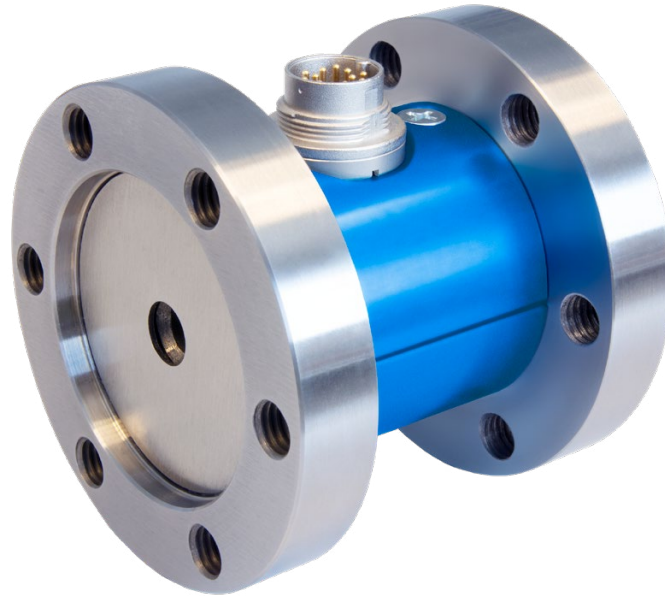


Multi-Component Sensor M-2396 with Rated Force/Rated Torque from 0.5 kN/5 Nm ... 2 kN/50 Nm



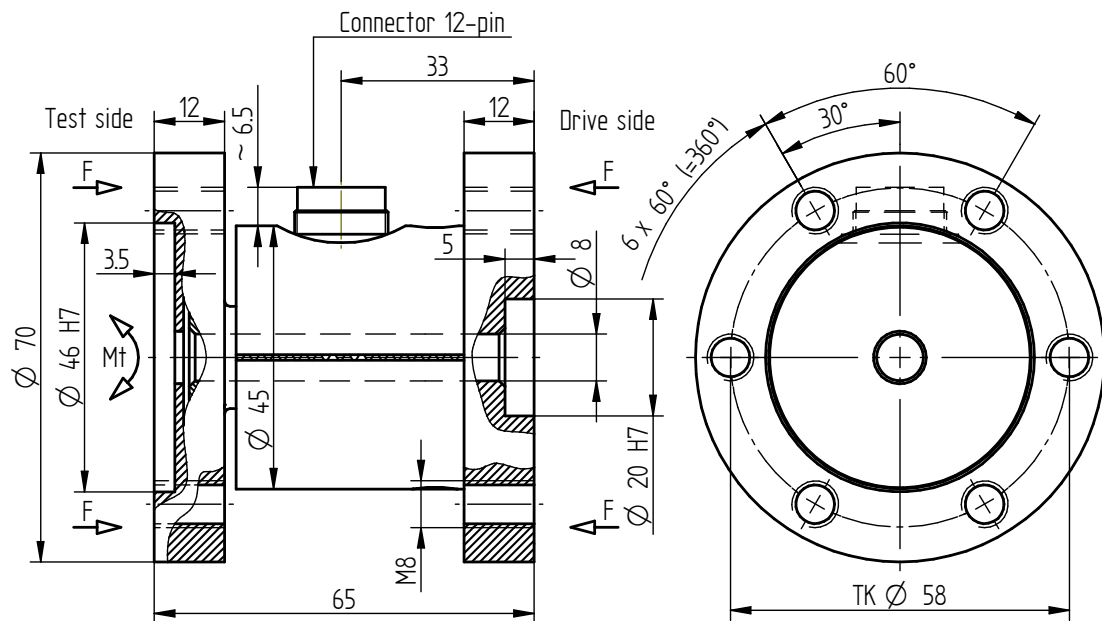
Performance Features

- Reaction torque/force sensor, non-rotating, for e. g. optimization of the cutting force of drills
- Flange-flange-solution
- Through hole
- Very short axial length
- High torsional stiffness
- Reliable and durable
- Simple handling and assembly
- Special versions on request

Application

- Assembly technology
- Process measuring and control technology
- Automotive industry
- Measuring and control devices
- Tool engineering
- Special mechanical engineering

Dimensions of in mm



Rated Torque [kN/Nm]	Tightening Torque	Property Class	Weight [kg]
0.5/5	35	10.9	0.4
1/10 / 1/30 / 20/20 / 0.5/50 / 2/50	35	10.9	0.8

Connection Assignment

12-pin	M-2396	Series 581
Pin A	Excitation (-) torque	
Pin B	Excitation (+) torque	
Pin C	Signal (+) torque	
Pin D	Signal (-) torque	
Pin E	Excitation (-) force	
Pin F	Excitation (+) force	
Pin G	Signal (+) force	
Pin H	Signal (-) force	
Pin J	Control signal force (option)	
Pin K	Control signal torque (option)	
Pin L	NC	
Pin M	Shield	

Technical Data acc. to VDI/VDE/DKD 2638 and VDI/VDE/DKD 2639

Multi-Component Sensor M-2396

Rated force F_{nom} /Rated torque M_{nom}	kN/N·m	0.5/5; 1/10; 1/30; 20/20; 0.5/50; 2/50
Accuracy class force	% F_{nom}	0.3
Accuracy class torque	% M_{nom}	0.2
Cross talk	% F/M_{nom}	<1
Relative repeatability error in unchanged mounting position b'	% F/M_{nom}	±0.1
Rated range of excitation voltage $B_{U, nom}$	VDC	2 ... 12
Bridge resistance R_{Br} (torque)	Ω	350
Input/output resistance R_e/R_a (force)	Ω	700
Rated characteristic value C_{nom}	mV/V	1 ±0.2 %
Electrical connection		12-pin series 581 ¹
Reference temperature T_{ref}	°C	23
Rated temperature range $B_{T, nom}$	°C	-5 ... 45
Operating temperature range $B_{T, G}$	°C	-15 ... 55
Storage temperature range $B_{T, S}$	°C	-30 ... 95
Temperature effect on zero signal TK_0	% $F/M_{nom}/10$ K	±0.4
Temperature effect on characteristic value TK_C	% $F/M_{nom}/10$ K	±0.2
Operating load (static)	% F/M_{nom}	130
Limit load (static)	% F/M_{nom}	150
Breaking load (static)	% F/M_{nom}	>300
Permissible oscillation stress	% F/M_{nom}	70 (peak-to-peak)
Material		Stainless steel (aluminum for 0.5 kN/5 N·m)
Level of protection		IP50

Article-No.	Rated Force/Torque [kN/Nm]	Spring Rate [Nm/rad]	Mass Moment of Inertia [kg·m ²]		Lateral Force Limit [N]
			Drive Side	Test Side	
109799	0.5/5	1.2E+03	7.3E-05	6.4E-05	8
105106	1/10	2.9E+03	2.1E-04	1.8E-04	20
106279	1/30	7.8E+03	2.1E-04	1.8E-04	42
109079	20/20	3.7E+03	2.1E-04	2.0E-04	42
108420	0.5/50	1.2E+04	2.1E-04	1.8E-04	20
109051	2/50	1.2E+04	2.1E-04	1.8E-04	60

Options

Article-No.	Description
100218	Control signal 100 % F/M_{nom}

¹ Female cable connector in scope of delivery at first delivery

Calibrations for Torque

Article-No.	Description	
400676	Linearity diagram in accordance to factory standard	25 % steps
400664	Linearity diagram in accordance to factory standard	10 % steps
400961	Proprietary calibration acc. to VDI/VDE 2646	3 steps
400700	Proprietary calibration acc. to VDI/VDE 2646	5 steps
400688	Proprietary calibration acc. to VDI/VDE 2646	8 steps
	DAkkS-Calibration/Standard on request	

Calibrations for Force

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

Electrical Connection

Article-No.	Description
41382	Female cable connector 12-pin series 581
45598	Female angled connector 12-pin series 682
109188	Connection cable, 3 m, with 12-pin female cable connector series 581 and free strands
113387	Connection cable angled, 3 m, with 12-pin female angled connector series 682 and free strands

Amplifiers

Examples of suitable amplifiers for the multi-component sensor M-2396:



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