

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 MANUAL IN A SAFE PLACE.



Sales : 800-633-0405
Tech Support : 770-844-4200

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.

Electrical specifications

Type No.	TRD-S <input type="checkbox"/> AD/BD TRD-S/SH <input type="checkbox"/> AD/BD (□: pulse/revolution)	TRD-S/SH <input type="checkbox"/> VD (□: pulse/revolution)
Operating voltage	AD: 4.75 - 13.2V DC *1 BD: 10.8 - 26.4V DC	+4.75 - 5.25V DC *1
Allowable ripple	3% rms or less	←
Current consumption	50 mA or less	150 mA or less
Signal format	Quadrature output, Phase difference 25 ± 12.5%	←
Max. response frequency	200kHz	←
Operating speed	(Max response frequency) / Pulses per revolution × 60 rpm or 6000 rpm whichever is lower.	←
Symmetry	50 ± 25%	←
Index signal width	50 - 150% of one cycle	←
Rising/falling time	1μs or less *2	100ns or less *2
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" ←	2.3 V or more ← 0.5 V or less ←
Load power supply voltage	DC 35 V or less	←
Short-circuit protection	Between output and power supply	←

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

Cautions for use

Mechanical specifications

Starting torque	Max: 1 x 10 ⁻³ N·m (+20°C)
Shaft moment of inertia	0.3 x 10 ⁻⁶ kg/m ²
Max allowable shaft load	Radial: 20 N Axial: 10 N
Max allowable speed	100s ⁻¹ (6000 rpm)
Wire size	AWG26
Weight	Approx. 150g (with 2m cable)

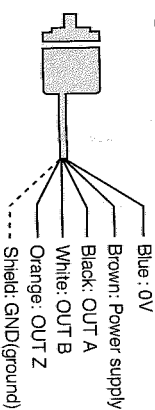
Environmental conditions

Ambient temperature	Use temperature: -10 to 70°C, storage temperature: -25 to 85°C
Ambient humidity	25 to 85% RH (no condensation)
Protection construction	Dust-proof type: Simple dust-proof type

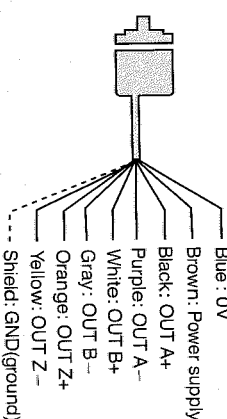
Connection

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

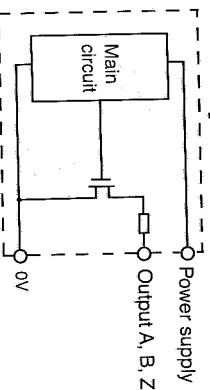
TRD-S/SH AD/BD



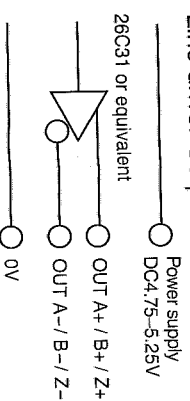
TRD-S/SH VD



Output circuit



Line driver Output



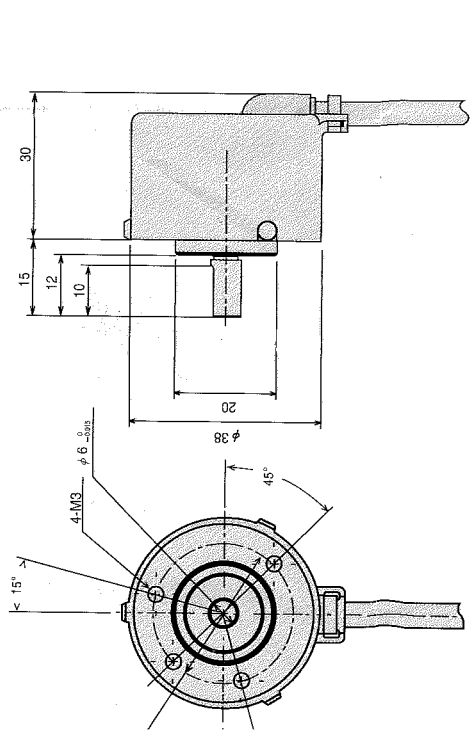
Do not wire the cable in parallel with other power lines and do not share a duct with other cables. capacitors or surge absorption elements to remove the sparks caused by relays and switches and control panel as far as possible.

Wire to connect all wires properly, as wrong wiring can damage the internal circuitry. Excessive pulses may be caused at the time of power ON and power OFF. After power ON, wait at least 0.5 sec before use.

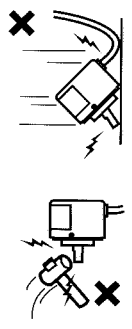
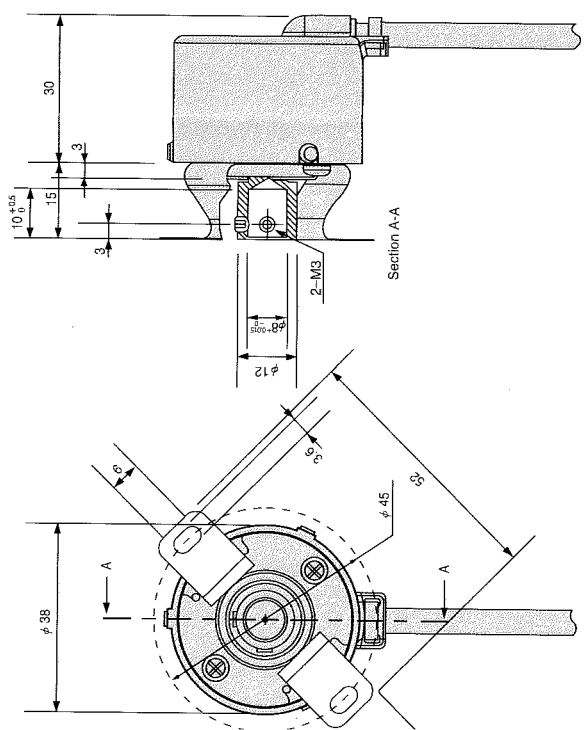
Do not disassemble the product.
The rotary encoder is composed of precision parts, its function will be impaired when it is subjected to shocks. Use sufficient care for handling and mounting.

External dimensions

SH □ AD/BD/V/D

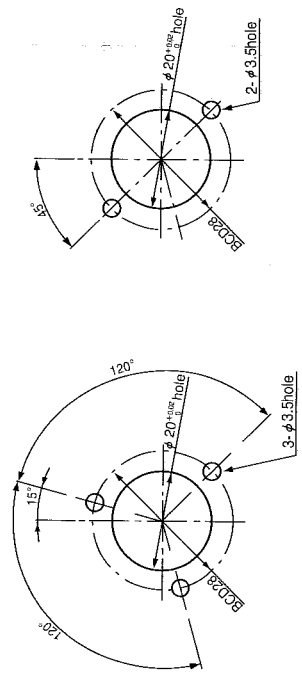


SH □ AD/BD/V/D



Mounting

TRD-S □ AD/BD/V/D



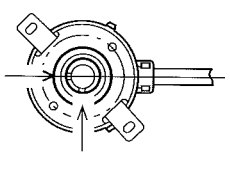
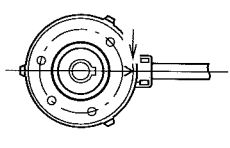
For installation with 3 screws

For installation with 2 screws

Setting Index position

TRD-S □ □ □

TRD-SH □ □ □



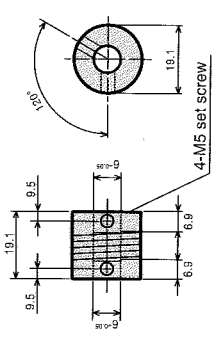
Adjustment is made by the shaft notch (facing down).

Output when the set screws are in the positions shown in the figure.

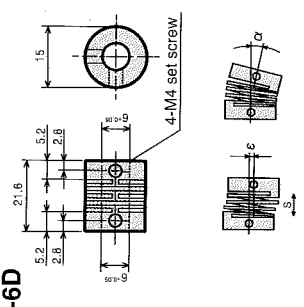
Options

● Coupling

RU-075D



GJ-6D

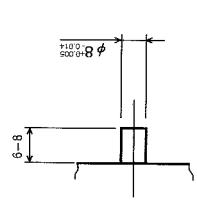


Type No.	Material	Q	ε	S
RU-075D	Aluminum alloy (7075)	5° MAX	0.25mm MAX.	0.12mm MAX.
GJ-6D	Glass-fiber reinforced polyacetal resin	6° MAX	0.5mm MAX.	0.12mm MAX.

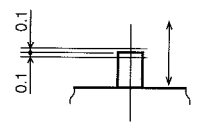
Mating shaft requirements

TRD-SH □ AD/BD/V/D

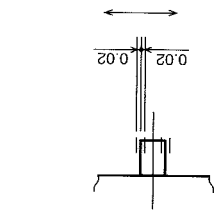
Dimensions of the mating part



Tolerance in shaft direction



Tolerance at a right angle to the shaft



Rectangularity of the mounting surface in regard to the shaft

