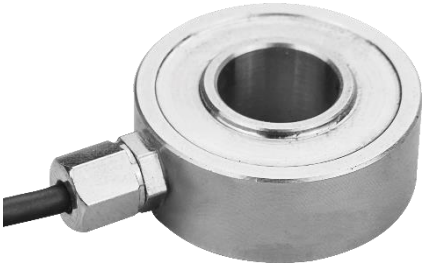
Flat ring force sensor for measuring compressive forces



XCM-135

Support ring with inner diameter 6.5 mm for force application

Ø 18 x 6.5 mm
0...5 kg
0...10 kg
0...20 kg
0...30 kg
0...50 kg

Features

- Flat ring force sensor with hollow design
- Measuring ranges available from 5 kg to 50 kg

Application

Thanks to its compact dimensions, the XCM-135 ring-shaped force sensor is suitable for force value detection and control applications in industry.

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 harsh environmental conditions.

Ordering code

Description	Measuring range	Output signal	Contact area in mm	Assembly	Specification
XCM-135-C-5kg-3.0m-2-0	0…5 kg	1.5 mV/V	Ø 18 x 8.1 mm	Ring force sensor	page 3
XCM-135-C-10kg-3.0m-2-0	0…10 kg	1.5 mV/V	Ø 18 x 8.1 mm	Ring force sensor	page 3
XCM-135-C-20kg-3.0m-2-0	0…20 kg	1.5 mV/V	Ø 18 x 8.1 mm	Ring force sensor	page 3
XCM-135-C-30kg-3.0m-2-0	0…30 kg	1.5 mV/V	Ø 18 x 8.1 mm	Ring force sensor	page 3
XCM-135-C-50kg-3.0m-2-0	0…50 kg	1.5 mV/V	Ø 18 x 8.1 mm	Ring force sensor	page 3

Ring-shaped force sensor XCM-135

Ø 18 x 8.1 mm

From 0...5 till 0...50 kg

Specifications

Performance	
Measuring range / Nominal force	0...5 kg 0...10 kg 0...20 kg 0...30 kg 0...50 kg
Zero signal unmounted	< ±2 % from fullscale
Output signal referred to the final value	1.5 mV/V
Deviation output signal	±10 %
Nonlinearity	< ±0.5 % from fullscale
Hysteresis	< ±0.5 % from fullscale
repeatability	< ±0.5 % from fullscale
Creep (30 min)	< ±0.05 % from fullscale
Temperature influence on final value	±0.1 % FS /10°C
Temperature influence on zero point	±0.1 % FS /10°C

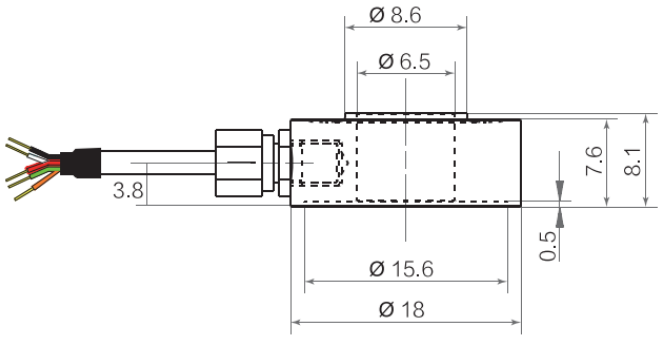
Electrical data	
Output signal referred to final value	1.5 mV/V
Insulation resistance	≥ 5000 MΩ / 100 VDC
Input resistance	350 ± 10Ω
Output resistance	350 ± 3Ω
Recommended voltage	3 - 5 V

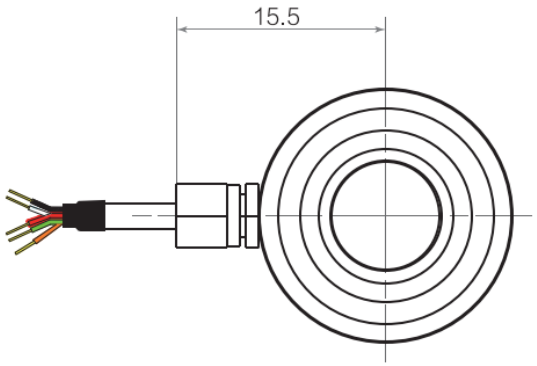
Materials	
Housing	Steel
Cable	PVC

Mechanical data	
Force application	Support ring
Overload	120 % from fullscale
Breaking load	150 % from fullscale
Electrical connection	Connection cable
Cable length	3 m
Plug type	Open stranded wires, connectors available on request

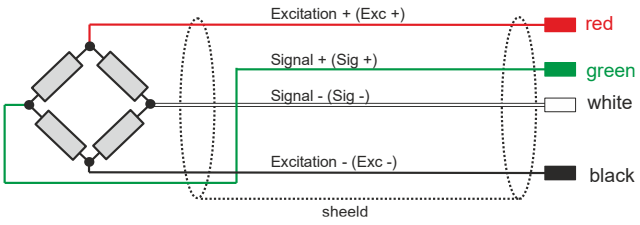
Environmental data	
Ambient temperature	-20...80 °C
Compensated temperature range	-10...60 °C
Protection rate	IP66

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)
   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 1.5% FS corresponds to a maximum measurement deviation of 0.75 kg over the entire measurement range for a force sensor with a measurement range of 0...50 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.