



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?	<ul style="list-style-type: none"> • Save on selection, training and installation costs • Reduce errors and downtime • Remove user dependencies 	<ul style="list-style-type: none"> • Reduce line rebalancing costs • Easy line integration • Remove device dependency 	<ul style="list-style-type: none"> • Get the job right, first time, every time • Assurance via traceability • Optimize your productivity
HOW DOES INGERSOLL RAND OFFER THIS?	<ul style="list-style-type: none"> • Intuitive, Visual Programming Interface • Plug and Play Accessories and Protocols • Backwards Capability • Integrated Backup and Recovery • Bundled Controller Options • Context Specific Integrated HELP 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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

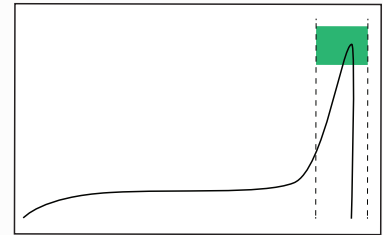
The web-based software eliminates device dependencies and enables full programming capability with any device that can run an Internet browser, including smart phones, tablets or computers. The INSIGHTqc™ controller is easy to integrate with the manufacturing line, provides flexible logic controls for 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.

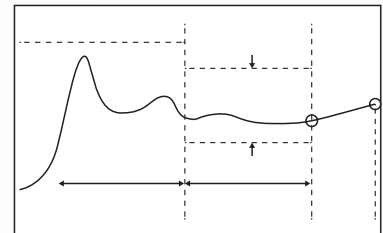
Capabilities

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	•	•	•	•					

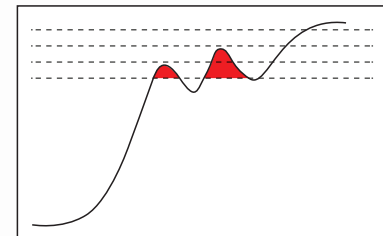
Torque/Angle Control



Prevailing Torque

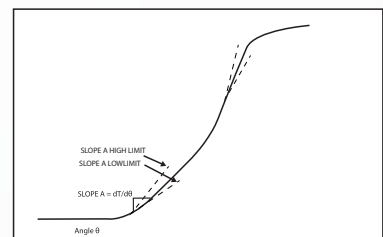


Stick Slip Detection

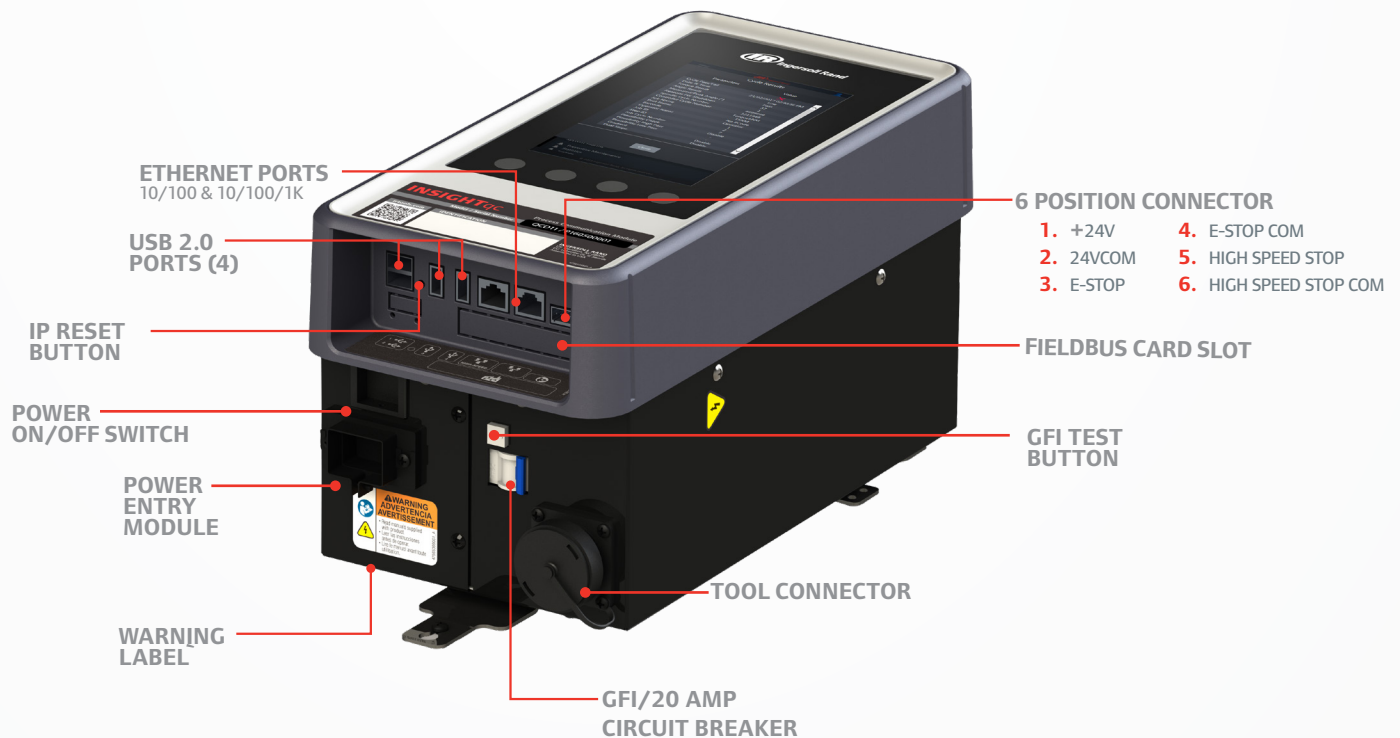


Statistical Process Control	
Statistic Status	Description
Mean	Statistical average - used to derive the central tendency of the tightening data of a particular PSET
Capability	Calculated as $(6 * \sigma / \text{Mean}) * 100$ on a particular PSET
Pass %	Indicates the % of the cycles that have a cycle 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: $\text{MEAN Result Value} - \text{TARGET Result Value}$ for a particular PSET
Range	Calculated as: $\text{MAX Result Value} - \text{MIN Result Value}$ 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: $(\text{USL} - \text{LSL}) / (6 * \sigma)$
CAM	Calculated as: $(\text{USL} - \text{USL}) / (6 * (\text{W} / \text{d} * \text{S}))$
PPK	Process Performance Index, Calculated as: $\text{MIN} ((\text{MEAN} - \text{LSL}) / (3 * \sigma) \text{ OR } (\text{USL} - \text{MEAN}) / (3 * \sigma))$

Gradient/ Slope Analysis



Specifications



Hardware	
Weight (Kg)	5.6
Volume (dm ³)	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 Protocol 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

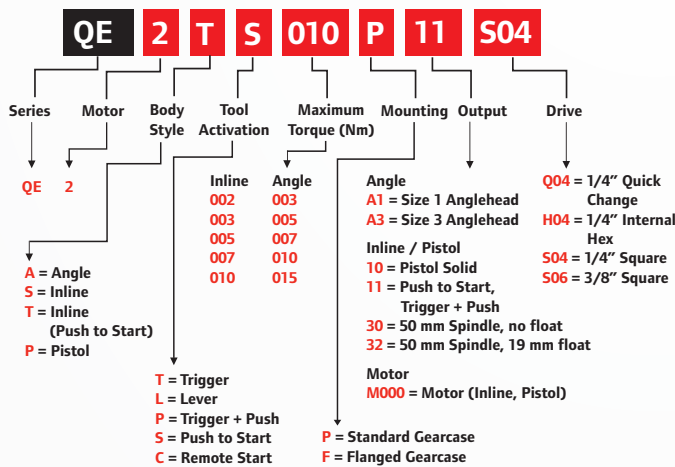
The INSIGHTqc™ Controller is 100% compatible with our QE and QM tools. With the INSIGHTqc™, these tools will have 50K tightening records and 50K tightening traces – compared to 10 to 30K in competitors’ products – which will let users understand all facets of the tightening process – torque, angle, time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

Model	SYSTEM OPTIONS				FIELDBUS OPTIONS				MES OPTIONS				
	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	•	•		•	•	•	•	•	•

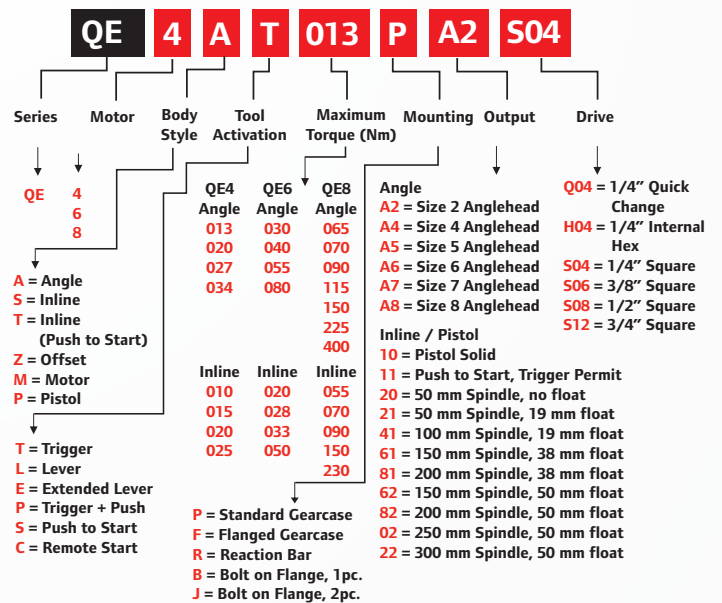
DC Electric Nutrunners



QE2 Series DC electric nutrunners



QE Series DC electric nutrunners



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-built 24V power supply.



USB to Serial Adapter

QC-ADPT-1

- For RS232 connection.



Socket Tray

QC-SKTR

- 4 Positions.

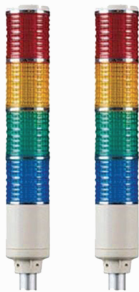


Bar Code Scanners

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 Extension 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.



Ingersoll Rand (NYSE:IR) advances the quality of life by creating comfortable, sustainable and efficient environments. Our people and our family of brands—including Club Car®, Ingersoll Rand®, Thermo King® and Trane®—work together to enhance the quality and comfort of air in homes and buildings; transport and protect food and perishables; and increase industrial productivity and efficiency. We are a \$13 billion global business committed to a world of sustainable progress and enduring results.



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