INSTRUCTION MANUAL

PRODUCT TYPE
DIGITAL ANGLE METER WITH MAGNET

MODEL
7700-0001

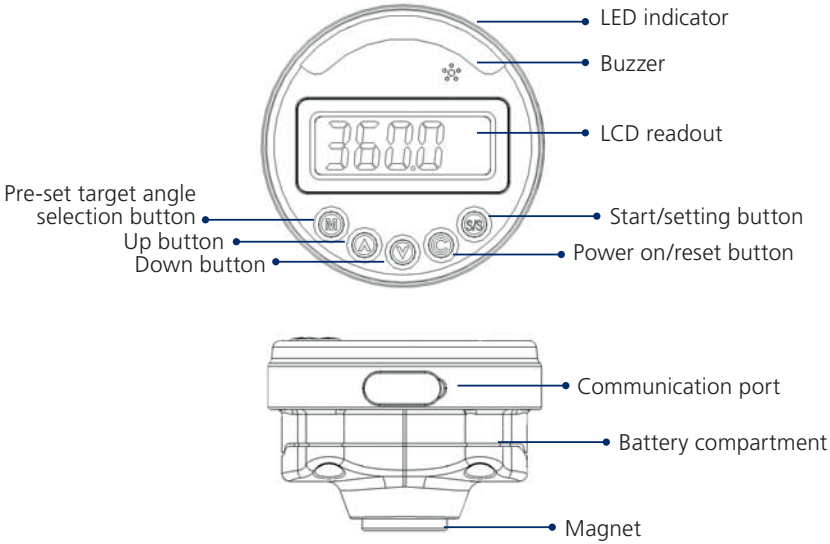
DEAR USER

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

MAIN FEATURES

- Digital angle value readout
- +/- 2° (rotating 90° at speed of 30°/sec)
- CW and CCW operation
- Buzzer and LED indicator for the 9 pre-settable target angles
- 50 data memory for recall and angle auditing
- Auto power off after about 2 minutes idle
- AAA regular and rechargeable batteries are compatible

NAMES AND FUNCTIONS OF PARTS



SPECIFICATIONS 7700-0001

Angle accuracy *1	± 2° for 90° rotation @ 30°/sec
Display range	0 ~ 999.0°
Resolution	0.1°
Target memory	9 sets
Target range	1~360.0° (increment 1°)
Data memory size	50
PC connectivity *2	No
LED	6 (1 Red + 5 Green)
Button	5
Battery *3	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 *4	10G
Environmental test *5	Pass
Electromagnetic compatibility test *6	Pass

Note:

**1: The accuracy of the readout is guaranteed from 0.0° to 360.0° and the test speed is 30°/sec. For maintaining accuracy, calibrate the meter at regular intervals (1 year recommended).*

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

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

**4: Horizontal and vertical test*

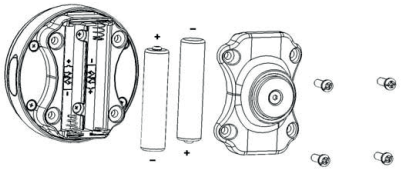
**5: Environmental test:*
- *a. Dry heat*
- *b. Cold*
- *c. Damp heat*
- *d. Change of temperature*
- *e. Impact (shock)*
- *f. Vibration*
- *g. Drop*

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

BEFORE USING THE METER

Battery Installation

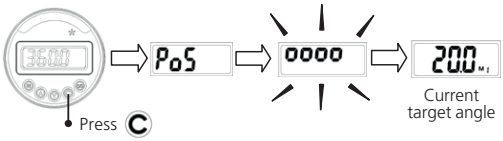
- Loosen the screw of the battery cap.
- Insert two AAA batteries matching the -/+ polarities of the battery to the battery compartment.
- Fasten the screw of the battery cap.



Power On

- Gently press C to power on.

  First the direction sign PoS or nEG will show. Then the LCD shows 0000. It indicates the meter is under resetting process. Finally if the reset process is completed, the target angle will be shown. For example 200.0 is shown.



> ***Caution:***
> *During resetting process, never vibrate or shake the meter. Keep it rest.*

Auto Power Off

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

> ***Caution:***
> *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 angle meter before using the meter. It will guarantee a better accuracy.

> ***Caution:***
> *During resetting process, never vibrate or shake the meter. Keep it rest. If Er4 shows, refer to "ERROR MESSAGE" section.*

Hardware Reset

- To do hardware rest, use a pin to touch the reset button which is located in the hole of the meter back.
- Another way is remove battery and re-install it.
- If the meter does not work functionally, please do hardware reset.

ERROR MESSAGES

Low Voltage Indicator

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

Er5

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

Er4

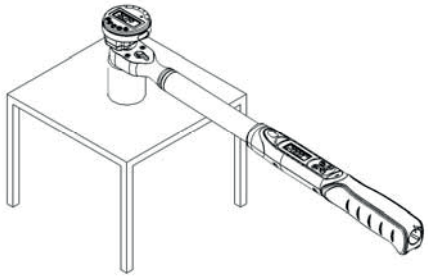
- If the meter does not reset successfully for a period of time, Er4 will be shown. Press C to do zero-reset again. Notice that during resetting process, never vibrate or shake the meter. Keep it rest.

Er--

- If the meter rotates too fast, Er-- will be shown. Do press C to zero reset the meter.

OPERATION

1. Put the meter on the wrench

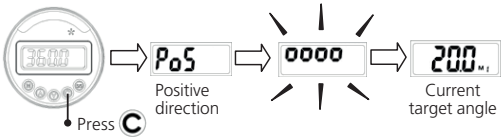


Get started fast

- Press C to power on.
- Press M or ∧ ∨ to set target angle.
- Press S/S to start the angle measurement.
- Start rotation.
- Rotation stop and the LCD will be flashing.
- Now press M to record angle or press C to clear or press S/S to count from current angle.

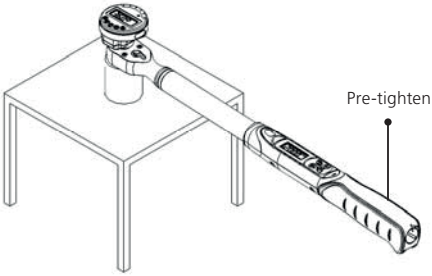
2. Power on the meter and reset

- Press C to power on the meter or reset it.
- Finally the current target angle will be shown.
- Make sure the direction. If you want to change to direction, please refer to "CHANGE ANGLE DIRECTION".



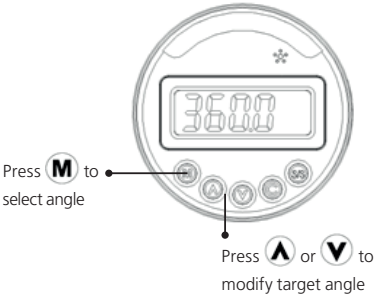
4. Pre-tighten wrench

- Hold on your wrench to pre-tighten the screw. (eliminate the backlash of wrench)



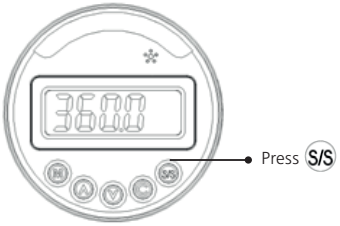
3. Set target angle

- Press M to select the pre-set target angle (M1~M9).
- Or press ∧ or ∨ to modify the current target angle. Note that the target angle will be saved automatically with the current **M** number.



5. Start to measure angle

- Press S/S to start the angle meter and immediately pull your wrench.



6. Stop and wait for LCD Flashing

- As the angle meter does not move for a few seconds, the LCD screen will be flashing and the current angle is holding on screen.
  It also means the meter stop calculating angle.

Note:

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

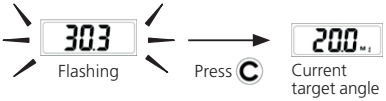
2. There is also a buzzer to indicate the reaching level of target angle. Interval sound means it reaches over 80% and long sound means it reaches over 99.5% of target angle.

((…((… …))…)) ➔ over 80%

(((((((… …))))))) ➔ over 99.5%

7. Clear angle value, Calculating angle again or Save angle record

- Pressing C will clear the current angle.

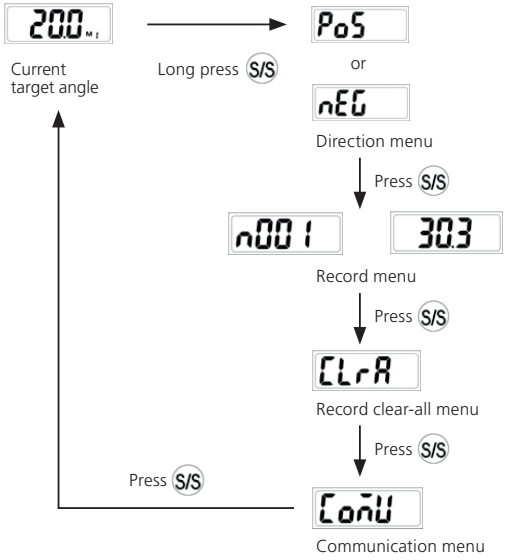


- Pressing S/S will calcualte angle again from current angle.

- Pressing M will record the current value and then clear the current value.

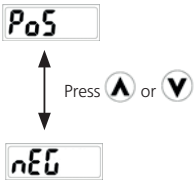
SETUP MENU INTRODUCTION

- From the current target angle screen, long press to go into setup menu.
  Continuously press can visit the direction menu, record menu, record clear-all menu and communication menu.
  Finally press again to skip out the setup menu and go back to the current target angle screen.



CHANGE ANGLE DIRECTION

- Visit the direction menu, press ∧ or ∨ to select the direction. PoS (Positive) means clockwise direction and nEG (negative) is counter-clockwise direction.
- After setting the direction, continuously press S/S to skip out the setup menu and go back to the current target angle screen.



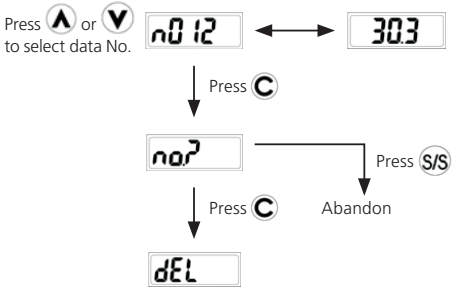
VIEW ANGLE RECORD

- Visit the record menu, press ∧ or ∨ to select the data number and view it.

- If no record exists, nonE will be shown.
- Continuously pressing S/S will skip out the setup menu and go back to the current target angle screen.

CLEAR A SINGLE RECORD

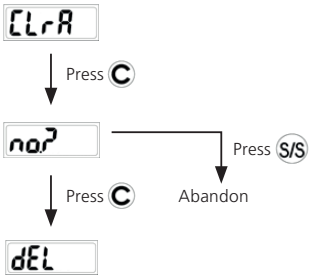
- Visit the **record menu.**
- Press ∧ or ∨ or to select the data number you want to delete.
- Press C twice to delete the current data. (dEL will be shown)



- If press C once, nor 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 current target angle screen.

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, nor 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 current target 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 angle meter 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 meter.

Uploading record data

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

BATTERY MAINTENANCE

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

POLAR TOOLS A/S

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