High Precision Torque Sensor

for non-rotating applications

MODEL **8631**

NEW

burster TEDS

Highlights

- Measuring ranges from 0 ... 5 N·m up to 0 ... 200 N·m
- Linearity error ≤0,1 % F.S.
- Standardized output signal
- Tare function, filter and average values configurable
- Extremely high, reliable axial load

Options

- Output signal ±10 V / USB
- burster TEDS
- Dual-range model

Applications

- Test setups for precision mechanics
- Measuring reaction torques for motors
- Measuring car-seat adjustment torques
- Measuring operating torques for door release mechanisms

Product description

This high-precision torque sensor is designed for both static and dynamic measurements on non-rotating parts. The through-hole can be used to feed parts such as cables or Bowden cables through the sensor.

The mounting flanges contain threaded holes and through-holes so that the sensor can be fitted at either end. With no rotating parts, this sensor needs no maintenance when used correctly.

The modular design of this strain-gage sensor 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. With the USB option, in addition to the voltage output, the measurement function is available via USB as well. 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. Examples can be found on our website www.burster.com

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

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Technical Data

8631	–	5005-VXXXXX	5010-VXXXXX	5020-VXXXXX	5050-VXXXXX	5100-VXXXXX	5200-VXXXXX
Measuring range calibrated in N·m from 0 ...		±5	±10	±20	±50	±100	±200
		Higher measuring ranges on request.					
Accuracy							
Relative non-linearity		0.1 % F.S.					
Relative hysteresis		0.1 % F.S.					
Maximum limit axial load	[N]	500	750	1000	2000	4000	6000
Maximum limit radial load	[N]	50	75	100	200	400	600
Spring constant	[N·m/rad]	650	1500	5500	15000	30000	135000
Mass moment of inertia measuring side	[10^{-6} kg*m^2]	37	38	165	170	465	480
Electrical values without amplifier / USB							
Sensitivity		1 mV/V					
Tolerance of sensitivity		0.1 % F.S.					
Bridge resistance (full bridge)		1000 Ω					
Excitation voltage		5 V (max. 10 V)					
Environmental conditions without amplifier / USB							
Range of operating and nominal temperature		-20 °C ... +80 °C					
Sensitivity of temperature effects		on the zero point 0.015 % F.S./K on the sensitivity 0.010 % F.S./K					
Electrical values with amplifier / USB							
Rated supply voltage range		5 ... 30 V DC (or 5 V via USB)					
DC power consumption		ca. 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					
Calibration signal		10.00 V DC					
Environmental conditions with amplifier / USB							
Range of operating and nominal temperature		0 °C ... +60 °C					
Sensitivity of temperature effects:		on the zero point 0.015 % F.S./K on the sensitivity 0.010 % F.S./K					
Mechanical values							
Dynamic overload safe		up to 70 % from nominal value					
Max. operation torque		150 % of nominal torque					
Breakaway torque		300 % of nominal torque					
Alternating load		70 % of nominal torque					
Other		5005	5010	5020	5050	5100	5200
Material:		Housing: made of anodized aluminium Shaft: steel shell 1.4542					
Protection class		acc. EN 60529, IP40					
Weight	[g]	400		930	950	1700	1750

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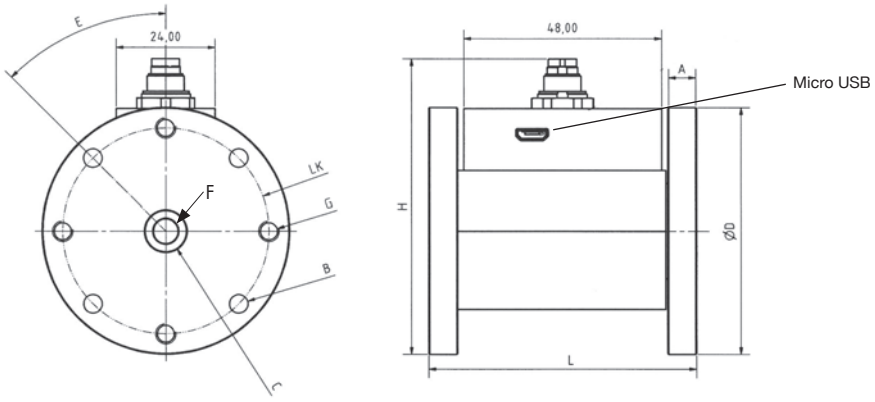
Geometrie

8631	–	5005-VXXXXX	5010-VXXXXX	5020-VXXXXX	5050-VXXXXX	5100-VXXXXX	5200-VXXXXX
L	[mm]	65		70		80	
D	[mm]	60		80		100	
A	[mm]	7		10		12	
H	[mm]	72		86		105	
LK	[mm]	50		70		85	
Ø B	[mm]	4.5 (4 x 90°)		5.5 (6 x 60°)		9.0 (6 x 60°)	
G	[mm]	4 x M5		6 x M5		6 x M8	
E	[mm]	45°		30°			
F	[mm]	6		12			
C	[mm]	10 H7		20 H7			
Mounting							
Mounting instructions		Do not exceed the permitted axial and radial forces during fitting and operation (see technical data). Please refer to our operating instructions for detailed information www.burster.com.					

Dimensional drawing **Model 8631**



For detailed dimensions, you can find CAD data for the sensor on our website www.burster.com.

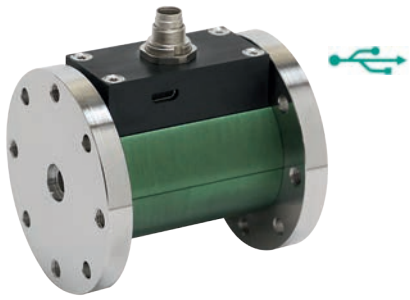
Electrical values

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

Wiring Code depends on the options selected

Pin	Assignment without electronic	Assignment with electronic
1	Bridge supply -	Supply GND
2	Bridge supply +	Supply +5 ... 30 V
3	Shield	Shield
4	Signal +	Output signal ±10 V
5	Signal -	Output signal GND
6	TEDS I/0 (option) / NC	Control signal
7	TEDS GND (option) / NC	Switching between ranges (option)

Integrated ampifier with USB interface



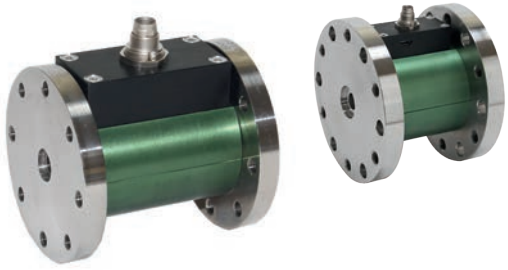
This sensor model comes with a USB port in addition to the 0 ... ± 10 V output. Two versions are available:

- ± 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.

With both versions, the measurement signal can be tared, averaged or filtered. These functions can be set up and/or activated via USB and the free version of DigiVision.

Dual-range version



With integrated amplifier, the dual-range option can be selected. The following subdivisions are available:

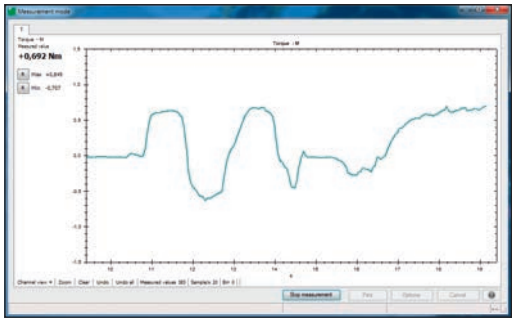
Graduation:	1:2	1:4	1:5
	Upper scale value of second range		
5 N·m	-	-	1 Nm
10 N·m	5 Nm	-	2 Nm
20 N·m	10 Nm	5 Nm	-
50 N·m	-	-	10 Nm
100 N·m	50 Nm	-	20 Nm
200 N·m	100 Nm	50 Nm	-

The second, smaller measuring range can be activated via USB or by applying the operating voltage to pin 7.

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

DigiVision configuration and analysis software max. 200 measured value/s for one sensor (freely available on our website)

DigiVision Standard PC software

DigiVison configuration and analysis software up to 16 channels — Model 8630-P100

PC-Software DigiVision Professional

DigiVision configuration and analysis software including maths functions; up to 32 — Model 8630-P200

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

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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, length 3 m
99209-586C-0510030		Connecting cable for model 9235, model 7281 and model 9311, length 3 m
9900-K358		Micro USB cable, length 1.8 m
8631-P100		DigiVision Standard configuration and analysis software; up to 16 channels
8631-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		
		DAkkS calibration certificate per DIN 51309, clockwise and/or anticlockwise torque, with eight steps spaced across the measurement range, increasing and decreasing.

Order Code

Measuring Range	Code			
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	3	0
8	6	3	1	–	X	X	X	X	-	V		0		3	0

Standard sensor	
■ Standard sensor, one measuring range	0
■ Dual-range version, graduation 1:5	2
■ Dual-range version, graduation 1:4	3
■ Dual-range version, graduation 1:2	4

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