

# TR3 Heavy Duty Tru-Trac™

## Encoder and Spring Loaded Measuring Wheel



Mount Options



**An integrated heavy duty encoder and spring loaded measuring wheel assembly all in one, easy-to-use, compact unit. Available in a single, or optional dual-wheel format, the TR3 Heavy Duty Tru-Trac™ is a versatile solution for tracking velocity, position or distance over a wide variety of surfaces in almost any industrial application.**

Its spring loaded torsion arm provides a simple-to-adjust torsion load, allowing the TR3 Heavy Duty Tru-Trac™ to be mounted in any orientation, even upside-down. The TR3 Heavy Duty Tru-Trac™ housing is an all metal work horse, specifically designed to take on your toughest application environments at operating speeds up to 3000 feet per minute. Just one look and it's easy to see the TR3 Heavy Duty Tru-Trac™ is the ideal solution for countless applications.

### Key Features

- Heavy Duty Encoder And Measuring Wheel Solution Integrated Into One Industrial Strength Unit
- Spring Loaded Torsion Arm Makes Wheel Pressure Adjustments A Snap
- 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

### Applications

- Lumber
- Corrugated
- Converting
- Metal Roll Forming
- Paper Monitoring
- Glue Dispensing
- Linear Material Monitoring
- Conveyor Systems
- Printing
- Labelling
- Mining
- Construction

## Ordering Information

Blue type indicates price adder options. Not all configuration combinations may be available.

Mechanical			Electrical			Optional Features					
						Leave Blank For Standard Options -20° to +85°C Std    IP50 Std    None Std					
<b>TR3</b>	<b>U3</b>	<b>A</b>	<b>0500</b>	<b>V1</b>	<b>A</b>	<b>OC</b>	<b>F00</b>				
<b>MODEL</b> TR3 Tru-Trac™	<b>WHEEL CONFIGURATION</b> A Single B Double		<b>CYCLES PER REVOLUTION</b> See CPR Options below Price adder >9999	<b>INPUT VOLTAGE</b> V1 5 to 28 VDC			<b>CONNECTOR TYPE</b> F00 18" Cable <sup>6</sup> (Std) F01 12" Cable F02 24" Cable F03 36" Cable M00 2M Cable <sup>7</sup> SMW 6-pin MS <sup>8</sup> SMY 7-pin MS <sup>8</sup> SMX 10-pin MS <sup>8</sup> SMJ 5-pin M12 <sup>3,8</sup> SMK 8-pin M12 <sup>8</sup>	<b>OPERATING TEMPERATURE</b> -20° to +85°C (Std) T1 -40° to +85°C <sup>9</sup> T2 -20° to +100° C	<b>CONNECTOR ORIENTATION</b> (See Drawing) Standard Rear Exit L1 60° From Standard L2 120° From Standard L3 180° From Standard L4 240° From Standard L5 300° From Standard	<b>SEALING</b> IP50 (Std) S3 IP66 S4 IP67	
<b>WHEEL TYPE &amp; CIRCUMFERENCE</b> U3 Urethane 12" cir U5 Urethane 1/3 M cir K3 Knurled 12" cir K5 Knurled 1/3 M cir 25 No Wheel 3/8" (0.375") Shaft A3 Hard Anodized Knurled 12" cir A5 Hard Anodized Knurled 1/3 M cir			<b>NUMBER OF CHANNELS<sup>1</sup></b> A Channel A  <b>Channel A Leads B</b> Q Quadrature A & B R Quadrature A & B with Index  <b>Channel B Leads A<sup>2</sup></b> K Reverse Quadrature A & B D Reverse Quadrature A & B with Index			<b>OUTPUT TYPE</b> OC Open Collector PP Push-Pull HV Line Driver <sup>3</sup> PU Pull-Up Resistor <sup>2,4</sup> OD Open Collector with Differential Outputs <sup>9</sup>				<b>CERTIFICATION</b> None (Std) CE CE Marked <sup>10</sup>	

**Model TR3 - Tru-Trac™ CPR Options:**


0001 thru	0189*	0198	0200	0250
0256	0300	0315	0360	0400
0500	0512	0580	0600	0750
0800	1000	1024	1125	1200
1250	1500	1800	2000	2048
2500	2540	3000	3600	4000
4096	5000	6000	7200	8192

10,000

\*Contact Us For Availability

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

Optional accessory Mounting Bracket (Stock #176389-01) for TR3 Heavy Duty Tru-Trac™ can be ordered separately.

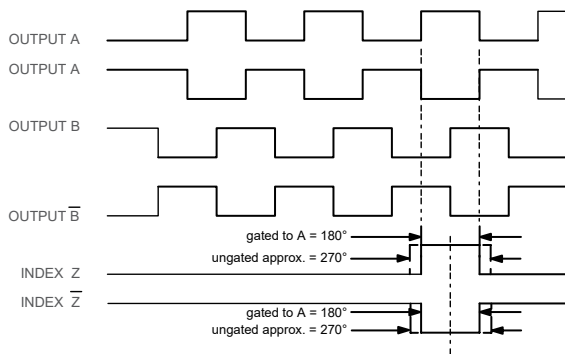


**NOTES:**

- 1 Contact Customer Service for non-standard index gating or phase relationship options.
- 2 Reverse Quadrature not available with Pull-Up Resistor Output Type.
- 3 Line Driver not available with 5-pin M12 connector.
- 4 With Input Voltage above 16 VDC, operating temperature is limited to 85° C.
- 5 For mating connectors, cables, and cordsets visit [www.encoder.com](http://www.encoder.com). For Connector Pin Configuration Diagrams visit [www.encoder.com](http://www.encoder.com).
- 6 For non-standard English cable lengths enter 'F' plus cable length expressed in feet.  
Example: F06 = 6 feet of cable. Frequency above 300 kHz standard cable lengths only.
- 7 For non-standard metric cable lengths enter 'M' plus cable length expressed in meters.  
Example: M06 = 6 meters of cable.
- 8 Body Mount connector options only available with connector orientation L1 thru L5.
- 9 Rated to -40° C during encoder operation. Storage and startup below -25° C not recommended.
- 10 Please refer to **Technical Bulletin TB100: When to Choose the CE Mark** at [www.encoder.com](http://www.encoder.com)

## Waveform Diagrams

### INCREMENTAL SIGNALS



CLOCKWISE ROTATION AS VIEWED FROM THE SINGLE WHEEL SIDE

NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES  
WAVEFORM SHOWN WITH OPTIMAL COMPLEMENTARY SIGNALS  
A, B, Z FOR HV AND OD OUTPUTS ONLY

## Wiring Table

For EPC-supplied mating cables, refer to wiring table provided with cable.

Function	Gland Cable <sup>†</sup> Wire Color	5-pin M12**	8-pin M12**	10-pin MS	7-pin MS HV, OD	7-pin MS PU, PP, OC	6-pin MS PU, PP, OC
Com	Black	3	7	F	F	F	A, F
+VDC	White	1	2	D	D	D	B
A	Brown	4	1	A	A	A	D
A'	Yellow	--	3	H	C	--	--
B	Red	2	4	B	B	B	E
B'	Green	--	5	I	E	--	--
Z	Orange	5	6	C	--	C	C
Z'	Blue	--	8	J	--	--	--
Case	--	--	--	G	G	G	--
Shield	Bare*	--	--	--	--	--	--

\*CE Option: Cable shield (bare wire) is connected to internal case.

†Standard cable is 24 AWG conductors with foil and braid shield.

\*\*CE Option: Use cable cordset with shield connected to M12 connector coupling nut.

## Specifications

### Electrical

<b>Input Voltage</b>	4.75 to 28 VDC max for temperatures up to 85°C 4.75 to 24 VDC for temperatures between 85°C to 100°C
<b>Input Current</b>	100 mA max (65 mA typical) with no output load
<b>Output Format</b>	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.
<b>Output Types</b>	Open Collector- 20 mA max per channel Push-Pull- 20 mA max per channel Pull-Up- Open collector with 2.2K ohm Pull-Up 20mA max per channel Line Driver- 20 mA max per channel (Meets RS 422 at 5 VDC supply)
<b>Index</b>	Once per revolution. 0190 to 10,000 CPR: Gated to output A 0001 to 0189 CPR: Ungated See Waveform Diagrams below.
<b>Max. Frequency</b>	Standard Frequency Response is: 200 kHz for CPR 1 to 2540 500 kHz for CPR 2541 to 5000 1 MHz for CPR 5001 to 10,000 Extended Frequency Response (optional) is 300 kHz for CPR 2000, 2048, 2500, and 2540
<b>Noise Immunity</b>	Tested to BS EN61000-6-2; BS EN50081-2; BS EN61000-4-2; BS EN61000-4-3; BS EN61000-4-6, BS EN500811
<b>Symmetry</b>	180° (±18°) electrical
<b>Quad. Phasing</b>	90° (±22.5°) electrical
<b>Min. Edge Sep</b>	67.5° electrical
<b>Accuracy</b>	Within 0.017° mechanical or 1 arc-minute from true position. (for CPR>189)

### Mechanical

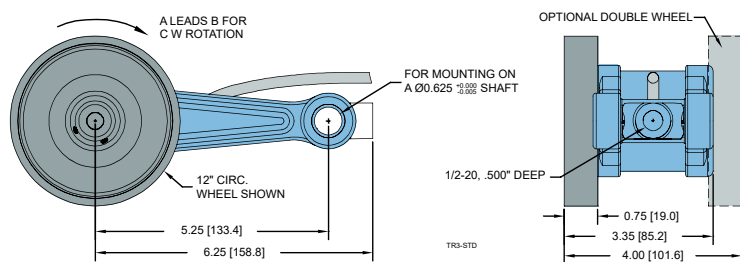
<b>Max Linear Speed</b>	3000 FPM not to exceed a maximum shaft speed of 6000 RPM.
<b>Shaft Material</b>	Stainless Steel
<b>Shaft Size</b>	00.375"
<b>Radial Shaft Load</b>	Up to 10 lb max. Controlled by spring torsion feature
<b>Starting Torque</b>	1.0 oz-in typical with IP50 seal 2.5 oz-in typical with IP66 seal and single wheel 4.0 oz-in typical with IP66 seal and dual wheel
<b>Electrical Connection</b>	18" cable (foil and braid shield, 24 AWG conductors)
<b>Mounting</b>	5/8" diameter thru hole with clamp
<b>Housing</b>	Powder coated aluminum
<b>Wheel Width</b>	3/4" standard
<b>Weight</b>	2.5 lb typical with single wheel 3.0 lb typical with dual wheel

### Environmental

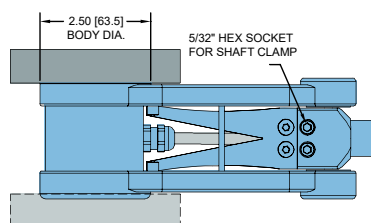
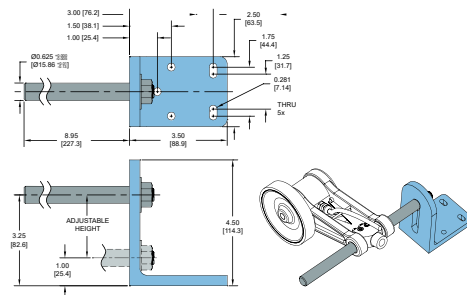
<b>Operating Temp</b>	-20° to +85° C for standard models -40° to +85° C for low temperature option -20° to +100° C for high temperature option
<b>Storage Temp</b>	-25° to +85° C
<b>Humidity</b>	98% RH non-condensing
<b>Vibration</b>	10 g @ 58 to 500 Hz
<b>Shock</b>	80 g @ 11 ms duration
<b>Sealing</b>	IP50 standard; IP66 available

## Dimensions

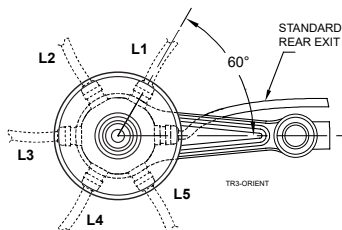
### Model TR3 - Heavy Duty Tru Trac™



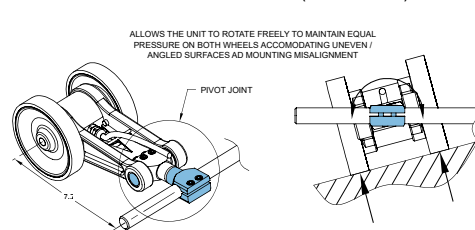
### Model TR3 Mounting Bracket (Order #176389-01)



### CONNECTOR ORIENTATION



### Model TR3 Double Wheel Pivot (Order #176391-01)



#### Trumeter (Europe)

Pilot Mill  
Alfred Street  
Bury,  
BL9 9JR  
Tel: +44 161 674 0960  
Email: [sales.uk@trumeter.com](mailto:sales.uk@trumeter.com)

#### Trumeter (The Americas)

6601 Lyons Rd, Suite H-7,  
Coconut Creek, Florida,  
FL 33073,  
USA  
Tel: +1 954 725 6699  
Email: [sales.usa@trumeter.com](mailto:sales.usa@trumeter.com)

#### Innovative Design Technologies Sdn. Bhd

Lot 5881, Lorong Iks Bukit Minyak 1  
Taman Perindustrian Iks, 14000 Bukit Tengah  
Penang, Malaysia  
Web: [www.idtworld.com](http://www.idtworld.com)  
Tel: + 604 5015700  
Email: [sales.my@idtworld.com](mailto:sales.my@idtworld.com)