

## T22 PULLEY ROTARY TORQUE TRANSDUCER (U.S. & METRIC)

### FEATURES & BENEFITS

- Capacities from 20 to 5K Nm (177 to 44K lbf-in)
- $\pm 5$  VDC output
- Digital electronics
- 10 kHz sample rate
- Contactless
- 16-bit resolution

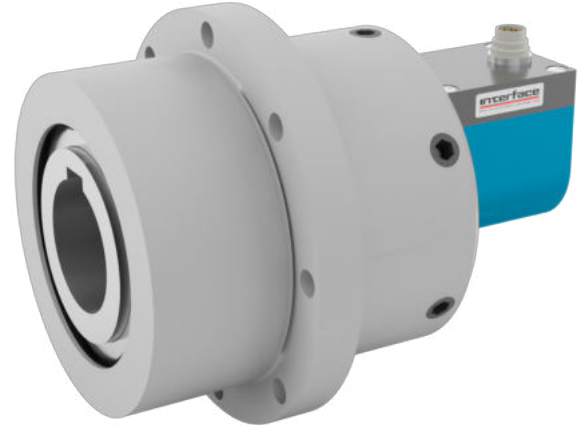
### SPECIFICATIONS

ACCURACY – (MAX ERROR)		
Combined Error – %FS		$\pm 0.1$
Nonrepeatability – %		$\pm 0.02$
TEMPERATURE		
Effect on Zero – %RO / deg	$^{\circ}\text{C}$	$\pm 0.02$
Effect on Output – % / deg	$^{\circ}\text{C}$	$\pm 0.01$
Rated Range	$^{\circ}\text{C}$	+5 to +45
	$^{\circ}\text{F}$	+41 to +113
Operating Range	$^{\circ}\text{C}$	+0 to +60
	$^{\circ}\text{F}$	+32 to +140
ELECTRICAL		
Output – VDC		+5
Bandwidth – kHz – db		1 – 3
Calibration Signal – %RO		100
Supply Voltage – VDC		12 to 28
Supply Current – mA		60
Electrical Connection – pin		12
MECHANICAL		
Safe Overload – %RO		200
Max Speed – RPM		Varies with capacity. (See table)
Housing Material		Aluminum

### ELECTRICAL CONNECTION

8-PIN T12 ELECTRICAL CONNECTION		
PIN	FUNCTION	DESCRIPTION
1	NC	-
2	Option Angle B	5VDC TTL
3	Signal (+)	$\pm 5$ VDC ( $\pm 10$ VDC)
4	Signal (GND)	0 VDC
5	Supply (GND)	0 VDC
6	Supply (+)	12-28 VDC
7	Option Angle A	5VDC TTL
8	NC	-
9	NC	-
10	Cal. Control	$L < 2.0 / H >; 3.5$ V
11	NC	-
12	Shield	Transducer Housing

### STANDARD CONFIGURATION



MODEL T22 (Shown)

### OPTIONS

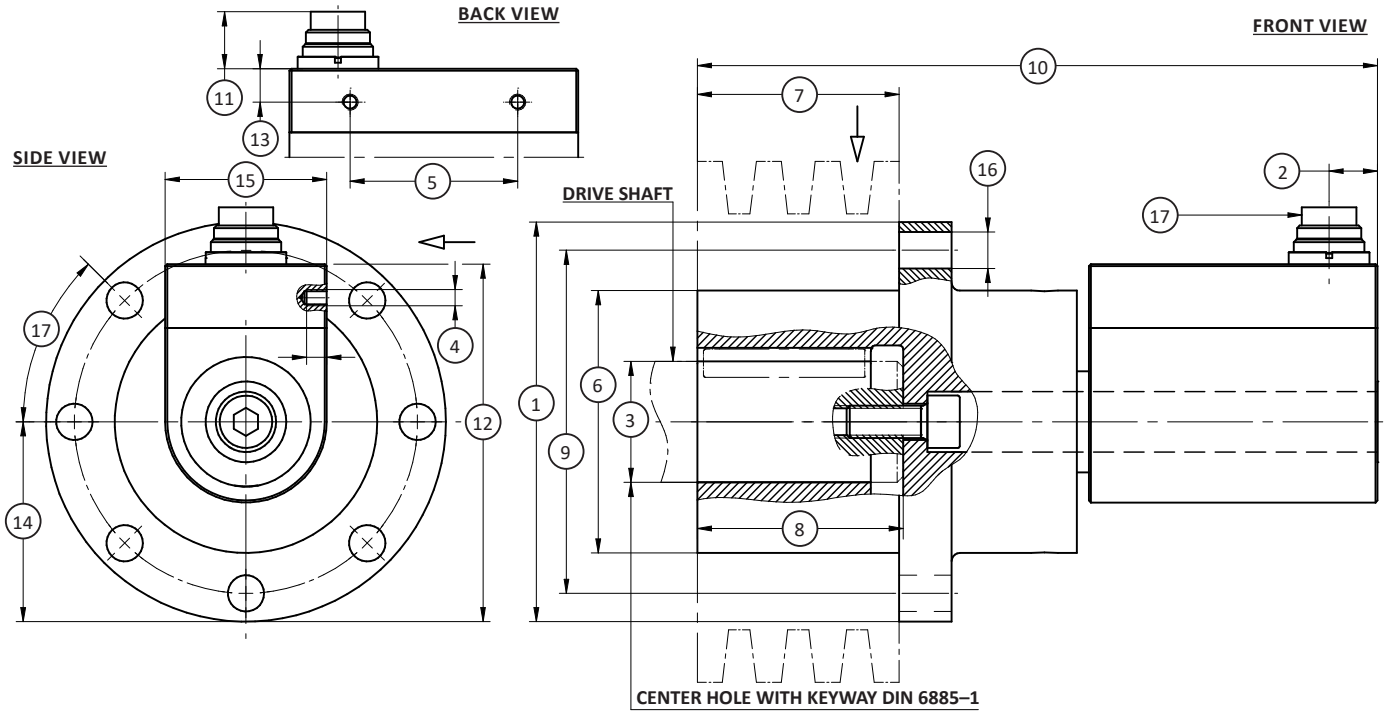
- Speed & angle measurement - 360 pulse TTL, 2-tracks 90° offset, available on capacities up to 1K Nm (8.85K lbf-in) only
- Speed output - 60 pulse TTL, 1-track, available on capacities 2K Nm (17.7K lbf-in) & above
- $\pm 10$ V torque output
- USB output & software

### PERFORMANCE PARAMETERS

CAPACITY		MAX RPM	SPRING RATE	MOMENT OF INERTIA – J (Kg·m <sup>2</sup> )		MAX SHEAR FORCE	
Nm	lbf-in			NM/rad	Drive Side	Test Side	N
20	177	12,000	$1.3 \times 10^4$	$1.6 \times 10^{-4}$	$1.7 \times 10^{-3}$	11K	2.47K
50	443	12,000	$2.6 \times 10^4$	$1.6 \times 10^{-4}$	$1.7 \times 10^{-3}$	11K	2.47K
100	885	12,000	$5.3 \times 10^4$	$1.6 \times 10^{-4}$	$1.7 \times 10^{-3}$	11K	2.47K
200	1.77K	12,000	$1.1 \times 10^5$	$1.6 \times 10^{-4}$	$1.7 \times 10^{-3}$	11K	2.47K
500	4.43K	10,000	$3.1 \times 10^5$	$2.4 \times 10^{-3}$	$4.6 \times 10^{-2}$	37K	8.32K
1K	8.85K	10,000	$6.7 \times 10^5$	$2.4 \times 10^{-3}$	$4.6 \times 10^{-2}$	37K	8.32K
2K	17.7K	5,000	$9.4 \times 10^5$	$1.8 \times 10^{-2}$	$1.2 \times 10^{-1}$	48K	10.8K
5K	44.3K	5,000	$2.5 \times 10^6$	$1.8 \times 10^{-2}$	$1.2 \times 10^{-1}$	48K	10.8K

U.S. dimensions and capacities are provided for conversion only. Standard products have International System of Units (SI) capacities and dimensions.

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### DIMENSIONS

See Drawing	CAPACITIES							
	Metric (Nm)	U.S. (lbf-in)	Metric (Nm)	U.S. (lbf-in)	Metric (Nm)	U.S. (lbf-in)	Metric (Nm)	U.S. (lbf-in)
	20, 50, 100, 200	177, 443, 885, 1.77K	500	4.43K	1K	8.85K	2K, 5K	17.7K, 44.3K
	mm	in	mm	in	mm	in	mm	in
(1)	Ø99	Ø3.90	Ø176	Ø6.93	Ø176	Ø6.93	Ø220	Ø8.66
(2)	12	0.47	15	0.59	15	0.59	15	0.59
(3)	Ø15 H7 - Ø30 H7	Ø(0.5913 / 0.5905) - Ø(1.1819 / 1.1811)	Ø40 H7 - Ø55H7	Ø(1.5758 / 1.5748) - Ø(2.1665 / 2.1653)	Ø50 H7 - Ø55 H7	Ø(1.9695 / 1.9685) - Ø(2.1665 / 2.1653)	Ø60 H7 - Ø85 H7	Ø(1.9695 / 1.9685) - Ø(3.3478 / 3.3464)
(4)	M4		M4		M4		M4	
(5)	41.5	1.63	29.5	1.16	29.5	1.16	29.5	1.16
(6)	Ø65g6	Ø2.56	Ø140g6	Ø5.51	Ø140g6	Ø5.51	Ø170g6	Ø6.69
(7)	50 <sup>+0.2</sup>	1.97 <sup>+0.008</sup>	60 <sup>+0.2</sup>	2.36 <sup>+0.008</sup>	60 <sup>+0.2</sup>	2.36 <sup>+0.008</sup>	110 <sup>+0.2</sup>	4.43 <sup>+0.008</sup>
(8)	51	2.01	80	3.15	80	3.15	130	5.12
(9)	Ø85 <sup>+0.2</sup>	Ø3.35 <sup>+0.008</sup>	Ø158 <sup>+0.2</sup>	Ø6.22 <sup>+0.008</sup>	Ø158 <sup>+0.2</sup>	Ø6.22 <sup>+0.008</sup>	Ø195 <sup>+0.2</sup>	Ø7.68 <sup>+0.008</sup>
(10)	168.5	6.63	227.5	8.96	227.5	8.96	287.5	11.32
(11)	14	0.6	14	0.6	14	0.6	14	0.6
(12)	88.5	3.48	135	5.31	135	5.31	157	6.18
(13)	8.2 <sup>+0.1</sup>	0.32 <sup>+0.004</sup>	8.2 <sup>+0.1</sup>	0.32 <sup>+0.004</sup>	8.2 <sup>+0.1</sup>	0.32 <sup>+0.004</sup>	8.2 <sup>+0.1</sup>	0.32 <sup>+0.004</sup>
(14)	49.5	1.95	88	3.43	88	3.43	110	4.33
(15)	40	1.57	58	2.28	58	2.28	58	2.28
(16)	Ø9	Ø0.35	Ø11	Ø0.43	Ø11	Ø0.43	Ø13	Ø0.51
(17)	Connector 12-pin		Connector 12-pin		Connector 12-pin		Connector 12-pin	

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### PERFORMANCE PARAMETERS

CAPACITY		MAX RPM	SPRING RATE	MOMENT OF INERTIA – J (Kg•m <sup>2</sup> )		MAX THRUST LOAD		MAX SHEAR FORCE	
Nm	lbf-in		NM / rad	Drive Side	Test Side	N	lbf	N	lbf
20	177	12,000	1.3x10 <sup>4</sup>	1.6x10 <sup>-4</sup>	1.7x10 <sup>-3</sup>	950	214	11K	2.47K
50	443	12,000	2.6x10 <sup>4</sup>	1.6x10 <sup>-4</sup>	1.7x10 <sup>-3</sup>	1.9K	427	11K	2.47K
100	885	12,000	5.3x10 <sup>4</sup>	1.6x10 <sup>-4</sup>	1.7x10 <sup>-3</sup>	4K	899	11K	2.47K
200	1.77K	12,000	1.1x10 <sup>5</sup>	1.6x10 <sup>-4</sup>	1.7x10 <sup>-3</sup>	7.4K	1.66K	11K	2.47K
500	4.43K	10,000	3.1x10 <sup>5</sup>	2.4x10 <sup>-3</sup>	4.6x10 <sup>-2</sup>	12.5K	2.81K	37K	8.32K
1K	8.85K	10,000	6.7x10 <sup>5</sup>	2.4x10 <sup>-3</sup>	4.6x10 <sup>-2</sup>	21K	4.72K	37K	8.32K
2K	17.7K	5,000	9.4x10 <sup>5</sup>	1.8x10 <sup>-2</sup>	1.2x10 <sup>-1</sup>	24K	5.40K	48K	10.8K
5K	44.3K	5,000	2.5x10 <sup>6</sup>	1.8x10 <sup>-2</sup>	1.2x10 <sup>-1</sup>	39K	8.77K	48K	10.8K