

# Z4A

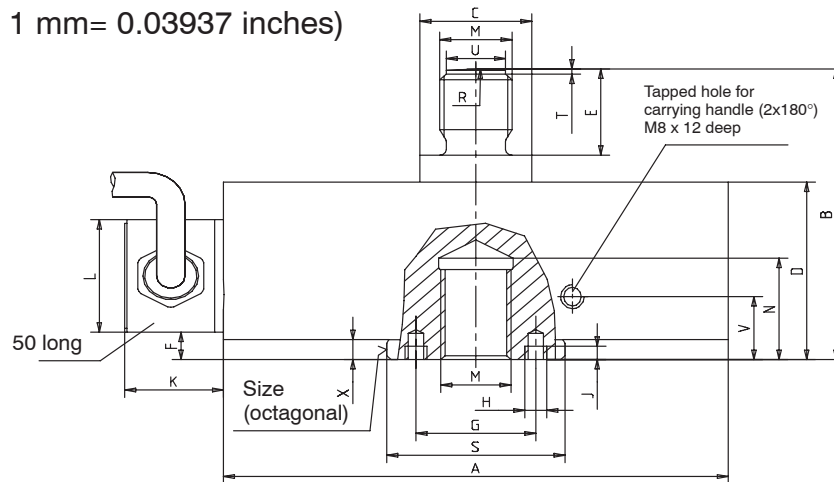
## Force Transducer



### Special features

- Tensile /compressive force transducer with maximum accuracy
- Nominal (rated) forces 20 kN ... 500 kN
- Possible classification according to instrument class in conjunction with DKD calibration certificate according to ISO 376
- Transfer standard in international force comparison
- Good long-term stability

Dimensions (in mm; 1 mm= 0.03937 inches)



Type/ Order no.	∅ A	B	∅ C <sub>F7</sub>	D	E	F	G	H	J	K	L	M	N	R	∅ S <sub>F7</sub>	T	∅ U	V	X	a./f.
1-Z4A/20 kN	115	77	25	47	23	7.3						M16	27	60	40	1.4	13		5.3	38
1-Z4A/50 kN	120	83	26	55	23	10.2	-	-	-	22	30	M20x1.5	28	60	48	1.4	17		8.2	45
1-Z4A/100 kN	146	107	40	69	33	12.2						M30x2	37	160	62	1.4	27		10.2	59
1-Z4A/200 kN	180	137	50	89	43	13.1	68	M6	6			M39x2	45	160	76	1.8	36		11.1	73
1-Z4A/500 kN	275	250	100	145	95	21	118	M8	8	32	43	M72x4	87	400	140	3	65	35	20	134

## Specifications

Type	Z4A						
Data according to VDI standards 2638							
Nominal (rated) force	$F_{nom}$	kN	20	50	100	200	500
Accuracy class <sup>1)</sup>	00					0.5	
Nominal sensitivity	$C_{nom}$	mV/V	2				
rel. sensitivity deviation	$d_c$	%	0.1				
rel. tensile/compressive force sensitivity diff.	$d_{zd}$	%	0.2				
Zero signal tolerance	$d_{s,o}$	%	0.5				
rel. zero point compensation (zero signal return) <sup>1)</sup>	$f_o$	%	0.08				
Rel. range (0.2 $F_{nom}$ to $F_{nom}$ ) at: <sup>1)</sup>							
unchanged mounting position, typically	$b_i$	%	0.02				
different mounting positions, typically	$b$	%	0.03				
Rel. range of inversion (0.2 $F_{nom}$ – $F_{nom}$ ) <sup>1)</sup>	$u$	%	0.06				0.15
Linearity deviation	$d_{lin}$	%	0.02				0.03
Effect of temperature on sensitivity/10 K by reference to nominal sensitivity	$TK_c$	%	0.01				
Effect of temperature on zero signal/10 K by reference to nominal sensitivity	$TK_0$	%	0.015				
Effect of transverse forces (Transverse forces 10 % $F_{nom}$ ) <sup>2)</sup>	$d_Q$	%	0.03				
Effect of eccentricity per mm	$d_E$	%	0.01	0.005			
Rel. creep over 30 min.	$d_{crF+E}$	%	0.02				
Input resistance	$R_e$	$\Omega$	>345				
Output resistance	$R_a$	$\Omega$	356 ± 0.3				
Isolation resistance	$R_{is}$	$\Omega$	>5·10 <sup>9</sup>				
Reference excitation voltage	$U_{ref}$	V	5				
Operating range of the excitation voltage	$B_{U,G}$	V	0.5 ... 12				
Nominal temperature range	$B_{t,nom}$	°C	+10...+40				
Operating temperature range	$B_{t,G}$	°C	-30...+85				
Storage temperature range	$B_{t,S}$	°C	-50...+85				
Reference temperature	$t_{ref}$	°C	+22				
Max. operational force	( $F_G$ )	%	150				
Limit force	( $F_L$ )	%	150				
Breaking force	( $F_B$ )	%	250				
Static lateral limit force	( $F_Q$ )	%	30				
Limit torque	$M_G$	N·m	120	350	950	2000	4000
Nominal displacement	$S_{nom}$	mm	0.2		0.25	0.28	0.45
Fundamental resonance frequency	$f_G$	kHz	4.1	4.5	3.4	3.6	2.5
Weight		kg	1.8	2.4	5.5	11.2	42
Rel. permissible vibrational stress	$F_{rb}$	%	70			50	
Cable length, six-wire connection		m	6				
Degree of protection to DIN EN60529			IP 67				

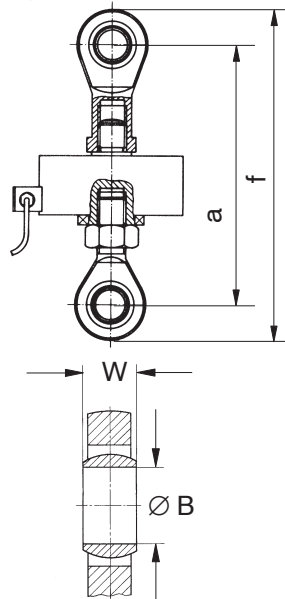
<sup>1)</sup> classification guaranteed only in conjunction with a DKD calibration certificate acc. ISO376

<sup>2)</sup> half pivot height for Z4A

## Accessories for Z4A

Force introduction parts for standard measurements in industry

Knuckle eye ZGOW/ZGUW



Type	Upper knuckle eye Lower knuckle eye Order no.	Weight (kg)	a		f		W	Ø B	M <sub>A</sub> (N·m)
			min approx.	max approx.	min approx.	max approx.			
Z4A/20 kN	1-Z4/20kN/ZGOW 1-Z4/20kN/ZGUW	0.2	158	170	198	210	21	16 <sup>H7</sup>	120
Z4A/50 kN	1-U2A/2t/ZGOW 1-U2A/2t/ZGUW	0.8 0.4	190	199	245	254	25	20 <sup>H7</sup>	350
Z4A/100 kN	1-Z4/100kN/ZGOW 1-Z4/100kN/ZGUW	1.1	261	269	331	339	37	30 <sup>H7</sup>	950
Z4A/200 kN	1-U2A/10t/ZGOW 1-U2A/10t/ZGUW	3.2 1.1	352	357	475	480	35	50 <sup>+0.001</sup> -0.014	2000
Z4A/500 kN	1-Z4/500kN/ZGOW 1-Z4/500kN/ZGUW	17.3 12.0	570	590	764	784	44	60 <sup>+0.003</sup> -0.018	4000 <sup>1)</sup>

<sup>1)</sup> secured with 2 screws to prevent rotation; transducer side with internal thread

## Pin assignment

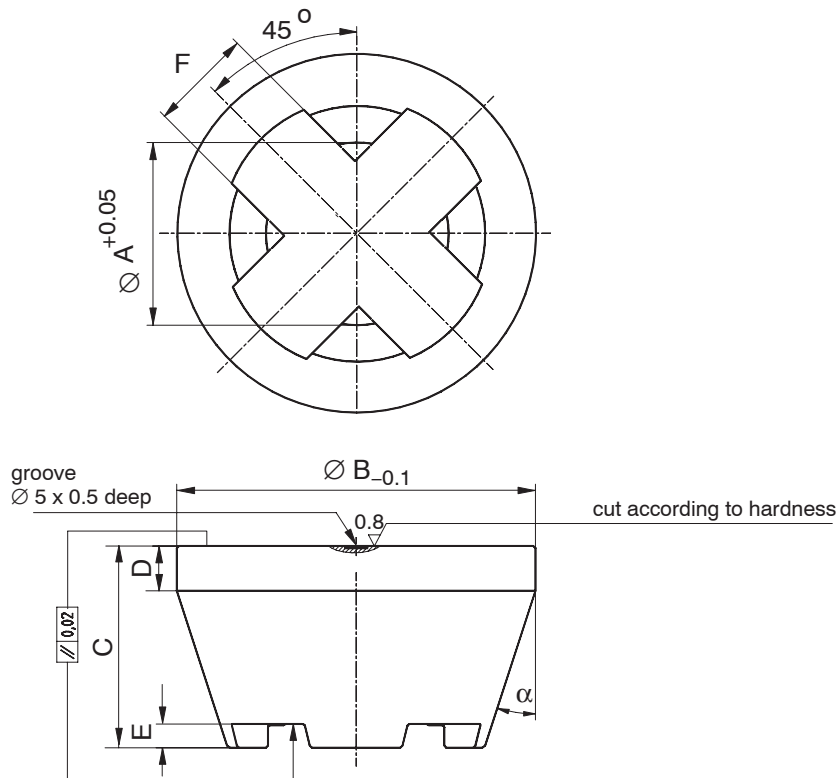
### 6-connection cable



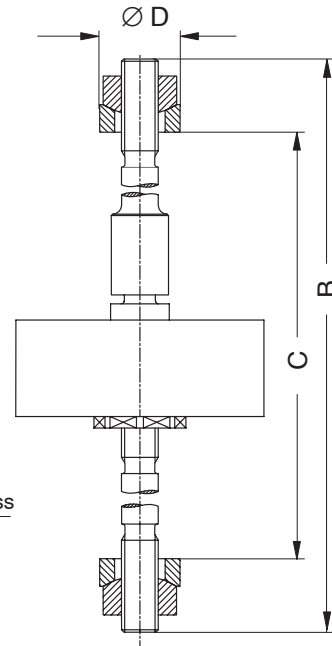
Cable shielding, connected to housing

**Force introduction parts for precision measurements, recommended for Z4A**  
e.g. according to DIN EN 10002-3 or ISO 376

**EDO4**



**Tensile force introduction ZKM**



Type	Thrust piece Order no.	Weight (kg)	$\varnothing A$	$\varnothing B$	C	D	E	F	$\alpha$
Z4A/20 kN	1-EDO4/20 kN	0.34	16.2	48	29	8	5	12	18°
Z4A/50 kN	1-EDO4/50 kN		20.2		29		5		
Z4A/100 kN	1-EDO4/100 kN	1.58	30.2	80	45	10	5	23	
Z4A/200 kN	1-EDO4/200 kN		39.2						
Z4A/500 kN	1-EDO4/500 kN	4.35	72.4	112	68	15	12	30	15°

Type	ZKM Order no.	Weight (kg)	B	C		$\varnothing D$
				min	max	
Z4A/20 kN	1-Z4A/20kN/ZKM	0.82	325	228	276	35 -0.120 -0.280
Z4A/50 kN	1-Z4A/50kN/ZKM	1.45	350	248	299	45 -0.130 -0.290
Z4A/100 kN	1-Z4A/100kN/ZKM	2.32	395	277	334	50 -0.130 -0.290
Z4A/200 kN	1-Z4A/200kN/ZKM	4.19	447	317	382	64 -0.140 -0.330
Z4A/500 kN	1-Z4A/500kN/ZKM	20.1	623	432	522	90 -0.170 -0.390

Subject to modifications.  
All product descriptions are for general information only.  
They are not to be understood as a guarantee of quality or durability.

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