

Incremental Encoder Series

TRD-S/SH OPERATION MANUAL

Thank you for purchasing this Series TRD-S/SH 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-S/SH – 2nd Edition – 08/2017 – sheet 1 of 1
ES-M0222-2

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

Type No.	TRD-S □AD/BD TRD-SH □AD/BD (□:pulse/revolution)	TRD-S/SH □VD (□:pulse/revolution)		
Power Supply	Operating voltage *	AD: 4.75–13.2 VDC BD: 10.8–26.4 VDC	+4.75–5.25 VDC	
	Allowable ripple	3% rms or less		
	Current consumption	50mA or less	150mA or less	
Output Waveform	Signal format	Quadrature output		
	Max response frequency	200kHz		
	Operating speed	(Max response frequency / Pulses per revolution) x 60 or 6000 rpm, whichever is lower.		
	Symmetry	50±25%		
	Index signal width	50–150% of one cycle		
	Rising/falling time **	1 µs or less	100ns or less	
Output	Output configuration	N channel Mos FET. Open drain output	Line driver output (26C31 or equivalent)	
	Output current	Inflow	30 mA max.	—
		Output voltage	"H"	—
		"L"	0.4 V or less	0.5 V or less
	Load power supply voltage	DC 35V or less		
	Short-circuit protection	Between output and power supply		

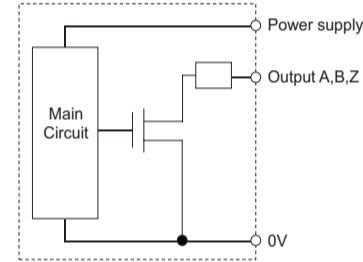
* To be supplied by a class II source.
** With a cable of 2m or less.

Mechanical Specifications

Mechanical Specifications		
Starting torque	max 1x10 ⁻³ N·m (20°C)	
Shaft Moment of Inertia	0.3x10 ⁻⁶ kg/m ²	
Max allowable shaft load	Radial	20N
	Axial	10N
Max allowable speed *	100s ⁻¹ (6000 rpm)	
Wire size	AWG26	
Weight **	approx 150g [5.3 Oz]	
M3 screws torque	0.45 N·m [4.0 lb·in]	

* Highest speed that can support mechanical integrity of the encoder.
** With 2m cable.

Output Circuit



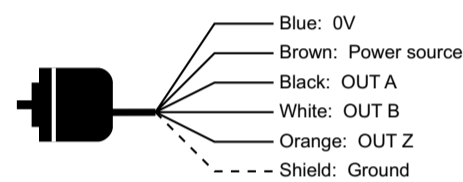
Environmental Specifications

Environmental Conditions		
Ambient Temperature	Operation	-10 to 70 °C
	Store	-25 to 85 °C
Ambient Humidity	25 to 85% RH (no condensation)	
Protective Construction	Dust-proof type: Simple dust-proof type	

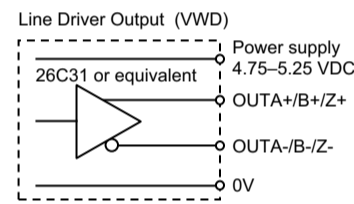
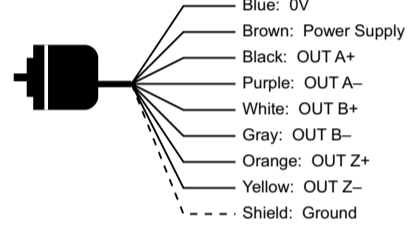
Wiring Connections

The shield wire (Ground) is not connected to the encoder body.

TRD-S/SH□AD/BD



TRD-S/SH□VD



WARNINGS for Use



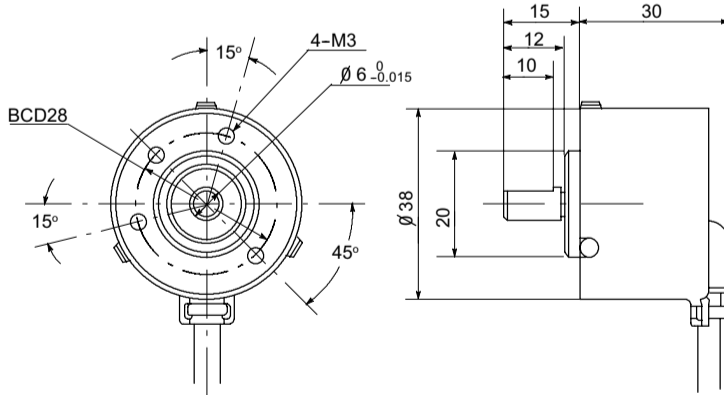
- Do not wire the cable in parallel with other power lines, and do not share a wiring duct with other cables.
- Use capacitors or surge absorption elements to remove the sparks caused by relays and switches in the control panel.
- Connect all wires properly. (Incorrect wiring can damage the internal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

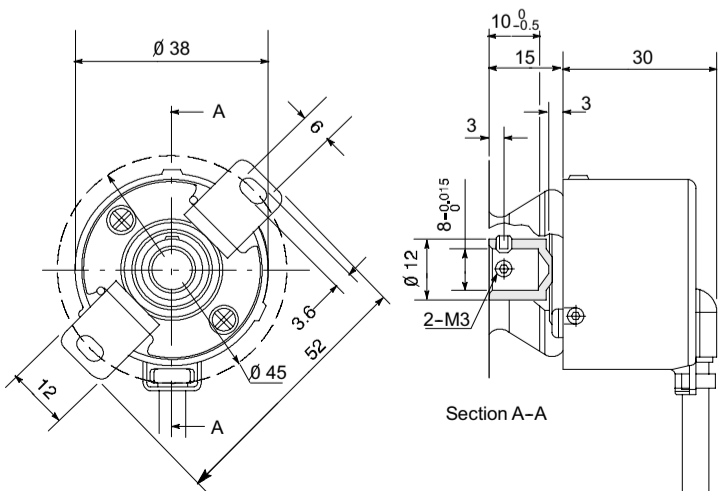
Visit www.AutomationDirect.com for drawings of each part number.

External Dimensions

TRD-S□AD/BD/VD

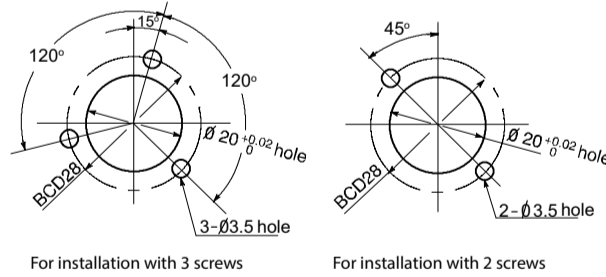


TRD-SH□AD/BD/VD



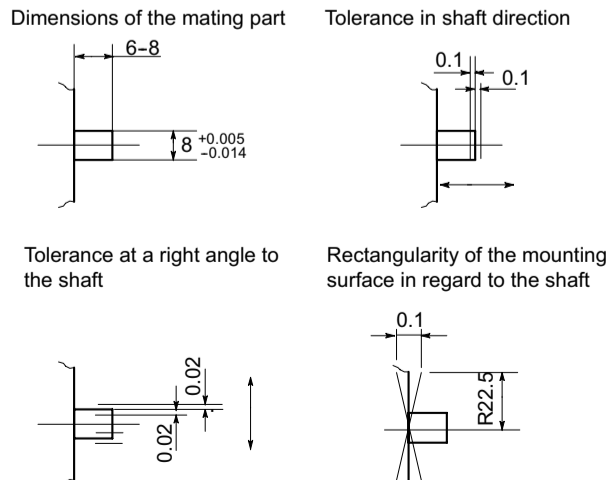
Mounting

TRD-S□AD/BD/VD



Mating shaft requirements

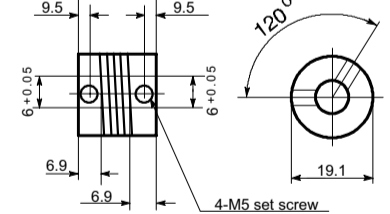
TRD-SH□AD/BD/VD



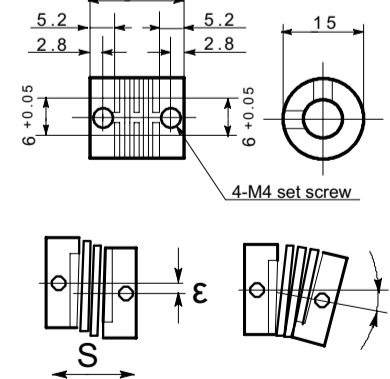
Options

Coupling

RU-75D



GJ-6D



Type No.	Material	α	ε	S
RU-075D	Aluminum alloy (7075)	5° MAX	0.25 mm MAX	0.12 mm MAX
GJ-6D	Glass fiber reinforced poly-acetal resin	6° MAX	0.5 mm MAX	0.12 mm MAX