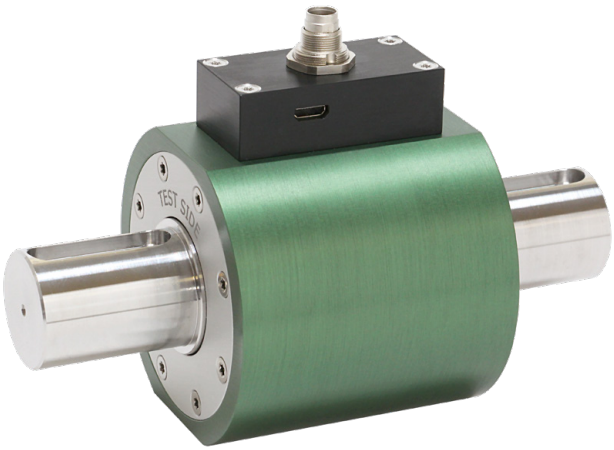
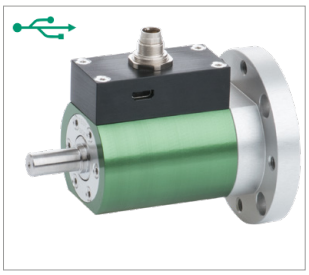
High-Precision Torque Sensor
for non-rotating applications

MODEL **8625**

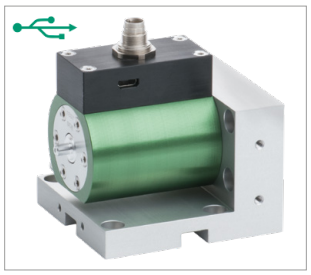


burster TEDS

NEW
immune to side loads
thanks to support bearings



8625 with flange



8625 with bracket

Highlights

- Measurement ranges of 0 ... 0.01 N·m to 0 ... 200 N·m
- Linearity error as low as from ≤ 0.05 % F.S.
- Standardized output signal
- Tare function, filter and average values configurable

Options

- Output signal ±10 V / USB
- burster TEDS
- Bracket or flange adapter offers choice of mounting options
- Immune to side loads thanks to built-in support bearings
- Dual-range model

Applications

- Test setups for precision mechanics
- Measuring the frictional torque ob bearings
- Measuring the torques applied to vehicle control elements and knobs
- Reference sensor in calibration systems

Product description

This high precision torque sensor is designed for both static and dynamic measurements on non-rotating applications. It is particularly suitable for torque measurements on, for instance, extremely small electrical actuating drives and micro-mechanical actuator elements, or for measuring reaction torques e.g. on micro-motors.

The high accuracy of measurement also makes this sensor ideal for use as a reference in many fields of industrial manufacture as well as laboratory research and development projects. Not containing any rotating parts, it requires no maintenance if properly used.

The strain-gage based sensor's modular design allows precise configuration for the desired application. With the integrated amplifier option, the sensor directly supplies a voltage signal of 0 ... ±10 V that is proportional to the torque. The sensor can be configured via the micro-USB interface, providing access to, for example, a filter frequency setting, averaging, and a tare function. Measurements via USB in addition to the voltage output are available with the USB measurement option. The sensor comes with the DigiVision software for performing measurements and data archiving, with drivers additionally available e.g. for LabVIEW. Integration into custom software is possible via DLL

The burster TEDS option (electronic data sheet, memory chip with sensor-specific data) allows rapid configuration of compatible evaluation units (instrumentation amplifier, indicator, ...).

Technical Data

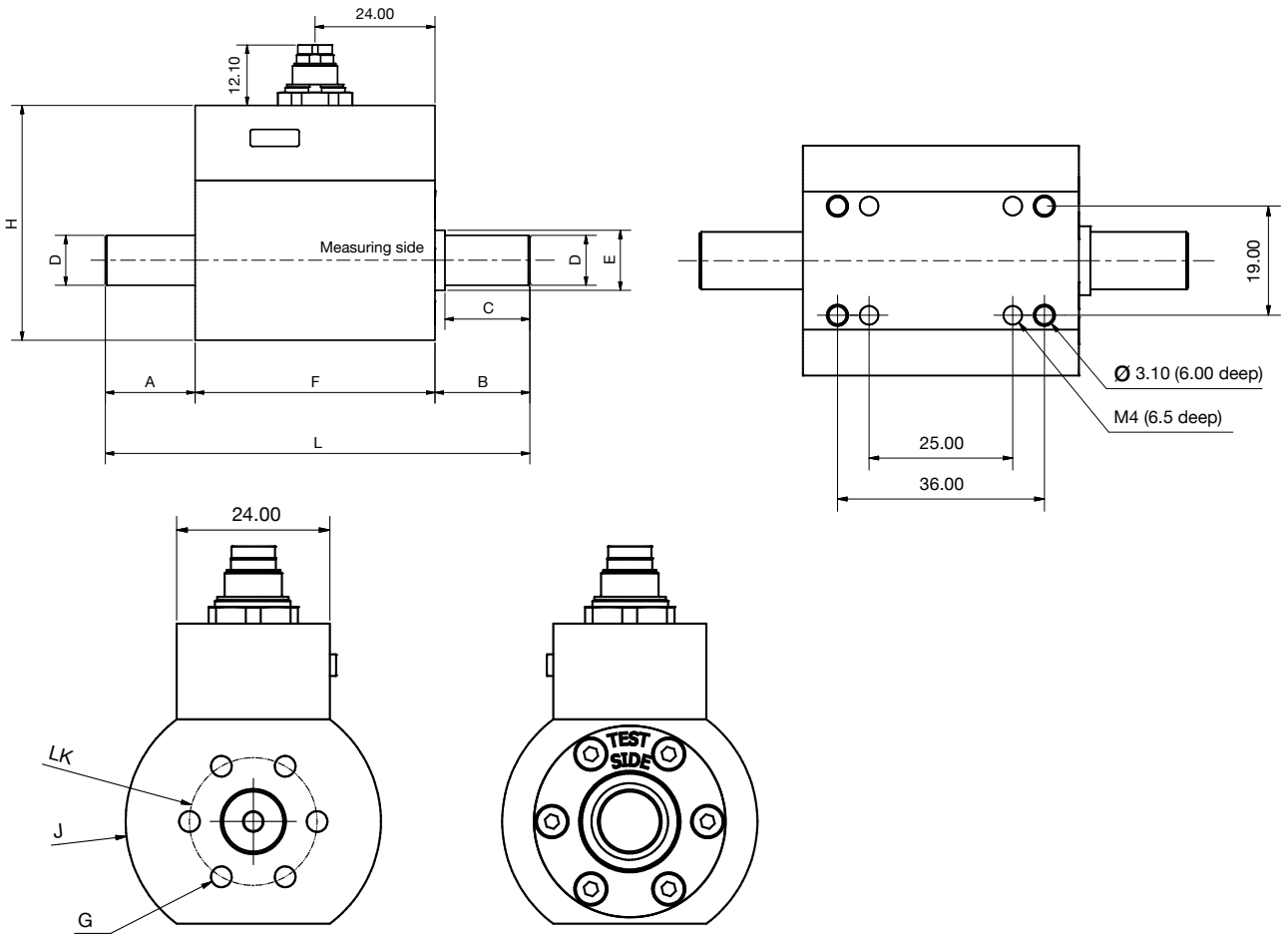
8625	–	4010-VXXXXX	4020-VXXXXX	4050-VXXXXX	4100-VXXXXX	4200-VXXXXX	4500-VXXXXX	5001-VXXXXX
Measuring range calibrated in N·m from 0 …		±0.01 N·m	±0.02 N·m	±0.05 N·m	±0.1 N·m	±0.2 N·m	±0.5 N·m	±1 N·m
Accuracy								
Relative non-linearity		0.15 % F.S.	0.1 % F.S.		0.05 % F.S.			
Relative hysteresis		0.15 % F.S.	0.1 % F.S.					
Tolerance of sensitivity		0.2 % F.S.	0.1 % F.S.					
Maximum axial load	[N]	50						
Maximum radial load	[N]	1				1.5	2	3
Spring constant	[N·m/rad]	5	8	10	18	41	115	261
Mass moment of inertia measuring side	[10^{-6} kg*m²]	0.022	0.026	0.059	0.749	0.812	0.886	1.15
Electrical values without amplifier								
Bridge resistance (full bridge)		1000 Ω						
Excitation voltage		5 V (max. 10 V)						
Environmental conditions without amplifier								
Range of operating and nominal temperature		-20 °C … +80 °C						
Sensitivity of temperature effects		at zero 0.020 % F.S./K (≤ 0.05 N·m) or 0.015 % F.S./K (≥ 0.1 N·m) on final value 0.015 % F.S./K (≤ 0.05 N·m) or 0.010 % F.S./K (≥ 0.1 N·m)						
Electrical values with amplifier/USB								
Rated supply voltage range		5 … 30 V DC (or 5 V via USB)						
DC power consumption		approx. 1 W						
Output voltage at ± rated torque		±10 V						
Output resistance		< 500 Ω						
Insulation resistance		zero (binding capability)						
-3 dB cut-off frequency		5000 Hz						
Ripple		<50 mV_{ss}						
Calibration signal		10.00 V DC						
Environmental conditions with amplifier/USB								
Range of operating and nominal temperature		-20 °C … +60 °C						
Sensitivity of temperature effects		at zero 0.020 % F.S./K (≤ 0.05 N·m) or 0.015 % F.S./K (≥ 0.1 N·m) on final value 0.015 % F.S./K (≤ 0.05 N·m) or 0.010 % F.S./K (≥ 0.1 N·m)						
Mechanical values								
Dynanic overload safe		recommended 70 % of nominal torque						
Max. operation torque		150 % of nominal torque (≥ 0.2 N·m)						
Breakaway torque		300 % of nominal torque						
Alternating load		70 % of nominal torque						
Other								
Material		Housing: made of anodized aluminium Shaft ≤ 0.05 N·m: high-strength aluminium 3.1354; Shaft ≥ 0.1 N·m: steel shell 1.4542						
Protection class		acc. EN 60529, IP40						
Weight	[g]	150			180			190
Geometry								
L	[mm]	59		65	85			
LJ	[mm]	48						
H	[mm]	47						
∅ J	[mm]	40						
LK	[mm]	20						
A / B	[mm]	5.5		8	18			
G	[mm]	M4						
Installation								
Installation instructions		Do not exceed the permitted axial and radial forces during fitting and operation. Please refer to our operating instructions for detailed information (www.burster.com). Do not use the housing as a means of absorbing torque.						

2888-008625EN-5699-071526

Technical Data

8625	–	5002-VXXXXX	5005-VXXXXX	5010-VXXXXX	5020-VXXXXX	5050-VXXXXX	5100-VXXXXX	5200-VXXXXX
Measuring range calibrated in N·m from 0 …		±2 N·m	±5 N·m	±10 N·m	±20 N·m	±50 N·m	±100 N·m	±200 N·m
Accuracy								
Relative non-linearity		0,05 % F.S.						
Relative hysteresis		0,1 % F.S.						
Tolerance of sensitivity		0,1 % F.S.						
Maximum axial load	[N]	50	200					
Maximum radial load	[N]	6	15	30				
Spring constant	[N·m/rad]	304	1242	2604				
Mass moment of inertia measuring side	[10^{-6} kg*m^2]	1.17	1.44	2.2				
Electrical values without amplifier								
Bridge resistance (full bridge)		1000 Ω						
Excitation voltage		5 V (max. 10 V)						
Environmental conditions without amplifier								
Range of operating and nominal temperature		-20 °C … +80 °C						
Sensitivity of temperature effects		at zero 0.020 % F.S./K (≤ 0.05 N·m) or 0.015 % F.S./K (≥ 0.1 N·m) on final value 0.015 % F.S./K (≤ 0.05 N·m) or 0.010 % F.S./K (≥ 0.1 N·m)						
Electrical values with amplifier/USB								
Rated supply voltage range		5 … 30 V DC (or 5 V via USB)						
DC power consumption		approx. 1 W						
Output voltage at ± rated torque		±10 V						
Output resistance		< 500 Ω						
Insulation resistance		zero (binding capability)						
-3 dB cut-off frequency		5000 Hz						
Ripple		<50 mV_{ss}						
Calibration signal		10,00 V DC						
Environmental conditions with amplifier/USB								
Range of operating and nominal temperature		-20 °C … +60 °C						
Sensitivity of temperature effects		at zero 0.020 % F.S./K (≤ 0.05 N·m) or 0.015 % F.S./K (≥ 0.1 N·m) on final value 0.015 % F.S./K (≤ 0.05 N·m) or 0.010 % F.S./K (≥ 0.1 N·m)						
Mechanical values								
Dynanic overload safe		recommended 70 % of nominal torque						
Max. operation torque		150 % of nominal torque (≥ 0.2 N·m)						
Breakaway torque		300 % of nominal torque						
Alternating load		70 % of nominal torque						
Other								
Material		Housing: made of anodized aluminium Shaft ≤ 0.05 N·m: high-strength aluminium 3.1354; Shaft ≥ 0.1 N·m: steel shell 1.4542						
Protection class		acc. EN 60529, IP40						
Weight	[g]	190	210					
Geometry								
L	[mm]	85			103		136	
LJ	[mm]	48			55		65	
H	[mm]	47			63		64	
∅ J	[mm]	40			55		70	
LK	[mm]	20			26		41	
A / B	[mm]	18			24		35,5	
G	[mm]	M4			M6		M8	
Installation								
Installation instructions		Do not exceed the permitted axial and radial forces during fitting and operation. Please refer to our operating instructions for detailed information (www.burster.com). Do not use the housing as a means of absorbing torque.						

Dimensional drawing - **standard sensor**



Holes on the sensor underside only up to 10 N.m. For detailed dimensions, including with fitted flange or bracket, you can find sensor CAD data on our website www.burster.com.

Electrical values

7-pin miniature connector, additionally micro-USB interface for configuration/measurement (Option, USB connection cable included)

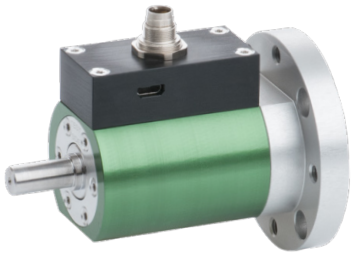
Wiring Code do not use the housing as a means of absorbing torque.

Pin	Assignment
1	Supply -
2	Supply +
3	Shield
4	Signal +
5	Signal -
6	TEDS GND (option) / calibration signal
7	TEDS I/0 (option) / NC

2888-008625EN-5699.071526

Accessories

Flange-mounted model

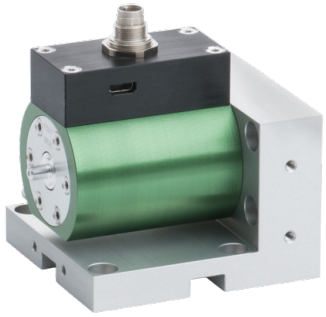


The flange adapter allows easy integration of the sensor in existing equipment with a flange connection. When ordered with the sensor, the flange adapter comes prefitted; please refer to order code.

Alternatively it can be ordered separately as an accessory.

Please refer to the accessories data sheet 8600-Z00X

Bracket-mounted model

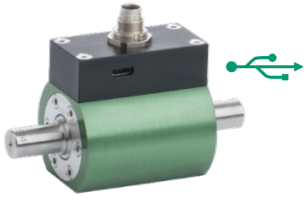


The bracket provides a quick-to-fit and stable fixture for the sensor. When ordered with the sensor, the bracket comes pre-fitted; please refer to order code

Alternatively it can be ordered separately as an accessory.

Please refer to the accessories data sheet 8600-Z00X

Integrated amplifier with USB interface



This sensor model comes with a USB port in addition to the 0 ... ± 10 V output.
Two versions are available:

- ±10 V output signal, USB used solely for configuration
- ±10 V output signal, USB used for both configuration and measurement

When a USB-based measurement is launched, the analog output signal is disabled because it is not possible to use both forms of output simultaneously.

Metal-bellows couplings

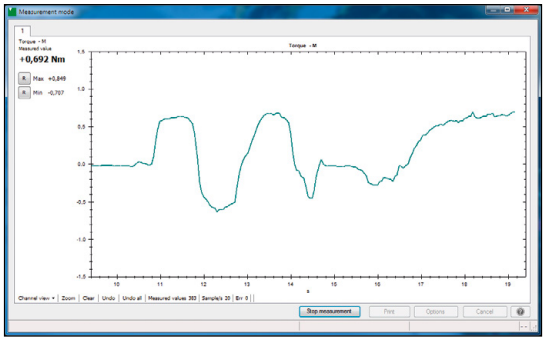
Metal-bellows couplings provide optimum misalignment correction. We recommend torsionally rigid metalbellows couplings. These couplings feature extremely high torsional stiffness under applied torque and extremely low restoring forces. The clamp fasteners come in two parts to 10 N·m for easy and reliable fitting/removal. From measuring range 20 N·m the metal-bellows couplings model 8690 can be used with keyways.

Please refer to the accessories data sheet 8690 or 8691.

DigiVision configuration and analysis software

Features

- Can be used to actuate tare function, with value stored in sensor
- Configuration options for averaging and filters; value stored in sensor
- Intuitive user interface
- Automatic sensor identification
- Sensor calibration data readout



DigiVision Light PC software		
freely available on our website		DigiVision configuration and analysis software max. 200 measured value/s for one sensor
DigiVision Standard PC software		
Model 8625-P100		DigiVison configuration and analysis software up to 16 channels
PC-Software DigiVision Professional		
Model 8625-P200		DigiVision configuration and analysis software with additional configurable maths channel; up to 32 channels

USB measurement option

- Numerical & graphical display and measurement of the physical torque value
- Practical start and stop trigger functions
- 4 limits can be configured for each measurement channel
- MIN/MAX value acquisition
- Automatic scaling
- Measurement reports can be saved as Excel or PDF file
- Archive viewer for displaying sets of curves
- X Multichannel measurements, even with different sensors (e.g. 9206, 8631, 8661) available with standard version

Accessories

Order code		
9900-V594		Mating connection 7 pin
9900-V596		Mating connection 90°-angle
99594-000A-0150030		Connecting cable, length 3 m, other end free
99596-000A-0150030		Connecting cable, length 3 m, plug with 90°-angle, other end free
99141-594A-0150030		Connecting cable for burster desktop instruments with 12 pin socket, 3 m
99209-586C-0510030		For model 9235, model 7281 and model 9311
9900-K358		Micro USB cable, length 1.8 m
8630-P100		DigiVision Standard configuration and analysis software; up to 16 channels
8630-P200		DigiVision Professional with additional configurable maths channel; up to 32 channels
		DigiVision Light configuration and analysis software, max. 200 measured value/s for one sensor (freely available on our website)

Calibration

Manufacturer Calibration Certificate (WKS)		
		Special calibration for clockwise or/and counter clockwise direction torque, in 20 % steps of range up and down.
DAkkS Calibration Certificate		
		The DAkkS calibration certificate (in accordance with German Calibration Service DKD-R 6-1 guidelines, clockwise and/or anticlockwise torque) includes at least three measurement cycles in steps of 10% of the measurement range, rising and falling.

2888-008625EN-5699-071526

Order Code

Measuring Range	Code			
0 ... ±0.01 N·m	4	0	1	0
0 ... ±0.02 N·m	4	0	2	0
0 ... ±0.05 N·m	4	0	5	0
0 ... ±0.1 N·m	4	1	0	0
0 ... ±0.2 N·m	4	2	0	0
0 ... ±0.5 N·m	4	5	0	0
0 ... ±1 N·m	5	0	0	1
0 ... ±2 N·m	5	0	0	2
0 ... ±5 N·m	5	0	0	5
0 ... ±10 N·m	5	0	1	0
0 ... ±20 N·m	5	0	2	0
0 ... ±50 N·m	5	0	5	0
0 ... ±100 N·m	5	1	0	0
0 ... ±200 N·m	5	2	0	0

											Standard				
											0	0	0	0	0
8	**6**	**2**	**5**	**–**					**–**	**V**					**0**

Standard sensor

- Standard sensor, one measuring range — 0
- 2 range sensor 1:10 — 1
- 2 range sensor 1:5 — 2
- 2 range sensor 1:4 — 3

- Without additional support bearings on the measuring side — 0
- With additional support bearings on the measuring side — 1

Output signals

- Output voltage 10 V incl. configuration USB — 0
- Output voltage 10 V incl. USB configuring and measuring USB — 1
- Output signal standardized, mV/V — 3
- Output signal standardized, mV/V with TEDS — 4

Versions

- Both round shaft ends — 0
- Flange-mounted — 4
- Bracket-mounted — 7