

## Series 420 Specification Metric Non-contact Rotary Torque Transducers

**DESCRIPTION** Datum Electronics has further extended its standard range of torque transducers to cater for higher rotary speeds and an increased number of torque ranges.

The 420 Series torque transducers operate with no direct contact from the rotor to the stator, they are available either as complete transducers or as separate rotor/stator assemblies for test rig and OEM applications. They provide a system accuracy of 0.1% of full scale either into a rack-mounted indicator, a PC or a control system.

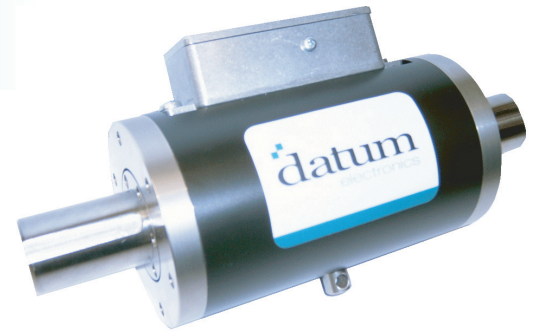
The standard range of housings cater for torque ranges from 10Nm up to 10kNm, the same modular elements have been applied to bespoke transducers for use down as low as 1Nm and up to 200kNm. The 420 Series is compatible with Datum's full range of torque indicators (Type 300 torque indicator, Type 310 portable torque and speed indicator, Type 370 torque, speed and power indicator) and a range of data-logging software including TorqueLog.

Torque measurement applications often benefit from an engineering input at an early stage in terms of the application of standard transducers or the design of a bespoke unit. We at Datum Electronics have an experienced design team with a wealth of experience and we are confident that we can engineer a design solution which will more than meet your requirements.

Among the enhanced features are the additional options for:

- Direct Analogue Output
- Direct Serial Outputs
- Increased Sampling Rates
- Analysis Tools

The new range is complemented by Datum's ability to engineer special torque solutions with Transducers, Indicators and Software tailor made to meet customer requirements.



### SERIES M 420 TECHNICAL RANGE

The Series 420 Torque Transducer range has been extended with new models together with rationalization of existing models. This consolidation allows new technical features to be added, benefiting you with more competitive pricing.

We have standardised our range of torque transducers for clear and simple applications and specifications.

Size 1	0-5 Nm to 0-100Nm
Size 2	0-100Nm to 0-500Nm
Size 3	0-600Nm to 0-2000 Nm
Size 4	0-2500Nm to 0-10,000Nm

If your requirements dictate anything above our standard transducer range of 10,000Nm we can and have engineered torque measurement transducers up to 250,000Nm.

## FEATURES

### Series 420 Non-Contact Rotary Torque Transducer

- Non-Contact Torque Transducers and Shaft Installations
- High Accuracy
- Digital Data
- Simple Instrumentation
- Suitable for use on test rig applications and on permanent installations

### Types of specification

- Metric Non-Contact Torque Transducers (Type M420)
- Imperial Replacement Non-Contact Torque Transducers (Type R420)

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**TECHNICAL SPECIFICATIONS**

Size 1	0-5 Nm to 0-100Nm
Size 2	0-100Nm to 0-500Nm
Size 3	0-600Nm to 0-2000 Nm
Size 4	0-2500Nm to 0-10,000Nm

These are our standard size ranges of torque transducers. If your requirements dictate anything above our standard transducer range of 10,000Nm we can and have engineered torque measurement transducers up to 250,000Nm.

Torque Output	Digital RS232
Speed Output	Digital RS232

Analogue Output Options	4-20mA / +/-10Vdc for torque and speed
Serial Data Options	RS485 / CAN Bus

Signal Transmission	Non-Contact Inductive
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Combined Error (including non-linearity, hysteresis, signal transmission)	0.1% (standard) 0.05% of full scale to order
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Output Sample Rate	10 - 100sps (see notes for higher data rates to 5KHz)
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Operating Temperature Range	- 10 to + 70C
Service Temperature Range	- 20 to 85C ( - 20 to + 125C Series 430*)
Storage Temperature Range	- 40 to + 85C

\* If you require a greater temperature range than the ones quoted, the Series 430 torque transducer can be adapted to meet your needs. Contact Datum Electronics for further information (T: +44 (0) 1983 810310 E: sales@datum-electronics.co.uk.)

Temperature Effect on Span	0.001% per degree C
Temperature Effect on Zero	0.002% per degree C
Calibration normal temp	22 degree C

Environmental Protection	IP54 (IP65 to order if required)
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Cable Length	4 metres (standard) longer if required
Connection	Connector (TRIAD01 4-Way Plug) transducer
Mechanical Overload	150% of rated load (standard) up to 400% if required
Signal Convention	+ ve clockwise - ve anti-clockwise

Power Supply	11 - 15 Vdc, (24Vdc and 110 / 240Vac)
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Speed Measurement (not effected by oil / dust etc...)	Integral Magnetic pick off
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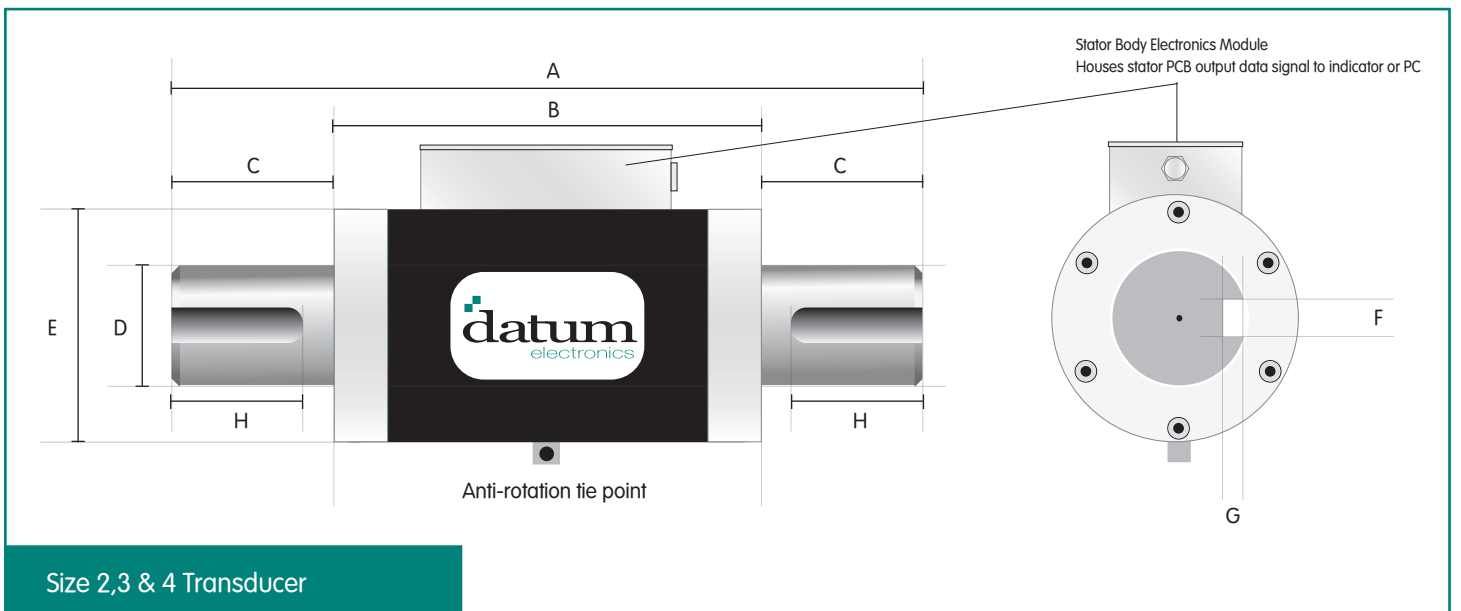
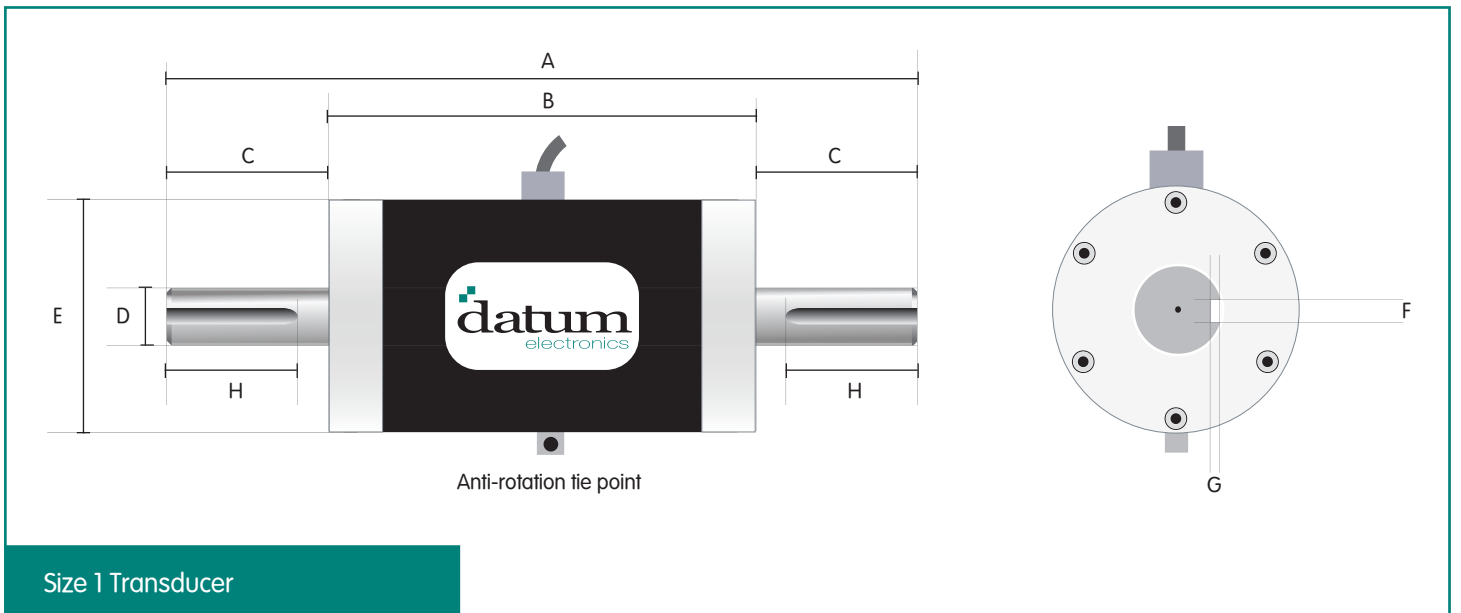
Other Options available	Fast data in burst mode for transient analysis to 30000Hz AC Coupled signal output Signal Filtering Shaft Torque, Bending and Thrust Outputs Built into customer shaft
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Instrumentation	Type 370D / Type 310D / Type 300D and Datum Torque-Log Software
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**DIMENSIONS**

		Size 1	Size 2	Size 3	Size 4
A	Total length	184 mm	240 mm	315 mm	425 mm
B	Stator body length	128 mm	128 mm	119 mm	200 mm
C	End of stator body - to end of shaft	28 mm	56 mm	98 mm	112.5 mm
D	Shaft diameter	15 mm	30 mm	50 mm	75 mm
E	Stator body diameter	60 mm	85 mm	105 mm	150 mm
F	Keyway width	5 mm	8 mm	12 mm	20 mm
G	Keyway depth	3 mm	6.6 mm	6.6 mm	12 mm
H	Keyway length	25 mm	44 mm	78 mm	75 mm



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**TORQUE & LOAD CELL INDICATORS**

Datum Electronics offers a choice of Torque Indicators, which compliment the Series 420 Non-contact Rotary Torque Transducer. These indicators output data in various forms including Torque, Speed, Power, Strain and Load. Datum Electronics have also developed compatible software TorqueLog, which allows data measurements to be recorded direct to your PC or laptop.

**TYPE 324**

**HAND-HELD TORQUE CELL INDICATOR**

Torque, Load or Strain Indication  
Compatible with Load Cells  
0.5-3.5mV/V

Simple to Calibrate  
Load Cell Supply  
Rechargeable Batteries  
Low Cost

Designed for use with all conventional load cells, torque transducers and strain gauges.

The indicator provides a clear 3.5 digit, 12mm LCD high display of load

Designed for use with all conventional load cells, torque transducers and strain gauges.

The indicator provides a 2x 20 Character LCD readout of the load, its units and status.



**TYPE 310**

**HAND-HELD TORQUE CELL INDICATOR**

Torque, Load or Strain Indication  
Compatible with Load Cells  
0-3.2mV/V

Simple to Calibrate  
PC Interface Software  
Outputs 4-20mA, 0-5V  
Tare

Peak Hold  
10 Load Cell Calibration Memory  
Load Cell Supply  
Rechargeable NIMH Batteries

Designed for use with all conventional load cells, torque transducers and strain gauges.

The indicator provides a 2x 20 Character LCD readout of the load, its units and status.



**TYPE 300**

**WALL MOUNTED OR FREE STANDING TORQUE CELL INDICATOR**

Torque, Load or Strain Indication  
Large 5-Digit Displays  
Control Outputs 4-20mA, 0-10Vdc,  
2x relay

Serial Output for PC or Printer  
Peak Hold  
Simple to Calibrate

Designed for use with all conventional load cells, torque transducers and strain gauges. Available in wall mounted or free standing enclosures.



**TYPE 370**

**RACK OR DESKTOP TORQUE CELL INDICATOR**

Torque, Speed and Power Indication  
Large 5-Digit Displays  
Control Outputs 4-20mA, 0-10Vdc,  
2x relay

Serial Output for PC or Printer  
Peak Hold  
Simple to Calibrate

For use with Datum's digital and slip ring torque transducers  
Supplied as a 19" rack or instrument case



**TYPE 686**

**TORQUE TRANSDUCER ANALOGUE OUTPUT MODULE**

Converts digital output from Torque Transducer and converts to either 4 - 20mA or 0 - 10 V Analogue Output.  
LED's indicate level of torque from 0 - 100% rating

- ve torque
- Very low or 0 torque being received
- Mid range level of torque being received
- Very high or 100% torque being received.

Serial port for connection to PC or Laptop  
Compatible with TorqueLog software

Zero reset allows operator to reset zero at current applied Torque Level.  
For use with Datum's Torque Transducer Range



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**TORQUELOG**

**TORQUELOG SOFTWARE**

Datum Electronics TorqueLog software is an easy and convenient way of collecting data. Compatible with Windows 2000 and XP, the TorqueLog software provides a direct readout of Torque, Speed and Power on a PC with additional facilities to read peak torque, log data to Excel and provide data for other applications.

Using a USB or Serial Port (adapter required) from either a Laptop or desktop PC connected through to the Series 420 Torque Transducer, you can have the data that you require at your fingertips, allowing you to process the information which can be printed, displayed graphically or quickly saved as a Microsoft Excel spreadsheet.

The TorqueLog software is easy to use and easy to install, and provides the user with data access at the touch of a button.

**FEATURES**

Datum Electronics TorqueLog software is designed work on a Laptop or Desktop Windows™ PC to provide display of Torque, (or Torque Speed and Power) and Data logging facilities for Datum Electronics Range of Digital contact less Torque Transducers.

The main features are:

- Calibrated Display of Torque in Nm or lbft
- Display of Speed in RPM
- Display of Power in kW or hp
- Peak Torque, Speed and Power Capture Facility
- Data logging of Torque (or Torque Speed and Power)

**DATA LOGGING**

TorqueLog software can log data to the disk drive of your PC in a comma separated value (CSV) format. This format is directly compatible with Microsoft Excel.

Data can be logged, at a selectable interval from the transducer data rate (normally about 15 per second) to once every 30 minutes.

Data is logged as Torque only, or Torque, Speed & Power depending on the display mode selected.

**SYSTEM REQUIREMENTS**

The software is compatible with any Windows™ PC but a basic minimum specification is as listed below.

Pentium™ Desktop or Laptop PC with one spare Com Port (Com1 — Com 4)

Minimum 640 x 480 Screen resolution (Min 256 colour, preferably 16 bit)

Min 5Mb free HDD space

Windows™ 98, 2000 or XP

