

T12 SQUARE DRIVE TORQUE TRANSDUCER (U.S. & METRIC)

FEATURES & BENEFITS

- Capacities from 0.1 to 5K Nm (0.89 to 44.3K lbf-in)
- ± 5 VDC output
- 12 to 28 VDC supply
- Contactless - no slip rings

SPECIFICATIONS

		Standard	Enhanced
ACCURACY – (MAX ERROR)			
Combined Error – %FS		± 0.25	± 0.1
Nonrepeatability – %FS		± 0.05	± 0.02
TEMPERATURE			
Effect on Zero – %RO / deg	$^{\circ}\text{C}$	± 0.05	± 0.02
Effect on Output – % / deg	$^{\circ}\text{C}$	± 0.02	± 0.01
Rated Range	$^{\circ}\text{C}$	+5 to +45	+5 to +45
	$^{\circ}\text{F}$	+41 to +113	+41 to +113
Operating Range	$^{\circ}\text{C}$	0 to +60	0 to +60
	$^{\circ}\text{F}$	+32 to +140	+32 to +140
ELECTRICAL			
Torque Output – VDC		± 5	± 5
Bandwidth – kHz – dB		1 – 3	3 – 3
Calibration Signal – %RO		100	100
Supply Voltage – VDC		+12 to +28	+12 to +28
Supply Current – mA		60	60
Electrical Connection – pin		8 or 12	8 or 12
Resolution – bit		12	16
Sample Rate – kHz		10	10
MECHANICAL			
Safe Overload – %RO		200	200
Max Speed – RPM		Varies with capacity (see table)	Varies with capacity (see table)
Housing Material		Aluminum	Aluminum

STANDARD CONFIGURATION



MODEL T12 (Shown)

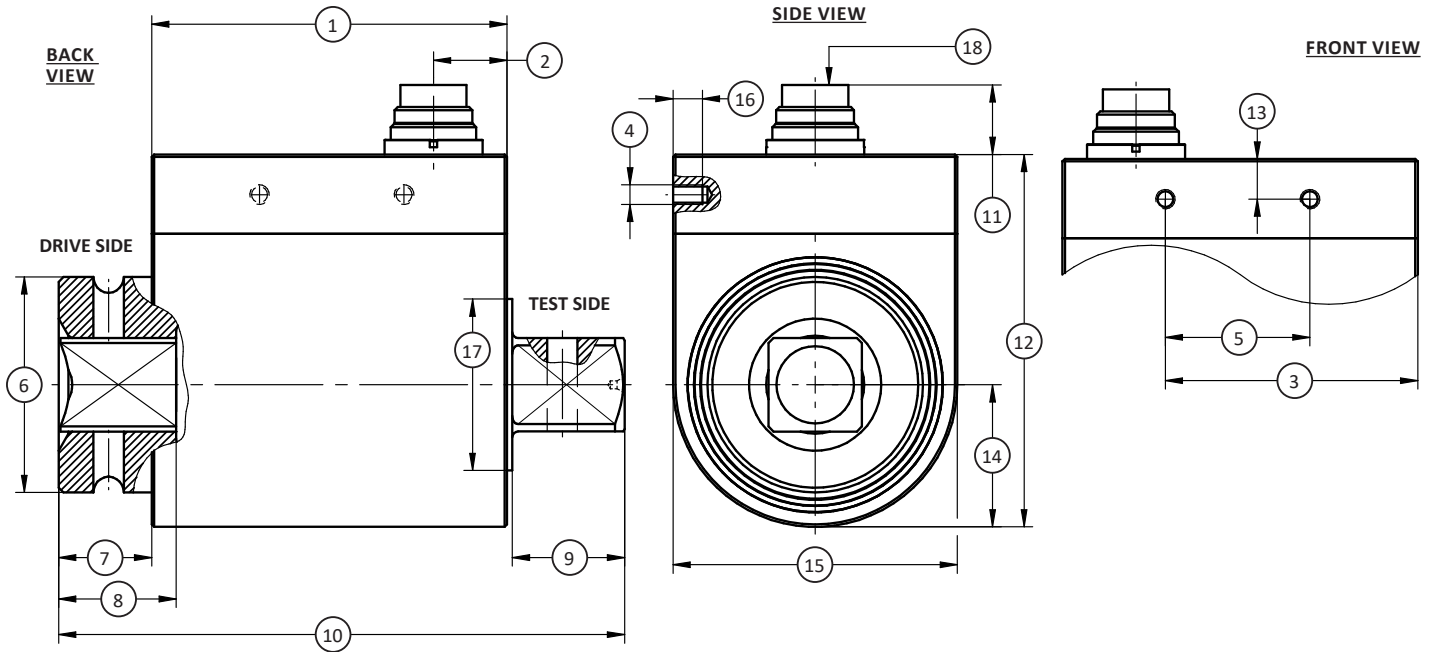
OPTIONS

- Angle measurement - 360 pulse TTL, 2-tracks 90° offset, available on capacities up to 1K Nm only
- +10 V torque output
- Enhanced accuracy – combined error $\pm 0.1\%$
- RS485 output (requires enhanced accuracy)
- USB Option Available

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	NC	–
D	Signal (GND)	0 VDC	NC	–
E	Supply (GND)	0 VDC	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	$L < 2.0 / H > 3.5\text{V}$	NC	–
L	NC	–	RS485 Option	RS485 (A)
M	Housing	–	Housing	–

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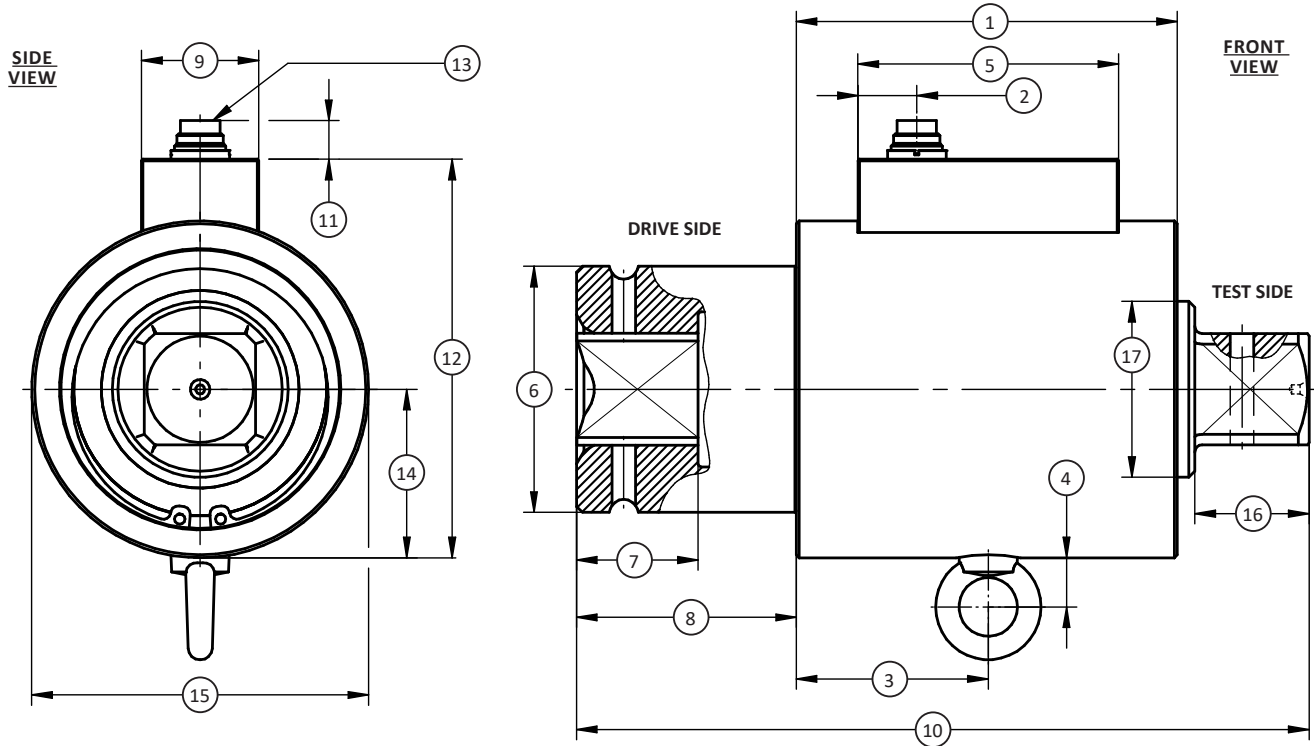


DIMENSIONS

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)
	0.1, 0.2, 0.5, 1, 2, 5, 10, 15, 20	0.85, 1.77, 4.43, 8.85, 17.7, 44.3, 88.5, 133, 177	35, 50, 63	310, 442, 558	100, 160, 200	885, 1.41K, 1.77K	500	4.43K	1K	8.85K
	1/4"		3/8"		1/2"		3/4"		1"	
mm	in	mm	in	mm	in	mm	in	mm	in	
(1)	49	1.9	71.5	2.82	71.5	2.82	72.5	2.86	72.5	2.86
(2)	15	0.6	12	0.47	29.8	1.17	15	0.6	15	0.6
(3)	33.5	1.3	56.5	2.22	56.5	2.22	51.5	2.03	51.5	2.03
(4)	M4		M4		M4		M4		M4	
(5)	18	0.7	41.5	1.64	41.5	1.64	29.5	1.16	29.5	1.16
(6)	∅13	∅0.5	∅22	∅0.87	∅29.8	∅1.17	∅44	∅1.7	∅54	∅2.1
(7)	6.5	0.3	11	0.43	13	0.51	19	0.75	29	1.14
(8)	8	0.3	-	-	-	-	24	0.9	26.5	1.04
(9)	7.2	0.3	10.4	0.41	15.1	0.61	22.9	0.90	27.4	1.08
(10)	64	2.5	94.5	3.72	100.5	3.96	115.5	4.55	130.5	5.14
(11)	12	0.5	14	0.6	14	0.6	14	0.6	14	0.6
(12)	56	2.2	59	2.32	59	2.32	76	2.99	76	2.99
(13)	26.5	1.0	8.2	0.32	8.2	0.32	8.2	0.32	8.2	0.32
(14)	16	0.6	20	0.79	20	0.79	29	1.14	29	1.14
(15)	32	1.3	40	1.58	40	1.58	58	2.29	58	2.29
(16)	4	0.2	5	0.2	5	0.2	6	0.24	6	0.24
(17)	∅10	∅0.4	∅20	∅0.8	∅20	∅0.8	∅35	∅1.4	∅35	∅1.4
(18)	Connector 12-pin		Connector 12-pin		Connector 12-pin		Connector 12-pin		Connector 12-pin	

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DIMENSIONS (CONTINUED)

See Drawing	CAPACITIES	
	Metric (Nm)	U.S. (lbf-in)
	2K, 5K	17K, 44.3 K
	1 1/2"	
	mm	in
(1)	130	5.1
(2)	20	0.8
(3)	65.5	2.6
(4)	17	0.7
(5)	89	3.5
(6)	Ø84	Ø3.3
(7)	41.5	1.6
(8)	75	3.0
(9)	40	1.6
(10)	250	9.8
(11)	13	0.5
(12)	136	5.4
(13)	Connector 12-pin	
(14)	57.5	2.3
(15)	Ø115	Ø4.5
(16)	39	1.5
(17)	Ø60	Ø2.4

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PERFORMANCE PARAMETERS

CAPACITY		SQUARE in	MAX RPM	SPRING RATE NM/rad	MOMENT OF INERTIA – J (Kg•m ²)		MAX THRUST LOAD		MAX SHEAR FORCE	
Nm	lbf-in				Drive Side	Test Side	N	lbf	N	lbf
0.1	0.88	1/4	3,000	1.8x10 ¹	2.1x10 ⁻⁶	2.3x10 ⁻⁷	42	9.4	1.2	0.27
0.2	1.77	1/4	3,000	1.8x10 ¹	2.1x10 ⁻⁶	2.3x10 ⁻⁷	42	9.4	1.2	0.27
0.5	4.43	1/4	3,000	1.2x10 ²	2.1x10 ⁻⁶	2.3x10 ⁻⁷	185	41.6	2.9	0.65
1	8.85	1/4	3,000	1.2x10 ²	2.1x10 ⁻⁶	2.3x10 ⁻⁷	260	58.5	4.7	1.06
2	17.7	1/4	4,000	3.0x10 ²	2.1x10 ⁻⁶	2.4x10 ⁻⁷	480	108	12.2	2.74
5	44.3	1/4	4,000	5.9x10 ²	2.1x10 ⁻⁶	2.5x10 ⁻⁷	870	196	30	6.74
10	88.5	1/4	4,000	7.3x10 ²	2.1x10 ⁻⁶	2.7x10 ⁻⁷	1.15K	259	45	10.1
15	133	1/4	4,000	7.3x10 ²	2.1x10 ⁻⁶	2.7x10 ⁻⁷	1.15K	259	45	10.1
20	177	1/4	4,000	7.3x10 ²	2.1x10 ⁻⁶	2.7x10 ⁻⁷	1.15K	259	45	10.1
35	310	3/8	3,000	8.6x10 ³	9.8x10 ⁻⁶	1.1x10 ⁻⁵	3.3K	742	110	24.7
50	443	3/8	3,000	1.0x10 ⁴	9.9x10 ⁻⁶	1.1x10 ⁻⁵	4.2K	944	155	34.8
63	558	3/8	3,000	1.1x10 ⁴	1.0x10 ⁻⁵	1.1x10 ⁻⁵	4.9K	1.1K	190	42.7
100	885	1/2	2,500	1.2x10 ⁴	1.6x10 ⁻⁵	1.1x10 ⁻⁵	4K	899	135	30.3
160	1.42K	1/2	2,500	1.5x10 ⁴	1.6x10 ⁻⁵	1.2x10 ⁻⁵	5.5K	1.24K	215	48.3
200	1.77K	1/2	2,500	1.5x10 ⁴	1.6x10 ⁻⁵	1.2x10 ⁻⁵	5.5K	1.24K	215	48.3
500	4.43K	3/4	2,500	8.8x10 ⁴	9.8x10 ⁻⁵	7.7x10 ⁻⁵	13.5K	3.03K	840	189
1K	8.85K	1	1,500	1.3x10 ⁵	2.1x10 ⁻⁴	1.1x10 ⁻⁴	16.5K	3.71K	1K	225
2K	17.7K	1 1/2	1,000	2.1x10 ⁵	3.5x10 ⁻³	1.8x10 ⁻³	27K	6.07K	1.65K	371
5K	44.3K	1 1/2	1,000	2.7x10 ⁵	3.5x10 ⁻³	1.8x10 ⁻³	51K	11.5K	4K	899