

E20 Series

کانون ابزار

تلفن:

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Shaft Type/Blind Hollow Shaft Type Ø20mm Incremental Rotary Encoder

■ Features

- Ø20mm of miniature rotary encoder
- Easy installation at narrow space
- Low moment of inertia
- Power supply: 5VDC, 12VDC ±5%
- Various output types

⚠ Please read "Safety Considerations" in the instruction manual before using.



E20S Series



E20HB Series

■ Ordering Information

E20S	2		360	3	N	12	R
Series	Shaft diameter		Pulses/revolution	Output phase	Control output	Power supply	Cable
Ø20mm S: shaft type	External	2: Ø2mm	100, 200, 320, 360	3: A, B, Z 6: A, $\bar{A}$, B, $\bar{B}$, Z, $\bar{Z}$	N: NPN open collector output V: Voltage output L: Line driver output (※)	5: 5VDC ±5% 12: 12VDC ±5%	R: Axial cable type S: Radial cable type
Ø20mm HB: blind hollow shaft type	Inner	2: Ø2mm 2.5: Ø2.5mm 3: Ø3mm					

※The power of Line driver is only for 5VDC.

■ Specifications

Item	Shaft Type/Blind Hollow Shaft Type Ø20mm Incremental Rotary Encoder	
Resolution (PPR)※1	100, 200, 320, 360	
Electrical specification	Output phase	A, B, Z phase (line driver output A, $\bar{A}$, B, $\bar{B}$, Z, $\bar{Z}$ phase)
	Phase difference of output	Phase difference between A and B: $\frac{T}{4} \pm \frac{T}{8}$ (T=1 cycle of A phase)
	Control output	NPN open collector output
		Load current: max. 30mA, residual voltage: max. 0.4VDC=
		Voltage output
	Line driver output	Load current: max. 10mA, residual voltage: max. 0.4VDC=
		• [Low] - Load current: max. 20mA, residual voltage: max. 0.5VDC=
		• [High] - Load current: max. -20mA, output voltage: min. 2.5VDC=
	Response time (rise/fall)	NPN open collector output
		Max. 1μs (cable length: 1m, I sink = 20mA)
		Voltage output
Mechanical specification	Line driver output	Max. 0.5μs (cable length: 1m, I sink = 20mA)
		Max. response frequency
		100kHz
	Power supply	• 5VDC= ±5% (ripple P-P: max. 5%) • 12VDC= ±5% (ripple P-P: max. 5%)
	Current consumption	Max. 60mA (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	500VAC 50/60Hz for 1 minute (between all terminals and case)
	Connection	Axial cable type, radial cable type
	Starting torque	Max. 5gf·cm (5×10^{-4} N·m)
	Moment of inertia	Max. 0.5g·cm ² (5×10^{-8} kg·m ²)
Environmental specification	Shaft loading	Radial: 200gf, Thrust: 200gf
	Max. allowable revolution※2	6,000rpm
	Vibration	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours
	Shock	Approx. max. 50G
	Environment	Ambient temperature
		-10 to 70°C, storage: -20 to 80°C
	Ambient humidity	Ambient humidity
		35 to 85%RH, storage: 35 to 90%RH
	Protection structure	IP50 (IEC standard)
	Cable	Ø3mm, 5-wire (line driver output: 8-wire), 1m, Shield cable
Accessory	Ø2mm Coupling (shaft type), Bracket (blind hollow shaft type)	
	Approval	CE (except line driver output)
	Unit weight	Approx. 35g

※1: Not indicated resolutions are customizable.

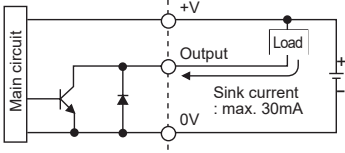
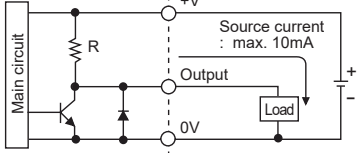
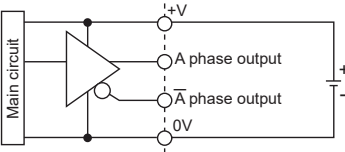
※2: Make sure that max. response revolution should be lower than or equal to max. allowable revolution when selecting the resolution.

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

※Environment resistance is rated at no freezing or condensation.

Incremental Ø20mm Shaft/Blind Hollow Shaft type

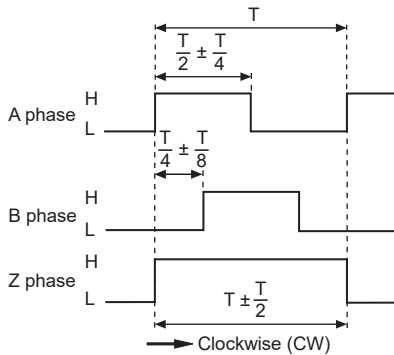
■ Control Output Diagram

NPN open collector output		Voltage output	
Rotary encoder circuit	Load connection	Rotary encoder circuit	Load connection
			
Line driver output		—	
Rotary encoder circuit	Load connection		
			

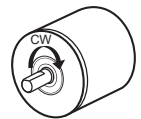
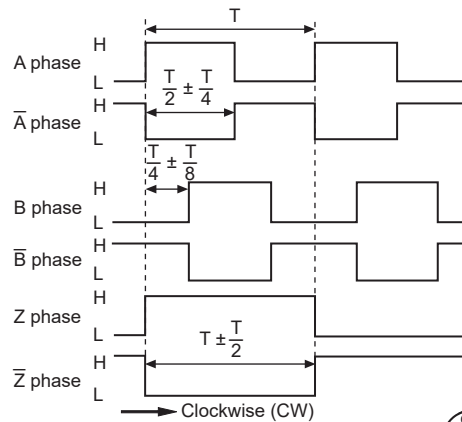
※The output circuit of A, B, Z phase are same. (line driver output is A, $\bar{A}$, B, $\bar{B}$, Z, $\bar{Z}$)

■ Output Waveform

◎ NPN open collector output / Voltage output

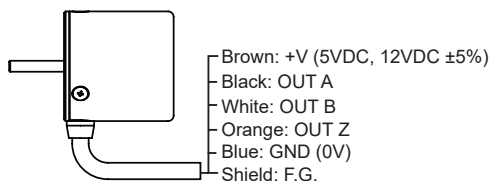


◎ Line driver output

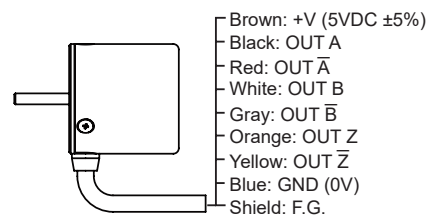


■ Connections

◎ NPN open collector output / Voltage output



◎ Line driver output



※Do not apply tensile strength over 15N to the cable.

SENSORS

CONTROLLERS

MOTION DEVICES

SOFTWARE

(A) Photoelectric Sensors

(B) Fiber Optic Sensors

(C) LIDAR

(D) Door/Area Sensors

(E) Vision Sensors

(F) Proximity Sensors

(G) Pressure Sensors

(H) Rotary Encoders

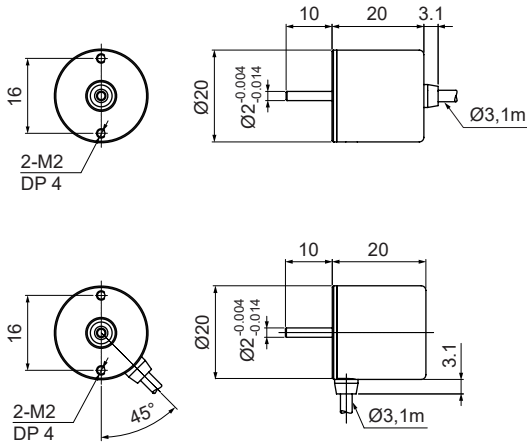
(I) Connectors/ Connector Cables/ Sensor Distribution Boxes/ Sockets

E20 Series

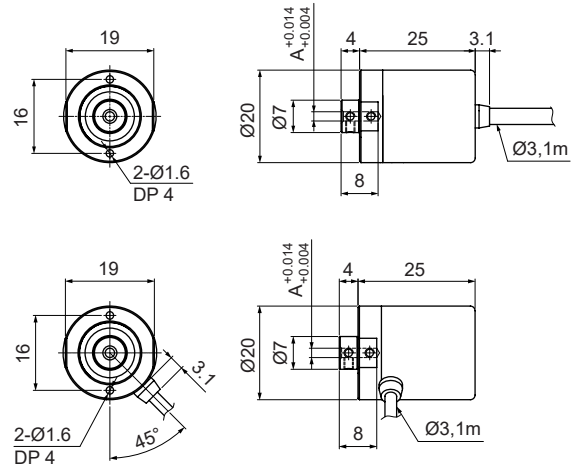
■ Dimensions

(unit: mm)

◎ Shaft type

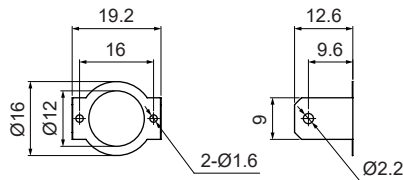


◎ Blind hollow shaft type

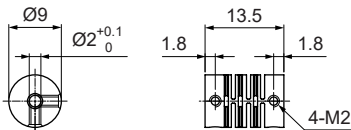


Model	E20HB2	E20HB2.5	E20HB3
A	Ø2	Ø2.5	Ø3

◎ Bracket (E20HB)



◎ Coupling (E20S)



- Parallel misalignment: max. 0.15mm
- Angular misalignment: max. 2°
- End-play: max. 0.5mm

※Do not load overweight on the shaft.

※Do not put strong impact when insert a coupling into shaft.

Failure to follow this instruction may result in product damage.

※Fix the unit or a coupling by a wrench under 0.15N·m of torque.

※When you install this unit, if eccentricity and deflection angle are larger, it may shorten the life cycle of this unit.

※For parallel misalignment, angular misalignment, end-play terms, refer to the "Glossary" section of Technical Description.

※For flexible coupling (ERB series) information, refer to ERB series section.

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