The force in torque management

CheckStar Multi

Rotary Torque Transducers

The CheckStar Multi raises the standard for dynamic torque and angle measurement of all continuous drive and impulse tools, with proven reliable performance in thousands of applications worldwide.

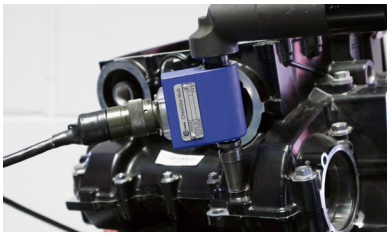
The CheckStar Multi rotary torque transducer incorporates a 360° light ring, giving the user visual feedback of the status of a tightening when used with a Crane readout or data collector.

The CheckStar fits in-line between the assembly tool and the fastener, measuring the actual torque applied and the angular rotation of the fastener, under production conditions.

Whatever the vibration and shock loads experienced, CheckStar Multi's patented contact system ensures a connection is always maintained between the readout and the strain gauges. Inferior systems can suffer from "brush bounce" that ultimately leads to unreliable torque readings.

The low inertia design of the CheckStar Multi ensures accurate and repeatable measurement of high speed transients, such as the point of shut-off on continuous drive tools and the pulsing of impulse tools.

Using on board intelligence, the transducer is automatically recognised by a Crane data collectors, eliminating set-up errors and enabling logging of serial numbers against measurements for complete traceability.



Key Features

- In-line rotary torque transducer with optional angle measurement
- Low inertia benefits accurate dynamic measurement
- Low friction eliminates wear and supports accuracy
- Patented design ensures no brush bounce even when used with impulse tools
- Suitable for use with all continuous drive tools, impulse tools and torque wrenches
- Automatic transducer recognition with Crane data collectors and readout devices
- Compatible with most industry standard data collectors & readouts
- 360° light ring showing fastener status, when used with Crane devices
- Square and hex drives available
- Available in various sizes ranging from 1Nm up to 5000Nm
- Can be supplied with a cable or our RFm wiresless communication device

RFm Wireless Communications Device

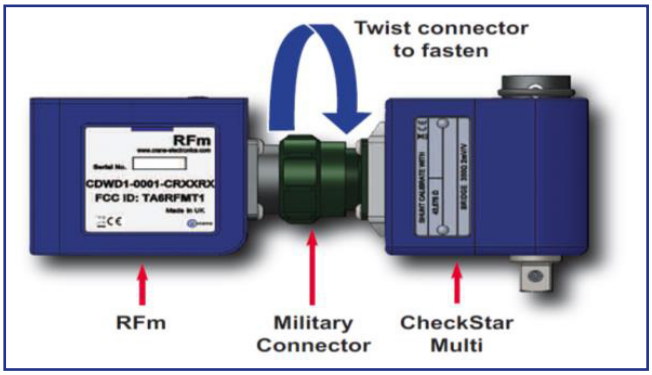
The RFm allows the CheckStar Multi to be used wirelessly when used in conjunction with a TorqueStar Pro data collector.

Previously, a CheckStar Multi could only connect to a data collector via a cable. This addition to the Crane family allows the CheckStar Multi to be situated in areas where long lengths of cable would be a hazard or impractical. The RFm reads the torque and angle values in real-time and converts them into digital values. It also analyses the digital samples using measurement algorithms to calculate properties of the fastening such as Peak or Click.

The RFm communicates the final fastening readings using RF, giving a range of approximately 10m. If the RFm for any reason loses its link to the data collector, it continues to work offline, storing up to 200 readings. It is simple to 'pair' (associate the connection) an RFm with our data collectors and it contains its own power source which is a small rechargeable Lithium Ion battery.

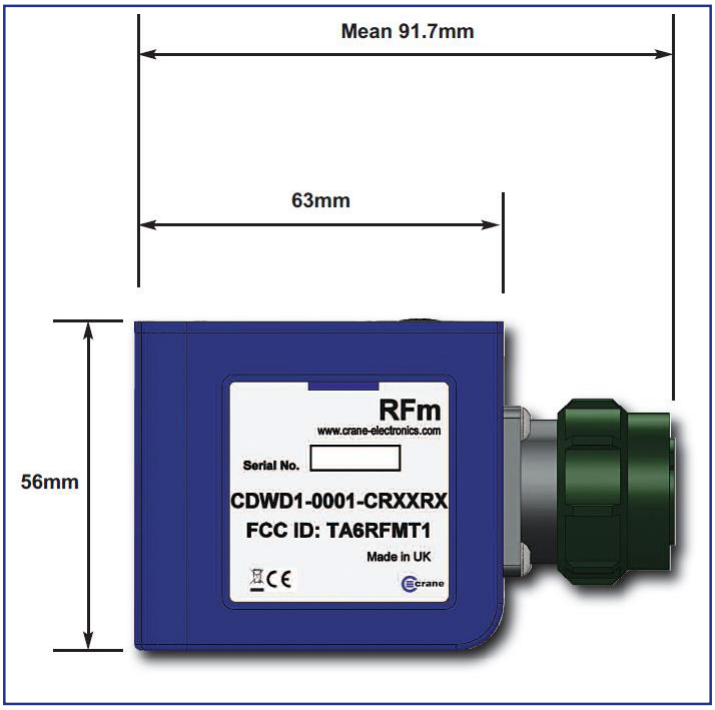
Connecting to the CheckStar Multi

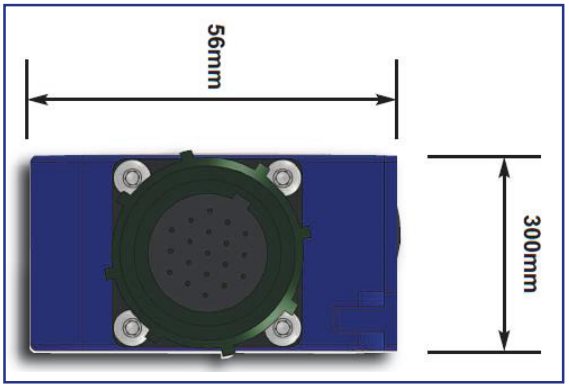
The RFm connects to the CheckStar Multi via a military connector. The outer shell of the RFm military connector is rotated clockwise to fasten and rotated anti-clockwise to unfasten (when viewed from the RFm towards the CheckStar Multi). The outer shell of the military connector has ribs to help grip during rotation. The action is a bayonet type so during use the connection will not come undone.

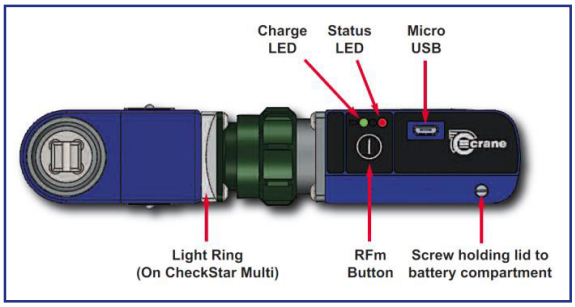


Weight and Dimensions of the RFm

Weight: Approx. 142g







RFm - Technical Specifications

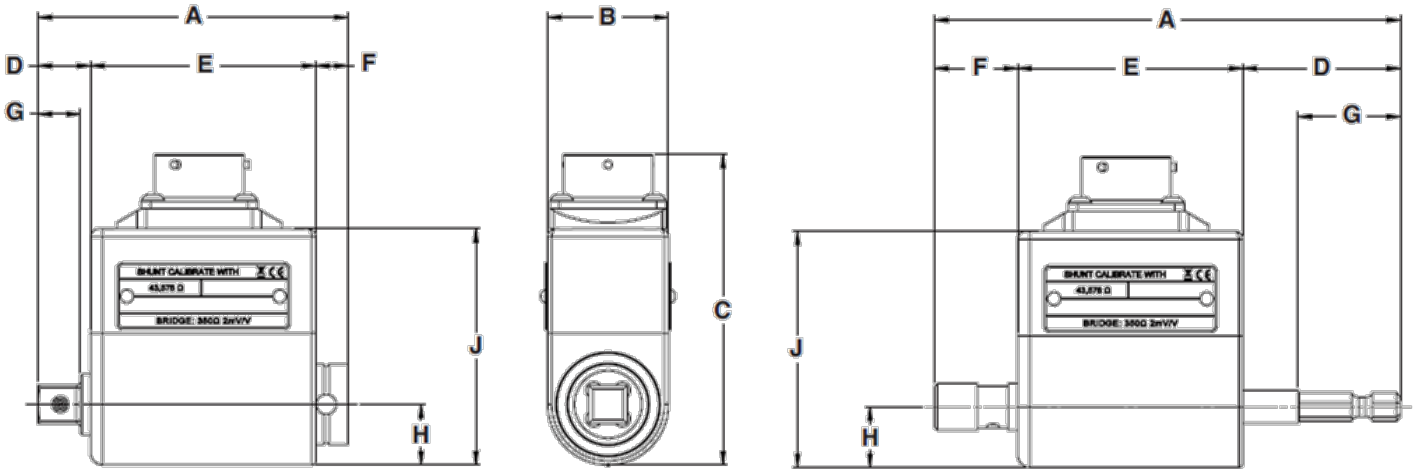
Physical Measurement	Bi-directional torque and angle* and pulse count.
Measurement Modes	Peak: Capture of highest torque value during the cycle Click: Capture of click point torque during click mechanism operation Pulse: Special algorithm for use with impulse tools, incorporating pulse count
Plug & Play	The following information is read from the memory incorporated in the CheckStar Multi: Torque range (span), angle encoder PPR, transducer serial number, calibration due date and torque @2mV/V.
Reading Storage	RFm can store up to 200 readings in off-line mode
LEDs	Status LED and Charge LED, used when charging battery internally Note. The RFm also controls the CheckStar Multi light ring during operation
Torque Measurement	Resolution to 0.006% of transducer span. Sampled every 20 micro-seconds (50,000 p/s)
Zero Stability	< 0.1% FSD / °C
Static Accuracy	+/-0.2% FSD of connected transducer
Angle Measurement*	Sample every 1000 micro-seconds (1,000) per second. Automatically adapts to PPR of angle transducer using quadrature phase measurement
Frequency Response	A low pass Bessel Filter is employed for conditioning the transducer signal to 'eliminate noise' from the tool measurement. User selectable from 75Hz to 4608Hz
Batteries	Rechargeable Lithium Ion battery. Useable battery life of 6 hours with normal usage Capacity 600mAh. 3.7V
Ports	19-pin military connector for CheckStar Multi. USB for diagnostics and battery charging
Communication	Communicates using 2.400GHz RF

*Angle measurement is available when using CheckStar Multi's with built-in angle encoder

CheckStar Multi - Technical Specifications

Special Features	Patented mechanism for reliable measurement of impulse tools. Integrated light ring giving visual indication of fastening status
Tool Compatibility	All assembly and torque tools including impulse tools (not impact tools) Joint kit recommended for off-line measurement of continuous drive and impulse tools to represent joint conditions
Physical Measurements	Bi-directional torque (clockwise calibration unless otherwise specified) Optional bi-directional angle encoder (also enables RPM measurement on suitable indicator).
Automatic Transducer	A Crane readout or data collector can automatically read the following recognition information from the CheckStar Multi; torque range, angle encoder data, serial number, calibration due date
Calibration	Issued with a calibration certificate traceable to National & International standards
Standard Crane Calibration	10 points; single direction (clockwise unless otherwise requested); 10% to 100% of nominal Recalibration is recommended every 12 months
Optional Calibrations:	
5% Crane Calibration	11 points; single direction (clockwise unless otherwise requested). 5% to 100% of nominal torque
Bi-Direction Crane	10 points; each direction; from 10% to 100% of nominal torque
Class 1 Crane Calibration	± 0.5% of reading for the primary classification range
UKAS Calibration	Calibration to BS 7882
Construction	Patented slip ring mechanism eliminating signal losses due to brush bounce and enabling low running friction in either direction (<0.1% rated torque or 0.1Nm, whichever is greater); design is durability tested to >100 million revolutions with no measurable degradation of electrical performance Aluminium housing Stainless steel shaft Overload capacity: 125% rated torque Square drives to ANSI B107-4 – 1982; BS4006 – 1992; DIN 3121 – 1987 Male Square drive fitted with detent pin that may be removed if required Female Square drive supplied with retaining pin (may be removed if required) Female Hex drive fitted with ball and spring retainer
Connections	Compatible with BS 9522 - F0017. Cable mounting type 14-19S, Complies with MIL-C-26482
Zero Stability	< ± 0.1% FSD/°C
Static Accuracy	± 0.25% FSD
Operating Environment	5 to 40°C (-10 to 60°C with reduced specification
Temperature	Humidity: 10 to 75% non-condensing Ingress protection rating: IP40
Warranty	2 years' parts and labour against faulty workmanship or materials. The second year of warranty is only valid if the unit has been recalibrated at an authorised Crane Electronics Service Centre after the first year

Weight and Dimensions of the CheckStar Multi

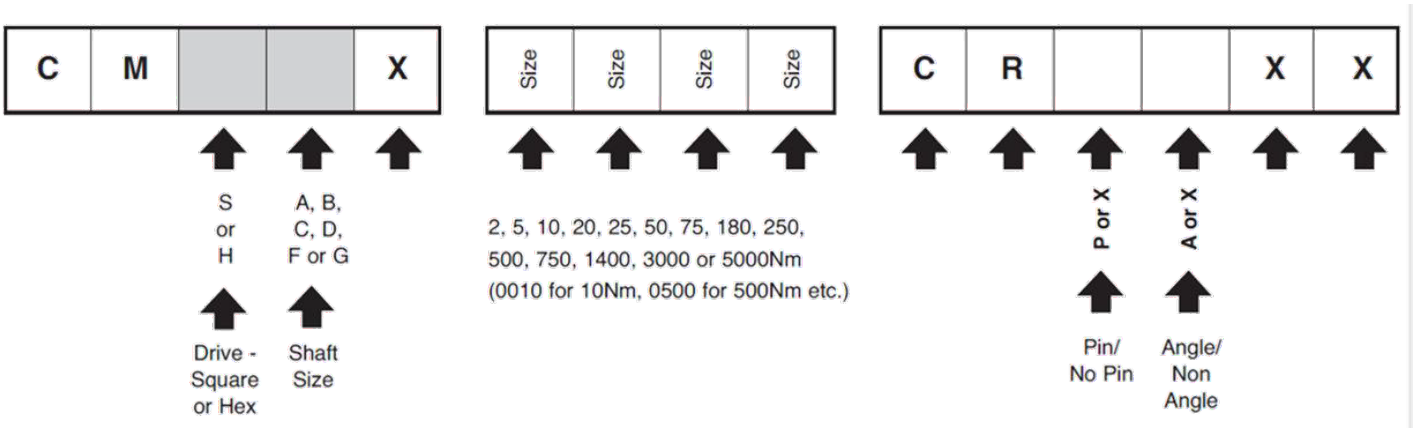


Dimensions in mm										
Drive	A	B	C	D	E	F	G	H	J	Weight (Grams)
1/4” Hex	115.8	30.0	73.0	39.2	56.0	20.6	25.5	13.2	54.5	210
1/4” Sq.	71.5	30.0	73.0	10.3	56.0	5.2	7.3	13.2	54.5	200
3/8” Sq.	77.0	30.0	77.1	12.9	56.0	8.1	10.5	15.0	58.6	240
1/2” Sq.	87.0	52.0	88.0	17.0	58.0	12.0	14.7	21.0	69.5	430
3/4” Sq.	106.0	52.0	98.6	25.3	60.0	20.7	21.4	26.0	80.1	760
1” Sq.	125.0	63.0	110.1	31.8	64.5	28.7	26.0	32.0	91.6	1500
1 1/2” Sq.	181.0	102.0	153.7	43.8	86.5	50.7	39.3	51.0	136.0	5700

Shaft Size	Rating Options Available	Product Code Ref.
¼”	1, 2, 5, 10, 20Nm	A
⅜”	25, 50, 75Nm	B
½”	180Nm	C
½”	250Nm	D
¾”	250 or 500Nm	D
1”	750 or 1400Nm	F
1 ½”	3000 or 5000Nm	G

5, 10 & 20Nm available in Hex or Square Drive - Hex drive with no pin.
ALL square drive transducers are supplied with pin.

Product Code Creator



Product Code	Description
CMHAX-0001-CRXXXX	1/4" Hex 1Nm CheckStar Multi
CMHAX-0001-CRXAXX	1/4" Hex 1Nm CheckStar Multi w/ Angle
CMHAX-0002-CRXXXX	1/4" Hex 2Nm CheckStar Multi
CMHAX-0002-CRXAXX	1/4" Hex 2Nm CheckStar Multi w/ Angle
CMHAX-0005-CRXXXX	1/4" Hex 5Nm CheckStar Multi
CMHAX-0005-CRXAXX	1/4" Hex 5Nm CheckStar Multi w/ Angle
CMHAX-0010-CRXXXX	1/4" Hex 10Nm CheckStar Multi
CMHAX-0010-CRXAXX	1/4" Hex 10Nm CheckStar Multi w/ Angle
CMHAX-0020-CRXXXX	1/4" Hex 20Nm CheckStar Multi
CMHAX-0020-CRXAXX	1/4" Hex 20Nm CheckStar Multi w/ Angle
CMSAX-0005-CRPXXX	1/4" Square 5Nm CheckStar Multi
CMSAX-0005-CRPAXX	1/4" Square 5Nm CheckStar Multi w/ Angle
CMSAX-0010-CRPXXX	1/4" Square 10Nm CheckStar Multi
CMSAX-0010-CRPAXX	1/4" Square 10Nm CheckStar Multi w/ Angle
CMSAX-0020-CRPXXX	1/4" Square 20Nm CheckStar Multi
CMSAX-0020-CRPAXX	1/4" Square 20Nm CheckStar Multi w/ Angle
CMSBX-0025-CRPXXX	3/8" Square 25Nm CheckStar Multi
CMSBX-0025-CRPAXX	3/8" Square 25Nm CheckStar Multi w/ Angle
CMSBX-0050-CRPXXX	3/8" Square 50Nm CheckStar Multi
CMSBX-0050-CRPAXX	3/8" Square 50Nm CheckStar Multi w/ Angle

Product Code	Description
CMSBX-0075-CRPXXX	3/8" Square 75Nm CheckStar Multi
CMSBX-0075-CRPAXX	3/8" Square 75Nm CheckStar Multi w/ Angle
CMSCX-0100-CRPXXX	1/2" Square 100Nm CheckStar Multi
CMSCX-0100-CRPAXX	1/2" Square 100Nm CheckStar Multi w/ Angle
CMSCX-0180-CRPXXX	1/2" Square 180Nm CheckStar Multi
CMSCX-0180-CRPAXX	1/2" Square 180Nm CheckStar Multi w/ Angle
CMSCX-0250-CRPXXX	1/2" Square 250Nm CheckStar Multi
CMSCX-0250-CRPAXX	1/2" Square 250Nm CheckStar Multi w/ Angle
CMSDX-0250-CRPXXX	3/4" Square 250Nm CheckStar Multi
CMSDX-0250-CRPAXX	3/4" Square 250Nm CheckStar Multi w/ Angle
CMSDX-0500-CRPXXX	3/4" Square 500Nm CheckStar Multi
CMSDX-0500-CRPAXX	3/4" Square 500Nm CheckStar Multi w/ Angle
CMSFX-0750-CRPXXX	1" Square 750Nm CheckStar Multi
CMSFX-0750-CRPAXX	1" Square 750Nm CheckStar Multi w/ Angle
CMSFX-1400-CRPXXX	1" Square 1400Nm CheckStar Multi
CMSFX-1400-CRPAXX	1" Square 1400Nm CheckStar Multi w/ Angle
CMSGX-3000-CRPXXX	1.5" Square 3000Nm CheckStar Multi
CMSGX-3000-CRPAXX	1.5" Square 3000Nm CheckStar Multi w/ Angle
CMSGX-5000-CRPXXX	1.5" Square 5000Nm CheckStar Multi
CMSGX-5000-CRPAXX	1.5" Square 5000Nm CheckStar Multi w/ Angle

All CheckStar Multi's are supplied with a 12-month Calibration Certificate and if applicable, Angle Certification.

For pricing, availability or further technical information about the CheckStar Multi and RFm, please contact us online at www.crane-electronics.com or alternatively, email us at sales@crane-electronics.

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Crane Electronics has a worldwide network of dedicated distributors located across the globe. For your nearest official Crane distributor, please visit **www.crane-electronics.com**.