Wireless Digital Torque Wrench “DATA TORK”

MODEL CEM3-G-WF

Operating Instruction

CEM100N3X15D-(G)-WF

Your Torque Partner

TOHNICHI

Safety Precautions

Please read this operating instruction carefully before use. For any questions, contact a Tohnichi authorized distributor or Tohnichi office. Keep this instruction for future use.

Safety symbol

This symbol indicates attention is required for your safety. When this symbol appears in this instruction, pay particular attention for your safety concerns. Take preventative measures according to the written message for appropriate operation and management.

Safety Precautions

A signal word accompanies the safety symbol, which indicates the level of cautions on safety of people and the appropriate use of the equipment. Signal words are classified into 3 levels: "danger", "warning" and "caution" by the degree of risk.

" **Danger**": Imminent danger which may cause serious damage

" **Warning**": Potential danger which may cause serious damage

" **Caution**": Potential danger which hinder ordinary operation but may not lead to serious damage.

Warning

1) **Use only the official Tohnichi charger and battery.**

   Do not use any other chargers and batteries not designated in this manual.

2) **Charge in the appropriate manner.**

   Use this charger only to the rated power source.

   - Doing otherwise may cause abnormal generation of heat, which may result in fire.

   Do not charge the battery in conditions outside of the 0-40 degree Celsius temperature range.

   - Doing so may cause them to burst and cause a fire.

   Do not wrap the charger or battery with a cloth,etc.

   - Doing so may cause them to burst and cause a fire.

   When it is not in use, remove the plug from the power source.

   - Doing otherwise may cause an electric shock or a fire.

3) **Pay attention to the condition of your workplace.**

   Do not use the charger or storage battery in the rain or other wet conditions.

   - Doing so may cause an electric shock and/or damage to the product.

   Keep the workplace brightly lit.

   - Working in dark place may cause an accident.

   Do not use or charge the product in such place where flammable liquid or gas exist.

   - It may cause explosion, fire and other accidents.

4) **Use only the authorized designated accessories and optional equipment.**

Do not use any other accessories or optional equipment other than those designated in this manual.

- It may cause accident or injuries.

5) **Do not throw the battery into a fire.**

- It may explode and/or generate hazardous substances.

6) **Do not disassemble or try to modify the product.**

- Doing so may endanger safety of the product, damage the product performance, life, and/or cause product failure.

7) **Make sure to switch the ratchet lever completely in direction according to your usage requirements (QH interchangeable head).**

- Failing to do so may cause accident, injuries and/or product failure.

8) **Do not extend the handle of the torque wrench with a pipe, etc.**

- Doing so may cause product failure and accuracy error.

9) When using it in high place, take appropriate measures to prevent the product from falling.

- Falling products or sockets may cause accidents, injuries and/or product failures.

1) **Always keep the workplace clean and uncluttered.**

- Untidy place or work stand may lead to accidents.

2) **Keep away from children.**

Do not let young people touch the product or the cable of the charger.

- It may cause injuries.

Keep other people away from the workplace.

- It may cause injuries.

3) **When not in use, take proper care to store it.**

Keep it in dry conditions and lock it so children cannot reach it.

- Failing to do so may lead to accidents.

Do not keep the product or the battery in such condition where the temperature may rise as high as 50 degrees Celsius.

- Doing so may damage the battery performance and cause smoke and/or fire.

4) **Do not use the product beyond its capacity.**

In order to use the product safely and effectively, set the torque within the product capacity.

- Using the product beyond its capacity may cause accidents or product failure.

5) **Choose the product that fits the required operation.**

Do not use the product for purposes other than those specifically designated in this manual.

- Doing so may cause injuries.

6) Do not handle the charger cable roughly.

Do not carry tool by the charging cable. When pulling out the plug, do not pull from back along the cable.

Keep the cable away from heat, oil, and do not force it against sharp corners to avoid physical damage to the cable.

Carefully choose the place for charging so that the cable is not subject to any external damage.

- It may cause an electric shock and/or fire.

7) Keep your posture in natural and firm position.

Keep your feet on the ground firmly and maintain your balance.

- Failing to do so may cause injuries.

8) Take good care of the product.

To change accessories, follow the instruction manuals.

- Doing otherwise may cause injuries.

Check the cable of the charger periodically, and contact the nearest distributor or Tohnichi for repair.

- Doing otherwise may cause an electric shock and/or a fire.

When using an extension cord, conduct a periodic check and change with a new one if there is any damage.

- Otherwise it may cause an electric shock and/or a fire.

Keep the handle dry and clean, keep it from oil or grease.

- Otherwise it may cause injuries.

9) Check if there is any damage to parts of the product.

Before use, check the case and other parts to make sure they are functioning properly.

Check everything that may affect the ordinary operation.

Do not use the charger with damaged plug or damaged cable or ones with any physical damage.

- Otherwise it may cause an electric shock, short-circuit and/or a fire.

NOTES

1) Use only the accompanying charger for charging the battery.
2) Only use the battery designated in this manual.
3) Use the product only within the operating environment specified in this manual.
4) Do not disassemble the product.
5) Check the functions and settings before use.
6) Be careful not to expose the product to water or oil as it may cause malfunction.
7) Do not drop the product or hit it against other objects as it may cause product failures.
8) Do not use the product beyond its capacity specified in this manual.
9) Make sure to conduct daily inspection as well as periodic inspection.
10) Push clear and make sure the display shows zero (zero adjustment) before measuring.
11) For accurate measurement, hold the center of the effective length line and apply force in right angle against the handle.
12) Connect the torque wrench and the interchangeable head firmly.

If there is strange smell or fire on usage, stop use.
Move this instrument to a safety place, and contact Tohnichi.

*** For handling of used battery ***

Nickel metal hydrogen battery is used on this product.

We appreciate your utmost efforts to recycle it to save the resources.

Ask the distributors or Tohnichi Japan or overseas facility.

Contents

1. Outline

CEM3-G-WF is 2.4/5GHz Wireless LAN digital torque wrench. It is ideal for either tighten fastener inspection or production tightening.

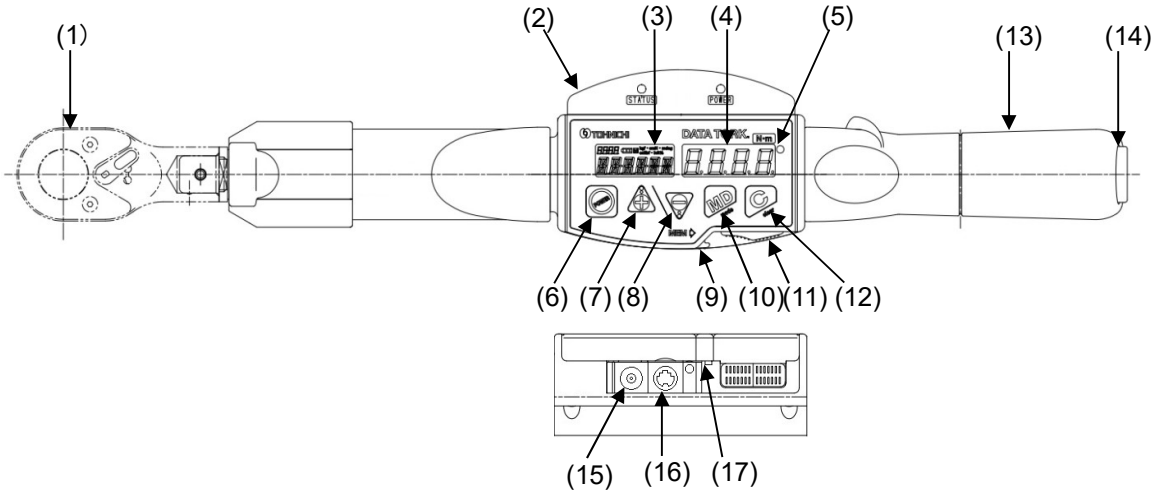
2. Features

- Connect to a network or directly to your device using IEEE 802.11 11a/b/g/n 2.4/5GHz wireless
- Available the 2.4 GHz and 5 GHz dual bands
- Changeable between simplex communication mode for inspection and duplex communication mode for production
- CEM3-G-WF is able to be set High/ Low torque values via 2.4/5GHz Wireless LAN and one tool would can work for multiple fasteners without tool changing. That saves time to change the tool, costs for installation and tool managing. It is ideal for cell lot productions and small lot production line
- Selectable display mode between counter mode which is storable up to 999 data and Hi/ Lo display mode which shows torque range of your set
- CEM3-G-WF is able to be connected either direct or via wireless LAN access point
- CEM3-G-WF is able to change the tool enable/ disable wirelessly, that prevents to use the wrong tool accidentally.

3. Composition

1) Body …….. 1pc.
2) Battery pack: BP-5 …… 1pc.
3) Interchangeable head QH (Suitable ratchet head) ……... 1pc.
4) BC-3-G ……. 1pc.
5) Instruction manual …… 1pc.

4. Components



(1) Interchangeable head

The drawing above shows attached QH interchangeable head. Tohnichi head SH, RH, RQH, DH, HH and FH are also available. NOTE: PH head can't be used

(2) Wireless LAN module

There are wireless LAN module and antenna inside

(3) Liquid crystal display (LCD)

It shows counter number, Hi/ Lo torque values, battery life indicator, unit of measure and clock

(4) 7 segments LED display

It shows torque value

(5) Tightening completion, judgment LED

Blue LED turns on for tightening completion OK and red LED turns on for NG

(6) : Power button

Switch to poser on and off. When power is on, does zero check on torque measurement

Press and hold it for 2 seconds to turn off wireless LAN module power

(7) : Upper arrow key

Sends a counter one by one or continuously to read out the measured

Press and hold to fast-forward

(8) :Down arrow key

Sends a counter one by one or continuously to read out the measured

Press and hold to fast-forward

(9) Terminal cover

This cover protects each terminal from dust and debris

(10) : Mode key

When counter 000: Press and hold for 2 seconds to move to setting mode

(11) MEM : Memory key

Saves and transfers the displayed data to external device

(12) : Clear key

Clears saved data (measurement value, date) on peak mode. Takes auto zero adjustment on run mode

(13) Grip

There is a battery pack (BP-5) inside

(14) Battery cap

Remove it when exchanging battery (Counter clockwise thread)

(15) Charge jack

Connect BC-3-G charge to this jack for charging

(16) External output terminal

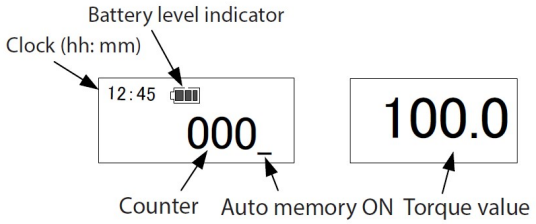
Terminal to connect RS232C cable or USB cable to transfer data

(17) Reset button

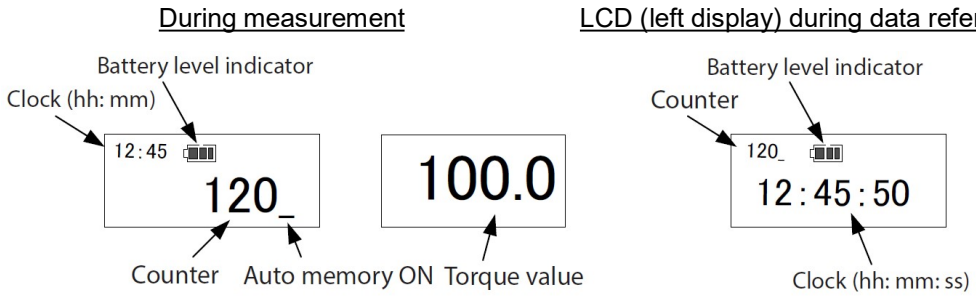
Press it when display shows error or malfunction happens

[Description of display]

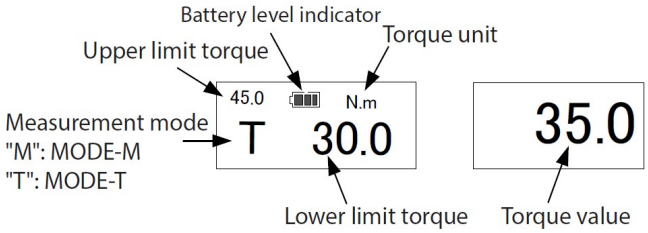
- RUN mode (The counter is “000”)



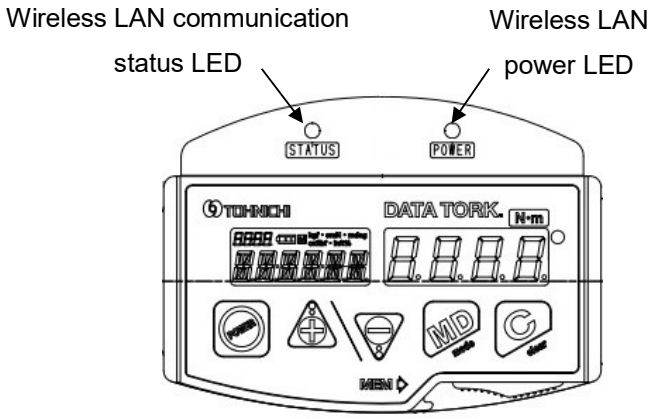
- Peak mode (The counter is “000” to “999”)



- Hi/ Lo torque display mode



[Description of wireless LAN module]



- Wireless LAN power LED

Red LED turns on during wireless LAN power is on. Press and hold for 2 seconds when CEM3-G-WF power is on to turn off all power.

- Wireless LAN communication status LED

Blue LED blinks when tool connects with access point, solid blue LED turn on when tool connect with PC or server via access point.

Blink blue LED: Connects with access point only

Solid blue LED: Connects with access point and server

5. Explanation of each mode

CEM3-G-WF has two modes that are Measurement mode and Display mode

5.1. Measurement mode (Default: MODE-T)

- Inspection mode (MODE-M)

MODE-M is ideal for re-tightening and breakaway inspections. The tool makes judgement the measured torque result if there are set the High/ Low limit torque values.

- Tightening mode (MODE-T)

MODE-T is ideal for tightening process. When you set the High/ Low limit torque values the tool gives beep intermittent and blue LED blinking if the torque value reaches about 80% of lower limit torque. Once reaches on lower limit torque value the tool gives beep continuous and solid blue LED to tell tightening completion. The Hi/ Lo torque values can be set through wireless LAN.

5.2. Display mode (Default: MEMCNT)

- RUN mode (The counter is “000”)

The display shows the torque value being applied at the moment and returns to zero when torque is released.

- MEMCNT (Memory counter display mode)

The left display shows memory counter number and right display shows torque value. The maximum torque will be captured and the right display holds it. When you save the data, it is tied with counter number and stored with time stamp on the tool.

- TORQUE (High/ Low limit torque display mode)

The left display shows lower limit torque on upper left corner and upper limit torque on middle of display. The maximum torque will be captured and the right display holds it.

6. Explanation of each feature

6.1. Auto zero

In the RUN mode, press key, and auto zero adjustment works.

If the displayed torque is more than 7.5 of the maximum capacity torque, the display shows "Err9".

<Display shows “Err9”>

Press key without torque load.

If “Err9” disappears, this instrument can be used normally.

If not, press reset key and key once again.

6.2. Error message

<Err 1 to 5> Error in membrane switch

- Turn off the power once and turn it on again without touching any keys.

-If error disappears, then is operates normally.

-If not, contact TOHNICHI or the nearest distributor to ask for repair.

<Err 8> Error in data memory

- Contact TOHNICHI or the nearest distributor to ask for repair.

<Err 9> Error in the circuit board or the torque sensor

- At no load condition, press key.

-If “Err9” disappears, then it operates normally.

-If not, contact TOHNICHI or the nearest distributor to ask for repair.

6.3. Auto memory/ reset

After tightening or measuring, the values are automatically saved and forward to the counter to the next. Auto memory timing can be selected from 0.1 to 5 seconds.

If you do not want to use auto memory function, set it as 0.0 seconds.

6.4. Judgment

Set the lower and higher limit torques, these judge whether the measured result are within the range or not.

Under the Tightening mode (MODE-T), when you set the high/ low torque and angle, double tightening detection angle, and direction of tightening, the tool gives the beep intermittent and blue LED if the torque value reaches about 80% of low limit torque. Once reaches on low limit torque value the tool give beep continuous and red LED.

Under the Inspection mode (MODE-M), if you set the high and low limit torque values the tool makes judgment the measured torque result.

If you set the Auto memory/ reset, the judgment is made automatically.

6.5. Mute

By setting “Off” on buzzer output setting, the buzzer sound on key operation will be turned off. However, over-torque alarm, tightening completion, NG judgment alarm remains effective.

6.6. Electric power saving

When it is left without any key operation of tightening operation for about 1 minute 7-segment LED darkens to save electricity. This mode is available when Auto power off is set ON.

6.7. Auto power off

When it is left without any key operation of tightening operation for a set time (default setting is 3 minutes) or unloading condition (loading torque is less than 7.5% of the max. torque range of the model), the power will automatically turn off.

If you prefer not to use Auto power off, set it to OFF.

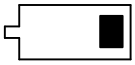
At “LoBATT” alarm condition, power will turn off in 1 minute regardless of the above condition

6.8. Residual battery indicator

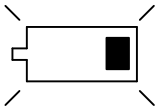
Residual battery amount is indicated on the display as follows:

Full

Half remaining



Time to charge battery



No battery available. Recharge immediately.

No key operation works except for , and it automatically turns off in 1 minute.

Each settings and data remain unchanged even after “LoBATT” condition.

6.9. Over-torque alarm

When it exceeds 105% of the maximum measurable torque, the value on the display and “- - - -“ blinks alternatively and the buzzer does on.

6.10. Over-torque alarm/ Peak torque hold starting value

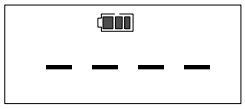
(N.m case)

Model	Torque range		1 digit	Over-torque alarm (105% of Max. capacity torque)	Peak hold starting torque (7.5% of Max. capacity torque)	Auto zero range (7.5% of Max. capacity torque)
	Min.	Max.				
CEM10N3X8D-G-WF	2.00	10.00	0.01	10.50	0.75	0.75
CEM20N3X10D-G-WF	4.00	20.00	0.02	21.00	1.50	1.50
CEM50N3X12D-G-WF	10.00	50.00	0.05	52.50	3.75	3.75
CEN100N3X15D-G-WF	20.0	100.0	0.1	105.0	7.5	7.5
CEM200N3X19D-G-WF	40.0	200.0	0.2	210.0	15.0	15.0
CEM360N3X22D-G-WF	72.0	360.0	0.4	378.0	27.0	27.0
CEM500N3X22D-G-WF	100.0	500.0	0.5	525.0	37.5	37.5
CEM850N3X32D-G-WF	170	850	1	893	64	64

6.11. Enable/ Disable tool

CEM3-G-WF can be enabled/ disabled through commands via wireless LAN connection to prevent the tool would be used accidentally.

Please refer the "10.3 Communication format" for details



7. Operation examples - Inspection mode operation

7.1. Counter display mode without judgment

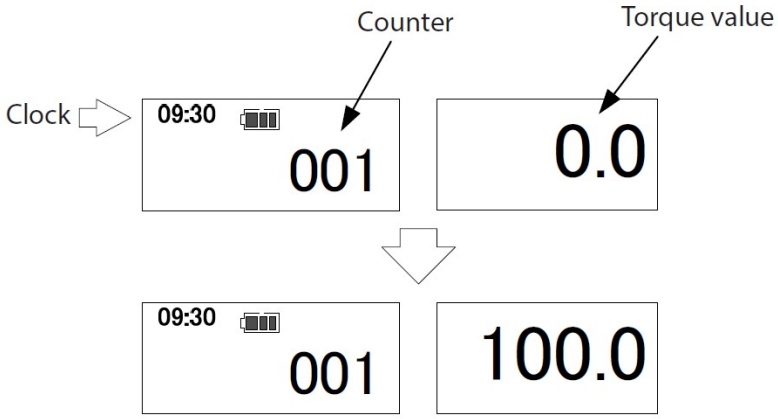
Captures, stores and outputs the peak torque (Default)

i. Set measurement mode to “MODE-M” (Default)

ii. Set display mode to “MEMCNT” and Hi/ Lo limits to “0” (Default)

iii. Make sure the LCD left side display shows counter between “001” to “999” then measure

NOTE: Display can captures from about 7.5% of torque capability

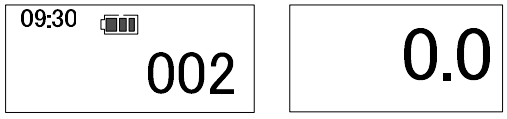


iv. When press MEM key after measurement, tool stores the peak torque and timestamp. If there is wireless LAN connection on the tool, it outputs them.

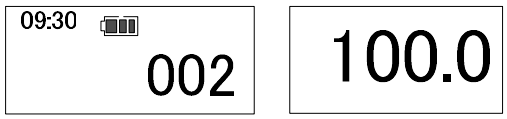
NOTE: The time of timestamp is at the MEM key pressed. If there is Auto memory/ reset setting the data are stored/ output automatically.

v. Peak torque on the display will be reset and goes to next counter

NOTE: if there is a measured data on the counter number display shows it

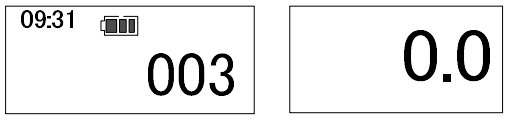


vi. If load the torque and exceed the value on display the peak reading is updated.



vii. When press MEM key after measurement, tool stores the peak torque and timestamp. If there is wireless LAN connection on the tool, it outputs them.

viii. Peak torque on the display will be reset and goes to next counter



7.2. Counter display mode with judgment

Captures the peak torque and makes judgment due to your setting tolerance. Then stores and outputs the data to server

i. Set measurement mode to “MODE-M” (Default)

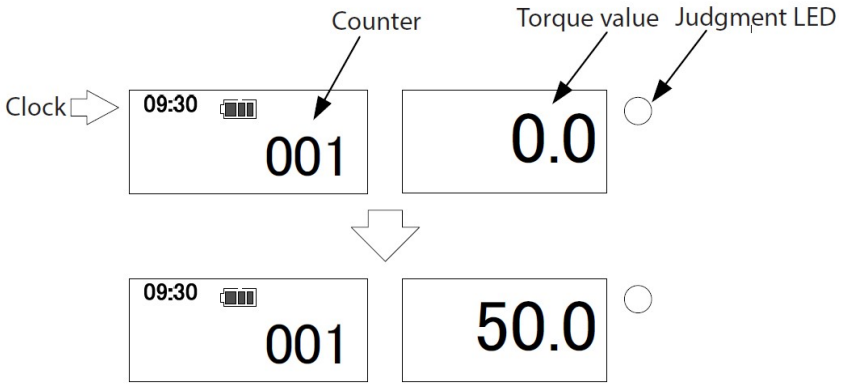
ii. Set display mode to “MEMCNT” and High/ Low limit values

NOTE: if you set Hi/ Lo limits to "0" tool does not judge.

On this instruction manual, set to 55 Nm for High limit, to 45 Nm for low limit for example.

iii. Make sure the LCD left side display shows counter between “001” to “999” then measure

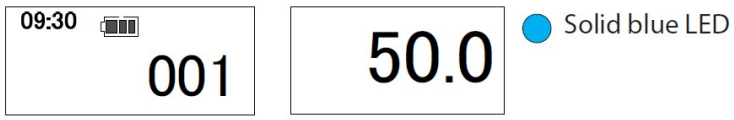
NOTE: Display can captures from about 7.5% of torque capability



iv. When press MEM key after measurement, tool judges the result. If there is Auto memory/ reset setting the judgment will be performed automatically.

[When judgment is OK]

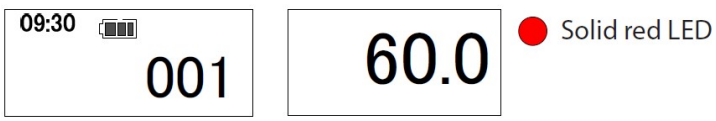
Shows the solid blue LED for about 0.5 seconds and stores the data. If there is wireless LAN connection on the tool, it outputs data.



[When judgment is NG]

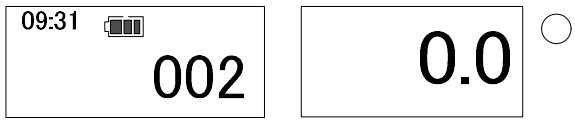
The red LED turns on and buzzer sounds continuously. Press MEM key to save and output the data, or press key to clear.

If there is "NGAUTO" output setting the data will be output automatically even if get judgment result is NG. If there is wireless LAN connection on the tool, it outputs data.



v. Peak torque on the display will be reset and goes to next counter

NOTE: if there is a measured data on the counter number display shows it



7.3. High/ Low limit values display mode with judgment

Shows High/ Low limit values on left display. When press MEM key or Auto reset It makes judgment in the range or not after measurement, then outputs data to the server

i. Set measurement mode to “MODE-M” (Default)

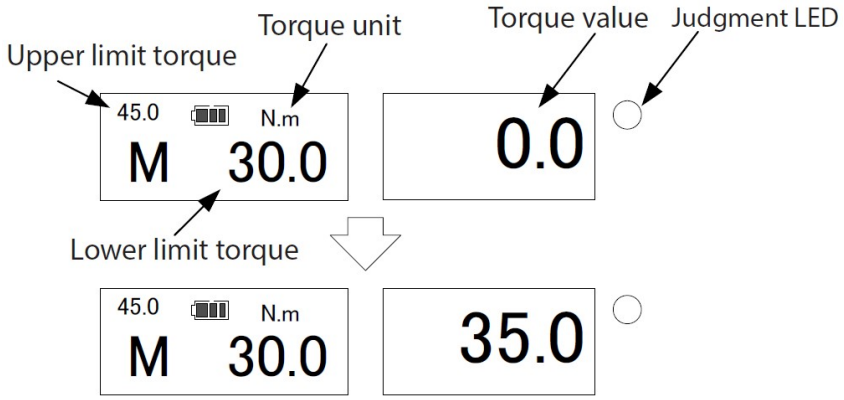
ii. Set display mode to “TORQUE” and High/ Low limit values

NOTE: if you set High/ Low limits to "0" tool does not judge.

On this instruction manual, set to 45 Nm for High limit, to 30 Nm for low limit for example.

iii. Make sure the LCD left side display shows High/ Low limit values then measure

NOTE: Display can captures from about 7.5% of torque capability



iv. When press MEM key after measurement, tool judges the result. If there is Auto memory/ reset setting the judgment will be performed automatically.

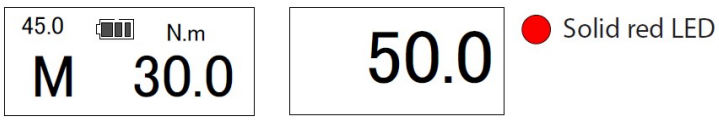
[When judgment is OK]

Shows the solid blue LED for about 0.5 seconds and stores the data. If there is wireless LAN connection on the tool, it outputs data.

[When judgment is NG]

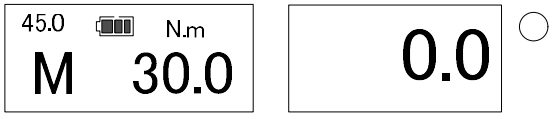
The red LED turns on and buzzer sounds continuously. Press MEM key to save and output the data, or press C key to clear.

If there is "NGAUTO" output setting the data will be output automatically even if get judgment result is NG. If there is wireless LAN connection on the tool, it outputs data.



v. Peak torque on the display will be reset and ready to next measurement

NOTE: The tool does not store the data under “TORQUE” mode



8. Operation examples - Tightening mode operation

8.1. Counter display mode with judgment

Gives the beep intermittent and blue LED blinking when approach on settings torque. Captures the peak torque and makes judgment due to your setting tolerance. Then stores and outputs the data to server

i. Set measurement mode to “MODE-T”

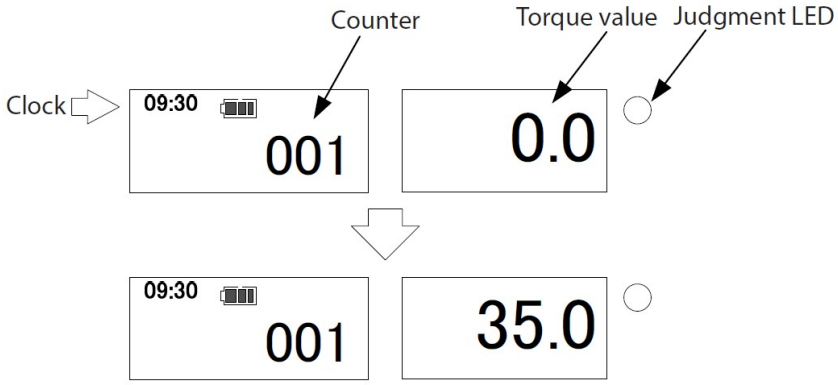
ii. Set display mode to “MEMCNT” and High/ Low limit values

NOTE: if you set Hi/ Lo limits to "0" tool does not judge.

On this instruction manual, set to 60 Nm for High limit, to 50 Nm for low limit for example.

iii. Make sure the LCD left side display shows counter between “001” to “999” then measure

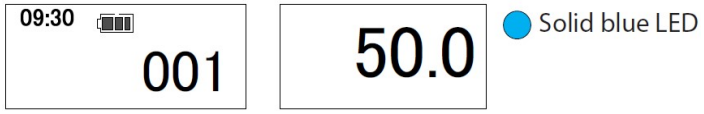
NOTE: Display can captures from about 7.5% of torque capability



iv. The tool gives the beep intermittent and blue LED blinking when the torque value reaches about 80% of low limit torque.

v. Once reaches on low limit torque value the tool gives beep continuous and blue LED.

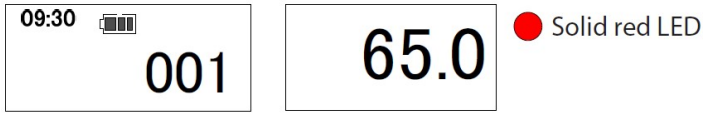
[When judgment is OK]



vi. When press MEM key after measurement, tool stores the peak torque and timestamp. If there is wireless LAN connection on the tool, it outputs them.

NOTE: The time of timestamp is at the MEM key pressed. If there is Auto memory/ reset setting the data are stored/ output automatically.

[When judgment is NG]

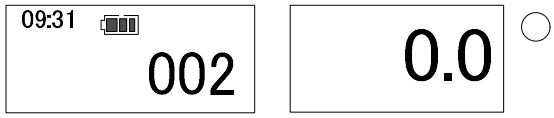


The tool gives the solid red LED. Press MEM key to store and output data, press key to clear the measured data.

If there is "NGAUTO" output setting the data will be output automatically even if get judgment result is NG. If there is wireless LAN connection on the tool, it outputs data.

vii. Peak torque on the display will be reset and goes to next counter

NOTE: if there is a measured data on the counter number display shows it



8.2. <u>High/ Low limit values display mode with judgment</u>

Shows High/ Low limit values on left display. Gives the beep intermittent and blue LED blinking when approach on settings torque. When press MEM key or Auto reset It makes judgment in the range or not after measurement, then outputs data to the server

i. Set measurement mode to “MODE-T”

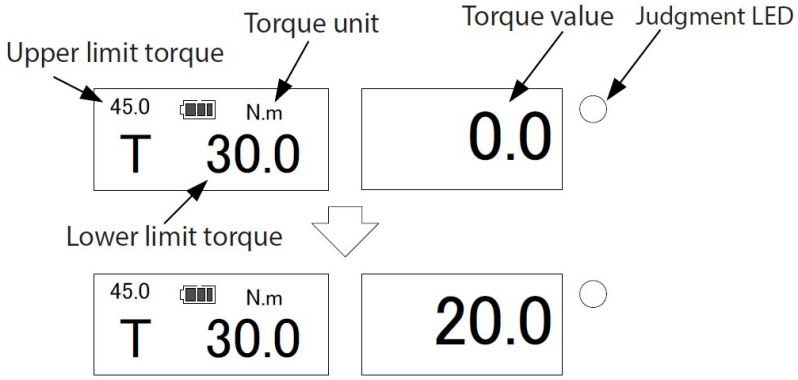
ii. Set display mode to “TORQUE” and High/ Low limit values

NOTE: if you set High/ Low limits to "0" tool does not judge.

On this instruction manual, set to 45 Nm for High limit, to 30 Nm for low limit for example.

iii. Make sure the LCD left side display shows High/ Low limit values then measure

NOTE: Display can captures from about 7.5% of torque capability



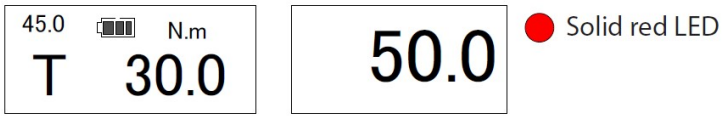
iv. The tool gives the beep intermittent and blue LED blinking when the torque value reaches about 80% of low limit torque.

v. Once reaches on low limit torque value the tool gives beep continuous and blue LED.

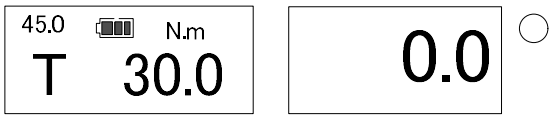
[When judgment is OK]

vi. When press MEM key after measurement, tool stores the peak torque and timestamp. If there is wireless LAN connection on the tool, it outputs them.
NOTE: The time of timestamp is at the MEM key pressed. If there is Auto memory/ reset setting the data are stored/ output automatically.

[When judgment is NG]

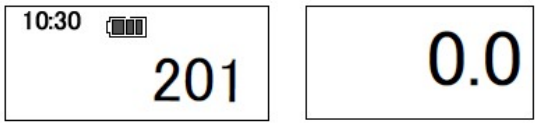


vii. Peak torque on the display will be reset and ready to next measurement
NOTE: The tool does not store the data under “TORQUE” mode



9. Operation examples - Counter display mode operation

9.1. Checking the measured data



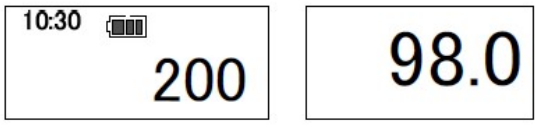
: Send the counter forward

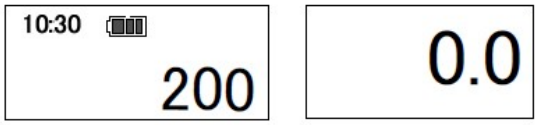
: Send the counter backward

Press and hold it to fast-forward

Example) Refer the data on counter #200 and timestamp

Note: When press key while display timestamp the counter moves and shows counter data immediately



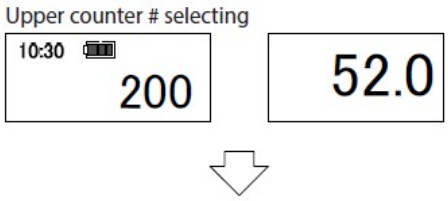


Example) Refer the data on counter #200 and timestamp

Note: Does not shows timestamp if there is no data stored

9.2. Data processing function

It processes the measured data to calculate the data quantity, maximum/ minimum/ average torque of the selected data range



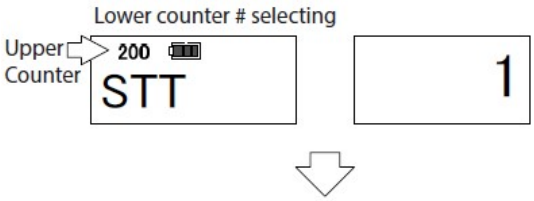
Set the counter number to the upper end that you need using ▲▼ keys, then press MD key to the next

Example 1) To process data 001 to 200

Set counter to 200 and press MD key. Confirm STT shows 1 and press MD to the next

Example 2) To process data 101 to 200

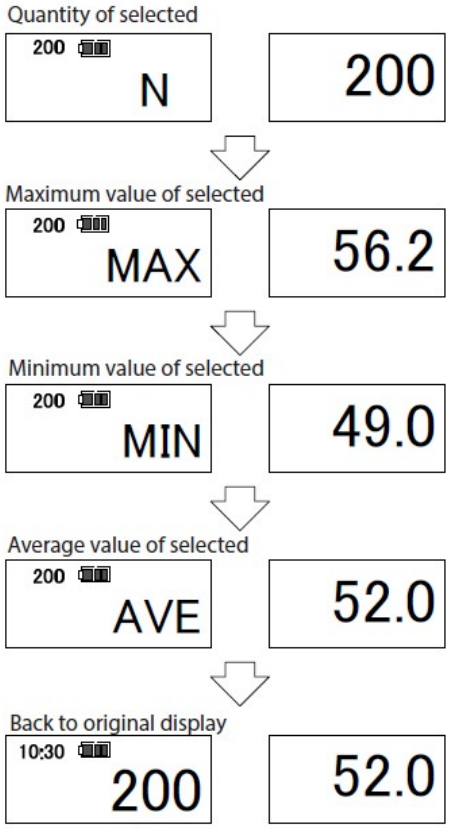
Set counter to 200 and press MD key. Set STT number to 101 and press MD to the next



Set the number on right display to the lower end that you need using ▲▼ keys then press MD key to the next

Press ESC to return to measurement mode

NOTE: This feature valid to only data stored



Press MD key to proceed

Press ESC to return to measurement mode

Press MD key to proceed

Press ESC to return to measurement mode

Press MD key to proceed

Press ESC to return to measurement mode

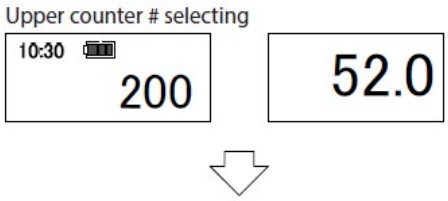
Press MD key to proceed

Press ESC to return to measurement mode

9.3. Batch output of measurement data

It outputs the selected measurement data (torque and timestamp) to external device

Build connection with server via wireless LAN before proceed it



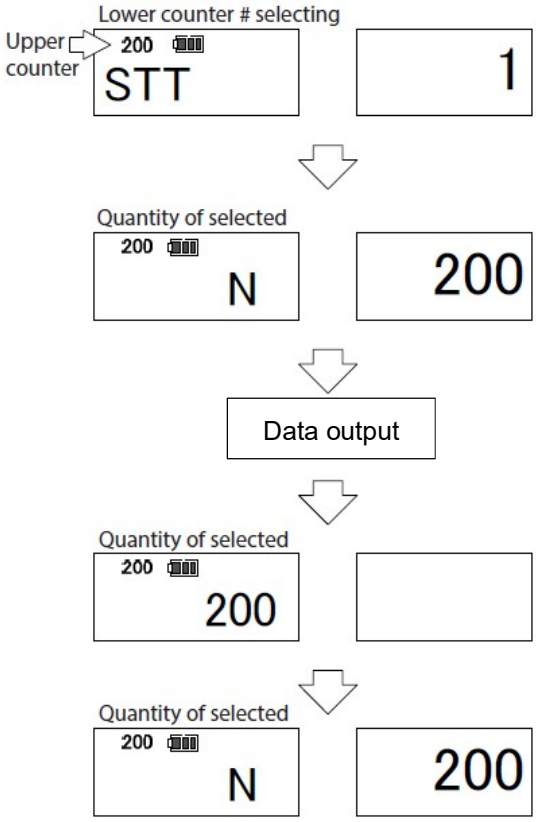
Set the counter number to the upper end that you need using ▲▼ keys, then press MD key to the next

Example 1) To process data 001 to 200

Set counter to 200 and press MD key. Confirm STT shows 1 and press MD to the next

Example 2) To process data 101 to 200

Set counter to 200 and press MD key. Set STT number to 101 and press MD to the next



Set the number on right display to the lower end that you need using ▲▼ keys then press MD key to the next

Press ◎ to return to measurement mode

Press MEM key to batch output

Press ◎ to return to measurement mode

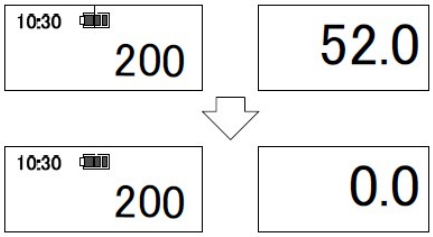
NOTE: Press ◎ to cancel outputting

Only ◎ available during data output

Data output complete

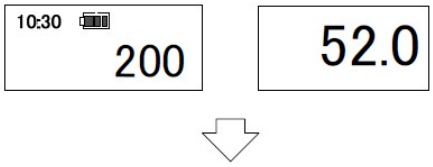
9.4. Data clearance

(1) : Delete a single data



Set counter # to be deleted using ▲\▼
Press [MD] to delete data

(2) : Delete the selected range of data



Set the counter number to the upper end that you need using ▲\▼ keys, then press [MD] key to the next

Example 1) To process data 001 to 200

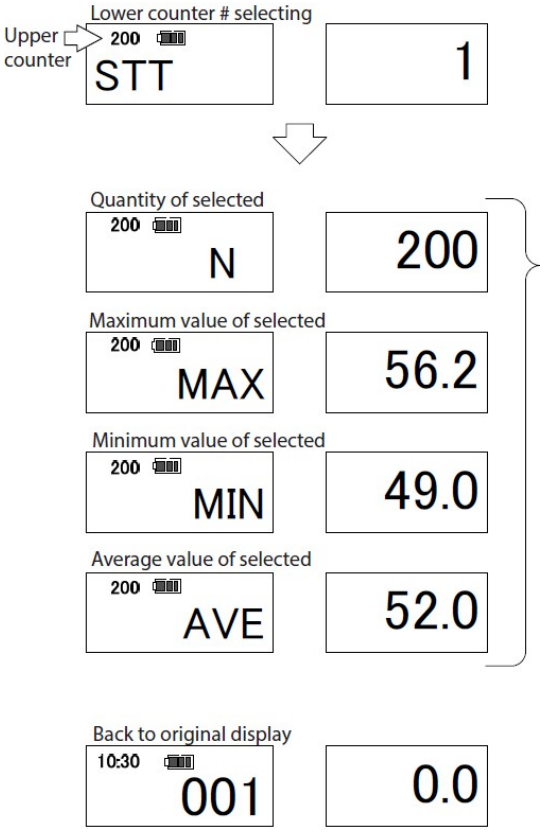
Set counter to 200 and press [MD] key. Confirm STT shows 1 and press [MD] to the next

Example 2) To process data 101 to 200

Set counter to 200 and press [MD] key. Set STT number to 101 and press [MD] to the next

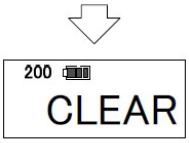
Example 3) To delete all data

Set counter to 999 and press [MD] key. Confirm STT shows 1 and press [MD] to the next



Set the number on right display to the lower end that you need using ▲\▼ keys then press [MD] key to the next
Press [C] to return to measurement mode

Press [MD] key and [C] key at the same time when the left display shows either "N", "MAX", "MIN" or "AVE" such as the left example displays. Then release both keys.



Data deletion complete

Display return to lower end counter and to measurement mode

10. External output format

10.1. Wireless LAN communication specifications

Wireless Standard	IEEE 802. 11a/b/g/n
Frequency	11b/g/n : 2.4/ 5GHz 11b/g : 2.4GHz 11n/a : 5GHz
Transmission Speed	11b : Max. 11 Mbps 11a/g : Max. 54 Mbps 11n : Max. 72.2 Mbps
Modulation Method	11b : DSSS 11a/g/n : OFDM
Authentication Method	WPA2
Protocol	TCP/IPv4
Communication Distance	Approx. 50 m*
Acquisition of license	TELEC, FCC, IC, SRRC

*Varies depend on performance of radio conditions and communication connection partner device

10.2. PC/USB Communication conditions

Baud rate	2400, 4800, 9600, 19200 bps
Parity	None
Data length	PC : 7 bit USB : 8 bit
Stop bit	1 bit

NOTE: When using optional USB (SUB connector corresponding serial output) cable, catalog #584, driver software is required to be installed on your PC

10.3. Communication format

i. Output format for “M3+ID” mode (from CEM3-G-WF to External device)

·Counter display mode

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
R	E	,	0	1	0	,	+	1	0	0	.	0	,	n	m				,	1	2	3	4	5	6	A	,

Header | 3 digits counter | torque with decimal point | Unit of torque | Serial number

29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
1	8	/	1	0	/	2	2	,	1	3	:	4	5	:	1	0	CR	LF

Date (yy/mm/dd) | Time (hh/mm/ss) | Delimiter

·High/ Low limit values display mode

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
R	E	,	0	1	0	,	+	1	0	0	.	0	,	n	m				,	1	2	3	4	5	6	A	,

Header — 3 digits counter (Fixed to "001") — torque with decimal point — Unit of torque — Serial number

29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
1	8	/	1	0	/	2	2	,	1	3	:	4	5	:	1	0	CR	LF

Date (yy/mm/dd) — Time (hh/mm/ss) — Delimiter

ii. Output format for “M-3” mode (from CEM3-G-WF to External device)

·Counter display mode

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
R	E	,	0	1	0	,	1	0	0	.	0	,	1	6	/	0	8	/	2	2	,	1	2	:	4	5	:	1	0	CR	LF

Header — 3 digits counter — torque with decimal point — Date (yy/mm/dd) — Time (hh/mm/ss) — Delimite

·High/ Low limit values display mode

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
R	E	,	0	1	0	,	1	0	0	.	0	,	1	6	/	0	8	/	2	2	,	1	2	:	4	5	:	1	0	CR	LF

Header — 3 digits counter (Fixed to "001") — torque with decimal point — Date (yy/mm/dd) — Time (hh/mm/ss) — Delimite

iii. Input command for High/ Low limit values (from External device to CEM3-G-WF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
A	T	0	3	7	,	2	0	.	0	0	,	1	0	.	0	0	CR	LF

Header — Upper limit torque with decimal point — Lower limit torque with decimal point

NOTE: Adjust the decimal point depend on the model and unit of measure.

Example 1) Set to 20 Nm for higher and 15 Nm for lower limit for CEM20N3X10D-G-WF

Send a command “AT037,20.00,15.00CRLF”

Example 2) Set to 90 Nm for higher, 80 Nm for lower limit for CEM100N3X15D-G-WF

Send a command “AT037,090.0,080.0CRLF”

Example 3) Set to 600 Nm for higher, 500 Nm for lower limit for CEM850N3X32D-G-WF

Send a command “AT037,0600.,0500.CRLF”

iv. Input commands to enable/ disable tool (from External device to CEM3-G-WF)

1	2	3	4	5	6	7	8	9
A	T	0	4	7	,	0	CR	LF

"0": Tool activate

"1": Tool deactivate

v. Response commands (from External device to CEM3-G-WF)

·Received successfully

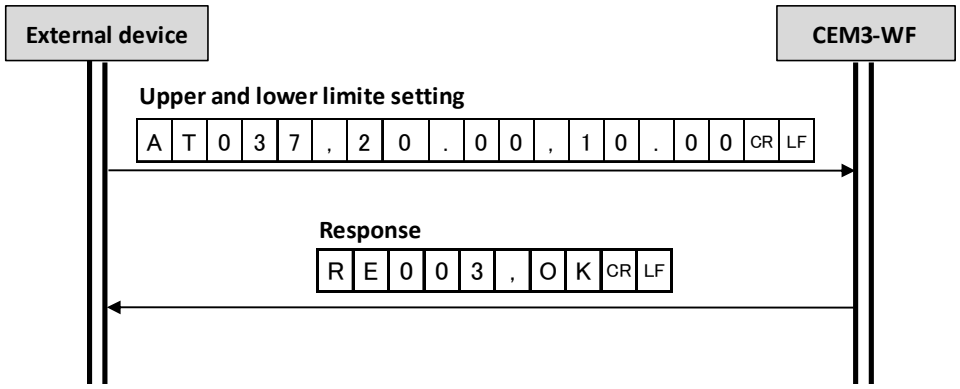
1	2	3	4	5	6	7	8	9	10
R	E	0	0	3	,	O	K	CR	LF

·Received error or setting error

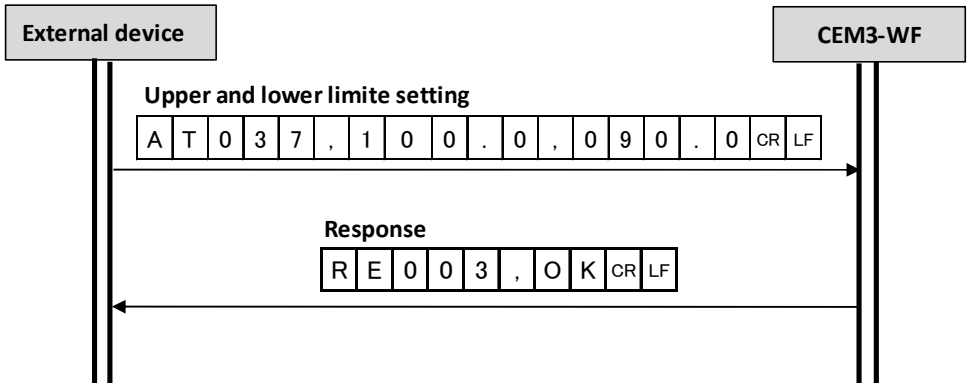
1	2	3	4	5	6	7	8	9	10	11	12	13
R	E	0	0	4	,	E	R	R	O	R	CR	LF

10.4. Example of communication

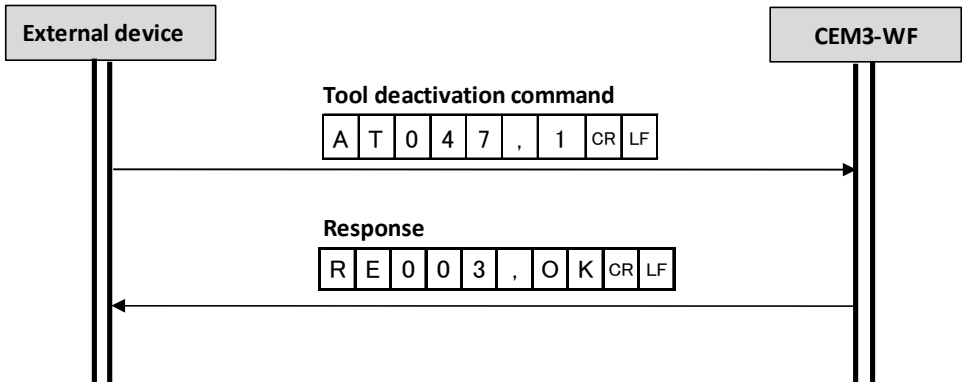
i. When set to 20.00 for Higher and 10.00 for lower limit torques for CEM50N3X12D-G-WF



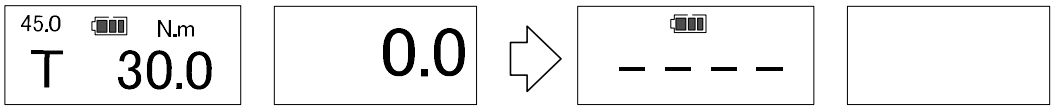
ii. When set to 100.0 for Higher and 90.00 for lower limit torques for CEM200N3X19D-G-WF



iii. When send a disable tool command to CEM3-G-WF



Display shows "- - - -" and can't measure the torque



Send command “AT047,0CRLF” to enable the tool

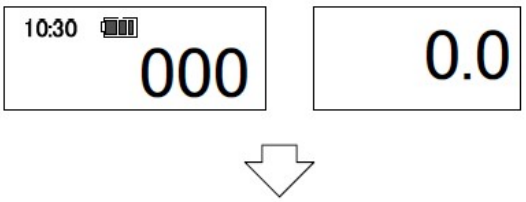
11. Various settings

11.1. Setting items

Setting items	Display	Default	Selectable from	Note
Measurement mode	SEL	MODE-M	MODE-M/ MODE-T	
Display mode	dISP	MEMCNT	MEMCNT / TORQUE	
Unit of torque	USEL	N·m	N·m/ kgf·cm/ kgf·m/ lbf·in/ lbf·ft	
Higher limit torque	HI	0	0 ～ Maximum capacity	
Lower limit torque	Lo	0	0 ～ Maximum capacity	Has to be less than higher limit torque
Trigger torque	Trg	0	0/ 5% ～100% of capacity	
Tightening direction	tUrn	CW	CW/ CCW/ BOTH	
Auto reset timer	Ar	0.0	0.0/ 0.1～5.0	
NG data processing	ng	NG_MAN	NG_MAN/ NGAUTO	
Buzzer	bU	ON	ON/ OFF	
Auto power off	PoFF	3MIN	3MIN/ 10MIN/ 30MIN/ OFF	
Communication mode	do	WLAN	WLAN / WLANDR / PC / USB	
Baud rate	bps	-	2400/ 4800/ 9600/ 19200	For PC or USB communication mode
Communication format	dCn	M-3	M-3/ M3+ID	
Default setting	dFLt	DFT-N	DFT-N/ DFT-Y	
Time	rtC1	-	-	
Date	rtC2	-	-	

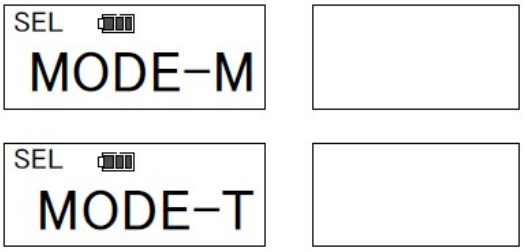
11.2. Setting procedure by key operation

Set the counter to “000” using ▲▼ keys



Press and hold MEM more than 2 seconds to get in setting mode

i. Measurement mode setting



Select the measurement mode using ▲▼

“MODE-T”: Tightening mode

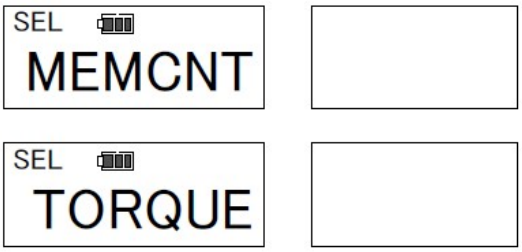
“MODE-M”: Inspection mode

Press MEM to save setting and go to next

Press ESC to skip setting and go to next

Press C to return to Measurement mode

ii. Display mode setting



Select the display mode using ▲▼

“MEMCNT”: Memory counter display mode

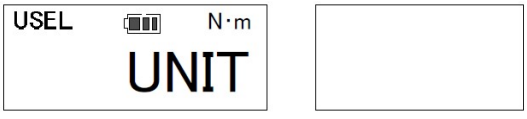
“TORQUE”: High/ Low limit display mode

Press MEM to save setting and go to next

Press ESC to skip setting and go to next

Press C to return to Measurement mode

iii. Unit of torque



Select the unit of measurement using ▲▼

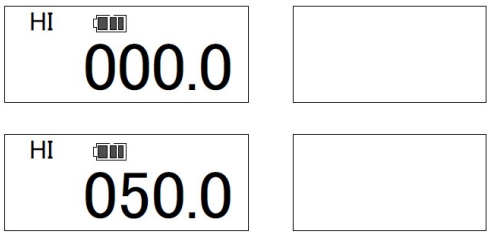
Press MEM to save setting and go to next

Press ESC to skip setting and go to next

Press C to return to Measurement mode

Next setting

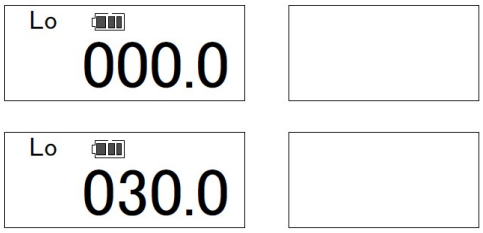
iv. Higher limit torque setting



Set the number using ▲
Move the digit using ▼

Press MEM to save setting and go to next
Press NO to skip setting and go to next
Press C to return to Measurement mode

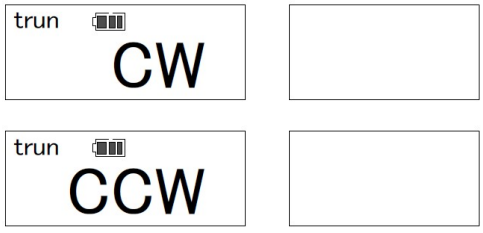
v. Lower limit torque setting



Set the number using ▲
Move the digit using ▼

Press MEM to save setting and go to next
Press NO to skip setting and go to next
Press C to return to Measurement mode

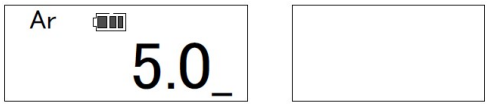
vi. Tightening direction setting



Select the tightening direction CW or CCW using ▲\▼

Press MEM to save setting and go to next
Press NO to skip setting and go to next
Press C to return to Measurement mode

vii. Auto reset timer setting



Select the reset timer using ▲\▼

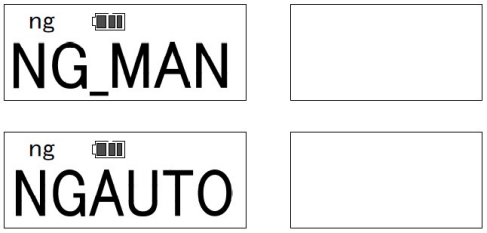
Press MEM to save setting and go to next
Press NO to skip setting and go to next
Press C to return to Measurement mode

Set reset timer from
0.0⇔0.1⇔0.2⇔0.3⇔0.4⇔0.5⇔1.0
⇔2.0⇔3.0⇔4.0⇔5.0 sec.

To inactivate auto reset function, select 0.0 sec.

Next setting

viii. NG data processing setting



Select “NG_MAN” or “NGAUTO” using

Press MEM to save setting and go to next

Press NO to skip setting and go to next

Press C to return to Measurement mode

- “NG_MAN” (Manual output):

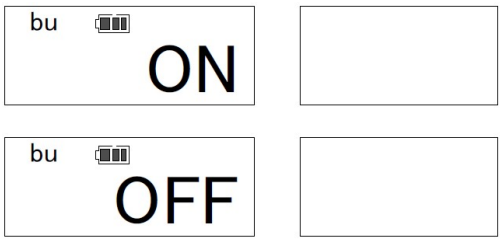
When judgment result is NG the auto reset feature will be declined

Press MEM to output or C to clear data

- NGAUTO (Auto output):

Auto reset feature is applied even if though the judgment result is NG

ix. Buzzer setting



Select buzzer turns "ON" or "OFF" using

Press MEM to save setting and go to next

Press NO to skip setting and go to next

Press C to return to Measurement mode

x. Auto power off setting

Select an auto power off timer from 3 minutes, 10 minutes, 30 minutes or NONE using

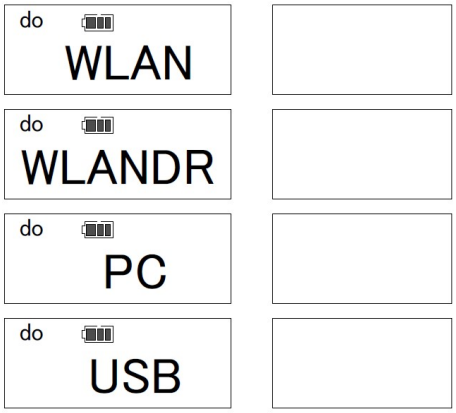
Press MEM to save setting and go to next

Press NO to skip setting and go to next

Press C to return to Measurement mode

Next setting

xi. Communication mode setting



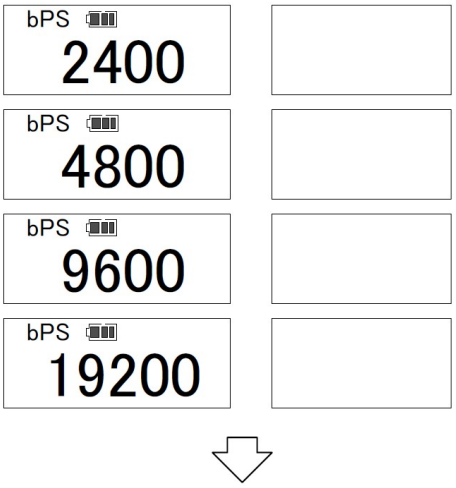
Select the communication mode from "WLAN", "WLANDR", "PC" or "USB" using

“WLAN”*: Wireless LAN via access point
“WLANDR”*: Direct LAN connection with device
“PC”: RS232C output
“USB”: USB serial connector output

Press MEM to save setting and go to next
Press NO to skip setting and go to next
Press C to return to Measurement mode

NOTE: Baud rate setting will be skipped when select "WLAN" or "WLANDR"

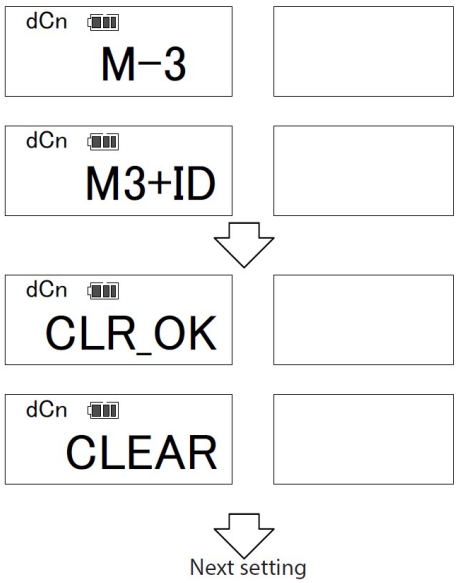
xii. Baud rate setting



Select the baud rate from 2400, 4800, 9600 or 19200 bps using

Press MEM to save setting and go to next
Press NO to skip setting and go to next
Press C to return to Measurement mode

xiii. Communication format setting

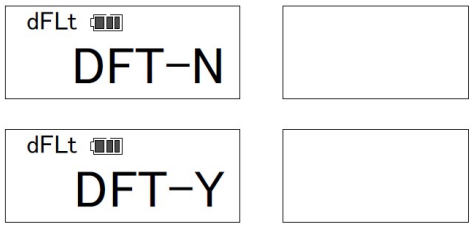


Select the communication format using
Refer “10.3. Communication format” for details

Press MEM to save setting and go to next
Press NO to skip setting and go to next
Press C to return to Measurement mode

When change the communication format setting all measured data would be cleared from tool

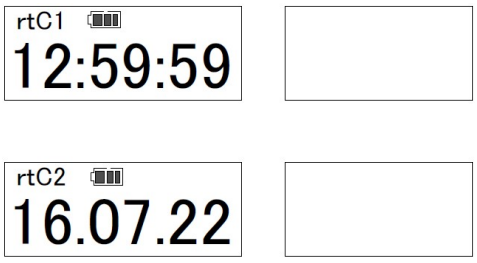
xiv. Default setting



Select the "DFT-Y" for factory reset or "DFT-N" for NOT, using

"DFT-Y" then press MEM:
The tool will be factory reset, all data deleted and settings back to default
Press MEM on "DFT-N" or press to skip setting and go to next
Press to return to Measurement mode

xv. Clock display



Switch between date (yy:mm:dd) display or clock (hh:mm:ss) display using

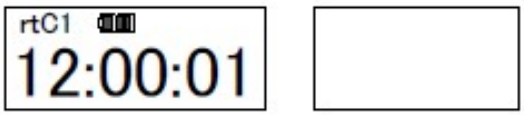
Press MEM to get into Time & date settings
Press or to return to Measurement mode

xvi. Time and date settings

Set the hours using
Press MEM to save setting and go to next
Press to skip setting and go to next
Press to return to Measurement mode

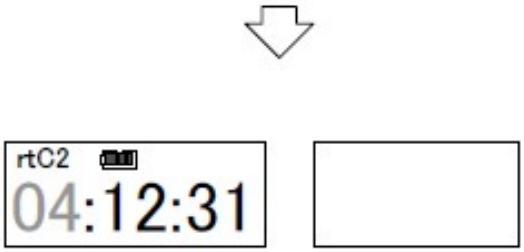
Set the minutes using
Press MEM to save setting and go to next
Press to skip setting and go to next
Press to return to Measurement mode

Press MEM to reset seconds to "00"
Press to skip setting and go to next
Press to return to Measurement mode



Press MEM or to proceed date settings

Press to return to Measurement mode

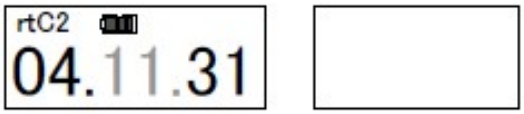


Set the year using

Press MEM to save setting and go to next

Press to skip setting and go to next

Press to return to Measurement mode



Set the month using

Press MEM to save setting and go to next

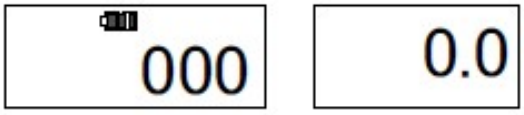
Press to skip setting and go to next

Press to return to Measurement mode

Set the date using

Press MEM to save setting and return to Measurement mode

Press or to skip setting return to Measurement mode



12. Wireless LAN connection procedure

12.1. CEM3-WF Wireless LAN setting software

*System requirements OS: Windows 7/ Windows 8/ Windows 8.1/ Windows 10

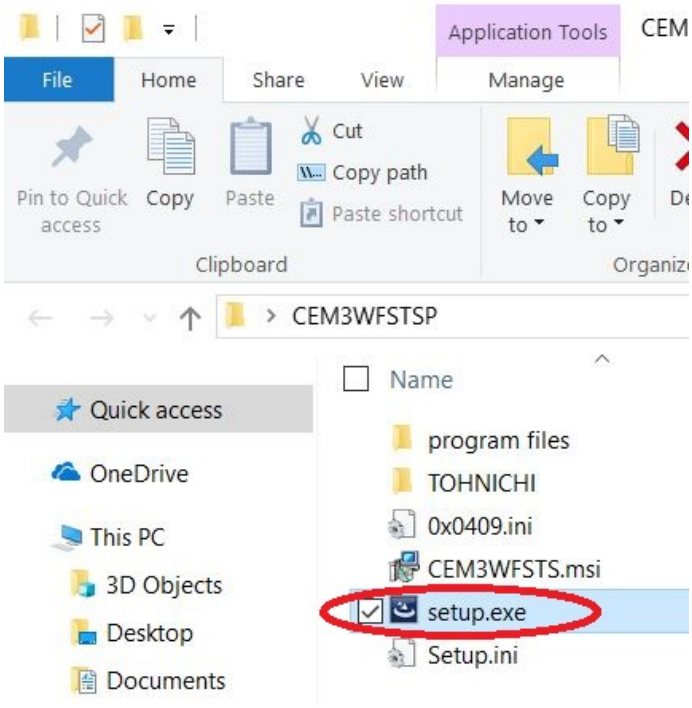
12.2. CEM3-WF Setting Software installation procedure

i. Download "CEM3-WF Settings Software" and USB driver from Tohnichi Mfg. website (https://en.global-tohnichi.com/)

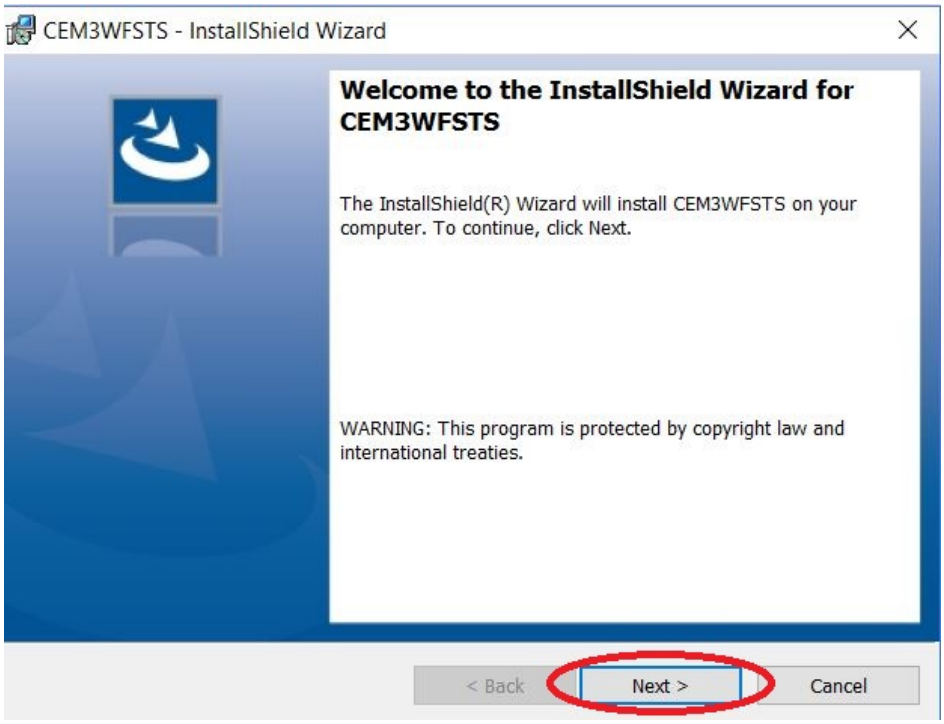
ii. Install USB driver. Please refer the installation procedure for USB driver in the folder

iii. Unzip the folder

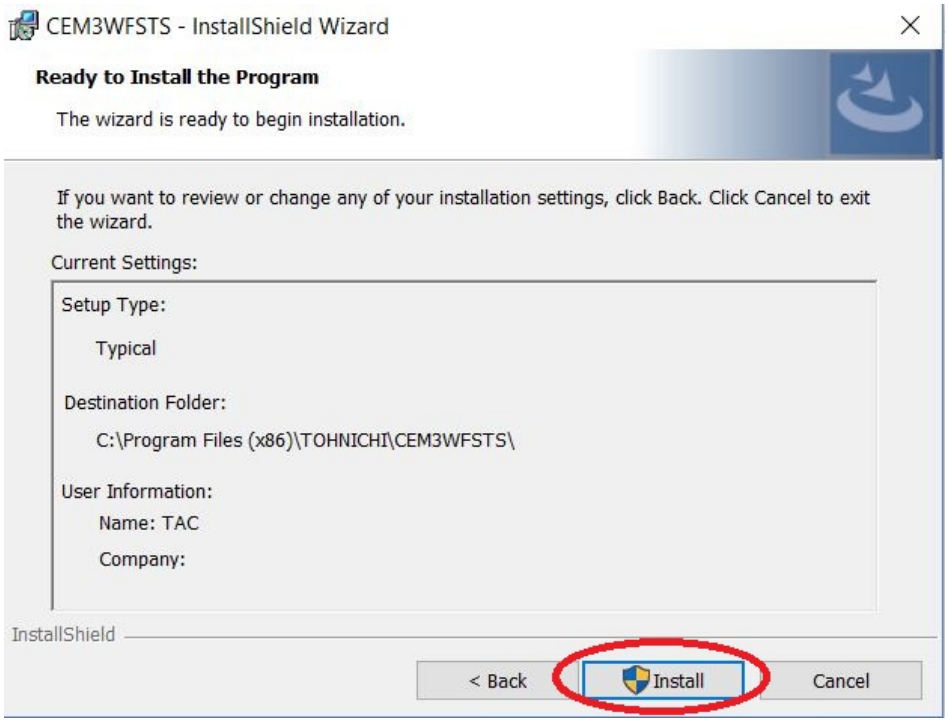
iv. Start the “Setup” file. Please run it after move whole folder to your Desktop or “c” drive



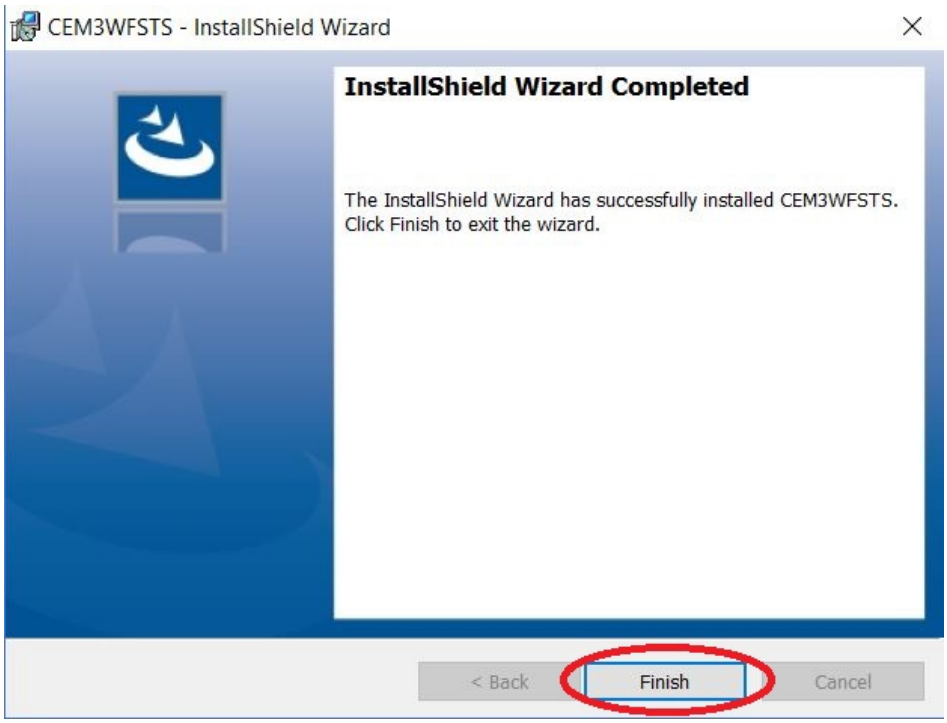
v. Click “Next” to proceed



vi. Click “Install” to proceed with the software installation



vii. Installation completed, click “Finish”



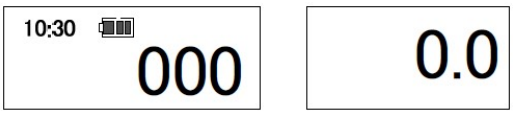
viii. After installation, the shortcut of "CEM3WFSTS" setting software will be created on the start menu desktop screen

* Trademarks

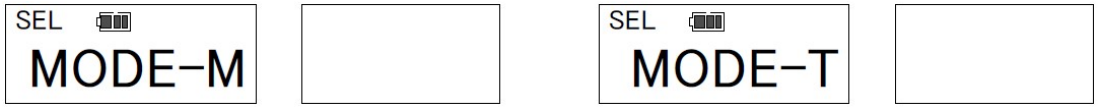
Microsoft, Windows and Windows Vista are registered trademarks of the Microsoft Corporation.

12.3. Wireless LAN setting procedure

i. Set counter number to "000" (Run mode) using



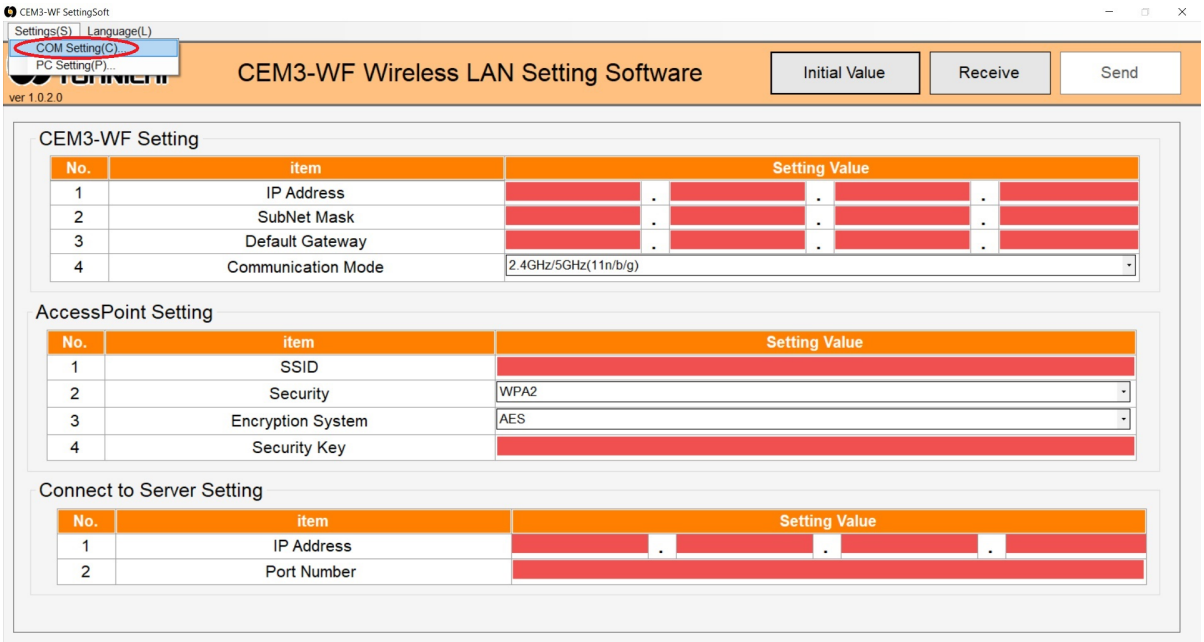
ii. Press and hold for 2 seconds to get into Measurement mode setting
Make sure display shows either "MODE-M" or "MODE-T"



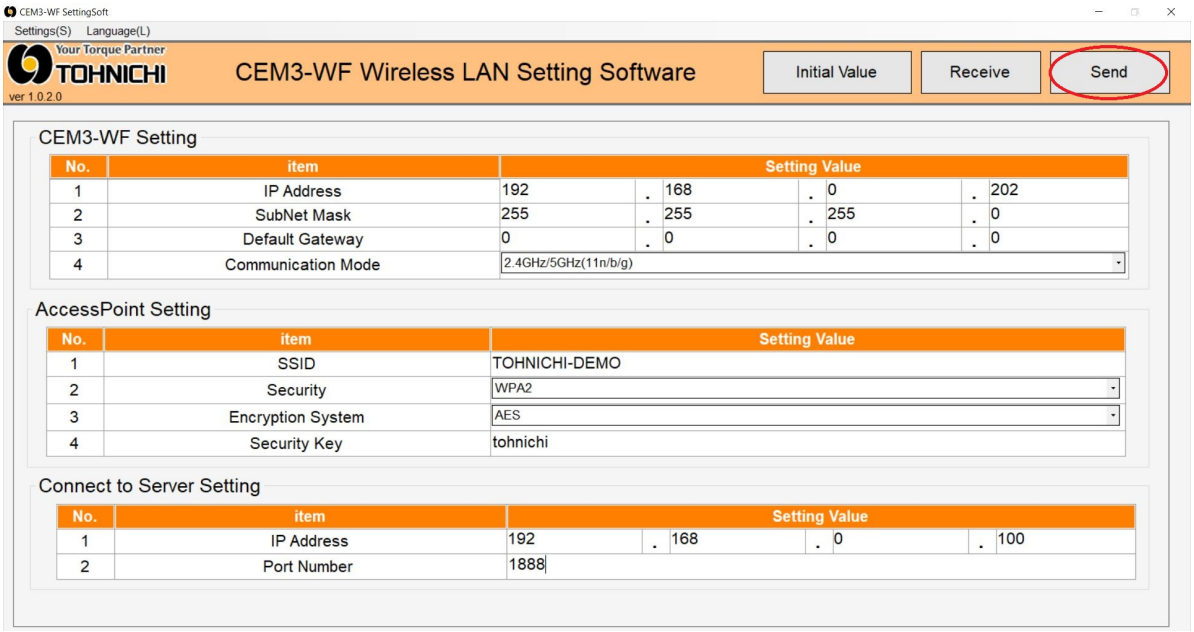
iii. Connect the CEM3-G-WF torque wrench and PC using USB cable

iv. Start "CEM3WFSTS" setting software

v. Click "Setting" on upper left corner, click “COM Settings”, then s elect COM port number which is connected USB cable



vi. Enter or select the parameters then hit "Send" to update CEM3-G-WF wrench settings



"Receive": Confirm current settings on CEM3-G-WF wrench

The parameters on software display will be updated

"Initial Value": The parameters on software display will be cleared

It does not update settings on CEM3-G-WF wrench

[Description of parameters]

- CEM3-G-WF wrench settings

#1, IP Address: Enter IP address for CEM3-G-WF wrench

#2, SubNet Mask: Enter SubNet Mask for CEM3-G-WF wrench

#3, Default Gateway: Enter Default Gateway for CEM3-G-WF wrench

#4, Communication Mode: Select communication frequency

- Access Point Settings

#1, SSID: Enter SSID of access point (up to 32 digits)

#2, Security: Select "WPA2" or "Open" depend on access point

#3, Encryption System: Select "AES" or "NONE" depend on assess point

#4, Security Key: Enter security key of access point to connect (up to 32 digits)

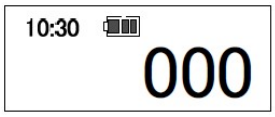
- Connect to Server Settings

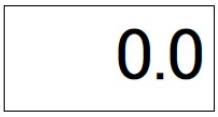
#1, IP Address: Enter IP address for connecting server

#2, Port Number: Enter port number for connecting server
(Available through 1024 to 65535)

vii. Once upload setting is completed displays "Completion"

viii. Unplug the USB cable and press to exit setting mode





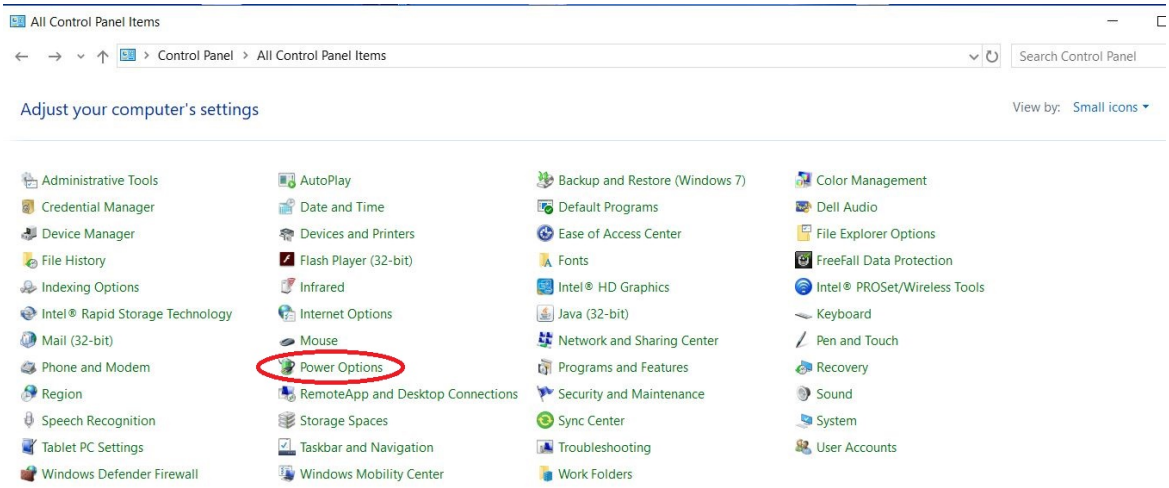
12.4. Notes for wireless LAN connection

12.4.1. Battery setting for laptop or tablet PC

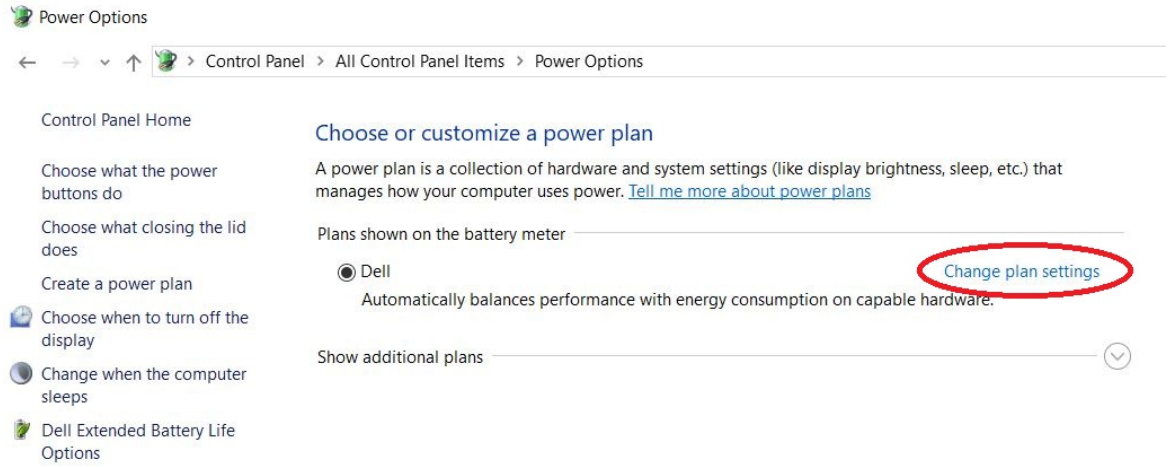
There is concern to the wireless LAN connection due to battery setting if use laptop or tablet PC with default settings. Please follow the steps below to change the setting.

- Changing battery power operation option

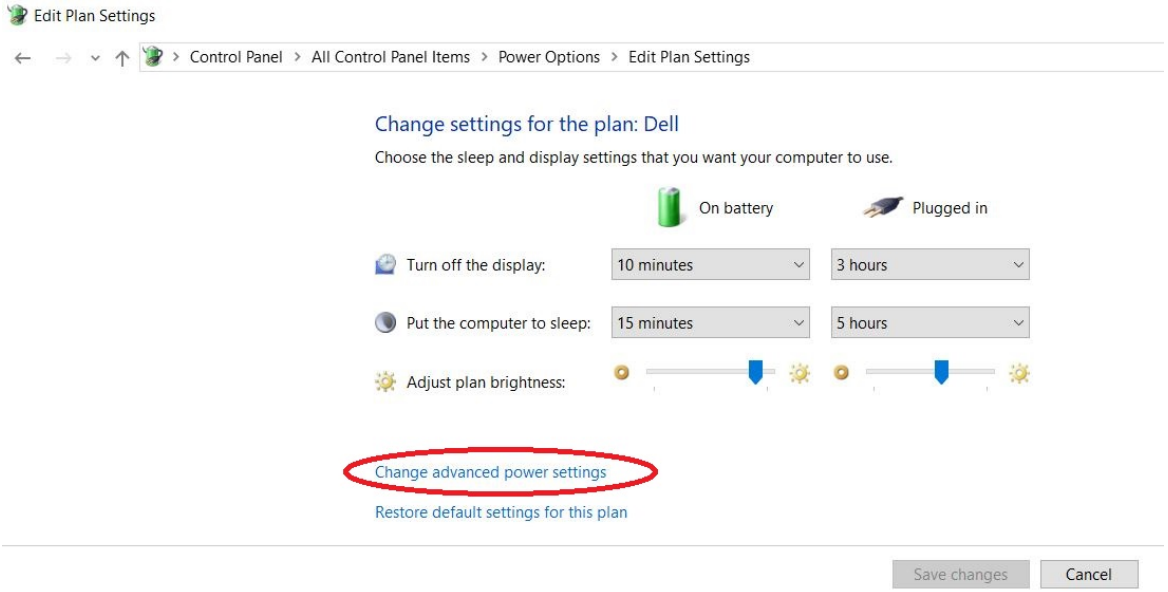
i. Click “Power Options” in the “Control Panel”



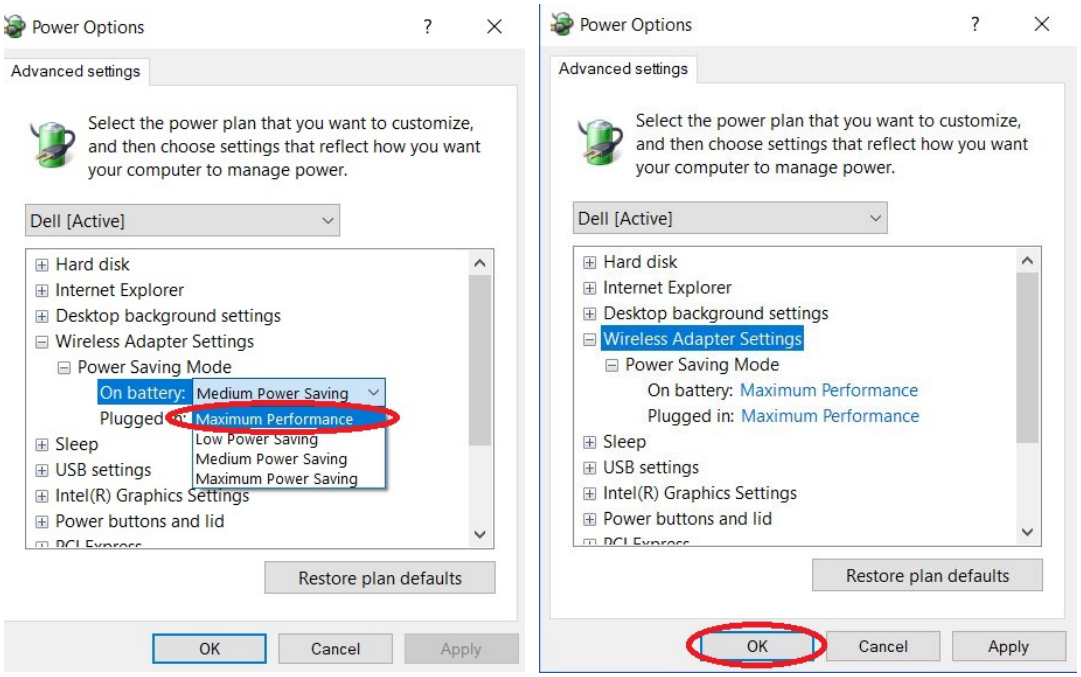
ii. Click “Change plan settings”



iii. Click “Change advanced power settings”



iv. Pulldown “Wireless Adapter Settings”, “Power Saving Mode”, then select “Maximum Performance” for “On battery”. Click “OK” to save the setting.



12.4.2. Note on charging during wireless LAN connections

Press and hold for 2 seconds to turn CEM3-G-WF power and wireless LAN connections off then plug in the DC jack for charging.

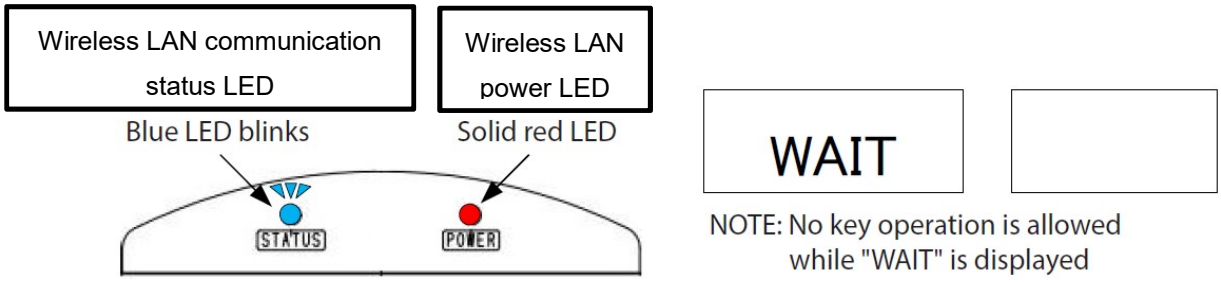
If plug in the DC jack when CEM3-G-WF is connecting on wireless LAN the tool is turned off forcibly also wireless LAN connection does off too. In this case, tool requires longer time to re-connect on wireless LAN then above.

12.5. Procedure of wireless LAN connection via access point

Communication mode: "WLAN"

i. Make sure PC/ server and access point are turned on then press to turn on CEM3-G-WF which is set wireless LAN connection settings

ii. When success the connection with an access point the blue "STATUS" LED blinks

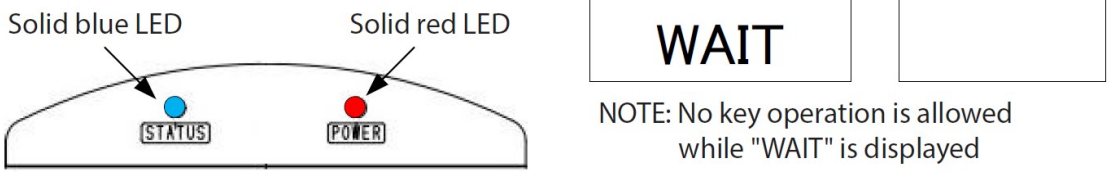


NOTE: No key operation is allowed while "WAIT" is displayed

NOTE: If CEM3-G-WF not be able communicate with an access point even retry 3 times the wireless LAN power will be turned off to save battery and turn off Wireless LAN power LED.

Press to turn off tool power then press it again to turn on tool power and wireless LAN power.

iii. When success the connection with PC/ server via access point blue "STATUS" LED turns on



NOTE: No key operation is allowed while "WAIT" is displayed

NOTE: If an access point does not communicate with PC/ server even CEM3-G-WF retry 3 times the wireless LAN power will be turned off to save battery and turn off Wireless LAN power LED.

Press to turn off tool power then press it again to turn on tool power and wireless LAN power.

NOTE: If disconnect between access point and PC/ server after success whole connection, and there is still connection between CEM3-G-WF and access point, blue "STATUS" LED blinks and retry the connecting 3 times. If still not be able to connect, CEM3-G-WF disconnects with access point and turn off Wireless LAN power LED.

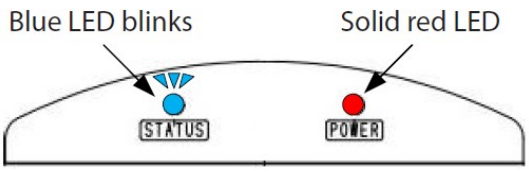
Press to turn off tool power then press it again to turn on tool power and wireless LAN power.

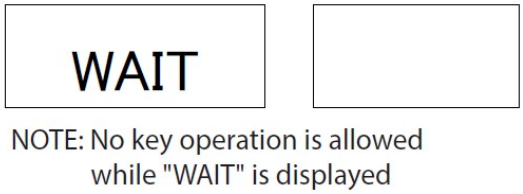
12.6. Procedure of wireless LAN connection with tablet PC

Communication mode: “WLANDR”

i. Make sure tablet PC is turned on then press to turn on CEM3-G-WF which is set wireless LAN connection settings

ii. When CEM3-G-WF is ready to communicate the blue "STATUS" LED blinks and awaiting connection with tablet PC

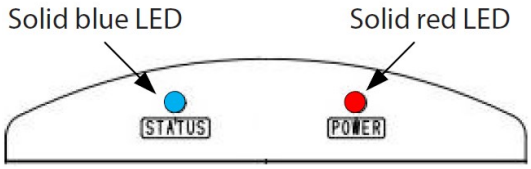


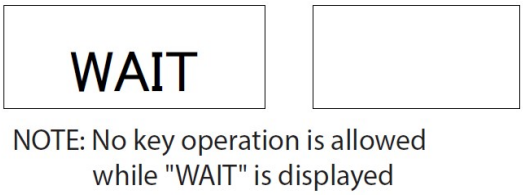


NOTE: If there is no connection with laptop or tablet PC over 3 minutes, the wireless LAN power will be turned off to save battery and turn off Wireless LAN power LED.

Press to turn off tool power then press it again to turn on tool power and wireless LAN power.

iii. Search on the wireless network on tablet PC then connect with the SSID of "CEM3-WF_******* (Serial number)". Once success connection blue "STATUS" LED turns on and tool is ready for wireless communication.





NOTE: At the first connection, the security key will be required.

SSID	CEM3-WF_******* (Serial number)
Security key	12345678 (Fixed)
Port number	50000 (Fixed)

NOTE: If disconnect with tablet PC the blue "STATUS" LED blinks to return to the waiting. If not be able to re-connect over 3 minutes, the wireless LAN power will be turned off to save battery and turn off Wireless LAN power LED.

Press to turn off tool power then press it again to turn on tool power and wireless LAN power.

13. Battery

Battery life

BP-5 battery can be recharged about 500 times depending on conditions before it dies.

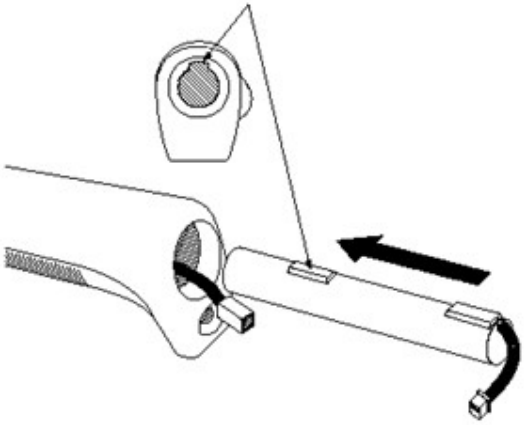
When it is old, replace it with a new BP-5 battery

At the delivery conditions, BP-5 battery is empty. Make sure to charge it before use.

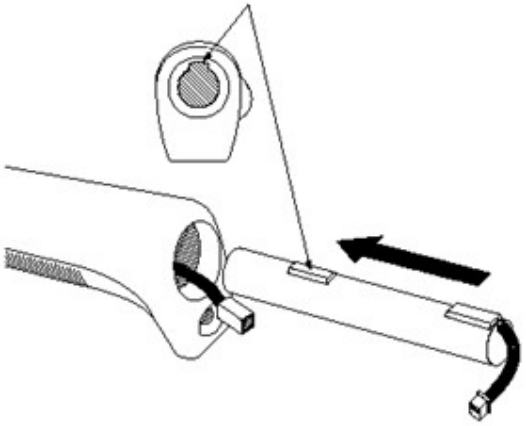
How to install the battery

i. Turn the cap clockwise to remove it.

ii. Set the battery in line with the hole as shown below and slide it in.



iii. Connect the connector



iv. Push in the battery to the end.

v. Push in the cable and the connector carefully.

vi. Put the cap back on by turning it counterclockwise.

NOTE: Be careful not to pinch the cable and the connector when putting the cap on.

14. Charging

Connect the BC-3-G charger to the CEM3-G-WF DC jack. Make sure BC-3-G charge is connected to the power source. Green light on BC-3-G turns on when charging is complete (it takes about 3.5 hours from the empty condition).

Caution

If plug in the DC jack when CEM3-G-WF is connecting on wireless LAN the tool is turned off forcibly also wireless LAN connection does off too. In this case, tool requires longer time to re-connect on wireless LAN then above.

The wireless LAN connection has to disconnect after close the socket communication. Press and hold  for 2 seconds to turn off wireless LAN connection then plug in the DC jack for the charging.

Warning

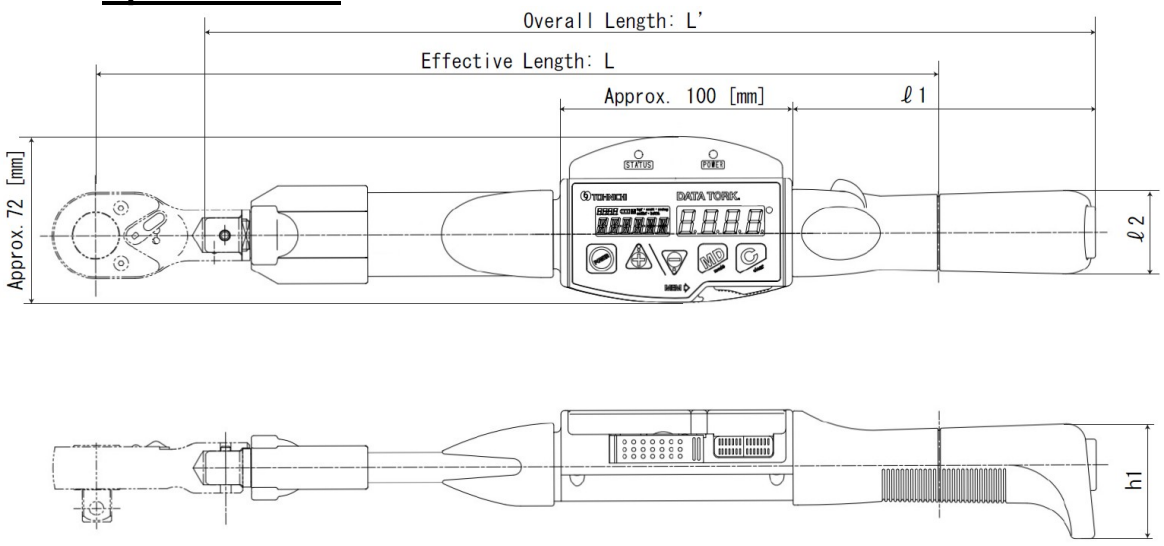
i. Check the voltage on the charger and use the appropriate power source
ii. Stop charging as soon as the green light on the charger turns on. Excessive charging may shorten the battery life.
iii. The product can't operate when it is connected to the charger.
iv. If green light on the charger turns on and the red light stars to blink, it indicates an error. Stop using it immediately, and contact Tohnichi or nearest Tohnichi distributor.
v. Temperature must be kept within 0-40 degrees Celsius range when charging.
vi. If it should emit some abnormal smell or generates abnormal heat, stop using it immediately and move it to a safe place. Contact Tohnichi or nearest Tohnichi distributor.
vii. When not in use for a long time, charge it to full, and remove the battery to keep it. It is recommended that it should be charged at least once every half a year.

15. Options

- Battery pack: BP-5
- Charger (100-240V): BC-3-G
- Interchangeable head: SH, RH, QH, RQH, DH, HH, FH

  NOTE: PH of interchangeable head can't be used.
- Communication cable
  - CEM3-PC (D-SUB 9 pin female): Catalog No. 575
  - CEM3-PC (USB A type): Catalog No. 584

16. Specifications



Torque Range

Model	Capability						Max. Hand Force
	SI		Metric		American		
	Min.-Max.	1 digit	Min.-Max.	1 digit	Min.-Max.	1 digit	
	[N·m]		[kgf·cm]		[lbf·in]		[N]
CEM10N3X8D-G-WF	2-10	0.01	20-100	0.1	20-90	0.1	48.1
CEM20N3X10D-G-WF	4-20	0.02	40-200	0.2	36-180	0.2	92.2
CEM50N3X12D-G-WF	10-50	0.05	100-500	0.5	100-440	0.5	196.9
CEN100N3X15D-G-WF	20-100	0.1	200-1000	1	200-880	1	275.5
CEM200N3X19D-G-WF	40-200	0.2	400-2000	2	[lbf·ft]		428.3
					30-150	0.2	
CEM360N3X22D-G-WF	72-360	0.4	720-3600	4	52-260	0.4	498.6
CEM500N3X22D-G-WF	100-500	0.5	[kgf·m]		73-360	0.5	549.5
			10-50	0.05			
CEM850N3X32D-G-WF	170-850	1	17-85	0.1	124-620	1	608

Dimensions

Model	Dimensions [mm]					Weight	Accessory Provided		Interchangeable Heads
	Effective Length	Overall Length	Grip Length	Grip Width	Height	[kg]			
CEM10N3X8D-G-WF	208	212	63.5	35.6	47	0.54	QH8D	Battery Pack (BP-5), Charger, USB Cable	(SH, RH, QH, HH) 8D
CEM20N3X10D-G-WF	217	214	63.5	35.6	47	0.55	QH10D		(SH, RH, QH, DH, HH) 10D
CEM50N3X12D-G-WF	254	282	130	36.4	56.5	0.66	QH12D		(SH, RH, QH, RQH, DH, HH) 12D
CEN100N3X15D-G-WF	363	384	130	36.4	56.5	0.71	QH15D		(SH, RH, QH, RQH, DH, HH) 15D
CEM200N3X19D-G-WF	467	475	130	36.4	56.5	0.86	QH19D		(SH, RH, QH, RQH, DH, HH) 19D
CEM360N3X22D-G-WF	722	713	130	36.4	56.5	1.21	QH22D		(SH, RH, QH, RQH, DH, HH) 22D
CEM500N3X22D-G-WF	910	949	230	30	43.5	4.08			
CEM850N3X32D-G-WF	1398	1387	230	30	43.5	5.22	QH32D		(SH, RH, QH) 32D

Specifications

Torque accuracy	±1%
Display	7 segments LED 4 digits 14 segments LCD 6 digits 7 segments LCD 4digits OK/ NG judgment LED Blue･Red Wireless LAN power LED Red Wireless LAN connection status LED Blue Battery level indicator 4 steps
Data quantity	999 readings
Basic functions	Peak hold Measured data transmission Auto reset Tightening completion alarm OK/ NG judgment Auto zero Auto power off Over torque alarm Clock
Communication	Wireless LAN (IEEE802.11 a/b/g/n) RS232C compliant (2400-19200 bps) USB connector corresponding serial output
Power	Nickel hydrogen battery (BP-5)
Continuous operation	Aprox. 8 hours
Charging time	Aprox. 3.5 hours
Communication mode change	Key operation
Operating temperature	0～40 degrees Celsius (no condensation)

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