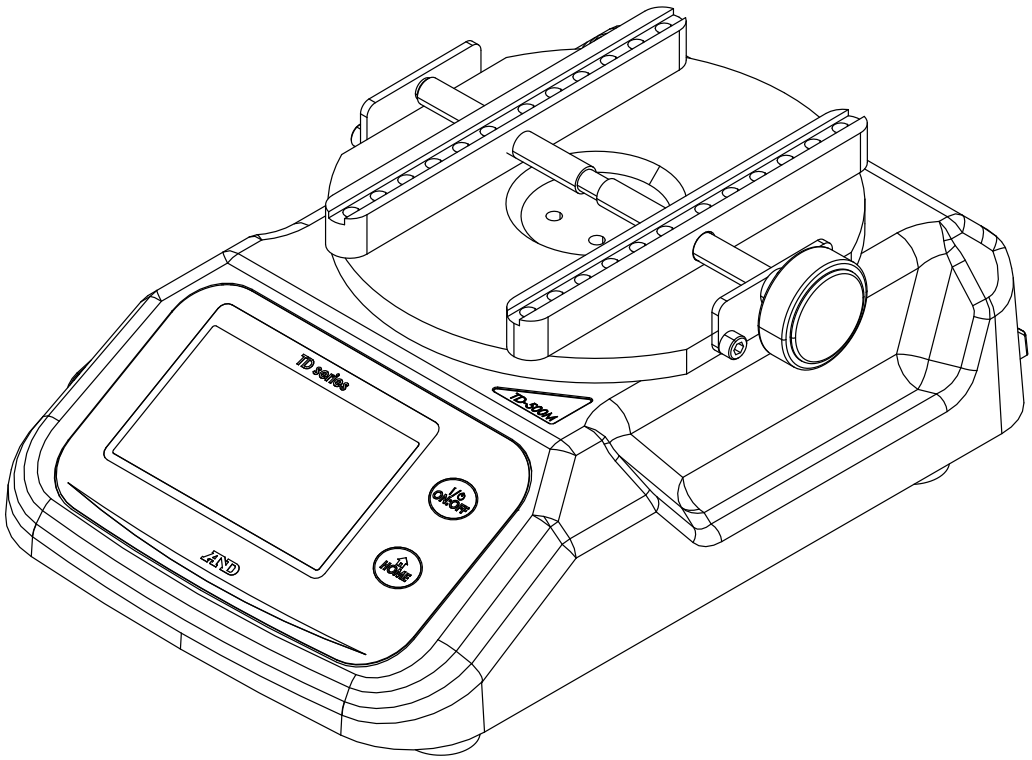
TD-H Series

Cap Torque Tester

INSTRUCTION MANUAL

Applicable Models

TD-0.5H
TD-2H
TD-5H
TD-10H



A&D Company, Ltd.

1WMPD4005998

Safety Precautions

Warning: Definition

The warnings described in this manual have the following meanings:

⚠WARNING	A potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠CAUTION	A potentially hazardous situation which, if not avoided, may result in minor or moderate injury or damage to the instrument.
Tips	Provides helpful information related to device operation.
Caution	Cautions to use the device correctly.
	Location where there is a risk of electric shock. Do not touch this area under any circumstances.
	Indicates prohibited actions.
	Indicates mandatory actions.

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Cautions

⚠WARNING		This product is heavy; handle it with care. If dropped on your foot or other body part, it may cause serious injury. Handle the product with great care. For the mass of this product, refer to "14.1. Specifications".
		If you notice smoke, unusual odors, or abnormal sounds, a major fault or fire hazard may be present. Immediately stop using the product, turn off the power, unplug the AC adapter, and contact your local A&D dealer.
		Use only the supplied AC adapter and USB power cable. Operation is not guaranteed if commercially available AC adapters or USB power cables from other products are used. If parts for which operation is not guaranteed are used, this product may fail to power on. A failure in the electronic circuitry may occur, creating a fire hazard.
		Do not touch the AC adapter with wet hands. There is a risk of electric shock.
		Do not use a damaged USB power cable. Doing so may cause electric shock or fire.
		Do not operate this product if liquids or foreign objects have entered it. Doing so may result in electric shock or fire.
		Do not insert the power plug if dust or foreign matter is on the prongs. Doing so may cause electric shock or fire.
		Insert the power plug fully to the base of the prongs. If used when the plug is not fully inserted, a short circuit may occur, resulting in electric shock or fire.
		Do not install this product in locations where flammable liquids or combustible gases are present. Doing so may cause electric shock or fire.
		Use this product with an AC 100 to 240 V power source. Using power sources other than AC 100 to 240 V may cause fire or electric shock.

⚠CAUTION		Do not apply torque in excess of the rated capacity. Doing so may damage the sensor. If the sensor is damaged, applying further torque may damage components and may cause injury.
		Do not disassemble, repair, or modify this product under any circumstances. Doing so compromises safety and may lead to reduced performance, shortened service life, or malfunction.
		When unplugging the AC adapter, always hold the adapter body and do not pull the cable.
		Periodically unplug the AC adapter and clean the base of the prongs and the spaces between them. If used while dust remains on the prongs, a short circuit may occur, posing a fire hazard.
		Use this product within the operating temperature range of 0 to 40°C. Using the product outside this range may cause malfunction or reduced performance.
		Use this product within the operating humidity range of 85% RH or less (non-condensing). Using the product outside this range may cause malfunction or reduced performance.

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1. Product Overview

1.1. Features

- **High-visibility, easy-to-operate display**
  A 4.5-inch touch-panel color LCD provides intuitive operation and excellent visibility.
- **Measurement settings storage and management**
  Up to 10 measurement settings patterns can be saved. Each pattern can be assigned a label name, making confirmation, editing, and switching easy. Since label names are linked to settings, switching the label automatically applies the corresponding settings.
- **Supports multi-stage torque measurement**
  Opening torque of caps can be measured at the 1st, 2nd, and 3rd peak levels, and all three can be viewed on one screen. Closing torque measurement is also supported.
- **Large-capacity memory**
  Up to 1,000 torque-measurement results can be stored in the main unit. This is convenient for managing measurement history.
- **PC connection via USB**
  Equipped with a USB Type-C port for easy connection to a PC. Data transfer and management are smooth.
- **Printer output support (optional)**
  By connecting an optional printer, measurement data stored in memory can be printed.
- **No need to switch output modes**
  Overload output and comparator output can be output simultaneously. Integration with external devices is also supported.
- **Clock function for date / time recording**
  The built-in clock records the measurement date and time in internal memory, improving traceability.
- **Peak hold function**
  Holds the maximum torque value during measurement.
- **Comparator function for pass / fail judgment**
  Based on preset threshold values, the Cap Torque Tester can determine whether results are pass or fail. This is useful for quality control.
- **Extensive lineup**
  Four models are available with rated torque of 0.5 Nm, 2 Nm, 5 Nm, or 10 Nm, allowing you to select the most suitable model for your application.

2. Product Configuration

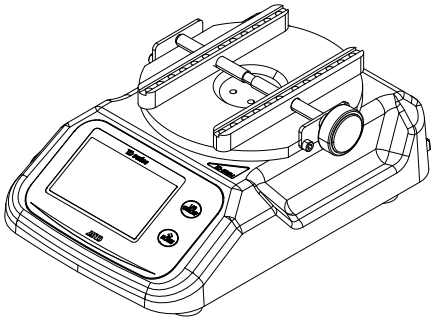
Caution

- This product is a precision instrument, and it should be unpacked carefully.
  It is advisable to keep the original packaging materials, as they may be needed for transporting the balance in the event of repair.
- Do not connect the included AC adapter to other devices.
- Use the dedicated AC adapter specified for the Cap Torque Tester.
- If the wrong AC adapter is used, the Cap Torque Tester may not operate correctly.

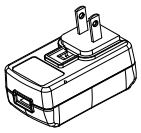
2.1. Packing List

Common contents for TD-H Series

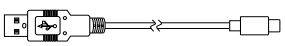
Main unit



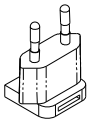
AC adapter



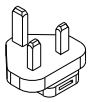
USB power cable



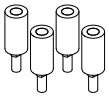
Type C plug



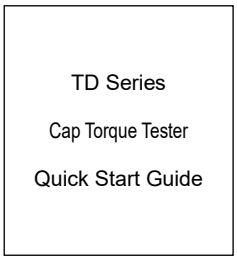
Type G plug



Holding pins



Quick Start Guide



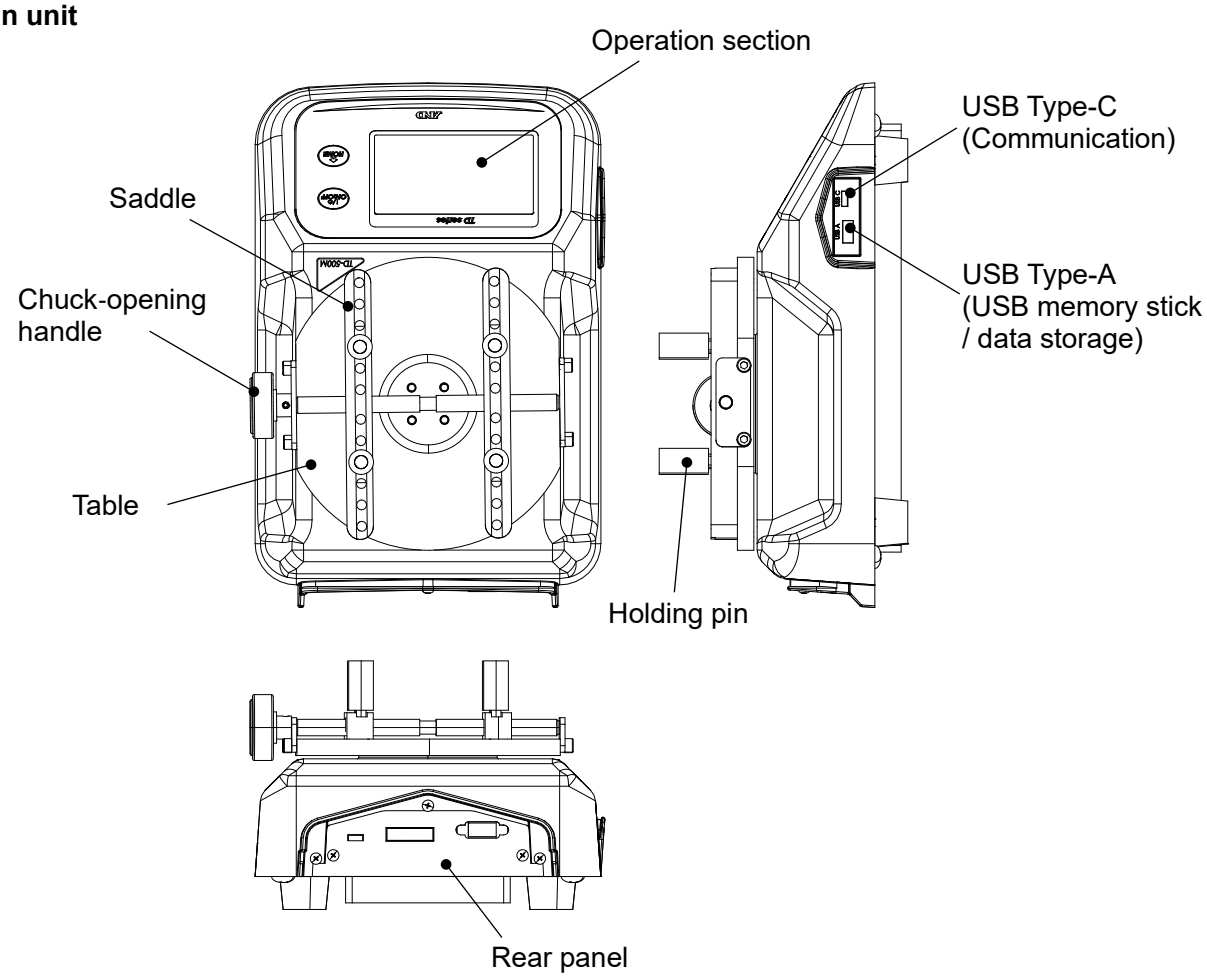
Warranty card
(For North American models only.)



⚠CAUTION Use only the supplied AC adapter and USB power cable. Operation is not guaranteed if commercially available AC adapters or USB power cables from other products are used. If parts for which operation is not guaranteed are used, this product may fail to power on.

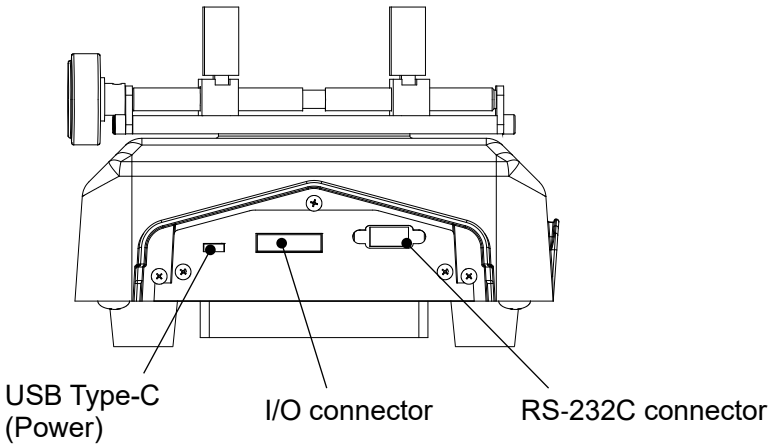
3. Names of Parts

Main unit



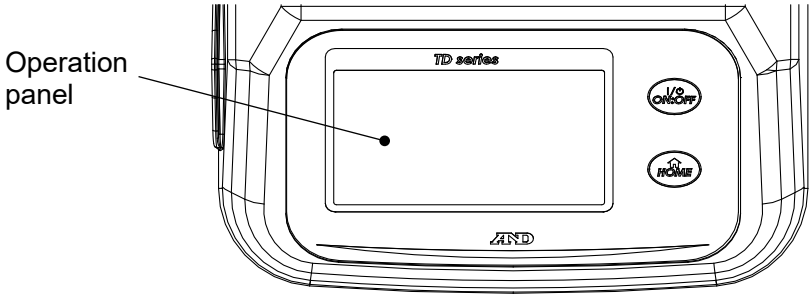
Name	Description / Function
Table	The sample is placed here.
Operation section	This section contains the operation panel, the [ON:OFF] key, and the [HOME] key.
Saddle	Allows the holding pins to be fixed at any position.
Chuck-opening handle	Used to open and close the saddle.
Holding pin	Used to secure the sample.
USB Type-A (USB memory stick / data storage)	Used to transfer memory data and settings files to a USB memory stick. USB communication with a PC is not supported.
USB Type-C (Communication)	Used for USB communication with a PC (memory data, settings, torque values).
Rear panel	Allows connection of the AC adapter, RS-232C cable (printer, Bluetooth®, or PC), and I/O cable.

Rear panel



Name	Description / Function
USB Type-C (Power)	Allows an AC adapter to be connected.
I/O connector	Allows an I/O cable to be connected. Refer to “9.3. I/O Settings”.
RS-232C connector	Allows connection of an RS-232C cable (printer, Bluetooth®, or PC). Refer to "9.1. RS-232C / USB Type-C Specifications".

Operation section

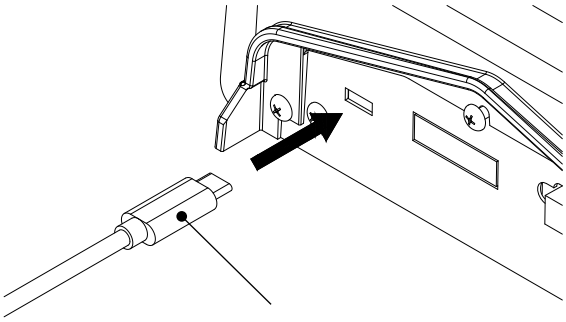


Name	Description / Function
Operation panel	Pressing the screen enables various settings and saving operations.
I/O ON:OFF	Turns the power on or off.
HOME	Moves to the HOME screen. Operates as a function key when function settings are configured. ("8.6. System Settings") When not on the HOME screen, this functions only to return to the HOME screen even if function settings are configured.

4. Measurement Method

4.1. Installation

1. Connect the supplied USB power cable to the power USB port on the rear of the main unit, and then plug the AC adapter into an electrical outlet.



USB power cable

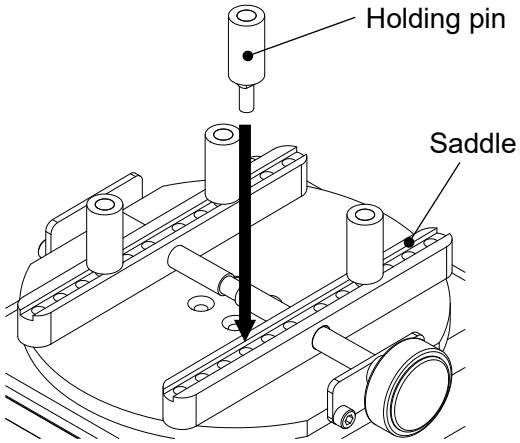
⚠CAUTION Always connect the USB power cable to the power USB port on the rear of this product. If you connect the cable to the USB Type-C connector (for communication) on the side, this product may be damaged.
Use only the supplied USB power cable. Operation is not guaranteed if commercially available USB power cables are used. If parts for which operation is not guaranteed are used, this product may fail to power on.

2. Press the [ON:OFF] key.
3. When starting the Cap Torque Tester for the first time, a language selection screen will appear. Select the language you want to use.

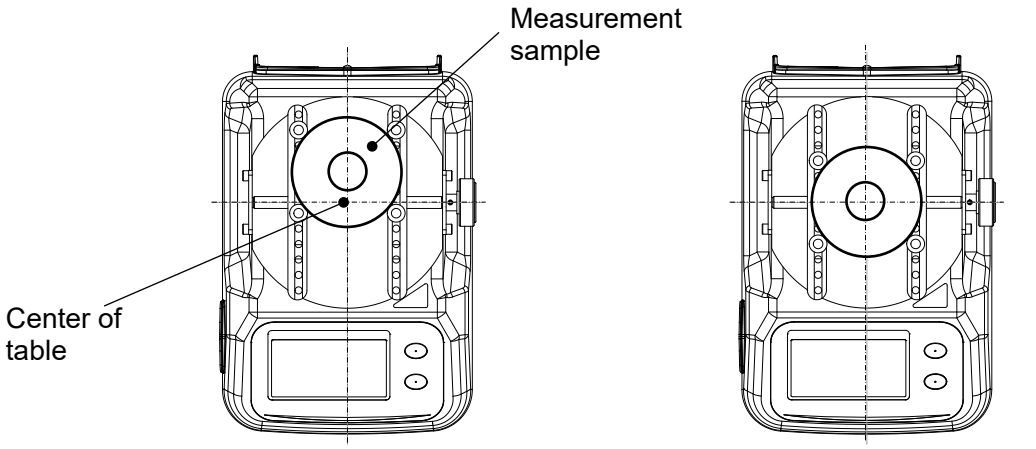


4. Place the measurement sample at the center of the table.

5. Insert the holding pins into positions on the saddle that match the size and shape of the measurement sample.



6. Turn the chuck-opening handle to secure the measurement sample.



Caution

Secure the measurement sample so that its center aligns with the center of the table.

If it is difficult to align the sample center with the table center due to it having a special shape, create a jig to hold the sample.

4.2. Measurement Settings

Configure the various measurement settings.

For details on the configuration procedure, refer to "8.2. Menu Screen" and the following sections.

4.3. Zero Adjustment

Perform zero adjustment.

On the HOME screen, press the [RE-ZERO/RESET] button to perform zero adjustment and set the measurement value to 0.

Perform zero adjustment with no torque applied to the table.

4.4. Measurement Methods

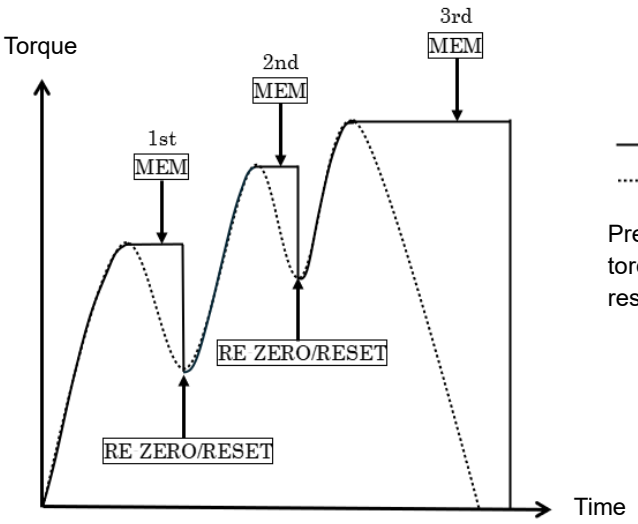
4.4.1. Peak Hold Mode

This mode detects the peak torque applied to the measurement sample.

⚠CAUTION Do not apply torque in excess of the rated capacity.
Doing so may damage the sensor. If the sensor is damaged, applying further torque may damage components and may cause injury.

1. Secure the measurement sample by following the steps in "4.1. Installation".
2. Select the measurement mode. (Default setting: Free Peak Hold)
   To use another mode, select Open Peak Hold or Close Peak Hold.
3. Set the Peak Detection Count. (Default: 1st)
4. Press the [RE-ZERO/RESET] button to perform zero adjustment.
5. Rotate the measurement sample in the direction specified for the selected measurement mode.
6. The peak torque applied to the measurement sample will be displayed.
7. Press the [MEM] button.
8. Press the [RE-ZERO/RESET] button to reset the peak.
   Note: If Auto Reset is enabled, reset operation is not required.
9. Repeat steps 5 to 8 until the set Peak Detection Count is reached.
10. When the final peak value is reached, press the [MEM] button to display the measurement result.
11. Press either the [SAVE] button or the [DISCARD] button to complete the measurement.
    [SAVE] button: Saves the data and increments the MEMNo.
    [DISCARD] button: Discards the data.

Note: For details on the configuration procedure, refer to "8.4. Measurement Settings".



Pressing the [MEM] button stores the currently peak-held torque value, and pressing the [RE-ZERO/RESET] button resets the peak.

4.4.2. Continuous Measurement Mode

This mode displays and stores continuous torque data without performing peak hold.

1. Set the measurement mode to Continuous Measurement.

Follow the steps below when saving continuous data.

2. Connect a USB memory stick to the USB Type-A port.
3. Press the [RE-ZERO/RESET] button to perform zero adjustment.
4. Press the [USB SAVE START] button to begin saving data.
5. Press the [USB SAVE FINISH] button to stop saving data.

Refer to “12.1. USB Output File Format” for the format of continuous saved data.
Continuous saving is performed at 100 times per second. If you want to measure high-response torque peak values, set the filter setting to High-Response Mode and measure in Peak Hold Mode.
For filter settings, refer to "8.4. Measurement Settings".

The USB memory stick is mounted automatically. To unmount or remount it, press the USB Memory button on the HOME or MENU screen.
If a USB memory stick is not connected, the [USB SAVE START] button on the HOME screen will be grayed out.

4.5. Torque Polarity

The torque polarity changes depending on the measurement mode and polarity setting.

The polarity based on the combination of settings is as follows. (For polarity setting, refer to "8.4. Measurement Settings").

The opening direction is counterclockwise.

Measure mode	Polarity setting	Opening torque	Closing torque
Free Peak Hold Open Peak Hold Continuous Measurement	Positive	No sign	Minus sign
	Negative	Minus sign	No sign
Close Peak Hold	Positive	Minus sign	No sign
	Negative	No sign	Minus sign

4.6. Precautions Regarding Power Supply

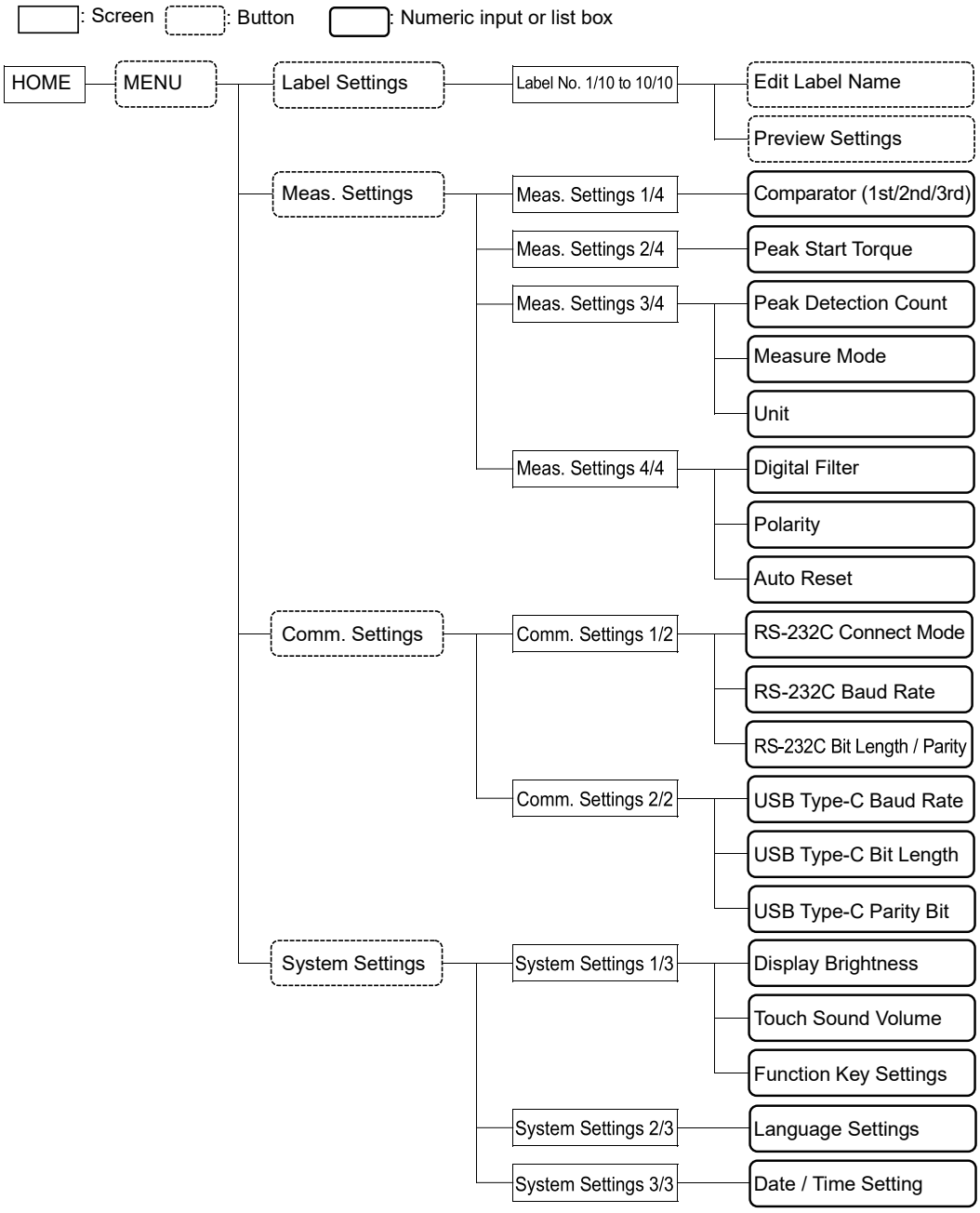
The Cap Torque Tester is constantly provided with power if the AC adapter is connected.

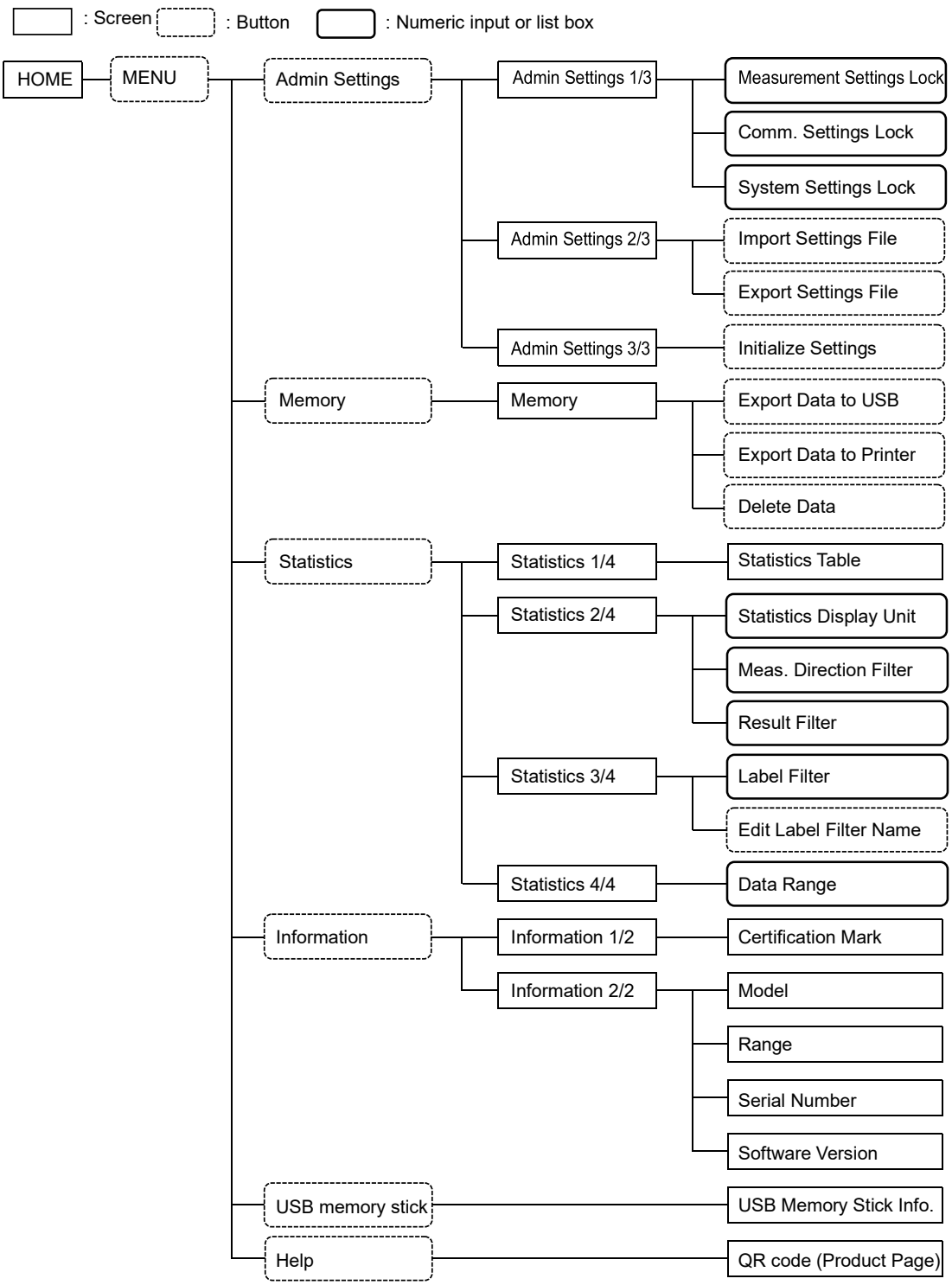
This does not adversely affect the Cap Torque Tester.

To ensure accurate measurement, it is recommended to keep the unit powered at all times.

5. Screen Transition Map

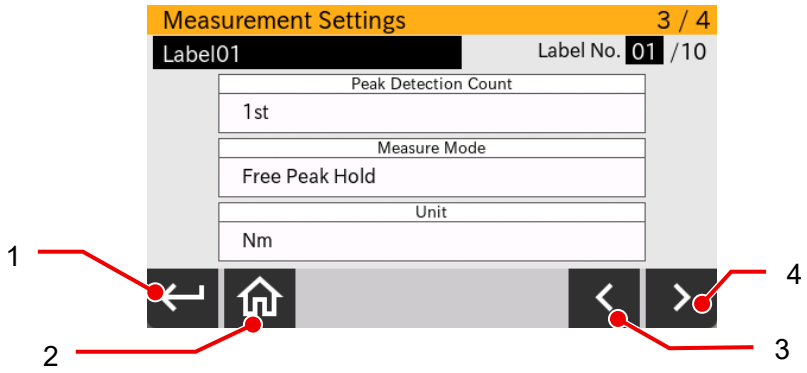
TD-H Series




: Screen
: Button
: Numeric input or list box
HOME
MENU
Admin Settings
Admin Settings 1/3
Measurement Settings Lock
Comm. Settings Lock
System Settings Lock
Admin Settings 2/3
Import Settings File
Export Settings File
Admin Settings 3/3
Initialize Settings
Memory
Memory
Export Data to USB
Export Data to Printer
Delete Data
Statistics
Statistics 1/4
Statistics Table
Statistics 2/4
Statistics Display Unit
Meas. Direction Filter
Result Filter
Statistics 3/4
Label Filter
Edit Label Filter Name
Statistics 4/4
Data Range
Information
Information 1/2
Certification Mark
Information 2/2
Model
Range
Serial Number
Software Version
USB memory stick
USB Memory Stick Info.
Help
QR code (Product Page)

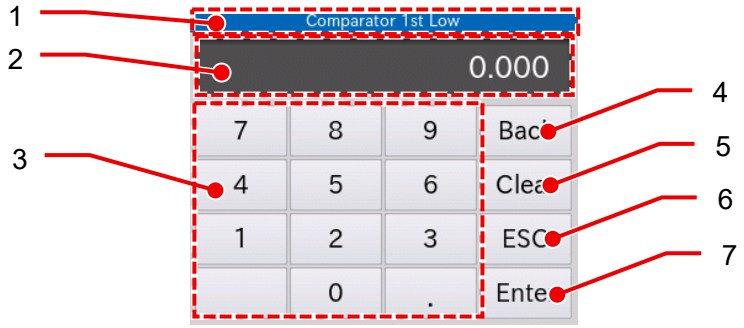
6. Basic Touch-panel Operation

6.1. Common Buttons



No.	Name	Description
1	Back button	Returns to the previous level.
2	HOME button	Returns to the HOME screen.
3	Previous page button	Moves to the previous page.
4	Next page button	Moves to the next page.

6.2. Numeric-input Screen



No.	Name	Description
1	Setting name	Displays the name of the setting for numeric input.
2	Numeric display	Displays the entered value.
3	Numeric-input buttons	Used to enter numbers.
4	[Back] button	Deletes the number immediately before the cursor.
5	[Clear] button	Deletes all entered numbers.
6	[ESC] button	Returns to the previous screen without applying the entered value.
7	[Enter] button	Applies the entered value and returns to the previous screen. If the value is outside the allowable range, an error sound is emitted and the value is not applied.

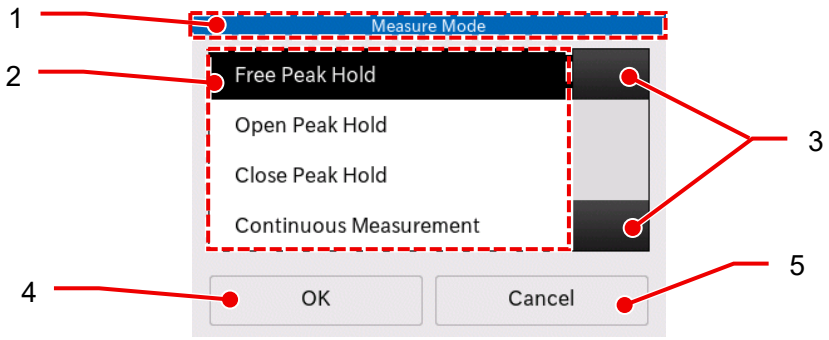
6.3. Text-input Screen

Only alphanumeric characters can be entered.



No.	Name	Description
1	Setting name	Displays the name of the setting for keyboard input.
2	Text display	Displays the entered text.
3	[abc/ABC] button	Switches between uppercase and lowercase letters.
4	[Space] button	Inputs a space character.
5	Text-input buttons	Used to input text.
6	[ESC] button	Returns to the previous screen without applying the entered text.
7	[CLR] button	Clears the entered text.
8	[BS] button	Deletes the character immediately before the cursor.
9	[Enter] button	Applies the entered text and returns to the previous screen. If no text is entered, the screen will not return. Please enter at least one character.

6.4. List Box



No.	Name	Description
1	Setting name	Displays the name of the setting for selection input.
2	Option-selection button	Displays the selected option with a black highlight.
3	Scroll button	Scrolls through the list.
4	[OK] button	Applies the selected option and returns to the previous screen.
5	[Cancel] button	Returns to the previous screen without applying the selected option.

7. Function / Settings Table

- The settings in the table below are saved in the Cap Torque Tester and retained even after power cycling.
- You can import and export settings files using a USB memory stick via “8.7. Admin Settings”.
- The numbers in parentheses beside the options indicate the values stored in the settings file.

For the TD-H series

Setting item	Settings screen	Default	Setting range
Label Name	Label Settings 1/10 to 10/10	Label01 to Label10	Up to 16 characters
Comparator 1st Low	Meas. Settings 1/4	*1	0 Nm ≤ setting value < 1st High
Comparator 1st High	Meas. Settings 1/4	*1	*1
Comparator 2nd Low	Meas. Settings 1/4	*1	0 Nm ≤ setting value < 2nd High
Comparator 2nd High	Meas. Settings 1/4	*1	*1
Comparator 3rd Low	Meas. Settings 1/4	*1	0 Nm ≤ setting value < 3rd High
Comparator 3rd High	Meas. Settings 1/4	*1	*1
Peak Start Torque	Meas. Settings 2/4	*2	*2
Peak Detection Count	Meas. Settings 3/4	1st	1st (0), 2nd (1), 3rd (2)
Measure Mode	Meas. Settings 3/4	Free Peak Hold	Free Peak Hold (0) Open Peak Hold (1), Close Peak Hold (2), Continuous Measurement (3)
Unit	Meas. Settings 3/4	Nm	Nm (0), Ncm (1), lbft (2), lbin (3) *4
Digital Filter	Meas. Settings 4/4	Normal	High-Response Mode (0), Normal (1), Static Mode (2)
Polarity	Meas. Settings 4/4	Positive	Positive (0), Negative (1)
Auto Reset	Meas. Settings 4/4	OFF	OFF (0), ON (1)
RS-232C Connect Mode	Comm. Settings 1/2	Printer Connection	PC Connection (0), Printer Connection (1)
RS-232C Baud Rate	Comm. Settings 1/2	2400 bps	38400 bps (0), 19200 bps (1), 9600 bps (2), 4800 bps (3), 2400 bps (4), 1200 bps (5), 600 bps (6)
RS-232C Bit Length / Parity	Comm. Settings 1/2	7 bit / Even	7 bit / Even (0), 7 bit / Odd (1), 8 bit / None (2)
USB Type-C Baud Rate	Comm. Settings 2/2	115200 bps	115200 bps (0), 57600 bps (1), 38400 bps (2), 19200 bps (3), 9600 bps (4), 4800 bps (5), 2400 bps (6)
USB Type-C Bit Length	Comm. Settings 2/2	8 bit	7 bit (0), 8 bit (1)
USB Type-C Parity Bit	Comm. Settings 2/2	None	None (0), Odd (1), Even (2)
Display Brightness	System Settings 1/3	3 (Max)	1 (Min), 2 (Medium), 3 (Max)
Touch Sound Volume	System Settings 1/3	3 (Max)	0 (Mute), 1 (Min), 2 (Medium), 3 (Max)

Setting item	Settings screen	Default	Setting range
Function Key Settings	System Settings 1/3	HOME	HOME (0), MEM (1), RE-ZERO / RESET (2), MEM+RESET (3)
Language Settings	System Settings 2/3	*3	English (0), Japanese (1)
Measurement Settings Lock	Admin Settings 1/3	OFF	OFF (0), ON (1)
Communication Settings Lock	Admin Settings 1/3	OFF	OFF (0), ON (1)
System Settings Lock	Admin Settings 1/3	OFF	OFF (0), ON (1)
Statistics Display Unit	Statistics 2/4	Nm	Nm (0), Ncm (1), lbft (2), lbin (3) *4
Meas. Direction Filter	Statistics 2/4	ALL	ALL (0), Open (1), Close (2)
Result Filter	Statistics 2/4	ALL	ALL (0), OK (1), NG (2), NG (Low) (3), NG (High) (4)
Label Filter	Statistics 3/4	ALL	ALL (0), Filtered (1)
Label Filter Name	Statistics 3/4	Label01	Up to 16 characters
Data Range	Statistics 4/4	0 to 1000	0 to 1000

*1 The number of decimal places in the default value and the setting range differ depending on the model.

Model	Low default value	High default value	High setting range
TD-0.5H	0.0500	0.4500	Low < setting value ≤ 0.9999 Nm
TD-2H	0.200	1.800	Low < setting value ≤ 9.999 Nm
TD-5H	0.500	4.500	Low < setting value ≤ 9.999 Nm
TD-10H	1.00	9.00	Low < setting value ≤ 99.99 Nm

*2 The default value and the setting range differ depending on the model.

Model	Default	Setting range
TD-0.5H	0.0250	0.0250 Nm < setting value ≤ 0.9999 Nm
TD-2H	0.100	0.100 Nm < setting value ≤ 9.999 Nm
TD-5H	0.250	0.250 Nm < setting value ≤ 9.999 Nm
TD-10H	0.50	0.50 Nm < setting value ≤ 99.99 Nm

- The settings in the table below are not saved in the Cap Torque Tester and return to default values when the power is cycled.

Setting item name	Settings screen	Default	Setting range
Year	System Settings 3/3	*5	2000 ≤ setting value ≤ 2099
Month	System Settings 3/3	*5	1 ≤ setting value ≤ 12 *6
Day	System Settings 3/3	*5	1 ≤ setting value ≤ 31 *6
Hour	System Settings 3/3	*5	0 ≤ setting value ≤ 23
Minute	System Settings 3/3	*5	0 ≤ setting value ≤ 59
Second	System Settings 3/3	*5	0 ≤ setting value ≤ 59

*3 The default language is the one set in step 3 of "4.1. Installation".

*4 lbft (2) and lbin (3) are available only for North American models.

*5 The date and time displayed when the screen is opened are used as the default values.

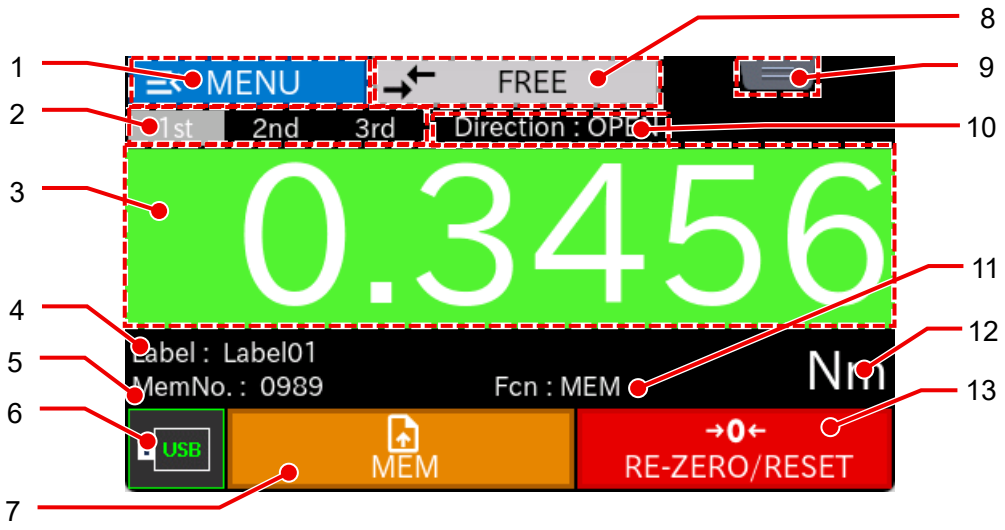
*6 Invalid dates cannot be set. (e.g., April 31)

8. Application

8.1. Home Screen

- On the Home screen, you can view measurement values, save data, perform peak reset / zero adjustment, check current settings, switch measurement modes, and mount or unmount a USB memory stick.
- Some buttons differ depending on whether the measurement mode is Peak Hold Mode or Continuous Measurement Mode.

8.1.1. When the measurement mode is Peak Hold Mode

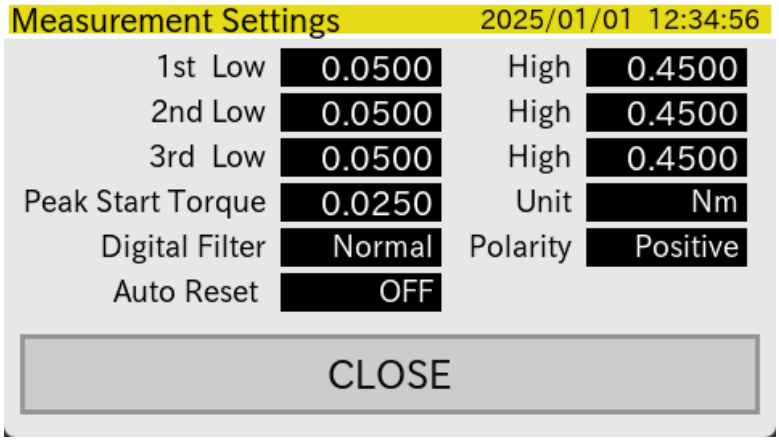


No.	Name	Description
1	[MENU] button / [CANCEL] button	Moves to the Menu screen (“8.2. Menu Screen”). When the [MEM] button is pressed while the peak detection count is set to 2nd or 3rd, it becomes the [CANCEL] button so that measurement can be canceled midway.
2	Peak Detection Count	Displays the currently set peak detection count. Displays peaks up to the one set in the peak detection count setting, and shows '---' for peaks that will not be measured. The background color and lighting / blinking change depending on the measurement result. Grey, blinking: Indicates the next peak to be stored. Red, ON 1st : Indicates that the peak torque value is judged as Low. Green, ON 1st : Indicates that the peak torque value is judged as Pass. Yellow, ON 1st : Indicates that the peak torque value is judged as High.

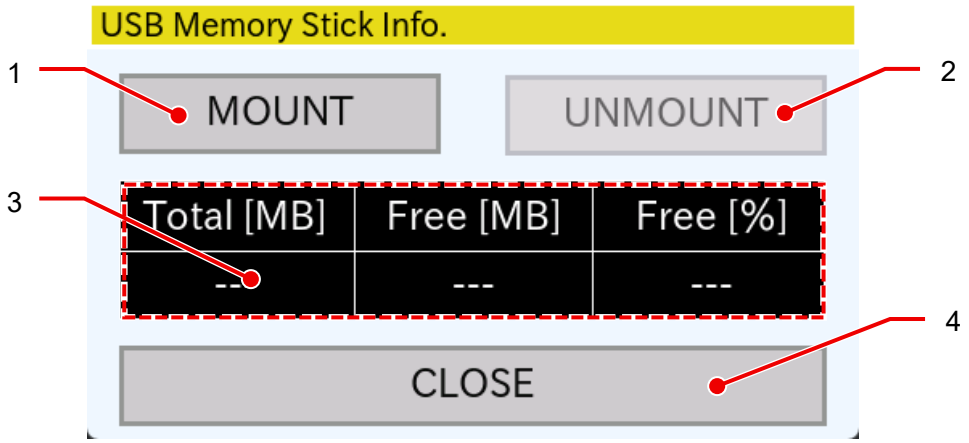
No.	Name	Description
3	Peak torque values	Displays the peak-held torque value. Displays the torque value in real time until peak hold occurs. The background color of the peak torque value changes depending on the measurement state. Red: The peak torque value is less than the Low torque threshold. Green: The peak torque value is between the Low and High torque thresholds. Yellow: The peak torque value is greater than the High torque threshold. 
4	Label name	Displays the current label name.
5	MEMNo.	Displays the next data number to be saved in four digits. The memory number is automatically assigned according to the current number of saved items and cannot be changed. Up to 1000 items can be saved. When the memory is empty, 0001 is displayed; when full, 1000 is displayed. When the number of saved items reaches 990, the data number is shown in yellow. When the count reaches 1000 after saving, a buzzer sounds and a warning dialog is displayed. When the count reaches 1000, the data number is shown in red and the [MEM] button is grayed out. Delete unnecessary data to free memory. (For deleting data, refer to “8.8. Memory”.)
6	USB Memory button	Moves to the USB Memory Stick Info screen ("8.1.1.1. USB Memory Stick Info."), where you can mount or unmount a USB memory stick. Displayed when a USB memory stick is mounted. Grayed out during measurement after saving the 1st peak.
7	[MEM] button	Saves the peak torque value to the current peak number. If a USB memory stick is mounted, the peak torque value is saved to it also. The button is grayed out until the torque exceeds the peak start torque, after which it becomes enabled. When the final peak-torque value is saved, the screen moves to the Measurement Result Screen (“8.1.1.2. Measurement result screen”).

No.	Name	Description
8	Measurement mode selector button	The currently set measure mode is displayed. Pressing the button cycles through the measurement modes in the following order. [FREE]→[OPEN]→[CLOSE]→[CONTINUOUS]→[FREE]… [FREE]: Free Peak Hold [OPEN]: Open Peak Hold [CLOSE]: → Close Peak Hold [CONTINUOUS] → Continuous Measurement The button is grayed out during measurement.
9	Drawer button	Displays the list of current measurement settings and the date / time.(*7) Pressing the [CLOSE] button closes the display.
10	Measurement direction display	Displays the measurement direction when the torque value is peak-held. When the measurement direction is confirmed, the text turns red.
11	Function key setting status	Displays the function assigned to the function key. It is not displayed when the setting is HOME. (Refer to "8.6. System Settings".)
12	Measurement unit	Displays the torque measurement unit. The measurement unit can be changed in the Measurement Settings. (Refer to "8.4. Measurement Settings".)
13	[RE-ZERO/RESET] button	Performs peak reset and zero adjustment until the 1st peak is saved, setting the measurement value to 0. If the power is turned off once, the Cap Torque Tester returns to the state before zero adjustment. After the 1st peak is saved, only peak reset is performed until the final peak save is completed.

*7 The measurement settings list and date / time screen displayed using the drawer button



8.1.1.1.USB Memory Stick Info.

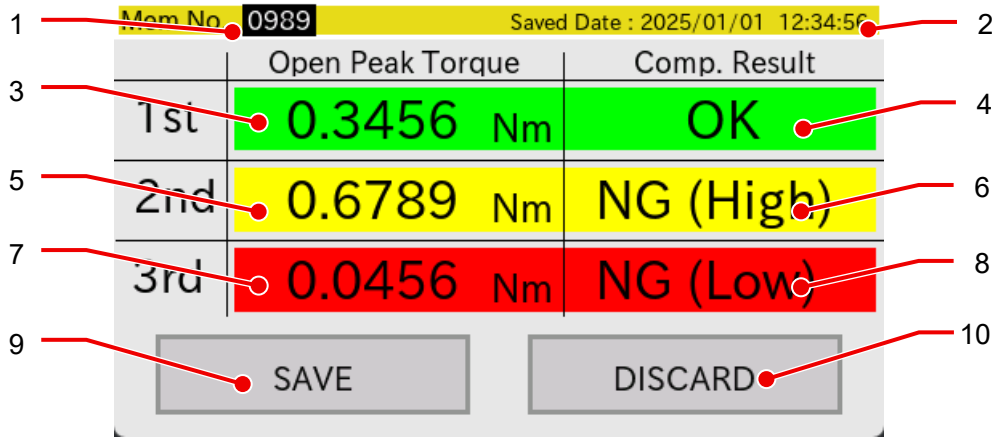


No.	Name	Description
1	[MOUNT] button	Mounts the USB memory stick.
2	[UNMOUNT] button	Unmounts the USB memory stick.
3	USB Memory Stick Info.	Displays information about the connected USB memory stick.
4	[CLOSE] button	Closes the USB Memory Stick Info screen.

Caution

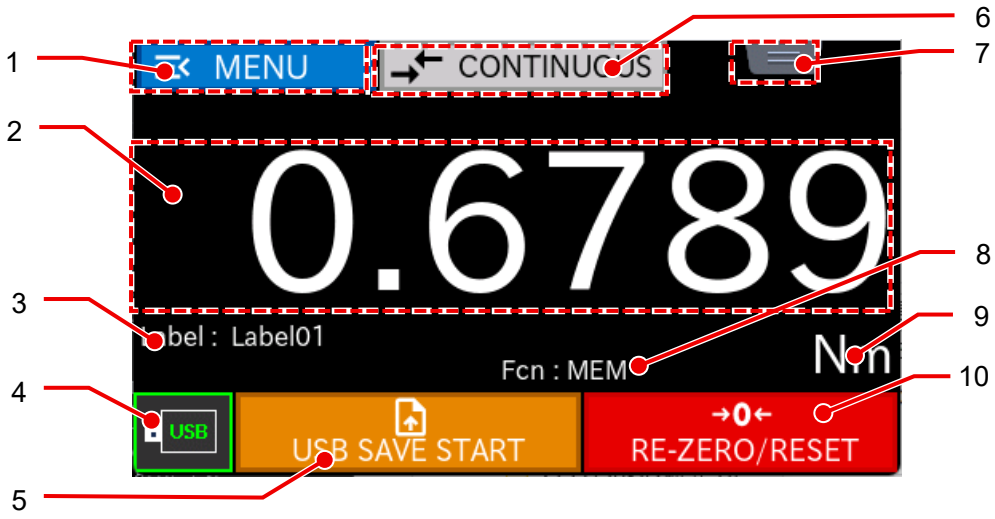
When removing the USB memory stick from the Cap Torque Tester, always press the [UNMOUNT] button first. If not operated correctly, data may not be exported.

8.1.1.2.Measurement result screen



No.	Name	Description
1	MEMNo.	Displays the measured memory number.
2	Saved Date	Displays the saved date and time of the measurement.
3	1st peak torque value	Displays the result of the 1st peak torque value. The judgment color is the same as on the Home screen.
4	1st peak judgment result	Displays the judgment result of the 1st peak torque value. The judgment color is the same as on the Home screen.
5	2nd peak torque value	Displays the result of the 2nd peak torque value. The judgment color is the same as on the Home screen.
6	2nd peak judgment result	Displays the judgment result of the 2nd peak torque value. The judgment color is the same as on the Home screen.
7	3rd peak torque value	Displays the result of the 3rd peak torque value. The judgment color is the same as on the Home screen.
8	3rd peak judgment result	Displays the judgment result of the 3rd peak torque value. The judgment color is the same as on the Home screen..
9	[SAVE] button	Saves the measurement result to memory and increments the memory number. If a USB memory stick is mounted, the result is also saved to the USB memory stick.
10	[DISCARD] button	Discards the measurement result. The memory number is not incremented.

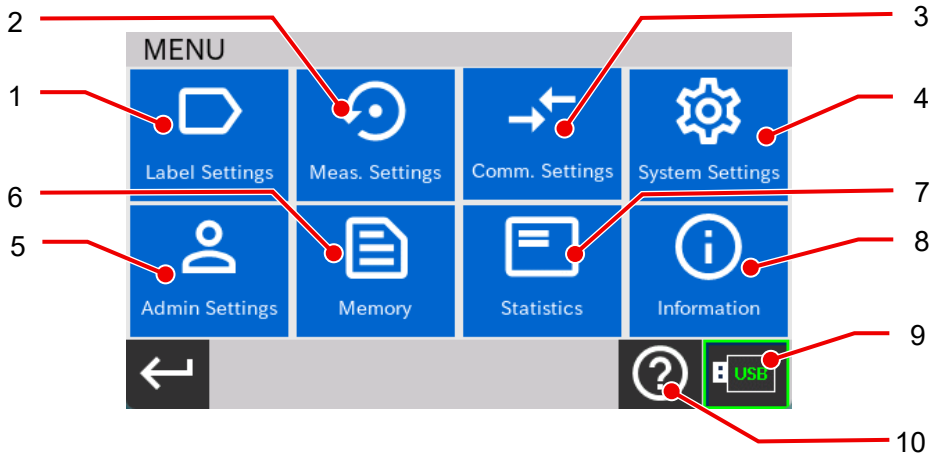
8.1.2. When the measurement mode is Continuous Measurement Mode



No.	Name	Description
1	[MENU] button	Same as in Peak Hold Mode.
2	Torque value	Displays the real-time torque value.
3	Label Name	Same as in Peak Hold Mode.
4	USB Memory button	Same as in Peak Hold Mode.
5	[USB SAVE START] button [USB SAVE FINISH] button	Starts continuous saving of real-time torque values. When saving begins, the [USB SAVE START] button changes to the [USB SAVE FINISH] button. Pressing the [USB SAVE FINISH] button ends continuous saving. Outputs the data as a file to a USB memory stick connected to the USB Type-A port. Continuous saving is performed at 100 times per second. The file name is "yyyymmdd_hhmmss_TorqueMeter.csv". (y: year, m: month, d: day, h: hour, m: minute, s: second) If the USB memory stick connected to the USB Type-A port is not yet mounted, the [USB SAVE START] button is grayed out and cannot be pressed.
6	Measurement mode selector button	Same as in Peak Hold Mode.
7	Drawer button	Same as in Peak Hold Mode.
8	Function button setting status	Same as in Peak Hold Mode.
9	Measurement unit	Same as in Peak Hold Mode.
10	[RE-ZERO/RESET] button	Performs zero adjustment and sets the measurement value to 0. "Saving ..." is displayed while saving is in progress.

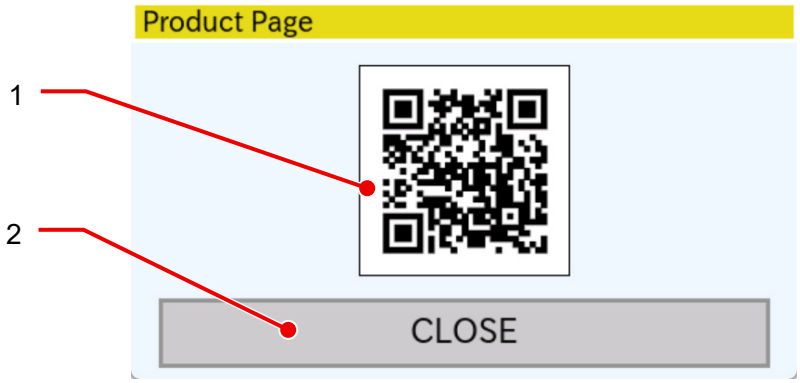
8.2. Menu Screen

- On the Menu screen, you can move to each settings screen.
- From the USB Memory Stick button at the bottom of the screen, you can mount or unmount a USB memory stick connected to the USB Type-A port.
- From the Help button at the bottom of the screen, you can access the product-page link and download the online manual.



No.	Name	Description
1	Label Settings button	Moves to the Label Settings screen ("8.3. Label Settings").
2	Meas. Settings button	Moves to the Measurement Settings screen ("8.4. Measurement Settings"). If the admin lock function is ON, the button is grayed out.
3	Comm. Settings button	Moves to the Communication Settings screen ("8.5. Communication Settings"). If the admin lock function is ON, the button is grayed out.
4	System Settings button	Moves to the System Settings screen ("8.6. System Settings"). If the admin lock function is ON, the button is grayed out.
5	Admin Settings button	Moves to the Admin Settings screen ("8.7. Admin Settings").
6	Memory button	Moves to the Memory screen ("8.8. Memory").
7	Statistics button	Moves to the Statistics screen ("8.9. Statistics").
8	Information button	Moves to the Information screen ("8.10. Information").
9	USB Memory button	Moves to the USB Memory Stick Info screen ("8.1.1.1. USB Memory Stick Info."), where you can mount or unmount a USB memory stick. When a USB memory stick is mounted, the button turns green.
10	Help button	Moves to the Product Page (QR code) screen ("8.2.1. Product Page (QR code) screen").

8.2.1. Product Page (QR code) screen

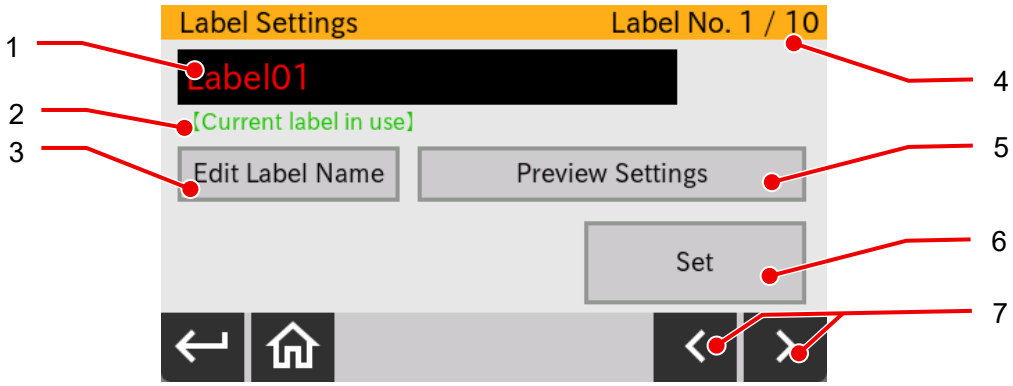


No.	Name	Description
1	QR code	Scanning the QR code displays the link to the product page.
2	[CLOSE] button	Closes the Product Page (QR code) screen.

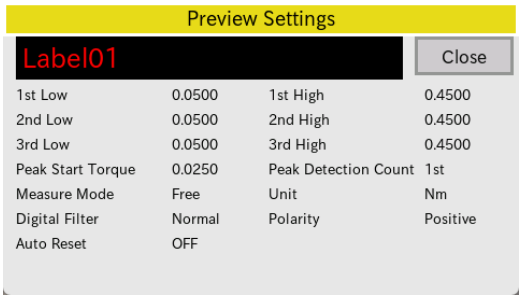
8.3. Label Settings

- The Cap Torque Tester includes a "label" function that allows you to manage measurement settings. By using the label function, you can change all settings associated with each label at once when the measurement target changes, eliminating the need to reconfigure each item individually.
  For details that can be set for each label, refer to "7. Function / Settings Table".
- The Cap Torque Tester can save up to 10 measurement settings patterns and manage them with label names.
- You can check each label's measurement settings, edit label names, and switch label numbers.

8.3.1. Label Settings 1/10 to 10/10



No.	Name	Setting value (setting range)	Description
1	Label Name	–	Displays the currently selected label name. If the label is in use, it appears in red.
2	Active label	–	If the selected label number is the one currently in use, "Current label in use" is displayed.
3	[Edit Label Name] button	Up to 16 characters Blank label names cannot be entered.	Pressing the button opens the text input screen, where you can change the label name for the selected label number.
4	Label number	–	Displays the label number.
5	[Preview Settings] button	–	Pressing the button shows the Preview Settings screen for the selected label number. (*8)
6	[Set] button	–	Sets the currently displayed label number as the active label. When the button is pressed, a confirmation dialog appears before switching. Pressing the [OK] button sets the currently displayed label as the active label. Pressing the [Cancel] button cancels the label switch.
7	Displayed-label selector button	–	Pressing the button switches the label number. The left button decreases the label number by 1, and the right button increases it by 1.



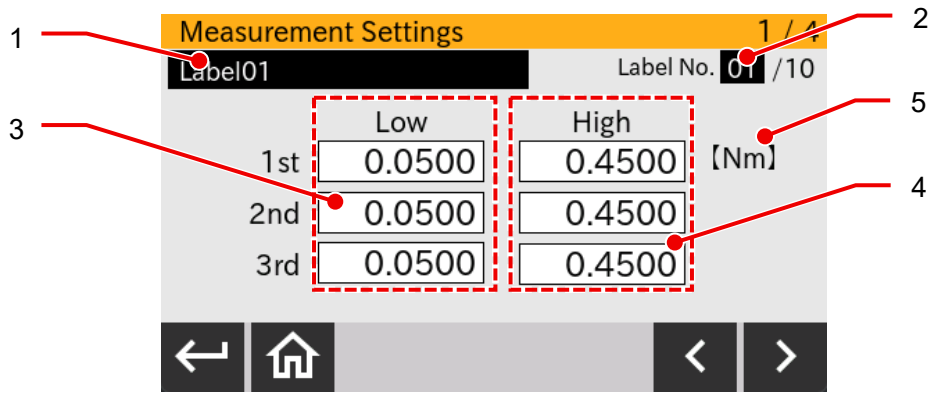
*8 Preview Settings screen

8.4. Measurement Settings

- In the Measurement Settings screen, you can change the measurement settings for the current label.

8.4.1. Measurement Settings 1/4 (Comparator settings)

In this screen, you can set the lower and upper torque limits for each peak.

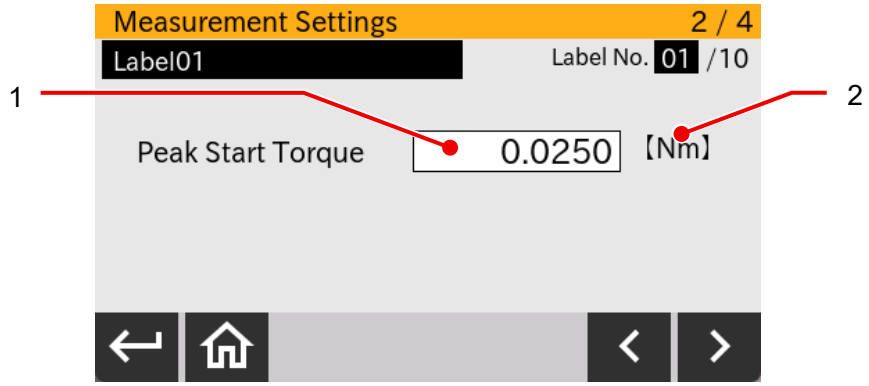


No.	Name	Setting value (setting range)	Description
1	Label Name	–	Displays the label name currently being configured.
2	Label number	–	Displays the label number currently being configured. Label switching is performed in "8.3. Label Settings".
3	Comparator setting (Low)	1st Low: 0 Nm ≤ setting value < 1st High 2nd Low: 0 Nm ≤ setting value < 2nd High 3rd Low: 0 Nm ≤ setting value < 3rd High	Sets the torque lower limits for 1st to 3rd peaks. If the saved peak torque value is below the lower limit, it is judged as Low. Pressing the numeric-input field displays the numeric-input screen and allows value entry. If you try to enter a value outside the allowable range, an error beep sounds and the value cannot be entered. In Close Peak Hold mode, 2nd and 3rd become grayed out; in Continuous Measurement mode, 1st to 3rd become grayed out.
4	Comparator setting (High)	The setting range varies depending on the model. (*9)	Sets the torque upper limits for 1st to 3rd peaks. If the saved peak torque value exceeds the upper limit, it is judged as High. Pressing the numeric-input field displays the numeric-input screen and allows value entry. If you try to enter a value outside the allowable range, an error beep sounds and the value cannot be entered. In Close Peak Hold mode, 2nd and 3rd become grayed out; in Continuous Measurement mode, 1st to 3rd become grayed out.
5	Measurement unit	–	Displays the unit used for comparator settings. This is shared with the unit setting.

*9 Relationship between model and setting range

Model	Setting range
TD-0.5H	Low < setting value ≤ 0.9999 Nm
TD-2H / TD-5 / TD-5H	Low < setting value ≤ 9.999 Nm
TD-10H	Low < setting value ≤ 99.99 Nm

8.4.2. Measurement Settings 2/4 (Peak Start Torque)

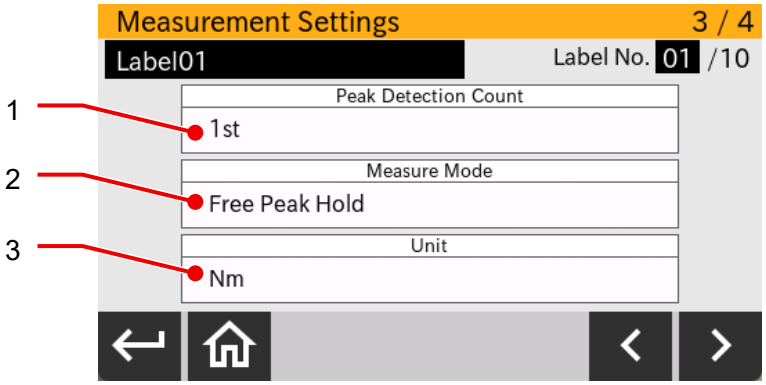


No.	Name	Setting value (setting range)	Description
1	Peak Start Torque	The setting range varies depending on the model. (*10)	Sets the peak start torque. When the measurement mode is set to Peak Hold, the Cap Torque Tester does not enter peak hold operation until the absolute torque value exceeds the peak start torque. In Continuous Measurement mode, this setting is grayed out.
2	Measurement unit	–	Displays the unit for the peak start torque. This is shared with the unit setting.

*10 Relationship between model and setting range

Model	Setting range
TD-0.5H	0.0250 Nm < setting value ≤ 0.9999 Nm
TD-2H	0.100Nm < setting value ≤ 9.999 Nm
TD-5H	0.250 Nm < setting value ≤ 9.999 Nm
TD-10H	0.50 Nm < setting value ≤ 99.99 Nm

8.4.3. Measurement Settings 3/4 (Peak Detection Count, Measure Mode, Unit)



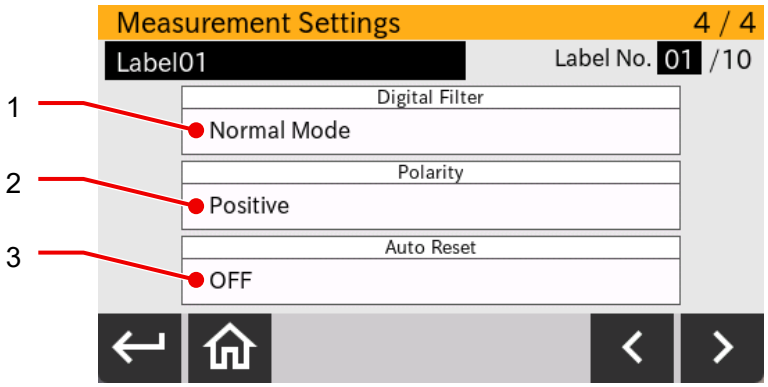
No.	Name	Setting value (setting range)	Description
1	Peak Detection Count	1st, 2nd, 3rd	Sets the number of peak detections during opening. When the measurement mode is Close Peak Hold or Continuous Measurement, this setting is grayed out and cannot be changed.
2	Measure Mode	Free Peak Hold, Open Peak Hold, Close Peak Hold, Continuous Measurement	Select the measurement mode. Free Peak Hold .....Detects torque peak values in either opening or closing direction. Open Peak Hold.....Detects only the opening-direction torque peak value. Close Peak Hold .....Detects only the closing-direction torque peak value. Continuous Measurement.....Displays and saves continuous torque data without peak hold.
3	Unit	Nm, Ncm, lbft, lbin	Sets the torque measurement unit. Automatically converts units for comparator settings and peak start torque setting value. The number of decimal places for torque values depends on the unit setting. (*11)

*11 Relationship between unit setting and decimal places

(lbft and lbin are available only for North American models.)

Unit setting	Number of decimal places		
	TD-0.5H	TD-2H / TD-5H	TD-10H
Nm	4	3	2
Ncm	2	1	0
lbft	4	3	2
lbin	3	2	1

8.4.4. Measurement Settings 4/4 (Digital Filter, Polarity, Auto Reset)

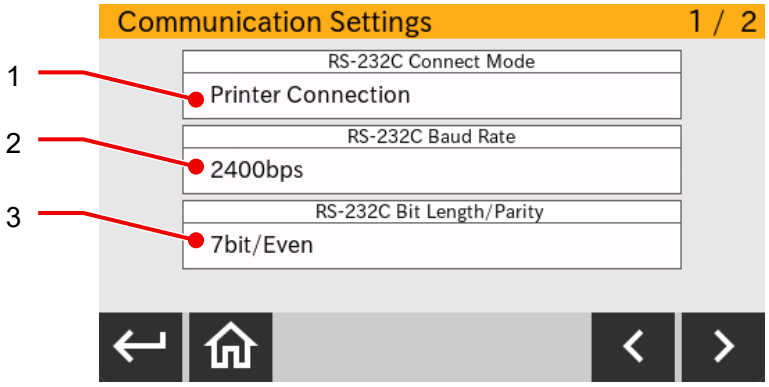


No.	Name	Setting value (setting range)	Description
1	Digital Filter	High-Response Mode, Normal Mode, Static Mode	Sets the digital filter applied to torque values. High-Response Mode ... Sets a high-response digital filter suitable for various experiments. Normal..... Sets a digital filter suitable for standard opening / closing measurements. Static Mode .... Sets a digital filter suitable for static experiments and calibration.
2	Polarity	Positive, Negative	Sets the torque polarity. Positive..... Does not invert the polarity. Negative.... Inverts the polarity. When polarity is inverted, the comparator judgment polarity is also inverted. (Example: If the comparator setting value is 0.01 Nm, judgment is made at –0.01 Nm.)
3	Auto Reset	OFF, ON	Sets the ON/OFF state of the auto reset function. OFF ....To perform peak reset, you must manually press the [RE-ZERO/RESET] button. ON.....After saving, peak reset is performed automatically.

8.5. Communication Settings

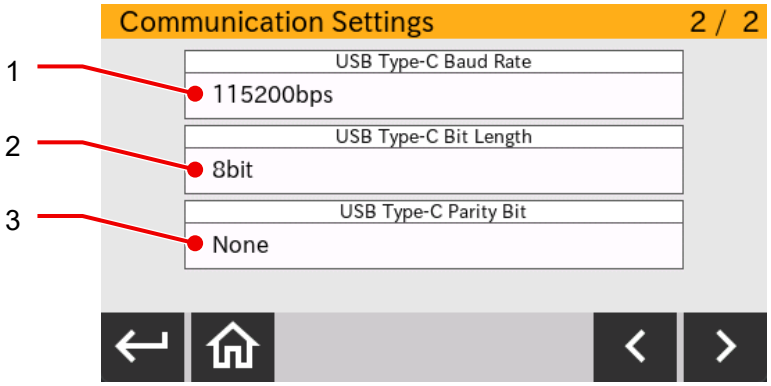
- You can change the settings for the RS-232C port and USB Type-C on the Comm. Settings screen.

8.5.1. Communication Settings 1/2 (RS-232C Connect Mode, Baud Rate, Bit Length/Parity)



No.	Name	Setting value (setting range)	Description
1	RS-232C Connect Mode	PC Connection, Printer Connection	PC Connection ....Mode for connecting the RS-232C port to a PC Printer Connection....Mode for connecting the RS-232C port to a printer
2	RS-232C Baud Rate	38400 bps, 19200 bps, 9600 bps, 4800 bps, 2400 bps, 1200 bps, 600 bps	Sets the baud rate for the RS-232C port. When the RS-232C Connect Mode is set to PC Connection, the baud rate is fixed at 2400 bps and the field is grayed out.
3	RS-232C Bit Length/Parity	7 bit/Even, 7 bit/Odd, 8 bit/None	7 bit/Even.....Sets the bit length to 7 bits and parity to Even. 7 bit/Odd .....Sets the bit length to 7 bits and parity to Odd. 8 bit/None ....Sets the bit length to 8 bits and parity to None. When RS-232C Connect Mode is set to PC Connection, the setting is fixed at 7 bit/Even and the field is grayed out.

8.5.2. Communication Settings 2/2 (USB Type-C Baud Rate, Bit Length, Parity Bit)

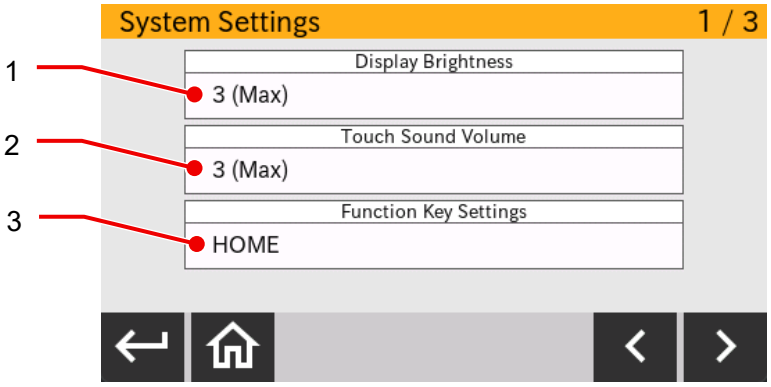


No.	Name	Setting value (setting range)	Description
1	USB Type-C Baud Rate	115200 bps, 57600 bps, 38400 bps, 19200 bps, 9600 bps, 4800 bps, 2400 bps	Sets the baud rate for USB Type-C.
2	USB Type-C Bit Length	7 bit, 8 bit	Sets the bit length for USB Type-C.
3	USB Type-C Parity Bit	None, Odd, Even	Sets the parity bit for USB Type-C.

8.6. System Settings

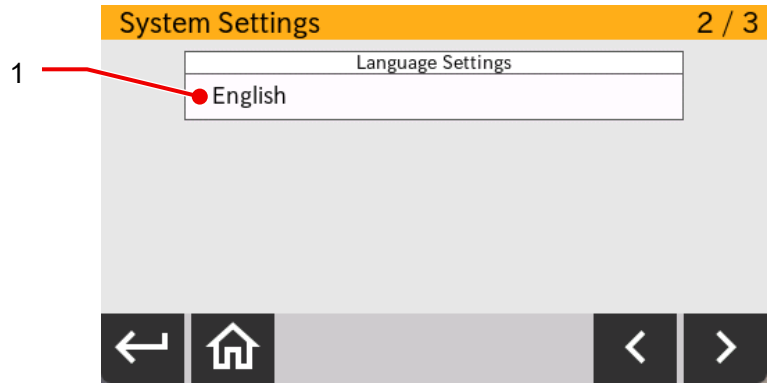
- The System Settings screen allows you to change the display brightness, touch sound volume, function key assignments, language settings, and date / time.

8.6.1. System Settings 1/3 (Display Brightness, Touch Sound Volume, Function Key Settings)



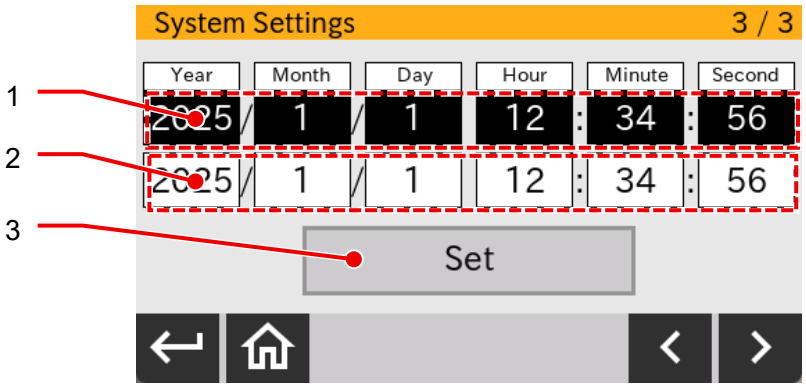
No.	Name	Setting value (setting range)	Description
1	Display Brightness	1 (Min), 2 (Medium), 3 (Max)	Sets the display brightness to one of three levels.
2	Touch Sound Volume	0 (Mute), 1 (Min), 2 (Medium), 3 (Max)	Sets the touch-sound volume of the Cap Torque Tester to one of four levels. When set to 0, the unit is muted. (Even in mute mode, the error buzzer will sound.)
3	Function Key Settings	HOME, MEM, RE-ZERO/RESET, MEM+RESET	Sets the function assigned to the function key on the Home screen.

8.6.2. System Settings 2/3 (Language Settings)



No.	Name	Setting value (setting range)	Description
1	Language Settings	English, Japanese	Sets the language for the Cap Torque Tester. English..... English display Japanese..... Japanese display

8.6.3. System Settings 3/3 (Date / Time Settings)

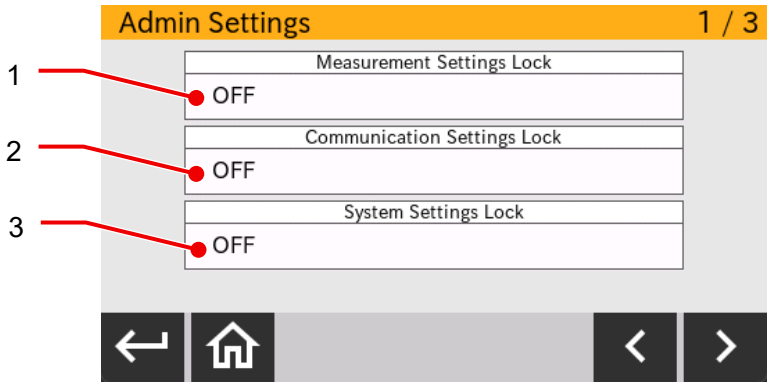


No.	Name	Setting value (setting range)	Description
1	Date / time display	–	Displays the current date and time of the Cap Torque Tester.
2	Date / time setting	Year: 2000 ≤ setting value ≤ 2099 Month: 1 ≤ setting value ≤ 12 Day: 1 ≤ setting value ≤ 31 Hour: 0 ≤ setting value ≤ 23 Minute: 0 ≤ setting value ≤ 59 Second: 0 ≤ setting value ≤ 59	Enter the desired date and time for the Cap Torque Tester. Invalid dates (e.g., April 31) cannot be set.
3	[Set] button	–	Applies the values entered in the date / time settings.

8.7. Admin Settings

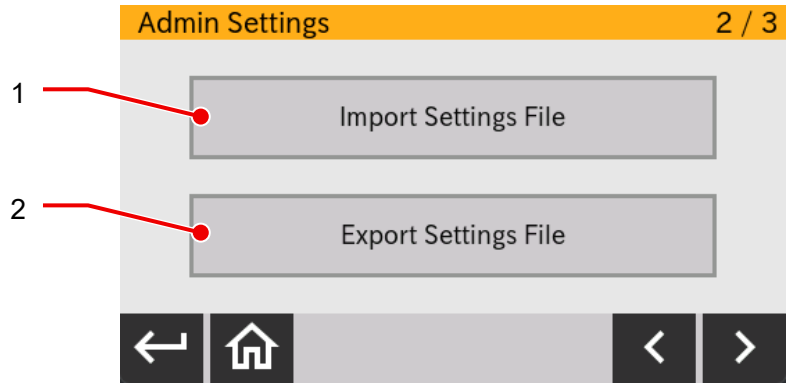
- The Admin Settings screen allows you to change the lock settings for measurement settings, communication settings, and system settings, as well as read and write setting files using a USB memory stick and initialize settings.

8.7.1. Admin Settings 1/3 (Measurement Settings Lock, Communication Settings Lock, System Settings Lock)

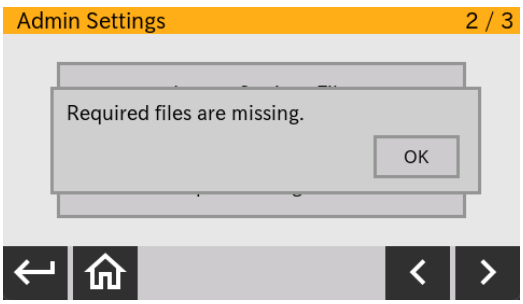


No.	Name	Setting value (setting range)	Description
1	Measurement Settings Lock	OFF, ON	Sets restrictions on measurement settings. OFF.. No restrictions. ON ... Grays out the measurement settings button on the menu screen and restricts access to the measurement settings screen.
2	Communication Settings Lock	OFF, ON	Sets restrictions on communication settings. OFF.. No restrictions. ON ... Grays out the communication settings button on the menu screen and restricts access to the communication settings screen.
3	System Settings Lock	OFF, ON	Sets restrictions on system settings. OFF.. No restrictions. ON ... Grays out the system settings button on the menu screen and restricts access to the system settings screen.

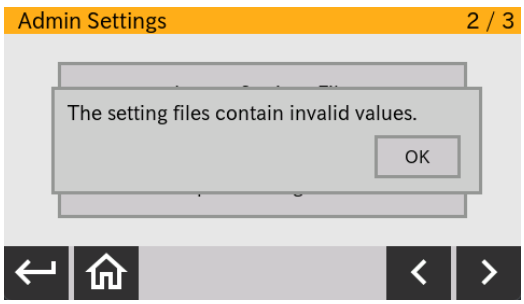
8.7.2. Admin Settings 2/3 (Import / Export Settings File)



No.	Name	Description
1	[Import Settings File] button	Imports a settings file from a USB memory stick connected to the USB Type-A port. Pressing the button displays "Importing ...". If successful, "Please confirm the imported data." appears. Pressing the [OK] button opens the Settings File Check screen ("8.7.2.1. Settings File Check screen"). If required settings files are missing, “Required files are missing” appears. If the settings file contains invalid values, “The setting files contain invalid values.” appears. If importing fails, check whether the settings file on the USB memory stick is correct.
2	[Export Settings File] button	Exports settings files to a USB memory stick connected to the USB Type-A port. The exported files are: - Label_n_******.xml (n : 01 to 10, ******: Label Name) - TD-commonSettingFile.xml For details on the settings files, refer to "12.3. Settings File Format". Pressing the button displays "Exporting ...". When exporting is complete, "Completed." appears. If the USB memory stick is not mounted, the button is grayed out.

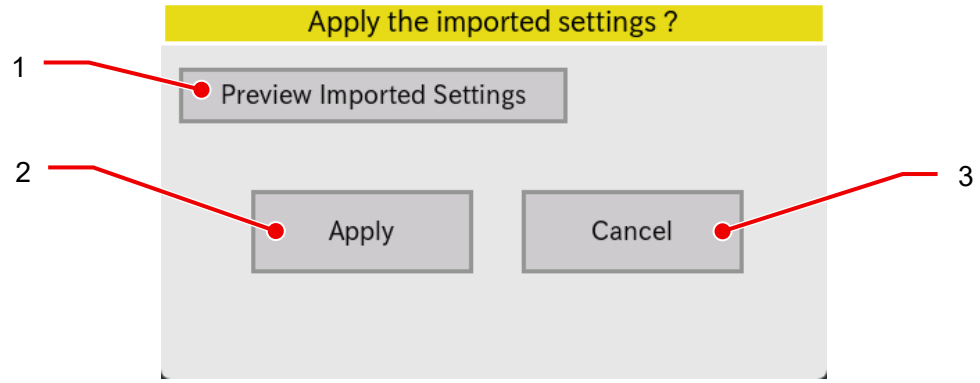


If the imported setting file is incomplete



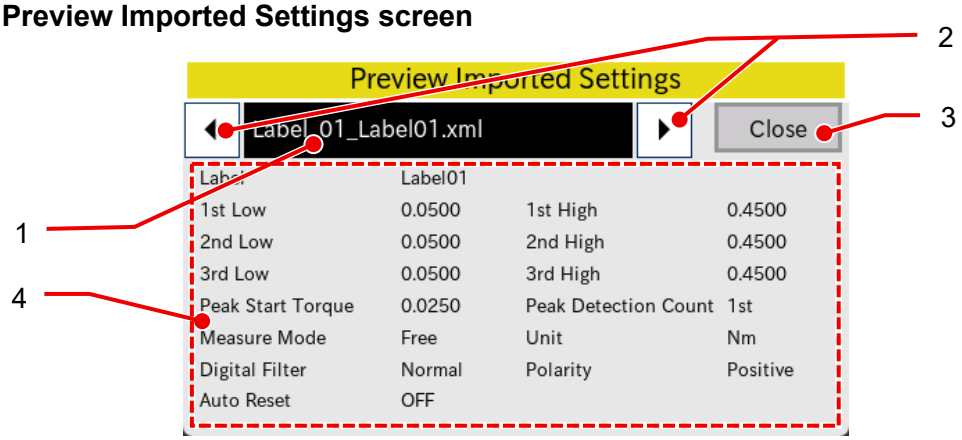
If importing fails

8.7.2.1 Settings File Check screen



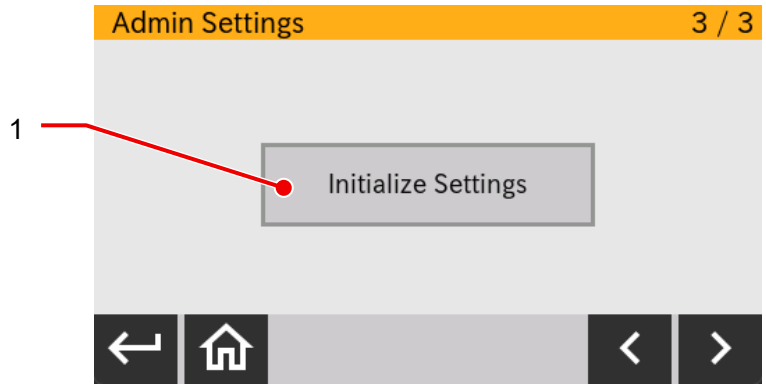
No.	Name	Description
1	[Preview Imported Settings] button	Pressing the button opens the Preview Imported Settings screen ("8.7.2.2. Preview Imported Settings screen"), where you can check label settings file names, measurement settings lists, and common settings.
2	[Apply] button	Pressing the button applies the imported settings file.
3	[Cancel] button	Pressing the button cancels applying the imported settings file.

8.7.2.2 Preview Imported Settings screen



No.	Name	Description
1	File name display	Displays the file name of the label settings file or the common settings file.
2	File name display switch buttons	Pressing the left or right button switches the file name. The left button moves −1, the right +1. The display transitions in the sequence: Label Setting 1 → Label Setting 2 → … Label Setting 10 → Common Setting 1 → Common Setting 2 → Label Setting 1…
3	[Close] button	Pressing the button closes the Preview Imported Settings screen.
4	Imported Settings	Displays the contents of the currently displayed settings file.

8.7.3. Admin Settings 3/3 (Initialize Settings)



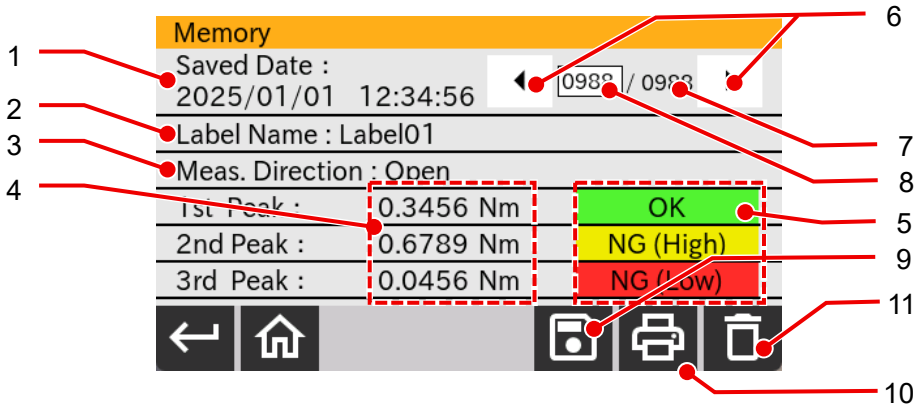
No.	Name	Description
1	[Initialize Settings] button	Pressing the button displays a confirmation dialog for initializing settings. Pressing the [OK] button initializes all label settings (Label 1 to Label 10) and displays "Completed.". Pressing the [Cancel] button cancels initialization.

Note: If initialization is performed, the label setting values will return to the default values listed in "7. Function / Settings Table".

8.8. Memory

- Up to 1000 saved Peak Hold mode data entries can be displayed or deleted.
- Saved data can be output to a USB memory stick or printer.
- If no data is saved, “No Memory” is displayed.

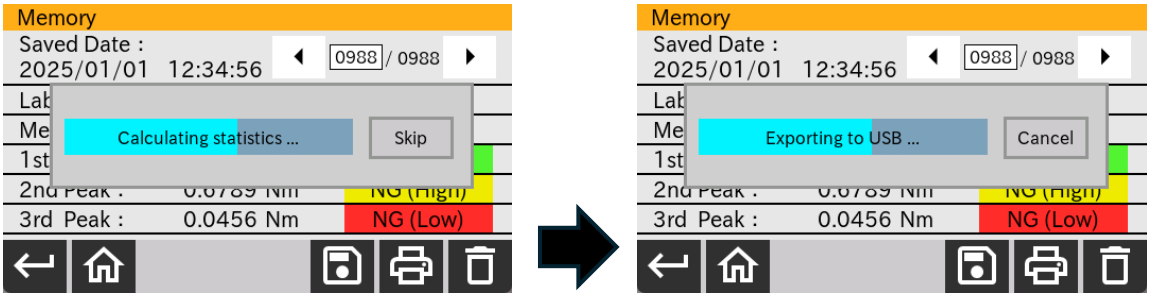
8.8.1. Saved Data screen



No.	Name	Description
1	Saved Date	Displays the saved date and time in yyyy/mm/dd hh:mm:ss format.
2	Label Name	Displays the label name at the time of saving.
3	Meas. Direction	Displays the measurement direction at the time of saving.
4	Peak torque values	Displays 1st–3rd peak torque values. Blank if not measured. (If Peak Detection Count is set to 1st, 2nd and 3rd remain blank.)
5	Comp. Result	Displays judgment results for each peak torque value: Low (red): NG (Low), Pass (green): OK, High (yellow): NG (High).
6	MEMNo. switch button	Pressing the left or right button changes the memory number. Left button: −1 / Right button: +1.
7	Number of saved entries	Displays the number of currently saved entries.
8	MEMNo.	Displays the memory number of the displayed data. Pressing the memory number opens numeric entry for direct entry.
9	USB Memory Output button	Outputs all saved data to a USB memory stick connected to the USB Type-A port. For details, refer to "8.8.2. USB memory output". Disabled when the USB memory stick is not connected or unmounted.
10	Printer Output button	Prints either one displayed memory entry or all data. For details, refer to "8.8.3. Printer output".
11	Delete Data button	Deletes either the latest saved data or all saved data from memory. For details, refer to "8.8.4. Delete data".

8.8.2. USB memory output

- Outputs all saved data to a USB memory stick connected to the USB Type-A port.
- When you press the button, a confirmation dialog appears. Pressing the [OK] button displays the "Calculating statistics ..." progress bar.
  Pressing the [Skip] button cancels the statistical calculation and starts export to the USB memory stick.
  If you press the [Skip] button, the statistical values in the output file are set to zero.
- When the statistical calculation is complete, the "Exporting to USB ..." progress bar is displayed.
  Pressing the [Cancel] button stops the USB memory export process and exports the files up to the point when the [Cancel] button was pressed.

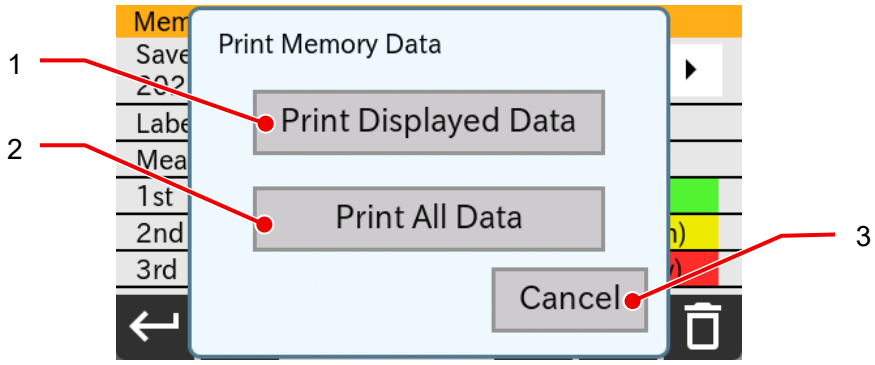


Statistical calculation progress bar　　Export to USB memory stick progress bar

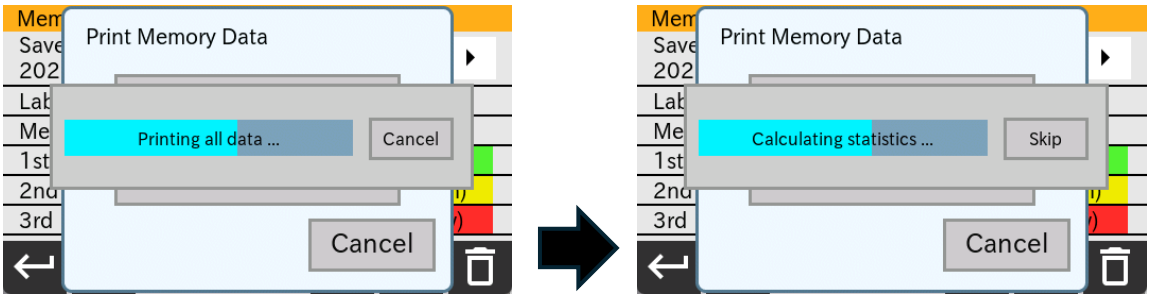
For file format details, refer to "12.1. USB Output File Format".

8.8.3. Printer output

- Prints either one displayed memory entry or all data.
- Pressing the button displays the print-confirmation dialog shown below, allowing you to select the printing method.
- If RS-232C Connect Mode ("8.5.1. Communication Settings 1/2 (RS-232C Connect Mode, Baud Rate, Bit Length/Parity)") is set to PC Connection, the button is grayed out.



No.	Name	Description
1	[Print Displayed Data] button	Prints one displayed memory entry. The print-confirmation dialog appears. Pressing the [OK] button prints it and displays "Completed". Pressing the [Cancel] button cancels printing.
2	[Print All Data] button	Prints all saved data. The print-confirmation dialog appears. Pressing the [OK] button displays the "Calculating statistics ..." progress bar. Pressing the [Skip] button cancels the statistical calculation and starts printing. If you press the [Skip] button, the statistical values in the printed output are set to zero. When the statistical calculation is complete, the "Printing all data ..." progress bar is displayed. Pressing the [Cancel] button stops printing. Cancelling printing takes a few seconds, and "Cancelling..." is displayed. When printing all data is complete, "Completed." is displayed.
3	[Cancel] button	Cancels printing.



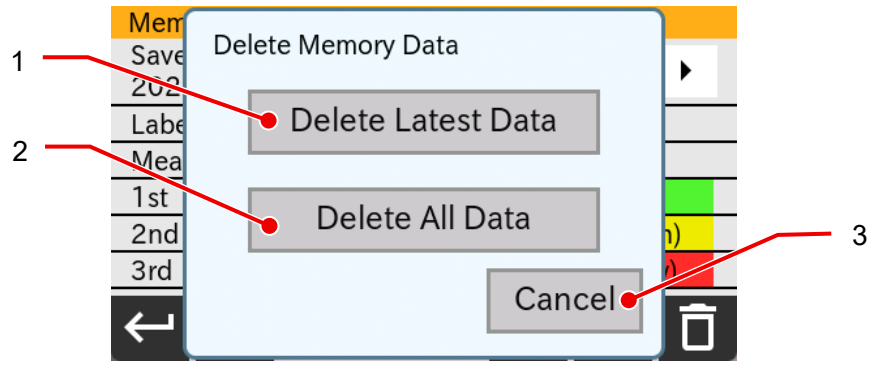
Statistical calculation progress bar

All-data printing progress bar

For printing specification details, refer to "12.2. Printer Output Format".

8.8.4. Delete data

- Deletes either the latest saved data or all saved data from memory.
- Pressing the button displays the delete-confirmation dialog shown below, allowing you to select the deletion method.
- When memory is 0 entries, the button is grayed out and unavailable.



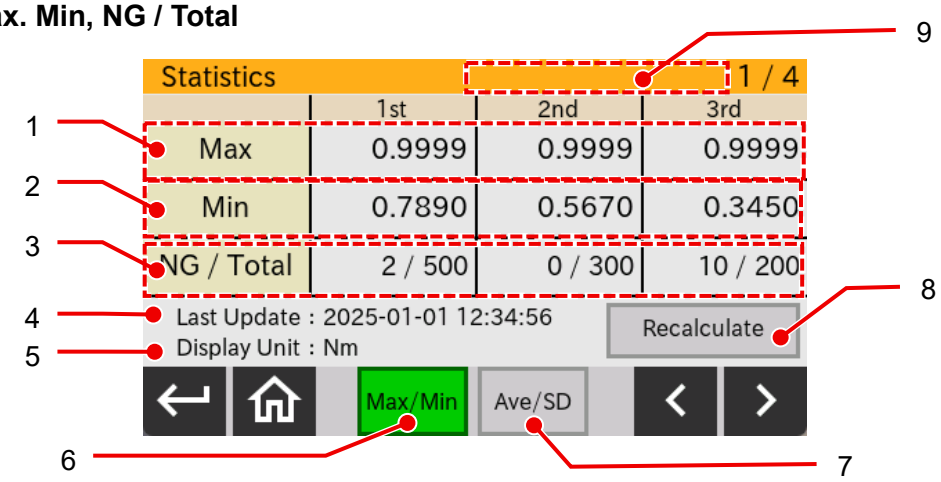
No.	Name	Description
1	[Delete Latest Data] button	Deletes the latest saved data. The delete-confirmation dialog appears. Pressing the [OK] button deletes the latest data and displays "The latest data has been deleted.". Pressing the [Cancel] button cancels deletion.
2	[Delete All Data] button	Deletes all saved data. The delete-confirmation dialog appears. Pressing the [OK] button deletes all data and displays "All data has been deleted". Pressing the [Cancel] button cancels deletion.
3	[Cancel] button	Cancels data deletion.

8.9. Statistics

- Displays statistical values of data saved in memory.
- The statistics filter allows extraction of target data for statistical calculation.

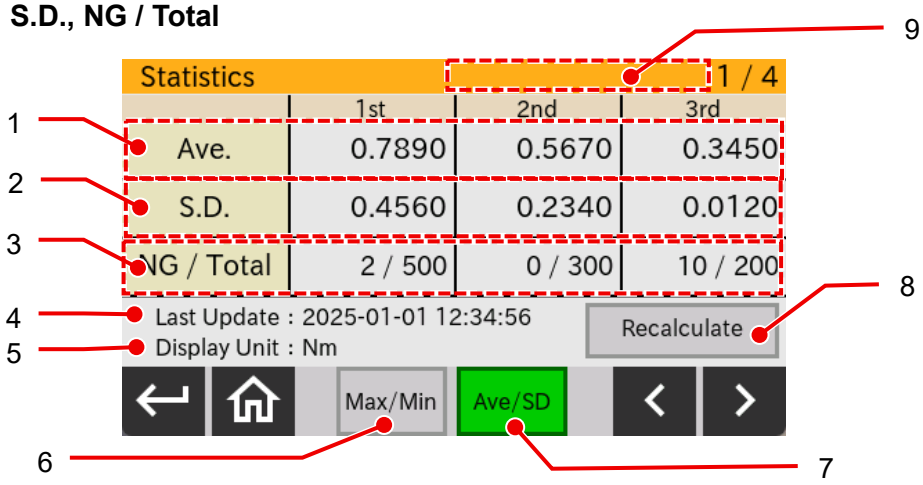
8.9.1. Statistics 1/4 (Statistical Data Display)

8.9.1.1 Max. Min, NG / Total



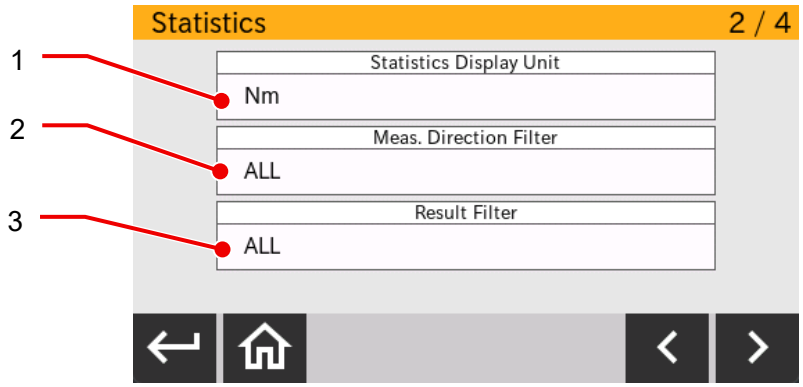
No.	Name	Description
1	Max	Displays the maximum torque value for each peak from the statistically calculated data saved in memory.
2	Min	Displays the minimum torque value for each peak from the statistically calculated data saved in memory.
3	NG / Total	Displays the number of NG results for each peak from the statistically calculated data saved in memory.
4	Last Update	Displays the date and time when the currently displayed statistical results were calculated.
5	Display Unit	Displays the unit used for the currently displayed statistical results.
6	[Max/Min] button	Switches to the maximum, minimum, and NG/count statistical results.
7	[Ave/SD] button	Switches to the average, standard deviation, and NG/count statistical results.
8	[Recalculate] / [Cancel] button	Calculates the statistical results using the filter settings configured on subsequent pages. During calculation, this becomes the [Cancel] button. Pressing it cancels the ongoing calculation.
9	Progress bar	While calculating statistical values, “Calculation...” is displayed.

8.9.1.2 Ave. S.D., NG / Total



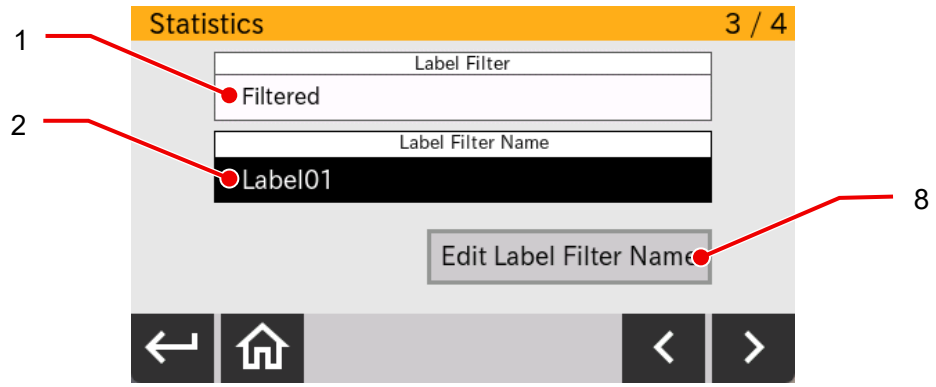
No.	Name	Description
1	Ave.	Displays the average value for each peak from the statistically calculated data saved in memory.
2	S.D.	Displays the standard deviation for each peak from the statistically calculated data saved in memory. If there is only one or fewer data points, the standard deviation is not displayed.
3	NG / Total	Displays the number of NG results for each peak from the statistically calculated data saved in memory.
4	Last Update	Displays the date and time when the currently displayed statistical results were calculated.
5	Display Unit	Displays the unit used for the currently displayed statistical results.
6	[Max/Min] button	Switches to the maximum, minimum, and NG/count statistical results.
7	[Ave/SD] button	Switches to the average, standard deviation, and NG/count statistical results.
8	[Recalculate] / [Cancel] button	Calculates the statistical results using the filter settings configured on subsequent pages. During calculation, this becomes the [Cancel] button. Pressing it cancels the ongoing calculation.
9	Progress bar	While calculating statistical values, “Calculation...” is displayed.

8.9.2. Statistics 2/4 (Statistics Display Unit, Meas. Direction Filter, Result Filter)



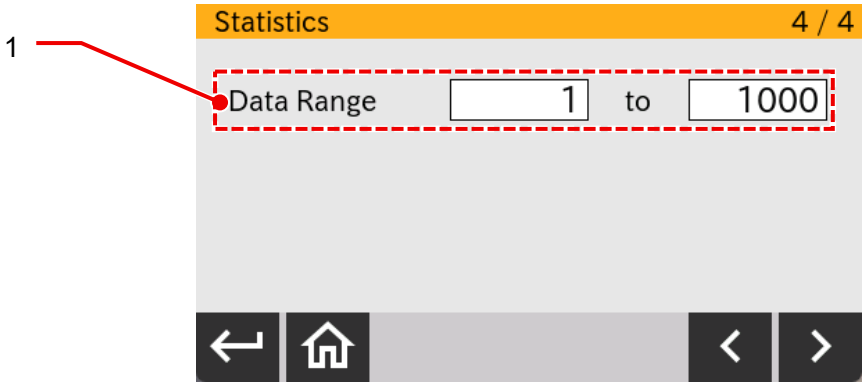
No.	Name	Setting value (setting range)	Description
1	Statistics Display Unit	Nm, Ncm, lbft, lbin	Sets the display unit for statistical data (maximum torque, minimum torque, average, standard deviation). This setting does not affect the measurement unit. The measurement unit can be changed in the Measurement Settings. (Refer to "8.4. Measurement Settings".) lbft and lbin are available only for North American models.
2	Meas. Direction Filter	ALL, Open, Close	Sets the measurement direction used for statistical calculations. ALL ..... Calculates statistical values using data from all measurement directions. Open..... Calculates statistical values using only opening-direction data. Close .... Calculates statistical values using only closing-direction data.
3	Result Filter	ALL, OK, NG, NG (Low), NG (High)	Sets the judgment result filter used for statistical calculations. ALL ..... Calculates statistical values using all judgment results. OK ..... Calculates statistical values using only data judged to be OK. NG ..... Calculates statistical values using only data judged to be NG. NG (Low)... Calculates statistical values using only data judged to be NG (Low). NG (High).. Calculates statistical values using only data judged to be (NG) High.

8.9.3. Statistics 3/4 (Label Filter)



No.	Name	Setting value (setting range)	Description
1	Label Filter	ALL, Filtered	Sets the label names used for statistical calculations. ALL.....Calculates statistical values for all label names. Filtered ..... Calculates statistical values only for data matching the label name set in item 3.
2	Label Filter Name	-	Displays the label name specified for the filter.
3	[Edit Label Filter Name] button	Up to 16 characters Blank label names cannot be entered.	When Label Filter is set to "Filtered", pressing the button opens a text entry screen where you can enter the label name to be used as the statistical target. Uppercase and lowercase are distinguished. When Label Filter is set to ALL, the button is grayed out.

8.9.4. Statistics 4/4 (Data Range)



No.	Name	Setting value (setting range)	Description
1	Data Range	0 to 1000	Calculates the statistical values within the entered data range.

The statistical values are calculated using the following formulas:

for target data $x_1, x_2, \ldots, x_n$,

Mean:

$$\bar{x} = \sum_{i=1}^{n} x_i$$

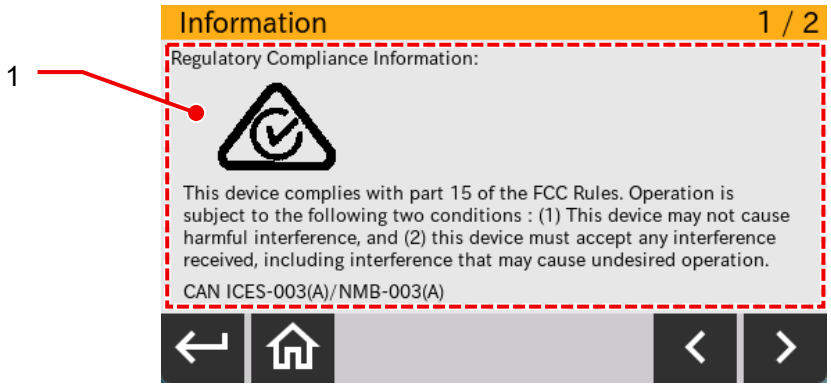
Standard deviation:

$$s = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n}(x_i - \bar{x})^2}$$

8.10. Information

- Displays the regulatory compliance information of the Cap Torque Tester.
- Allows you to check the product model, measurement range, serial number, and software version.

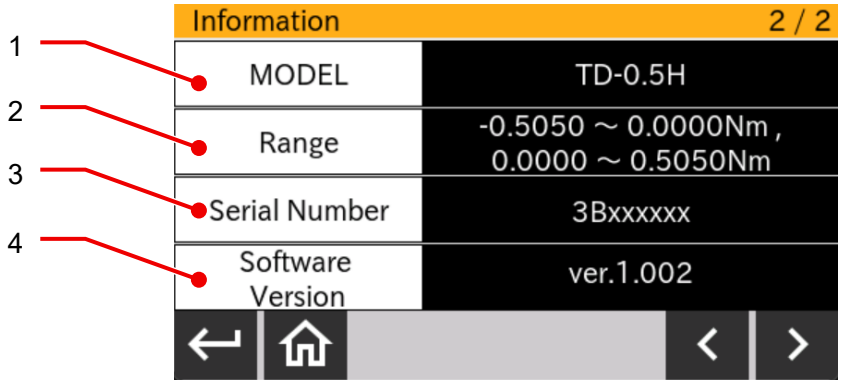
8.10.1. Product Information 1/2 (Regulatory Compliance Information Display)



No.	Name	Description
1	Regulatory compliance information	Displays the regulatory compliance information of the Cap Torque Tester.

Note: The Cap Torque Tester contains a built-in primary lithium battery (BR2032).

8.10.2. Information 2/2 (Information)



No.	Name	Description
1	MODEL	Displays the product model.
2	Range	Displays the product measurement range.
3	Serial Number	Displays the product serial number.
4	Software Version	Displays the product software version.

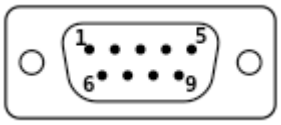
9. Interface Specifications

9.1. RS-232C / USB Type-C Specifications

The Cap Torque Tester allows importing and exporting settings files with a PC via an RS-232C connector, or printing memory data using a printer.
Connecting a cable to the USB Type-C communication port enables communication of memory data, settings values, and torque values with a PC.

9.1.1. RS-232C specifications

Number of channels	1 ch	
Connector	D-Sub 9-pin (male)	
Transmission system	EIA RS-232C	
Transmission form	Asynchronous, bidirectional, full-duplex transmission.	
Signal format	Baud rate	600, 1200, 2400, 4800, 9600, 19200, 38400 bps
	Data bits	7 bits or 8 bits
	Parity	Even or Odd: At a data bit length of 7 bits
		None: At a data bit length of 8 bits
	Data bit length	1 bit
	Code	ASCII



(Male side)

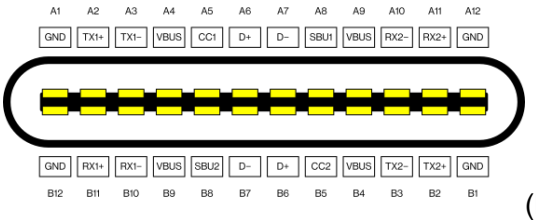
D-Sub 9-pin assignments

Pin No.	Signal name	Direction	Description
1	-	-	NC
2	TxD	OUT	Transmit data
3	RxD	IN	Receive data
4	-	-	NC
5	SG	-	Signal ground
6	DTR	OUT	Data set ready
7	Pin8	Loop	
8	Pin7	Loop	
9	-	-	NC
-	FG		Frame ground

For RS-232C settings, refer to "8.5. Communication Settings".

9.1.2. USB Type-C (Communication) settings

Number of channels	1 ch
Connector	USB Type-C (communication only, power supply not supported).
Communication standard	USB 2.0 FS (12 Mbps)
Baud rate	2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
Data bits	7 bits, 8 bits
Parity bits	None, Odd, Even



(Receptacle side)

USB Type-C pin assignment

Pin No.	Signal name	Description	Pin No.	Signal name	Description
A1	GND	Ground	B12	GND	Ground
A2	-	NC	B11	-	NC
A3	-		B10	-	
A4	-		B9	-	
A5	CC1	Configuration channel	B8	SBU2	NC
A6	D1+	USB 2.0 interface	B7	D2-	USB 2.0 interface
A7	D1-		B6	D2+	
A8	SBU1	NC	B5	CC2(VCONN)	Configuration channel
A9	-	NC	B4	-	NC
A10	-		B3	-	
A11	-		B2	-	
A12	GND	Ground	B1	GND	Ground

9.2. USB Type-A Settings

The Cap Torque Tester allows connection of a USB memory stick to the USB Type-A connector. Saving measurement data and settings files to a USB memory stick allows easy transfer of data to a Windows PC.

Caution

- Do not connect anything other than a USB memory stick to the USB Type-A connector.
- When removing the USB memory stick from the Cap Torque Tester, always press the [UNMOUNT] button first. If not operated correctly, data may not be exported.
- To prevent accidental data loss, use a USB memory stick dedicated for this product only. Do not use it with other devices.
- If other data is stored on the USB memory stick, it may be destroyed. Data loss cannot be guaranteed against. Always format the USB memory stick on a PC before using this product.
- USB memory sticks with security features (such as antivirus software) cannot be used.
- USB memory sticks formatted in NTFS or exFAT cannot be used.
  Use USB memory sticks formatted in FAT32.
- Even USB memory sticks that meet the above conditions may not operate correctly. Operation is not guaranteed for all USB memory sticks.
- USB hubs cannot be used.
- If the Cap Torque Tester malfunctions due to connecting or removing a non-approved USB memory stick, disconnect the AC adapter once and then restart the Cap Torque Tester.
- USB communication with a PC is not supported.

9.3. I/O Settings

By connecting a cable to the I/O connector, the Cap Torque Tester can receive save-command input and reset-command input, and can output comparator upper-limit, comparator lower-limit, and overload signals.

- Input specifications

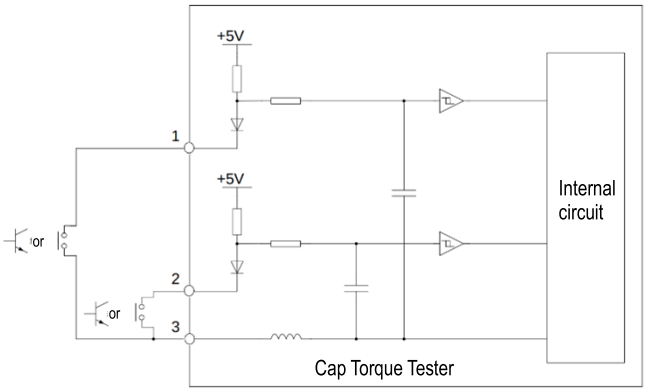
  Number of channels: 2 ch

  Ratings ON voltage: ≤1 V

  OFF current: ≤0.75 mA

  Short-circuit current (typ.): 2 mA

  Input equivalent circuit and recommended drive circuit:



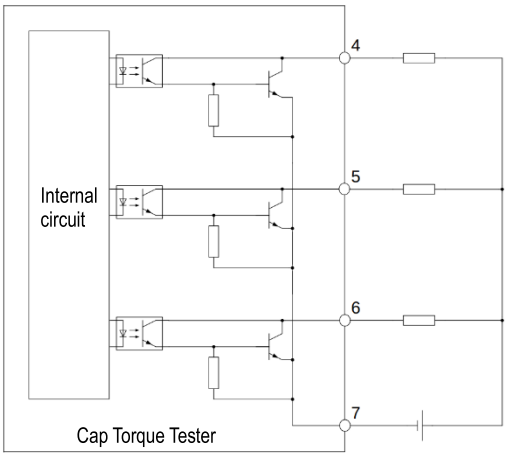
- Output specifications

  Number of channels: 3 ch

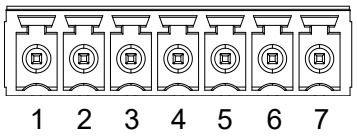
  Ratings Max load voltage: DC 30 V

  Max load current: 100 mA per point

  Output equivalent circuit and recommended load circuit:



Connector: Euroblock MC 1,5/7-G-3,81



(Receptacle side)

DIO connector pin assignment

Pin No.	Signal name	Description
1	DI1	Peak Hold mode: Save command When the measurement result screen is displayed: Same as the [SAVE] button Continuous Measurement mode: Start continuous save command
2	DI2	Peak Hold mode: Reset command When the measurement result screen is displayed: Same as the [DISCARD] button Continuous Measurement mode: Stop continuous save command
3	DI COM	
4	DO1	Comparator upper-limit output
5	DO2	Comparator lower-limit output
6	DO3	Overload output
7	DO COM	

10. Connection with Peripheral Devices

You can connect peripheral devices and a PC using the RS-232C connector or USB Type-C connector built into the Cap Torque Tester.

10.1. Cables Required to Connect to Peripheral Devices

The connection cables compatible with the interfaces used by peripheral devices are as follows.

Peripheral and connection cable compatibility table

Peripheral devices		Communication interface used	Connection cable	
Product	Model		Standard accessory / sold separately	Cable model
Thermal printer	AD-8129TH	RS-232C	[Standard accessory] RS-232C cable for connecting the printer	AX-KO2741-100
PC			[Sold separately]	(*12)
		USB	[Sold separately]	

*12 Please use an AX-USB-9P, AD-8541-SCALE, or AD-8541-PC to connect to a PC.

10.2. Printing to a Printer

The required printer-side settings for the type of printer used are shown below.

10.2.1. When using the AD-8129TH

- Using the standard RS-232C interface, you can print measurement results to the thermal printer (AD-8129TH).
- Use the cable supplied with the AD-8129TH for the connection.
- For detailed settings, refer to the printer instruction manual.
- When connecting to the AD-8129TH, set the printer to "dump printing mode".

11. Connecting to a PC

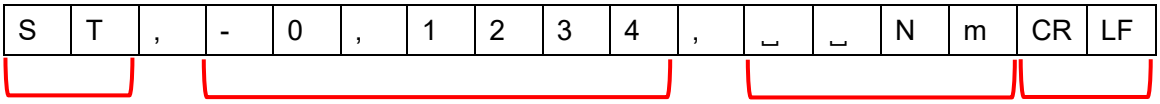
11.1. Data Communication Software

- The WinCT-TD data communication software allows you to easily receive measurement data from the Cap Torque Tester on a PC and perform statistical processing, graph display, and editing of setting files. WinCT-TD is Windows-based software. For PC communication, use either the USB interface (Virtual COM mode) or the RS-232C interface.
- When connected via RS-232C, you can import and export settings files.
- When connected via USB Type-C, you can communicate memory data, setting values, and torque values.
- To download WinCT-TD, visit the A&D website at: https://link.aandd.jp/TorqueMeter_en. For instructions on installing, setting up, and using WinCT-TD, refer to the “WinCT-TD” section on the A&D website.

11.2. Communication Format

11.2.1. Measurement data format

- This is the measurement data format transmitted to peripheral devices.
- A two-character header indicates the status of the data.
- The number of characters in the data varies depending on the model and unit.
- Positive values have no polarity sign; negative values include a polarity sign.
- The unit consists of up to four characters. lbft (2) and lbin (3) are available only for North American models.



Header Data Unit Terminator

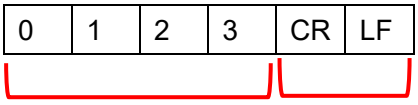
Header
ST: Stable
US: Unstable

Unit
Nm, Ncm, lbft, lbin

CR: Carriage return, ASCII 0Dh
LF: Line feed, ASCII 0Ah
␣: Space, ASCII 20h

11.2.2. Output of memory count

- Outputs the number of saved memory entries.
- The data consists of 4 characters (excluding the terminator).
- The data is padded with zeros (filling the higher order surplus part with zeros).



Memory count Terminator

11.2.3. Output of memory data

- Outputs the saved memory data.
- The items and order of output memory data are as follows:
  Memory No., saved date (yyyy/mm/dd hh:mm:ss format), label name (up to 16 characters), measurement direction, 1st measured torque, 1st result, 2nd measured torque, 2nd result, 3rd measured torque, 3rd result, measurement unit.
- Commas are used as delimiters between items.

M	0	1	2	3	,

Memory number

2	0	2	6	/	0	1	/	0	1	␣	0	1	:	2	3	:	5	6	,

Saved date

L	a	b	e	l	N	a	m	e	0	1	2	3	4	5	6	7	,

Label name

O	,	-	0	,	1	2	3	4	,	L	,

Meas. direction 1st meas. torque 1st meas. result

-	0	-	1	2	3	4	,	O	,

2nd meas. torque 2nd meas. result

-	0	.	1	2	3	4	,	H	,	␣	␣,	N	m	CR	LF

3rd meas. torque 3rd meas. result Meas. unit Terminator

Note:

・ Measurement direction O: Opening direction, C: Closing direction
  Measurement result O: OK judgment, L: Low judgment, H: High judgment,
  ␣: Not measured

11.2.4. Output of date

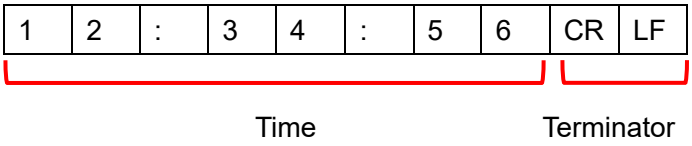
- The date is output from the clock data of the product.
- The data consists of 10 characters (excluding the terminator).

2	0	2	6	/	0	1	/	3	1	CR	LF

Date Terminator

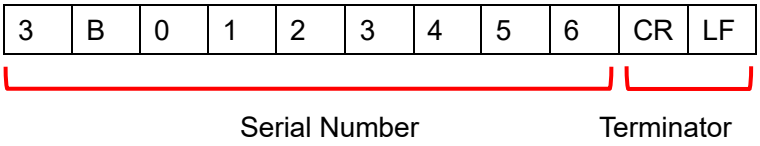
11.2.5. Output of time

- The time is output from the clock data of the product.
- 24-hour format.
- The data consists of 8 characters (excluding the terminator).



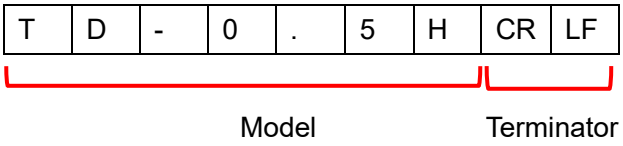
11.2.6. Output of serial number

- Outputs the product serial number.
- The data consists of 9 characters (excluding the terminator).



11.2.7. Output of model

- Outputs the product model.
- The data consists of up to 7 characters (excluding the terminator).



11.3. Command

Sending commands from a PC or PLC to the Cap Torque Tester enables requesting measurement data, key operations, and changing settings. When sending a command to the Cap Torque Tester, be sure to include a terminator (CR LF) at the end of the command string.

ASCII symbols

CR: Carriage return, ASCII 0Dh
LF: Line feed, ASCII 0Ah
<ESC>: Escape code, ASCII 1Bh
␣: Space, ASCII 20h

11.3.1. Control commands

Commands to query measurement data

Command	Description
Q	Requests the measurement data immediately.
QP	Requests the peak hold data immediately.
SIR	Requests the measurement data continuously.
C	Cancels the "SIR" command.

* While stream transmission is active by the SIR command, commands other than SIR and C are ignored.
* Stream transmission operates only when the HOME screen is displayed. It automatically stops in situations such as when the screen switches to the MENU screen or when continuous saving starts.
* If an SIR command is sent from the same port during stream transmission, the transmission continues without interruption. If an SIR command is sent from a different port than the one currently streaming, the current stream stops and a new stream begins on the port that received the SIR command.

Key control commands

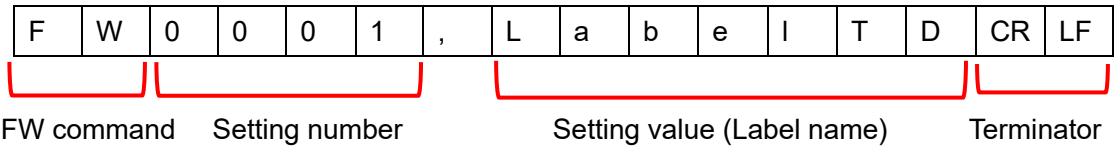
Command	Description
HOME	Moves to the HOME screen.
MEM	Same action as the [MEM], [USB SAVE FINISH], and [USB SAVE START] buttons.
MEMOK	Same action as the [SAVE] button on the measurement result screen.
MEMNG	Same action as the [DISCARD] button on the measurement result screen.
R	Same as the [RE-ZERO/RESET] button.

Commands to request or configure setting values

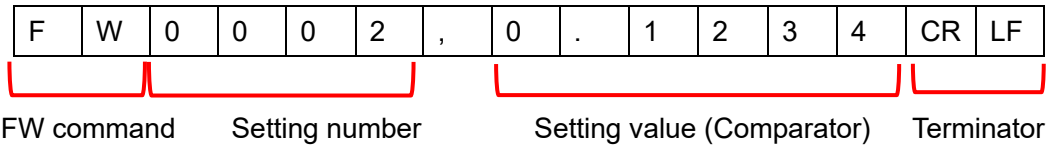
Command	Description
FR****	Requests the setting value corresponding to the setting number.
FW****,[Setting Value]	Sets the setting value corresponding to the setting number.

Note: How to use the FW command (for setting numbers, refer to "11.3.4. Setting numbers used for FR and FW commands").

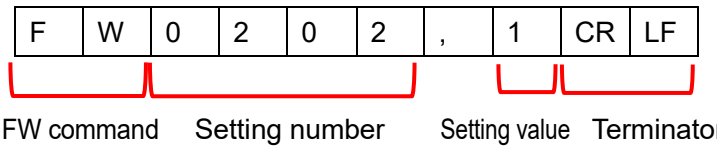
Example: Label Name



Example: Comparator 1st Low



Example: Setting Value (RS-232C baud rate)



Commands to query memory data

Command	Description
N	Requests the number of saved memory entries.
M****	Requests the memory data corresponding to the memory number. The memory number range is 0001 to 1000.
MNEW	Requests the latest saved memory data.
MALL	Requests all saved memory data.

Commands to set time and date

Command	Description
TM:**:**:**	Sets the time. To set the time to "twelve thirty-four and fifty-six seconds", the input is "TM:12:34:56". (Do not set non-existing time values.)
DT:**/**/**	Sets date. In the case of setting time to "January 23, 2026", the input is DT:2026/01/23. (Do not set non-existing date values.)
?TM	Requests the time.
?DT	Requests the date.

Commands to request other data

Command	Description
?SN	Requests the serial number.
TN	Requests the model.

11.3.2. AK code and error codes

The Cap Torque Tester will respond to all commands received from a PC or PLC.

Verifying the response code improves communication reliability.

Note: During stream transmission, commands other than SIR and C are ignored, and no error responses are returned.

The Cap Torque Tester responds as follows:

- When the Cap Torque Tester receives a command requesting various data...
  If the data can be output, the requested data is transmitted.
  If the data cannot be output, an error code (EC, Exx) is transmitted.

- When the Cap Torque Tester receives a control command...
  An AK code (acknowledgement, ASCII 06h) is transmitted upon confirmation of receiving the command and when the process is complete.
  If the command cannot be executed, an error code (EC, Exx) is transmitted.

Error code	Description and possible countermeasure
EC,E01	**Undefined command error** An undefined command was found. Example: When a setting number not listed in "11.3.4. Setting numbers used for FR and FW commands" is sent. Example: Example: When non-existent commands such as QO or MEMO are sent. Example: When a command is sent in a format that differs from its defined structure, such as TM:12/34/56. Check the transmitted command.
EC,E02	**Not ready** The received command cannot be executed. Example: When a Q command is received while not on the HOME screen. Example: When an invalid command is received during file output. Adjust the delay time for transmitting a command.
EC,E04	**Character length error** The number of characters in the received command (including the setting value for an FW command) exceeds the allowable limit of 64 characters. Check the command to transmit.
EC,E07	**Setting value error** The value of the received command has exceeded the allowed value. Example: When a value larger than the allowable range for that item is sent. Example: When setting Comparator Low, if a value greater than the currently set Comparator High is sent; or when setting Comparator High, if a value smaller than the currently set Comparator Low is sent. Example: When characters other than letters, numbers, or hyphens are sent for the label name setting. Check the setting range of the numerical value of the command.

11.3.3. Command usage examples

ASCII symbols

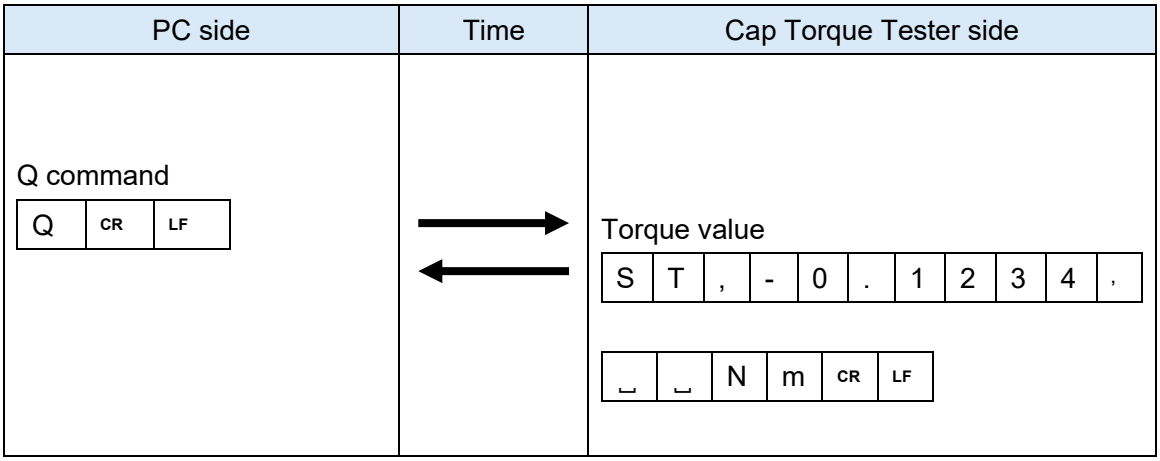
CR: Carriage return, ASCII 0Dh

LF: Line feed, ASCII 0Ah

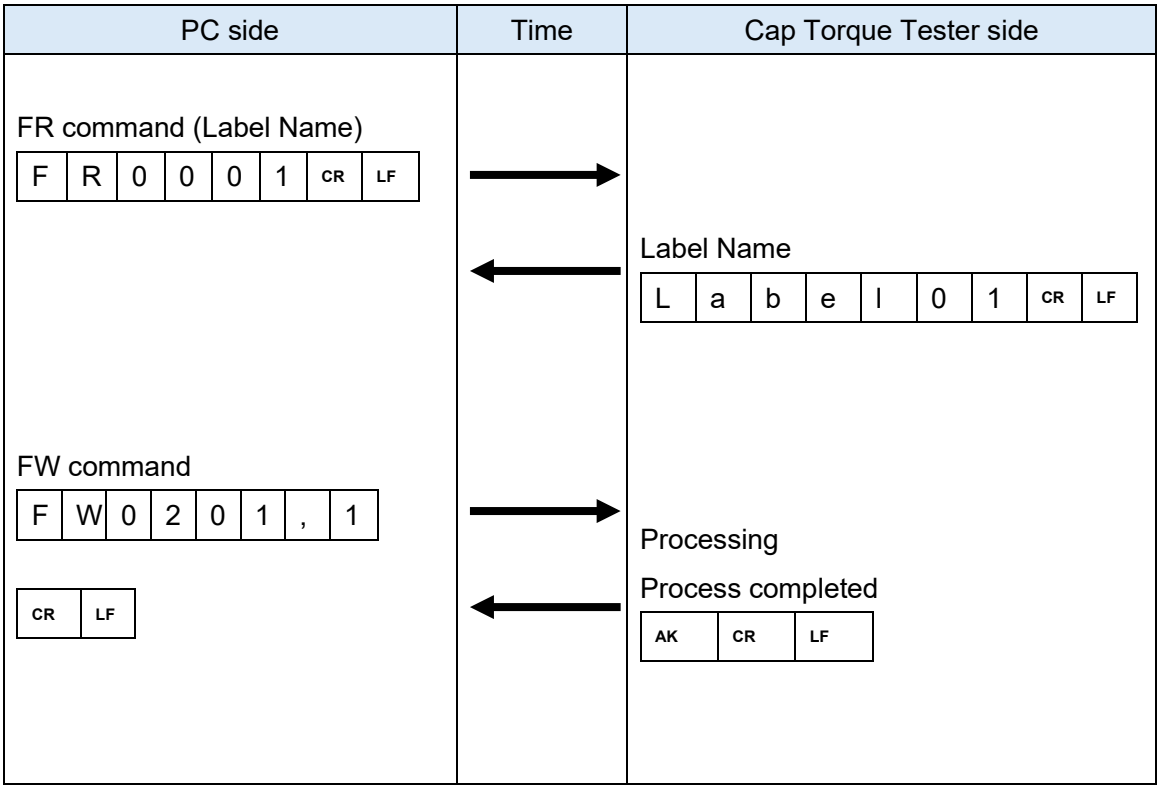
␣: Space, ASCII 20h

AK: Acknowledgement, ASCII 06h

Example of "Q command"



Example of a setting command



11.3.4. Setting numbers used for FR and FW commands

Setting Number	Setting item	Setting range
0001+20* (Label Number − 1)	Label Name	Up to 16 characters
0002+20* (Label Number − 1)	Comparator 1st Low	0 Nm ≤ setting value < 1st High
0003+20* (Label Number − 1)	Comparator 1st High	*13
0004+20* (Label Number − 1)	Comparator 2nd Low	0 Nm ≤ setting value < 2nd High
0005+20* (Label Number − 1)	Comparator 2nd High	*13
0006+20* (Label Number − 1)	Comparator 3rd Low	0 Nm ≤ setting value < 3rd High
0007+20* (Label Number − 1)	Comparator 3rd High	*13
0008+20* (Label Number − 1)	Peak Start Torque	*14
0009+20* (Label Number − 1)	Peak Detection Count	1st (0), 2nd (1), 3rd (2)
0010+20* (Label Number − 1)	Measure Mode	Free Peak Hold (0) Open Peak Hold (1), Close Peak Hold (2), Continuous Measurement (3)
0011+20* (Label Number − 1)	Unit	Nm (0), Ncm (1), lbft (2), lbin (3) *lbft (2) and lbin (3) are available only for North American models.
0012+20* (Label Number − 1)	Digital Filter	High-Response Mode (0), Normal (1), Static Mode (2)
0013+20* (Label Number − 1)	Polarity	Positive (0), Negative (1)
0014+20* (Label Number − 1)	Auto Reset	OFF (0), ON (1)
0201	RS-232C Connect Mode	PC Connection (0), Printer Connection (1)
0202	RS-232C Baud Rate	38400 bps (0), 19200 bps (1), 9600 bps (2), 4800 bps (3), 2400 bps (4), 1200 bps (5), 600 bps (6)
0203	RS-232C Bit Length / Parity	7 bit / Even (0), 7 bit / Odd (1), 8 bit / None (2)
0204	USB Type-C Baud Rate	115200 bps (0), 57600 bps (1), 38400 bps (2), 19200 bps (3), 9600 bps (4), 4800 bps (5), 2400 bps (6)
0205	USB Type-C Bit Length	7 bit (0), 8 bit (1)
0206	USB Type-C Parity Bit	None (0), Odd (1), Even (2)
0207	Display Brightness	1 (Min), 2 (Low), 3 (Max)

Setting item	Setting item	Setting range
0208	Touch Sound Volume	0 (Mute), 1 (Min), 2 (Low), 3 (Max)
0209	Function Key Settings	HOME (0), MEM (1), RE-ZERO / RESET (2), MEM+RESET (3)
0210	Language Settings	English (0), Japanese (1)
0211	Measurement Settings Lock	OFF (0), ON (1)
0212	Communication Settings Lock	OFF (0), ON (1)
0213	System Settings Lock	OFF (0), ON (1)
0214	Statistics Display Unit	Nm (0), Ncm (1), lbft (2), lbin (3) *lbft (2) and lbin (3) are available only for North American models.
0215	Meas. Direction Filter	ALL (0), Open (1), Close (2)
0216	Result Filter	ALL (0), OK (1), NG (2), NG (Low) (3), NG (High) (4)
0217	Label Filter	ALL (0), Filtered (1)
0218	Label Filter Name	Up to 16 characters

*13 The number of decimal places in the default value and the setting range differ depending on the model.

Model	Low default value	High default value	High setting range
TD-0.5H	0.0500	0.4500	Low < setting value ≤ 0.9999 Nm
TD-2H	0.200	1.800	Low < setting value ≤ 9.999 Nm
TD-5H	0.500	4.500	Low < setting value ≤ 9.999 Nm
TD-10H	1.00	9.00	Low < setting value ≤ 99.99 Nm

*14 The default value and the setting range differ depending on the model.

Model	Default	Setting range
TD-0.5H	0.0250	0.0250 Nm < setting value ≤ 0.9999 Nm
TD-2H	0.100	0.100 Nm < setting value ≤ 9.999 Nm
TD-5H	0.250	0.250 Nm < setting value ≤ 9.999 Nm
TD-10H	0.50	0.50 Nm < setting value ≤ 99.99 Nm

12. Data Output

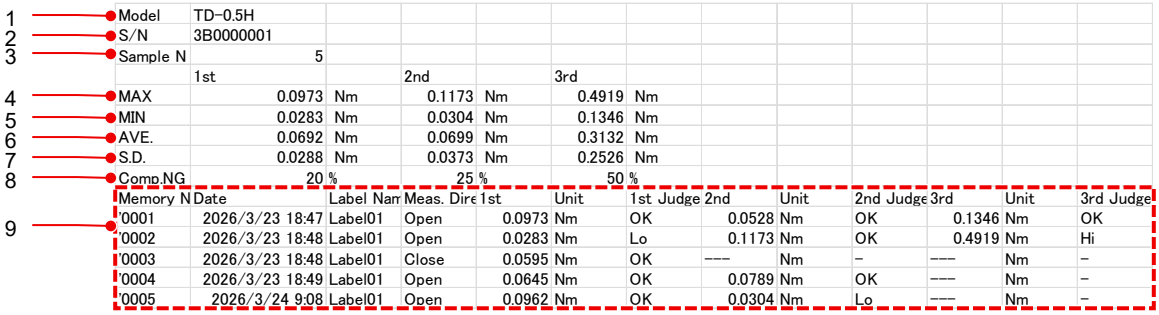
12.1. USB Output File Format

The Cap Torque Tester allows saving measurement data and settings files to a USB memory stick connected to the USB Type-A connector, enabling easy transfer to a Windows PC.

Note: Saving is not possible if the remaining free space on the USB memory stick is 2 MB or less.

- USB Output File Format
  - Single saved data (when output to USB using the USB Memory Output button)
    File name: TD-MemoryData.csv

Example



1	Model	TD-0.5H													
2	S/N	3B0000001													
3	Sample N	5													
		1st		2nd		3rd									
4	MAX	0.0973	Nm	0.1173	Nm	0.4919	Nm								
5	MIN	0.0283	Nm	0.0304	Nm	0.1346	Nm								
6	AVE.	0.0692	Nm	0.0699	Nm	0.3132	Nm								
7	S.D.	0.0288	Nm	0.0373	Nm	0.2526	Nm								
8	Comp.NG	20	%	25	%	50	%								
	Memory N	Date	Label Nam	Meas. Dire	1st	Unit	1st Judge	2nd	Unit	2nd Judge	3rd	Unit	3rd Judge		
9	0001	2026/3/23 18:47	Label01	Open	0.0973	Nm	OK	0.0528	Nm	OK	0.1346	Nm	OK		
	0002	2026/3/23 18:48	Label01	Open	0.0283	Nm	Lo	0.1173	Nm	OK	0.4919	Nm	Hi		
	0003	2026/3/23 18:48	Label01	Close	0.0595	Nm	OK	---	Nm	-	---	Nm	-		
	0004	2026/3/23 18:49	Label01	Open	0.0645	Nm	OK	0.0789	Nm	OK	---	Nm	-		
	0005	2026/3/24 9:08	Label01	Open	0.0962	Nm	OK	0.0304	Nm	Lo	---	Nm	-		

No.	Name	Description
1	Model	Displays the product model.
2	S/N	Displays the serial number.
3	Sample N	Displays the sample count.
4	MAX	Displays the maximum value for each peak. Unit is fixed to Nm.
5	MIN	Displays the minimum value for each peak. Unit is fixed to Nm.
6	AVE.	Displays the average value for each peak. Unit is fixed to Nm.
7	S.D.	Displays the standard deviation for each peak. Unit is fixed to Nm.
8	Comp.NG Rate	Displays the NG rate for each peak.
9	Detailed Data	Memory Number: Displays the memory number. Date: Displays the saved date and time in yyyy/mm/dd hh:mm:ss format. Label Name: Displays the label name. Meas. Direction: Displays the measurement direction. 1st: Displays the 1st peak value. Unit: Displays the unit. Unit is fixed to Nm. 1st Judge: Displays the 1st peak judgment result. 2nd: Displays the 2nd peak value. Unit is fixed to Nm. 2nd Judge: Displays the 2nd peak judgment result. 3rd: Displays the 3rd peak value. Unit is fixed to Nm. 3rd Judge: Displays the 3rd peak judgment result.

- Single Saved Data (when exported to USB using the [MEM] button)

  File name: TD-TorqueData.csv

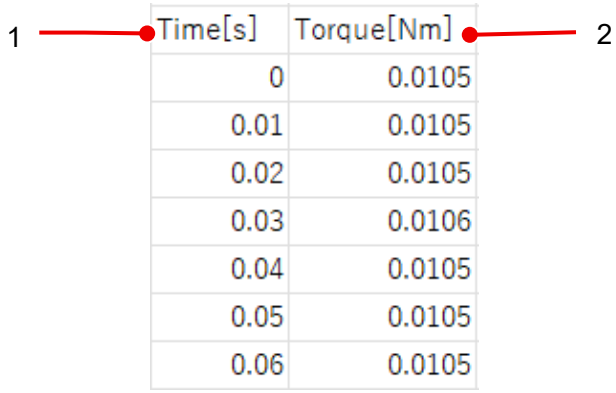
Memory N	Date	Label Nam	Meas. Dire	1st	Unit	1st Judge	2nd	Unit	2nd Judge	3rd	Unit	3rd Judge
'0005	2026/3/23 18:50	Label01	Open	0.0763	Nm	OK	0.4758	Nm	Hi	---	Nm	–

  When output to USB using the USB Memory Output button, the contents are the same as item 9 "Detailed Data" in TD-MemoryData.csv.

- Continuous saved data

  Continuous saving is performed at 100 times per second.

  File name: yyyymmdd_hhmmss_TorqueMeter.csv



Time[s]	Torque[Nm]
0	0.0105
0.01	0.0105
0.02	0.0105
0.03	0.0106
0.04	0.0105
0.05	0.0105
0.06	0.0105

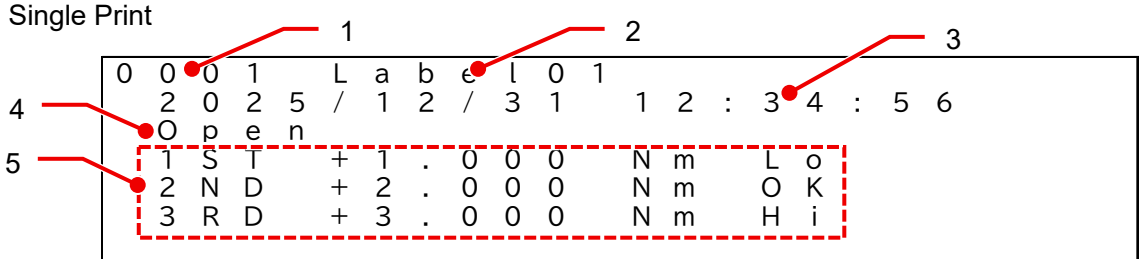
No.	Name	Description
1	Timestamp	Displays the timestamp at 0.01-second intervals.
2	Torque Value	Displays the torque value. The unit as configured in the unit setting.

12.2. Printer Output Format

The Cap Torque Tester can print measurement data by connecting a printer to the RS-232C connector. Set the connection mode to "Printer Connection" in "8.5. Communication Settings". To select single-print or all-print output, refer to "8.8.3. Printer output".

- Single-print example and print format

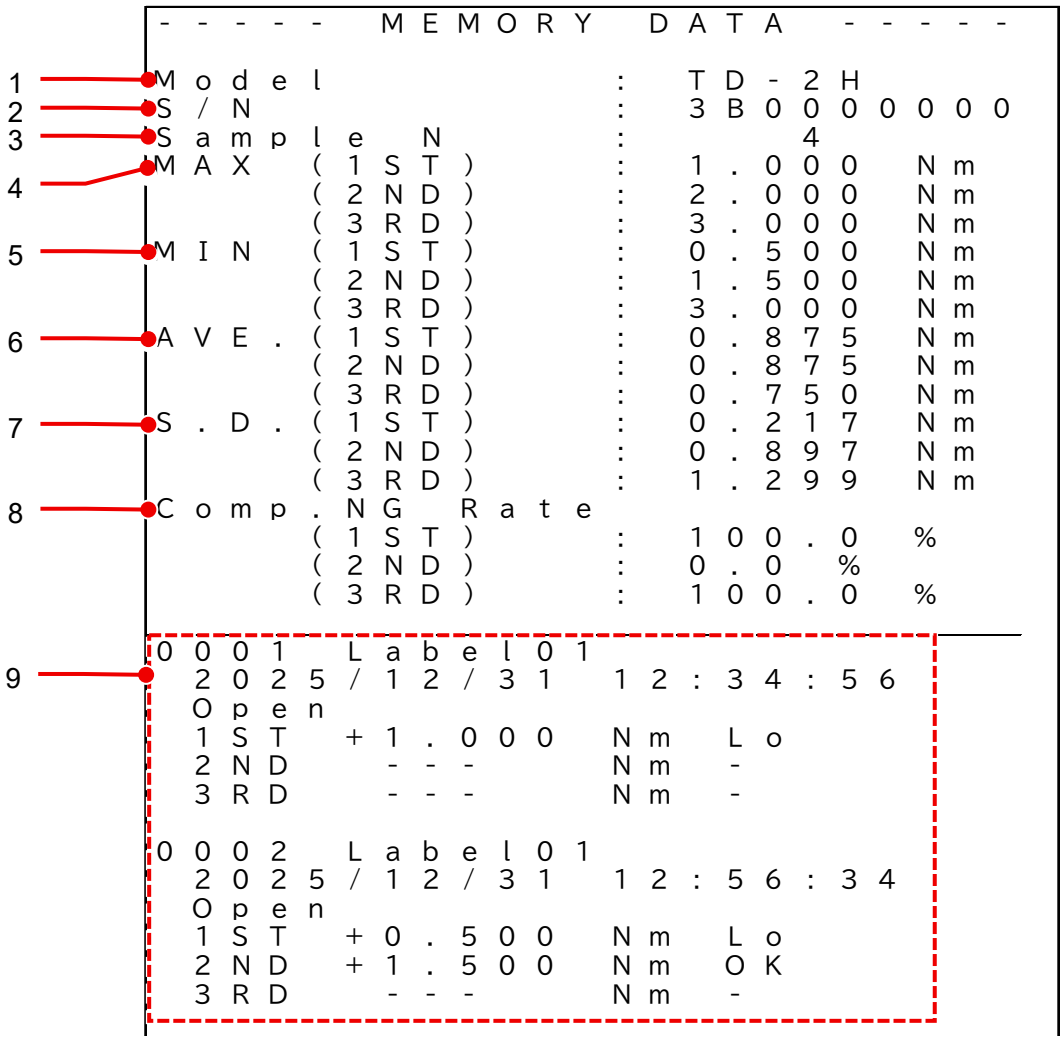
Single Print



No.	Name	Description
1	MEMNo.	Displays the memory number.
2	Label Name	Displays the label name.
3	Date	Displays the date and time.
4	Meas. Direction	Displays the measurement direction (Open, Close).
5	Measurement Data	Displays the measurement data. Unit is fixed to Nm. If the open peak detection count is set to 1st, the 2nd and 3rd values are shown as “–”. Judgment results are shown as Lo for Low, Hi for High, and OK for Pass.

All-print example and print format

All Print



No.	Name	Description
1	Model	Displays the product model.
2	S/N	Displays the serial number.
3	Sample N	Displays the sample count.
4	MAX	Displays the maximum value for each peak.
5	MIN	Displays the minimum value for each peak.
6	AVE.	Displays the average value for each peak.
7	S.D.	Displays the standard deviation for each peak.
8	Comp.NG Rate	Displays the NG rate for each peak.
9	Detailed Data	Displays the same contents as single print.

12.3. Settings File Format

The Cap Torque Tester can import and export settings files by connecting to a PC via the RS-232C connector or USB Type-C connector (communication), or by using a USB memory stick. Using settings files allows batch changes to label-linked configurations.

The TD-H series supports importing and exporting ten labels at once.

Note: The settings file cannot be exported if the remaining free space on the USB memory stick is 2 MB or less.

- For the TD-H series

  Settings file name: Label_01_******.xml (******: Label Name)
  Label_02_******.xml (******: Label Name)
  Label_03_******.xml (******: Label Name)
  Label_04_******.xml (******: Label Name)
  Label_05_******.xml (******: Label Name)
  Label_06_******.xml (******: Label Name)
  Label_07_******.xml (******: Label Name)
  Label_08_******.xml (******: Label Name)
  Label_09_******.xml (******: Label Name)
  Label_10_******.xml (******: Label Name)
  TD-commonSettingFile.xml (Common settings file)

Editing the label number in the settings file name allows you to change which label the settings apply to.

Example: Label01_COLA.xml → Settings applied to label number 1
To apply the settings of Label01_COLA.xml to label number 2, rename the file to Label02_COLA.xml.

Caution

When importing settings files, all of the settings files above must be present as all of the information for labels 1 to 10 is imported at once. If any file is missing, “Required files are missing” is displayed.

- Contents included in Label_n_******.xml (n: 01–10, ******: Label Name)
  - Label Name
  - Comparator settings
  - Peak start torque settings
  - Peak detection count settings
  - Measurement mode settings
  - Unit setting
  - Digital filter settings
  - Polarity setting
  - Auto reset settings

- Contents Included in TD-commonSettingFile.xml
  - Comm. Settings
  - System Settings
  - Admin Settings
  - Statistics filter settings

13. Display

If an error is displayed on the product or if abnormal operation is observed, first check the items in "13.1. Error Display List". If the issue is still not resolved or if symptoms not listed below occur, please contact your local A&D dealer.

13.1. Error Display List

Display	Description and possible countermeasure
Over Torque!!	Overload error The torque value has exceeded 101% of the upper measurement limit. A warning is displayed on the screen and the buzzer sounds. Reduce the torque to 101% or less. The warning disappears once the torque is below 101%.
[ERROR]--FRAM	FRAM read error Displayed when FRAM readout fails. If this error appears, repair is required. Please contact your local A&D dealer.
[ERROR]--ADC	ADC error Displayed when ADC initialization fails or when measurement values or zero point are abnormal. If this error appears, repair is required. Please contact your local A&D dealer.
Memory capacity has reached the upper limit. Please clean up memory.	Maximum saved-data error Displayed when the saved-data count reaches the maximum of 1000 entries. Delete unnecessary data to free memory.

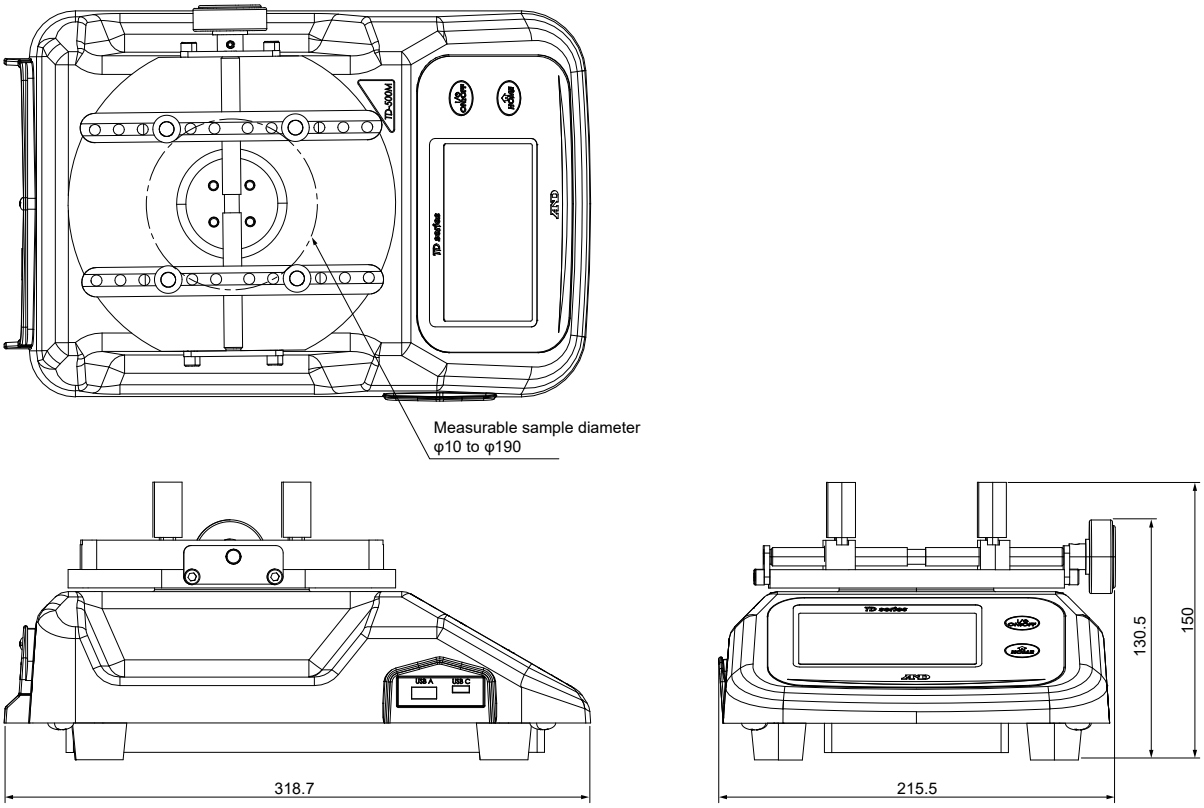
14. Specifications

14.1. Specifications Table

Cap Torque Tester TD-H Series						
Product model		**TD-0.5H**	**TD-2H**	**TD-5H**	**TD-10H**	**Unit**
Full scale (F.S.)		0.5	2	5	10	N·m
Measurement range		-0.5050 to 0.0000 0.0000 to 0.5050	-2.020 to 0.000 0.000 to 2.020	-5.050 to 0.000 0.000 to 5.050	-10.10 to 0.00 0.00 to 10.10	N·m
Display resolution		0.0001	0.001	0.001	0.01	N·m
*lbft and lbin are available		0.01	0.1	0.1	1	N·cm
only for North American		0.0001	0.001	0.001	0.01	lbft
models.		0.001	0.01	0.01	0.1	lbin
Accuracy		±0.3				%F.S.
Supported workpiece (Chuck range)		φ10 to φ190				mm
Supported workpiece (Max. mass)		1 or less	7			kg
		Note: For the TD-0.5H, when the load exceeds 1 kg and is up to 5 kg, the accuracy is ±0.5% F.S.				
Mass		Approx. 6			Approx. 9	kg
Overload display		When the torque value exceeds 101% of the upper limit of the measurement range, "Over Torque!!" is shown on the LCD, and the buzzer sounds.				
Measurement modes		Peak Hold (Free / Open / Close), Continuous Measurement				
Memory	Number of memory entries	Up to 1000 entries can be stored, including the 1st, 2nd, and 3rd open peaks and the close peak.				
	Statistical processing	Average, maximum, minimum, standard deviation, defect rate				
Judgment function		Judgment is possible for the 1st, 2nd, and 3rd open peaks as well as the close peak.				
Clock function		Records date and time with torque data in internal memory				
Data output	USB Type-C	USB 2.0 or higher; communicates memory data, settings, and torque values				
	RS-232C	Prints memory data using an RS-232C compatible printer Recommended printer: AD-8129TH (A&D), includes dedicated printer cable				
	USB Type-A	Transfers memory data and setting files to a USB memory stick				
External output		Comparator upper limit output, comparator lower limit output, overload output				
Supported software		WinCT-TD PC software (data acquisition supported) Note: Available as a free download from the A&D website				
Power supply		Main unit: DC 5 V / 1 A				
		Dedicated AC adapter (included): AC 100 to 240 V, 50 to 60 Hz				
Built-in battery		BR2032 coin type lithium battery (used only for the clock function)				
Dimensions		216 mm (W) × 319 mm (D) × 150 mm (H) (height includes holding pins)				
Operating environment		Temperature: 0 to 40°C, Humidity: 85% RH or less (non condensing)				

14.2. External Dimensions

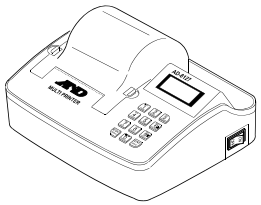
TD-H Series



Unit: mm

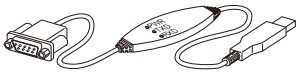
14.3. Peripheral Devices

AD-8129TH: Compact thermal printer



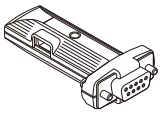
- A small direct thermal printer that connects to the Cap Torque Tester via the RS-232C interface.
- Offers multiple functions, including date / time printing, statistical-calculation printing, interval mode, and chart mode.

AX-USB-9P: USB converter



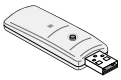
- Converts the Cap Torque Tester's RS-232C interface to USB.
- Driver installation is required.

AD-8541-SCALE: Bluetooth® converter (for PC connection)



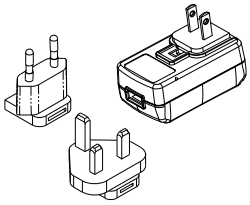
- Enables wireless (Bluetooth®) communication between the Cap Torque Tester and a PC at distances of up to 10 meters.

AD-8541-PC: Bluetooth® dongle for PC



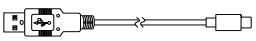
- Enables wireless (Bluetooth®) communication between the Cap Torque Tester and a PC at distances of up to 10 meters.
- Driver installation is required.

AX-TB301: AC adapter



- AC adapter for use with the Cap Torque Tester.
- Includes Type C and Type G plugs.
- Please note that a USB cable is not included.

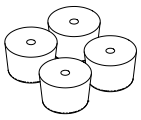
AX-KO7215-150: USB power cable



- A USB power cable used with the Cap Torque Tester.

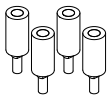
14.4. Options

TD-RUBBERFEET: Rubber Feet(TD)(with screws, 4 pcs)



- Rubber feet attached to the bottom of the Cap Torque Tester. (Includes four M5×25 mounting screws.)
- Replacement parts for when the original rubber feet are lost or damaged.
  One set contains four pieces.

TD-PIN-1: Holding Pin1(TD)(Rubber, 4 pcs)



- Standard accessory holding pins used to secure the test object.
  One set contains four pieces.

15. Maintenance

15.1. Caring for the Cap Torque Tester

- Wipe off dirt using a soft cloth slightly moistened with neutral detergent.
- Do not use organic solvents or chemical cleaning cloths.
- Do not disassemble the Cap Torque Tester.
- When transporting the Cap Torque Tester, use the packing materials and box in which it was originally packed at the time of purchase.

15.2. Storage Method

- Avoid high temperature, high humidity, and direct sunlight.
  Changes in temperature or humidity may cause deterioration or malfunction of internal components. Store in a stable environment.
- Avoid locations with dust, oil, moisture, or chemicals.
  Dirt adhering to the product may affect operation or measurement accuracy. Store in a clean environment.
- Avoid areas with vibration or unstable surfaces.
  As this is a precision instrument, store it in a stable location with minimal vibration or impact.
- Store the product in its dedicated packing box.
  To protect the product from drops or shocks, store it in the dedicated packing box.

15.3. Calibration and Repair

Calibration services are available for a fee.
To maintain measurement accuracy, periodic calibration is recommended.
For information on cost and lead time, contact your local A&D dealer.
Settings and memory data may be reset to factory defaults during calibration, so record them beforehand.
For repair requests as well, please contact your local A&D dealer. Provide details such as model, serial number, and failure symptoms.
To prevent damage, return the product in its dedicated packing box.

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