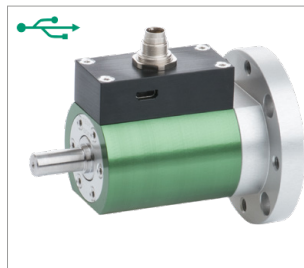


High-Precision Torque Sensor for non-rotating applications

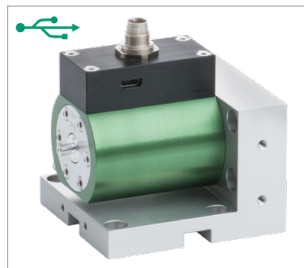
MODEL 8625



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 of 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, ...).

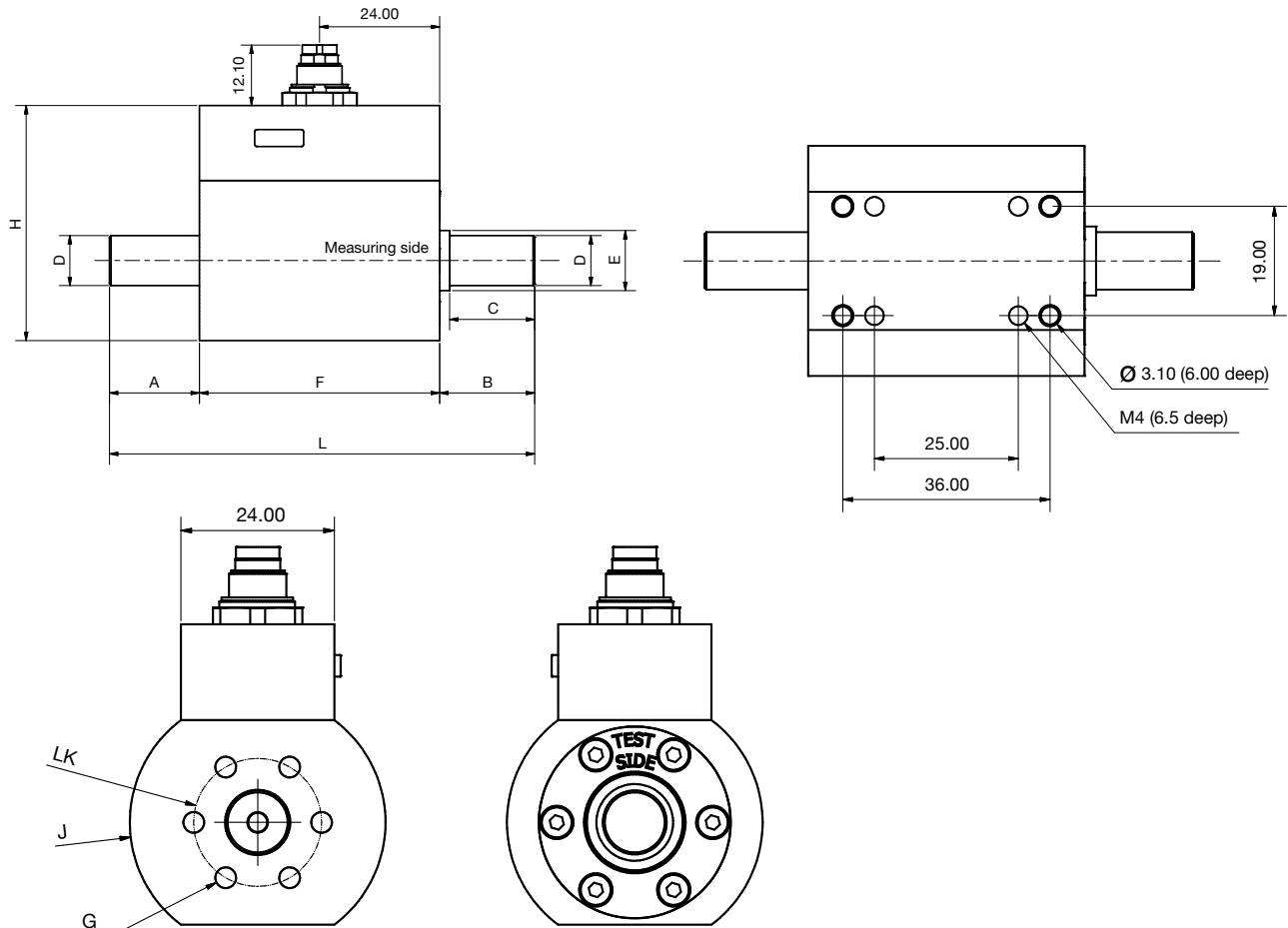
Technical Data

| 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·m ²] | 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. | | | | | | | |

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 | | | | | | | | |
| Dynamic 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/O (option) / NC |

Accessories

Flange-mounted model

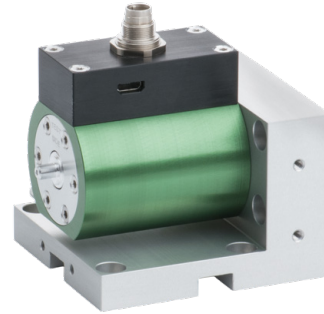


The flange adapter allows easy integration of the sensor in existing equipment with a flange connection. When ordered with the sensor, the flange adapter comes prefitted; please refer to order code.

Alternatively it can be ordered separately as an accessory.

Please refer to the accessories data sheet 8600-Z00X

Bracket-mounted model

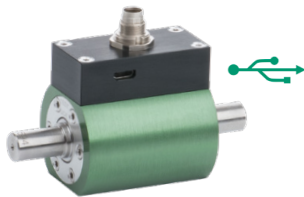


The bracket provides a quick-to-fit and stable fixture for the sensor. When ordered with the sensor, the bracket comes prefitted; please refer to order code

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



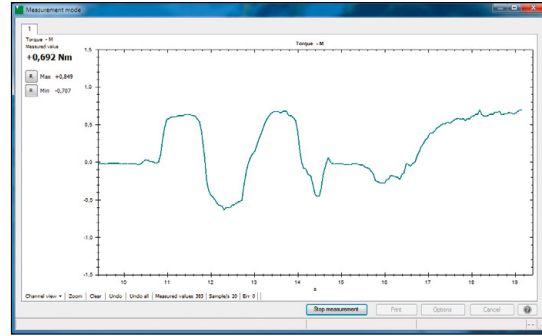
Metal-bellows couplings provide optimum misalignment correction. We recommend torsionally rigid metalbellows couplings. These couplings feature extremely high torsional stiffness under applied torque and extremely low restoring forces. The clamp fasteners come in two parts to 10 N·m for easy and reliable 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

DigiVision 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.

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 |