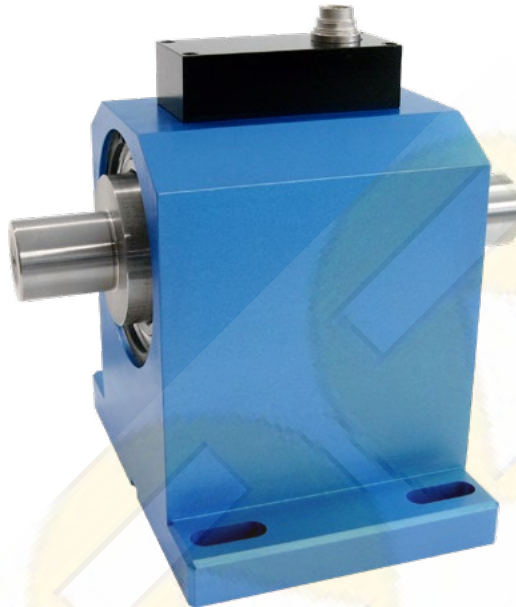


Rotating Dual Range Torque Sensor DR-2531/DR-2531-P (contactless) with Nominal Torque from 5/0.5 ... 20000/2000 N·m



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.

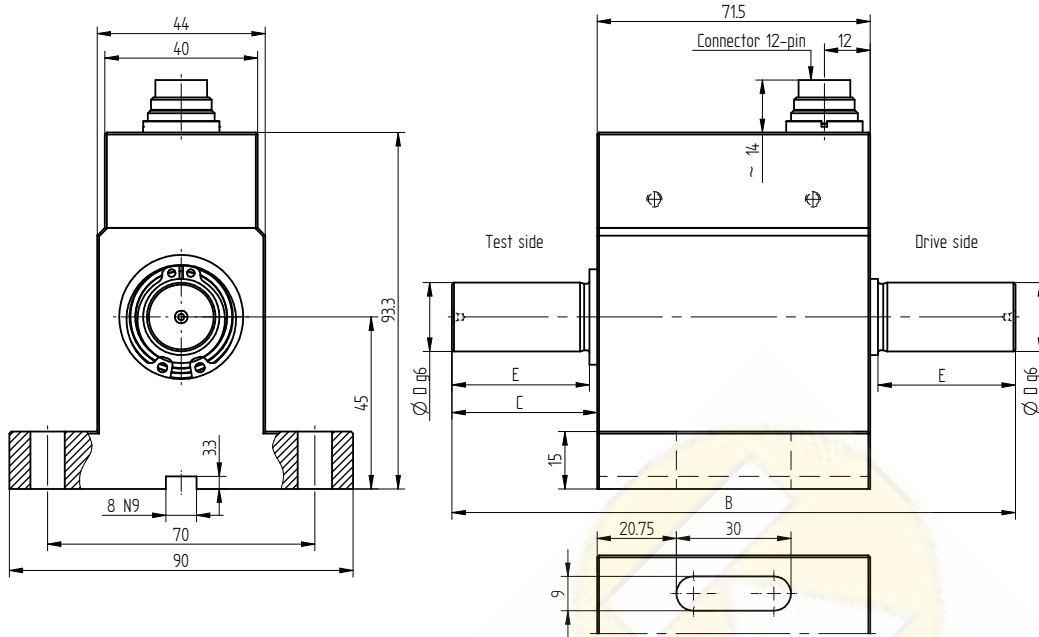
Performance Features

- Torque sensor for e.g. test bench applications
- Accuracy class 0.1%
- Active output $\pm 5V$ (optional $\pm 10V$)
- Integrated speed/angle measurement, optional
- Speed up to 12000 min^{-1}
- Very short axial length
- High torsional stiffness
- Simple handling and assembly
- Special versions on request

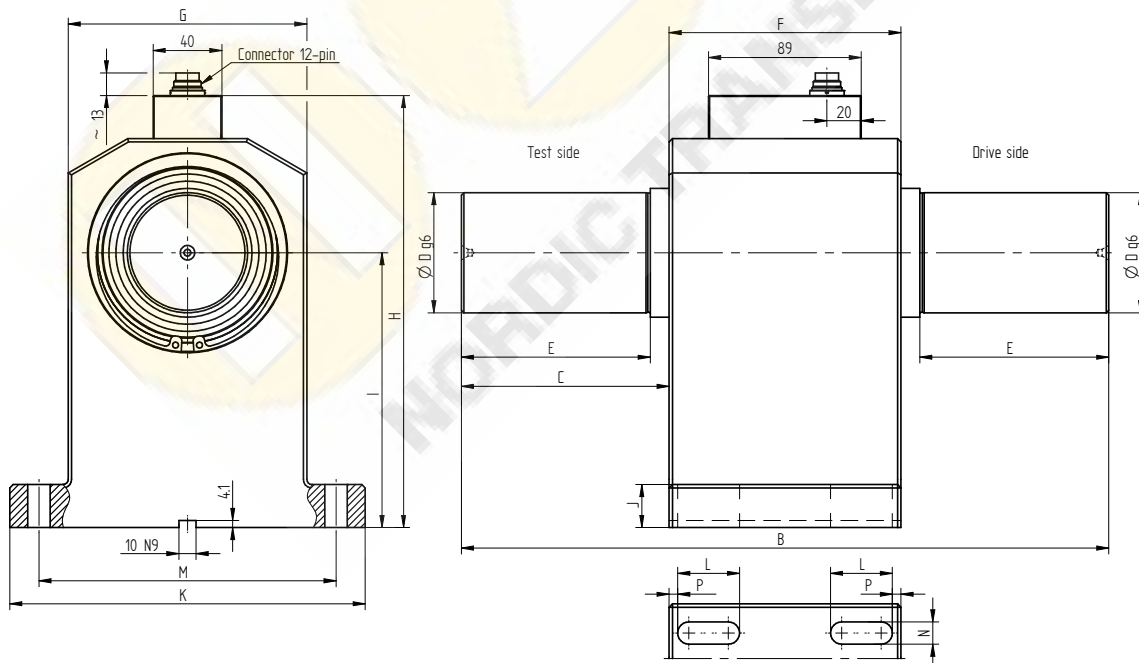
Application

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

Dimensions of DR-2531/DR-2531-P in mm

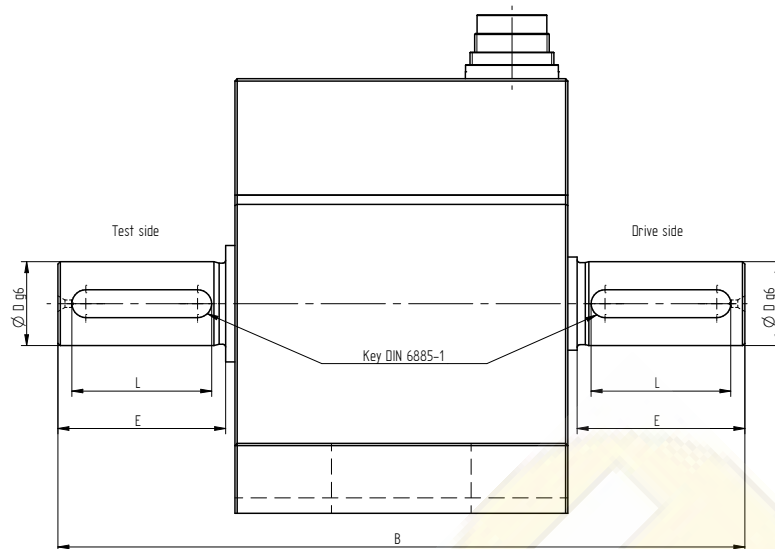


Nominal Torque [N·m]	Dimensions [mm]				Weight [kg]
	B	C	ØD	E	
5/0.5	107.5	18	8	17	0.8
10/1	107.5	18	10	17	0.8
20/2; 30/3	111.5	20	18	18	0.9
50/5; 100/10	147.5	38	18	36	1.0



Nominal Torque [N·m]	Dimensions [mm]														Weight [kg]
	B	C	ØD	E	F	G	H	I	J	K	L	M	N	P	
200/20; 500/50	217	43.5	32	38	130	115	190.4	112	20	175	30	145	11	5	8.8
1000/100	262	66	50	58	130	115	190.4	112	20	175	30	145	11	5	10.3
2000/200; 5000/500	377	121	70	110	135	139	251.5	160	25	207	36	173	13	5	19.0
10000/1000; 20000/2000	470	140	110	120	190	210	343	215	40	300	45	260	17	15	69.0

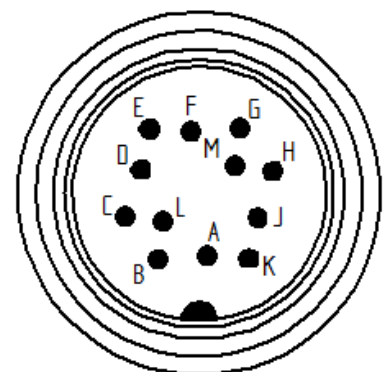
Dimensions of Version with Feather Keys in mm



Nominal Torque [N·m]	Dimensions [mm]					Weight [kg]
	B	ØD	E	L	Feather Key ¹	
5/0.5	107.5	8	17	14	2 x 2 x 14	0.8
10/1	107.5	10	17	14	3 x 3 x 14	0.8
20/2; 30/3	111.5	18	18	14	6 x 6 x 14	0.9
50/5; 100/10	147.5	18	36	30	6 x 6 x 30	1.0
200/20; 500/50	217	32	38	36	10 x 8 x 36	8.8
1000/100	262	50	58	50	14 x 9 x 50	10.3
2000/200; 5000/500	377	70	110	100	20 x 12 x 100	19.0
10000/1000; 20000/2000	570	110	170	160	28 x 16 x 160	69.0

Connection Assignment

12-pin	DR-2531 / DR-2531-P	Series 581
Pin A	NC	-
Pin B	Signal angle B, option	5V TTL
Pin C	Signal 1 (+)	±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	Signal 2 (+)	±5V (±10V)
Pin J	NC	-
Pin K	Control signal	L < 2.0V; H > 3.5V
Pin L	NC	-
Pin M	Shield	-



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

Technical Data acc. to VDI/VDE/DKD 2639

Dual Range Torque Sensor		DR-2531/DR-2531-P
Nominal torque M_{nom}	N·m	5/0.5 ... 20000/2000
Accuracy class	% M_{nom}	0.1
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	5
Electrical connection		12-pin series 581 ²
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-2531	Article-No. DR-2531-P ³	Nominal Torque [N·m]	Limit Speed [min ⁻¹]	Springrate [N·m/rad]	Mass Moment of Inertia [kg·m ²] ⁴		Axial Force Limit [N]	Lateral Force Limit [N]
					Drive Side	Test Side		
107587	112990	5/0.5	12000	2.4E+02	9.7E-06	7.9E-06	62	3
107776	112645	10/1	12000	7.2E+02	1.0E-05	7.9E-06	62	12
107779	109911	20/2	12000	1.9E+03	1.1E-05	9.9E-06	62	23
107780	113401	30/3	12000	2.9E+03	1.1E-05	9.9E-06	62	35
107781	111875	50/5	12000	5.4E+03	1.4E-05	1.1E-05	62	45
107782	113094	100/10	12000	8.0E+03	1.4E-05	1.2E-05	62	64
107783	115244	200/20	7000	3.3E+04	1.3E-03	8.0E-04	770	175
107785	112963	500/50	7000	7.7E+04	1.3E-03	8.0E-04	770	410
107786	112785	1000/100	7000	1.9E+05	1.6E-03	1.1E-03	770	530
107787	114089	2000/200	5500	5.1E+05	5.4E-03	4.2E-03	1100	720
107790	112627	5000/500	5500	7.8E+05	5.5E-03	4.3E-03	1100	860
108970	114703	10000/1000	3500	2.9E+06	4.1E-02	3.6E-02	2800	2400
109583	114900	20000/2000	3500	3.8E+06	4.1E-02	3.6E-02	2800	2400

² Female cable connector in scope of delivery at first delivery

³ Version „-P“ feather key

⁴ Without option speed/angle measurement

Options

Article-No.	Description	
103562	Output signal	±10V
101560	Speed/angle measurement, 2 x 360 impulses, 90° displaced	5V TTL, CW-turn CH A  CH B 
104097 ⁵	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	

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-2531 / DR-2531-P:



⁵ Nominal torque ≥2000 N·m