

Reference and heavy-load force sensor For loads from 630 kN up to 20000 kN

Reference force sensor XCR-171



For force reference measurements at presses



Ø 158 x 150 mm, 0...630 kN 0...1050 kN 0...1500 kN 0...1600 kN	Ø 175 x 150 mm, 0...5000 kN 0...4000 kN	Ø 195 x 165 mm, 0...10.000 kN	Ø 260 x 200 mm, 0...20.000 kN
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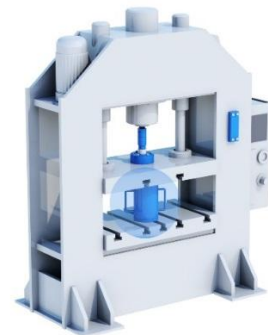
Characteristics

- Solid steel housing
- Encapsulated design with IP65 protection
- Easy to handle with carrying handles
- Individual measuring ranges on request
- Planparallel ring areas

Application

Connected to a display device, the heavy-load force sensor is ideally suited to perform reference measurements:

- Measurement of the maximum pressing force (peak value measurement)
- Calibration of strain sensors for indirect force measurements
- Reference measurement of pressing force
- Calibration of the press closing force
- Verification of the load distribution at large platforms



The XCR-171 force transducer is suitable for reference force measurements in applications where high accuracy and a high robustness against side loads are required.

The load cells can be delivered with a calibration certificate. These load sensors are based on proven strain gauge technology and deliver a linear signal proportional to the applied pressure force. Due to the robust construction of the force transducer and the two carrying handles, these force transducers are particularly suitable for reference measurements of press forces.

Ordering code

Description	Measuring range	Output signal	Dimensions in mm	Montage	Characteristic	Specification
XCR-171-630	0...630 kN	1.25 mV/V	Ø 158 x 150 mm	-	2x carrying handles	page 3 & 4
XCR-171-1050	0...1050 kN	1.25 mV/V	Ø 158 x 150 mm	-	2x carrying handles	page 3 & 4
XCR-171-1500	0...1500 kN	1.25 mV/V	Ø 158 x 150 mm	-	2x carrying handles	page 3 & 4
XCR-171-1600	0...1600 kN	1.25 mV/V	Ø 158 x 150 mm	-	2x carrying handles	page 3 & 4
XCR-171-4000	0...4000 kN	1.25 mV/V	Ø 175 x 150 mm	-	2x carrying handles	page 3 & 4
XCR-171-5000	0...5000 kN	1.5 mV/V	Ø 175 x 150 mm	-	2x carrying handles	page 3 & 4
XCR-171-10000	0...10000 kN	2.0 mV/V	Ø 195 x 165 mm	-	2x carrying handles	page 3 & 4
XCR-171-20000	0...20000 kN	2.0 mV/V	Ø 260 x 200 mm	-	2x carrying handles	page 3 & 4

Heavy-load force sensor XCR-171

From 630 kN up to 20000 kN



Specifications

Performance

Measuring range	0...630 kN 0...1050 kN 0...1500 kN 0...1600 kN 0...4000 kN 0...5000 kN 0...10000 kN 0...20000 kN
Sensitivity from full scale	+ 1.25 mV/V + 1.5 mV/V + 2.0 mV/V
Deviation sensitivity	± 1.0 %
Zero signal unmounted	< ± 0.1 mV/V
Linearity	< ± 0.5 % from full-scale
Repeatability	< 0.2 % from full-scale
Full scale drift over temperature range	± 0.2 % FS /10°C
Zero drift over temperature range	± 0.2 % FS /10°C

Electrical data

Power supply	1...15 VDC
Output signal at full scale	+ 1.25 mV/V + 1.5 mV/V + 2.0 mV/V
DMS bridge resistance	2000 Ohm

Material

Housing	Stainless steel
Sensor housing	Aluminium

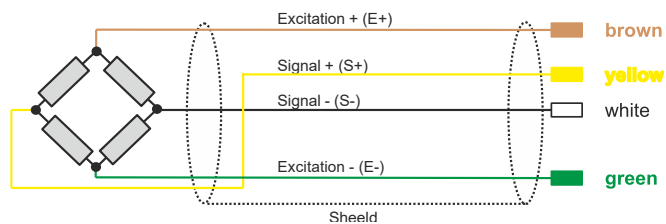
Mechanical data

Overload	150 % of full scale
Life endurance alternating 50 % load	10 Mio cycles
Deflection at rated load	< 0.25 mm
Electrical connection	M12, 4 pole

Environmental data

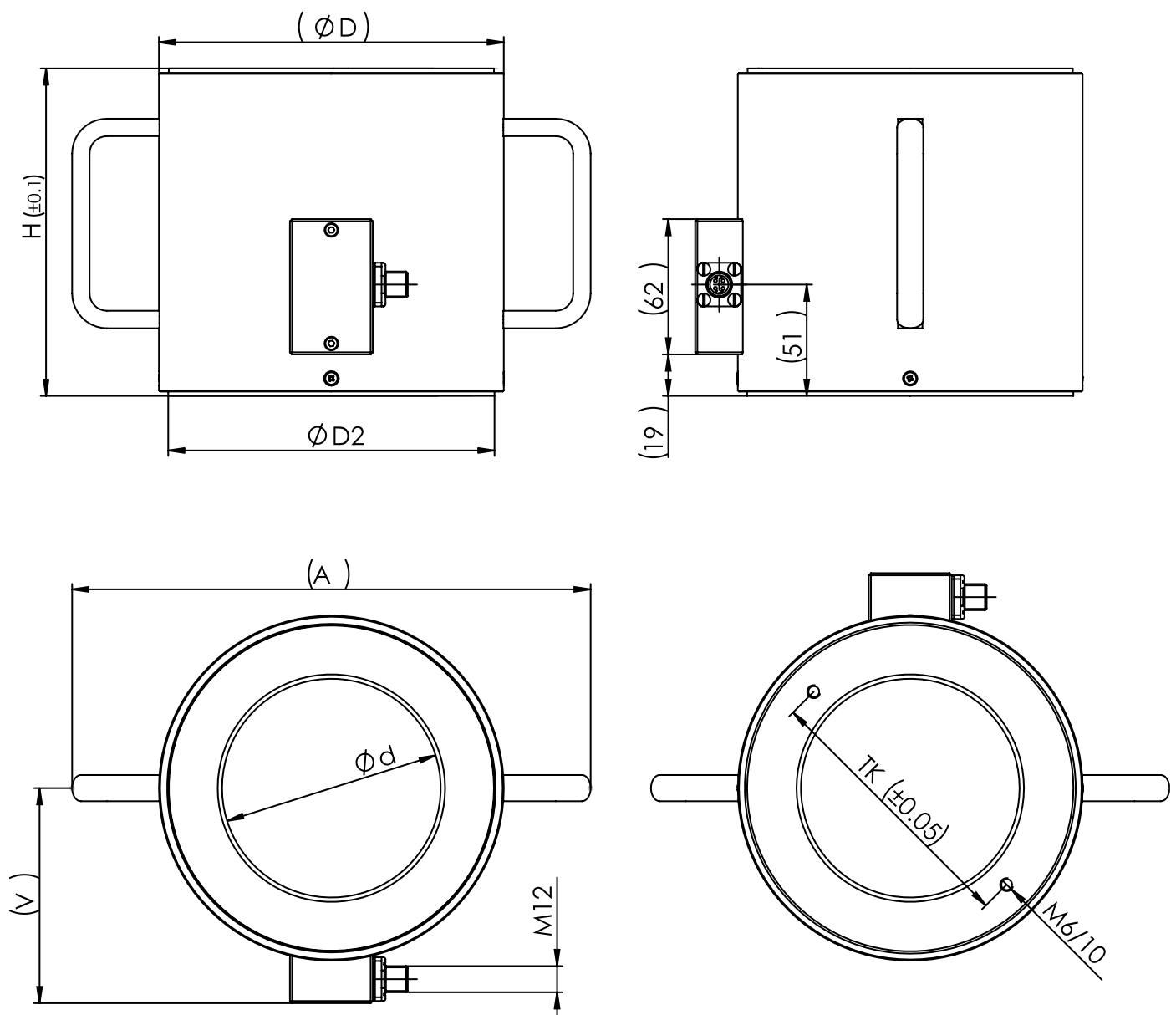
Storage temperature	-40...85 °C
Ambient temperature	0...50 °C
Protection rate	IP 54
Strength against vibration	EN60068-2

Specifications



Mechanical dimensions

Force	630 kN	1050 kN	1500 kN	1600 kN	4000 kN	5000 kN	10.000 kN	20.000 kN
D	158	158	158	158	175	175	195	260
D2	149.5	149.5	149.5	149.5	163	163	179.5	246
d	100.2	100.2	85	85	0	0	0	0
H	150	150	150	150	150	150	165	200
V	98.5	98.5	98.5	98.5	115.5	115.5	135.5	200.5
A	238	238	238	238	255	255	275	340
TK	125	125	125	125	125	125	125	125



Zero reset / adjustment

The zero adjustment at the force sensors with DMS bridge output signal (mV/V) is done at the subsequent amplifier. X-Sensors offers two different types of amplifiers: One for static applications and one for dynamic applications. For dynamic applications, a digital input for automatic zero-point adjustments is offered. For static applications, the zero point can be adjusted manually by DIP switches and by a potentiometer for fine tuning.

Further information concerning the zero-point adjustment can be found in the data sheet of the measurement amplifiers X-201 from X-Sensors.

Definition of accuracy

The accuracy includes the following parameters:

1. Linearity and hysteresis

The linearity and hysteresis specifies the measuring error in reference to the ideal BFSL curve. The maximum measuring error is stated in reference to the full scale value. This means that an accuracy of 0.6 % FS at a force sensor with a measuring range of 0...630 kN corresponds to a measuring error of only 3.78 kN.

2. Sensitivity

The DMS sensors have sensitivities which are specified in reference to the measuring range. The sensitivity can have a small deviation from sensor to sensor. For this reason, the deviation of sensitivity is specified for each sensor type.