

KD33 50mN $\pm 50\text{mN}$



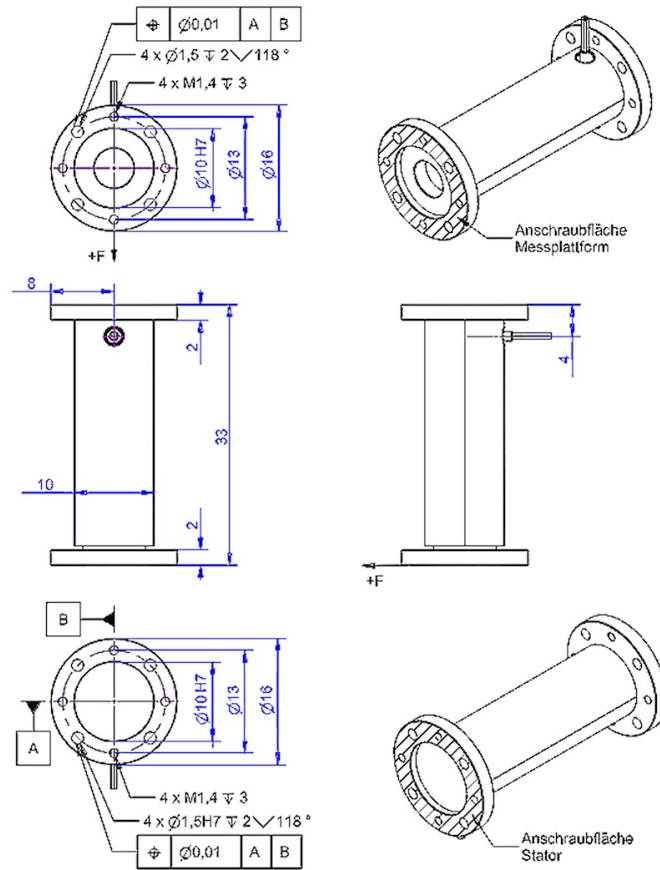
Description

The force sensor KD33 is used for force measurement in the range of millinewton with a resolution of approx. 1 mg (10 nN). The low measuring range of 50 mN (5g) is achieved by the use of semiconductor strain gauges on a double beam made of a titanium alloy. Due to the use of semiconductor strain gauges, the sensor is very robust. The force sensor can be exposed to a force of up to 10N without damage. The natural frequency of the sensor without additional masses is 800Hz.

Due to the small measuring range, the mounting position of the sensor must be selected in such a way that the force acts in a horizontal direction. This is achieved by a vertical installation position ("standing"), or by a horizontal insertion with a force induction in the horizontal plane. The ideal supply voltage is 2.5V. For this purpose, the measuring amplifiers GSV-3 in the measuring range 3.5 mV/V and GSV-8 in the measuring range 7 mV/V. Higher supply voltages of e.g. 5V are technically possible, but cause a significant shift of the zero signal by approx. $\pm 2\text{mV/V}$.

The force sensor KD33 is largely protected against environmental influences (light, infrared radiation, air flow) by a housing. Nevertheless, for example, the approximation of a palm to a few cm causes an immediate upset of the

Dimensions



Technical Data

Force sensor	
Type	Force sensor
Force direction	Tension / Compression
Rated force Fx	50 mN
Force introduction	Fläche
Dimension 1	Ø16
Sensor Fastening	Fläche
Dimension 2	Ø16
Operating force	200 mN
Rated displacement	2 µm
Lateral force limit	100 mN
Natural frequency	800 Hz
Height	16 mm
Length or Diameter	33 mm

Electrical Data	
Input resistance	480 Ohm
Tolerance input resistance	50 Ohm
Output resistance	480 Ohm
Tolerance output resistance	50 Ohm
Insulation resistance	2 GOhm
Rated range of excitation voltage from	2.5 V
Operating range of excitation voltage f	1 ... 5 V
Zero signal	0.5 mV/V
characteristic value range min	2 mV/V
characteristic value range max	3 mV/V

Precision	
Accuracy class	0,5%
Relative linearity error	0.5 %
Relative zero signal hysteresis	0.5 %
Temperature effect on zero signal	-4 %FS/K
Temperature effect on characteristic value	0.5 %RD/K
Relative creep	0.5 %RD/K
Relative repeatability error	0.5 %RD

Connection Data	
Connection type	4 conductor open
Name of the connection	MESC-4x0014-PUR
Cable length	3 m

Temperature	
Rated temperature range f	10 ... 30 °C
Operating temperature range f	10 ... 50 °C

Environmental protection

IP40

Abbreviation: RD: „Reading“; FS: „Full Scale“;

1) The exact characteristic value is indicated in the test report.

Pin Configuration

Symbol	Description	Wire colour
+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