

Series 420 Specification Flange / Flange 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 FF 420 TECHNICAL RANGE

The transducer element in this case is a flange-flange coupling with the strain gauges and the rotor electronics mounted in the centre section of the coupling. The signal is transmitted across an inductive link to the stator that is mounted around the centre of the coupling.

It is not limited by bearings, therefore it can be used at higher speeds, and places no bearings loads on to the shaft. The stator needs to be mounted in relation to the shaft within an operating envelope of +/- mm.

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

Size 1, 2 & 3	5Nm to 5-3500Nm
Size 4, 5	4000Nm to 60,000Nm
Size 6	65,000Nm to 100,000Nm

FEATURES

Series 420 Non-Contact Rotary Torque Transducer

- Non-contact Transmission
- High Accuracy
- High Tolerance to Misalignment
- DIN Size Flanges
- 250 - 100,000Nm High Speed Non-contact Torque Transducers

Types of specification

- Flange / Flange Non-Contact Torque Transducers (Type FF420)
- Imperial Replacement Non-Contact Torque Transducers (Type FF420)

Series 420 Specification Flange / Flange
Non-contact Rotary Torque Transducers

TECHNICAL SPECIFICATIONS

Size 1, 2 & 3	5 Nm to 3500 Nm
Size 4 & 5	4000 Nm to 60,000Nm
Size 6	65,000 to 100,000 Nm

These are our standard size ranges of torque transducers. If your requirements dictate anything above our standard transducer range of 100,000Nm 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	Heavy Duty 4-pin connector at the stator (TRIAD01 4-Way Plug). Cable terminates with 9 pin D connector.
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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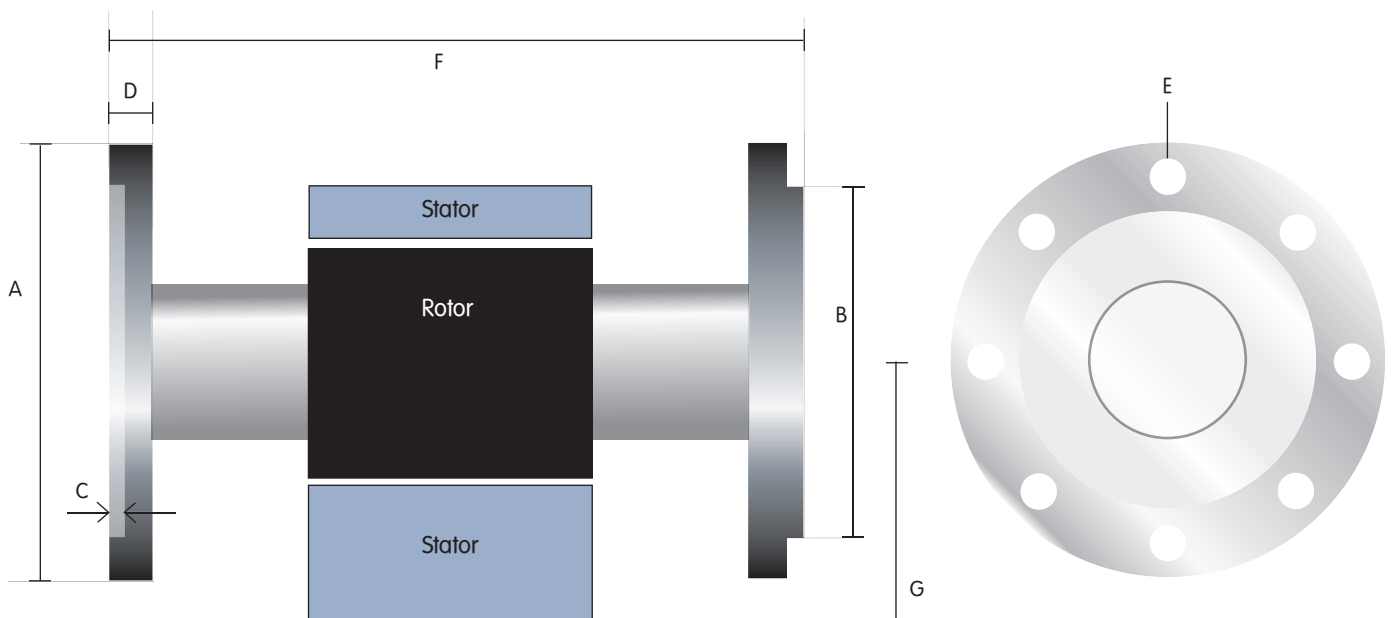
Other Options available	Fast data in burst mode for transient analysis to 30,000Hz AC & DC coupled signal output Signal Filtering Shaft Torque, Bending and Thrust Outputs Built into customer shaft
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Instrumentation	Type 370D / Type 310D / Type 300D and Datum Torque-Log Software
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DIMENSIONS

Torque Rating (Nm)	A	B	C	D	No of Holes	E (+0.2mm)	E (PCD)	F	G	Stator Size
250	100	57	2.5	8	6	8.25	84	100	80	1,2,3
500	100	57	2.5	8	6	8.25	84	100	80	1,2,3
700	100	57	2.5	8	6	8.25	84	100	80	1,2,3
1000	120	75	2.5	8	8	10.25	101.5	100	80	1,2,3
1600	120	75	2.5	8	8	10.25	101.5	100	80	1,2,3
1900	120	75	2.5	8	8	10.25	101.5	110	80	1,2,3
2900	150	90	3	10	8	12.1	130	120	80	1,2,3
4400	150	90	3	10	8	12.1	130	130	110	4,5
5100	180	110	3	12	8	14.1	155.5	140	110	4,5
7300	180	110	3	15	10	16.1	155.5	160	110	4,5
13000	225	140	4.4	20	8	16.1	196	190	120	4,5
18000	250	140	5.5	20	8	18.1	218	210	130	4,5
23000	285	175	6	20	8	20.1	245	220	150	4,5
36000	315	175	6	22	8	22.1	280	250	165	4,5
50000	350	220	7	25	10	22.1	310	285	180	4,5
100000	435	280	9	32	10	27.1	385	350	225	6



Flange / Flange Torque Transducer without bearings

STATOR DIMENSIONS

Size	Max Rating	Width	Depth	Height	Fixing Base
1,2,3	3500Nm	45 mm	150 mm	134 mm	220 x 45 mm
4,5	60,000Nm	45 mm	200 mm	205 mm*	270 x 45 mm
6	100,00 Nm	45 mm	250 mm	260 mm*	320 x 45 mm

Size 2,3 & 4 Transducer

* Height will increase with flange diameter

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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

