

Diameter Ø50mm Shaft Type Incremental Rotary Encoder

■ Features

- 12-24VDC power supply of line driver output (line-up)
- Suitable for measuring angle, position, revolution, speed, acceleration and distance
- Power supply: 5VDC, 12-24VDC ±5%

■ Applications

- Various tooling machinery, packing machine and general industrial machinery, etc.

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



■ Ordering Information (former name: ENB)

E50S	8	8000	3	N	24	
Series	Shaft diameter	Pulse/1 Revolution	Output phase	Control output	Power supply	Cable
Diameter Ø50mm, shaft type	Ø8mm	Refer to resolution	2: A, B 3: A, B, Z 4: A, Ā, B, B̄ 6: A, Ā, B, B̄, Z, Z̄	T: Totem pole output N: NPN open collector output V: Voltage output L: Line driver output	5: 5VDC ±5% 24: 12-24VDC ±5%	No mark: Axial cable type C: Axial cable connector type CR: Axial connector type CS: Radial connector type

■ Specifications

Item		Diameter Ø50mm shaft type of incremental rotary encoder	
Resolution (P/R) ^{*1}		*1, *2, *5, 10, 12, 15, 20, 23, 25, 30, 35, 40, 45, 50, 60, 75, 100, 120, 125, 150, 192, 200, 240, 250, 256, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 1500, 1800, 2000, 2048, 2500, 3000, 3600, 4000, 5000, 6000, 8000	
Electrical specification	Output phase	A, B, Z phase (line driver: A, Ā, B, B̄, Z, Z̄ phase)	
	Phase difference of output	Output between A and B phase: $\frac{T}{4} \pm \frac{T}{8}$ (T=1 cycle of A phase)	
	Control output	Totem pole output	• [Low] - Load current: Max. 30mA, Residual voltage: Max. 0.4VDC • [High] - Load current: Max. 10mA, Output voltage (power voltage 5VDC): Min. (power voltage-2.0)VDC, Output voltage (power voltage 12-24VDC): Min. (power voltage-3.0)VDC
		NPN open collector output	Load current: Max. 30mA, Residual voltage: Max. 0.4VDC
		Voltage output	Load current: Max. 10mA, Residual voltage: Max. 0.4VDC
		Line driver output	• [Low] - Load current: Max. 20mA, Residual: Max. 0.5VDC • [High] - Load current: Max. -20mA, Output voltage (power voltage 5VDC): Min. (power voltage-2.5)VDC, Output voltage (power voltage 12-24VDC): Min. (power voltage-3.0)VDC
	Response time (rise/fall)	Totem pole output	Max. 1μs (cable length: 2m, I sink = 20mA)
		NPN open collector output	
		Voltage output	
		Line driver output	Max. 0.5μs (cable length: 2m, I sink = 20mA)
	Max. Response frequency	300kHz	
	Power supply	• 5VDC ±5% (ripple P-P: Max. 5%) • 12-24VDC ±5% (ripple P-P: Max. 5%)	
	Current consumption	Max. 80mA (disconnection of the load), Line driver output: Max. 50mA (disconnection of the load)	
	Insulation resistance	Over. 100MΩ (at 500VDC megger between all terminals and case)	
	Dielectric strength	750VAC 50/60Hz for 1 minute (between all terminals and case)	
	Connection	Axial cable type, Axial cable connector type, Axial/Radial connector type	
Mechanical specification	Starting torque	Max. 70gf·cm (0.007N·m) ^{*2} , Max. 800gf·cm (0.078N·m) ^{*3}	
	Moment of inertia	Max. 80g·cm ² (8×10 ⁻⁶ kg·m ²) ^{*2} , Max. 400g·cm ² (4×10 ⁻⁵ kg·m ²) ^{*3}	
	Shaft loading	Radial: Max. 10kgf, Thrust: Max. 2.5kgf	
	Max. allowable revolution ^{*4}	5,000rpm	
Vibration		1.5mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 2 hours	
Shock		Approx. Max. 75G	
Environment	Ambient temperature	-10 to 70°C, Storage: -25 to 85°C	
	Ambient humidity	35 to 85%RH, Storage: 35 to 90%RH	
Protection structure		Axial cable type, Axial cable connector type: IP50 (IEC standards) ^{*5} , Axial/Radial connector type: IP65 (IEC standards)	
Cable		Ø5mm, 5-wire (line driver output: 8-wire), 2m, Shield cable (AWG 24, core diameter: 0.08mm, number of cores: 40, insulator out diameter: Ø1mm)	
Accessory		Ø8mm coupling, Bracket	
Approval		CE (except for line driver output)	
Weight ^{*6}		Approx. 363g (approx. 275g), Axial/Radial connector type: Approx. 268g (approx. 180g)	

※1: ^{*} pulse is only for A, B phase (line driver output is for A, Ā, B, B̄ phase). Not indicated resolutions are customizable.

※2: This value is for Axial cable type, Axial cable connector type (protection structure: IP50).

※3: This value is for Axial cable type, Axial cable connector type (protection structure: IP64), Axial/Radial connector type (protection structure: IP65).

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

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

※5: In case of axial cable type, axial cable connector type, they are available to order the option protection structure IP64.

※6: The weight includes packaging. The weight in parentheses 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