

Datum Electronics

Torque and Shaft Power
Measurement Specialists



Inline Torque Sensors

M425 Rotary Torque Sensors

M425 non-contact rotary torque sensor is designed to fit with most applications and solutions in line, using standard keyway shafts.



Accuracy: +/- 0.1%

Sample Rates: Preconfigured to 100 sps, for other options contact sales

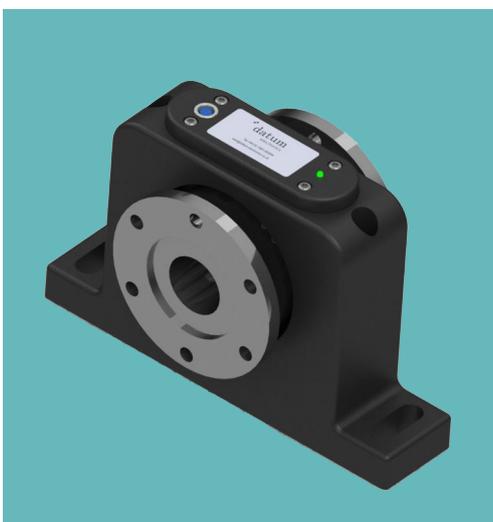
Operating Range: -10+70 °C (+14 to +158 °F)

Model Size	Rated Load, Nm	Rated Load, Lbf-ft	Rotational Speed, RPM
Size 1-A	0 - 10	0 - 7.5	0 - 10,000
Size 1-B	0 - 20	0 - 15	0 - 10,000
Size 1-C	0 - 50	0 - 40	0 - 10,000
Size 1-D	0 - 100	0 - 75	0 - 10,000
Size 2-A	0 - 250	0 - 185	0 - 8,000
Size 2-B	0 - 500	0 - 370	0 - 8,000
Size 3-A	0 - 1,000	0 - 740	0 - 6,000
Size 3-B	0 - 2,000	0 - 1,475	0 - 6,000
Size 4-A	0 - 5,000	0 - 3,700	0 - 5,000
Size 4-B	0 - 10,000	0 - 7,375	0 - 5,000
Size 5-A	0 - 15,000	0 - 11,100	0 - 2,000
Size 5-B	0 - 20,000	0 - 14,750	0 - 2,000
Size 5-C	0 - 25,000	0 - 18,450	0 - 2,000
Size 5-D	0 - 30,000	0 - 22,125	0 - 2,000

*Signal output options can include Ethernet, USB, RS485/232 and 4 analogue channels configured 4-20mA (4-12-20mA): +/-10Vdc, +/- 5Vdc, 0-10Vdc or 0-5Vdc

FF425 Flange Torque Sensors

The standard range of FF425 non-contact rotary torque sensors, with DIN flanges, can be supplied up to 30kNm. Larger custom units up to 100kNm can be designed to fit an existing coupling spacer design.



Accuracy: +/- 0.1%

Sample Rates: Preconfigured as 100 sps, for other options contact sales

Operating Range: -10+70 °C (+14 to +158 °F)

Model Size	Rated Load, Nm	Rated Load, Lbf-ft	Rotational Speed, RPM
Size 1	0 - 100	0 - 75	0 - 10,000
Size 2-A	0 - 250	0 - 185	0 - 10,000
Size 2-B	0 - 500	0 - 370	0 - 10,000
Size 3-A	0 - 1,000	0 - 740	0 - 10,000
Size 3-B	0 - 2,000	0 - 1,475	0 - 10,000
Size 4-A	0 - 5,000	0 - 3,700	0 - 8,000
Size 4-B	0 - 10,000	0 - 7,375	0 - 8,000
Size 5-A	0 - 15,000	0 - 11,100	0 - 6,000
Size 5-B	0 - 20,000	0 - 14,750	0 - 6,000
Size 5-C	0 - 25,000	0 - 18,450	0 - 6,000
Size 5-D	0 - 30,000	0 - 22,125	0 - 6,000

*Signal output options can include Ethernet, USB, RS485/232 and 4 analogue channels configured 4-20mA (4-12-20mA): +/-10Vdc, +/- 5Vdc, 0-10Vdc or 0-5Vdc

Inline Torque Sensors

RS425 High-Speed Torque Sensors

RS425 is a bearingless torque sensor, with completely separate rotor and stator, designed to fit easily in line using either a key-way or a spline shaft (for larger torque).



Accuracy: +/- 0.1%

Sample Rates: Preconfigured as 100 sps, for other options contact sales

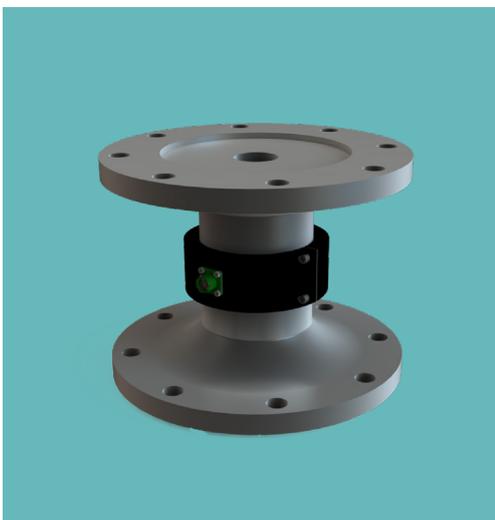
Operating Range: -10+70 °C (+14 to +158 °F)

Model Size	Rated Load, Nm	Rated Load, Lbf-ft	Rotational Speed, RPM
Size 1-A	0 - 10	0 - 7.5	0 - 10,000
Size 1-B	0 - 20	0 - 15	0 - 10,000
Size 1-C	0 - 50	0 - 40	0 - 10,000
Size 1-D	0 - 100	0 - 75	0 - 10,000
Size 2-A	0 - 250	0 - 185	0 - 10,000
Size 2-B	0 - 500	0 - 370	0 - 10,000
Size 3-A	0 - 1,000	0 - 740	0 - 6,000
Size 3-B	0 - 2,000	0 - 1,475	0 - 6,000
Size 4-A	0 - 5,000	0 - 3,700	0 - 5,000
Size 4-B	0 - 10,000	0 - 7,375	0 - 5,000
Size 5-A	0 - 15,000	0 - 11,100	0 - 2,000
Size 5-B	0 - 20,000	0 - 14,750	0 - 2,000
Size 5-C	0 - 25,000	0 - 18,450	0 - 2,000
Size 5-D	0 - 30,000	0 - 22,125	0 - 2,000

*Signal output options can include Ethernet, USB, RS485/232 and 4 analogue channels configured 4-20mA (4-12-20mA): +/-10Vdc, +/- 5Vdc, 0-10Vdc or 0-5Vdc

FF410 Static Torque Sensors

FF410 is a static torque sensor with no bearings, designed to easily fit into an existing test rig or drive train, using standard DIN flanges.



Accuracy: +/- 0.1%

Sample Rates: Preconfigured as 100 sps, for other options contact sales

Operating Range: 0+70 °C (+32 to +158 °F)

Model Size	Rated Load, Nm	Rated Load, Lbf-ft
Size 1	0 - 250	0 - 185
Size 2	0 - 500	0 - 370
Size 3	0 - 700	0 - 515
Size 4	0 - 1,000	0 - 740
Size 5	0 - 1,600	0 - 1,180
Size 6	0 - 1,900	0 - 1,400
Size 7	0 - 2,900	0 - 2,140
Size 8	0 - 4,400	0 - 3,245
Size 9	0 - 5,100	0 - 3,760
Size 10	0 - 7,300	0 - 5,385
Size 11	0 - 13,000	0 - 9,590

*Signal output options can include Ethernet, USB, RS485/232 and 4 analogue channels configured 4-20mA (4-12-20mA): +/-10Vdc, +/- 5Vdc, 0-10Vdc or 0-5Vdc

Shaft Power Measurement Solutions

Compact Shaft Power Measurement Kit

Series 430 Shaft Power Measurement Kit is a portable system, designed to measure the on-shaft torque and power for trials applications on rotating shafts. The Kit measures the on-shaft torque, wirelessly sending this data to the off shaft receiver. An optical system measures the shaft RPM, to give power measurement. It is easy to install, set up, test and re-use where necessary.



- Shaft Sizes: 30 - 500 mm (1.1811" - 19.685")
- Accuracy: +/- 0.1%
- Battery Life: 30 hours (4 days)
- Operating Temperature: 0 to + 70 °C (+32 to + 158 °F)
- Data Sampling Rate: 10 sps as standard (for 100 sps contact sales)
- Cable Length: 10m as standard
- Data Output: RS485 to DUI
- Single or Dual Channel Strain
- PC Software

**Signal output options can include Ethernet USB, RS485/232 and 4 analogue channels configured 4-20mA (4-12-20mA): +/-10Vdc, +/- 5Vdc, 0-10Vdc or 0-5Vdc*

Standard Shaft Power Measurement Kit

Series 430 Shaft Power Measurement Kit is a portable system, designed to measure the on-shaft torque and power for trials applications on rotating shafts. The Kit measures the on-shaft torque, wirelessly sending this data to the off shaft receiver. An optical system measures the shaft RPM, to give power measurement. It is easy to install, set up, test and re-use where necessary.



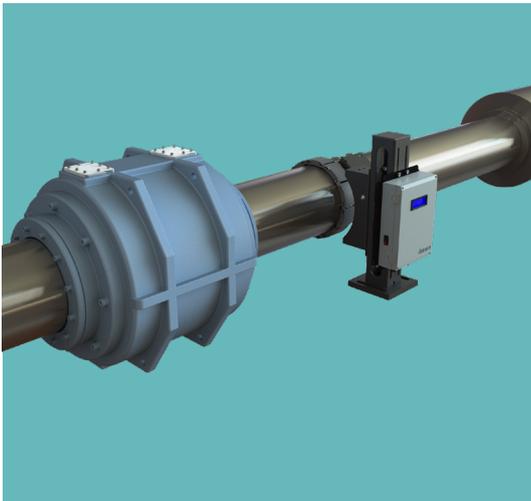
- Shaft Sizes: 90 - 1,100 mm (3.5433" - 43.3071")
- Accuracy: +/- 0.1%
- Battery Life: 30 days (charger included)
- Operating Temperature: 0 to + 70 °C (+32 to + 158 °F)
- Data Sampling Rate: 10 sps as standard (for 100 sps contact sales)
- Cable Length: 10m as standard
- Data Output: RS485 to DUI
- Single or Dual Channel Strain
- PC Software

**Signal output options can include Ethernet, USB, RS485/232 and 4 analogue channels configured 4-20mA (4-12-20mA): +/-10Vdc, +/- 5Vdc, 0-10Vdc or 0-5Vdc*

Shaft Power Measurement Solutions

Marine Shaft Power Meter Systems

The Commercial Marine Shaft Power Meter has been developed to provide ongoing power monitoring data on ships including propulsion, thruster and even generator shafts. The system is suitable for all commercial vessels, with single or multiple shaft installations and is designed to provide data for fuel economy and equipment maintenance planning programs.



Modular System Design

Displays of Shaft Torque, Speed (RPM), Power and Running Hours

*Thrust output is available, contact our sales

Shaft Sizes: 150 - 1200 mm (2.7559" - 47.244")

Accuracy: +/- 0.1%

Robust Design: IP68

Serial Data Outputs: RS485, (NMEA), RS232, MODBUS, Ethernet, MAS, etc.

Three channels of Analogue Outputs of Torque, Speed and Power: 4-20mA (4-12-20mA): +/-10Vdc, +/- 5Vdc, 0-10Vdc or 0-5Vdc

Local Data Outputs for Memory Stick Logging, Trials Logging, and On-Ship Diagnostics

Wind Turbine Power Monitoring Systems

The Datum Wind Turbine Drive Monitoring System provides key data regarding the output and condition, of the main drive of a wind turbine. The system has capacity to store a file of a year's data. We also provide a service to monitor multiple turbines, linking the data to operational maintenance records.



Shaft Sizes: from 150 mm (from 5.905")

Accuracy: +/- 0.1%

Simple Installation

Provides outputs of Power, Shaft Torque, Shaft Speed (RPM), Shaft Torsional Vibration, Shaft Signature and Shaft Bending

Serial Data Outputs: RS485, (NMEA), RS232, Ethernet

Three channels of Analogue Outputs of Torque, Speed and Power: 4-20mA (4-12-20mA): +/-10Vdc, +/- 5Vdc, 0-10Vdc or 0-5Vdc

Shaft Power Measurement Solutions

PTO Power Monitoring Systems

The PTO (Power Take Off) Shaft Torque & Power Monitoring System is designed to accurately monitor and log the torque, shaft speed and transmitted power, when testing systems driven from all standard PTO shafts. The system is a useful tool in research and analysis into the performance of a tractor transmission, or any PTO compatible drive.



Torque Rating: Dependant on spline configuration

Accuracy: +/- 0.1%

Operating Speed: 540 / 1000 rpm

Sampling Rate: 100 sps as standard

Cable Length: 4m cable, for longer cables contact sales

Data Output: RS232 or RS485 (on request)

Supply Voltage: 12V from vehicle

Configurations:

Configuration 1: 1"3/8 x 6 Spline Male and Female

Configuration 2: 1"3/8 x 21 Spline Male and Female

Configuration 3: 1"3/4 x 6 Spline Male and Female

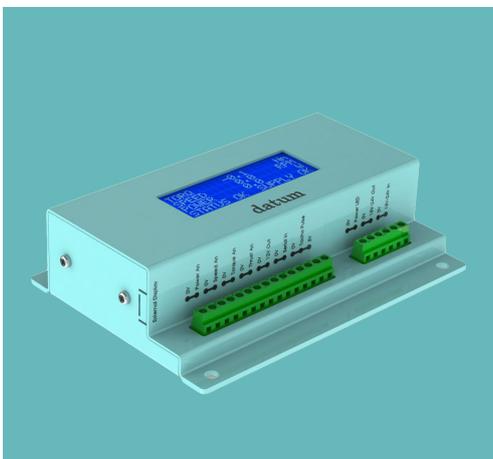
Configuration 4: 1"3/4 x 20 Spline Male and Female

For non-standard configurations please discuss with sales

**Signal output options can include Ethernet USB, RS485/232 and 4 analogue channels configured 4-20mA (4-12-20mA): +/-10Vdc, +/- 5Vdc, 0-10Vdc or 0-5Vdc*

Torque Sensor Display & UI

The Datum Universal Transducer Interface has been designed to accept signal from all of the Datum In-line and Shaft Power Measurement systems. It provides a wide range of analogue and serial data outputs, displaying Torque, Speed (RPM) and Power data plus one more additional strain input.



Supports all Datum Inline and Shaft Power Measurement Solutions

Displays: Torque, Speed RPM, Power and Status

Operating Range: -10 to +70 °C (+14 to +158 °F)

Environmental Protection: IP54

Analogue Outputs: 4-20mA, +/-10Vdc, +/-5Vdc, 0-10Vdc or 0-5Vdc

Digital Outputs: RS485, RS232, Ethernet, USB Type Mini B, USB Type A

Also accepts an input from an external shaft speed tachometer

Power Supply: 15-24Vdc (included)

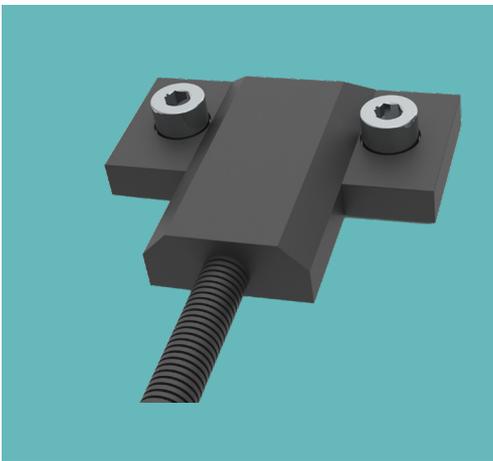
USB Port Memory Stick Logging

Strain Gauge Bolt-On Sensors

We supply standard bolt-on sensors (below) or we can design sensors according to your needs.
Contact us for details of our OEM solutions.

2-Hole Bolt-On Strain Gauge Sensors

The Series 460 Bolt-On strain sensor range was designed to measure tensile and compressive bending stresses in various weighing applications including vehicles, civil engineering structures, silos, hoppers and specialist engineering projects. The 2-hole sensor is a single axis option, which can be amplified by utilising strain gauge conditioning amplifiers, or displays.



Rated Strain Range: 10 - 1,100 micro-strain

Rated Output: 1.5mV/V for 1,000 micro-strain

Bridge Resistance: 350 ohm (nominal)

Linearity & Repeatability: 0.1% of rated output (FSD)

Temperature Effect on Output: 0.005 of applied load

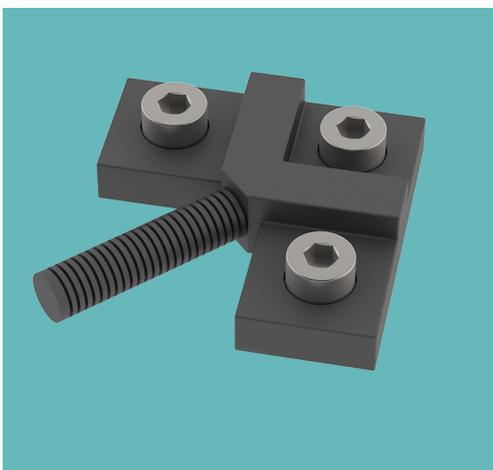
Typical Operating Temperature: -20 to + 80 °C (-4 to + 176 °F)

Environmental Protection: IP68

Resistant to **chemicals** including: dust, waste, salt spray, paint, dilute acid; **fuels**: diesel, gasoline, bio diesel oils including lubricating, hydraulic; **coolants**: ethylene glycol, coolant conditioner, freon

3-Hole Bolt-On Strain Gauge Sensors

The Series 460 Bolt-On strain sensor range was designed to measure tensile and compressive bending stresses in various weighing applications including vehicles, civil engineering structures, silos, hoppers and specialist engineering projects. The 3-hole sensor is a more advanced option, able to compensate for rapid changes in temperature difference between the sensor and the structure it is applied to.



Rated Strain Range: 10 - 1,100 micro-strain

Rated Output: 1.5mV/V for 1,000 micro-strain

Bridge Resistance: 350 ohm (nominal)

Linearity & Repeatability: 0.1% of rated output (FSD)

Temperature Effect on Output: 0.005 of applied load

Typical Operating Temperature: -20 to + 80 °C (-4 to + 176 °F)

Environmental Protection: IP68

Resistant to **chemicals** including: dust, waste, salt spray, paint, dilute acid; **fuels**: diesel, gasoline, bio diesel oils including lubricating, hydraulic; **coolants**: ethylene glycol, coolant conditioner, freon

Custom (OEM) Solutions

Our Expertise

In many cases it may be better to use an existing shaft or test rig, engineering this to become the torque sensor. This process reduces the cost of fitting a conventional torque transducer and it improves the measurements taken, by maintaining the dynamics of the driveline.

Datum Electronics are able to provide both modular and custom designed torque and rotary strain measurement solutions. The solutions range from an installation on a specific shaft, or a coupling on a test rig, to the full design of an integral system for a drive system. Such engineered solutions can be completed as one off projects, as well as fully integrated OEM solutions.

We have also designed and built the world's largest torque transducer of 12 MNm.

With over 30 years of experience, Datum Electronics have completed over thousands of such designs and will probably have something approximately close to your requirements in our library. If you would like to discuss an application, where you believe a custom design would be of benefit, please call our technical sales team or email us a drawing or sketch of the shaft as well as its location, including as much information as possible.

We also provide production sensors in high volume for our OEM customers.

How Datum Electronics Can Help

Custom engineering solutions are our specialty and Datum Electronics have been successfully providing flexible solutions to meet emerging markets and customers needs, for many years by:

- Modifying or customising our standard products to fit our customer's requirements
- Developing new products from existing components and parts
- Adapting standard products to integrate into existing machinery or application
- Designing and manufacturing one-off designs
- Developing production engineered solutions for high-volume applications.

