

Miniature force sensor for measuring compressive forces



XCM-137

with force release button

Ø 19 x 9 mm,

0...5 kg

0...10 kg

0...20 kg

0...30 kg

0...50 kg

0...100 kg

0...150 kg

0...200 kg

0...250 kg

0...300 kg

0...500 kg

Features

- With force application button for force application
- Measuring ranges available from 5 kg to 500 kg

Application

Thanks to its compact dimensions, the XCM-137 force sensor is suitable for applications with limited space.

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.

Description	Measuring range	Output signal	Contact area in mm	Assembly	Specification
XCM-137-B-5kg-3.0m-2-5-0-0	0...5 kg	1.0 - 1.5 mV/V	Ø 19 x 9 mm	Button force introduction on top	page 3
XCM-137-B-10kg-3.0m-2-5-0-0	0...10 kg	1.0 - 1.5 mV/V	Ø 19 x 9 mm	Button force introduction on top	page 3
XCM-137-B-20kg-3.0m-2-5-0-0	0...20 kg	1.0 - 1.5 mV/V	Ø 19 x 9 mm	Button force introduction on top	page 3
XCM-137-B-30kg-3.0m-2-5-0-0	0...30 kg	1.0 - 1.5 mV/V	Ø 19 x 9 mm	Button force introduction on top	page 4
XCM-137-B-50kg-3.0m-2-5-0-0	0...50 kg	1.0 - 1.5 mV/V	Ø 19 x 9 mm	Button force introduction on top	page 4
XCM-137-B-100kg-3.0m-2-5-0-0	0...100 kg	1.0 - 1.5 mV/V	Ø 19 x 9 mm	Button force introduction on top	page 4
XCM-137-B-150kg-3.0m-2-5-0-0	0...150 kg	1.0 - 1.5 mV/V	Ø 19 x 9 mm	Button force introduction on top	page 5
XCM-137-B-200kg-3.0m-2-5-0-0	0...200 kg	1.0 - 1.5 mV/V	Ø 19 x 9 mm	Button force introduction on top	page 5
XCM-137-B-250kg-3.0m-2-5-0-0	0...250 kg	1.0 - 1.5 mV/V	Ø 19 x 9 mm	Button force introduction on top	page 5
XCM-137-B-300kg-3.0m-2-5-0-0	0...300 kg	1.0 - 1.5 mV/V	Ø 19 x 9 mm	Button force introduction on top	page 5
XCM-137-B-500kg-3.0m-2-5-0-0	0...500 kg	1.0 - 1.5 mV/V	Ø 19 x 9 mm	Button force introduction on top	page 5

Miniature compression force sensor XCM-137

Ø 19 x 9 mm

From 0...5 till 0...20 kg



Specification

Performance

Measuring range / nominal force	0...5 kg 0...10 kg 0...20 kg
Zero point unmounted	< ±2 % from fullscale
Deviation Sensitivity	±10 %
Nonlinearity	< ±1.0 % from fullscale
Hysteresis	< ±0.5 % from fullscale
Repeatability	< ±0.5 % from fullscale
Creep (30 min)	< ±1.0 % 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	1.0 - 1.5 mV/V
Bridge resistance / sensor element strain gauge full bridge	350 Ohm
Supply voltage	3 - 5 VDC

Materials

Housing	Steel
Cable	PVC

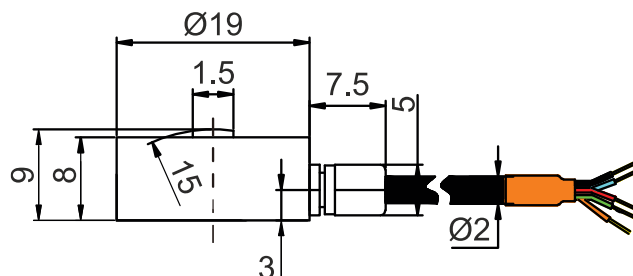
Mechanical data

Force application	Button
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

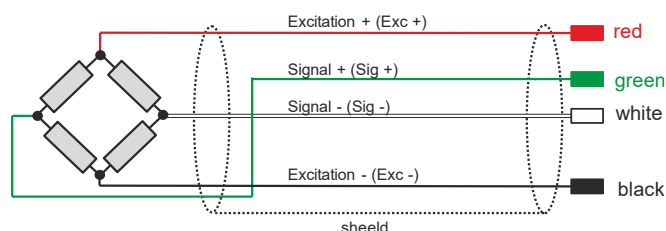
Environmental data

Ambient temperature	-20...80 °C
Compensated temperature range	-10...60 °C

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.

Miniature compression force sensor XCM-137

Ø 19 x 9 mm

From 0...30 till 0...100 kg



Specification

Performance

Measuring range / nominal force	0...30 kg 0...50 kg 0...100 kg
Zero point unmounted	< ± 2 % from fullscale
Deviation Sensitivity	± 10 %
Nonlinearity	< ± 1.0 % from fullscale
Hysteresis	< ± 0.5 % from fullscale
Repeatability	< ± 0.5 % from fullscale
Creep (30 min)	< ± 1.0 % 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	1.0 - 1.5 mV/V
Bridge resistance / sensor element strain gauge full bridge	350 Ohm
Supply voltage	3 - 5 VDC

Materials

Housing	Steel
Cable	PVC

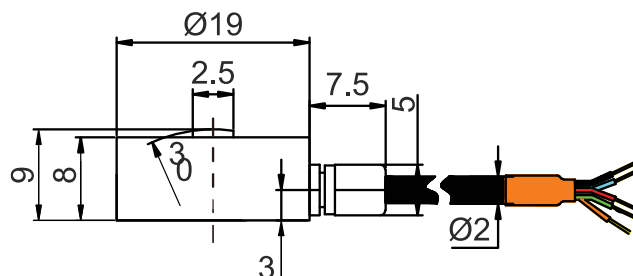
Mechanical data

Krafteinleitung	Button
Überlast	120 % from fullscale
Bruchlast	150 % from fullscale
Elektrischer Anschluss	Connection cable
Kabellänge	3 m
Steckertyp	Open stranded wires, connectors available on request

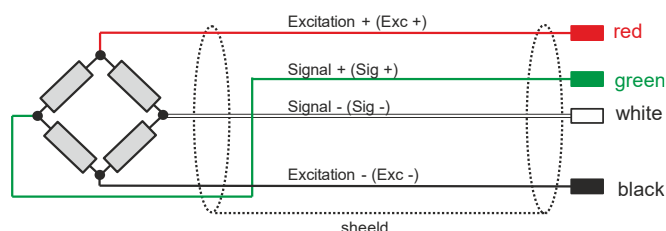
Environmental data

Ambient temperature	-20...80 °C
Compensated temperature range	-10...60 °C

Mechanical dimensions



Wiring

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Miniature compression force sensor XCM-137

Ø 19 x 9 mm

From 0...150 till 0...500 kg



Specification

Performance

Measuring range / nominal force	0...150 kg 0...200 kg 0...250 kg 0...300 kg 0...500 kg
Zero point unmounted	< ±2 % from fullscale
Deviation Sensitivity	±10 %
Nonlinearity	< ±1.0 % from fullscale
Hysteresis	< ±0.5 % from fullscale
Repeatability	< ±0.5 % from fullscale
Creep (30 min)	< ±1.0 % 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	1.0 - 1.5 mV/V
Bridge resistance / sensor element strain gauge full bridge	350 Ohm
Supply voltage	3 - 5 VDC

Materials

Housing	Steel
Cable	PVC

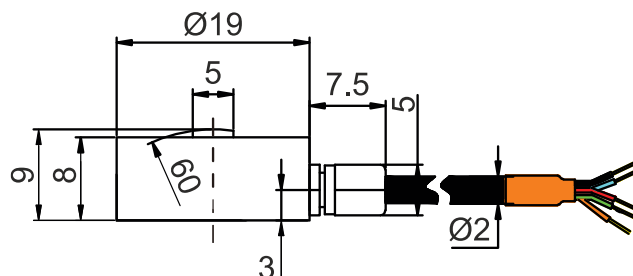
Mechanical data

Krafteinleitung	Button
Überlast	120 % from fullscale
Bruchlast	150 % from fullscale
Elektrischer Anschluss	Connection cable
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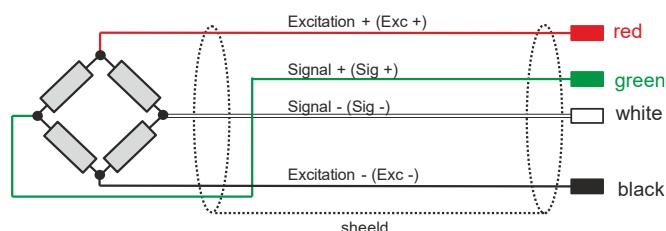
Environmental data

Ambient temperature	-20...80 °C
Compensated temperature range	-10...60 °C

Mechanical dimensions



Wiring



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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 2.0 % FS corresponds to a maximum measurement deviation of 10 kg over the entire measurement range for a force sensor with a measurement range of 0...500 kg.

2. sensitivity

In the data sheet a sensitivity of the sensors is given. However, the sensitivity is not always exactly identical. For this reason, the deviation of the sensitivity is specified.