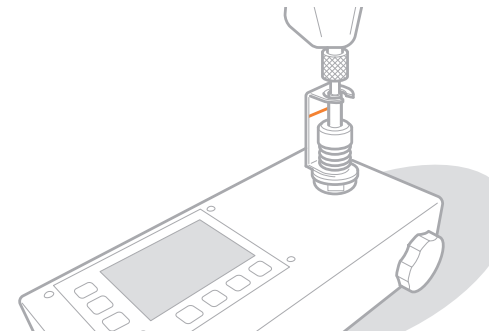
Digital Torque Meter

HP-100 / HP-10

Operation Manual

Table of Contents



Important Safety Instructions

Before using the device, please carefully read this document to use it correctly. As warnings, cautions and important notes written in this document are for preventing injury of users and other people, and damage to property, please make sure to observe them. Please note that HIOS is not liable for any damages caused as a result of negligence of such warnings, cautions and important notes while using, improper usage, or repair or alternation of the device by other than HIOS or a third party specified by HIOS.

⚠ WARNING

Indicates a warning concerning operations that may lead to death or injury to persons if not performed correctly. To use the machine safely, always pay attention to these warnings.

⚠ CAUTION

Indicates a caution concerning operations that may lead to injury to persons if not performed correctly. To use the machine safely, always pay attention to these cautions.

⚠ IMPORTANT

Indicates operational requirements and restrictions. Be sure to read these items carefully to operate the machine correctly, and avoid damage to the machine or property.

Installation

To use this device safely and comfortably, carefully read the following precautions and install the machine in an appropriate location.

⚠ WARNING

- Do not install it where there is a risk of fire or electric shock:
- A place with high humidity or excessive dust
- Outdoor or a place exposed to direct sunlight
- A place with high temperature
- A place with flame
- A place close to flammable solvents such as alcohol and thinner

Other Warnings

- Do not connect the device to anything that is not specified by HIOS. Otherwise, fire or electric shock may be caused.
- Do not put metals like jewelry or containers containing liquid on the device. If such article contacts with any electric component, etc., inside the device, fire or electric shock may be caused.
- Before attaching/detaching replacement parts, etc., please turn off the power of the device and unplug it from the power source. If the power cord is damaged, fire or electric shock may be caused.

⚠ CAUTION

Do not install it to the following places:

There is a risk of falling or collapse leading to injury.

- Unstable place
- A place with vibration

Other notes

- When installing the device, do it carefully and slowly so that your hand is not caught between the device and ceiling and/or walls. Otherwise, injury may be caused.

⚠ IMPORTANT

Do not install it to the following places:

Otherwise, a malfunction of the device may be caused.

- A place where there are extreme fluctuations in temperature and/or humidity.
- Experience lab etc., where chemical reactions can occur.
- A place where corrosive and/or toxic gas is likely to be contained in the air.
- A place where distortion and/or sinking is likely to occur due to the weight of the device.

Do not install it in any place where condensation occurs:

If you do any of the following, water droplets (condensation) may occur inside the device, and if you continue using the device in such condition, it may cause sensor failure or a malfunction. Leave the device for a

while to adjust it to the ambient temperature and humidity before use.

- When the room is quickly heated
- When the device is moved from a place with low temperature or humidity to a place with high temperature or humidity

Power Supply

WARNING

- Do not use the device with a power supply and voltage other than the ones specified. Otherwise, fire or electric shock may be caused.
- Do not use a power cord other than the supplied one. Otherwise, fire or electric shock may be caused.
- Do not damage, modify, pull, or forcefully bend the power cord. Also, do not put heavy objects on the power cord. Otherwise, fire or electric shock may be caused.
- Do not plug/unplug the power cord with a wet hand. Otherwise, electric shock may be caused.
- Do not plug multiple power cords into one outlet or use an extension cord. Otherwise, fire or electric shock may be caused.
- Do not bundle or tie the power cord. Otherwise, fire or electric shock may be caused.
- Insert the power plug firmly into the outlet. Failure to firmly plug in the power cord can result in fire or electric shock.
- If lightning occurs, unplug the power cord from the outlet. Otherwise, fire, electric shock, or a malfunction may be caused.

CAUTION

- Do not place objects around the power plug. It should be disconnected immediately in an emergency.

IMPORTANT

When connecting the power supply:

- Do not connect the power cord to an uninterruptible power supply.
- If the device is connected to an outlet that has multiple connectors, do not connect other devices to the remaining connectors.
- We recommend to use an outlet wired through an indoor ground fault breaker. Connecting the ground wire of the device can prevent not only electric shock but also fires caused by a combination of peculiar conditions.

Other Note

- Electrical noise can cause the device to malfunction.
- The product that you have purchased contains a rechargeable battery. The battery is recyclable. At the end of it's useful life, under various state and local laws, it may be illegal to dispose of this battery into the municipal waste stream. Check with your local solid waste officials for details in your area for recycling options or proper disposal.

Handling

WARNING

- If there is a strange noise, smell, heat or smoke, immediately unplug the power cord from the outlet and contact your dealer. Using the device without solving these problems may cause fire or electric shock.
- Do not disassemble or modify the device. It may cause a malfunction or be subject to legal penalty.
- Do not disassemble or modify accessories. Otherwise, a malfunction of the device may be caused.
- Do not allow children to reach for power cords, cables, internal components, electrical components, etc. It may cause an unexpected accident.
- Do not use flammable spray near the device. If any foreign substances such as gas adheres to the electrical components inside the device, fire or electric shock may be caused.
- When moving the device, make sure to turn off the power before unplugging the power plug. Moving the device without turning off the power can damage the power cord and cause fire or electric shock.

CAUTION

- Do not put heavy objects on the device. The object may collapse or fall down and cause injury.
- If you do not use this unit for a long time, unplug the plug from the outlet for safety.
- Please do not wear fluttering cuffs, gloves, ties, etc. When measuring a rotating object such as a screwdriver, getting caught in the rotation may cause an injury or malfunction.
- Wear suitable clothing for work. Cover long hair with a hat etc., so that you can work safely.

CAUTION

Other Note

- Do not apply strong impact to this device.
- Do not apply more torque than the allowable range. Otherwise, the interior of the detector may be

damaged.

- Do not measure devices that cause continuous impact, such as air screwdrivers and impact wrenches. Otherwise, a malfunction of the device may be caused.

Maintenance and Inspections

WARNING

Clean the device regularly. If dust accumulates, the device may not operate properly.

When performing maintenance, be sure to check the following information. If you encounter any operational problems, refer to "Troubleshooting." If this does not solve the problem, or if you think an inspection is necessary, contact your dealer or HIOS.

- Be sure to turn off the power and unplug the power cord from the outlet before cleaning the device. Cleaning without doing this may cause fire or electric shock.
- Periodically unplug the power cord, and wipe off dust and dirt with a dry cloth. Dust absorbs moisture and current flows, and that may cause fire.
- Check power cords and plugs periodically for heat, rust, bends, scratches, and cracks. Continued use in damaged condition may cause fire and electric shock.

IMPORTANT

- Do not store the device in a place where temperature and humidity change rapidly and condensation is likely to occur.

Other Notes

- Keep the device charged at about 50%. Charge the device several times a year even during storage.

Radio Frequency Interference

This product uses the 2.4 GHz bandwidth. Although you do not need a radio station license to use this product, please note the following:

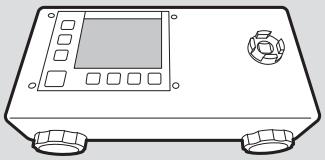
- In addition to microwave ovens and other industrial, scientific, and medical equipment, the 2.4 GHz bandwidth is operated by other radio stations of the same type, private radio stations for mobile identification that require a license to be used on factory production lines, certain low-power radio stations that do not require a license, and amateur radio stations. Before using the device, make sure that no other radio station is operating nearby in order to prevent radio interference with other radio equipment.
- Do not use it near medical devices. Radio waves from the device can affect medical devices and cause accidents due to a malfunction.
- Place the device in a place with no shielding as much as possible. It is difficult to connect when communicating over walls or between floors.

Contains Modular FCC ID:2AC7Z-ESP32WROOM32E

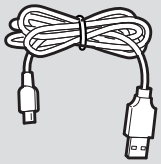
Checking Supplied Accessories

If anything is missing or damaged, please contact the dealer from whom you purchased this device.

Device

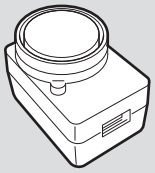


USB Cable

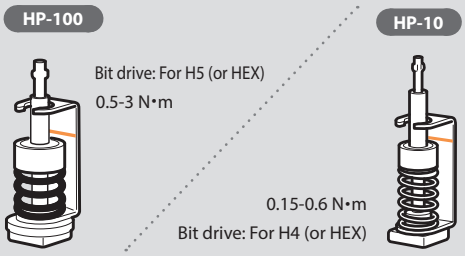


Micro USB Type-B×USB Type-A

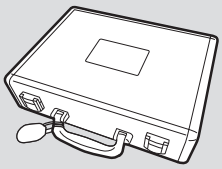
AC Adapter



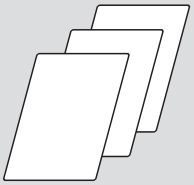
Fidaptor



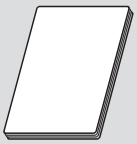
Case



Inspection Certificate, Calibration Sheet etc.



Manual

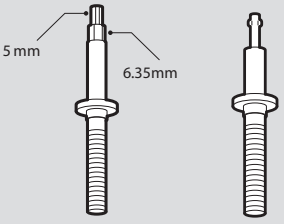


Only for HP-100 (HIOS Bit Drive Type)

Grease

For Fidaptor

Threaded Shafts



HEX (2-step shaft) H4

Fidaptor Spring

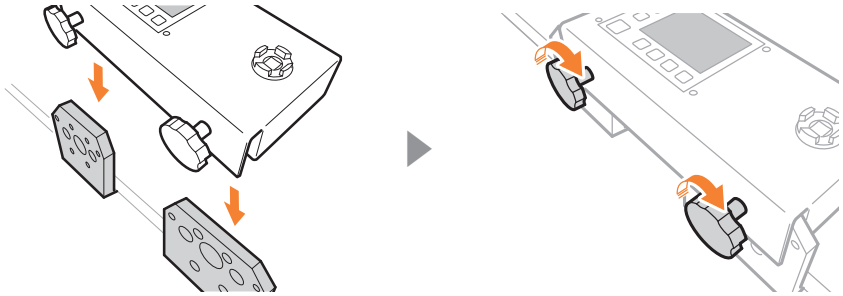
0.15-0.6 N • m

Installation

Fixing the Device

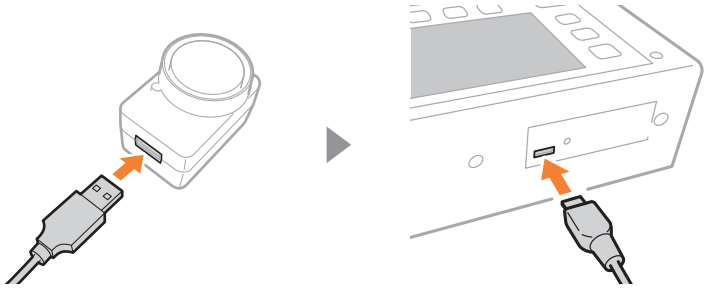
1 Fix the device if necessary.

- Secure the brim with the L-shaped angle and fix it with the fixing handle.

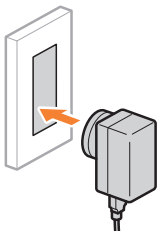


Connecting to the Power Supply

1 Connect the USB cable to the device and the AC adapter.



2 Plug the AC adapter to the outlet.



NOTE

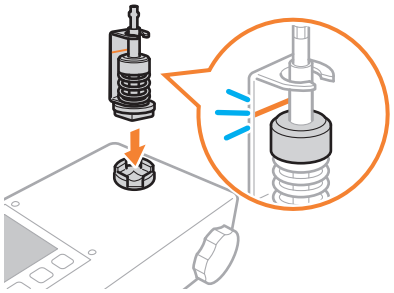
- You can also use this device without power from the outlet. The battery lasts up to 2.5 hours.

Setting the Fidaptor

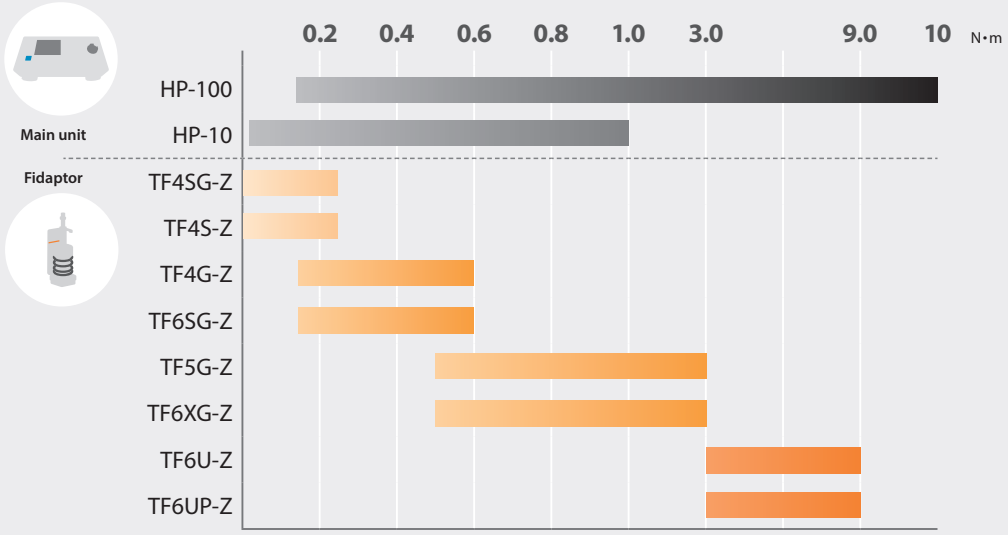
Set the bundled Fidaptor to the socket. The Fidaptor is ideal for measuring the set torque value of a clutch type electric screwdriver.

1 Set the Fidaptor to the socket

- Make sure that the torque to be measured is within the measurement range of the device or Fidaptor.
- Make sure that the Fidaptor is loosened to the limit line.



Measuring Range of Main Unit and Fidaptor

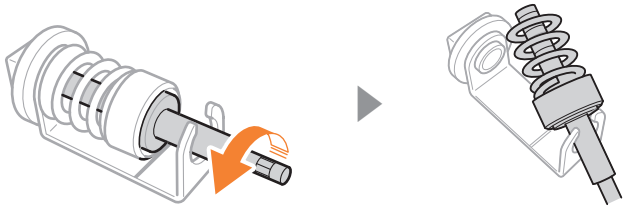


Changing Shaft and Spring (HP-100)

If the Bit drive of the screwdriver doesn't match with the Fidaptor, or if you want to measure a different torque range, replace it with the bundled shaft or spring.

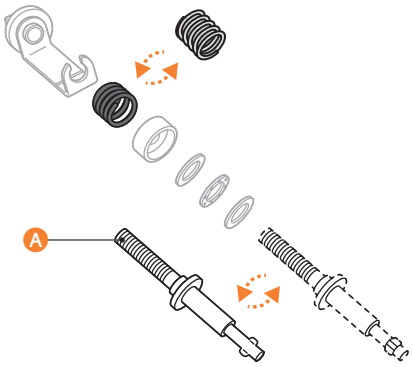
1 Turn the shaft counterclockwise.

- When the device comes off the mount, tilt the shaft to remove it.



2 Change shafts and springs if necessary.

- Apply grease to the threaded portion Ⓐ of the shaft.

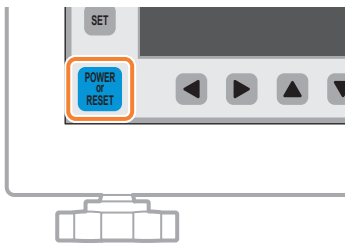


3 Assemble back the parts.

Turn on the Power

Zero-adjustment is performed automatically when the power is turned on.

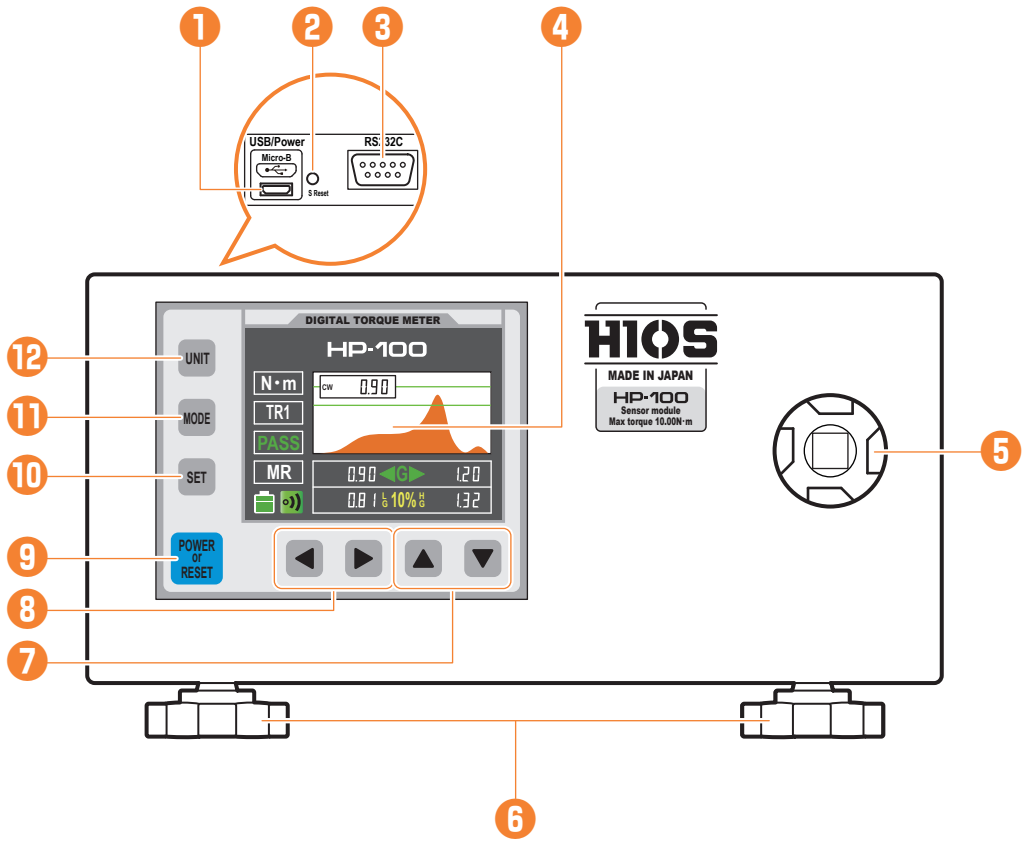
1 Press POWER or RESET.



- To turn off the power, press and hold POWER or RESET.

Names and Functions of Components

Main Unit and Operation Panel



1 USB port (Micro USB Type-B)

Use the bundled cable to connect to the AC adapter or to send measurement data to PC.

2 S Reset button

The software can be forcefully reset with this button. Use this function in the event that the system becomes unstable and you want to restore the system to the state immediately after startup.

3 RS-232C port (optional)

Outputs measurement data.

4 Display

The measurement value, operation status such as pass/fail judgment, and error status are displayed. You can also make settings by looking at the display. "Display" (P. 12)

❺ Socket

Set the Fidaptor and attachments of items to be measured.

❻ Fixing handle

Secures the device to the L-shaped angle.

❼ ▲ ▼ buttons

- Changes the setting value.

❽ ◀ ▶ buttons

- If this button is pressed while setting pass/fail judgment values, the cursor moves left and right.

❾ POWER or RESET button

- This switch turns power on/off.
- Outputs measurement values and resets the display.

❿ SET button

- If this button is pressed and held, auto reset time, buzzer sound, and pass/fail judgment can be set.
  "Various Settings" (P. 21)
- If this button is pressed while in TR1/TR2 mode, the measurement value display position is changed.
- If this button is pressed while in setting mode, setting item moves to the next.

⓫ MODE button

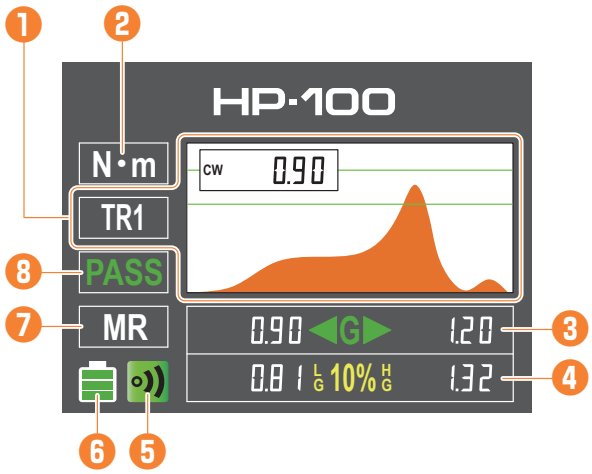
Switches the measurement mode. "Switching the Measurement Mode" (P. 16)

⓬ UNIT button

Switches the unit of measurement. "Switching the Unit" (P. 24)

Display

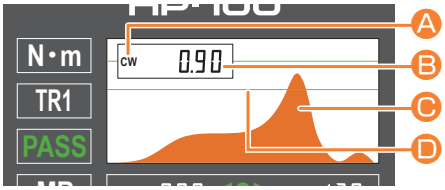
The display shows not only the measured values but also the torque waveform and pass/fail judgment settings. You can also view information such as battery level and communication status on the display.



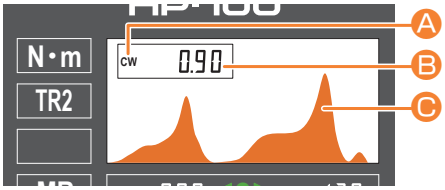
1 Measurement mode

Press MODE to display the functions of each mode. "Switching the Measurement Mode" (P. 16)

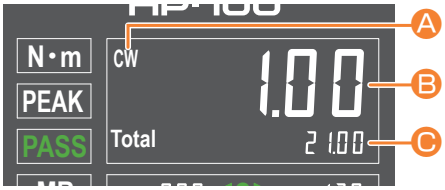
TR1: Fluctuation in torque from start to end of the measurement is displayed as a waveform, and the peak torque value is displayed as a fixed numerical value. When the load is out of the measurement range, the measurement is terminated.



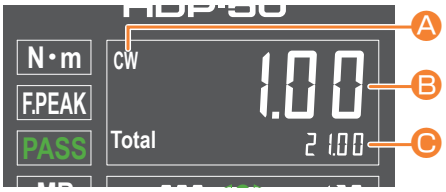
TR2: The value of the load applied to the detector is displayed as it is. Even if the load is outside the measurement range, it can be measured continuously. You cannot use pass/fail judgment.



PEAK: The highest actual measured value (peak value) during measurement is displayed. When CCW is selected, a minus sign is displayed.



F.PEAK: Slip torque of the additional fastening is displayed. The first peak down is detected and displayed in a numerical value.



Ⓐ Rotation direction

Displays the direction in which the measurement joint is turned.

CW: Clockwise

CCW: Counterclockwise

Ⓑ Measurement torque

The measured torque is displayed. In PEAK/F.PEAK/TR1 mode, the peak torque is displayed. In TR2 mode, the load applied to the detector is displayed.

Ⓒ Cumulative torque

Cumulative torque from the start of measurement to the present is displayed. A numeric value is displayed in PEAK/F.PEAK mode, and a waveform image is displayed in TR1/TR2 mode.

Ⓓ Judgment threshold line

Displays the upper and lower limits set for the pass/fail judgment threshold.

❷ Unit

The unit is displayed. "Switching the Unit" (P. 24)

❸ Pass/fail judgment threshold

Displays the reference value for determining whether the measured peak value passes or fails. You cannot use this function in TR2 mode. "Setting PASS/Fail Judgment" (P. 22)

❹ Acceptable range for pass/fail judgment

Sets the acceptable range to the numeric value set by the pass/fail judgment threshold. "Setting PASS/Fail Judgment" (P. 22)

❺ Buzzer

Displays the status of the buzzer sound. "Adjusting Sound Volume" (P. 21)

❻ Battery

Displays the device's battery level or charging status. When the battery is low, an image of the battery that has little battery appears. To charge the device, plug it in to a power outlet using the supplied USB cable and AC adapter. "Connecting to the Power Supply" (P. 07)

: Fully charged or almost fully charged

: Low battery

: Charging

❼ Auto reset mode

The auto reset mode is displayed. The display is automatically reset and the data is sent when the set time elapses after the measurement is finished. "Auto Reset" (P. 21)

❽ Pass/fail judgment result

Displays the judgment result of the measured value based on the pass/fail judgment threshold.
PASS: Within threshold
Fail: Outside threshold
OFF: Judgment function disabled

Auto Power Off Mode

The screen saver starts automatically after a certain period of inactivity. In addition, after a certain time has passed since the screen saver was activated, the device enters the auto power off mode, which automatically turns off the power.
The screen saver is a function that adjusts the brightness of the display to prevent its damage such as partial burn-in or deterioration, and to reduce power consumption.

Screen saver or auto power off doesn't work when:

- Something is in process on the device in the background
- Adjustment, data output, etc., is in process on the device
- The device is receiving external signals regularly

To deactivate the screen saver

Press POWER or RESET.

Basic Operation of the Device

Here is how to measure the torque of a clutch type electric screwdriver using Fidaptor.

1 Set the Fidaptor.

"Setting the Fidaptor" (P. 08)

2 Press UNIT, if required.

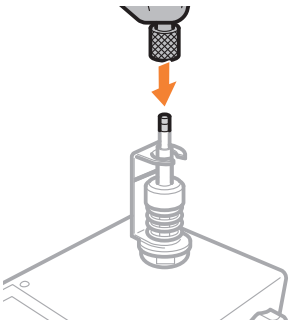
"Switching the Unit" (P. 24)

3 Press MODE, if required.

"Switching the Measurement Mode" (P. 16)

4 Set the electric screwdriver to the Fidaptor.

- Fit the bit drive of the screwdriver to the shaft.
- The maximum tolerate load on the Fidaptor from the above is 49 N for the standard version and 19.6 N for the low torque version.



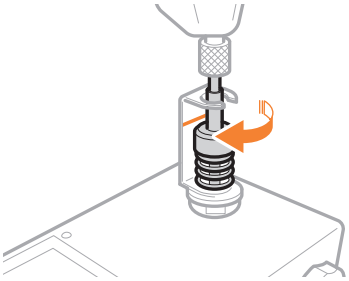
5 Press POWER or RESET.

- The display is cleared and returns to the default state.

6 Use the electric screwdriver until it stops.

How to handle the device

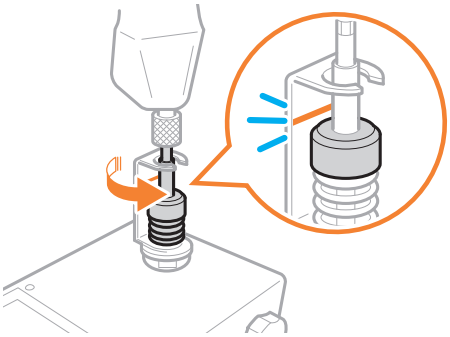
- Do not apply torque that exceeds the maximum measurement range more than necessary. Otherwise, a malfunction may be caused.
- Do not measure tools that give continuous impact, such as an air screwdriver and impact wrench.
- Set the repeated measurement cycle time to 5 seconds or longer. Cycles shorter than this can cause parts to wear out faster.



- The measurement value, waveform, and pass/fail judgment results are shown on the display.
- The pass/fail judgment function is disabled in TR2 mode.
- When auto reset mode is enabled, the display is reset after the set time has elapsed.

7 Loosen the Fidaptor.

- Loosen it to the limit line.
- If the Fidaptor doesn't have a limit line, loosen it until the spring is no longer loaded.



8 Press POWER or RESET.

- Resets the measured value.
- Data is output when the device is connected to PC, etc. "Outputting Measurement Data" (P. 25)
- Repeat the above steps to measure the output torque.
- To finish the measurement, turn off the power and remove the measurement joint from the socket.

Switching the Measurement Mode

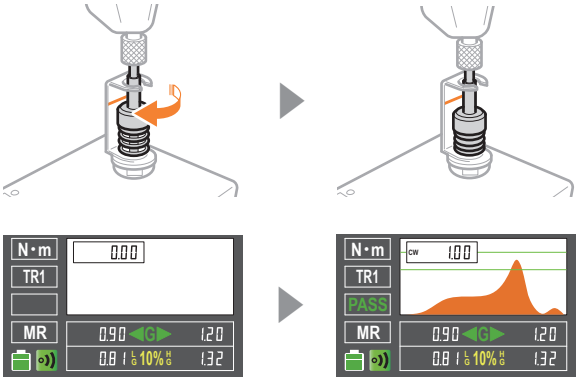
TR1 Mode

TR1 mode displays the maximum value during measurement while displaying the continuous load change from the start to the end as a waveform. When the measured value is less than the measured range (the level at which no load is detected), the measurement is finished.

1 Press MODE.

- Press until <TR1> appears on the display.

2 Use the electric screwdriver until it stops.



- Displays the maximum torque value during measurement.
- Displays the result whether the maximum torque value during measurement is within the pass/fail judgment threshold.
- If a load that is less than the measurement range is detected, the measurement is automatically terminated.

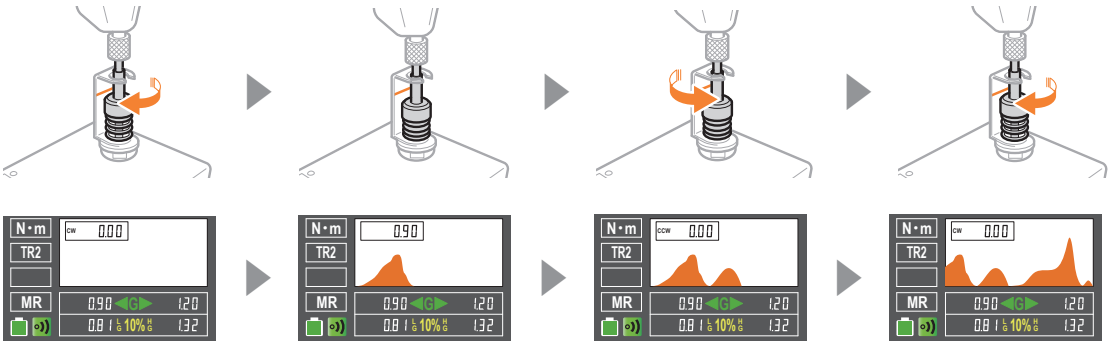
TR2 Mode

In TR2 mode, the fluctuation in the load applied to the detector at that time is displayed numerically or in waveform. Even if the measured value falls below the measurement target range (the level at which no load is detected), you can continue measuring. In such case, pass/fail judgment function cannot be used.

1 Press MODE.

- Press until <TR2> appears on the display.

2 Use the electric screwdriver until the measurement is complete.



Data Output in TR2 Mode

- In TR2 mode, the data is automatically output in real time while measuring. Therefore, the auto reset setting is not applied.

PEAK Mode

In PEAK mode, the maximum value during measurement is displayed. When the value reaches the measurement range, the measured value is in the hold state, and the display is updated when the load exceeds the held value.

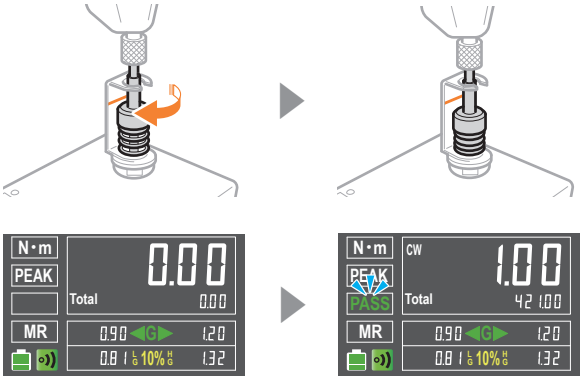
1 Press MODE.

- Press until <PEAK> appears on the display.

2 Use the electric screwdriver until the measurement is complete.

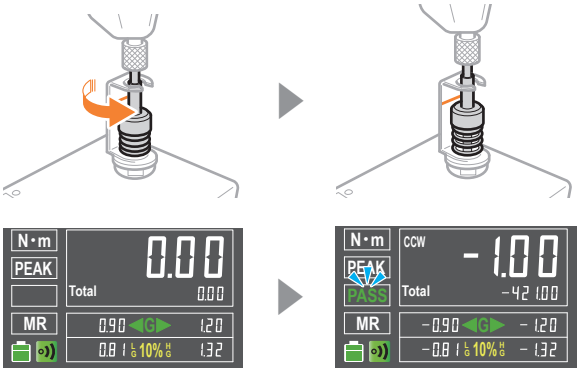
Clockwise

When the measurement is complete, it is judged whether the peak value is within the threshold.



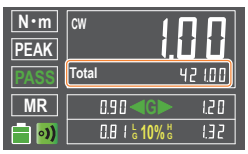
Counterclockwise

When the measurement is complete, it is judged whether the peak value is within the threshold. If it is counterclockwise, the <–> symbol is displayed.



Cumulative torque value

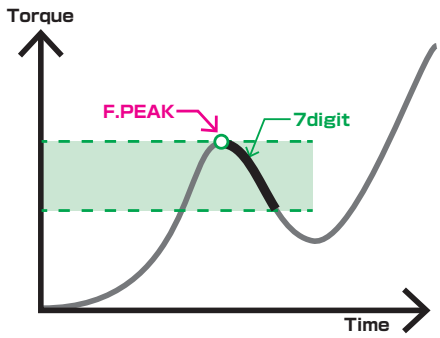
When the measurement joint is loaded, the torque value continues to be added. You can see the cumulative value at <Total> field.



Increase or decrease in cumulative torque value

- If the rotation is turned to counterclockwise, the cumulative torque is counterclockwise direction is subtracted from the cumulative value measured in clockwise so far.

F.PEAK Mode



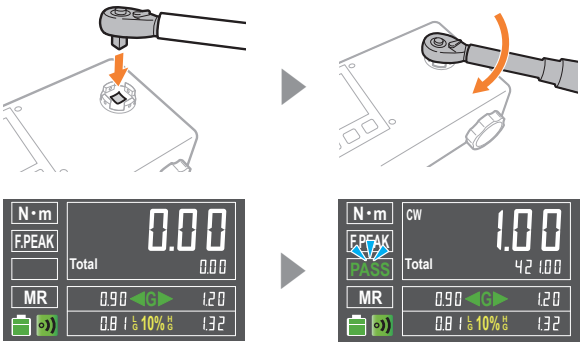
In the F. PEAK mode, the slip torque of the additional fastening is displayed. When the decreasing rate of the first peak down exceeds 7 digits, the maximum value at that point is displayed. Thereafter, the display does not change even if torque exceeding the maximum value is applied.

1 Press MODE.

- Press until <F.PEAK> appears on the display.

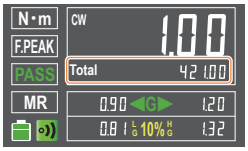
2 Use the tool until the measurement is complete.

When the measurement is complete, it is judged whether the peak value is within the threshold.



Cumulative torque value

When the measurement joint is loaded, the torque value continues to be added. You can see the cumulative value at <Total> field.



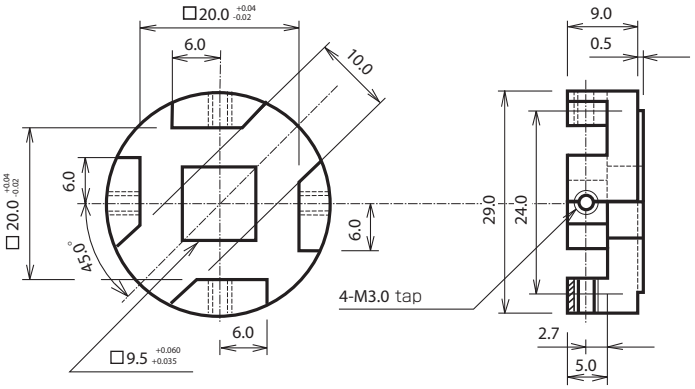
Increase or decrease in cumulative torque value

- If the rotation is turned to counterclockwise, the cumulative torque is counterclockwise direction is subtracted from the cumulative value measured in clockwise so far.

Using Other Measuring Joints

In addition to the clutch-type electric screwdriver, this device can also measure the torque of various tools. Please prepare an adapter, conversion socket, or other attachment that fits into the device's socket. If you want to fix the measurement joint, use the set screw holes on the side of the socket.

Socket: mm



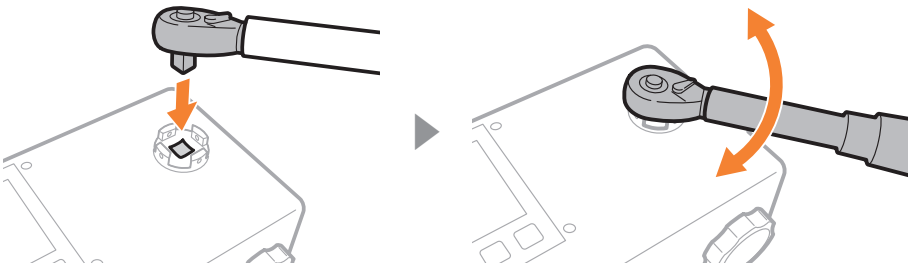
If you use the attachment:

- Make sure that the connection between the socket of the device and the attachment is not loose.
- The attachment must be strong enough not to break during measurement.
- The maximum load on the socket from the above must not exceed 98N.
- The socket must not be continuously loaded like when using an impact screwdriver.
- Do not violate the operating principles of torque measuring instrument.

Measure with a Torque Wrench

1 Set the torque wrench in the socket.

- If the socket size doesn't fit, prepare a separate socket adapter.
- When rotating in contact with the end face of the socket, friction may affect the values.



Various Settings

Use different settings as needed.
If you want to cancel during setting, press the POWER or RESET button.

Auto Reset

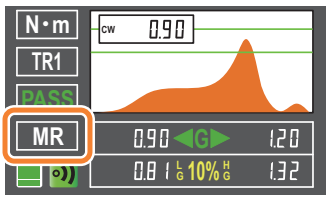
You can automatically clear the measurement result displayed or send the data at a specified time without pressing the POWER or RESET button.

> **Auto reset setting in TR2 mode**
> - TR2 mode immediately sends data while measuring, so auto reset cannot be changed from MR.

1 Press and hold SET.

- The item flashes to enter the setting mode.

2 Press SET to move the cursor to the auto reset item.



3 Press ▲ or ▼ to change the setting.

- **MR**: Manual
- **AR1**: Reset and send data **1.0** seconds after end of measurement
- **AR2**: Reset and send data **2.0** seconds after end of measurement
- **AR3**: Reset and send data **5.0** seconds after end of measurement

4 Press and hold SET.

- The settings are complete.

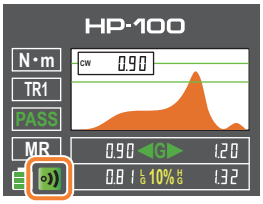
Adjusting Sound Volume

The device issues a confirmation or warning sound in response to various conditions, such as when starting up, pressing POWER or RESET, changing settings, or when there is any operation error. You can set these volumes to mute.

1 Press and hold SET.

- The item flashes to enter the setting mode.

2 Press SET to move the cursor to the volume icon.



3 Press ▲ or ▼ to change the setting.

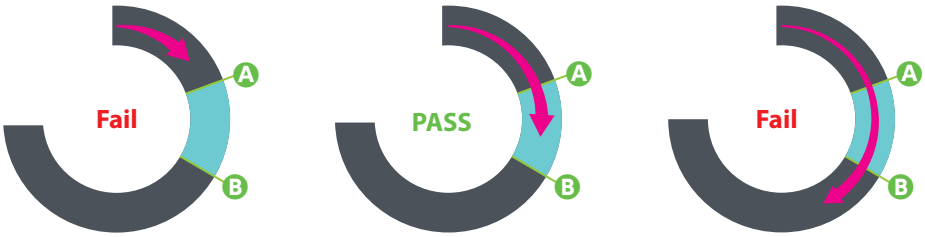
- : With sound
- : Mute

4 Press and hold SET.

- The settings are complete.

Setting PASS/Fail Judgment

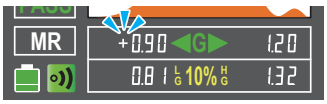
You can judge whether the measured peak value is within the set threshold range. Two thresholds are set: the lower limit A and the upper limit B. If the measured value reaches between them, it is a pass, and if the value is outside the range, it is a fail. This feature is not enabled in TR2 mode.



1 Press and hold SET.

- The item flashes to enter the setting mode.

2 Press SET to move the cursor to the judgment item.



3 Press ▲ or ▼ to change the rotation direction.

- +: Clockwise
- –: Counterclockwise

4 Press ◀ or ▶ to move the cursor.

5 Press ▲ or ▼ to change the lower threshold.

- This cannot be set to a value greater than the upper limit.

6 Press SET to move to the upper threshold.

- The rotation direction is the same as the lower threshold.

7 Press ◀ or ▶ to move the cursor.

8 Press ▲ or ▼ to change the upper threshold.

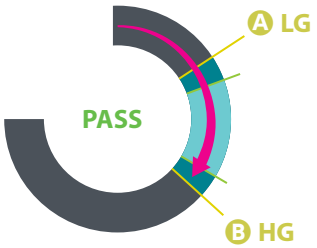
- This cannot be set to a value less than the lower threshold.

9 Press and hold SET.

- The settings are complete.

Widen the Acceptable Range of PASS/Fail Judgment

Sets the acceptable range for the judgment threshold. If the threshold is exceeded but within the acceptable range, it is determined as a pass.



1 Press and hold SET.

- The item flashes to enter the setting mode.

2 Press SET to move the cursor to the judgment acceptable item

setting field.

3 Press ▲ or ▼ to change the setting.

- Select from 00%, 0.5%, 10%, 15% or 20%.
- The value with the coefficient added is displayed.

4 Press and hold SET.

- The settings are complete.

Disable pass/fail judgment

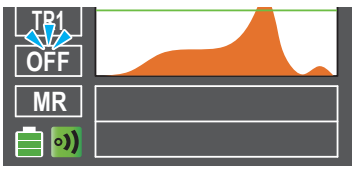
You can disable the judgment function.

1 Press and hold SET.

- The item flashes to enter the setting mode.

2 Press ▲ or ▼ to change the setting.

- Select OFF to hide the threshold items.



3 Press and hold SET.

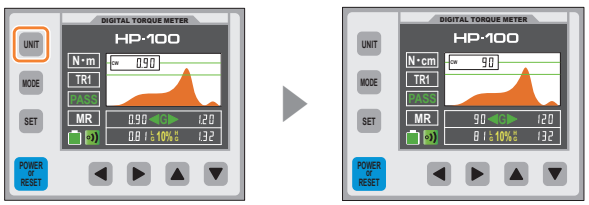
- The settings are complete.

Switching the Unit

Select the unit of torque.

1 Press UNIT.

- The unit is changed.



Outputting Measurement Data

The measured data can be output to a PC, and the data can be collected and accumulated by application.
You can also output the collected data to a CSV file.
Contact your distributor for application details.

Torque Meter Tool Operating Environment

The system requirements for using the torque meter tool are as follows:

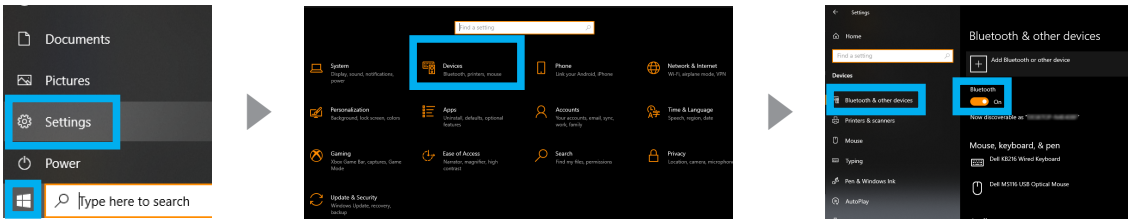
- Windows 10
- Windows 11

Connecting with Bluetooth

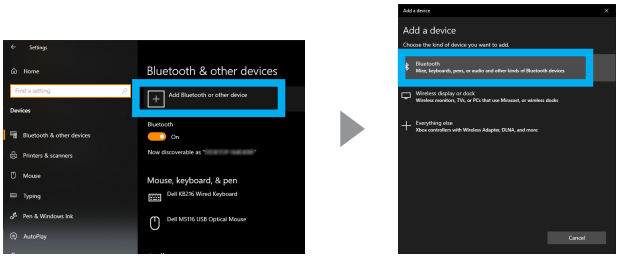
Pair with the tool via Bluetooth® connection.

Windows 10

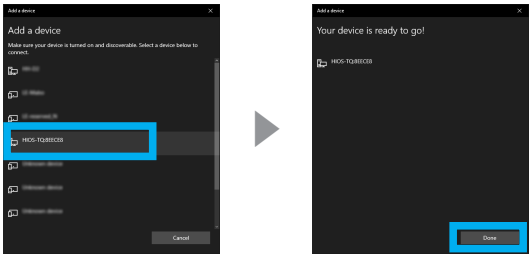
1 [Start] ▶ [Setting] ▶ [Devices] ▶ [Bluetooth & other devices] ▶ Turn on [Bluetooth].



2 [Add Bluetooth or other device] ▶ Select [Bluetooth] from [Add device].

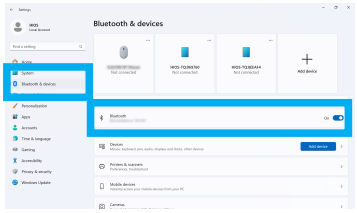


3 Select HIOS-TQ:XXXXXX.

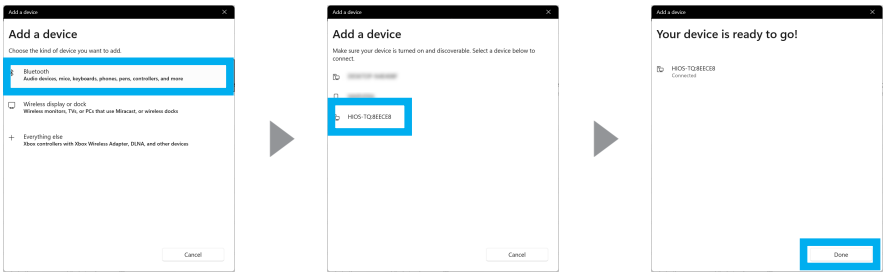


Windows 11

1 [Start] ▶ [Setting] ▶ [Bluetooth & devices] ▶ Turn on [Bluetooth].



2 [Add a device] ▶ [Bluetooth] ▶ Select the device ▶ Click [Finish].



Connecting Using USB or RS-232C (Optional)

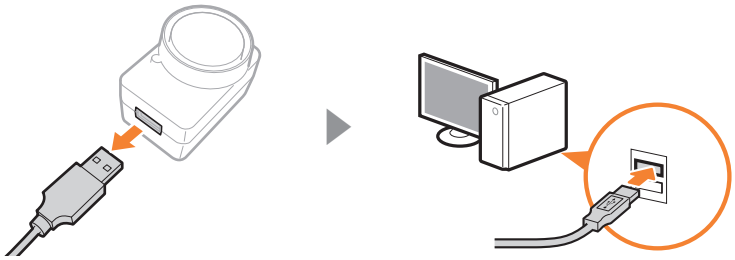
Use the supplied USB cable or RS-232C to connect to a PC. RS-232C cable is not provided with the device. Please provide it separately.

Battery charging from PC

- USB charging from a PC may not be able to recover the battery due to low power supply.

1 Connect the cable to PC.

- For the RS-232C, connect to the 232C port.

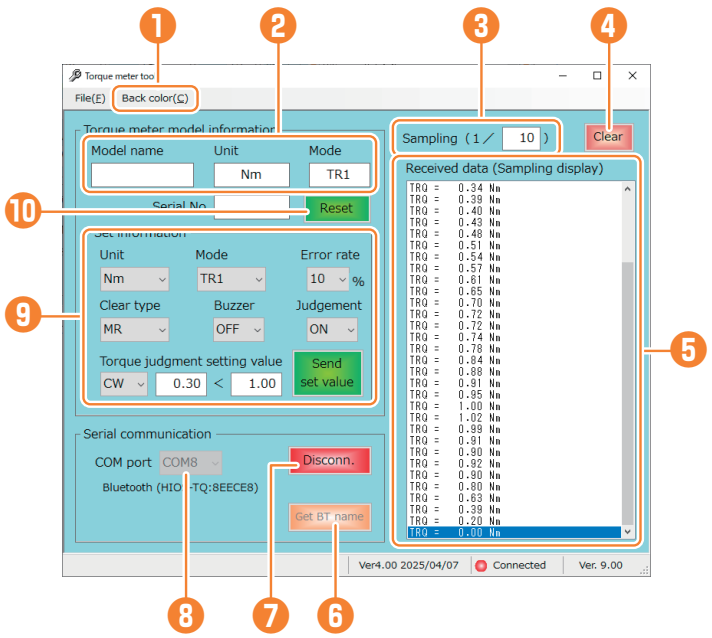


2 Check the COM port.

- Right-click the [Start] button ▶ [Device Manager] ▶ [Ports (COM and LPT)] and check the connected serial port.

Torque Meter Tool Screens

This section describes the main screens of the torque meter tool.



1 Back color

You can change the background color of the application.

2 Torque meter model information

The device information is displayed.

❸ Sampling

Enter a coefficient to thin out the received measurement data items to be displayed. When set to <1/1>, the data items are not thinned out. The data itself, such as CSV storage, is not affected.

❹ Clear

Clears the data in the received data field.

❺ Received data field

Displays the measurement data sent from the device.

❻ BT name acquisition

You can check the ID for wireless connection.

❼ Connect/Disconnect

Starts or stops measurement communication between the device and a tool.

❽ COM port

Select the serial port to which you want to connect.

❾ Set information

You can check the device's configuration. You can also use the application to change the configuration of the device.

❿ Reset

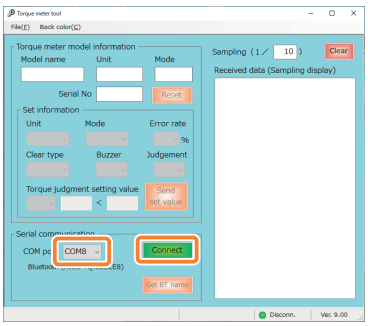
You can clear the display of the device or send data.

Sending Measurement Data

1 Start the application.

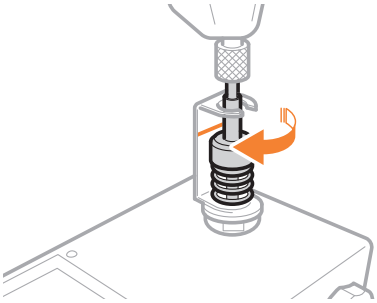
2 Select the COM port and press the Connect button.

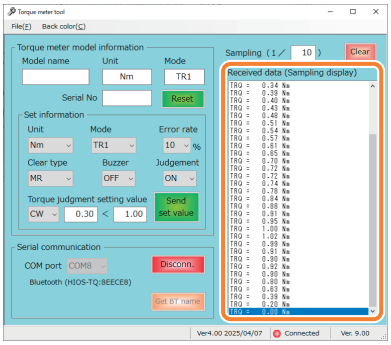
- Select the connected serial port.



3 Send measurement data from the device.

- The measurement data is displayed in the received data field.

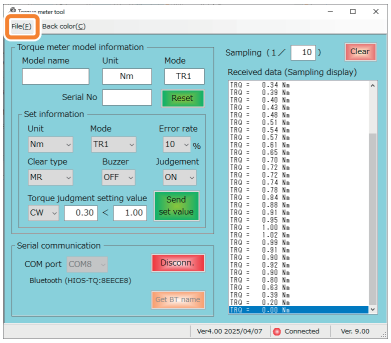


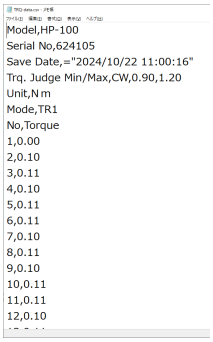


Saving Measurement Data

1 Select [File] ▶ [Save Measurement Data].

- Name and save a file in a location of your choice.
- A CSV file is generated.





```
Model,HP-100
Serial No,624105
Save Date,="2024/10/22 11:00:16"
Trq. Judge Min/Max,CW,0.90,1.20
Unit,N m
Mode,TR1
No,Torque
1,0.00
2,0.10
3,0.11
4,0.10
5,0.11
6,0.11
7,0.10
8,0.11
9,0.10
10,0.11
11,0.11
12,0.10
```

Unit change during data sampling

- Changing units during data collection results in a sampling where units are mixed. Even if there are mixed units, only the final unit is displayed in the saved data.

About Send/Receive Data

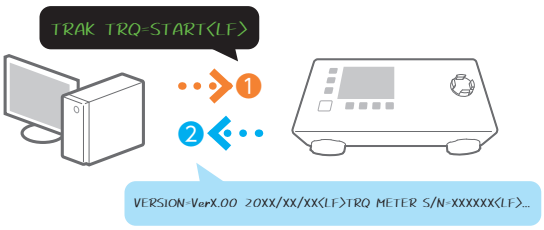
When using general serial communication tools, PLC, etc., refer to the following setting items.

Communication Setting Parameters

Item	Communication parameter
Baud rate	115,200 bps
Data length	8 bit
Stop bit	1 bit
Parity	None
CTS/RTS control	None
Format	ASCII
Delimiter	LF

About Send/Receive Command

Communication check



1 Before starting to measure, send the following commands to the device.

Send	Description
TRAK TRQ=START	Starts data
CONNECTING	Communication check to continue data transmission/reception. Transmitted to the device every 30 seconds.

2 After the command is sent, a reaction message is sent from the device.

Message	Description
VERSION=Ver**X.XX YYYY/MM/DD**	Firmware version and release date of the device
TRQ METER S/N=**XXXXXX**	Serial number
MODEL=HP-**XXX**	Model name
UNIT=**Xx**,(XXX:X,XXX:X)	Unit being set (Selectable units: number of effective digits after the decimal point)

Message	Description
Mode=**XXXX**	Measurement mode being set ● **PEAK**, **F.PEAK**, **TR1**, **TR2**
Set Value=**XX.XX**,**XX.XX**	The lower and upper thresholds for pass/fail judgment and the rotation direction being set If the judgment function is off, the value is not displayed.
Reset Type=**XX**	Auto reset setting being set ● **MR**, **AR1**, **AR2**, **AR3**
Error Rate=**XX**	Acceptable pass/fail judgment range being set (%) ● **0**, **5**, **10**, **15**, **20**
Buzzer=**X**	Buzzer sound setting being set ● **OFF**, **ON**

If you are connecting with a USB, you can check the device's Bluetooth name.

Send command	Description
MD:GET BT NAME	Acquires Bluetooth name BT NAME=HIOS-TQ:XXXXXX

When measuring

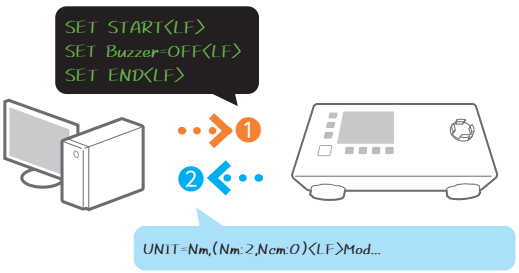
This section explains messages shown when sending measurement data.

Message	Description
TRQ=XXX	Torque value transmitted from the device ● TR1: Outputs continuous measurement values from start to stop ● TR2: Immediately outputs continuous measurement values from start to stop ● PEAK: Outputs peak value ● F.PEAK: Outputs the peak value after the first peak down detection

A message is sent when you change any setting on the device.

Message	Description
UNIT=**Xx**,(XXX:X,XXX:X) Set Value=**XX.XX**,**XXX.XX**	Changes units
Mode=**XXXX**	Switches the measurement mode ● **PEAK**, **F.EAK**, **TR1**, **TR2**
Set Value=**XX.XX**,**XXX.XX**	Changes pass/fail judgment
Reset Type=**XX**	Changes auto reset setting ● **MR**, **AR1**, **AR2**, **AR3**
Error Rate=**XX**	Changes the acceptable pass/fail judgment range ● **0**, **5**, **10**, **15**, **20**
Buzzer=**XX**	Changes buzzer sound setting ● **OFF**, **ON**

You can change the device settings by sending the following command from the controller.



1 Send a setting change command to the device. Send <SET START> and <SET END> before and after the setting change command.

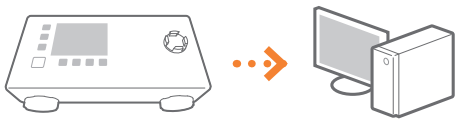
Send command	Description
SET START	Starts sending
SET END	Stops sending
SET UNIT=**Xx**	Changes unit.
SET Mode=**XXXX**	Changes the measurement mode ● **PEAK**, **TR1**, **TR2**

Send command	Description
Set JUDGE VAL=**XXX.XX**, **XXX.XX**	Changes pass/fail judgment value. For CCW, add - to the beginning of the judgment value. When the judgment function is off, sending this command with a value entered turns on the judgment function. When the judgment function is on, sending this command without a value turns off the judgment function.
SET RESET CLEAR=**XX**	Changes auto reset setting ● **MR**, **AR1**, **AR2**, **AR3**
SET ERR RATE=**XX**	Changes the acceptable pass/fail judgment range ● **0**, **5**, **10**, **15**, **20**
SET Buzzer=**XX**	Changes buzzer sound setting ● **OFF**, **ON**

② After the command is sent, a reaction message is sent from the device.

Message	Description
UNIT=Xx,(XXX:X,XXX:X) Mode=XXXX Set Value=X.XX,X.XX Reset Type=XX Error Rate=XX Buzzer=XX	Device setting items

The following message is sent when the device is turned off.



Send command	Description
Power Off	The device is turned off

When ending measurement

After measurement is complete, send the following commands to the device.

Send command	Description
TRAK TRQ=STOP	Terminates data transmission/reception with the device

Maintenance

This section explains the maintenance of the device and measuring jigs.
To prevent deterioration of measurement accuracy and ensure comfortable and safe operation, periodically clean and calibrate the device. Please check the safety precautions before maintenance. "Important Safety Instructions" (P. 03)
Be sure to turn off the power and unplug the power cord from the outlet when cleaning the device. Otherwise, fire or electric shock may be caused.

Main Unit

Wipe the surface of the device periodically to keep it clean.

1 Turn off the power of the device and unplug the power plug from the outlet.

2 Wipe the surface of the device.

- Wipe it gently with a soft dry cloth.

3 Plug the power cord in to the outlet and turn on the power.

Periodic calibration to maintain accuracy

Calibration values may vary due to usage conditions, aging of the product, etc. To maintain the measurement accuracy of the device, check the accuracy periodically (by calibration or checking and adjustment as required). Contact your dealer or HIOS for more information.

When not used for a long time

Keep the device charged at about 50%. Charge the device several times a year even during storage.

Fidaptor

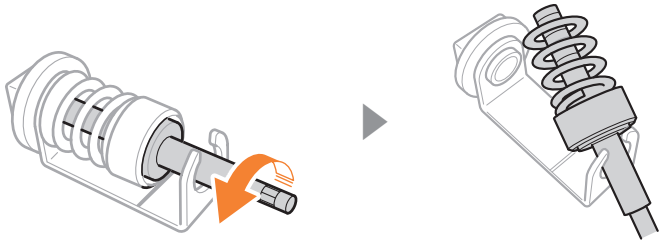
Wipe the surface of the Fidaptor periodically to keep it clean. In addition, check each component before use.

Maintenance and inspections

- Do not store the Fidaptor spring in a compressed state. Otherwise, the spring may deteriorate faster.
- Do not clean the surface of the Fidaptor with chemical substance such as benzine or alcohol. The color of the silk printing will fade, leading to deterioration of the quality.

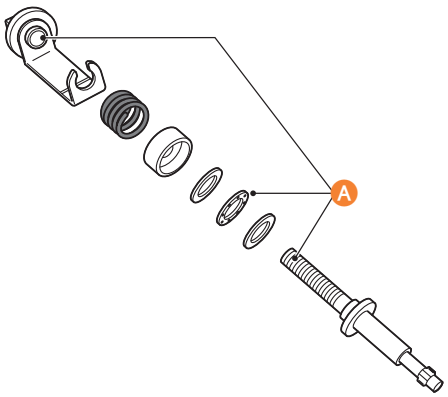
1 Turn the shaft counterclockwise.

- When the device comes off the mount, tilt the shaft to remove it.



2 Apply grease.

- Apply grease to A.



- Check whether the threaded shaft is bent or any foreign matter is adhered to it, and check whether the thread is worn.

3 Attach the shaft to the mount.

Periodic Replacement of the Fidaptor

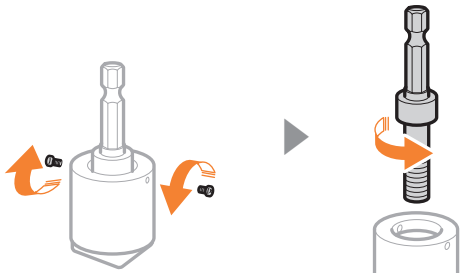
The Fidaptor is a consumable part. We recommend that you replace the Fidaptor approximately every 2,500 strokes.

Part Replacement of the Soft Joint (Optional)

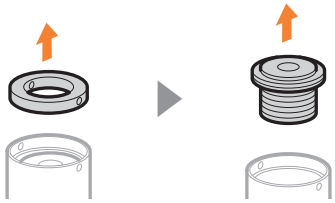
In this section, part replacement and maintenance of TFSJ-006N-HEX and TFSJ-006N are explained.

1 Remove the fixing screw and take out the shaft.

- For TFSJ-006N, in the same way, remove the fixing screw and take out the bolt.

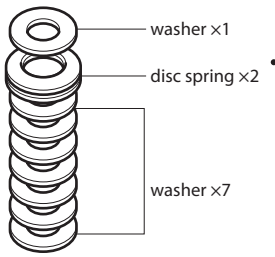


2 Remove the ring cover and then take out the disc spring and the washer.



3 Replace the part.

- The Fidaptar is a consumable part. It is recommended to replace it approximately every 2,500 strokes.
- Please make sure to put the washer on the top of the disc springs.



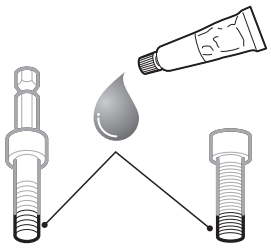
CAUTION

- The disc springs should be stacked in series as shown in the figure.

CAUTION

- Please do not grease the disc springs and the washer. Otherwise, the measurement result may become inaccurate.

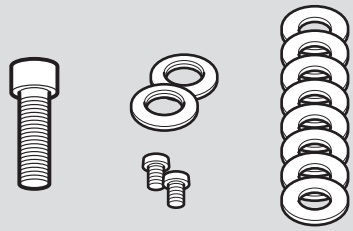
● When you replace with the new shaft, grease the screw thread.



Replacement Part Sets for the Soft Joints

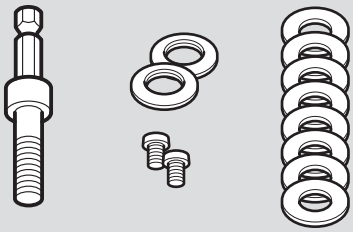
Compositions of the small parts of the soft joints are as follows:

For TFSJ-006N (No. TFSJ-PARTSET)



- M8 Hexagonal Socket Head Bolt
- Disc Spring ×2 (exclusive)
- M8 Washer ×8
- M2×3 TOTSUPULA ×2

For TFSJ-006N-HEX (No. TFSJ-PARTSET-HEX)



- 6HEX Shaft
- Disc Spring ×2 (exclusive)
- M8 Washer ×8
- M2×3 TOTSUPULA ×2

4 Reassemble the parts.

Troubleshooting

If a problem occurs, refer to this chapter for troubleshooting before contacting your dealer or HIOS. If the problem persists, please contact your dealer or HIOS.

Nothing is shown on the display.

→ The device may not have been used for a long time or the battery may not be charged. Charge the battery and then turn on the power again.

Displayed value cannot be reset to zero.

→ Restart the device without loading the socket.

Power is turned off.

→ The Auto Power Off function turns off the device automatically after about three minutes of inactivity.

The measured value is not accurate.

→ Restart the device without loading the socket.

Some drawing appears on the display.

→ Rendering error may have occurred due to noise or other cause. Restart the device.

Torque cannot be held.

→ Set the measurement mode to PEAK, F.PEAK or TR1.

The device cannot be charged. Even after charging, the display shows that the battery is not charged.

→ The AC adapter may not be plugged in correctly. Check the plug insertion.

→ USB charging of the PC may not be possible because the power supply is low. Connect the AC adapter to an outlet.

→ The battery may be deteriorated. Contact your dealer or HIOS.

On the display, the torque peak value is displayed within the threshold, but the judgment is displayed as a Fail.

→ The actual rotation direction may not be the same as the one set in the pass/fail judgment criteria. Check the rotation direction set with judgment criteria.

When data is sent or received, a return message is not sent even if the measurement start command is sent.

→ Check if the device is turned on.

Cannot pair with the device.

→ It may be paired with Bluetooth from another device. Disconnect pairing and then reconnect.

After-sales Service

Please direct questions about customer services to HIOS Inc. or your HIOS dealer.

Repair, Replacement, Calibration, and Inspection

- We cannot return the items you sent with the after-sales service request. Remove the items (seals, etc.) that you installed after purchase before sending.
- When you request after-sales service, please send it in the included case. Prevents damage or accidents due to impact or fall during transportation.
- It may be necessary to reconfigure or change the settings of the after-sales service request when the product is repaired or replaced.
- Service charges will also be made for calibration, inspection or parts replacement for the Fidaptor, etc.
- You will be responsible for transportation and other expenses when you request after-sales service.
- There is an inspection jig (inspection bar) that you can use to check the measurement accuracy. Even if you use it, you should perform the inspection and calibration by us at least once a year.

We will repair it free of charge in the following cases:

- The same part is repaired within three months after the calibration service is provided; and/or
- Re-inspection or calibration is required within three months after inspection and calibration.

Cases We Cannot Undertake Repair or Replacement

- There is a trace of inappropriate repair, disassembly, or alteration
- When the serial number is listed on the after-sales service request, the serial label is missing or there is a trace of removal, and there is a trace of tampering with the serial number or conduct that makes it illegible (including a case where the serial number has been removed)
- It is thought to have been damaged during transportation due to inadequate packing
- It is determined that the damage is too severe to maintain the function even after repair
- It is reasonably determined that there are circumstances equivalent to those set forth in the preceding items.

Specifications

The device is subject to change and improvement without prior notice. We appreciate your understanding in advance.

Model name	HP-100	HP-10
Measurement range		
N · m	0.15-10.00	0.015-1.000
N · cm	15-1000	1.5-100.0
lbf · in	1.5-90.0	0.15-9.00
kgf · cm	1.5-100.0	0.15-10.00
Minimum display	10digit*1	
Measurement direction	Right-hand screw, left-hand screw	
Measurement mode	PEAK, F.PEAK*2, TR1, TR2 *2 The lower limit of the measurement range; HP-10: 0.026N•m HP-100: 0.26N•m	
Measurement accuracy	Within ±0.5% (F.S.)*3	
Charging and scalability	Micro USB Type-B port supports the following: Charging Data transfer (USB 2.0 up to 480M b/s)	
Power and battery	Input: AC100-240V 50/60Hz 0.4A Output: DC5V 2A 10W All models 1000mA Ni-MH Battery built-in 3.6V (operating voltage: 3.3V) Maximum 300mA when the power is ON Torque measurement, data transfer: up to 2.5 hours Charging using a power adapter or PC via USB port: 5 hours Number of charges: 500	
Power consumption	Maximum: 1.5 W or less *This may vary depending on usage environment and conditions.	
Wireless communication (for Wireless model)	Bluetooth Classic Ver 4.2 Serial Port Profile Frequency bandwidth: 2.4GHz	
Size (Width×Depth×Height)	230×110×50mm (excluding the largest projection) *This may vary depending on usage environment and conditions.	

Weight	1.94kg
Operating environment	Temperature: 15 to 35°C Relative humidity: 25 to 65% (no condensation)

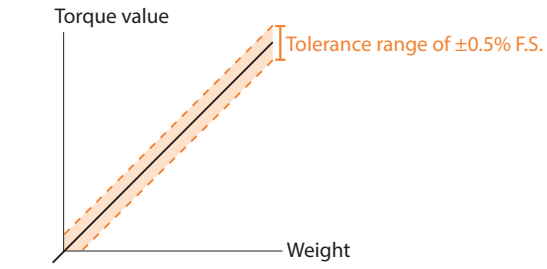
*1 digit

It refers to one count of the lowest digit in a digital display. ±1 digit means that the last digit may have an error for one count.

[Example] 0.001=1digit, 0.025=25digit, 0.10=10digit, 1.25=125digit

*3 Measurement accuracy

Our accuracy is F.S. (full scale). If the product accuracy is ±0.5%, ±0.5% of the maximum torque is applied to the lower torque.



Weight	0.1	0.2	0.5	1.0	2.0	5.0
HP-100 Measurement torque	—	—	0.98±0.05	1.96±0.05	3.92±0.05	9.81±0.05
HP-10 Measurement torque	0.098±0.005	0.196±0.005	0.490±0.005	0.981±0.005	—	—

Notices

Disclaimer

- Specifications and appearance of the product are subject to change without notice.
- Please note that the contents of this manual are subject to change without prior notice.
- As with other wireless devices, this device operates using wireless signals, and connection cannot be guaranteed in every situation. Therefore, you cannot use the device in situations where interruption of the data connection could result in death, personal injury, property damage, data loss, or other loss. We shall not be liable for any damages or indirect damages suffered by you or a third party due to use of the device, or due any defect in the device that cannot be predicted by us.

Trademarks

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- Also, other company names and product names in this manual are trademarks or registered trademarks of respective owners.

Illustrations

Unless otherwise specified, illustrations used in this manual are provided in HP-100 (N・m ↔ N・cm specifications), Fidaptor TF5G-Z, and measurement mode <TR1>. However, if models have differences, multiple illustrations are also displayed with the model names such as "HP-10 / HP-100".

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