

# CD1140 Contactless Torque Sensor



- Contactless transmission
- Keyed Shaft couplings
- Range from  $\pm 0.05$  to  $\pm 20,000$  Nm ( $\pm 0.04$  to  $\pm 16,000$  lbf.ft)
- Stainless Steel or Aluminum
- Built In Amplifier

## DESCRIPTION

The CD 1140 family of torque sensors offers a rugged but small package size as well as many mounting configurations so as to provide excellent measurements in both industrial and laboratory environments. The contactless transmission of supply voltage and measuring signal facilitates continuous operation with low wear and no slip ring service. The CD1140 is also available with optional speed or angle detection (but not both).

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

- High Accuracy
- Built-in Amplifier
- Low Moment of Inertia
- Small Outline
- Speed and Angle Detection (Option)

## APPLICATIONS

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

## STANDARD RANGES

| Model               | CD1140-1                        | CD1140-1a | CD1140-1b | CD1140-2 | CD1140-3               | CD1140-6           | CD1140-7                 | CD1140-8         |
|---------------------|---------------------------------|-----------|-----------|----------|------------------------|--------------------|--------------------------|------------------|
| <b>FS in Nm</b>     | 0.05 - 0.1<br>0.2 - 0.5 - 1     | 2         | 5 - 10    | 20 - 50  | 100 - 150<br>200 - 300 | 500 - 1000<br>1500 | 2k - 3k<br>4k - 5k       | 10k - 15k<br>20k |
| <b>FS in lbf.ft</b> | 0.04 - 0.08<br>0.16 - 0.4 - 0.8 | 1.6       | 4 - 8-    | 16 - 40  | 80 - 120<br>160 - 240  | 400 - 800<br>1.2k  | 1600 - 2400<br>3200 - 4k | 8k - 12k<br>16k  |
| <b>RPM max.</b>     | 37000                           | 37000     | 26000     | 19000    | 13500                  | 7900               | 6300                     | 4000             |

# CD1140 Contactless Torque Sensor

## PERFORMANCE SPECIFICATIONS

All values are typical at temperature 20±1° C

| Parameters                          |                                                   |
|-------------------------------------|---------------------------------------------------|
| Operating Temperature Range (OTR)   | 0 to 60° C (32 to 140° F)                         |
| Compensated Temperature Range (CTR) | 5 to 45° C (41 to 113° F)                         |
| Zero Shift in CTR                   | 0.02% F.S. / ° C (0.01% of F.S. / ° F)            |
| Sensitivity Shift in CTR            | 0.01%/ ° C of reading (0.005% / ° F of reading)   |
| Range (F.S.)                        | ±0.05 Nm to ±20 kNm [±0.04 lbf.ft to ±16 klbf.ft] |
| Over-Range                          |                                                   |
| Without Damage                      | 2 x F.S.                                          |
| Accuracy                            |                                                   |
| Linearity                           | 0.1% F.S.                                         |
| Hysteresis                          | 0.1% F.S.                                         |

## Electrical Characteristics

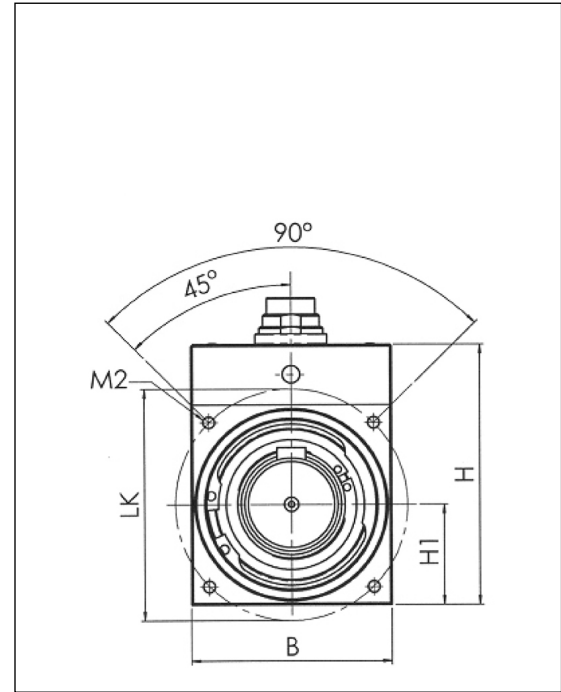
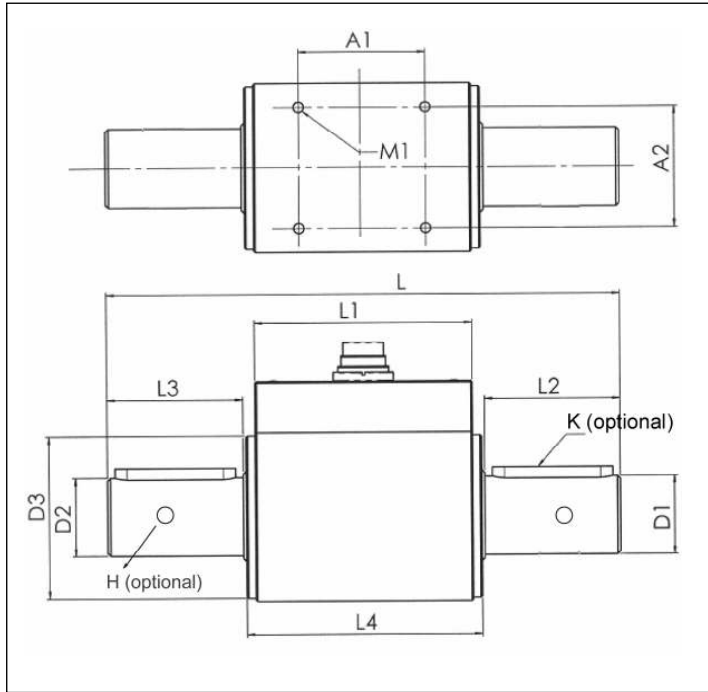
| Model          | CD1140    |
|----------------|-----------|
| Supply Voltage | 12Vdc±10% |
| Signal at F.S  | ±10V      |
| Consumption    | <200mA    |

## Notes

1. Electrical Termination: 6 pin connector (12 pin connector with optional speed or angle detection)

# CD1140 Contactless Torque Sensor

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



Dimensions in mm [inch]

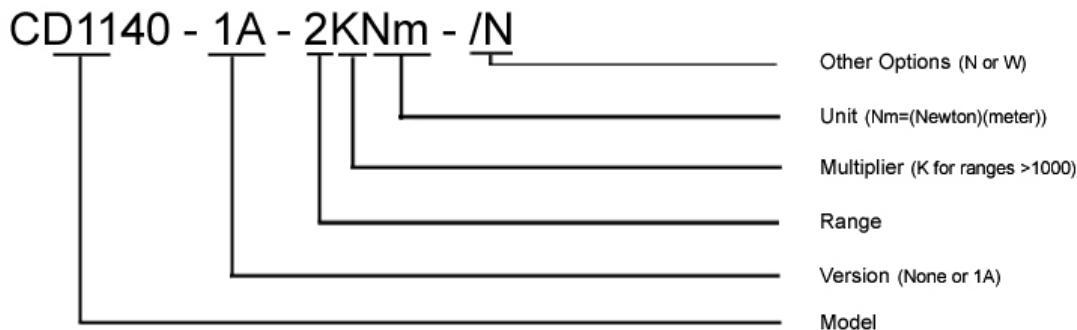
| Model        | CD1140-1                     | CD1140-1a   | CD1140-1b  | CD1140-2   | CD1140-3              | CD1140-6          | CD1140-7                | CD1140-8        |
|--------------|------------------------------|-------------|------------|------------|-----------------------|-------------------|-------------------------|-----------------|
| FS in Nm     | 0.05 -0.1 -0.2<br>0.5 - 1    | 2           | 5 - 10     | 20 - 50    | 100 -150<br>200 - 300 | 500 -1000<br>1500 | 2k- 3k<br>4k- 5k        | 10k- 15k<br>20k |
| FS in lbf.ft | 0.04 -0.08-0.16<br>0.4 - 0.8 | 1.6         | 4 - 8      | 16 - 40    | 80 -120<br>160 - 240  | 400 -800<br>1200  | 1600 -2400<br>3200 - 4k | 8k -12k<br>16k  |
| L            | 89 [3.5]                     | 95 [3.74]   | 110 [4.33] | 145 [5.71] | 170 [6.69]            | 270 [10.63]       | 320 [12.6]              | 355 [13.98]     |
| B            | 28 [1.1]                     | 28 [1.1]    | 36 [1.42]  | 42 [1.65]  | 56 [2.2]              | 88 [3.46]         | 105 [4.13]              | 160 [6.3]       |
| H            | 48,5 [1.91]                  | 48,5 [1.91] | 54 [2.13]  | 58 [2.28]  | 73 [2.87]             | 104 [4.09]        | 121 [4.76]              | 176 [6.93]      |
| H1           | 14 [0.55]                    | 14 [0.55]   | 18 [0.71]  | 21 [0.83]  | 28 [1.1]              | 44 [1.73]         | 52.5 [2.07]             | 80 [3.15]       |
| Ø D1         | 8 [0.31]                     | 8 [0.31]    | 10 [0.39]  | 15 [0.59]  | 26 [1.02]             | 45 [1.77]         | 70 [2.76]               | 110 [4.33]      |
| Ø D2         | 5 [0.2]                      | 6 [0.24]    | 10 [0.39]  | 15 [0.59]  | 26 [1.02]             | 45 [1.77]         | 70 [2.76]               | 110 [4.33]      |
| Ø D3         | 27 [1.06]                    | 27 [1.06]   | 32 [1.26]  | 38 [1.5]   | 54 [2.13]             | 80 [3.15]         | -                       | -               |
| H (optional) | Ø2 H7                        | Ø2.5 H7     | -          | -          | -                     | -                 | -                       | -               |
| Ø LK         | 32 [1.26]                    | 32 [1.26]   | 38 [1.5]   | 46 [1.81]  | 65 [2.56]             | 98 [3.86]         | -                       | -               |
| L1           | 62 [2.44]                    | 62 [2.44]   | 68 [2.68]  | 79 [3.11]  | 72 [2.83]             | 84 [3.31]         | 95 [3.74]               | 115 [4.53]      |
| L2           | 10 [0.39]                    | 14 [0.55]   | 18 [0.71]  | 30 [1.18]  | 45 [1.77]             | 85 [3.35]         | 110 [4.33]              | 115 [4.53]      |
| L3           | 11 [0.43]                    | 14 [0.55]   | 18 [0.71]  | 30 [1.18]  | 45 [1.77]             | 85 [3.35]         | 110 [4.33]              | 115 [4.53]      |
| L4           | 66 [2.6]                     | 66 [2.6]    | 72 [2.83]  | 83 [3.27]  | 78 [3.07]             | 90 [3.54]         | -                       | -               |
| A1           | 40 [1.57]                    | 40 [1.57]   | 56 [2.2]   | 60 [2.36]  | 42 [1.65]             | 46 [1.81]         | 75 [2.95]               | 85 [3.35]       |
| A2           | 22 [0.87]                    | 22 [0.87]   | 24 [0.94]  | 32 [1.26]  | 40 [1.57]             | 70 [2.76]         | 85 [3.35]               | 130 [5.12]      |
| M1           | M3x5                         | M3x5        | M3x6       | M3x6       | M4x8                  | M6x12             | M8x16                   | M10x20          |
| M2           | M3x6                         | M3x6        | M3x6       | M3x6       | M4x8                  | M6x12             | -                       | -               |
| K (optional) | -                            | -           | 2xA3x3x14  | 2xA5x5x25  | 2xA8x7x40             | 4xA14x9x80        | -                       | -               |
| Weight [g]   | 170                          | 170         | 340        | 600        | 1,300                 | 4,500             | 11,500                  | 31,000          |
| Rpm max      | 37,000                       | 37,000      | 26,000     | 19,000     | 13,500                | 7,900             | 6,300                   | 4,000           |

# CD1140 Contactless Torque Sensor

## OPTIONS

|                                                                                                           |
|-----------------------------------------------------------------------------------------------------------|
| <b>H</b> : Cross Holes on Shaft Ends (see table on page 3/4)                                              |
| <b>K</b> : Torque meter with Keyed Shafts (see table on page 3/4)                                         |
| <b>N</b> : Speed Detection (Notes: Rev. Max: 10,000rpm; Pulses/Rev.: 60)                                  |
| <b>W</b> : Angle Detection (Notes: Rev. Max: 3000rpm; Pulses/Rev.: 360; Resolution: 1°; Phase shift: 90°) |

## ORDERING INFO



### 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)

The information in this sheet has been carefully reviewed and is believed to be accurate; however, no responsibility is assumed for inaccuracies. Furthermore, this information does not convey to the purchaser of such devices any license under the patent rights to the manufacturer. Measurement Specialties, Inc. reserves the right to make changes without further notice to any product herein. Measurement Specialties, Inc. makes no warranty, representation or guarantee regarding the suitability of its product for any particular purpose, nor does Measurement Specialties, Inc. assume any liability arising out of the application or use of any product or circuit and specifically disclaims any and all liability, including without limitation consequential or incidental damages. Typical parameters can and do vary in different applications. All operating parameters must be validated for each customer application by customer's technical experts. Measurement Specialties, Inc. does not convey any license under its patent rights nor the rights of others.