

IQVu

Manual 1198-01 Issue 3

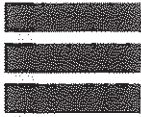
Crane Electronics Ltd



NOTICE

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CE MARKING

Manufacturer: Crane Electronics Ltd.

Address: Watling Drive
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Hinckley
Leicestershire
LE10 3EY
United Kingdom

Tel: +44 (0)1455 251488

Declares that this product has been assessed and complies with the requirements of the relevant CE Directives.



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

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.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



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 (2002/96/EC) 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.

For more detailed information about recycling of this product please contact your local authority or the Company where you have purchased the product.

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.

ABOUT THIS MANUAL

This manual covers the IQVu fitted with a Torque Interface Module.

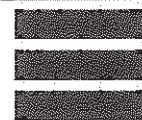
For information on torque transducers or PC software to be used in conjunction with IQVu, please refer to corresponding manuals accordingly.



Actual screen shots represented in this manual may differ slightly from those within the IQVu app depending on version.

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PACKING LIST

The following items are supplied with the IQVu package.

1 x IQVu Unit	1 x IQVu Torque Module
1 x User Manual (CD)	1 x GETAC handle accessory
1 x Quick start guide	1 x PSU and country specific plugs
1 x Stylus	2 x spare stylus tips
1 x Wrist Lanyard	1 x Carry Case
1 x Tether	

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

CARE AND STORAGE

Operating temperature range	-20 to +50 degrees C
Storage temperature range	-20 to +50 degrees C
Humidity	10-75% non-condensing
IP Rating:	IP40 (indoor use only).

Tablet is MIL-STD-810G and IP65 certified.

The main screen may be wiped clean with a soft cloth.

BATTERIES

The IQVu unit has an internal Lithium Polymer pack.

From fully discharged, the unit will require a 6 hour charge to attain maximum capacity.

The full capacity of the battery pack is 7600mAh which yields approx. 8 hours (1 average shift) of normal use.

When the PSU is plugged into the socket and switched on at the mains, the charge indicator LED will illuminate with colour according to the charge status.

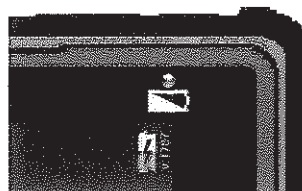
Glow red = battery power is critically low (less than 10%)

Glows amber = battery charging in progress

Glows green = battery fully charged

Flashes amber = current battery level is insufficient for starting up the device

Flashes red and amber = battery is in an abnormal state (contact Crane for assistance)



The IQVu can be used while charging (subject to temperature constraints.)

WARNINGS

-  Maintain unit with care. Keep unit clean for better and safer performance.
-  Changes or modifications to the IQVu not expressly approved by Crane Electronics Ltd could void the user's authority to operate the equipment.
-  Always operate IQVu with approved power supply
-  Always operate, inspect and maintain this unit in accordance with all regulations (local, state, federal and country) that may apply.
-  Do not remove any labels.
-  Always use Personal Protective Equipment appropriate to the tool used and material worked.
-  Keep body stance balanced and firm. Do not overreach when operating this tool. Anticipate and be alert for sudden changes in motion, reaction torque, or forces during the operation.
-  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.
-  Maintain unit with care. Keep unit clean for better and safer performance. Follow instructions for changing accessories.
-  Do not operate this product in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.
-  This unit contains no user serviceable parts. Only qualified service personnel should replace or fit parts.



OVERVIEW

IQVu is the most revolutionary torque data collector in the world. It combines all of the features of the established TorqueStar with a market leading, robust Tablet to give a modern and familiar product. It provides the ideal Solution for the measurement and collection of torque, angle, and pulse data in the manufacturing and quality environment.

The Tablet is sleek, thin, but tough, certified to a MIL-STD810G six foot drop rating along with IP65 dust and water protection.

It has been carefully engineered, down to the chassis, to be protected against drops, shocks, spills, vibration and more.

The screen of the IQVu uses Tempered Glass and features LumiBond™ optical bonding. This results in a display that is not only extremely robust and scratch resistant, but also very durable and easy to read in most lighting conditions.

By using ultra-sensitive multi-touch technology the screen has been developed to respond effortlessly to touch, press, drag - even from an input from a gloved hand.

The comprehensive audit tool performs bi-directional measurement in track, peak, click, pulse, move on and yield measurement modes.

The quick "Check" function allows the operator to take measurements as required.

Work can be scheduled using Rounds and Jobs to allow a planned approach to collecting any data.

Input of any information is either via the soft keypad on the screen or downloaded from OMS or Opta Comms.

The IQVu works with existing Crane products and all new Crane products, including the increasing range of Crane wireless devices, allowing further flexibility when collecting data.

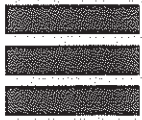
The high resolution 7" screen clearly displays all relevant information, using colour to enable the operator to easily view and interpret the information.

Throughout the measurement process relevant measurement values are displayed along with a realtime graph of the tightening trace if required.

Measurement readings and associated information are stored on the IQVu. In addition detailed individual readings of traces are stored. All of this information can then be saved to a USB stick or emailed directly from the device.

PDFs of documents, work instructions, photographs, and comments can be loaded onto the IQVu and stored against Jobs. As well as being loaded from a USB stick, photographs can also be taken using the 5 mega pixel auto focus camera built into the IQVu.

This enables the operator to take photographs of applications to store against relevant readings, if required for later analysis.



FEATURES AND DIMENSIONS

WEIGHT

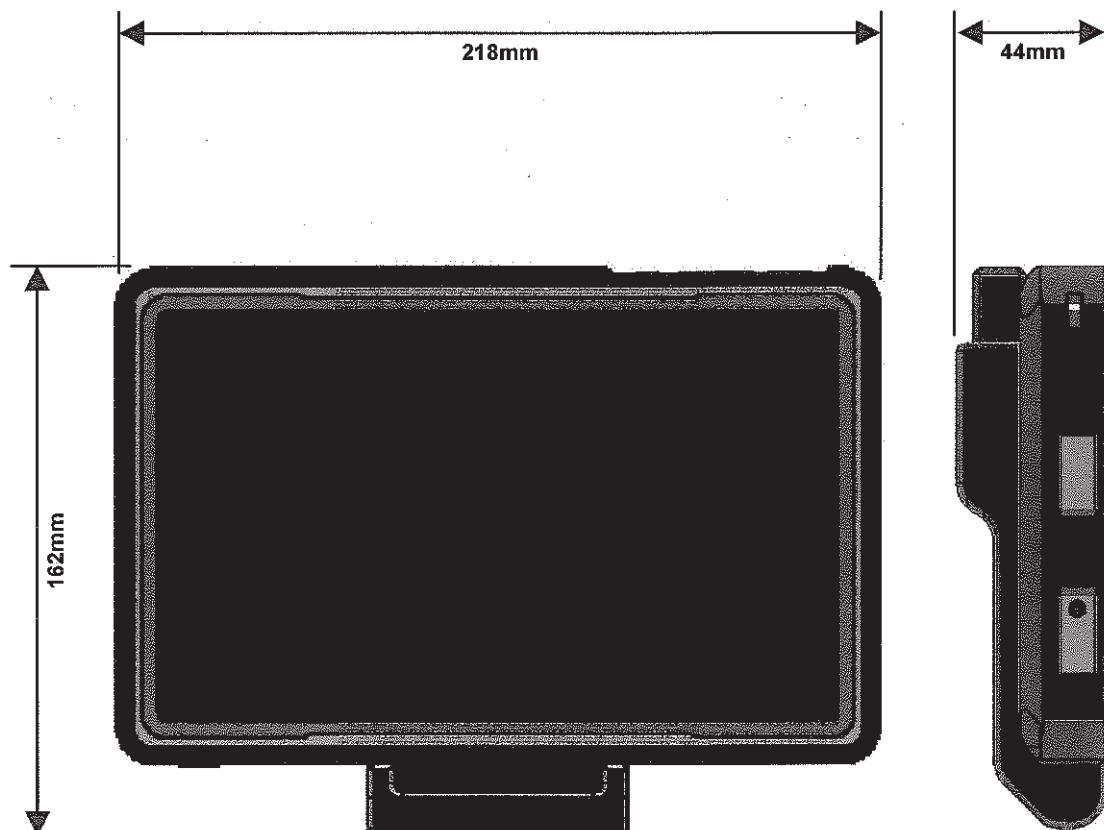
Complete with Torque Module and hand strap - 1.04Kg

CONSTRUCTION

Protective rubberised trim and soft engineering material, with rounded corners to alleviate damage to goods being tested. Tablet will survive 1.8m drop

DIMENSIONS

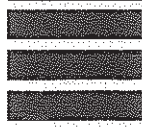
218mm (W) x 162mm (L) x 44mm (H)





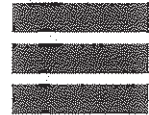
SPECIFICATIONS

Physical measurements:	Bi-directional torque and angle*; pulse count, pulse rate; RPM** * Angle measurement is only available when using a rotary transducer with angle encoder. **RPM is only available when using a rotary transducer with angle encoder in Track Mode												
Measurement units:	Nm, Ncm, lb ft, lb in, oz in, kNm, klb ft, kg m, kg cm												
Measurement modes:	<table> <tr> <td>Track</td><td>real time torque</td></tr> <tr> <td>Peak</td><td>capture of highest torque value during the cycle.</td></tr> <tr> <td>Click</td><td>capture of peak torque before click mechanism operates to limit.</td></tr> <tr> <td>Pulse</td><td>special measurement algorithm for use with impulse tools, incorporating pulse count and pulse rate.</td></tr> <tr> <td>MoveOn</td><td>special audit algorithm that detects the torque at the point where already fastened joint starts to turn.</td></tr> <tr> <td>Yield</td><td>special production algorithm that detects the torque at the point where fastener starts to stretch.</td></tr> </table>	Track	real time torque	Peak	capture of highest torque value during the cycle.	Click	capture of peak torque before click mechanism operates to limit.	Pulse	special measurement algorithm for use with impulse tools, incorporating pulse count and pulse rate.	MoveOn	special audit algorithm that detects the torque at the point where already fastened joint starts to turn.	Yield	special production algorithm that detects the torque at the point where fastener starts to stretch.
Track	real time torque												
Peak	capture of highest torque value during the cycle.												
Click	capture of peak torque before click mechanism operates to limit.												
Pulse	special measurement algorithm for use with impulse tools, incorporating pulse count and pulse rate.												
MoveOn	special audit algorithm that detects the torque at the point where already fastened joint starts to turn.												
Yield	special production algorithm that detects the torque at the point where fastener starts to stretch.												
Plug & Play txd data:	The following information is read from memory incorporated in the UTA transducer or CheckStar Multi: Torque range (span), angle encoder PPR, Transducer serial number, Calibration due date. In addition the Torque@2mV/V will be read from the CheckStar Multi.												
Types of Transducer:	CheckStar Multi (Rotary IS plug and play) UTA (Rotary, Static, and Wrenchmaster) automatically work. Industrial Standard (can be manually pre-set).												
Data Storage:	16Gbyte storage Micro SDHC (up to 32GBytes) slot.												
Processor:	1GHz Dual Core Processor												
Operating System:	Android 4.1												
Statistics:	Statistics for primary measurement: Count of readings Cp Mean (average) Cpk Standard Deviation (sigma) Cm Range (max-min) Cmk												
Print:	Wi-Fi printer (TBC)												
Display:	7.0" TFT LCD WSVGA Resolution 1024 x 600 pixels Brightness is adjustable Touch sensitive with gloves worn. Special damage resistant tempered glass, which is both tough and scratch resistant.												
Fastening Status:	Colour (user definable) Sound (user definable) Vibration (user definable) External Light ring indication on CheckStar Multi (User definable for specification and control limits.) Graph of Tightening Trace: Available in real time. Resolution down to 1mS. Can zoom in to see features. Can display torque vs time (default), and angle versus time, and torque versus angle if angle transducer used.												



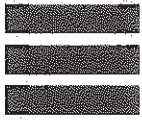
SPECIFICATIONS CONTINUED

Data Entry:	Numeric and Alphanumeric Via soft keypad on screen. Actions by moving finger, tapping screen, tapping icons and soft buttons on screen. User interface is via graphical icons that are language independent.
Operating Language:	English, French, German, Spanish, Italian, Chinese and Swedish . Can toggle between languages when log in.
Txd Calibration Date:	Warned if transducer out of calibration.
Torque Measurement:	5 digit display Resolution to 0.006% of transducer span. Sampled every 20 micro seconds (50,000 per second).
Zero Stability:	< 0.1% FSD / °C
Static Accuracy:	+/-0.2% FSD of connected transducer.
Angle Measurement:	Display angle to 0.01 degrees. Sample every 1000 micro seconds (1,000 per second). Automatically adapts to PPR of angle transducer using quadrature phase measurement.
Security:	App protected by SOTI MobiControl, which limits which apps can be accessed by the user. Multiple users are supported with User login with password and individual level of access.
Frequency Response:	A low pass Bessel Filter is employed for conditioning the transducer signal to eliminate 'noise' from the tool measurement. User selectable from 75Hz to 5000Hz.
Power:	International Charger 12V @ 2 A from 100-240VAC; 50/60Hz 6 hours to fully charge batteries.
Batteries:	Internal Lithium Polymer battery pack. Capacity 7600mAh Useable battery life 8 hour shift with normal usage.
Stand:	Can lie flat or be angled on desk for ease of viewing with built in stand.
Carrying:	Can be held in either hand and comes with hand and wrist straps.
Power Management:	Selectable time for going to sleep and dimming the screen to save power.
Ports:	25 pin female D-type for connecting to transducers. DC Power port for running off mains and charging batteries. USB port to accept connection to PC or USB memory stick. SD card slot.
Communications:	USB ver 2.0 (host and client) Bluetooth (v2.1+EDR class 2) WLAN 802.11 b/g/n
Camera:	5 Mega pixels auto focus camera. Photos can be attached to job or individual readings.
GPS:	GPS position can be associated with reading.
Time:	Realtime clock. Date and Time stamp for each reading.

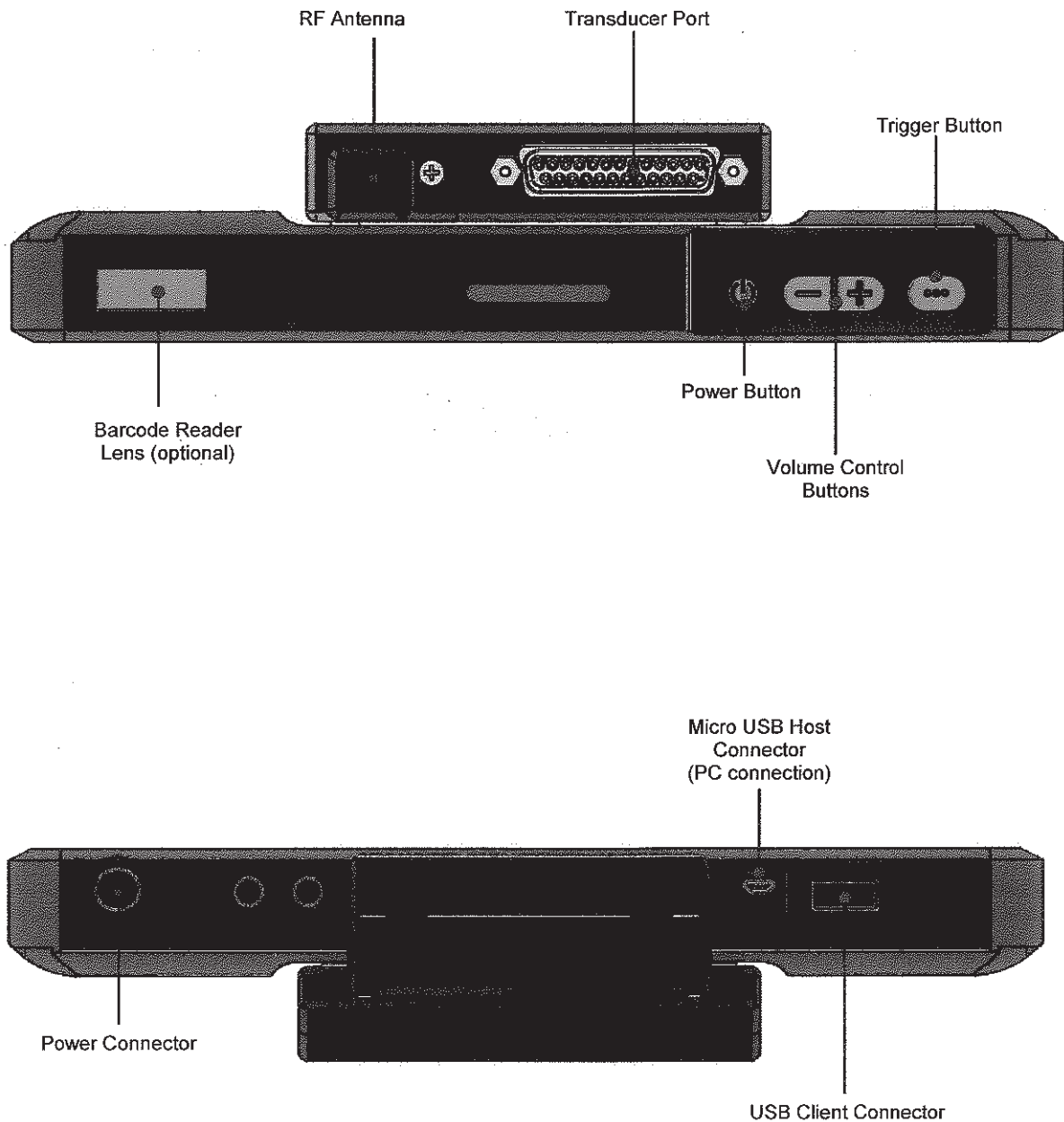


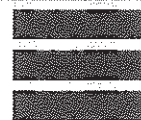
SPECIFICATIONS CONTINUED

Barcode:	Optional Reader available.
Warranty:	TBC
Work Instructions:	Work instructions in form of jpg image or pdf file can be associated with job.
Readings:	Readings can be organised into subgroups, jobs and rounds. A trace of the fastening can be associated with all readings or just those that are NOK. Readings and Traces are stored and can be viewed later
Job specifications:	Jobs be specified for specific, similar or any transducer. Control limits are possible.
DC Tool connection:	The IQVu can talk to DC Tool Controller using Open Protocol over Wifi and associate the tool reading with a reading from transducer.
Export:	Torque Readings can be exported as CSV file so can be used in Excel template to generate user reports
PC Compatibility:	Will communicate with OMS and Opta Comms.

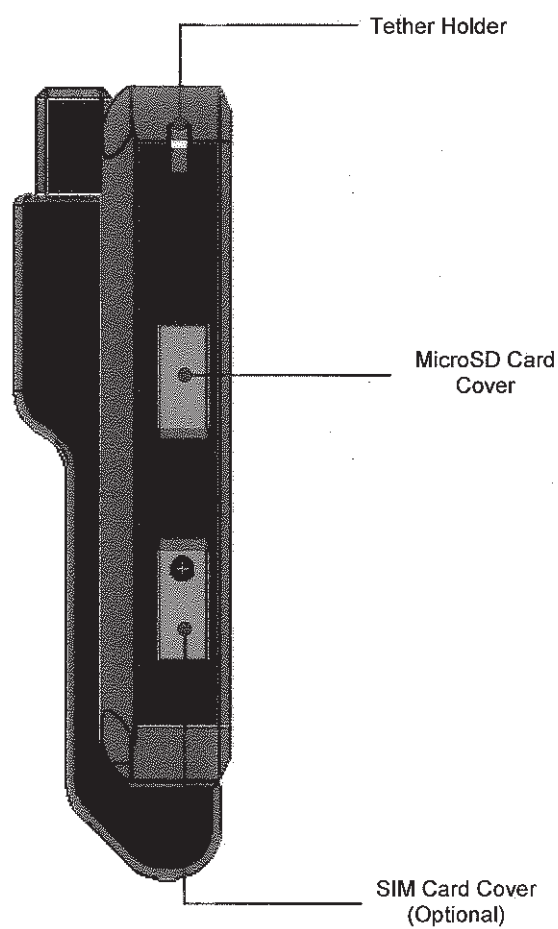


CONTROLS AND CONNECTIONS



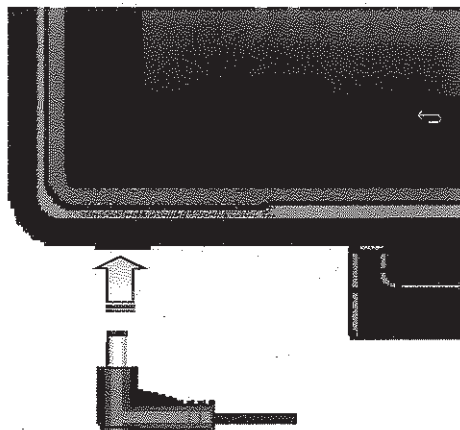


CONTROLS AND CONNECTIONS CONTINUED



CONNECTING CHARGER

Connect the lead from the PSU to the connector on the bottom of the IQVu (see below), and connect the PSU to an AC mains supply. The adaptor can be used for direct power from the mains or to charge the internal battery. It has an automatic cut-off to prevent overcharging.



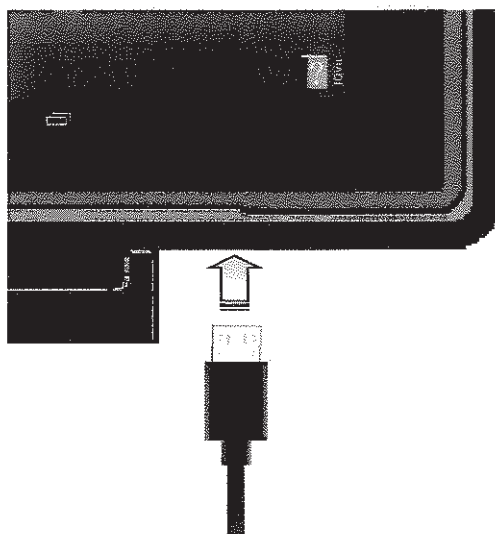
CAUTION : To ensure optimal performance from the battery use only included AC PSU. Do not charge the battery when the temperature is at extremes (i.e. >40 deg C {104 deg F} OR < 0 deg C {32 deg F}). If the IQVu is not used for a long period of time, ensure the battery is charged at least once every 2 weeks. Over discharge can adversely effect performance.

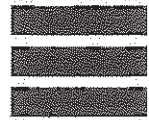


TIP Whilst charging, the bottom right corner of the IQVu display may become warm. This is within normal operating parameters and is not harmful to the device.

CONNECTING TO PC

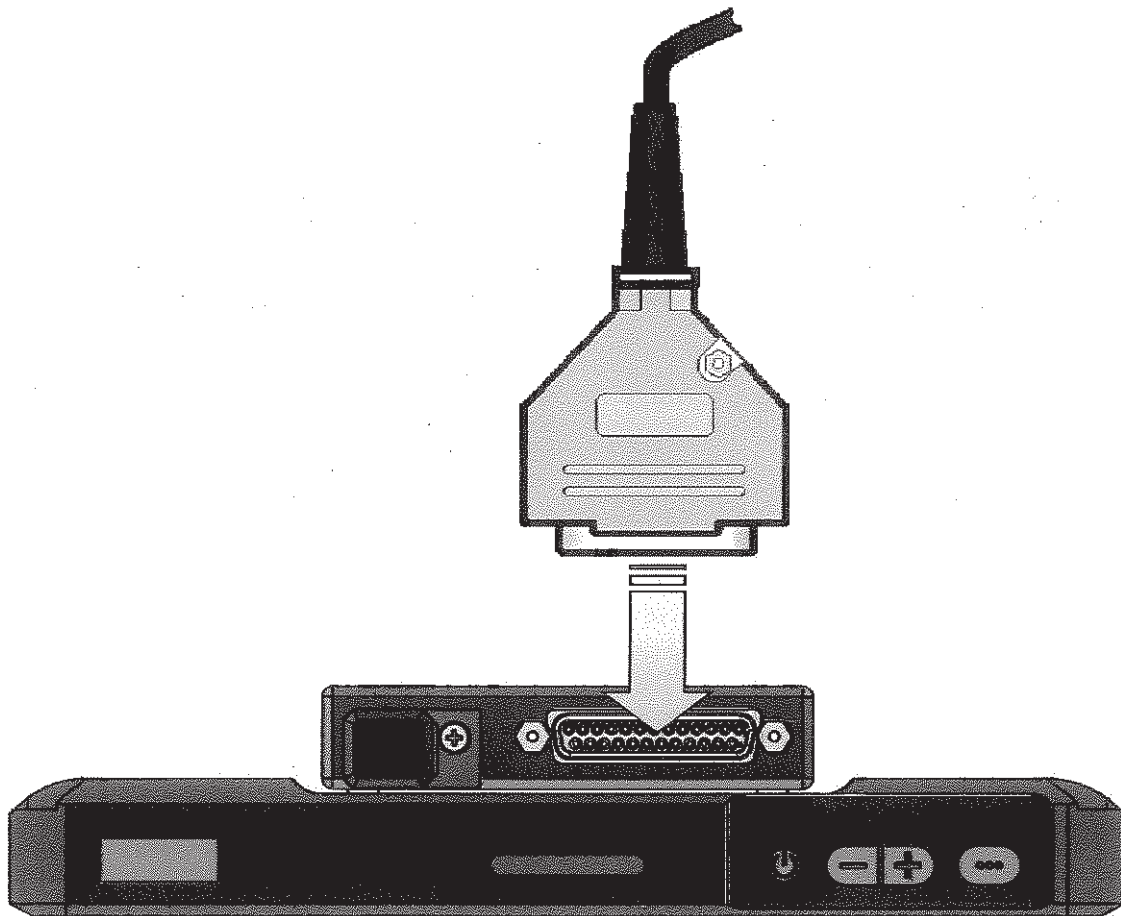
Ensure suitable PC software and drivers are installed before connecting IQVu. Connect the Micro USB cable to the Micro USB Host connector, then connect to USB socket on PC. Refer to PC software manual for further information.



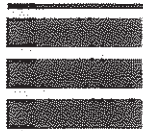


CONNECTING A TRANSDUCER

Connect a suitable transducer to the IQVu via the 25-way 'D' connector on the rear of the IQVu as shown below.

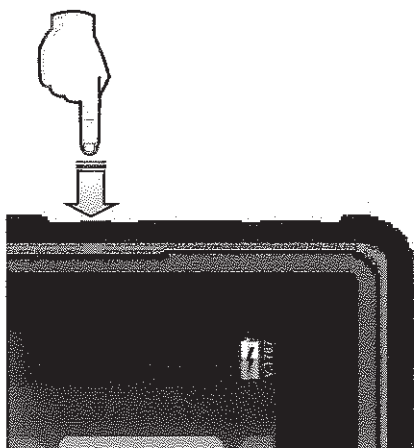


NOTE: To connect multiple transducers to the IQVu, an optional automatic switch box is available. For more information please contact your local representative.



SWITCHING ON

Press and release the Power button on top of the IQVu.



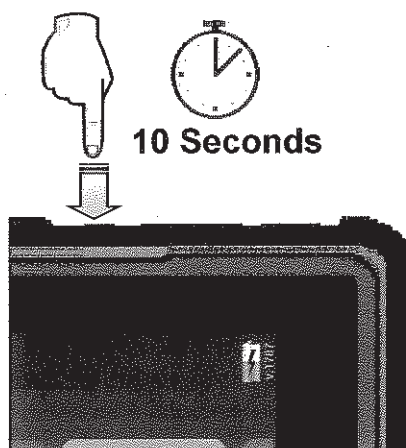
The IQVu will take approx 30 seconds from a cold start as the Android OS loads.

If the IQVu is just in display sleep mode it will turn on immediately

RESET

If the IQVu becomes un-responsive it can be powered down by pressing and holding the power button for longer than 10 seconds.

This will NOT Erase any stored data



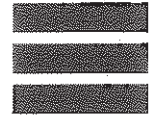
SWITCHING OFF

Press and hold the power button on top of the IQVu until a menu pops up on the screen.



Select the "Power off" option
Then select "OK"



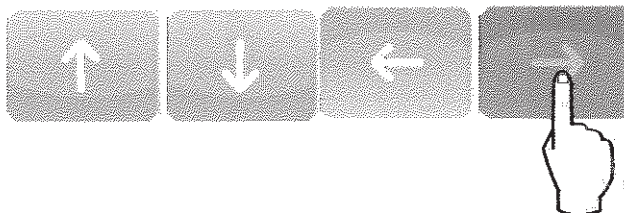


IQVU NAVIGATION

To Navigate the IQVu menu simply swipe left / right or up / down for more options



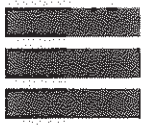
Or where applicable use the arrow icons on screen



TIP Tap and hold arrow icon to fast scroll through settings pages.



CAUTION : Do not use sharp objects on the touch screen. Doing so may damage the display surface. Always use the included stylus or your finger.

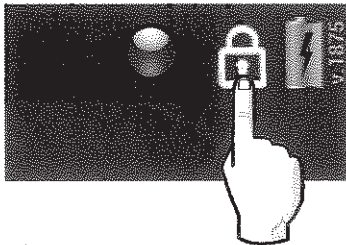


IQVU NAVIGATION CONTINUED

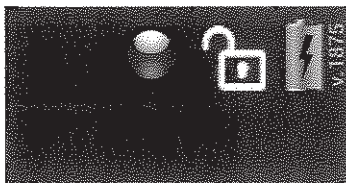
The IQVu has 3 data entry methods - Numeric, Alpha Numeric entry and selecting from a list.
Before editing a field the screen must be unlocked.

UNLOCK A SETTINGS SCREEN

To remove the edit lock simply tap on the padlock symbol in the top right of the screen



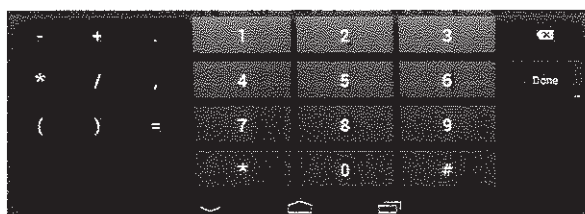
Tap again to reinstate the lock



TIP Navigation away from the current screen is disabled until the edit lock is reinstated

NUMERIC ENTRY

Tap on the numeric field to be edited and the IQVu will automatically display a virtual numeric keypad.
Tap "Done" to accept the value and the keypad will automatically disappear.



Tap here to close the keypad

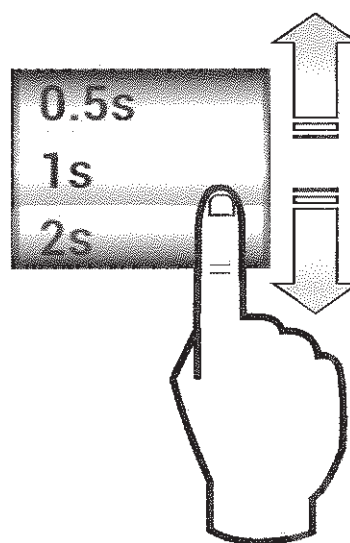
ALPHA NUMERIC ENTRY

Tap on the alpha-numeric field to be edited and the IQVu will automatically display a virtual keypad.
Tap "Done" to accept the value and the keypad will automatically disappear.

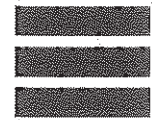


Tap here to close the keypad

SELECTING FROM A LIST



Tap and hold on the cylinder then swipe up / down to change the value. The required value should be in the center position



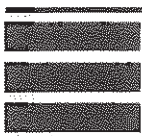
STARTING IQVU APP

The IQVu is configured with SOTI software in order to provide the most secure environment.



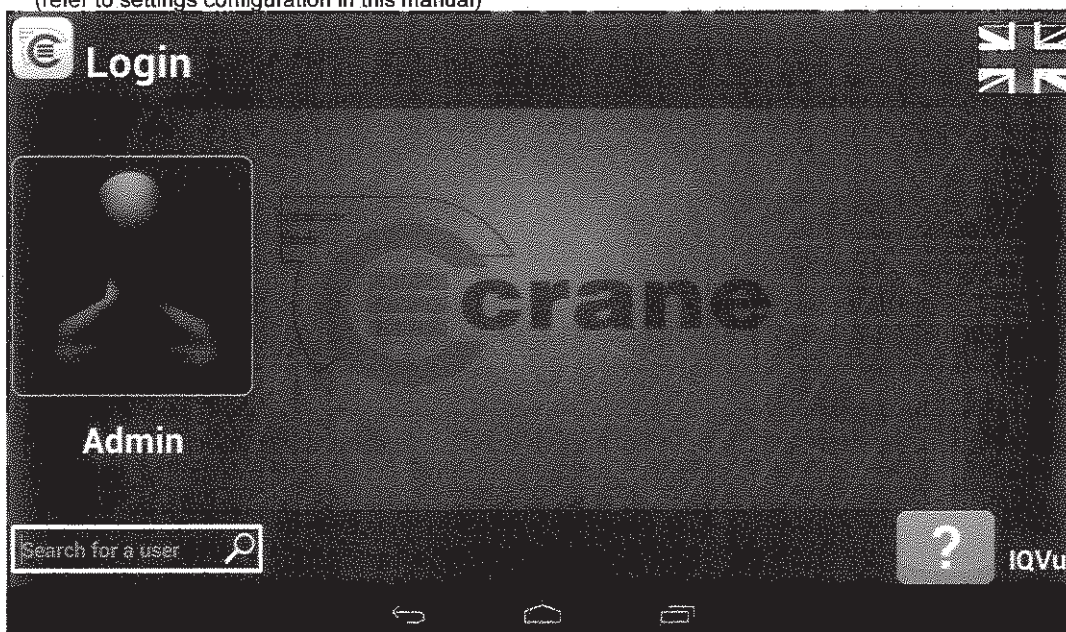
Select the Crane IQVu icon, the app will load and a Crane splash screen will be displayed before entering the login screen. When the IQVu first starts it will display the SOTI menu which contains all approved apps that are allowed to run on IQVu.





LANGUAGE

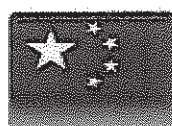
It is possible to change the language for the IQVu directly from the login screen or within the settings menu (refer to settings configuration in this manual)



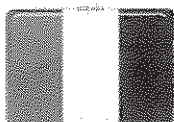
To change the language simply tap on the flag icon in the top right of the screen. Swipe up/down on the flags to reveal more options.



English



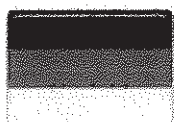
Chinese



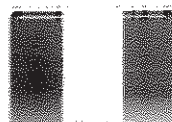
French



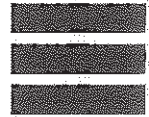
Spanish



German

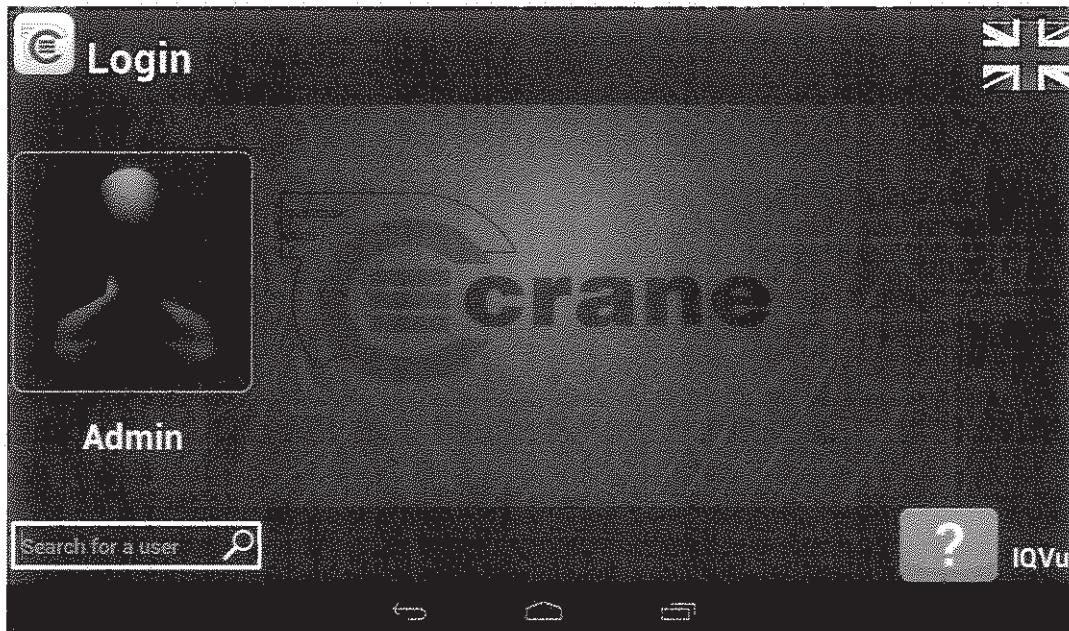


Italian

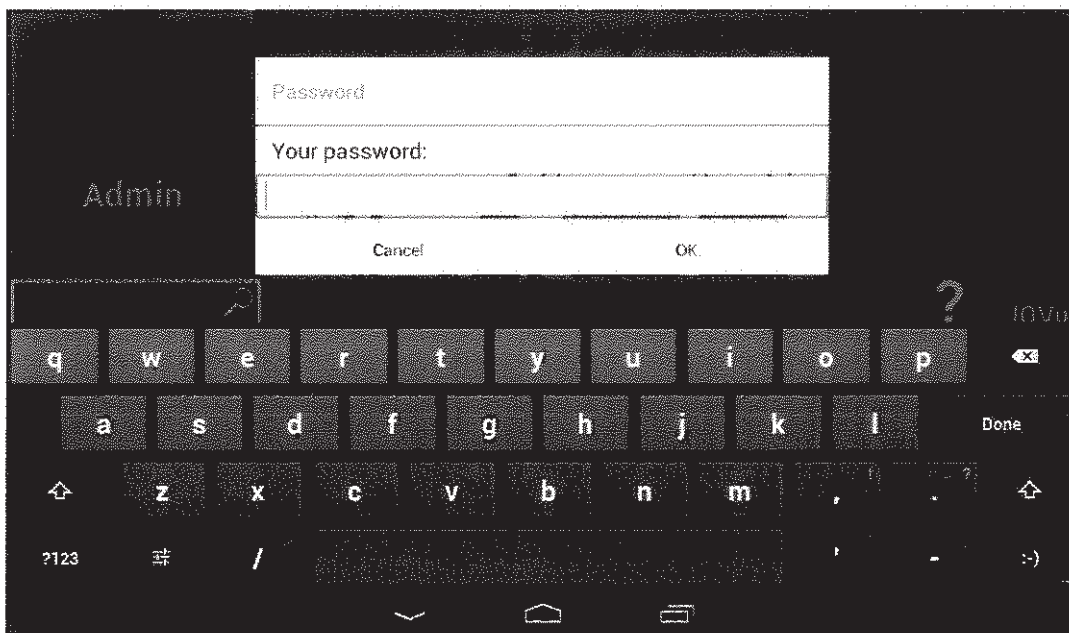


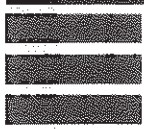
LOGGING IN

The IQVu is pre-configured with an Admin user which has a default password = "admin"



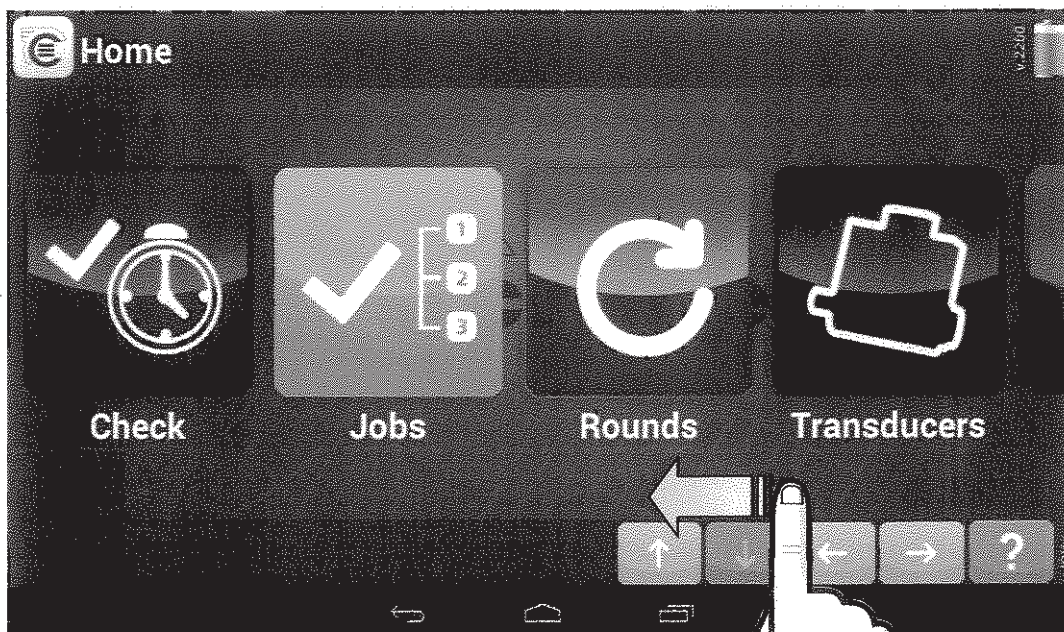
To enter the password simply click on the Admin user icon and a virtual keypad will be displayed. It is recommended that this password be changed before continuing further work on the IQVu.



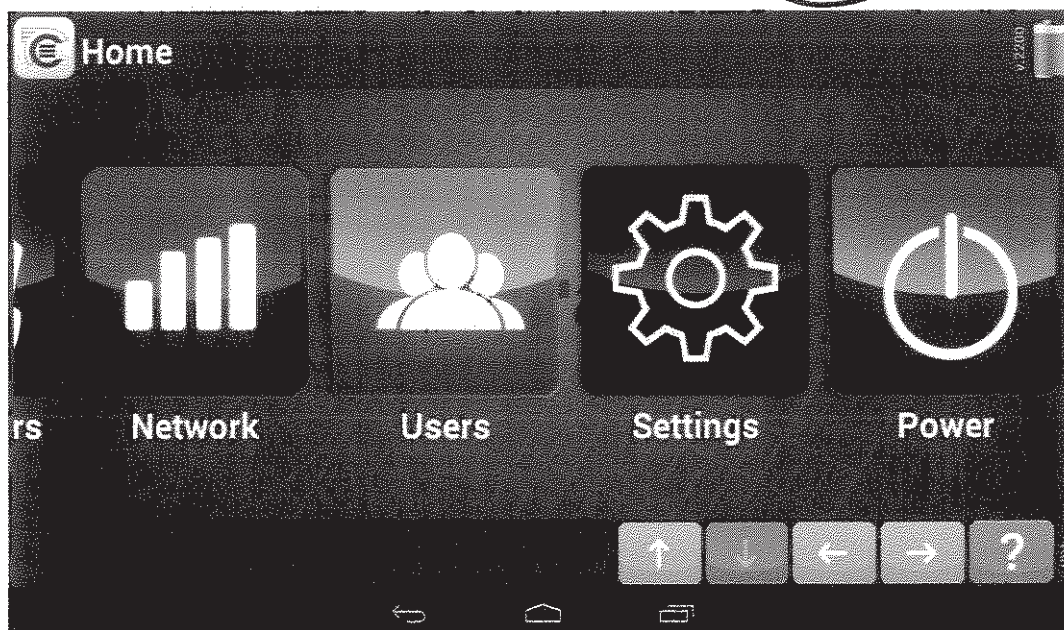


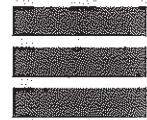
HOME MENU

After logging in the user is taken to the home page menu.



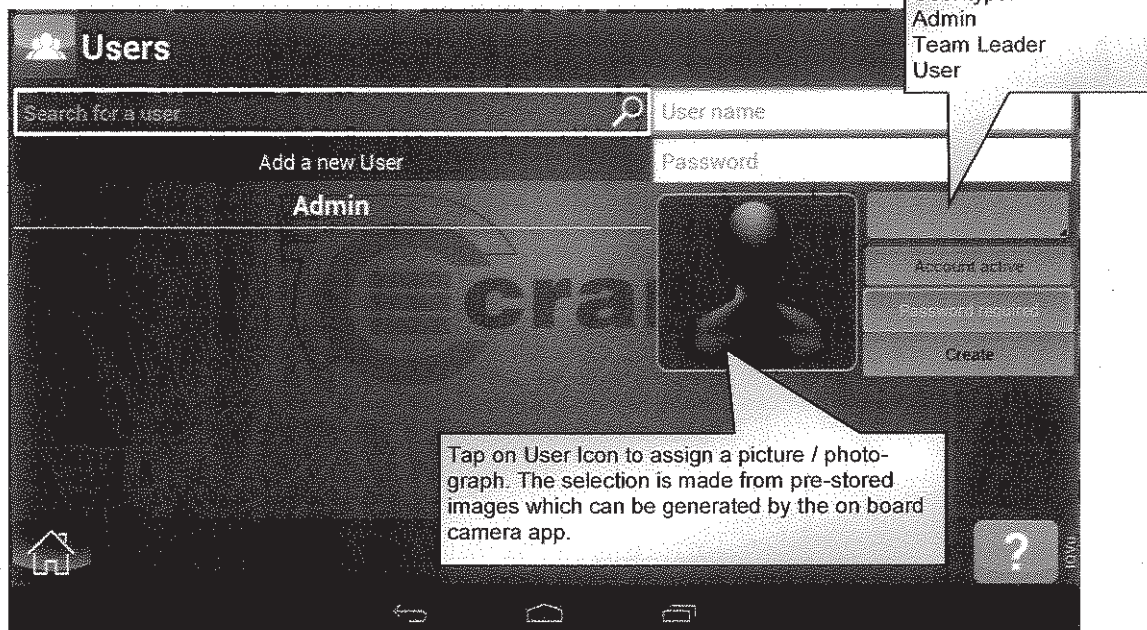
To review more icons simply swipe across the screen.





USERS

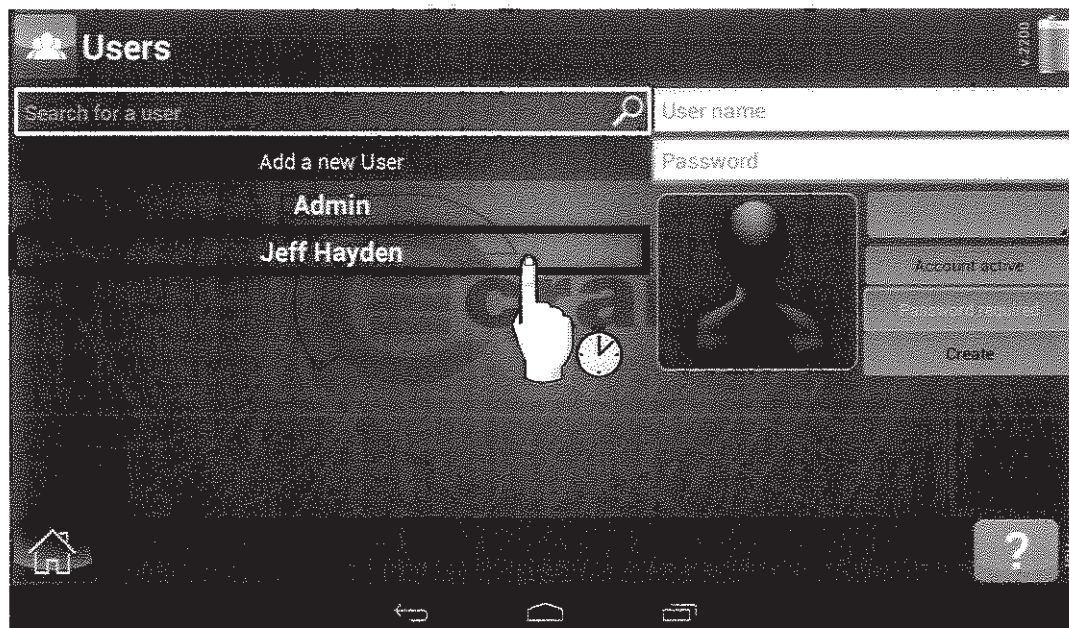
To manage user on the IQVu select the User icon from the home menu.



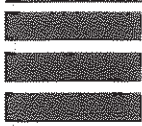
Enter information into all fields then click "Create" to add the new user to the list.

For more information on user type please see table in appendix A.

A user can be removed from the login menu without deleting the profile by tapping the "Account Active" button



TIP Tap and hold user name until box appears around it. User can then be placed in the order required on The list / login page by dragging up / down.



TRANSDUCERS

IQVu is compatible with Checkstar Multi, UTA and IS transducers. Multiple transducers can be attached via The optional Automatic Switch Box.

 **Transducers** 

Name	S/N	Type	Span, Nm	Port	PPR	Battery
75Nm T&A	77307	0	75	2	180	N/A
75Nm T&A	86635	0	75	3	720	N/A
180Nm T&A	91296	0	180	4	180	N/A
10Nm T Only	100	0	10	5	180	N/A

Tap on required Job to start taking readings

Tap to add IS transducer



Connected transducers are colour coded.
"Plug and Play" transducer will automatically appear in the List when the refresh icon is tapped.

GREEN = Available AND selected
AMBER = Available NOT selected
= NOT available

 **Transducers** 

Name	S/N	Type	Span, Nm	Port	PPR	Battery
------	-----	------	----------	------	-----	---------

Create

S/N	12345	mV/V	2
Span, Nm	75	Torque@mV/V	74.98
PPR	720	Close	OK



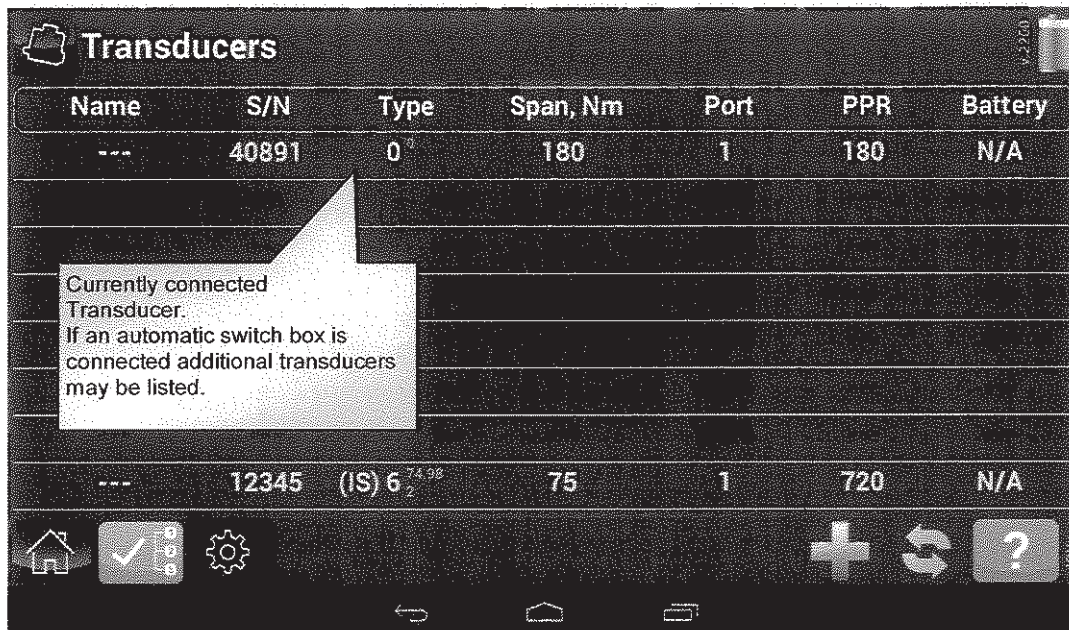


When using the optional automatic switch box, IS transducers can ONLY be in port 1



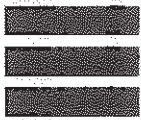
CHECK MODE

When entering check mode, then IQVu will prompt to select a transducer to use. Simply tap on the required line.



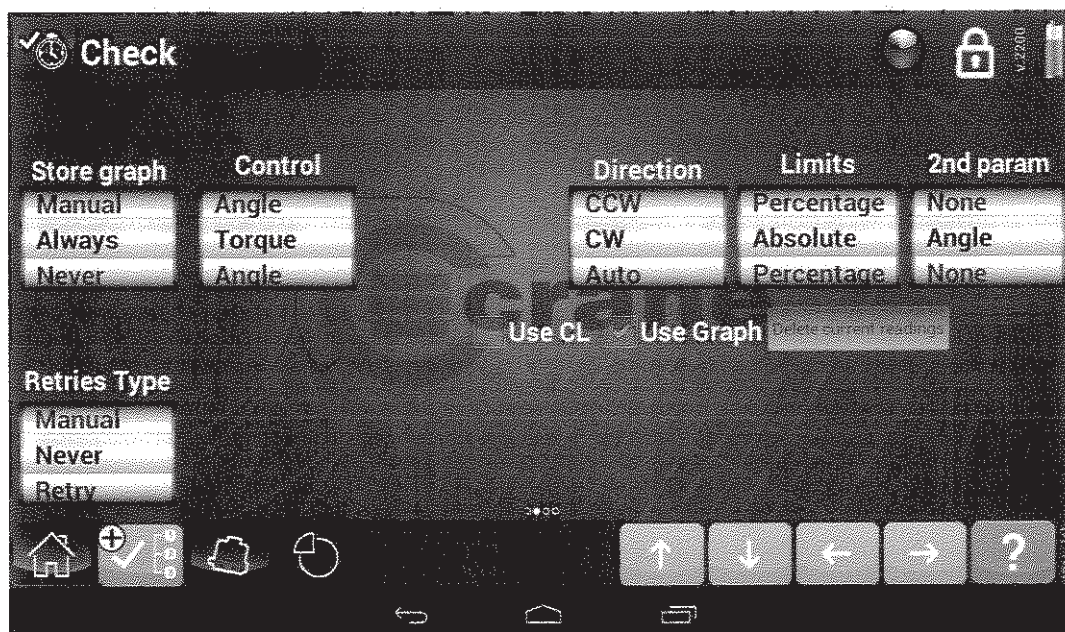
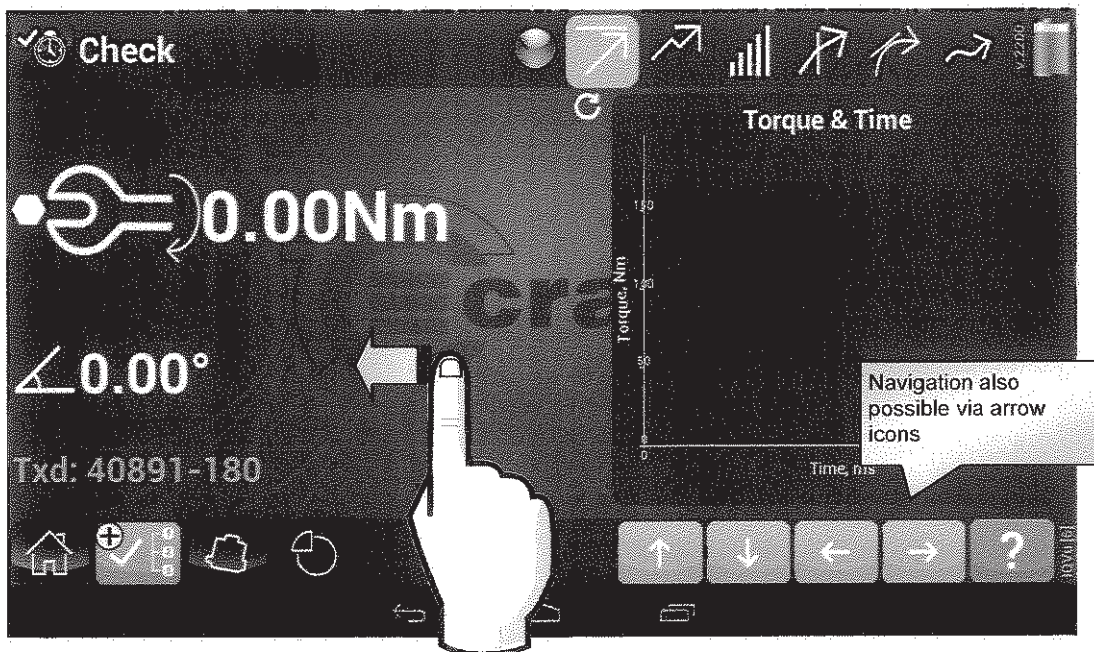
RF 1 through 6 are reserved for future use.



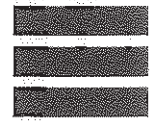


EDITING CHECK MODE SETTINGS

To enter check mode settings simply swipe to the left across the screen

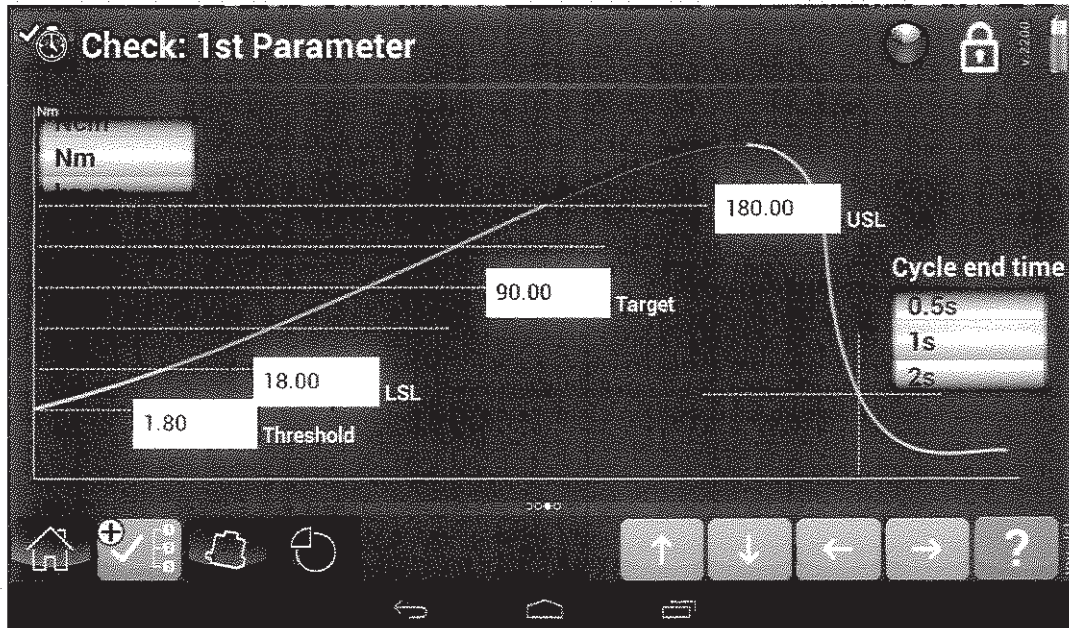


Unlock the screen and make required changes.



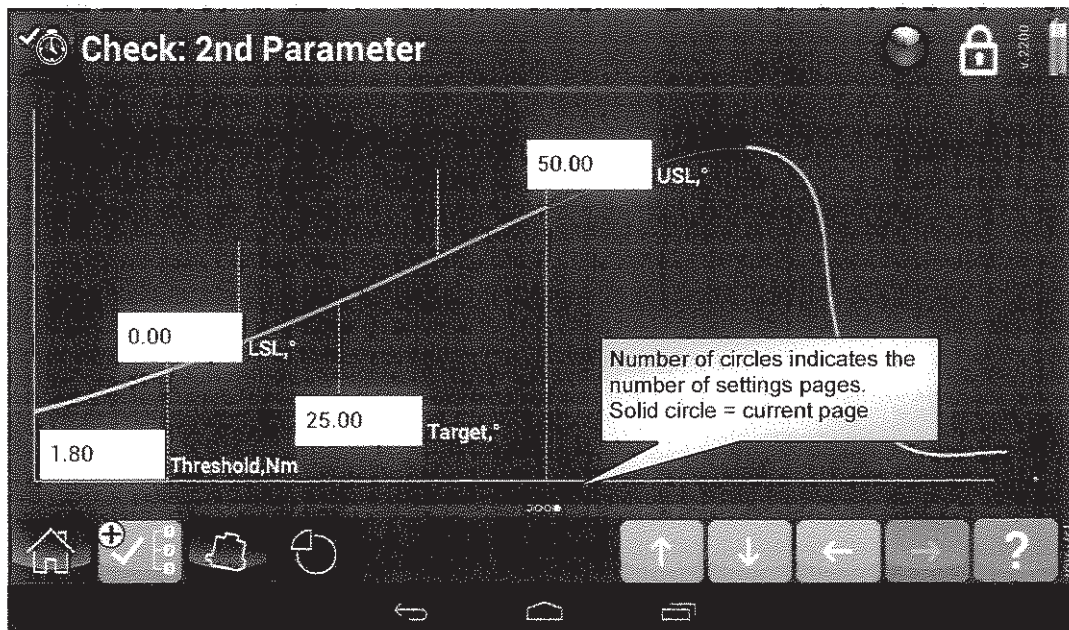
EDITING CHECK MODE SETTINGS CONTINUED

Swipe to the left again to show 1st parameter setup as below:

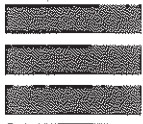


TIP Padlock needs to be opened before editing is allowed. Please refer to IQVu navigation in this manual for further details.

If a second parameter is defined left swipe again to show parameters

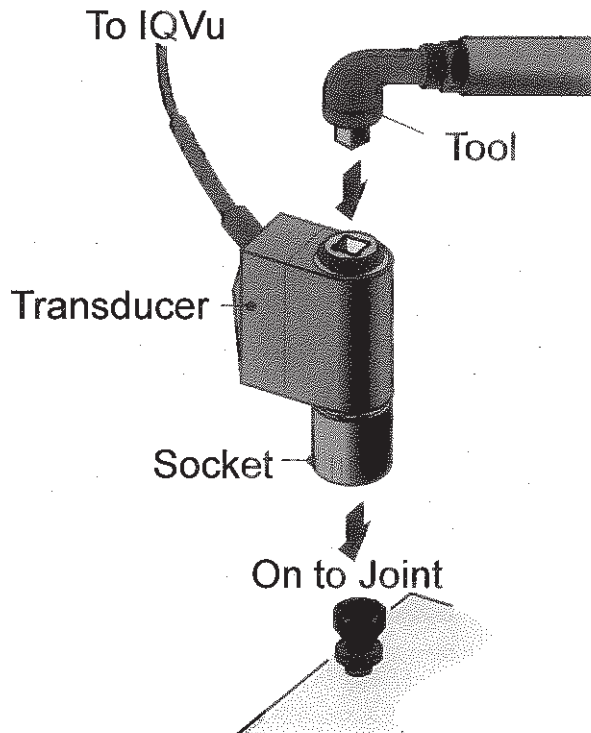


When all parameters are edited as required right swipe back to the measure screen



PERFORMING A CHECK MEASUREMENT

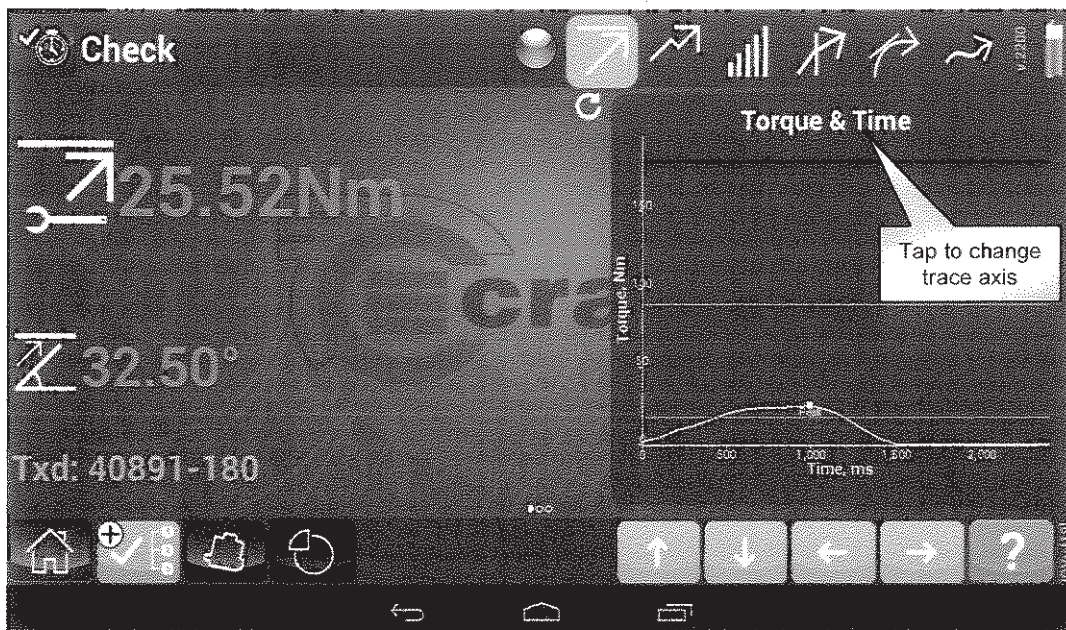
Once the check settings are configured as required insert the tool drive into the transducer and perform a tightening cycle.



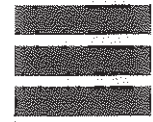
This example below shows a Crane UTA CheckStar used for a dynamic measurement



TIP Ensure the "Torque Being Measured" indicator  is **GREEN** before beginning rundown.



When the rundown is complete IQVu displays the Torque and second parameter values along with a Torque Vs Time trace



CHECK MODE VIEW READINGS / ADD ATTACHEMENT

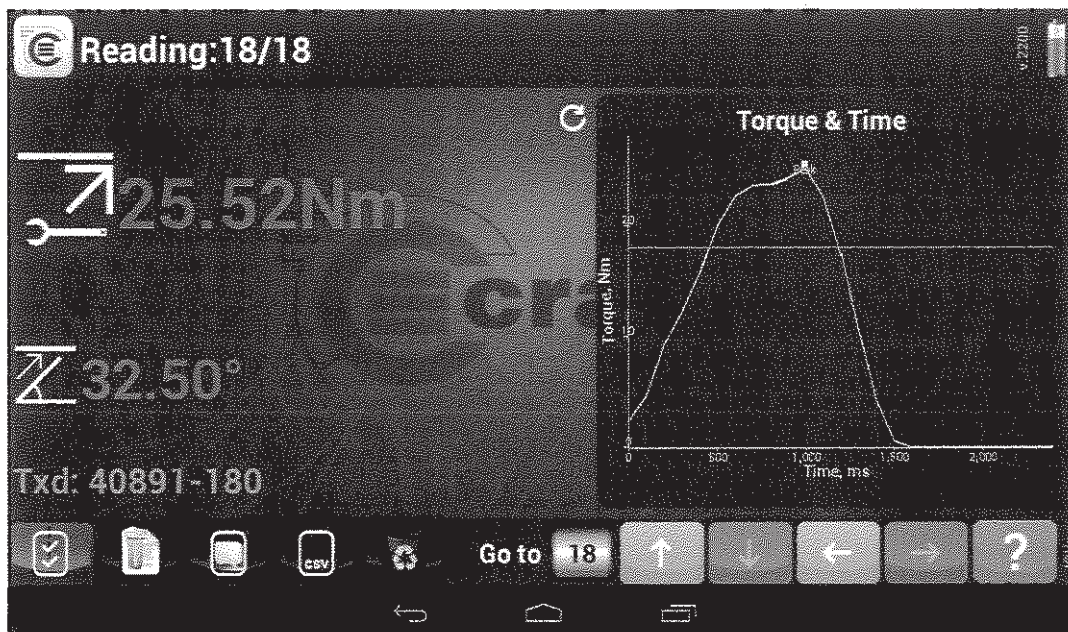
To view stored readings in check mode either swipe up or press the down navigation arrow icon.

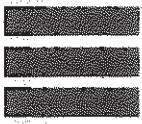
Readings

Readings	Type	Torque, Nm	Peak, Nm	Peak, °	Final angle, °
Reading: 18/18	Peak	25.52	25.52	32.50	33.50
Reading: 17/18	Peak	28.76	28.76	54.00	72.00
Reading: 16/18	Peak	27.94	27.94	9.00	42.50
Reading: 15/18	Peak	27.34	27.34	14.00	88.50
Reading: 14/18	Peak	33.14	33.14	90.00	80.00
Reading: 13/18	Peak	23.17	23.17	1.50	7.50
Reading: 12/18	Peak	25.09	25.09	83.50	83.00
Reading: 11/18	Peak	20.14	20.14	24.00	17.50
Reading: 10/18	Peak	24.19	24.19	-2.00	-9.00
Reading: 9/18	Peak	11.14	11.14	57.50	87.00
Reading: 8/18	Peak	12.16	12.16	98.00	95.50

Up arrow icon, Question mark icon

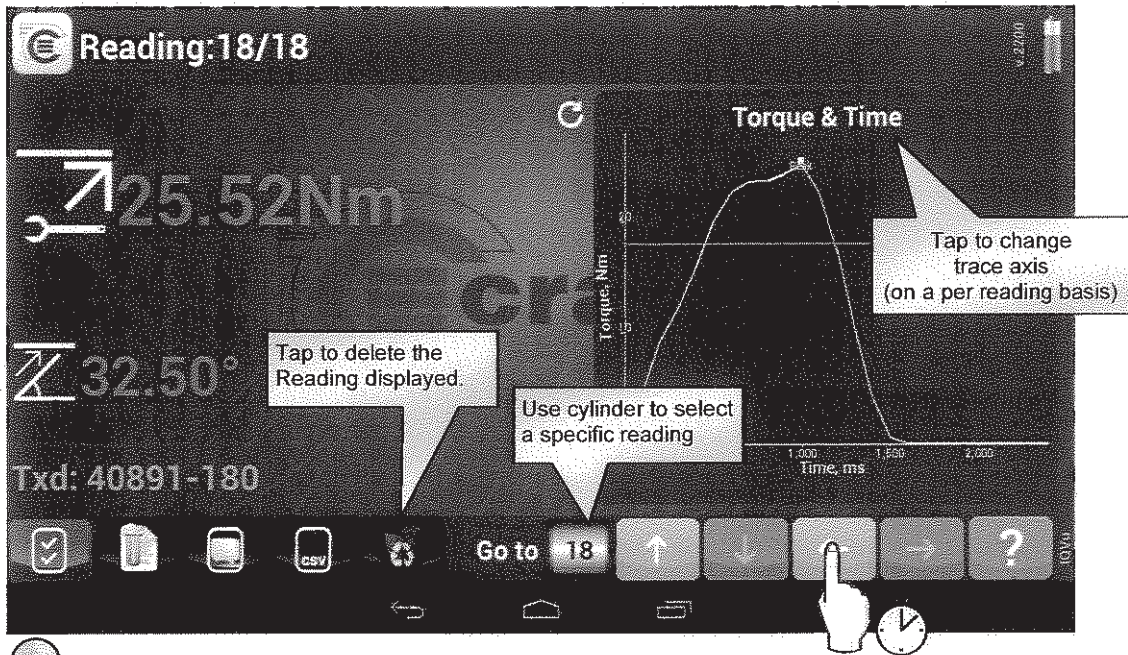
Tap the up arrow icon to view the individual readings





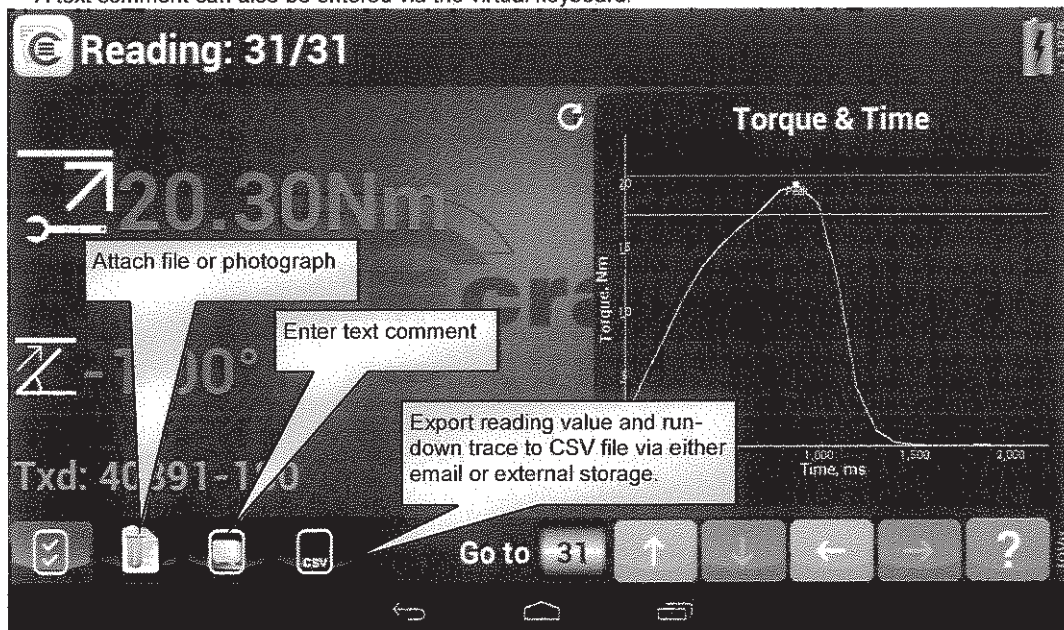
CHECK MODE VIEW READINGS / ADD ATTACHEMENT

Individual readings can be viewed by swiping left / right or using the arrow key icons.

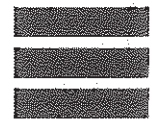


TIP Tap and hold the left / right arrow icon to goto first last readings

The IQVu allows the user to attach either a file(s) and / or photograph(s) to each reading.
A text comment can also be entered via the virtual keyboard.

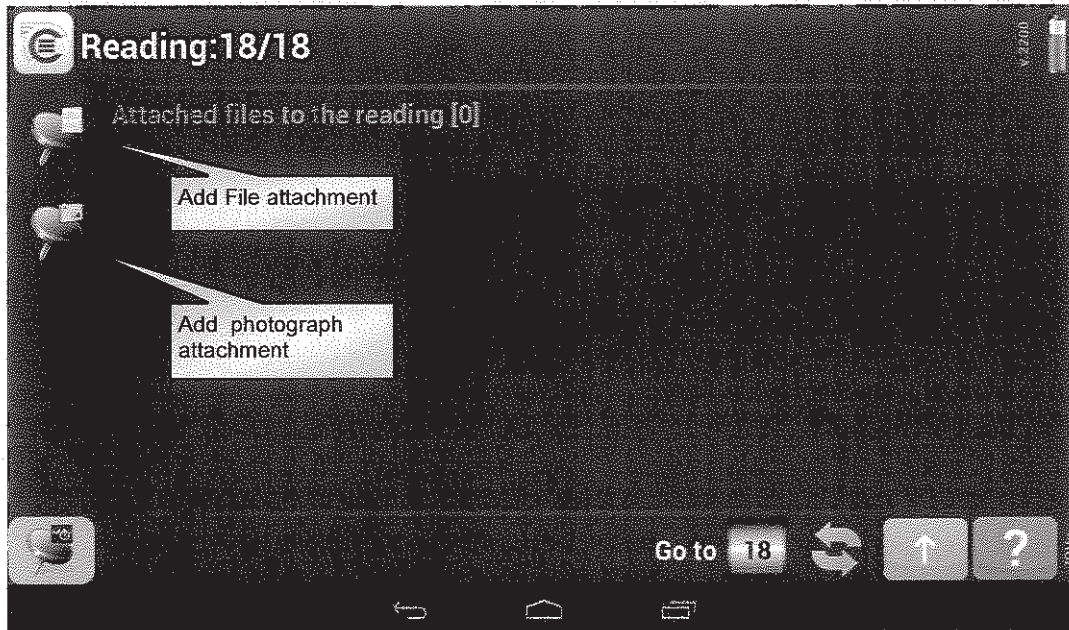


TIP Email requires a valid wifi network connection and user account setup.

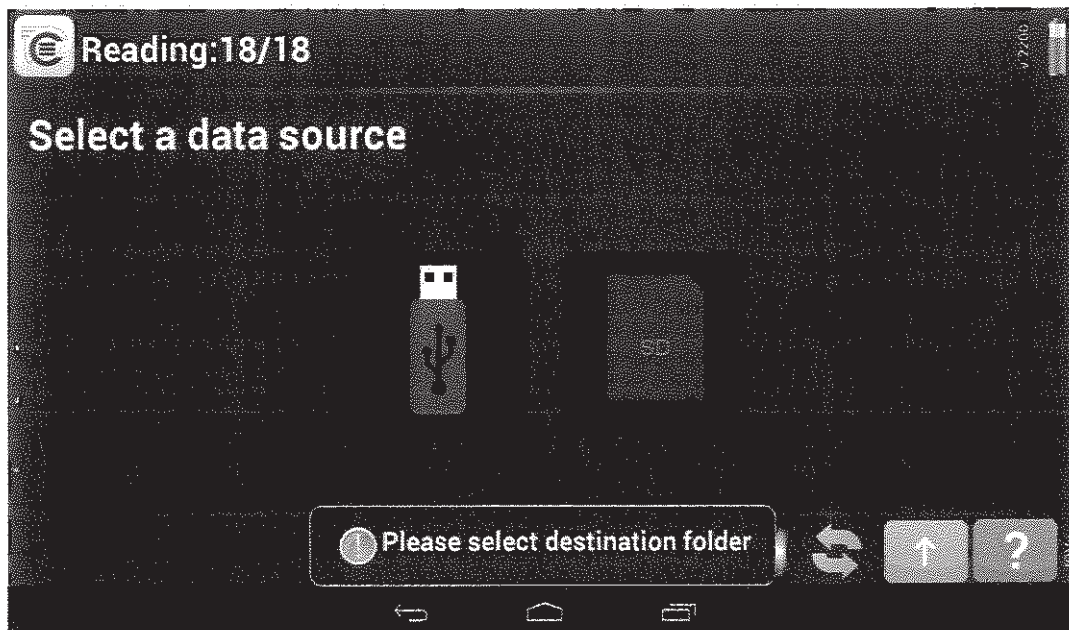


CHECK MODE VIEW READINGS / ADD ATTACHEMENT CONTINUED

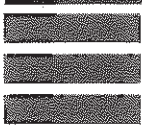
To view stored readings in check mode either swipe up or press the down navigation arrow icon.



To attach a file, tap on the "Attach File" icon

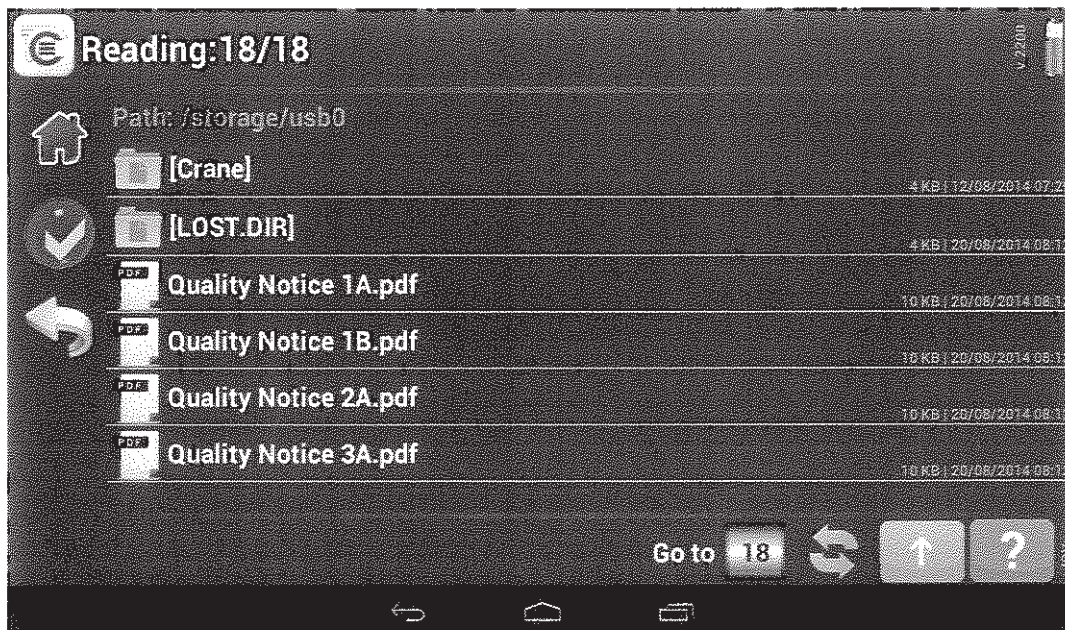


IQVu allows supports files stored on either USB drive or SD card. When not available the corresponding icon will be greyed out.



CHECK MODE VIEW READINGS / ADD ATTACHEMENT CONTINUED

Tap on the tile to be attached to the reading.



The IQVu allows to the user to add a description for the file to be attached.

