

# Torque Sensor

## Rotating, Non-Contact Transfer

### Model 8645

Code:	8645 E
Manufacturer:	burster
Delivery:	4 weeks
Warranty:	12 months
Issue:	1.4.2003



- New, patented measuring technology
- Measuring range from 0 ... 2.5 Nm to 0 ... 175 Nm
- Speed up to 5000 min<sup>-1</sup>
- Maintenance free due to non-contact transfer
- Very competitive price
- Square-drive shafts on request

### Application

With its new EMD-technology this sensor can measure static and dynamic torques from non-rotation up to permanent high speed.

The reliability and, above all, the very low price opens up new possibilities next to the present applications for torque measurement sensors.

Examples: Automotive (steering, gearing, motors)  
 Drilling systems  
 Bolting tools  
 Textile machines  
 Torque stands

### Description

A new, patented technology (EMD-technology) is used to create the electrical voltage from the applied torque.

The nickeliferous steel shaft is impregnated with a permanent magnetic pattern. Torque changes this pattern as well as the magnetic field. As a result the sensor delivers a torque-dependent but less speed-dependent measurement signal for the evaluation by EMD-electronic of the stator.

A magnetization of the shaft is always necessary (no strain gages, no wiring).

A ASIC for signal evaluation gives the user a torque-proportional electrical voltage.

**Technical Data**

Order Code	Measuring range	Dimension [mm]						Weight of sensor [g]
		A	B	C	D	E	F	
8645-5002.5	0 ... ± 2.5 Nm	119.0	70.0	23	9	39.0	19.5	400
8645-5005	0 ... ± 5 Nm	119.0	70.0	23	9	39.0	19.5	400
8645-5007.5	0 ... ± 7.5 Nm	119.0	70.0	23	9	39.0	19.5	400
8645-5017.5	0 ... ± 17.5 Nm	119.0	70.0	23	9	39.0	19.5	400
8645-5075	0 ... ± 75 Nm	139.0	70.0	30	14	49.0	24.5	700
8645-5175	0 ... ± 175 Nm	179.0	70.9	50	19	49.0	24.5	800

**Electrical**

Excitation voltage: 9 ... 12 V DC  
 Excitation current: < 10 mA  
 Analog output signal: 0.5 ... 4.5 V DC nominal  
 Signal output at 0 Nm (adjustable): 2.5 V DC  
 Output resistance: 50 Ohm  
 Signal bandwidth (-3 db): 1 kHz

**Environmental**

Temperature operating: 0 ... 70 °C  
 Temperature effect zero: < 0.1 % F.S./K  
 Stability against interfering static magnetic fields (minimal allowed distance to sensor housing 70 mm): 500 mT

**Mechanical**

Linearity and hysteresis: < 1 % F.S.  
 Signal resolution: 0.1 % F.S.  
 Signal influence by rotation: < 1 % F.S.  
 Speed: max. 5000 min<sup>-1</sup>  
 Degree of protection: IP41 acc. to DIN 40050  
 Overload safe: 100 % over capacity  
 Maximum axial load (all ranges): 40 N  
 Maximum radial load (all ranges): 50 N  
 Durability of bearings at max. speed: 40000 h  
 Shaft material: Ni Cr Ni 14

Electrical connection: 5 pin connector  
 Mating connector mounted on cable, length 2 m (incl. in standard)

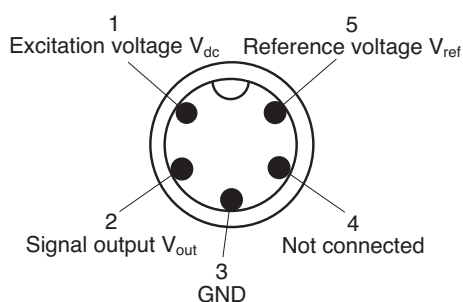
Mechanical connection: Both shaft ends conform to DIN 748, keyway to DIN 6885

**Wiring code cable:**

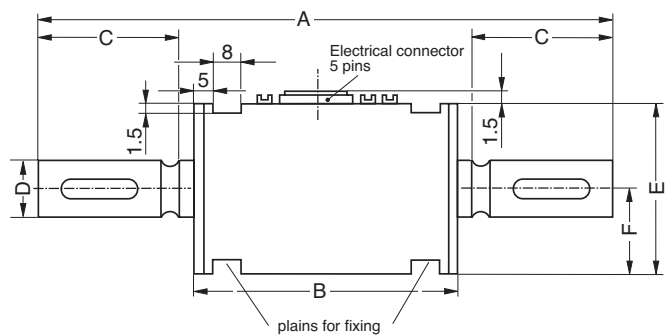
Excitation + white  
 Signal output + brown  
 Excitation/signal - black

Reference Voltage  $V_{ref}$  (2.5 V) grey

**Wiring code connector**



**Dimensions**



**Order Information**

Torque Sensor, Measuring range 0 ... ± 5 Nm,

**Model 8645-5005**

**Options**

Square design  
 higher measuring ranges

**upon request  
 upon request**

**Accessories**

**Mating connector**  
 to all burster instrumentation in table housing

**Model 9941**

**Mounting of mating connector to conductor cable**

**Model 99004**

**Amplifiers, process indicators like e.g. digital displays 9180, 9162**

(please refer to product section 9 of catalog)

**Mounting Instructions**

During use and storing the sensor must not be exposed to electrical and magnetical fields.

For mounting of the sensor it should be respected that the shafts are arranged exactly in line to the connecting shafts. There shouldn't exist any axial and radial load. To avoid that please use flexible shaft couplings, torsionally stiff.