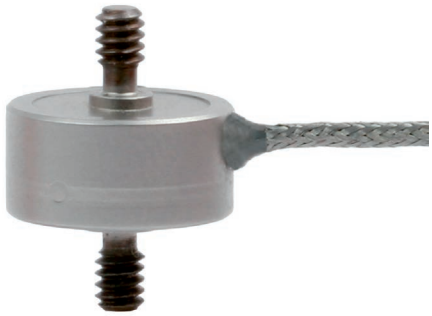
Miniature tension/compression force transducer
For small measuring ranges from 10 N
Model F2221

Applications

- Construction and apparatus
- Production lines, manufacturing plant
- Measurement and control facilities
- Special equipment and machinery construction
- Cable force measurements



Miniature tension/compression force transducer, model F2221

Special features

- Measuring ranges 0 … 10 N up to 0 ... 50 kN
- Standard calibration: tension/compression (positive in tension)
- Ease of assembly
- Small geometries
- Stainless steel version

Description

Miniature tension/compression force transducers are designed for static and dynamic measurement tasks in the direct flux of force. They determine the tension and compression forces in a wide scope of applications. It is possible, for example, to measure the actual force in ropes and rods.

The force is applied to this tension/compression force transducer via threaded bolts, which are located on each side of the cylindrical body.

The measurement range starts with a rated force of 10 N.

Note
To prevent overload, it is advantageous to connect up the force transducer electrically during installation and to monitor the measured value. In mounting the force transducer torsion and bending moments have to be avoided.

The force must be applied axial to the centre. Torsion and bending moments must be avoided.

Option
- High temperature version up to 250 °C
- Cable amplifier 4 ... 20 mA or 0 ... 10 V output
- Other cable length

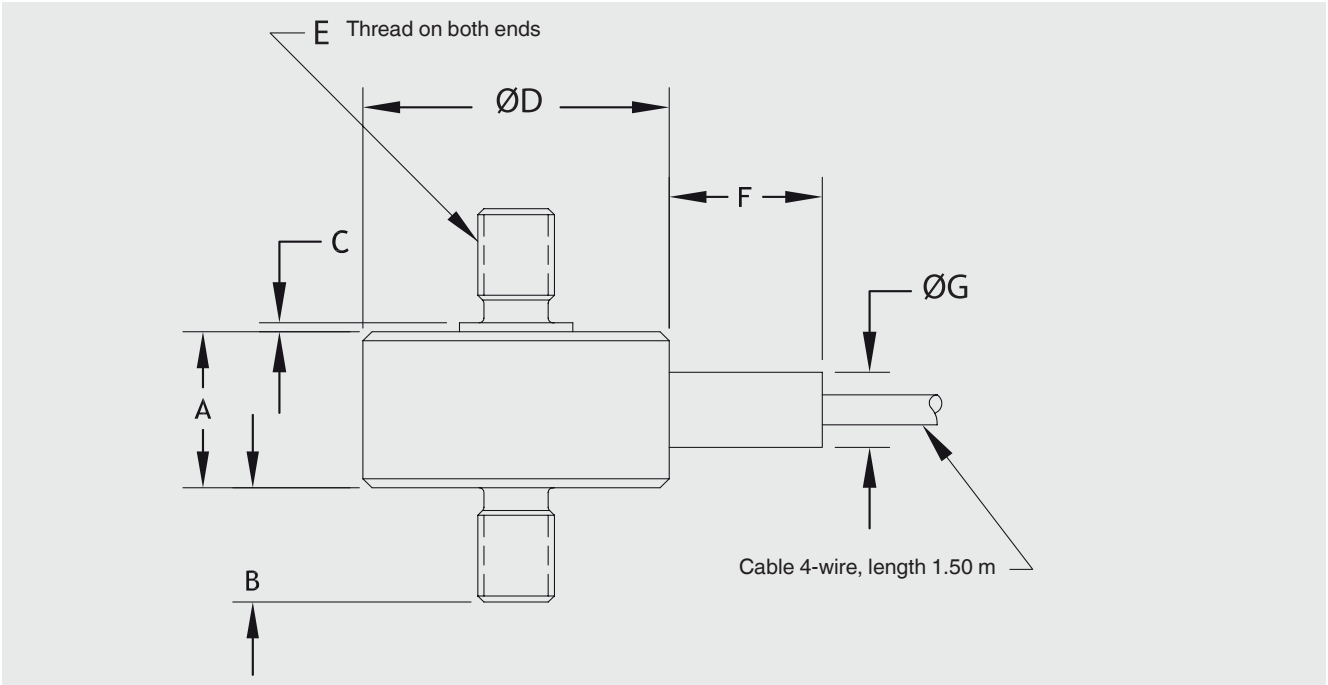
Specifications in accordance with VDI/VDE/DKD 2638

Model F2221	
Rated force F_{nom} N	10 / 20 / 50 / 100 / 200 / 500 / 1,000 / 2,000 / 5,000 / 10,000 / 20,000 / 30,000 / 50,000
Relative linearity error d_{lin}	
Tension or compression	±0.15 % F_{nom} up to 1,000 N ±0.20 % F_{nom} from 2,000 N
Relative deviation of zero signal $d_{S, 0}$	±2 % F_{nom}
Relative repeatability error in unchainged mounting position b_{rg}	±0.1 % F_{nom} with 10 N ±0.05 % F_{nom} from 20 N
Temperature effect on zero signal TK_0	≤ ±0.1 %/10 K
Temperature effect on characteristic value TK_C	≤ ±0.1 %/10 K
Force limit F_L	150 % F_{nom}
Breaking force F_B	> 300 % F_{nom}
Permissible oscillation stress acc. to DIN 50100 F_{rb}	70 % F_{nom}
Material	Stainless steel
Rated temperature range $B_{T, nom}$	15 … 71 °C (15 … 250 °C) Others on request
Operating temperature range $B_{T, G}$	-54 … +121 °C
Reference temperature T_{ref}	23 °C
Output signal (rated output) C_{nom}	2,0 mV/V (10 N with 1,5 mV/V)
Input-/output resistance R_e/R_a	350 Ω
Insulation resistance	> 2 GΩ
Electrical connection	Cable (PTFE) 1.5 m, open wires, 4-wire
Voltage supply	
without amplifier	DC 5 V with 50 N, DC 10 V from 100 N for mV/V output
with cable amplifier	DC 12 … 28 V for output 0(4) … 20 mA, DC 0 … 10 V
Protection (acc. to IEC/EN 60529)	IP65
Weight	20 g up to 250 g depending on rated force

Approvals

Logo	Description	Country
CE	**EU declaration of conformity** ■ EMC directive ■ RoHS directive	European Union
EAC	**EAC (Option)** ■ EMC directive	Eurasian Economic Community

Dimensions in mm



Rated force in N	Dimensions in mm						
	ØD	A	B	C	E	F	ØG
10 / 20 / 50	19.1	11.43 ± 0.8	6.35	1.5 max.	M4 x 0.7	7.87	4.83
100 / 200 / 500	25.4	13.21	6.35	0.76	M5 x 0.8	12.7	6.35
1,000 / 2,000 / 5,000	25.4	13.21	9.65	0.76	M6 x 1.0	12.7	6.35
10,000	25.4	18.3	12.7	0.76	M10 x 1.5	12.7	6.35
20,000	31.8	23.9	16.0	0.76	M12 x 1.5	12.7	9.65
30,000 / 50,000	35.1	27.9	22.35	0.76	M20 x 1.5	12.7	9.65

Pin assignment

Electrical connection	
Excitation voltage (+)	Red
Excitation voltage (-)	Black
Signal (+)	White
Signal (-)	Green

Ordering information

Model / Rated force / Calibration direction / Connecting thread / Relative linearity error / Temperature range / Output signal / Electrical connection / Options