

Incremental Encoder

Series TRD-GN

Operation Manual

Thank you for purchasing this series TRD-GN Incremental Encoders. Please read this Operation Manual carefully before applying this product.

PLEASE KEEP THIS MANUAL IN A SAFE PLACE!

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Safety Consideration

This indicates contents which can cause large accidents Warning leading to loss of life or severe injury when the indication is disregarded and wrong handling is executed.

This indicates contents which can cause injury or !\Caution material damage when the indication is disregarded and wrong handling is executed.

Explanation of the pictograms

This symbol indicates a general prohibition.

This symbol indicates a compulsory item or an instruction.

[Operating environment and conditions]

Warning

- O 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.

[Operating environment and conditions]

∕ !**∖Caution**

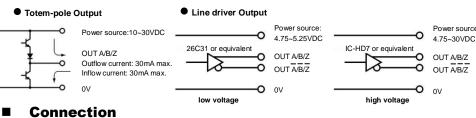
- Use and store the equipment within the scope of the environment (vibrations, impact, temperature, humidity, etc.) specified in the specifications.
- Otherwise fire or product damage may be caused.
- Understand the product first before use it.

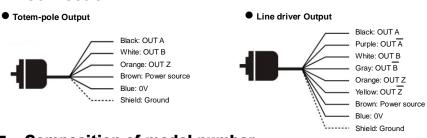
[Installation and wiring]

Warning

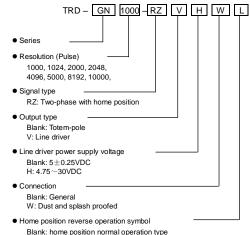
- Use only with the power supply voltage listed in the specifications. Otherwise fire, electric shock, or accidents may be caused.
- Use only with the wiring and layout specified in the specifications. Otherwise fire, electric shock, or accidents may be caused.
- Do not apply any kind of stress to the wires. Otherwise electric shock or fire may be caused.

Output circuit



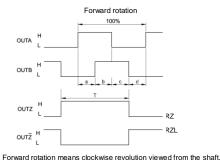


Composition of model number



Blank: home position normal operation type L: home position reverse operation type

Output signal timing chart ● Totem-pole Output



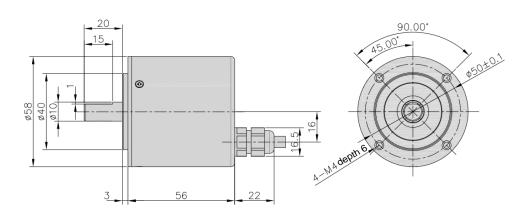
12.5%≤a,b,c,d≤37.5%, 50%≤T≤150%

Line Drive Output



12.5%≤a.b.c.d≤37.5%. 50%≤T≤150%

External dimensions



■ Mechanical specifications

Otti	(2000)	General: ≤0.01N • m	
Starting torque (+20°C)		Dust and splash proofed: ≤0.04N • m	
Shaft m	noment of inertia	$5.7{\times}10^{-6}~\text{kg} \bullet \text{m}^{\text{a}}$	
Allowable	Radial	100N	
shaft load	Axial	50N	
Max. allow	able rotation speed	5000rpm	
Servic	e life of bearing	1.2×10 ⁹ revolutions (calculated value at the maximum load)	
	Material	Oil-proofed PVC (with shielded cable)	
	External diameter	Approx.6.0mm	
Cable	Length	2m	
	Nominal cross-sectional area	Totem-pole output(5-core): 0.3mm ²	
		Line driver output(8-core twisted pair): 0.2mm ²	
		General: approx.313g	
Weight	t (without cable)	Dust and splash proofed: approx.320g	

Environmental requirements

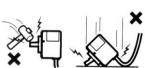
A 11 11	Operation temperature: -10 \sim +70 $^{\circ}\mathrm{C}$			
Ambient temperature	Storage temperature: -25 \sim +85 $^{\circ}\mathrm{C}$			
Ambient humidity	35~85%RH (without condensation)			
Withstand voltage	AC500V 1minute *Note 1			
Insulation resistance	≥50MΩ			
insulation resistance	(Excluding shield between power supply, signal wire and case.)			
Vibration resistance	Durable for 1h along 3 axes at 10 to 55Hz with 0.75mm amplitude			
Shock resistance	11ms with 490m/s ² applied 3 times 3 axes, total 18 times			
Protection construction	General: IP50 dust and splash proofed: IP65			
Note 1. Chiefd wire in connected to the aneader hady. The analogues is connected with 0\/				

Note1: Shield wire is connected to the encoder body. The enclosure is connected wire through a 630V 0.01µF capacitance.

Electrical specifications

Output type		Totem-pole output	Line driver output		
Power supply	Power sup	ply voltage	RZ: 10~30VDC	RZV: 4.75~5.25VDC	RZVH: 4.75~30VDC
	Allowable ripple		≤3%rms		
	Current consumption		≤100mA (without load)		
Signal format		Two-phase A and B+Phase Z			
Max. response frequency		100kHz	200kHz		
Electric Max. allowable speed		(Maximum response frequency/Pulse)x60 (The encoder can not respond to revolution faster than the electric maximum allowable speed.)			
Duty ratio		50%±25%			
Phase Shift		25%±12.5%			
Index signal width		100%±50%			
	Rise and Fall time		2µs Max. (Cable length: 2m, output current: 20mA (Resistance load))		
Output	Output type		Totem-pole output	Line driver output (26C31 or equivalent)	Line driver output (IC-HD7 or equivalent)
	Output voltage	H-level voltage	≥(Power source voltage -4V)	≥2.5V (output current: 20mA (resistance load))	
		L-level voltage	≤2VDC	≤0.5VDC (output current	t: 20mA (resistance load))
Output current		current	≤30mA		

Cautions for use



- Do not wire the cable in parallel with other power lines and do not share a duct with other cables
- Use capacitors or surge absorption elements to remove the sparks caused by relays and switches in the control panel as far as
- Be sure to connect all wires properly, as wrong wiring can damage the internal circuitry.
- Erroneous pulses may be caused at the time of power ON and power OFF. After power ON, wait for at least 0.5 sec before use.
- Use a specified coupling for connecting the encoder shaft and the shaft of a machine to be controlled. Do not squeeze the shaft into
- The service life of the bearing is largely affected by the amount of load to the shaft. Try to reduce the load as much as possible.
- Do not disassemble the product. Do not expose the product for a long time to water, even if it is a dust-resistant, jet-proof type. Wipe off any water getting onto the product.
- As the rotary encoder is composed of precision parts, its function will be impaired when it is subjected to shocks. Use sufficient care for handling and mounting.

