Ingersoll Rand

INSIGHTqc™ CONTROLLER

Simple, Flexible and Capable Solutions

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?	• 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, 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

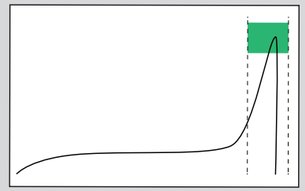
SOFTWARE CAPABILITY

	Standard	F	M	FM		Standard	F	M	FM
Software Feature	•	•	•	•	License Update	•	•	•	•
Home Screen	•	•	•	•	License Activate	•	•	•	•
JOB Setup	•	•	•	•	Date & Time Settings	•	•	•	•
PSET Setup	•	•	•	•	System Initialization	•	•	•	•
ALL Tighteing 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 Managmeent	•	•	•	•
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	•	•	•	•					

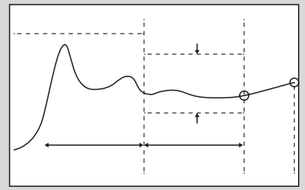
STATISTICAL PROCESS CONTROLS

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 / 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)

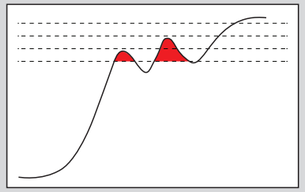
TORQUE/ANGLE CONTROL



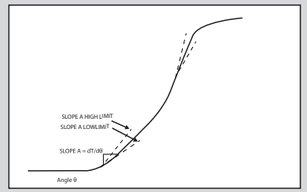
PREVAILING TORQUE



STICK SLIP DETECTION



GRADIENT/ SLOPE ANALYSIS



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SPECIFICATIONS

INSIGHTqc™ CONTROLLER
BY THE NUMBERS

Software

256 JOBs PSETs

31 Steps per PSET

5 Alarms

User Logins

Web-Based Programming

NOT Required
- PC Software
- PC License

- 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
- Trade transfer over open protocol

ONBOARD DATA STORAGE

- 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

50,000

- Audit Logs
- Event Logs
- System Logs
- Tightening Results
- Tightening Curves

Connectivity

4 Fieldbus Options — Ethernet IP, ProfiNet, ProfiBus, DeviceNet

7 MES Protocol Options — Open Protocol, Ford Open Protocol, ToolsNet, Toyota PokeYoke, VW XML, IR Ethernet EOR, & Nissan Serial

Hardware

40 sec Boot Time — 40 Seconds

8 Tool Families

109 Volume — 10.9 dm^3

4 USB — 2.0 Ports

7" Touch Screen — 7 Inch Color

2 Ethernet Ports — 10/100, 10/100/1K

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/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 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	Angle
002	003
003	005
005	007
007	010
010	015

Mounting:
P = Standard Gearcase
F = Flanged Gearcase

Output:
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)

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	QE6 Angle	QE8 Angle
013	030	065
020	040	070
027	055	090
034	080	115
		150
		225
		400

Inline	Inline	Inline
010	020	055
015	028	070
020	033	090
025	050	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" Ch
H04 = 1/4" He
S04 = 1/4"
S06 = 3/8"
S08 = 1/2"
S12 = 3/4"

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 Extenson 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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Learn more at www.ingersollrand.com

Ingersoll Rand (NYSE:IR), driven by an entrepreneurial spirit and ownership mindset, is dedicated to helping make life better for our employees, customers and communities. Customers lean on us for our technology-driven excellence in mission-critical flow creation and industrial solutions across 40+ respected brands where our products and services excel in the most complex and harsh conditions. Our employees develop customers for life through their daily commitment to expertise, productivity and efficiency.