

Medium Duty Incremental Encoders

Features

The medium duty encoder offers the greatest flexibility of choice in a very high-quality encoder, all for a very low price.

Features:

- Small body with 50 mm diameter and 35 mm depth
- Splash proof (IP65 rating)
- 8 mm standard shaft or 8 mm hollow shaft
- Incremental resolution available from 3 pulses per revolution to 2500 pulses per revolution
- Line driver or Totem-pole output
- Up to 100 kHz response frequency



Standard shaft (TRD-N) model



Hollow shaft (TRD-NH) model

Note: Yellow shaded part numbers are non-stock. Availability may range from four to six weeks.

Incremental Medium Duty Standard Shaft Encoders (Totem-pole Output, TRD-Nxxx-RZWD)					
Part Number	Price	Pulses per Revolution	Input Volt-age	Output	Body Dia.
TRD-N3-RZWD	<--->	3	5-30 VDC	Totem-pole sink/source	50mm
TRD-N4-RZWD	<--->	4			
TRD-N5-RZWD	<--->	5			
TRD-N10-RZWD	<--->	10			
TRD-N30-RZWD	<--->	30			
TRD-N40-RZWD	<--->	40			
TRD-N50-RZWD	<--->	50			
TRD-N60-RZWD	<--->	60			
TRD-N100-RZWD	<--->	100			
TRD-N120-RZWD	<--->	120			
TRD-N200-RZWD	<--->	200			
TRD-N240-RZWD	<--->	240			
TRD-N250-RZWD	<--->	250			
TRD-N300-RZWD	<--->	300			
TRD-N360-RZWD	<--->	360			
TRD-N400-RZWD	<--->	400			
TRD-N480-RZWD	<--->	480			
TRD-N500-RZWD	<--->	500			
TRD-N600-RZWD	<--->	600			
TRD-N750-RZWD	<--->	750			
TRD-N1000-RZWD	<--->	1000			
TRD-N1024-RZWD	<--->	1024			
TRD-N1200-RZWD	<--->	1200			
TRD-N2000-RZWD	<--->	2000			
TRD-N2500-RZWD	<--->	2500			

Incremental Medium Duty Hollow Shaft Encoders (Totem-pole Output, TRD-NHxxx-RZWD)					
Part Number	Price	Pulses per Revolution	Input Volt-age	Output	Body Dia.
TRD-NH3-RZWD	<--->	3	5-30 VDC	Totem-pole sink/source	50mm
TRD-NH4-RZWD	<--->	4			
TRD-NH5-RZWD	<--->	5			
TRD-NH10-RZWD	<--->	10			
TRD-NH30-RZWD	<--->	30			
TRD-NH40-RZWD	<--->	40			
TRD-NH50-RZWD	<--->	50			
TRD-NH60-RZWD	<--->	60			
TRD-NH100-RZWD	<--->	100			
TRD-NH120-RZWD	<--->	120			
TRD-NH200-RZWD	<--->	200			
TRD-NH240-RZWD	<--->	240			
TRD-NH250-RZWD	<--->	250			
TRD-NH300-RZWD	<--->	300			
TRD-NH360-RZWD	<--->	360			
TRD-NH400-RZWD	<--->	400			
TRD-NH480-RZWD	<--->	480			
TRD-NH500-RZWD	<--->	500			
TRD-NH600-RZWD	<--->	600			
TRD-NH750-RZWD	<--->	750			
TRD-NH1000-RZWD	<--->	1000			
TRD-NH1200-RZWD	<--->	1200			
TRD-NH2000-RZWD	<--->	2000			
TRD-NH2500-RZWD	<--->	2500			

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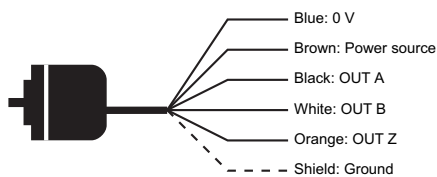
Incremental Medium Duty Standard Shaft Encoders (Line Driver Output, TRD-Nxxx-RZVWD)					
Part Number	Price	Pulses per Revolution	Input Voltage	Output	Body Dia.
TRD-N3-RZVWD	<--->	3	5VDC	Line driver (differential)	50mm
TRD-N4-RZVWD	<--->	4			
TRD-N5-RZVWD	<--->	5			
TRD-N10-RZVWD	<--->	10			
TRD-N30-RZVWD	<--->	30			
TRD-N40-RZVWD	<--->	40			
TRD-N50-RZVWD	<--->	50			
TRD-N60-RZVWD	<--->	60			
TRD-N100-RZVWD	<--->	100			
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TRD-N240-RZVWD	<--->	240			
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TRD-N2000-RZVWD	<--->	2000			
TRD-N2500-RZVWD	<--->	2500			

Incremental Medium Duty Hollow Shaft Encoders (Line Driver Output, TRD-NHxxx-RZVWD)					
Part Number	Price	Pulses per Revolution	Input Voltage	Output	Body Dia.
TRD-NH3-RZVWD	<--->	3	5VDC	Line driver (differential)	50mm
TRD-NH4-RZVWD	<--->	4			
TRD-NH5-RZVWD	<--->	5			
TRD-NH10-RZVWD	<--->	10			
TRD-NH30-RZVWD	<--->	30			
TRD-NH40-RZVWD	<--->	40			
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TRD-NH2000-RZVWD	<--->	2000			
TRD-NH2500-RZVWD	<--->	2500			

Wiring diagrams

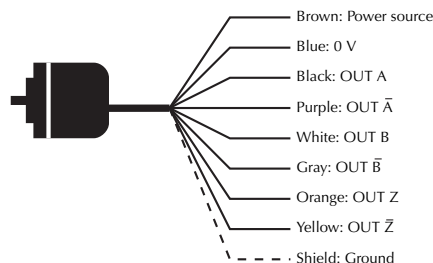
Totem-pole connections

Cable shield is not connected to the encoder body; enclosure is grounded through the 0V wire



Line driver connections

Cable shield is not connected to the encoder body; enclosure is grounded through the 0V wire



Medium Duty Incremental Encoders

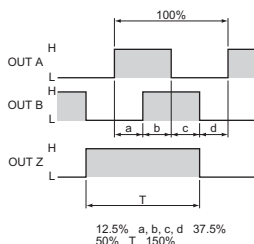
Electrical Specifications				
Model		TRD-N/NHxxxx-RZWD (Totem-pole)	TRD-N/NHxxxx-RZVWD (Line Driver)	
Power Supply	Operating Voltage	4.75 - 30VDC*	+4.75 - 5.25VDC*	
	Allowable Ripple	3% rms max.	-	
	Current Consumption	60 mA max.		
Signal Waveform		Two-phase + home position		
Max. Response Frequency		100kHz max.		
Duty Ratio		50 ± 25% (square wave)		
Signal Width at Home Position		100 ± 50%		
Output	Rise/Fall Time	3µs max. (when cable length is 1m)	-	
	Output Type	Totem-pole	Line driver output (26C31 or equivalent)	
	Output Logic	Negative logic (active low)	Negative logic (active high)	
	Output Current	"H"	10mA max.	-
		"L"	30mA max.	-
	Output Voltage	"H"	[(Load power volt) - 2.5V]	-
"L"		0.4V max.	-	
Load Power Voltage		35 VDC max.		

* To be supplied by Class II source

Mechanical Specifications	
Starting Torque	Max. 0.03 Nm (.0022 ft lbs)
Max. Allowable Shaft Load	Radial: 50N (11.24 lbs) Axial: 30N (6.74 lbs)
Max. Allowable Speed	5000 rpm (dust and splash proofed: continuous: 3,000 rpm, instantaneous: 5,000 rpm) (highest speed that can support the mechanical integrity of encoder)
Wire Size	AWG24
Weight	Approx. 250g (8.82 oz) with 2m cable
Environmental Specifications	
Ambient Temperature	10 to 70°C; 14 to 158°F
Storage Temperature	-25 to 85°C; -13 to 185°F
Operating Humidity	35-85% RH
Voltage Withstand	500VAC (50/60Hz) for one minute
Insulation Resistance	50MΩ min. (excluding shield between power supply, signal cable and case)
Vibration Resistance	Durable for one hour along three axes at 10 to 55 Hz with 0.75 mm amplitude (excluding shield between power supply, signal cable and case)
Shock Resistance	11 ms with 490 m/s ² applied three times along three axes
Protection	IP50: dust proof; IP65: dust and splash proof

Channel timing chart

Output Signal Timing Chart - Totem Pole Models



The above waveforms apply to normal (clockwise) revolution viewed from the shaft. OUT Z phase is reversed on the RZL and RZWL models.

Accessories

Couplings

If you selected an encoder with a solid shaft, please select a coupling that fits your encoder. All couplings are in stock, ready to ship.

See page 21-16 for more information.

Mounting bracket

JT-035D metal mounting bracket can be used for all TRD-N/NH/NA encoders.



How to read the timing charts

Open Collector Models

Out A and Out B are 90 degrees out of phase. Like any quadrature encoder, four unique logic states are created internal to the encoder. This is based on the rising edge to rising edge (one cycle) on channel A or B that indicates that one set of bars on the internal encoder disk has passed by the optical sensor.

OUT Z is the absolute reference added to an incremental encoder and is also known as home position. It signifies a full rotation of the encoder disk.

Line Driver Models

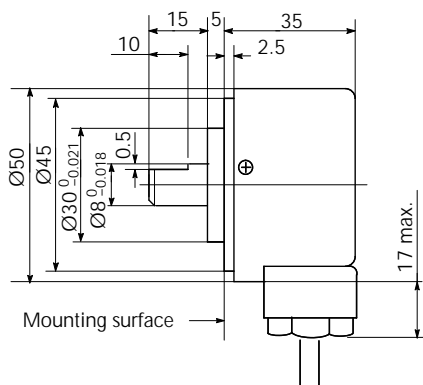
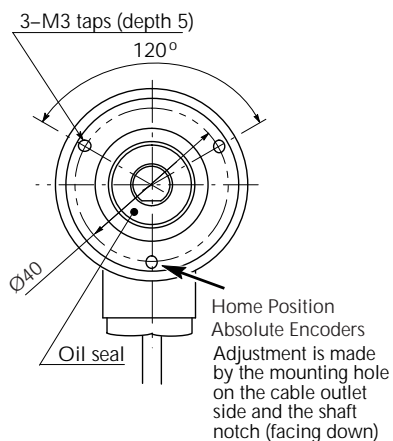
Channel A (OUT A and A-not) and Channel B (OUT B and B-not) are also 90 degrees out of phase on line driver encoders. OUT Z is the same as on open collector models, and is the absolute reference (home position). It signifies one full rotation of the encoder.

Medium Duty Absolute and Incremental

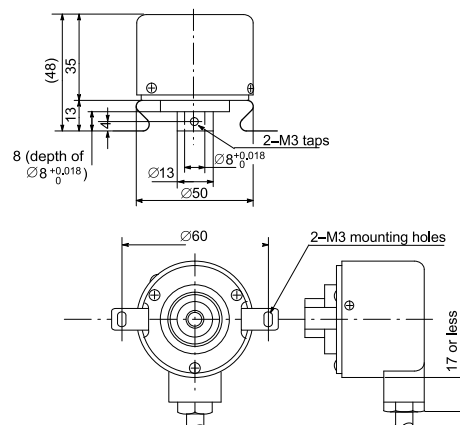
Dimensions

The following are the external dimensions of both incremental and absolute medium duty encoders and the optional mounting bracket.

Standard shaft incremental and absolute encoders (TRD-N, TRD-NA)



Hollow shaft incremental encoders only (TRD-NH)

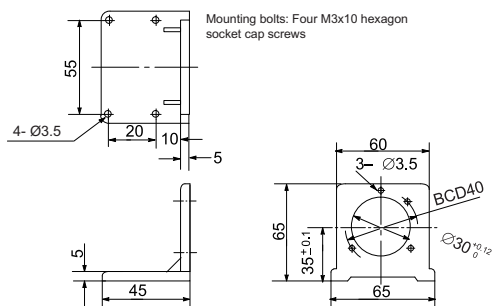


All dimensions in mm
1mm = 0.03937in

Optional mounting bracket for all medium duty encoders



← --- →



Great Selection at Great Prices



Encoder Selection Guide

Type	Incremental	Absolute	Standard Shaft	Hollow Shaft	Output*	Rating
Light-duty	X		X	X	OC, LD	IP40
Medium-duty	X	X (gray code)	X	X	P/P, LD, OC	IP65
Heavy-duty	X		X		P/P	IP65

* OC=open collector, P/P=push/pull, LD=line driver

Accessories

Couplings

Aluminum alloy and glass-fiber reinforced plastic couplings, including:
 6 mm to 6 mm
 8 mm to 8 mm
 10 mm to 10 mm



Aluminum alloy couplings, including:
 6 mm to 1/4"
 8 mm to 1/4", 3/8"
 10 mm to 1/4", 3/8"



Mounting brackets

Simplify your installation with a ready-to-use mounting device for medium and heavy-duty encoders

