Nidec
All for dreams

364-23-194-2

DIGITAL TORQUE METER TNP • TNJ SERIES

Instruction Manual

Please read the instruction manual carefully before use.

Please read the caution section in the instruction manual before use,
and use properly according to the instruction manual.

NIDEC DRIVE TECHNOLOGY CORPORATION

Safety notes

Please comply

Please read instruction manual carefully before installation, operation, maintenance, checking, And please use the product after reading product knowledge, safety information and precaution statement.

[Danger], [Warning], [Caution] differentiate the importance of safety notes in the instruction manual, they are very important. Please comply.

Danger mark indicates possible death, serious injury or fire if the user disregards the instruction.

Warning mark indicates the possibility of a serious injury if the user does not follow the instruction.

Caution mark indicates the possibility of light injury or dangers if user operates improperly. And that leads to great effect base on different instance. Please comply.

The following marks indicate the sort of contents which are complied with.

The mark indicates warning, Please pay attention.

The mark indicates prohibit operation.

The mark indicates follow instruction.

⚠ Warning

Heavy! Pay close attention to operation

When the product falls on user foot, it leads to serious injury.

⚠ Caution

Do not exceed the bound of torquemoment.

While exceeded the bound of toquemoment, the inductor and other parts may go wrong.

Please place the product on the convenient location during maintenance and checkup.

Do not more and hold the product while the power is on.

If power cables break off, it may lead to electric shock, fire, injury.

Please check it the object is fixed up.

Please check the object is fix up not to move. The object cannot be test correctly while it can move.

Please check the electric source is single phase. The voltage of electrical outlet is equal to the mark voltage. Don't connect too many power cables.

If power cable break off, it may lead to electric shock, fire, injury.

Do not mangle, bend, pull, turn, and truss power cables.
Don't place object on the cables.
Don't nip power cables.

If power cable breakoff, it may lead to electric shock, fire, injury.

⚠ Caution

Don't charge with other attached AC adapter and not others.
It may leads to circuit damage and fire.

Please use and charge only by AC100 ~ 230V.
It may lead to fire and electrical shock fire.

Please insert power cable into AC socket firmly.
While use in the loose condition, it may lead to electric shock and fire for short circuit.

Don't plug into or unplug from AC connect instrument with wet hands.
It may leads to electric shock.

Don't disassemble, repair, or remodel.
It may lead to injury for abnormal action.

Don't haul AC connect instrument.
If soft cable break off, it may lead to fire, for short circuit.

Don't operate the unit in condition with dust on AC plug.
It can cause the fire.

Don't use and save in the following environment :

- Sunniness atmosphere.
- The environmental which water may suffer.
- Environment which condensation generates.
- Environment with much dust, salt, and iron.
- Environmental which oil, water, and chemicals will suffer.
- A place with corrosive gas and combustible gas.

Please wipe with the clean soft cloth when it get dirty. Don't use gas, thinner, or ethanol.

Use it the temperature range (0 ～ 40℃)
It may cause wrong operation if exceed the temperature range.

Periodical examination and adjustment are recommended.
Accuracy of measurement will become lower with time, depending on frequency of use or measuring torque.

Use in the humidity range (35 ～ 85%RH) (non-condensing).
It may lead to wrong operation if exceed the humidity.

1. Product features

- Opening and closing torque can be measured.
- Data can be downloaded to PC with USB.
- Peak value (peak hold) can be measured.
- Memorize 1000 peak values at maximum with memory mode. (TNP only)
- Decision to pass or fail of the product by comparator function (Judgement is informed by LED). (TNP only)
- Nickel Metal hydride battery enables to use TNP without AC adapter. (TNJ operate with only AC adapter)
- Rating torques
  TNJ series 2N·m, 5N·m, 10N·m.
  TNP series 0.5N·m, 2N·m, 5N·m, 10N·m.
- Select the measuring units (Nm, Ncm, Kgcm, Lbin)
- Selectable measuring cycle (indication cycle); 1, 2, 4, 8 times / second

2. Accessories

1. Torque meter unit

*This picture is TNP
Measuring table.

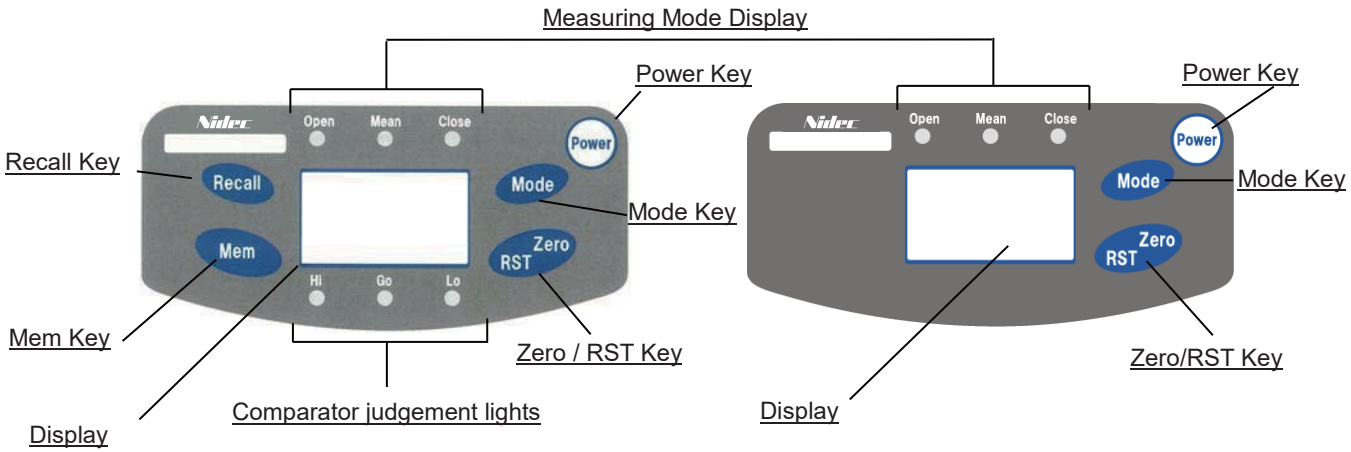
2. AC adaptor 3. Chuck pins (4pieces) 4. USB cable (TNP only)

5. Operation manual

3. Parts names and functions

3.1 Main unit

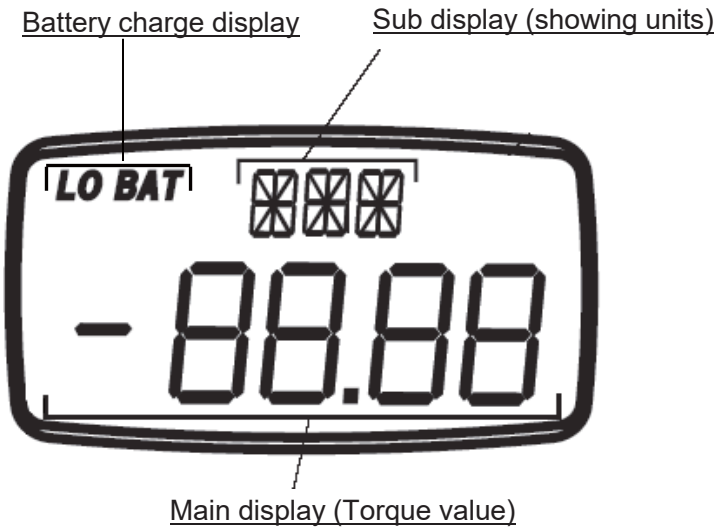
■TNP series（Front）　　■TNJ series（Front）



Power Key	Turn ON and OFF.
Recall Key (TNP only)	Recall data at opening and closing measuring. At average measuring mode, data cannot be recalled. Available at function mode.
Mem Key (TNP only)	Memory peak hold value at opening and closing measuring. At average measuring mode, data cannot be memorized. Available at clear of all memory data. Available at function mode.
Mode Key	Switch the measuring mode. At memory calling, press this button in order to go back to measuring mode. Available at function mode.
Zero/RST key	At Average measuring mode - Zero set. At open and close measuring mode - Peak reset Available at start-up of function mode. Available at function mode.
Display	Shows measuring data, units of measure, battery status, function status.
Measuring mode LED light	LED on “Open”, “Mean” or “Close” indicates measuring mode status.
Comparator judgement display (TNP only)	After the comparator judgement, one LED at the “Hi, Go, Lo” display is on. This indicates the result of comparator judgement. Average measuring mode. Performs a comparator judgement of measuring data, then displays the result. Opening or Closing measuring mode. Performs a comparator judgement of peak hold value, then show the result. When comparator judgement is fail, Hi or Go or Lo does not turn on.

3.2 Display

3.2.1 Part names

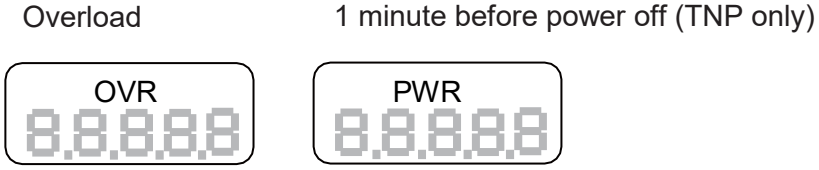


3.2.2 Value display

Show measuring value with sign and 4 digits numbers.
Mean mode; Show opening as “+”, closing as “-“.
Open/Close mode; always “+”

3.2.3 Unit display

Show “OVR” when overloaded. “PWR” indicates 1 minute before auto-power off.



3.2.4 Battery charge display (TNP only)

Display shows below screens depending on the battery condition.

"LO BAT" is shown when voltage of Nickel-Metal Hydride battery is low. Please charge battery with AC adapter.

"BAT" is shown during recharging of Nickel Metal Hydride battery; even if Power is off.

4 Operation

4.1 Fundamental operation

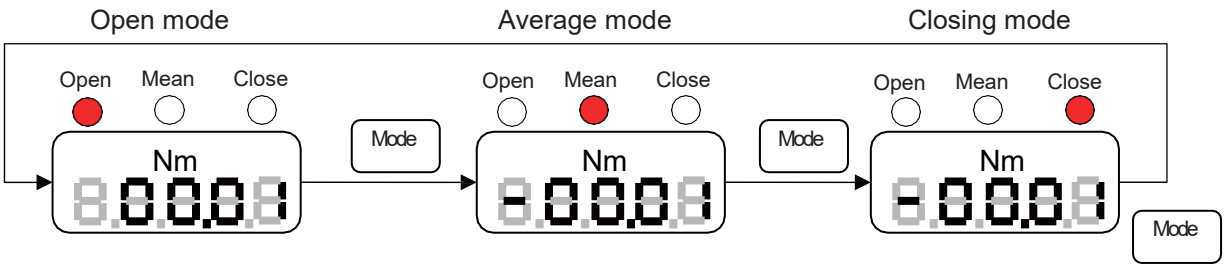
Key name	Operation
Power	Turn ON and OFF
Mode	Change measuring mode
Zero/RST	Zero set / Peak reset
Mem	Store the peak data (TNP only)
Recall	Display memory data (TNP only)

4.2 Special operation

Operation key	Operation	How to operate
Zero/RST + Power	Function mode	When Power is off, press Zero/RST key and hold, then press Power key, then release Keep pressing Zero/RST key until function setting "F01" turns on
Mem + Power	Clear memory data (TNP only)	When Power is off, press Mem key and hold, then press Power key, then release Keep pressing Mem key until "none" appears

5 Measuring mode

Please change the measuring mode by Mode key.

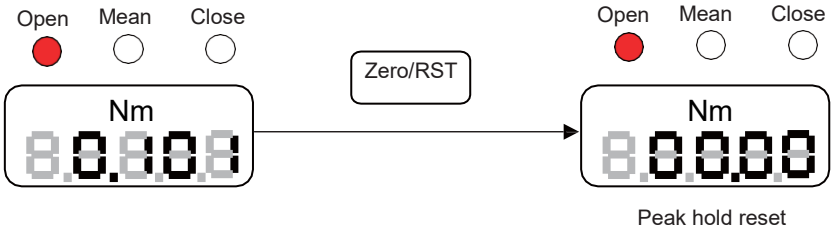


5.1 Open Measuring Mode

Hold the peak value of torque for opening direction on measuring table.
Measuring cycle, 8 times/second
Display cycle, 8 times/second

Show the Torque in “real time” (Mean) until hold the peak value of opening direction.

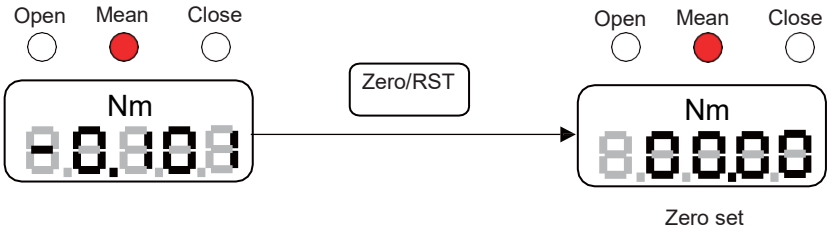
Reset the peak hold by pressing Zero/RST key.



5.2 Average measuring mode

Show torque of measuring table in real time.
Display cycle choose at Function: 1 time/second, 2 times/second, 4 times/second, 8 times/second
Measuring time, same as display cycle.

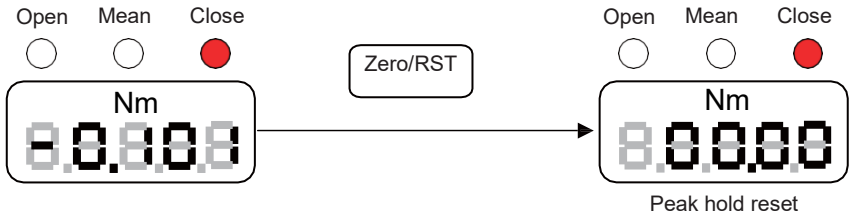
Zero set is done by pressing the Zero/RST key.



5.3 Close measuring mode

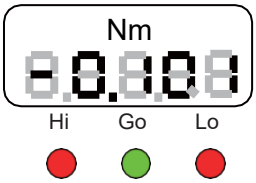
Hold the peak value of torque for closing direction at measuring table.
Measuring cycle, 8 times/second
Display cycle, 8 times/second

Reset the peak hold by pressing Zero/RST key.



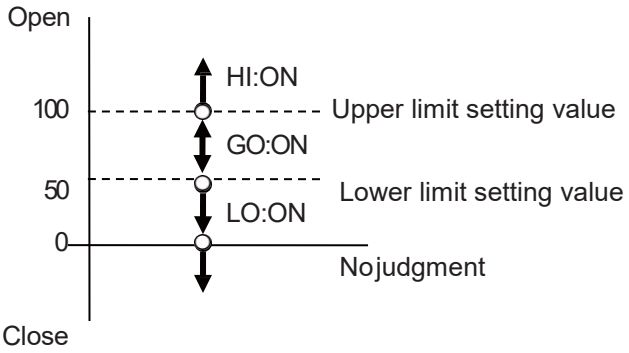
6 Comparator function (TNP only)

Compare upper/lower limit setting value at Function mode with measuring value or peak hold value or registered memory data. Result turns on the relevant LED.
When upper and lower limit value are 0, judgement output does not occur any upper or lower judgement.
Absolute value is used to compare at judgement of upper / lower limit value.
Judge upper/lower limit in real time at Average measuring mode.
Peak hold value is judged at Open/Close measuring mode. During displaying the memory data, the memory data is judged.
Upper/lower limit value will be set in measuring range.
Upper/lower limit value should be set as Upper limit >= Lower limit.
If the upper/lower limit can NOT be set, numeric is blinking. Please press Mode key and set the upper/lower limit again.



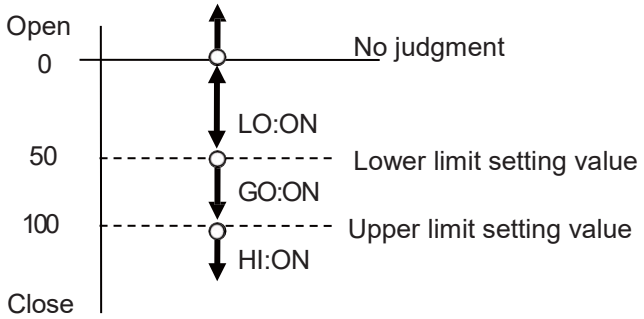
■ Judgement process (Upper limit value: 100, Lower limit value: 50)

• In case of open torque measuring



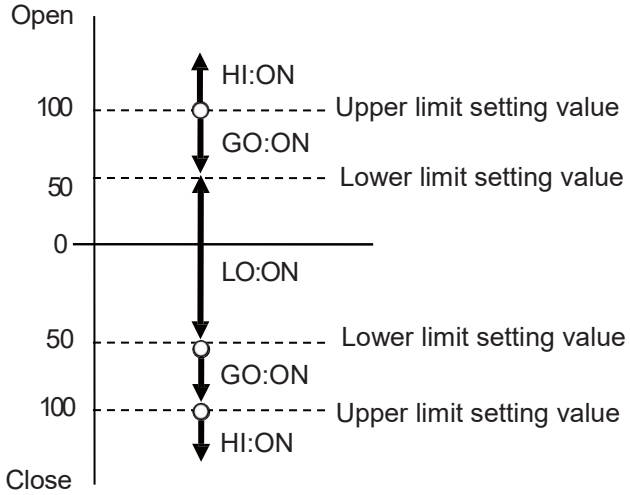
Measuring data is from 0 - 49, “Lo” indicator is on
Measuring data is from 50 - 100, “Go” indicator is on
Measuring data is from 101 – , “Hi” indicator is on

• In case of close torque measuring



Measuring data is from 0 - -49, then the “Lo” indicator is on
Measuring data is from -50 - -100, then the “Go” indicator is on
Measuring data is from -101 - “Hi” indicator is on

• In case of average torque measuring



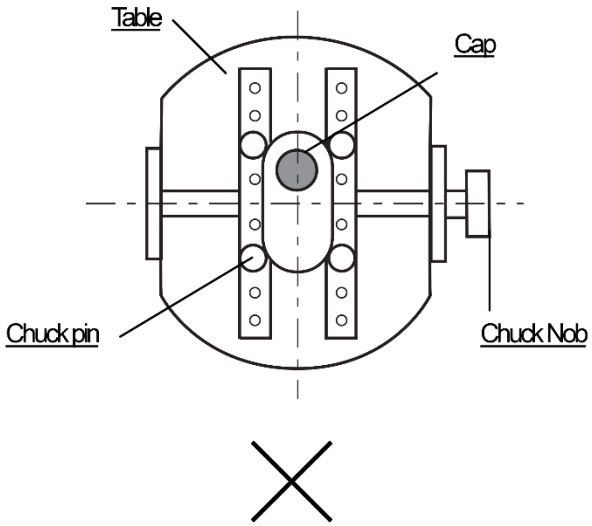
Measuring data is from – -101, then the “Hi” indicator is on
Measuring data is from -100 - -50 “Go” indicator is on
Measuring data is from -49 - 49, then the “Lo” indicator is on
Measuring data is from 50 - 100, then the “Go” indicator is on
Measuring data is from 101 - “Hi” indicator is on

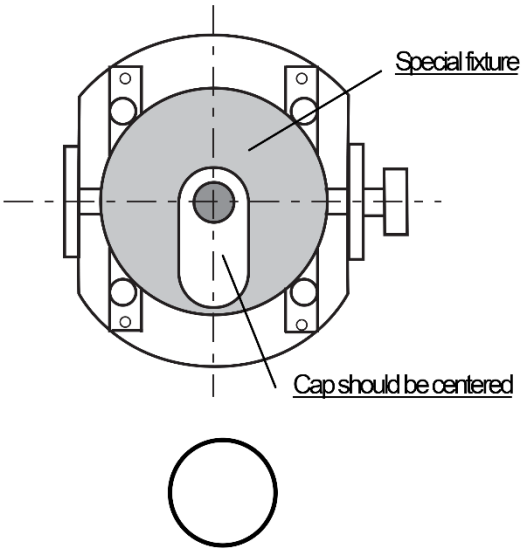
7 Measuring method

7.1 How to fix measuring sample

1. Loosen the knob on the measuring table.
2. Depending on the diameter/size and shape of sample, please insert chuck pins (4 ea.) into holes as shown
3. Put the sample on the measuring table.
4. Turning the knob clockwise on the measuring table, then check if the sample is firmly fixed in the place.

NOTE: Place the cap of sample into the center of table.
NOTE: Special fixture may be required to firmly hold sample.





7.2 Zero adjustment: to "Zero" or Tare the TNP:

When the TNP is in "Open" or "Close" measuring mode, if the displayed torque does not return to "0.00" (when no torque is applied and press Zero/RST), please change the mode to "Mean" mode, and then set "zero point" by pressing "Zero/RST" key.

7.3 Measurement

In the case of "Open" and "Close" measuring modes, the maximum or peak torque value is displayed and saved. Before testing another sample, press "Zero/RST" key. This resets the display to zero "0.00".

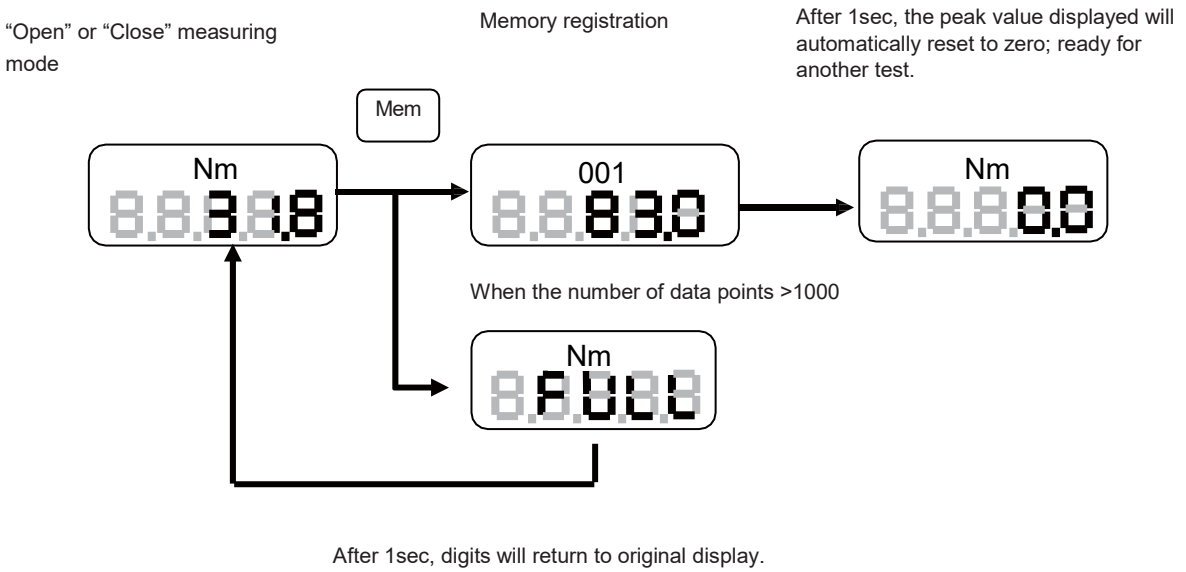
NOTE: Press Zero/RST (zero reset) only while no torque is being measured ("0.00" no torque condition).

8 Memory registration (TNP only)

8.1 Memory registration

When at the “Open” or “Close” measuring modes, a single peak torque value is registered in the TNP memory by simply pressing the “Mem” key. (See flow chart below).

The TNP will then automatically reset to zero, and another torque test may be performed. Up to 1000 tests may be performed with each test peak stored into memory.

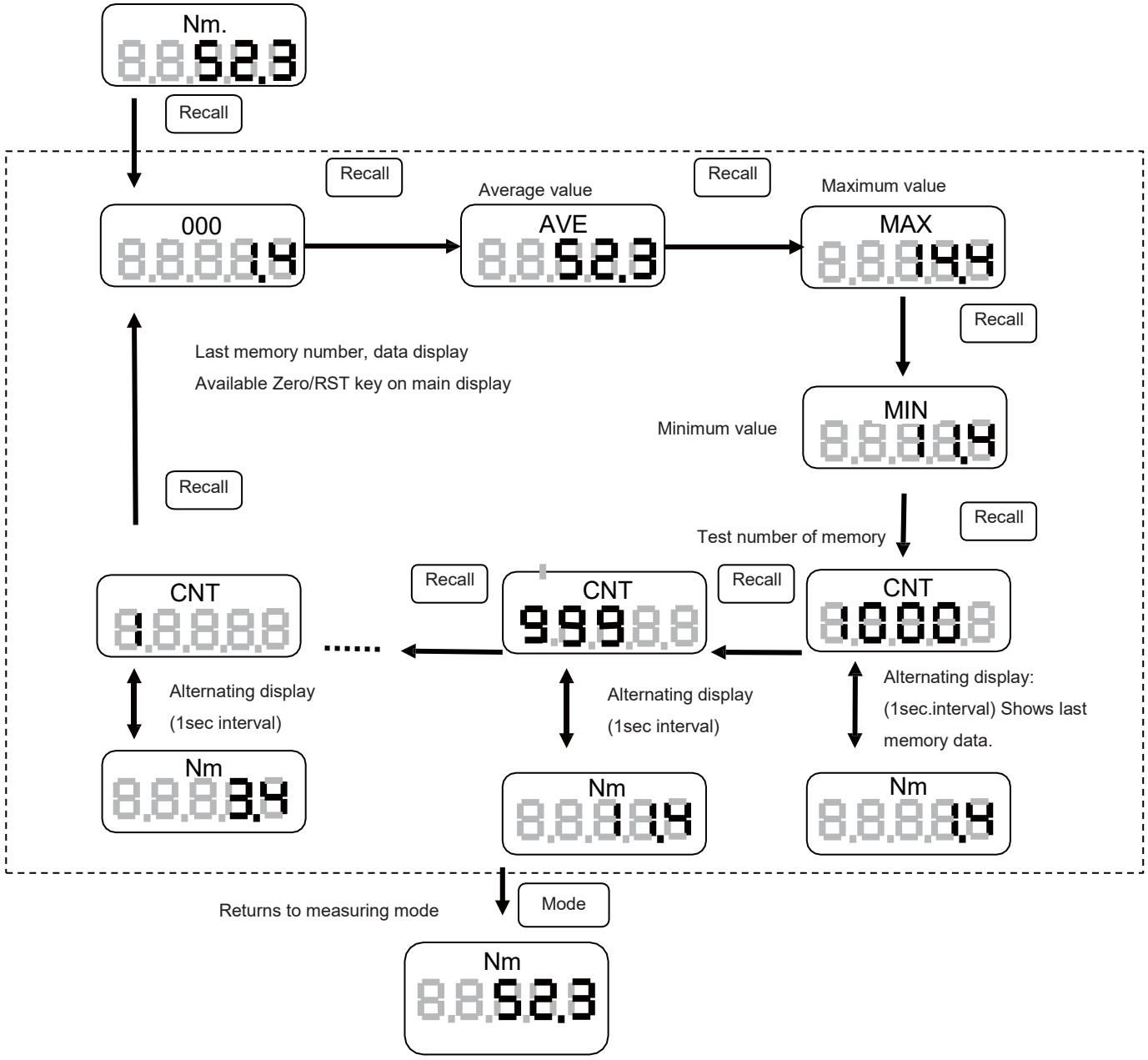


8.2 Memory display

When at the “Open” or “Close” measuring modes, press the “Recall” key, then it’s in Memory display mode.
In the memory display mode, showing “the Last memory data” -> “Average” of all memory data -> “Maximum” -> “Minimum” -> “each memory data” by pressing “Recall” key.
(In case of the last memory number is 1000, “000” is shown on the sub display.)

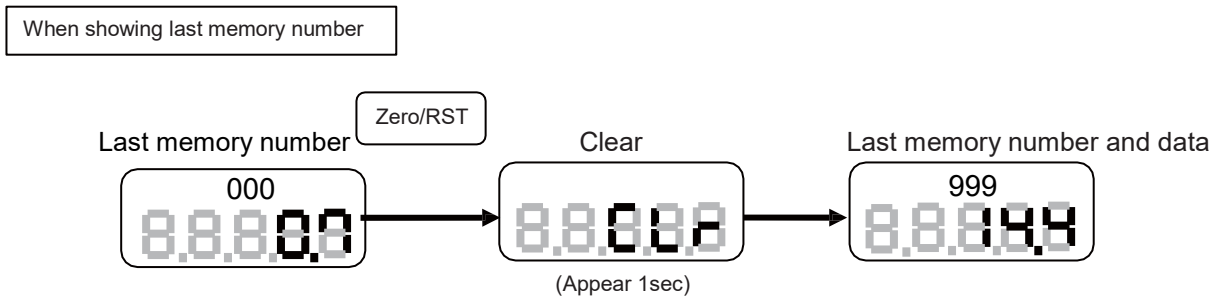
To return to “Open” or “Close” measuring modes at any time: press the “Mode” key. The TNP will be ready for another test in either “Open or Close” measuring mode.

Steps for recalling “Close” or “Open” memorydata

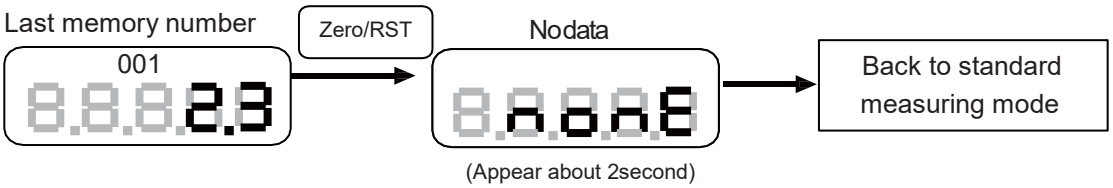


8.3 Clearing memory data

To clear the last data stored, press "Zero/RST".

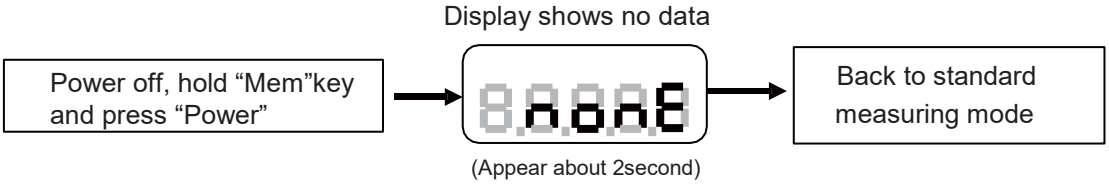


When there is one last data, the last data is cleared by pressing "Zero/RST" key. After that, "nonE" is displayed at main display for 2 seconds, then the display returns to measuring mode as shown below:



8.4 Clear all data

When the power is OFF, hold the "Mem" key, then press and release the "Power" key. All memory data of open and close measuring are cleared.



9. Function modes setting

9.1 Function Mode

FUNCTION	Sub display	Setting content	Initial setting
Measuring unit	f01	Changes the measuring units : Nm, Ncm, Kgcm, Lbin	Nm
Display update time (indication cycle)	f02	Select 1, 2, 4 and 8 times/second	2
Auto power OFF	f03	None or 10 minutes	10 minutes (TNP only)
Upper comparator value (Hi limit)	HI	0000 – 9999: with decimal point	0000 (TNP only)
Lower comparator value (Lo limit)	LO	0000 – 9999: with decimal point	0000 (TNP only)

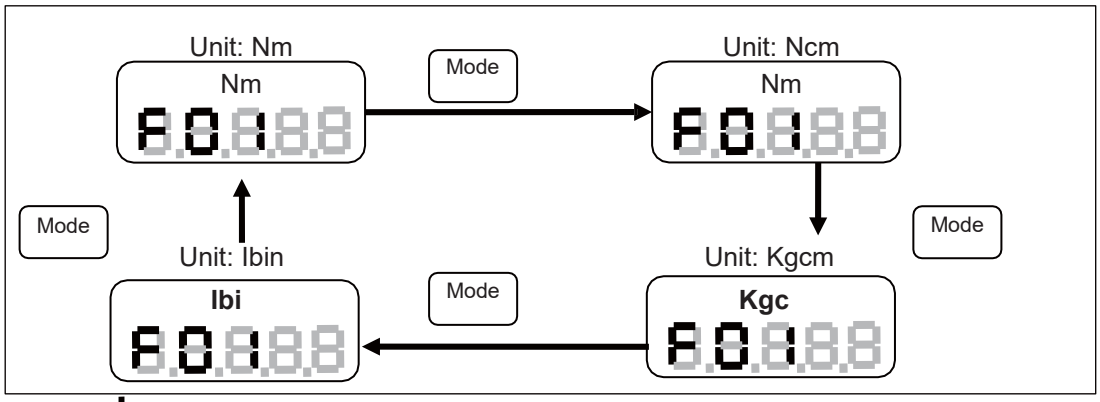
9.2 Operation

1. Setting for measuring units, display update time (indication cycle) and auto power off.

Power is OFF

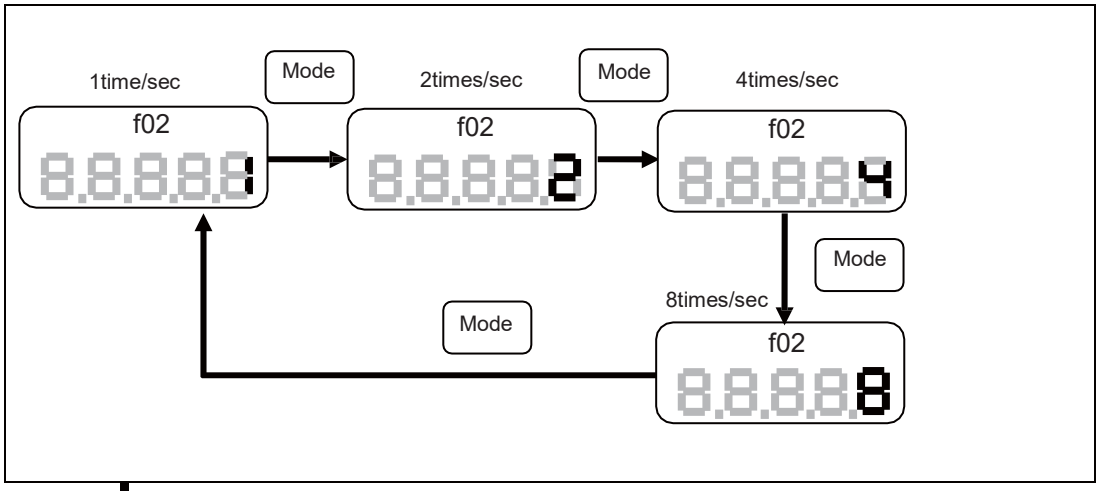
Power + Zero/RST While pushing down Zero/RST key, push and release Power key.

Setting measuring units **Show present setting at display**



Zero/RST Move to display update time (Indication cycle).

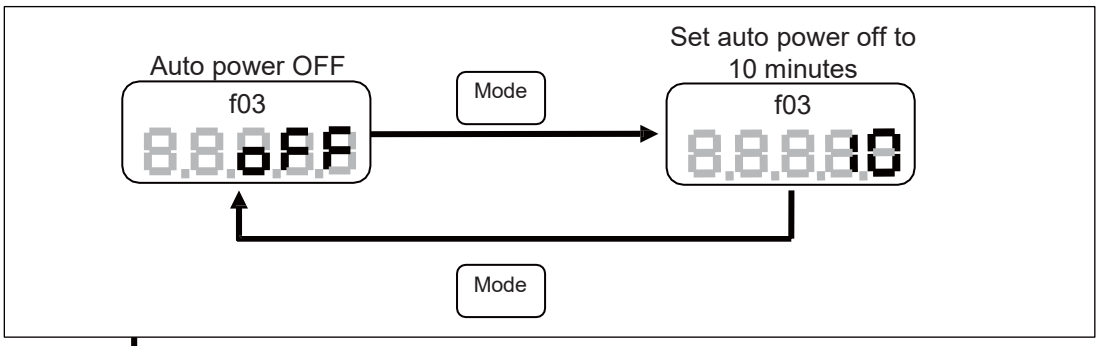
Setting update time. **Show present setting at display.**



Zero/RST **TNP series;**
Move to auto power OFF setting.

TNJ series;
Complete setting and back to measuring standard display.

Setting auto power off. **Show present setting at display.**

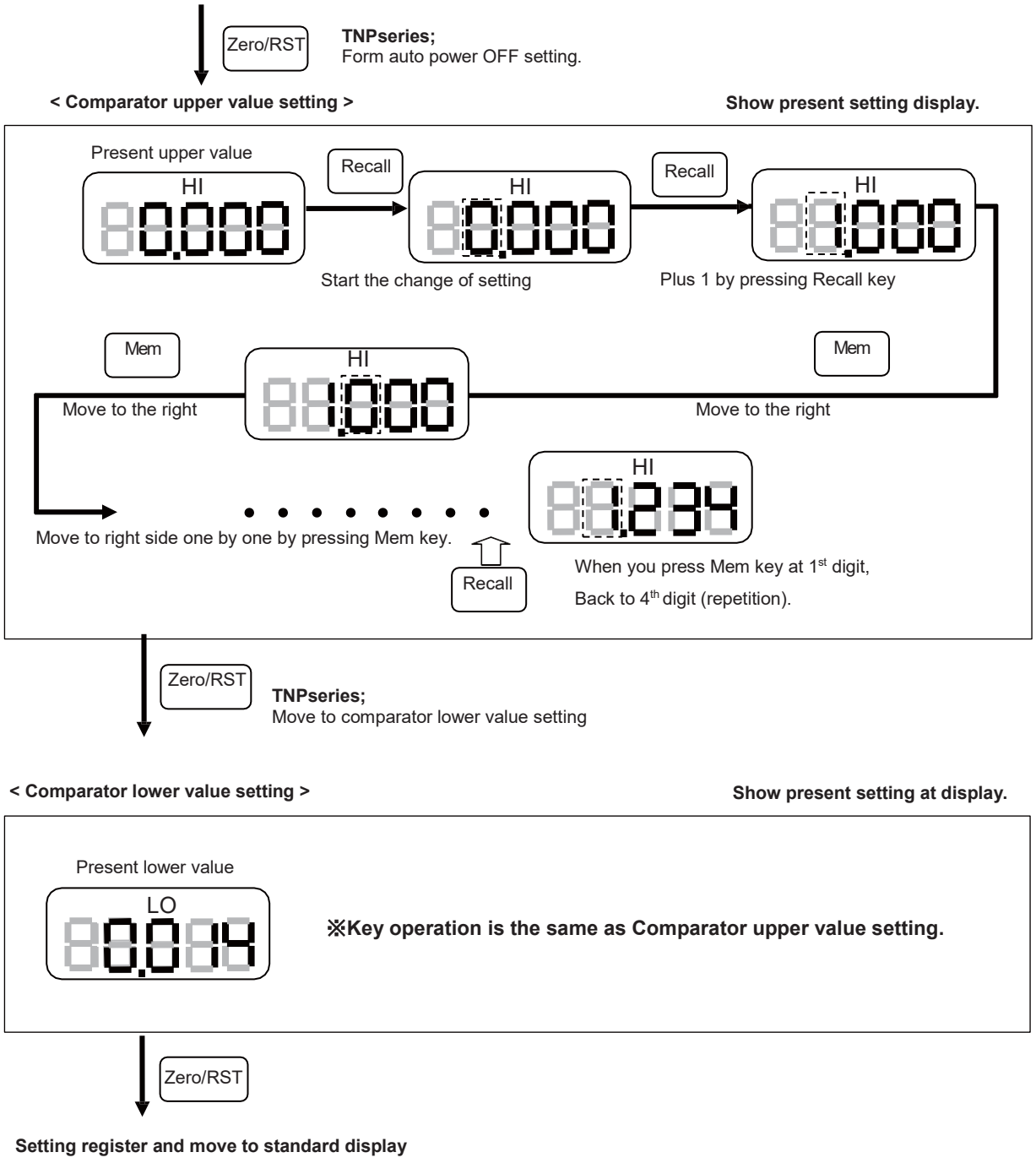


Zero/RST **TNP series;**
Move to comparator settings (Hi, Go, Lo).

2. Setting for upper and lower limit

Automatically 4 digits number without sign and decimal point is displayed according to unit and rated capacity

- Select 4 digits from 0,1,2,3,4,5,6,7,8,9 by pressing “Recall” key. When you press “Recall” key at “9”, back to 0. Move to right digit by pressing “Mem” key.
- Move to comparator lower setting by Zero key.



10. Importing the Data

10.1 USB communication function

By connecting Digital Torque meter and PC by USB cable, it can have real time communication with PC (importing of memory data or real time data acquiring of measured data.) Install the communication software “Degitorq _ TNP” on the PC.

10.2 The feature of Digitorq _ TNP

“Degitorq _ TNP” is add-in software of Excel, so that it can import the memory or measured data of the Digital torque meter on the Excel sheet directly. Thanks to this, analysis and graph of frequency distribution of imported data can be done easily.

10.3 How to install Digitorq _ TNP

Access to the support page of our website (https://www.nidec.com/en/nidec-drivetechnology/product/download/Measuring_Instruments_software/) and register for downloading. After registration, ID and password will be sent. With ID and Password, access to the Download website of “Degitorq _ TNP” and get the software.

10.4 Caution during using USB

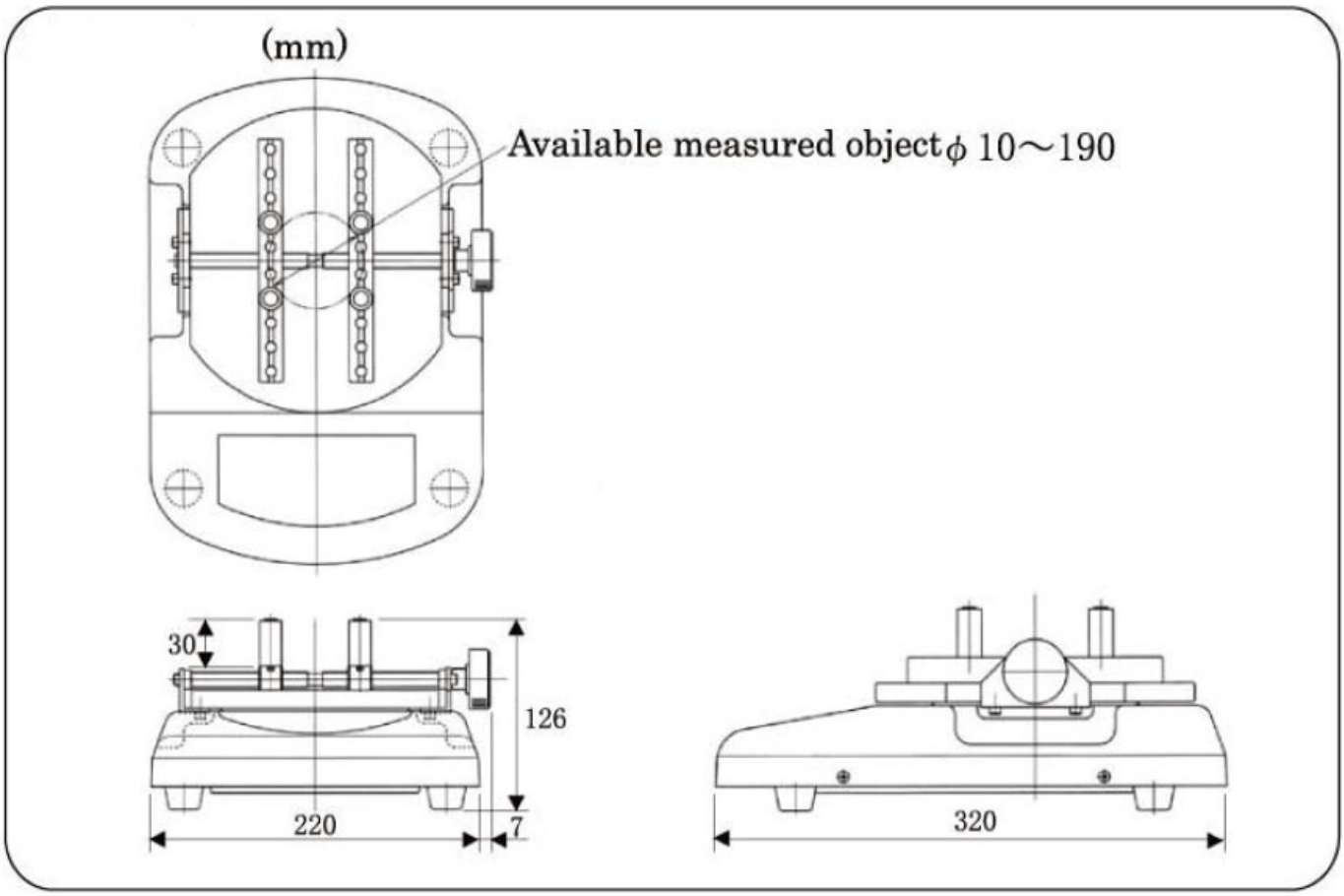
Do not leave for long time with USB cable connected. Even if the power of Digital Torque meter is OFF, if USB cable is connected, it drains the battery faster than usual. (If AC adaptor is connected, this may not happen)

11 Specifications

Model		TNJ-0.5 (with output)	TNJ-2/TNP-2 (with output)	TNJ-5/TNP-5 (with output)	TNJ-10/TNP-10 (with output)
Measuring torque		0.5Nm	2Nm	5Nm	10Nm
Measuring range		0.00～± 50.00Ncm	0～±2.000Nm	0～±5.000Nm	0～±10.00Nm
Measuring unit		Ncm, mNm, gcm, lbin	Nm, Ncm, kgcm, lbin		
Display range		0 ~ 50.00 Ncm	0 ~ 2.000 Nm	0 ~ 5.000 Nm	0 ~ 10.00 Nm
		0 ~ 500.0 mNm	0 ~ 200.0 Ncm	0 ~ 500.0 Ncm	0 ~ 1000 Ncm
		0 ~ 5099 gcm	0 ~ 20.39 kgcm	0 ~ 50.99 kgcm	0 ~ 102.0 kgcm
		0 ~ 4.425 lbin	0 ~ 17.70 lbin	0 ~ 44.25 lbin	0 ~ 88.5 lbin
Display resolution		0.01 Ncm	0.001 Nm	0.001 Nm	0.01 Nm
		0.1 mNm	0.1 Ncm	0.1 Ncm	1 Ncm
		1 gcm	0.01 kgcm	0.01 kgcm	0.1 kgcm
		0.001 lbin	0.01 lbin	0.01 lbin	0.1 lbin
Chuck range		Φ10 - 190 mm			
Overload display		Show "OVR" at LCD sub display, blinking LED			
Display	Main display	4-digit LCD display Character height 12mm			
	Sub display	3-digit LCD display Character height 7mm			
	Judgment LED	Judgment LED (HI, GO, LO) (available with TNP series only)			
Accuracy		±0.5% F.S.			
Measuring mode	Open mode	Show max value when opening (peak display) :show max torque at measuring table.			
	Close mode	Show max value when closing (peak display) :show max torque at measuring table.			
	Average mode	Real time display (average value display) : show the torque at measuring table in real time.			
Display cycle		Select from 0.125 second (8times/second), 0.25 second (4times/second), 0.5second (2times/second), 1 second (8times/second). Peak display is held at 0.125 second.			
Sampling range		1msec（1000 times/second）			

Memory (TNP type only)	Memory data number	1000 data (max) (available with TNP series only)		
	Statistic process	Average value, Max value, Min value (available with TNP series only)		
Data output		USB1.1 (available with TNP series only)		
PC software		Able to download the memory data by PC software (Digitorq_TNP). Digitorq_TNP is available from our website free of charge). (available with TNP series only)		
Accessories		USB cable (available with TNP series only), AC adapter		
Power		Built in nickel hydride battery or AC adapter (AC100V～240V) (only AC adapter is available for TNJ series)		
Dimensions		320 (L) x 227 (W) x 126 (H) mm		
Weight		7 kg	8 kg	12 kg
Operation environment		0 - 40 degree C		

12 Dimensions



NIDEC DRIVE TECHNOLOGY CORPORATION

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NIDEC DRIVE TECHNOLOGY CORPORATION

NIDEC SHIMPO CORPORATION change its company name to NIDEC DRIVE TECHNOLOGY CORPORATION on April 1, 2023.