INSIGHTqcT Torque Tester

IQCTA, IQCTT Operating Manual



Contents

1.0 Scope

This manual provides operating instructions for the Ingersoll Rand Range of Torque Testers, Models IQCTA and IQCTT-n. The TA model is designed to work with a range of external Torque/Angle transducers. The TT model has an internal torque transducer with maximum torque of 1, 4, 12, or 30 Nm.

2.0 Packing List

The following items are provided with the INSIGHTqcT Torque Tester.

- 1. InsightqcT
- 2. RA Joint kit (with TT models only)
- 3. Calibration Certificate
- 4. 5V PSU Power Adapter
- 5. USB-A to USB Micro connection cable
- 6. USB Flash Drive
- 7. DOC, Safety and Product Information manuals
- 8. Quick start guide and web link to manual

3.0 Features and Mounting Dimensions.



4.0 Specifications

4.1 Measurement Modes

- 4.1.1 Track Real time Torque and Angle (if sensor provides)
- 4.1.2 Peak Continually updated capture of the highest torque encountered
- 4.1.3 Pulse Impulse Tool mode including pulse count
- 4.1.4 Click Click wrench tool mode

4.2 Measurement Units

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

4.3 Physical Measurements

- 4.3.1 Bi-directional Torque
- 4.3.2 Angle*
- 4.3.3 Pulse Count
- 4.3.4 RPM in track mode*
- 4.3.5 Cycle time duration
 - (* when using rotary angle transducer)

4.4 Compatible Input Devices

- 4.4.1 TRD, TR and TRDA Rotary Transducers
- 4.4.2 TSD and TS stationary transducers
- 4.4.3 Industry Standard Transducers
- 4.4.4 UTA transducers

4.5 Data Storage

4.5.1 999 Readings in storage mode

4.6 Statistics

- 4.6.1 Count, Range, Mean, Min, Max, Standard Deviation
- 4.6.2 Cm, Cmk, Cp Cpk

4.7 Data Output

4.7.1 Selectable output to Autoprint or CSV.

4.8 Cycle Status indication

4.8.1 Audible buzzer and LED High/OK/Low torque status. Levels user definable.

4.9 Operating Languages

4.9.1 English, French, German, Italian, Spanish

4.10 Power

- 4.10.1 Universal 5V charger or USB charger (Micro)
- 4.10.2 Rechargeable Li-ion 8 hours operation.

4.11 Input/Output Ports

- 4.11.1 25 pin D (female) transducer port digital or analog
- 4.11.2 Micro USB 2.0 for power and data export
- 4.11.3 USB Type A on the go
- 4.11.4 5V DC Power In for use with provided charger

4.12 Technical Specifications

- 4.12.1 Zero Stability <0.1% FSD/°C
- 4.12.2 Static Accuracy: +/- 0.25% FSD of connected transducer
- 4.12.3 Operating Environment:
 - 4.12.3.1 Temperature -20 to +50 °C
 - 4.12.3.2 Humidity 10 70% non-condensing
 - 4.12.3.3 Ingress protection IP45
- 4.12.4 Torque Measurement:
 - 4.12.4.1 5 significant digits.
 - 4.12.4.2 Sample every 20 uS
- 4.12.5 Angle Measurement
 - 4.12.5.1 Quadrature phase input
 - 4.12.5.2 Display resolution to 0.1 degrees
 - 4.12.5.3 Sample rate 1000 uS

5.0 Icons and Navigation

6.0 Start Up

Press the Power button

once. Wait five (5) seconds and the version screen will be displayed.



Press the OK button and the splash screen will be displayed for a few seconds followed by the Run screen.



7.0 Measurement Mode Selection

Select the down button witce to navigate to the mode selection tab witce. Press the witce button to cycle through the modes available (Peak, Pulse, Click and Track).



Readings will be recorded in the mode selected as soon as torque is applied to the joint. If the mode is subsequently changed, all previous readings will be erased after acknowledging the warning message.

Readings are not recorded or erased in tracking mode.

If the reading is above threshold but below the LSL (lower specification limit) the torque reading and status led will be amber and a single beep will be heard.

If the target torque is achieved, the torque reading and the status led will be green and two audible beeps will be heard.

If the reading is above the USL (upper specification limit) the torque reading and the status led will be red and three audible beeps will be heard.

To adjust the threshold, target and specification limits, press the key while the banner is selected (light grey background – as in first picture). The following screen will be shown.

		65% 🞫		
	0	07.50 Nm		
Torque Target	0	6.00 Nm		
	04.50 Nm			
A Torque Threshold	00.60 Nm			
\$	C	÷		



To adjust the values, highlight the variable to adjust and press the key again. A new window will be presented as shown. Use the up and down arrows to adjust the value and the left and right arrows to

navigate to the digit to be adjusted. Press 💟 to save or 💴 to return without saving.

8.0 Review Readings

Select the down button as needed to navigate to the mode selection tabs. Press the left or right

arrows to highlight the readings tab **E**

as shown on the left. Select any record using the up and down arrows and select is to bring up a trace of the fastening as shown on the right. The left and right arrows will move the cursor along the trace to show the data for each point.

				60%
êR	eadir	ngs List		
030/030	6.23	19	19:22:44	05/13/2020
029/030	6.04	18	19:22:40	05/13/2020
028/030	6.10	15	19:22:35	05/13/2020
027/030	6.14	19	19:22:30	05/13/2020
026/030	5.89	15	19:22:26	05/13/2020
025/030	5.90	19	19:22:22	05/13/2020
			•	+



Navigate to the save or print icons to save to memory stick on USB-A or stream to PC using USB Micro connector.

9.0 Statistics

Select the down button was needed to navigate to the mode selection tabs. Press the left or right

arrows to highlight the Statistics tab . Select with and a tabulation of calculated statistics of results will be displayed as shown.



Provide explanation and formulas for the statistics shown

10.0 Configuration

Select the down button was needed to navigate to the mode selection tabs. Press the left or right

arrows to highlight the Configuration tab — Select with — and a listing of configuration items will be displayed as shown. Navigate to the desired mode using the up and down arrows and select with





10.1 Measurement Mode

Changing any of the selections in measurement mode will cause all stored readings to be erased.

Select desired units by selecting left and right arrows to rotate through the list of available units.

Select clockwise or anticlockwise direction for test.

Select expected test time from 0.1s to 120s, default is 1.0s. This is the maximum expected time to completion from passing the threshold torque.

Select the desired frequency response in increments from 75Hz, 151Hz, 256Hz, 307Hz, 384Hz, 542Hz (default), 768Hz, 921Hz, 1024Hz, 1316Hz, 1536Hz, 2304Hz, 3072Hz, 4608Hz.

Turn the second parameter (angle, pulse..) on or off.



10.2 Power Settings

Select Auto power off time from never to 200 Minutes, with 5 minutes as default.

Select when the backlight dims to save battery power from never to 5 minutes with 2 minutes as default.

Select buzzer enable as On or Off.

Select display brightness from 20% to 100% with 50% as default.



10.3 Date and Time

Select data format between three formats. You will see the date presentation change as selections are made.

To change the actual date, highlight the date field and press . A date field will be highlighted in amber. Use the left and right arrows to move between month, day and year. Use the up and down

arrows to raise and lower the value. Once correct date is entered, press keep to return.

Select number format to change between using a period (.) or a comma (,) for decimal point.

Select time format to enable or disable display of seconds.

Select time and adjust in similar way to Date fields.



10.4 Global Settings

Use Global Settings to select Language Preference.

Use the left and right arrows to select between English, Spanish, Italian, French and German.



10.5 Miscellaneous Torque

Use the Up and Down arrows to navigate to the flag you want to adjust and the left and right arrows to set the requirement.

FiFO – First In, First Out. If FIFO is ON, one can only take 999 readings, if FIFO is off, the analyzer stores the most recent 999 values.

Autoprint, if set to ON will set the printout for end of results and reading list. To adjust settings for printout go to Autoprint screen.



10.6 Transducer

First connect the desired transducer to the 25 pin D connector on the back (ICQTA only).

Use this screen to edit the external transducer properties before taking any readings. Use the up and down arrows to select the field to adjust and the left and right arrows to select the requirement.

If using an internal transducer (IQCTT) the properties will be shown but not adjustable.

All IR and Crane Electronics Transducers are recognized. Select IS for Industry standard and the down arrow to select the transducer characteristic fields. Adjust to the specifications of the transducer to be used.

To adjust a field, using the up and down arrows, select the field, press and adjust each digit with left and right keys as necessary.



10.7 Autoprint Options

Use the Up and Down arrows to navigate to the setting you want to adjust and the left and right arrows to select On or OFF to have the value printed.



10.8 Splash Screen

Will display the serial number and versions of the component parts as shown below. It also displays the next calibration due date.



Appendix

Table 3- Ingersoll Rand Transducers						
Industry Standard Transducers	Smart Transducers		Torque Capacity		Drive	
	Torque only	Torque & Angle	(ftlb.)	(Nm)	(in)	
Rotary						
TR2H4	-	-	1.0 - 18	0.10 - 2	1/4, Hex	
TR5H4	TRD5H4	TRDA5H4	2.2 - 44	0.25 - 5	1/4, Hex	
TR20H4	TRD20H4	TRDA20H4	9.0 - 180	1 - 20	1/4, Hex	
TR20S4	TRD20S4	TRDA20S4	9.0 - 180	1 - 20	1/4, square	
TR75S6	TRD75S6	TRDA75S6	2.8 - 55	3.8 - 75	3/8, square	
TR180S8	TRD180S8	TRDA180S8	6.7 - 133	9 - 180	1/2, square	
TR250S12	-	-	9.2 - 185	12.5 - 250	3/4, square	
TR500S12	TRD500S12	TRDA500S12	18.5 - 370	25 - 500	3/4, square	
Stationary						
TS30S4	TSD28S4	-	1.1 - 22	1.5 - 30	1/4	
TS150S6	TSD135S6	-	5.5 - 110	7.5 - 150	3/8	
TS300S8	TSD270S8	-	11 - 221	15 - 300	1/2	
TS1000S12	TSD1000S12	-	37 - 738	50 - 1000	3/4	

Table 4 - Ingersoll Rand Joint Simulators					
Model	Includes Transducer	Joint Simulator Bolt Service Kit	Torque Capacity		Drive
			(ftlb.)	(Nm)	(in)
Rotary					
JKR20	No	JKS30-BKIT	0.75 - 15	1.0 - 20	1/4
JKR75	No	JKS150-BKIT	2.8 - 55	3.8 - 75	3/8
JKR180	No	JKS300-BKIT	6.7 - 133	9.0 - 180	1/2
JKR500	No	JKS1000-BKIT	18.5 - 370	25.0 - 500	3/4
Stationary					
JKS30	No	JKS30-BKIT	1.1 - 22	1.5 - 30	1/4
JKS150	No	JKS150-BKIT	5.5 - 110	7.5 - 150	3/8
JKS300	No	JKS300-BKIT	11.0 - 221	15.0 - 300	1/2
JKS1000	No	JKS1000-BKIT	37.0 - 738	50.0 - 1,000	3/4
JKST30	TS30S4	JKS30-BKIT	1.1 - 22	1.5 - 30	1/4
JKST150	TS150S6	JKS150-BKIT	5.5 - 110	7.5 - 150	3/8
JKST300	TS300S8	JKS300-BKIT	11.0 - 221	15.0 - 300	1/2
JKST1000	TS1000S12	JKS1000-BKIT	37.0 - 738	50.0 - 1,000	3/4