

Incremental ϕ 50mm Shaft Type

Diameter ϕ 50mm shaft type Incremental Rotary encoder

■ Features

- Suitable for measuring Angle, Position, Revolution, Speed, Acceleration, Distance
- Power supply : 5VDC, 12-24VDC \pm 5%
- Cost-effective

■ Applications

- Various tooling machinery, packing machine and general industrial machinery etc.

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



■ Ordering information (Former name : ENB)

E50S	8	-	5000	-	3	-	2	-	24	-	
Series	Shaft diameter	Pulse/1Revolution	Output phase	Output	Power supply	Cable					
Diameter ϕ 50mm, shaft type	ϕ 8mm	Refer to resolution	2 : A, B 3 : A, B, Z 4 : A, \bar{A} , B, \bar{B} 6 : A, A, B, 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: E50S8-PULSE-3-N-24

*Standard: A, B, Z

*The power of Line driver is only for 5VDC

*Cable length : 250mm

■ Specifications

Item		Diameter ϕ 50mm 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, 800, 1000, 1024, 1200, 1500, 1800, 2000, 2048, 2500, 3000, 3600, 5000, 6000, 8000 (Not indicated type is available to customize)		
Electrical specification	Output phase	A, B, Z phase (Line driver : A, \bar{A} , B, \bar{B} , Z, \bar{Z} phase)		
	Phase difference of output	Output 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	
	Response time (Rise/Fall)	Line driver output	<ul style="list-style-type: none"> • Low \Rightarrow Load current : Max. 20mA, Residual : Max. 0.5VDC • High \Rightarrow Load current : Max. -20mA, Output voltage : Min. 2.5VDC 	
		Totem pole output	Max. 1 μ s	
		NPN open collector output	Max. 1 μ s	
		Voltage output	Max. 1 μ s	
	Max. Response frequency	300kHz		<ul style="list-style-type: none"> • Measuring condition \Rightarrow Cable length : 2m, I sink = Max. 20mA
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), Line driver output:Max. 50mA (disconnection of the load)			
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			
Mechanical specification	Starting torque	(Note2)	Max. 70gf \cdot cm (0.007N \cdot m)	
	Rotor inertia		Max. 80g \cdot cm ² (8 \times 10 ⁻⁶ kg \cdot m ²)	
	Shaft loading		Radial : Max. 10kgf, Thrust : Max. 2.5kgf	
	Max. allowable revolution	(Note3)	5000rpm	
Vibration	1.5mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours			
Shock	Max. 75G			
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	ϕ 8mm coupling bracket			
Unit weight	Approx. 275g			
Approval	CE (Except for Line driver output)			

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

* **(Note2)** The lower torque than rated torque is optional.

* **(Note3)** Max. allowable revolution \geq Max. response revolution [Max. response resolution (rpm) = $\frac{\text{Max. response frequency}}{\text{Resolution}} \times 60 \text{ sec}$]

(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

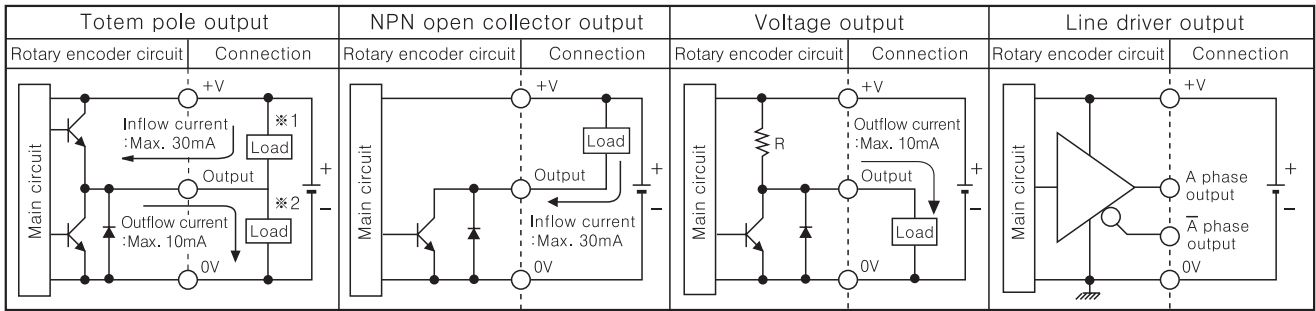
(N) Stepping motor & Driver & Controller

(O) Graphic panel

(P) Production stoppage models & replacement

E50S Series

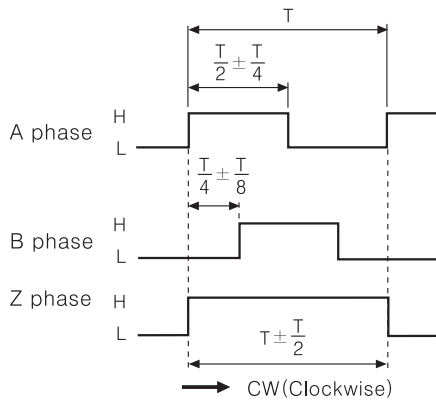
Control output diagram



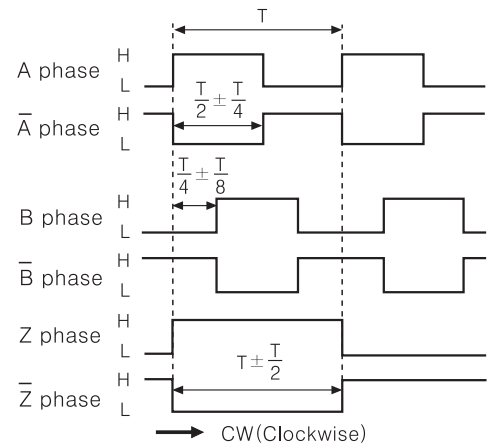
- ☞ Totem pole output type can be used for NPN open collector output type(*1) or Voltage output type(*2).
- ☞ All output circuits of A, B, Z phase is same. (Line driver output is for A, A $\bar{}$, B $\bar{}$, B, Z $\bar{}$, Z)

Output waveform

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



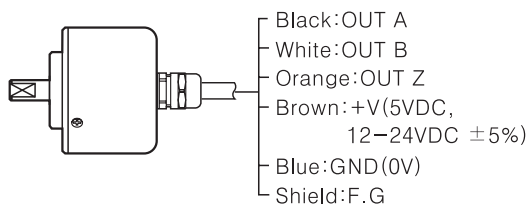
*CW : In a view of shaft



Connections

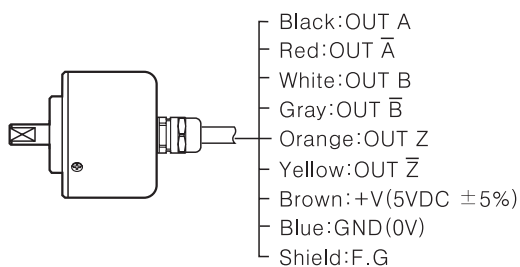
Normal type

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



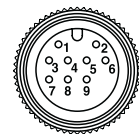
- ※ Unused wires must be insulated.
- ※ The metal and shield cable of encoder should be grounded(F.G)

- Line driver output



Cable outgoing connector type

- Totem pole output
- Line driver output
- NPN open collector output
- Voltage 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 A $\bar{}$	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 B $\bar{}$	Gray
			⑦	OUT Z	Orange
			⑧	OUT Z $\bar{}$	Yellow
			⑨	F.G	Shield

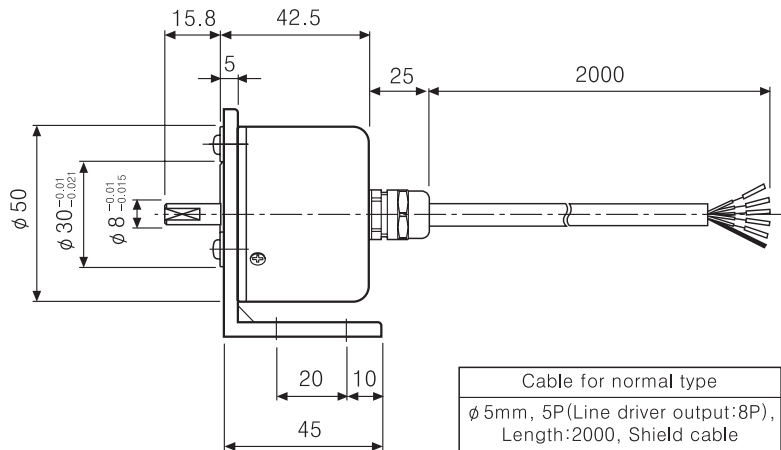
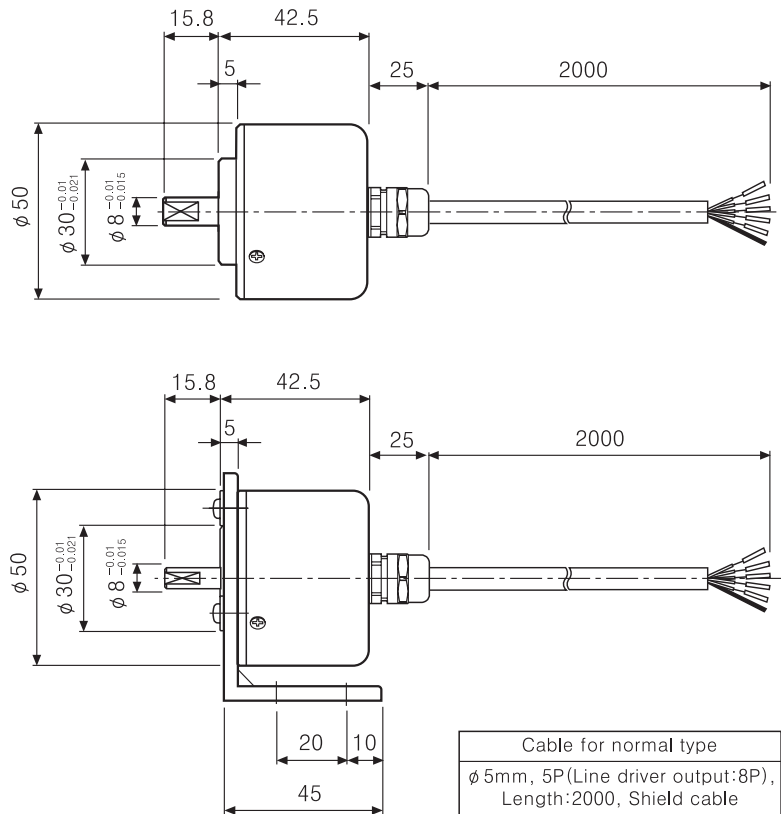
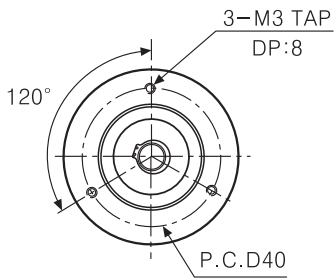
*F.G(Field Ground):It should be grounded separately.

Incremental $\phi 50\text{mm}$ Shaft Type

Dimensions

Normal type

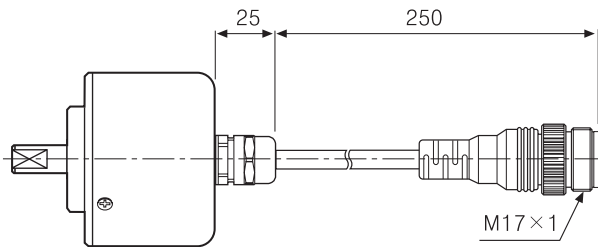
(Unit:mm)



Cable for normal type
 $\phi 5\text{mm}$, 5P(Line driver output:8P),
Length:2000, Shield cable

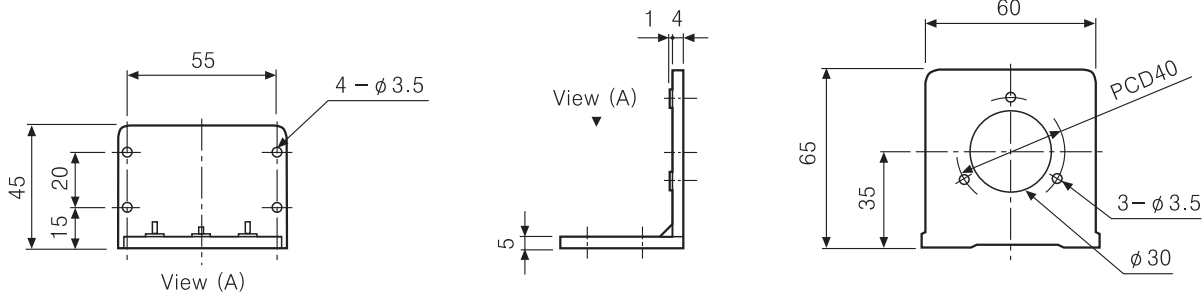
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- (B) Timer
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Cable outgoing connector type



※The connector cable is optional and refer to M-46 for the specification.

Bracket



Coupling

