

Tension and pressure transducer **ZD 1.X, 2.X, 4.0, 5.0, 6.0**

For tension and compression forces
Measurement ranges from 1 kN bis 300 kN

Load and force measurement
Rope/cable force measurement
Force measurement in lifting devices
Machine and plant engineering



Designed,
developed and
made in Germany

These tension/pressure transducers are distinguished by their compact design. In contrast to the classic tension rod, compression forces can be applied to these force transducers. They are also considerably more accurate.

These tension/pressure transducers are used in the most varied industrial applications. The forces are transmitted centrally via the grub screws. It should be ensured

that a clearance is maintained between the locknut and the cube-shaped body to prevent any forces acting on the body. These force transducers are also optionally available with spherical rod ends.

All types are equipped with integrated measuring amplifiers. Signals can therefore also be transmitted over longer distances. A broad bandwidth of output

signals are at your disposal. Tension/pressure transducers are supplied with an M12x1 plug connector.

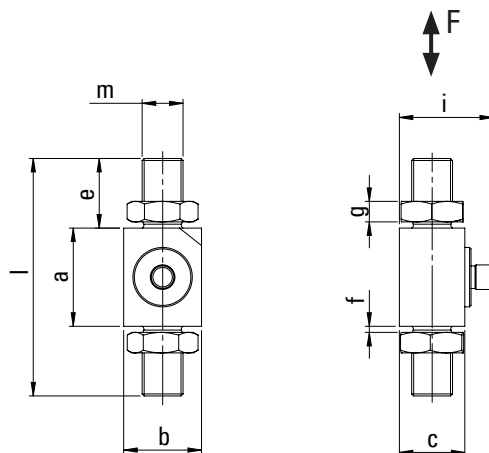
Technical data

Type	ZD 1.0	ZD 1.1	ZD 1.2	ZD 1.3	ZD 1.4	ZD 2.0	ZD 2.1	ZD 2.2	ZD 4.0	ZD 5.0	ZD 6.0
Nominal load [kN]	1	2	3	5	10	20	30	50	100	200	300
Dimensions [mm]	l	78				116			258	282	325
	e	21				34			101	110	120
	a	36				48			56	62	85
	b	30				38			48	55	68
	c	30				32			48	55	68
	g	6				10			on request		
	i	44				46			63	70	83
	f	2...4				2...4			> 20		
Thread m	M 12 x 1.75					M 20 x 1.5			M 36 x 3	M 42 x 3	M 52 x 3
Material	Aluminium anodized				SST	Aluminium anodized	Stainless steel		Stainless steel		
Self-weight [kg]	0.1				0.2	0.2	0.5	2.2		3.2	6.2
Maximum working load*	1.1 x nominal load								1.1 x nominal load		
Limit load*	1.5 x nominal load								2 x nominal load		
Breaking load*	> 3 x nominal load								> 3 x nominal load		
Accuracy under tension	±0.25% f.s.**								±0.25% f.s.**		
under compression	±0.5% f.s.**								±0.5% f.s.**		
Reference temperature	20°C										
Nominal temperature range	-10°C to +50°C										
Working temperature range	-20°C to +80°C										
Temperature coefficient of gain	< 0.1% f.s.**/10 K										
Temperature coefficient of zero	< 0.2% f.s.**/10 K										
Nominal deflection [mm]	< 0.1								< 0.1	< 0.2	
Degree of protection	IP 67										

* The sum of the dynamic and static load is decisive

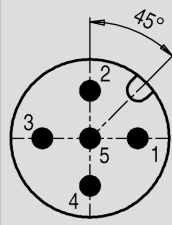
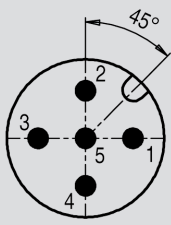
** f.s. = full scale value

Dimensions



f: Maintain a minimum clearance of 2 to 4 mm between the lock nut and housing for transducer types ZD 1.x and 2.x. This minimum clearance is 20 mm for the type ZD 4.0/5.0/6.0.

Output variants with integrated measuring amplifiers

Version	Measuring amplifier with current output		Measuring amplifier with voltage output	
	3-conductor	2-conductor		
Output signal Sig	1...9 mA 4...20 mA 12 ± 8 mA	4...20 mA 12 ± 8 mA	0...5 V 2.5 ± 2.5 V	0...10 V 5 ± 5 V
Supply U _b [V]	10...30		6...30	11...30
Resolution [bit]	11		11	
Measuring rate	1000 (optional 30...2000) Hz		1000 (optional 30...2000) Hz	
Insulation resistance	> 1 GΩ		> 1 GΩ	
Load	$< (U_b - 6V) / Sig_{max}$	$< (U_b - 8V) / Sig_{max}$	> 10 000 Ω	
Max. power consumption	40 mA		40 mA	
Electrical protection	Reverse voltage, overvoltage and short circuit protection		Reverse voltage and overvoltage protection	
Electrical connection variants	M 12 x 1; 5-pole	M 12 x 1; 5-pole	M 12 x 1; 5-pole	
U _b	1	1	1	
Sig(+)	4	1	4	
GND	3	3	3	
Shield	Housing		Housing	
not connected	2; 5	2; 4; 5	2; 5	
Pole assignment				

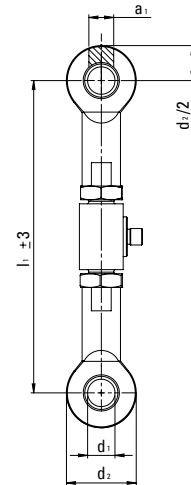
Options

» Output signal in mV/V (without measuring amplifier)

Accessories: Spherical rod ends

Spherical rod end type designations, dimensions and nominal loads

For transducer type	ZD 1.x	ZD 2.x	ZD 4.0	ZD 5.0	ZD 6.0	
Spherical rod end type	EF 12	EF 20	EF 35-20	EF 45-21	EF 60-21	
Dimensions [mm]	l_1	154	228	386	440	538
	d_1	12	20	35	45	60
	d_2	32	51	82	102	135
	a_1	10	16	25	32	44
Spherical rod end nominal load	28 kN	76.7 kN	180.8 kN	276.2	532.1	



Accessories: Cable with plug connector

- » With axial coupling or angled coupling
- » Cable length 5 m, 10 m and for axial coupling also 20 m

Cable end connection configuration

Version	Measuring amplifier with current output		Measuring amplifier with voltage output
	3-conductor	2-conductor	
U_b	BN (1)	BN (1)	BN (1)
Sig (+)	BK (4)	BN (1)	BK (4)
GND	BU (3)	BU (3)	BU (3)
not connected	WH	WH, BK	WH