

# TRD-S/SH Series Incremental Encoders

Rotary Encoders

## ■ Features

- Shaft and Hollow Shaft type are available.
- Small body with 38mm diameter and 30mm depth.
- Compact design but the lineup reaches 2,500P/R.
- Protection degree IP40. (simple dust proof)



## ■ List of model numbers

Type	Appearance	Model number	Source voltage	Output	Output type	Pulse/revolution
Shaft		TRD-S□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, 250, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 2000, 2500
		TRD-S□B	10.8 to 26.4 VDC		2-phase with home position in forward operation	
		TRD-S□V	4.75 to 5.25 VDC	2-phase with home position in forward operation		
Hollow shaft		TRD-SH□A	4.5 to 13.2 VDC	2-phase with home position in reverse operation	Open collector output	
		TRD-SH□B	10.8 to 26.4 VDC		2-phase with home position in forward operation	
		TRD-SH□V	4.75 to 5.25 VDC	2-phase with home position in forward operation		

## ■ Model numbering system

TRD- **S** □ □ **A**

- Series
  - S:** Shaft
  - SH:** Hollow 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	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	25	30	36	40	50	50	60	80	100	100	120	200	200
Applicable models	TRD-S□A/TRD-SH□A	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TRD-S□B/TRD-SH□B	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TRD-S□V/TRD-SH□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		TRD-S□A / TRD-SH□A	TRD-S□B / TRD-SH□B	TRD-S□V / TRD-SH□V	
Power source	Power source voltage	4.5 to 13.2 VDC	10.8 to 26.4 VDC	4.75 to 5.25 VDC	
	Allowable ripple	3% rms max.		—	
	Current consumption	50 mA max.		50 mA max.	
Signal waveform		Two-phase + home position		Two-phase + home position	
Maximum response frequency		200 kHz		200 kHz	
Duty ratio		50 ± 25%		50 ± 25%	
Phase difference width		25 ± 12.5%		25 ± 12.5%	
Signal width at home position		100 ± 50%		100 ± 50%	
Output	Rise / Fall time	1 μs max. (when cable length is 1 m)		—	
	Output type	NPN open collector output		Line-driver*	
	Output logic	Negative logic (active low)		Positive logic (active high)	
	Output voltage	“H”	—		2.5 V min.
		“L”	0.4 V max.		0.5 V max.
	Influx current	30 mA max.		—	
Load power voltage	30 VDC max.		—		

\* Equivalent to 26C31, lever is equivalent to 26C32.

