Miniature Ring Load Cell

Model 8438

Code:	8438 EN
Delivery:	ex stock/6 weeks
Warranty:	24 months

8438 EN

- **Measuring ranges from 0 ... 5 N to 0 ... 200 kN**
- **Centric throughout hole**
- **Flat disc design**
- **Made of stainless steel**
- **Completely welded sensor body**
- **Nominal characteristic value standardization possible**

Application

The miniature ring load cells of the 8438 series have been specially designed to show-up with small external dimensions. These sensors can be used for a wide range of industrial and laboratory applications due to their small size. The small diameter and height make this miniature ring load cell perfect for installation in structures, in which the measured force is guided directly through the sensor after disconnection.

Examples of this are force measurements on

- Bolts
- Screws
- Plate and cover fasteners
- Bearing contact forces
- Spot welding machines
- Cutting tools

Description

The measured tension and compression force must be introduced axially and perpendicularly to the entire surface of the inner and outer bands of the sensor in the opposite direction. Conversion of the acting force into an electrical output signal is performed by strain gauges connected together in a full bridge circuit. To achieve optimal accuracy, the base of the sensor should rest on a smooth level surface, hardened to at least 63 HRC with sufficient dimensions. The base cover welded to the surface has a stabilizing effect on the sensor element. Lateral forces should be avoided anyway as they distort the measured results.
During installation or operation, ensure that the cable outlet and the sensor cable are not subject to excessively high tensile or bending forces. Strain and bend relief may be necessary for the sensor cable on the machine side.

burster praezisionsmesstechnik gmbh & co kg Germany
Talstr. 1-5 · Gernsbach 76593 · Phone +49-7224-6450
www.burster.com
info@burster.com

Technical Data

Order Code	Measuring Range	Dimensions [mm]													Thread G	Resonance Frequency [kHz]
		D1	ø D2	ø D3	ø D4	ø D5	A	H	ø C	L	ø K	M	B	ø T		
8438-5005	0 ... 5 N	12.7	11.4	10.2	5.1	2.5	3.0	3.8	-	-	1.2	1.2	-	-	-	0.4
8438-5010	0 ... 10 N	12.7	11.4	10.2	5.1	2.5	3.0	3.8	-	-	1.2	1.2	-	-	-	0.7
8438-5020	0 ... 20 N	25.4	21.6	20.6	6.6	5.1	6.4	7.1	4.8	8.0	1.4	3.0	-	-	-	1.0
8438-5050	0 ... 50 N	25.4	21.6	20.6	6.6	5.1	6.4	7.1	4.8	8.0	1.4	3.0	-	-	-	1.1
8438-5100	0 ... 100 N	28.0	25.0	22.0	9.0	5.5 H8	7.0	8.0	2.2	8.0	1.9	2.5	-	-	-	1.2
8438-5200	0 ... 200 N	28.0	25.0	22.0	9.0	5.5 H8	7.0	8.0	2.2	8.0	1.9	2.5	-	-	-	2.0
8438-5500	0 ... 500 N	28.0	25.0	22.0	9.0	5.5 H8	7.0	8.0	2.2	8.0	1.9	2.5	-	-	-	3.7
8438-6001	0 ... 1 kN	38.0	29.0	25.0	13.5	7.0 H8	9.0	10.0	3.6	8.0	3.0	3.0	3.0	33.5	M 2.5x0,45	3.4
8438-6002	0 ... 2 kN	38.0	29.0	25.0	13.5	7.0 H8	9.0	10.0	3.6	8.0	3.0	3.0	3.0	33.5	M 2.5x0,45	5.5
8438-6005	0 ... 5 kN	38.0	29.0	25.0	13.5	7.0 H8	9.0	10.0	3.6	8.0	3.0	3.0	3.0	33.5	M 2.5x0,45	10.0
8438-6010	0 ... 10 kN	38.0	29.0	25.0	13.5	7.0 H8	9.0	10.0	3.6	8.0	3.0	3.0	3.0	33.5	M 2.5x0,45	15.0
8438-6020	0 ... 20 kN	49.0	41.0	35.0	23.0	15.0 H8	15.0	16.0	3.6	8.0	3.0	4.5	3.0	45.0	M 2.5x0,45	14.0
8438-6050	0 ... 50 kN	49.0	41.0	35.0	23.0	15.0 H8	15.0	16.0	3.6	8.0	3.0	4.5	3.0	45.0	M 2.5x0,45	24.0
8438-6100	0 ... 100 kN	78.0	60.0	54.0	42.0	28.0 H8	24.0	25.0	5.6	10.0	5.0	6.5	5.5	69.0	M 4.0x0,7	22.0
8438-6200	0 ... 200 kN	78.0	60.0	54.0	42.0	28.0 H8	24.0	25.0	5.6	10.0	5.0	6.5	5.5	69.0	M 4.0x0,7	37.0

Electrical values

Bridge resistance (full bridge):
- measuring range ≤ 0 ... 10 N semiconductor strain gauge 500 Ω, nominal*
- measuring range ≥ 0 ... 20 N foil strain gauge 350 Ω, nominal*

Excitation:
- measuring range ≤ 0 ... 10 N max. 5 V DC
- measuring range ≥ 0 ... 20 N max. 10 V DC

Nominal sensitivity:
- measuring range ≤ 0 ... 10 N 20 mV/V, nominal*
- measuring range 0 ... 20 N and 0 ... 50 N 2 mV/V, nominal*
- measuring range 0 ...100 N 1.0 mV/V, nominal*
- measuring range ≥ 0 ...200 N 1.5 mV/V, nominal*

* Deviations from the stated value are possible.

Environmental conditions

Range of operating temperature: 0 °C ... + 85 °C
Nominal temperature range: +15 °C ... + 70 °C
Influence of temperature on zero: ≤ ± 0.03 % F.S./K
Influence of temperature on sensitivity: ≤ + 0.03 % Rdg./K

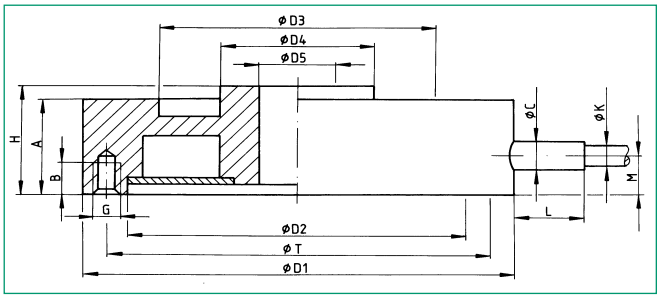
Mechanical values

Non-linearity: ≤ 1.0 % F.S.
Relative hysteresis: ≤ 0.75 % F.S.
Non-repeatability with unchanged assembly position: ≤ 0.25 % F.S.
Kind of measurement: tensile and compressive forces
calibration in compressive direction (preferential measuring direction)
Upon operation against the preferential measuring direction a changed characteristic value is possible.
Deflection full scale: approx. 60 µm
Mounting: measuring range ≥ 0 ... 1000 N
there are three mounting holes on the lower side of the sensor, equally spaced on T diameter with division 120°, one hole is located directly across the cable exit. This kind of mounting is allowed for compression load only.
Operating force max: 150 % of capacity
Dynamic load capacity: recommended 50 % of capacity
max. 70 % of capacity
Material: stainless steel 1.4542
Electrical connection:
all cables for measuring range ≥ 0 ... 100 N are suitable for drag chains
- measuring range ≤ 0 ... 500 N: shielded, TPE insulated cable with open ends for soldering, length appr. 2 m. bending radius ≥ 20 mm
- measuring range 0 ... 1 kN to 0 .. 50 kN: additionally equipped with anti-kink protection length appr. 40 mm, bending radius ≥ 30 mm
- measuring range ≥ 0 ...100 kN: additionally equipped with anti-kink protection and adapter for cable holder, length approx. 50 mm, bending radius ≥ 30 mm

Protection class: acc. to EN 60529 range ≤ 0 ... 50 kN IP54
range ≥ 0 ...100 kN IP65
Dimensions: refer to table and dimensional drawing
General tolerance of dimensioning: acc. to ISO 2768-f
Weight: depending on the measuring range, from 5 g up to 900 g
Wiring code: measuring range ≤ 0 ... 50 N / ≥ 0 ...100 N

red	/ with	excitation voltage	positive
black	/ brown	excitation voltage	negative
green	/ green	signal output	negative
white	/ yellow	signal output	positive

Dimensional drawing model 8438



The CAD drawing (3D/2D) for this sensor can be imported online directly into your CAD system.
Download via www.burster.com or directly at www.traceparts.com. For further information about the burster traceparts cooperation refer to data sheet 80-CAD-EN.

Order Information

Miniature ring load cell, measuring range 500 N **Model 8438-5500**

Accessories

Mating connector
12 pins, for all burster desktop devices **Model 9941**
9 pins, for SENSORMASTER and DIGIFORCE®
Order Code: 9900-V209

Installation of a mating connector for main usage of the sensor in preferential direction (positive signal for compressive load)
Order Code: 99004

Only for connection to SENSORMASTER model 9163 desktop version **Order Code: 99002**

Against preferred direction
(positive signal for tensile load) **Order Code: 99007**

Only for connection to SENSORMASTER model 9163 desktop version **Order Code: 99008**

Option

Standardization of the sensitivity to 1.0 mV/V ± 1 %, integrated to connector cable only for measurement ranges ≥ 0 ... 20 N **...-V010**

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 84WKS-84...

burster praezisionsmesstechnik gmbh & co kg Germany
Talstr. 1-5 · Gernsbach 76593 · Phone +49-7224-6450
www.burster.com
info@burster.com
2382-008438EN-5672-081524