

# 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

## APPLICATIONS

• High Accuracy	• Dynamic applications
• Built-in Amplifier	• Process control equipment
• Low Moment of Inertia	• Test and Measurement
• Small Outline	• Robotics and effectors
• Speed and Angle Detection (Option)	• Laboratory and Research

## STANDARD RANGES

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 - 0.5 - 1	2	5 - 10	20 - 50	100 - 150 200 - 300	500 – 1000 1500	2k - 3k 4k - 5k	10k - 15k 20k
FS in lbf.ft	0.04 - 0.08 0.16 - 0.4 - 0.8	1.6	4 - 8	16 - 40	80 - 120 160 - 240	400 - 800 1.2k	1600 - 2400 3200 - 4k	8k - 12k 16k
RPM max.	37000	37000	26000	19000	13500	7900	6300	4000

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## PERFORMANCE SPECIFICATIONS

All values are typical at temperature  $20\pm1^\circ\text{C}$

Parameters	
Operating Temperature Range (OTR)	0 to $60^\circ\text{C}$ (32 to $140^\circ\text{F}$ )
Compensated Temperature Range (CTR)	5 to $45^\circ\text{C}$ (41 to $113^\circ\text{F}$ )
Zero Shift in CTR	0.02% F.S. / $^\circ\text{C}$ (0.01% of F.S. / $^\circ\text{F}$ )
Sensitivity Shift in CTR	0.01% / $^\circ\text{C}$ of reading (0.005% / $^\circ\text{F}$ of reading)
Range (F.S.)	$\pm 0.05\text{ Nm}$ to $\pm 20\text{ kNm}$ [ $\pm 0.04\text{ lbf.ft}$ to $\pm 16\text{ klf.ft}$ ]
<b>Over-Range</b>	
Without Damage	2 x F.S.
<b>Accuracy</b>	
Linearity	0.1% F.S.
Hysteresis	0.1% F.S.

## Electrical Characteristics

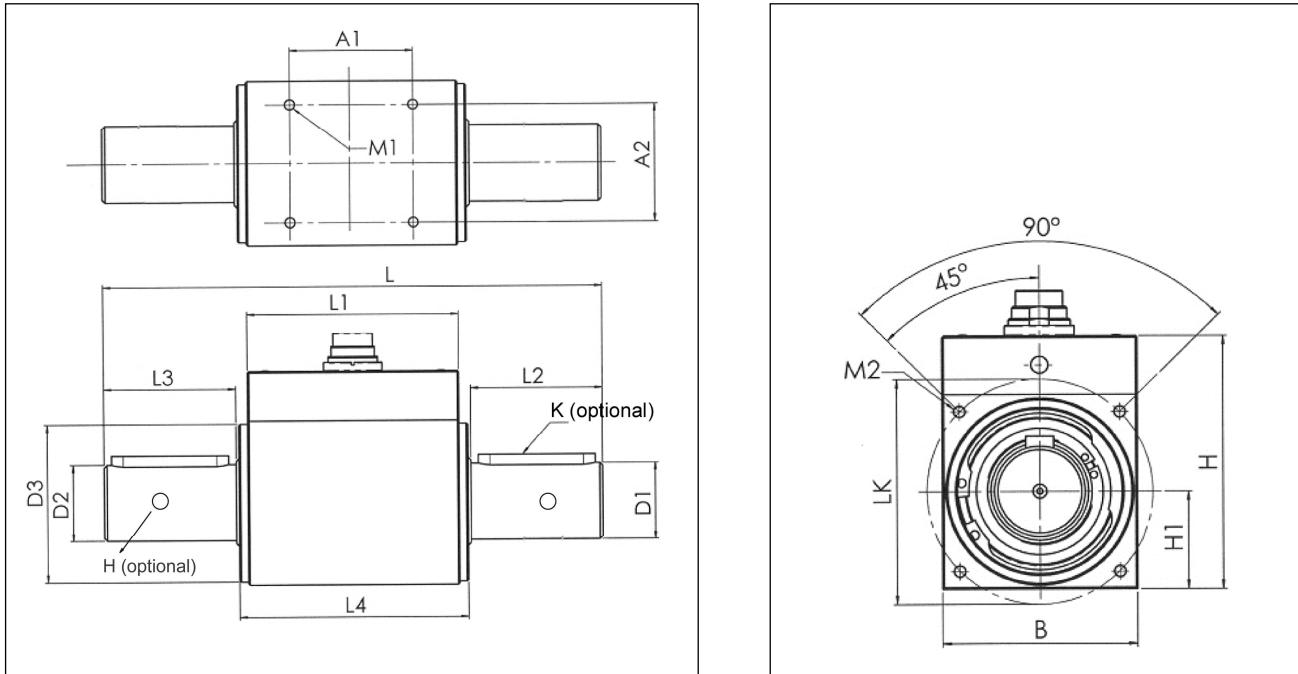
Model	CD1140
Supply Voltage	12Vdc $\pm 10\%$
Signal at F.S	$\pm 10\text{V}$
Consumption	<200mA

## 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 0.5 - 1	2	5 - 10	20 - 50	100 -150 200 - 300	500 -1000 1500	2k- 3k 4k- 5k	10k- 15k 20k
FS in lbf.ft	0.04 -0.08-0.16 0.4 - 0.8	1.6	4 - 8	16 - 40	80 -120 160 - 240	400 -800 1200	1600 -2400 3200 - 4k	8k- 12k 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]	168 [6.61]
H	48,5 [1.91]	48,5 [1.91]	54 [2.13]	58 [2.28]	73 [2.87]	104 [4.09]	121 [4.76]	185 [7.28]
H1	14 [0.55]	14 [0.55]	18 [0.71]	21 [0.83]	28 [1.1]	44 [1.73]	52.5 [2.07]	84 [3.30]
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]	121 [4.76]
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]	91 [3.58]
A2	22 [0.87]	22 [0.87]	24 [0.94]	32 [1.26]	40 [1.57]	70 [2.76]	85 [3.35]	138 [5.43]
M1	M3x5	M3x5	M3x6	M3x6	M4x8	M6x12	M8x16	M10x16
M2	M3x6	M3x6	M3x6	M3x6	M4x8	M6x12	-	-
K (optional)	-	-	2xA3x3x14	2xA5x5x25	2xA8x7x40	4xA14x9x80	4xA20x12x100	-
Weight [g]	170	170	340	600	1,300	4,500	11,500	33,000
Rpm max	37,000	37,000	26,000	19,000	13,500	7,900	6,300	4,000

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## OPTIONS

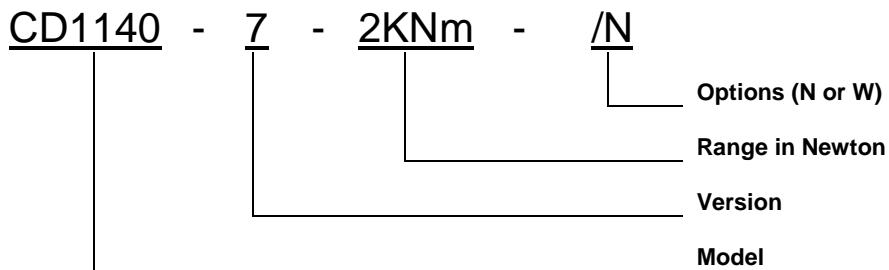
**H** : Cross Holes on Shaft Ends (see table on page 3/4)

**K** : Torque meter with Keyed Shafts (see table on page 3/4)

**N** : Speed Detection (Notes: Rev. Max: 10,000rpm; Pulses/Rev.: 60)

**W** : Angle Detection (Notes: Rev. Max: 3000rpm; Pulses/Rev.: 360; Resolution: 1°; Phase shift: 90°)

## ORDERING INFO



## RECOMMENDED ACCESSORIES

Description	Part Number
KD6 : Mating 6 Pin for torque output only	NCETACC001KD6
KD12 : Mating 12 Pin for torque with option speed or angle	NCETACC001KD12

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