

E40HBP Series

Diameter ϕ 40mm Hollow type/Built-in type Incremental Rotary encoder

■ Features

- Light plastic body
- Easy installation at narrow space
- Small rotor inertia
- Wide range of power source : 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/1 Revolution		Output phase		Control output		Power supply		Cable
Diameter ϕ 40mm HB : Hollow 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 (*) 2C: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

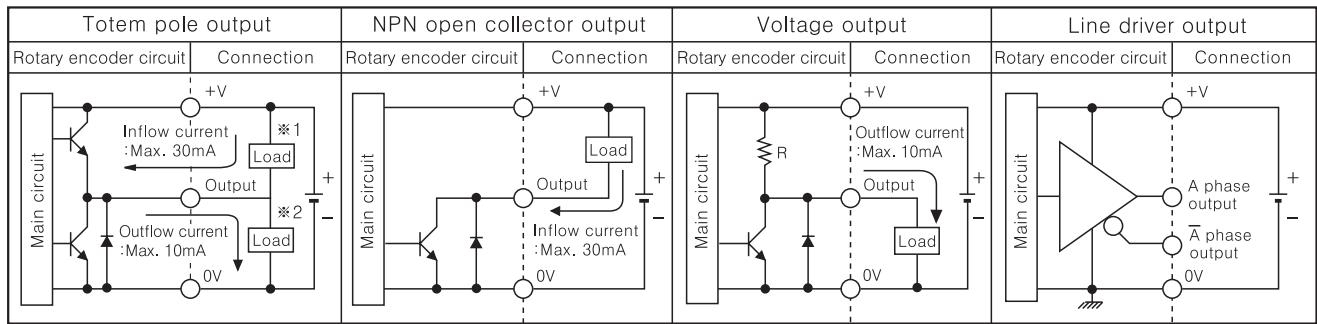
Item		Diameter ϕ 40mm shaft type of Incremental rotary encoder	
Resolution(P/R)		(Note1)	*1, *2, *5, 10, *12, 15, 20, 23, 25, 30, 35, 40, 45, 50, 60, 75, 100, 120, 125, 150, 192, 200, 240, 250, 256, 300, 360, 400, 500, 512, 600
Electrical specification	Output phase	A, B, Z phase(Line driver : A, $\bar{A}$, 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	• 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	• 5VDC $\pm$ 5%(Ripple P–P:Max. 5%) • 12–24VDC $\pm$ 5%(Ripple P–P:Max. 5%)	
	Current consumption	Max. 80mA(disconnection of the load)	
Mechanical specification	Insulation resistance	Min. 100M Ω (at 500VDC)	
	Dielectric strength	750VAC 50/60Hz for 1 minute(Between all terminals and case)	
	Connection	Cable outgoing type, 200mm cable outgoing connector type	
	Starting torque	Max. 50gf • cm(0.005N • m)	
	Rotor inertia	Max. 40g • cm ² (4 $\times$ 10 ^{–6} kg • 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°C (at non–freezing status), Storage:–25 ~ 85°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) ' * ' 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

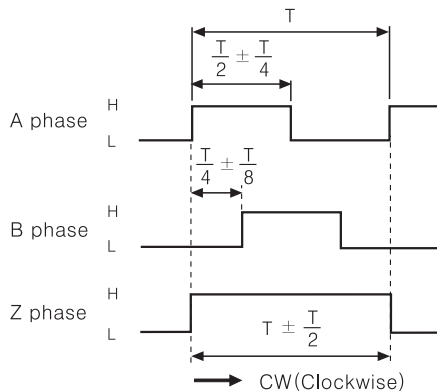


☞ Totem pole output type can be used for NPN open collector output type(※1) or Voltage output type(※2).

☞ All output circuits of A, B, Z phase is same. (Line driver output is for A, A $\bar{B}$, B, $\bar{Z}$, Z)

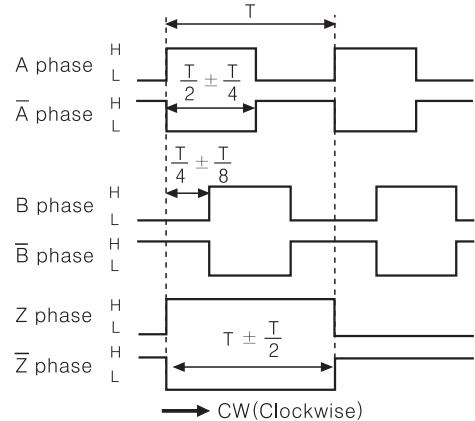
Output waveform

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



※CW : In a view of shaft

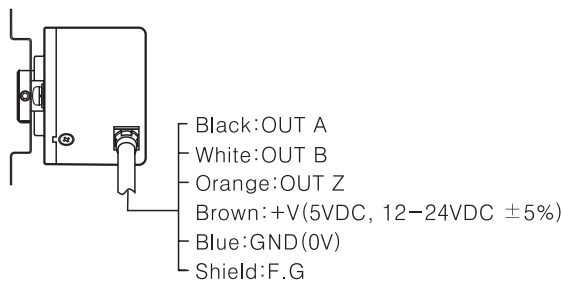
●Line driver output



Connections

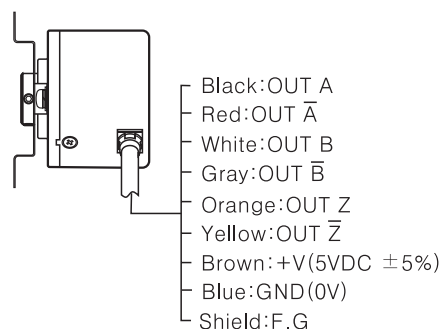
Normal type

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



※Unused wires must be insulated.

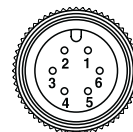
●Line driver output



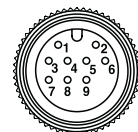
Cable outgoing connector type

●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

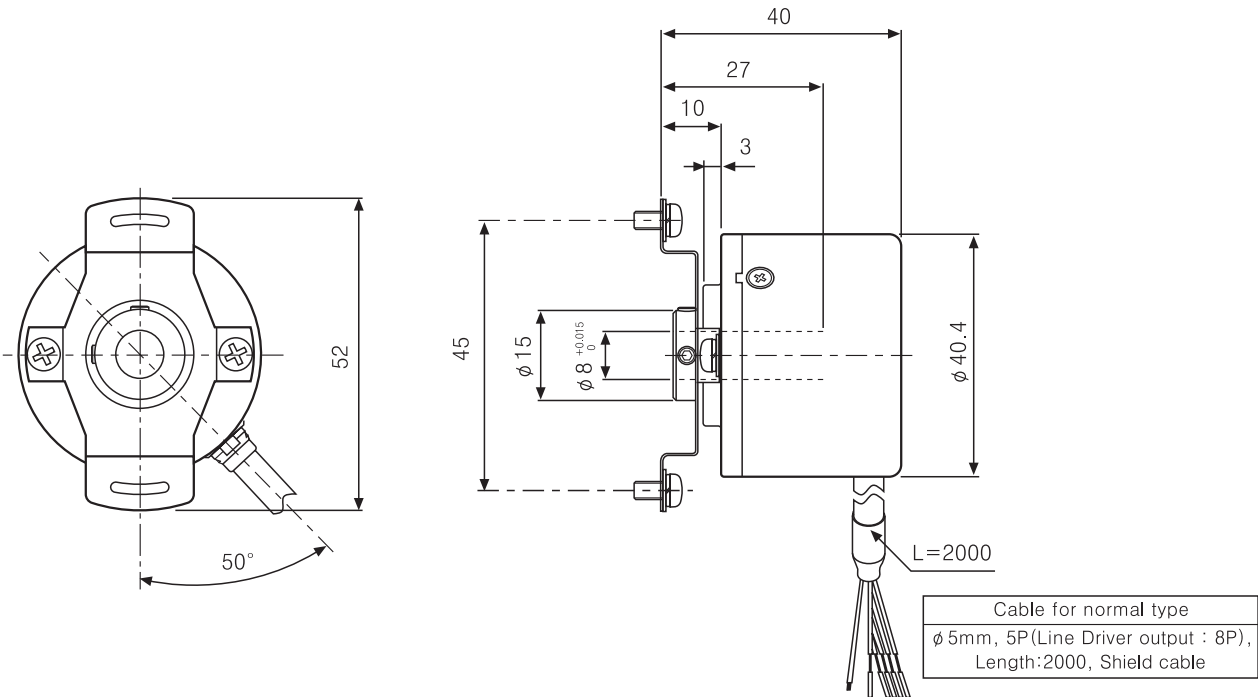
(P) Production stoppage models & replacement

E40HBP Series

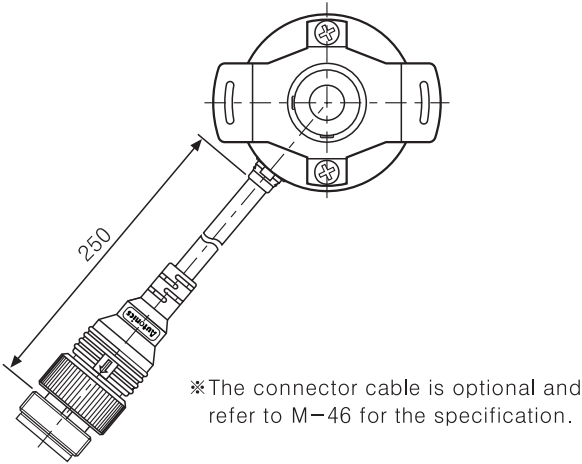
■ Dimensions

■ Normal type

(Unit:mm)



■ Cable outgoing connector type



◎ Bracket

