TRD-2E Series

Features

ϕ40 Incremental Type

- Small design with an outside diameter of ϕ40 mm / depth of 36 mm
- Equipped with short-circuit protection circuit, reverse connection protection circuit (For resolutions up to 2,500 P/R)
- Realizes IP54 protective structure.

Rotary Encoder Lineup
Selection Guide
Incremental Type
Absolute Type

Model Number List

Type	Appearance	Model Number	Supply Voltage	Output	Output Form	Pulse Number / Rotation
Shaft Type		TRD-2E□A	4.5 to 13.2 V DC	Output with 2-phase origin (Origin reverse action ⎍⎍)	Open collector output	10, 20, 30, 40, 50, 60, 100, 200, 240, 250, 300, 360, 400, 500, 600, 1,000, 1,024, 1,200, 2,000, 2,500, 3,600
		TRD-2E□B	10.8 to 26.4 V DC			
		TRD-2E□V	4.75 to 5.25 V DC	Output with 2-phase origin (Origin direct action ⎍⎍)	Line driver output	

TRD-2E□A

- Series classification
- Pulse number
- Form

A: Supply voltage 4.5 to 13.2 V DC Open collector output
B: Supply voltage 10.8 to 26.4 V DC Open collector output
V: Supply voltage 4.75 to 5.25 V DC Line driver output

Pulse and Frequencies

Pulse Number per Rotation		10	20	30	40	50	60	100	200	240	250	300	360	400	500	600	1,000	1,024	1,200	2,000	2,500	3,600
Maximum Response Frequency (kHz)*		0.8	1.6	2.5	3.3	4.1	5.0	8.3	16	20	20	25	30	33	41	50	83	85	100	166	200	200
Applicable Models	TRD-2E□A	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TRD-2E□B	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TRD-2E□V	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

* The electric maximum response frequency is specified by resolution (pulse number) and the maximum number of revolutions.
Electrical maximum number of revolutions = {(Maximum response frequency/Resolution) x 60}
Therefore, if the encoder rotates at a speed greater than the electrical maximum number of revolutions, the signals do not electrically follow.

Electrical Specifications

Model Number			TRD-2E□A	TRD-2E□B	TRD-2E□V
Power Supply	Supply Voltage*		A: 4.5 to 13.2 V DC	10.8 to 26.4 V DC	4.75 to 5.25 V DC
	Allowable Ripple		3% rms or less		
	Consumption Current (No Load)		50 mA or lower		
Output Waveform	Signal Format		2-phase output + home position		
	Maximum Response Frequency		200 kHz		
	Maximum Response Number of Revolutions		(Maximum Response Frequency/Resolution) x 60		
	Duty Ratio		50±25%		
	Signal Width at Home Position		100±50%		
Output	Rise / Fall Time		Not larger than 1 μs (Cable length 1 m, maximum load)		
	Output Form		NPN open collector output		Line driver output (Equivalent to 26C31)
	Output Logic		Negative logic (Active low)		Positive logic (Active high)
	Output Current	Sink	Up to 30 mA		Up to 20 mA
		Source	—		Up to 20 mA
	Output Voltage	"H"	—		2.5 V or higher
		"L"	0.4 V or lower		0.5 V or lower
	Load Supply Voltage		30 V DC or lower		—
	Short-circuit Protection		Between output and power supply		—

* To be supplied by Class II source.

TRD-MX
TRD-S/SH
TRD-2E
TRD-N/NH
TRD-J
TRD-GK

TRD-2E Series
Specifications/Dimensions

Mechanical Specifications

Starting Torque	0.01 N·m or less (+20°C)
Moment of Inertia	0.3 x 10^{-6} kg·m^2
Shaft Allowable Load	Radial: 30N
	Thrust: 20N
Maximum Allowable Number of Revolutions (Note 1)	5,000 rpm
Cable	Outside diameter ϕ5 mm 5-core shielded oil-resistant vinyl chloride cable (Line driver output is 8 cores) Core wire nominal cross-sectional area: 0.14 mm^2
Weight	Approx. 110 g (With 1 m cable)

Note 1: Maximum number of revolutions that can be mechanically endured

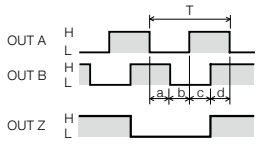
Environmental Requirements

Use Ambient Temperature	-10 to +70°C
Storage Ambient Temperature	-25 to +85°C
Use Ambient Humidity	35 to 85% RH (No condensation)
Withstand Voltage	Excluded due to capacitor grounding*
Insulation Resistance	50 MΩ or higher*
Vibration Resistance (Endurance)	Displacement half amplitude: 0.75 mm, 10 to 55 Hz, 3 axial directions, each 1 h
Impact Resistance (Endurance)	490m/s^2 11 ms, each 3 times in 3 axial directions
Protective Structure	Dustproof type·Splash-proof type: IP54

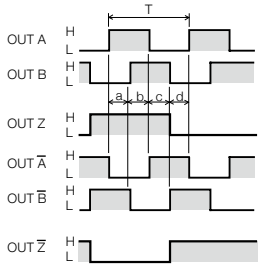
* The power supply, signal lines, and shield between the cases are excluded.

Output Waveform

Open Collector



Line Driver



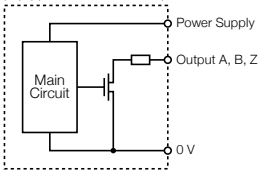
a, b, c, d = 1/4T±1/8T

Note: Clockwise rotation when the main body is the axle side is the normal rotation.

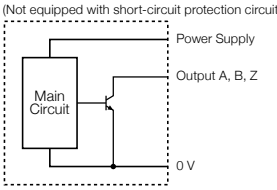
Output Circuit

Open Collector

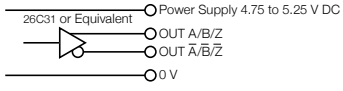
(Equipped with short-circuit protection circuit, up to 2,500 P/R)



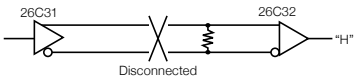
(Not equipped with short-circuit protection circuit, 2,500 P/R or higher)



Line Driver



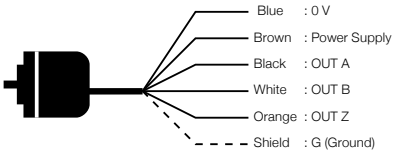
- When the transmission line or connector is disconnected, the output becomes "H."



Connection Diagram

Open Collector

The shielded wire is not connected to the main body for resolutions up to 2,500 P/R.
Shielded wire is connected to FG (frame ground) for resolutions of 2,500 P/R or higher.



Line Driver

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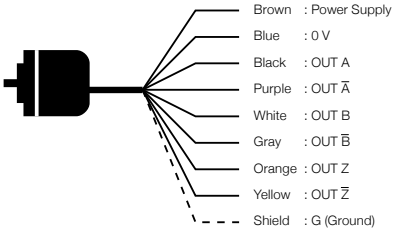

Dimensions (Unit: mm)