

## Tension and Compression Force Sensor K-12 with Nominal Force from 0.5 ... 1000 kN



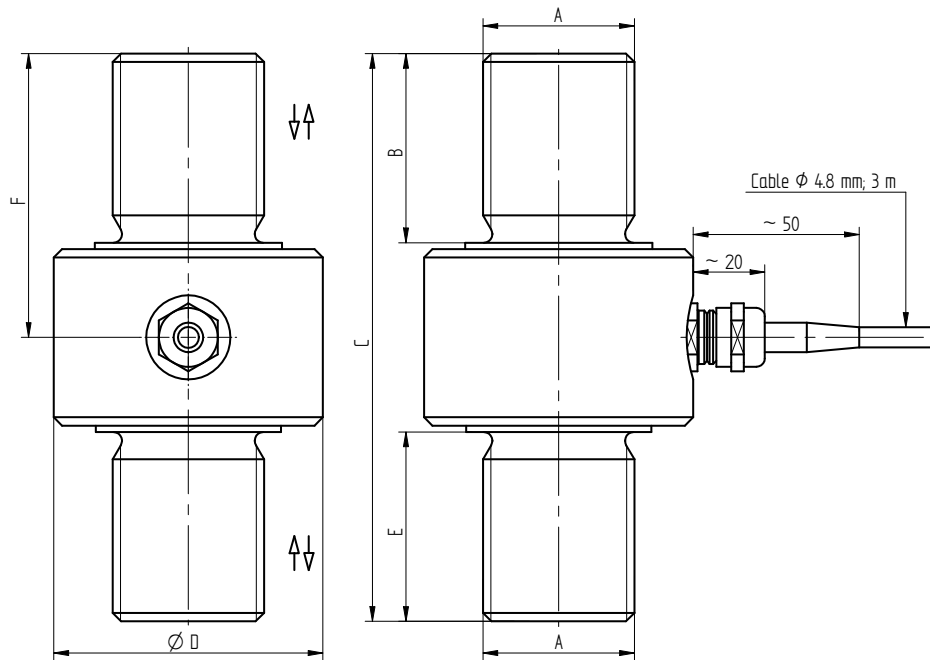
### Performance Features

- Sensor for tension and compression force measurement
- Simple handling and assembly
- Reliable and durable
- Long-term stability
- Level of protection IP67
- Special versions on request

### Application

- Equipment engineering
- Fully automated machining centres
- Measuring and control devices
- Tension/compressive testing machines
- Tool engineering
- Special mechanical engineering

## Dimensions of K-12 in mm



Article-No.	Nominal Force [kN]	Dimensions [mm]						Weight [kg]
		A	B	C	$\varnothing D$	E	F	
100474	0.5	M12	24	79	50	20	37	0.7
100473	1							
102372	2							
100472	5							
100471	10							
100470	20	M20x1.5	25	90	59	25	45	1.0
100469	50							
100468	100	M36x3	45	135	64	45	67.5	1.9
100467	200	M45x3	50	170	80	50	85	3.7
100466	500	M60x4	80	240	90	80	120	5.7
100465	1000	M100x3	110	300	130	110	150	20.1

## Connection Assignment

### Electrical Connection

Excitation (-)	green	●
Excitation (+)	brown	●
Signal (+)	yellow	●
Signal (-)	white	○
Control signal (option)	grey	●
Shield	shield	⊕

## Technical Data acc. to VDI/VDE/DKD 2638

### Tension and Compression Force Sensor K-12

Nominal force $F_{nom}$	kN	0.5	1	2	5	10	20	50	100	200	500	1000
Accuracy class compression force or tension force	% $F_{nom}$	0.1										
Accuracy class compression force and tension force	% $F_{nom}$	0.25										
Rel. repeatability error in unchanged mounting position $b_{rg}$	% $F_{nom}$	0.08										
Relative creep	% $F_{nom}/30 \text{ min}$	<±0.06										
Rated characteristic value $C_{nom}$	mV/V	1.00 ±0.1%										
Input/output resistance $R_e/R_a$	Ω	350										
Insulation resistance $R_{iS}$	Ω	>2*10 <sup>9</sup>										
Rated range of excitation voltage $B_{U, nom}$	VDC	2 ... 12										
Electrical connection		Cable, PVC, 3 m with free strands										
Reference temperature $T_{ref}$	°C	23										
Rated temperature range $B_{T, nom}$	°C	-10 ... 70										
Operating temperature range $B_{T, G}$	°C	-30 ... 80										
Storage temperature range $B_{T, S}$	°C	-50 ... 95										
Temperature effect on zero signal $TK_0$	% $F_{nom}/10 \text{ K}$	±0.25										
Temperature effect on characteristic value $TK_C$	% $F_{nom}/10 \text{ K}$	±0.07										
Maximum operating force $F_G$	% $F_{nom}$	130										
Force limit $F_L$	% $F_{nom}$	150										
Breaking force $F_B$	% $F_{nom}$	>300										
Permissible oscillation stress $F_{rb}$	% $F_{nom}$	70										
Lateral force resistance	% $F_{nom}$	50										
Rated displacement $S_{nom}$	mm	<0.1										
Preferential direction		Tension direction										
Material		Stainless steel										
Level of protection		IP67										

## Options

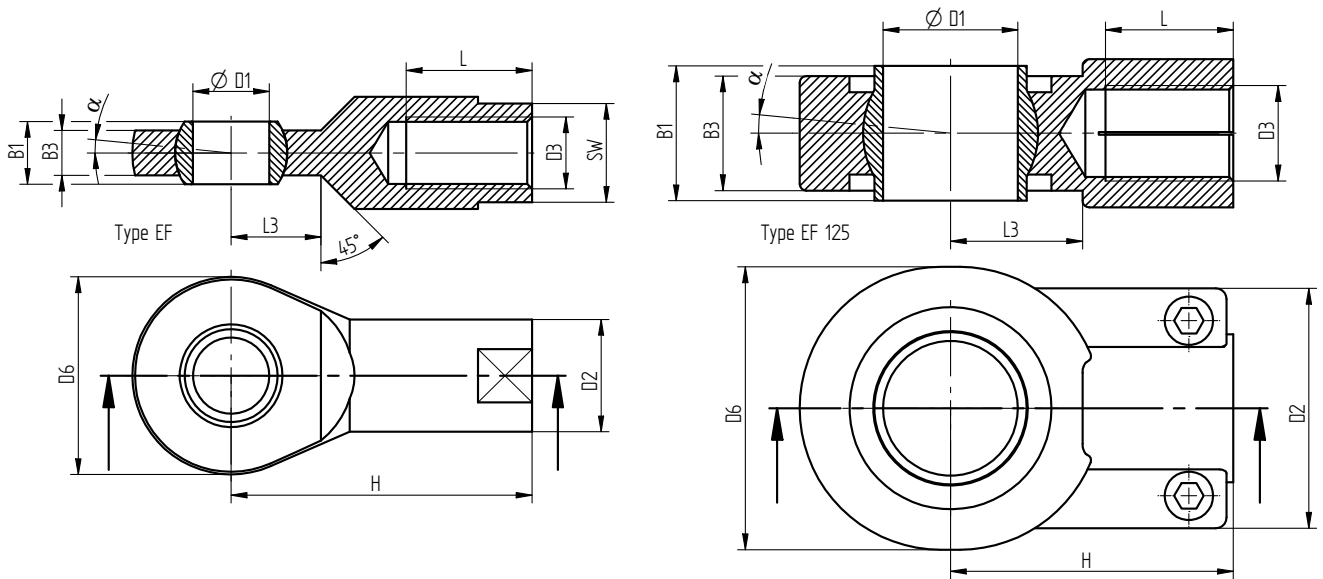
Article-No.	Description	
100218	Control signal	100 % $F_{nom}$
42828	Extended temperature range	-30 °C ... 100 °C
42829	Extended temperature range	-30 °C ... 120 °C [≥2 kN]
42830	Extended temperature range	-40 °C ... 150 °C [≥2 kN]
103954	Calibration in kg or t	
107592	6-wire connection	

## Calibrations

Article-No.	Description	
400628	Linearity diagram in accordance to factory standard	25 % steps
400170	Linearity diagram in accordance to factory standard	10% steps
400960	Proprietary calibration acc. to DIN EN ISO 376 and DAkKS-DKD-R 3-3	3 steps
400652	Proprietary calibration acc. to DIN EN ISO 376 and DAkKS-DKD-R 3-3	5 steps
400640	Proprietary calibration acc. to DIN EN ISO 376 and DAkKS-DKD-R 3-3	8 steps
	DAkKS-Calibration / Standard on request	

## Accessories

### Dimensions of Joint Eye Type EF in mm



Article-No.	Type - EF	Dimensions [mm]											Weight [kg]	Load rating stat. $C_0$ [N]
		B1	B3	ØD1	D2	D3	D6	H	L	L3	$\alpha$	SW		
40585	EF 12	10	7	12	19	M12	32	50	22	15	5°	17	0.09	28000
41433	EF 20	16	12	20	28	M20x1.5	51	77	33	23	4.5°	24	0.29	76700
40588	EF 35	25	20	35	51	M36x3	82	125	61	38	3.5°	41	1.23	180800
40591	EF 45	32	25	45	67	M45x3	102	165	76	50	4°	55	3.09	276200
40218	EF 60	44	36	60	84	M60x4	135	225	103	70	3.5°	70	7.30	532100
47925	EF 125	125	103	125	200	M100x3	265	260	113	120	4°	-	43.00	1144000

### Tolerances for Type EF

ØD1		ΔD1		ΔB1		ΔH	
>	≤	Tolerance		Tolerance		Tolerance	
5	18	0	-0.008	0	-0.12	+1.2	-1.2
18	30	0	-0.010	0	-0.12	+1.7	-1.7
30	50	0	-0.012	0	-0.12	+2.1	-2.1
50	80	0	-0.015	0	-0.15	+2.7	-2.7
-	125	+0.040	0	0	-0.40	+3.4	-3.4

### Electrical Connection

Article-No.	Description
10323	Cable connector KS6 (6-pin series 581) incl. sensor mounting
10320	Cable connector KSSH15 (15-pin) incl. sensor mounting
43418	Input connector ZA9612FS (ALMEMO) incl. sensor mounting and connector calibration
49205	Input connector ZKD712FS (ALMEMO 202) incl. sensor mounting and connector calibration

## Amplifiers

Examples of suitable amplifiers for the tension and compression force sensor K-12:

LCV	SI-USB	GM 40	GM 80	GM 80-PA
				

Further suitable amplifiers you can find on our homepage under <https://www.lorenz-messtechnik.de/english/products/>.