JTEKT

Incremental Encoder

Series TRD-SR/SHR

Safety Manual

Thank you for purchasing this Series TRD-SR/SHR Incremental Encoder.

Plase read this Safety Manual carefully before applying this product.

KEEP THIS MANUAL IN A SAFE PLACE.

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Specifications and dimensions are subject to change without notice due to product improvement.

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Safety Considerations

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

⚠ WARNING

- Do not disassemble the product.
- 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.
- 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.
- BURN HAZARD: Dependent on the ambient temperature, that surfaces may reach dangerous temperature. Avoid the direct skin contact with encoder.
- Align the shaft of the encoder with the shaft of the other device. If more than allowable load is applied to the shaft, it may cause an unexpected accident.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

⚠ 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
- Read this Safety Manual, and understand this product before using it.

WARNINGS for Use

- It must be mounted within an enclosure that is suitably designed for mechanical and environmental specifications.
- If this product gets dirty, wring out a cloth dampened with water well and wipe it to remove dirt.
- 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
- 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.
- Use care when handling and mounting the rotary encoder. It is made of precision components that can be damaged by physical shocks.

Model Numbering System

		Α	В	С	D	Е	F	G		Н
TRD	-	SHR	XXXX	С	W	Е	0	D	-	Mxx
			S	R	So	lid Shaft				

	Out and Name	SR	Solid Shaft
Α	Series Name	SHR	Hollow Shaft
В	A / B Pulse Number	xxxx	xxxx Pulse par Revolution
		А	Open collector
С	Output type	С	Totem-pole
		V	Line driver
		None	IP50 / side
D	Protective Structure / Cable Outlet position	W	IP65 / side
		В	IP50 / back
_	Shaft Length	None	16.4 mm
E	* TRD-SR series only	Е	20.0 mm
_	Pitch of Spindle Spring	0	PCD 40
F	*TRD-SHR series only	5	PCD 45
		None	Japan
G	Destination	D	Other Countries
		None	1 meter
Н	Cable Length	xx M	xx meter

Electrical Specifications

	Models		TRD-SR/SHR□A	TRD-SR/SHR□C	TRD-SR/SHR□V		
,	Operating volt	age *1	4.5 VDC to 26.4 VDC	10.8VDC to 26.4 VDC	4.75 VDC to 5.25 VDC		
Power	Allowable ri	pple	3% ms max				
Supply	Current consum	ption *2	Less than 90mA (50mA or less with no load)				
	Signal wave	form	Quadrature output + home position				
Output	Max response fre	quency *3	200kHz	100kHz	200kHz		
Waveform	Duty ratio(Symmetry)		50±25%				
	Index signal	width	100±50%				
	Rising/falling t	ime *4	1 µs max	3 µs max	1 µs max		
	Output configuration		NPN Open Collector Output	Totem Pole Output	Line Driver Output *5		
	Output voltage	"H"		[(Power supply voltage) - 2.5V] min	2.5V min		
Output		"L"	0.4V max	0.4V max	0.5V max		
		Outflow		Negative 10mA max			
	Output current	Inflow	Positive 30mA max	Positive 30mA max	Positive 20mA max		
	Load power supply voltage		30 VDC max	30 VDC max	-		

*1 To be supplied by Class II source. *2 Maximum load *3 When the operating speed is exceeded, the signal will not follow up electrically. Maximum operating speed = (Maximum response frequency / Resolution) x 60

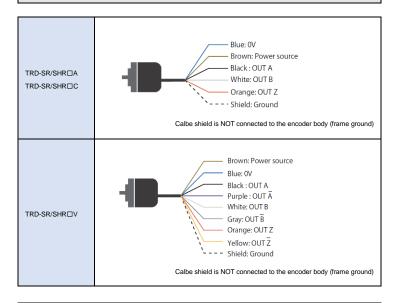
*4 With 1m cable, Maximum load *5 26C31 or equivalent

Mechanical Specifications

Starting Torque	0.001N m max (+20°C)				
Shaft Moment of Inertia	0.6 x 10 ⁻⁶ kg m ²				
	Radial	30N			
Max Allowable Shaft Load	Axial	20N			
Max Allowable Speed *6	6000 min ⁻¹				
	External diameter φ6 mm with 1m Oil-resistant PVC , AWG 26				
Cable	5-conductor shielded cable (TRD-SR/SHR□V : 8-conductor cable)				
Weight	IP50: Approximately 100g, IP65: Approximately 150g (With 1m cable)				

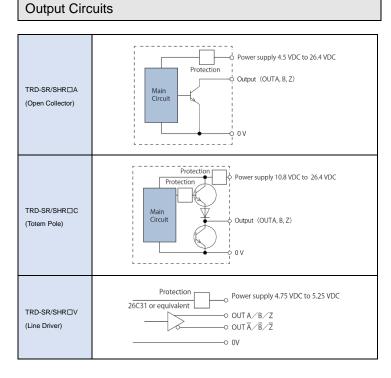
*6 Highest speed that can support mechanical integrity of the encoder

Connections



Environmental Specifications

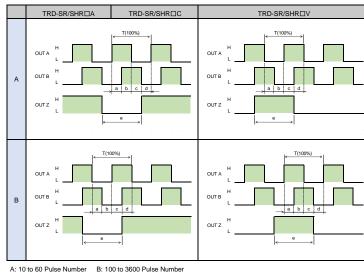
Ambience	Indoor use (avoid direct sunlight)	
Pollution Degree	2	
Altitude	2000m or less above sea level	
	-10°C to +80°C (Operation)	
Ambient Temperature	-25°C to +85°C (Store)	
Ambient Humidity	35% to 85% RH (non-condensing)	
Withstand Voltage	Grounded through capacitor	
Insulation Resistance	50MΩ min	
Vibration Resistance	Half amplitude 0.75 mm 10-55Hz 1hour along 3axes.	
Shock Resistance 490m/s 11ms 3 times 3 axes.		
Protective Construction IP50 / IP65 (Not scope of UL/cUL certification)		



Mounting Screw Information

TRD-SR (include)	Socket-head screw M3 x 0.5 x 6 mm [Tightening Torque 0.5 N m]
TRD-SHR	n/a

Output Waveform



T = a + b + c + d $a, b, c, d = 1/4T \pm 1/8T$ $e = 1 \pm 1/2T$

This Output waveform is Normal revolution (CW). "Normal" means clockwise revolution viewed from the shaft end.

Dimensions

