

## T11 BEARINGLESS ROTARY TORQUE TRANSDUCER (U.S. & METRIC)

### FEATURES & BENEFITS

- Capacities from 0.005 to 150 Nm (0.04 to 1.33K lbf-in)
- Bearingless
- High speed – to 30K RPM
- $\pm 5$  VDC output
- Very low range
- Eliminates bearing friction effects
- 10 kHz sample rate
- 12 to 28 VDC supply
- 16-bit resolution

### SPECIFICATIONS

ACCURACY – (MAX ERROR)		
Combined Error – %FS		$\pm 0.1$
Nonrepeatability – %FS		$\pm 0.02$
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		$\pm 5$
Bandwidth – kHz – dB		3 – 3
Calibration Signal – %RO		100
Supply Voltage – VDC		+12 to +28
Supply Current – mA		60
Electrical Connection – pin		8
Resolution – bit		16
Sample Rate – kHz		10
MECHANICAL		
Safe Overload – %RO		200
Max Speed – RPM		30K (see table)
Shaft Material		Stainless steel
Housing Material		Aluminum

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

### STANDARD CONFIGURATION



MODEL T11 (Shown)

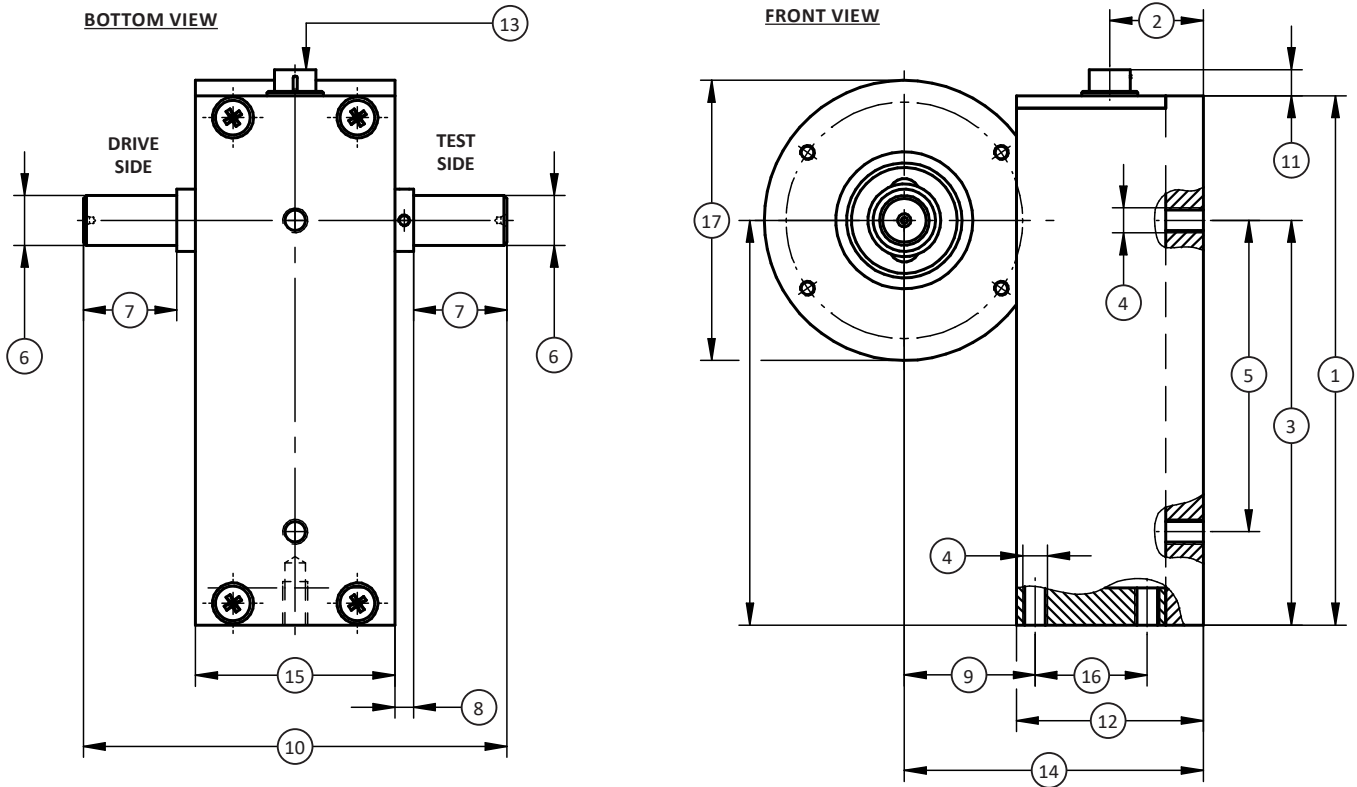
### OPTIONS

- +10 VDC output
- Speed output – 6 Pulse TTL, 1-track

### ELECTRICAL CONNECTION

Pin	8-PIN ELECTRICAL CONNECTION	
	Function	Description
1	Supply (+)	12-28 V
2	Supply (GND)	0 VDC
3	Signal (+)	$\pm 5$ ( $\pm 10$ )VDC
4	Signal (GND)	0 VDC
5	Cal. Control	L < 2.0V / H > 3.5V
6	Option Angle A	5VDC TTL
7	NC	–
8	NC	–
	Housing	Shield

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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)	Metric (Nm)	U.S. (lbf-in)
	0.005, 0.01	0.04, 0.62	0.02, 0.05, 0.1, 0.2, 0.5, 1	0.18, 0.44, 0.85, 1.77, 4.43, 8.85	2, 5	17.7, 44.3	10	88.5	20, 50, 100, 150	177, 443, 885, 1.33K
mm	in	mm	in	mm	in	mm	in	mm	in	
(1)	85	3.3	85	3.3	85	3.3	85	3.3	85	3.3
(2)	15	0.6	15	0.6	15	0.6	15	0.6	15	0.6
(3)	65	2.6	65	2.6	65	2.6	65	2.6	65	2.6
(4)	M4		M4		M4		M4		M4	
(5)	50	2.0	50	2.0	50	2.0	50	2.0	50	2.0
(6)	4g6	0.1573/0.1570	6g6	0.2361/0.2357	8g6	0.3148/0.3144	10g6	0.3935/0.3931	18g6	0.7084/0.7080
(7)	5	0.20	7	0.28	15	0.59	15	0.59	36	1.42
(8)	3	0.1	3	0.1	3	0.1	3	0.1	9	0.4
(9)	21	0.8	21	0.8	21	0.8	21	0.8	21	0.8
(10)	48	1.89	52	2.05	68	2.68	68	2.68	122	4.80
(11)	4	0.2	4	0.2	4	0.2	4	0.2	4	0.2
(12)	30	1.2	30	1.2	30	1.2	30	1.2	30	1.2
(13)	Connector 8-pin		Connector 8-pin		Connector 8-pin		Connector 8-pin		Connector 8-pin	
(14)	48	1.89	48	1.89	48	1.89	48	1.89	53	2.09
(15)	32	1.3	32	1.3	32	1.3	32	1.3	32	1.3
(16)	18	0.7	18	0.7	18	0.7	18	0.7	18	0.7
(17)	45	1.77	45	1.77	45	1.77	45	1.77	59.5	2.34

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### PERFORMANCE PARAMETERS

CAPACITY		MAX RPM	SPRING RATE	MOMENT OF INERTIA – (Kg•m <sup>2</sup> )		MAX THRUST LOAD		MAX SHEAR FORCE	
Nm	lbf-in		NM/rad	Drive Side	Test Side	N	lbf	N	lbf
0.005	0.04	20,000	4.6x10 <sup>-1</sup>	7.5x10 <sup>-7</sup>	1.1x10 <sup>-8</sup>	35	7.9	1	0.22
0.01	0.09	20,000	4.6x10 <sup>-1</sup>	7.5x10 <sup>-7</sup>	1.1x10 <sup>-8</sup>	35	7.9	1	0.22
0.02	0.18	30,000	3.7x10 <sup>0</sup>	7.6x10 <sup>-7</sup>	1.3x10 <sup>-8</sup>	35	7.9	1	0.22
0.05	0.44	30,000	3.7x10 <sup>0</sup>	7.6x10 <sup>-7</sup>	1.3x10 <sup>-8</sup>	40	9.0	1.1	0.25
0.1	0.89	30,000	1.8x10 <sup>1</sup>	8.6x10 <sup>-7</sup>	3.8x10 <sup>-8</sup>	43	10.0	1.5	0.34
0.2	1.77	30,000	1.8x10 <sup>1</sup>	8.6x10 <sup>-7</sup>	3.8x10 <sup>-8</sup>	59	13.3	2.3	0.52
0.5	4.43	30,000	1.2x10 <sup>2</sup>	8.6x10 <sup>-7</sup>	3.8x10 <sup>-8</sup>	185	41.6	4.2	0.94
1	8.85	30,000	1.2x10 <sup>2</sup>	8.6x10 <sup>-7</sup>	3.8x10 <sup>-8</sup>	255	57.3	7.2	1.62
2	17.7	30,000	6.2x10 <sup>2</sup>	9.1x10 <sup>-7</sup>	8.3x10 <sup>-8</sup>	520	117	14	3.15
5	44.3	30,000	6.2x10 <sup>2</sup>	9.1x10 <sup>-7</sup>	8.3x10 <sup>-8</sup>	520	117	14	3.15
10	88.5	30,000	1.5x10 <sup>3</sup>	9.8x10 <sup>-7</sup>	1.6x10 <sup>-7</sup>	900	202	33	7.42
20	177	20,000	7.4x10 <sup>3</sup>	1.2x10 <sup>-5</sup>	3.6x10 <sup>-6</sup>	2.15K	483	62	13.9
50	443	20,000	1.1x10 <sup>4</sup>	1.2x10 <sup>-5</sup>	3.9x10 <sup>-6</sup>	4K	899	160	36.0
100	885	20,000	1.1x10 <sup>4</sup>	1.2x10 <sup>-5</sup>	3.9x10 <sup>-6</sup>	4K	899	160	36.0
150	1.33K	20,000	1.2x10 <sup>4</sup>	1.2x10 <sup>-5</sup>	4.2x10 <sup>-6</sup>	5K	1.12K	220	49.5