

T25 HIGH SPEED ROTARY TORQUE TRANSDUCER (U.S. & METRIC)

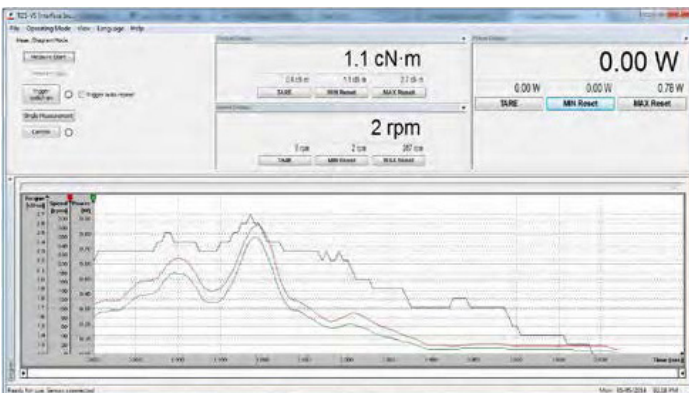
FEATURES & BENEFITS

- Capacities from 0.1 Nm to 5K Nm (0.885 to 44.3K lbf-in)
- 0.1% combined error
- Speed up to 30K RPM
- Unique design eliminates RPM dependent bearing friction effects
- Foot or float mount
- Remote activated on-shaft shunt calibration
- ±5VDC output
- 12-28 VDC supply
- Contactless data transmission
- Digital electronics
- 10 kHz sample rate
- 16-bit resolution

OPTIONS

- ±0.05% combined error
- Encoder for speed/angle measurement
- Keyed shaft per DIN 6885.1
- Right angle mating connector or cable assembly
- ±10 VDC output
- RS485 output
- USB output – includes encoder option and display graphing and logging software (replaces ±5V output)
- USB Option Available

SOFTWARE FOR USB OPTION



STANDARD CONFIGURATION

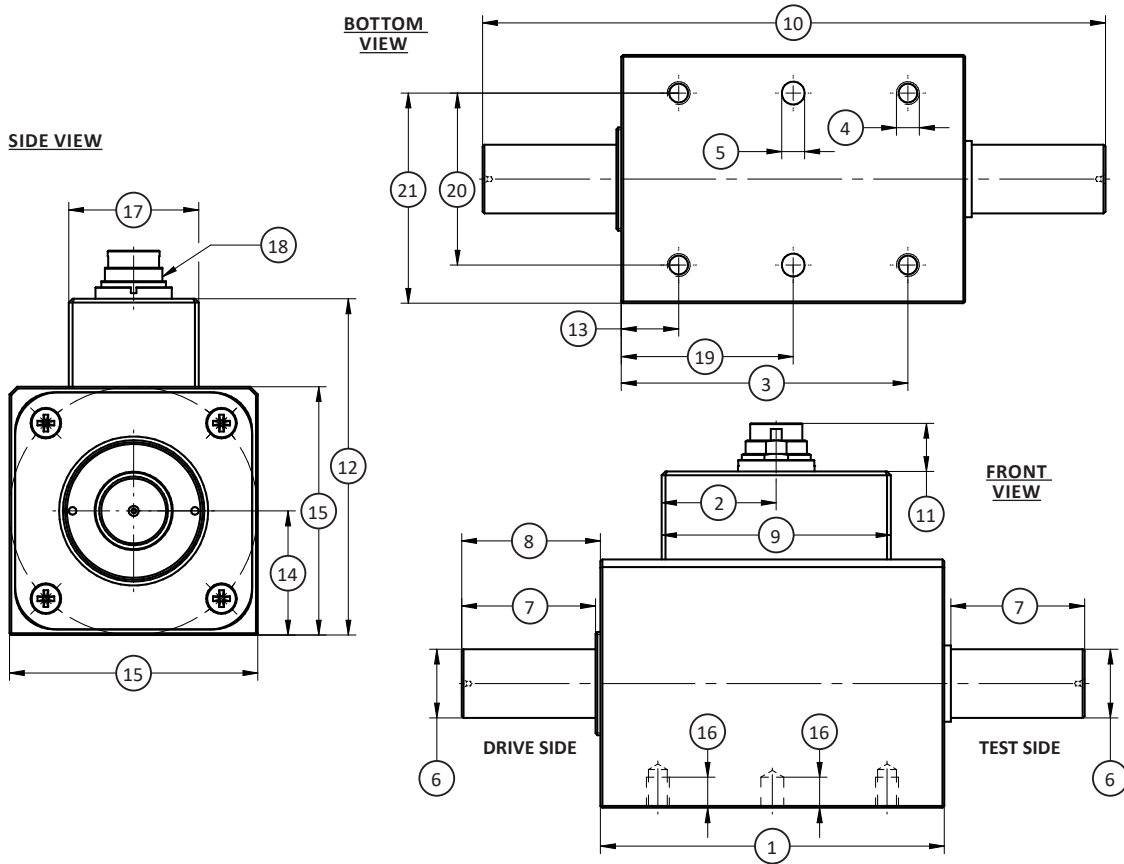


Model T25 (Shown)

SPECIFICATIONS

| ACCURACY - (MAX ERROR) | | |
|----------------------------|-----------------------------------------------------------------|-------------|
| Combined Error – %FS | ±0.1 | |
| Nonrepeatability – %RO | ±0.02 | |
| Resolution – bit | 16 | |
| TEMPERATURE | | |
| Effect on Zero – %RO / deg | °C | ±0.02 |
| | °F | ±0.01 |
| Effect on Output – % / deg | °C | ±0.01 |
| | °F | ±0.006 |
| Compensated Range | °C | +5 to +45 |
| | °F | +41 to +113 |
| Operating Range | °C | 0 to +60 |
| | °F | +32 to +140 |
| Storage Range | °C | -10 to +70 |
| | °F | +14 to +158 |
| ELECTRICAL | | |
| Supply Voltage – VDC | +12 to +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 Option | 360 pulse/rev, 2-track, +5V TTL, 90° offset, quadrature encoder | |
| MECHANICAL | | |
| Safe Overload – %RO | 200 | |
| Max Speed – RPM | Varies with capacity (see table) | |
| Shaft Material | Alloy Steel | |
| Housing Material | Aluminum | |
| Level of Protection | IP 50 | |

T25 HIGH SPEED ROTARY TORQUE TRANSDUCER (U.S. & METRIC)



DIMENSIONS

| Parameters | NOMINAL TORQUE | | | | | | | | | | | |
|------------|------------------------|-------------------------------------|-------------|--------------------|-----------------|--------------------|-------------|--------------------|-------------|--------------------|-------------|--------------------|
| | 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) | Metric (Nm) | U.S. (lbf-in) |
| | 0.1, 0.2, 0.5, 1, 2, 5 | 0.885, 1.77, 4.43, 8.85, 17.7, 44.3 | 10 | 88.5 | 20, 30, 50, 100 | 177, 266, 443, 885 | 200, 500 | 1770, 4425 | 1K | 8.85K | 2K, 5K | 17.7K, 44.3K |
| | mm | in | mm | in | mm | in | mm | in | mm | in | mm | in |
| (1) | 71 | 2.8 | 71 | 2.8 | 90 | 3.5 | 120 | 4.7 | 120 | 4.7 | 144 | 5.7 |
| (2) | 30 | 1.2 | 30 | 1.2 | 30 | 1.2 | 30 | 1.2 | 30 | 1.2 | 30 | 1.2 |
| (3) | 59 | 2.3 | 59 | 2.3 | 75 | 3.0 | 10 | 0.4 | 10 | 0.4 | 119 | 4.7 |
| (4) | M4 | | M4 | | M6 | | M8 | | M8 | | M12 | |
| (5) | ∅4 H7 | ∅(0.1580 / 0.1575) | ∅4 H7 | ∅(0.1580 / 0.1575) | ∅6 H7 | ∅(0.2367 / 0.2362) | ∅8 H7 | ∅(0.3156 / 0.3150) | ∅8H7 | ∅(0.3156 / 0.3150) | ∅12 H7 | ∅(0.4731 / 0.4724) |
| (6) | ∅8 g6 | ∅(0.3148 / 0.3144) | ∅10 g6 | ∅(0.3935 / 0.3931) | ∅18 g6 | ∅(0.7084 / 0.7080) | ∅32 g6 | ∅(1.2595 / 1.2589) | ∅42 g6 | ∅(1.6532 / 1.6526) | ∅70 g6 | ∅(2.7555 / 2.7548) |
| (7) | 16.5 | 0.65 | 16.5 | 0.65 | 35 | 1.4 | 55 | 2.2 | 55 | 2.2 | 110 | 4.3 |
| (8) | 19 | 0.7 | 19 | 0.7 | 35.5 | 1.40 | 56.5 | 2.22 | 56.5 | 2.22 | 114 | 4.5 |
| (9) | 60 | 2.4 | 60 | 2.4 | 60 | 2.4 | 60 | 2.4 | 60 | 2.4 | 60 | 2.4 |
| (10) | 110 | 4.3 | 110 | 4.3 | 163 | 6.4 | 234 | 9.2 | 234 | 9.2 | 372 | 14.6 |
| (11) | 13 | 0.5 | 13 | 0.5 | 13 | 0.5 | 13 | 0.5 | 13 | 0.5 | 13 | 0.5 |
| (12) | 63 | 2.5 | 63 | 2.5 | 88 | 3.5 | 118 | 4.6 | 118 | 4.6 | 163 | 6.4 |
| (13) | 12 | 0.5 | 12 | 0.5 | 15 | 0.6 | 20 | 0.8 | 20 | 0.8 | 25 | 1.0 |

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

T25 HIGH SPEED ROTARY TORQUE TRANSDUCER (U.S. & METRIC)

DIMENSIONS (CONTINUED)

| Parameters | NOMINAL TORQUE | | | | | | | | | | | |
|------------|------------------------|------------------------------------|-----------------------|------------------------|-----------------------|------------------------|-----------------------|------------------------|-----------------------|------------------------|---------------------|-----------------------|
| | 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) | Metric (Nm) | U.S. (lbf-in) |
| | 0.1, 0.2, 0.5, 1, 2, 5 | 0.89, 1.77, 4.43, 8.85, 17.7, 44.3 | 10 | 88.5 | 20, 30, 50, 100 | 177, 266, 443, 885 | 200, 500 | 1770, 4425 | 1K | 8.85K | 2K, 5K | 17.7K, 44.3K |
| | mm | in | mm | in | mm | in | mm | in | mm | in | mm | in |
| (14) | 20 ^{±0.05} | 0.8 ^{±0.002} | 20 ^{±0.05} | 0.8 ^{±0.002} | 32.5 ^{±0.05} | 1.28 ^{±0.002} | 47.5 ^{±0.05} | 1.87 ^{±0.002} | 47.5 ^{±0.05} | 1.87 ^{±0.002} | 70 ^{±0.05} | 2.8 ^{±0.002} |
| (15) | 40 | 1.6 | 40 | 1.6 | 65 | 2.6 | 95 | 3.7 | 95 | 3.7 | 140 | 5.5 |
| (16) | 8 | 0.3 | 8 | 0.3 | 8 | 0.3 | 14 | 0.6 | 14 | 0.6 | 20 | 0.8 |
| (17) | 34 | 1.3 | 34 | 1.3 | 34 | 1.3 | 34 | 1.3 | 34 | 1.3 | 34 | 1.3 |
| (18) | 12-pin connector | | 12-pin connector | | 12-pin connector | | 12-pin connector | | 12-pin connector | | 12-pin connector | |
| (19) | 35.5 ^{±0.05} | 1.40 ^{±0.002} | 35.5 ^{±0.05} | 1.40 ^{±0.002} | 45 ^{±0.05} | 1.8 ^{±0.002} | 60 ^{±0.05} | 2.4 ^{±0.002} | 60 ^{±0.05} | 2.4 ^{±0.002} | 72 ^{±0.05} | 2.8 ^{±0.002} |
| (20) | 30 | 1.2 | 30 | 1.2 | 45 | 1.8 | 70 | 2.8 | 70 | 2.8 | 100 | 3.9 |
| (21) | 35 | 1.4 | 35 | 1.4 | 55 | 2.3 | 82.5 | 3.25 | 82.5 | 3.25 | 120 | 4.7 |

PERFORMANCE PARAMETERS

| CAPACITY | | WEIGHT | | MAX RPM | SPRING RATE | MOMENT OF INERTIA (kg•m ²) | | MAX THRUST LOAD** | | MAX SHEAR FORCE** | |
|----------|----------|--------|-------|---------|---------------------|----------------------------------------|----------------------|-------------------|-------|-------------------|------|
| (Nm) | (lbf-in) | (kg) | lbs | | | (NM/rad) | Drive Side | Test Side | (N) | (lbf) | (N) |
| 0.1 | 0.89 | 0.5 | 1.10 | 30,000 | 1.8x10 ¹ | 9.2x10 ⁻⁶ | 2.5x10 ⁻⁷ | 43 | 10.0 | 1.5 | 0.34 |
| 0.2 | 1.77 | 0.5 | 1.10 | 30,000 | 1.8x10 ¹ | 9.2x10 ⁻⁶ | 2.5x10 ⁻⁷ | 58 | 13.0 | 2 | 0.4 |
| 0.5 | 4.43 | 0.5 | 1.10 | 30,000 | 9.4x10 ¹ | 9.2x10 ⁻⁶ | 2.5x10 ⁻⁷ | 240 | 54.0 | 3 | 0.7 |
| 1 | 8.85 | 0.5 | 1.10 | 30,000 | 9.4x10 ¹ | 9.2x10 ⁻⁶ | 2.5x10 ⁻⁷ | 240 | 54.0 | 3 | 0.7 |
| 2 | 17.7 | 0.5 | 1.10 | 30,000 | 3.7x10 ² | 9.2x10 ⁻⁶ | 2.5x10 ⁻⁷ | 480 | 108 | 7 | 1.6 |
| 5 | 44.3 | 0.5 | 1.10 | 30,000 | 7.7x10 ² | 9.2x10 ⁻⁶ | 2.6x10 ⁻⁷ | 900 | 202 | 16.5 | 3.71 |
| 10 | 88.5 | 0.6 | 1.32 | 30,000 | 8.8x10 ² | 9.3x10 ⁻⁶ | 3.4x10 ⁻⁷ | 1.05K | 236 | 21 | 4.7 |
| 20 | 177 | 1.6 | 3.53 | 20,000 | 5.1x10 ³ | 1.2x10 ⁻⁴ | 6.8x10 ⁻⁶ | 2.3K | 517 | 44 | 9.9 |
| 30 | 266 | 1.6 | 3.53 | 20,000 | 5.1x10 ³ | 1.2x10 ⁻⁴ | 6.8x10 ⁻⁶ | 2.3K | 517 | 44 | 9.9 |
| 50 | 443 | 1.6 | 3.53 | 20,000 | 9.6x10 ³ | 1.2x10 ⁻⁴ | 7.4x10 ⁻⁶ | 5K | 1.12K | 142 | 31.9 |
| 100 | 885 | 1.6 | 3.53 | 20,000 | 9.6x10 ³ | 1.2x10 ⁻⁴ | 7.4x10 ⁻⁶ | 5K | 1.12K | 142 | 31.9 |
| 200 | 1.77K | 4.8 | 10.58 | 15,000 | 8.9x10 ⁴ | 5.4x10 ⁻⁴ | 4.4x10 ⁻⁴ | 10K | 2.25K | 275 | 61.8 |
| 500 | 4.43K | 4.8 | 10.58 | 15,000 | 1.3x10 ⁵ | 5.4x10 ⁻⁴ | 4.4x10 ⁻⁴ | 13K | 2.92K | 400 | 89.9 |
| 1K | 8.85K | 5.6 | 12.35 | 15,000 | 1.7x10 ⁵ | 6.4x10 ⁻⁴ | 5.3x10 ⁻⁴ | 20K | 4.5K | 920 | 207 |
| 2K | 17.7K | 19.0 | 41.89 | 12,000 | 6.3x10 ⁵ | 5.7x10 ⁻³ | 5.1x10 ⁻³ | 34K | 7.64K | 1.25K | 281 |
| 5K | 44.3K | 19.0 | 41.89 | 12,000 | 9.6x10 ⁵ | 5.8x10 ⁻³ | 5.2x10 ⁻³ | 64K | 14.4K | 2.9K | 652 |

T25 HIGH SPEED ROTARY TORQUE TRANSDUCER (U.S. & METRIC)

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 | - |

*** Allowable without significant effect on measurement and applies to unsupported shaft only*