

# CS1060 Reaction Torque Sensor



- Square male coupling
- 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 CS1060 has been designed to measure reaction torque. Its sensing element is based on thin layer strain gauges in a Wheatstone bridge configuration providing excellent temperature stability. Optionally the torque sensor can receive an on-board amplifier for high-level output. Intermediate ranges are available at no extra cost.

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

- Suited for static applications
- Square male coupling
- High Level Output Model with Integrated Amplifier

## APPLICATIONS

- Non-Rotating parts torque measurement
- Test and Measurement
- Robotics and effectors
- Laboratory and Research

## STANDARD RANGES

|                                |  |  |  |  |  |
|--------------------------------|--|--|--|--|--|
| <b>F.S. Ranges in Nm</b>       | 5 to 100                               | 101 to 300                             | 301 to 800                             | 801 to 3k                              | 3001 to 7k                             |
| <b>F.S. Ranges in lbf.ft</b>   | 40 to 80                               | 81 to 240                              | 241 to 640                             | 641 to 2.4k                            | 2401 to 5.6k                           |
| <b>Stiffness in Nm/rad</b>     | $2 \times 10^2$ to $1 \times 10^4$     | $1 \times 10^4$ to $4 \times 10^4$     | $4 \times 10^4$ to $1.2 \times 10^5$   | $1.2 \times 10^5$ to $6 \times 10^5$   | $6 \times 10^5$ to $1.8 \times 10^6$   |
| <b>Stiffness in lbf.ft/rad</b> | $1.4 \times 10^1$ to $6.9 \times 10^2$ | $6.9 \times 10^2$ to $2.7 \times 10^3$ | $2.7 \times 10^3$ to $8.2 \times 10^3$ | $8.2 \times 10^3$ to $4.1 \times 10^4$ | $4.1 \times 10^4$ to $1.2 \times 10^5$ |

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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 klbf.ft] |
| <b>Over-Range</b>                   |   |
| Without Damage                      | 1.5 x F.S.                                  |
| <b>Accuracy</b>                     |   |
| Combined Non-Linearity & Hysteresis | ±0.25%F.S.                                  |

### Electrical Characteristics

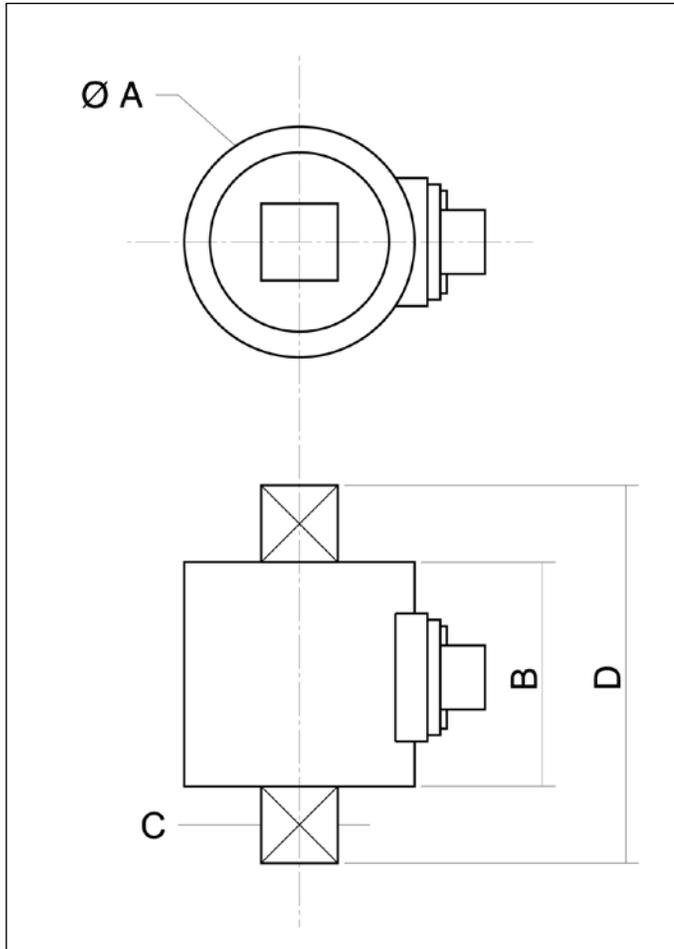
| Model                       | CS1060      | CS1060-A1     | CS1060-A2              |
|-----------------------------|-------------|---------------|------------------------|
| Supply Outage               | 10Vdc       | 10 – 30Vdc    | ±15Vdc (±12 to ±18Vdc) |
| F.S. Output                 | ±2mV/V      | ±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         | <30mA                  |
| 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 and housing in aluminum alloy
3. Connection : Square male couplings standard depending on F.S. ; other connection types on request (smooth shaft, cotter pin, etc)

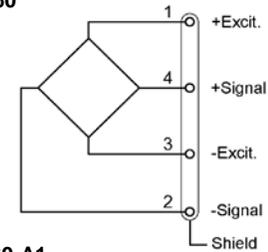
# CS1060 Reaction Torque Sensor

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

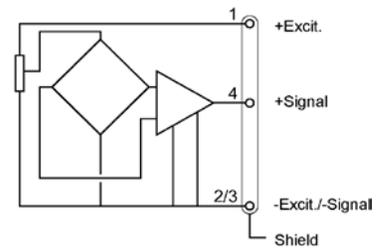


### Wiring Schematic

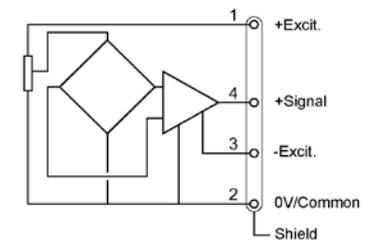
#### CS1060



#### CS1060-A1



#### CS1060-A2



### Dimensions in mm [inch]

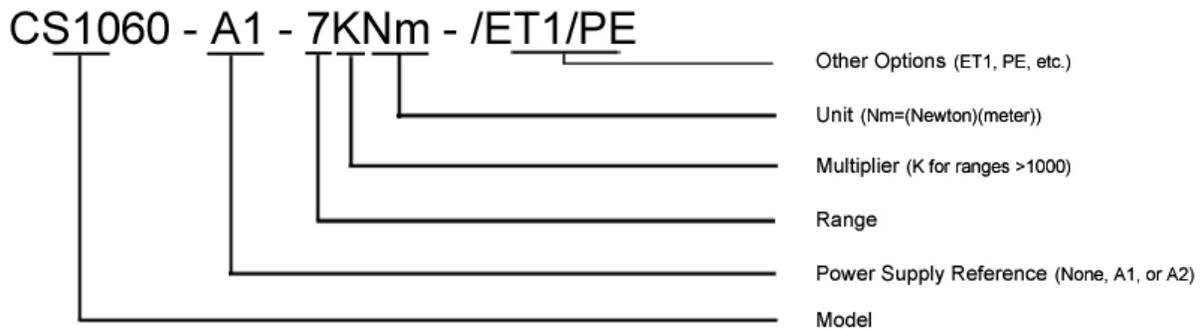
| F.S. in Nm<br>[lbf.ft] | 5 to 100<br>[4 to 80] |        | 101 to 300<br>[81 to 240] |        | 301 to 800<br>[241 to 640] |        | 801 to 3000<br>[641 to 2400] |         | 3001 to 7000<br>[2401 to 5600] |        |
|------------------------|-----------------------|--------|---------------------------|--------|----------------------------|--------|------------------------------|---------|--------------------------------|--------|
| A                      | 35                    | [1.38] | 40                        | [1.57] | 50                         | [1.97] | 65                           | [2.56]  | 85                             | [3.35] |
| B                      | 35                    | [1.38] | 40                        | [1.57] | 45                         | [1.77] | 55                           | [2.17]  | 60                             | [2.36] |
| C                      | 12.7                  | [1/2"] | 19                        | [3/4"] | 25.4                       | [1"]   | 38.1                         | [1"1/2] | 50.8                           | [2"]   |
| D                      | 59                    | [2.32] | 80                        | [3.15] | 95                         | [3.74] | 135                          | [5.31]  | 160                            | [6.30] |

# CS1060 Reaction Torque Sensor



|   |
|---|
| <b>A1</b> : Amplified Tension output with unipolar power supply |
| <b>A2</b> : Amplified Tension output with bipolar power supply  |
| <b>ET1</b> : CTR -20 to 100° C [-4 to 212° F] OTR=CTR           |
| <b>PE</b> : Cable Gland Termination with 2 m [6.6 ft] cable     |

## ORDERING INFO



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