

INSTRUCTION MANUAL

PRODUCT TYPE

DIGITAL TORQUE WRENCH WITH ANGLE MEASUREMENT

MODEL

7414-0030

7438-0135

7412-0200

7412-0340



DEAR USER

Thank you for purchasing this digital torque-angle wrench. This manual will help you to use the many features of your new digital torque-angle wrench. *Before operating the torque wrench, please read this manual completely, and keep it nearby for future reference.*

MAIN FEATURES

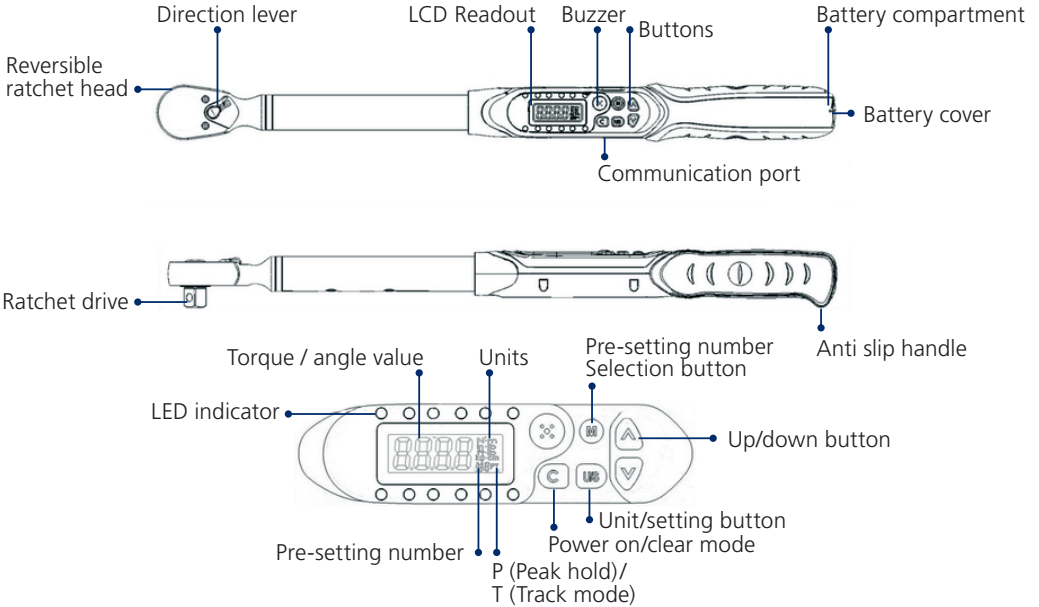
- Digital torque-angle value readout
- +/- 2° (rotating 90° at speed of 30°/sec) for angle accuracy
- +/-2% for torque accuracy
- CW and CCW operation
- Buzzer and LED indicator for the 9 pre-settable target torques or angles
- Five Units Selectable (Nm, ft-lb, in-lb, kg-cm, °)
- 50 data memory for recall and joint torque-angle auditing
- Auto power off after about 2 minutes idle
- AAA regular and rechargeable batteries are compatible
- Torque-angle one step measurement mode. (Once the torque preset has been reached, angle measurement begins.)
- Three kinds of measurements: (Example)

Setting		Measuring
Torque (Nm)	Angle	
100	0°	Torque
0	30°	Angle
100	30°	Torque and Angle – ONE STEP

NAMES AND FUNCTIONS OF PARTS

MODELS

ALL



SELECTION GUIDE

MODEL	SQUARE DRIVE INCHES	MAX. OPERATION TORQUE			
		Nm	ft-lb	in-lb	kg-cm
7414-0030	1/4	30	22.12	265.5	306.1
7438-0135	3/8	135	99.5	1195	1378
7412-0200	1/2	200	147.5	1770	2041
7412-0340	1/2	340	250.7	3009	3469

Torque accuracy

■ ± 2% (CW) / ± 3% (CCW)

Angle accuracy

■ ± 2° for 90° rotation

SPECIFICATIONS

MODEL NO.	MAX. OPERATION TORQUE Nm	SQUARE DRIVE "	MEASURED TORQUE Nm	LENGTH mm
7414-0030	30	1/4	1.5~30	390
7438-0135	135	3/8	6.8~135	415
7412-0200	200	1/2	10~200	530
7412-0340	340	1/2	17~340	650
ALL MODELS				
Torque accuracy *1	CW: $\pm 2\%$ CCW: $\pm 3\%$			
Angle accuracy *2	$\pm 2^\circ$ for 90° rotation			
Data memory size	50			
PC connectivity *3	No			
Number of presets	9			
Operation mode	Peak Hold / Track			
Bright LED	12 LED (2 red + 10 green)			
Unit selection	Nm, ft-lb, in-lb, kg-cm, degree			
Head type	Lever type ratchet			
Gear teeth	36			
Battery *4	AA x 2			
Operating temperature	$-10^\circ\text{C} \sim 60^\circ\text{C}$			
Storage temperature	$-20^\circ\text{C} \sim 70^\circ\text{C}$			
Humidity	Up to 90% non-condensing			
Drop test	1 m			
Vibration test *5	10 G			
Life time *6	10000 cycle			
Environmental test *7	Pass			
Electromagnetic compatibility test *8	Pass			

Note:

*1: The accuracy of the readout is guaranteed from 20% to 100% of maximum range +/- 1 increment. Calibration point is at the middle line of black circle area on the rubber handle. For maintaining accuracy, calibrate the wrench at regular intervals (1 year recommended).

*2: The angle accuracy is guaranteed at $\pm 2^\circ$ when rotating wrench to 90° at speed of $30^\circ/\text{sec}$.

*3: Use a special designed cable (accessory) to upload record data to PC.

*4: Two AA batteries

*5: Horizontal and vertical test

*6: One cycle means turning the torque wrench from 0 Nm to maximum torque and back to 0 Nm.

*7: Environmental test:

- Dry heat
- Cold
- Damp heat
- Change of temperature
- Impact (shock)
- Vibration
- Drop

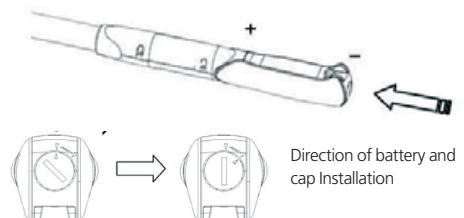
*8: Electromagnetic compatibility test:

- Electrostatic discharge immunity (ESD)
- Radiation susceptibility (RS)
- Radiation emission (RE)

BEFORE USING THE WRENCH

Battery Installation

- Remove the battery cap.
- Insert two AA batteries matching the +/- polarities of the battery to the battery compartment.
- Replace the battery cap and rotate it tightly according to the following figures.

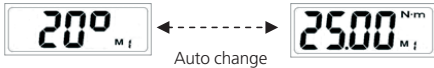


Power on and auto zero reset

- Set the wrench horizontally on a level surface and let it sit without touching it, then gently press **(C)** to power on the digital torque-angle wrench.
- After power on, the LCD will flash first 0000 to do auto zero-reset.



After doing auto zero-reset, a preset target will show on LCD.



Attention:

If **Er5** appears during power-on process, it means this wrench has been torqued to more than 110% of maximum torque.

Important!

When using the wrench in "ANGLE" mode the wrench must be placed flat (horizontally) on table or workbench before any attempt is made to change values or to power up the unit. If the user attempts these functions without following the instructions above. The unit's display will begin to flash a series of four zeros in the top half of the screen. In order to re-start the unit; press **(C)**

Zero reset

- If necessary, Zero-reset will guarantee an accurate measurement.
- After power on, **(C)** button is for zero reset.
- Usually press **(C)** to zero reset the digital torque-angle wrench before using the wrench.
- In angle mode, keep the wrench steady without any disturbance and press **(C)** to do zero-reset.
- In torque mode, if an external force is applied to the torque wrench during zero-reset period, an initial torque offset error will occur.

Auto power off

- The wrench will auto power off after about 2 minutes idle for power saving. Press **(C)** to power on the wrench again.

Cautions:

- During communication period (SEND appears), the auto power-off function is disabled.

Reset the wrench

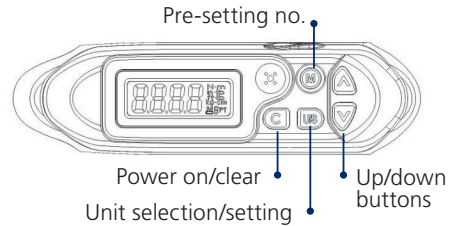
- If the wrench does not function normally or **Er5** appears, please go through the reset process to reset the wrench.
- To reset the wrench, loosen the battery cap then tighten it to re-start. After reset, remember to press **(C)**

Low voltage indicator

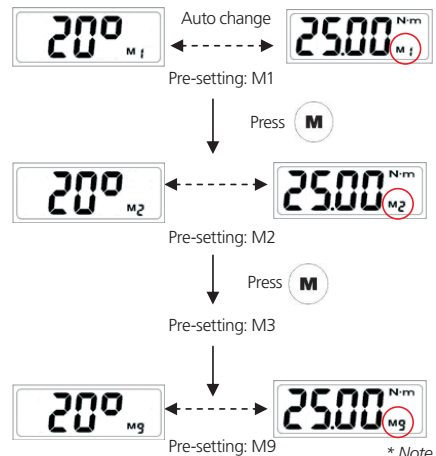
If the battery serial voltage is in low, the wrench will display a battery symbol and then turn off. Replace batteries.



SETUP



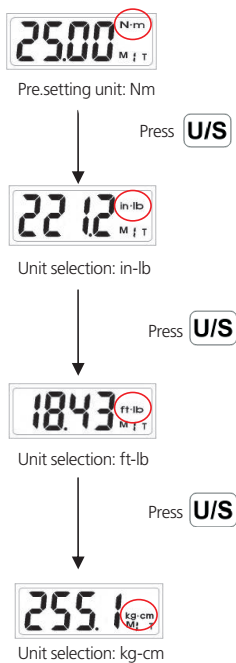
1. Pre-setting no.



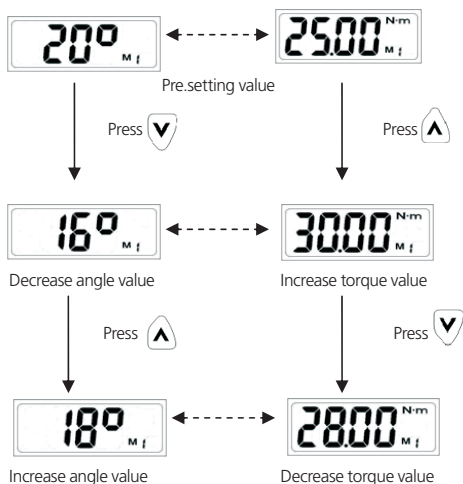
Note:

- The maximum capacity for "Pre-setting no." is 9 settings.
- The "Pre-setting no." cycles from 1 to 9.

2. Unit selection



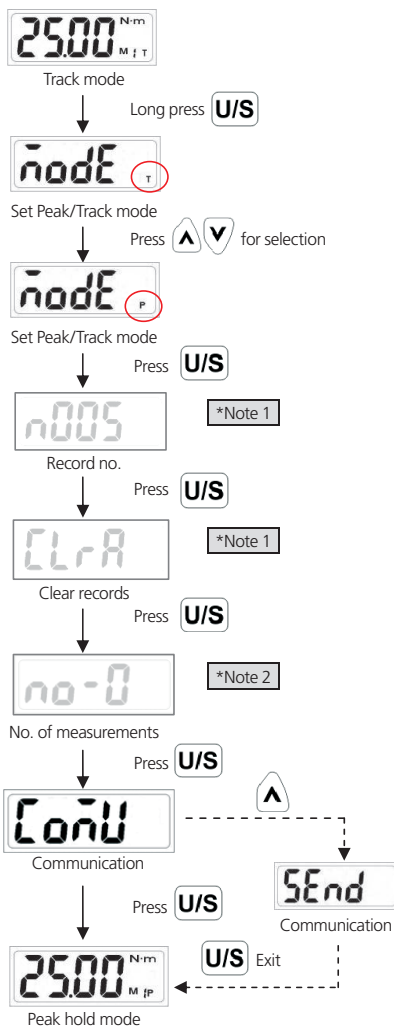
3. Set target value



Note:

The "Unit Selection" cycles through all modes.

4. Peak hold / Track mode selection

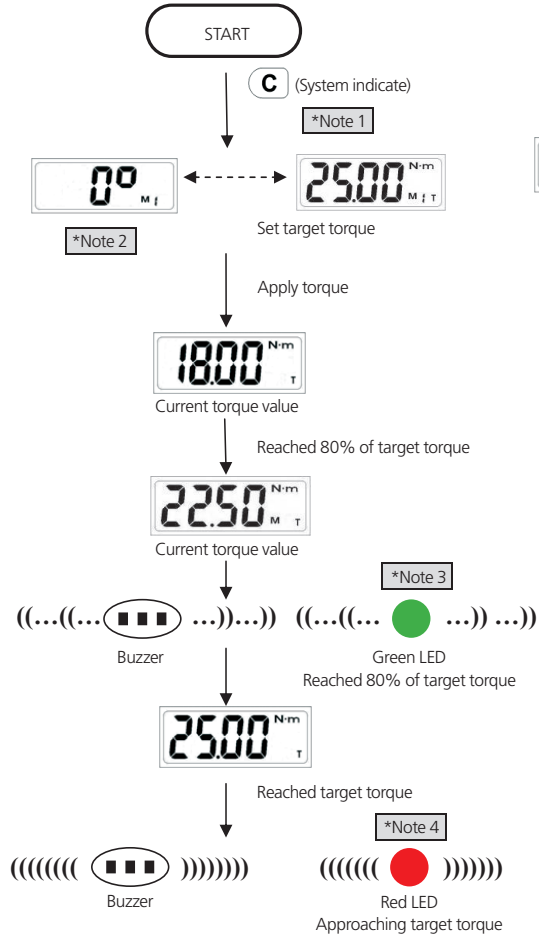


Note:

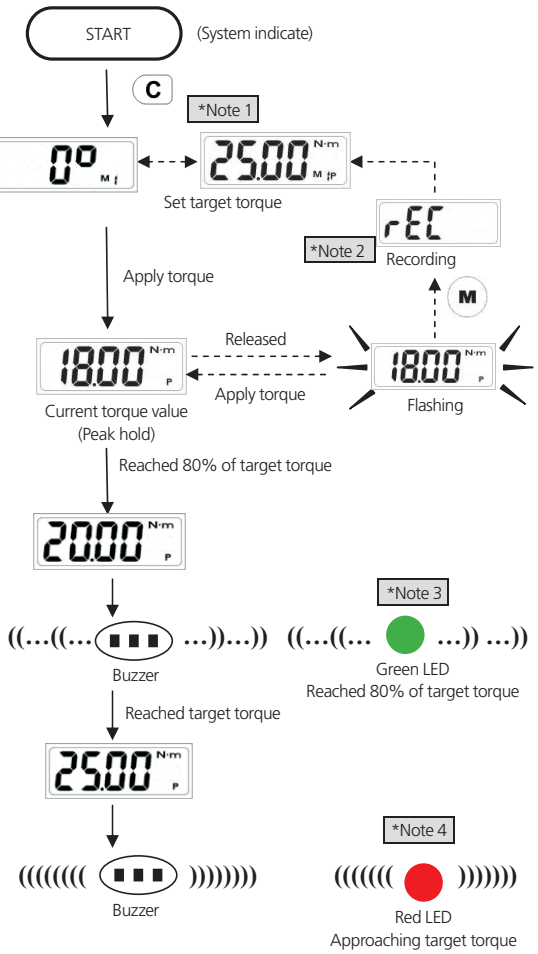
- Please skip this procedure and continue to the next step.
- Counting record: This feature counts how many times the wrench has been used, but only counts when applying up to 60% of max. torque. This record is not erasable until re-calibration. The feature will count up to 65,000 measurements. Regarding the number of measurements, the following figure means the recorded count is 10100. (No-1 means 10000 times, No-2 means 20000 times reached and so on...)




TRACK MODE OPERATION



PEAK HOLD MODE OPERATION




Note:



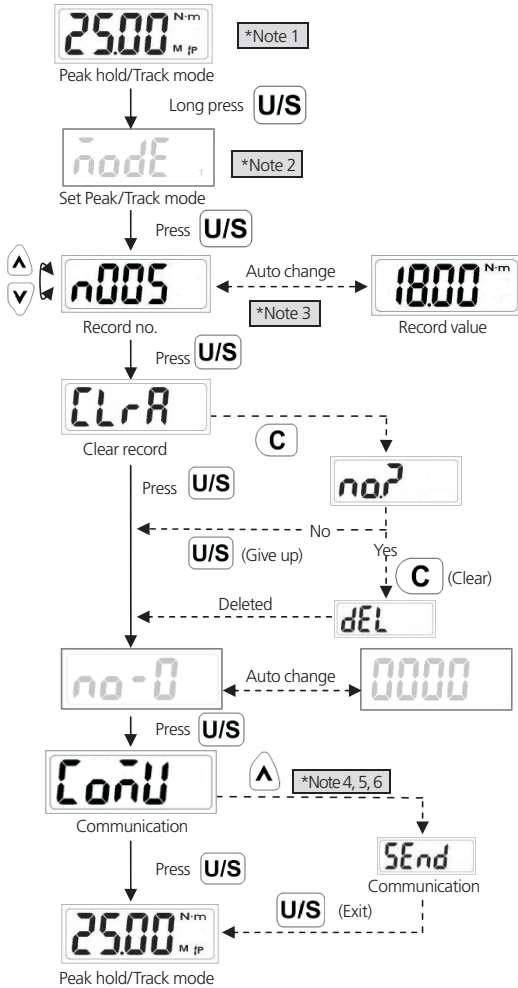
- If **Er0** appears, it means the wrench is overloaded. Overload = 110% of max. torque. Please contact your local dealer for recalibration.
- Set angle value to **0°**, to enter torque mode, then track mode is effective.
- When 80% of the target torque is reached, the green LED will begin to flash and the alarm tone will beep intermittently.
- When 99.5% of the target torque has been reached, the alarm will change to a steady tone and the green LED will stop flashing and stay on. The red LED will also illuminate.

Note:

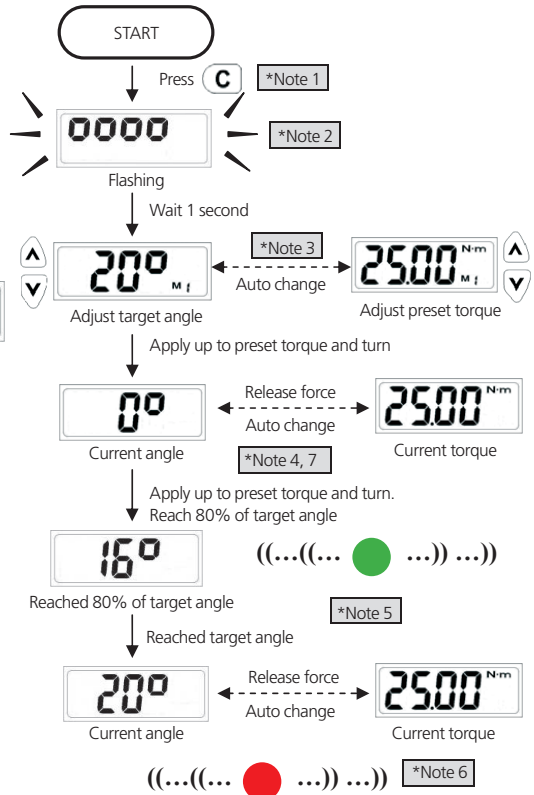


- If **Er0** appears, it means the wrench is overloaded. Overload = 110% of max. torque. Please contact your local dealer for recalibration.
- If **Ful 1** appears, it means the wrench's memory is full and no more values can be recorded. Please refer to the "Peak hold mode recorded value review" section to clear the memory records.
- When 80% of the target torque is reached, the green LED will begin to flash and the alarm tone will beep intermittently.
- When 99.5% of the target torque has been reached, the alarm will change to a steady tone and the green LED will stop flashing and stay on. The red LED will also illuminate.

PEAK HOLD MODE RECORDED VALUE REVIEW



ANGLE MODE OPERATION



Note:

- When angle is in auto initiate mode, please keep the wrench steady without any disturbance.
- After a short time, the angle function will enter initiate mode and a flashing **0000** will appear.
- When entering angle mode, press "up" or "down" button to adjust preset torque and angle. Adjusting preset torque to **000** implies snug point equals 5% of max. operation torque.
- When releasing force the wrench in angle mode, the display will show the corresponding torque with flashing.
- When 80% of the target degree is reached, the green LED will begin to flash and the alarm tone will beep intermittently.
- When 99.5% of the target degree has been reached, the alarm will change to a steady tone and the green LED will stop flashing and stay on. The red LED will also illuminate.
- Pressing "M" button to record current angle is possible.



Note:

- The "Peak hold" mode recorded value review also can be operated from "Track" mode operation.
- If you operate in the "Peak Hold" mode, the display will show **noDE**, please go to next step.
- If there are no records, it will show **no05**.
- This function is not supported on all type of models.
- Communication mode is for uploading recorded data to a PC.
- Communication mode is also for calibration of torque wrench. Please contact your local dealer for more information.

COMMUNICATION

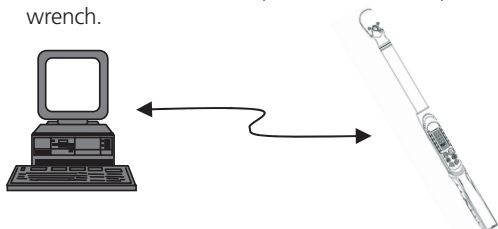


Precaution:

1. Communication function is only supported on some models. Check the model no. and its specification before using communication function.
2. Do not insert the plug of communication cable into torque wrench that does not support communication function.

Connecting communication cable

- Turn off power and then connect the accessory cable between the COM port of PC and torque wrench.



Uploading record data

- Make sure the connection between PC and wrench is normal.
- Change the wrench operation mode to "Send". (Please refer to "Peak Hold Mode Recorded Value Review" section).
- Use PC to start the uploader program.
- In uploader program, first select the correct COM port No.
- Next, select the file path to save the uploaded data.
- Finally, press "upload" button to transmit the torque records to PC.
- The uploaded data is then shown on the column and saved in the *.csv file. Use Microsoft Excel to view *.csv file.



Caution:

Refer to the uploader program user guide for the detail operations.

MAINTENANCE AND STORAGE

Attention!

One-year periodic recalibration is necessary to maintain accuracy. Please contact your local dealer for calibrations.



Caution:

1. Over-torquing (110% of Max. torque range) could cause breakage or lose of accuracy.
2. Do not shake violently or drop wrench.
3. Do not use this wrench as a hammer.
4. Do not leave this wrench in any place exposed to excessive heat, humidity, or direct sunlight.
5. Do not use this apparatus in water (it is not waterproof).
6. If the wrench gets wet, wipe it with a dry towel as soon as possible. The salt in seawater can be especially damaging.
7. Do not use organic solvents, such as alcohol or paint thinner when cleaning the wrench
8. Keep this wrench away from magnets.
9. Do not expose this wrench to dust or sand as this could cause serious damage.
10. Do not apply excessive force to the LCD panel.
11. Apply torque slowly and grasp the center of the handle. Do not apply load to the end of the handle.

BATTERY MAINTENANCE

- When the wrench is not going to be used for an extended period of time, remove the batteries.
- Keep a spare battery on hand when going on a long trip or to cold areas.
- Do not mix battery types or combine used batteries with new ones.
- Sweat, oil and water can prevent a battery's terminal from making electrical contact. To avoid this, wipe both terminals before loading a battery.
- Dispose of batteries in a designated disposal area. Do not throw batteries into a fire.

POLAR TOOLS A/S