

Incremental Encoder Series

TRDA-2E

OPERATION MANUAL

Thank you for purchasing this Series TRDA-2E 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

TRDA-2E_DS – 1st Ed, Rev B – 11/2013 – sheet 1 of 2

■ Safety Considerations



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).



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



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



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



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.



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

WARNINGS: Installation and Wiring



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



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



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

■ Electrical Specifications

Electrical Specifications		TRDA-2ExxxBD	TRDA-2ExxxVD	
Power Supply	Operating voltage *	10.8–26.4 VDC	4.75–5.25 VDC	
	Allowable ripple	3% rms max		
	Current consumption (no load)	50mA max		
Output Waveform	Signal waveform	Quadrature output		
	Max response frequency	200kHz		
	Operating speed	(maximum response frequency / resolution) x 60		
	Duty ratio (Symmetry)	50% ±25%		
Output	Index signal width	100% ±50%		
	Rising/falling time **	1µs max	100ns max	
Output	Output configuration	NPN open collector	Line driver (26C31 or equivalent)	
	Output logic	Negative logic (active low)	Positive logic (active high)	
	Output current	Inflow	30mA max	20mA max
		Outflow	–	
	Output voltage	"H"	–	2.5V min
		"L"	0.4V max	0.5V max
	Load power supply voltage	30 VDC max	–	–
Short-circuit protection	Between each output and 0V	–	–	

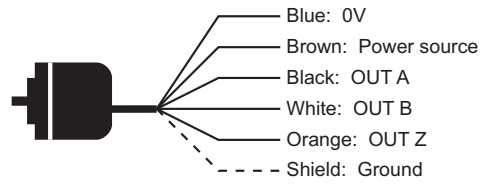
* TO BE SUPPLIED BY A CLASS II SOURCE.

** WITH A CABLE OF 2M OR LESS. MAXIMUM LOAD.

■ Connections

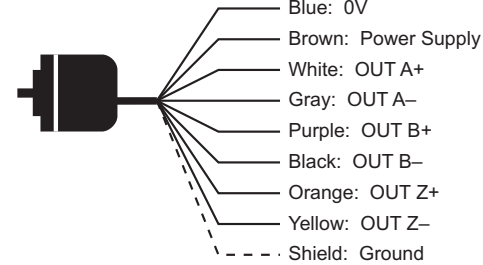
Open Collector Connections (TRDA-2ExxxBD)

Cable shield is connected to the encoder body (frame ground)

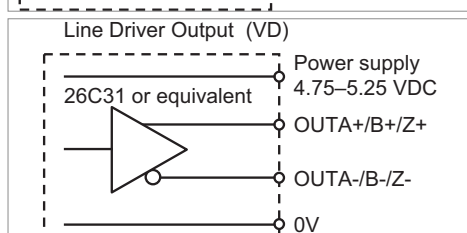
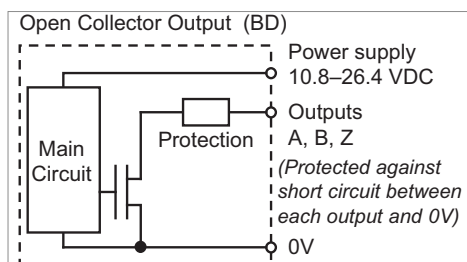


Line Driver Connections (TRDA-2ExxxVD)

Cable shield is connected to the encoder body (frame ground)

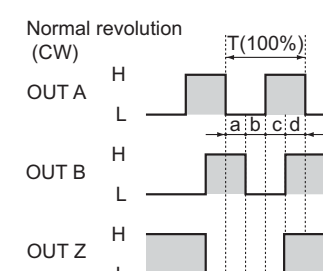


■ Output Circuits



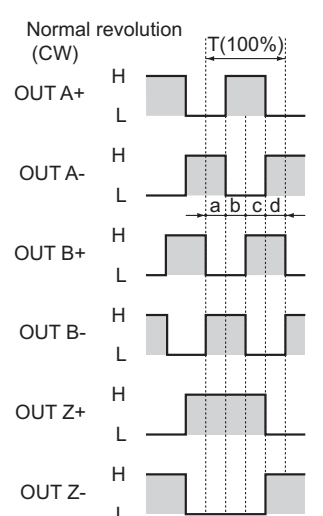
■ Channel Timing Charts

Open Collector Models (BD)



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

Line Driver Models (VD)



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

■ Mechanical Specifications

Mechanical Specifications		
Starting torque	Max 0.01 N·m (20°C)	
Shaft Moment of Inertia	0.6x10 ⁻⁶ kg·m ²	
Max allowable shaft load	Radial	30N
	Axial	20N
Max allowable speed *	5000 rpm	
Cable	Material	Oil-resistant PVC **
	Nominal core cross section	0.14 mm ²
	External diameter	5.0 mm
Weight	approx 170g [0.4 lb] ***	

* HIGHEST SPEED THAT CAN SUPPORT MECHANICAL INTEGRITY OF THE ENCODER.

** BD: 5-CORE SHIELDED CABLE (26 AWG).

VD: 8-CORE SHIELDED CABLE (26 AWG).

*** WITH 2M CABLE.

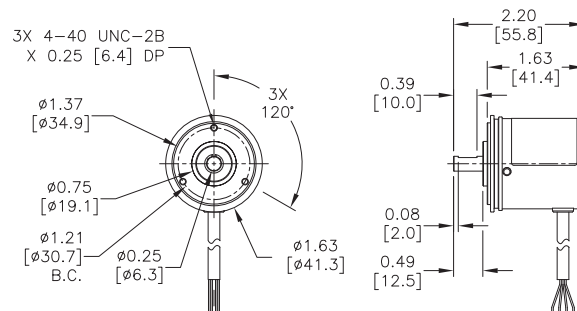


- Do not wire the cable in parallel with other power lines, and do not share a wiring duct with other cables.
- Use capacitors or surge absorption elements to remove the sparks caused by relays and switches in the control panel.
- Connect all wires properly. (Incorrect wiring can damage the internal 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.)

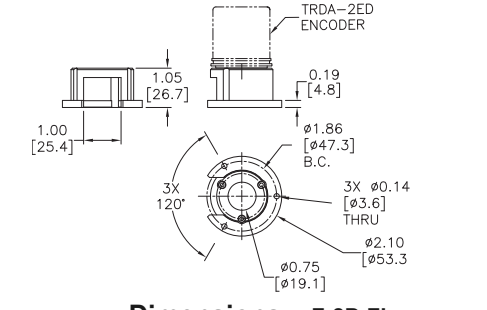
■ Dimensions – (dimensions = in [mm])

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

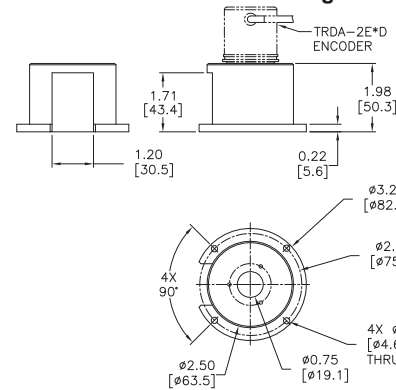
■ Dimensions – TRDA-2E Encoder



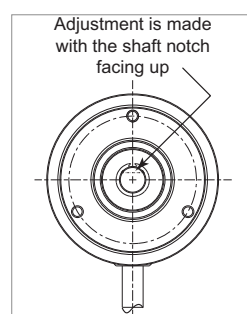
■ Dimensions – F-2D Flange



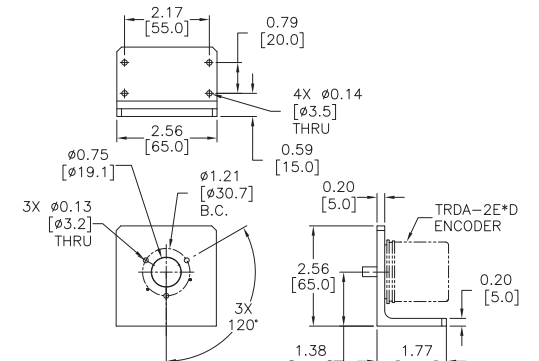
■ Dimensions – F-8D Flange



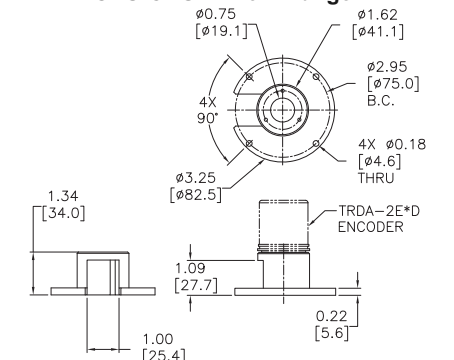
■ Index Position



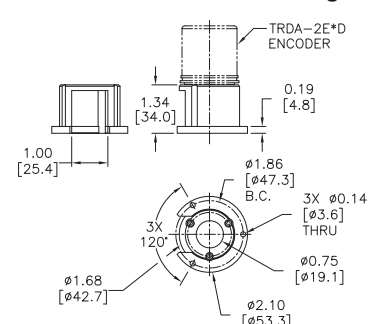
■ Dimensions – 2ET-035D Bracket



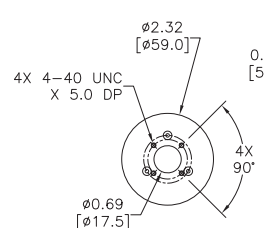
■ Dimensions – F-3D Flange



■ Dimensions – F-6D Flange



■ Dimensions – F-7D Flange



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■ Mounting Screw Information

Mounting Screw Information				
Part #	Quantity	Fastener Type	Size	Tightening Torque
2ET-035D	4	socket head screw	M3 x 0.5 x 10 mm	4.0 lb-in [0.45 N·m]
	3		#4-40x0.375" lg	
F-2D	6		#4-40x0.375" lg	
	3		#4-40x0.375" lg	
F-3D	4		#6-32x0.375" lg	8.1 lb-in [0.92 N·m]
	6		#4-40x0.375" lg	4.0 lb-in [0.45 N·m]
F-6D	7		#4-40x0.375" lg	
F-7D	3		#4-40x0.375" lg	4.0 lb-in [0.45 N·m]
	4		#6-32x0.375" lg	