

# Model TR1 - Tru-Trac™

## Encoder and spring loaded measuring wheel



### Features

- Encoder and Measuring Wheel Solution Integrated Into One Compact Unit
- Spring Loaded Torsion Arm Makes Wheel Pressure Adjustments So Easy
- Easily Installed In a Vertical, Horizontal, or Upside-Down Orientation
- Operates Over a Variety Of Surfaces At Speeds Up To 3000 Feet per Minute
- Integrated Module Simplifies Your System Design, Reducing Cost

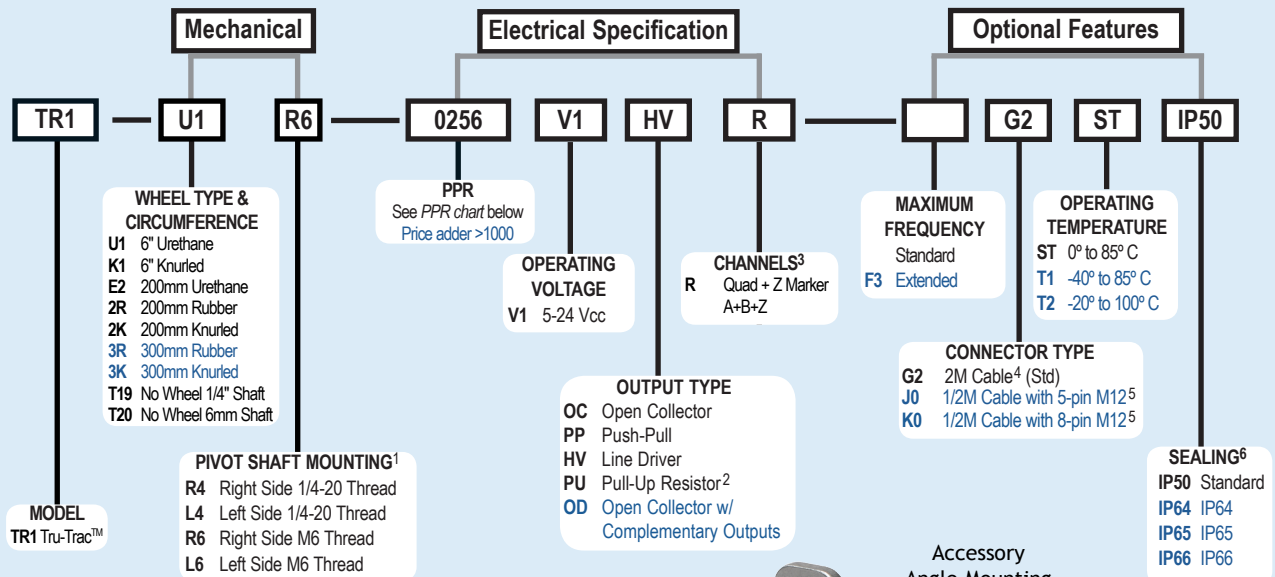
An integrated encoder and spring loaded measuring wheel assembly available in one, easy-to-use compact unit. The Tru-Trac™ is a versatile solution for tracking velocity, position, or distance over a wide variety of surfaces in almost any application. Its spring-loaded torsion arm provides a simple-to-adjust torsion load, allowing the Tru-Trac™ to be mounted in almost any orientation, even upside-down. The threaded shaft on the pivot axis is field reversible providing mounting access from either side. The Tru-Trac™ housing is a durable, conductive composite material that will eliminate static build up. With operating speeds up to 3000 Feet Per Minute and a wide variety of configuration options, it is easy to see the Tru-Trac™ is the ideal solution for countless applications.

### Common Applications

Web Tension Control, Paper Monitoring, Glue Dispensing, Linear Material Monitoring, Conveyor Systems, Printing, Labelling, Document Handling

### Model TR1 Ordering Guide

Blue type indicates price adder options. Not all configuration combinations may be available. Contact Customer Service for details.



For specification assistance call Customer Service at +44 (0)1978 262100

#### Model TR1 PPR Options

0001 thru 0189*	0198	0200	0250
0256	0300	0315	0360
0500	0512	0580	0600
0800	1000	1024	1125
1250	1500	1800	2000
2500	2540	3000	3600
4096	5000	6000	7200
10,000			8192

\*Contact Customer Service for Availability

New PPR values are periodically added to those listed. Contact Customer Service to determine all currently available values. Special disk resolutions are available upon request and may be subject to a one-time NRE fee.



Accessory Angle Mounting Bracket for TR1 Tru-Trac™ can be ordered separately as part #140104 Dimensional Drawing Located in Accessories Section.

#### NOTES:

- 1 Shaft is reversible in the field.
- 2 With input voltage higher than 16 Vcc, The operating temperature is limited to 85°C.
- 3 Contact customer service for non-standard index gating or phase relationship options.
- 4 For non-standard cable lengths - Contact Customer Service for availability and cost.
- 5 5-Pin not available with Line Driver(HV) output. Additional cable lengths available Please consult Customer Service.
- 6 Increased starting torque with IP64+ selection.

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### Model TR1 Specifications

#### Electrical

- Input Voltage ..... 4.75 to 28 VCC max for temperatures up to 85° C  
4.75 to 24 VCC for temperatures between 85° C to 100° C
- Input Current ..... 100 mA max (65 mA typical) with no output load
- Output Format ..... Incremental- Two square waves in quadrature with channel A leading B for clockwise shaft rotation, as viewed from the wheel side. See *Waveform Diagrams* below.
- Output Types ..... Open Collector- 20 mA max per channel  
Push-Pull- 20 mA max per channel  
Pull-Up 20mA max per channel  
Line Driver- 20 mA max per channel (Meets RS 422 at 5 Vcc supply)
- Index ..... Once per revolution.  
0190 to 2540 PPR: Gated to output A  
0001 to 0189 PPR: Ungated  
See *Waveform Diagrams* below.
- Max. Frequency ..... Standard Frequency Response is 200 kHz for PPR 1 to 2540  
500 kHz for PPR 2541 to 5000  
1 MHz for PPR 5001 to 10,000  
Extended Frequency Response (optional) is 300 kHz for PPR 2000, 2048, 2500, and 2540
- Noise Immunity ..... Tested to BS EN61000-6-2; BS EN50081-2; BS EN61000-4-2; BS EN61000-4-3; BS EN61000-4-6, BS EN500811
- Symmetry ..... 180° (±18°) electrical
- Quad. Phasing ..... 90° (±22.5°) electrical
- Min. Edge Sep ..... 67.5° electrical
- Accuracy ..... Within 0.017° mechanical or 1 arc-minute from true position. (for PPR>189)

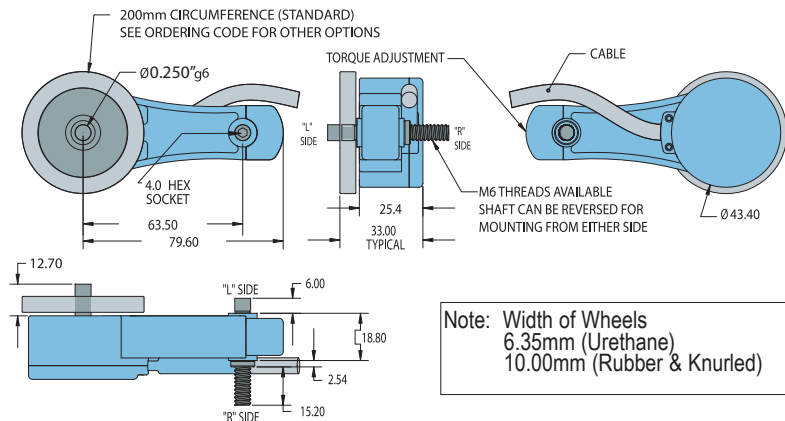
#### Mechanical

- Max Shaft Speed .... 6000 RPM. Higher speeds may be achievable, contact Customer Service.
- Shaft Material ..... Stainless Steel
- Shaft Tolerance ..... g6
- Radial Shaft Load .. 2.5kg max. Rated load of 1.25kg to 1.75kg for bearing life of  $1.2 \times 10^{10}$  revolutions
- Axial Shaft Load..... 2.5kg max. Rated load of 1.25kg to 1.75kg for bearing life of  $1.2 \times 10^{10}$  revolutions
- Starting Torque..... IP50  $3.531 \times 10^{-4}$  Nm  
IP64  $2.825 \times 10^{-3}$  Nm
- Electrical Conn..... 2M cable (foil and braid shield, 24 AWG conductors), 5-Pin & 8-pin M12 (12 mm) in-line connector with 0.5M cable (braid shield)
- Mounting ..... Pivot shaft can be mounted from either side of the Tru-Trac™ housing, and is reversible in the field. Specify 1/4-20 or M6 threads
- Housing ..... Stainless steel fibres in a high temperature nylon composite
- Wheel Width..... 6.35mm to 10mm
- Weight ..... 150 grams typical

#### Environmental

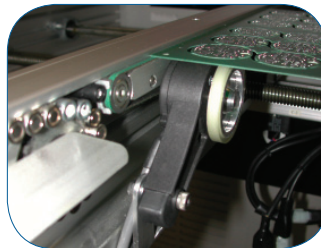
- Operating Temp..... -0° to +70° C for standard models  
-40° to +85° C for low temperature option  
-20° to +100° C for high temperature option
- Storage Temp..... -25° to +85° C
- Humidity ..... 98% RH non-condensing
- Vibration ..... 10 g @ 58 to 500 Hz
- Shock ..... 80 g @ 11 ms duration
- Sealing ..... IP50 standard; IP64 available

### Model Tr1 Tru-Trac™

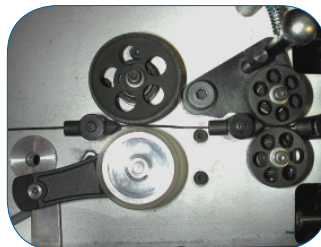


All dimensions are in mm with a tolerance of  $\pm 0.127$ mm or  $\pm 0.254$  unless otherwise specified

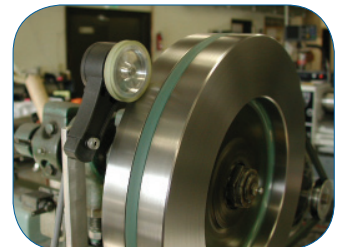
### Model Tr1 Tru-Trac™ Applications



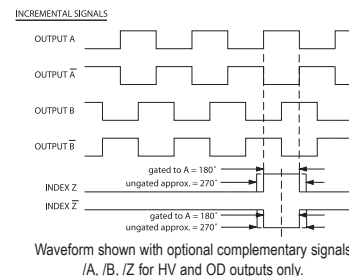
**For Linear Applications** the Tru-Trac™ can be mounted above or below the moving object, and the tension on the wheel adjusted for a wide range of applications such as packaging, conveyors, mail sorting, cut to length, labelling, gantries etc.



**For Rotational Applications** the Tru-Trac™ can be mounted in any orientation to monitor the position or velocity of many types of rotating equipment such as web tension control drums, rotary tables, printing, spooling, etc.



#### Waveform Diagrams

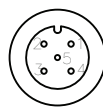


#### Wiring Table

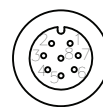
Function	Cable Wire Color	5-pin M12 <sup>2</sup>	8-pin M12 <sup>2</sup>
0 Volts	Black	3	7
+ Vcc	White	1	2
A	Brown	4	1
A'	Yellow	--	3
B	Red	2	4
B'	Green	--	5
Z	Orange	5	6
Z'	Blue	--	8
Shield	Bare <sup>1</sup>	--	--

<sup>1</sup>Cable shield (bare wire) is connected to internal case.

<sup>2</sup>Cable shield and M12 connector body is connected to internal case.



5-pin M12



8-pin M12

Linear Encoders