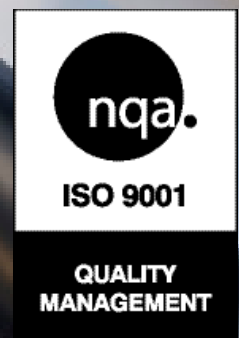


# DATUM ELECTRONICS LTD

TORQUE AND SHAFT POWER  
MEASUREMENT SPECIALISTS





# CONTENTS

- IN-LINE TORQUE SENSORS
- SHAFT POWER MEASUREMENT SOLUTIONS
- BOLT-ON STRAIN GAUGE SENSORS
- TORQUE SENSOR DISPLAY & UI
- CUSTOM (OEM) SOLUTIONS

# IN-LINE TORQUE SENSORS

## M425 ROTARY TORQUE SENSOR

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



## FEATURES

Accuracy: +/- 0.1%

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

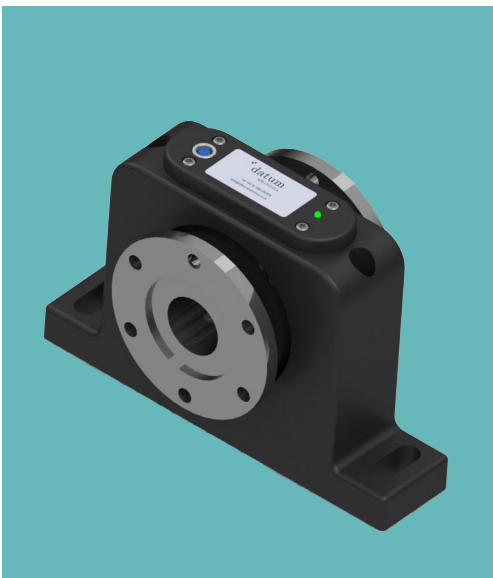
Operating Range: -10+70 °C (+14 to +158 °F)

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 analog channels configured 4-20mA (4-12-20mA); +/-10Vdc, +/- 5Vdc, 0-10Vdc or 0-5Vdc

## FF425 FLANGE TORQUE SENSOR

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.



## FEATURES

Accuracy: +/- 0.1%

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

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

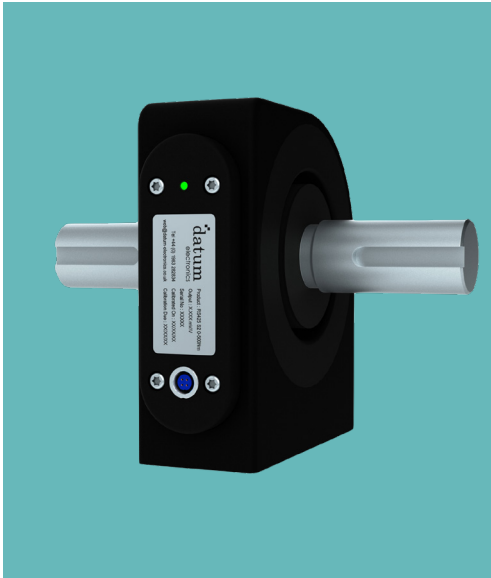
Model Size	Rated Load, Nm	Rated Load, Lbf-ft	Rotational Speed, RPM
Size 1	0 - 100	0 - 75	0 - 10,000
Size 2-A	0 - 250	0 - 185	0 - 10,000
Size 2-B	0 - 500	0 - 370	0 - 10,000
Size 3-A	0 - 1,000	0 - 740	0 - 10,000
Size 3-B	0 - 2,000	0 - 1,475	0 - 10,000
Size 4-A	0 - 5,000	0 - 3,700	0 - 8,000
Size 4-B	0 - 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 analog channels configured 4-20mA (4-12-20mA); +/-10Vdc, +/- 5Vdc, 0-10Vdc or 0-5Vdc

# IN-LINE TORQUE SENSORS

## RS425 HIGH-SPEED TORQUE SENSOR

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



## FEATURES

Accuracy: +/- 0.1%

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

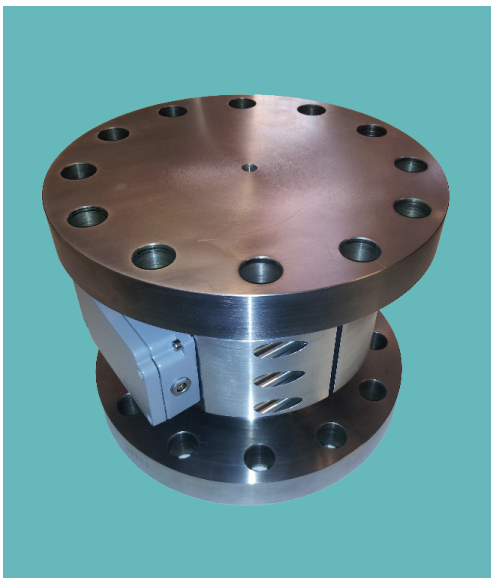
Operating Range: -10+70 °C (+14 to +158 °F)

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 SENSOR

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.



## FEATURES

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.



## FEATURES

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 analog 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.



## FEATURES

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

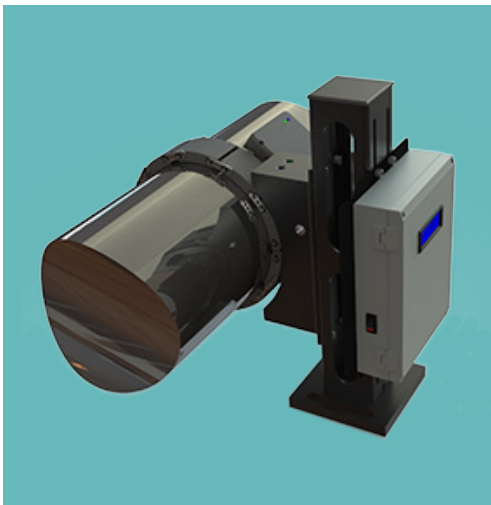
PC Software

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

# SHAFT POWER MEASUREMENT SOLUTIONS

## MARINE SHAFT POWER METER SYSTEM

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.



## FEATURES

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

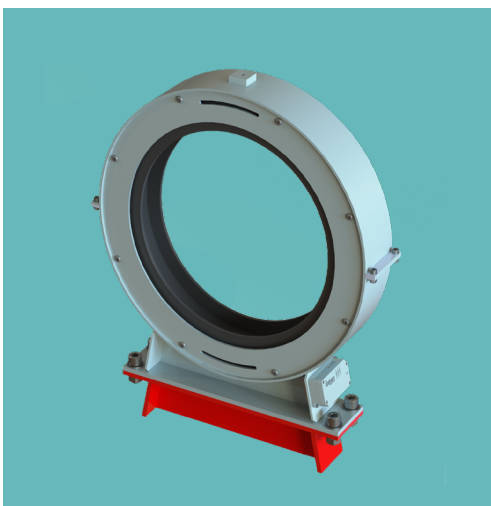
Serial Data Outputs: RS485, (NMEA), RS232, MODBUS, Ethernet, MAS, etc.

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

## NAVAL TORSION METER SYSTEM

The Datum Electronics Series 420 Naval Marine Torsion Meter has been designed to meet the needs of the world's Navies, to improve propulsion efficiency and operating reliability. The system has been tested to full DEFSTAN and MILSPEC specifications, making it the ultimate system for the harshest of environments, used by many Navies around the globe.



## FEATURES

Accuracy: +/- 0.1%

Displays Shaft Torque, Shaft Speed (RPM), and Shaft Power

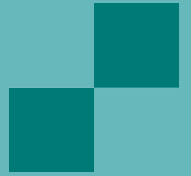
Operating Temperature: -15 to + 55°C ( +5 to + 131 °F)

Cable Length: 20m (to control unit) as standard

Tested to military standards for shock, vibration, EMC (Electro Magnetic Compatibility), Contamination (Oil, Grease, Glycol, Diesel, Salt Spray), Temperature and Humidity.

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



## WIND TURBINE DRIVE MONITORING SYSTEM

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.



## FEATURES

Shaft Sizes: from 150 mm (from 5.905 ")

Accuracy: +/- 0.1%

Simple Installation

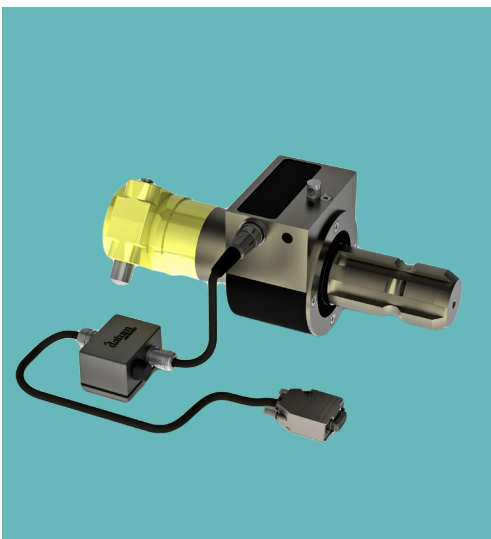
Provides outputs of Power, Shaft Torque, Shaft Speed (RPM), Shaft Torsional Vibration, Shaft Signature and Shaft Bending

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

## PTO POWER MONITORING SYSTEM

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.



## FEATURES

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*

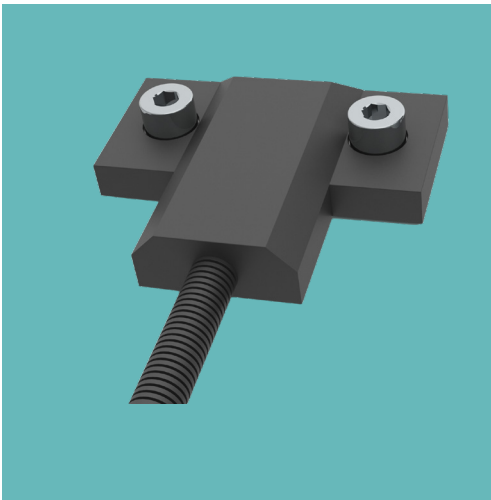
# STRAIN GAUGE BOLT-ON SENSORS

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 SENSOR

## FEATURES

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)

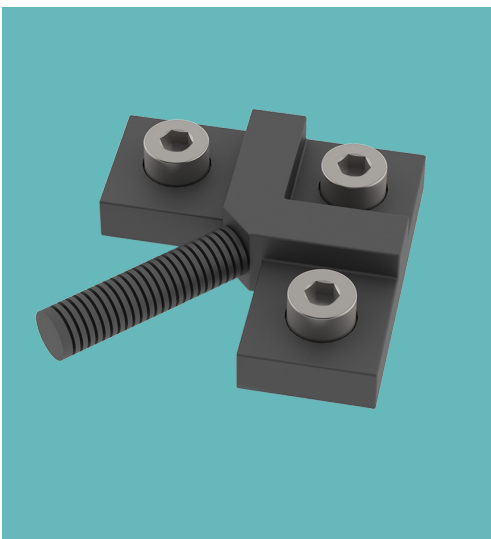
Environmental Protection: IP68

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

## FEATURES

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

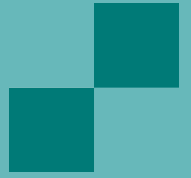
Typical Operating Temperature: -20 to + 80 °C ( -4 to + 176 °F)

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

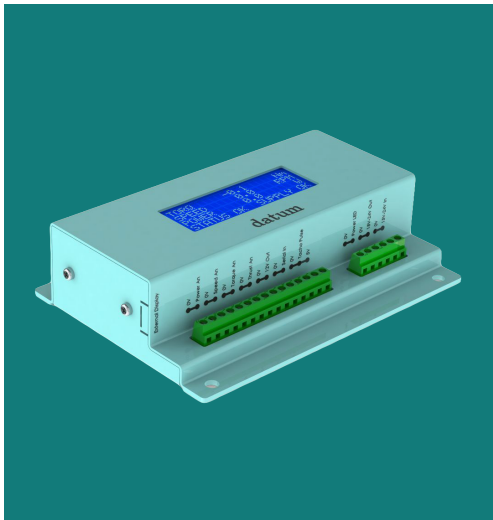


# TORQUE SENSOR UNIVERSAL INTERFACE



## 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.



## FEATURES

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 tacho

Power Supply: 15-24Vdc (included)

USB Port Memory Stick Logging

# 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.**

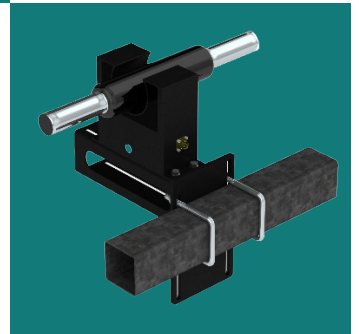
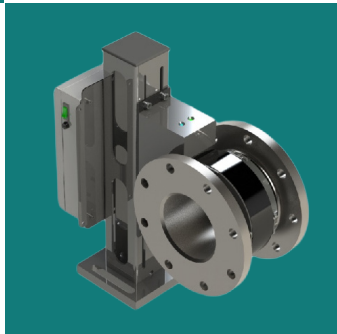
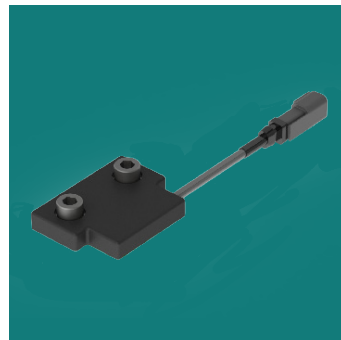
With over 30 years of experience, Datum Electronics have completed over thousands of such designs and will probably have something approximately close to your requirements in our library. If you would like to discuss an application, where you believe a custom design would be of benefit, please call our 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





Datum Electronics Ltd is an International Manufacturer and Supplier of Torque and Shaft Power Measurement Equipment. Headquartered in the UK, we have a long established presence in the USA, Asia, Europe and beyond.

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