



## Shaft Type Ø18mm Incremental Rotary Encoder

### ■ Features

- Ultra-compact (Ø18mm) and ultra-lightweight (12g)
- Easy installation in tight or limited spaces
- Low moment of inertia
- Power supply: 5VDC ±5%



[Axial cable type]



[Radial cable type]

### ■ Applications

- Suitable for office machine such as ATMs, bill counting machines, copy machines

**⚠ Please read "Caution for your safety" in operation manual before using.**



### ■ Ordering Information

<b>E18S</b>	<b>2.5</b>	<b>200</b>	<b>1</b>	<b>N</b>	<b>5</b>	<b>R</b>
Series	Shaft diameter	Pulse/1Revolution	Output phase	Control output	Power supply	Cable
Diameter Ø18mm, shaft type	2: Ø2mm 2.5: Ø2.5mm	100, 200, 300, 400	1: A	N: NPN open collector output V: Voltage output	5: 5VDC ±5%	R: Axial cable type S: Radial cable type

### ■ Specifications

Item		Shaft Type Ø18mm Incremental Rotary Encoder	
Resolution (P/R) <sup>※1</sup>		100, 200, 300, 400	
Electrical specification	Output phase		A phase
	Control output	NPN open collector output	Load current: Max. 30mA, Residual voltage: Max. 0.4VDC
		Voltage output	Load current: Max. 10mA, Residual voltage: Max. 0.4VDC
	Response time (rise/fall)	NPN open collector output	Max. 1µs (cable length: 1m, I sink=20mA)
		Voltage output	
	Max. response frequency		25kHz
	Power supply		5VDC ±5% (ripple P-P: max. 5%)
	Current consumption		Max. 50mA (disconnection of the load)
	Insulation resistance		Over 100MΩ (at 500VDC megger between all terminals and case)
	Dielectric strength		500VAC 50/60Hz for 1 min (between all terminals and case)
Connection		Axial/Radial cable type	
Mechanical specification	Starting torque		Max. 10gf·cm (9.8×10 <sup>-4</sup> N·m)
	Moment of inertia		Max. 0.5g·cm <sup>2</sup> (5×10 <sup>-8</sup> kg·m <sup>2</sup> )
	Shaft loading		Radial: 200gf, Thrust: 200gf
	Max. allowable revolution <sup>※2</sup>		6,000rpm
Vibration		1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours	
Shock		Approx. max. 50G	
Environment	Ambient temperature	-10 to 70°C, storage: -20 to 80°C	
	Ambient humidity	35 to 85%RH, storage: 35 to 90%RH	
Protection structure		IP50 (IEC standard)	
Cable		Ø0.98mm, 4-wire, 150mm, Flat ribbon cable (AWG26, core diameter: 0.16mm, number of cores: 7, insulator out diameter: Ø0.98mm)	
Accessory		Ø2mm coupling (supplied only for Ø2mm shaft diameter model)	
Approval		<b>CE cRUUS</b>	
Weight <sup>※3</sup>		Ø2mm Shaft diameter model: Approx. 35.4g (approx. 12g) Ø2.5mm Shaft diameter model: Approx. 34.2g (approx. 12g)	

※1: Not indicated resolutions are customizable.

※2: Make sure that. Max response revolution should be ≤ than or equal to max. allowable revolution when selecting the resolution.

$$[\text{Max. response revolution (rpm)}] = \frac{\text{Max. response frequency}}{\text{Resolution}} \times 60 \text{ sec}$$

※3: The weight includes packaging. The weight in parenthesis is for unit only.

※Environment resistance is rated at no freezing or condensation.

(A) Photoelectric Sensors

(B) Fiber Optic Sensors

(C) Door/Area Sensors

(D) Proximity Sensors

(E) Pressure Sensors

(F) Rotary Encoders

(G) Connectors/ Connector Cables/ Sensor Distribution Boxes/Sockets

(H) Temperature Controllers

(I) SSRs / Power Controllers

(J) Counters

(K) Timers

(L) Panel Meters

(M) Tacho / Speed / Pulse Meters

(N) Display Units

(O) Sensor Controllers

(P) Switching Mode Power Supplies

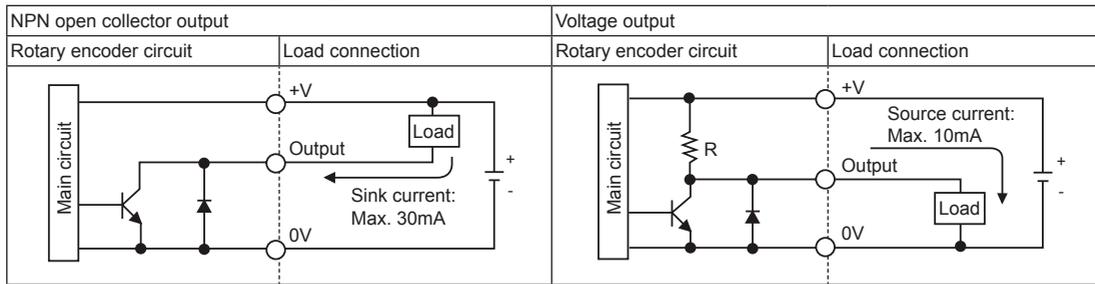
(Q) Stepper Motors & Drivers & Controllers

(R) Graphic/ Logic Panels

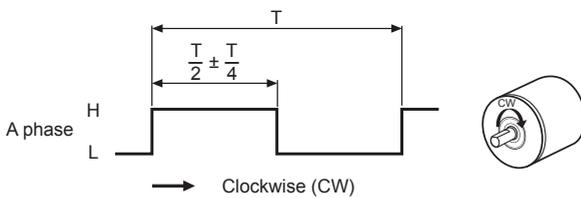
(S) Field Network Devices

(T) Software

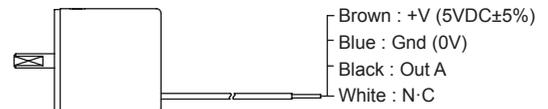
## Control Output Diagram



## Output Waveform



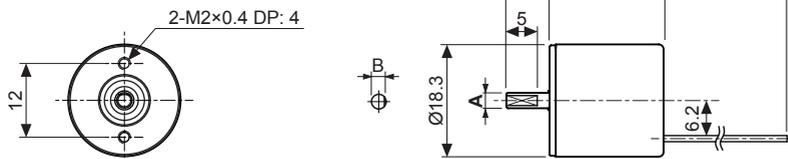
## Connections



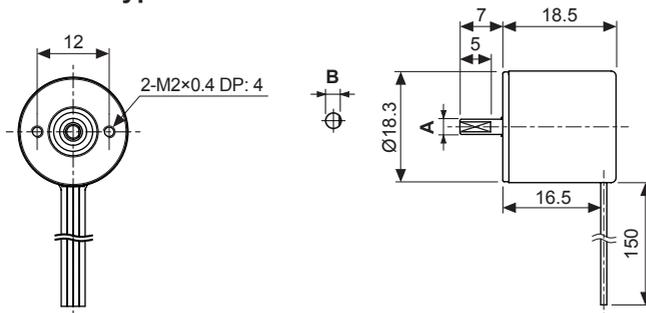
## Dimensions

### ⊙ Axial cable type

(unit: mm)

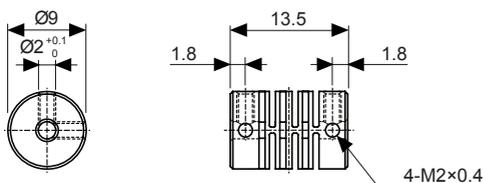


### ⊙ Radial cable type



Model	A	B
E18S2	Ø2.0 <sup>-0.004</sup> <sub>-0.02</sub>	1.7 <sup>0</sup> <sub>-0.1</sub>
E18S2.5	Ø2.5 <sup>-0.004</sup> <sub>-0.02</sub>	2.2 <sup>0</sup> <sub>-0.1</sub>

### ● Coupling (E18S)



- Parallel misalignment: Max. 0.15mm
- Angular misalignment: Max. 2°
- End-play: Max. 0.5mm

※When mounting the coupling to the encoder shaft, if there is combined misalignment (parallel, angular misalignment) between rotating encoder shaft and mate shaft, it may cause encoder and coupling's life cycle to shorten.

※Do not load overweight on the shaft.

※For parallel misalignment, angular misalignment, end-play terms, refer to page F-71.

※For flexible coupling (ERB series) information, refer to page F-64.