E18S Series

Diameter Ø18mm Shaft Type Incremental Rotary Encoder

NEW

▣ Features

- Diameter ø18mm of miniature and weight 12g of ultra-light rotary encoder
- Easy installation at narrow space
- Small shaft inertia moment
- Power supply: 5VDC ±5%

[Axial cable type]   [Radial cable type]

▣ Applications

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

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

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▣ Ordering Information

E18S	2.5	– 200	– 1	– N	– 5	– R
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			Diameter ø18mm shaft type of incremental rotary encoder
Resolution (P/R)[1]			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		Min. 100MΩ (at 500VDC megger between all terminals and case)
	Dielectric strength		500VAC 50/60Hz for 1 min. (between all terminals and case)
	Connection		Cable type (axial cable, radial cable)
Mechanical specification	Starting torque		Max. 10gf·cm (9.8×10⁻⁴ N·m)
	Moment of inertia		Max. 0.5g·cm² (5×10⁻⁸ kg·m²)
	Shaft loading		Radial : 200gf, Thrust : 200gf
	Max. allowable revolution[2]		6000rpm
Vibration			1.5mm amplitude at frequency of 10 to 55Hz (for 1 min.) in each X, Y, Z direction for 2 hours
Shock			Max. 50G
Environment	Ambient temperature		-10 to 70℃, storage: -20 to 80℃
	Ambient humidity		35 to 85%RH, storage: 35 to 90%RH
Protection structure			IP50 (IEC standard)
Cable			ø0.98mm, 4-wire, Length: 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			CE c�macRUus
Weight[3]			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 lower than or equal to max. allowable revolution when selecting the resolution.
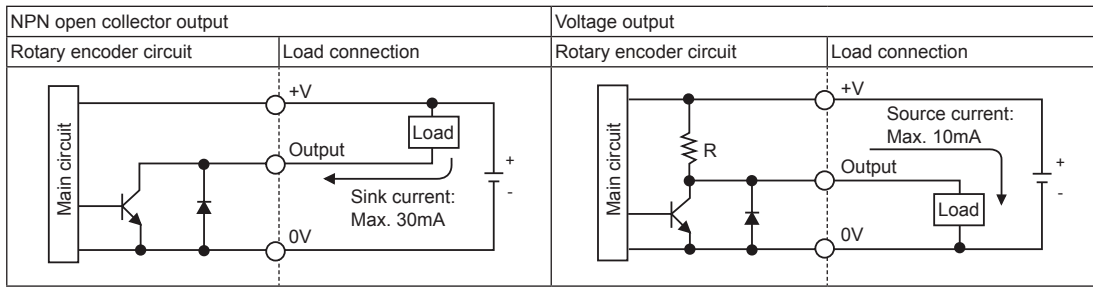
$$[\text{Max. response revolution (rpm)}= \frac{\text{Max. response frequency}}{\text{Resolution}} \times 60 \text{ sec}]$$

※3: The weight includes packaging. The weight in parentheses is for unit only.
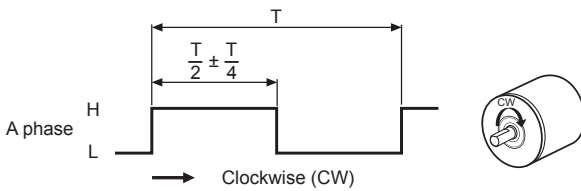※Environment resistance is rated at no freezing or condensation.
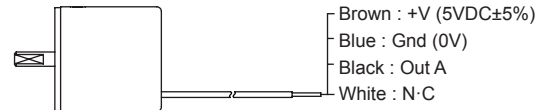
Incremental ø18mm Shaft Type

▣ Control Output Diagram

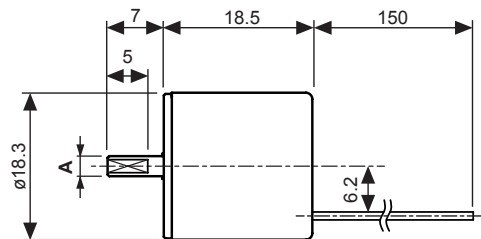| NPN open collector output		Voltage output	
Rotary encoder circuit	Load connection	Rotary encoder circuit	Load connection

NPN: +V, Output, Sink current: Max. 30mA, 0V

Voltage output: +V, Source current: Max. 10mA, Output, 0V, R

▣ Output Waveform

● **NPN open collector output / Voltage output**

$$\frac{T}{2} \pm \frac{T}{4}$$

A phase H / L

Clockwise (CW)

▣ Connections

● **NPN open collector output / Voltage output**
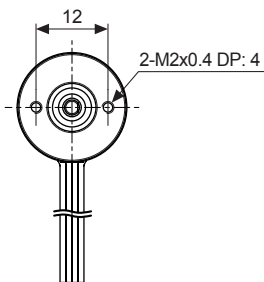
- Brown : +V (5VDC±5%)
- Blue : Gnd (0V)
- Black : Out A
- White : N·C

▣ Dimensions

(unit : mm)

◎ **Axial cable type**

2-M2×0.4 DP : 4

7, 5, 18.5, 150, 12, ø18.3, A, B, 6.2

◎ **Radial cable type**

12, 2-M2x0.4 DP: 4, 7, 5, 18.5, ø18.3, A, B, 16.5, 150
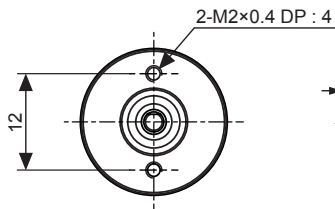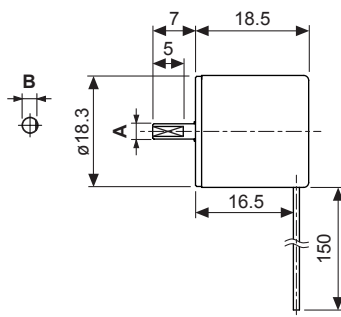
Model	A	B
E18S-2	Ø2.0 $^{-0.004}_{-0.02}$	1.7 $^{0}_{-0.1}$
E18S-2.5	Ø2.5 $^{-0.004}_{-0.02}$	2.2 $^{0}_{-0.1}$

● **Coupling (E18S)**

ø9, ø2 $^{+0.1}_{0}$, 13.5, 1.8, 1.8, 4-M2×0.4
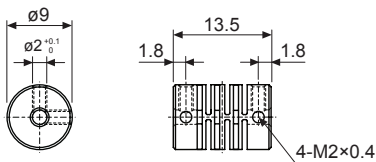
· Parallel misalignment: Max. 0.15mm
· Angular misalignment: Max. 2°
· End-play: Max. 0.2mm
※ For terminology of parallel, angular misalignment, and end-play, refer to page F-71.

(A) Photoelectric Sensors / (B) Fiber Optic Sensors / (C) Door/Area Sensors / (D) Proximity Sensors / (E) Pressure Sensors / (F) Rotary Encoders / (G) Connectors/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