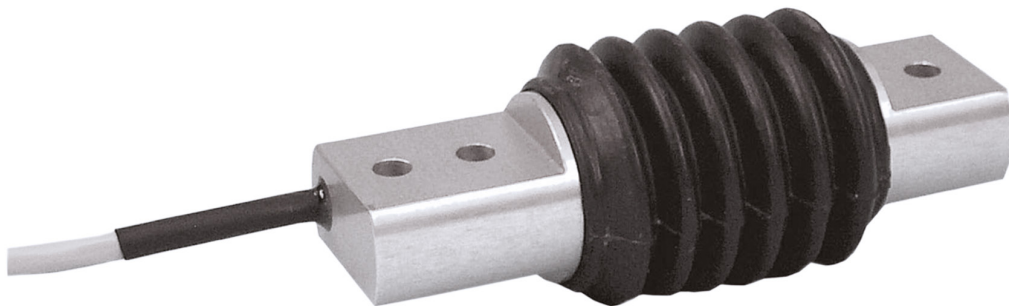


# Load Bending Beam

## Model 8511

Code:	8511 EN
Delivery:	ex stock
Warranty:	24 months



- For tension and compression forces
- Measuring ranges from 0 ... 5 N to 0 ... 2000 N
- High linearity up to 0.1 %
- Very low mounting height
- Simple force application
- Material aluminium or stainless steel
- Special design on request

### Application

Model 8511 bending beam load cells are designed for measuring tension and compression forces. Their high accuracy, low torque sensitivity and very low mounting height make these sensors particularly suitable for use in weighing and dosing technology as well as for laboratory and production use.

Extremely simple force application makes the sensor easy to handle. It offers a very favorable price/performance ratio and can be used universally for static and dynamic measurements.

Examples of application:

- ▶ Dosing system
- ▶ Load deflection curve
- ▶ Tension force measurement for wire or thread winders
- ▶ Friction forces
- ▶ Cable force
- ▶ Withdrawal force, etc

### Description

The measuring element of this load cell consists of a double bending beam with strain gauges, the resistance of which changes with the application of force. Upon applying a voltage to the strain gauge bridge, the change in the strain gauge resistance is converted into output voltage, which is directly proportional to the force. The strain gauges and the entire measuring element are protected from water spray by rubber bellows.

To install the load cell, it is securely clamped on the side with 2 bore holes. The tension or compression force to be measured is applied at the other end. Force is applied easily perpendicular to the sensor axis. This serves to prevent falsification of the measured values. The influence on the measuring signal resulting from the increase of load distance on the mounting side (e.g. by a touch finger) is negligible. Overload protection can be realized with little effort using a mechanical stop.

**Technical Data**

Model	Measuring Range [N]		Accuracy* [%F.S.]	Dimensions [mm]											Deflection Full Scale [mm]	Natural frequency [Hz]	Weight [g]	
				ø A	B	C	D	E	F	G	ø H	ø K	L	ø M				N
8511-5005	0 ...	5	≤ ± 0.5	19.5	10	5	15	22	6.5	18.5	5.5 E9	4.5	86.5	28	6	0.15	130	50
8511-5010	0 ...	10	≤ ± 0.5	19.5	10	5	15	22	6.5	18.5	5.5 E9	4.5	86.5	28	6	0.2	180	50
8511-5020	0 ...	20	≤ ± 0.25	19.5	10	5	15	22	6.5	18.5	5.5 E9	4.5	86.5	28	6	0.15	150	50
8511-5050	0 ...	50	≤ ± 0.25	19.5	10	5	15	22	6.5	18.5	5.5 E9	4.5	86.5	28	6	0.15	120	50
8511-5100	0 ...	100	≤ ± 0.1	28	15	7.5	20	29	8.5	20	5.5 E9	5.5	101	40	8.5	0.3	280	100
8511-5200	0 ...	200	≤ ± 0.1	28	15	7.5	20	29	8.5	20	5.5 E9	5.5	101	40	8.5	0.2	230	100
8511-5500	0 ...	500	≤ ± 0.1	28	15	7.5	20	29	8.5	20	6.5 E9	6.5	101	40	8.5	0.2	200	350
8511-6001	0 ...	1000	≤ ± 0.1	28	15	7.5	20	29	8.5	20	6.5 E9	6.5	101	40	8.5	0.2	180	350
8511-6002	0 ...	2000	≤ ± 0.1	28	15	7.5	20	29	8.5	20	6.5 E9	6.5	101	40	8.5	0.3	300	350

\* Combined value consisting of non-linearity, hysteresis and non-repeatability in constant installation position.

**Electrical values**

Bridge resistance: full bridge, foil model strain gauge 350 Ω, nominal

Excitation voltage:

up to range 0 ... 20 N  
over range 0 ... 50 N

max. 5 V DC  
max. 10 V DC

Sensitivity:

up to range 0 ... 20 N  
over range 0 ... 50 N

1.0 mV/V, nominal\*  
1.5 mV/V, nominal\*

Isolation resistance:

> 30 MΩ

Shunt calibration resistance:

100 kΩ ± 0,1 %

The bridge output voltage evoked by a shunt of this value is indicated in the calibration protocol.

\* Deviations from the stated values are possible.

**Environmental conditions**

Temperature operating:

- 30 °C ... 90 °C

Temperature compensated:

15 °C ... 70 °C

Temperature effect zero:

≤ 0.01 % F.S./K

Temperature effect span:

≤ 0.02 % Rdg./K

**Mechanical values**

Accuracy:

see table

Measurement type:

tension and compression

Preferential direction of measurement:

The direction of calibration is indicated by an arrow on the sensor. At this load direction, the output voltage is positive.

Deflection, full scale:

see table

Static overload safe:

150 % of capacity

Dynamic performance: recommended

50 % of capacity

Up to measuring range 0 ... 200 kN the load cell is not suitable for an extremely high number of cyclical loads.

Design:

double bending beam

Material:

range ≤ 0 ... 200 N: sensor body made of high-strength aluminium, anodized

range ≥ 0 ... 500 N: sensor body made of stainless steel 1.4542 bellows wear and weather resistance rubber

Protection class:

acc. EN 60529

IP54

Dimension:

see table and dimensions drawing

Weight:

see table

Electrical termination:

4

4 wire screened PVC cable with free soldered ends, length 1.7 m, diameter 4.5 mm, bending radius ≥ 20 mm. Kink protection is realized by an additional polymer coat, length approx. 30 mm, diameter 5.5 mm

Wiring code:

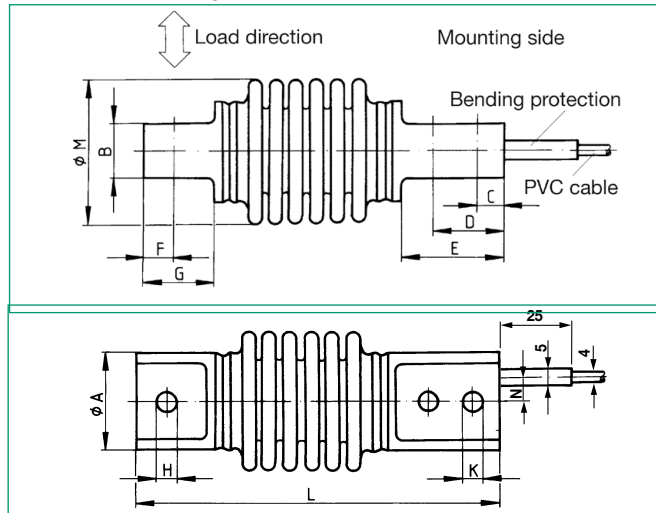
white  
brown  
yellow  
green

excitation  
excitation  
signal output  
signal output

positive  
negative  
positive  
negative

**Mounting:**

Up to measurement range 0 ... 200 N screws of strength class 8.8 necessary, for measurement ranges from 0 ... 500 N screws strength class 12.9.

**Dimensional drawing model 8511**


The CAD drawing (3D/2D) for this sensor can be imported online directly into your CAD system.

Download via [www.burster.com](http://www.burster.com) or directly at [www.traceparts.com](http://www.traceparts.com). For further information about the burster traceparts cooperation refer to data sheet 80-CAD-EN.

**Order Information**

Load bending beam, measuring range 10 N

**Model 8511-5010**

Load bending beam, measuring range 20 N, standardization of output 1.0 mV/V

**Model 8511-5020-V010**

**Accessories**

**Mating connector**, 12 pins for burster desktop devices **Model 9941**

**Mating connector**, 9 pins for 9163-V3, 9235 and 9310

**Model 9900-V209**

Mounting of mating connector on sensor cable upon prevalent use of the load cell

in preferential direction (positive sensor signal in preferential direction)

**Order Code 99004**

opposite to preferential direction (positive sensor signal opposite preferential direction)

**Order Code 99007**

Analysis devices, amplifier and process controller like digital display model 9180, USB sensor interface model 9206, sensor profibus module model 9221, In-line amplifier model 9235 and modular amplifier model 9243 **refer to section 9 of the catalog.**

**Test and Calibration Certificate**

Included in delivery, et al. with specification of zero output, sensitivity and shunt calibration factor.

**Option**

Standardization of output integrated part of cable to 1.0 mV/V

**...-V010**

(refer to order information)

**Factory Calibration Certificate (WKS)**

Calibration of a load cell separately as well as connected to an indicator. Standard is a certificate with 11 points, starting at zero, running up and down in 20% increments covering the complete measuring range for preferential direction. Special calibrations on request. Calculation of costs by base price plus additional costs per point.

**Order Code 85WKS-85...**