

Tension and compression force sensor for monitoring pressing and joining processes



X-137

with external thread as force introduction

Ø 24.4x 10.5 mm,

0...50 N

0...100 N

0...250 N

0...500 N

0...600 N

0...750 N

0...1 kN

Features

- Force introduction customizable for OEM applications
- Very good price-performance relation
- Low overall height for space-saving installation
- With external thread M5 and M6 as force introduction
- Encapsulated version IP65
- Measuring ranges from 50 N to 1 kN available

Application

The load cell X-137 is suitable for force monitoring in pressing and joining processes where high accuracies are required. The force sensors are integrated directly in the force flow.

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 and the sealed design according to IP65 guarantee trouble-free operation, even under difficult environmental conditions.

Description	Measuring range	Output signal	Contact area in mm	Assembly	Specificati on
X-137-D-50N-3.0m-2-E-E-0	0...50 N	2 mV/V	Ø 24.4 x 10.5 mm	Threaded rod M5 top / Threaded rod M5 bottom	page 3
X-137-D-100N-3.0m-2-E-E-0	0...100 N	2 mV/V	Ø 24.4 x 10.5 mm	Threaded rod M5 top / Threaded rod M5 bottom	page 3
X-137-D-250N-3.0m-2-E-E-0	0...250 N	2 mV/V	Ø 24.4 x 10.5 mm	Threaded rod M5 top / Threaded rod M5 bottom	page 3
X-137-D-500N-3.0m-2-E-E-0	0...500 N	2 mV/V	Ø 24.4 x 10.5 mm	Threaded rod M5 top / Threaded rod M5 bottom	page 3
X-137-D-600N-3.0m-2-F-F-0	0...600 N	2 mV/V	Ø 24.4 x 10.5 mm	Threaded rod M6 top / Threaded rod M6 bottom	page 3
X-137-D-750N-3.0m-2-F-F-0	0...750 N	2 mV/V	Ø 24.4 x 10.5 mm	Threaded rod M6 top / Threaded rod M6 bottom	page 3
X-137-D-1000N-3.0m-2-F-F-0	0...1 kN	2 mV/V	Ø 24.4 x 10.5 mm	Threaded rod M6 top / Threaded rod M6 bottom	page 3

Tension and compression force sensor X-137

Ø 24.4 x 10.5 mm

From 50 till 1000 N



Specifikation

Performance

Measuring range / nominal force	0...50 N 0...100 N 0...250 N 0...500 N 0...600 N 0...750 N 0...1 kN
Zero point unmounted	< ±2 % from fullscale
Deviation Sensitivity	±10 %
Nonlinearity	< ±0.5 % from fullscale
Hysteresis	< ±0.5 % from fullscale
Repeatability	< ±0.5 % from fullscale
Temperature influence on full scale	±0.1 % FS /10°C
Temperature influence on zero point	±0.1 % FS /10°C

Electrical data

Output signal referred to final value	2.0 mV/V
Bridge resistance / sensor element strain gauge full bridge	700 Ohm
Supply voltage	5-10 VDC

Materials

Housing	Steel
Cable	PVC

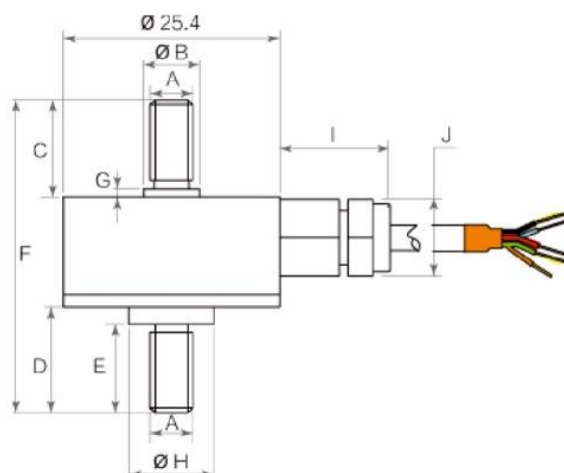
Mechanical data

Force application	Threaded rod M5 or M6
Overload	120 % from full scale
Breaking load	150 % from final value
Electrical connection	Connection cable
Cable length	3 m
Plug type	Open stranded wires, connectors available on request

Environmental data

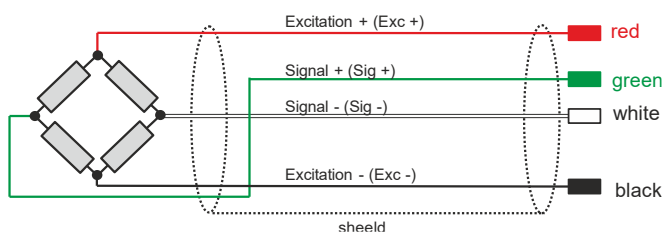
Ambient temperature	-20...80 °C
Compensated temperature range	-10...60 °C
Protection rate	IP 65

Mechanical dimensions



CAPACITY	A	B	C	D	E	F	G	H	I	J	K	L
50...500 N	M5	6.6	11.5	12.5	10.5	37	1	10	13	9	10	3
600...1000 N	M6	6.6	11.5	12.5	10.5	37	1	10	13	9	10	3

Wiring



Force assignment

Compressive force: Signal positive
Tensile force: Signal negative

Ordering code

The load cell is supplied without mounting screws and calibration certificate. Calibration certificate available on request.

For detailed ordering information, see page 2.

Definition of the 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 1.5 % FS corresponds to a maximum measurement deviation of 0.015 kN over the entire measurement range for a force sensor with a measurement range of 0...1 kN.

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.