Picture 4 is the plane dimension of test head and connector.
Picture 5 is the plane dimension of HP-200~500 sensor.

Torque Testing Process of Screwdriver

1. Connect the screwdriver with the sensor.
2. Press "PEAK" button to choose peak-holding state.
3. Press "ZERO" button to make the screen show zero.
4. Twist the screwdriver and stop it after hearing the "tick-tock" three times [keep the screwdriver and the sensor in one line (picture 7), please do not put it on one side (picture 6 and 8) or exceed force over 1kg to make it load the sensor heavily], then record the torque value showing on the screen.
5. Operate the above third and fourth steps five times to get the data continuously, then desert the max / min value and figure out the average, which is the torque of the screwdriver.

| Wrong | Right | Wrong |
| Picture 6 | Picture 7 | Picture 8 |

Serial Port Output

The serial port output of this meter is RS-232 level, and it can connect micro-printer, computer or other external devices. The matching micro printer must support RS-232 electrical level.

Illustration of RS-232 Port

Needle	Signal	Illustration
2	TxD	output signal of SCM
3	RxD	reception signal of SCM
5	GND	signal place

Picture 9

The third time you press "⌷SET⌷", the display screen shows "P.OFF", and the digital box shows current automatic power off time. Pressing "⌷▲⌷⌷▼⌷" can change the current value.

The fourth time you press "⌷SET⌷", the display screen shows "A.PE.", and the digital box shows current peak automatic-discharge time. Pressing "⌷▲⌷⌷▼⌷" can change the current value.

The fifth time you press "⌷SET⌷", the display screen shows "RS 232", and the digital box shows PC, Pr.1 or Pr.2. Pressing "⌷▲⌷⌷▼⌷"can change the current state.

The sixth time you press "⌷SET⌷", the display screen shows "LIGHT", and the digital box shows "On" or "OFF". "On" means that the backgroud light is on, and "OFF' means that the backgroud light is off. Pressing "⌷▲⌷⌷▼⌷" can change the current state.
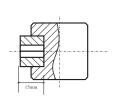
The seventh time you press "⌷SET⌷" can save the set value and return to the test state.

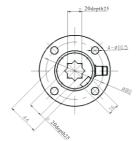Note: In the setup process, pressing "⌷ZERO⌷" can save the set value and return to the test state.

6. If you want to print the test curve or stored test value, you can connect the communication interface with micro-printer to print the stored data.

7. After using this torque meter, turn off the power and put the instrument back to the box.

Test Head and Connection Dimension

1. The vertical load of the torque test head or sensor should not exceed 1kg.

2. In order to avoid damage, do not crash the torque test head (HP-200~500: without that accessory) or sensor. The dimensions of torque test head and sensor are as follow:

Picture 4   Picture 5

---

means that this location has stored a test value, and the new test value will replace that value and store into the location.

B. In the set state, pressing "⌷▲⌷" can make the set value increase. Pressing it more than two seconds can make the data increase continuously.

⌷▼⌷ Reduce Button
A. In the state of storing test values, pressing "⌷▼⌷" can make the " ▸ " backward one location. Now pressing "⌷MEMORY⌷" can store the test value into this location. If there is " √ " on the right of this location, it means that this location has stored a test value, and the new test value will replace that value and store into the location.

B. In the set state, pressing "⌷▼⌷" can make the set value decrease. Pressing it more than two seconds can make the data decrease continuously.
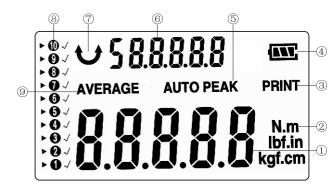
2. LCD

Picture 2

① The reading of torque; in setting mode, the data is the setting value.
② Unit
Three units(N.m, kgf.cm, lbf.in) convert automatically.
③ Print indication. Print all the stored data or single test curve.
④ Electric quantity indication of battery
When the power is low, it displays"▭" or flickers, meaning that the battery needs to be charged. When the battery is being charged, the

power indication " ▲▲▼ " flickers.

⑤ Peak value indication

When it displays " PEAK " on LCD screen, it is max test value in locked status ; when it displays "AUTO PEAK" , the peak is in automatic discharge status after the set time.

⑥ Stored test value, average of the stored data or the symbols of indication function at the set state.

⑦ Clockwise direction " ↰ " , counterclockwise direction " ↱ " .

⑧ Store test value

" ❶❷❸❹❺❻❼❽❾❿ "ten locations, each location can store one test value;

" ▶ "shows that it is current stored reading location;

" √ "shows that the location has already stored test value.

⑨ Average indication of stored test values.

3. Power Adapter Socket: 12VDC, 300mA.

4. Reset Hole

Be used to restart the instrument when it is disturbed strongly.

5. Indicator Lamps

[▲] indicator lamp of upper limit alarm value

[OK] normal value indicator lamp

[▼] indicator lamp of lower limit alarm value

In the work state, if test value is in the range of upper and lower limit deviation, normal value indicator lamp "[OK]" will light , meaning that it is eligible; if test value exceeds upper limit value, the indicator lamp of upper limit "[▲]" will light, and the buzzer alarms, meaning that it is not eligible; If the test value is less than lower limit value, the indicator lamp of lower limit "[▼]" will light, and the buzzer alarms, meaning that it is also not eligible. This can inform users that the test result isn't in the range.

6. RS-232 Port

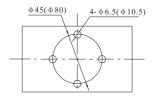RS-232 port output is used to connect computer, printer or other outside devices.

7. Sensor Port

It is a port of signal input and used to combine with the sensor.

8. Test Head: transfer the torque load to the sensor.

9. Connector 6mm or 6.3mm.

10. M8 Cylindrical Head Screw: lock test head.

11. Sensor Cable Port.

12. Sensor.

Operation Process

1. Open the instrument and check the power, if the screen displays " ▭ ", it means lack of power. Then please put the power adapter into the charging port, and plug into AC 220V/50HZ. " ▲▲▼ " flickers, which indicates that it is being charged. The instrument can automatically count the charging time, and it can stop charging when it is full. It can be charged no matter it is power on or off, and it can be used to test even though it is being charged.

2. Fix the sensor on the test bench by screws and ensure that it will not be moved when it is in the maximum torque.

$\phi45(\phi80)$ 4-$\phi6.5(\phi10.5)$

Sensor Installation Dimension
Note: the data in bracket is the sensor dimension of HP-200~500.

3. Under normal circumstances, open the power switch, and the test value shows zero. If the torque value is not zero, pressing Zero button can make the torque reading return to zero.

4. Press the Unit button to select the torque unit as you need.

5. Set upper and lower limit values, automatic power-off time, peak automatic discharge time, RS-232C output connection option and background light switch. Specific operations are as follow:

The first time you press "[SET]", the display screen shows "HIDT", and the digital box shows current automatic alarm upper value. Pressing "[▲][▼]" can change the current value.

The second time you press "[SET]", the display screen shows "LODT", and the digital box shows current automatic alarm lower value. Pressing "[▲][▼]" can change the current value.

CONTINUATION

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Ver:4.00 Con:20170225

SUNDOO®
ADVANCED PRECISION INSTRUMENT

HP SERIES USER'S MANUAL

HP Series   高 速 冲 击 扭 矩 测 试 仪
User Manual   HIGH-SPEED IMPACT TORQUE METER

For
HP-1000
HP-2000
HP-5000

CE   CNAB

温州山度仪器有限公司
WENZHOU SUNDOO INSTRUMENTS CO., LTD

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3	Sensor Connector Wire	1
4	Power Adapter	1
5	Straight-through RS-232 Cable with Tow-sided Holes	1
6	M10×40 Hexagon Screw(HP-2000~5000: M12×40)	8+1
7	M10 Hexagon Spanner(HP-2000~5000: M12)	1
8	Software CD	1
9	Manual	1
10	Factory Inspection Report	1
11	Qualification Card	1

Rechargeable Battery

During using the gauge, if the mark " ▭ "flicker, it means that the battery is very low and need to be charged. Please use matched " DC 12V/400mA" charger. With smart charging technology, it will stop charging automatically after charging fully.Practically protect the battery durability.

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1、Frequent and long-playing charging will shorten battery life
2、Please charge when the battery only has a grid or less a grid power to avoid not to charge fully because of very low power
3、Charge the battery fully at least once three months

Cautions

1. Do not exceed the capacity, otherwise the meter may be damaged, even danger will happen.
2. Do not hit or put something on the LCD.
3. Do not press the button with nail, pointed tool or objects.
4. Do not use the meter near water, oil or other liquids. Keep the meter in a dry, shady and stable place.
5. Do not open the rear cover or adjust the resistance.
6. Do not loose the fixed screw on the torque measuring tip.
7. Use matched charger, otherwise electric break-down or fire will happen.
8. Before using please insert the AC charger in the socket. Any losing of the plug may lead to fire or electric shocks caused by short circuit.
9. Do not use power exceeding the capacity of charger, or electric shock or fire may happen.
10. Do not plug in or out with wet hand to avoid electric shock.
11. Clean the gauge with soft cloth. First put the dry cloth in the water with detergent and then dry the cloth and clean the gauge. Do not use volatile chemical liquid such as volatile oil, thinner, alcohol, etc.
12. Handle carefully while carrying and using the meter.
13. Do not disassemble, repair or modify the meter by yourself. It may cause the malfunction of the meter.
14. If there is something wrong with the meter, please contact the original sales department or our company.

Specification

Model	HP-1000	HP-2000	HP-5000
Capacity	1000N. m	2000N. m	5000N. m
Resolution	0.5N.m	1N.m	2N.m
Accuracy	Within±1%FS		
Peak Collection Frequency	2000 Hz		
Test Speed	≤10000rpm		
Unit	N. m、kgf. cm、lbf. in		
Sensor Type	Sensor outside		
Power	Adaptor: DC 12V/300mA Rechargeable battery inside: Ni-Hi8.4V 1200mAh		
Use Time	Continuous use for about 16 hours		
Standby Time	About 3 months		
Battery Life	≥300times		

Function

HP Series High-speed Impact Torque Meter is an intelligent and multifunctional metro logical instrument especially designed for various torque testing and measuring. It is ideal for detecting and calibrating various electric&pneumatic screwdrivers torque screwdriver, torque driver and wrench with torque control, for the relative torsion torque testing and the torsion fracture parts testing.It has high accuracy, easy to operate and handy to carry out. It is widely used in electric, light industry, machinery manufacture, scientific research, and so on.

Characteristic

1. High accuracy and high resolution;
2. Upper and lower tolerance limit enables the device to judge the measured result as Go (Green pilot lamp)/NG (Red pilot lamp);
3. Torque Direction display;
4. Blue Background light;
5. Memorizing and printing 10 groups of test value;
6. printing Real-time tested curve of single time ;
7. Auto count the average of memory data;
8. Automatic converting three units(N.m,kgf.cm,lbf.in);
9. Peak holding;
10. auto-releasing and setting of peak holding and the time can be set freely
11. Auto power off and setting the time;
12. Port(RS-232C)output connecting computer with matched software.

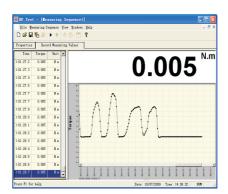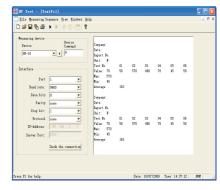## Operation Environment

1. Temperature:20℃ ±10℃
2. Relative humidity:35％RH～65％RH
3. No vibrancy and no cautery around.

H. Test is completed, in accordance with stop button ■ to stop the test (Picture 13);

I. Click on the File menu Save option to save data.

J. In the new dialog box for text documents such as the choice to import data storage devices, but after select the type of device that corresponds to the model, select the port corresponding serial computer; click" ▶ " button to open serial port, and then click the" PRINT "button on the apparatus, the apparatus will be stored in the data into the computer (Picture 14).

Icon explanation:

" 🗒 " : transfer the test data to EXCEL

" ▶ " : open the output to start test

" ■ " : close the output to stop test

" 🖑 " : collect the present data in manual

" ⊗ " : continnously collect the data timed

Picture 13　　　　　　　　　Picture 14

RS-232C to the state of output to PC.

C. Insert the accessory CD into computer and open the following path CD-ROM /English/Measure Software/HP Test/HP Test.exe;

D. Click the New file in File (Picture 9);

E. Click on the new dialog box will pop up for your choice of two modes: measurement curve documents, text This document (Picture 10);
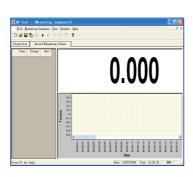
Picture 9   Picture 10

F. Select curve file, select the device type that corresponds to the model, in select the computer port corresponding serial port, and send command in the computer set up mining set the value of signal strength. 1 / 10 for 0.1 seconds (Picture 14: when 0, means hour 0, minute 0,l seconds 0,1 / 10 for a computer access time = 0.1 seconds);

G. Parameters set up, click on record measured values tab, switch to the curves show the community surface; click on the " ▶ " the start button and click the " 🕐 " TIMER key to collect test data curve (Picture 12);
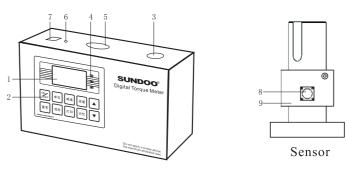
Picture 11   Picture 12

Parts and Functions

Sensor

Picture 1

1.LCD   4.Pilot lamp   7.Power connector
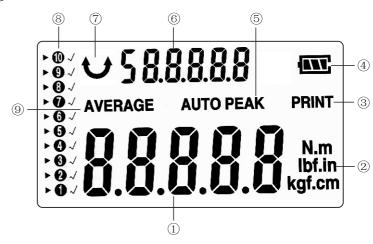2.Function button   5.RS-232C series port   8.Sensor cable
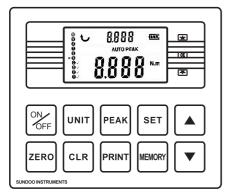3.Sensor port   6.Reset hole   9.Sensor

1. LCD

Picture 2

① The value of torque; in setting mode, the data is the setting value.

② Unit
   3units(N.m,kgf.cm,ibf.in)convert automatically.
③ Print the memorized data or single tested curve.
④ Indication of power content
   When the power content is Low, display " ⊏▭ " or flicker the Mete needs
   to charge .
   When the battery is charging, its indication is " ◣◣◣ ".
⑤ Indication of peak mode,"PEAK"means the max torque value,
"AUTO PEAK" means the peak will clear after the set time;
⑥ Indication of auto calculating the average of memorized data and the
   function symbol in set mode. Symbol of torque direction
⑦ Clockwise direction " ↰ " , counterclockwise direction " ↗ " .
⑧ Memory data
   " ❶❷❸❹❺❻❼❽❾❿ "are 10 grids, one torque data is memorized
   in one grid.
      ▶ :Means the grid is for the showing value.
      √ :The grids has memorized the data.
⑨ The average value of the memorized data.

2.Function Button

Picture 3

ON/OFF Power ON / OFF

1. When RS-232C output is set at Pr.1, it means the single tested Curve will be
   printed. Press "PRINT" , and it will appear on the screen, then tested curve will be printed
   simultaneously in the process of testing. The picture below is a sample.(Picture 7)
2. When RS-232C output is set at Pr.2, the screen will flicker when " PRINT " is pressed
   and ten groups of data and analysis report will be printed. Please refer to the picture
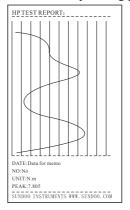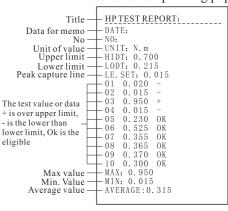   below.(Picture 8)

Illustration of printing paper: Illustration of printing paper:

Picture 7   Picture 8

3. When RS-232C output is set at PC, the screen will flicker and when print is
   pressed, ten groups of data will be transmitted to computer. Specific Method of
   connecting apparatus and computer is in the following.

   (1) Hardware condition
         ①CPU:1Gor over
         ②Memory:256MBor over
         ③Available Capacity:over 300MB
         ④CD-Driver:CD-ROM or DVD-ROM
   (2) Softwore Condition
         ①Operation System: Windows XP (32 Dits)
   (3) Operation
         A. Connect the digital torque meter to PC with RS-232C cable;
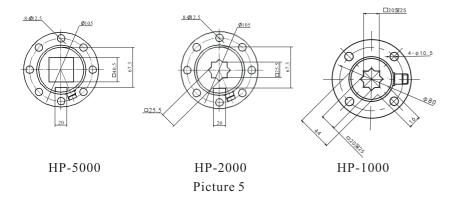   B. Turn on the torque meter and make it on the working state, then set

Note: In the process of setting, press " ZERO " button can save setting and return to test state.

6. To print a test curve or stored torque value, use the cable with the printer connected to the mini.

7. After you are finished using Torque tester, turn off the power switch, and back into the equipment box tester.

Test Head and Connecting Dimension

1. The vertical load of the torque measuring tip should not exceed 1kg.

2. Torque test head can not crash, so as to avoid damage. Test Head Plane Size shown:

HP-5000   HP-2000   HP-1000
Picture 5

Port Output

This meter is RS-232C, series port, the outside equipment must support RS-232C. (The setting way please refer page7 .)

Illustration of test report:

Needle	Signal	Illustration
2	TxD	output signal of SCM
3	RxD	reception signal of SCM
5	GND	signal place

Picture 6

ZERO Zero Button
Clean zero and peak value, or holding set value in the setting mode.

UNIT Shift Button of units
→ N.m → kgf.cm → lbf.in →

CLEAR Clear Button
In the state of memorizing torque value press " CLEAR " will delete the data which " ▶ " point at, press " CLEAR " all the time, will delete all the memory testing data.

PEAK Peak Button
Peaking holding auto-realeasing tracking mode. Track mode is default.

PRINT Print Button
You can print all the stored data or the output to the PC serial port (Page 9).

MEMORY Memory
Memorize the test value and calculate the average. Pressing the " MEMORY " button keeps the test value showed on the screen in the meter. Pressing the button still makes the screen display "AVERAGE" and the average of all reserved value can be seen.

SET Setting
A. Upper and lower tolerance limit;
B. Peak holding and auto- releasing function(1-30 seconds);
C. Automatic power off and its time(1-60 minutes);
D. RS-232C port output;
E. Background illumination;

▲ Plus a Button
A. In memory mode, press " ▲ " "one time," ▶ " symbol will forward one case. When press " MEMORY ", the testing value be saved, If on the right of the case is " √ " , shows this case already saved the testing value, the new test value will take place of this value and save into this case.
B. In the settings, press the " ▲ " button, set the value will increase. By the key Data will go straight increase.

Reduce a Button

A. In memory mode, press " ▼ "one time, " ▶ "symbol will backward one case. When press " MEMORY ", the testing value be saved, If on the right of the case is " √ ", shows this case already saved the testing value, the new test value will take place of this value and save into this case.

B. In the settings, press the " ▼ " button, set the value will be reduced. By the key Data will go straight decline.

3. Sensor port

It is a port of signal input and used to combine with the sensor.

4. The pilot lamp of upper and lower limit

▲ Pilot lamp of upper limited alarm

OK Pilot lamp of normal

▼ Pilot lamp of lower limited alarm

Work in the state apparatus, when the measured value in the set, the minimum range of deviation, the normal indicator light " OK " light, that qualified; When measured values exceed the upper limit, the upper limit of light " ▲ " light, peak ming device alarm, said a failure rate; when the measured value below the lower limit, the lower limit of light " ▼ " light, alarm devices Feng-ming, said the failure rate; to remind users that this is not the scope of the test results.

5. Communicating port

RS-232C port, for connecting computer or printer and other outside equipment.

6. Reset hole

It is to restart the meter, when the meter is disturbed strongly.

7. Power connecter: power adaptor:12VDC,300mA;

8. Sensor cable port.

9. Sensor.

Operation Process

1. Open the instrument checks the power, if the screen displays " ▭ " means lack of power, please complete the power adapter output charge into the machine interface, plug into AC 220V/50HZ, " ◣◣◣ " indicated that they were charging, full of automatically stop charging. In the on / off both pairs of instruments under the charge, charge could also be measured.

2. M6 screws with the sensor fixed on the test bench, installed to ensure that the work table without any moved under the maximum torque work.

3. Open the power switch, showing the torque value is zero. If it shows the torque value is not zero, press Clear button will clear the torque reading.

4. Depending on the test requirements, according to torque unit conversion button, select the required torque units.

5. Set the upper and lower tolerance limit, automatic power off time and peak auto-release time, RS-232C output connection option and background illumination switch option, operate in the following process.

The first time by the " SET " button, the display shows "HIDT" , the figures show that the current frame Automatic alarm of upper limit, press the " ▲ ▼ " key to change the current value;

The second time by the " SET " button, the display shows "LODT" , the number of box shows the current lower limit of the automatic alarm. Press the " ▲ ▼ " key to change the current value.

The third time by the " SET " button, the display shows "P. OFF", the number of the box shows the current self - turn off of the time, press the " ▲ ▼ " key to change the current value.

The fourth time by the " SET " button, the display shows "A. PE", the figures show the peak box automatically release time, press the " ▲ ▼ " key to change the current value.

The fifth time by the " SET " button, the display shows "RS-232", the figures show the PC box, or Pr.1, Pr.2, according to the " ▲ ▼ " button to change the current status;

The sixth by the " SET " button, the display shows "LIGHT", the figures box show "ON", or "OFF", "ON" for the back light lamp in this, "OFF" lights out for the back light, press the " ▲ ▼ " button can be to change the current status;