

# 20 mm Diameter Incremental Rotary Encoders



## E20 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

- Ultra-compact (Ø 20 mm) housing and lightweight (35 g) design
- Easy installation in tight or limited spaces
- Low shaft moment of inertia
- Various resolutions: 100, 200, 320, 360 pulses per revolution
- Various control output options
- Power supply: 5 VDC $\pm$  5%, 12 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.

**E20** ① ② - ③ - ④ - ⑤ - ⑥ - ⑦

#### ① Shaft type

S: Shaft type  
HB: Hollow Built-in type

#### ② Shaft outer diameter / Shaft inner diameter

2: Ø 2 mm  
2.5: Ø 2.5 mm  
3: Ø 3 mm

#### ③ Resolution

Number: Refer to resolution in 'Specifications'

#### ④ Output phase

3: A, B, Z  
6: A,  $\bar{A}$ , B,  $\bar{B}$ , Z,  $\bar{Z}$

#### ⑤ Control output

N: NPN open collector output  
V: Voltage output  
L: Line driver output

#### ⑥ Power supply

5: 5 VDC $\pm$  5%  
12: 12 VDC $\pm$  5%

#### ⑦ Connection

R: Axial cable type  
S: Radial cable type

### Product Components

Shaft type	Shaft type	Hollow Built-in type
<b>Product Components</b>	Product, Instruction manual	
<b>Bolt</b>	× 4	× 2
<b>Coupling</b>	× 1	-
<b>Bracket</b>	-	× 1

### Specifications

Model	E20□□-□-3-N-□-□	E20□□-□-3-V-□-□	E20□□-□-6-L-5-□
<b>Resolution</b>	100 / 200 / 320 / 360 PPR model		
<b>Control output</b>	NPN open collector output	Voltage output	Line driver output
<b>Output phase</b>	A, B, Z	A, B, Z	A, $\bar{A}$ , B, $\bar{B}$ , Z, $\bar{Z}$
<b>Inflow current</b>	≤ 30 mA	-	≤ 20 mA
<b>Residual voltage</b>	≤ 0.4 VDC $\pm$	≤ 0.4 VDC $\pm$	≤ 0.5 VDC $\pm$
<b>Outflow current</b>	-	≤ 10 mA	≤ -20 mA
<b>Output voltage</b>	-	-	≥ 2.5 VDC $\pm$
<b>Response speed</b> <sup>01)</sup>	≤ 1 μs		≤ 0.5 μs
<b>Max. response frequency</b>	100 kHz		
<b>Max. allowable revolution</b> <sup>02)</sup>	6,000 rpm		
<b>Starting torque</b>	≤ 5 × 10 <sup>-4</sup> N m		
<b>Inertia moment</b>	≤ 0.5 g · cm <sup>2</sup> (5 × 10 <sup>-8</sup> kg · m <sup>2</sup> )		
<b>Allowable shaft load</b>	Radial: ≤ 200 gf, Thrust: ≤ 200 gf		
<b>Unit weight</b>	≈ 35 g		
<b>Approval</b>	CE EAC	CE EAC	EAC

01) Based on cable length: 1 m, I sink: 20 mA

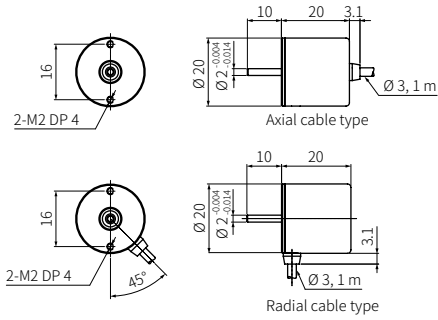
02) Select resolution to satisfy Max. allowable revolution ≥ Max. response revolution  
[max. response revolution (rpm) =  $\frac{\text{max. response frequency}}{\text{resolution}} \times 60 \text{ sec}$ ]

Model	E20□□-□-3-N-□-□	E20□□-□-3-V-□-□	E20□□-□-6-L-5-□
<b>Power supply</b>	5 VDC $\pm$ 5% (ripple P-P: ≤ 5%) / 12 VDC $\pm$ 5% (ripple P-P: ≤ 5%) model		5 VDC $\pm$ 5% (ripple P-P: ≤ 5%)
<b>Current consumption</b>	≤ 60 mA (no load)		≤ 50 mA (no load)
<b>Insulation resistance</b>	Between all terminals and case: ≥ 100 MΩ (500 VDC $\pm$ megger)		
<b>Dielectric strength</b>	Between all terminals and case: 500 VAC~ 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>	≤ 50 G		
<b>Ambient temp.</b>	-10 to 70 °C, storage: -20 to 80 °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>	IP50 (IEC standard)		
<b>Connection</b>	Axial / Radial cable type model		
<b>Cable spec.</b>	Ø 3 mm, 5-wire (Line driver output: 8-wire), 1 m, shield cable		

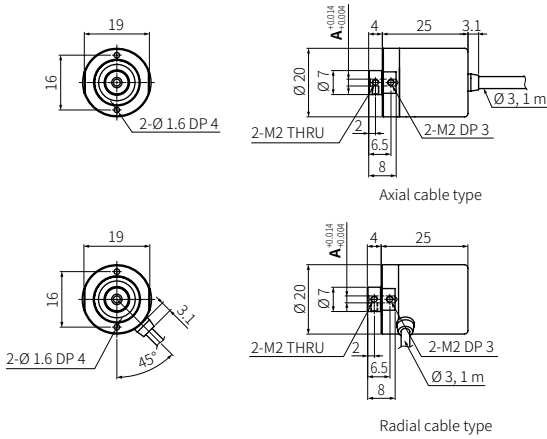
## Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.

### ■ Shaft type

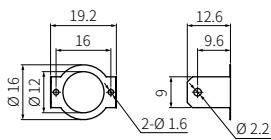


### ■ Hollow Built-in type

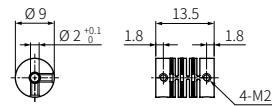


	A
E20HB2	Ø 2
E20HB2.5	Ø 2.5
E20HB3	Ø 3

### ■ Bracket



### ■ Coupling



- Parallel misalignment:  $\leq 0.15$  mm
- Angular misalignment:  $\leq 2^\circ$
- End-play:  $\leq 0.2$  mm