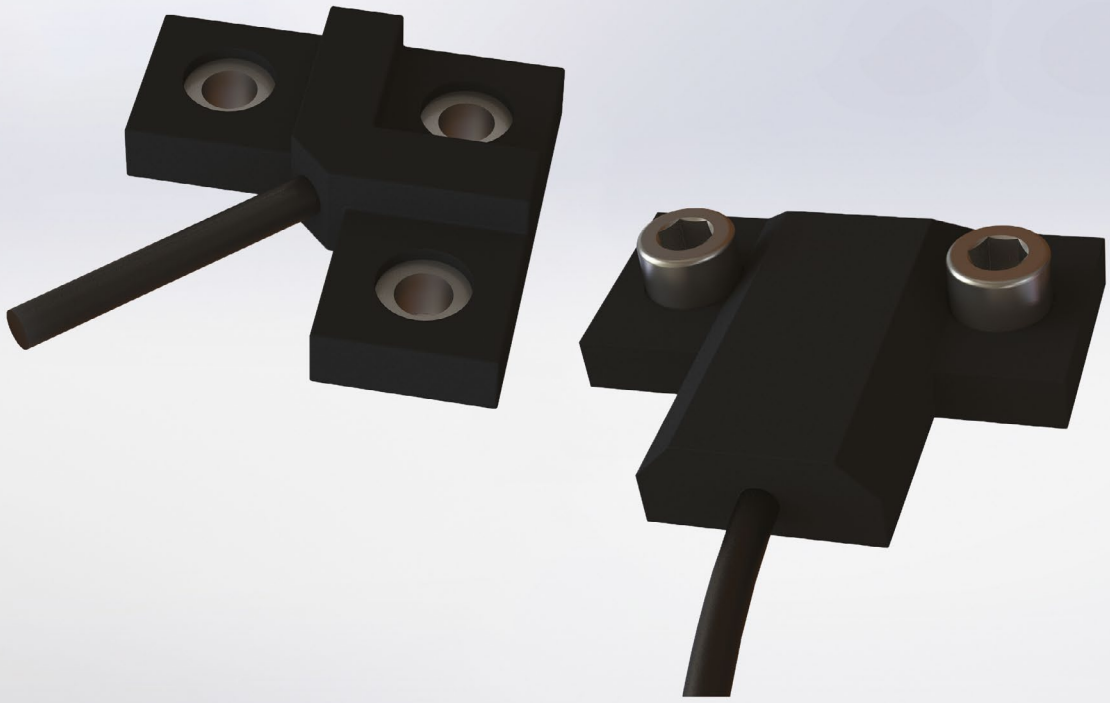
datum electronics



BOLT-ONS

Bolt-On Strain Gauge Sensors & Solutions

PRODUCT OVERVIEW

Made in the UK

PRECISION. DATA. INNOVATION.

BOLT-ONS

Bolt-on Strain Gauge Sensors & Solutions

Datum Electronics has developed many OEM, as well as standard “off the shelf” strain sensors for weighing and load applications, where quick, simple and repeatable installation (both on site or on a production line) is key.

Designed to be robust and extremely reliable, our strain sensors & solutions remove the need for highly skilled strain gauge installation, or expertise. They can also be implemented in the harshest environments, including underwater applications.

- Simple Design
- Easy Installation
- High Accuracy, Repeatability and Reliability
- Temperature Compensated Options
- No Physical Alterations to Structure Required
- Cost-Effective
- Multiple Straign Gauge Output options for OEM customers
- Amplifiers with signal conditioning can be integrated for OEM customers

What can Bolt-On Strain Sensors measure?

Datum Electronics designs and supplies a range of OEM strain sensors to industries, which require a measurement of tensile, compressive and bending stresses from 50 to 2,000 micro-strain.

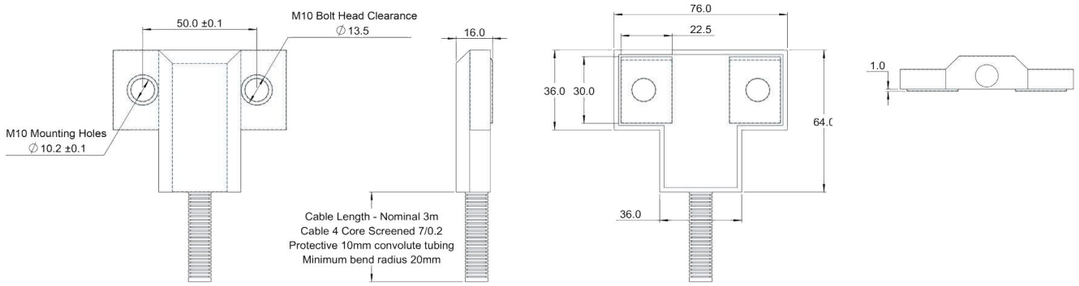
1. Strain Measurement
2. Weight Measurement
3. Load Measurement
4. Stress Monitoring
5. Axle Tilt Measurement for Safety
6. Structural Health Monitoring

Our strain sensors can be used in a large number of industrial applications, including:

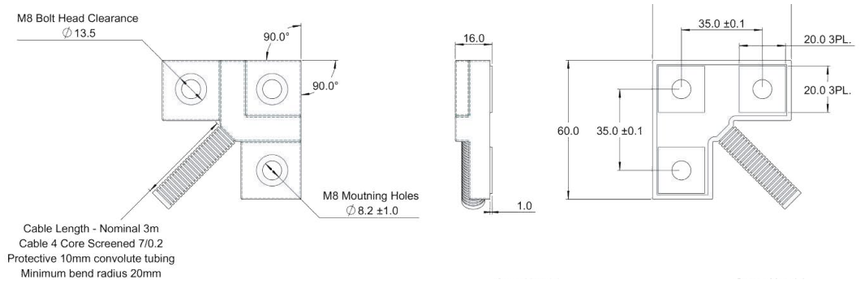
- Load Measurement for Heavy Vehicles and Machinery
- Vehicle Tilt Alarms
- Silo, Tanks & Hoppers
- Oil Rigs
- Specialist Engineering Projects
- Hull Stress Monitoring on Ships
- Steel Civil Engineering Structures including Bridges

Dimensions

2-Hole Bolt-On Strain Sensors



3-Hole Bolt-On Strain Sensors



Worried about Environmental Protection?

Our sensors have been designed to be resilient to harsh and challenging environments. We are able to meet any IP rating, as well as our customers' own quality regulations and specifications, such as JDQ53, EC1, and others.

Underwater applications can be catered for, as well as the ability to withstand varying temperature ranges.

Each sensor is supplied as a **sealed package**, removing the need for bonding, soldering and complex wiring of the strain gauges, making them easily installable on a production line, or retro fitted on site.

Need Specific Outputs?

We can develop the sensors according to your needs for a particular output, including built in conditioning and amplifiers:

- Analogue outputs, including 4-20mA, 0-10VDC etc
- Range of digital outputs, ie. CAN bus, RS485, RS323 etc.

The Datum Bolt-On Strain Gauge

Datum Electronics offer many types of bolt-on strain sensors, which have been developed to provide rugged and robust solutions for industry.

Designed to measure tensile, compressive and bending stresses, ranging from 50 to 1,100 micro-strain, the bolt-on strain gauge sensors have been designed for use in applications including on:

- Vehicles
- Civil Engineering Structures
- Silos
- Hoppers
- Specialist engineering projects

They can also be used for other applications including on bridges, oil rigs, ship hulls and the roofs of buildings to evaluate tensile and compressive strain.

Datum Electronics also specialises in volume OEM solutions, for customers who need an application specific product.

Specifications

Our Bolt-on strain sensors are quick and easy to install, without any fine wiring or soldering. Its practical robust design allows the sensor to work in almost any environment, in any weather and even underwater, if required.

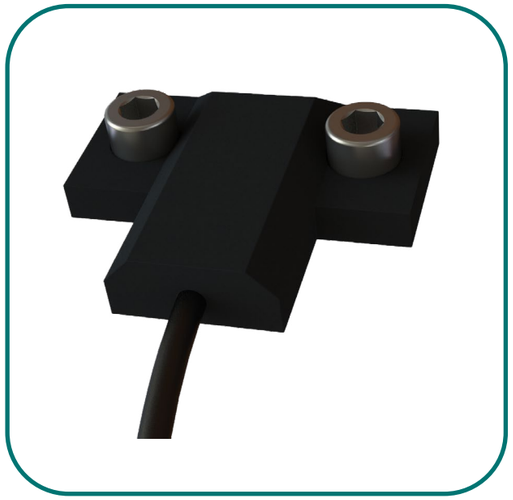
Rated to IP68 this is a truly universal product, that will give you reliable accurate strain indications, whatever the application or environmental condition. All sensors are pre-tested and checked during final assembly, ensuring the reliability and quality of all our sensors.

Diversity

Using the latest strain gauge techniques and technologies, the bolt-on sensors give you the accurate and reliable data you require, in a number of challenging environments. The sensors are fully compatible with load and strain indicators and amplifiers, allowing you to operate any number of sensors for your application.

Options can be a direct serial link to a PC, or an analogue input to a data logger or PLC, talk to our sales team to discuss. The Series 460 Bolt-on strain sensor is not only an essential product for measuring micro-strain, but it can also become an integral part of a strain monitoring system.

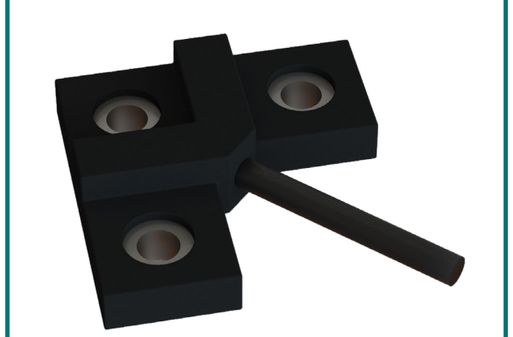
2-Hole Bolt-On Sensor



The standard 2-Hole sensor can be bolted directly to the structure for use in a range of applications and environments. We recommend that the structure, to which sensor is to be bolted, should be at least 10 times larger than the sensor, to ensure accurate and reliable measurement data.

The 2-Hole sensor has a standard hole size of 10.2mm for 2xM10 cap head screws.

3-Hole Bolt-On Sensor



The 3-Hole bolt-on strain sensor is a dual element sensor that corrects any differential temperature between the sensor and the structure. For example, a vehicle axle can be 5 degrees hotter than the sensor, as the axle heats due to braking and drive loads.

In this case the surface strain of the axle due to temperature can be 60 micro-strain greater than the sensor. The 3-Hole bolt-on sensor has been designed to eliminate this potential strain difference.

The 3-Hole sensor has a standard hole size of 8.2mm for 3xM8 cap head screws.

Technical Specifications

Rated Strain Range	up to 1,100 micro-strain as standard; up to 2,000 micro-strain for highly dynamic applications (OEM can be catered to your requirements)
Maximum Strain (single operation)	up to 10,000 micro-strain
Rated Output	1.5mV/V for 1,000 micro-strain (typically)
Linearity & Repeatability	0.1% of rated output (FSD) (dependent on the structure)
Hysterisis	0.1% of rated output (FSD) (dependent on the structure)
Temperature Effect on Output	0.005 of applied load
Temperature Effect on Zero	0.005 of rated load
Bridge Resistance	350 ohm (nominal)
Electrical Connection	3 meter, 4-core screened cable (can be catered to your requirements)
Excitation Voltage	10 VDC
Excitation (max)	15 VDC
Environmental Protection	IP68 (can be catered to other environmental factors)
Operating Temperature	-20°C to +100°C
Storage Temperature	-40°C to +100°C
Humidity	0% - 100%

Want to know more?

We will guide you through the selection and specification process to ensure you get the optimum sensor for your application (including prototyping) for:

- Assessing strain levels
- Optimum area for fitment
- Environmental and temperature considerations
- Suitability of output types
- Catering the schedules and production to meet your demands

In fact, Datum Electronics will provide full and comprehensive advice ensuring you arrive at a specification that meets all your needs.

Our services include free and informative help through the initial Sales process and enquiry, with options for:

- Assessing strain levels
- Optimum area for fitment
- Environmental and temperature considerations

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Contact Us

Rev. B

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