

Model Number  
5302D-02A

# TORKDISC® ROTARY TORQUE SENSING SYSTEM

Revision: C  
ECN #: 55332

Performance	ENGLISH	SI	
Measurement Range(Full Scale Capacity)	5,000 in-lb	565 Nm	
Filter Type(High Pass)	2-pole Butterworth	2-pole Butterworth	[1][2]
Filter Type(Low Pass - Anti Alias)	8-pole Elliptical	8-pole Elliptical	
Gain(Channel A)	1-16 dB	1-16 dB	
Gain(Channel B)	0.3-1.3 dB	0.3-1.3 dB	
Voltage Output(channel A - AC coupled)	± 10 V	± 10 V	
Voltage Output(channel B - DC coupled)	± 10 V	± 10 V	
Digital Output	QSPI	QSPI	[3]
Maximum Load(Axial)	1,000 lb	4.4 kN	[4][5]
Maximum Load(Lateral)	1,000 lb	4.4 kN	[4][5]
Maximum Moment	3,000 in-lb	339 Nm	[4][5]
Accuracy	± 0.10 % FS	± 0.10 % FS	[6]
Frequency Range(+3 dB)	0 to 8,500 Hz	0 to 8,500 Hz	[7]
<b>Environmental</b>			
Overload Limit(Bolt Joint Slip)	10,000 in-lb	1,130 Nm	[8]
Overload Limit(Failure)	20,000 in-lb	2,260 Nm	
Overload Limit(Safe)	15,000 in-lb	1,695 Nm	
Temperature Range(Rotor/Stator - Operating)	+32 to +185 °F	0 to +85 °C	
Temperature Range(Rotor - Compensated)	+70 to +170 °F	+21 to +77 °C	
Temperature Range(Receiver - Operating)	0 to +122 °F	+70 to +170 °F	
Temperature Effect on Output(System - within compensated range)	0.002 %FS/°F	0.0036 %FS/°C	
Temperature Effect on Zero	0.002 %FS/°F	0.0036 %FS/°C	
Balance(System - within compensated range)			
Position Sensitivity(180° rotation of sensor)	≤ 0.1 % FS	≤ 0.1 % FS	
<b>Electrical</b>			
Power Required(50 to 60 Hz)	9 to 18 VDC	9 to 18 VDC	[9]
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	
<b>Physical</b>			
Maximum Speed	15,000 RPM	15,000 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)	0.309 lb-ft <sup>2</sup>	0.013 kg-m <sup>2</sup>	
Dynamic Balance	per ISO G 2.5	per ISO G 2.5	
Torsional Stiffness	14,500 kin-lb/radian	1,600 kN-m/radian	
Torsional Angle(at Full Scale Capacity)	0.020 °	0.020 °	
Housing Material(Sensor)	Steel Alloy	Steel Alloy	
Weight(rotor/sensor)	9 lb	4.1 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 Low Pass cutoff frequencies of 10,000, 5000, 2500, 1200, 625 and 313 Hz.
- [2]Selectable High Pass cutoff frequencies of 5, 10, 20, 200 and 500 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]Root sum square of non-linearity, hysteresis, and non repeatability.
- [7]Output can be filtered via internal DIP switch (33, 55, 125, 250, 450 Hz).
- [8]Bolt joint slip torque is calculated assuming a coefficient of friction ( $\mu$ ) of 0.1 and that grade 8 socket head cap screws are used and tightened to 75% of yield.
- [9]Supplied with universal AC power adaptor.
- [10]See PCB Declaration of Conformance PS069 for details.

## SUPPLIED ACCESSORIES:

Model 182-028A Connector (1)  
Model 8314-06-24A Cable (1)

Entered: ND	Engineer: JM	Sales: KWW	Approved: JM	Spec Number:
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All specifications are at room temperature unless otherwise specified.  
In the interest of constant product improvement, we reserve the right to change specifications without notice.



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