

Koyo®

Incremental Encoder TRD-2E/2EH

Operation Manual

Thank you for purchasing series TRD-2E and TRD-2EH Incremental Encoder. Please read this Operation Manual carefully before applying this product.

KOYO ELECTRONICS (WUXI) CO.,LTD.

Addr: No.118 Lixi Road Wuxi, Jiangsu, P.R.China

Pc: 214072

Tel: (0510)85167888

Fax: (0510)85161393

KEW-8161B-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.



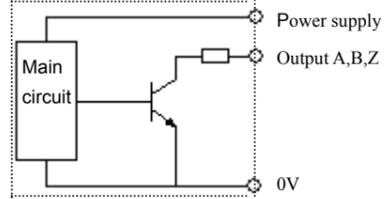
Use only with the wiring and layout specified in the specifications. Otherwise fire, electric shock, or accidents may be caused.



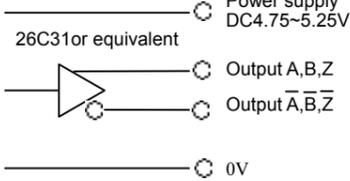
Do not apply any kind of stress to the wires. Otherwise electric shock or fire may be caused.

■ Output circuit

Open Collector Output



Line driver Output

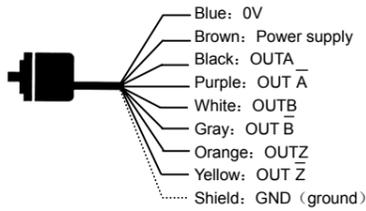
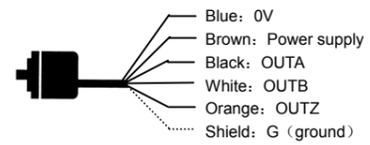


■ Connection

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

- TRD-2E□A/B
- TRD-2EH□A/B

- TRD-2E□V
- TRD-2EH□V



■ Electrical specifications

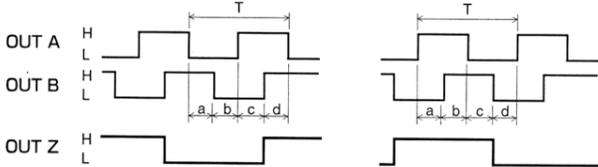
Type No.		TRD-2E□A/B/TRD-2EH□A/B	TRD-2E□V/TRD-2EH□V	
Power supply	Operating voltage	A: DC4.75V~13.2V B: DC10.8V~26.4V	DC4.75V~5.25V	
	Allowable ripple	3%rms Max.	3%rms Max.	
	Current consumption	50mA Max.	50mA Max.	
Output waveform	Signal format	Quadrature output	Quadrature output	
	Max. response frequency	200kHz	200kHz	
	Operating speed	(Maximum response frequency/Pulse)×60	(Maximum response frequency/Pulse)×60	
	Symmetry	50±25%	50±25%	
	Quadrature phasing	25±12.5%	25±12.5%	
	Index signal width	100±50%	100±50%	
Output	Rising/falling time	≤1μs (with a cable of 1m)	—	
	Output configuration	NPN open collector	Line driver(26C31 or equivalent)	
	Output logic	Negative logic (active low)	Positive logic(active high)	
	Output current	Inflow	30mA Max.	—
		Outflow	—	—
	Output voltage	"H"	—	2.5V Min.
		"L"	0.4V Max.	0.5V Max.
	Load power supply voltage	DC30V Max.	—	
	Short-circuit protection	Between output and power supply	—	

■ Output signal timing chart

(CW rotation viewed from input-shaft of encoder)

- TRD-2E□A/B
- TRD-2EH□A/B

- TRD-2E□V
- TRD-2EH□V



a,b,c,d=(25±12.5%) T

■ Mechanical specifications

Starting torque	Max. 0.01N·m (+20°C)	
Shaft moment of inertia	0.3×10 ⁻⁶ kg·m ²	
Max. allowable shaft load	Radial	30N
	Thrust	20N
Max. allowable speed	5000rpm	
Cable	Material	Oil-resistant PVC ^{*1}
	Nominal core cross section	0.14mm ²
	External diameter	φ5mm
Weight	Approx.200g (with 1m cable)	

*1 2E□A/B、2EH□A/B: 5-core shielded cable (AWG26)

2E□V、2EH□V : 8-core shielded cable (AWG26)

■ Environmental requirements

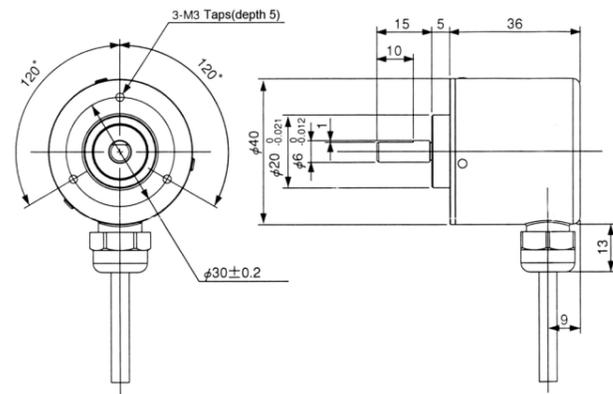
Ambient temperature	Operation	-10~+70°C
	Store	-25~+85°C
Ambient humidity	35~85%RH (non-condensing)	
Withstand voltage	AC500V (50/60Hz) for 1 min.	
Insulation resistance	50MΩ min.	
Vibration resistance	10~55Hz with 0.75mm amplitude ^{*2}	
Shock resistance	11ms with 490m/s ² ^{*3}	
Protection construction	IP54 (IEC529)	

*2: Durable for 1h along 3 axes

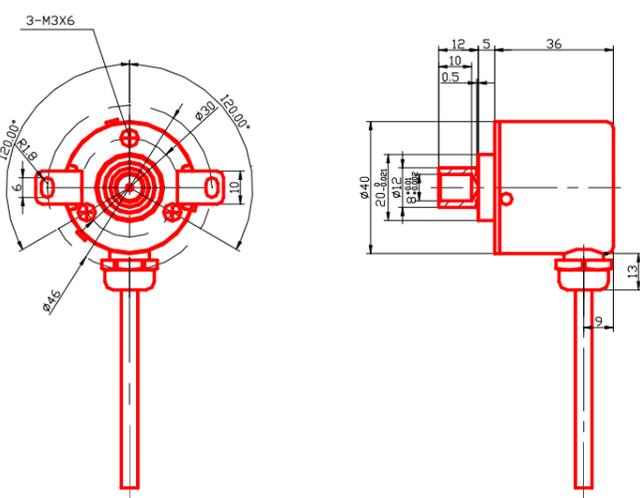
*3: Applied 3 times 3 axes

■ External dimensions

- TRD-2E□A/B/V



- TRD-2EH□A/B/V



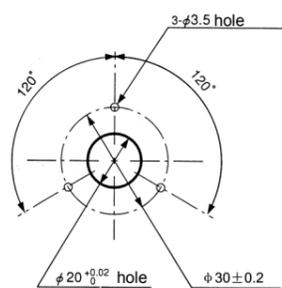
■ Cautions for use

- 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.
- 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.
- 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.



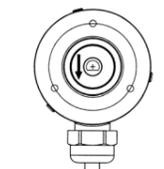
■ Mounting

TRD-2E□A/B/V



■ Setting index position

TRD-2E□A/B/V



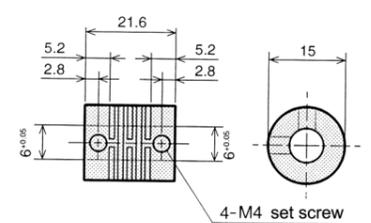
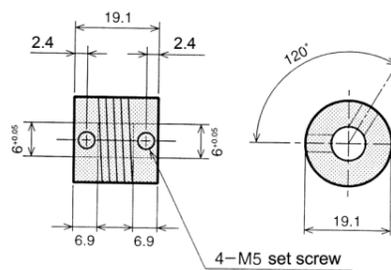
Adjustment is made by the shaft notch (facing down).

■ Options

- Coupling

RU-075

GJ-6



Type No.	Material	α	ε	s
RU-075	Aluminum alloy (7075)	5° MAX	0.25mmMAX	0.12mmMAX
GJ-6	Glass-fiber reinforced polyacetal resin	5° MAX	0.5mmMAX	0.12mmMAX