ASA Digital torque meters

Product Introductions

DTM-15M

DTM -150M

ASA ENTERPRISE CO.

Table of Content

■ **Special Thanks to our customer**

Thank you for choosing our high-precision torque meter. To ensure the tool fully utilizes its maximum performance and extend its life, please read this manual before use.

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■ General Safety Warnings

WARNING: Read all safety warnings and all instructions.

Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.

Save all warnings and instructions for future reference.

■ Work area safety

−Keep a work place always clean. The untidy place and work stand may cause the accident.

−Situation of work place

- Avoid using the torque meter in high-temperature, high humidity, direct sunlight, and untidy environment.
- Use it in where the temperature is stable. (About 20 degrees.)
- Make a work place bright enough.
- Do not use or charge in the place with inflammable liquid or gas.

■ Electrical safety

−Do not abuse the cord or pull it violently. Do not move the product while it is connected with the cord or unplugging it by pulling its cord.

−Please switch of the product and unplug the power supply in the following situation

- Not using or charging it.
- Under maintenance.
- Any predictable danger might be occurred.

−Charge correctly

- Carry out on the displayed voltage in the case of charge.
  Do not use a DC power supply or engine generator which generates unusually heat and might cause the fire.
- Charging time should not exceed the regular time. It may become the cause of fire by a burst of a battery, generation of heat, and liquid leak, or an injury by fault charge.
- Perform charge in a well ventilated place. Do not cover with cloth or any fabrics during charging.

−It is cautious of electric shock. The wet hand should not touch a power supply's plug, which might cause the electric shock.

−A battery (contained in the product) shouldn't be thrown into fire. There might be possible to cause the burst, inflammation or generates poisonous materials.

−The nickel-cadmium battery or the nickel-hydrogen battery is being used for our products. It is recyclable, please leave it to us when exchanging the battery.

−Turn off the power before connecting with external machines. By doing so can avoid damaging the products or electric shock.

−When any situation/problems (not mentioned in the manual) occur, please stop using the product immediately and contact us!

General Safety Warnings

■ Personal safety

−Do not apply the torque more than permission load. If applied the torque more than permission load, the torque meter will be damaged and might cause the accident and personal injury.

−Fixed the torque meter stably while testing the high torque to avoid any injury caused by rotating.

− Keep children and bystanders away while operating a power tool. Distractions can cause you to lose control.

■ Power tool use and care

−Careful Maintenance

- In order to work safely and efficiently, please check the product periodically. (bits, socket etc.) Do not use deformed or worn accessories.
- Change the accessories/parts in accordance to the manual.
- Check the cord periodically and replace it with the new cord once it got worn or damaged.

−Check if any part is damaged or broken

- Check carefully before using the product, and check whether the function is normal or not.
- Check if every part which might affect operation are normal function.
- Exchange the accessories/parts in accordance to the manual.

−Use assigned accessories, proper bits and sockets. Do not use any accessory, bits or sockets which are not suggested in the manual.

−Please send the torque meter back to the original-purchased company for maintenance. Non-trained or repair man whom with no technical background might not be able to handle the products and cause personal injury or product damaging.

−Do not disassemble, strongly hit or vibrate the products. This torque meter is precise equipment, please do not dismantle it. The improper hits or vibrates might cause the breakdown of the machine, which might also cause the accident or personal injury.

− When any situation/problems (not mentioned in the manual) occur, please stop using the product immediately and contact us!

Read before use:

■ Please read the following notices before use:

-Please store the products carefully in dry, somewhere higher that kids cannot reach or locked place while not using it.

−Dress properly. Do not wear loose clothing or jewelry. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewelry or long hair can be caught in moving parts.

−Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations.

−Stay alert when operating the power tool.

- Please be aware of the correct operation way of the products and surrounding environments.
- Please operate the products with common sense. (This should be noted among all our products and differ from the different models/products.)

Declaration of Conformity CE

■ Declaration of Conformity CE

We (ASA Enterprise Corporation) declare under our sole responsibility that the products high-precision torque meter described under this manual are in conformity with the following Directives/ or standardization documents: EMC Directive 2014/30/EU.

■ Service

Have your high-precision torque meter serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the controller is maintained.

■ Warranty

We offer one-year free repair service with this product. The warranty is valid for one year from the date of purchase entered on the Product Information Form. Please note that this warranty policy does not apply to the circumstances listed below and we will charge for repair or labor cost if necessary.

−Normal damage to the spare parts: Micro-switch

−The unit was not plugged to designated power source.

−Improper use or attempt to repair unit by user.

−Out of the warranty period or the user cannot present the manual.

■ Inspection and calibration

−The unique sensing mechanism adopted by this tester can ensure long-term accuracy. The tools used for checking its accuracy is also provided. Even though, we suggest returning the torque tester back to manufacturer for inspection annually. (Please be noted that this service will be charged).

−Delivery of tester shall comply with precision standard of our company. Considering different use conditions of tester, long-term use will affect the precision. Therefore, our company provides calibration and necessary inspection service; meanwhile, we suggest using the regular calibration document attached with this tester.

■ Precautions in returning back tester for calibration or maintenance.

−Place tester in original toolbox so as to avoid damage in transportation.

−Except original objects in toolbox, no other objects shall be placed in the box. Self-made mounting plate, tool or standby tool head shall not be placed in. Our company assumes no liability hereto.

−Please describe failure in detail.

■ Battery Recycle

−The product is provided with environmental rechargeable battery together with the machine. According to laws in different countries and regions, it is illegal to discard waste battery in urban rubbish dump. Please consult local officials in charge of managing solid waste for recovery or disposal of waste battery

Product Information

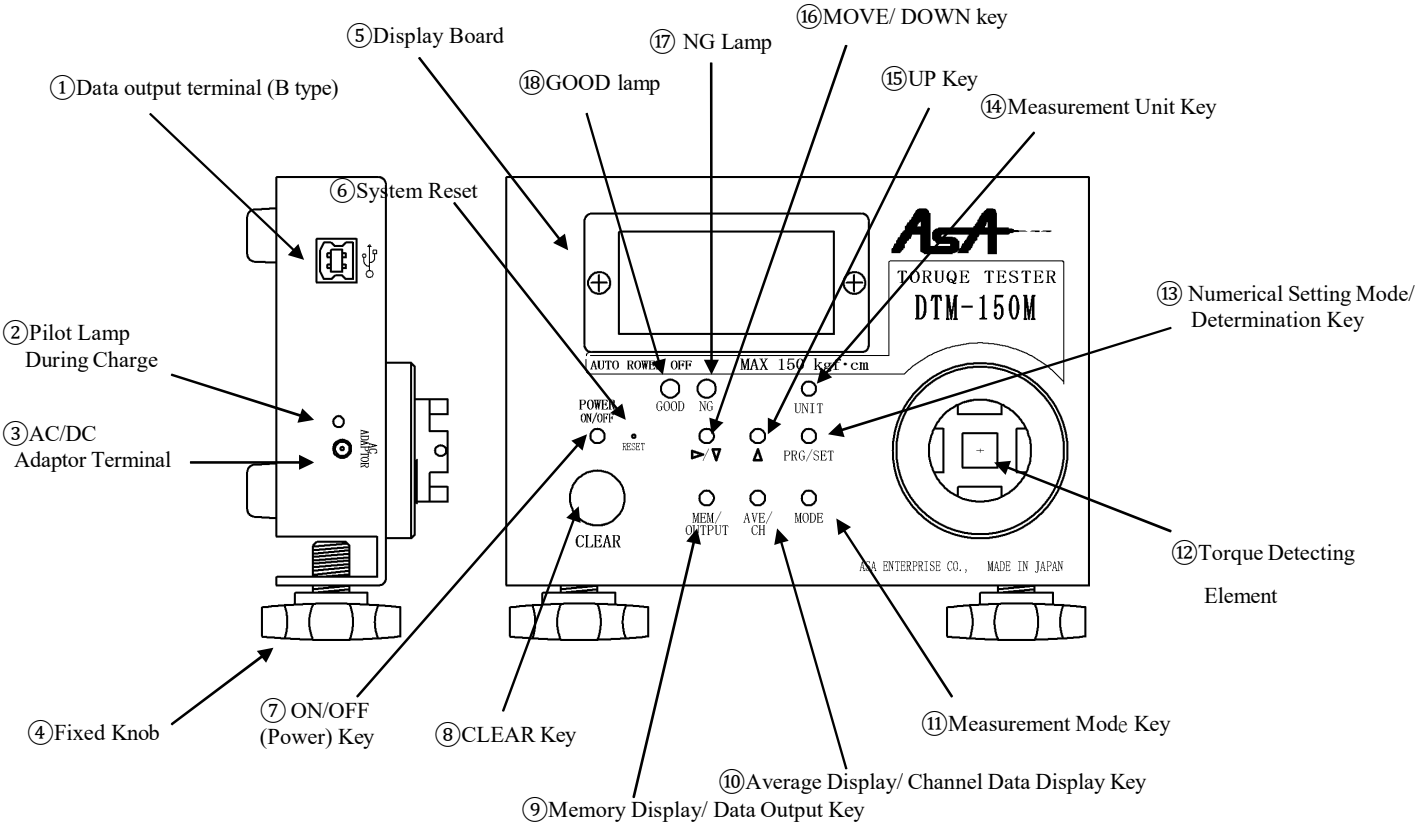
■ **Feature**

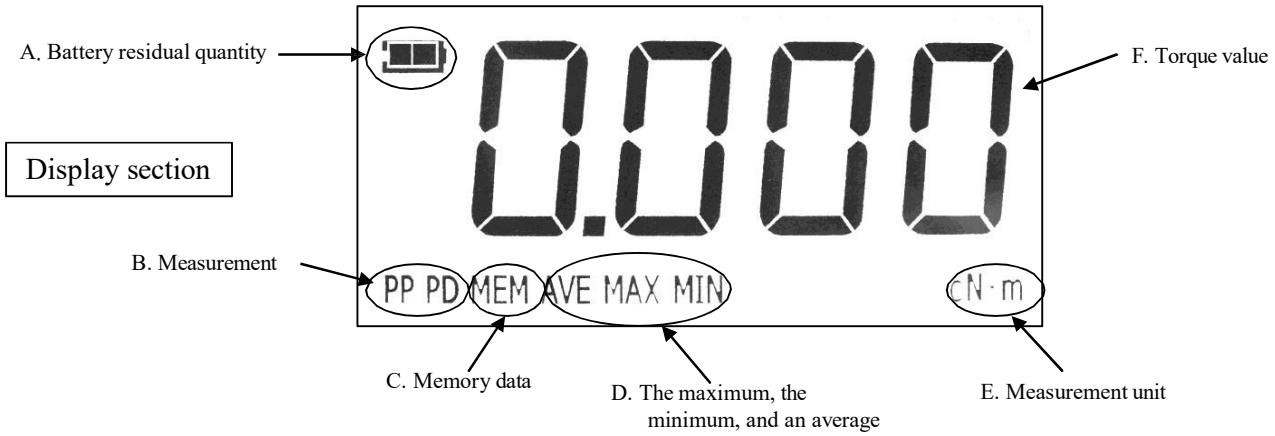
- It can save 800 data.
- A convenient functional setup of a measurement start value etc.
- Can show the torque data under measurement timely. (About 1/180 seconds.)
- Rechargeable battery drive.
- The wise auto shutdown function can prevent the machine kept running.
- Can use the personal computer for data management by USB output function
- Start afresh adjustable function.
- Auto-clear the measurement value displayed on the screen.

Model name	**DTM-150M**	**DTM-15M**
Measuring range	1.0～150 kgf･cm	0.040～15.00 kgf･cm
	0.10～15 N･m	4.0～1500 mN･m
	1.0～135 lbf･in	0.040～13.50 lbf･in
Accuracy	±0.5% (19.9kgf･cm or less ±0.1 kgf･cm)	±0.5% (1.200kgf･cm or less ±0.006 kgf･cm)
Display	The 3.5 figures digital display of LCD	The 3.5 figures digital display of LCD
		0～7.998 0.002 increments 8.00～ 0.01 increments
The measurement direction	CW-CCW (right and left)	
Measurement Mode	P-P (peak to peak) / T-R (track) / P-D (peak-down) / C (Real-time Output)	
High and low limits judging function	High and low value is measurement within the limits, and can be set up. The setting numerical value of five sets is saved.	
Results judgment	It can perform results judgment within the setting.(in P-P mode) It confirms with lamp lighting or a buzzer.	
The Maximum, the minimum, and the average value display	It displays the maximum, the minimum, average value, （As opposed to a maximum of 800 data）	
Real-time Output	Load torque value is outputted every about1/ 180 second. (A change whole 1 / 12 seconds is possible)	
Data memory	Measured value - 800 data	
Data output	ASCII format (baud rate 19200)	
Automatic clear time	In 0.1 - 3.0 seconds (0.5 seconds interval) an indication is automatically given zero. It is a manual zero clearance by 0.0 second setup.	
One-touch zero	By pushing a clear button, zero adjustment can be performed by one-touch.	
Battery	Ni-cd battery 1.2V×5sells (700mAh) /300 times or more charge life	
Auto power OFF	Power-supply OFF is carried out after the neglect during 10 minutes.	
Charge time / use time	About 3 hours / About 12 hours use consecutive at full charge time	
Socket size	□20mm / □9.5mm	
Accessories (One piece each)	Measurement joint ASJ-50、ASJ-10K	Measurement joint ASJ-10K、ASJ-1.5
	（4 bits HEX opposite side 6mm）	
	An AC/DC adaptor	
	Exclusive case	
	Result of calibration , Certification on calibration , Traceability system figure	

※ Do not use it for measurement of an impact tool

■ Outline


⑤Display Board
⑯MOVE/ DOWN key
⑰ NG Lamp
⑱GOOD lamp
⑮UP Key
⑭Measurement Unit Key
①Data output terminal (B type)
⑥System Reset
⑬ Numerical Setting Mode/ Determination Key
②Pilot Lamp During Charge
③AC/DC Adaptor Terminal
TORUQE TESTER
DTM-150M
AUTO POWER OFF
MAX 150 kgf·cm
POWER ON/OFF
RESET
GOOD
NG
UNIT
PRG/SET
CLEAR
MEM/ OUTPUT
AVE/ CH
MODE
ASA ENTERPRISE CO., MADE IN JAPAN
ADAPTOR
⑫Torque Detecting Element
④Fixed Knob
⑦ ON/OFF (Power) Key
⑧CLEAR Key
⑪Measurement Mode Key
⑩Average Display/ Channel Data Display Key
⑨Memory Display/ Data Output Key


A. Battery residual quantity
F. Torque value
Display section
0.000
B. Measurement
PP PD MEM AVE MAX MIN
CN·m
C. Memory data
D. The maximum, the minimum, and an average
E. Measurement unit

Product Information

■ The name/ main use/ contents of each part

The name of each part	The main use and contents
①Data output terminal	The serial output of the measurement data is carried out. USB form (B type).
②Pilot Lamp During Charge	The light is switched on during charge. The AC/DC adaptor of exclusive use is used for charge.
③AC/DC Adaptor Terminal	The plug of an AC/DC adaptor is inserted.
④Fixed Knob	At the time of measurement, a fixed thing etc. is put and a main part is fixed.
⑤Display Board	A torque value and various information are displayed.
⑥System Reset	The time of full electric discharge etc. is used when resetting a system.
⑦ON/OFF (Power) Key	It use it in ON/OFF of the power supply.
⑧CLEAR (Clear) Key	It pushes, when measurement is completed, and giving an indication zero. When the memory data is deleted, it uses it. It is used at the time of zero adjustment.
⑨Memory Display / Data Output Key	It is used when displaying the memory data saved on the main part. It uses, when outputting the saved data.
⑩Average Display Key	It is used when displaying the maximum, the minimum, and the average of measured value.
⑪Measurement Mode Key	It is used when changing measurement mode. It is used for the check of the function set up during a functional numerical value setup.
⑫Torque Detecting Element	Torque is measured in this portion. The joint for measurement is attached, or the angle of a tool is inserted, and it measure.
⑬ Numerical Setting Mode / Determination Key	It is used when changing the setting numerical value of various functions. It is used when determining a numerical value.
⑭Measurement Unit Key	It is used when changing the unit of measurement.
⑮▲ Key (UP Key)	It is used when making a numerical value increase at the time of a functional numerical value setup. The memory data choose are changed (increase).
⑯▼/▸ Key (MOVE・DOWN Key)	At the time of a numerical setup, when decreasing a numerical value, it is used. It is used when moving the place which changes a numerical value to the right. The memory data to choose are changed (decrease).
⑰ NG Lamp	It blinks, when the yes-no decision is set up, and it is "no." Light is carried out at the time of exaggerated torque.
⑱ GOOD Lamp	The light is switched on when the yes-no decision is set up, and it is "yes" The light is switched on when each functional numerical value is under setup.
Display section	
A Battery residual quantity	The residual quantity of an internal charge of battery is displayed.
B Measurement mode	A chosen measurement mode is displayed.
C Memory data	When a memory data is used, it displays.
D The maximum, the minimum, and an average	When a maximum, the minimum, and the average value is used, it displays.
E Measurement unit	The measurement unit chosen now is displayed.
F Torque value	The torque value in each measurement mode and unit is displayed.

■ Preparation of Measurement

Please prepare and check before operating measurement.

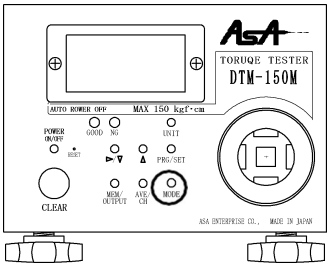
−Measurement Mode

Measurement mode	Display	Contents
P-P (peak to peak)	Display section 「PP」 	The maximum under measurement is always displayed. Load holds more than from 10 digits or 40 digits*. Usually, this mode is used.
P-D (peak-down)	Display section 「PD」 	A value when a load torque value changes from a rise to descent is displayed. It carries out, once it pushes a clear button, when applying re-load. Load operates more than from 10 digits or 40 digits*. It is suitable for measurement of a torque wrench etc.
C (Real-time Output)	Green LED blink 	The data output of the load torque value is carried out every about 1 / 180 seconds. (A change whole 1/12 seconds is possible) It is suitable for torque curve creation or a screw bundle examination.
T-R (track)	There is no display 	It is mainly used at the time of calibration etc. The value of the load torque concerning a detector is displayed as it is. (There is no display.)

* digit - DTM-150M - 1digit is 0.1kgf･cm

DTM-15M - 1digit is 0.001kgf･cm (～7.998 kgf･cm) 0.01kgf･cm (8.00～15.00 kgf･cm)

−A setup and change in measurement mode



・Button to be used -- "MODE"

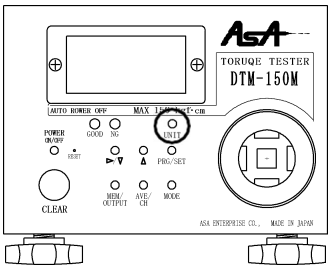
Pushing the "MODE" button is continued for about 1 second. (It is a setting mode pushed long so that the measurement should not change while measuring it.)

The measurement mode display changes.

The measurement mode to be used is chosen.

The display changes sequentially if it keeps pushing. Truck (with no display) -> Peak hold (PP) -> peak down (PD) -> Real-time output (C) -> Truck

−Setup and Change of Measurement Unit



・Button to be used -- "UNIT"

Pushing the "UNIT" button is continued for about 1 second.

(It is a setting mode pushed long so that the measurement should not change while measuring it.)

The measurement unit display changes.

A push on a button changes a display.

The measurement unit to be used is chosen.

The display changes sequentially if it keeps pushing.

Operation

-Selection of Joint for Measurement

- Some “joint for measurement” is attached to this product.
- At the time of measurement of a tool, the joint corresponding to a tool is surely used.

-ASJ Joint

- The ASJ joint must be applied when testing electric or pneumatic screwdrivers.
- In case joint is chosen, tolerance level is checked and it is cautious of exaggerated torque enough.

Model Of ASJ joint	Use For Which Model	Cap Bolt
SJ50 (MAX 50kgf·cm)	It attaches to DTM-150M	Cap bolt portion H6
SJ10K (MAX 10kgf·cm)	It attaches to DTM-150M/15M	Cap bolt portion H6
SJ1.5 (MAX 1.5kgf·cm)	It attaches to DTM-15M	M2.5 +

The bolt omission prevention function was newly carried in joint. By attaching an omission prevention screw, if a bolt separates from a plinth, it will race, and it does not decompose and trouble is not caused to work.（However, when it continues racing, a ridge may be worn out and torque value may change.）Moreover, by wear, the metal fatigue, etc. of a screw, where a spring is closed, it is left, and a bolt may jump out with the pressure.

New joint which served also as the measure against dangerous prevention in that case. (PAT)

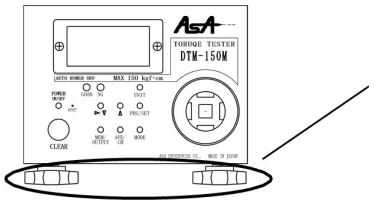
⚠ **Caution on use:**

- Please do not apply on torque over than the tolerance range.
- Please check whether grease is attached to bolt and bearing before use.
- Please release the spring and keep it safely after use.
- The number of times of an exchange standard is about 2500 times. But if any of the below situation happens, please stop using and change the new joint.

▲The spring is deformed or the top of the screw is worn out.

▲Abnormal sounds happened.

-Cautions of fixing



At the time of measurement, it installs so that a circuit tester main part may not move.

When especially high torque starts, A fixed knob is used.

−Power source

- This model applied "Ni-cd chargeable battery", please charge it with the attached AC/DC exclusive adaptor.
- The display of battery residual quantity is displayed on the display upper part.
- The meaning of the display screen:

Display	Contents
	There is battery residual quantity.
	Battery residual quantity has decreased. It charges soon. When using many lamps, such as a yes-no decision, and buzzers, it charges a little early.
	There is almost no battery residual quantity. It charges urgently. When there is no battery residual quantity, a power source is shut off immediately.

Charge uses an AC-DC **exclusive adaptor** by all means.

If key operation is not performed for 10 minutes, a power source will be in an OFF state automatically.

When you turn off the power, push an ON/OFF button **lightly** for about 1 second.

* If an AC/DC adaptor is connected, a display may be a full display, **but while the pilot lamp is on, continue charge.**

−Reset to zero adjustment

At the following, this tester is performed zero adjustment automatically.

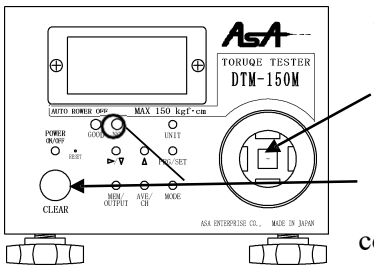
①When power is switched on

②When measurement mode is changed

(When torque started during this movement, it becomes impossible for 0 points to shift, and to do a normal measurement.

At the time of power supply injection and the measurement changing, confirm that torque does not started.)

Moreover, zero points might shift when zero points do not return.



In that case, zero points adjustments by the following methods.

1. Check that torque has not started a detecting element.
2. If CLEAR is kept pushed, Red LED will switch on the light.
   If the light is switched on, the CLEAR button will be detached promptly.
3. Red LED will disappear, display will be zero, zero adjustment is completed.

※When continue pushing it in a state with the red LED, display it with ALL and become all elimination of memory data. (Leave Red LED unattended. It will be zero.)

■ **Measuring Method**

The concrete measuring method of various tools is explained.

−Measurement of Electric Driver

The torque of the electric driver whose set torque is possible of operation is measured.

In the case of the electric driver which performs impact operation, it may be unable to measure normally.

-Check of Torque, and Selection of Measurement Joint

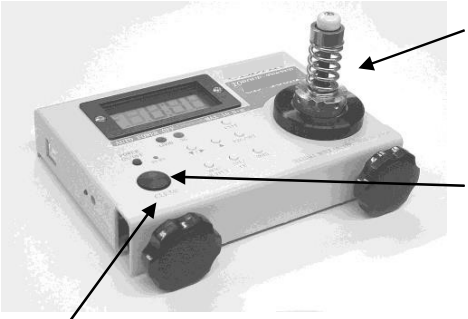
Check the output torque of the electric driver to be measured and check whether it is within the measuring range of the tester body. Select the ASJ joint to be used at the same time.

First, check whether the torque of the electric driver's guide is within the allowable range of the ASJ joint.

① When using ASJ 1.5, check whether the bit of the electric driver to be measured and the pan screw of the head of the SJ joint are in tight engagement. If the pan and screw do not fit well, it may cause a cam out or damage to the screw head. In this case, replace the bit with another one, or change it by changing the type of screw (please select one with screw length of about 25 mm).

② When using ASJ 10K or ASJ - 50, exchange with the attached measuring bit and measure.

−Measuring method



① Install ASJ joint in a torque detecting element.
(ASJ joint is fixable using the tapped hole for fixation of a detecting-element nail portion.)

② Press a power-source key and switch on a power. (A power source is switched on after checking that load is not applied to a detecting element, since zero adjustment is performed at this time)

③Check whether measurement mode is "PP" peak interrupt mode.
Measurement mode is changed into "PP" when "PP" is not displayed on display (3.1.2 references).

④The fit of the bit of an electric driver is carried out to the screw of ASJ joint head, operate an electric driver, fasten, and perform lump operation. **It checks whether the spring of ASJ joint is loosening at this time.** When you are not loosening, please be sure to start measurement after loosening.

※Before operation, a display checks in "0." When it is not "0", a clear button is pushed and it is made "0."

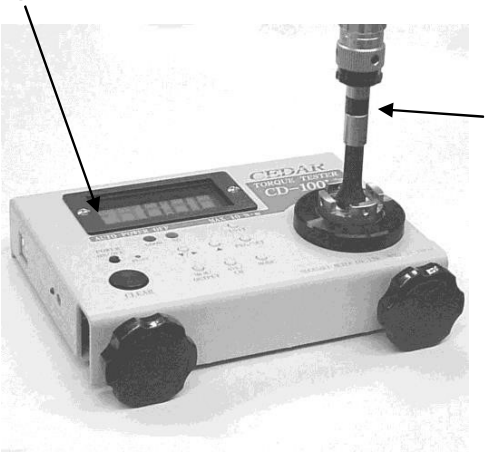
⑤ If it binds tight and operation finishes, the torque value of a display board will be checked.

⑥ Loosen the spring of ASJ joint using inversion operation of a driver.

⑦ If the "CLEAR" button is pushed, it will be in the state where a display is cleared and measurement is possible again.

−Measurement of Torque Driver Torque Wrench
Torque of operation, such as a manual torque driver and a torque wrench is measured.

−Measurement of a torque driver
①Check whether measurement mode is “PP” peak interrupt mode.



Measurement mode is changed into “PP” is not displayed on display. (3.1.2 references.)

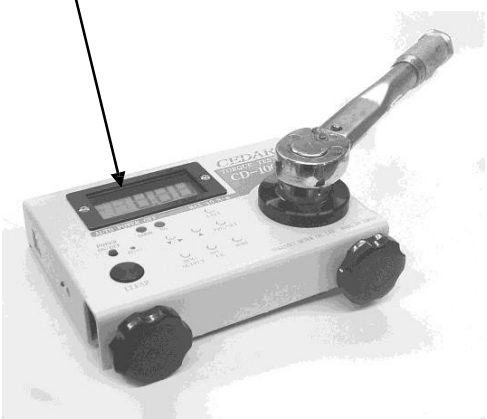
②The bit of a torque driver is replaced with a commercial bit adapter(The drive section is the thing of □9.5), and is inserted in □9.5portion of a detecting-element inner side.

③Operated by binding tight, and bind tight until it races.
※Before operation, a display checks in "0." When it is not "0", a clear button is pushed and it is made "0."

④If races, the torque value of a display board will be checked.

⑤If “CLEAR” button is pushed, it will be in the state where a display is cleared and measurement is possible again.

−Measurement of Torque Wrench
Although measurement of a torque wrench is also possible, it restricts to the thing which is in measuring range and operates.
① Check whether measurement mode is “PD” peak down mode.



Measurement mode is changed into "PD" when "PD" is not displayed on display (3.1.2 references).

② Since □9.5 Hole is Open inside Torque Detecting Element, Insert Angle Drive of Wrench in the Portion.

③ Operate by binding tight.
※Before operation, a display checks in "0." When it is not "0", a clear button is pushed and it is made "0."

④ By click operation, if a torque value falls temporarily, the value will be displayed and green (GOOD)will light up. For the stable measurement, a “peak down start value” is set up beforehand. (5.2 references.)

⑤ If “CLEAR” button is pushed, it will be in the state where a display is cleared and measurement is possible again.
※When it cannot insert in □9.5 hole directly, use a conversion adapter etc.

■ About a convenient function

This model carries various functions convenient to measure. You can use the function appropriate for each management condition more efficiently because you use.

−Kinds of convenient function

①The yes-no decision which sets up a maximum value and a minimum value. The maximum value and minimum value of measured value can be set up respectively. It is success judging (Green GOOD lamp lighting) within the limits of an upper minimum value. A failure judging (Red NG lamp blink) is carried out of the range.

②The value which starts the measurement at the time of peak-down mode can be set up.
When measuring a torque driver/wrench etc., the unrelated torque change at the time of a measurement start can be disregarded.

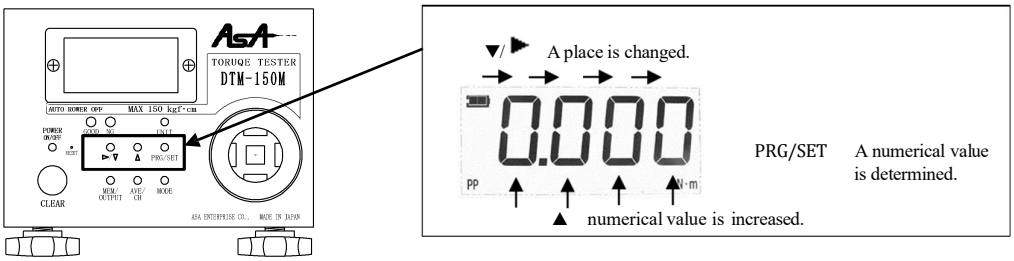
③The value which starts the output at the time of real-time output mode can be set up.

④Time to be automatic and clear the display of a measurement result can be set up.

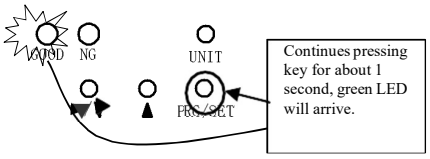
⑥ Hoe to sound buzzer sound can be chose.

−The setting method of a convenient functional numerical value.
The numerical value for using a convenient function is set up.

PRG/SET, and ▲ and ▼ /▶ are used.



1. Change in Setting Mode, and Setup of Maximum value.



If it continues pressing the PRG/SET key for about 1 second, green LED (GOOD lamp) and H will stick, the channel set up now is displayed.

The channel which wants to change a channel or the contents to use is set up by the ▲ key or the ▼/▶ key. (ch0-ch4)

When you change the channel to be used, press the "CLR" key after change. When changing the contents of a setting of a channel, the PRG key is pressed again.

2. Setup of Maximum Value

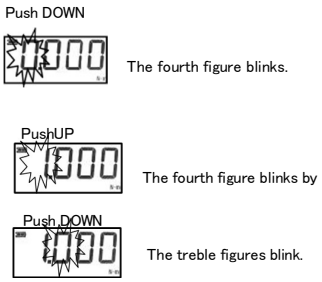
A maximum value is displayed after displaying H will arrive.

The maximum value is set up by ▲ and ▼/▶ key.

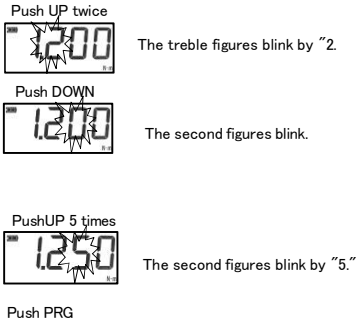
Since the fourth figure will blink if ▼/▶ key is pressed first, a numerical value is chosen by ▲ key.

If a setup of a numerical value of the fourth figure finishes, ▼/▶ key will be pressed again. Since the treble figures blink, a numerical value is set up similarly.

When a maximum value is set as 1.250

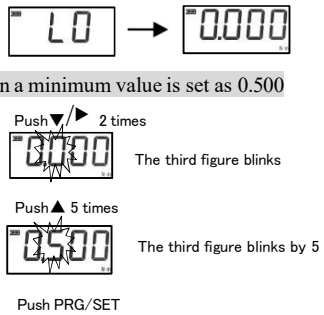


The second figures and the first figure are set up similarly.
It is a numerical increase at ▲ key. One figure falls by ▼/▸ key.
If ▼/▸ is pushed again after setting up the first figure, since all figures will be displayed, check the set point.
When the setting is corrected, it sets it from the fourth digit again pushing ▼/▸ key. If a setup of a maximum value is completed, the PRG key will be pressed again.
* When the PRG key is pressed while setting up, move to the next setting.



3. Setup of Minimum Value

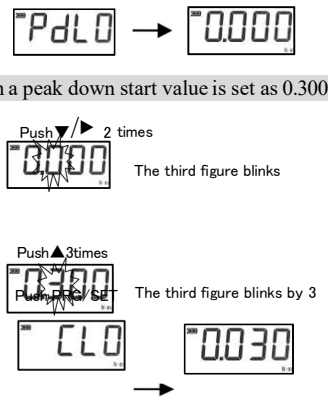
A minimum value is displayed after displaying LO
The minimum value of torque measurement is set up by the ▲ key and the ▼/▸ key like a maximum value.
The a minimum value cannot set a value bigger than a maximum limit value.
If a setup is completed, the PRG/SET key will be pressed again.



4. Setup of Peak Down Start Value

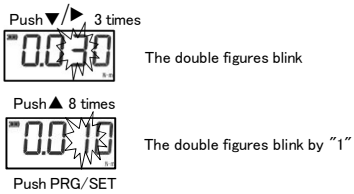
After displaying PdLO, a peak down start value is displayed.
A peak down start value is set up by ▲key and ▼/▸key like a maximum value.

If a setup is completed, the PRG/SET key will be pressed again.



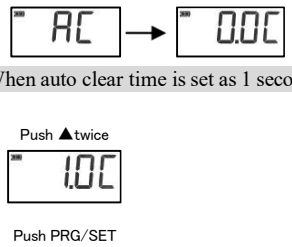
5.Setup of Real-time Output Start Value

After displaying CLO, a real-time output start value is displayed.
A value is set up similarly.
When this value is set to 0, the inside of real-time output mode continues outputting data.
If a setup is completed, the PRG/SET key will be pressed again.



6. Auto Clear Setup

After displaying AC, a time of an auto clearance is displayed.
Time to carry out the zero clearance of the display is set up by ▲ or ▼/▸. (A setup the whole 0.5 is possible in 0.1 - 3.0 seconds)
It increases by ▲. It decreases by ▼/▸. Setup-time selection
0.0C⇔0.1C⇔0.5C⇔1.0C⇔1.5C⇔2.0C⇔2.5C⇔3.0C⇔0.0C



If it sets up by 0.0C, it will become the zero clearance in manual operation.

*** When set up except 0.0C, a zero clearance is not carried out even if it pushes a Clear key.**

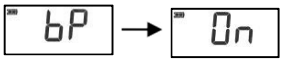
If a setup is completed, the PRG/SET key will be pressed again.

7.Setup of Buzzer

After displaying bP, an ON-OFF-FF setup of a buzzer is displayed. How to sound a buzzer is set up by ▲ and ▼/▸.

(On: Sound altogether OFF: Don't sound except exaggerated torque. FF: Only NG sounds.)

If a setup is completed, the PRG/SET key will be pressed again.



When setting up for sounding a buzzer

Push PRG/SET

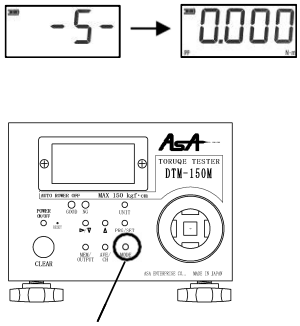
8. End of Setup

It is displayed -S- and is a setting end. Green LED disappears.

(The inside of setting mode has turned on green LED)

* When ending a setup on the way, press the CLEAR key. It is displayed as -S- and will be in the state where it can measure. Green LED puts out the light.

* What value or when the numerical value set up now checks, it presses the MODE key. The item of the numerical value set as a display board now is displayed. (HI、LO、PdLO、CLO、AC、bP)



The item under setup is checked.

−Kinds of Convenient Function

Introduce the method of the measurement using a convenient function.

・OK/NG Judgment

A measurement result judges the inside of a fiducially point, or the outside of a fiducially point, and tells you about at a lamp or a buzzer.

① Set up the “maximum value” and the “minimum value” used as a standard. (Reference 5.2)
② Measurement mode checks in “PP”. (Only measurement mode “PP” of a OK/NG judgment is effective.)
③ When measured value is between a minimum and a maximum, NG lamp blinks and a buzzer sounds.
④ If measurement is completed, the CLEAR key will be pressed and an indication will be given zero. At this time, the lamp and buzzer of a OK/NG judgment disappeared.

A OK/NG judgment is performed only when measurement mode is “P-P”.

Detection of the value of a peak-down switches on a Green (GOOD) lamp at the time of P-D mode.

	Below minimum *	Within the limits	Beyond a maximum	Exaggerated torque
Lamp	Red blink (slowly)	Green lighting	Red blink (quick)	Red lighting
Buzzer	Intermittence sound (slowly)	Continuation sound	Intermittence sound (quick)	Continuation sound

Below minimum value *While the load under measurement has not reached a minimum value, it judges, when load is almost lost.

−Maximum, Minimum, and Average value

・I The maximum, the minimum value, and the average value of the measurements data saved can be displayed and checked. However, it becomes calculation of only the data (data of the same measurement direction) of the same mark as a memory number "001" (the first data).

When data 001 is + (the CW direction), only + (the CW direction) is.

- (The CCW direction) only for - (the CCW direction), a case is.

(1) AVE/CH key is pressed.

(2) As Opposed to Data Measured and Saved

1) The number of data -- With no display 2）

Maximum Torque value -- "MAX" Display 3）

Minimum Torque value -- "MIN" Display

4） Average Torque value -- "AVE" Display

−It is Automatic in Display and Clear

When carrying out repeat measurement, even if it does not push the clear button after a measurement end, a display can be cleared automatically.

① Set up the "auto clear time" of a convenient functional numerical value. (5.2 Refer)

② After a measurement end, if the time set up after the load concerning a detecting element was lost passes, a display will be cleared.

* When auto clear time is set up, a display is not cleared even if it presses the "CLEAR key."

−Real-time output

A data output (real-time output mode) can be carried out about 180 times in 1 second.

It can switch every 1/ 12 seconds. The change method「**6.4 Change of Output Speed of Data**」Reference.

① Set measurement mode as "real-time output" mode.(Reference 3.1.2)

② If torque load becomes beyond the value CLO set up beforehand, the data output of the load torque will be carried out.

③ If torque load becomes under CLO, a data output will stop.

※During a real-time output mode, green LED is blinking.

・If torque load becomes beyond the value CLO set up beforehand, the data output of the load torque will be carried out.

・If torque load becomes under CLO, a data output will stop.

※During a real-time data output, since the torque display changes at high speed, it stops being able to be visible very easily.

※When the output of data is not carried out by setup of CLO, even if torque has started, the torque display has become with "0."

※When CLO is set as "0", the inside of real-time output mode continues taking out data. The data outside the measurement range is used as a reference value. Although the data near "0" may be fluctuated also in the time of the no-load, it is not failure with the condition on data processing.

■ Preservation, Display and Data Output

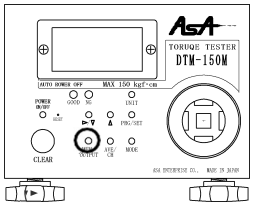
Preservation, a display, and an output can be carried out for data, such as measurement data and the average. Whenever data press the CLEAR key or require an auto clearance, as soon as memory memorizes, they output a signal also to a data output terminal. Statistics data output a signal also to a data output terminal at the same time they display data.

−Measurement Data

・Preservation of Measurement Data

Memory data are always saved, whenever it presses the CLEAR key or an auto clearance starts. When a lot of data are treated, we recommend you to eliminate data before use.

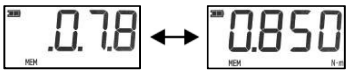
※ Begin the memory of data from the data number 001. When data are already memorized, it saves from the following memory number. Preservation of a maximum of 800 data can be performed, and if it exceeds 800 data, it will be overwritten from No. 001. Since front data will disappear, when exceeding 800 data, save them in a personal computer etc.



・Display and Elimination of Saved Measurement Data

① If the MEM/OUTPUT key is pressed, it will be displayed as "MEM", and the data number and measured value which were saved at the end will be displayed by turns.

② If ▲ key or▼/▶ key is pressed, a memory number is changed and data can be searched. If button operation is left for 6 seconds, the "MEM" display will disappear and it will move to measurement mode.

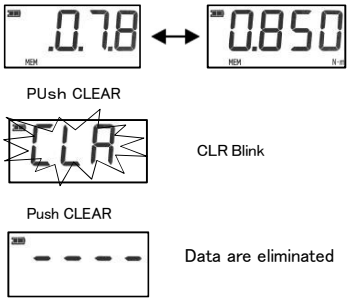


※ When memory data are eliminated individually

③ If the CLEAR key is pressed while displaying a memory number and a torque value on alternation, it will blink CLA.

④ If the CLEAR key is again pressed during blink, the data which displayed as ---- and were chosen will be eliminated.(Subsequent data slide data to the eliminated portion)

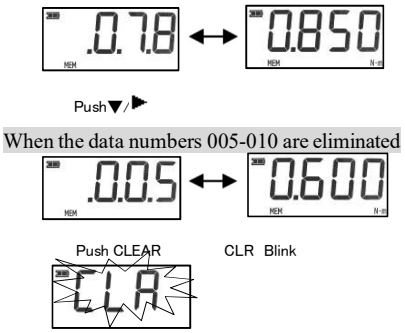
⑤ If it is left during CLA blink, it will be in the state which can be measured. (Data are not eliminated)



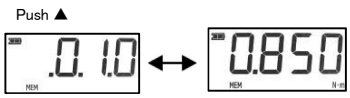
※When the range is specified and memory data are eliminated

⑥ Press ▲ key or▼/▶ key and display the data of the beginning of data to erase.

⑦ If the CLEAR key is pressed while displaying a memory number and a torque value on alternation, it will blink CLA.



⑧ Since a data number will increase if ▲ key is pressed, display the data of the last of the range to erase.



⑨ If the CLEAR key is pressed while displaying a memory number and a torque value on alternation, the data of the range which displayed as ---- and was chosen will be eliminated. If no button operations are carried out at this time, it will check whether it blinks with CLR and eliminates.
When eliminating, the CLEAR key is pressed during CLR blink. When stopping elimination, it is left as it is. It returns to a torque display and data are not eliminated.

※When memory data are eliminated, the data saved after that slide to the data number.

-Output of Saved Measurement Data

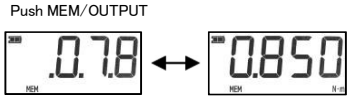
① A push on the MEM/OUTPUT key displays by turns the data number and measured value which were saved at the end.

② While displaying a data number and measured value, press the MEM/OUTPUT key once again.(It becomes data output preparation)

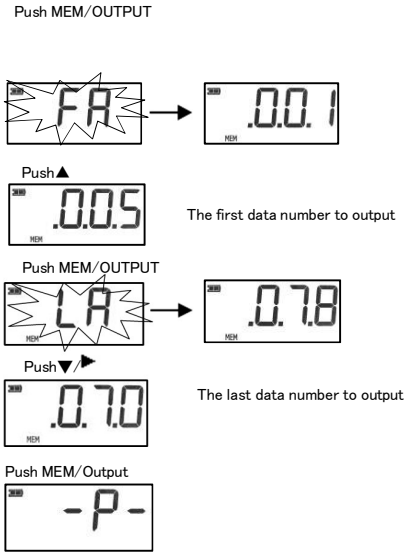
③ Since a data number is displayed after displaying it as FA (first address), choose the data number of the first data to output by▲or▼/▶ .

④ Since a data number is displayed after displaying it as LA (last address), choose the data number of the data of the last to output by▲or▼/▶ . The MEM/OUTPUT key will be pressed if selection finishes.

⑤ Display it as -P- and output.
After an output finishes, it returns to a measurement state.



When the data numbers 005-070 are outputted



※ Press the CLEAR key for about 1 second to stop an output during an output.

-Output Data

Output data are outputted in the ASCII format with a USB cable.
In addition, in order to take in data, driver software needs to be installed separately.
About installation of driver software:
Homepage of our company: http://www.asa-tool.com
FTDI Chips Virtual COM Port Drivers: http://www.ftdichip.com/Drivers/VCP.htm

・Data Format

Data bit length	start bit 1 + data bit 8 + stop bit 2 + no parity		
Baud rate	19200bps	Connector form	USB（B type）

・The format of data has the following two kinds

① Format at the Time of Measured Value and Statistics Data Output

18	○○○	OE	20	±	○○○○○	20	OF	○○○○○○	OD
CAN	※	SO	Space	Sign	Measured value	Space	SI	Unit	CR
All data 21									

② Data Format at the Time of Real-time Output Mode

18	±	○○○○○	OD
CAN	Sign	Measured value	CR
All data 8			

The contents of data

CAN: Cancellation

※ : At the time of a measured-value output

At the time of a memory data output "a data number"

At the time of the output in a clearance "a space"

: At the time of a channel data output "N" The number of data, "MAX" Maximum, "MIN" Minimum value, "m" Average value

SO : Double width expansion printing specification.

± : Measurement sign + A direction with a bundle − The Return Direction

Measured value: A decimal point is also included. The last is a space when there is no decimal point.

1 0 . 0 0 ---- 10.00

SI : Double width expansion printing release

Unit : In N-m etc., the remainder is a space.

N · m □ □ □ ---- N·m (k g f · c m ---- kgf·cm)

CR : Carriage return

※Cautions: An interface cable is used for connection of a computer, prepare a cable according to a computer. Ask our company a cable.

−All Elimination of Saved Data

① When carrying out package elimination of all the data, it continues pushing until it displays the CLEAR key as ALL. (About 4 seconds)

※Push continuously, and after a while (about 2 seconds), although Red LED switches on the light, it continues pushing as it is.

② If the CLEAR key is again pressed during ALL blink, it will be indicated by blink with CLA.

③ If the CLEAR key is pressed again, it will be displayed as ---- and all data will be eliminated. (The setting numerical value of each function is not cleared)

※When operation is left during ALL・CLA blink, it will be in the state which can be measured.(Memory is not cleared)

−All Elimination of Saved Data

・The speed of the output at the time of outputting the data saved can be changed.

① For Printer Output (Low Speed) -- Setup "00"

② For Personal Computer Output (High Speed) -- Setup "01"
(It is set as "01" at the time of purchase.)

・The change of a setup is performed by the following methods.

① In the state of a power source OFF, pressing the PRG key, press the ON/OFF key and switch on a power source.

② If the PRG key is detached, it will be displayed as "01" or "00."Since it will change if ▲ key is pressed, a setup is chosen.

③ If the PRG key is pressed again, after displaying it as -S-, it returns to a torque display, and will be in the state which can be measured.

■System Reset

−CPU in the tester might not start even if the battery charges it with electricity complete discharged. (when not using it for a long term)

−In that case, push the system reset button. (A system reset button is beside a power button.)
It will be in an initial state (all the contents of money are eliminated.)

−Do not use it excluding the following condition:

- When the display doesn't appear even if this machine is not used for a long term and charged.
- Additionally, when the tester doesn't work.

−Since all the contents of memory are eliminated when system reset is performed, redo a setup once again.

■ Calibration Trust Service

−Periodical calibration

A regular proofreading is necessary to manage the accuracy of torque tester.
By our company, the proofreading with the high reliability traced to the national standard is performed, and in order to use it within accuracy, I recommend you one proofreading per year.
(Periodical calibration is a charge.)
An inspection report, a proofreading certificate, and traceability system figure attachment

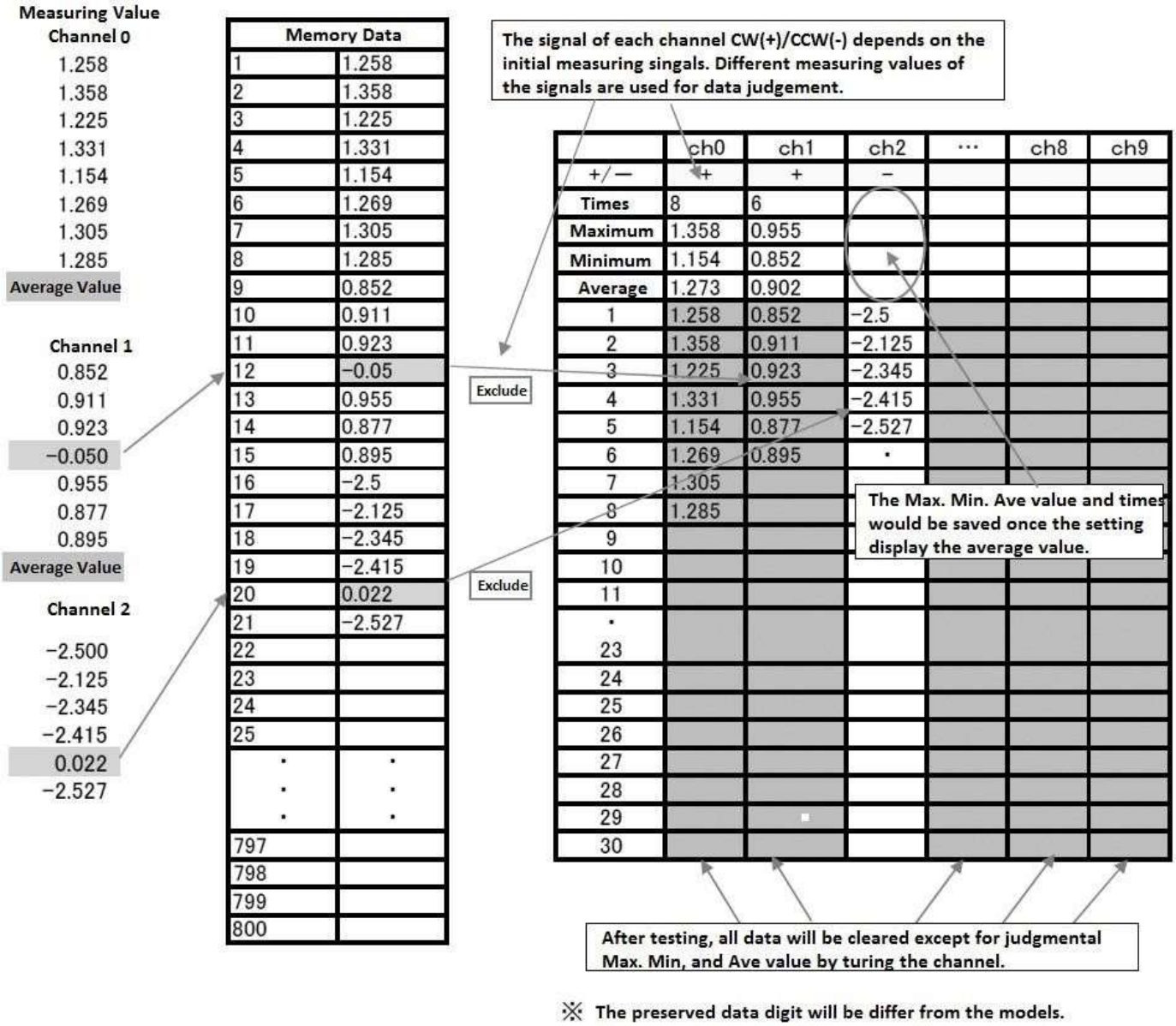
−Guarantee

Although manufactured under sufficient quality control, if the fault which originates in manufacture, transportation, etc. of our company within one year after a purchase should occur,
I will fix this machine gratuitously.
In the following case, it becomes a charge within the term of a guarantee.
Failure and damage by the error, and unjust repair and reconstruction on use
Failure and damage by the natural disaster, pollution, unusual voltage, etc.

−Statistic Data

・**Calculation Method of Statistics Data**

The data for statistics data are kept as data for calculation in the same value temporarily, when measurement data are saved. It is overwritten by the oldest data, when even a maximum of 30 data are kept and the data beyond it are inputted. Being calculated when AVE/CH is pushed carries out about the data kept temporarily.



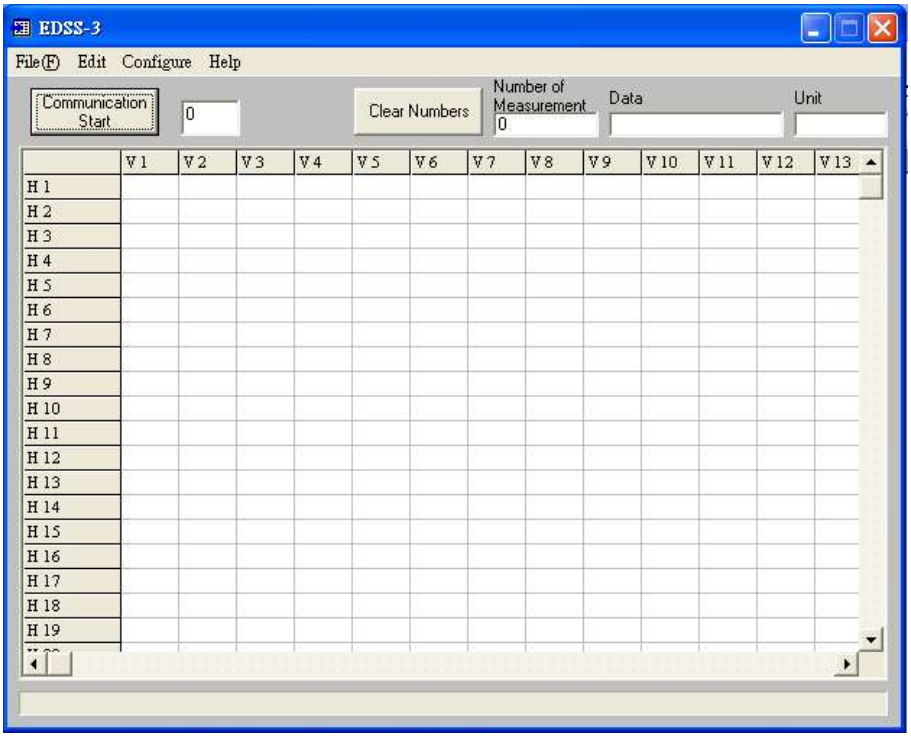
※The first data kept temporarily fasten, when it is the data (+) of the same direction, it fastens and the data of only the same directio **<u>Concept of calculating/ preserving of channel data</u>** are not saved to the momentary storage data for calculation (saved to measurement data). The first data loosen, in the case of a direction, it loosens, and it becomes only a direction.

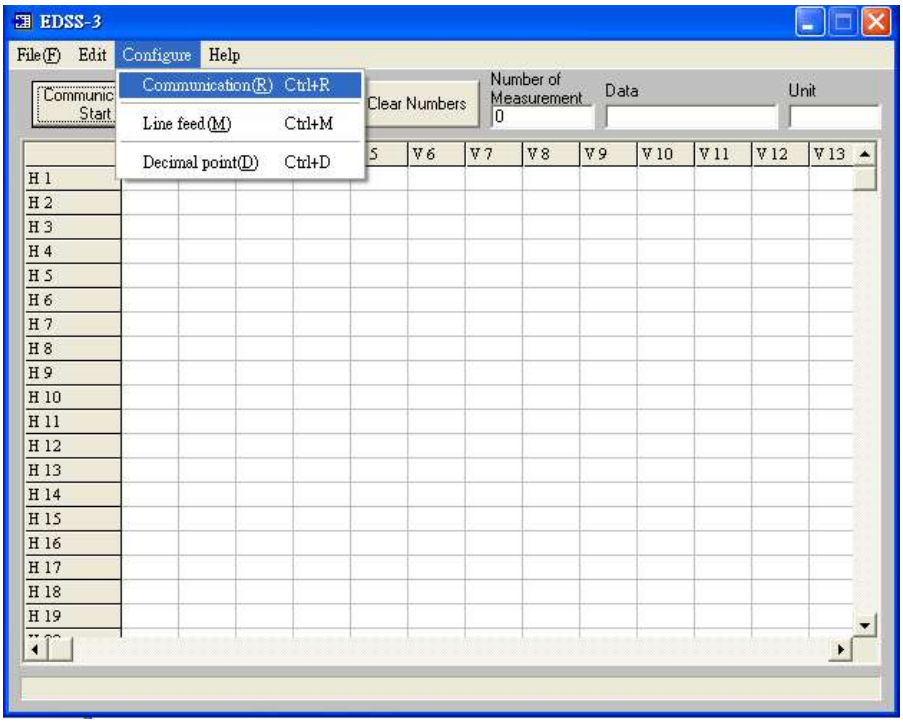
■ The manual of torque meter's designate software (EDSS-3)

−Communication setup

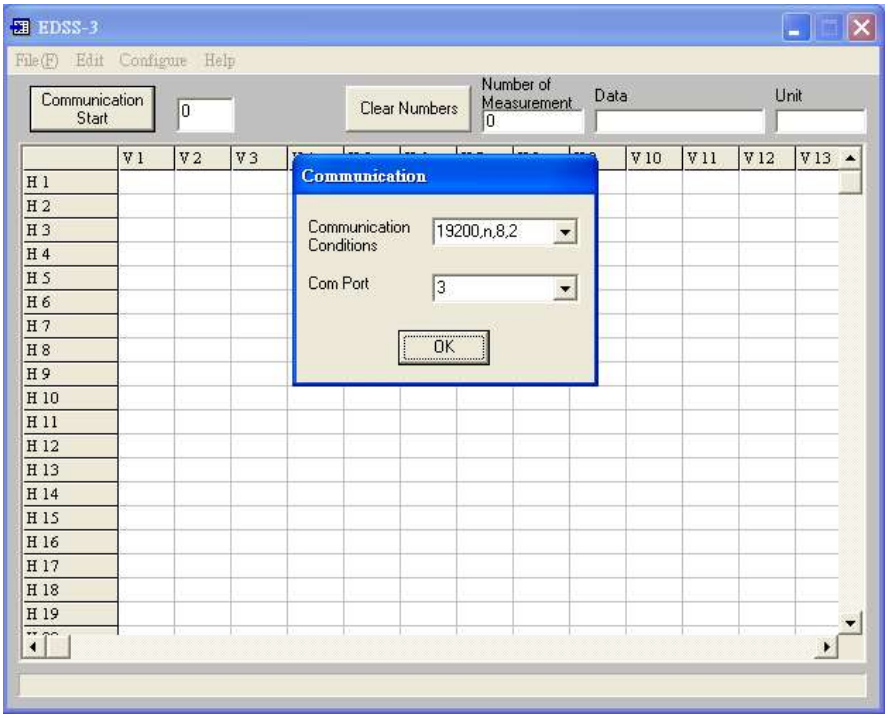
Communicative initial setting is performed before use.

• Choose "Communication" before "Configure" of a menu.





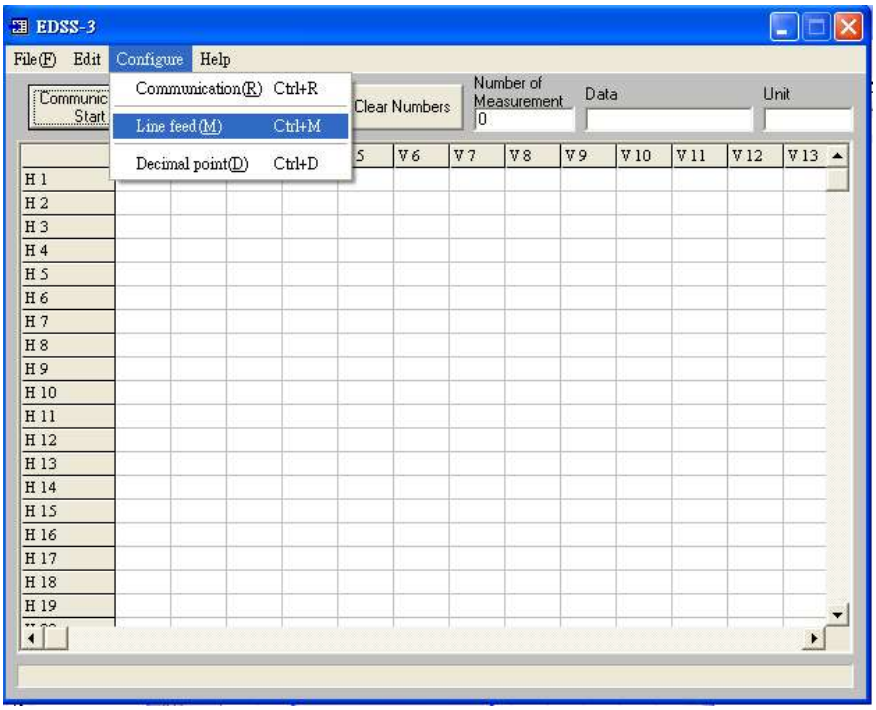
- A setup of “Communication Conditions” is united with “19200n,8,2”
- Please united a setup of “COM Port” with the USB port of the personal computer of a stock. (Please refer to the manual of a personal computer about a COM port.)



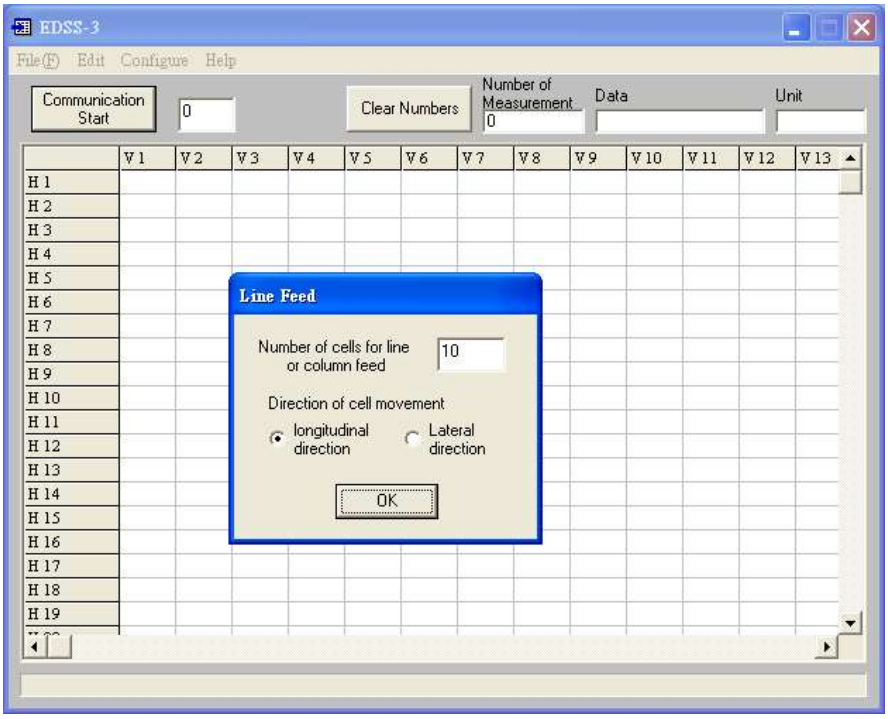
–Setup of method of taking in

It sets up how the data to take in is arranged on a screen.

- Choose “Line feed” from “Configured” of a menu.



• Set the number of data a new line for is started as “Number of cells for line or column feed”. Maximum is to 100 in the direction of length at 400 and transverse direction.



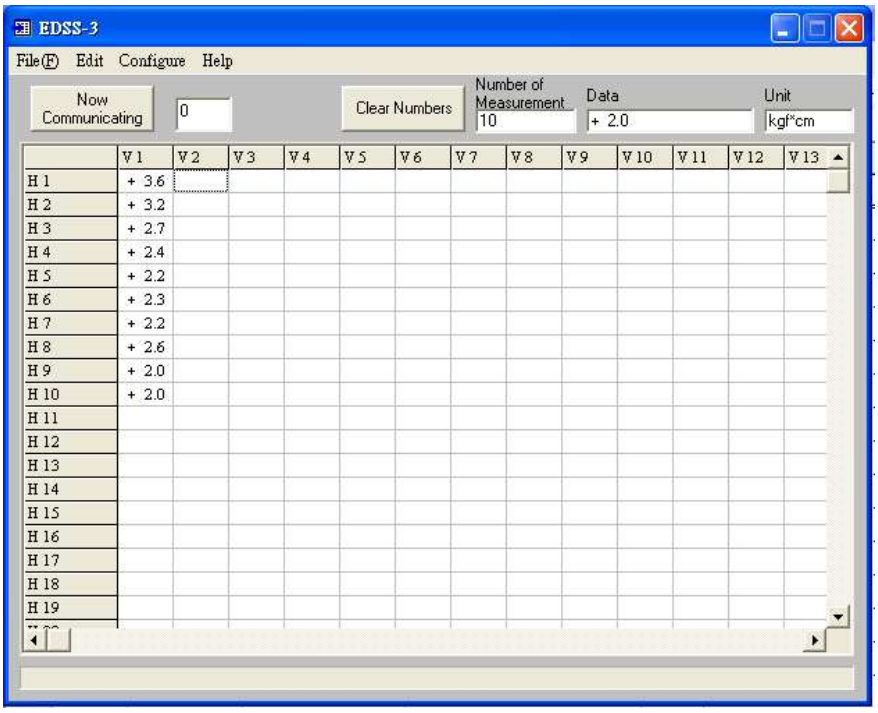
• determine the direction to which a cell moves. Please choose the direction of length, or a transverse direction.

–Taking in of data.

• If a “communication start” button is pushed, it will be in the state waiting for communication.

• Move cursor to a cell to carry out a measurement start.

• Transmit data from a measuring instrument.



−Data shift to spreadsheet software

The taken-in data moves to commercial spreadsheet software.

(Please start spreadsheet software beforehand.)

- The range of data to move is chosen with a mouse.
- Choose a “Copy” or “Cut” from “Edits” of a menu.
  (A menu indication also of the right-click is given.)
- Stick on spreadsheet software.

−Preservation of data

When saving the taken-in data, “Save” in the “File” of a menu is chosen. The preservation from of a file serves as a comma separated text file (***.txt)

NOTE:

“Copyright”: As for this program, SUGISAKI METER CO., LTD. has all rights.

“Exemption from responsibility”: When this program is operated and it suffers damages, we offer no guarantee.

■Troubleshooting

-When functional fault arises, check based on the following table. By the corresponding processing, when fault is not canceled, tell repair to our company or a store. In addition, we are allowed to make a torque tester's term of guarantee into one year from a purchase. (However, there may be onerous in the contents of repair.)

condition	checkpoint	solution
A power supply is not turned on.	Is charge carried out?	Carry out regular time charge using the exclusive charger attached.
Even if it turns on a power switch, a LOBAT lamp blinks and a power supply is shut off immediately.	Charge is insufficient.	Carry out regular time charge using the exclusive charger attached.
It does not display, even if it switches on a power supply after charge of regulation time.	If it is not used over a long period of time, an internal battery will carry out full electric discharge.	It will return, if a front system reset button is pushed. After a return, push a clear button and give an indication zero.
It cannot measure.	When torque is applied, does a numerical value change?	The gauge may be damaged when not changing. Request repair.
	Is it the numerical value of each function under setup?	End a setup and return to measurement mode.
A display disappears immediately.(It does not hold by measurement mode PP/PD)	It is used setting up an auto clearance.	Check the setting item of an auto clear function again. When there is no necessity, set it as 0.0C.
A zero point cannot be taken.	Did you clear and make it zero?	"3.5" is seen and zero adjustment is performed.
By real-time output mode, even if it imposes torque, a display does not change. Data are not outputted.	Torque has not reached a real-time output start value.	At real-time output mode, when torque is under a "CLO" real-time output start value, a data output does not give an indication with "0", either. Please change the value of "CLO" into a suitable value.

Enjoying in Technique of Assemblies

Retailer's Stamp	Montion Kft. | Montion Tools E-mail: info@montion.hu asa-tool.hu | montion.hu | montiontools.com | htools.hu	Attention! The generic or unsuitable parts might seriously affect the torque meter's lifespan, please purchase the parts from original manufacturer to secure your rights. REV A.0