APPLIED MEASUREMENTS LTD.
Transducer Specialists...

+44 (0) 118 981 7339
info@appmeas.co.uk
www.appmeas.co.uk

DBBSS/TSF Torque and Axial Force Sensor

Key Features:

- Capacities 1kN/10Nm to 250kN/2500Nm
- Output: 1.5 - 3.0mV/V
- Accuracy: <±0.1%/RC
- Environmental Protection: IP65
- Custom Versions Available
- Low Profile Very Compact
- Low Deflection
- Minimal Crosstalk
- Stainless Steel Robust Construction
- 3 Year Warranty

Measures Static Torque and Axial Load Force in Tension and/or Compression

The DBBSS/TSF torque and axial force sensors are designed to measure both static torque and axial load in tension and/or compression. The unique design of this compact and accurate dual axis transducer ensures that crosstalk between the axes is minimised (typically between 0.1% and 1%), with accuracy of better than 0.1% of the rated capacity in both torque and force modes.

This dual-axis transducer is widely used in geotechnical and materials testing sectors where it is employed as a central component on pieces of high accuracy analytical test equipment.

Design modifications such as size, capacity and configuration of mounting holes or fixtures, can be made on the DBBSS/TSF sensors to suit your application with little or no effect on the cost, please speak to our sales team.

Options:

- Custom Versions Available
- Non-Standard Ranges Available
- Dual Bayonet-Lock Connector with 4-Core Screened Cable Assemblies (one per axis)
- Submersible (IP68) Versions
- USB Version (via DSC-USB)
- High Temperature Versions
- Rotary/Rotating Versions
- Fatigue Rated Versions
- Vacuum Aplications Versions
- Pressurised Environments
- TEDS (Transducer Electronic Data Sheet)
- TEDS Allows Plug & Play with TEDS Enabled Instrumentation
- Single or Multi-Channel PC-Based Monitoring & Data Logging System
- Wireless Version (via T24 instrumentation)

Applications:

- Geotechnical Testing & Monitoring
- Materials Testing Applications
- Servo Hydraulic Testing Systems
- Fatigue Testing Machines
- Turbine Thrust & Torque Measurement
- Renewable Energy Research & Development Applications

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Specification:

Rated Capacity (RC)	kN/Nm	1/10; 2.5/25; 5/50; 10/100; 25;250; 25/500; 50/500; 100/1000; 250/2500
Sensitivity (RO)	mV/V	1.5mV/V to 3.0mV/V (see note below)
Zero Balance/Offset	±%/Rated Output	1
Output Symmetry	±%/Rated Output	<0.5 typical
Non-Linearity	±%/Rated Output	Axial Force <0.05 Torsional Force <0.10
Hysteresis	±%/Rated Output	<0.1
Repeatability	±%/Rated Output	Axial Force <0.03 Torsional Force <0.05
Temperature Effect on Zero	±%/Rated Output/ ˚C	<0.030
Temperature Effect on Sensitivity	±%/Applied Load/ ˚C	<0.005
Input Resistance	Ohms	400 nominal
Output Resistance	Ohms	350 nominal
Insulation Resistance	Megohms	>5000 @ 50Vdc
Excitation Voltage	Volts AC or DC	10 recommended (2-15 acceptable)
Operating Temperature Range	˚C	-20 to +80
Compensated Temperature Range	˚C	0 to +70
Storage Temperature Range	˚C	-20 to +80
Safe Overload	% of Rated Capacity	150
Ultimate Overload	% of Rated Capacity	400
Maximum Safe Side Load	%/Rated Force Capacity	30
Deflection @ Rated Capacity		Consult sales
Fundamental Resonant Frequency*		Consult sales
IP Rating (Environmental Protection)		IP65
Weight (excluding cable)		See dimension table
Fatigue Life		10^8 cycles typical (10^9 cycles on fatigue-rated versions)
Cable Length (as standard)	metres	5
Electrical Connection		6-Pin Bayonet Lock Connector + Mating Cable Assembly Fitted with 5 Metres of 6-Core Screened Cable
Construction		Stainless Steel
Resolution:		1 part in 250,000 (with appropriate instrumentation)
*The resonant frequency is calculated with the body of the load cell attached to a large plate, ensuring that only the sensing element oscillates: This is vital to achieve the highest natural frequency and subsequent frequency response.		

Wiring Diagram - 6 Core Cable:

Wire		Designation
	Red	+ve excitation
	Blue	-ve excitation
	Green	+ve signal (Force Axis) (Compression)
	Yellow	-ve signal (Force Axis)
	Black	+ve signal (Torque Axis) (Clockwise)
	White	-ve signal (Torque Axis)

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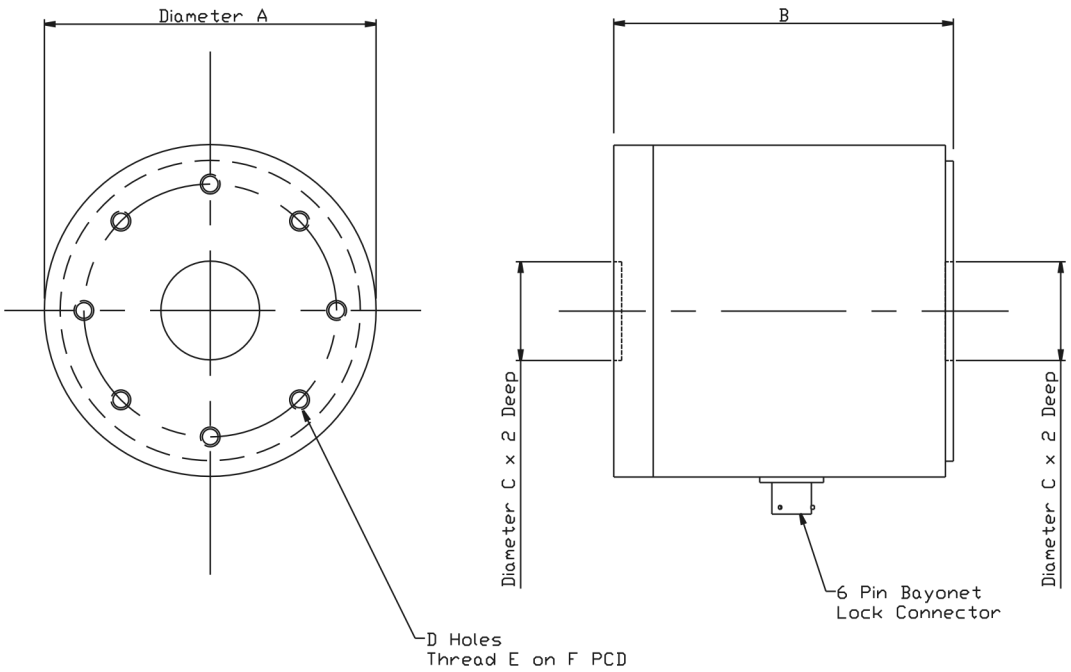
Dimensions (mm):

CAPACITY (kN/Nm)	ØA	B	ØC	D	E	ØF	WEIGHT (kg)
1/10, 2.5/25, 5/50	84	86	25/H7	8	M5 x 7DP	64	3.5
10/100, 25/250, 25/500	86	120	25/H7	6	M8 x 12DP	60	4.5
50/500, 100/1000	135	125	30/H7	12	M10 x 15DP	100	11
250/2500	230	200	35/H7	12	M16 x 24DP	190	47

Note: The sensitivity can vary between the limits stated depending upon the aspect ratio between the two axis. This is to limit the level of crosstalk between axis.



Ordering Codes:

Core Product	Capacity (inc Engineering Units)	Cable Length (m)	Specials Code	Example Result
DBBSS/TSF	1/10kN/Nm	005	000	DBBSS/TSF-1/10kN/Nm-005-000
DBBSS/TSF	2.5/25kN/Nm	005	000	DBBSS/TSF-2.5/25kN/Nm-005-000
DBBSS/TSF	5/50kN/Nm	005	000	DBBSS/TSF-5/50kN/Nm-005-000
DBBSS/TSF	10/100kN/Nm	005	000	DBBSS/TSF-10/100kN/Nm-005-000
DBBSS/TSF	25/250kN/Nm	005	000	DBBSS/TSF-25/250kN/Nm-005-000
DBBSS/TSF	25/500kN/Nm	005	000	DBBSS/TSF-25/500kN/Nm-005-000
DBBSS/TSF	50/500kN/Nm	005	000	DBBSS/TSF-50/500kN/Nm-005-000
DBBSS/TSF	100/1000kN/Nm	005	000	DBBSS/TSF-100/1000kN/Nm-005-000
DBBSS/TSF	250/2500kN/Nm	005	000	DBBSS/TSF-250/2500kN/Nm-005-000

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Associated Products:

TR150 Handheld Indicator

T24 Wireless Telemetry Range

Intuitive2-L Panel-Mount Indicator

DSC-USB USB Signal Digitiser

ICA Miniature Strain Gauge Amplifier

SGA Signal Conditioner/Amplifier