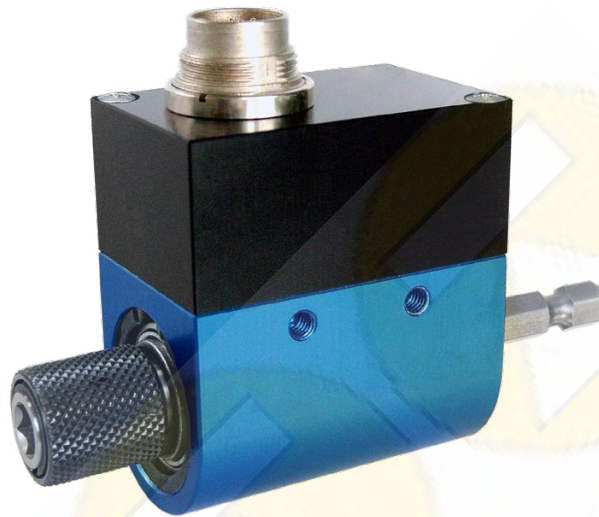


Rotating Torque Sensor DR-2153 (contactless) with Rated Torque from 0.1 ... 20 N·m



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.

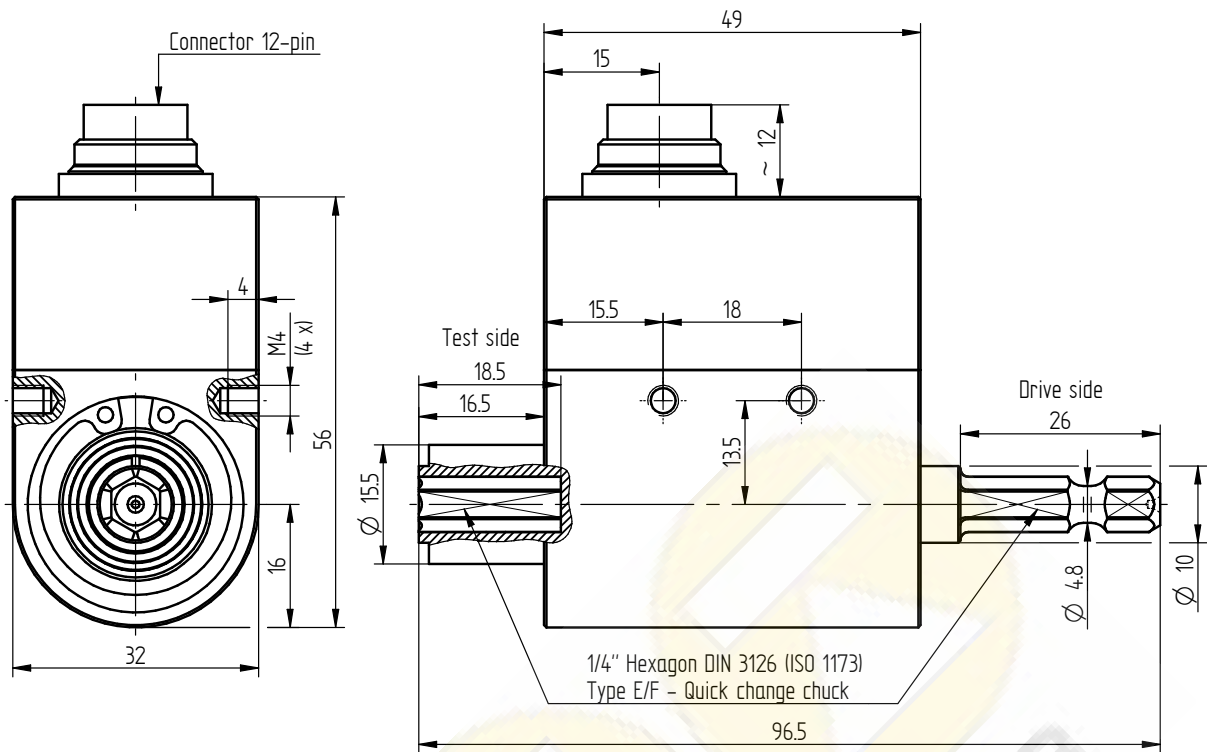
Performance Features

- Torque sensor for 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

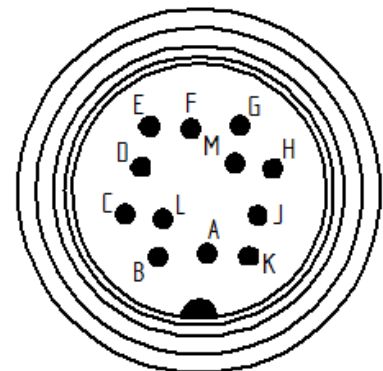
Dimensions of DR-2153 in mm



| | | |
|----------------------------|---------------|-------------|
| 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 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·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:

