Force Sensor KM10a 1kN

Item number: 11372



Highlights

- Ultraminiature version
- Lower temperature drift compared to the KM10

The KM10a is an ultraminiature membrane force sensor. This load cell is used for force measurement in the pressure direction.
Similar to the KM10, the force introduction is made via the calotte (diameter 3mm, R10) in the center of the sensor.

With the KM10a sensor, the surface area is sanded to achieve reproducibility within the limits of 1% of the actual value. The adjustment board (7mm x 75mm x 4mm) built into the cable also ensures a lower temperature drift compared to the km10 force sensor. The highly flexible MESC-4x0014-PUR cable is used from the sensor to the adjustment board. From the adjustment board, the more robust PVC cable STC-31V-4 is used compared to MESC-4x0014. The adjustment board contains temperature-dependent resistances for the comparison of temperature-related drift < 0.01%/K. The adjustment board should therefore be about the same and contains matching elements for the temperature-related drift.

Optional special version

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

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Stand: 21.03.2026

Technical Data

Basic Data		Unit
Type	Force load cell	
Force direction	Compression	
Rated force Fx	1	kN
Force introduction	Load button	
Dimension 1	R10, Ø 3 mm	
Sensor Fastening	Circular ring	
Operating force	150	% FS
Rated displacement	0.08	mm
Lateral force limit	10	% FS
Material	Stainless steel	
Natural frequency fx	5	kHz
Dimensions	Ø9,5mm x 3,18mm ... Ø12,7mm x 4,5mm	
Height	3.8	mm
Length or Diameter	12.7	mm
Variants	100N ... 2kN	

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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	1.5	mV/V / FS
Characteristic value range to	2	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	0.01	% FS/K
Temperature effect on characteristic value	0.01	% 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	red	
	-Us	negative bridge supply	black	
	+Ud	positive bridge output	green	
	-Ud	negative bridge output	white	

Pressure load: positive output signal.Shield- transparent.

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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