

T4 GENERAL PURPOSE ROTARY TORQUE TRANSDUCER (U.S. & METRIC)

FEATURES & BENEFITS

- Capacities from 0.1 to 1K Nm (0.88 to 8.85K lbf-in)
- Speed up to 15K RPM
- ± 5 VDC output
- 12-28 VDC supply
- Contactless data transmission
- Digital electronics with on-shaft shunt
- 0.2% combined error
- 10 kHz sample rate
- 12-bit resolution
- Very short overall length

SPECIFICATIONS

ACCURACY – (MAX ERROR)		
Combined Error – %FS		± 0.2
Nonrepeatability – %FS		± 0.04
Resolution – bit		12
TEMPERATURE		
Effect on Zero – %RO / deg	$^{\circ}\text{C}$	± 0.03
Effect on Output – % / deg	$^{\circ}\text{C}$	± 0.015
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, Hz (-3dB)		1K
Sample Rate – Hz		10K
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	
MECHANICAL		
Safe Overload – %RO		200
Max Speed – RPM		Varies with Capacity (see table)
Shaft Material		Alloy Steel
Housing Material		Aluminum

STANDARD CONFIGURATION



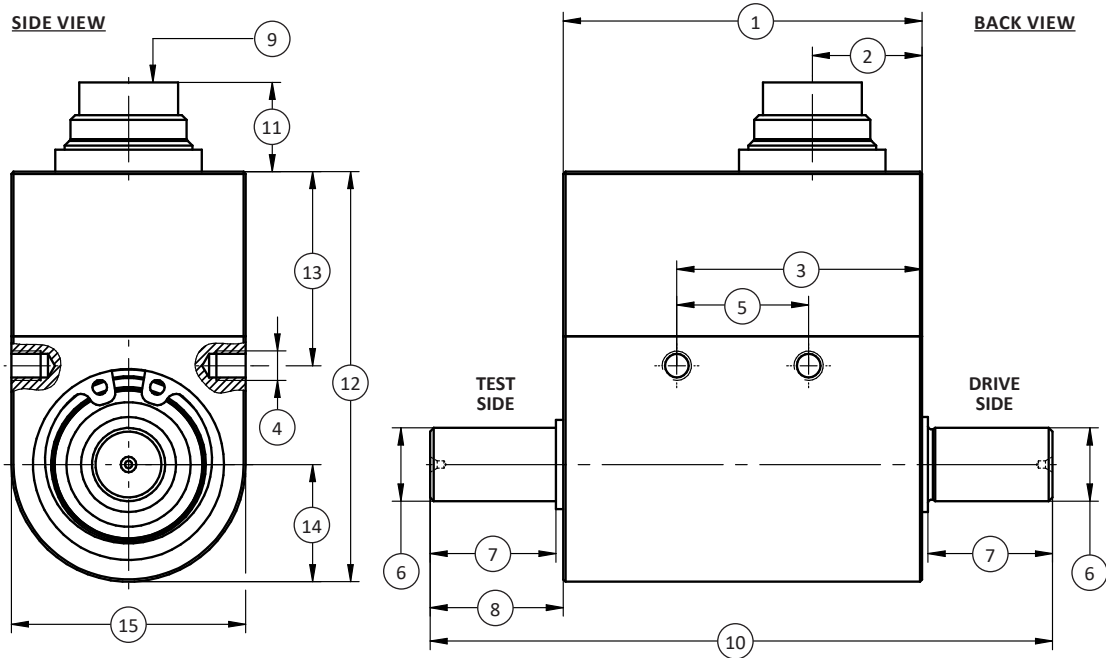
MODEL T4 (Shown)

OPTIONS

- Speed and angle output – 360 pulse TTL, 2-tracks 90° offset
- $\pm 10\text{V}$ torque output
- RS485
- Keyed shafts – per DIN 6885.1
- Mating cable assembly

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

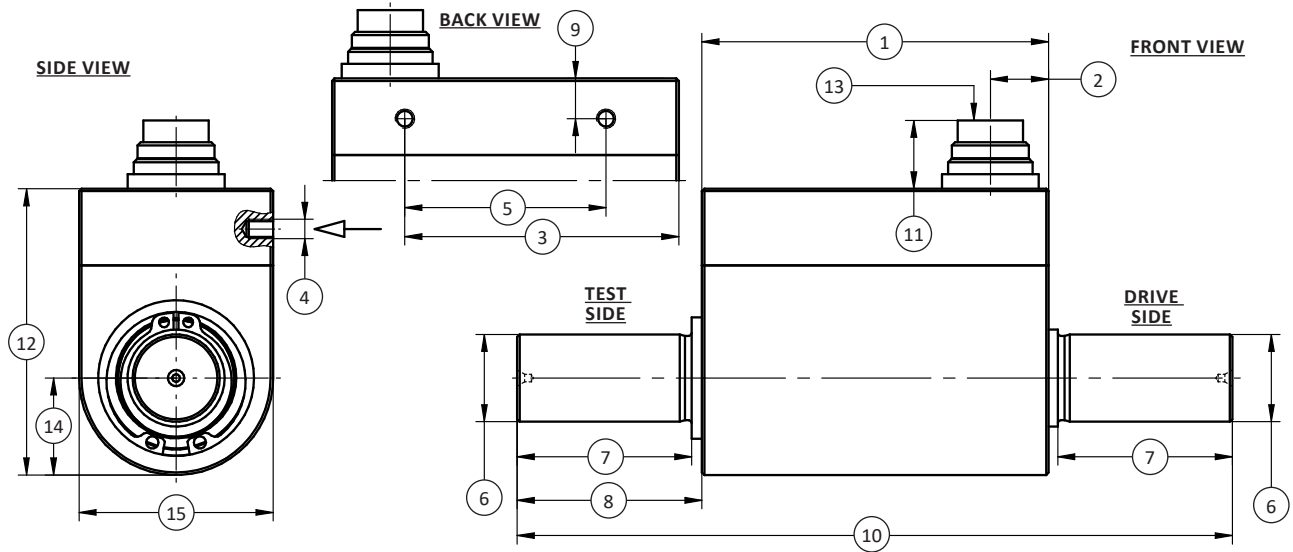
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DIMENSIONS

See Drawing	CAPACITIES			
	Metric (Nm)	U.S. (lbf-in)	Metric (Nm)	U.S. (lbf-in)
	0.1, 0.2, 0.5, 1, 2, 5	0.88, 1.77, 4.43, 8.85, 17.7, 44.3	10	88.5
	mm	in	mm	in
(1)	49	1.9	49	1.9
(2)	15	0.6	15	0.6
(3)	33.5	1.32	33.5	1.32
(4)	M4 ↓ 4	M4 ↓ 0.2	M4 ↓ 4	M4 ↓ 0.2
(5)	18	0.7	18	0.7
(6)	∅8g6	∅0.3148 / 0.3144	∅10g6	∅0.3935 / 0.3931
(7)	17	0.67	17	0.67
(8)	18	0.7	18	0.7
(9)	Connector 12-pin		Connector 12-pin	
(10)	85	3.35	85	3.35
(11)	12	0.5	12	0.5
(12)	56	2.2	56	2.2
(13)	26.5	1.04	26.5	1.04
(14)	16	0.6	16	0.6
(15)	32	1.3	32	1.3

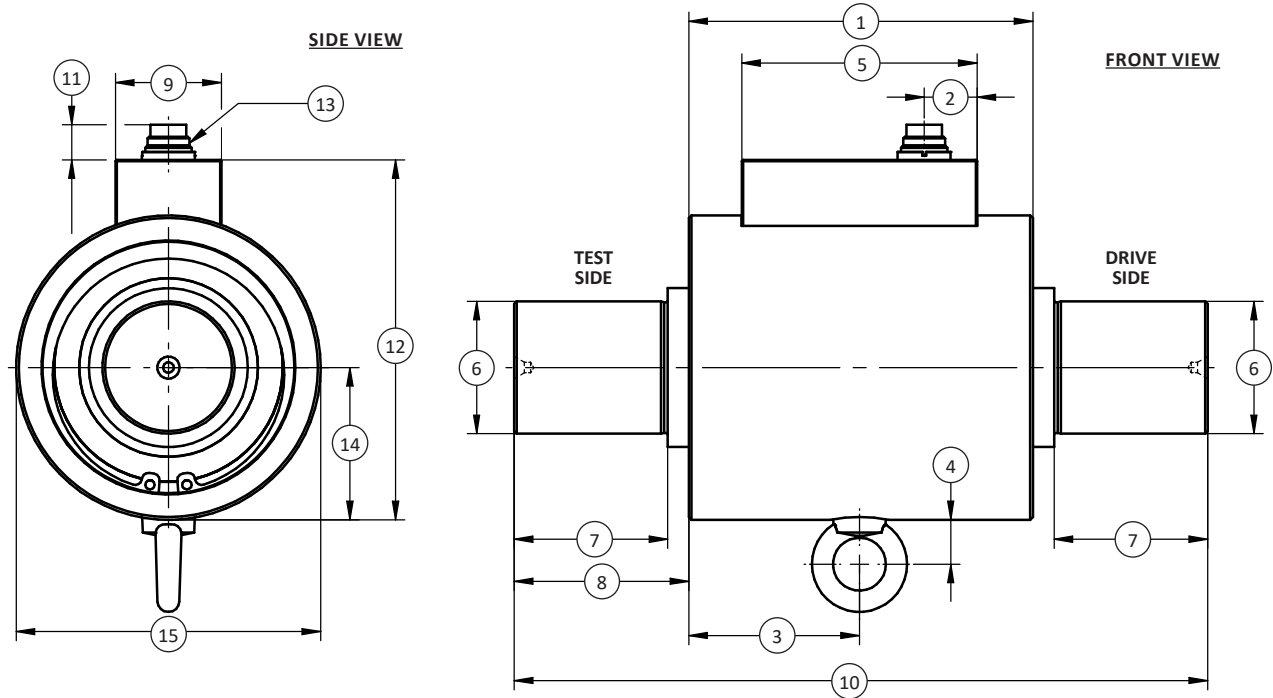
T4 GENERAL PURPOSE ROTARY TORQUE TRANSDUCER (U.S. & METRIC)



DIMENSIONS (CONTINUED)

See Drawing	CAPACITIES					
	Metric (Nm)	U.S. (lbf-in)	Metric (Nm)	U.S. (lbf-in)	Metric (Nm)	U.S. (lbf-in)
	20, 30	177, 265	50, 100	443, 885	200, 500	1.77K, 4.43K
	mm	in	mm	in	mm	in
(1)	71.5	2.81	71.5	2.81	72.5	2.85
(2)	12	0.5	12	0.5	15	0.6
(3)	56.5	2.2	56.5	2.2	51.5	2.03
(4)	M4 ↓ 5	M4 ↓ 0.2	M4 ↓ 5	M4 ↓ 0.2	M4 ↓ 6	M4 ↓ 0.2
(5)	41.5	1.63	41.5	1.63	29.5	1.16
(6)	∅18g6	∅0.7087 / 0.7082	∅18g6	∅0.7087 / 0.7082	∅32g6	∅1.2595 / 1.2589
(7)	18	0.71	36	1.42	38	1.50
(8)	20	0.79	38	1.50	43.5	1.71
(9)	8.3	0.33	8.3	0.33	8.3	0.33
(10)	111.5	4.39	147.5	5.81	159.5	6.28
(11)	14	0.6	14	0.6	14	0.6
(12)	59	2.32	59	2.32	76	2.99
(13)	Connector 12-pin		Connector 12-pin		Connector 12-pin	
(14)	20	0.79	20	0.79	29	1.14
(15)	40	1.57	40	1.57	58	2.28

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DIMENSIONS (CONTINUED)

See Drawing	CAPACITIES	
	Metric (Nm)	U.S. (lbf-in)
	1K	8.85K
	mm	in
(1)	130	5.12
(2)	20	0.8
(3)	64.5	2.54
(4)	17	0.7
(5)	89	3.5
(6)	Ø50g6	Ø1.9685 / 1.9675
(7)	58 TYP	2.28 TYP
(8)	66 TYP	2.60 TYP
(9)	40	1.6
(10)	262	10.3
(11)	13	0.5
(12)	136	5.4
(13)	Connector 12-pin	
(14)	57.5	2.26
(15)	Ø115	Ø4.5

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PERFORMANCE PARAMETERS

CAPACITY		MAX RPM	SPRING RATE	MOMENT OF INERTIA ¹		MAX THRUST LOAD ²		MAX SHEAR FORCE ²	
(Nm)	(lbf-in)			(NM/rad)	Drive Side	Test Side	(N)	(lbf)	(N)
0.1	0.88	15,000	1.8x10 ¹	1.9x10 ⁻⁶	2.8x10 ⁻⁷	42	9.44	0.9	0.20
0.2	1.77	15,000	1.8x10 ¹	1.9x10 ⁻⁶	2.8x10 ⁻⁷	58	13.0	1.2	0.27
0.5	4.43	15,000	1.2x10 ²	1.9x10 ⁻⁶	2.8x10 ⁻⁷	172	38.7	1.9	0.43
1	8.85	15,000	1.2x10 ²	1.9x10 ⁻⁶	2.8x10 ⁻⁷	227	51.0	2.9	0.65
2	17.7	15,000	3.6x10 ²	1.9x10 ⁻⁶	2.9x10 ⁻⁷	348	78.2	5.5	1.24
5	44.3	15,000	4.0x10 ²	1.9x10 ⁻⁶	2.9x10 ⁻⁷	650	146	14	3.15
10	88.5	15,000	9.3x10 ²	2.1x10 ⁻⁶	3.8x10 ⁻⁷	1K	225	26	5.85
20	177	15,000	4.5x10 ³	1.2x10 ⁻⁵	9.9x10 ⁻⁶	1.68K	378	43	9.67
30	265	15,000	4.5x10 ³	1.2x10 ⁻⁵	9.9x10 ⁻⁶	2.2K	495	65	14.6
50	443	15,000	8.5x10 ³	1.3x10 ⁻⁵	1.2x10 ⁻⁵	3.1K	697	80	18.0
100	885	12,000	8.5x10 ³	1.3x10 ⁻⁵	1.2x10 ⁻⁵	4.8K	1.08K	160	36.0
200	1.77K	10,000	6.7x10 ⁴	1.0x10 ⁻⁴	9.0x10 ⁻⁵	8K	1.80K	290	65.2
500	4.43K	10,000	7.1x10 ⁴	1.0x10 ⁻⁴	9.0x10 ⁻⁵	14K	3.15K	700	157
1K	8.85K	8,000	3.1x10 ⁵	1.6x10 ⁻³	1.1x10 ⁻³	23K	5.17K	900	202

Notes:
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 < 2.0 V / H > 3.5 V	NC	-
L	NC	-	RS485 Option	RS485 (A)
M	Housing	-	Housing	-

