

INSTRUCTION MANUAL

PRODUCT TYPE

DIGITAL TORQUE AND ANGLE ADAPTERS

MODEL

7714-0030

7738-0135

7712-0200

7712-0340



DEAR USER

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

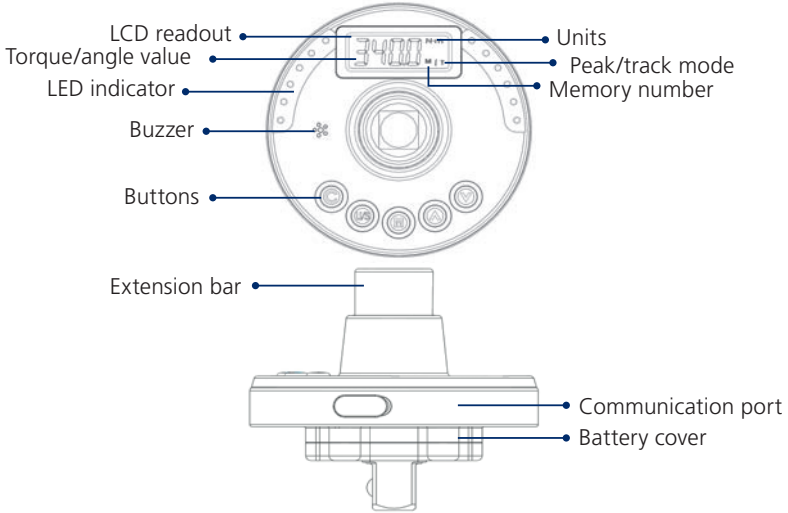
MAIN FEATURES

- Digital torque-angle value readout
- +/- 2° (rotating 90° at speed of 30°/sec) for angle accuracy
- +/-3% 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, degree)
- 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

NAMES AND FUNCTIONS OF PARTS

MODELS

ALL



SELECTION GUIDE

MODEL	SQUARE DRIVE INCHES	MAX. OPERATION TORQUE			
		Nm	ft-lb	in-lb	kg-cm
7714-0030	1/4	30	22.12	265.5	306.1
7738-0135	3/8	135	99.5	1195	1378
7712-0200	1/2	200	147.5	1770	2041
7712-0340	1/2	340	250.7	3009	3469

Torque accuracy

- 3%- CW / 4%-CCW

Communication

- No

SPECIFICATIONS

MODEL NO.	RESOLUTION Nm	SQUARE DRIVE "	MEASURED TORQUE RANGE Nm	LENGTH mm
7714-0030	0.01	1/4	1.5~30	60
7738-0135	0.1	3/8	6.8~135	75
7712-0200	0.1	1/2	10~200	80
7712-0340	0.1	1/2	17~340	80
ALL MODELS				
Torque accuracy *1	CW: ±3% CCW: ±4%			
Angle accuracy *2	+/- 2° (rotating 90° at speed of 30°/sec)			
Measured angle Range	1°~999°			
Data memory size	50			
PC connectivity *3	No			
Pre-setting no.	9 sets			
Bright LED	12 (2 red + 10 green)			
Torque operation mode	Peak Hold / Track			
Unit selection	Nm, ft-lb, in-lb, kg-cm, degree			
Button	5			
Battery *4	AAA x 2			
Operating temperature	-10°C ~ 60°C			
Storage temperature	-20°C ~ 70°C			
Humidity	Up to 90% non-condensing			
Drop test	1 m			
Vibration test *5	10 G			
Life time *6	10.000 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. For maintaining accuracy, calibrate the adaptor at regular intervals (1 year recommended).

*2: The angle accuracy is guaranteed at ±2° when rotating adaptor to 90° at speed of 30°/sec.

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

*4: Two AAA batteries (Toshiba carbon-zinc R03UG battery)

*5: Horizontal and vertical test

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

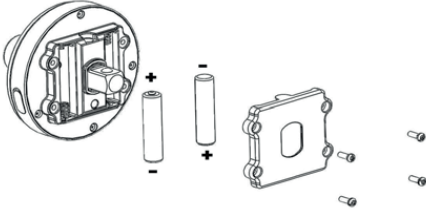
*7: Environmental test:
a. Dry heat
b. Cold
c. Damp heat
d. Change of temperature
e. Impact (shock)
f. Vibration
g. Drop

*8: Electromagnetic compatibility test:
a. Electrostatic discharge immunity (ESD)
b. Radiation susceptibility (RS)
c. Radiation emission (RE)

BEFORE USING THE ADAPTOR

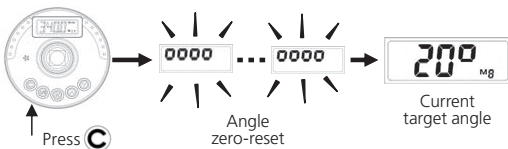
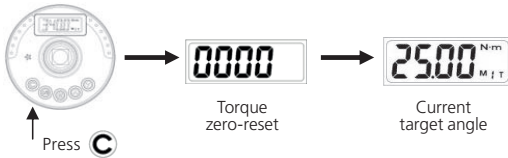
Battery Installation

- Loosen the screw of the battery cap.
- Insert two AAA batteries matching the -/+ polarities of the battery to the battery compartment.
- Fasten the screw of the battery cap.



Power on and auto reset

- Let the adaptor be sat without touching it.
- Gently press **C** to power on.
- Auto zero-reset will be processed first.
- The adaptor will be started in torque or angle mode. Which mode will be started depends on in which mode the adaptor is powered-off last time.
- In torque mode, first is torque zero-reset and then a target torque screen will show.
- In angle mode, it first do several seconds of angle-zero-reset and then a target angle screen will show.
(Very important issue: See attention)
- If it takes too long in angle reset, press **C** will perform reset again.

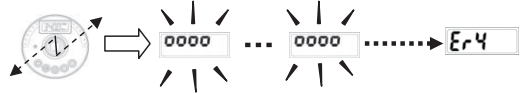


Attention

If **Er0** appears, refer to "ERROR MESSAGE".

Important

- During angle reset, keep the adaptor still and never shake, vibrate or even touching the adaptor.
- If the adaptor is moving again and again, the zero reset will not stop. Finally, **Er4** will be shown. (Refer to "ERROR MESSAGE")



Auto power off

- The adaptor will auto power off after about 2 minutes idle for power saving.

Cautions:

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

Zero reset



- Press **C** for zero reset.
- Usually press **C** to zero reset the digital torque-angle adaptor before using the adaptor. It will guarantee a better accuracy.
- In angle mode, please keep the adaptor steady without any disturbance and press **C** to do zero-reset.
- In torque mode, if an external force is applied to the torque adaptor during zero-reset period, an initial torque offset error will occur.

hardware reset

- To do hardware reset, remove battery and re-install it.
- If the adaptor does not function normally or **Er5** appears, please go through the reset process to reset the adaptor.

FAST GETTED START

- Press **C** to power on.
- No applying forces on adaptor.
- Target torque or angle will be shown.
- Press **U/S** to select the torque unit or “ ° ” (angle mode) and then press **▲ ▼** to set target value.
- Or press **M** to select the pre-set target values.
- Press **C** to reset adaptor.(suggested)
- Start to rotate adaptor.
- Watch out the warning LED, sounds and LCD to stop rotation.

T-mode torque operation

- In T-mode, LCD displays the current torque value.
- After release force, the LCD value will return to 0.

P-mode torque operation

- In P-mode, LCD displays the maximum torque value.
- After release force, the LCD shows the caught maximum value. (flashing)
- Now press **M** to record maximum torque value, or press **C** to clear it.

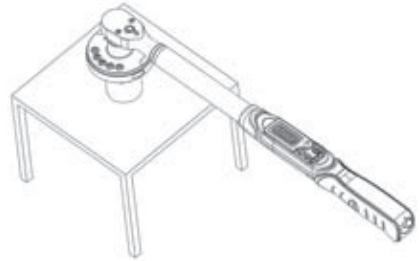
Angle operation

- In angle mode, LCD displays the angle rotated after the reaching over 5% of the rated maximum torque.
- Now press **M** to record angle value, or press **C** to clear it.

OPERATION

1. Install the adaptor and power on

- Press **C** to power on the adaptor.



2. No applying forces on adaptor

3. Target torque or angle will be shown



Without applying force



Target torque or angle

ERROR MESSAGES

Low Voltage Indicator

- If the battery voltage is too low, the adaptor will display a battery symbol and then turn off.
Replace batteries.



Low battery indicator

Er0

When **Er0** shows during power-on process, it means this adaptor has ever been applied more than 110% of torque of the spec. The accuracy of torque may be lost.

Er--

In angle mode, iff the adaptor rotates too fast, **Er--** will be shown. Do press **C** to zero reset the adaptor.

Er4

In angle mode, if the adaptor does not reset successfully for a period of time, **Er4** will be shown. Press **C** to do zero-reset again. Notice that during resetting process, never vibrate or shake the adaptor. Keep it rest.

Er5

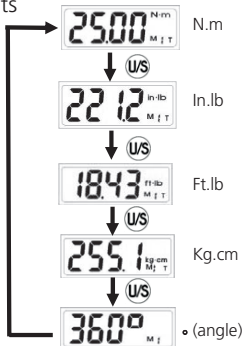
- **Er5** shows that the adaptor does not work functionally, please do hardware reset. Refer to "HARDWARE RESET".



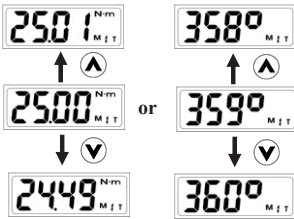
4. Set target torque or angle

- Press **U/S** to select the torque unit (torque mode) or " ° " (angle mode)
- Then press **▲** **▼** to set target value.
- Note that the target value will be saved automatically with the current M number discarding torque or angle.
- Another way is to press **M** to select the pre-set target value (M1~M9).

EX. Select units



EX. Set targets



EX. Using the pre-set targets



5. Zero-reset adaptor

- Press **C** to zero-reset the adaptor.(suggested)
- Refer to "POWER ON AND AUTO ZERO" and "ZERO RESET"



Torque only:

6. Check p/t mode of torque

- Refer to "P/T MODE SELECTION" to set P or T- mode operation of torque.

Definition

T-mode torque view

- In T-mode, if a force is applied on adaptor, LCD displays and tracks the current torque value.
- After releasing force, the LCD value will return to target setting view.



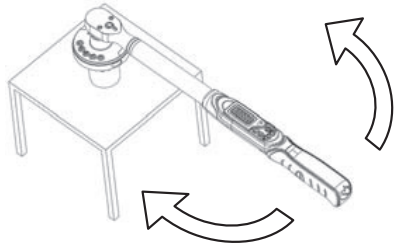
P-mode torque view

- In P-mode, LCD displays the maximum torque value.
- After releasing force, the LCD shows caught maximum value. (flashing)



7. Start to rotate adaptor

- Rotate the adaptor clockwise or counter-clockwise.



8. Watch out the warning led, sounds and LCD to stop rotation

- There are 6 LEDs to indicate the current angle reaching 80%, 85%, 90%, 95%, 97.5% and 99.5% of target angle.



- There is also a buzzer to indicate the reaching level of target angle. Interval sound means it reaches over 80% and long sound means it reaches over 99.5% of target angle.

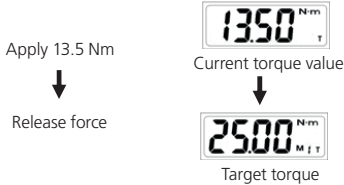
((...((... ...))...)) → over 80%

(((((... ...)))))) → over 99.5%

9. Torque/angle value when rotates

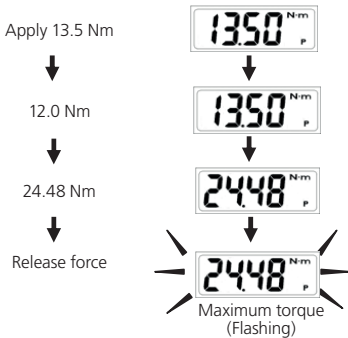
T-mode torque value

- In T-mode, if a force is applied on adaptor, LCD displays and tracks the current torque value.
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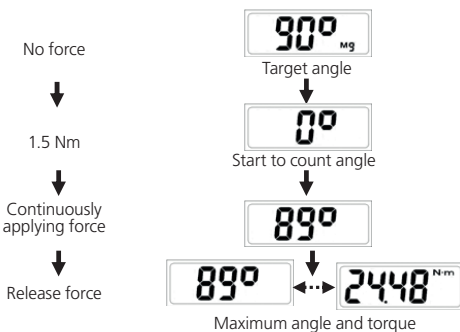
P-mode torque value

- In P-mode, LCD displays the maximum torque value. (flashing)
- After releasing force, the LCD shows the maximum value. (flashing)



Angle value

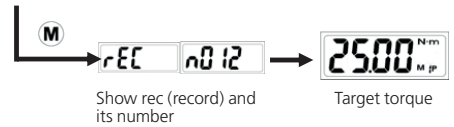
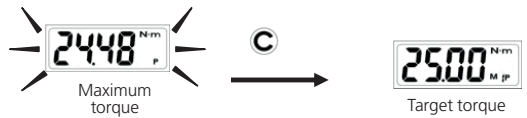
- In angle mode, LCD displays the angle rotated. The angle is counted after the rotation torque has been reaching over 5% of the rated maximum torque.
- After releasing force, the LCD shows the maximum angle and the maximum torque (alternatively).
EX. For a 30.00 Nm adaptor, 5% is 1.5 Nm



10. Save torque/angle value or clear maximum value

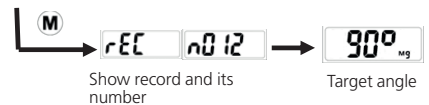
P-mode

- In P-mode, after releasing force, the LCD shows the maximum value. (flashing)
- Pressing **C** will clear the maximum torque and go back to show the target torque.
- Pressing **M** will record the maximum torque, then clear it and go back to show the target torque.



Angle-mode

- In angle mode, after releasing force, the LCD shows the maximum angle and the maximum torque (alternatively).
- Pressing **C** will clear the maximum angle and go back to show the target angle.
- Pressing **M** will record the maximum angle, then clear it and go back to show the target angle.



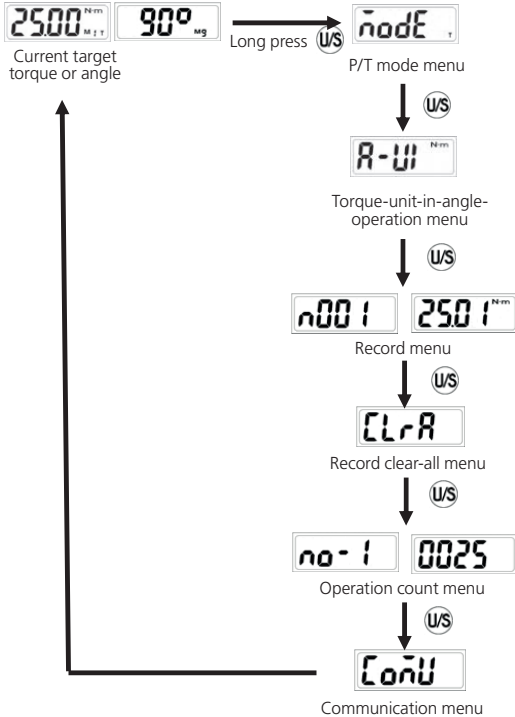
11. Back to step 2 for next operation

VISIT SETUP MENU

- From the target torque/angle screen, long press **U/S** to go into setup menu.

Continuously press **U/S** can visit the *P/T mode menu*, *torque-unit-in-angle-operation menu*, *record menu*, *record clear-all menu*, *operation count menu* and *communication menu*.

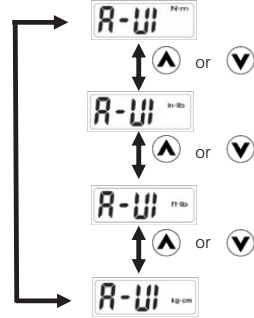
Finally press **U/S** again to skip out the setup menu and go back to the target torque/angle screen.



Select torque unit in angle operation

Visit the torque-unit-in-angle-operation menu, press **▲** or **▼** to select the torque unit during angle rotation.

Continuously pressing **U/S** will skip out the setup menu and go back to the target torque/angle screen.



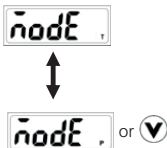
VIEW DATA RECORD

- Visit the record menu, press **▲** or **▼** to select the data number and view it.
- If no record exists, nonE will be shown.
- Continuously pressing **U/S** will skip out the setup menu and go back to the target torque/angle screen.



P/T MODE SELECTION

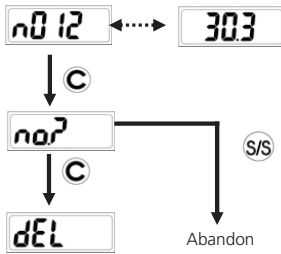
- Visit the P/T mode menu, press **▲** or **▼** to select the Peak-hold or Track mode of torque operation.
- n0dE. Continuously pressing **U/S** will skip out the setup menu and go back to the target torque/angle screen.



CLEAR A SINGLE RECORD

- Visit the record menu.
- Press **▲** or **▼** to select the data number you want to delete.
- Press **C** twice to delete the current data (**dEL** will be shown)
- If press **C** once, **no?** will be shown. If you want to abandon, just press **S/S** to skip out this menu. Continuously pressing **S/S** will skip out the setup menu and go back to the target torque/angle screen.

Press **▲** or **▼**
To select data no.



VIEW OPERATION COUNTS

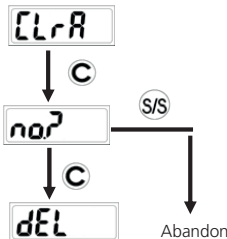
- Visit the operation counts, the operation counts will be shown.
- Operation counting record counts every time the adaptor has been used over 60% of maximum torque. This record is not erasable until re-calibration.
- The feature will count up to 65,000 measurements.
- The following figure means the recorded count is 10025.
- Continuously pressing **US** will skip out the setup menu and go back to the target torque/angle screen.

Ex 10025 times



CLEAR ALL RECORDS

- Visit the record clear-all menu
- Press **C** twice to delete the all record data. (**dEL** will be shown)
- If press **C** once, **no?** will be shown. If you want to abandon, just press **S/S** to skip out this menu.
- **CLrA** Continuously pressing **S/S** will skip out the setup menu and go back to the target torque/angle screen.



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 adaptor 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 adaptor.



Uploading record data

- Make sure the connection between PC and adaptor is normal.
- Visit the **communication menu** (COMU), shows). Press **▲** or **▼** to start communication function. (**SEnd** will be shown)
- 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 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 loss of accuracy.
2. Do not shake violently or drop adaptor.
3. Do not leave this adaptor in any place exposed to excessive heat, humidity, or direct sunlight.
4. Do not use this apparatus in water. (it is not waterproof)
5. If the adaptor gets wet, wipe it with a dry towel as soon as possible. The salt in seawater can be especially damaging.
6. Do not use organic solvents, such as alcohol or paint thinner when cleaning the adaptor.
7. Keep this adaptor away from magnets.
8. Do not expose this adaptor to dust or sand as this could cause serious damage.
9. Do not apply excessive force to the LCD panel.

BATTERY MAINTENANCE

- When the adaptor 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

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