

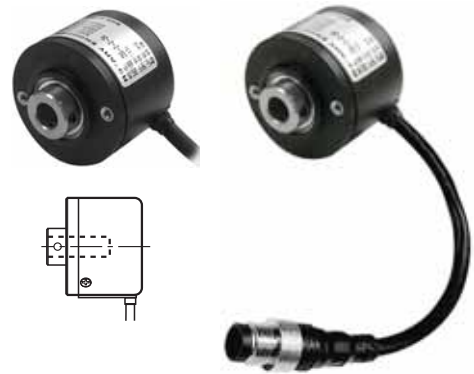
E40HBP Series

Diameter ϕ 40mm Hollow shaft built-in type Incremental Rotary encoder

Features

- Light plastic body
- Easy installation at narrow space
- Small rotor inertia
- Power supply : 5VDC, 12-24VDC \pm 5%
- Various output types

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



Ordering information

E40HB	8	P	600	3	N	24	
Series	Inside	External material	Pulse/1Revolution	Output phase	Control output	Power supply	Cable
Diameter ϕ 40mm HB : Hollow shaft built-in type	ϕ 8mm	Plastic	Refer to resolution	2 : A, B 3 : A, \bar{B} , Z 4 : A, \bar{A} , B, \bar{B} 6 : A, \bar{A} , B, \bar{B} , Z, \bar{Z}	T:Totem pole output N:NPN open collector output V:Voltage output L:Line driver output(*)	5 : 5VDC \pm 5% 24 : 12-24VDC \pm 5%	No mark:Normal type (*) C:Cable outgoing connector type

*Standard:E40HB8P-[PULSE]-3-N-24

*Standard:A, B, Z

*The power of Line driver is only for 5VDC

*Cable length:250mm

Specifications

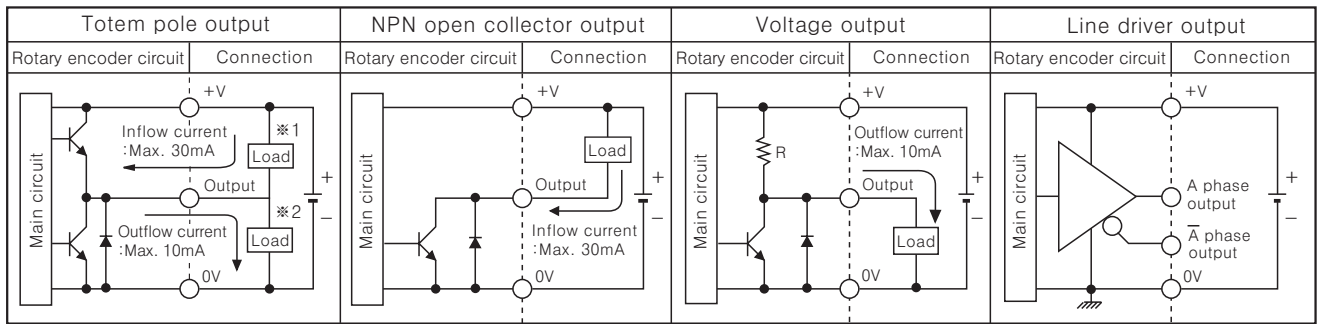
Item		Diameter ϕ 40mm Hollow shaft built-in type of Incremental rotary encoder		
Resolution(P/R)		(Note1) *1, *2, *5, 10, *12, 15, 20, 23, 25, 30, 35, 40, 45, 50, 60, 75, 100, 120, 125, 150, 192, 200, 240, 250, 256, 300, 360, 400, 500, 512, 600		
Electrical specification	Output phase		A, B, Z phase(Line driver : 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=1cycle of A phase)	
	Control output	Totem pole output	<ul style="list-style-type: none"> • Low \Rightarrow Load current:Max. 30mA, Residual voltage : Max. 0.4VDC • High \Rightarrow Load current:Max. 10mA, Output voltage(Power supply 5VDC):Min. (Power supply-2.0)VDC, Output voltage(Power supply 12-24VDC):Min. (Power supply-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 \Rightarrow Load current : Max. 20mA, Residual : Max. 0.5VDC High \Rightarrow Load current : Max. -20mA, Output voltage : Min. 2.5VDC	
	Response time (Rise/Fall)	Totem pole output	Max. 1 μ s	
		NPN open collector output	Max. 1 μ s	
		Voltage output	Max. 1 μ s	
		Line driver output	Max. 0.5 μ s	
	Max. Response frequency		180kHz	
	Power supply		<ul style="list-style-type: none"> • 5VDC \pm5% (Ripple P-P:Max. 5%) • 12-24VDC \pm5% (Ripple P-P:Max. 5%) 	
Current consumption		Max. 80mA (disconnection of the load)		
Insulation resistance		Min. 100M Ω (at 500VDC mega between all terminals and case)		
Dielectric strength		750VAC 50/60Hz for 1 minute(Between all terminals and case)		
Connection		Cable outgoing type, 200mm cable outgoing connector type		
Mechanical specification	Starting torque		Max. 50gf \cdot cm(0.005N \cdot m)	
	Rotor inertia		Max. 40g \cdot cm ² (4 \times 10 ⁻⁶ kg \cdot m ²)	
	Shaft loading		Radial : Max. 3kgf, Thrust : Max. 0.5kgf	
	Max. allowable revolution		(Note2) 3000rpm	
Vibration		1.5mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours		
Shock		Max. 50G		
Ambient temperature		-10 ~ 70 $^{\circ}$ C (at non-freezing status), Storage:-25 ~ 85 $^{\circ}$ C		
Ambient humidity		35~85%RH, Storage: 35~90%RH		
Protection		IP50(IEC standard)		
Cable		ϕ 5mm, 5P, Length : 2m, Shield cable(Line driver output : ϕ 5mm, 8P)		
Accessory		Bracket		
Unit weight		Approx. 130g		

* **(Note1)** '1' pulse is only for A, B phase(Line Driver output is for A, \bar{A} , B, \bar{B} phase)

* **(Note2)** Max. allowable revolution \geq Max. response revolution **[**Max. response revolution(rpm) = $\frac{\text{Max. response frequency}}{\text{Resolution}} \times 60 \text{ sec}$ **]**

Incremental ϕ 40mm Hollow Shaft/Built-in Type

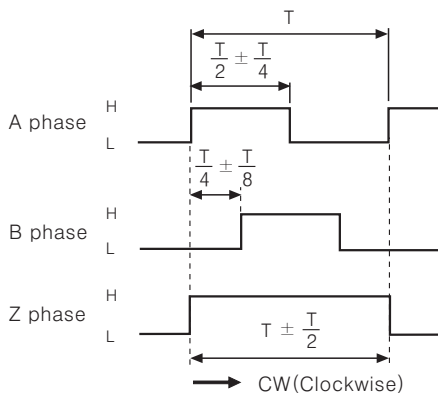
Control output diagram



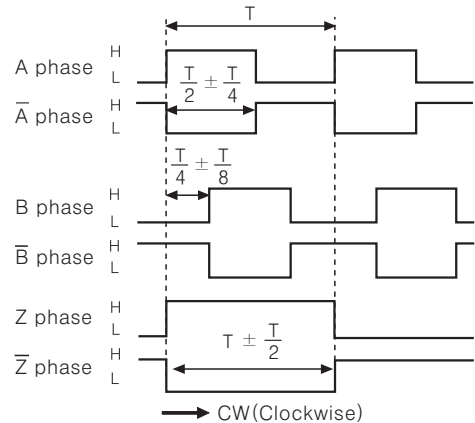
⇒ Totem pole output type can be used for NPN open collector output type(※1) or Voltage output type(※2).
 ⇒ All output circuits of A, B, Z phase is same. (Line driver output is for A, \bar{A} , B, \bar{B} , Z, \bar{Z})

Output waveform

- Totem pole output / NPN open collector output / Voltage output
- Line driver output



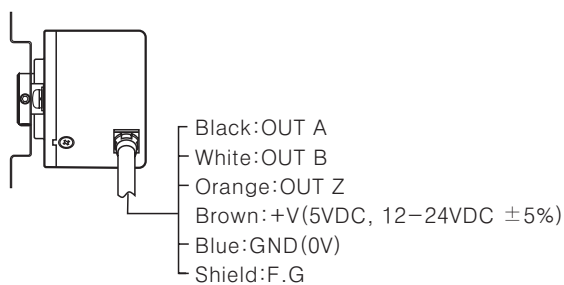
※CW : As viewed from the shaft



Connections

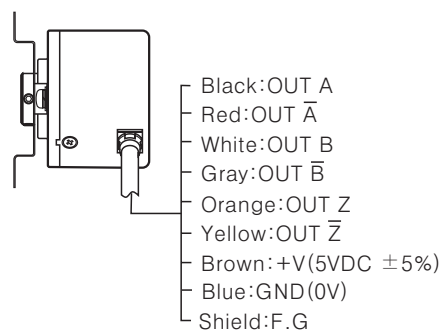
Normal type

- Totem pole output / NPN open collector output / Voltage output



※Unused wires must be insulated.

- Line driver output



Cable outgoing connector type

- Totem pole output
- NPN open collector output
- Voltage output
- Line driver output



Totem pole output NPN open collector output Voltage output			Line driver output		
Pin No	Function	Cable color	Pin No	Function	Cable color
①	OUT A	Black	①	OUT A	Black
②	OUT B	White	②	OUT \bar{A}	Red
③	OUT Z	Orange	③	+V	Brown
④	+V	Brown	④	GND	Blue
⑤	GND	Blue	⑤	OUT B	White
⑥	F.G	Shield	⑥	OUT \bar{B}	Gray
			⑦	OUT Z	Orange
			⑧	OUT \bar{Z}	Yellow
			⑨	F.G	Shield

※F.G(Field Ground):It should be grounded separately .

(A) Counter

(B) Timer

(C) Temp. controller

(D) Power controller

(E) Panel meter

(F) Tacho/Speed/Pulse meter

(G) Display unit

(H) Sensor controller

(I) Switching power supply

(J) Proximity sensor

(K) Photo electric sensor

(L) Pressure sensor

(M) Rotary encoder

(N) Stepping motor & Driver & Controller

(O) Graphic panel

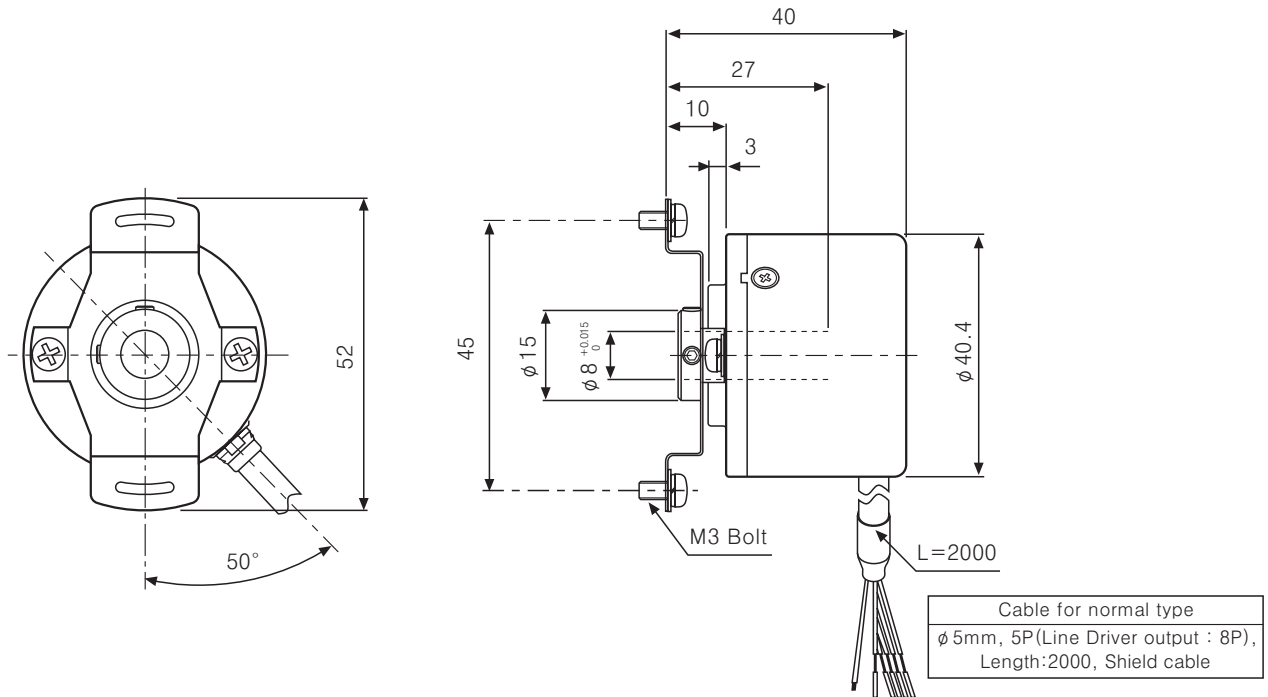
(P) Production stoppage models & replacement

E40HBP Series

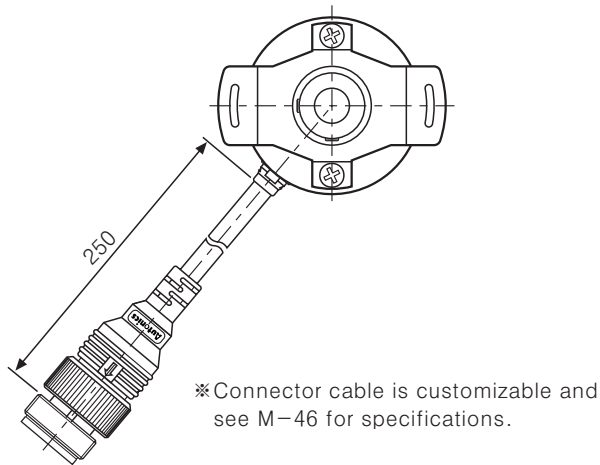
■ Dimensions

■ Normal type

(Unit:mm)



■ Cable outgoing connector type



○ Bracket

