Tension and Compression Load Cell

1. Application

This tension and compression sensor with its compact construction is designed for heavy-duty use in rough environments as well as for laboratory and test purposes.
The housing and the protective covers are made of stainless steel. The protective cover for lower ranges is made of aluminium. The sensor has a low overall height and a central lead-in/lead-out of the load. Therefore the sensor can be retrofitted easily into existing structures.
The tension and compression load cells of this type are allround instruments for both static and dynamic measurement.

Some areas of application:

- Press-in actions,
- Draw-pull forces,
- Spring power measurements,
- Measurements of cutting forces,
- Drill feed forces,
- Force measurements on mounting devices
- Weighting techniques

2. Description

The force links operate by the approved strain gauge method. The measuring unit contains an applied strain gauge full bridge which converts the affecting energy in an electrical signal.

A metric thread is cut in the middle axis through which the measurement force is fed either by means of a load button or an application-related screw part.
To realize best results, the load cell must be mounted on a plan flat surface.

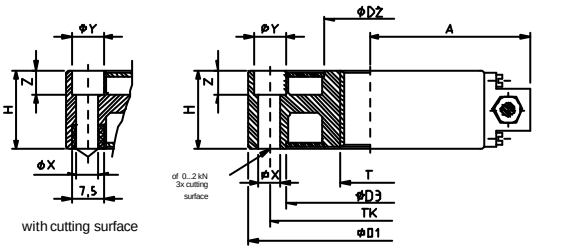
Lateral forces within an angular range of ± 2.5° to the horizontal can be neclected. In case of greater late-ral forces, constructive methods must be taken to lead the lateral forces away from the sensor (e.g. by levers hold from roller bearings, movable bearings). The use of the integral screwholes guarantees a simple mounting possibility for the sensor.

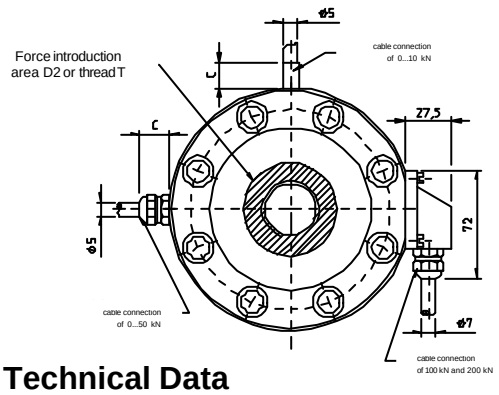
3. Special features

- Available measuring ranges from 0 ... 500 N up to 0 ... 200 kN
- Accuracy ≤ 0.25 % F.S.
- Material: stainless steel
- Standardized sensitivity
- Simple mounting

4. Dimensions

Meas. Range [kN]	Article No.	Dimensions [mm] ØD1	ØD2	ØD3	H	A	C	TKØ	ØX	ØY	Z	Thread T	Clearance holes on TK	Natural frequency [kHz]
0...0,5	12931	54,5	15	35,5	16	-	10	45	4,5	8	4,6	M8 x 1,25	3	›2
0...1	12932	54,5	15	35,5	16	-	10	45	4,5	8	4,6	M8 x 1,25	3	›3
0...2	12933	54,5	15	35,5	16	-	10	45	4,5	8	4,6	M8 x 1,25	3	›5
0...5	12934	54,5	15	35,5	16	-	10	45	4,5	8	4,6	M8 x 1,25	6	›8
0...10	12935	54,5	15	35.5	16	-	-	45	4,5	8	4,6	M8 x 1,25	6	›12
0...20	12936	79	25	59	25	58	15	68	4,5	8	4,6	M12 x 1,5	8	›4
0...50	12937	119	35	94	35	73	15	105	6,6	11	6,8	M24 x 1,5	8	›3
0...100	12038	155	50	109	50	105	-	129	13,5	20	13	M36 x 3	8	›3
0...200	12939	155	50	109	50	105	-	129	13,5	20	13	M36 x 3	8	›5





5. Technical Data

5.1 Electrical specifications:

Bridge resistance :
Foil SG, (full bridge circuit) 350 Ω, nominal
(Deviations are possible)

Calibration resistance:
Meas. range 0 ... 0.5 kN 100 kΩ ± 0.1 %
Meas. range ≥ 0 ... 1 kN 80 kΩ ± 0.1 %
The bridge output signal resulting from a shunt of this value is shown in the calibration certificate.

Excitation: recommended: 5 V DC or AC
max.: 10 V DC or AC

Output: 1.5 mV/V ± 0.25 % standardized

⇨ Option 1: sensitivity 1,0 mV/V
supplementing of Art.-No.: ....“1“

5.2 Environmental conditions:

Operating temperature range: - 30 °C ... + 80 °C

Rated temperature range: + 15 °C ... + 70 °C

Temperature influence
on zero: ≤ 0.02 % F.S./ K
on span: ≤ 0.02 % Rdg./ K

5.3 Mechanical specifications:

combined value for non-linearity, hysteresis and repeatability: ‹0,25 % v.E.

Kind of measurement: tension & compression (calibration in compression direction)

Deflection: approx. 80 µm

Overload - safe: 150 % of capacity

Overload - burst: ›250 % of capacity

Dynamic performance: recommended: 70 % der Nennkraft
maximum: 100 % der Nennkraft

Material: stainless steel 1.4542
Weight: approx. 250 g ...5,2 kg

Protection class (according to DIN 40050): = 0...10 kN: IP 52
= 0...20 kN: IP 65

Dimensions: see table and scale drawing

Meas. ranges = 0...2 kN are equipped with edges within clearance holes, so they are 1.5 mm higher

Meas. range = 0...50 kN cable port radial

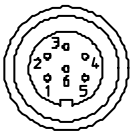
Meas. range = 0...50 kN cable port tangential

Mounting:
Meas. range to 2 kN: 3 clearance holes with edges for three-point-support
Meas. range of 5 kN: 6 or 8 clearance holes

5.4 Electrical connection:

4-wire, shielded, flexible PVC-cable with bare ends of soldering, belding radius minimum 25 mm, length approx. 2 m, with connection plug Tuchel, 6-poles
Meas. range 20..50 kN: threated cable outlet

Pin connection



Top view
connection plug

Pin	wire	signal	
1	brown	excitation	-
2	white	excitation	+
3	(blank)	shield	
4	yellow	signal output	+
5	green	signal output	-

6. Order Information

e.g. Tension and compression load cell, 0...100 kN

108524/02 - **100 kN** - **12938** **1**

Data sheet | Meas. range | Article No. | Option 1,0 mV/V

For signal amplifiers and display units please refer to the data sheets of product group 4.