

Rotating Torque Sensor DR-2153 (contactless) with Rated Torque from 0.1 ... 20 N·m

Data sheet



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.

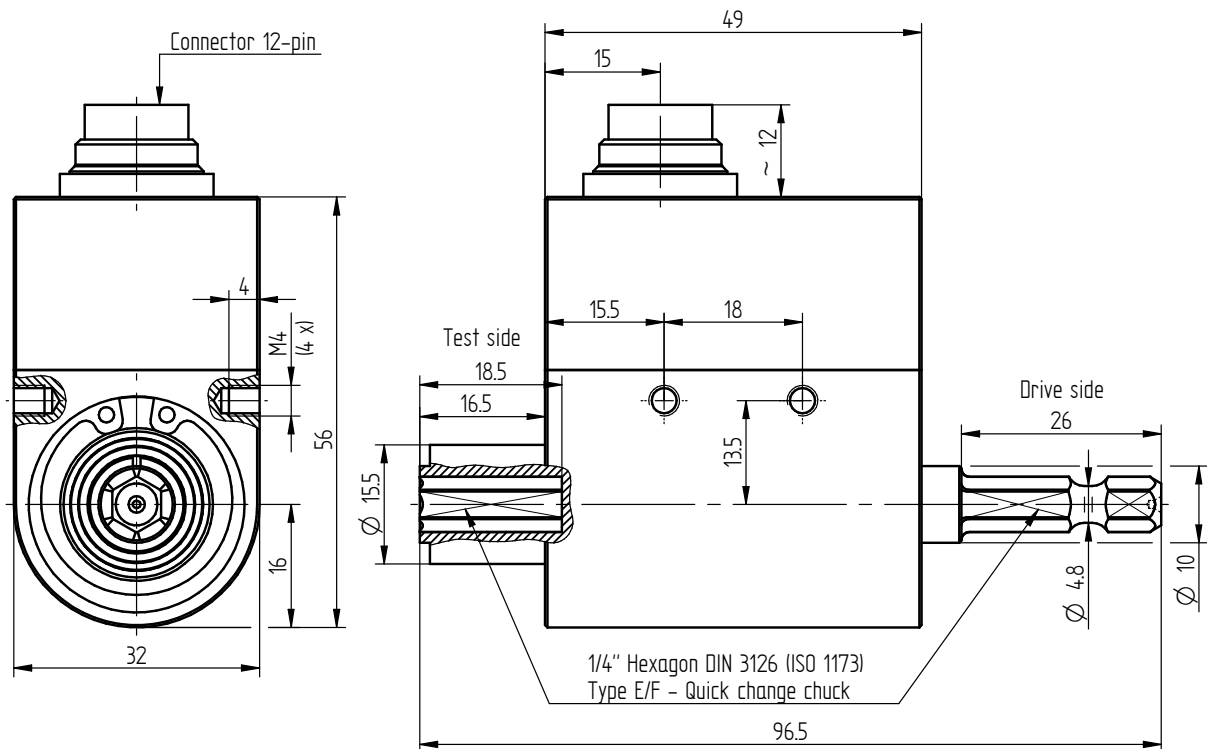
Performance Features

- Torque sensor for screw driving systems
- High accuracy
- Active output $\pm 5V$ (optional $\pm 10V$)
- Integrated speed/angle measurement, optional
- Speed up to 4000 min^{-1}
- Very short axial length
- High torsional stiffness
- 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 in mm



Rated Torque [N·m]	Hexagon Drive	Weight [kg]
0.1/0.2/0.5/1/2/5/10/15/20	1/4"	0.2

Connection Assignment

12-pin	DR-2153		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	-	

Technical Data acc. to VDI/VDE/DKD 2639

Torque Sensor DR-2153

Rated torque M_{nom}	N·m	0.1 ... 20
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	10
Electrical connection		12-pin series 581 ¹
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 TK₀	% 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.	Rated Torque [N·m]	Limit Speed [min ⁻¹]	Springrate [N·m/rad]	Mass Moment of Inertia [kg·m ²] ²		Axial Force Limit [N] ³	Lateral Force Limit [N] ³
				Drive Side	Test Side		
103816	0.1	3000	1.8E+01	2.6E-06	2.9E-07	43	1.2
103815	0.2	3000	1.8E+01	2.6E-06	2.9E-07	58	1.6
103157	0.5	3000	1.1E+02	2.6E-06	2.9E-07	185	1.6
103817	1	4000	1.1E+02	2.6E-06	2.9E-07	260	2.6
103678	2	4000	2.9E+02	2.6E-06	3.0E-07	480	6.6
102386	5	4000	4.6E+02	2.6E-06	3.1E-07	865	17
101845	10	4000	5.2E+02	2.6E-06	3.3E-07	1150	24
103814	15	4000	5.2E+02	2.6E-06	3.3E-07	1150	24
102067	20	4000	5.2E+02	2.6E-06	3.3E-07	1150	24

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 

¹ Female cable connector in scope of delivery at first delivery

² Without option speed/angle measurement

³ Unsupported shaft

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	

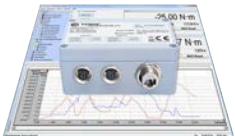
Accessories

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-2153:

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

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