

Operator's Manual

TorqueStar Lite Data Collector

Manual 1292-01 Issue 2

Crane Electronics Ltd



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UKCA MARKING

Crane Electronics Limited declares that the TorqueStar range has been assessed and complies with the UK regulatory requirements.



CE MARKING

Crane Electronics Limited declares that the TorqueStar range has been assessed and complies with the requirements of the relevant CE Directives.



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.

PRODUCT DISPOSAL

Applicable in the EU and other European Countries with separate collection systems



The symbol shown here and on the product means that the product is classed as Electrical or Electronics Equipment and should not be disposed with normal commercial waste at the end of its working life.

The Waste of Electrical and Electronics Equipment (WEEE) Directive (2012/19/EU) has been put in place to recycle products using best available recovery and recycling techniques to minimise the impact on the environment, treat any hazardous substances and avoid the increasing landfill.

To enable this product to be disposed of properly i.e. cradle to grave, Crane Electronics is willing to accept the return of your product (at your cost) for recycling or alternatively, for more detailed information about recycling of this product please contact your local authority or the Distributor / Company where you have purchased the product.

Battery disposal to take place in line with the AMENDED BATTERIES DIRECTIVE 2013/56/EU. Batteries must **not** go to landfill. Check with local legislation.

Crane Electronics declares that this product does not contain any of the 191 Substances of Very High Concern (SVHC's) identified in the REACH Regulation in used articles make-up.

In Countries outside the EU:

If you wish to discard this product, please contact your local authorities and ask for the correct way of disposal.

Signed for & on behalf of **Crane Electronics Ltd.**

Name: **B. M. Etter**
Title: **Safety & Environmental Advisor**

Signature of Issuer:

WARNINGS



Changes or modifications to the TorqueStar range not expressly approved by Crane Electronics Ltd could void the user's authority to operate the equipment.

ABOUT THIS MANUAL

This manual covers the TorqueStar Lite version, working with our range of torque transducers and digital torque wrenches.



Actual screen shots represented in this manual may differ slightly from those on the actual TorqueStar unit, depending on the version.

For information on the operation of one of our digital torque wrenches or torque transducers, please refer to their own manuals.

Software version TorqueStar Lite

PACKING LIST

The following Items are supplied with the **TorqueStar Lite** dependent on model specification purchased.

- 1 x TorqueStar Lite
- 1 x Calibration Certificate
- 1 x Quick Start Guide (with QR code link to operator's manual)
- 1 x 5V PSU Power Adapter
- 1 x USB to Micro USB connection cable
- 1 x Carry Lanyard

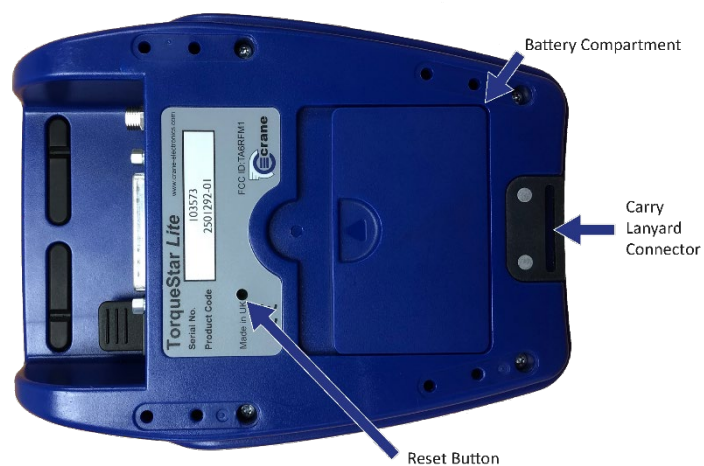
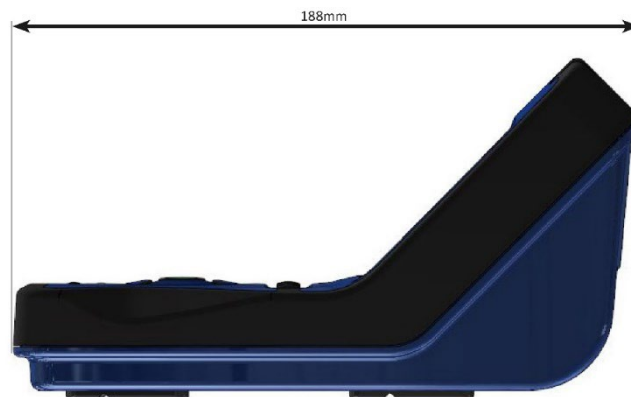
Please ensure all items are present and notify Crane Electronics Ltd immediately of any shortages.



SPARES AND ACCESSORIES (with Product Code)

Additional Batteries	080159
5V PSU Power Adapter	TSXXA – 0000 - CRPXXX
External battery charger	TSXXA – 0000 - CRCXXX
USB to Micro USB connection cable	090301
Carry Lanyard	110385

FEATURES AND DIMENSIONS



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** – No movement when checking desired Torque

Measurement Units:

Torque - Nm, lbft, lbin, MNm, Ncm, kgcm, kgm, kNm, klbft, Nmm, ozin

Physical Measurements:

Auto Bi-directional torque; angle*; pulse count; RPM in track mode*; cycle time duration (*when using rotary transducer).

Compatible Input Devices:

IS, UTA, and Multi, including cabled WrenchStar Multi, cable products compatible, analog or digital.

Plug & Play Transducer data:

Auto ID of all Crane UTA/Multi products (Cabled products only). The following information is read from the chip in the transducer - torque range, angle encoder data, serial number, calibration due date.

Data Storage:

999 readings in storage mode.

Basic Statistics:

Count, range, mean, min, max, standard deviation.

Auto Print / 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:

Audible buzzer and LED HI/OK/LO torque status. User definable.

Operating Languages:

English, Czech, French, German, Italian, Hungarian, Spanish, Swedish, Polish, Turkish.

HARDWARE

Construction:

High strength injection moulding. Protective rubberised trim to alleviate secondary damage. Soft rubber trim surrounding tough internal chassis. Can survive 1.8m drop.

Display:

White OLED screen - 79mm x 21mm

Keypad:

Easy clean keypad. 11 keys including 5 function keys, 5 soft directional keys and on/off key.

Power:

Universal 5V charger or USB charger.

Power Management:

User selectable auto power-off: User definable between 0-200 minutes.

Battery Pack:

Lithium Ion - User swappable. Charge time: 3 hours with appropriate charger current. Chargeable via USB or 5V charger.

Input/output ports:

25 pin 'D' type transducer port (female) (digital or analogue).
Micro USB (2.0) for power and export.
5V DC power port for use with mains power DC charger.

TECHNICAL FEATURES

Zero Stability:

$\leq \pm 0.01\%$ FSD/ °C.

Static Accuracy:

$\pm 0.25\%$ FSD of connected transducer.

Operating Environment:

Temperature: -20 to +50 °C.
Humidity 10-75% non-condensing.
Ingress protection rating: IP45.

Torque Measurement

Display to 5 significant figures. Sample every 20 micro seconds.

Angle Measurement:

Quadrature phase input. Display angle to 0.1 degrees, Sample every 1000 micro seconds.

Warranty:

12 months parts and labour against faulty workmanship or materials.

ICONS – TorqueStar Lite

Fixed soft-key Icons:



Measurement
Modes



Delete



Readings



Statistics



Settings

On-screen Icons - Measurement Modes:



Peak



Click



Track



Pulse

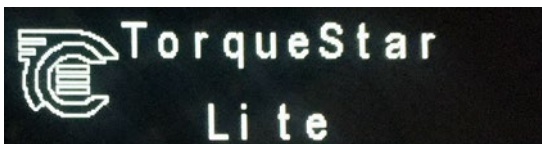
START UP

Turning on your TorqueStar:

Turn on the TorqueStar by pressing the on/off button situated below the arrowed keypad.



The first screen you will see is as below.

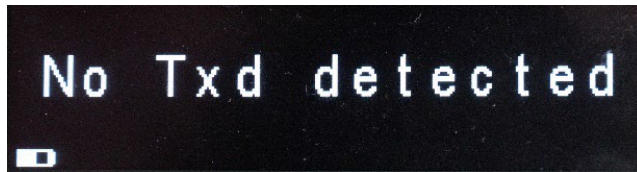


The screen will then change to:



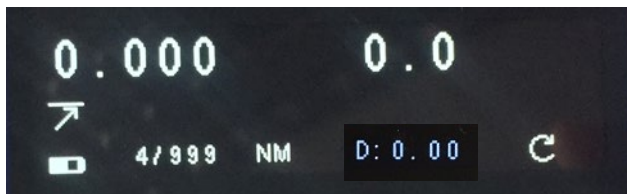
It confirms the serial number of the TorqueStar Lite you have and its calibration due date. TM is the latest software version of the torque module and KB represents the latest version of the keyboard.

If no transducer is plugged in then this screen will appear.

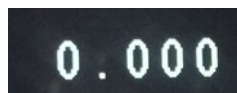


Please connect a transducer. See 'Connecting a transducer' set-up.

If a transducer is already plugged in then the last measurement mode used is automatically displayed.



The screen icons denote the following:



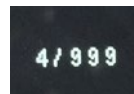
Measurement reading



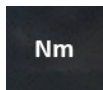
Primary measurement mode



Battery status



Number of readings



Measurement unit



Duration in seconds



Direction of rotation/torque

FIXED ICONS



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



Reading list Icon – This will show the readings currently held on Lite. Using the up and down arrow keys you can scroll through the readings.



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



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

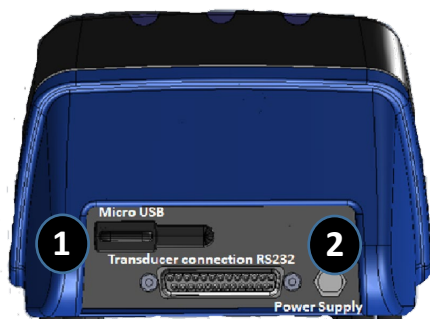
INPUTS



TorqueStar Lite has connectivity using the following:

- 1) Micro USB
- 2) 25-way D-type Female Transducer Port
- 3) 5V Aux Power Supply

CHARGING YOUR TORQUESTAR



Charging can be done in two ways:

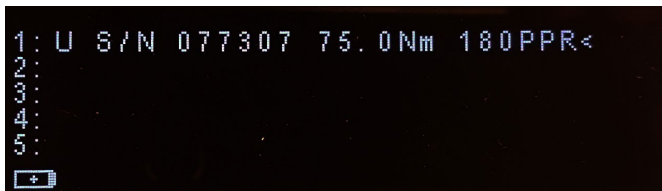
- 1) Connect Micro USB on the TorqueStar Lite to USB on a laptop/PC or USB charger.
- 2) Connect the 5V DC port with a DC power supply.

CONNECTING A TRANSDUCER

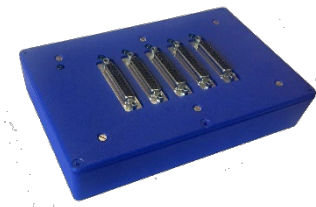


Plug the male 25-way D-type connection on the transducer to the female connection port on the back of the TorqueStar Lite.

All Crane UTA transducers will automatically be recognised.
IS transducers will have to be manually inputted (See transducer set-up).
Refresh the screen by pressing the right arrow key.



Use 1 x UTA transducer or 1 x IS or you can connect 5 x UTA transducers at any one time by using a 5-Way transducer switching box.



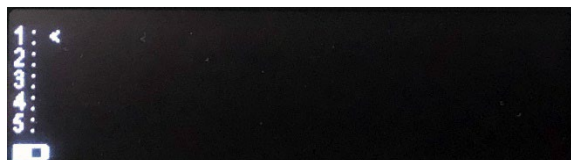
5-Way auto transducer switching box:

Allows connection of up to 5 transducers and the capability to switch between them with ease. Automatic recognition of UTA's and no hardware modifications required to connect. Uses 25-way D-type interface supplied.

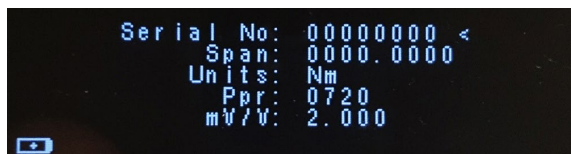
Part Number: TO-899-09CR-0-0

CONNECTING AN INDUSTRY STANDARD TRANSDUCER

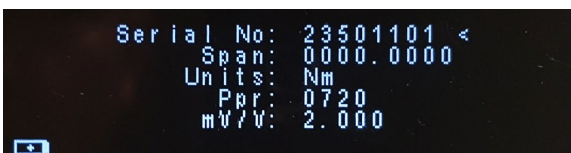
All IS transducers must be set-up manually for use with the TorqueStar Lite.



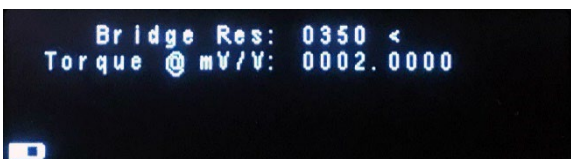
First, press the settings button once to view the transducer list screen.



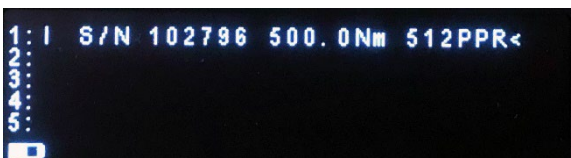
Press the settings button once more to view the blank transducer details page.



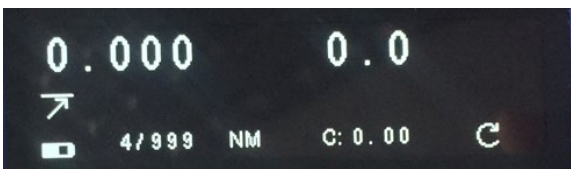
Using the green key to access each detail. Use the up and down arrow keys to change the numbers to represent the chosen IS transducer you wish to use. Press the green key to save the changes and return to transducer settings.



Press down arrow to see more transducer settings.



Once completed press the settings button to go back to the transducer list screen. Press the green key to select the newly added transducer.



You can begin to measure with the IS transducer.



The serial number can be up to 8 digits. Spanning 1.0000 to 8000.0.

If PPR = 000 then there is no angle.

mV/V = 0.500 to 8.000 mV/V.

THE MEASURING SCREEN

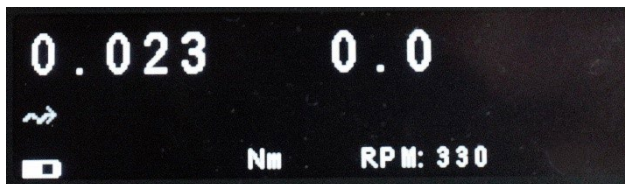


Measuring Screen:

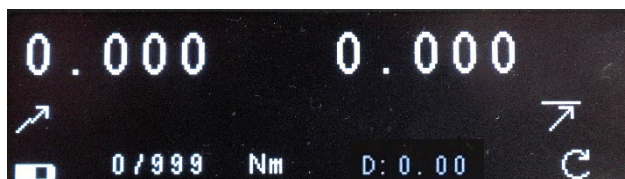


- 1 Measurement reading.
- 2 Angle reading (if enabled).
- 3 Primary measurement mode.
- 4 Battery status.
- 5 Reading count.
- 6 Unit of measurement.
- 7 Duration in seconds.
- 8 Measurement direction.

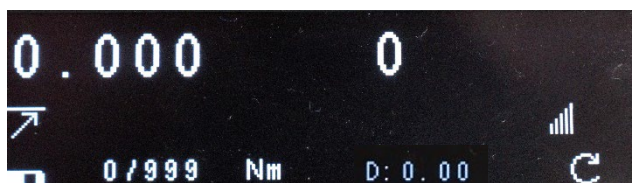
Pressing the measurement button will take you through the measurement modes.



Screen 2 on the second press Track mode. RPM is now displayed instead of seconds.

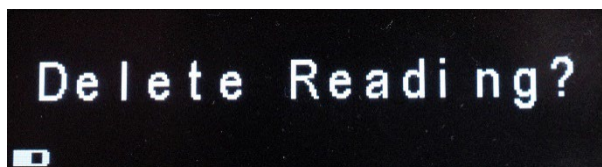


Screen 3 on the third press Click mode with peak value displayed.

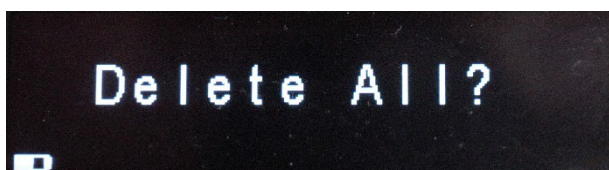


Screen 4 on the fourth press pulse mode with peak value displayed.

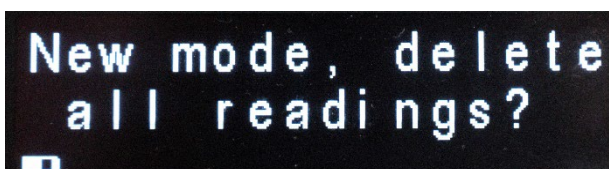
DELETION



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 mid-way through readings you have already done.

SETTINGS

TQ = Torque

ANG = Angle

CLK = Click

PUL = Pulse

UL = Upper Spec Limit

NOM = Target

LL = Lower Spec Limit

THR = Threshold

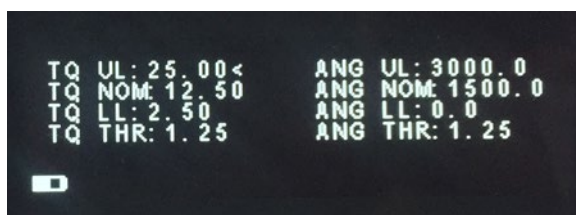
Pressing the fixed Settings key. The first screen you will come to is the torque and angle settings.

It will show (ang)le for Peak, CLK THR (Click Threshold) for Click and Pulse for Pulse.

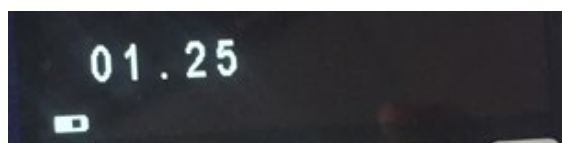
Using the up and down arrows on the keypad you can manoeuvre between the required lines. When the arrow is on the line press the green button. You can then use the Up and Down arrows to change the numbers and the left and right arrows to move left and right. Pressing the green button will save and take 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).

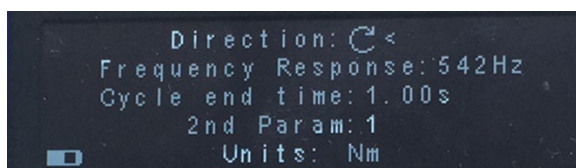
e.g. Peak Mode



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
 Anti-clockwise

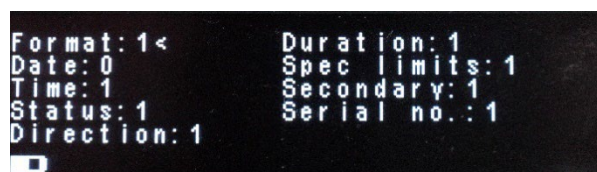
Frequency Response (Hz): 75, 151, 256, 307, 384, 542, 768, 921, 1024, 1536, 2304, 3072, 4608

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, kNm, klbft + others (display valid units for span)

PRINTER SETTINGS



Fourth press of the settings icon will take you to the Auto Print settings (5th Settings screen).

Format: Show the Auto-Print 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.

SETTINGS

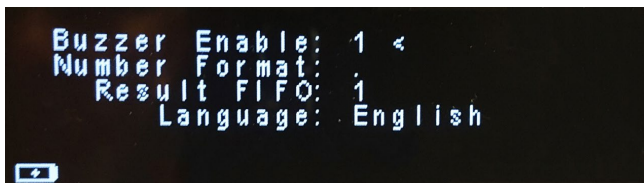


Settings can be accessed by pressing the Settings Icon and using the up and down arrow keys and changing the formats by using the right and left arrow keys:



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

- Power Off: Set the duration of the length of time before the TorqueStar Lite 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 key up or down will take you to the above screen where you can enable or disable the buzzer.

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 (o) then it stops taking readings when it reaches 999. If on (I) 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

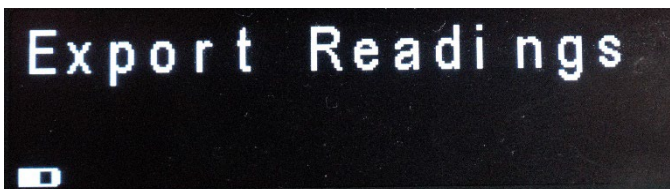
READINGS LIST



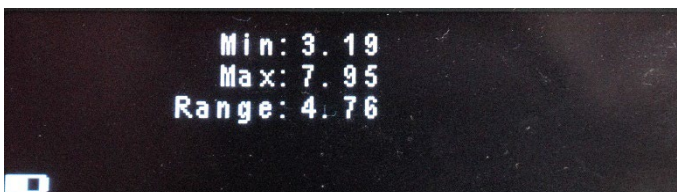
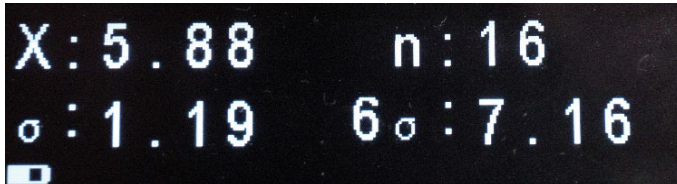
One press of the fixed icon will take you to the reading screen where you can see all of your current readings. You can navigate up and down using the arrow keys.



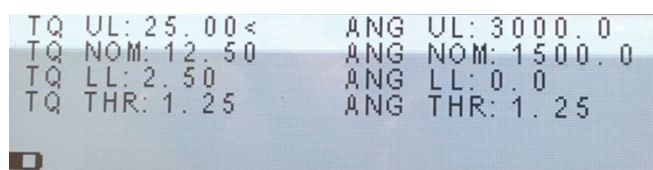
A second press will allow you to export your readings to a printer. Press the green button to accept. All readings are exported in Autoprint format.



STATISTICS



POWER SAVING



The OLED display screen on the TorqueStar Lite, will turn white if it is not used for a period of time. This is perfectly normal and reduces the risk of screen 'burn'.