

Model Number
5309D-01A

TORKDISC® ROTARY TORQUE SENSING SYSTEM

Revision: B
ECN #: 55332

Performance	ENGLISH	SI	
Measurement Range(Full Scale Capacity)	50,000 in-lb	5,649 Nm	
Filter Type(High Pass)	2-pole Butterworth	2-pole Butterworth	[1]
Filter Type(Low Pass - Anti Alias)	8-pole Elliptical	8-pole Elliptical	[2]
Gain(Channel A)	1 to 16 dB	1 to 16 dB	
Gain(Channel B)	0.3 to 1.3 dB	0.3 to 1.3 dB	
Voltage Output(channel B - DC coupled)	± 10 V	± 10 V	
Voltage Output(channel A - AC coupled)	± 10 V	± 10 V	
Digital Output	QSPI	QSPI	[3]
Maximum Load(Axial)	5,000 lb	22.25 kN	[4][5]
Maximum Load(Lateral)	5,000 lb	22.25 kN	[4][5]
Maximum Moment	25,000 in-lb	2,825 Nm	[4][5]
Accuracy	± 0.10 % FS	± 0.10 % FS	
Frequency Range(- 3 dB)	0 to 8,300 Hz	0 to 8,300 Hz	
Environmental			
Overload Limit(Bolt Joint Slip)	85,000 in-lb	9,604 Nm	[6][7]
Overload Limit(Failure)	125,000 in-lb	14,123 Nm	
Overload Limit(Safe)	100,000 in-lb	11,298 Nm	
Temperature Range(Operating)	+32 to +185 °F	0 to +85 °C	
Temperature Range(Compensated)	+70 to +170 °F	+21 to +77 °C	
Temperature Effect on Output(within compensated range)	0.003 %FS/°F	0.0054 %FS/°C	
Temperature Effect on Zero Balance(within compensated range)	0.003 %FS/°F	0.0054 %FS/°C	
Position Sensitivity(180° rotation of sensor)	≤ 0.1 % FS	≤ 0.1 % FS	
Electrical			
Power Required(50 to 60 Hz)	9 to 18 VDC	9 to 18 VDC	[8]
Digital Resolution	16 Bit	16 Bit	
Digital Sample Rate	26,484 samples/sec	26,484 samples/sec	
Analog Resolution(based on ±10 V FSO and 16-bit resolution)	0.31 mV	0.31 mV	
Physical			
Maximum Speed	10,000 RPM	10,000 RPM	
Permissible Axial Float(rotor to stator)	0.25 in	6.4 mm	
Permissible Radial Float(rotor to stator)	0.25 in	6.4 mm	
Rotating Inertia(without adaptors)	2.36 lb-ft ²	0.099 kg-m ²	
Dynamic Balance	per ISO G 2.5	per ISO G 2.5	
Torsional Stiffness	115,000 kin-lb/radian	12,993 kN-m/radian	
Torsional Angle(at Full Scale Capacity)	0.017 °	0.017 °	
Housing Material(Sensor)	Plated Steel	Plated Steel	
Weight	30 lb	13.6 kg	

OPTIONAL VERSIONS

Optional versions have identical specifications and accessories as listed for the standard model except where noted below. More than one option may be used.

NOTES:

- [1]Selectable High Pass cutoff frequencies of 5, 10, 20, 200 and 500 Hz.
- [2]Selectable Low Pass cutoff frequencies of 10,000, 5000, 2500, 1200, 625 and 313 Hz.
- [3]Request Technical Note FTQ-STN5 regarding digital output signal.
- [4]Extraneous load limits reflect the maximum axial load, lateral load, and bending moment that may be applied singularly without electrical or mechanical damage to the sensor.
- [5]Where combined extraneous loads are applied, decrease loads proportionally.
- [6]Joint slip torque is calculated assuming a coefficient of friction (μ) of 0.1 and that grade 8 socket head cap screws are used and tightened to 75% of yield.
- [7]Bolt joint slip torque is increased from 85,000 in-lbs to 110,000 in-lbs by applying Loctite 638 to the inner 6.000" bolt circle mating surfaces, or using 5/8-11 UNC Supertanium bolts in the 6.000" bolt circle, torqued to 230 ft-lbs.
- [8]Supplied with universal AC power adaptor.
- [9]See PCB Declaration of Conformance PS069 for details.

SUPPLIED ACCESSORIES:

- Model 100-9161-10 Power Supply (1)
- Model 182-028A Connector (1)
- Model 8314-06-24A Cable (1)

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