

Force Sensor KM10 25N

Item number: 2093



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.

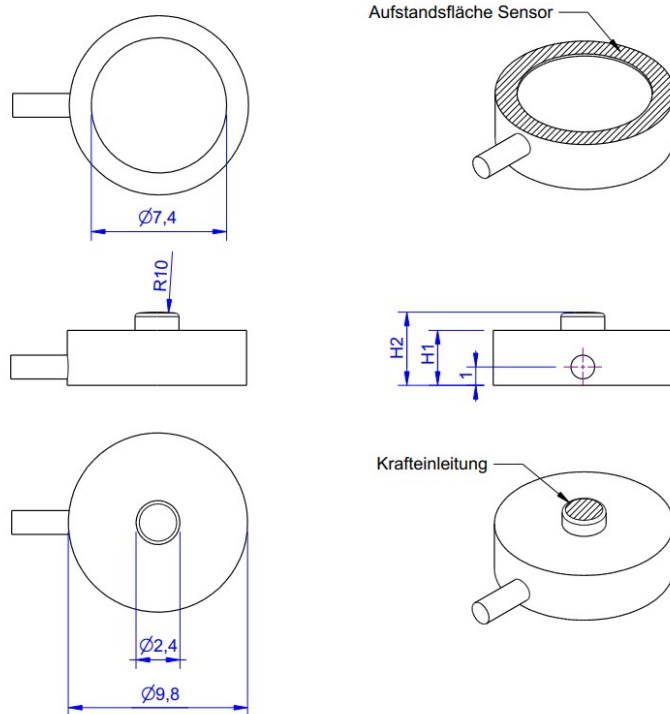
The force sensor is assembled on a flat surface. The force sensor is centered on the outer circumference, for example with 3 pins or within a 0.5 mm deep sink. The 9.8mm – 7.4mm ring forms the sensor's contact area. In the centre, a potting compound is visible up to a 7.4mm diameter. The inner ring is 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;

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 |

Technical Data

| Basic Data | | Unit |
|----------------------------------|-----------------|------|
| Type | Force load cell | |
| Force direction | Compression | |
| Rated force F _x | 25 | 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 f _x | 5 | kHz |
| Dimensions | Ø9,8 mm x 4 mm | |
| Height | 4 | mm |
| Length or Diameter | 9.8 | mm |
| Variants | 25N...1kN | |

| 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;

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.