

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
- ±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 | | ±0.1 |
| Nonrepeatability – %FS | | ±0.02 |
| TEMPERATURE | | |
| Effect on Zero – %RO / deg | °C | ±0.02 |
| Effect on Output – % / deg | °C | ±0.01 |
| Rated Range | °C | +5 to +45 |
| | °F | +41 to +113 |
| Operating Range | °C | 0 to +60 |
| | °F | +32 to +140 |
| ELECTRICAL | | |
| Output – VDC | | ±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)

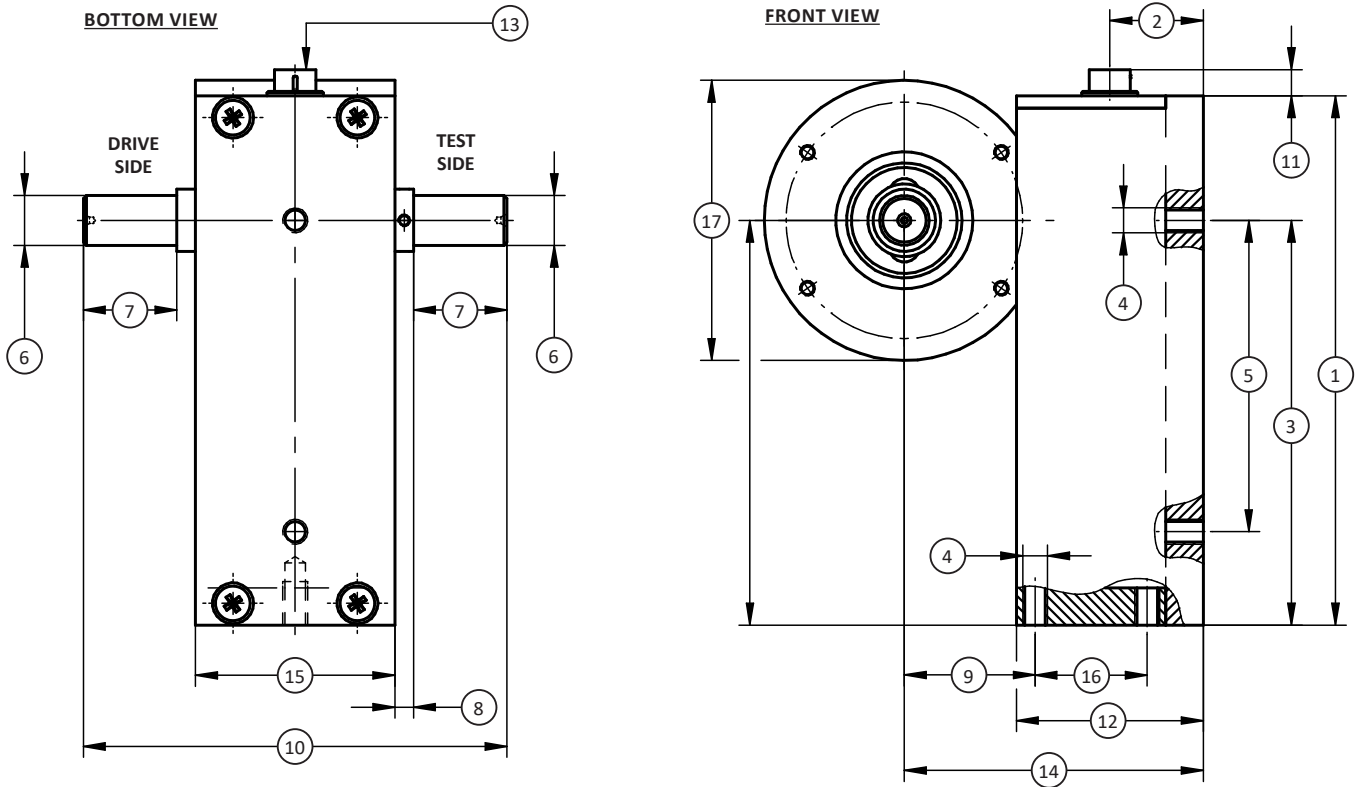
OPTIONS

- +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 (+) | ±5 (±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 ²) | | 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 ⁻¹ | 7.5x10 ⁻⁷ | 1.1x10 ⁻⁸ | 35 | 7.9 | 1 | 0.22 |
| 0.01 | 0.09 | 20,000 | 4.6x10 ⁻¹ | 7.5x10 ⁻⁷ | 1.1x10 ⁻⁸ | 35 | 7.9 | 1 | 0.22 |
| 0.02 | 0.18 | 30,000 | 3.7x10 ⁰ | 7.6x10 ⁻⁷ | 1.3x10 ⁻⁸ | 35 | 7.9 | 1 | 0.22 |
| 0.05 | 0.44 | 30,000 | 3.7x10 ⁰ | 7.6x10 ⁻⁷ | 1.3x10 ⁻⁸ | 40 | 9.0 | 1.1 | 0.25 |
| 0.1 | 0.89 | 30,000 | 1.8x10 ¹ | 8.6x10 ⁻⁷ | 3.8x10 ⁻⁸ | 43 | 10.0 | 1.5 | 0.34 |
| 0.2 | 1.77 | 30,000 | 1.8x10 ¹ | 8.6x10 ⁻⁷ | 3.8x10 ⁻⁸ | 59 | 13.3 | 2.3 | 0.52 |
| 0.5 | 4.43 | 30,000 | 1.2x10 ² | 8.6x10 ⁻⁷ | 3.8x10 ⁻⁸ | 185 | 41.6 | 4.2 | 0.94 |
| 1 | 8.85 | 30,000 | 1.2x10 ² | 8.6x10 ⁻⁷ | 3.8x10 ⁻⁸ | 255 | 57.3 | 7.2 | 1.62 |
| 2 | 17.7 | 30,000 | 6.2x10 ² | 9.1x10 ⁻⁷ | 8.3x10 ⁻⁸ | 520 | 117 | 14 | 3.15 |
| 5 | 44.3 | 30,000 | 6.2x10 ² | 9.1x10 ⁻⁷ | 8.3x10 ⁻⁸ | 520 | 117 | 14 | 3.15 |
| 10 | 88.5 | 30,000 | 1.5x10 ³ | 9.8x10 ⁻⁷ | 1.6x10 ⁻⁷ | 900 | 202 | 33 | 7.42 |
| 20 | 177 | 20,000 | 7.4x10 ³ | 1.2x10 ⁻⁵ | 3.6x10 ⁻⁶ | 2.15K | 483 | 62 | 13.9 |
| 50 | 443 | 20,000 | 1.1x10 ⁴ | 1.2x10 ⁻⁵ | 3.9x10 ⁻⁶ | 4K | 899 | 160 | 36.0 |
| 100 | 885 | 20,000 | 1.1x10 ⁴ | 1.2x10 ⁻⁵ | 3.9x10 ⁻⁶ | 4K | 899 | 160 | 36.0 |
| 150 | 1.33K | 20,000 | 1.2x10 ⁴ | 1.2x10 ⁻⁵ | 4.2x10 ⁻⁶ | 5K | 1.12K | 220 | 49.5 |