PROFESSIONAL TRANSDUCER DISPLAY

OPERATING MANUAL

Advanced Witness Systems Ltd

1010

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Professional Transducer Display
Operating Manual
(Model No: 1010)

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DESCRIPTION.

The Advanced Witness Systems Professional Transducer Display (From this point onwards, referred to as the **PTD**) is designed to power, process and display readings from all AWS I Series Torque Transducers (IITTs) and Intelligent Instrumented Transducer Cables (IITCs). The PTD boasts a rugged design, with an LCD display readable in sunlight and two power options: Mains (1010M) for use with the AWS Universal Torque Wrench Calibration Machine (UTWCM) and Battery (1010B) for portable applications.

The bright coloured LCD screen displays readings digitally with an additional analogue bar graph to show a varying signal. The PTD in conjunction with AWS I Series Transducers has three modes of operation: Run, First Peak and Peak modes. 4 soft keys in conjunction with the screen, select the mode of operation; units of measure and limits, making for easy operation of the instrument. When limits are selected, two columns of LED's either side of the screen show the state of the limits in conjunction with colour change of the digits on the display as the measurements are made.

On the battery powered version (1010B) battery charge state and charging indication are shown at switch on, and during operation. Batteries are charged using the supplied mains plug top charger. The auto power down function extends battery life.

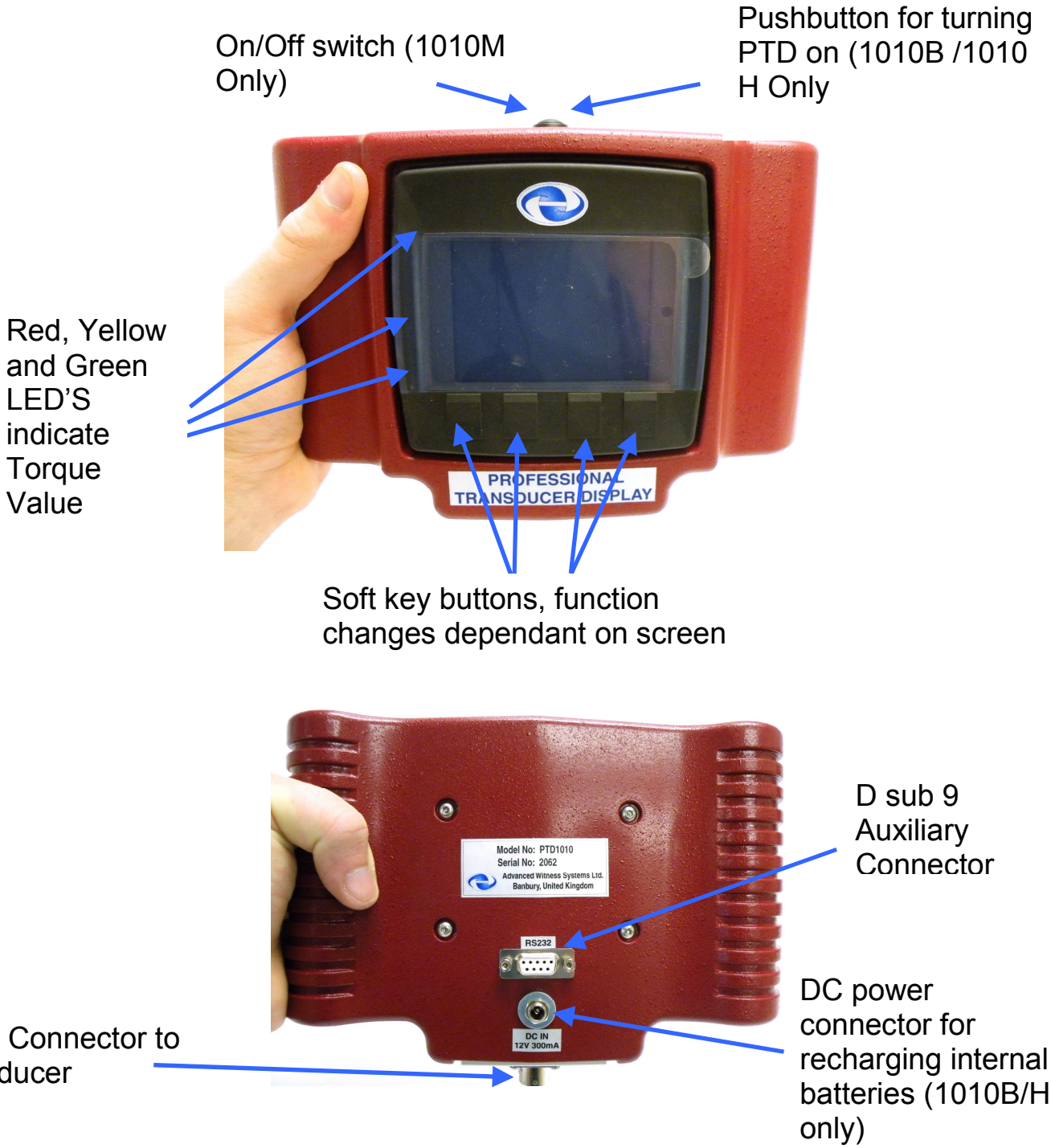
A RS232 output facilitates the logging of torque values into other devices and software such as our ADMS Kepler 4 software enabling fast, accurate calibrations of torque tools to standards such as ISO 6789:2017. Kepler 4 includes the ability to produce certificates, labels and reports to maintain full traceability.

An extreme environment version (1010H) is also available. This includes a heated display for use at sub-zero temperatures and is rated to IP67.

Please note that the unit is not supplied with a transducer cable. The required Cable **AWS ITC-1009** can be purchased separately from Advanced Witness Systems Ltd or supplier.

BOX CONTENTS:

1x PTD-1010M, PTD-1010B or PTD-1010H (Batteries fitted to 1010B or 1010H)
1x Mains power Supply with UK and EU mains connections
1x Operating Manual
1x Display Stand (Optional)



SPECIFICATION

There are three models of the AWS PTD: a mains powered version (1010M), a battery powered version (1010B) and an extreme environment version (1010H). On all three versions the casing has a rugged solid design to withstand high shock damage.

Model	Specification
PTD-1010M	Mains power supply from 12V DC charger.
PTD-1010B	Internal rechargeable batteries.
PTD-1010H	Internal rechargeable batteries. The display contains a heater enabling it to be used at subzero temperatures. Rated to IP 67.

Unit Is Handheld, Ergonomically Designed and Lightweight.

Wide Dynamic Response flat to 1 kHz in all modes.

Multi-Coloured dual LED Limit State Indication with additional digit colour change when limits selected.

Modes: Run, Peak and 1st Peak, with optional limit selection. Modes selected by soft keys. Graphical icons show mode selected.

Run: Shows readings as they change.

Peak: Shows, updates and retains the maximum reading in a fast dynamic memory. Retains until manually cancelled.

1st Peak: Detects, shows and retains the First peak reading, in fast dynamic memory, or for 3 seconds if auto-cancel option is chosen.

LCD Display:	70mm X 52mm Bright Full Colour Sunlight Readable LCD Display of 5 Digit Active Reading, with Analogue Bar Graph, Mode Selection graphics, Battery State and indication of charging.
Power:	1010M - 12V DC mains power supply with UK and EU mains connections. 1010B/H - Internal Rechargeable Batteries allow it to be used in the field. Auto power off function extends life of the display. Supplied with 12V DC mains power supply with UK and EU mains connections.
Accuracy:	Better than 1% of reading from 4% to 100% F.S.D when used with AWS Intelligent In-line Torque Transducers. Display is accurate to 0.1cNm, dependant on units selected.
Data Output:	Female D sub 9 Auxiliary Connector
Transducer Connection:	Mil C 26482 series. 6 pin. Shell size 10. Pin A + 9.6 to 12 volts D.C Pin B 0 volts Pin C Can bus high Pin D Can bus low Pin E Do not use Pin F Do not use
Operating temperature:	1010M/B: -10 to +50^{o}C 1010H: -20 to +50^{o}C
Weight:	1.6 Kg
Size:	220mm x 180mm x 90mm
CE:	2014/30/EU
EMC:	EN 61326:2007
NATO Stock No:	5980-22-623-1641

QUICK START GUIDE

The AWS PTD has 4 soft key buttons and 1 pushbutton/ switch. The soft key button effects are dependant on what the screen shows. A summary of the effects can be found on page 10.

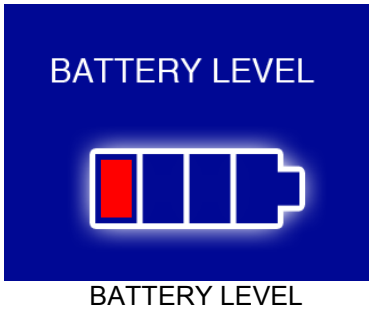
Attach PTD to an AWS Intelligent Transducer via an **AWS ITC-1009** transducer cable (not supplied). Alternatively attach the PTD to an analogue transducer via an **AWS IITC-1008** intelligent inline transducer cable.

1010M

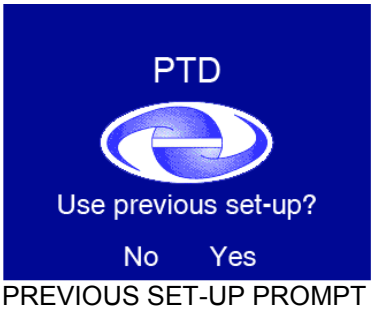
Switch the switch on the upper 1010M case to the "**On**" position to turn the unit on. To turn off the 1010M switch the switch on the upper casing to the "**Off**" position. After switch on the screen will show the range of the transducer attached to the PTD. If no transducer is connected then it will show "**Not Found**".

1010B/H

Press and hold the **push button on the upper 1010B/H case** to turn the unit on. The 1010B/H can be turned off by pressing and holding the far left soft key. The 1010B/H also has an inbuilt timer to switch battery power off 60 minutes after the last button was pushed. After switch on the screen will show the current battery level followed by the range of the transducer attached to the PTD. If no transducer is connected then it will show "**Not Found**".



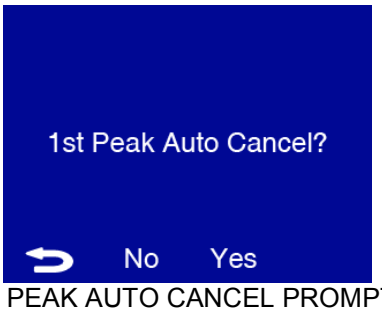
BATTERY LEVEL



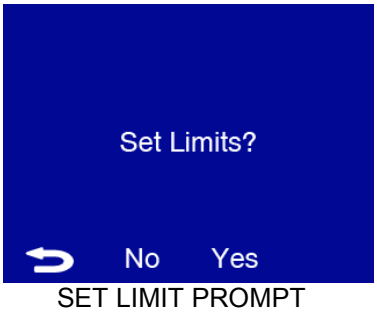
PREVIOUS SET-UP PROMPT

For both versions the user is then prompted to select either the previous set-up "**Yes**" or "**No**".

If "**Yes**" is selected the PTD will use the settings selected at its last power down. If "**No**" is selected the user will then be prompted to select 1st peak auto cancel, and/or set limits, units of measurement, and the mode of operation.



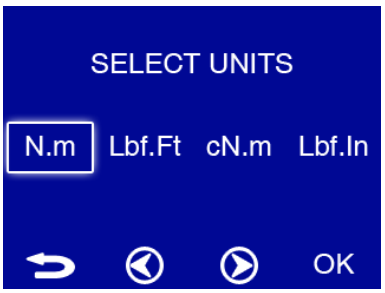
1st PEAK AUTO CANCEL PROMPT



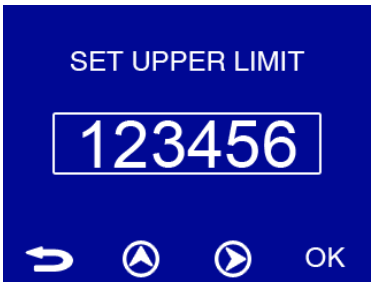
SET LIMIT PROMPT

UNITS

The PTD uses 5 Units of measurement **N.m, cN.m, Lbf.Ft, Lbf.In and Ozf.In**. These are selected for the displayed torque value and setting the limits. Selected units can be changed from the main screen by pressing back twice and reselecting a new unit.



UNIT SELECTION.



UPPER LIMIT SET

LIMITS

Set the "**target torque limit**" to the required setting, see key chart on page 12 on how to use buttons for limit value setting.
Set the "**upper limit**" to the maximum permissible torque reading.
Please note this is limited to 110% of the transducers full scale torque value and must be above the target torque or the "Over Range" warning will not allow you to proceed to the next screen.

Set the "**Lower limit**" to the minimum permissible torque reading.
Please note this must be set below the target torque or the "Over Range" warning will not allow you to proceed to the next screen.

When the reading is within the Lower and Upper limits the green LED's will light up. If the torque reading is at or above the "**Upper limit**" the red LED's will light up. If the torque reading is at or below the "**Lower limit**" the yellow LED's will light up.

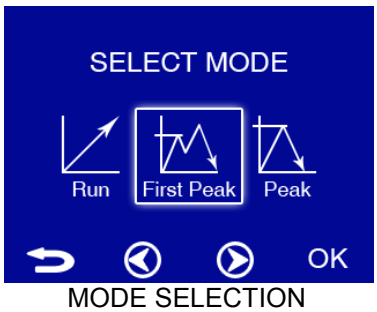
Additionally in Peak and 1st Peak modes the Digits on the display will match the colour of the limit indicating LED's.

MAXIMUM TORQUE LIMIT

The yellow ribbon graph at the top of the display shows the percentage of torque applied compared to full scale torque value of the transducer. If the bar is flashing the maximum torque range of the transducer has been exceeded.

Warning: do not exceed 110% of the MAXIMUM TORQUE RANGE doing so could permanently damage the Transducer and void its warranty.

EXAMPLE READING SHOWING MAXIMUM TORQUE LIMIT



MODE SELECTION

MODES

The PTD works in three different modes. Each mode has a different use and they can be easily switched between. The display will show which mode is currently selected by a pictographic graph representing that mode (See Page 6).

RUN: Run mode continually displays the actual torque applied to the transducer. This mode as an instance can be used for reading torque directly, to check the calibration of dial and electronic types of indicating torque tools or to calibrate a transducer

1st PEAK: 1st Peak mode will display the first peak in a torque signal that is detected. This 1st peak can be used to check the calibration of click type torque tools. After a peak in torque signal is detected the displayed torque reading is automatically sent to a PC via RS232. Pressing the "**Reset**" button will reset the memory and the display to zero. If "**1st Peak Auto Cancel**" is chosen at the start or from a previous set up then the peak reading will be displayed for approximately 3 seconds before being reset.

PEAK: Peak mode will display 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 cam and beam types of torque tools. To send the displayed torque reading to a PC via RS232 press "**RESET**" button, which will also reset the memory and display to clear the peak.

CONNECTING TO A PC VIA RS232

The following information is used when configuring the PTD to a PC via RS232. This information is also required to configure the PTD to **ADMS KEPLER 4**.

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

KEY CHART

Soft key Symbol	Effect	Screens where used.
OK	Accept input/selected item.	Select units, select mode, set limits
	Back to previous screen, push and hold to turn unit off.	Select units, select mode, set limits, reading
	Increase selected number. Cycles back to zero.	Set limits
	Move right between different mode selections/ units of numbers. Cycles back to first number.	Set limits, select mode, select units
	Move left between different mode selections/ units of numbers.	Select mode, select units
Mode	Cycle through RUN, 1st PEAK and PEAK.	RUN, 1st PEAK and PEAK reading
Tare	Tares the reading to zero.	RUN reading
Reset	Allows another reading to be taken.	1st PEAK and PEAK reading

CALIBRATION GUIDE

The AWS PTD unit can be used in conjunction with a standard to calibrate a torque transducer.

BUTTONS Functions (as shown on screen)

INC Increases the selected number, cycles through zero. Changes selected units.

>/TARE Pressing moves the selected digit to the right, this cycles back through. Pressing and holding the button will tare/zero the reading.

CAL This will calibrate the transducer to the selected torque range.

STORE Will store the selected torque range.

ORDER OF CALIBRATION

1. Fit transducer in appropriate Calibration machine.

2. Attach the transducer to the PTD via cable.

3. Place the PTD into Calibration Mode by Pressing and holding the furthest left and furthest right soft key buttons whilst turning the PTD on. This will activate the Calibration Mode.

4. Allow the display and transducer to thermally stabilise for 5 minutes.

5. Use the "**INC**" and "**>/TARE**" buttons to change the N.M. RANGE to the maximum range of the transducer. Press "**STORE**" to store this number.

6. Use the "**INC**" and "**>/TARE**" buttons to change the units to the required units. Press "**STORE**" to store this number.

7. Press and hold "**>/TARE**".

8. Apply the amount of torque for full scale. Allow this to settle for 2 Minutes.

9. Press **CAL** and the reading will show the applied torque.

10. Turn the unit off and then on. The transducer is now calibrated.

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