

## Rotating Torque Sensor DR-2643/DR-2643-P (contactless) with Nominal Torque from 0.1 to 5000 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.*

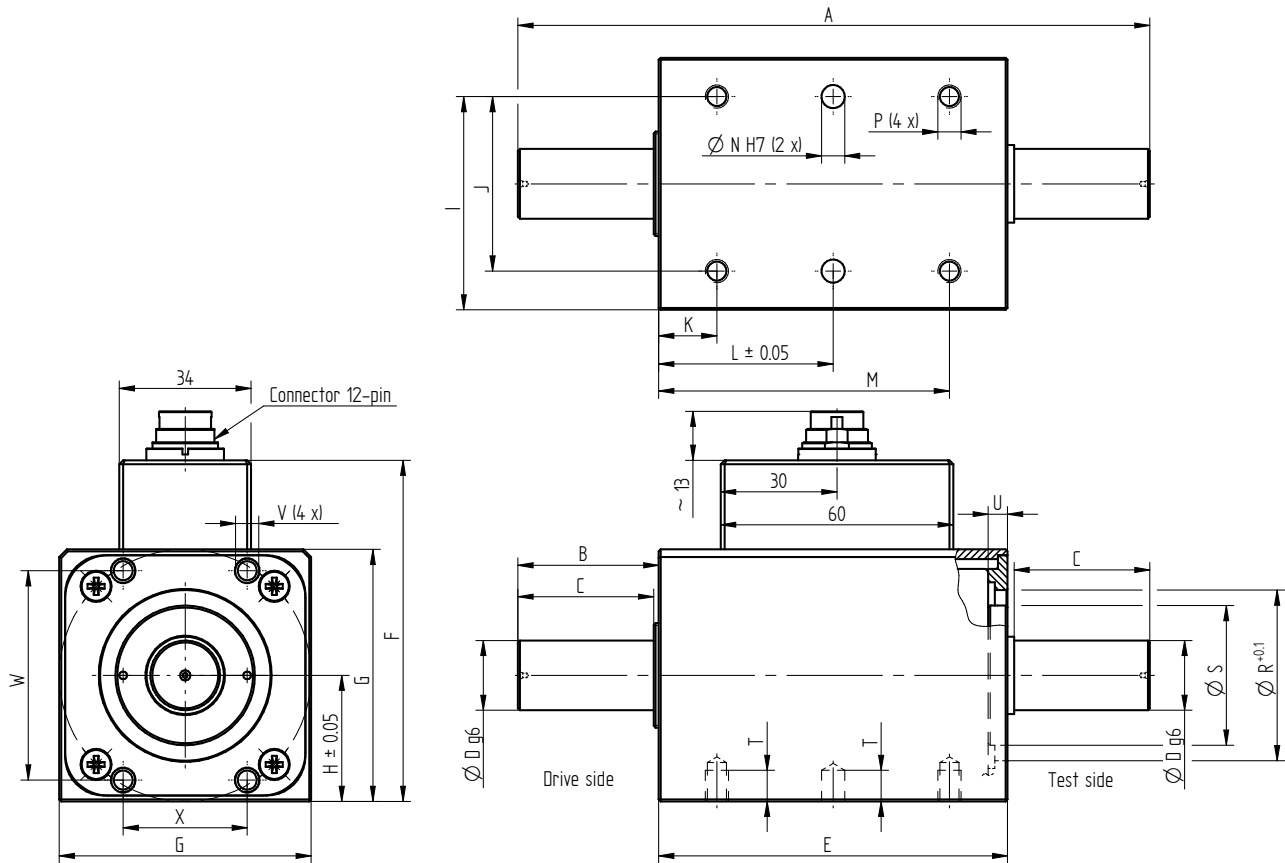
### Performance Features

- Torque sensor for e. g. test bench applications
- High accuracy
- Active output  $\pm 5V$  (optional  $\pm 10V$ )
- Integrated speed/angle measurement (optional)
- Virtually no influence of the bearing friction on the measuring signal
- Speed up to  $30000 \text{ min}^{-1}$
- 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

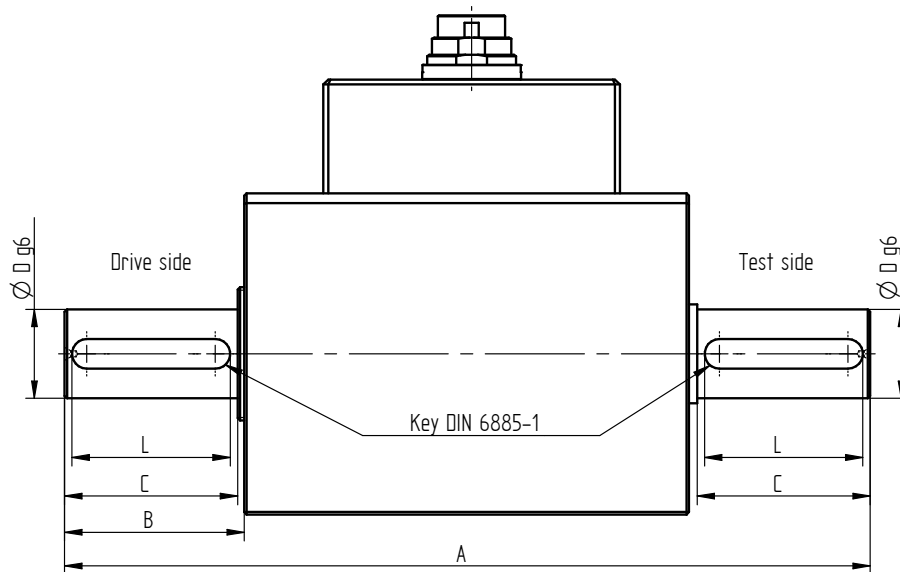
## Dimensions in mm



Rated Torque [N·m]	Dimensions [mm]											
	A	B	C	$\varnothing D$	E	F	G	H	I	J	K	L
0.1/0.2/0.5/1/2/5	110	19	16.5	8	71	63	40	20	35	30	12	35.5
10	110	19	16.5	10	71	63	41	20	35	30	12	35.5
20/30/50/100	163	36.5	35	18	90	88	65	32.5	55	45	15	45
200/500	234	56.5	55	32	120	118	95	47.5	82.5	70	20	60
1000	234	56.5	55	42	120	118	95	47.5	82.5	70	20	60
2000/5000	372	114	110	70	144	163	140	70	120	100	25	72

Rated Torque [N·m]	Dimensions [mm]											Weight [kg]
	M	$\varnothing N$	P	$\varnothing R$	$\varnothing S$	T	U	V depth	W	X		
0.1/0.2/0.5/1/2/5	59	4	M4	28	20	8	~ 1,5	M4	7.5	32	18	0.5
10	59	4	M4	28	20	8	~ 1,5	M4	7.5	32	18	0.6
20/30/50/100	75	6	M6	44	36	8	~ 5	M6	12.5	54	32	1.6
200/500	100	8	M8	70	65	14	~ 6	M8	16.5	76	50	4.8
1000	100	8	M8	70	65	14	~ 6	M8	16.5	76	50	5.6
2000/5000	119	12	M12	108	98	20	~ 7	M12	25	112	72	19.0

## Dimensions of Version with Feather Key in mm



Rated Torque [N·m]	Dimensions [mm]						Weight [kg]
	A	B	C	ØD	L	Feather Key <sup>1</sup>	
0.1/0.2/0.5/1/2/5	110	19	16.5	8	14	2 x 2 x 14	0.5
10	110	19	16.5	10	14	3 x 3 x 14	0.6
20/30/50/100	163	36.5	35	18	32	6 x 6 x 32	1.6
200/500	234	56.5	55	32	50	10 x 8 x 50	4.8
1000	234	56.5	55	42	50	12 x 8 x 50	5.6
2000/5000	372	114	110	70	100	20 x 12 x 100	19.0

## Connection Assignment

12-pin	DR-2643/DR-2643-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-2643/DR-2643-P

Nominal torque $M_{nom}$	N·m	0.1 ... 5000
Accuracy class	% $M_{nom}$	0.1 (optional 0.05)
Relative repeatability error in unchanged mounting position $b'$	% $M_{nom}$	±0.02
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
Temperature effect on characteristic value $TK_C$	% $M_{nom}/10$ K	±0.1
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-2643	Article-No. DR-2643-P <sup>3</sup>	Rated Torque [N·m]	Limit Speed [min <sup>-1</sup> ]	Spring Rate [N·m/rad]	Mass Moment of Inertia [kg·m <sup>2</sup> ] <sup>4</sup>		Axial Force Limit [N] <sup>5</sup>	Lateral Force Limit [N] <sup>5</sup>
					Drive Side	Test Side		
114347	115669	0.1	30000	1.8E+01	9.2E-06	2.5E-07	43	1.5
114348	115670	0.2	30000	1.8E+01	9.2E-06	2.5E-07	58	2
112805	115671	0.5	30000	9.4E+01	9.2E-06	2.5E-07	240	3
112804	115672	1	30000	9.4E+01	9.2E-06	2.5E-07	240	3
112593	115673	2	30000	3.7E+02	9.2E-06	2.5E-07	480	7
112381	115674	5	30000	7.7E+02	9.2E-06	2.6E-07	900	16.5
112806	115675	10	30000	8.8E+02	9.3E-06	3.4E-07	1050	21
112447	115676	20	20000	5.1E+03	1.2E-04	6.8E-06	2300	44
107403	115677	30	20000	5.1E+03	1.2E-04	6.8E-06	2300	44
112807	115678	50	20000	9.6E+03	1.2E-04	7.4E-06	5000	142
112808	115679	100	20000	9.6E+03	1.2E-04	7.4E-06	5000	142
112810	114085	200	15000	8.9E+04	5.4E-04	4.4E-04	10000	275
112811	114538	500	15000	1.3E+05	5.4E-04	4.4E-04	13000	400
112812	115680	1000	15000	1.7E+05	6.4E-04	5.3E-04	20000	920
112814	115681	2000	12000	6.3E+05	5.7E-03	5.1E-03	34000	1250
112816	115682	5000	12000	9.6E+05	5.8E-03	5.2E-03	64000	2900



<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

<sup>5</sup> Unsupported shaft

## Options

Article-No.	Description	
101695	Accuracy class	0.05 % $M_{nom}$
103562	Output signal	$\pm 10V$
101560	Speed / angle measurement, 2 x 360 impulses, 90° displaced	5V TTL, CW-turn CH A  CH B 

## 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	

## 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

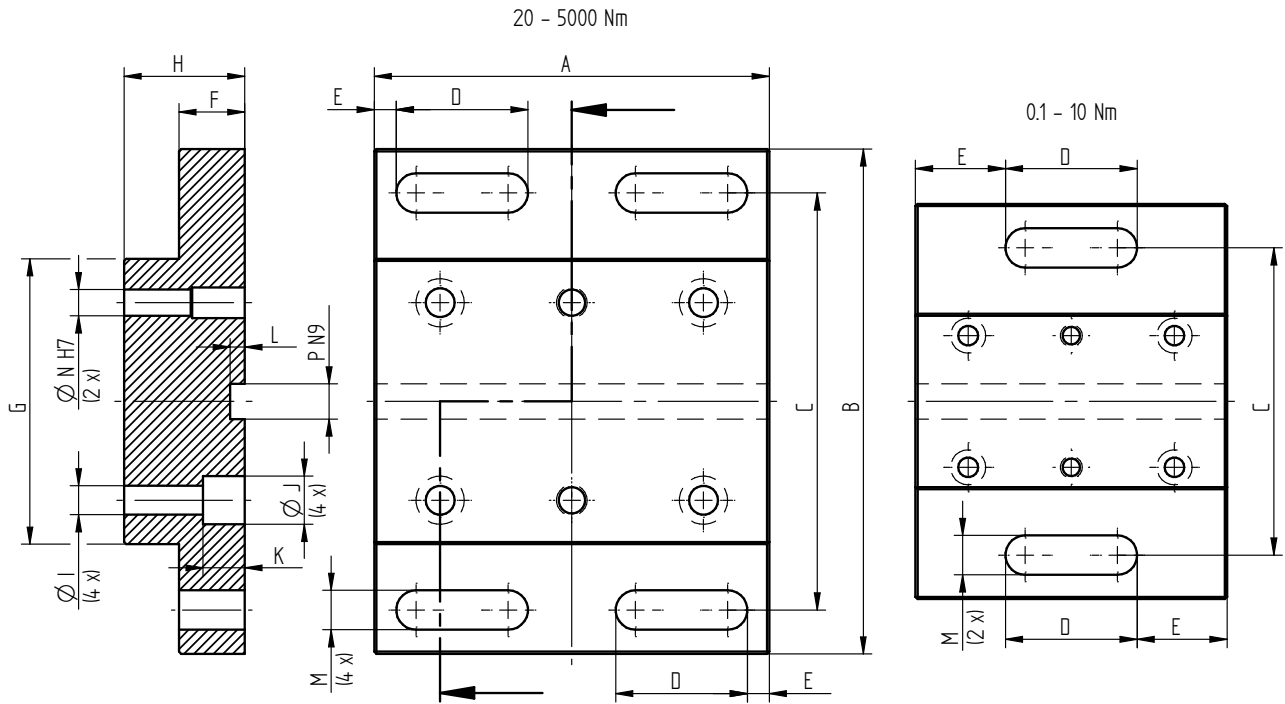
### Amplifiers

Examples of suitable amplifiers for the torque sensor DR-2643/DR-2643-P:



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

# Base Plates



Rated Torque [N·m]	Article-No.	Dimensions [mm]															Weight [kg]
		A	B	C	D	E	F	G	H	$\varnothing I$	$\varnothing J$	K	L	M	$\varnothing N$	P	
0.1/0.2/0.5/1/2/5/10	118547	71	90	70	30	20.5	15	40	25	4.5	8	7	3.3	9	4	8	0.3
20/30/50/100	118548	90	115	95	30	5	15	65	27.5	6.6	11	9.5	3.3	9	6	8	0.6
200/500/1000	118549	120	155	125	30	5	20	95	37.5	9	15	10.5	4.1	11	8	10	1.4
2000/5000	118550	144	210	176	36	5	25	140	45	13.5	20	14	4.1	13	12	10	2.9