



INSIGHTqc™ Controller



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, 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, 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

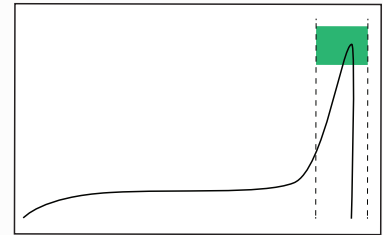
The web-based software eliminates device dependencies and enables full programming capability with any device that can run an Internet browser, including smart phones, tablets or computers. The INSIGHTqc™ controller is easy to integrate with the manufacturing line, provides flexible logic controls for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

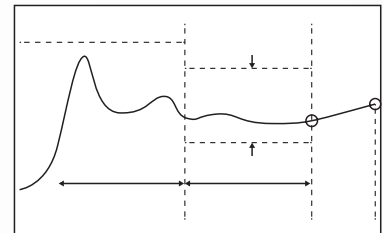
Capabilities

Software Capability									
	Standard	F	M	FM		Standard	F	M	FM
Software Feature	•	•	•	•	License Update	•	•	•	•
Home Screen	•	•	•	•	License Activate	•	•	•	•
JOB Setup	•	•	•	•	Date & Time Settings	•	•	•	•
PSET Setup	•	•	•	•	System Initialization	•	•	•	•
ALL 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	•	•	•	•	Atlas Copco Open Protocol			•	•
Preventative Maintenance Alarms	•	•	•	•	Atlas Copco ToolsNet			•	•
Tool Calibration	•	•	•	•	VW XML 2.1			•	•
Factory Reset	•	•	•	•	Nissan Serial EOR			•	•
Network System Discovery	•	•	•	•					

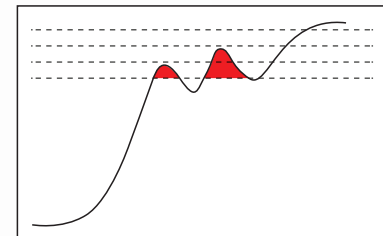
Torque/Angle Control



Prevailing Torque

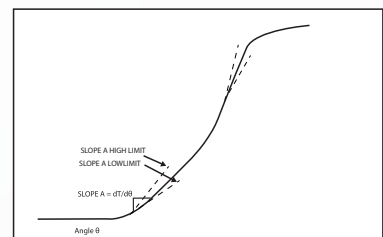


Stick Slip Detection




Statistical Process Controls	
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






SIMPLE



FLEXIBLE









CAPABLE

Insightq c™ Controller

By the Numbers

Software

 <p>256 JOBS & PSETs</p>	 <p>31 Steps</p>	 <p>5 Alarms</p>	 <p>User Logins</p>	 <p>Web-Based Programming</p>	<p>NOT Required</p>  <ul style="list-style-type: none"> • PC Software • PC License
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- ✓ Logic rules for JOB sequencing
- ✓ Barcode function: USB, Serial, Ethernet
- ✓ Manual barcode entry option
- ✓ Tubenut controls (configurable modes)
- ✓ Quick programming mode
- ✓ Advanced programming mode
- ✓ Unrestricted programming from controller or remote
- ✓ Embedded, context-specific help
- ✓ Email statistics alarms direct from controller
- ✓ Multi-language support
- ✓ Onboard tool diagnostics







ONBOARD DATA STORAGE

<ul style="list-style-type: none"> ✓ Removable SSD Card that stores ALL settings and data ✓ Complete controller settings and data recovery through SSD swap ✓ Tightening curve displayed on Home screen of controller ✓ Full USB Backup and Restore Function 	<p>50,000</p> <ul style="list-style-type: none"> • Audit Logs • Event Logs • System Logs • Tightening Results • Tightening Curves
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Connectivity

<p>4 Fieldbus Options</p> <p>Ethernet IP, ProfiNet, ProfiBus, DeviceNet</p>	<p>5 MES Protocol Options</p> <p>Open Protocol, ToolsNet, Toyota PokeYoke, VW XML, IR Ethernet EOR, Nissan Serial EOR</p>
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Hardware

 <p>40_{sec} Boot Time 40 Seconds</p>	 <p>8 Tool Families</p>	 <p>109 Volume 10.9 dm³</p>	 <p>4 USB 2.0 Ports</p>	 <p>7" Touch Screen 7 Inch Color</p>	 <p>2 Ethernet Ports 10/100, 10/100/1K</p>
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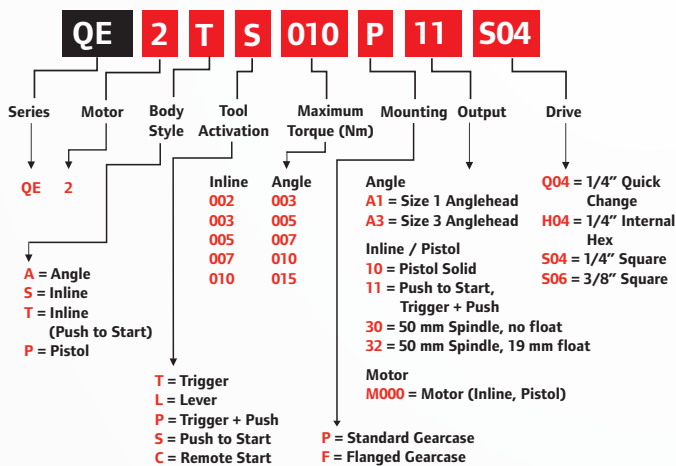
Controller Models

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.

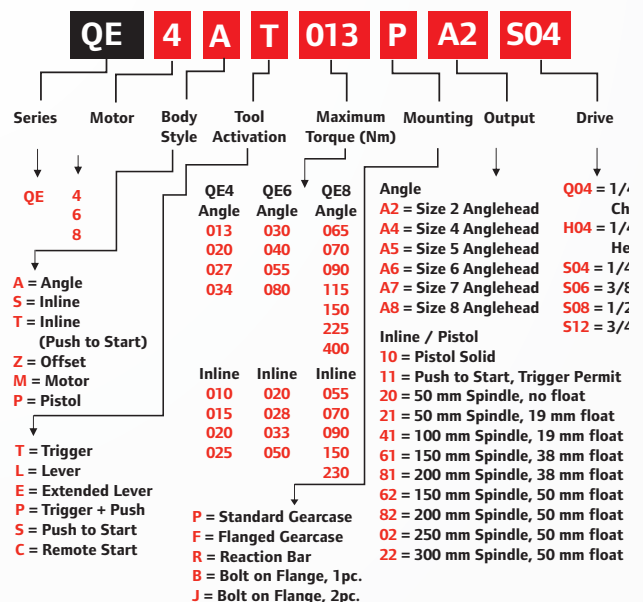
Model	SYSTEM OPTIONS				FIELDBUS OPTIONS				MES OPTIONS				
	Series	Display	Power	Hardware	Ethernet/P	ProfiNet	ProfBUS	DeviceNET	IR Ethernet EOR	Atlas Copco Open Protocol	ToolsNet	VW XML 2.1	Nissan SerialEOR
QCD11	QC	Display	120V AC	Standard					•				
QCD11-F	QC	Display	120V AC	Standard	•	•			•				
QCD11-M	QC	Display	120V AC	Standard	•				•	•	•	•	•
QCD11-FM	QC	Display	120V AC	Standard	•	•			•	•	•	•	•
QCD12-F	QC	Display	120V AC	Standard plus ProfiBus Card	•	•	•		•				
QCD12-FM	QC	Display	120V AC	Standard plus ProfiBus Card	•	•	•		•	•	•	•	•
QCD13-F	QC	Display	120V AC	Standard plus DeviceNet Card	•	•		•	•				
QCD13-FM	QC	Display	120V AC	Standard plus DeviceNet Card	•	•		•	•	•	•	•	•
QCD21	QC	Display	230V AC	Standard					•				
QCD21-F	QC	Display	230V AC	Standard	•	•			•				
QCD21-M	QC	Display	230V AC	Standard					•	•	•	•	•
QCD21-FM	QC	Display	230V AC	Standard					•	•	•	•	•
QCD22-F	QC	Display	230V AC	Standard plus ProfiBus Card	•	•	•		•				
QCD22-FM	QC	Display	230V AC	Standard plus ProfiBus Card	•	•	•		•	•	•	•	•
QCD23-F	QC	Display	230V AC	Standard plus DeviceNet Card	•	•		•	•				
QCD23-FM	QC	Display	230V AC	Standard plus DeviceNet Card	•	•		•	•	•	•	•	•

DC Electric Nutrunners

QE2 Series DC electric nutrunners



QE Series DC electric nutrunners



System Accessories

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

Model	Description	Order Number
QC-SKTR	Socket Tray, 4 Position	47615828001
QC-TL-4	USB Tower Light	47601629001
QC-ADPT-1	Serial Interface Adaptor	47601630001
QC-DIO-8CH	Digital I/O Box, 8 Channel	47617332001
QC-BC-SCAN-1	Bar Code Scanner, Cabled USB; HD	47625754001
QC-BC-SCAN-2	Bar Code Scanner, Cabled USB; LD	47625755001
QC-BC-SCAN-WL	Bar Code Scanner, HD, Wireless with USB Cradle	47625756001
QC-DIO-366-K	DIO Box Mounting Bracket Kit	47628739001



DIO Box



USB to Serial Adapter



Socket Tray



Bar Code Scanners



Bit Tray



Light Tower

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 cool cable (qm, qe4/6/8)	GEA40-CORD-3M-90	GEA50-CORD-6M-90	GEA40-CORDX-10-90
	(10m)	(20m)	(40m)
DC Tool Extension Cables			
Extension cable	GEA40-EXT-10M	GEA40-EXT-20M	GEA40-EXT-40M
	(50")	936	
90 extension cable***	GEA40-INT-01		

*** 90 degree extension cable requires a tool cable. Other lengths available.



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Ingersoll Rand (NYSE:IR), driven by an entrepreneurial spirit and ownership mindset, is committed to helping make life better. We provide innovative and mission-critical industrial, energy, medical and specialty vehicle products and services across 40+ respected brands designed to excel in even the most complex and harsh conditions where downtime is especially costly. Our employees connect to customers for life by delivering proven expertise, productivity and efficiency improvements.