PROFESSIONAL CALIBRATION TORQUE UNIT

OPERATING MANUAL

Advanced Witness Systems Ltd

1006

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Professional Calibration Torque Unit Operating Manual
(Model No: 1006)

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DESCRIPTION.

The Advanced Witness Systems Professional Calibration Torque Units (From this point onwards, referred to as the **PCTU**) are designed as low cost but accurate and robust production line instruments to test/check /calibrate a range of torque wrenches and screwdrivers.

Modes of operation are Run (live), 1st Peak for click type torque wrenches, and Peak for indent screwdrivers, dial torque wrenches etc. Selection of modes is by dedicated flex push buttons. Indication of mode selected is by LED's above the mode symbol.

Torque units of measurement S.I. or imperial can be selected.

Rechargeable Battery powered (mains plug top charger supplied) allows portability for them to be used in the field in travelling service vehicles. The unit has an auto power down to conserve battery life.

The PCTU has a rotating display for ease of viewing.

The PCTU can be bench/pedestal or wall mounted.

PCTU's are able, via their RS232 connection to directly log torque values into **AWS KEPLER production** Software programs (option) which records test data and indicate whether the performance of the tool is up to the required standard or trending towards the need for re-calibration.

The PCTU instrument has a simple facility to allow recalibration in conjunction with master torque standards.

RS232 connector

9V DC POWER connector

SPECIFICATION

MODEL RANGE AND SIZE CHART.

Model: PCTU-1006	**-10**	**-50**	**-250**	**-1000**
Ranges:	**0.4 -10 Nm**	**2 – 50 Nm**	**10 - 250 Nm**	**40 - 1000 Nm**
Female Square Drive Size:	¼"	⅜"	½"	¾"

Usage: Clockwise and anti-clockwise

Units: Nm and Lbf.Ft or cNm and Lbf.In Selectable (Dependant on Range).

Modes:

RUN- For Dial-type and Electronic Wrenches and Screwdrivers

1st PEAK- For Click-type Wrenches and Screwdrivers

PEAK- For Cam-type Wrenches and Screwdrivers

Display: 5 X 12.5mm digit LED. Adjustable viewing angle through 90°

Power: Internal Rechargeable Batteries allow it to be used in the field. Auto power off function extends life of the display. Supplied with 9V DC plug top charger.

Accuracy: Better than 1% of reading from 4 to 100% of Rated output. See Calibration certificate for full results.

Mounting: Wall or bench/pedestal mountable via 4 hole 8 mm dia bolt fixings (bolts not supplied).

Data Output:	Female RS232 connection.
Overload capability:	125%
Maximum mechanical overload:	160% of Range stated.
Operating temperature:	+5°C to +50°C.
Temperature coefficient:	On Zero: 0.01% per °C On Span: 0.03% per °C
Weight:	1000Nm 4.5 Kg 250Nm 3.8 Kg 50Nm 3.1 Kg 10Nm 3.0 Kg
Size:	200mm x 150mm x 145mm
CE:	2004/108/EEC
EMC:	EN 61326: 2007
NATO Stock No:	

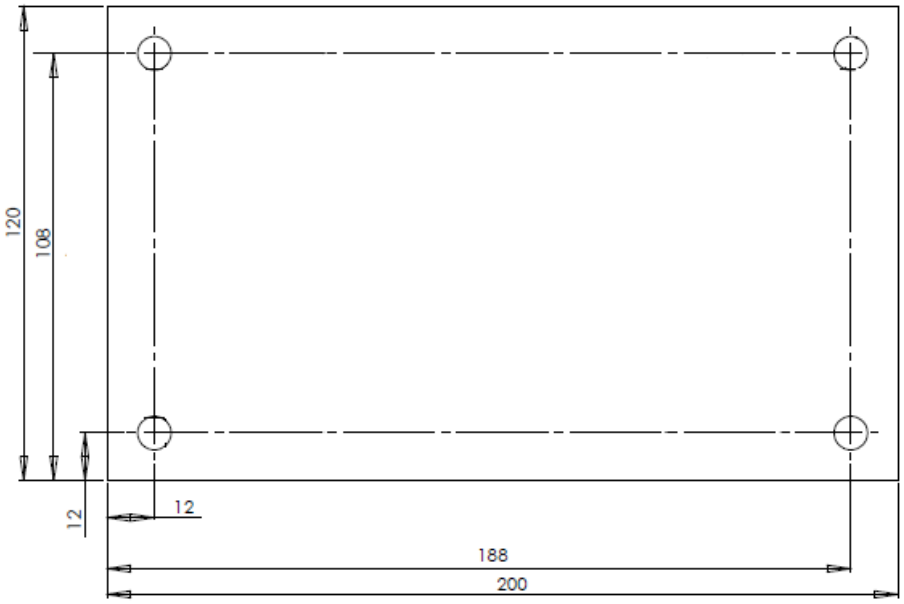
BOX CONTENTS:

1X PCTU-1006 (batteries fitted)
1X mains power Supply with UK or EU mains connections
1X Operating Manual
1X Calibration Certificate

The Advanced Witness Systems PCTU comes with batteries fitted and packaged with a plug top mains power supply. Please note that batteries are not supplied charged. The batteries must be charged for 6 hours continuously before use.

SET UP

Ensure that the mounting location is sufficiently secure before mounting the unit. The unit does not come supplied with mounting bolts or screws. The mounting holes have a diameter of 8.5mm. Mounting hole centre locations are shown below (dimensions are in mm).

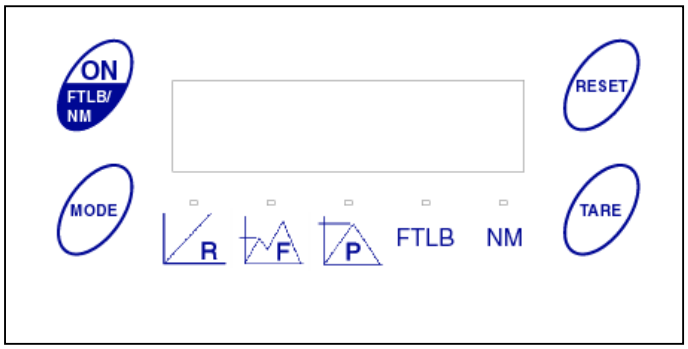


The PCTU is supplied ready for bench or wall mounting.

QUICK START GUIDE.

Following charging the PCTU is ready for immediate use. After switch on the display will show the maximum torque range in Nm.

BUTTON LAYOUT:



Press and hold **ON** to switch PCTU on (to switch OFF do the same)

Pressing **ON** once will change the units of measurement. Units selected are indicated by the lit L.E.D

Press **MODE** to cycle through **RUN, 1st PEAK** and **PEAK**
Mode selected is indicated by L.E.D

Press **TARE** to zero when in **RUN** mode. This will reset the display and show 5 dashes across the screen.

When in **1st PEAK** or **PEAK** mode, press **RESET** to cancel current reading prior to taking another reading when connected to a PC via RS232 pressing reset will send the reading to the PC.

MODE SELECTION.

The PCTU works in three different modes.

RUN: Run mode continually displays the actual torque applied to the transducer. This can be used to check the calibration of dial and electronic types of indicating torque tools.

1st PEAK: 1st Peak mode will display the first peak in a torque signal that is detected. This 1st Peak can be used with click type torque tools. To cancel the reading and to send the displayed torque reading to a PC via RS232 press **RESET** button, which will also reset the memory and display to zero.

PEAK: Peak mode will show the maximum torque value that was detected. Reducing the torque will display the highest detected peak torque. This can be used to check the calibration of dial and beam types of indicating torque tools. To cancel the reading and to send the displayed torque reading to a PC via RS232 press **RESET** button, which will also reset the memory and display to zero.

Warning: do not exceed the MAXIMUM TORQUE RANGE. Doing so could permanently damage the PCTU and void its warranty. Should 5 dashes appear and remain this indicates that the PCTU has exceeded the overload capability.

CONNECTING TO A PC VIA RS232

The following information is used when configuring the PCTU to a PC via RS232. This information is also required to configure the PCTU to **AWS KEPLER LITE 3**.

RS232 SETUP: Bits per second: 19200
Data bits: 8
Parity: none
Stop bits: 1
Flow control: none

CALIBRATION.

In order to conserve power the device will automatically turn off after 5 minutes if not used. In order to prevent this the user must cycle through Nm/Lbft every 4 minutes this is especially important during calibration of the PCTU.

The professional calibration torque unit comes calibrated clockwise and ready for immediate use. To recalibrate follow the steps below.

CALIBRATION PROCEDURE:

Press and hold **RESET** and **TARE** while switching the device **ON.** This will access the range mode. (The range is the highest value the transducer is calibrated for. For example the PCTU-1006-250 this figure should be set to 250.) The device must be calibrated in Newton Metres.

Pressing **ON** and **MODE** moves value up and down.

Pressing **TARE** will store this value.

Following this the maximum torque should be applied by using a master torque standard such as a calibrated beam and weight set. For example, the PCTU-1006-250 the maximum torque of 250Nm should be applied.

Once the torque is applied and the number shown on the display has settled the PCTU can be calibrated by pressing and holding **RESET** for 5 seconds. Calibration has occurred when the word **CAL** is displayed on the screen and five dashes appear.

CLASSIFICATION OF TORQUE TOOLS.

For tools that can be calibrated on this device see ISO 6789.

Indicating Torque Tools: Type I

Class A: wrench, torsion or flexion bar
Class B: wrench, rigid housing with scale or dial display
Class C: wrench, rigid housing and electronic measurement
Class D: screwdriver, with scale or dial display
Class E: screwdriver, with electronic measurement

Setting Torque Tools: Type II

Class A: wrench, adjustable, graduated or with display
Class B: wrench, fixed adjustment
Class C: wrench, adjustable, non-graduated
Class D: screwdriver, adjustable, graduated or with display
Class E: screwdriver, fixed adjustment
Class F: screwdriver, adjustable, non-graduated
Class G: wrench, flexion bar, adjustable, graduated

KEPLER LITE 3

"The entry level programme for production line and stand alone testing, performance verification, logging and tracking of torque tools."

KEY FEATURES INCLUDE:

- Full tracking of tool tightening performance
- Shows torque out of limits for selected tool
- Automatically calculates average and deviation of each set of readings
- Data input via COM port and keyboard. Option for bar code direct entry

New Reading Screen

Main Screen

- User generated database for tool types and torque parameters required
- Complies with ISO 6789 and BSEN 26789 torque
- Multiple operator accounts (With password protection)

- Bespoke templates easily created for your certificates, reports and labels
- Full tracking of tools calibration performance and history
- Auto or manual certificate numbering
- Data output and report generation collated and filtered from any combination of good and out of tolerance tools. Uses include monthly reports, etc.

Report Screen

Report Configuration Screen

- Select different printers for readings, labels, and reports/certificates

KEPLER LITE 3

Advanced Witness Systems Ltd
Unit 8, Beaumont Business Centre, Beaumont Close
Banbury, Oxfordshire
OX16 1TN
Telephone: 01295 266939
Fax: 01295 263503
sales@awstorque.co.uk
www.awstorque.co.uk