

CONTINUATION

Dear user,

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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-1000
HP-2000
HP-5000



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

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

This High-speed Impact Torque meter is an intelligent and multifunctional metro logic 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.


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Packing List

Item	Name	Quantity
1	Body	1
2	Sensor	1
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.

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

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 $\pm 1\%$ FS		
Peak Collection Frequency	2000 Hz		
Test Speed	≤ 10000 rpm		
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	≥ 300 times		

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: $20^{\circ}\text{C} \pm 10^{\circ}\text{C}$
2. Relative humidity: 35%RH~65%RH
3. No vibrancy and no cautery around.

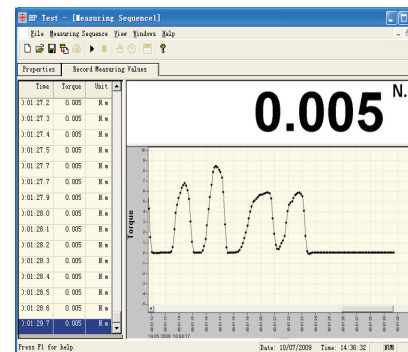
H. Test is completed, in accordance with stop button ■ to stop the test (Picture 13);

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

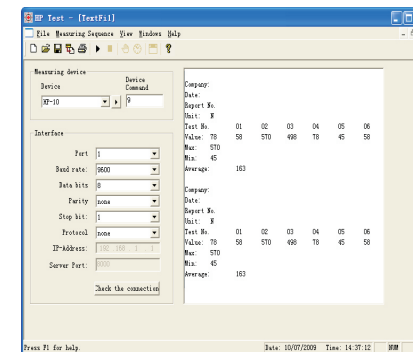
J. In the new dialog box for text documents such as the choice to import data storage devices, but after select the type of device that corresponds to the model, select the port corresponding serial computer; click "►" button to open serial port, and then click the "PRINT" button on the apparatus, the 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
- "": continously collect the data timed

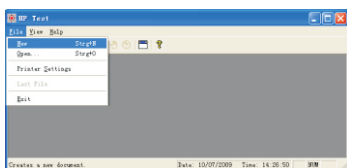


Picture 13

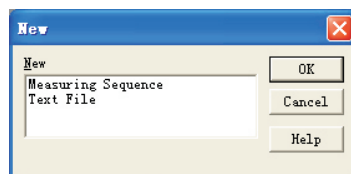


Picture 14

- 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);



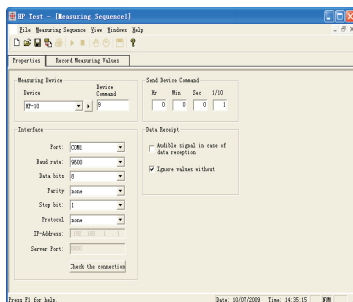
Picture 9



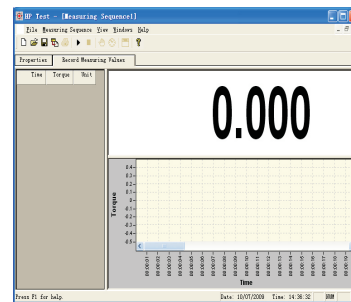
Picture 10

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 0,1 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);

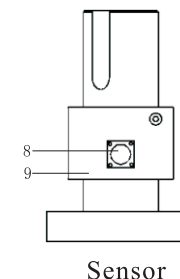
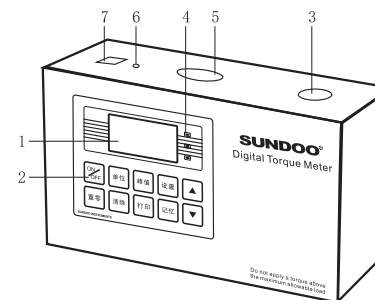


Picture 11



Picture 12

Parts and Functions

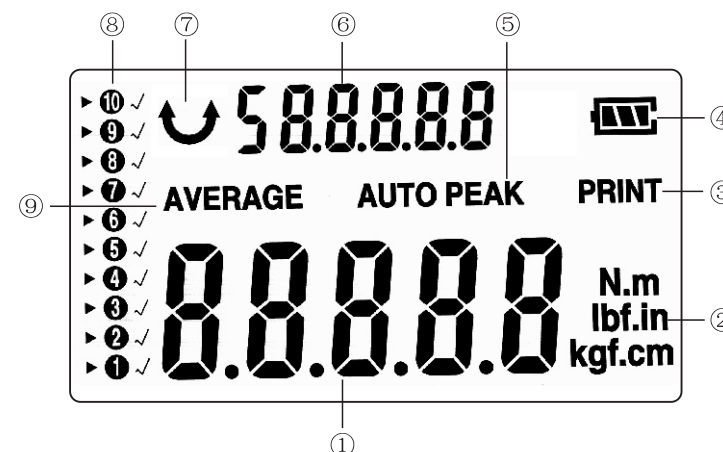


Sensor

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

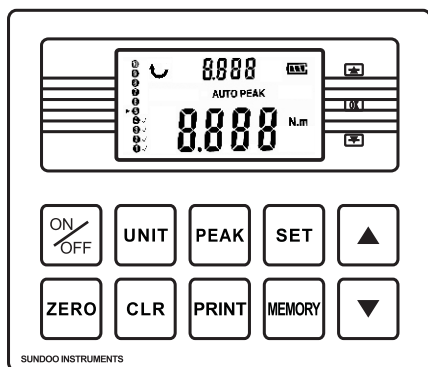


Picture 2

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

- ② Unit
3 units(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
" **1 2 3 4 5 6 7 8 9 10** "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



Power ON / OFF



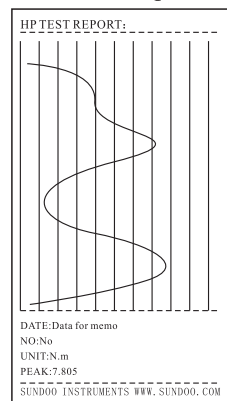
1. When RS-232C output is set at Pr.1, it means the single tested Curve will be printed. Press "  ", and it will appear on the screen, then tested curve will be printed simultaneously in the process of testing. The picture below is a sample.(Picture 7)
2. When RS-232C output is set at Pr.2, the screen will flicker when "  " 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:



Picture 7

Illustration of printing paper:

Title	HP TEST REPORT:
Data for memo	DATE: -----
No	NO: -----
Unit of value	UNIT: N. m
Upper limit	HDT: 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 -
The test value or data	05 0.230 OK
+ is over upper limit,	06 0.525 OK
- is the lower than	07 0.355 OK
lower limit, Ok is the	08 0.365 OK
eligible	09 0.370 OK
	10 0.300 OK
Max value	MAX: 0.950
Min. Value	MIN: 0.015
Average value	AVERAGE: 0.315

Picture 8

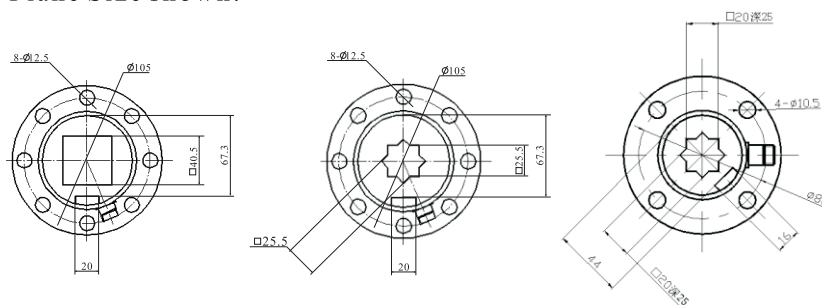
3. When RS-232C output is set at PC, the screen will flicker and when print is pressed, ten groups of data will be transmitted to computer. Specific Method of connecting apparatus and computer is in the following.
 - (1) Hardware condition
 - ① CPU:1G or over
 - ② Memory:256MB or over
 - ③ Available Capacity:over 300MB
 - ④ CD-Driver:CD-ROM or DVD-ROM
 - (2) Software Condition
 - ① Operation 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.

- To print a test curve or stored torque value, use the cable with the printer connected to the mini.
- After you are finished using Torque tester, turn off the power switch, and back into the equipment box tester.

Test Head and Connecting Dimension

- The vertical load of the torque measuring tip should not exceed 1kg.
- Torque test head can not crash, so as to avoid damage. Test Head Plane Size shown:



HP-5000

HP-2000

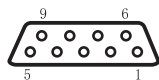
HP-1000

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-releasing 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

 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 connector: 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;