

# CD1050 Dynamic Rotary Torque Sensor



- Square Male Couplings
- Range from  $\pm 5$  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, Inc. 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

<b>F.S range in Nm</b>	5 - 10 - 20 - 50 - 100	150 - 200 - 300	500 - 750	1k - 2k - 3k	4k - 5k - 7k
<b>F.S range in lbf-ft</b>	4 - 8 - 16 - 40 - 80	120 - 160 - 240	400 - 600	800 - 1,6k - 2,4k	3,2k - 4k - 5,6k
<b>Stiffness in Nm/rad</b>	$1,4 \cdot 10^2$ 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 $1,3 \cdot 10^6$
<b>Stiffness in lbf.ft/rad</b>	$0,1 \cdot 10^2$ 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 $8,9 \cdot 10^4$
<b>Rotation in rpm</b>	3000	2200	1750	1250	1000

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## PERFORMANCE SPECIFICATIONS

All values are typical at temperature 20±1° C

<b>Parameters</b>	
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	<1% of reading / 50° C [100° F]
Range (F.S.)	±5 Nm to ±7 kNm [4 lbf-ft to 5,6 klf-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

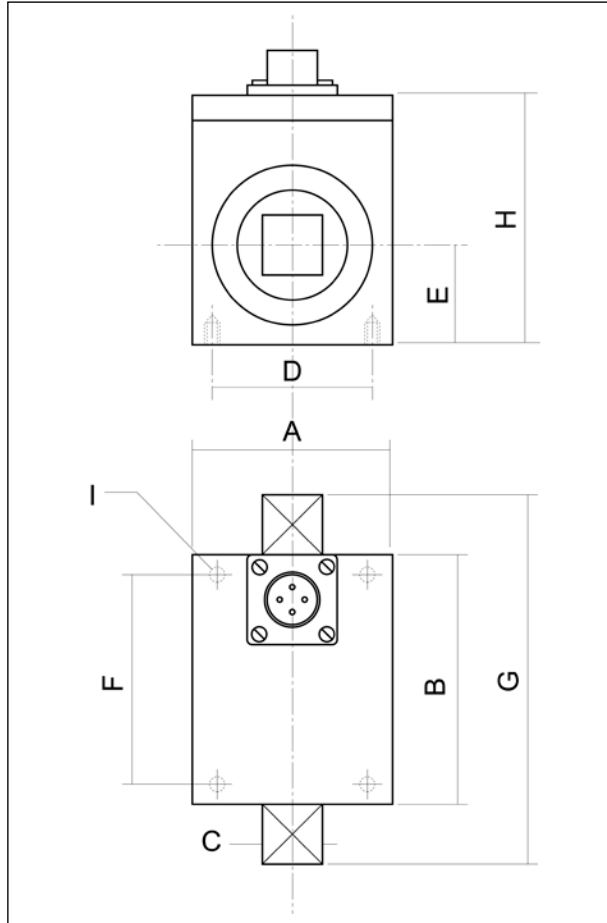
Model	CD1050	CD1050-A1	CD1050-A2
Supply Outage	10Vdc	10 – 30Vdc	±15Vdc (±12 to ±18Vdc)
F.S. Output	±2mV/V	±2V ±5% F.S	±5V ±5% F.S
Zero Offset	<±5% F.S.	2.5V ±5% F.S.	0V ±5% F.S.
Input Impedance/Consumption	350 to 700Ω	<50mA	<50mA
Output Impedance	350 to 700Ω	<10Ω	<10Ω
Insulation under 50Vdc	≥100MΩ	≥100MΩ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

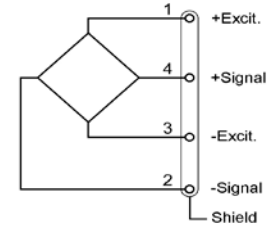
# CD1050 Dynamic Rotary Torque Sensor

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

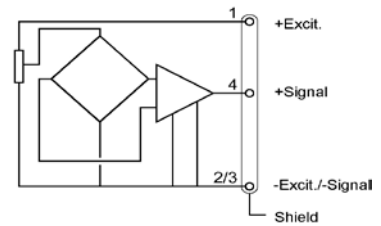


### Wiring Schematic

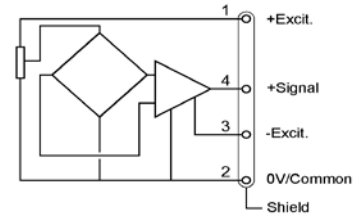
#### CD1050



#### 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	

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## OPTIONS

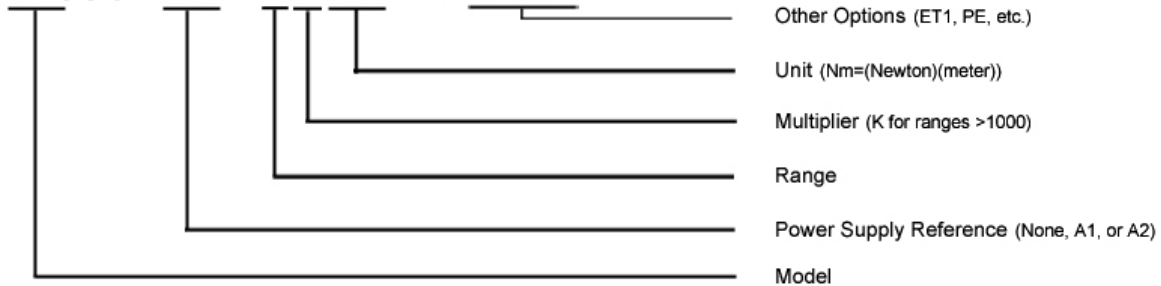
**A1** : Amplified Tension output with unipolar power supply

**A2** : Amplified Tension output with bipolar power supply

**PE** : Cable Gland Termination with 2 m [6.6 ft] cable

## ORDERING INFO

CD1050 - A1 - 7KNm - /ET1/PE



### NORTH AMERICA

Measurement Specialties, Inc.  
Vibration Design Center  
32 Journey - Suite 150  
Aliso Viejo, CA 92656  
United States USA  
Tel: 1-949-716-0877  
Fax: 1-949-916-5677  
[t&m@meas-spec.com](mailto:t&m@meas-spec.com)

### EUROPE

Measurement Specialties  
(Europe), Ltd.  
26 Rue des Dames  
78340 Les Clayes-Sous-Bois,  
France  
Tel: +33 (0) 130 79 33 00  
Fax: +33 (0) 134 81 03 59  
[pfg.cs.emea@meas-spec.com](mailto:pfg.cs.emea@meas-spec.com)

### ASIA

Measurement Specialties  
(China), Ltd.  
No. 26 Langshan Road  
Shenzhen High-Tech Park (North)  
Nanshan District, Shenzhen  
518057  
China  
Tel: +86 755 3330 5088  
Fax: +86 755 3330 5099  
[pfg.cs.asia@meas-spec.com](mailto:pfg.cs.asia@meas-spec.com)

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