

Force and strain sensors

2 solution approaches for force measurement, 7 designs,
unlimited force ranges



Force and strain sensors from Baumer combine tried and tested technologies with sophisticated innovations

For diverse requirements and specific applications, the product portfolio covers the entire scope of force and strain measurements. The product range contains all components of high performance sensors, intelligent evaluation, and application-specific solutions. Baumer offers the complete range of sensor technology from a single source – compatibility that pays off.

Two solution approaches for maximum flexibility



Force sensors



For smaller forces



Strain sensors



For larger forces

All-round solution for force measurement of the future – simulation, parameterization, intelligent evaluation

Further to the DLM force and the DST strain sensors, Baumer provides the entire measurement chain for force measurements with DAB industrial amplifiers. Thanks to many varied intelligent functions and secondary data, the smart measuring amplifiers and strain sensors with integrated amplifier electronics save valuable time in the setup force measurement solutions and, thanks to data pre-processing, significantly take processing load off the controller.

Quicker solutions to engineering tasks thanks to simulation and test options

- Simple testing of the machine without a physical sensor through remote access
- Simulation of amplification functions for easy commissioning

More cost effective due to flexibly parameterizable interfaces

- Simple and reproducible parameterization of sensors via IO-Link
- Individual matching to specific machines for even more precise measurements
- Analogue signal range can be freely parameterized and adjusted to the measurement range

Maximum machine efficiency thanks to smart additional functions

- Direct output of the process value in different units for simple measurement value monitoring
- Peak value memory for reliable maximum value recognition
- Sample & hold function for the time synchronization of measurement value recording by several sensors
- Low-pass filter for optimized signal/noise ratio

Intelligent functions and supplementary data



Diagnostic data



Peak detection



Input and output parameterizable



Digital switching points



Teach by reference



Filter functions



Process value selectable



Remote operation possible



Alarm state adjustable



Sample & hold



Adjustable measurement range

- Application-specific parameterization of the measurement range
- Setting of the sensitivity via IO-Link through teach by reference or teach by value



Remote operation

- Simple testing of the machine without a physical sensor through remote access
- Simulation of amplification functions for easy commissioning

Force sensors – intelligently coordinated portfolio of force range and installation options

Find the right force sensor for your application quickly and easily

1

- Coordinated portfolio of force range and installation options
- Maximum flexibility due to different connection options
- Uniform thread size within the series independent of the force range

2

Small and flexible force sensors

- Limited sensor diameter for limited spaces
- Simple integration due to various installation options

Robust force sensors for rough industrial environments

3

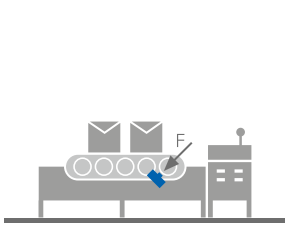
- Stainless steel sensor housing for reliable use in rugged industrial applications
- Hermetically sealed sensors with long service life

4

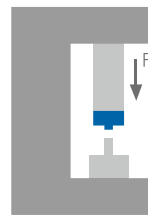
Clever sensor design for reliable force measurement

- Low-fatigue force sensors with 100% oscillatory width for dynamic applications across the entire measurement range

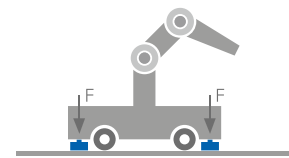
Various applications



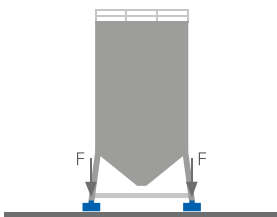
Component load monitoring for ball bearings



Monitoring of the assembly force



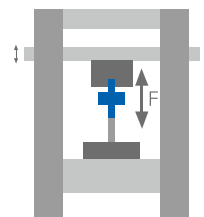
Overload protection



Determination of fill quantities



Monitoring retention forces



Force measuring for testing machines

Strain sensors – cost-efficient force measurement of large forces

For higher force ranges and large constructions, strain sensors are a suitable alternative to force sensors. As opposed to force sensors, strain sensors are not installed directly in the force flow but are screwed onto the surface of the corresponding component. The measured surface strain allows the force to be determined precisely without elaborate component adjustment.

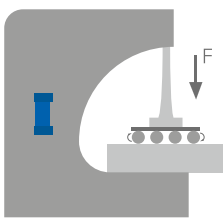


Long-term stable in the smallest design
In laboratory settings, strain gauges are often glued to a component to implement force measurement. However, to obtain constant and precise measurement results in serial production as well, it is easier to use screw-on strain sensors. The miniaturized DST20 strain sensor is a robust alternative for confined spaces.

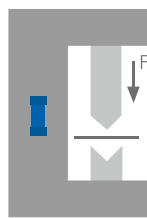
Advantages of strain sensors

- One sensor for different force ranges, machine sizes, and measurement tasks.
- Quick and easy implementation in existing machines and systems thanks to mounting in the force shunt.
- Solutions for industrial applications, robust outdoor applications, and applications in confined spaces.

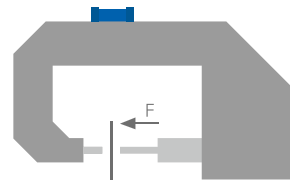
Strain measurement in industrial applications



Retention force regulation

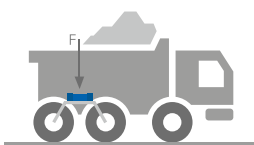


Process monitoring

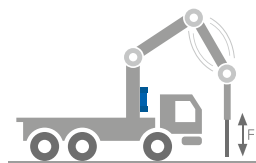


Force monitoring in the fusion process

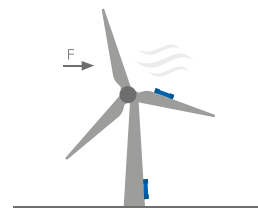
Strain measurement in rough outdoor applications



Weight measurement for construction vehicles



Vibration damping



Load monitoring in wind power plants

Intelligently coordinated portfolio – Find the right force sensor for your application quickly and easily

	Sensor	Product name	Measuring range	Size*	Mechanical connection	Electrical connection	Force direction
Force sensors		DLM20-BU	0 ... 2000 N	ø 19 × 11 mm	4 × M2 / separate	M5, 4-pin	Pressure
		DLM20-SO	0 ... 1000 N	ø 26 × 10 mm	4 × M2 / M4	M5, 4-pin	Compression/pressure
		DLM20-IN	0 ... 1000 N	ø 19 × 16 mm	M4 / M4	M5, 4-pin	Compression/pressure
		DLM30-BU	0 ... 10 000 N	ø 32 × 18 mm	4 × M3 / separate	M8, 4-pin	Pressure
		DLM30-SO	0 ... 5000 N	ø 39 × 18 mm	4 × M4 / M6	M8, 4-pin	Compression/pressure
		DLM30-IN	0 ... 5000 N	ø 26 × 23 mm	M6 / M6	M8, 4-pin	Compression/pressure
		DLM40-BU	0 ... 20 kN	ø 38 × 21 mm	4 × M3 / separate	M8, 4-pin	Pressure
		DLM40-SO	0 ... 20 kN	ø 60 × 26 mm	4 × M6 / M12	M8, 4-pin	Compression/pressure
		DLM40-IN	0 ... 20 kN	ø 41 × 35 mm	M12 / M12	M8, 4-pin	Compression/pressure
		L003	0 ... 100 kN	ø 155 × 46 mm	12 × M10 / M30	M12, 5-pin, Cables	Compression/pressure
Strain sensors		DST20	0 ... 1000 µm/m	28 × 12 × 10 mm	2 × M4	M5, 4-pin	Compression/pressure
		DST53	0 ... 2000 µm/m	70 × 26 × 17 mm	4 × M6	M12, 5-pin	Compression/pressure
		DST55R	0 ... 1000 µm/m	71 × 40 × 21 mm	2 × M8	M12, 5-pin	Compression/pressure
		DST76	0 ... 500 µm/m	89 × 25 × 10 mm	4 × M6	Cable	Compression/pressure

*Sensor height without threading

Customized solutions – force measurement optimally integrated in your application

Standard sensors are often not the right solution when it comes to larger force ranges or specific requirements. Professional project management, understanding of the application, and close collaboration from the idea to serial production decisively contribute to mutual success when developing customized solutions. With our optimized and flexible production processes we ensure reliable and consistent quality even for small or medium-sized production runs.

Our range of services

Force measurement in **industrial applications**

Optimized to your installation situation and application

Professional project management

Innovative development department

Many years of expertise solving customer-specific requirements

Security of investment due to long-term product availability

The path to your solution



Joint analysis of the starting position and development of solution options



Design and FEM analysis of prototypes



Construction of prototypes



Support during testing and commissioning



Serial production



For more information about our force and strain sensors visit:
www.baumer.com/forceandstrain