Lorenz® messtechnik gmbh

Rotating Torque Sensor DR-2453 (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.

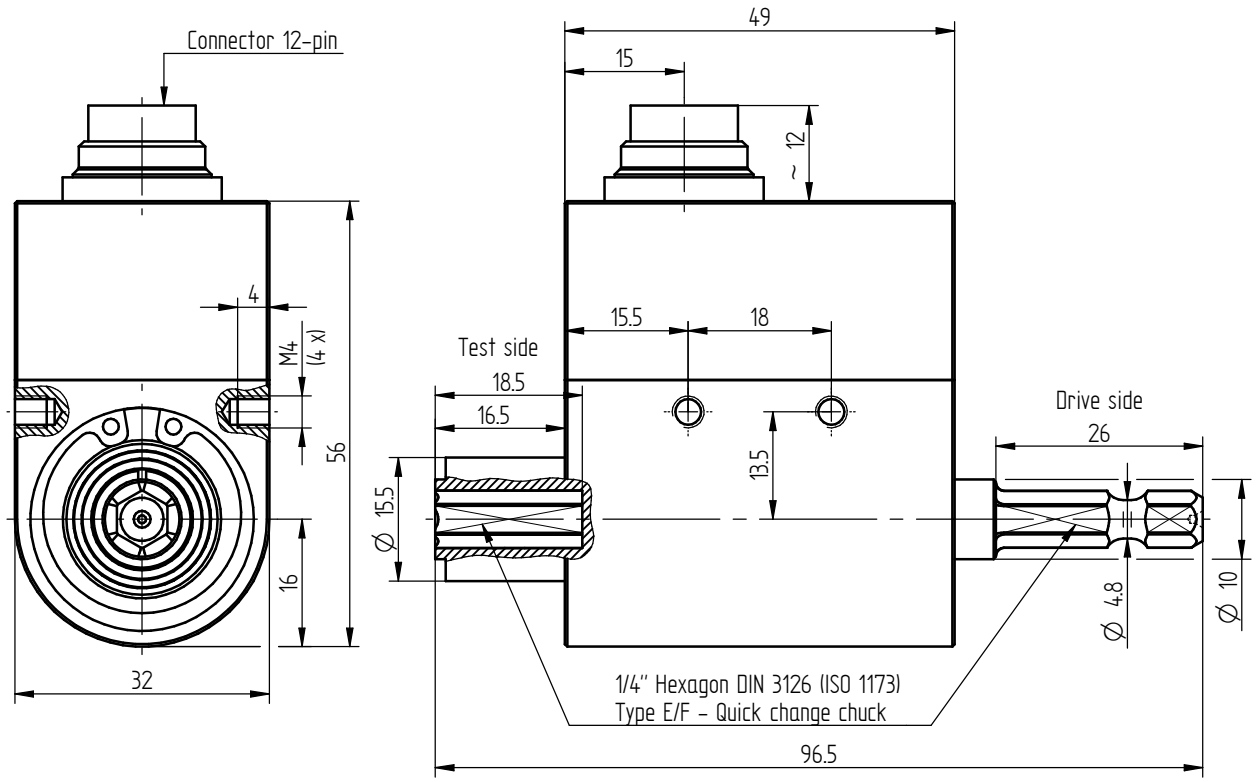
Performance Features

- Torque sensor for screw driving systems
- High accuracy
- Digital output RS485
- Integrated speed/angle measurement, optional
- Speed up to 4000 min^{-1}
- Very short axial length
- High torsional stiffness
- Simple handling and assembly
- Auto identification of: measuring range, serial number, date of calibration
- Special versions on request

Application

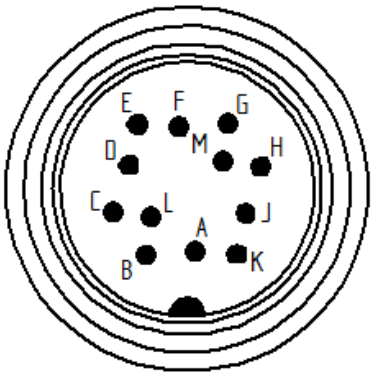
- Assembly technology
- Process measuring and control technology
- Automotive industry
- Measuring and control devices
- Tool engineering
- Special mechanical engineering

Dimensions of DR-2453 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-2453		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	NC	-	
Pin H	NC	-	
Pin J	RS485	RS485 (B)	
Pin K	NC	-	
Pin L	RS485	RS485 (A)	
Pin M	Shield		

Technical Data acc. to VDI/VDE/DKD 2639

Torque Sensor DR-2453		
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	digits	±25000
Control signal excitation	V	per software
Sample rate	kSample/s	5
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 **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.	Rated Torque [N·m]	Limit Speed [min^{-1}]	Springrate [N·m/rad]	Mass Moment of Inertia [kg·m²][2]		Axial Force Limit [N][3]	Lateral Force Limit [N][3]
				Drive Side	Test Side		
104167	0.1	3000	1.8E+01	2.6E-06	2.9E-07	43	1.2
104168	0.2	3000	1.8E+01	2.6E-06	2.9E-07	58	1.6
104169	0.5	3000	1.1E+02	2.6E-06	2.9E-07	185	1.6
104170	1	4000	1.1E+02	2.6E-06	2.9E-07	260	2.6
104171	2	4000	2.9E+02	2.6E-06	3.0E-07	480	6.6
104172	5	4000	4.6E+02	2.6E-06	3.1E-07	865	17
104173	10	4000	5.2E+02	2.6E-06	3.3E-07	1150	24
104174	15	4000	5.2E+02	2.6E-06	3.3E-07	1150	24
104175	20	4000	5.2E+02	2.6E-06	3.3E-07	1150	24

Options

Article-No	Description	
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

[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