Force Sensor KM10 50N

Item number: 5402



Highlights

- Ultraminiature force load cell
- versions with lateral or axial (AX) cable outlet

The force is transmitted via the universal ball joint (diameter 2.4mm, R4) in the centre of the sensor.

The force sensor is assembled on a flat surface. The force sensor is centered on the outer circumference, for example with 3 pins or within a 0.5 mm deep sink. The 9.8mm – 7.4mm ring forms the sensor's contact area. In the centre, a potting compound is visible up to a 7.4mm diameter. The inner ring is not used for centring.

To protect against lift-off, the contact area can be fixed on a flat surface with PUR lacquer.

A version with a central cable outlet is available as an alternative to a lateral cable outlet.

Cable type in this version is MESC-4x0014-PUR.

Optional special version

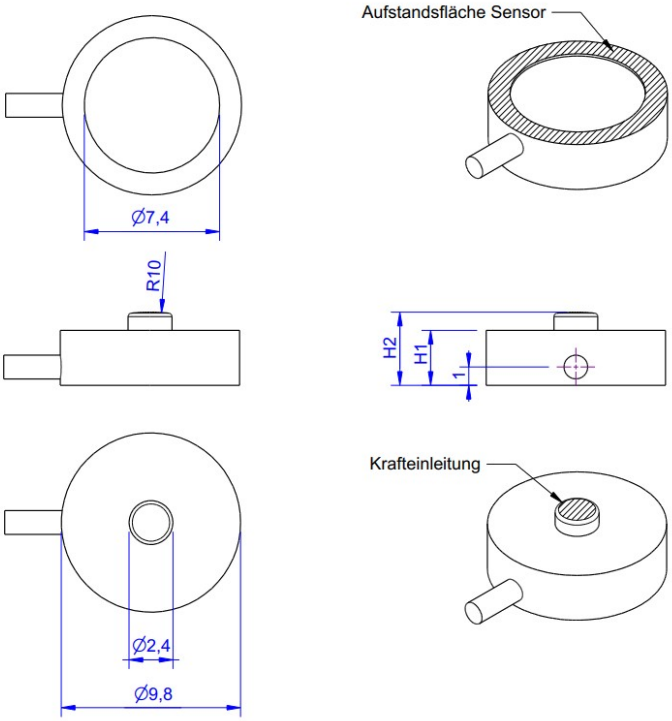
- Protection class IP68: from rated force 200 N
- Temperature range -40°C to 180°C
- Vacuum version from 10^{-5} mbar
- Pressure range up to 8 bar
- Suitable for cleanrooms

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Technical Drawing



Nennlast	Höhe (H1) in mm	Höhe (H2) in mm
25N	3	4
50N	3	4
100N	3	4
200N	3	4
500N	3	4
1000N	3,5	4,5

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Technical Data

Basic Data		Unit
Type	Force load cell	
Force direction	Compression	
Rated force Fx	50	N
Force introduction	Load button	
Dimension 1	Ø2,4	
Sensor Fastening	Circular ring	
Dimension 2	Ø9,8x1,2	
Operating force	150	%FS
Rated displacement	0.08	mm
Lateral force limit	10	%FS
Material	Stainless steel	
Natural frequency fx	5	kHz
Dimensions	Ø9,8 mm x 4 mm	
Height	4	mm
Length or Diameter	9.8	mm
Variants	25N...1kN	

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Electrical Data		Unit
Input resistance	350	Ohm
Tolerance input resistance	20	Ohm
Output resistance	350	Ohm
Insulation resistance	2	GOhm
Rated range of excitation voltage from	2.5	V
Rated range of excitation voltage to	5	V
Operating range of excitation voltage from	1	V
Operating range of excitation voltage to	5	V
Zero signal	0.1	mV/V
Characteristic value range from	0.5	mV/V / FS
Characteristic value range to	1.1	mV/V / FS

Accuracy Data		Unit
Accuracy class	1	
Relative linearity error	1	%FS
Relative zero signal hysteresis	0.05	%FS
Temperature effect on zero signal	0.02	%FS/K
Temperature effect on characteristic value	0.02	%RD/K
Relative creep	0.1	%FS
Environmental Data		**Unit**
Rated temperature range from	-10	°C
Rated temperature range to	70	°C
Operating temperature range from	-10	°C
Operating temperature range to	85	°C
Storage temperature range from	-10	°C
Storage temperature range to	85	°C
Environmental protection	IP64	

Abbreviation: RD: „Reading“; FS: „Full Scale“;1) The exact nominal sensitivity is indicated in the test report;

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Pin Assignment

Channel	Symbol	Description	Wire color	PIN
	+Us	positive bridge supply	brown	
	-Us	negative bridge supply	white	
	+Ud	positive bridge output	green	
	-Ud	negative bridge output	yellow	

Screen - transparent. Pressure load : positive output signal

Mounting

Notes on surface preparation for mounting the sensor:

The contact surface of the force sensor must be flat; a hardened and ground surface is ideal. The reason: The contact surface of the force sensor should lie over the entire surface.

The sensor should therefore not adapt to the contact surface under increasing pressure. This can produce a non-linear characteristic. In addition, a different characteristic would be effective each time it is removed and installed.

We do not recommend using superglue for assembly. This adhesive has the property that it hardens very quickly and that the surface of the sensor may not be completely in contact. It is better to take a PUR varnish, preferably transparent nail varnish, and apply a thin layer. If possible, the housing of the sensor should not be under tension on the circumference.

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