

Incremental Encoder Series

TRD-GK

OPERATION MANUAL

Thank you for purchasing this Series TRD-GK 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-GK_DS - 2nd Ed, Rev A - 07/2019 - sheet 1 of 1

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		TRD-GKxxx-RZD	
Power Supply	Operating voltage *	9.7-30.9 VDC	
	Allowable ripple	3% rms max	
	Current consumption (no load)	50 mA max @ < 16 VDC 70 mA max @ ≥ 16 VDC	
Output Waveform	Signal waveform	Quadrature output + home position	
	Max response frequency	100 kHz	
	Operating speed	(maximum response frequency / resolution) x 60 rpm or 5,000 rpm; whichever is lower	
	Duty ratio (Symmetry)	50% ±25%	
	Index signal width	25-150% @ ≤ 400 ppr 1° ±30' @ ≥ 500 ppr (50-150% @ 1800/3600/5000 ppr)	
Output	Rising/falling time **	3µs max	
	Output configuration	Totem Pole (Push Pull)	
	Output current	Inflow	30 mA max
		Outflow	30 mA max
	Output voltage	"H"	[power supply V - 4V] min
		"L"	2V max
	Load power supply voltage	35 VDC max	
Short-circuit protection	between output and power supply and between output and 0V		

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

Connections

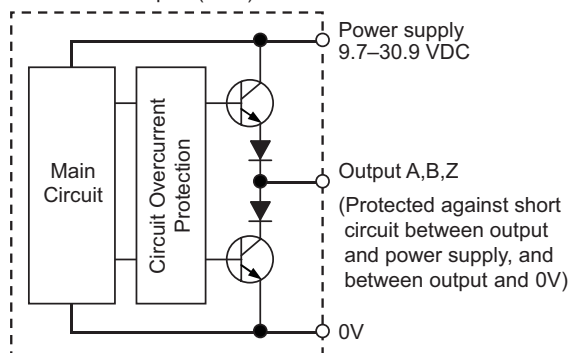
Totem Pole Connections (RZD)

* Cable shield is NOT connected to the encoder body (frame ground)



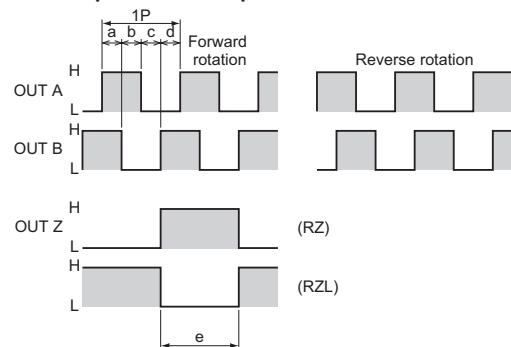
Output Circuits

Totem Pole Output (RZD)



Channel Timing Charts

Two-phase output



a, b, c, d = (1/4 ± 1/8) P
e: 400 P or less: 25 to 150%
500 P or more: 1 ± 30'
(At 1,800, 3,600, 5000 pulses only: 50 to 150%)
OUT Z generates home position in both directions.

Mechanical Specifications

Mechanical Specifications		
Starting torque	Max 0.1 N·m [20°C]	
Shaft Moment of Inertia	1x10 ⁻⁵ kg·m ²	
Max allowable shaft load	Radial	100N
	Axial	50N
Max allowable speed *	5000 rpm (83.3s ⁻¹)	
Cable wire size	24 AWG	
Weight **	approx 600g [21.2 oz]	

* HIGHEST SPEED THAT CAN SUPPORT MECHANICAL INTEGRITY OF THE ENCODER.
** WITH 2M CABLE.

Environmental Specifications

Environmental Conditions		
Ambient Temperature	Operation	-10 to 70 °C [14 to 158 °F]
	Store	-25 to 85 °C [-13 to 185 °F]
Ambient Humidity	35 to 85 %RH (non-condensing)	
Insulation Resistance	50 MΩ min	
Vibration Resistance *	@ ≤ 500 ppr	10 to 55 Hz with 0.75 mm half amplitude
	@ ≥ 600 ppr	10 to 55 Hz with 0.35 mm half amplitude
Shock Resistance **	@ ≤ 500 ppr	981 m/s ² for 11 ms
	@ ≥ 600 ppr	294 m/s ² for 11 ms
Mounting Orientation	can be mounted in any orientation	
Protective Construction	IP65	
Agency Approvals	cUL-US (E189395)	

* DURABLE FOR ONE (1) HOUR ALONG (3) AXES. (NOT GUARANTEED FOR CONTINUOUS USE.)
** APPLIED (3) TIMES (3) AXES. (NOT GUARANTEED FOR CONTINUOUS USE.)

WARNINGS for Use

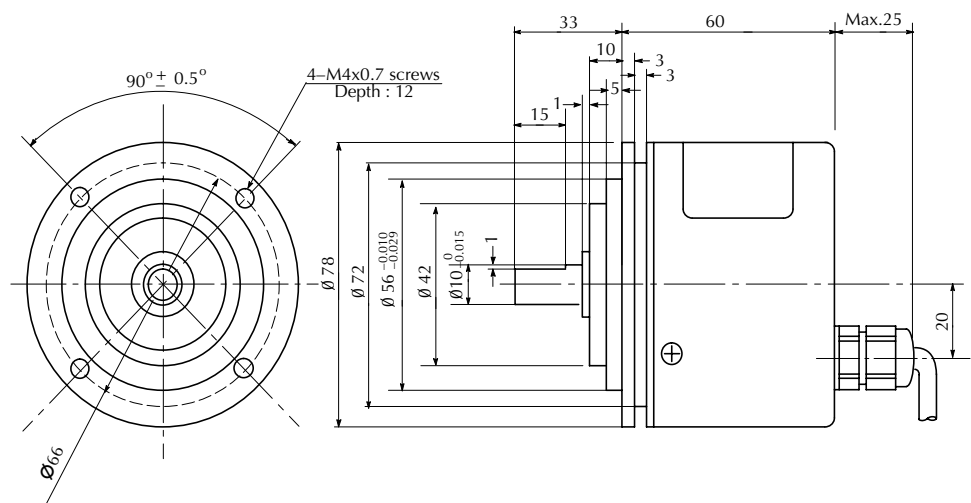


- Do not wire the cable in parallel with other power lines, and do not share a wiring duct with other cables.
- Use capacitors or surge absorption elements to remove the sparks caused by relays and switches in the control panel.
- Connect all wires properly. (Incorrect wiring can damage the internal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

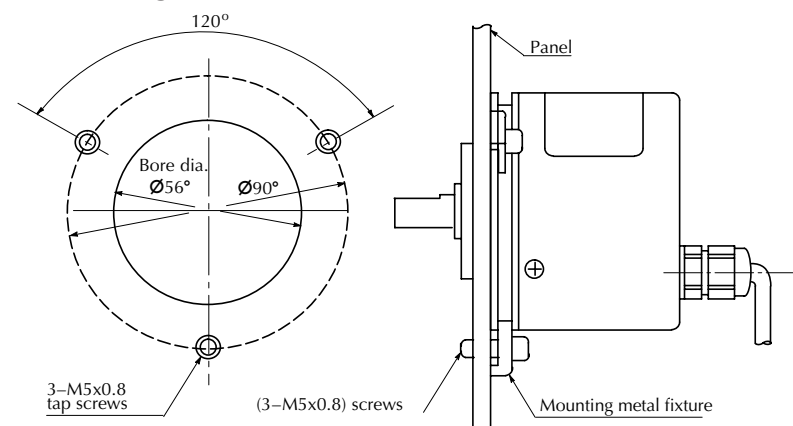
Dimensions - (dimensions = mm)

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

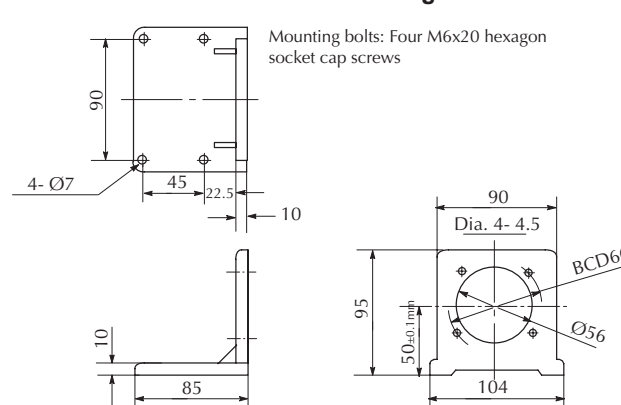
Dimensions - TRD-GK Encoder



Mounting - TRD-GK Encoder



Dimensions - RT-11D Mounting Bracket



Dimensions KM-9D Mounting Clamp

