



Operating Manual

Digital Torque Tester (DTT)



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Introduction

1.1. Product Description

The Digital Torque Tester (DTT) is a state of the art device suitable for both torque testing & calibration of torque tools. As a precision tool, it is highly accurate as well as highly repeatable. For product portfolio cohesion, the Torque Tester Display (TTD) uses the same Organic LED display, membrane keypad, user interface and PC based data management software as other standard products within this range of electronic torque tools. Additionally, training time is kept to a minimum due to the ease of use of the tool itself.

Digital Torque Testers are demonstrated to have an accuracy of 0.5% or better, and are both simple to set and calibrate as well as coming with a fully traceable certification.

The Torque Tester Display (TTD) has both visual and audible alarms that signal good or bad torque. Furthermore, there is a visual battery life indicator, alarms for preset value approach, fastener overload, range overload and maximum mechanical overload.

1.2. Recommended Use

The Digital Torque Tester (DTT) is specifically designed for use in all industrial settings and applications where accuracy and repeatability combined with complete torque data management is required. This tool is ideal for the regular accuracy checking required for a torque wrench, and will ensure that on-site tools are compliant and accurate to the relevant standards.

1.3. Basic Characteristics

- Accuracy – Right hand side torque = $\pm 0.5\%$, Left hand side torque = $\pm 0.5\%$ of actual reading from 10% to 100% of the Maximum Torque. Measurements from 5% to 10% can be viewed but do not meet maximum permissible deviation.
- Resolution – 0.01 to 50 Nm, 0.1 to 1.000 Nm
- Alarms – Preset value approach, range overload, mechanical overload, low battery and memory full
- Memory Capacity – >2.000 values
- Battery Life – Sleep Mode: 5.000 hours,
Operational Mode – For standard super series:
Up to 120 hours.

2. General Guidelines

2.1. Changing the Batteries

1. Remove the battery door.
2. Install four standard AA or standard rechargeable batteries in the required orientation.
3. Replace the battery door.
4. Turn on the tester and check to ensure the date and time are both set correctly.

Note: Standard & rechargeable AA batteries are both suitable for use with the Digital Torque Testers (DTT). Rechargeable batteries should be charged offline with a suitable charger.

2.2. Transducer Guidelines

- Store in a cool, dry location.
- Do not exceed specified torques.
- Do not use external forces on transducer e.g. a hammer.
- Apply torque perpendicularly to transducer.
- Secure Transducer in place before applying torque to the transducer.

The stated range of each transducer defines the calibrated range. Working above the stated range can damage the transducer beyond repair. Maximum Permissible Deviation value does not apply to measurements below 10% of the Maximum Torque.

2.3. Interchanging the Transducer

The Torque Tester Display (TTD) can be interchanged with any Digital Torque Tester (DTT) in the range.



Figure 2.3.: Torque Tester Display & Digital Torque Tester

Instructions:

1. Ensure the TTD is powered off.
2. Unscrew the cable from the connector on the DTT.
3. Screw the cable into the same connector on the desired DTT.
4. Power on the TTD.
5. Ensure that no error messages appear. If error messages appear repeat steps 1-4.

2.4. Safety Instructions

The following are a set of general guidelines for using and storing the tester that should be adhered to at all times;

- All torque tools are precision instruments and should be handled with care.
- Do not subject the tool to torque loads in excess of the model range.
- Using non-linear extensions may affect the accuracy of the readings.
- The use of torque extensions will increase the torque applied.
- Do not operate the tool unless it has been powered on and the display screen can be read clearly.
- Do not drop the tool or subject it to heavy impact blows.
- Ensure the tool is stored in a cool, dry location in order to protect it from damage.

2.5. Basic Device Operation

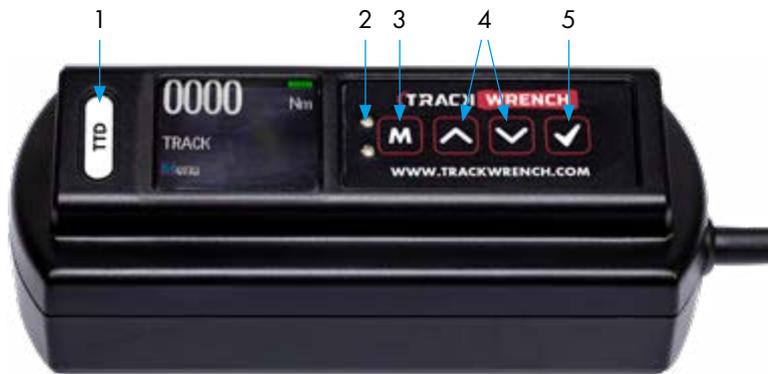


Figure 2: Tool Interface Overview

1. Model label.
2. Coloured LED warning indicators.
3. Use **M** to scroll through the menu or return to the previous screen.
4. Use the directional arrows to adjust values such as units, torque settings, time, etc.
5. Use **✓** to enter mode, confirm setting or save result to memory.

3. Modes of Operation

Torque reading starts at 5% of maximum capacity with an accuracy of +/-0.5% from 10% to 100% of the Maximum Torque. Measurements from 5% to 10% can be viewed but do not meet maximum permissible deviation. The following are the different modes available with the Digital Torque Tester(DTT):

- Languages
- Units
- Date
- Track
- Peak
- Preset
- Set
- Click-Torque
- Dynamic Peak
- Recall
- Upload
- Clear
- Comms

3.1. Language Mode

The languages of operation available to the user are: English, Chinese, French, German, Italian, Polish, Portuguese, Russian & Spanish.

1. Press **M** to scroll to the Language mode
2. Press **✓** to enter Language mode
3. Press **▼** **▲** to scroll to desired language
4. Press **✓** to confirm operation in this language



Figure 3: Language Mode

3.2. Units Mode

1. Press **M** to scroll to Units mode
2. Press **✓** to enter Units mode
3. Press **▼** **▲** to scroll to desired units
4. Press **✓** to confirm selected units



Figure 4: Units Mode

Note: The following units of measurement are available; kgf.cm, kgf.m, cN.m, N.m, ozf.in, lbf.in & lbf.ft

3.3. Date Mode

1. Press **M** to scroll to Date mode
2. Press **✓** to enter Date mode
3. Press **▼** **▲** to set the minute and hour
4. Press **✓** to confirm
5. Repeat steps 3 & 4 to set the date, month and year

3.4. Track Mode

As torque is applied, the OLED will actively display the applied torque reading from 5-100% of the maximum span of the device. Upon removal of the load, the display will return to zero.

1. Press **M** to scroll to Track mode
2. Press **✓** to enter Track mode



Figure 5: Track Mode Graph

3.5. Peak Mode

In Peak mode, the maximum torque reading will remain on the OLED display when the load is removed as long as the torque loaded is above the 10% of maximum capacity threshold. The Torque will display from 5% of maximum capacity threshold. The user has the option to store the reading in memory. If storage of the reading is not required, the user may continue to the next measuring task.

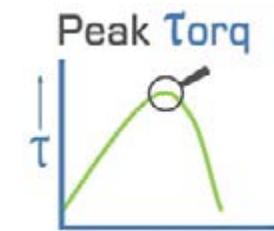


Figure 6: Peak Mode Graph

1. Press **M** to scroll to Peak mode
2. Press **✓** to enter Peak mode
3. Press **✓** to store the peak value recorded if required

3.6. Preset Mode

In Preset mode, the maximum torque reading will remain on the OLED display when the load is removed as long as the torque loaded is above the 10% of maximum capacity threshold. The Torque will display from 5% of maximum capacity threshold. Depending on the maximum torque recorded, there are various warning signals activated:

- Passing Minimum Value – The green LED on the keypad will flash, and the buzzer will sound intermittently, while the OLED display will change to orange.
- Passing Nominal Value – The green LED on the keypad will turn on, and the buzzer will sound continuously, while the OLED display will change to green.
- Passing Maximum Value – The red LED will flash continuously, and the buzzer will sound continuously, while the OLED display will change to red.

1. Press **M** to scroll to Preset mode
2. Press **✓** to enter Preset mode
3. Press **✓** **▲** to select your preferred preset number i.e. 1 to 99
4. Press **✓** to operate within this preset parameter
5. Press **✓** to store the applied torque if required

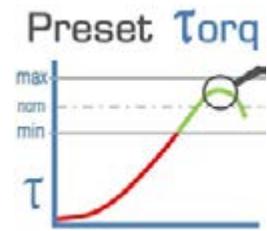


Figure 7: Preset Mode Graph

3.7. Set Mode

This mode allows the user to set limits for the torque applied. The operator can choose to set values by either percentage or numerical tolerance. During operation the OLED display will be green when approaching the preset tolerance and will change to red if exceeded.

1. Press **M** to scroll to Set mode
2. Press **✓** to enter Set mode
3. Press **✓** **↶** to select set by percentage or set by tolerance
4. Press **✓** **↶** to scroll to required preset number i.e. 1 to 99
5. Press **✓** to confirm preset number selected
6. Press **✓** **↶** to set nominal value and **✓** to confirm
7. Press **✓** **↶** to set your low value and **✓** to confirm
8. Press **✓** **↶** to set your high value and **✓** to confirm

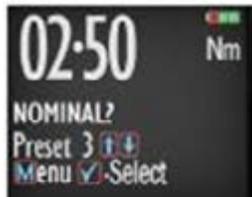


Figure 8: Nominal Preset

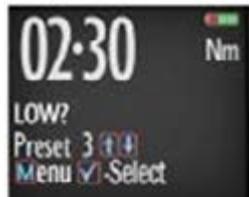


Figure 9: Low Preset Figure



Figure 10: High Preset

9. Once the parameters have been confirmed the operator can find the configured preset within Preset mode. Use **M** to select Preset mode from the main menu and find the desired preset number.

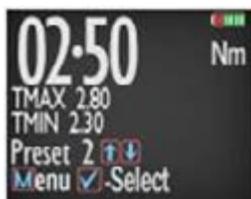


Figure 11: Set & Preset Functions

3.8. Click-Torque Mode

In Click-Torque mode, the first peak reading will remain on the OLED display when the load is removed, as long as the torque loaded is above 10% of the maximum capacity threshold. The Torque will display from 5% of maximum capacity threshold. This mode is best suited to capturing the click-out point of a mechanical click wrench which can then be compared to the etched or printed dial scale on the tool itself. Once captured, the user has the option to store the reading to memory. If storage of the reading is not required, the user may continue to the next task.

1. Press **M** to scroll to Click-Torque mode
2. Press **✓** to enter Click-Torque mode
3. Press **✓** to store the first peak value if desired

3.9. Dynamic Peak Mode

In Dynamic Peak mode, the final peak value will remain on the OLED display when the load is removed, as long as the torque loaded is above the 10% of maximum capacity threshold. The mode is best suited to capturing the final installed torque (2nd Peak) for click wrenches, the peak torque of slipping wrenches or, in conjunction with a joint simulator, the peak torque of suitable rotary tools of 1.200 RPM or less. Please note that impact of erratic drive pulse tools are not suitable for testing with the range of Digital Torque Testers (DTT). Once captured, the user has the option to store the reading to memory. If storage of the reading is not required, the user may continue to the next task.

1. Press **M** to scroll to Dynamic Peak mode
2. Press **✓** to enter Dynamic Peak mode
3. Press **✓** **▲** to scroll to the required preset number i.e. 1 to 99
4. Press **✓** to select the desired preset
5. Press **✓** to store the maximum peak value if desired

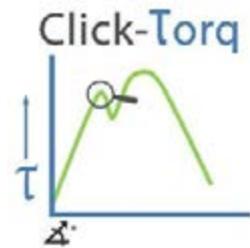


Figure 12: Click-Torque Mode Graph

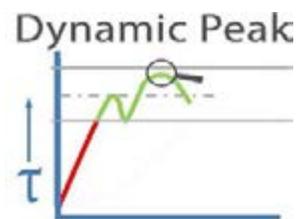


Figure 13: Dynamic Peak Mode Graph

3.10. Recall Mode

This mode allows the user to view the stored torque data. Only locations containing data will be displayed. Note that as data is stored, the locations are populated sequentially from 01 to 2094.

1. Press **M** to scroll to Recall mode
2. Press **✓** to enter and view memory locations, results and functions
3. Press **✓** **↑** to scroll through locations that contain data

3.11. Upload Mode

This mode allows the user to upload stored torque data. In upload mode, the driver must be connected to a PC running the PC Front-End Software (PCFE) via the USB port on the Driver and the PC.

1. Press **M** to scroll to Upload mode
2. Press **✓** to enter Upload mode
3. Press **✓** to select "From" & **✓** **↑** for the starting point of the results upload
4. Press **✓** to confirm "From" location
5. Press **✓** to select "To" & **✓** **↑** for the finishing point of the results upload
6. Press **✓** to confirm, press **✓** again when asked are you sure

3.12. Comms Mode

This mode allows the user to select the method of communication. The standard model allows communication by standard USB cable to the included software. For communication by ASCII or BINARY the wrench will need factory modifications in advance.

1. Press **M** to scroll to Comms mode
2. Press **✓** to enter Comms mode
3. Press **✓** **↶** to select the method of communication & **✓** to confirm

Note: For standard communication to the included software program, select "PCFE".

3.13. Clear Mode

This mode allows the user to clear the stored data from an range of locations. Before clearing the selected range and as a safety precaution, the user will be asked are they sure they wish to clear selected data. This can be done by pressing the confirm button.

1. Press **M** to scroll to Clear mode
2. Press **✓** to enter Clear mode
3. Press **✓** **↶** to select "From" range to be cleared and press **✓** to confirm
4. Press **✓** **↶** to select "To" range to be cleared and press **✓** to confirm
5. Press **✓** to confirm and you will be asked if you are sure
6. Press **✓** to confirm and that range of data is cleared from the wrench memory

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