

T3 PRECISION-PEDESTAL MOUNT ROTARY TORQUE TRANSDUCER (U.S. & METRIC)

FEATURES & BENEFITS

- Capacities from 0.1 to 20K Nm (0.88 to 177K lbf-in)
- Speed up to 15K RPM
- ± 5 VDC output
- 12-28 VDC supply
- Contactless data transmission
- Digital electronics with on-shaft shunt
- 0.1% combined error
- 10 kHz sample rate
- 16-bit resolution
- Very short overall length

SPECIFICATIONS

ACCURACY – (MAX ERROR)		
Combined Error – %FS		± 0.1
Nonrepeatability – %FS		± 0.02
Resolution – bit		16
TEMPERATURE		
Effect on Zero – %RO / deg	$^{\circ}\text{C}$	± 0.02
Effect on Output – % / deg	$^{\circ}\text{C}$	± 0.01
Compensated 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
Storage Range	$^{\circ}\text{C}$	-10 to +70
	$^{\circ}\text{F}$	+14 to +158
ELECTRICAL		
Supply Voltage – VDC		12 - 28
Supply Current – mA		≤ 60
Output – VDC		± 5
Bandwidth – kHz – dB		1 – -3
Sample Rate – kHz		10
Calibration Signal – %FS		100
Electrical Connection		12-pin binder series 581 (includes mate)
ENCODER OPTIONS		
Capacities	0.1 - 1K Nm	360 pulse/rev, 2-track, +5V TTL, 90° offset, quadrature encoder
	0.88 - 8.85K lbf-in	
	2K - 20K Nm	60 pulse/rev, 1-track, +5V TTL,
	17K - 177K lbf-in	
MECHANICAL		
Safe Overload – %RO		200
Max Speed – RPM		Varies with capacity (see table)
Shaft Material		Alloy steel
Housing Material		Aluminum

STANDARD CONFIGURATION

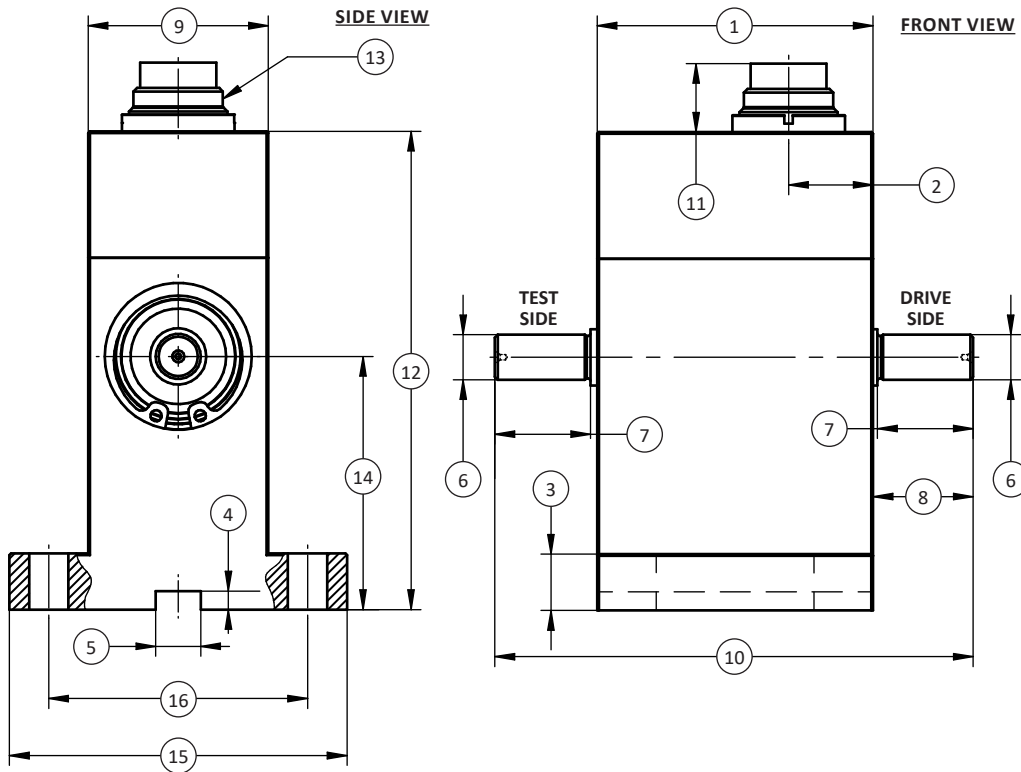


MODEL T3 (Shown)

OPTIONS

- Speed and angle output - 360 pulse TTL, 2-tracks 90° offset, available on capacities up to 5K Nm (44.25K lbf-in) only
- Speed output - 60 Pulse TTL, 1-Track, available on capacities 10K Nm (88.5K lbf-in) and above
- +10V output
- RS485
- Keyed shafts - per DIN 6885.1
- $\pm 0.05\%$ combined error
- Mating cable assembly

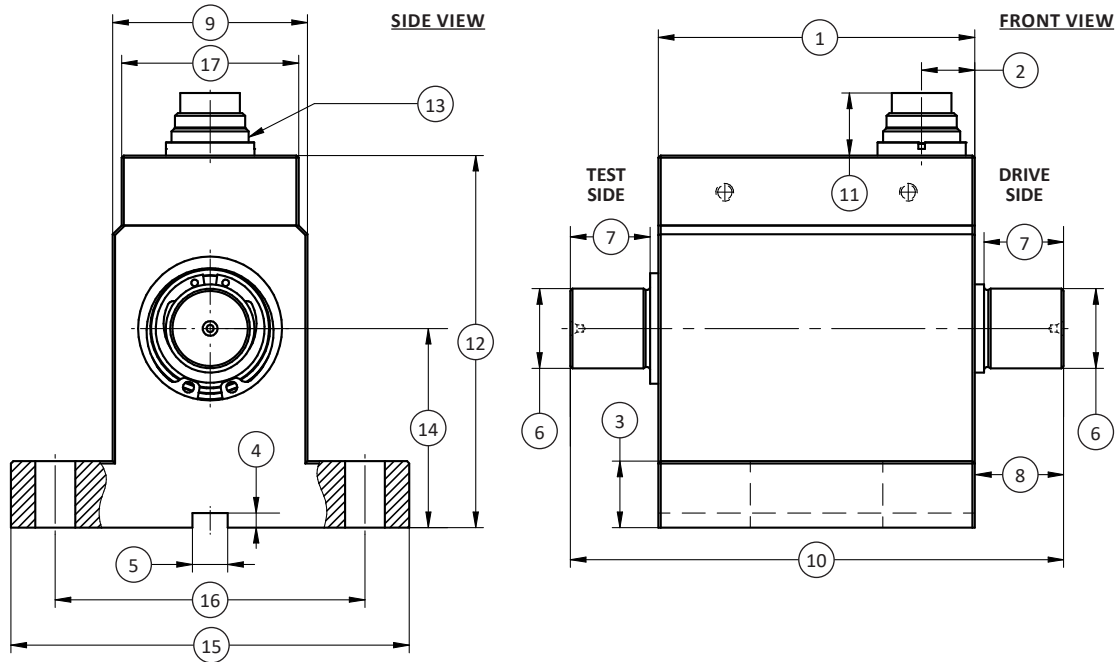
T3 PRECISION-PEDESTAL MOUNT ROTARY TORQUE TRANSDUCER (U.S. & METRIC)



DIMENSIONS

See Drawing	CAPACITIES			
	Metric (Nm)	U.S. (lbf-in)	Metric (Nm)	U.S. (lbf-in)
	0.1, 0.2	0.88, 1.77	0.5, 1	4.43, 8.85
	mm	in	mm	in
(1)	49	1.9	49	1.9
(2)	15	0.6	15	0.6
(3)	10	0.4	10	0.4
(4)	33	1.3	33	1.3
(5)	8N9	0.3150 / 0.3135	8N9	0.3150 / 0.3135
(6)	∅8g6	∅0.3148 / 0.3144	∅8g6	∅0.3148 / 0.3144
(7)	17	0.67	17	0.67
(8)	18	0.7	18	0.7
(9)	32	1.3	32	1.3
(10)	85	3.35	85	3.35
(11)	12	0.5	12	0.5
(12)	85	3.35	85	3.35
(13)	Connector 12-pin		Connector 12-pin	
(14)	45	1.8	45	1.8
(15)	60	2.4	60	2.4
(16)	46	1.8	46	1.8

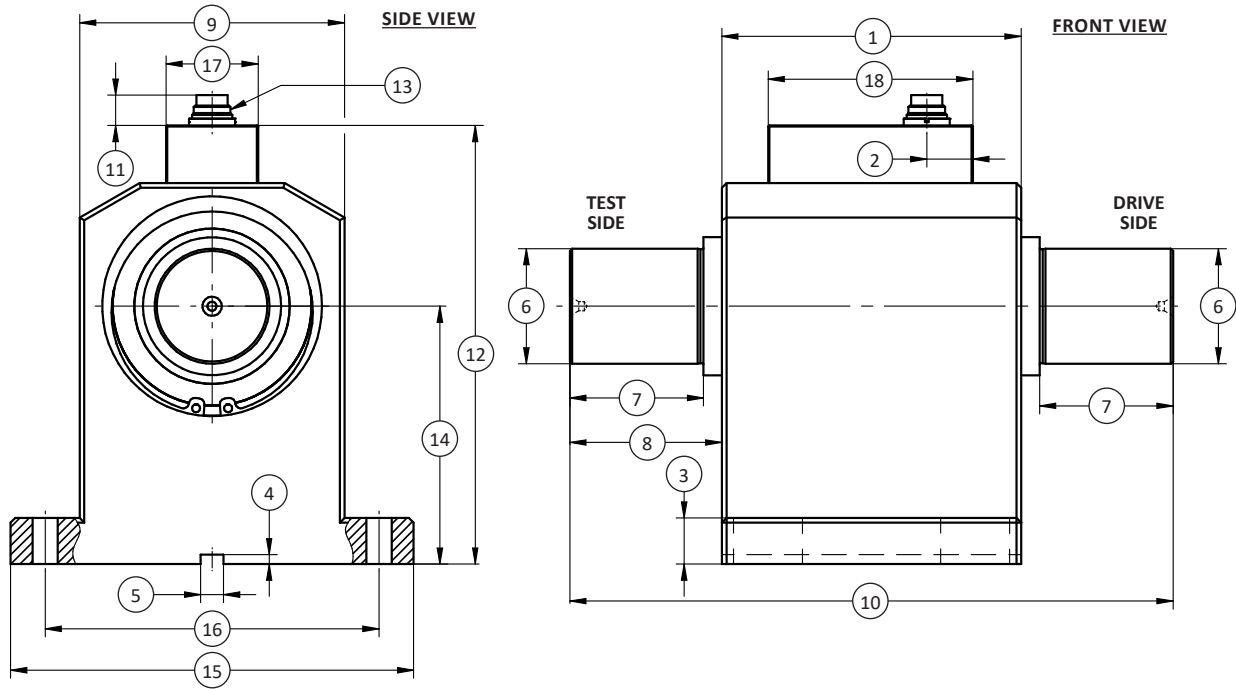
T3 PRECISION-PEDESTAL MOUNT ROTARY TORQUE TRANSDUCER (U.S. & METRIC)



DIMENSIONS (CONTINUED)

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)
	2, 5	17.7, 44.3	10	8.85	20, 30	177, 265	50, 100	443, 885
	mm	in	mm	in	mm	in	mm	in
(1)	71.5	2.81	71.5	2.81	71.5	2.81	71.5	2.81
(2)	12	0.5	12	0.5	12	0.5	12	0.5
(3)	15	0.6	15	0.6	15	0.6	15	0.6
(4)	33	1.3	33	1.3	33	1.3	33	1.3
(5)	8N9	0.3150 / 0.3135	8N9	0.3150 / 0.3135	8N9	0.3150 / 0.3135	8N9	0.3150 / 0.3135
(6)	Ø8g6	Ø0.3156 / 0.3150	Ø10g6	Ø0.3943 / 0.3937	Ø18g6	Ø0.7094 / 0.7087	Ø18g6	Ø0.7094 / 0.7087
(7)	17	0.67	17	0.67	18	0.7	36	1.4
(8)	18	0.7	18	0.7	20	0.8	38	1.5
(9)	44	1.7	44	1.7	44	1.7	44	1.7
(10)	107.5	4.23	107.5	4.23	111.5	4.39	147.5	5.81
(11)	14	0.6	14	0.6	14	0.6	14	0.6
(12)	84	3.3	84	3.3	84	3.3	84	3.3
(13)	Connector 12-pin		Connector 12-pin		Connector 12-pin		Connector 12-pin	
(14)	45	1.8	45	1.8	45	1.8	45	1.8
(15)	90	3.5	90	3.5	90	3.5	90	3.5
(16)	70	2.8	70	2.8	70	2.8	70	2.8
(17)	40	1.6	40	1.6	40	1.6	40	1.6

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DIMENSIONS (CONTINUED)

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)
	200, 500	1.77K, 4.43K	1K	8.85K	2K, 5K	17K, 44.3K	10K, 20K	85.5K, 177K
	mm	in	mm	in	mm	in	mm	in
(1)	130	5.12	130	5.12	135	5.31	190	7.48
(2)	20	0.79	20	0.79	20	0.79	20	0.79
(3)	20	0.79	20	0.79	25	0.98	40	1.57
(4)	4.1	0.16	4.1	0.16	4.1	0.16	4.1	0.16
(5)	10N9	0.3937 / 0.3923	10N9	0.3937 / 0.3923	10N9	0.3937 / 0.3923	10N9	0.3937 / 0.3923
(6)	Ø32g6	Ø1.2595 / 1.2589	50g6	Ø1.9681 / 1.9675	70g6	Ø2.7555 / 2.7548	110g6	Ø4.3302 / 4.3294
(7)	38	1.50	58	2.28	110	4.33	120	4.72
(8)	43.5	1.71	66	2.60	121	4.76	140	5.51
(9)	115	4.53	115	4.63	139	5.47	210	8.27
(10)	217	8.54	262	10.31	377	14.84	470	18.50
(11)	13	0.5	13	0.5	13	0.5	13	0.5
(12)	190.4	7.50	190.4	7.50	251.5	9.90	343	13.5
(13)	Connector 12-pin		Connector 12-pin		Connector 12-pin		Connector 12-pin	
(14)	112	4.41	112	4.41	160	6.30	215	8.46
(15)	175	6.89	175	6.89	207	8.15	300	11.81
(16)	145	5.7	145	5.7	173	6.8	260	10.2
(17)	40	1.5	40	1.5	40	1.5	40	1.5
(18)	89	3.50	89	3.50	89	3.50	89	3.50

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PERFORMANCE PARAMETERS

CAPACITY		MAX RPM	SPRING RATE (NM/rad)	MOMENT OF INERTIA ¹ (Kg•m ²)		MAX THRUST LOAD ²		MAX SHEAR LOAD ²	
Nm	lbf-in			Drive Side	Test Side	N	lbf	N	lbf
0.1	0.88	15,000	1.8x10 ¹	1.9x10 ⁻⁶	2.8x10 ⁻⁷	30	6.74	0.9	0.20
0.2	1.77	15,000	1.8x10 ¹	1.9x10 ⁻⁶	2.8x10 ⁻⁷	30	6.74	1.2	0.27
0.5	4.43	15,000	1.2x10 ²	1.9x10 ⁻⁶	2.8x10 ⁻⁷	30	6.74	2.9	0.65
1	8.85	15,000	1.2x10 ²	2.0x10 ⁻⁶	2.8x10 ⁻⁷	30	6.74	2.9	0.65
2	17.7	12,000	4.4x10 ²	1.0x10 ⁻⁵	8.1x10 ⁻⁶	62	13.9	8.5	1.91
5	44.3	12,000	4.4x10 ²	1.0x10 ⁻⁵	8.1x10 ⁻⁶	62	13.9	8.5	1.91
10	88.5	12,000	1.7x10 ³	1.0x10 ⁻⁵	8.2x10 ⁻⁶	62	13.9	28	6.29
20	177	12,000	4.5x10 ³	1.2x10 ⁻⁵	9.9x10 ⁻⁶	62	13.9	43	9.67
30	265	12,000	4.5x10 ³	1.2x10 ⁻⁵	9.9x10 ⁻⁶	62	13.9	65	14.6
50	443	12,000	8.5x10 ³	1.3x10 ⁻⁵	1.2x10 ⁻⁵	62	13.9	64	14.4
100	885	12,000	8.4x10 ³	1.3x10 ⁻⁵	1.2x10 ⁻⁵	62	13.9	64	14.4
200	1.77K	7,000	9.2x10 ⁴	1.3x10 ⁻³	8.0x10 ⁻⁴	760	171	350	78.7
500	4.43K	7,000	9.2x10 ⁴	1.3x10 ⁻³	8.0x10 ⁻⁴	760	171	420	94.4
1K	8.85K	7,000	3.1x10 ⁵	1.6x10 ⁻³	1.1x10 ⁻³	760	171	800	180
2K	17K	5,500	7.2x10 ⁵	5.3x10 ⁻³	4.3x10 ⁻³	1.1K	247	860	193
5K	44.3K	5,500	8.0x10 ⁵	5.4x10 ⁻³	4.3x10 ⁻³	1.1K	247	860	193
10K	85.5K	3,500	3.1x10 ⁶	4.0x10 ⁻²	3.7x10 ⁻²	2.8K	629	2.3K	517
20K	177K	3,500	3.7x10 ⁶	4.0x10 ⁻²	3.8x10 ⁻²	2.8K	629	2.3K	517

1 = Without encoder option
2 = Unsupported shaft

ELECTRICAL CONNECTION

Pin	12-PIN ELECTRICAL CONNECTION		12-PIN RS485 OPTION	
	Function	Description	Function	Description
A	NC	-	NC	-
B	Option Angle B	TTL	Option Angle B	TTL
C	Signal (+)	±5 VDC (±10 VDC)	NC	-
D	Signal (GND)	0 VDC	NC	-
E	Supply (GND)	0 VDC, TTL	Supply (GND)	0 VDC
F	Supply (+)	12-28 V	Supply (+)	12-28 VDC
G	Option Angle A	TTL	Option Angle A	TTL
H	NC	-	NC	-
J	NC	-	RS485 Option	RS485 (B)
K	Cal. Control	L < 2.0V / H > 3.5V	NC	-
L	NC	-	RS485 Option	RS485 (A)
M	Housing	-	Housing	-