Operator's Manual

ADTT Torque Tester

Notice

Table of Contents

CE / UK MARKING

AIMCO, by its manufacturing partner, declares that the ADTT has been assessed and complies with the requirements of the relevant CE Directives and UKCA regulatory requirements.

COMPLIANCE

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in particular installations. If this equipment does cause harmful interference to radio or television reception which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WARNINGS AND SAFETY INFORMATION

IMPORTANT SAFETY INSTRUCTIONS

PLEASE READ THIS THOROUGHLY BEFORE USE. IMPROPER USE OF THIS PRODUCT COULD AFFECT THE SAFETY OF THE OPERATOR OR BYSTANDERS. IMPROPER USE COULD ALSO RESULT IN INCORRECT MEASUREMENT READINGS.

Read the manual completely before using the unit.

- Observe all equipment, system and manufacturer's warnings, cautions and procedures when using this unit.
- Always operate, inspect and maintain this unit in accordance with all regulations (local, state, federal and country) that may apply.
- Maintain unit with care. Keep unit clean for better and safer performance.
- Please observe the max. torque limits of the unit – Overtorquing can cause breakages.
- Do not remove any labels.
- Do not remove any screws or fixings from the unit.
- Unit must be stored in a dry place.
- It is advised that the batteries are removed from the unit if it is to be stored for a period of more than 3 months.
- Do not immerse in liquids.
- Do not operate this product in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.
- Always operate the ADTT with the approved batteries or power supply.
- Periodic recalibration is necessary to maintain accuracy (recommended on a yearly basis).
- A unit which is out of calibration can cause damage to the tool or parts.
- If the capacity of the unit is suspected to have been exceeded, the calibration must be verified before further use.
- If the unit is dropped, the calibration must be verified.
- This unit contains no user serviceable parts. Only qualified AIMCO service personnel should replace or fit parts.
- Changes or modifications to the ADTT not expressly approved by AIMCO could void the user's authority to operate the equipment.

Always use the appropriate Personal Protective Equipment for the tool used and material worked.

- All users and observers must wear safety goggles.
- Good professional tool and fastener installation practices must be followed for personal safety and to avoid unit damage.
- Ensure work pieces are secure. Use clamps or vices to hold work pieces whenever possible. Never use a damaged or malfunctioning tool or accessory with this unit.
- Keep body stance balanced and firm. Do not overreach when operating the tool. Anticipate and be alert for sudden changes in motion, reaction torque, or forces during the operation.
- Always pull the tool; do not push.

WARNING Risk of flying particles.

- Ensure the unit and all adaptors, extensions, drivers and sockets are rated to match or exceed the target torque of the tool.
- Use the correct size socket for fastener.
- Follow instructions for changing accessories.
- Do not use broken hand tools as sockets or accessories as these can cause injury.
- Do not use worn or cracked sockets or adaptors.
- Worn fasteners must be replaced before using the unit.
- Make sure the tool is fully engaged on the unit before testing.
- Use the tool solely for the testing of tools.
- When using a ratchet head adaptor, ensure the direction lever is fully engaged in the correct position, observing the direction of torque being applied.
- The unit must not be used for testing without being switched on, as this may damage the unit.

Electrical shock can cause injury.

- Must NOT be used on live electrical circuits.

ABOUT THIS MANUAL

This manual covers the ADTT torque tester.

Actual screen shots or images represented in this manual may differ slightly from those on the actual product, depending on the version.

OVERVIEW

The ADTT torque tester is ideal for the concise measurement and collection of assembly tool torque audit data for manufacturing and quality personnel.

Our basic, easy-to-use readouts include a built-in torque transducer and a variety of measurement modes including track, peak, pulse and click. The torque tester can also be used as either a portable device or fixed permanently using the mounting bars.

Incorporating a large, clear OLED screen display to view readings and results, the easy to use keypad offers a familiar feel with simple function keys to effortlessly switch between modes and settings.

The new internal memory allows for up to 999 readings to be stored and the addition of a new micro USB port allows for a wider range of connections for exporting data.

The new port also allows for additional power options alongside the general 5V power supply and internal battery option for added portability. The ADTT is available in 4, 12, and 30 Nm ranges.

PACKING LIST

The following Items are supplied with the ADTT dependent on model specification purchased.

1 x ADTT (with standard rundown adapter)
1 x Calibration Certificate (12 months)
1 x Quick Start Guide (with QR code link to Operator's Manual)
2 x Type 'C' Cell non-rechargeable batteries

All contents are supplied packaged in a box. Please ensure all items are present and notify AIMCO immediately of any shortages.

Joint Simulator

CARE AND STORAGE

Operating Temperature Range: –20°C to +50°C

Storage Temperature Range: –20°C to +50°C

Humidity: 10 – 75% non-condensing.

IP Rating: IP45.

The ADTT may be wiped clean with a soft cloth.

WEIGHTS AND DIMENSIONS

Weight: 1736g (without accessories).

SPECIFICATIONS

Measurement Modes	**Track:** Real time torque **Peak:** Capture of the highest torque **Pulse:** Special measurement algorithm for use with impulse tools, incorporating pulse count **Click:** Capture of peak torque before click mechanism operates to limit
Measurement Units	Torque - Nm, lbft, lbin, Ncm, kgcm, kgm, ozin
Physical Measurements	Auto Bi-directional torque; pulse count; cycle time duration.
Data Storage	999 readings in storage mode.
Basic Statistics	Count, range, mean, min, max, standard deviation.
AutoPrint / Data Output	Easy selectable output to AutoPrint of all results. Interface to simple PC package that outputs the print data to an Excel spreadsheet.
Cycle Status Indication	LED HI/OK/LO torque status. User definable limits.
Operating Languages	English, Czech, French, German, Italian, Hungarian, Spanish, Swedish, Polish, Turkish.

Construction	High strength injection moulding. Steel base with mounting bars.
Display	White OLED screen - 79 mm x 21 mm
Keypad	Easy clean keypad. 11 keys including 5 function keys, 5 directional keys and on/off key.
Power	5V DC mains power. Two type ‘C’ cell non-rechargeable batteries (supplied as standard)
Power Management	User selectable auto power-off: User definable between 0-200 minutes.
Batteries	Compatible with both Alkaline and NiMH “C” cells (LR14)
Input/output ports	Micro USB (2.0) for power and export. 5V DC power port for use with mains power DC PSU.
Zero Stability	<± 0.02% FSD/ °C.
Static Accuracy	± 0.25% FSD.
Torque Measurement	Display up to 5 significant figures. Sample every 20 micro seconds.
Warranty	12 months parts and labor against faulty workmanship or materials.

ICONS – ADTT

Fixed soft-key Icons:


Measurement Modes


Delete


Readings


Statistics


Settings

On-screen Icons - Measurement Modes:


Peak


Click


Track


Pulse

START UP

Turning on your ADTT:

Turn on the ADTT by pressing the On/Off button situated below the arrowed keypad.

The first screen you will see is as below.

The screen will then change to:

It confirms the serial number of the ADTT and its calibration due date. TM is the latest software version of the torque module and KB represents the latest version of the keyboard.

The unit will then enter measure mode, showing the last measurement mode used is automatically displayed.

The screen icons below denote the following:

 Primary measurement mode

 Measurement reading

 Battery status

 Number of readings

 Measurement unit

 Duration in seconds

 Direction of rotation/torque

 DC power

FIXED ICONS

Measurement Mode - Default mode will be peak. A second press will take you to track, a third press will take you to click, and a fourth press will take you to pulse (shown as icon in secondary parameter position).

Delete - You can delete the last reading or all readings. One press will delete the last reading; two presses will delete all readings.

Reading List – This will show the readings currently held on the torque tester. Using the up and down arrow keys you can scroll through the readings.

Statistics – This will display the following stats from the current readings: count, range, mean, min, max, and standard deviation (sigma).

Settings – Allows you to toggle through various screen settings. See separate screen section of this manual below.

INPUTS

The ADTT has connectivity using the following:

❶ Micro USB

❷ 5V DC power supply

❸ External Transducer Port: Compatible with ARTU Rotary Transducers and ASTU Stationary Transducers

POWERING YOUR ADTT

There are two ways in which the unit can be powered:

❶ Connect the 5V DC port with a DC power supply.

❷ Insert 2 x Type ‘C ‘ Cell (LR14) NiMH or Alkaline batteries.

Please note: The ADTT does not contain a battery charging system. Please use size “C” non-rechargable NiMh or Alkline batteries and dispose of properly when depleted.

THE MEASUREMENT SCREEN

Measurement Screen:

❶ Measurement reading ❷ Primary measurement mode ❸ Battery status ❹ Reading count.

❺ Unit of measurement ❻ Duration in seconds ❼ Measurement direction

Pressing the measurement button will take you through the measurement modes.

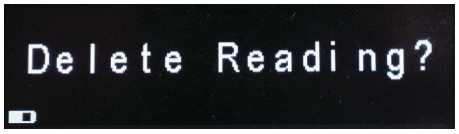
Screen 2 on the second press Track mode.

Screen 3 on the third press Click mode with peak value displayed.

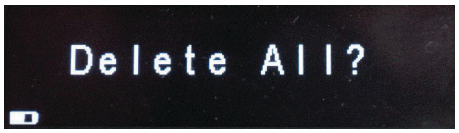
Screen 4 on the fourth press pulse mode with peak value and cycle duration displayed

A second parameter for pulse count can also be enabled.

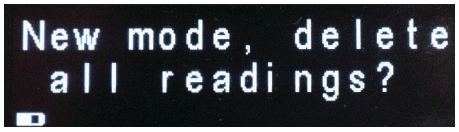
DELETION



Readings are taken in order, so the first is 1 the last reading would be 999. One press of the delete icon will allow you to delete the last reading only. Press the green OK button to do so.



A second press of the delete button will allow you to delete all readings in the list in one go. Just press the green OK button.



The other time you are forced to delete all readings is when you change the measurement mode midway through readings you have already done.

In addition, readings are also deleted when the torque limit specifications are altered.

SETTINGS

Settings can be accessed by pressing the Settings Icon and using the up and down arrow keys and changing the formats by using the right and left arrow keys:

TQ = Torque CLK = Click PUL = Pulse

UL = Upper Spec Limit NOM = Target LL = Lower Spec Limit THR = Threshold

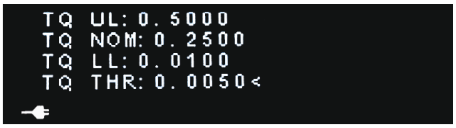
Pressing the fixed Settings key. The first screen you will come to is the torque settings.

It will show CLK THR (Click Threshold) for Click and Pulse for Pulse.

Using the up and down arrows on the keypad you can manoeuvre between the required lines. When the arrow is on the line press the green button. You can then use the Up and Down arrows to change the numbers and the left and right arrows to move left and right. Pressing the green button will save and take you back to the main setting screen. Note. Pressing Settings icon cancels edit.

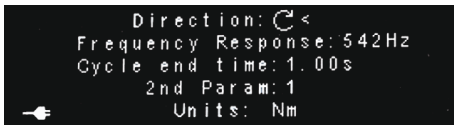
The units of measurement are the display units (show on screen after).

e.g. Peak Mode



e.g. Threshold

Pushing the up or down arrow key will take you to another screen where you can change the Direction, Frequency, Cycle End Time, 2nd Parameters and Measurement Units. Use the up and down arrows to navigate and the left and right arrows to change.

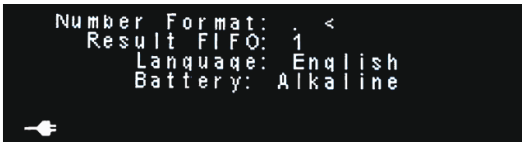


Direction:	Auto Clockwise Counter-clockwise
Frequency Response (Hz):	75, 151, 256, 307, 384, 542, 768, 921, 1024, 1536, 2304, 3072, 4608
Cycle End Time (s):	0.20, 0.5, 1.0, 2.0, 5.0, 10, 20
2nd Param:	0 = Off, 1 = On
Units:	Nm, lbft, lbin, Ncm, kgcm, kgm, + others (display valid units for span)

A second press of the settings icon will take you to Setup System Settings.

Power Off:	Set the duration of the length of time before the torque tester turns off. 0 – 200 (0 = Never turn off)
Date:	Set the correct date.
Time:	Set the time.
Date format:	Change how you want the date to be formatted. DD/MM/YYYY, MM/DD/YYYY, YY/MM/DD
Time format:	Set how you want the time displayed. HH:MM:SS, HH:MM

A press of the arrow keys up or down will take you to the following screen where you can make additional settings changes.



Number Format:	Period or Comma for decimal place.
Result FIFO:	First in first out can be set which way you want the readings to be deleted. If off (0) then it stops taking readings when it reaches 999. If on (1) then when 999 readings are reached, it starts overwriting the earliest readings, meaning it holds the last 999 readings only.
Language:	English, Swedish, Czech, Spanish, Italian, Portuguese, German, Turkish, Polish, Hungarian, French

AUTOPRINT SETTINGS

A third press of the settings icon will take you to the AutoPrint settings.

The AutoPrint settings are as follows:

Format:	Show the AutoPrint format. Display as [xxxx] 1 = Show, 0 = Not Shown
Date:	Show the date of the reading.
Time:	Show the time of the reading.
Status:	HI, LO, OK
Direction:	Right (Clockwise), Left (Anti-clockwise)
Duration:	Reading duration in seconds.
Spec Limits:	USL, Target and LSL.
Secondary:	Show if there are any second parameters.
Serial No.:	Show the serial number of the tool.

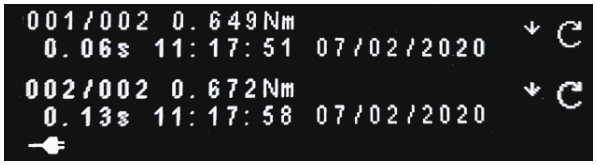
Example:

```
16:08:30.449 << [B17F] 096829 17/10/18 16:06:10 1.811Nm LO 0.6 OK Right 1.279 10.00 2.500 3000.0 0.0 Peak
16:08:30.453 << [B17F] 096829 17/10/18 16:06:14 4.285Nm OK 2.9 OK Right 1.848 10.00 2.500 3000.0 0.0 Peak
16:08:30.458 << [B17F] 096829 17/10/18 16:06:18 15.11Nm HI 1.8 OK Right 1.761 10.00 2.500 3000.0 0.0 Peak
16:08:30.462 << [B17F] 096829 17/10/18 16:06:32 2.605Nm OK 7.6 LO Right 4.537 10.00 2.500 3000.0 0.0 Peak
16:08:30.469 << [B17F] 096829 17/10/18 16:06:36 2.443Nm LO 5.4 LO Right 2.094 10.00 2.500 3000.0 0.0 Peak
16:08:30.473 << [B17F] 096829 17/10/18 16:06:42 10.58Nm HI 85.5 LO Right 3.144 10.00 2.500 3000.0 0.0 Peak
```

AutoPrint takes place when each reading cycle end is complete. AutoPrint does not work in Track mode as there is no cycle end and no reading stored.

READINGS LIST

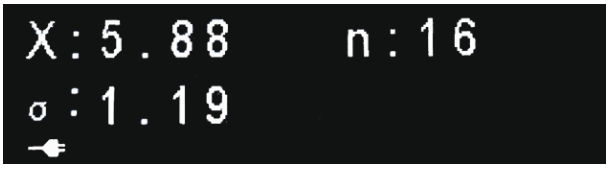
One press of the Readings icon will take you to the first reading screen where you can see all of your current readings. You can navigate through the results by using the up and down arrow keys.



A second press will allow you to export your readings to a PC. Press the green button to accept. All readings are exported in AutoPrint format.

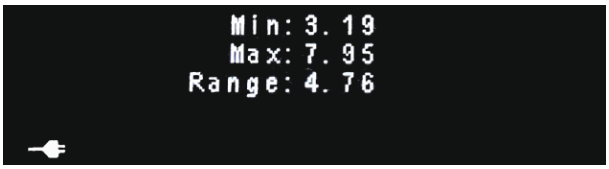
STATISTICS

Pressing the fixed Statistics icon takes you to two screens which display simple statistics relating to the current collected readings data.



The first screen displays

X =Mean average
n = Sample count and
σ = Sigma (Standard deviation)



Pressing the up and down arrow keys takes you to the second screen which displays the current minimum and maximum readings as well as the range between them.

CONTACT US

To get in touch with AIMCO, please go to www.aimco-global.com

Corporate Headquarters

10000 SE Pine Street
Portland, OR 97216
800-852-1368
FAX 800-582-9015
www.aimco-global.com

AIMCO Corporation de Mexico SA DE CV

Ave. Cristobal Colon 14529
Chihuahua, Chihuahua. 31125
Mexico
Phone: (01-614) 380-1010
Fax: (01-614) 380-1019

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