

50 mm Diameter Incremental Rotary Encoders



E50 Series CATALOG

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

Features

- Ø 50 mm housing, Ø 8 mm solid shaft
- Accurate measurement of angle, position, revolution, speed, acceleration, and distance
- Cable type, cable connector type, axial / radial connector types available
- Various resolutions: 1 to 8000 pulses per revolution
- Various control output options
- Power supply: 5 VDC \pm 5%, 12 - 24 VDC \pm 5%

Ordering Information

This is only for reference, the actual product does not support all combinations. For selecting the specified model, follow the Autonics website.

E50 S 8 - ① - ② - ③ - ④ - ⑤

① Resolution

Number: Refer to resolution in 'Specifications'

② Output phase

2: A, B
3: A, B, Z
4: A, \bar{A} , B, \bar{B}
6: A, \bar{A} , B, \bar{B} , Z, \bar{Z}

③ Control output

T: Totem pole output
N: NPN open collector output
V: Voltage output
L: Line driver output

④ Power supply

5: 5 VDC \pm 5%
24: 12 - 24 VDC \pm 5%

⑤ Connection

No mark: Axial cable type
C: Axial cable connector type
CR: Axial connector type
CS: Radial connector type

Product Components

- Product
- Instruction manual
- Bolt \times 7
- Coupling \times 1
- Bracket \times 1

Specifications

Model	E50S8-□-□-□-□-□	E50S8-□-□-□-□-□	E50S8-□-□-□-□-□	E50S8-□-□-□-□-□
Resolution	1 / 2 / 5 PPR ⁽¹⁾ 10 to 8,000 PPR model			
Control output	Totem pole output	NPN open collector output	Voltage output	Line driver output
Output phase	A, B, Z	A, B, Z	A, B, Z	A, \bar{A} , B, \bar{B} , Z, \bar{Z}
Inflow current	\leq 30 mA	\leq 30 mA	-	\leq 20 mA
Residual voltage	\leq 0.4 VDC \pm	\leq 0.4 VDC \pm	\leq 0.4 VDC \pm	\leq 0.5 VDC \pm
Outflow current	\leq 10 mA	-	\leq 10 mA	\leq -20 mA
Output voltage (5 VDC \pm)	\geq (power supply -2.0) VDC \pm	-	-	\geq 2.5 VDC \pm
Output voltage (12 - 24 VDC \pm)	\geq (power supply -3.0) VDC \pm	-	-	\geq (power supply -3.0) VDC \pm
Response speed ⁽²⁾	\leq 1 μ s			\leq 0.5 μ s
Max. response freq.	300 kHz			
Max. allowable revolution ⁽³⁾	5,000 rpm			
Approval	CE ENEC	CE ENEC	CE ENEC	ENEC

01) Depending on the control output, only A, B or A, \bar{A} , B, \bar{B} are output.

02) Based on cable length: 2 m, I sink: 20 mA

03) Select resolution to satisfy Max. allowable revolution \geq Max. response revolution

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

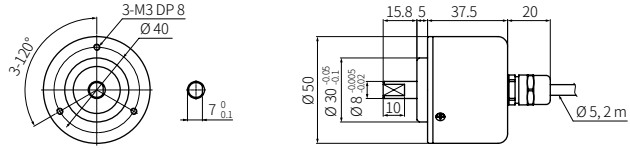
Connection	Axial cable type	Axial cable connector type	Axial connector type	Radial connector type
Starting torque	\leq 0.007 N m		\leq 0.078 N m	
Inertia moment	\leq 80 g \cdot cm ² (8×10^{-6} kg \cdot m ²)		\leq 400 g \cdot cm ² (4×10^{-5} kg \cdot m ²)	
Allowable shaft load	Radial: \leq 10 kgf, Thrust: \leq 2.5 kgf			
Unit weight (packaged)	\approx 275 g (\approx 363 g)		\approx 180 g (\approx 268 g)	

Power supply	5 VDC \pm 5% (ripple P-P: \leq 5%) / 12 - 24 VDC \pm 5% (ripple P-P: \leq 5%) model
Current consumption	Totem pole, NPN open collector, Voltage output: \leq 80 mA (no load) Line driver output: \leq 50 mA (no load)
Insulation resistance	Between all terminals and case: \geq 100 M Ω (500 VDC \pm megger)
Dielectric strength	Between all terminals and case: 750 VAC \sim 50 / 60 Hz for 1 minute
Vibration	1 mm double amplitude at frequency 10 to 55 Hz (for 1 minute) in each X, Y, Z direction for 2 hours
Shock	\leq 75 G
Ambient temp.	-10 to 70 $^{\circ}$ C, storage: -25 to 85 $^{\circ}$ C (no freezing or condensation)
Ambient humi.	35 to 85%RH, storage: 35 to 90%RH (no freezing or condensation)
Protection rating	Axial cable type / cable connector type: IP50 (IEC standard) ⁽¹⁾ Axial / Radial connector type: IP65 (IEC standard)
Cable spec.	\varnothing 5 mm, 5-wire (Line driver output: 8-wire), shield cable cable type: 2 m, cable connector type: 250 mm
Wire spec.	AWG24 (0.08 mm, 40-core), insulator diameter: \varnothing 1 mm
Connector spec.	Totem pole, NPN open collector, Voltage output: M17 6-pin socket type Line driver output: M17 9-pin socket type

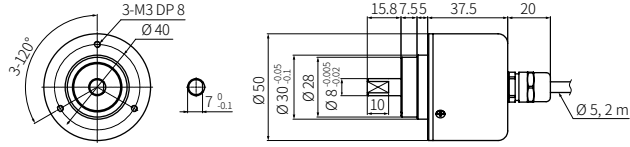
01) Protection structure IP64 option is also available to order.
(starting torque: \leq 0.078 N m, inertia moment: \leq 400 g \cdot cm² (4×10^{-5} kg \cdot m²))

Dimensions

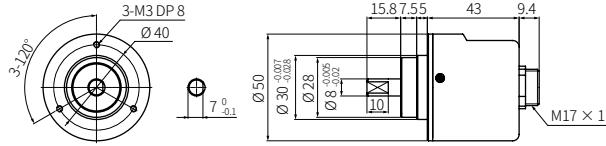
- Unit: mm, For the detailed drawings, follow the Autonics website.
 - Following items are based on cable type, connector type.
- Refer to 'Specifications' for detailed specifications of cable, wire and connector.



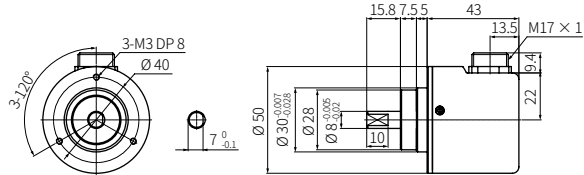
Axial cable type (IP50)



Axial cable type (IP64)

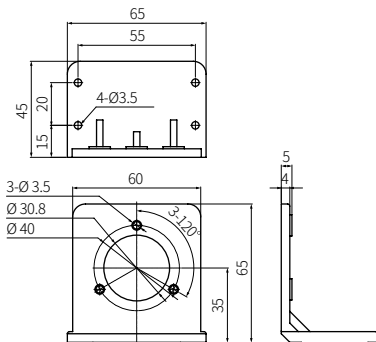


Axial connector type

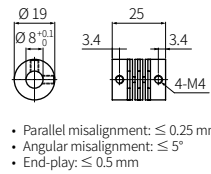


Radial connector type

■ Bracket



■ Coupling



- Parallel misalignment: ≤ 0.25 mm
- Angular misalignment: $\leq 5^\circ$
- End-play: ≤ 0.5 mm

Sold Separately

- Connector cable: CID6S-□, CID9S-□