Column-shaped force sensor for the measurement of compressive forces

XCP-171

Support surface for the application of force

Ø 20 x 24 mm
0…1 kg
0…2 kg
0…5 kg
0…10 kg
0…20 kg
0…100 kg

Features

- Column-shaped force sensor with compact/stable compression body
- Measuring ranges available from 1 kg to 100 kg

Application

Thanks to the columnar design, the XCP-171 has a very high stiffness. This force sensor is ideal for measurement of compressive forces and features a very high measurement accuracy.

The sensors are based on proven strain gauge technology and provide a linear signal, proportional to the centrally applied compressive force. The solid steel housing guarantees trouble-free operation, even under difficult environmental conditions.

Ordering code

Description	Measuring range	Output signal	Contact area in mm	Definition	Specification
XCP-171-D-1kg-3.0m-2-0	0…1 kg	2.0 mV/V	Ø 16 mm	Column pressure force sensor	page 3
XCP-171-D-2kg-3.0m-2-0	0…2 kg	2.0 mV/V	Ø 16 mm	Column pressure force sensor	page 3
XCP-171-D-5kg-3.0m-2-0	0…5 kg	2.0 mV/V	Ø 16 mm	Column pressure force sensor	page 3
XCP-171-D-10kg-3.0m-2-0	0…10 kg	2.0 mV/V	Ø 16 mm	Column pressure force sensor	page 3
XCP-171-D-20kg-3.0m-2-0	0…20 kg	2.0 mV/V	Ø 16 mm	Column pressure force sensor	page 3
XCP-171-D-100kg-3.0m-2-0	0…100 kg	2.0 mV/V	Ø 16 mm	Column pressure force sensor	page 3

Column pressure force sensor XCP-171

Ø 20 x 24 mm

From 0...100 kg

Specifications

Performance	
Measuring range / Nominal force	0...1 kg 0...2 kg 0...5 kg 0...10 kg 0...20 kg 0...100 kg
Zero signal unmounted	±2 % from fullscale
Output signal referred to the final value	2.0 mV/V
Deviation output signal	±10 %
Nonlinearity	< ±0.1 % from fullscale
Hysteresis	< ±0.1 % from fullscale
repeatability	< ±0.1 % from fullscale
Creep (30 min)	< ±0.05 % from fullscale
Temperature influence on final value	±0.05 % FS /10°C
Temperature influence on zero point	±0.05 % FS /10°C

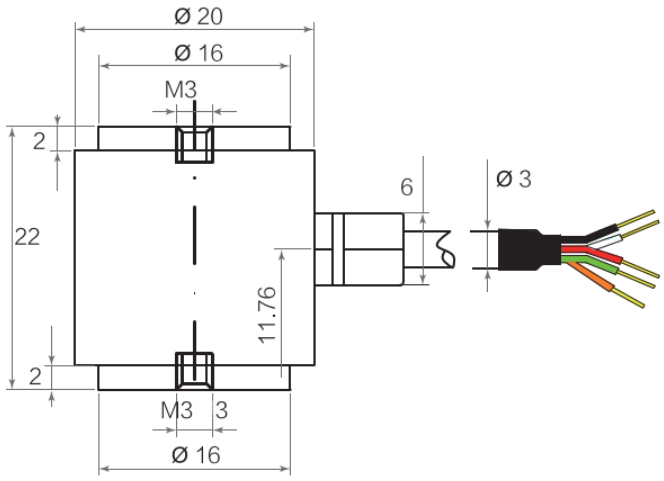
Electrical data	
Output signal referred to the final value	2.0 mV/V
Insulation resistance	≥5000 MΩ / 100 VDC
Input resistance	350 ± 5Ω
Output resistance	350 ± 3Ω
Recommended voltage	3 - 10 V
Output signal referred to the final value	2.0 mV/V

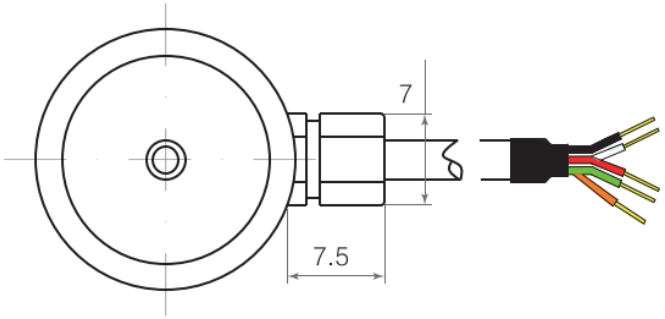
Materials	
Housing	Steel
Cable	PVC

Mechanical data	
Force application	Contact surface Ø 16 mm
Mounting/Assembly	Internal thread top/bottom M3
Overload	150 % from fullscale
Breaking load	200 % from fullscale
Electrical connection	Connection cable
Cable length	3 m
Plug type	Open stranded wires, connectors available on request

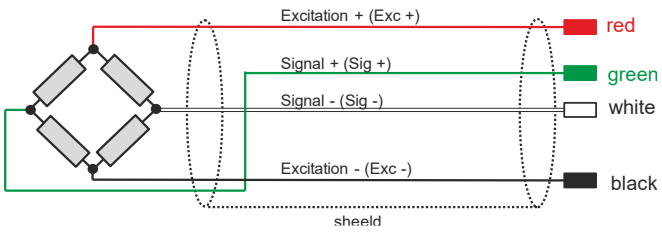
Environmental data	
Ambient temperature	- 20 ... 80 °C
Protection rate	IP40

Mechanical dimensions





Wiring



Ordering code

The load cell is supplied without a calibration certificate.
Calibration certificate available on request.

For detailed ordering information, see page 2.

Definition of accuracy

For force sensors, there are the following points to consider regarding accuracy:

1. linearity, repeatability and hysteresis (combined error).
   The linearity, repeatability and hysteresis specify the measurement deviation compared to the ideal characteristic curve. This maximum measurement deviation is specified in relation to the final value. I.e. for example an inaccuracy of 0.3 % FS corresponds to a maximum measurement deviation of 0.3 kg over the entire measurement range for a force sensor with a measurement range of 0...100 kg.

2. sensitivity
   In the data sheet a sensitivity (= output signal to the final value) of the sensors is given. However, the sensitivity is not always exactly identical. For this reason, the deviation of the sensitivity is specified.