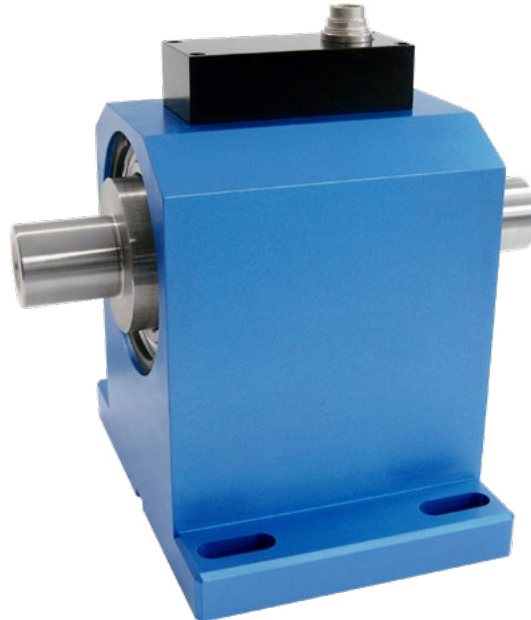


Rotating Torque Sensors: DR-2512/DR-2512-P and DR-2512-R/DR-2512-R-P (contactless) with Nominal Torque from 0.1 ... 20000 N·m



This sensor has a contactless and digital signal transmission from rotor to stator without signal falsification of the measurement data. It is therefore highly accurate and maintenance-free.

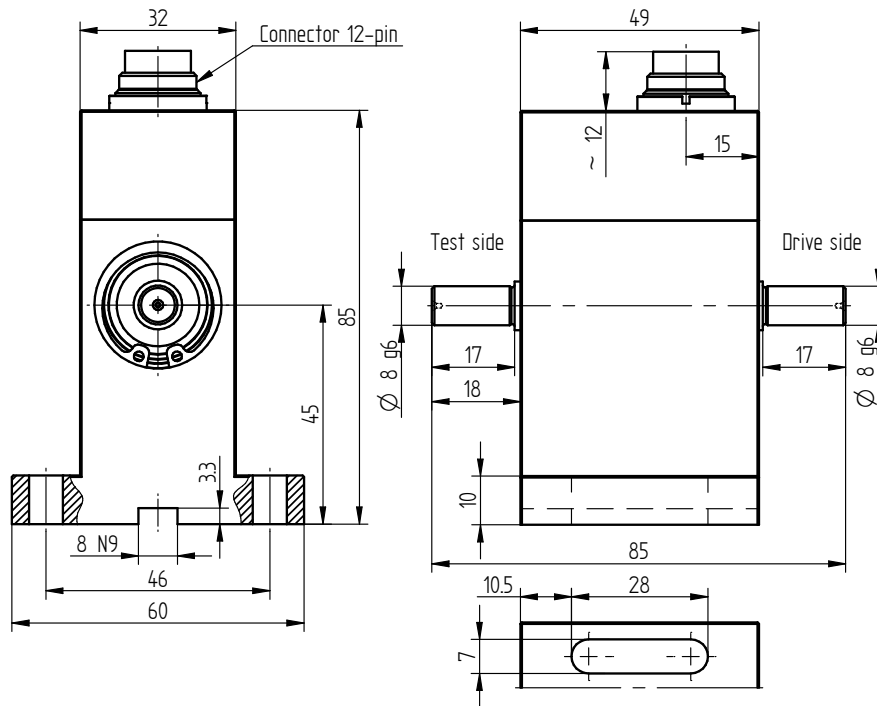
Performance Features

- Torque sensor for e.g. test bench applications
- Accuracy class 0.05%, optional
- Digital output RS485
- Integrated speed/angle measurement, optional
- Speed up to 15000 min⁻¹
- Very short axial length
- High torsional stiffness
- Simple handling and assembly
- Auto identification of measuring range, serial number, calibration date
- Special versions on request

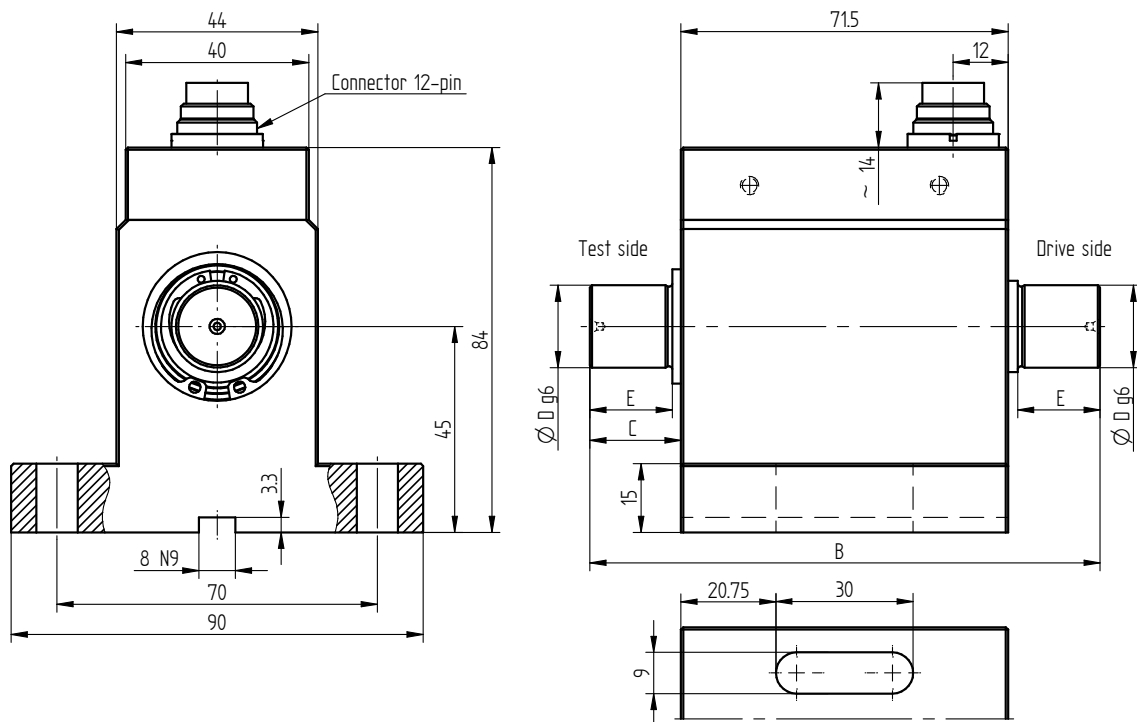
Application

- Research and development
- Process measuring and control technology
- Fully automated machining centres
- Measuring and control devices
- Tool engineering
- Special mechanical engineering

Dimensions of DR-2512/DR-2512-P and DR-2512-R/DR-2512-R-P in mm

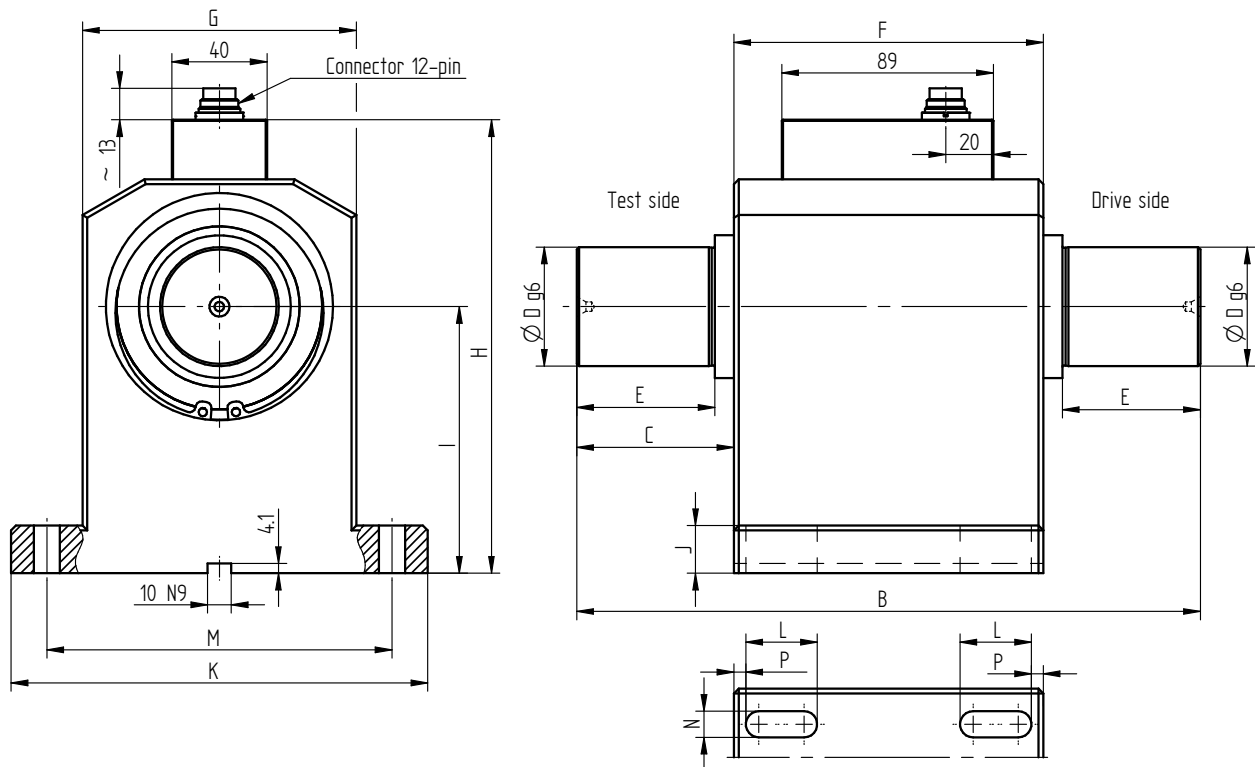


Nominal Torque [N·m]	Weight [kg]
0.1/0.2/0.5/1	0.4



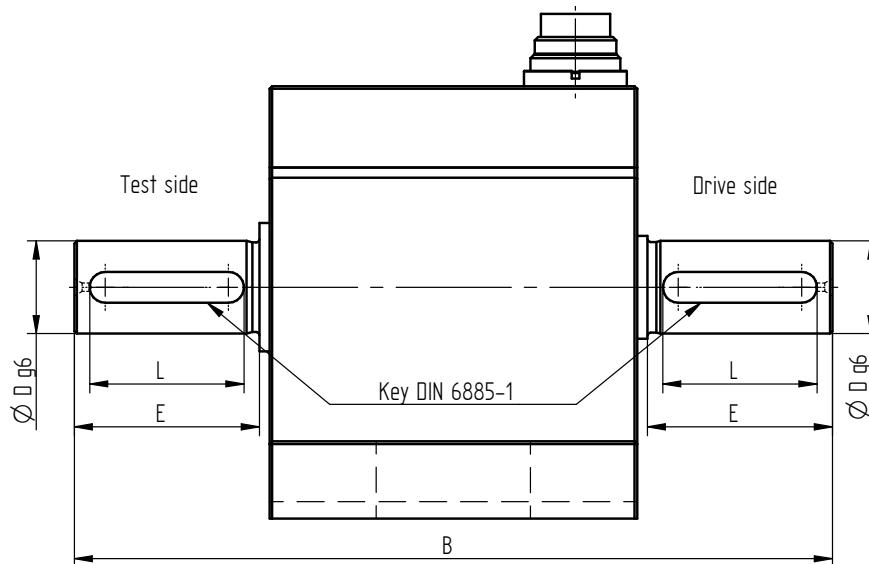
Nominal Torque [N·m]	Dimensions [mm]				Weight [kg]
	B	C	ØD	E	
2/5	107.5	18	8	17	0.8
10	107.5	18	10	17	0.8
20/30	111.5	20	18	18	0.9
50/100	147.5	38	18	36	1.0

Dimensions of DR-2512/DR-2512-P and DR-2512-R/DR-2512-R-P in mm



Nominal Torque [N·m]	Dimensions [mm]														Weight [kg]
	B	C	ØD	E	F	G	H	I	J	K	L	M	N	P	
200/500	217	43.5	32	38	130	115	190.4	112	20	175	30	145	11	5	8.9
1000	262	66	50	58	130	115	190.4	112	20	175	30	145	11	5	10.3
2000/5000	377	121	70	110	135	139	251.5	160	25	207	36	173	13	5	19.0
10000/20000	470	140	110	120	190	210	343	215	40	300	45	260	17	15	69.0

Dimensions of Version with Feather Keys in mm



Nominal Torque [N·m]	Dimensions [mm]					Weight [kg]
	B	ØD	E	L	Feather Key ¹	
0.1/0.2/0.5/1	85	8	17	14	2 x 2 x 14	0.4
2/5	107.5	8	17	14	2 x 2 x 14	0.8
10	107.5	10	17	14	3 x 3 x 14	0.8
20/30	111.5	18	18	14	6 x 6 x 14	0.9
50/100	147.5	18	36	30	6 x 6 x 30	1.0
200/500	217	32	38	36	10 x 8 x 36	8.9
1000	262	50	58	50	14 x 9 x 50	10.3
2000/5000	377	70	110	100	20 x 12 x 100	19.0
10000 / 20000	570	110	170	160	28 x 16 x 160	69.0

Connection Assignment

12-pin	DR-2512/DR-2512-P and DR-2512-R/DR-2512-R-P	Series 581
Pin A	NC	-
Pin B	NC	-
Pin C	NC	-
Pin D	NC	-
Pin E	Supply (GND)	0V
Pin F	Supply (+)	12 ... 28VDC
Pin G	Speed measurement (option) ²	5V TTL
Pin H	NC	-
Pin J	RS485	RS485 (B)
Pin K	NC	-
Pin L	RS485	RS485 (A)
Pin M	Shield	

¹ Calculated load type for feather key: single side light shocks

² Nominal torque ≥ 2000 N·m

Technical Data acc. to VDI/VDE/DKD 2639

Torque Sensor		DR-2512/DR-2512-P	DR-2512-R/DR-2512-R-P
Nominal torque M_{nom}	N·m	0.1 ... 20000	0.1 ... 1000
Accuracy class	% M_{nom}	0.1 (optional 0.05)	0.2
Relative repeatability error in unchanged mounting position b'	% M_{nom}	±0.02	±0.04
Rated range of supply voltage	VDC	12 ... 28	
Current consumption	mA	≤60	
Output signal	digits	±25000	
Control signal excitation		per software	
Sample rate	kSample/s	5	
Electrical connection		12-pin series 581 ³	
Reference temperature T_{ref}	°C	23	
Rated temperature range	°C	5 ... 45	
Operating temperature range	°C	0 ... 60	
Storage temperature range	°C	-10 ... 70	
Temperature effect on zero signal TK_0	% $M_{nom}/10$ K	±0.2	±0.3
Temperature effect on characteristic value TK_C	% $M_{nom}/10$ K	±0.1	±0.15
Maximum operating torque M_G (static)	% M_{nom}	150	
Torque limit M_{max} (static)	% M_{nom}	200	
Breaking torque M_B (static)	% M_{nom}	>300	
Permissible oscillation stress when subjected to torque M_{df}	% M_{nom}	70 (peak-to-peak)	
Level of protection		IP50	

Article-No. DR-2512	Article-No. DR-2512-P ⁴	Nominal Torque [N·m]	Limit Speed [min ⁻¹]	Springrate [N·m/rad]	Mass Moment of Inertia [kg·m ²] ⁵		Axial Force Limit [N]	Lateral Force Limit [N]
					Drive Side	Test Side		
104183	115698	0.1	15000	1.8E+01	1.9E-06	2.8E-07	30	0.9
104184	115699	0.2	15000	1.8E+01	1.9E-06	2.8E-07	30	1.2
104185	115700	0.5	15000	1.2E+02	1.9E-06	2.8E-07	30	2.9
104186	115701	1	15000	1.2E+02	2.0E-06	2.8E-07	30	2.9
104187	115702	2	12000	4.4E+02	1.0E-05	8.1E-06	62	8.5
104188	115703	5	12000	4.4E+02	1.0E-05	8.1E-06	62	8.5
104189	115704	10	12000	1.7E+03	1.0E-05	8.2E-06	62	28
104191	115705	20	12000	4.5E+03	1.2E-05	9.9E-06	62	43
104213	115706	30	12000	4.5E+03	1.2E-05	9.9E-06	62	65
104192	115707	50	12000	8.5E+03	1.3E-05	1.2E-05	62	64
104193	110642	100	12000	8.4E+03	1.3E-05	1.2E-05	62	64
104194	115708	200	7000	9.2E+04	1.3E-03	8.0E-04	760	350
104195	114190	500	7000	9.2E+04	1.3E-03	8.0E-04	760	420
104196	115709	1000	7000	3.1E+05	1.6E-03	1.1E-03	760	800
104197	115710	2000	5500	7.2E+05	5.3E-03	4.3E-03	1100	860
104198	115711	5000	5500	8.0E+05	5.4E-03	4.3E-03	1100	860
107499	115712	10000	3500	3.1E+06	4.0E-02	3.7E-02	2800	2300
109686	115713	20000	3500	3.7E+06	4.0E-02	3.8E-02	2800	2300

³ Female cable connector in scope of delivery at first delivery

⁴ Version „-P“ feather key

⁵ Without option speed/angle measurement

Technical Data acc. to VDI/VDE/DKD 2639 (continued)

Article-No. DR-2512-R ⁶	Article-No. DR-2512-R-P ⁴	Nominal Torque [N·m]	Limit Speed [min ⁻¹]	Springrate [N·m/rad]	Mass Moment of Inertia [kg·m ²] ⁵		Axial Force Limit [N]	Lateral Force Limit [N]
					Drive Side	Test Side		
108723	115684	0.1	15000	1.8E+01	1.9E-06	2.8E-07	30	0.9
108724	115685	0.2	15000	1.8E+01	1.9E-06	2.8E-07	30	1.2
108725	115686	0.5	15000	1.2E+02	1.9E-06	2.8E-07	30	2.9
108726	115687	1	15000	1.2E+02	2.0E-06	2.8E-07	30	2.9
108727	115688	2	12000	4.4E+02	1.0E-05	8.1E-06	62	8.5
108728	115689	5	12000	4.4E+02	1.0E-05	8.1E-06	62	8.5
108729	115690	10	12000	1.7E+03	1.0E-05	8.2E-06	62	28
108731	113335	20	12000	4.5E+03	1.2E-05	9.9E-06	62	43
108820	115691	30	12000	4.5E+03	1.2E-05	9.9E-06	62	65
108732	110204	50	12000	8.5E+03	1.3E-05	1.2E-05	62	64
108733	115693	100	12000	8.4E+03	1.3E-05	1.2E-05	62	64
108734	115694	200	7000	9.2E+04	1.3E-03	8.0E-04	760	350
108735	115695	500	7000	9.2E+04	1.3E-03	8.0E-04	760	420
108736	115696	1000	7000	3.1E+05	1.6E-03	1.1E-03	760	800

Options

Article-No.	Description	
101695	Accuracy class	0.05 % M _{nom}
115391	Speed/angle measurement, RS485	
	Speed resolution	1 min ⁻¹
	Speed accuracy	1 % full scale ±1 digit
	Angle of rotation resolution	0.25 degree
	Output signal speed/angle of rotation	±32511 digits
104097 ⁷	Speed measurement, 1x60 impulses	5V TTL

Calibrations

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
401023	Proprietary calibration for the angle of rotation acc. to VDI/VDE 2648-1	
	DAkkS-Calibration / Standard on request	

⁴ Version „-P“ feather key

⁵ Without option speed/angle measurement

⁶ Version „-R“ accuracy class 0.2% M_{nom}

⁷ Nominal torque ≥2000 N·m

Accessories

Electrical Connection

Article-No.	Description
41382	Female cable connector 12-pin series 581
45598	Female angled connector 12-pin series 682
10270	Connection cable, 3 m, with 12-pin female cable connector series 581 and free strands
10345	Connection cable angled, 3 m, with 12-pin female angled connector series 682 and free strands