CONTINUATION

Dear User,

We're pleased for your patronage of purchasing ST-R Series Dynamic Torque Meter. Before using the instrument, please read the manual carefully and keep it well to give you help when you can't learn it or there is something wrong with it. 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.

SUNDOO®
ADVANCED PRECISION INSTRUMENT

STM SERIES USER'S MANUAL

STM系列   数 字 式 动 态 扭 矩 试 验 机

User Manual **DIGITAL DYNAMIC TORQUE METER**

CE CNAS

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

Thank you for purchasing STM Series Digital Dynamic Torque Tester.
This Digital Dynamic Torque Tester is specially designed and manufactured for dynamic torque measurement.Before using it, please read the manual carefully for making full use of all functions and getting accurate reading.

CONTENT

Packing List

Item	Parts Name	Quantity
1	Main body	1
2	Power wire	1
3	Communication cable with two ends hole	1
4	Software CD	1
5	Qualification Card	1
6	User manual	1
7	Factory Inspection Report	1

Specification and Parameter

Model	STM-1	STM-2	STM-5	STM-10	STM-20	STM-50	STM-100
Capacity	1 N.m	2 N.m	5 N.m	10 N.m	20 N.m	50 N.m	100 N.m
Resolution	0.0005 N.m	0.001 N.m	0.002 N.m	0.005 N.m	0.01 N.m	0.02 N.m	0.05 N.m
Connector Size	φ30mm						
Accuracy	±1% FS					±2% FS	
Max. Speed	1000 rpm						
Power	220V±10%V 100W						
Instrument Dimension	L656×W360×H430 mm						

Function

STM Series Digital Dynamic Torque Tester is specially designed and manufactured for dynamic torque measurement. It is used for checking and calibrating the torque of motor and speed reducer in motor industry、 machine manufacturing and scientific research institution etc.

Operation environment

1、Operation temperature: 0℃−40℃.
2、Operation humidity: 35%RH−65%RH.
3、No shock and corrosivity materials around.

Main features

1、High accuracy and high resolution.
2、Free setting and adjustment of upper and lower limit, red/green indication lamps and buzzer alarm inside.
3、Torque direction display.
4、Blue backlight.
5、10 groups measurement data storage and printing.
6、Single measurement curve printing.
7、Automatically calculate storage data average.
8、Selectable three units: N.m、 kgf.cm、 lbf.in.
9、Real-time/peak hold modes, peak release time setting.
10、Automatic-off design without any operation.
11、Printer inside and print 10 groups storage data/max.value/min.value/ average/qualified and unqualified judgment.
12、Serial (RS-232) output, connect to computer via software.

Icon instruction:

- : Export collecting data to EXCEL;
- ▶ : Open serial port to start test;
- ■ : Close serial port to stop test;
- : Collect current measurement data manually;
- : Collect measurement data continuously and regularly.

Caution and Maintenance

1、When using torque tester, make sure that specimen must be installed on tester stand storngly and isn't moved.
2、Do not apply torque above capacity, otherwise the meter may be damaged, even danger will happen.
3、Do not hit screen or put something on the LCD.
4、Do not press the button with nail, pointed tool or objects
5、Do not use the meter near water, oil or other liquids. Keep the meter in a dry, shady and stable place.
6、Do not open the rear cover or adjust the resistance.
7、Do not pull out and insert plug with wet hand to against electric shock.
8、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, alcohol, ect.
9、Be careful of carrying and using the tester.
10、Do not disassemble, repair or modify the tester by yourself, which may cause permanent fault.
11、If there is something wrong with the meter, please contact the original purchase place or our company.

F. Choose the model and port in new dialog box. Write the time of capturing the torque signal in Send Device Command.1/10 means 0.1 second (See Picture 12: If Hr is 0, Min is 0, Sec is 0, 1/10 is 1, the capturing time is 0.1 second).

G. After setting the parameters, click "Record Measuring values", and switch to curve display interface. After clicking " ▶ " and " ⊘ " to start measuring curve of collecting data(Picture 13/14).
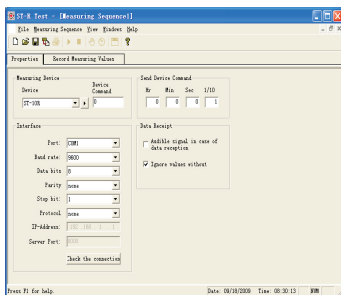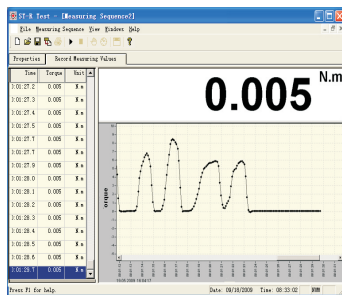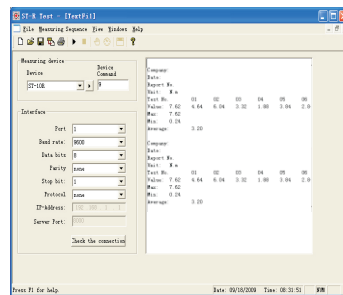
Picture 12
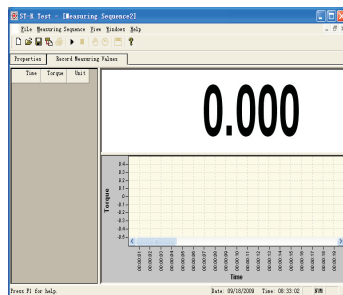
Picture 13

H. After finishing measurement, click " ■ " to stop testing(Picture 14).

I. Click "File" in the menu and choose "save" for measurement data.

J. "Text File" of step E dialog is inputing storage data from tester. Choose the model and port, click " ▶ " to open serial port, then press " PRINT " key on tester for inputing storage data to computer (Picture 15).
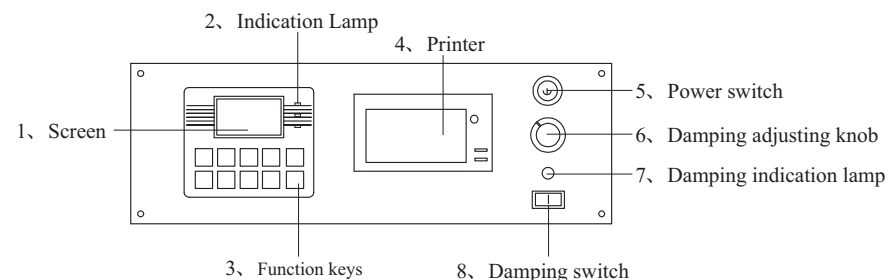
Picture 14

Picture 15

Parts appellation and functions

2、Indication Lamp
4、Printer
5、Power switch
1、Screen
6、Damping adjusting knob
7、Damping indication lamp
3、Function keys
8、Damping switch

Picture 1 （Coutrol panel）

Connector
9、Emergency switch
Control panel
656

Picture 2 （Frout View）

12、Socket
10、RS-232 Connector
11、Earth terminal
360

Picture 3 （Side View）

8±0.026

Unit:mm

φ45

φ30$^{+0.04}_{+0.01}$

33.3$^{+0.2}_{0}$
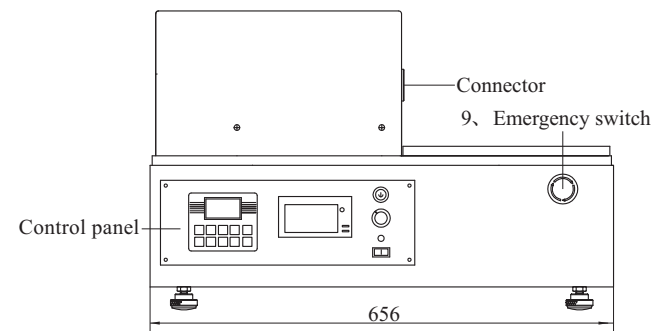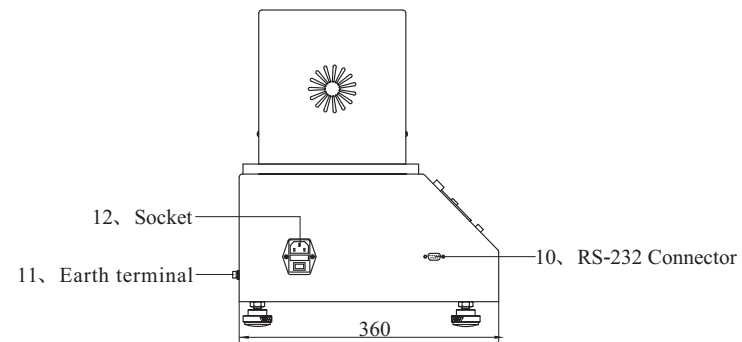
Picture 4（Connector size）

Connector: connect motor with matching clamp

1、LCD

Picture 5

①Torque reading and it displays set value under setting status.

②Torque unit: Three different units (N.m, Ibf.in, kgf.cm), automatic conversion.

③Printing indication: Print all storage data or single mesurement curve.

④Peak indication: When it displays "PEAK" on LCD screen, it is max. torque in the locked status; when it displays "AUTO PEAK", the peak is in automatic discharge status.

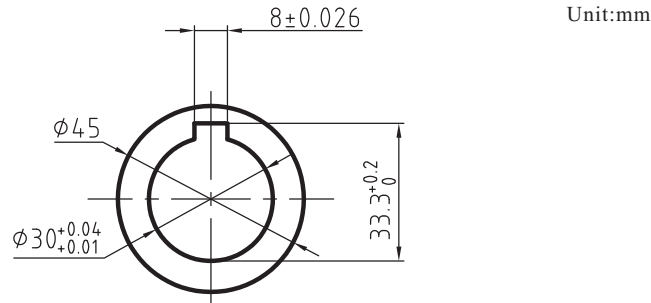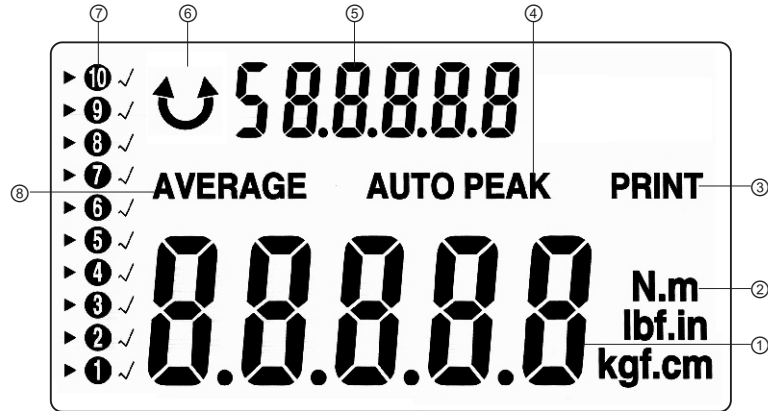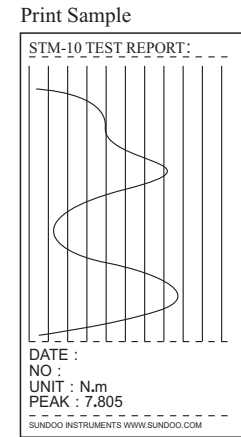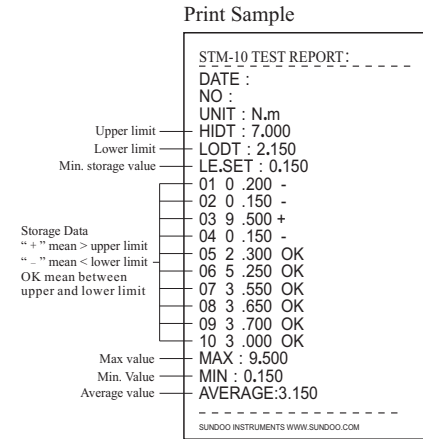⑤Storage torque, average of storage torque or the symbols of indication function at the set status.

⑥Torque direction indication.

Print Sample

STM-10 TEST REPORT: _ _ _ _

DATE :
NO :
UNIT : N.m
PEAK : 7.805

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Picture 8

Print Sample

STM-10 TEST REPORT: _ _ _ _ _ _
DATE :
NO :
UNIT : N.m
Upper limit —— HIDT : 7.000
Lower limit —— LODT : 2.150
Min. storage value —— LE.SET : 0.150
01 0 .200 -
02 0 .150 -
03 9 .500 +
04 0 .150 -
Storage Data   05 2 .300 OK
" + " mean > upper limit   06 5 .250 OK
" – " mean < lower limit   07 3 .550 OK
OK mean between   08 3 .650 OK
upper and lower limit   09 3 .700 OK
10 3 .000 OK
Max value —— MAX : 9.500
Min. Value —— MIN : 0.150
Average value —— AVERAGE:3.150
- - - - - - - - - - - - - - -
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Picture 9

3."PC" mode is connecting to computer for viewing measurement curve or inputing storage data from tester via software.The following is operation steps.

A.Connect torque tester to computer via RS232 cable.

B.Turn on the tester, and enter working status.Choose "PC" mode under setting (see setting details on page 8).

C.Put CD into computer drive and open software:CD/Chinese/Measuring software/STM Test/STM Test.exe.

D.Choose "New" in the File menu (Picture 10).

E.Choose "Measuring sequence" in new dialog box (Picture 11).
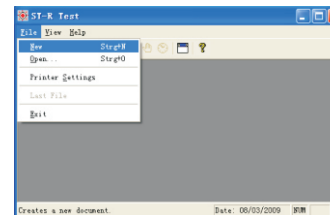
Picture 10
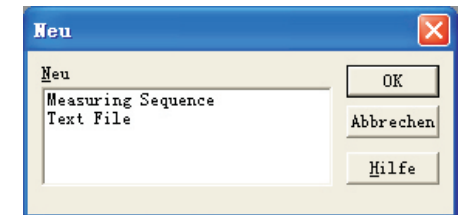
Picture 11

Press "SET" for the third time, it display "P.OFF", and the digital box display automatic power-off time. Pressing "▲▼" can change the parameter.

Press "SET" for the fourth time, it display "A.PE.", and the digital box display peak hold automatic release time. Pressing "▲▼" can change the parameter

Press "SET" for the fifth time, it display "RS232", and the digital box display PC, Pr.1 or Pr.2. pressing "▲▼" can change current mode.

Press "SET" for the sixth time, it display "LIGHT", and the digital box display "ON" or "OFF". "ON" means backlight lighting, "OFF" means backlight isn't lighting. Pressing "▲▼" can change current status.

Press "SET" for the seventh time, and it will save all setting parameters and back to working status.

5. After using the torque tester, turn off and keep it properly.

Note: During set processing, pressing "ZERO" can save setting parameter and back to working mode.

Serial output

This torque tester is RS-232 output. Other external equipments must be with RS-232 support for communication.The following is RS-232 output instruction.

Illustration of RS-232 Port
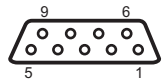
Pin	Signal	Illustration
2	TxD	Output signal of SCM
3	RxD	Reception signal of SCM
5	GND	Signal ground

Picture 7

1. "Pr.1" mode is connecting to micro printer for printing single measurement curve by pressing " PRINT " key. See the printing sample (Picture 8).
2. "Pr.2" mode is connecting to micro printer for printing storage data by pressing " PRINT " key. See the printing sample (Picture 9).

Clockwise is " ↻ ", counterclockwise is " ↺ ".

⑦Storage torque

"❶❷❸❹❺❻❼❽❾❿ " ten cells,each cell store one torque;

" ► " means current storage cell and reading cell;

" √ " means that the cell already store one torque.

⑧Average indication of storage torque.

2. Automatic alarm indication lamps of upper and lower limit deviation.

▲ Upper limit alarm lamp

OK Normal value lamp

▼ Lower limit alarm lamp

Under working status, if the reading is between upper and lower limit, normal value lamp "OK" light, meaning that it is eligible; if the reading exceed upper limit, the upper limit alarm lamp "▲" light, and the buzzer alarms, meaning that it is not eligible; if the reading is under lower limit, the lower limit alarm lamp "▼" light, and the buzzer alarms, meaning that it is not eligible. This remind user that the measurement result isn't in the range.
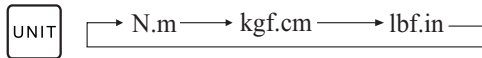
3. Function keys
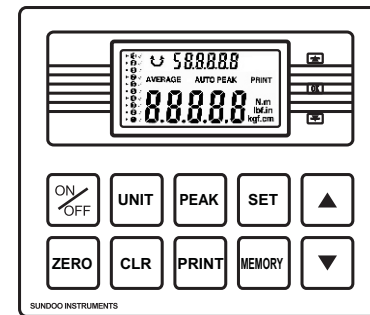
Picture 6

ON/OFF Power ON / OFF

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

| UNIT | → N.m → kgf.cm → lbf.in ─┐

| CLEAR | Under working status, pressing " [CLEAR] " will clear the data which "▶" points; pressing " [CLEAR] " all the time will clear all storage data.

| PEAK | Three modes conversion: peak-hold, peak-hold automatic release and real-time tracking. Real-time tracking is default mode after power on.

| PRINT | Be used for printing current data (see details on page 9)

| MEMORY | Be used for storing measurement value and calculating the average; pressing " [MEMORY] " store current torque ; press the key all the time and appear "AVERAGE" for viewing the average of all storage data.

| SET | A: be used for setting upper and lower limit.
B: be used for setting automatic shutdown time (from 1~60 minutes, 0 is not automatic shutdown).
C: be used for setting peak-hold automatic release time (from 1~30 seconds).
D: be used for setting serial output mode.
E: be used for setting backlight ON/OFF.

| ▲ | A.Under storage mode, " [▲] " will move forward to other cells by pressing "▶", then store measurement value by pressing "Memory". If there is " [MEMORY] " beside the cell, it means that the cell already store data, new measurement value will be stored in the cell.
B.under set mode, the setting parameter will increase by pressing " [▲] ".If you press it all the time, the parameter will increase continuously.

| ▼ | A.Under storage mode," [▼] " will move back to other cells by pressing " ▶ ", then store measurement value by pressing " √ ". If there is " [MEMORY] " beside the cell, it means that the cell already store data, new measurement value will be stored in the cell.
B.Under set mode, the setting parameter will decrease by pressing " [▼] ".If you press it all the time, the parameter will decrease continuously.

4. Micro printer: print 10 groups storage data/max.value/min.value/average/ qualified and unqualified judgment.

5. Power switch

6. Damping adjusting knob: be used for adjusting the damping output

7. Damping indication lamp

8. Damping switch

9. Emergency switch

10. RS-232C serial output: be used for connecting to computer, printer or other equipments.

11. Earth terminal

12. Socket

Operation Process

1.Install specimen on STM working stand and make sure that it isn't moved under max. capacity.

2.Normally, the reading is zero after power on.. If the reading is not zero, press " [ZERO] " to back to zero.

3.Choose the unit according to requirement.

4.Setting upper and lower limit, automatic power-off time, peak-hold automatic release time, serial output and backlight ON/OFF.

Press " [SET] " for the first time, it display "HIDT", and the digital box display current upper limit. Pressing " [▲][▼] " can change the parameter.
Press " [SET] " for the second time, it display "LODT", and the digital box display current lower limit. Pressing " [▲][▼] " can change the parameter.