

Incremental Encoder Series

TRD-N(H) OPERATION MANUAL

Thank you for purchasing this Series TRD-N(H) Incremental Encoder. Please read this Operation Manual carefully before applying this product.

KEEP THIS MANUAL IN A SAFE PLACE.



Sales: 800-633-0405
Tech Support: 770-844-4200

TRD-N(H)_DS - 1st Ed, Rev B - 07/2019 - sheet 1 of 1

Electrical Specifications

Electrical Specifications		TRD-N(H)xxx-RZWD	TRD-N(H)xxx-RZVWD	
Power Supply	Operating voltage *	4.75-30.0 VDC	4.75-5.25 VDC	
	Allowable ripple	3% rms max		
	Current consumption (no load)	60mA max		
Output Waveform	Signal waveform	Quadrature output + home position		
	Max response frequency	100kHz	100kHz for ≤ 3000 ppr 200kHz for > 3000 ppr	
	Operating speed	(maximum response frequency / resolution) x 60		
	Duty ratio (Symmetry)	50% ±25%		
	Index signal width	100% ±50%		
Output	Rising/falling time **	3µs max	100ns max	
	Output configuration	Totem Pole (Push Pull)	Line driver (26C31 or equivalent)	
	Output current	Inflow	negative: 30 mA max	positive: 20 mA max
		Outflow	positive: 10 mA max	
	Output voltage	"H"	[power supply V - 2.5V] min	2.5V min
		"L"	0.4V max	0.5V max
	Load power supply voltage	35 VDC max	-	-
Short-circuit protection	between each output and 0V	-	-	

* TO BE SUPPLIED BY A CLASS II SOURCE.
** WITH A CABLE OF 2M OR LESS. MAXIMUM LOAD.

Connections

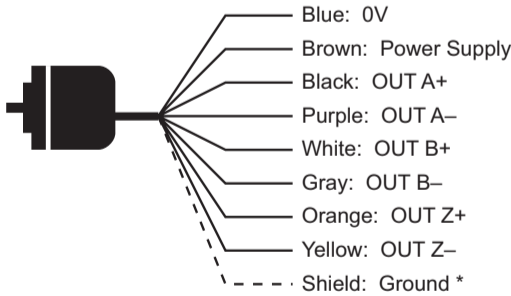
Totem Pole Connections (RZWD)

- * ≤ 2500 p/r: Cable shield is NOT connected to the encoder body (frame ground)
- * ≥ 3000 p/r: Cable shield is connected to the encoder body (frame ground)

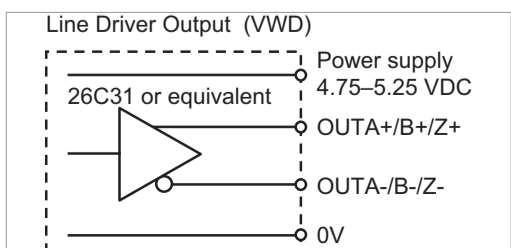
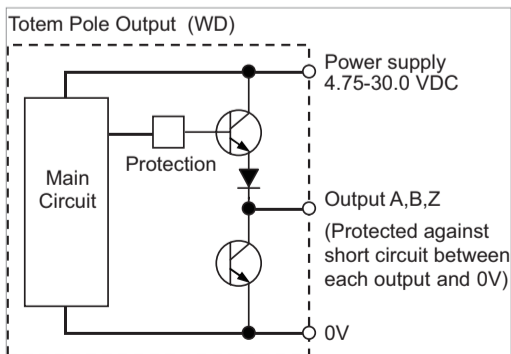


Line Driver Connections (RZVWD)

- * ≤ 2500 p/r: Cable shield is NOT connected to the encoder body (frame ground)
- * ≥ 3000 p/r: Cable shield is connected to the encoder body (frame ground)

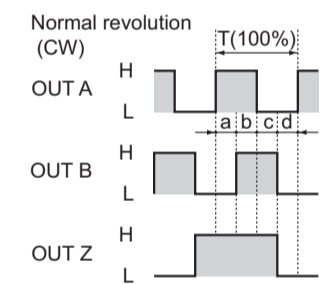


Output Circuits



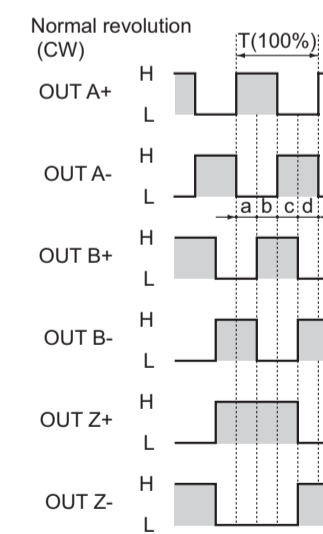
Channel Timing Charts

Totem Pole Models (RZWD)



a, b, c, d = 1/4T ± 1/8T
"Normal" means clockwise revolution viewed from the shaft

Line Driver Models (RZVWD)



a, b, c, d = 1/4T ± 1/8T
"Normal" means clockwise revolution viewed from the shaft end

Mounting Screw Information

Mounting Screw Information				
Part #	Quantity	Fastener Type	Size	Tightening Torque
TRD-N	3	socket-head screw	M3 x 0.5 x 9 mm	4.4 lb-in [0.5 N·m]
TRD-NH	0	n/a	n/a	n/a
JT-035D	4	socket-head screw	M3 x 0.5 x 9 mm	*
NF-55D	3	countersink Phillips screw	M3 x 0.5 x 6 mm	4.4 lb-in [0.5 N·m]
	3	socket-head screw	M4 x 0.7 x 12 mm	*
NM-9D	3	countersink Phillips screw	M3 x 0.5 x 6 mm	4.4 lb-in [0.5 N·m]
	3	socket-head screw	M4 x 0.7 x 12 mm	*

* THESE SCREWS ARE FOR MOUNTING THE BRACKET TO THE CUSTOMER-PROVIDED MOUNTING SURFACE; TIGHTENING TORQUE DEPENDS UPON THE MOUNTING SURFACE MATERIAL.

Safety Considerations

Warning: When you see the "exclamation mark" icon in the left-hand margin, the paragraph to its immediate right will be a WARNING. This information could prevent injury, loss of property, or even death (in extreme cases).

Note: When you see the "notepad" icon in the left-hand margin, the paragraph to its immediate right will be a SPECIAL NOTE WHICH PRESENTS INFORMATION THAT MAY MAKE YOUR WORK QUICKER OR MORE EFFICIENT.

WARNINGS: Operating environment and conditions

Warning: Do not use in a combustible or explosive atmosphere. Otherwise personal injury or fire may be caused.

Warning: Do not use this product for applications related to human safety. Use is assumed in an application where an accident or incorrect use will not immediately cause danger to humans.

CAUTIONS: Operating environment and conditions

Caution: USE AND STORE THE EQUIPMENT WITHIN THE SCOPE OF THE ENVIRONMENT (VIBRATIONS, IMPACT, TEMPERATURE, HUMIDITY, ETC.) SPECIFIED IN THE SPECIFICATIONS. OTHERWISE FIRE OR PRODUCT DAMAGE MAY BE CAUSED.

Caution: READ THIS OPERATION MANUAL, AND UNDERSTAND THIS PRODUCT BEFORE USING IT.

WARNINGS: Installation and Wiring

Warning: Use only with the power supply voltage listed in the specifications. Otherwise fire, electric shock, or accidents may be caused.

Warning: Use only with the wiring and layout specified in the specifications. Otherwise fire, electric shock, or accidents may be caused.

Warning: Do not apply any kind of stress to the wires. Otherwise fire or electric shock may be caused.

Mechanical Specifications

Mechanical Specifications		
Starting torque	Solid shaft (TRD-N)	Max 0.02 N·m [20°C]
	Hollow shaft (TRD-NH)	Max 0.05 N·m [20°C]
Shaft Moment of Inertia	2.0x10 ⁻⁶ kg·m ²	
Max allowable shaft load	Radial	50N
	Axial	30N
Max allowable speed *	3000 rpm (continuous) 5000 rpm (max)	
Cable	Material	Oil-resistant PVC **
	Nominal conductor cross section	0.2 mm ²
	External diameter	6.4 mm
Weight	approx 270g [0.6 lb] ***	

* HIGHEST SPEED THAT CAN SUPPORT MECHANICAL INTEGRITY OF THE ENCODER.
** RZWD: 5-CONDUCTOR SHIELDED CABLE (24 AWG). RZVWD: 8-CONDUCTOR SHIELDED CABLE (24 AWG).
*** WITH 2M CABLE.

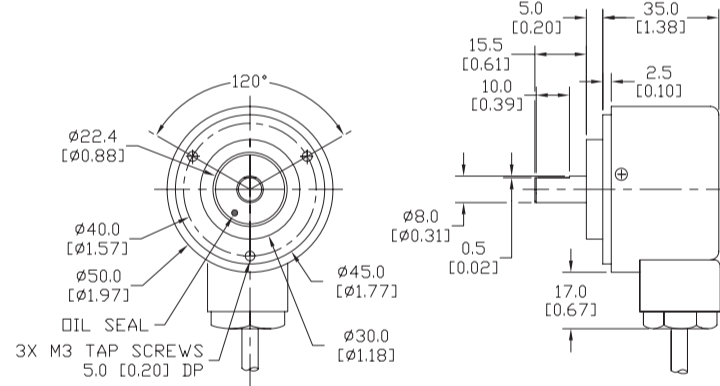
WARNINGS for Use

- Do not wire the cable in parallel with other power lines, and do not share a wiring duct with other cables.
- Use capacitors or surge absorption elements to remove the sparks caused by relays and switches in the control panel.
- Connect all wires properly. (Incorrect wiring can damage the internal circuitry.)
- Erroneous pulses may be caused at the time of power ON and power OFF. After power ON, wait at least a 0.5 second before use.
- Do not disassemble the product.
- Use care when handling and mounting the rotary encoder. (It is made of precision components that can be damaged by physical shocks.)

Dimensions - (dimensions = mm [in])

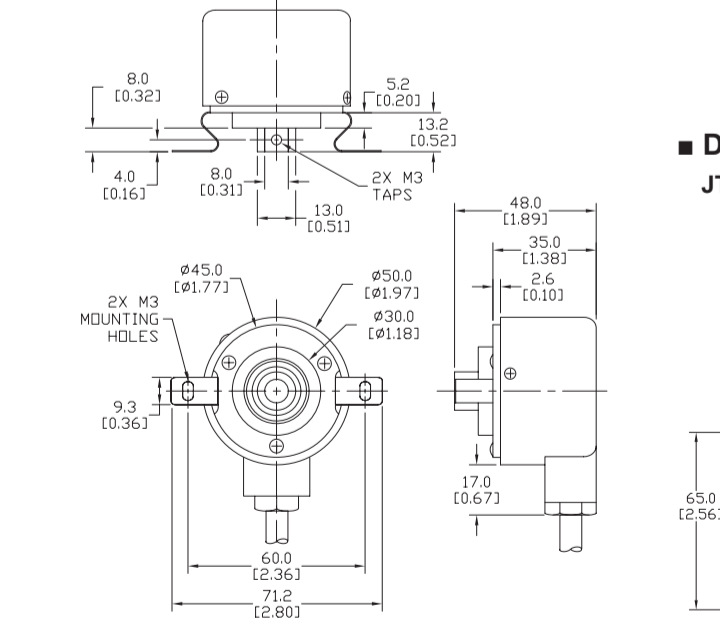
VISIT WWW.AUTOMATIONDIRECT.COM FOR DRAWINGS OF EACH PART NUMBER.

Dimensions - TRD-N Solid-Shaft Encoder

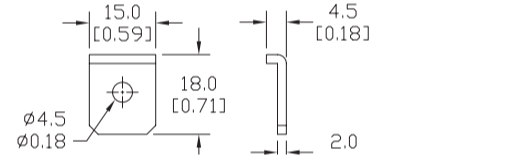


Dimensions

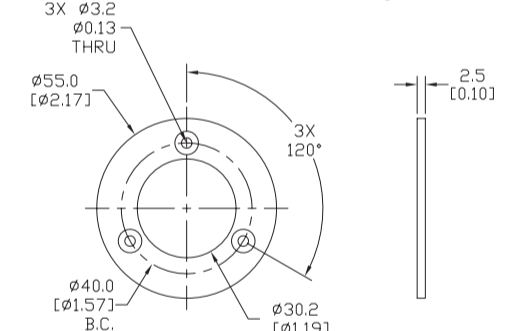
TRD-NH Hollow-Shaft Encoder



Dimensions NM-9D Mounting Clamp *

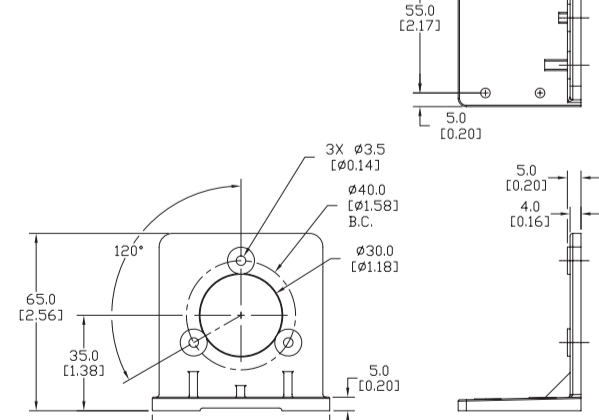


Dimensions - NF-55D Flange



NF-55D flange & included NM-9D bracket: Requires (3) M4 x 0.7 tapped holes equally spaced on a 64 mm bolt circle in the mounting surface.

Dimensions JT-035D Mounting Bracket



Index Position

