

ROTARY ENCODER(E50SP SERIES)

Ordering information(Former name : ENB)

E50S	8	P	-	600	-	3	-	N	-	24	-	
Series	Shaft diameter	External material	Pulse/1 Revolution	Output phase	Control output	Power supply	Cable					
Diameter ø 50mm, shaft type	6 : ø 6mm 8 : ø 8mm	Plastic	Refer to resolution	2:A, B 3:A, B, Z 4:A, A, B, B̄ 6:A, A, B, B̄, Z, Z̄	T:Totem pole output N:NPN open collector output V:Voltage output L:Line driver output(*)	5 :5VDC ±5% 24:12-24VDC ±5%	No mark:Normal type (*) C:Cable outgoing connector type					


*Standard: E50S8P-PULSE-3-N-24

*Standard :
A, B, Z

*The power of Line
driver is only for 5VDC

*Cable length
: 250mm

Specifications

Item		Diameter ø 50mm shaft type Incremental Rotary encoder		
Model	Totem Pole output	E50S □ P □ - □ -T-5- □	E50S □ P □ - □ -T-24- □	
	NPN open collector output	E50S □ P □ - □ -N-5- □	E50S □ P □ - □ -N-24- □	
	Voltage output	E50S □ P □ - □ -V-5- □	E50S □ P □ - □ -V-24- □	
	Line Driver output	E50S □ P □ - □ -L-5- □	—	
Appearances		 NEW		
		[ø 50mm, L58.3mm]		
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, Ā, B, B̄, Z, Z̄ phase)		
	Phase difference of output	Output between A and B phase : $\frac{T}{4} \pm \frac{T}{8}$ (T=1 cycle 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. 0.5V High \Rightarrow Load current : Max. -20mA, Output voltage : Min. 2.5V	
	Response time (Rise/Fall)	Totem pole output	Max. 1μs	
		NPN open collector output	Max. 1μs	
		Voltage output	Max. 1μs	
		Line driver output	Max. 0.5μs	
	Max. Response frequency	180kHz		
	Current consumption	Max. 80mA (disconnection of the load), Line driver output:Max. 50mA (disconnection of the load)		
Insulation resistance	Min. 100MΩ (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	Max. 100gf · cm (0.01N · m)		
	Rotor inertia	Max. 40g · cm ² (4 × 10 ⁻⁶ kg · m ²)		
	Shaft loading	Radial : Max. 2kgf, Thrust : Max. 1kgf		
	Max. allowable revolution	(*Note2) 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°C (at non-freezing status), Storage: -25 ~ 85°C			
Ambient humidity	35~85%RH, Storage: 35~90%RH			
Protection	IP50 (IEC standard)			
Cable	5P, ø 5mm, Length : 2m, Shield cable (Line driver output : 8P, ø 5mm)			
Accessory	ø 8mm coupling standard, ø 6mm coupling (Option), Bracket			
Unit weight	Approx. 235g			

*(*Note1) '1' pulse is only for A, B phase (Line Driver output is A, Ā, B, B̄ phase)

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

 Please select the resolution to make lower max. revolution than max. allowable revolution.

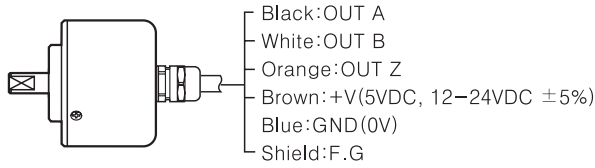
Selection Guide

ROTARY ENCODER(E50SP SERIES)

Connections

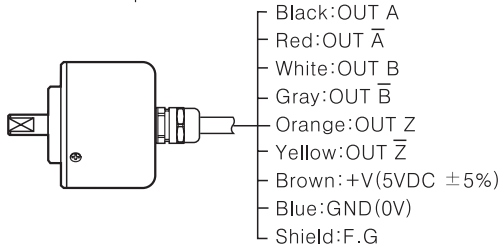
Normal type

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



※Unused wires must be insulated.

- Line driver output



Cable outgoing connector type

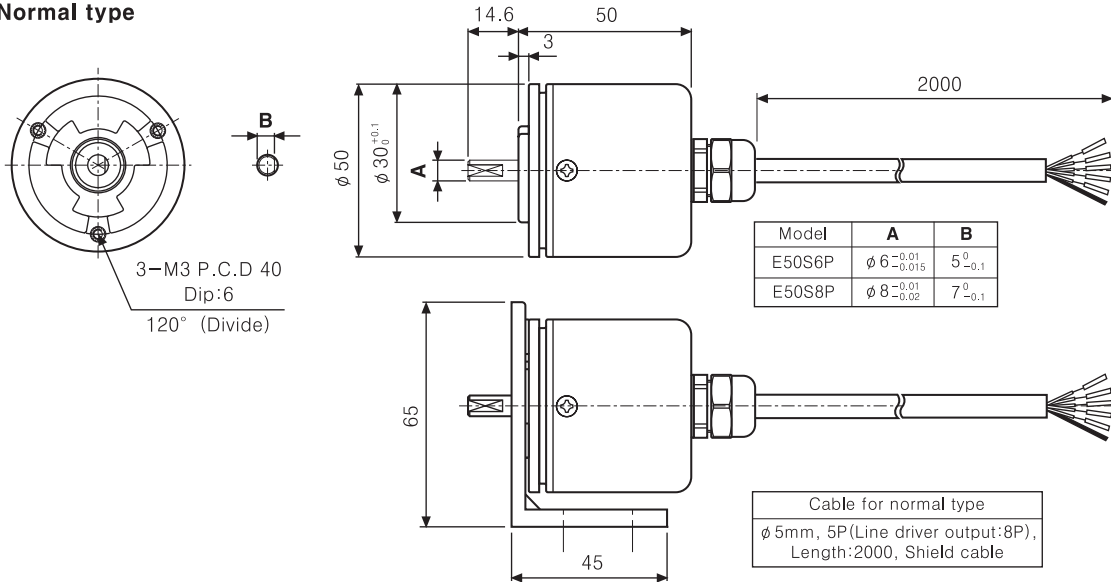


Totem pole output NPN open collector output Voltage output			Line driver output		
Pin No.	Cable color	Function	Pin No.	Cable color	Function
①	Black	OUT A	①	Black	OUT A
②	White	OUT B	②	Red	OUT \bar{A}
③	Orange	OUT Z	③	Brown	+V
④	Brown	+V	④	Blue	GND
⑤	Blue	GND	⑤	White	OUT B
⑥	Shield	F.G	⑥	Gray	OUT \bar{B}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

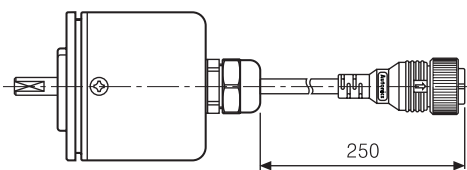
※F.G(Field Ground)

Dimensions

Normal type

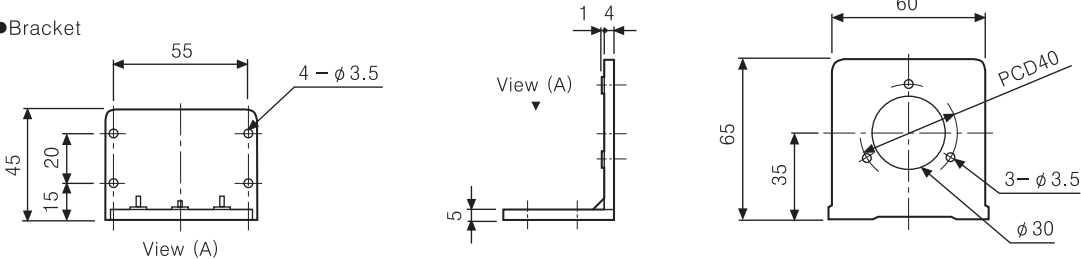


Cable outgoing connector type



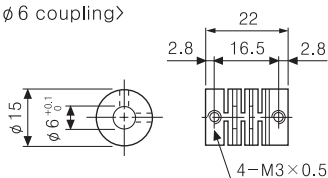
※The connector cable is optional and refer to M-46 for the specification.

- Bracket

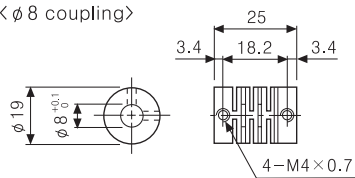


- Coupling

< $\phi 6$ coupling >



< $\phi 8$ coupling >



Unit:mm