

# 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-□-□-□-□-□
<b>Resolution</b>	1 / 2 / 5 PPR <sup>(01)</sup> 10 to 8,000 PPR model			
<b>Control output</b>	Totem pole output	NPN open collector output	Voltage output	Line driver output
<b>Output phase</b>	A, B, Z	A, B, Z	A, B, Z	A, $\bar{A}$ , B, $\bar{B}$ , Z, $\bar{Z}$
<b>Inflow current</b>	$\leq$ 30 mA	$\leq$ 30 mA	-	$\leq$ 20 mA
<b>Residual voltage</b>	$\leq$ 0.4 VDC $\pm$	$\leq$ 0.4 VDC $\pm$	$\leq$ 0.4 VDC $\pm$	$\leq$ 0.5 VDC $\pm$
<b>Outflow current</b>	$\leq$ 10 mA	-	$\leq$ 10 mA	$\leq$ -20 mA
<b>Output voltage (5 VDC<math>\pm</math>)</b>	$\geq$ (power supply -2.0) VDC $\pm$	-	-	$\geq$ 2.5 VDC $\pm$
<b>Output voltage (12 - 24 VDC<math>\pm</math>)</b>	$\geq$ (power supply -3.0) VDC $\pm$	-	-	$\geq$ (power supply -3.0) VDC $\pm$
<b>Response speed<sup>(02)</sup></b>	$\leq$ 1 $\mu$ s			$\leq$ 0.5 $\mu$ s
<b>Max. response freq.</b>	300 kHz			
<b>Max. allowable revolution<sup>(03)</sup></b>	5,000 rpm			
<b>Approval</b>	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  
 [max. response revolution (rpm) =  $\frac{\text{max. response frequency}}{\text{resolution}} \times 60 \text{ sec}$ ]

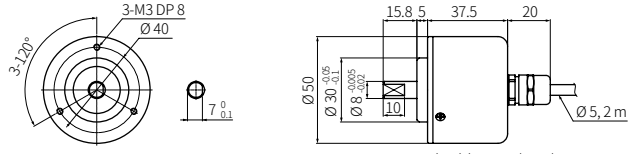
Connection	Axial cable type	Axial cable connector type	Axial connector type	Radial connector type
<b>Starting torque</b>	$\leq$ 0.007 N m		$\leq$ 0.078 N m	
<b>Inertia moment</b>	$\leq$ 80 g $\cdot$ cm <sup>2</sup> ( $8 \times 10^{-6}$ kg $\cdot$ m <sup>2</sup> )		$\leq$ 400 g $\cdot$ cm <sup>2</sup>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

<b>Power supply</b>	5 VDC $\pm$ 5% (ripple P-P: $\leq$ 5%) / 12 - 24 VDC $\pm$ 5% (ripple P-P: $\leq$ 5%) model
<b>Current consumption</b>	Totem pole, NPN open collector, Voltage output: $\leq$ 80 mA (no load) Line driver output: $\leq$ 50 mA (no load)
<b>Insulation resistance</b>	Between all terminals and case: $\geq$ 100 M $\Omega$ (500 VDC $\pm$ megger)
<b>Dielectric strength</b>	Between all terminals and case: 750 VAC $\sim$ 50 / 60 Hz for 1 minute
<b>Vibration</b>	1 mm double amplitude at frequency 10 to 55 Hz (for 1 minute) in each X, Y, Z direction for 2 hours
<b>Shock</b>	$\leq$ 75 G
<b>Ambient temp.</b>	-10 to 70 $^{\circ}$ C, storage: -25 to 85 $^{\circ}$ C (no freezing or condensation)
<b>Ambient humi.</b>	35 to 85%RH, storage: 35 to 90%RH (no freezing or condensation)
<b>Protection rating</b>	Axial cable type / cable connector type: IP50 (IEC standard) <sup>(01)</sup> Axial / Radial connector type: IP65 (IEC standard)
<b>Cable spec.</b>	$\varnothing$ 5 mm, 5-wire (Line driver output: 8-wire), shield cable cable type: 2 m, cable connector type: 250 mm
<b>Wire spec.</b>	AWG24 (0.08 mm, 40-core), insulator diameter: $\varnothing$ 1 mm
<b>Connector spec.</b>	Totem pole, NPN open collector, Voltage output: M17 6-pin socket type Line driver output: M17 9-pin socket type

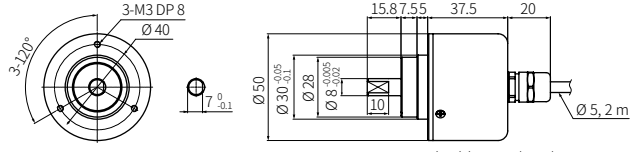
01) Protection structure IP64 option is also available to order.  
 (starting torque:  $\leq$  0.078 N m, inertia moment:  $\leq$  400 g $\cdot$ cm<sup>2</sup> ( $4 \times 10^{-5}$  kg $\cdot$ m<sup>2</sup>))

## Dimensions

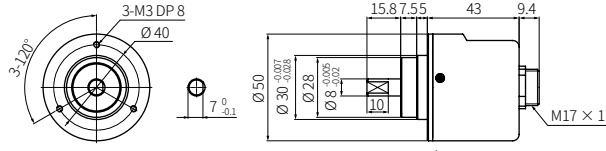
- Unit: mm, For the detailed drawings, follow the Autonics website.
  - Following items are based on cable type, connector type.
- Refer to 'Specifications' for detailed specifications of cable, wire and connector.



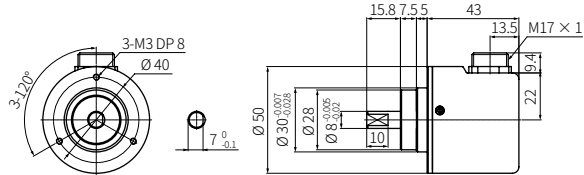
Axial cable type (IP50)



Axial cable type (IP64)

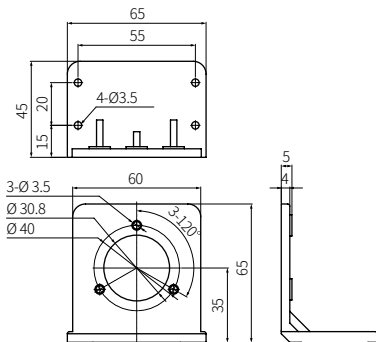


Axial connector type

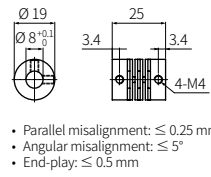


Radial connector type

### ■ Bracket



### ■ Coupling



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

## Sold Separately

- Connector cable: CID6S-□, CID9S-□