

Torque Sensor

Rotating, Non-Contact Transfer

Model 8645 with round shafts

Model 8646 with square ends

Code:	8645 E
Manufacturer:	burster
Delivery:	ex stock
Warranty:	24 months

CAD data in 3D/2D available on
powerPARTS by web2CAD
Info: data sheet 80-CD-ROM-E



Model 8646



Model 8645

- Very low price
- New, patented measuring technology
- Measuring ranges from 0 ... 2.5 Nm to 0 ... 500 Nm
- Speed up to 5000 rpm
- Maintenance-free due to non-contact transfer

Application

With its new EMD-technology this sensor can measure static and dynamic torque 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
screwing and bolting tools
textile machines
test rigs
printing and typography technology
pumps
fitness and workout gears
mechanical conveying technology
household appliances

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.

The function derives only from a magnetization of the shaft (no strain gauges, no wiring).

An ASIC for signal extension gives the user a torque-proportional electrical voltage.

Technical Data

Model 8645, round ends

Variations in dimensions acc. ISO 2768-f

Order code	Measuring range	Dimensions [mm]														Inertia moment [g/cm ²]	Weight of sensor [g]
		A	B	C	∅ D _{k6}	E	F	G	H	K	L	M	N	P	S		
8645-5002.5	0 ... ± 2.5 Nm	125	70	27.5	9	40	-	8	5	-	23	43.9	15	37	1.5	4.86	400
8645-5005	0 ... ± 5 Nm	125	70	27.5	9	40	-	8	5	-	23	43.9	15	37	1.5	5.12	400
8645-5007.5	0 ... ± 7.5 Nm	125	70	27.5	9	40	-	8	5	-	23	43.9	15	37	1.5	5.53	400
8645-5017.5	0 ... ± 17.5 Nm	125	70	27.5	9	40	-	8	5	-	23	43.9	15	37	1.5	8.15	450
8645-5075	0 ... ± 75 Nm	139	70	34.5	14	50	-	8	5	-	30	43.9	18	47	1.5	46.4	700
8645-5175	0 ... ± 175 Nm	179	70	54.5	19	50	-	8	5	-	50	43.9	18	47	1.5	180	800
8645-5250	0 ... ± 250 Nm	179	70	54.5	19	50	-	8	5	-	50	43.9	18	47	1.5	188	1000
8645-5500	0 ... ± 500 Nm	220	87	66.6	25	60	-	10.5	2	-	-	61.4	19	57	1.5	984	1700

Model 8646, square end

Order code	Measuring range	Dimensions [mm]														Inertia moment [g/cm ²]	Weight of sensor [g]
		A	B	C	square	E	F	G	H	K	L	M	N	P	S		
8646-5002.5	0 ... ± 2.5 Nm	95.5	70	9.5	1/4"	40	16	8	5	12	-	43.9	15	37	1.5	2.53	400
8646-5005	0 ... ± 5 Nm	95.5	70	9.5	1/4"	40	16	8	5	12	-	43.9	15	37	1.5	2.79	400
8646-5007.5	0 ... ± 7.5 Nm	95.5	70	9.5	1/4"	40	16	8	5	12	-	43.9	15	37	1.5	3.20	400
8646-5017.5	0 ... ± 17.5 Nm	95.5	70	9.5	1/4"	40	16	8	5	12	-	43.9	15	37	1.5	5.82	450
8646-5075	0 ... ± 75 Nm	107	70	13.0	3/8"	50	24	8	5	18	-	43.9	18	47	1.5	30.2	700
8646-5175	0 ... ± 175 Nm	123.5	70	18.5	1/2"	50	35	8	5	24	-	43.9	18	47	1.5	100	800
8646-5250	0 ... ± 250 Nm	123.5	70	18.5	1/2"	50	35	8	5	24	-	43.9	18	47	1.5	102	800
8646-5500	0 ... ± 500 Nm	146	87	29.6	3/4"	60	29.6	10.5	2	33.5	-	61.4	19	57	1.5	563	1500

Electrical

Excitation voltage: 9 ... 12 V DC
 Excitation current: < 10 mA
 Signal output at 0 Nm (adjustable): 2.5 V DC
 Analog output signal (max. left to max. right torque): 2.5 V ± 1 V nominal
 Output resistance: 50 Ω
 Signal bandwidth (-3 db): 1 kHz

Environmental

Temperature operating: 0 ... 70 °C
 Temperature effect zero: < ± 0.1 % F.S./K
 Do not apply torque sensor within dynamic magnetic fields, e.g. near high running motors.

Resistance to magnetic fields: max. 300 kA/m at distance of 70 mm

Mechanical

Linearity and hysteresis failure and signal variation during rotation:
 Measuring ranges up to 250 Nm < ± 1 % F.S.
 Measuring range 0 ... 500 Nm < ± 2 % F.S.
 Repeatability: < ± 0.1 % F.S.
 Resolution: 0.1 % F.S.
 Speed: Model 8645 (permanent up to 3000) max. 5000 min⁻¹
 Model 8646 max. 1000 min⁻¹

Protection class (acc. EN 60529): IP 50

Static overload safe:
 ranges up to 175 Nm 200 % over capacity
 ranges 250 Nm and 500 Nm 150 % over capacity

Maximum axial load (all ranges): Influence < 1 % F.S. 40 N
 between shaft and housing

Maximum radial load (all ranges): Influence < 1 % F.S. 50 N

Durability of bearings at max. speed: 40,000 h

Shaft material housing: Ni Cr Ni 14

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

Mechanical connection:

Model 8645 both shaft ends with keyway acc.
 Measuring range up to 250 Nm 1 keyway acc. DIN 6885-1A
 Measuring range 500 Nm 2 keyways acc. DIN 6885-1A

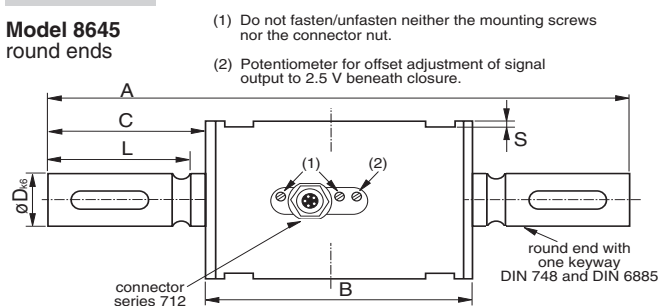
Model 8646 square, male and female, acc. to DIN 3121

Wiring code cable	wiring code	connector
Excitation	+ white	1
Signal output	+ brown	2
Excitation/signal GND	- black	3
free		4
Reference voltage	V _{ref} (2,5 V) grey	5

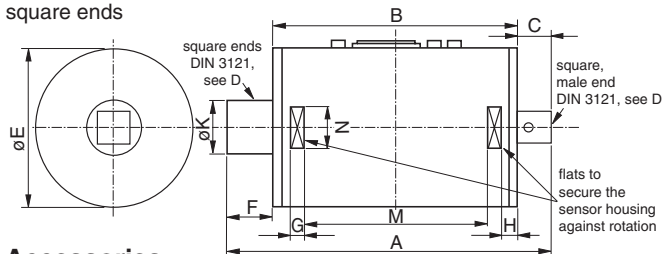
To avoid function error pls. use cable on sensor delivery only.
 Upon delivery without mounted connector please use a connector with shielding. Generally the shielding should escort the signal as far as possible. The use of another cable than the one included in delivery can affect the proper function of the sensor system.

Dimensions

Model 8645 round ends



Model 8646 square ends



Accessories

Mating connector Model 9941
 to all burster instrumentation in table housing

Mounting of mating connector to conductor cable Model 9904

Connecting cable, length 1.5 m, one end free Model 8645-Z001
 (one included on sensor delivery)

Connecting cable, length 3 m, one end free Model 8645-Z002

Holder for 8645 and 8646,
 ranges up to 17.5 Nm Model 8645-Z003
 ranges 75 Nm and above Model 8645-Z004

Amplifiers, process indicators like e.g. digital displays 9180, 9162
 (please refer to product section 9 of catalog)

Order Information

Torque sensor, round ends, measuring range 0 ... ± 5 Nm,
 (cable 1.5 m included) Model 8645-5005

Mounting Instructions

During use and storage 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 should not exist any axial and radial load. To avoid that please use flexible shaft couplings, torsionally stiff.