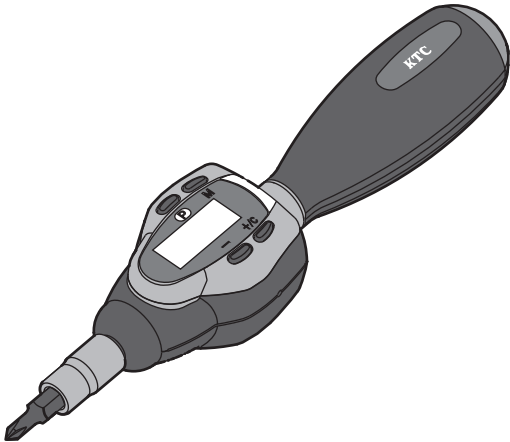


Symptom	Possible causes	Response	Reference page
Measurement is impossible	It is in the Peak Hold mode.	Press the +/c button to cancel the measurement value.	19
	It is in the Preset mode or Pass/Fail mode.	Wait for 3 seconds and then it becomes ready for measurement.	19
Error is not eliminated		Refer to the error indication list.	25
The custom setting screen cannot be started		Refer to the custom setting.	18
The power is unintentionally turned OFF	Auto power OFF	For energy saving, the power is automatically turned "OFF" after the time set for the auto power OFF setting.	21

Digital Ratchet Instruction Manual

Thank you for purchasing our product.
This product is a driver-type digital torque tool to measure the tightening torque.
Please be familiar with this instruction manual for safe use.



GLK Series Driver Type

GLK060
GLK250
GLK500

After-sales service

○ Inspection report list

This indicates the results of accuracy and performance inspection of the product conducted before shipment based on our internal standards.

○ Calibration and adjustment

The torque accuracy check (calibration) and adjustment services are available for a fee.

○ Issuance of "calibration certificate"

The calibration certificate certifies that the value indicated by the measuring instrument is calibrated by using inspection equipment in conformity to the standard equipment traced against the international standards. It independently and officially certifies the accuracy and performance of the measuring instrument.

Contents of the calibration certificate are as follows:

- Inspection report
- Inspection date
- Declaration of tracing against the international standards
- Identification of the calibrated article (management number, item name, model number, manufacturer and manufacturing number)
- Item name, model, equipment capacity of the inspection equipment used for the calibration, and last and next calibration dates of the inspection equipment

* The inspection report indicates results of accuracy inspection based on KTC's standards conducted at the time of shipment, while the calibration certificate provides information of b. through e. above besides the inspection report.

For other inquiries about repair, etc., please contact the distributor.

The following symbols are used in this instruction manual.

Item that may cause expansion of the damage	MUST
Prohibited activity	Must not disassembled

● Please keep this instruction manual at hand.

Contents

- Features and applications of the product..... 2**
- Packed contents 2**
- Product dimensions and names 3**
- Before use 5**
- Safety precautions 5**
- How to use the main unit 6**
 - Battery replacement 6
 - Power ON/OFF 7
 - Mounting of a driver bit..... 8
 - Measurement 9
- Torque measurement..... 10**
 - Overview of the torque measurement 10
 - How to use "Measurement mode" 11
 - Torque value setting in "Preset mode" 12
 - How to use "Preset mode" 13
 - Setting of "Pass/Fail mode" 14
 - How to use "Pass/Fail mode" 16
- Custom setting 18**
- Conversion of unit and input torque value 23**
- Error indication..... 25**
- Maintenance and care 26**
- After-sales service 27**

Features and applications of the product

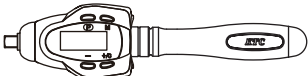


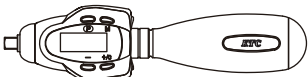


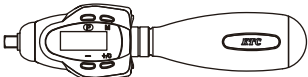

○ Features

- The driver type digital ratchet is a preset type driver with excellent workability combined with digital functions for accurate indication.
- The torque value is indicated by light and sound.
- Full-scale torque measurement functions that satisfies the international standard (ISO).
- Torque in both right and left directions can be measured.
- Up to 5 target torque values (preset values) can be registered.
- Various settings can be customized to use indications and alarm sound (ON/OFF) according to your needs.
- In the Auto Clear mode, indications are cleared after a certain time has passed even during continuous works. It is not needed to press the clear button each time.
- In the Pass/Fail mode that sets the upper and lower limits of tightening torque, the number of passes can be counted.
- In the Track mode, the real-time torque value is indicated. When the load is eliminated, the indication becomes "0".

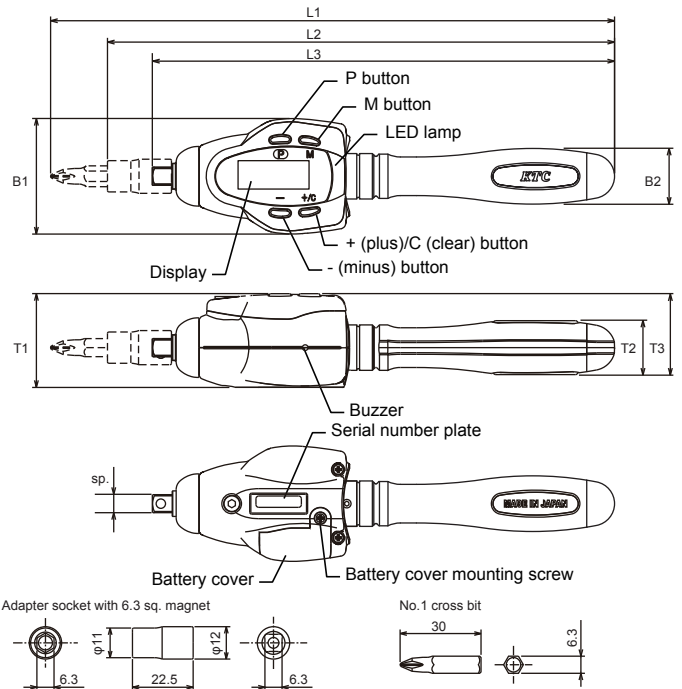
○ Applications

- Measurement of tightening and loosening torque values of right-hand and left-hand screws.
- Tightening work to the specified torque.

Packed contents

GLK060	Common supplies for GLK series	
	Adapter socket with 6.3 sq. magnet	
	No.1 cross bit	
GLK250	Dedicated resin case	
		
GLK500	 1 copy	
	 1 booklet	

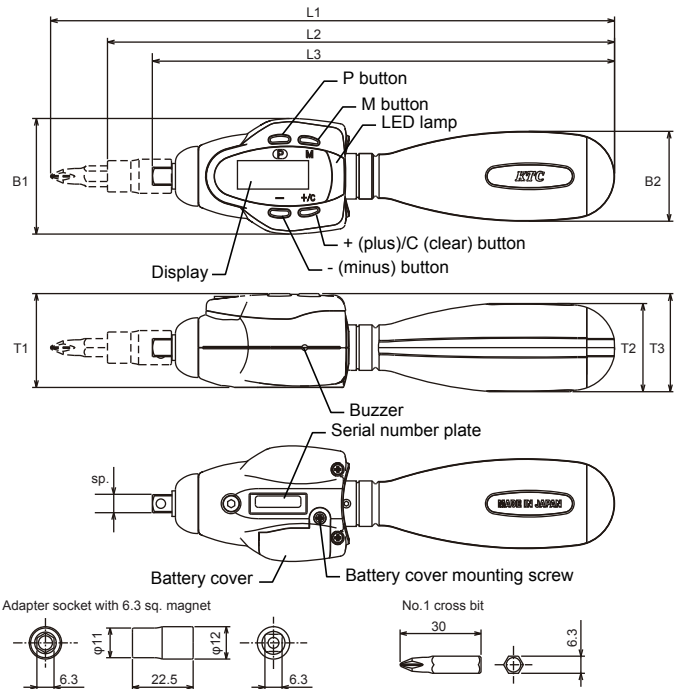
Product dimensions and names



Part number		GLK060
sq.	mm	6.3 (1/4" sq.)
Measurement accuracy	Left/Right	±3%+1digit
Accuracy assurance range		12 to 60
Indication range	cN·m	0.6 to 78
Minimum indication unit		0.05
Dimensions	L1	199
	L2	179
	L3	163
	B1	41
	B2	20
	T1	33
	T2	19
	T3	28.5
Weight (approximate)	g	170
Operating ambient temperature		0 to 40°C
Storage ambient temperature		-20 to 60°C
Use direction	Right-hand screw (turning the screw right)/Left-hand screw (turning the screw left)	
Battery	Coin-type lithium battery CR2354 (use one) * Panasonic only	
Battery life	About one month (100 times/day): Auto power OFF setting 1 to 10 minutes	

•digit = Minimum indication unit •The battery life above assumes that a new battery is used at 20°C.
•Batteries other than Panasonic may not be used.
•Measurement values out of the accuracy assurance range are only for reference.

Product dimensions and names



Part number			GLK250	GLK500
sq.		mm	6.3 (1/4" sq.)	
Measurement accuracy		Left/Right	±3%+1digit	
Accuracy assurance range			50 to 250	100 to 500
Indication range		cN·m	2.5 to 325	5 to 650
Minimum indication unit			0.1	0.1
Dimensions	L1		199	
	L2		179	
	L3		163	
	B1	mm	41	
	B2		32	
	T1		33	
	T2		31	
	T3		34.5	
Weight (approximate)		g	190	
Operating ambient temperature			0 to 40°C	
Storage ambient temperature			-20 to 60°C	
Use direction		Right-hand screw (turning the screw right)/Left-hand screw (turning the screw left)		
Battery		Coin-type lithium battery CR2354 (use one) * Panasonic only		
Battery life		About one month (100 times/day): Auto power OFF setting 1 to 10 minutes		

•digit = Minimum indication unit •The battery life above assumes that a new battery is used at 20°C.
•Batteries other than Panasonic may not be used.
•Measurement values out of the accuracy assurance range are only for reference.

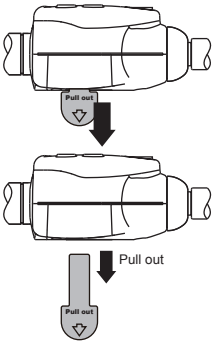
Before use

○ Removal of the insulation sheet

After unpacking the package, pull out the "insulation sheet" attached to the battery cover on the back of the main unit before use.

Check




The supplied battery is for inspection checks. It is not intended for the full-scale use of the Digital Ratchet.









Safety precautions

The following symbols are used in this instruction manual.

 Item that may cause expansion of the damage	 Prohibited activity	Please read "Safety precautions" carefully before use for proper use of this product.
 MUST	 Must not disassembled	

 Warning Death or serious injury may be caused.		
Picture indication	Important items	Harm and damage
	<ul style="list-style-type: none">Stop using in the event of any battery fluid leakage or abnormal odor.	There is a risk of fluid leakage, heating and bursting. In the event that battery fluid is attached to skin or cloth, immediately wash it out by a lot of clean water.
	<ul style="list-style-type: none">Be sure to mount the battery in the right direction. Also be sure to remove used-up battery without delay.	There is a risk of fluid leakage, heating and bursting.

 Note Injury and property damages may be caused.		
Picture indication	Important items	Harm and damage
	<ul style="list-style-type: none">Do not disassemble or alter.	Property damages may be caused. If heated or processed, the product cannot offer the designed performance.
	<ul style="list-style-type: none">Be sure to keep the product out of the reach of infants.	Injury and property damages may be caused.
	<ul style="list-style-type: none">Wear safety equipment such as protective glasses for your own safety.	Injury may be caused.
	<ul style="list-style-type: none">Do not use the product for other than the intended purposes indicated in the instruction manual.	Injury and property damages may be caused.
	<ul style="list-style-type: none">Do not throw the main unit.	The main unit or other properties may be damaged.



Note

Injury and property damages may be caused.

Picture indication	Important items	Harm and damage
	<ul style="list-style-type: none"> Do not use the product in a humid place. 	Damages may be caused.
	<ul style="list-style-type: none"> Do not give strong shock on the main unit, e.g. falling. 	The main unit or other properties may be damaged.
	<ul style="list-style-type: none"> Do not leave the product at high temperature, e.g. under direct sunshine or near heating equipment. 	Damages may be caused.
	<ul style="list-style-type: none"> Do not drop the product into water or leave it under water. 	Damages may be caused.
	<ul style="list-style-type: none"> Do not leave the product with any chemical, seawater or moisture attached to it. 	Damages may be caused.

How to use the main unit

Battery replacement



Warning

Death or serious injury may be caused.

Picture indication	Important items	Harm and damage
	<ul style="list-style-type: none"> Stop using in the event of any battery fluid leakage or abnormal odor. 	There is a risk of fluid leakage, heating and bursting. In the event that battery fluid is attached to skin or cloth, immediately wash it out by a lot of clean water.
	<ul style="list-style-type: none"> Be sure to mount the battery in the right direction. Also be sure to remove used-up battery without delay. 	There is a risk of fluid leakage, heating and bursting.

When the battery starts to run out, the indicator blinks.

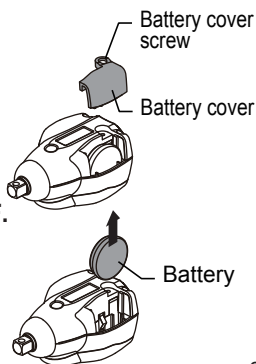
For accurate measurement, replace the battery without delay.

Coin-type lithium battery CR2354

* Panasonic only

1. Turn the power of the main unit OFF.
2. Loosen the battery cover screw on the main unit by using **[+]** screwdriver (cross No.1).

• Batteries other than Panasonic may not be used.



3. Remove the battery cover and replace the battery with new one.

- * Set the battery in the specified direction. Setting it in other than the specified direction may cause a malfunction or accident.

4. After replacing the battery, install the battery cover.

- * Securely tighten the battery cover screw.

Reference battery life

About one month or more with 100 uses per day (about 50 hours)

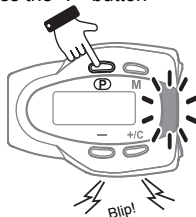
- * The battery life above assumes that a new battery is used at 20°C. At low temperature, the battery life may be shortened.

■ Power ON/OFF

1. Turn the power ON.

Press and release the "P" button. Then the power is turned ON and the product becomes ready for measurement and setting.

Press the "P" button

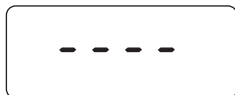


Press the button gently.

Starting up screen

Pressing and releasing the "P" button with no indication on the display will turn the power ON and "----" appears on the display and LED is turned ON together with a short buzzer sound.

Starting up

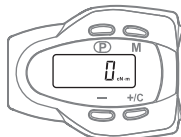


Check

If any error code is displayed, refer to P. 25.

It enters into the Measurement mode when the power is turned ON.

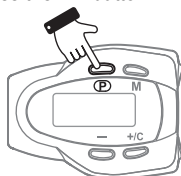
Indications in Measurement mode
(No-load condition)



2. Turn the power OFF.

Press and hold the "P" button to turn the power OFF. (About 3 seconds)

Press the "P" button



Keep the main unit free from any force until "0 (zero)" value is displayed on the display after turning the power ON. Turning the power ON under any force may cause wrong torque indication. After turning the power ON, make a torque measurement with the ambient temperature stable. In places where the temperature varies sharply, turn the power ON/OFF frequently.

For working procedures for disassembly and assembly of work objects and handling of new parts, follow the maintenance instructions of each manufacturer, etc.

● Precautions for use of the driver type



Note

Injury and property damages may be caused.

Picture indication	Important items	Harm and damage
	<ul style="list-style-type: none"> Do not extend the grip by pipes, etc. 	The main unit or other properties may be damaged.
	<ul style="list-style-type: none"> Do not use the product for any electrified work object. 	Electric shock and property damages may be caused.
	<ul style="list-style-type: none"> For any high-place work, be sure to implement safety measures. 	Injury and property damages may be caused.
	<ul style="list-style-type: none"> Do not use the product out of the specification range, e.g. overload. 	Damages may be caused.
	<ul style="list-style-type: none"> Do not use any tip tool "at an angle" or "with insufficient engagement". 	Injury and property damages may be caused by slippage or fall-off.
	<ul style="list-style-type: none"> Do not hit the main unit by foot or strike it by a hammer to give a shock. 	Injury and damages of the main unit or other properties may be caused.
	<ul style="list-style-type: none"> Do not use the product in an unstable place or at an improper posture. 	Injury and damages of the main unit or other properties may be caused.
	<ul style="list-style-type: none"> If any abnormal sound, etc. occurs during work, immediately stop working. 	Injury and damages of the main unit or other properties may be caused.
	<ul style="list-style-type: none"> Do not use the product as a chisel or lever. 	Injury and damages of the main unit or other properties may be caused.

■ Mounting of a driver bit



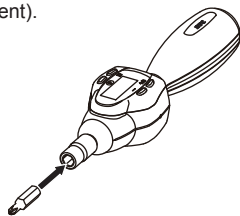
Note

Injury and property damages may be caused.

Picture indication	Important items	Harm and damage
	<ul style="list-style-type: none"> Check for any crack or damage on the tip tool. 	Injury and damages of the main unit or other properties may be caused.
	<ul style="list-style-type: none"> Do not swing around the main unit 	The main unit or other properties may be damaged.
	<ul style="list-style-type: none"> Use a driver bit appropriate for respective conditions. 	Damages may be caused.

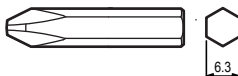
Attach a tip tool (driver bit, etc.) appropriate for the measurement object to the dedicated adapter socket (magnetic attachment).

!	<ul style="list-style-type: none"> • Be sure to use a driver bit with plane mounting surface.
⊘	<ul style="list-style-type: none"> • Double-head driver bit cannot be used.



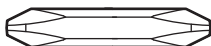
Can be used

Single-head bit



Cannot be used

Double-head bit



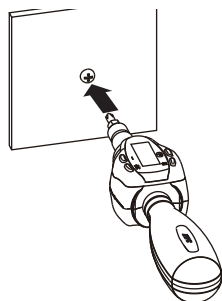
○ About tip tool

- Besides the supplied driver bit, our "bit for plate ratchet replacement driver" (separately sold) may be attached.
- 6.3 sq. insert socket (KTC part number: B2) and bit socket (KTC part number: BT2) may substitute the adapter socket with 6.3 sq. magnet.

■ Measurement

1. Set the product to the object and work on it.

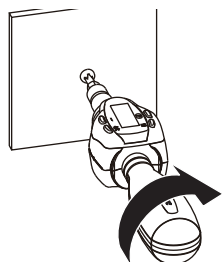
!	<ul style="list-style-type: none"> • Please use a driver bit appropriate for the screw size. • Check the torque unit of the work object. • Insert the driver bit into the screw to the end.
---	--



2. To measure the torque value, grasp the grip and apply a force slowly in the working direction.

⊘	<ul style="list-style-type: none"> • Do not set the product to the work object at an angle. • Do not use ball point type tip and universal joint. • Do not joint multiple extension bars.
---	--

Example: Measurement of tightening torque



Torque measurement



Note Injury and property damages may be caused.

Picture indication	Important items	Harm and damage
	• Do not apply any force out of the indicated range.	Damages or malfunction may be caused.
	• Do not use the product with any failure in indications of torque measurement result (damage on the display) not eliminated.	The work object may be damaged.
	• Do not apply any load on the product when turning the power ON.	Right torque measurement and indication may be prevented.

■ Overview of the torque measurement

○ Measurement modes

There are three Measurement modes (measurement methods) and three measurement value indication modes (indication methods), which may be combined appropriately for usage.

If any work with a torque value within the specified range is required, it is recommended to use the Preset mode or Pass/Fail mode.

<Measurement modes>

1. Measurement mode (For details, refer to P. 11)

A mode to make a torque measurement without setting a target torque value.

2. Preset mode (For details, refer to P. 12)

A mode convenient for continuous tightening works to a target torque value.

- It is notified of by the light (LED lamp) and sound (buzzer) that the target torque value is reached.
- Up to 5 target torque values can be set.

3. Pass/Fail mode (For details, refer to P. 15)

A mode to set lower and upper torque values and check if the work is completed within the set torque value range.

- The history (count) of accurate works can be logged.

<Measurement value indication modes>

1. Peak Hold Mode (For setting procedures, refer to P. 19)

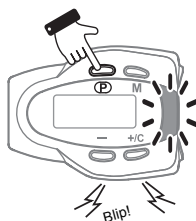
Keep the maximum measurement value displayed.

2. Auto Clear mode (For setting procedures, refer to P. 20)
A measurement value is displayed for the set time and then the indication is reset to "0 (zero)".
(Adjustable between 1 to 10 seconds)
3. Track mode (For setting procedures, refer to P. 19)
A real-time torque value is indicated.

■ How to use "Measurement mode"

The torque can be visually controlled without setting a target torque. You may work on while checking the tightening status.

Press the "P" button



1. Turn the power ON.

Turn the power ON. Then the starting-up indication disappear and the "Measurement mode" is activated.

2. Check the display and perform the work.

3. Once the measurement is completed, a torque value is indicated on the display.

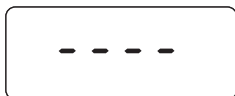
The display indicates the maximum measurement value with the Peak Hold mode.
(Default setting at the time of shipment)

4. To clear the peak-hold indication, press the "+ (plus)/C (clear)" button.

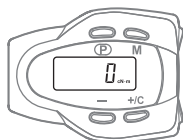
5. Turn the power OFF.

Press and hold the "P" button to turn the power OFF.
(About 3 seconds)

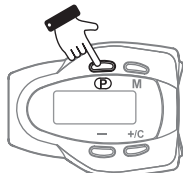
Starting up



Indications in Measurement mode
(No-load condition)



Press the "P" button



Keep the main unit free from any force until "0" value is displayed on the display after turning the power ON. Turning the power ON under any force may cause wrong torque indication. After turning the power ON, make a torque measurement with the ambient temperature stable. In places where the temperature varies sharply, turn the power ON/OFF frequently.

Check

When the Peak Hold mode is ON or no operation is on the way, a torque value is kept indicated. However, the power is turned OFF after the time set for the auto power OFF, which clears the measured torque value.
(Factory default: 2 minutes)

Torque measurement

■ Torque value setting in "Preset mode"

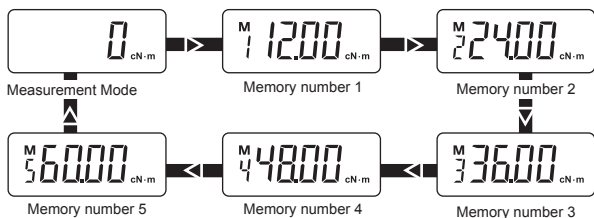
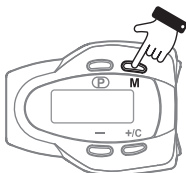
Preset torque values (settings) are convenient for frequent works and repetitive works.

○ Recalling the set value

Recall the set value (memory number) recorded in the Digital Ratchet main unit.

1. Turn the power ON.
2. Press the "M" button to switch the memory number display.

Display the memory number



○ Registering a target torque value

A target torque value can be registered with each memory number.

1. Display the memory number.

Press the "M" button to display a memory number to be registered.

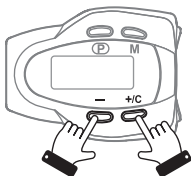
2. Display a target torque value.

Press the "+" (plus/C (clear)) and "-" (minus)" buttons to display a torque value to be set.

Display for target torque value setting



Set a target torque value

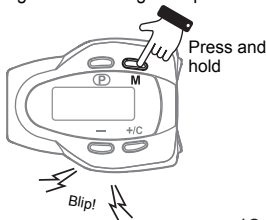


When no set value is registered



Blinking

Registration of target torque



Check

If "M" is blinking in the upper left part of the display, the value displayed in the memory number and the value already registered are not consistent.

3. Register.

Press and hold the "M" button.

Registration is completed with a short buzzer sound.

Torque measurement

■ How to use "Preset mode"

○ Recalling the set value to perform the work

Recall the set value (memory number) recorded in the Digital Ratchet main unit to perform the work.

1. Starting the "Preset mode"

Turn the power ON to enter into the "Measurement mode" and then press the "M" button once.

Press the "M" button to switch the Measurement mode and memory numbers 1 through 5.

2. Checking the display

"M" lights in the upper left part of the display and the registered torque value is indicated.

3. Measuring

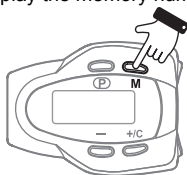
It is ready for measurement when "M" in the upper left part of the display disappears and "0 cN·m" appears. When the value approaches the set torque value, the user is notified by the buzzer and LED lighting.

4. Indicating the measurement value

The display indicates the maximum measurement value with the Peak Hold mode.

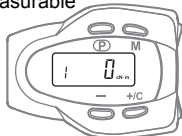
(Default setting at the time of shipment)

Display the memory number



Lighting

Measurable



90% of the set torque value



Over the set torque value



Check

When the Peak Hold mode is ON or no operation is on the way, a torque value is kept indicated. However, the power is turned OFF after the time set for the auto power OFF, which clears the measured torque value.
(Factory default: 2 minutes)

■ Setting of "Pass/Fail mode"

A function to check that the work is completed within the preset torque range. The history (count) of whether a lot of bolts and nuts are accurately worked on can be logged.

Check

To use the Pass/Fail mode, it is necessary to enable the "Pass/Fail mode" in the custom setting screen and set the "torque value acceptance range (upper/lower limits)" and "measurement rotation direction (right/left)".

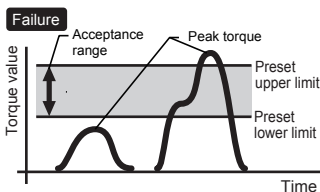
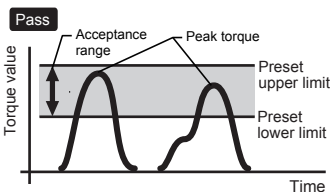
For custom settings, refer to P. 18

• For pass

It passes the criteria and counts as pass if the peak torque is within the set torque value range.

• For failure

It fails the criteria and counts as failure if the peak torque is not within the set torque value range.



○ Enable the Pass/Fail mode

Enable the "Pass/Fail mode" in the custom setting.

1. Turning the power OFF

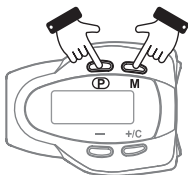
2. Starting the custom setting screen

Press and hold the "M" button first and then press the "P" button.

3. Checking that the setting screen has been started

4. Pressing the "M" button to switch the display

Set the mode indicator on the display to "4".



Setting screen



Setting screen



Mode indicator

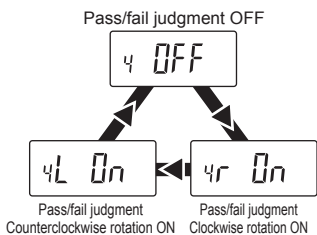
5. Setting the "Pass/Fail mode"

Use the "+" (plus)/C (clear)" and "-" (minus)" buttons to set the rotation direction for the pass/fail judgment.

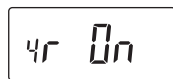
- Clockwise rotation ON : 4rOn
- Counterclockwise rotation ON : 4LOn
- No pass/fail judgment (OFF) : OFF

6. Setting completed

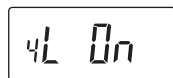
Press and hold the "P" button (for about 3 seconds) to turn the power OFF.



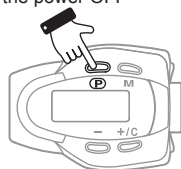
Pass/fail judgment clockwise rotation ON



Pass/fail judgment counterclockwise rotation ON



Turn the power OFF



○ Setting the acceptance range

1. Turn the power ON.

2. Checking the display

Turning the power ON after setting to the "Pass/Fail mode" activates the Pass/Fail mode and displays "c" on the display. "c" represents the count of pass.

3. Setting the lower limit value

Press the "M" button once and check that "L" is displayed in the mode indicator on the display.

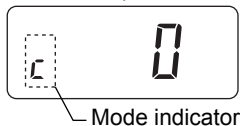
4. Displaying the lower limit value

Use the "+" (plus)/C (clear)" and "-" (minus)" buttons to display the specified lower limit value.

5. Registering the lower limit value

Press and hold the "M" button (for about 2 seconds) to register it.

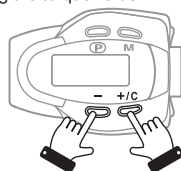
Screen on start-up



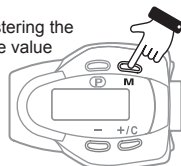
At the time of setting the lower limit value



Setting the torque value



Registering the torque value



○ Setting the acceptance range

6. Setting the upper limit value

Press the "M" button twice and check that "H" is displayed in the mode indicator on the display.

7. Displaying the upper limit value

Use the "+" (plus)/C (clear)" and "-" (minus)" buttons to display the specified upper limit value.

8. Registering the upper limit value

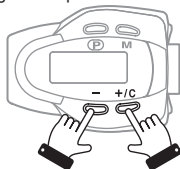
Press and hold the "M" button (for about 2 seconds) to register it.

At the time of setting the upper limit value

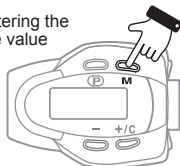


Mode indicator

Setting the torque value



Registering the torque value

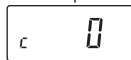


■ How to use "Pass/Fail mode"

1. Checking the display

After setting the upper and lower limit values, check that the mode indicator is "c".

Pass counts of the pass/fail judgment



Target upper limit value



Target lower limit value

In the Pass/Fail mode



Mode indicator

2. Measurement

When torque measurement starts, the mode indicator part changes to "J" and the torque value is indicated.

In the Pass/Fail mode measurement



Mode indicator

3. Pass/fail judgment

<Failure>

Lower limit value 90% to 99%

LED : Lighting

Buzzer sound : Intermittent sound

Lower limit value 90% to 99%



3. Pass/fail judgment

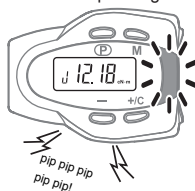
<Pass>

Within the set torque range

LED : Lighting

Buzzer sound : Continuous sound

Within the set torque range



<Failure>

Over 100% of the upper limit value

LED : Lighting

Buzzer sound : Intermittent sound

Over 100% of the upper limit value



4. Indicating the measurement value

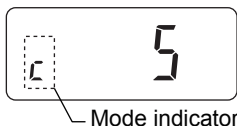
The display indicates the maximum measurement value with the Peak Hold mode.

(Default setting at the time of shipment)

5. To clear the peak-hold indication, press the "+ (plus)/C (clear)" button.

6. Indicating the pass count

The measurement value disappears and the pass count is indicated.



Custom setting

By changing the Digital Ratchet settings, you can customize it for your convenience.

Item name	Setting at the time of shipment	Setting item	Reference page
Measurement value display method	1 P	P: Peak Hold mode	19
		A: Auto Clear	
		t: Track mode	
Auto clear time (sec)	2 2	The measurement value is cleared after the time set for the measurement value indication method "A"	20
Buzzer sound	3 On	On: Buzzer is active OFF: Mute	20
Pass/fail judgment	4 OFF		21
Auto power OFF time (min)	5 2	The power is turned OFF after the specified period in an inactivity state	21
Measurement unit	6 cN·m	cN·m N·m Switching of unit at the time of measurement	22

○ Starting the custom setting screen

Press the "M" button.

1. Press the "M" button

2. Pressing the "M" and "P" buttons at the same time

Press the "M" button while pressing and holding the "P" button. (About 3 seconds)

3. Releasing the "M" and "P" buttons

Release the buttons at the same time.

4. Starting the setting screen

5. Changing the setting

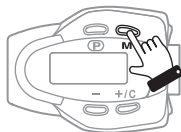
Change the setting of each item.

6. Turning the power OFF

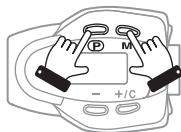
After the setting, turn the power OFF once with the "P" button.

7. Turning the power ON

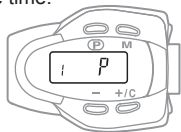
The setting change is applied when the power is back.



Press and hold the "M" button and then press the "P" button. Press and hold at the same time (for about 3 seconds)

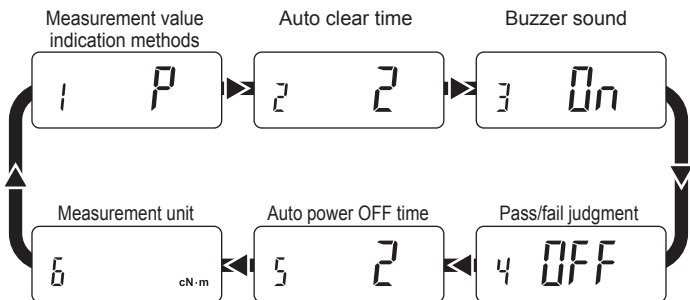


Release the buttons at the same time.



○ Navigation within the custom settings

Press the "M" button to navigate among setting items. Settings can be changed in a row.



○ Setting of the measurement value indication method

1. Starting the custom setting screen

(For startup procedures, refer to P. 18)

2. Navigating to the measurement indication method screen

Press the "M" button to navigate to the mode indicator "1".

3. Selecting an indication method

Use the "+" (plus)/C (clear)" and "-" (minus)" buttons to select a mode.

[P: Peak Hold mode]

Keep the maximum measurement value to indicate it. The value is not cleared until the "+" (plus)/C (clear)" button is pressed.

[A: Auto Clear mode]

The measurement value is displayed for the set time (second) and automatically cleared.

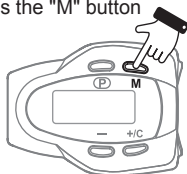
[t: Track mode]

A real-time torque value is indicated without keeping the maximum measurement value.

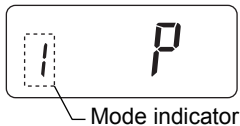
4. Setting completed

Display a mode to change and press and hold the "P" button (for about 3 seconds) to turn the power OFF.

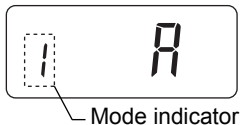
Press the "M" button



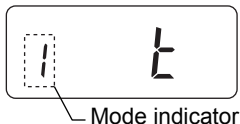
Peak Hold mode indication
(Setting at the time of shipment)



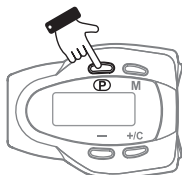
Auto Clear mode indication



Track mode indication



Press and hold the "P" button



○ Setting of the auto clear time

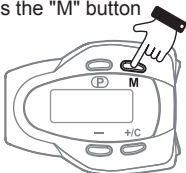
1. Starting the custom setting screen

(For startup procedures, refer to P. 18)

2. Navigating to the auto clear time setting screen

Press the "M" button to navigate to the mode indicator "2".

Press the "M" button



Auto clear time setting screen
(Setting at the time of shipment)



Mode indicator

Check

To auto-clear the measurement value, it is necessary to select the Auto Clear mode in the custom setting "Measurement value indication method".

3. Setting of time

Use the "+" (plus)/C (clear)" and "-" (minus)" buttons to set the time (second).

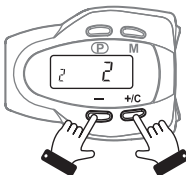
Set time

1 to 10 seconds

(Factory default: 2 seconds)

4. Setting completed

Press and hold the "P" button (for about 3 seconds) to turn the power OFF.



○ Setting of buzzer sound

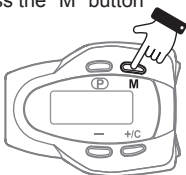
1. Starting the custom setting screen

(For startup procedures, refer to P. 18)

2. Navigate to the buzzer sound setting screen

Press the "M" button to navigate to the mode indicator "3".

Press the "M" button



Buzzer sound setting screen
(Setting at the time of shipment)



Mode indicator

3. Setting of time

Use the "+" (plus)/C (clear)" and "-" (minus)" buttons to configure settings.

On: Buzzer is active

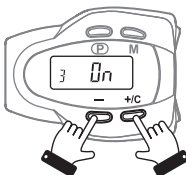
OFF: Mute

4. Setting completed

Press and hold the "P" button (for about 3 seconds) to turn the power OFF.

Setting On/OFF

(Factory default: On)



○ Setting of "Pass/Fail mode"

1. Starting the custom setting screen

(For startup procedures, refer to P. 18)

2. Navigate to the Pass/Fail mode setting screen

Press the "M" button to navigate to the mode indicator "4".

3. Setting the Pass/Fail mode

Use the "+" (plus)/C (clear)" and "-" (minus)" buttons to set a judgment method.

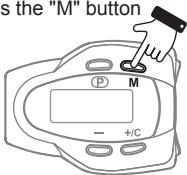
Check

For details of setting and usage of the Pass/Fail mode, refer to P. 14.

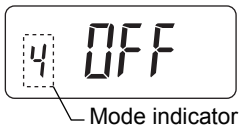
4. Setting completed

Press and hold the "P" button (for about 3 seconds) to turn the power OFF.

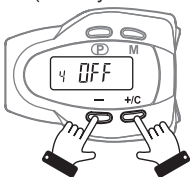
Press the "M" button



Pass/Fail mode setting screen
(Setting at the time of shipment)



Select the judgment direction
(Factory default: OFF)



○ Setting of auto power OFF

1. Starting the custom setting screen

(For startup procedures, refer to P. 18)

2. Navigate to the buzzer sound setting screen

Press the "M" button to navigate to the mode indicator "5".

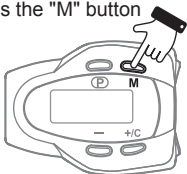
3. Setting of time

Use the "+" (plus)/C (clear)" and "-" (minus)" buttons to set the time (minute).

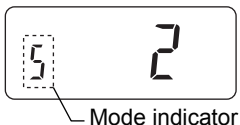
4. Setting completed

Press and hold the "P" button (for about 3 seconds) to turn the power OFF.

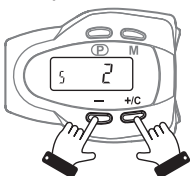
Press the "M" button



Auto power OFF setting screen
(Factory default: 2 minutes)



Set time 1 to 10 minutes
(Factory default: 2 minutes)



○ Setting of the measurement unit

1. Starting the custom setting screen

(For startup procedures, refer to P. 18)

2. Navigate to the measurement unit setting screen

Press the "M" button to navigate to the mode indicator "6".

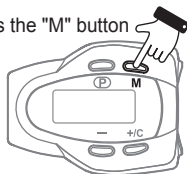
3. Setting of unit

Use the "+" (plus)/C (clear)" and "-" (minus)" buttons to set the unit.

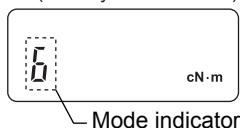
4. Setting completed

Press and hold the "P" button (for about 3 seconds) to turn the power OFF.

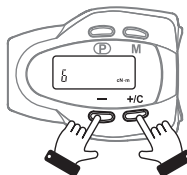
Press the "M" button



Measurement unit setting screen
(Factory default: cN·m)



Unit setting cN·m / N·m
(Factory default: cN·m)



Conversion of unit and input torque value

The Digital Ratchet has a function of measurement value unit conversion.



- The measurement with units other than cN·m and N·m are not available.
- The unit cannot be converted in the Track mode. For custom settings, refer to P. 18.

○ Unit conversion of the target torque value

The unit conversion function can be used at the time of target measurement value setting.

<Units available for conversion>

- N·m (newton-meter)
- kgf·m (kilogram-meter)
- ozf·in (inch-ounce)
- lbf·in (inch-pound)
- lbf·ft (feet-pound)

1. Target torque setting screen

Open the target torque value setting screen in the "Preset mode" or "Pass/Fail mode". For each mode screen, refer to

- Preset mode P12
- Pass/ Fail mode P15.

2. Press the "P" button

Each time the button is pressed, the unit indication changes.

3. Displaying a target torque value

"M" blinks in the upper left part of the display.

When the unit to set is displayed, use the "+" (plus)/C (clear)" and "-" (minus)" buttons to display the set value.

4. Completion

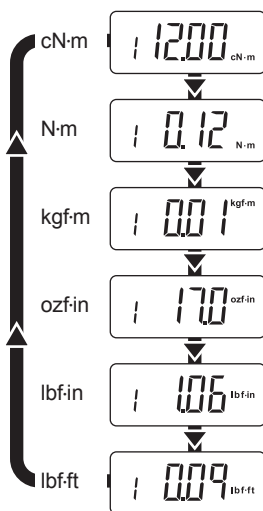
Unit conversion is completed when the unit on the display changes to "cN·m" or "N·m" and it becomes ready for measurement ("0" displayed). (Setting at the time of shipment: cN·m)

Target torque value setting screen

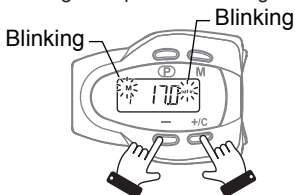


(Example: in the Preset mode)

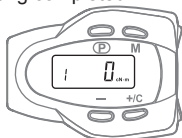
Switching units



Target torque value setting



Setting completed



○ Unit conversion of the measured torque value

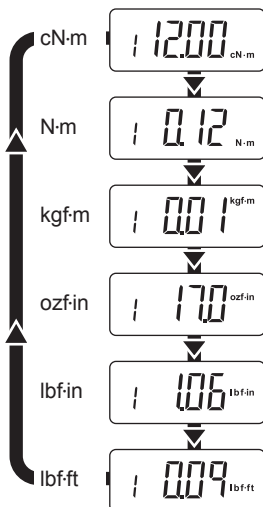
The unit conversion function can be used after the completion of measurement works.

1. Measuring in each mode

2. Converting the unit

After completion of the measurement, press the "P" button to convert the unit once.

Switching units



It is a reference value after unit conversion



Check

- Pressing and holding the "P" button (for about 3 seconds) will turn the power OFF.
- The value after unit conversion is only for reference. Converted values may vary because they are rounded off according to the minimum displayed number of digits.
- The unit display after unit conversion blinks to indicate it is a reference value.

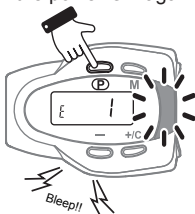
Error indication

■ Description of indications and responses

○ Power ON error

If an error code is displayed after power ON with continuous buzzer sound and LED lighting, take the following response action.

Turn the power ON again

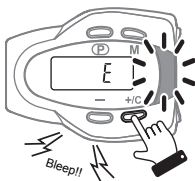


Error code	Response
E1	Turn the power ON again
E2	
E3	Repair is required
E4	
E5	
E6	Turn the power ON again
E7	

○ When the measurement torque range is exceeded

Applying a torque above the measurement torque range set for the Digital Ratchet causes an error.

Press the "c (clear)" button

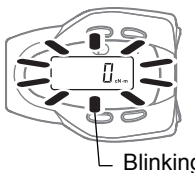


Error code	Response
E	Press "+ (plus)/c (clear)"

Battery replacement required

○ The LCD display blinks

If the entire display blinks, it is time to replace the battery. For battery replacement, refer to P. 6.



- Error code E1, E2 or E6 may be displayed when there is any equipment that generates strong electromagnetic wave around the product when the power is turned ON. Keep it away from the equipment or stop the equipment and then turn the power ON again.
- If the error persists after the indicated response action, repair is necessary. Please contact the distributor.

Maintenance and care



Note

Injury and property damages may be caused.

Picture indication	Important items	Harm and damage
	<ul style="list-style-type: none">Do not use thinner, benzine or alcohol and any cleaner containing organic solvent.	The surface may be deteriorated or deformed.

○ Storage method

Store the product in a dedicated case (supplied).

○ Maintenance and care of the main unit

For care, lightly wipe with soft and dry cloth.

○ About accuracy check

To maintain the accuracy of the Digital Ratchet, check the accuracy (calibration and, if necessary, adjustment) on a regular basis (at least once per year).

*** Torque wrench calibration and adjustment are for value.**

For details, please contact the distributor and so on.



For disposal of the battery, be sure to apply insulation treatment by winding the terminal up with adhesive tape.



Troubleshooting

Symptom	Possible causes	Response	Reference page
The product cannot be turned ON	The insulation sheet is not removed.	Pull out the insulation sheet.	5
	The battery is run out.	Replace the battery.	25
All indications are blinking	The battery is run out.		
Wrong value is indicated	An excessive force is applied on the grip during measurement.	Slowly apply a force during measurement.	9
	A load is applied on the main unit when the power is turned ON.	When turning the power ON, ensure that no excessive force is applied on the grip, etc.	7
	The temperature varied rapidly.	Turn the power ON again at the temperature close to the operating temperature as long as possible.	7