

## CD1050 Dynamic Rotary Torque Sensor



- Square Male Couplings
- $\pm 5$  to  $\pm 7,000$  Nm ( $\pm 4$  to  $\pm 5,600$  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:  $\pm 5$  Nm to  $\pm 7,000$  Nm ( $\pm 4$  Lbf-ft to  $\pm 5,600$  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	$1.4 \cdot 10^2$ to $7.5 \cdot 10^3$	$7.5 \cdot 10^3$ to $3 \cdot 10^4$	$3 \cdot 10^4$ to $1 \cdot 10^5$	$1 \cdot 10^5$ to $4.5 \cdot 10^5$	$4.5 \cdot 10^5$ to $1.3 \cdot 10^6$
Stiffness in Lbf-ft/rad	$0.1 \cdot 10^2$ to $5.1 \cdot 10^2$	$5.1 \cdot 10^2$ to $2.1 \cdot 10^3$	$2.1 \cdot 10^3$ to $6.9 \cdot 10^3$	$6.9 \cdot 10^3$ to $3.1 \cdot 10^4$	$3.1 \cdot 10^4$ to $8.9 \cdot 10^4$
Rotation in rpm	3000	2200	1750	1250	1000

# CD1050 Dynamic Rotary Torque Sensor

## PERFORMANCE SPECIFICATIONS

Ambient Temperature: 20±1°C (unless otherwise specified)

### PARAMETERS

Operating Temperature Range (OTR)	-20 to 80°C (-4 to 176°F)
Compensated Temperature Range (CTR)	0 to 60°C (32 to 140°F)
Zero Shift in CTR	<0.5% F.S./50°C (100°F)
Sensitivity Shift in CTR	<2.10 <sup>-4</sup> /°C 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
<b>Over-Range</b>	
Save Overload	1.5 x F.S.
Ultimate Load	3 x F.S.
<b>Accuracy</b>	
Combined Non-Linearity & Hysteresis	<±0.25%F.S

### Electrical Characteristics

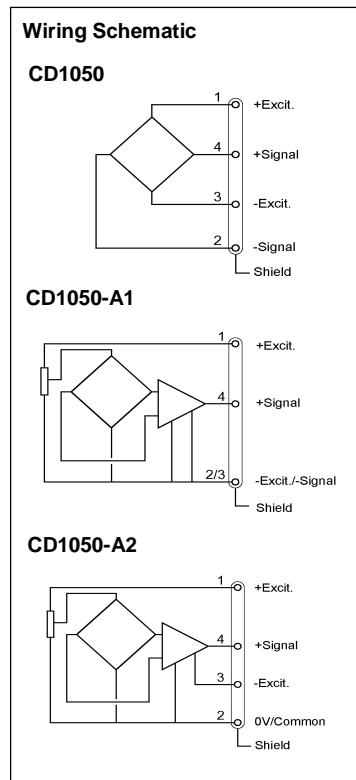
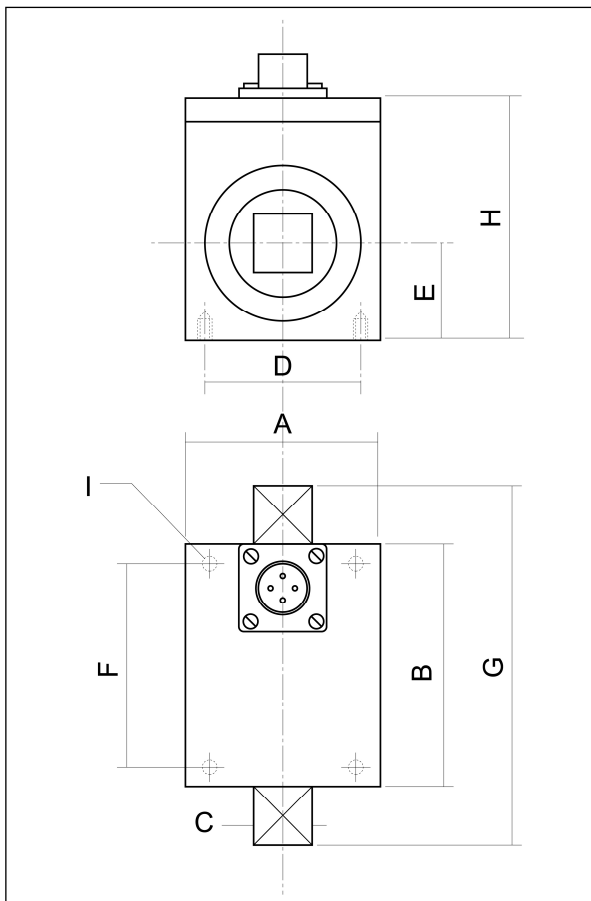
Model	CD1050	CD1050-A1	CD1050-A2
Supply Outage	10Vdc	10 – 30Vdc	±15Vdc (±12 to ±18Vdc)
F.S. Output	2mV/V	0.5 to 4.5Vdc	±5V
Zero Offset	<±5% F.S.	2.5V ±5% F.S.	0V ±5% F.S.
Input Impedance/Consumption	350 to 700Ω	<50mA	<50mA
Output Impedance	350 to 700Ω	<10Ω	<10Ω
Insulation under 50Vdc	≥100MΩ	≥100MΩ	≥100MΩ

### 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.)

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## DIMENSIONS & WIRING SCHEMATIC (IN METRIC AND IMPERIAL)



Dimensions in mm [inch]

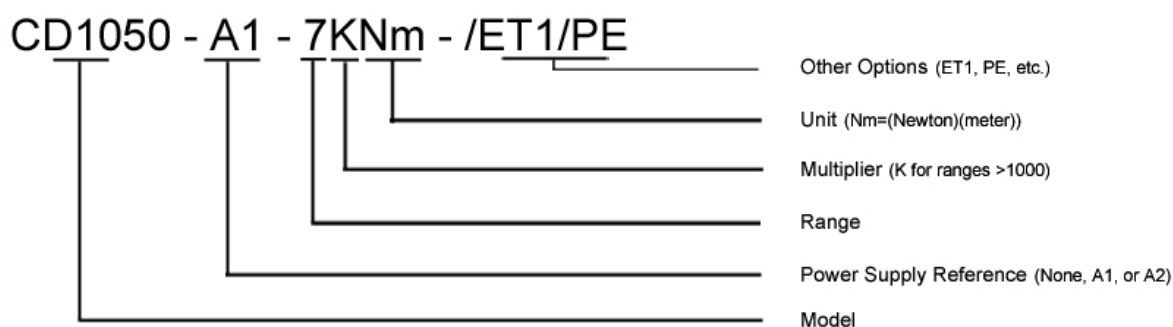
F.S. in Nm [Lbf-ft]	5 - 10 - 20 - 50 - 100 [4 - 8 - 16 - 40 - 80]	150 - 200 - 300 [120 - 160 - 240]	500 - 750 [400 - 600]	1K - 2K - 3K [800 - 1,6K - 2,4K]	4K - 5K - 7K [3,2K - 4K - 5,6K]
A	40 [1.57]	50 [1.97]	60 [2.36]	80 [3.15]	105 [4.13]
B	50 [1.97]	55 [2.17]	60 [2.36]	75 [2.95]	80 [3.15]
C	12.7 [0.50]	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

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## OPTIONS

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

## ORDERING INFO



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