CD1050 Dynamic Rotary Torque Sensor

- **Square Male Couplings**
- **±5 to ±7,000 Nm (±4 to ±5,600 Lbf-ft)**
- **Stainless Steel**
- **Cable Gland or Connector Output**
- **Built In Amplifier per Request**

DESCRIPTION

The CD1050 Series has been developed to be mounted on rotating shafts for rotary torque measurements. Constructed in stainless steel, the sensor is suitable for use in many hostile environments. Fitted with metallic strain gauges in a Wheatstone bridge circuit, the CD1050 is providing excellent temperature stability.
For high-level output a model with integrated amplifier is available.

With many years of experience as a designer and manufacturer of sensors, Measurement Specialties often works with customers to design or customize sensors for specific uses and testing environments.

To meet your needs we also offer complete turnkey systems. The matched components (sensor, power, amplifier and digital display) are formatted, calibrated and ready for immediate use.

FEATURES

- ▪ Ranges from: ±5 Nm to ±7,000 Nm (±4 Lbf-ft to ±5,600 Lbf-ft)
- ▪ For Dynamic Applications
- ▪ Square Male Couplings
- ▪ High Level Output Model with Integrated Amplifier

APPLICATIONS

- Dynamic applications
- Process control equipment
- Test and Measurement
- Robotics and effectors
- Laboratory and Research

STANDARD RANGES

F.S range in Nm	5 - 10 - 20 - 50 - 100	150 - 200 - 300	500 - 750	1K – 2K – 3K	4K – 5K – 7K
F.S range in Lbf-ft	4 - 8 - 16 - 40 - 80	120 - 160 - 240	400 - 600	800 – 1,6K – 2,4K	3,2K – 4K – 5,6K
Stiffness in Nm/rad	$1.4.10^2$ to $7.5.10^3$	$7.5.10^3$ to 3.10^4	3.10^4 to 1.10^5	1.10^5 to $4.5.10^5$	$4.5.10^5$ to $1.3.10^6$
Stiffness in Lbf-ft/rad	$0.1.10^2$ to $5.1.10^2$	$5.1.10^2$ to $2.1.10^3$	$2.1.10^3$ to $6.9.10^3$	$6.9.10^3$ to $3.1.10^4$	$3.1.10^4$ to $8.9.10^4$
Rotation in rpm	3000	2200	1750	1250	1000

CD1050 Dynamic Rotary Torque Sensor

PERFORMANCE SPECIFICATIONS

Ambient Temperature: 20±1ºC (unless otherwise specified)

PARAMETERS

Operating Temperature Range (OTR)	-20 to 80ºC (-4 to 176°F)
Compensated Temperature Range (CTR)	0 to 60ºC (32 to 140°F)
Zero Shift in CTR	<0.5% F.S./50ºC (100°F)
Sensitivity Shift in CTR	$<2.10^{-4}$/ ºC of reading [$<1.10^{-4}$ / °F of reading]
Range (F.S.)	±5 Nm to ±7 kNm [4 lbf-ft to 5,6 klbf-ft]
Velocity of Rotation	Up to 3000 RPM ; Bidirectional operation
Over-Range	
Save Overload	1.5 x F.S.
Ultimate Load	3 x F.S.
Accuracy	
Combined Non-Linearity & Hysteresis	<±0.25%F.S

Electrical Characteristics

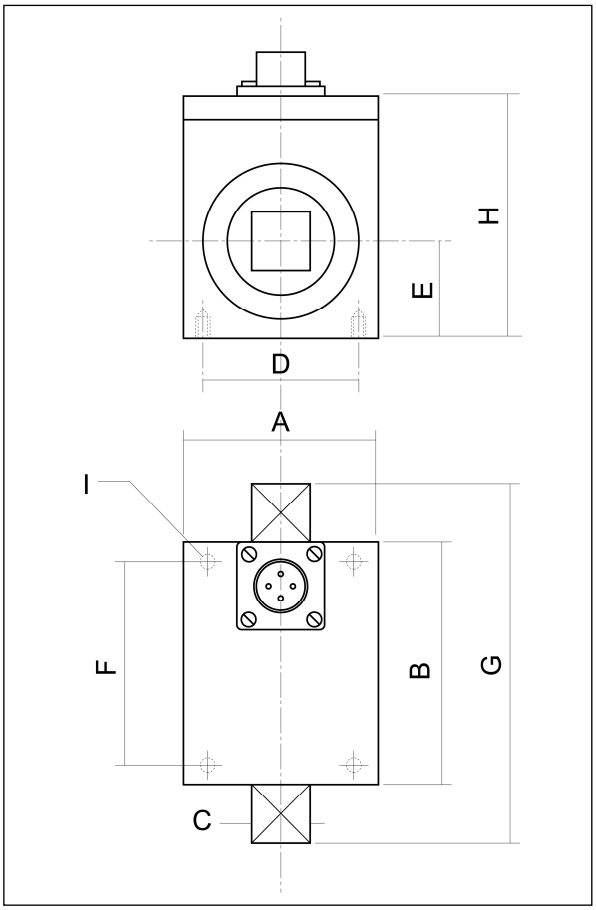
Model	**CD1050**	**CD1050-A1**	**CD1050-A2**
Supply Outage	10Vdc	10 – 30Vdc	±15Vdc (±12 to ±18Vdc)
F.S. Output	2mV/V	0.5 to 4.5Vdc	±5V
Zero Offset	<±5% F.S.	2.5V ±5% F.S.	0V ±5% F.S.
Input Impedance/Consumption	350 to 700Ω	<50mA	<50mA
Output Impedance	350 to 700Ω	<10Ω	<10Ω
Insulation under 50Vdc	≥100MΩ	≥100MΩ	≥100MΩ

Notes

1. Electrical Termination: Connector output including mate
2. Material: Body in stainless steel ; aluminum alloy housing.
3. Other connection types on request (smooth shaft, cotter pin, etc.)

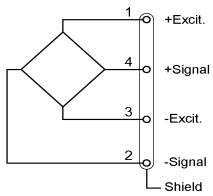
CD1050 Dynamic Rotary Torque Sensor

DIMENSIONS & WIRING SCHEMATIC (IN METRIC AND IMPERIAL)

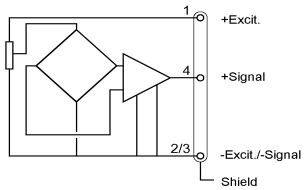


Wiring Schematic

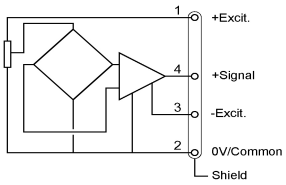
CD1050



CD1050-A1



CD1050-A2



Dimensions in mm [inch]

F.S. in Nm [Lbf-ft]	5 - 10 - 20 - 50 - 100 [4 - 8 - 16 - 40 - 80]		150 - 200 - 300 [120 - 160 - 240]		500 - 750 [400 - 600]		1K – 2K – 3K [800 – 1,6K – 2,4K]		4K – 5K – 7K [3,2K – 4K – 5,6K]	
A	40	[1.57]	50	[1.97]	60	[2.36]	80	[3.15]	105	[4.13]
B	50	[1.97]	55	[2.17]	60	[2.36]	75	[2.95]	80	[3.15]
C	12.7	[0.50]	19	[0.75]	25.4	[1.00]	38.1	[1.50]	50.8	[2.00]
D	32	[1.26]	40	[1.57]	50	[1.97]	70	[2.76]	95	[3.74]
E	20	[0.79]	25	[0.98]	30	[1.18]	40	[1.57]	52.5	[2.07]
F	42	[1.65]	45	[1.77]	50	[1.97]	65	[2.56]	70	[2.76]
G	80	[3.15]	105	[4.13]	120	[4.72]	160	[6.30]	190	[7.48]
H	50	[1.97]	60	[2.36]	70	[2.76]	90	[3.54]	115	[4.53]
I	4 x M3		4 x M3		4 x M4		4 x M4		4 x M4	

CD1050 Dynamic Rotary Torque Sensor

OPTIONS

A1 : Unipolar Tension
A2 : Bipolar Tension (ex.±15Vdc)
PE : Cable Gland Termination with 2 m [6.6 ft] cable

ORDERING INFO