Ingersoll Rand

INSIGHTqc™ Controller

REAL TOOLS FOR REAL WORK.™

Simply Insightful

When trying to achieve simple manufacturing goals in a complex manufacturing world, taking control of and understanding the fastening process doesn't have to be complicated. The new Ingersoll Rand® INSIGHTqc™ is different, by design. The INSIGHTqc™ controller is designed to be easy to use, easy to integrate, and provide a common platform to meet the global assembly needs of our customers. This controller offers advanced tightening control and a simple user experience to improve efficiency on production lines, and get the job done right, first time, every time.

	SIMPLE	FLEXIBLE	CAPABLE
WHY DO I CARE?	EXPERTS NOT REQUIRED	EASILY IMPLEMENT CHANGE	MEET YOUR REQUIREMENTS
WHAT DOES THIS MEAN TO ME?	• Save on selection, training and installation costs • Reduce errors and downtime • Remove user dependencies	• Reduce line rebalancing costs • Easy line integration • Remove device dependency	• Get the job right, first time, every time • Assurance via traceability • Optimize your productivity
HOW DOES INGERSOLL RAND OFFER THIS?	• Intuitive, Visual Programming Interface • Plug and Play Accessories and Protocols • Backwards Capability • Integrated Backup and Recovery • Bundled Controller Options • Context Specific Integrated HELP	• Web Based programming use any operating system via any browser • Meets current industry communication needs • Adjustable to meet any tightening control requirements • Integrated logic controls • Easy hardware and software upgrades	• Touch Screen Interface • Industry leading cycle data storage • Robust audit and system logs • Advanced tightening strategies and features • Onboard diagnostics • Integrated statistical process controls • Preventative maintenance alarms • Configurable email alerts

The web-based software eliminates device dependencies and enables full programming capability with any device that can run an Internet browser, including smart phones, tablets or computers. The INSIGHTqc™ controller is easy to integrate with the manufacturing line, provides flexible logic controls for job sequencing, and helps reduce line rebalancing costs through a simple and intuitive user interface.

Bottom line, the INSIGHTqc™ controller is a Simply Insightful solution.

Capabilities

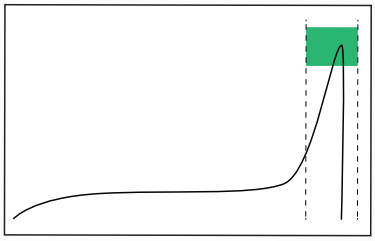
Software Capability

	Standard	F	M	FM		Standard	F	M	FM
Embedded Software	•	•	•	•	License Update	•	•	•	•
Home Screen	•	•	•	•	License Activate	•	•	•	•
JOB Setup	•	•	•	•	Date & Time Settings	•	•	•	•
PSET Setup	•	•	•	•	System Initialization	•	•	•	•
Multiple Tightening Strategies	•	•	•	•	Spindle Management	•	•	•	•
Quick Programming	•	•	•	•	IP Address Settings	•	•	•	•
Advanced Programming	•	•	•	•	Email Alerts	•	•	•	•
Cycle Results	•	•	•	•	Digital IO Settings	•	•	•	•
JOB Results	•	•	•	•	EOR Data Out	•	•	•	•
Audit Log	•	•	•	•	Barcode	•	•	•	•
Event Log	•	•	•	•	User Management	•	•	•	•
System Diagnostics	•	•	•	•	System Logs		•		•
Tool Diagnostics	•	•	•	•	Fieldbus Diagnostics		•		•
Digital IO Diagnostics	•	•	•	•	Fieldbus Settings		•		•
Statistics Settings	•	•	•	•	Ethernet IP		•		•
Statistics Summary	•	•	•	•	ProfiNet		•		•
Statistics Alarm Settings	•	•	•	•	ProfiBus		•		•
Statistics Alarm Summary	•	•	•	•	DeviceNet		•		•
Backup and Restore	•	•	•	•	MES Protocols Settings			•	•
Firmware Update	•	•	•	•	Open Protocol			•	•
Preventative Maintenance Alarms	•	•	•	•	ToolsNet			•	•
Tool Calibration	•	•	•	•	VW XML 2.1			•	•
Factory Reset	•	•	•	•	Nissan Serial EOR			•	•
Network System Discovery	•	•	•	•					

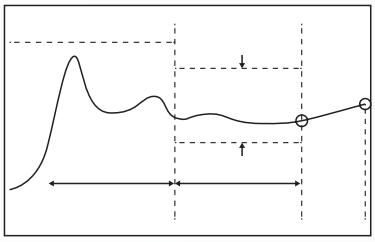
Statistical Process Control

Statistic Status	Description
Mean	Statistical average - used to derive the central tendency of the tightening data of a particular PSET
Capability	Calculated as (6* sigma / Mean) * 100 on a particular PSET
Pass %	Indicates the % of the cycles that have a cycle result of PASS from the sample population of a particular PSET
Fail %	Indicates the % of the cycles that have a cycle result of FAIL from the sample population of a particular PSET
Mean Shift	Calculated as: MEAN Result Value - TARGET Result Value for a particular PSET
Range	Calculated as: MAX Result Value - MIN Result Value of a particular PSET.
Standard Deviation (σ)	The calculated standard deviation (σ) of the Result Value of a particular PSET.
PP	Process Performance, calculated as: (USL - LSL) / (6 * σ)
CAM	Calculated as: (USL - USL) / (6* (W / d * S))
PPK	Process Performance Index, Calculated as: MIN ((MEAN - LSL) / (3 * σ) OR (USL - MEAN) / (3 * σ)

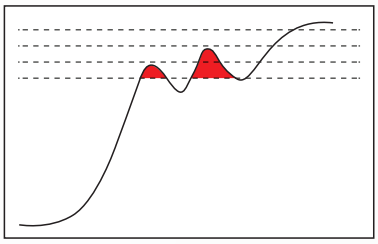
Torque/Angle Control



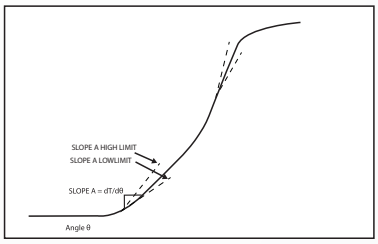
Prevailing Torque



Stick Slip Detection



Gradient/ Slope Analysis



Specifications

Hardware	
Weight (Kg)	5.6
Volume (dm3)	10.9
Colour Touchscreen	7 inch
Ethernet Port (10/100)	1
Ethernet Port (10/100/1K)	1
USB 2.0 Ports	4
Hot Swap Tools	Y
Boot Time (seconds)	40
Voltage / Current Requirement	230V / 8A
IP Rating (mounted vertically)	IP52
Onboard Circuit Breaker	Y
Integrated E-Stop	Y
Software	
PC Software	Not Required
PC License	Not Required
Number of JOBs	256
Number of PSETs (per JOB)	256
Number of Steps (per PSET)	31
Logic Rules for JOB Sequencing	Y
Barcode function: USB, Serial, Ethernet	Y
Manual Barcode Entry Option	Y
Tubenut Controls (Configurable modes)	Y
Number of Configurable User Logins	Unlimited
Quick Programming Mode	Y
Advanced Programming Mode	Y
Unrestricted programming function from controller screen	Y
Unrestricted remote programming from any device via any authorized browser	Y
Embedded, Context-Specific Help	Y
Email Statistics Alarms Direct From Controller*	Y
Email Preventative Maintenance Alarms Direct from Controller*	5
Multi-language Support	Y
Onboard Tool Diagnostics	Y
*Requires proper authorization and network settings by plant IT Administrator for each controller	
Onboard Data Storage	
Removeable SSD Hard Drive that stores ALL settings and data	Y
Complete controller settings and data recovery through SSD swap	Y
Tightening Results	50,000
Tightening Curve	50,000
Tightening curve displayed on Home screen of controller	Y
Audit Log	50,000
Event Log	50,000
System Log	50,000
Full Backup and Restore Function (USB or from computer/Tablet)	Y
Connectivity	
Fieldbus Options	
Ethernet IP, ProfiNet , ProfiBus, DeviceNet	
MES Protcool Options	
Open Protocol, Toolsnet, VW XML 2.1, Nissan Serial EOR, IR Ethernet EOR	
Supported Languages	
English, French, German, Italian, Spanish, Czech, Russian, Portuguese, Polish, Simplified Chinese	

Controller Models

The INSIGHTqc™ Controller is 100% compatible with our QE and QM tools. With the INSIGHTqc™, these tools will have 50K tightening records and 50K tightening traces – compared to 10 to 30K in competitors' products – which will let users understand all facets of the tightening process – torque, angle, time and date.

	SYSTEM OPTIONS				FIELDBUS OPTIONS				MES OPTIONS				
Model	Series	Display	Power	Hardware	Ethernet/IP	ProfiNet	ProfBUS	DeviceNET	IR Ethernet EOR	Open Protocol	ToolsNet	VW XML 2.1	Nissan SerialEOR
QCD31	QC	Display	230V AC	Standard					•				
QCD31-F	QC	Display	230V AC	Standard	•	•			•				
QCD31-M	QC	Display	230V AC	Standard					•	•	•	•	•
QCD31-FM	QC	Display	230V AC	Standard	•	•			•	•	•	•	•
QCD32-F	QC	Display	230V AC	Standard + ProfiBUS Card	•	•	•		•				
QCD32-FM	QC	Display	230V AC	Standard + ProfiBUS Card	•	•	•		•	•	•	•	•
QCD33-F	QC	Display	230V AC	Standard + DeviceNet Card	•	•		•	•				
QCD33-FM	QC	Display	230V AC	Standard + DeviceNet Card	•	•		•	•	•	•	•	•

DC Electric Nutrunners

QE2PT003P10Q04

QE2SL005P10Q04

QE2AL003PA1S04

QE4SC010B21S06

QE6ZC020P52S06

QE8AT065PA5S08

QE2 Series DC electric nutrunners

QE 2 T S 010 P 11 S04

Series: QE
Motor: 2
Body Style:
A = Angle
S = Inline
T = Inline (Push to Start)
P = Pistol

Tool Activation:
T = Trigger
L = Lever
P = Trigger + Push
S = Push to Start
C = Remote Start

Maximum Torque (Nm):
Inline: 002, 003, 005, 007, 010
Angle: 003, 005, 007, 010, 015

Mounting:
Angle
A1 = Size 1 Anglehead
A3 = Size 3 Anglehead
Inline / Pistol
10 = Pistol Solid
11 = Push to Start, Trigger + Push
30 = 50 mm Spindle, no float
32 = 50 mm Spindle, 19 mm float
Motor
M000 = Motor (Inline, Pistol)

Output:
P = Standard Gearcase
F = Flanged Gearcase

Drive:
Q04 = 1/4" Quick Change
H04 = 1/4" Internal Hex
S04 = 1/4" Square
S06 = 3/8" Square

QE Series DC electric nutrunners

QE 4 A T 013 P A2 S04

Series: QE
Motor: 4, 6, 8

Body Style:
A = Angle
S = Inline
T = Inline (Push to Start)
Z = Offset
M = Motor
P = Pistol

Tool Activation:
T = Trigger
L = Lever
E = Extended Lever
P = Trigger + Push
S = Push to Start
C = Remote Start

Maximum Torque (Nm):
QE4 Angle: 013, 020, 027, 034
QE6 Angle: 030, 040, 055, 080
QE8 Angle: 065, 070, 090, 115, 150, 225, 400
Inline: 010, 015, 020, 025
Inline: 020, 028, 033, 050
Inline: 055, 070, 090, 150, 230

Mounting:
P = Standard Gearcase
F = Flanged Gearcase
R = Reaction Bar
B = Bolt on Flange, 1pc.
J = Bolt on Flange, 2pc.

Output:
Angle
A2 = Size 2 Anglehead
A4 = Size 4 Anglehead
A5 = Size 5 Anglehead
A6 = Size 6 Anglehead
A7 = Size 7 Anglehead
A8 = Size 8 Anglehead
Inline / Pistol
10 = Pistol Solid
11 = Push to Start, Trigger Permit
20 = 50 mm Spindle, no float
21 = 50 mm Spindle, 19 mm float
41 = 100 mm Spindle, 19 mm float
61 = 150 mm Spindle, 38 mm float
81 = 200 mm Spindle, 38 mm float
62 = 150 mm Spindle, 50 mm float
82 = 200 mm Spindle, 50 mm float
02 = 250 mm Spindle, 50 mm float
22 = 300 mm Spindle, 50 mm float

Drive:
Q04 = 1/4" Quick Change
H04 = 1/4" Internal Hex
S04 = 1/4" Square
S06 = 3/8" Square
S08 = 1/2" Square
S12 = 3/4" Square

Standard USB Accessories

The INSIGHTqc™ Controller provides optimal flexibility with the range of plug in accessories to maximize productivity for your manufacturing line. A variety of cables and extension cables are available to customize your production setup.

DIO Box

QC-DIO-8CH

- 8 Inputs/8 Outputs with behavior assignable. In-build 24V power supply.

USB to Serial Adapter

QC-ADPT-1

- For RS232 connection.

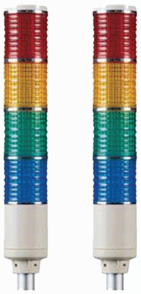
Socket Tray

QC-SKTR

- 4 Positions.

Bar Code Scanners

QC-BC-SCAN-WL Wireless
QC-BC-SCAN-1 Wired-Heavy Duty
QC-BC-SCAN-2 - Wired-Light Duty



Light Tower

QC-TL-4

- 4 LEDs : Red, Orange, Green, Blue.

Bit Tray

IC-BIT-8

- If a bit tray is needed order IC-BIT-8, IC-19PIN-10M & QC-DIO-8CH.

Tool Cables

	(3m)	(6m)	(10m)
DC Tool Cables			
Tool Cable (QE2)	CPS2-CORD-3M	CPS2-CORD-6M	CPS2-CORD-10M
90° tool cable (QE2)**	-	CPS2-CORD-6M-90	-
Tool cable (QM, QE4/6/8)	GEA40-CORD-3M	GEA40-CORD-6M	GEA40-CORD-10M
90° tool cable (QM, QE4/6/8)**	GEA40-CORD-3M-90	GEA40-CORD-6M-90	GEA40-CORD-10-90
	(10m)	**(20m)**	**(40m)**
DC Tool Extenson Cables			
Extension cable	GEA40-EXT-10M	GEA40-EXT-20M	GEA40-EXT-40M
	(1,25m)	**(2m)**	**(3m)**
90 extension cable***	GEA40-INT-01	GEA40-INT-04	GEA40-INT-08

** 90° on tool side.
*** 90° on controller side. Extension cable requires a tool cable. Other lengths available.

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www.ingersollrandproducts.com

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