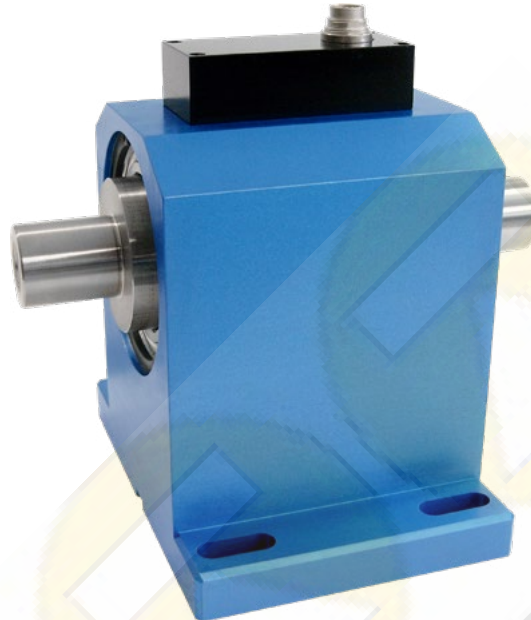


## Rotating Torque Sensors: DR-2212/DR-2212-P and DR-2212-R/DR-2212-R-P (contactless) with Nominal Torque from 0.1 ... 20000 N·m



*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.*

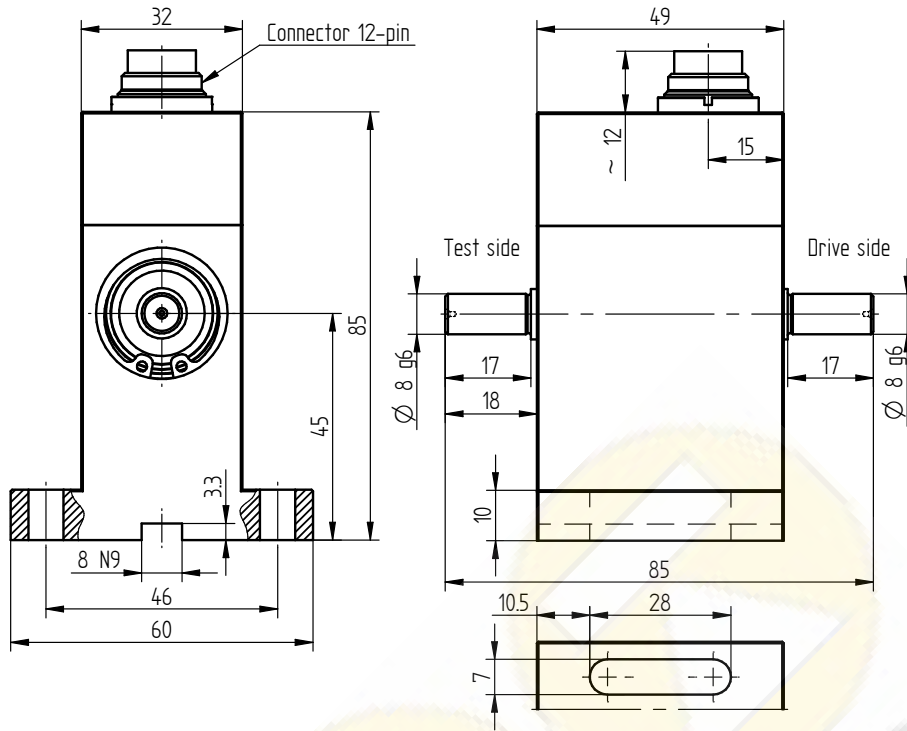
### Performance Features

- Torque sensor for e.g. test bench applications
- Accuracy class 0.05%, optional
- Active output  $\pm 5V$ , (optional  $\pm 10V$ )
- Integrated speed/angle measurement, optional
- Speed up to  $15000 \text{ min}^{-1}$
- Very short axial length
- High torsional stiffness
- Simple handling and assembly
- 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-2212/DR-2212-P and DR-2212-R/DR-2212-R-P in mm

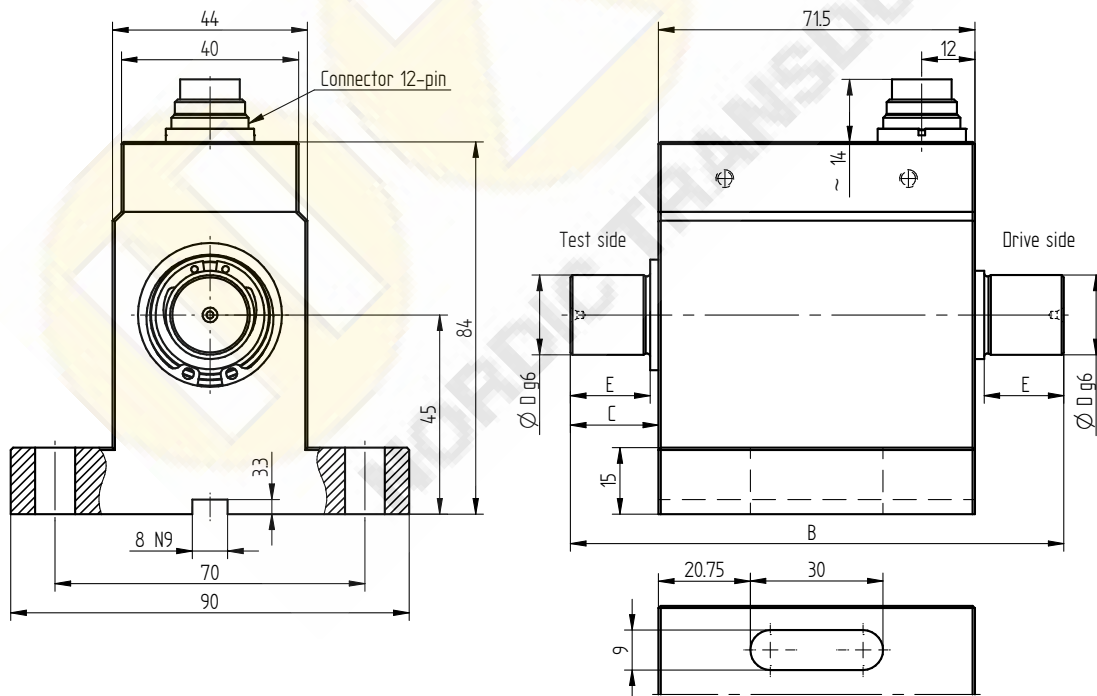


Nominal Torque [N·m]

0.1/0.2/0.5/1

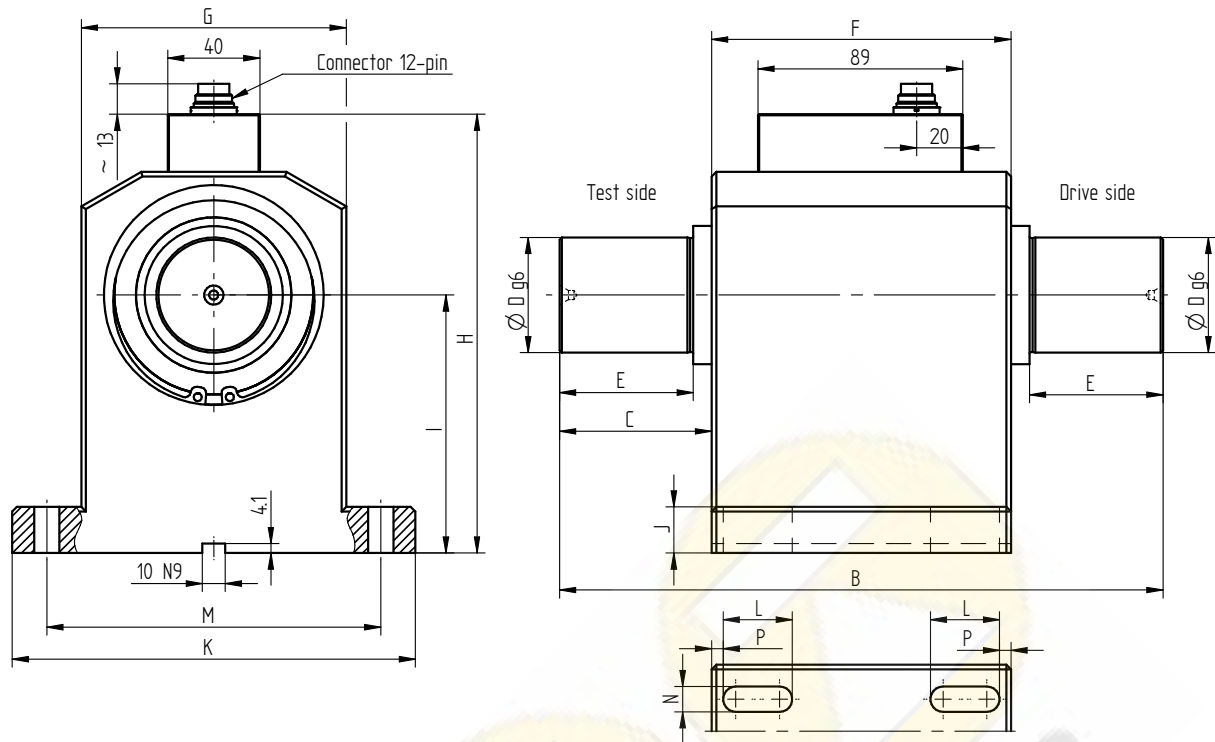
Weight [kg]

0.4



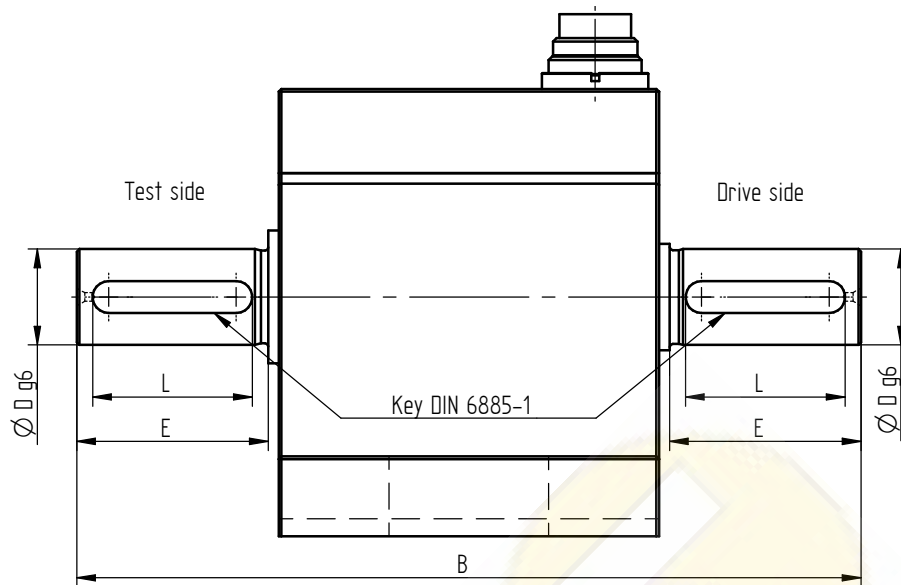
Nominal Torque [N·m]	Dimensions [mm]				Weight [kg]
	B	C	$\varnothing D$	E	
2/5	107.5	18	8	17	0.8
10	107.5	18	10	17	0.8
20/30	111.5	20	18	18	0.9
50/100	147.5	38	18	36	1.0

## Dimensions of DR-2212/DR-2212-P and DR-2212-R/DR-2212-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

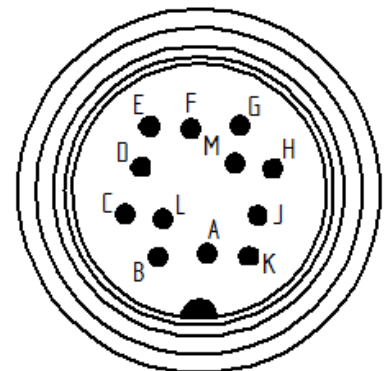
## Dimensions of Version with Feather Keys in mm



Nominal Torque [N·m]	Dimensions [mm]					Weight [kg]
	B	ØD	E	L	Feather Key <sup>1</sup>	
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-2212/DR-2212-P and DR-2212-R/DR-2212-R-P	Series 581
Pin A	NC	-
Pin B	Signal angle B (option)	5V TTL
Pin C	Signal (+)	±5V (±10V)
Pin D	Signal (GND)	0V
Pin E	Supply (GND)	0V
Pin F	Supply (+)	12 ... 28VDC
Pin G	Signal angle A (option)	5V TTL
Pin H	NC	-
Pin J	NC	-
Pin K	Control signal	L <2.0V; H >3.5V
Pin L	NC	-
Pin M	Shield	-



<sup>1</sup> Calculated load type for feather key: single side light shocks

## Technical Data acc. to VDI/VDE/DKD 2639

Torque Sensor		DR-2212/DR-2212-P	DR-2212-R/DR-2212-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	V	±5	
Control signal excitation	V	L <2.0; H >3.5	
Sample rate	kSample/s	10	
Electrical connection		12-pin series 581 <sup>2</sup>	
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-2212	Article-No. DR-2212-P <sup>3</sup>	Nominal Torque [N·m]	Limit Speed [min <sup>-1</sup> ]	Springrate [N·m/rad]	Mass Moment of Inertia [kg·m <sup>2</sup> ] <sup>4</sup>		Axial Force Limit [N]	Lateral Force Limit [N]
					Drive Side	Test Side		
103819	115628	0.1	15000	1.8E+01	1.9E-06	2.8E-07	30	0.9
103820	115629	0.2	15000	1.8E+01	1.9E-06	2.8E-07	30	1.2
102921	115630	0.5	15000	1.2E+02	1.9E-06	2.8E-07	30	2.9
102866	115631	1	15000	1.2E+02	2.0E-06	2.8E-07	30	2.9
102437	115632	2	12000	4.4E+02	1.0E-05	8.1E-06	62	8.5
102922	110436	5	12000	4.4E+02	1.0E-05	8.1E-06	62	8.5
102794	115641	10	12000	1.7E+03	1.0E-05	8.2E-06	62	28
102909	109963	20	12000	4.5E+03	1.2E-05	9.9E-06	62	43
104212	111072	30	12000	4.5E+03	1.2E-05	9.9E-06	62	65
102457	111230	50	12000	8.5E+03	1.3E-05	1.2E-05	62	64
102836	110435	100	12000	8.4E+03	1.3E-05	1.2E-05	62	64
103337	109961	200	7000	9.2E+04	1.3E-03	8.0E-04	760	350
103602	112509	500	7000	9.2E+04	1.3E-03	8.0E-04	760	420
103822	115668	1000	7000	3.1E+05	1.6E-03	1.1E-03	760	800
103821	112659	2000	5500	7.2E+05	5.3E-03	4.3E-03	1100	860
103709	111182	5000	5500	8.0E+05	5.4E-03	4.3E-03	1100	860
105485	113347	10000	3500	3.1E+06	4.0E-02	3.7E-02	2800	2300
105486	113348	20000	3500	3.7E+06	4.0E-02	3.8E-02	2800	2300

<sup>2</sup> Female cable connector in scope of delivery at first delivery



<sup>3</sup> Version „-P“ feather key

<sup>4</sup> Without option speed/angle measurement

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

Article-No. DR-2212-R <sup>5</sup>	Article-No. DR-2212-R-P <sup>3</sup>	Nominal Torque [N·m]	Limit Speed [min <sup>-1</sup> ]	Springrate [N·m/rad]	Mass Moment of Inertia [kg·m <sup>2</sup> ] <sup>4</sup>		Axial Force Limit [N]	Lateral Force Limit [N]
					Drive Side	Test Side		
108693	115617	0.1	15000	1.8E+01	1.9E-06	2.8E-07	30	0.9
108694	115618	0.2	15000	1.8E+01	1.9E-06	2.8E-07	30	1.2
108695	115619	0.5	15000	1.2E+02	1.9E-06	2.8E-07	30	2.9
108696	113309	1	15000	1.2E+02	2.0E-06	2.8E-07	30	2.9
108697	115620	2	12000	4.4E+02	1.0E-05	8.1E-06	62	8.5
108698	115621	5	12000	4.4E+02	1.0E-05	8.1E-06	62	8.5
108699	115683	10	12000	1.7E+03	1.0E-05	8.2E-06	62	28
108701	110886	20	12000	4.5E+03	1.2E-05	9.9E-06	62	43
108819	110437	30	12000	4.5E+03	1.2E-05	9.9E-06	62	65
108702	110083	50	12000	8.5E+03	1.3E-05	1.2E-05	62	64
108703	111271	100	12000	8.4E+03	1.3E-05	1.2E-05	62	64
108704	110438	200	7000	9.2E+04	1.3E-03	8.0E-04	760	350
108705	111617	500	7000	9.2E+04	1.3E-03	8.0E-04	760	420
108706	115622	1000	7000	3.1E+05	1.6E-03	1.1E-03	760	800

## Options

Article-No.	Description	
101695	Accuracy class	0.05 % M <sub>nom</sub>
103562	Output signal	±10V
101560	Speed/angle measurement, 2 x 360 impulses, 90° displaced	5V TTL, CW-turn CH A  CH B 
104097 <sup>6</sup>	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	

<sup>3</sup> Version „-P“ feather key

<sup>4</sup> Without option speed/angle measurement

<sup>5</sup> Version „-R“ accuracy class 0.2% M<sub>nom</sub>

<sup>6</sup> 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

### Amplifiers

Examples of suitable amplifiers for the torque sensors DR-2212/DR-2212-P and DR-2212-R/DR-2212-R-P:

LCV-USB2	SI-ETH	SI-USB3	GM 80	GM 80-PA
				