

TRD-2E Series Incremental Encoders

Rotary Encoders

■ Features

- Small body with 40 mm diameter and 36 mm depth
- Protection against reverse connection and short circuit
- Protection degree IP54 (dust and splash proof)



■ List of model numbers

Type	Appearance	Model number	Source voltage	Output	Output type	Pulse/revolution
Shaft		TRD-2E□A	4.5 to 13.2 VDC	2-phase with home position in reverse operation □□	Open collector output	* 10, 20, 30, 40, 50, 60, 100, 200, 240, 250, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 2000, 2500
		TRD-2E□B	10.8 to 26.4 VDC			
		TRD-2E□V	4.75 to 5.25 VDC	2-phase with home position in forward operation □□	Line driver output	

■ Model numbering system

TRD- 2E □ □ A

- Series
2E: Shaft
- Pulse/revolution
- Model
A: Source voltage 4.5 to 13.2 VDC, open collector output
B: Source voltage 10.8 to 26.4 VDC, open collector output
V: Source voltage 4.75 to 5.25 VDC, line driver output

■ Pulse and frequencies

Pulse/revolution	10	20	30	40	50	60	100	200	240	250	300	360	400	500	512	600	800	1000	1024	1200	2000	2500	
Max. response frequency (kHz)*	1	2	3	4	5	6	10	20	24	25	30	36	40	50	50	60	80	100	100	120	200	200	
Applicable models	TRD-2E□A	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TRD-2E□B	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TRD-2E□V	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

* Maximum response frequency is defined by the following formula:
 Maximum revolution speed = (Maximum response frequency/Pulse) × 60
 The encoder does not respond to revolution faster than the maximum speed.

■ Electrical Specifications

Model number		TRD-2E□A/B	TRD-2E□V	
Power source	Operating voltage*1	A: 4.75 to 13.2VDC B: 10.8 to 26.4VDC	4.75 to 5.25VDC	
	Allowable ripple	Less than 3% rms		
	Current consumption	Less than 50mA		
Signal waveform	Signal type	Two-phase + home position		
	Max. response frequency	200kHz		
	Max. response revolution	(Max. response frequency/Resolution) × 60		
	Duty ratio	50±25%		
	Signal width at home position	100±50%		
Output	Rise/Fall time	Less than 1μs (when cable length is 1m)		
	Output type	NPN open collector output / Line driver output (equivalent to 26C31)		
	Output logic	Negative logic (active low) / Positive logic (active high)		
	Output current	Inflow	Max. 30mA	
		Outflow	-	
	Output voltage	"H"	-	
		"L"	0.4V max. / 0.5V max.	
	Load power voltage	Less than 30VDC		
Short circuit protection	Between output and power source			

*1 To be supplied by Class II source.

Mechanical specifications

Initial torque	0.01 N•m (+20°C) max.
Moment of inertia	$0.3 \times 10^{-6} \text{ kg} \cdot \text{m}^2$
Allowable load	Radial: 20 N
	Thrust: 20 N
Maximum allowable speed (Note 1)	5000 rpm
Cable	External diameter $\phi 5 \text{ mm}$ 5-wire oil resistant PVC cable Nominal section area of core: 0.14 mm^2 (Line driver output: 8-wire, 0.14 mm^2)
Weight	Approx. 110 g (with 1m cable)

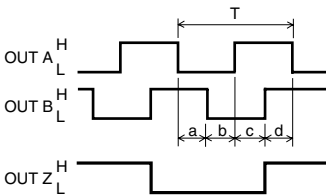
Note 1: Highest speed that can support mechanical integrity of the encoder

Environmental requirements

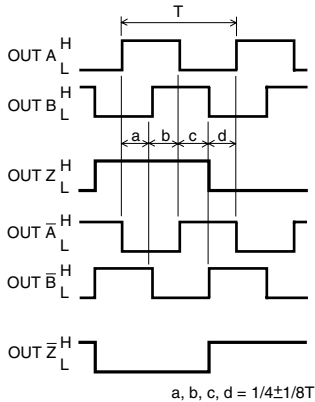
Ambient temperature	-10 to +70°C
Storage temperature	-25 to +85°C
Operating humidity	35 to 85% RH (with no condensation)
Voltage withstand	500 VAC (50 Hz/60 Hz) for one minute
Insulation resistance	50 M Ω min.
Vibration resistance	Durable for one hour along three axes at 10 to 55 Hz with 0.75 mm amplitude
Shock resistance	11 ms with 490 m/s^2 applied three times along three axes
Protection	Dust and splash proof : IP54

Channel timing chart

TRD-2E□ A/B



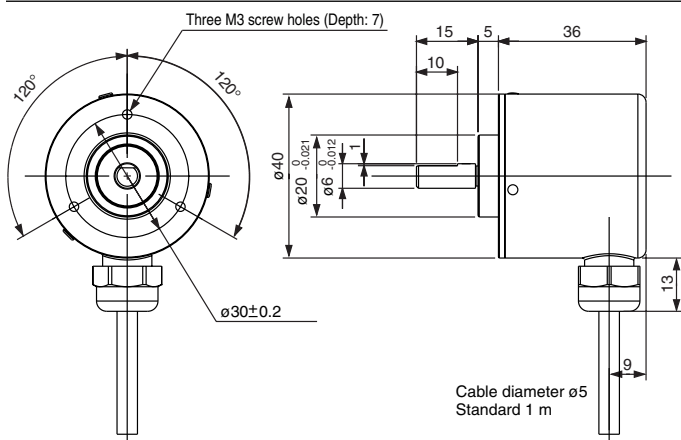
TRD-2E□ V



Normal means clockwise revolution viewed from the shaft.

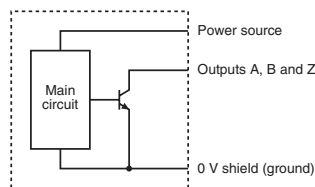
External Dimensions

(in mm)

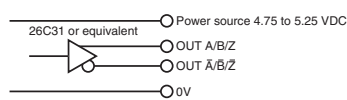


Cable diameter $\phi 5$
Standard 1 m

Open collector output circuit

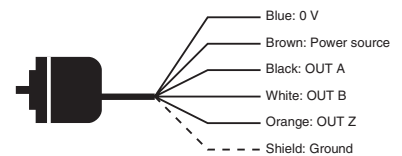


Line driver output circuit



Open collector connections

Shielded cable is not connected to the encoder body.



Line driver connections

Shielded cable is not connected to the encoder body.

