

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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SDT SERIES USER'S MANUAL

SDT Series User Manual

For

SDT-0.02

SDT-0.05

SDT-0.1

SDT-0.2

SDT-0.5

SDT-1

SDT-2

SDT-5

SDT-10

SDT-20

SDT-50

扭 矩 试 验 机

TORQUE TESTER

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

Thanks very much for your patronage to purchase SDT Series Torque Tester.
This torque tester is designed and manufactured for testing torque of various
torsion springs. It is an intelligent and multi-functional measuring instrument.
In order to take full advantage of all function of this instrument and obtain
correct test value, please read the manual carefully before using it.

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Packing List

Item	Name	Quantity
1	Instrument Body	1
2	Power Wire	1
3	D11、D8、D5、D2 Card Core	4
4	M4,M6,M8 Inner Hexagon Spanner	3
5	Straight-through RS-232 Cable With Two-sided Holes	1
6	Software CD	1
7	Manual	1
8	Factory Inspection Report	1
9	Qualification Card	1

Caution and Maintenance

1. Do not apply a torque above 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 head.
7. Use matched charger, or electric break-down or fire will happen.
8. Before using it please insert the AC charger in the socket completely. Lose 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 meter. Do not use volatile chemical substance 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 yourself, which may cause permanent fault of the meter.
14. If there is something wrong with the meter, please contact the original sales department or our company.

Specification and Parameter

Model	SDT-0.02	SDT-0.05	SDT-0.1	SDT-0.2	SDT-0.5	SDT-1	SDT-2	SDT-5	SDT-10	SDT-20	SDT-50
Capacity	20 N.mm	50 N.mm	100 N.mm	200 N.mm	500 N.mm	1000 N.mm	2000 N.mm	5000 N.mm	10 N.m	20 N.m	50 N.m
Resolution	0.002 N.mm	0.005 N.mm	0.01 N.mm	0.02 N.mm	0.05 N.mm	0.1 N.mm	0.2 N.mm	0.5 N.mm	0.001 N.m	0.002 N.m	0.005 N.m
Accuracy	Within $\pm 1\%$										
Test Angle Range	- 9999.9° ~ + 9999.9°										
Angle Resolution	0.1°										
Loading Mode	Manual										
Specimen Rotary Diameter	$\phi 100\text{mm}$										
Specimen Length	150mm(can be extended as special requirements)										
Power	110V~220V 50~60HZ 100W										
Dimension	L700×W360×H390 mm										

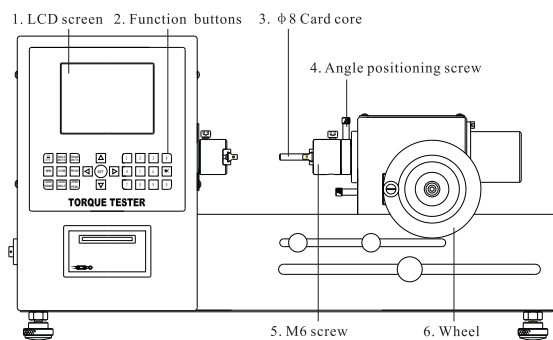
Function

SDT Series Torque Tester is especially designed and manufactured for testing the torque of various torsion springs/other elastic objects. The torque and angle are both digital display, so it is very accurate and intuitionistic. The torsion angle of torque sensor can compensate automatically. The card cores are simply equipped and easy to insert.

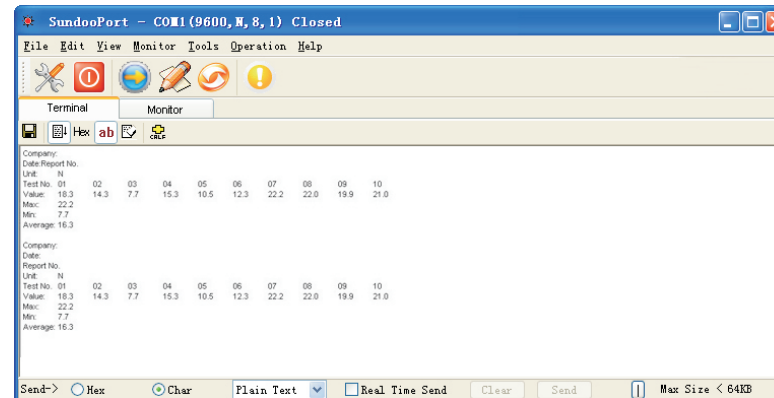
Main Characteristics

- 1、320×240 LCD screen display.
- 2、Peak hold function.
- 3、Peak hold automatic discharge function and discharge time can be set freely (1~99 seconds).
- 4、Automatic shutdown function: shutdown time can be set freely (1~99 minutes).
- 5、Comparison function: free setting of upper and lower limit deviation value and red/green indicator lamps and buzzer of automatic sound/light alarm.
- 6、Units conversion
Convert three units {N.m(N.mm), kgf.cm, lbf.in} automatically.
- 7、Inside printer
Print test curve and analysis report of 10 groups of memory data.
- 8、Port(RS-232)output: connecting computer can export test data via software.

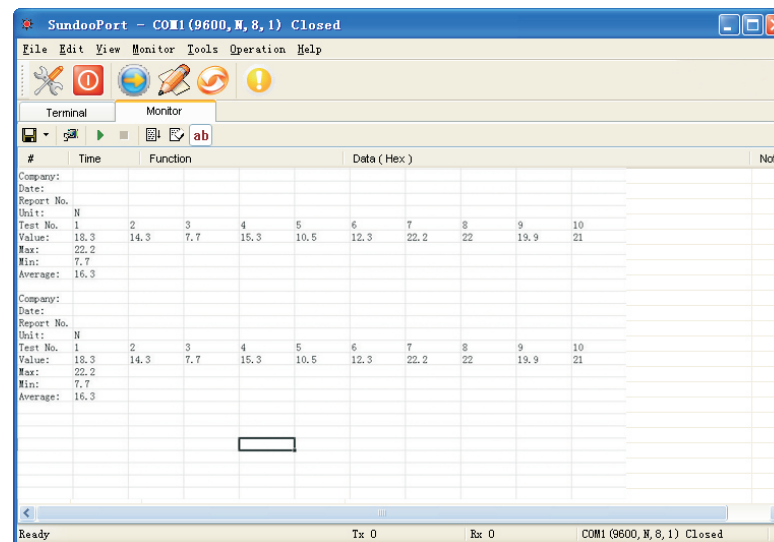
Parts and Functions



Picture 1

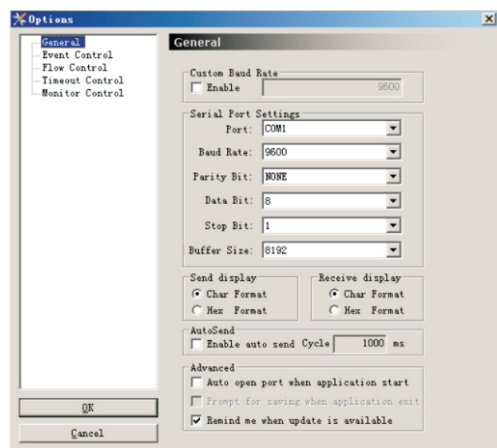


Picture 11

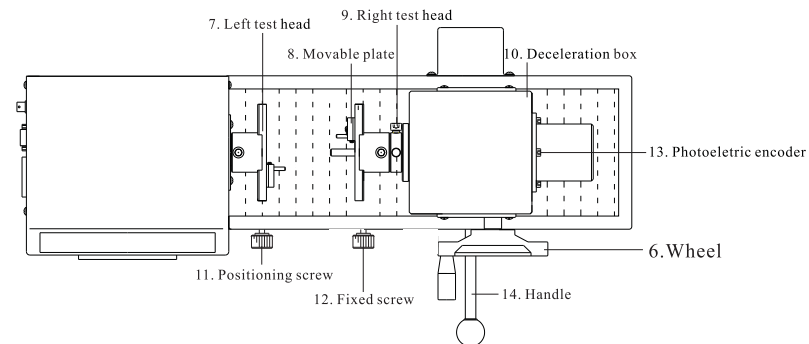


Picture 12

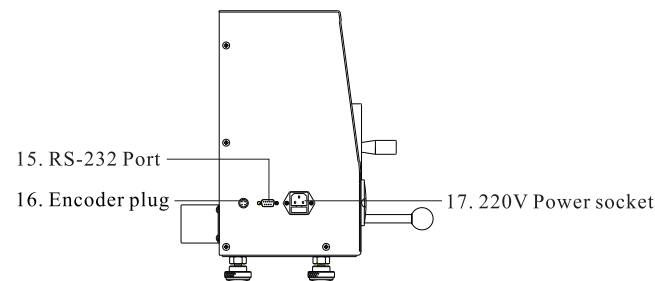
2. When port communication mode is set at "STATEMENTS", "STATEMENTS" will flicker and display on LCD screen when "PRINT" is pressed and ten groups of data and analysis report will be printed (See Picture 9).
3. When port communication mode is set at "PC", "PC" will flicker when "PRINT" is pressed, and ten groups of data will be transmitted to computer. Specific operation of connecting tester and test software are the following.
 - A. Connect the digital torque tester with computer via straight-through RS 232 cable with two-sided holes.
 - B. Turn on the gauge, make it in working status, then set the port output mode as PC state.
 - C. Put CD into computer drive and open software route: CD-ROM/English/Measuring software/SundooPort_Ver 1.00/SundooPort.exe; The software doesn't need to be installed. Just open it by double clicking SundooPort.exe.
 - D. Single click tool configuration parameters options of menu, then set the parameter (See Picture 10 on Page 11). Choose the port connection: COM1 or COM2
 - E. Press the "PRINT" on tester, then start receiving data (See Picture 11 on Page 11).
 - F. Click "Save" to store test data. The default storage format is Excel format, and you could also save it as TXT format. You can edit report format according to actual demand (See Picture 12 on Page 12).



Picture 10



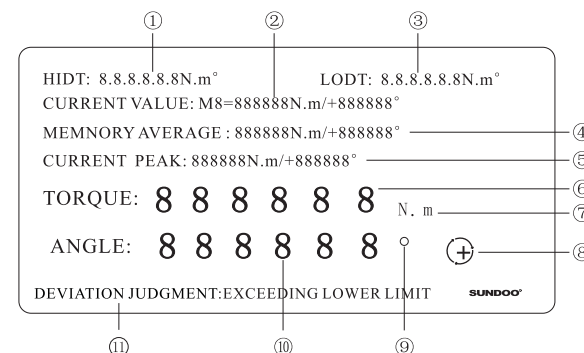
Picture 2



Picture 3

1. LCD screen

1) Testing window



Picture 4

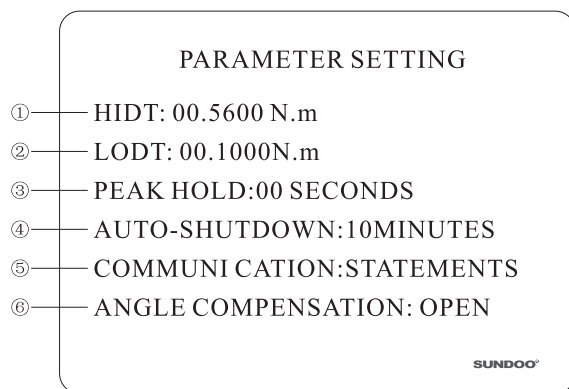
- ①Upper limit reading.
- ②Current memory value
There are 10 cells from M0 to M9, each cell can store a test value.
- ③Lower limit reading.
- ④Average of stored value.
- ⑤Peak value during test.
- ⑥Torque value reading.
- ⑦Three selectable measuring units: N.m(N.mm),lbf.in,kgf.cm.
- ⑧Angle direction symbol: "⌚" is clockwise, "⌚" is counterclockwise which is the same as actual test direction.
- ⑨Two selectable angel units: "°", "°" and automatic conversion by pressing "ANGLE UNITS".
- ⑩Angle value reading.
- ⑪Upper and lower limits deviation judgment

If the test value is greater than the upper limit, it displays "exceeding upper limit".

If the test value is between the upper limit and lower limit, it displays "Eligible".

If the test value is under the lower limit, it displays "exceeding lower limit".

2) Setting window



Picture 5

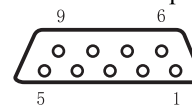
10. Turn the wheel according to the direction you want to force tested torsion spring. When the torque value flickers at the minimum resolution, please clean the angle value. According to the angle(torque) of test requirement, you could get actual torque(angle).
11. After finishing test, please turn off the instrument, and pull out the power plug.

Note: This instrument is used for testing the torque of elastic objects. Don't force on the sensor tensile and compressive direction.

Port Output

The port output of this instrument is RS-232C electric level, which is used for connecting computer and other outer equipments. The matched outer equipments must support RS-232C electric level.

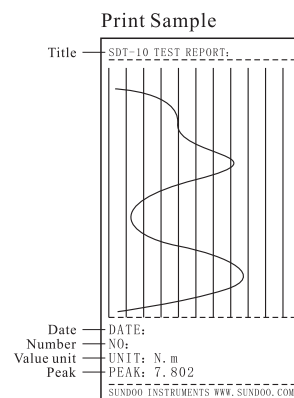
Illustration of port



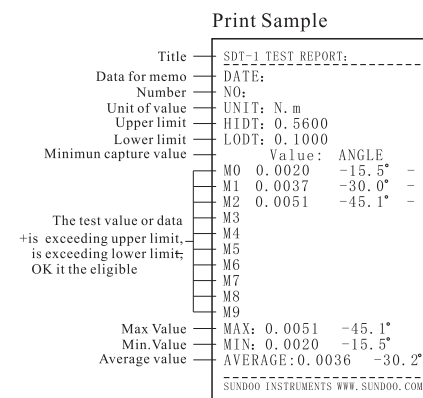
Needle	Signal	Illustration
2	TxD	output signal of SCM
3	RxD	input signal of SCM
5	GND	Earth

Picture 7

1. When port communication mode is set at "CURVE", it means the single tested curve will be printed. Press "PRINT", and "CURVE" will appear on the screen, then tested curve will be printed simultaneously in the process of testing. (See Picture 8).



Picture 8



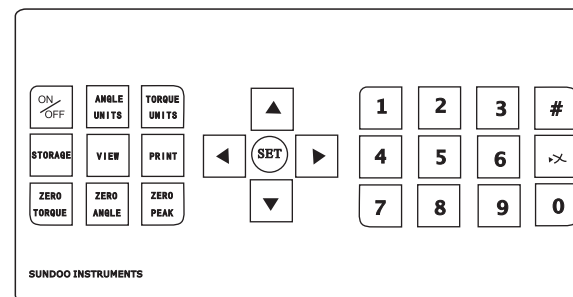
Picture 9

- B. Cursor will point at lower limit by pressing "▼" button again. Move the cursor by pressing "◀ ▶" and change the parameter by pressing the number keys.
 - C. Cursor will point at automatic shutdown time by pressing "▼" button again. Move the cursor by pressing "◀ ▶" and change the parameter by pressing the number keys.
 - D. Cursor will point at peak automatic discharge time by pressing "▼" button again. Move the cursor by pressing "◀ ▶" and change the parameter by pressing the number keys.
 - E. Cursor will point at communication mode by pressing "▼" button again. Pressing the "◀ ▶" can change current state. "PC" is exporting the test data through connecting computer; "CURVE" is output to inside printer to print test curve; "STATEMENTS" is output to inside printer to print analysis report of 10 groups stored data.
 - F. Cursor will point at angle compensation by pressing "▼" button again. Choose the "OPEN" or "CLOSE" by pressing "◀ ▶".
 - G. After finishing setting, the contents can be kept by pressing "SET" and be back to the testing window.
4. Please choose proper accessories and card core according to the sample shape and test method (standard configuration is torsion spring clamping tool).
 5. Insert card core into the center hole of right test head, then lock the M6 screw on the test head to fasten the card core. Install the tested torsion spring on the card core, then adjust the movable plate to suitable place to make the torsion arm of tested sample be close to fixed axis of movable plate and fasten the movable plate by tightening the M4 screw on it.
 6. According to sample length, make two test heads be located in appropriate test distance by moving the handle.
 7. Make the other torsion arm be close to fixed axis on movable plate, and fasten the movable plate by tightening the M4 screw on it.
 8. After finishing fixing the sample, tighten the positioning screw of reduction box to prevent the torsion spring falling off test head during test.
 9. After finishing setting, turn the wheel to make the tested torsion spring be under free status, then clean the torque value on LCD screen.

- ①Upper limit.
- ②Lower limit.
- ③Peak hold time (1-99 seconds free setting, 0 is not automatic discharge).
- ④Auto shutdown time (1-99 minutes free setting, 0 is non-power off).
- ⑤Communication mode
 - "PC":connecting computer can export test data by software.
 - "STATEMENTS":output to inside printer, and print analysis report of 10 groups stored data.
 - "CURVE": output to inside printer, and print current test curve.
- ⑥Angle compensation
 - There are two options: "OPEN" and "CLOSE".
 - "OPEN": angle compensation function is OPEN.
 - "CLOSE": angle compensation function is CLOSE.

Note: You can move the cursor to the corresponding item by pressing "▲▼", then move the cursor to the modified location by pressing "◀ ▶". Finally, you could change current value by pressing number buttons.

2. Function buttons



Picture 6



Power ON/OFF



Unit Button

→ N.m(N.mm) → kgf.cm → lbf.in →



The default angle unit is "°". The angle unit could be converted to "°, " by pressing the button .



The current torque value can be memorized by pressing this button.



Be used for viewing the stored value. Pressing the button can enter into view status, then the value of stored location flickers, and you can press the up and down key to view the stored value. You can also press the number key to view fleetly.



Print data of current state (View " Port Output ").



Pressing the "X" can delete current stored test value; Pressing the "X" all the time can delete all stored test value.



Be used for cleaning the torque value to zero.



Be used for cleaning the angle value to zero.



Be used for cleaning peak to zero.



- A. Set upper and lower limits automatic alarm value.
- B. Set peak hold automatic discharge time (1-99 seconds free setting, 0 is not automatic discharge).
- C. Set automatic shutdown time (1-99 minutes free setting, 0 is non-power off) .
- D. Set communication mode.
- E. Set angle compensation (set by pressing left and right button).



- A. Under view mode, it is used for choosing the stored value for viewing.
- B. Under setting mode, it is used for choosing the data you want to revise.



- A. Under view mode, it is used for choosing the stored value for viewing.
- B. Under setting mode, it is used for choosing the data you want to revise.



Under setting mode, it is used for choosing the data you want to revise and communication mode and angle compensation function.



Under setting mode, it is used for choosing the data you want to revise and communication mode and angle compensation function.

- 3. Card core: be used for clamping the tested sample.
- 4. Angle positioning screw: be used for limiting rotation angle.
- 5. M6 screws.
- 6. Wheel.
- 7. Left test head: be used for clamping the tested sample.
- 8. Movable plate.
- 9. Right test head: be used for clamping the tested sample.
- 10. Deceleration box.
- 11. Positioning screw: be used for limiting the stroke of deceleration box.
- 12. Fixed screw: be used for moving the deceleration box.
- 13. Photoelectric encoder.
- 14. Handle: be used for moving the deceleration box.
- 15. RS-232 Port: be used for connecting computer or other outer equipments.
- 16. Encoder plug: be used for connecting encoder.
- 17. 220V Power socket.

Operation Environment

- 1. Operation temperature: 0℃-40℃.
- 2. Operation humidity: 35%RH-65% RH.
- 3. No vibrancy or corrosion around.

Operation Instructions

Take ordinary straight arm torsion spring as an example. The test head of this instrument is suitable for : outer arm torsion spring, center arm torsion spring, parallel double torsion spring, straight arm torsion spring, single arm bending torsion spring (card core and test head can be custom-made according to different test sample).

- 1. Turn on the instrument.
- 2. Choose torque unit according to test requirements.
- 3. Set upper and lower limit automatic alarm value, automatic shutdown time, peak hold automatic discharge time, communication mode and angle compensation.
 - A. Cursor will point at upper limit by pressing set button. Move the cursor by pressing "◀ ▶" and change the parameter by pressing the number keys.