

Miniature Ring Load Cell

Model 8438

Code:	8438 E
Manufacturer:	burster
Delivery:	ex stock/6 weeks
Warranty:	24 months
Issue:	1.1.2005

CAD data in 3D/2D available on
POWERPARTS by web2CAD
 Info: data sheet 80-CD-ROM-E



- Central clearance hole
- Available ranges from 0 ... 5 N to 0 ... 200 kN
- Flat disc design
- Allows measurement of force at screw connections
- Made of stainless steel
- Optional standardization of sensitivity
- Completely welded sensor body

Application

The miniature ring load cell of the 8438 series have been specially designed to have small external dimensions. Small diameters and low assembly heights make these units suitable for installation in structures where the measured force is routed directly through the sensor after separation. Examples of this are force measurements on

- bolts,
- screws,
- plate and cover fastenings,
- bearing contacts,
- spot welding machines,
- cutting tools.

Description

The measured force must be introduced via the inner and outer bands of the sensor respectively. For example, when the outer band is the contact surface, the measured force is introduced via the part attached to the inner band. The conversion of the acting force into an electrical output signal is performed by strain gages 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 min. 63 HRC with sufficient dimensions. Lateral forces should be avoided, as they distort the measured results.

During installation, ensure that the cable outlet and the sensor cable are not subjected to excessively high tensile or bending forces.

Technical Data

Model	Measuring range	Dimensions [mm]														Thread	Natural Frequency [kHz]
		ø D1	ø D2	ø D3	ø D4	ø D5	A	H	ø C	L	ø K	M	B	ø T	G		
8438 - 5005	0 ... 5 N	12.7	11.4	10.2	5.1	2.5	3.0	3.8	-	-	1.2	1.2	-	-	-	-	-
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 $\leq 0 \dots 10$ N Semiconductor 500 Ω , nominal*
 Measuring range $\geq 0 \dots 20$ N Foil 350 Ω , nominal*

Excitation:

Measuring range $\leq 0 \dots 500$ N max. 5 V DC
 Measuring range $\geq 0 \dots 1000$ N max. 10 V DC

Sensitivity:

Measuring range $\leq 0 \dots 10$ N 20 mV/V, nominal*
 Measuring range $0 \dots 20$ N and $0 \dots 50$ N 2 mV/V, nominal*
 Measuring range $0 \dots 100$ N 1.0 mV/V, nominal*
 Measuring range $\geq 0 \dots 200$ N 1.5 mV/V, nominal*

* Deviations from the stated value are possible

Environmental Conditions

Operating temperature range: $0^\circ\text{C} \dots + 85^\circ\text{C}$
 Temperature compensated: $+ 15^\circ\text{C} \dots + 70^\circ\text{C}$
 Temperature effect on zero: $\leq \pm 0.03\%$ F.S./K
 Temperature effect on span: $\leq + 0.03\%$ Rdg./K

Mechanical Values

Non-linearity: $\leq 1.0\%$ F.S.
 Relative hysteresis: $\leq 0.75\%$ F.S.
 Non-repeatability with unchanged assembly position: $\leq 0.25\%$ F.S.
 Deflection full scale: approx. 60 μm

Mounting:

Measuring range $\geq 0 \dots 1000$ N on bottom side there are three mounting holes, equally spaced on T diameter as shown.

This kind of mounting is allowed for compression load only.

Operating force max: 50 % over capacity

Dynamic load capacity:
 recommended 50 % of capacity
 max. 70 % of capacity

Material: stainless steel 1.4542

Electrical connection:

Measuring range $\leq 0 \dots 500$ N shielded, TPE-insulated cable with free solder ends, length appr. 2 m, bending radius ≥ 20 mm

Measuring range $0 \dots 1\text{kN}$ to $0 \dots 50$ kN additionally equipped with anti-kink filament, length appr. 40 mm, bending radius ≥ 30 mm

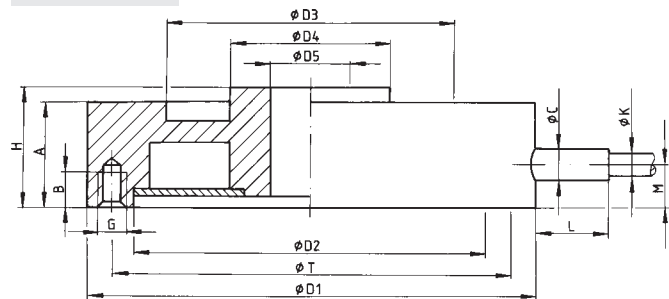
Measuring range $\geq 0 \dots 100$ kN additionally equipped with anti-kink filament and adapter for cable, length approx. 50 mm, bending radius ≥ 30 mm

Protection class: according to EN 60529
 Measuring range $\leq 0 \dots 50$ kN IP 54
 Measuring range $\geq 0 \dots 100$ kN IP 65

Wiring code:

Measuring range $\leq 0 \dots 50$ N/Measuring range $\geq 0 \dots 100$ N
 red / white excitation (positive)
 black / brown excitation (negative)
 green / green signal output (negative)
 white / yellow signal output (positive)

Scale drawing



Sensor CAD drawing can be imported in 3D or 2D version from CD-ROM or downloaded from the Internet.

For more information on **powerPARTS** by web2CAD please refer to the introduction of product section 8 in the catalog.

Dimensions: see table and scale drawing

General tolerances for longitudinal dimensions according to ISO 2768-f

Weight: depending on the measuring range, from 5 g up to 900 g

Option

Standardization of sensitivity to 1.0 mV/V integrated to connector cable

Order code: 8438-xxxx-V010

Order Information

Miniature ring load cell, measuring range 500 N (see table)

Model 8438-5500

Manufacturer calibration

Calibration of the load cell separately as well as connected to an indicator is available. Calculation with basic cost and additional cost per point. Please state the requested points. Standard is an 11-point-run in 20 %-increments up and down.

Order code: 84WKS-8438

Accessories

Mounting of mating connector to conductor cable.

- for main use in preferred direction (positive measuring signal for compression force) **Order code: 99004**

- against preferred direction (positive measuring signal for tensile force) **Order code: 99007**

Mating connector (9 pins) to amplifier model 9235 and DIGIFORCE® model 9310

Model 9900-V209

Mating connector (12 pins) to all burster instrumentations in table housing

Model 9941