JTEKT

Incremental Rotary Encoder

TRD-SR/SHR

Operation Manual

Thank you for purchasing this series TRD-SR/SHR Incremental Rotary Encoders. Please read this Operation Manual carefully before applying this product.
PLEASE KEEP MANUAL IN A SAFE PLACE!

JTEKT ELECTRONICS (WUXI) CO.,LTD.

Add: No.6 Lianhe Road, Hudai Town Binhu District, Wuxi, Jiangsu, P.R.China
Pc: 214161 https：//www.jtektele.com.cn
Tel: (0510)85167888 Fax: (0510)85161393

JELWX-M8178B-E

■ Safety Consideration

⚠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.

Explanation of the pictograms

⃠ This symbol indicates a general prohibition.
❗ This symbol indicates a compulsory item or an instruction.

[Operating environment and conditions]

⚠Warning

⃠ 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.

[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

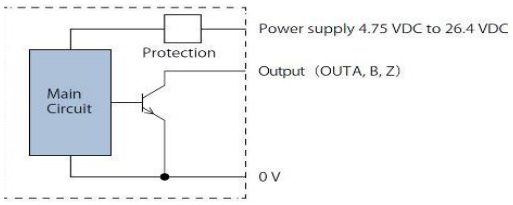
❗ Use only with the power supply voltage listed in the specifications.
Otherwise fire, electric shock, or accidents may be caused.

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

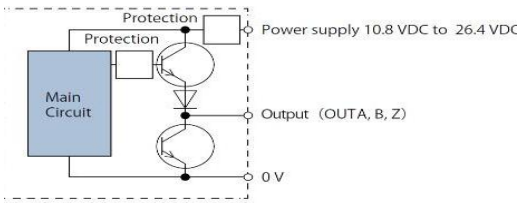
❗ Do not apply any kind of stress to the wires.
Otherwise electric shock or fire may be caused.

■ Output circuit

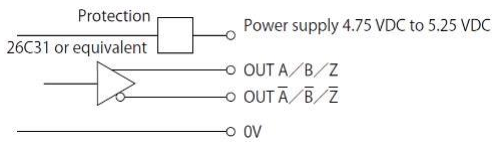
TRD-SR/SHR□A(Open Collector)



2. TRD-SR/SHR□C (Totem Pole)

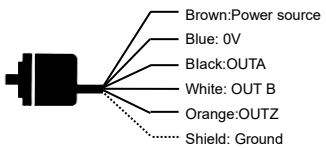


3. TRD-SR/SHR□V (Line Driver)



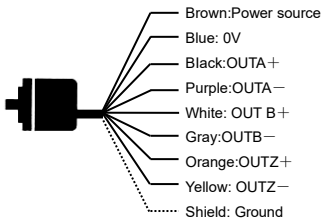
■ Connection

TRD-SR/SHR□A
TRD-SR/SHR□C



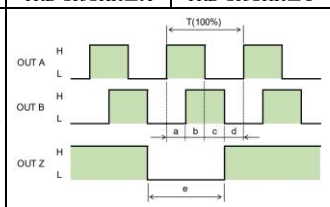
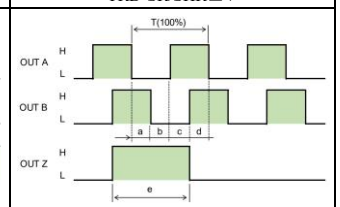
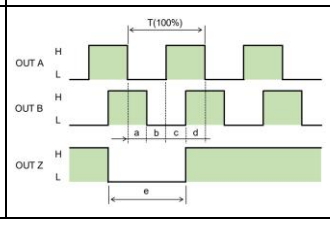
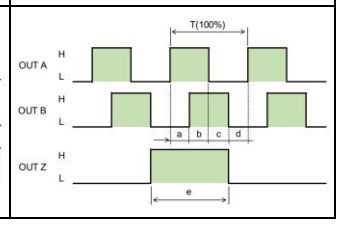
Calbe shield is NOT connected to the encoder body (frame ground)

TRD-SR/SHR□V



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

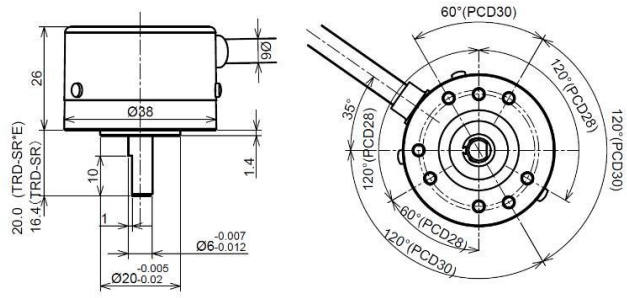
■ Output Waveform

	TRD-SR/SHR□A / TRD-SR/SHR□C	TRD-SR/SHR□V
A		
B		

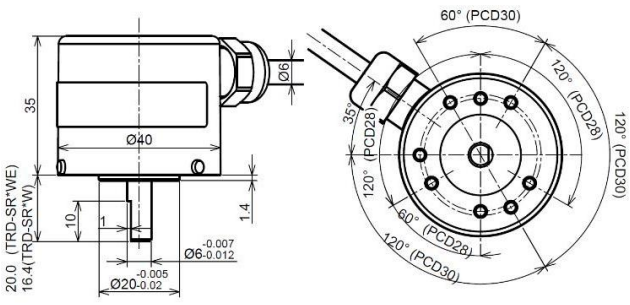
A:10～60Pulse Number B:100～3600Pulse Number
T = a + b + c + d a, b, c, d = 1 / 4 T ± 1 / 8 T e = 1 ± 1 / 2 T
This Output waveform is Normal revolution (CW). ”Normal” means clockwise revolution viewed from the shaft end.

■ Dimensions

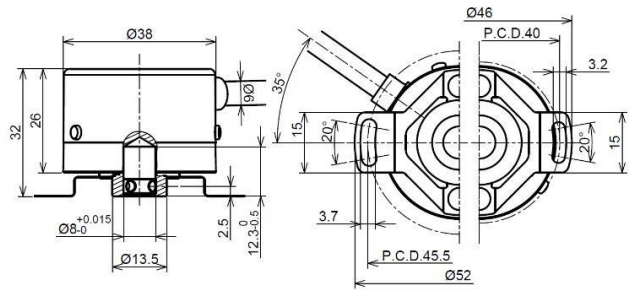
TRD-SR/TRD-SR*E



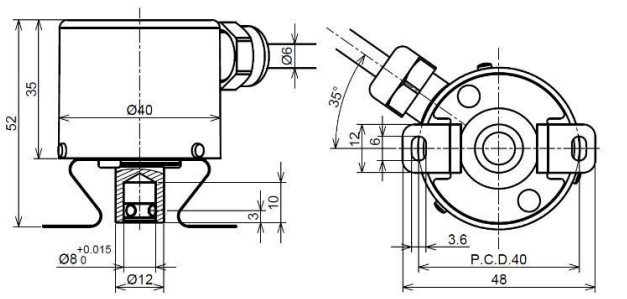
TRD-SR*W/TRD-SR*WE



TRD-SHR



TRD-SHR*W



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

■ Electrical specifications

Models			TRD-SR□A TRD-SHR□A	TRD-SR□C TRD-SHR□C	TRD-SR/□V TRD-SHR□V
Power Supply	Operating voltage *1		4.5 VDC to 26.4 VDC	10.8VDC to 26.4 VDC	4.75 VDC to 5.25 VDC
	Allowable ripple		3% rms max		
	Current consumption *2		Less than 90mA (50mA or less with no load)		
Signal wave form			Quadrature output + home position		
Max response frequency *3			200kHz	100kHz	200kHz
Duty ratio(Symmetry）			50%±25%		
Index signal width			100%±50%		
Output	Rising/falling time *4		1μs max	3μs max	1μs 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
		“L”	0.4V max	0.4V max	0.5V max
	Output current	Outflow	—	Negative 10mA max	Positive 20mA max
		Inflow	Positive 30mA max	Positive 30mA 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.

■ Environmental requirements

Ambient Temperature	−10℃～+80℃(Operation)
	−25℃～+85℃(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)

■ Model Numbering System

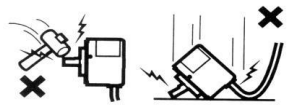
TRD - SHR □ C W - E - 0 - D - xxM

- Series Name
  SR:Solid Shaft
  SHR:Hollow Shaft
- A / B Pulse Number
- Output type
  A:Open collector
  C:Totem-pole
  V:Line driver
- Protective Structure
  None:IP50 / side
  W:IP65 / side
  B:IP50 / back
- Shaft Length
  * TRD-SR series only
  None:16.4mm
  E:20.0mm
- Pitch of Spindle Spring
  *TRD-SHR series only
  0：40mm
  5：45mm
- Destination
  None:Japan
  D:Other Countries
- Cable Length
  None：1 meter
  xxM：xx meter

■ Mechanical specifications

Starting Torque		0.003Nm max (+20℃)
Shaft Moment of Inertia		0.6×10^{-6}kg・m²
Max Allowable Shaft Load	Radial	30N
	Axia	20N
Max Allowable Speed *6		6000 min^{-1}
Cable		External diameter Φ6 mm with 1m Oil-resistant PVC , AWG 26 5-conductor shielded cable （TRD-SR/SHR□V : 8-conductor cable)
Weight		IP50: Approximately 100g IP65: Approximately 150g (With 1m cable)

■ 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 possible.
- Be sure to connect all wires properly, as wrong wiring can damage the internal circuitry.
- 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.
- 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.
- Avoid using this product in the following places: the place where there is excessive vibration and shock, the encoder may be damaged; the place where there are devices with strong magnetic and strong electrical interference; the place where there is flammable, corrosive gases, splashing water, oil and dusty; the place where the temperature and humidity exceeds the standard; the place where strong alkali and strong acid materials nearby; the place where receives direct sunlight.