

Diameter ø50mm Shaft type Absolute Rotary Encoder

■ Features

- Light as plastic structure
- Power supply : 5VDC, 12-24VDC ±5%
- Gray code output

■ Applications

- Precision machine tool, Fabric machinery, Robot, Parking system



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

■ Ordering information

EP50S - **6** - **360** - **3** - **F** - **N** - **24**

Series	Shaft diameter	Pulse/1Revolution	Output code	Revolution direction	Control output	Power supply
Diameter ø50mm shaft type	6 : ø6mm 8 : ø8mm	360	3 : Gray Code	F : Output value increase at CW direction	N : NPN open collector output	5 : 5VDC ±5% 24 : 12-24VDC ±5%

■ Specifications

Item	Diameter ø50mm shaft type of absolute rotary encoder	
Resolution(P/R)	360	
Electrical specification	Output code	Gray Code(Shift Gray Code)
	Output phase / Output angle	TS: Signal Pulse(9bit), TS: 2°±25'
	Control output	NPN Open collector- Load current : Max. 15mA, Residual voltage : Max. 1VDC
	Response time(Rise/Fall)	Ton=Max. 1µs, Toff=Max. 1µs(Cable length : 2m, I sink = 15mA)
	Power supply	• 5VDC ±5%(Ripple P-P : Max. 5%) • 12-24VDC ±5%(Ripple P-P : Max. 5%)
	Current consumption	Max. 80mA(disconnection of the load)
	Connection	Cable type(Cable gland)
Mechanical specification	Starting torque	Max. 40gf·cm(0.004N·m)
	Moment of inertia	Max. 50g·cm ² (5×10 ⁻⁷ kg·m ²)
	Shaft loading	Radial : 2kgf, Thrust : 1kgf
	Max. allowable revolution ^{※1}	3000rpm
Insulation resistance	Min. 100MΩ(at 500VDC megger between all terminals and case)	
Dielectric strength	750VAC 50/60Hz for 1 minute(Between all terminals and case)	
Vibration	1.5mm amplitude or 300m/s ² at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 2 hours	
Shock	Approx. Max. 50G	
Environment	Ambient temperature	-10 to 70°C, storage : -25 to 85°C
	Ambient humidity	35 to 85%RH, storage : 35 to 90%RH
Protection	IP50(IEC standard)	
Cable	ø6, 12-wire, Length : 2m, Shield cable	
Accessory	Fixing bracket, Coupling	
Unit weight	Approx. 280g	

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

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

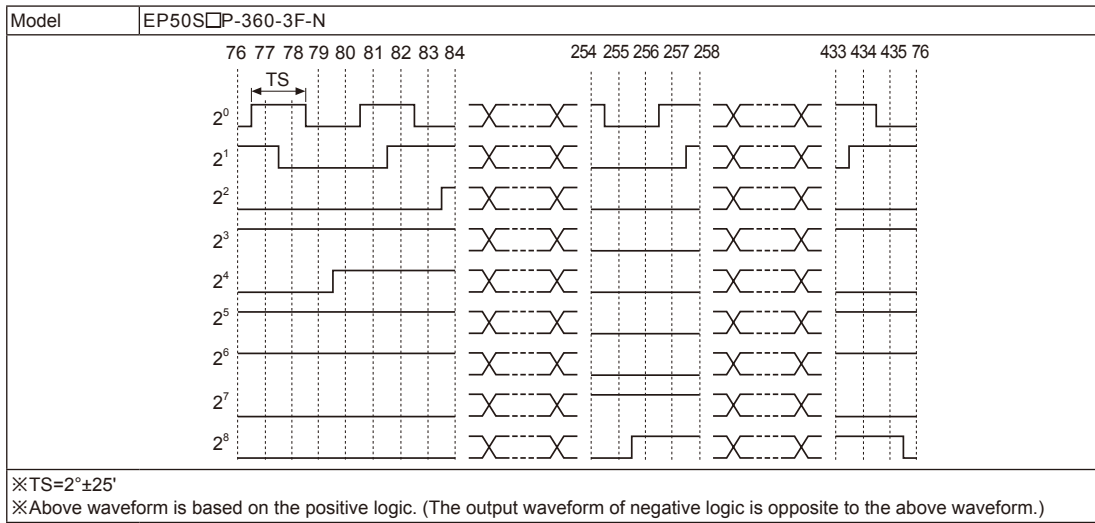
※Environment resistance is rated at no freezing or condensation.

(A)	Photo electric sensor
(B)	Fiber optic sensor
(C)	Door/Area sensor
(D)	Proximity sensor
(E)	Pressure sensor
(F)	Rotary encoder
(G)	Connector/Socket
(H)	Temp. controller
(I)	SSR/ Power controller
(J)	Counter
(K)	Timer
(L)	Panel meter
(M)	Tacho/ Speed/ Pulse meter
(N)	Display unit
(O)	Sensor controller
(P)	Switching mode power supply
(Q)	Stepper motor& Driver&Controller
(R)	Graphic/ Logic panel
(S)	Field network device
(T)	Software
(U)	Other

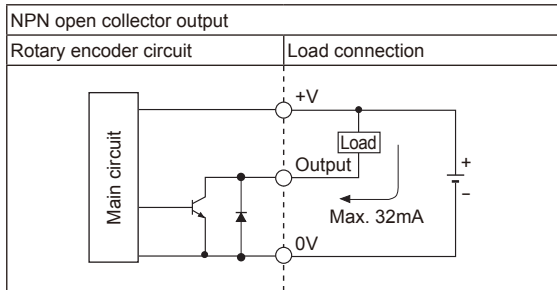
EP50SP Series

Output waveform

360 division (Gray code output)



Control output diagram



※Be sure that if overload or short-circuit to output terminal, output circuit is damaged.

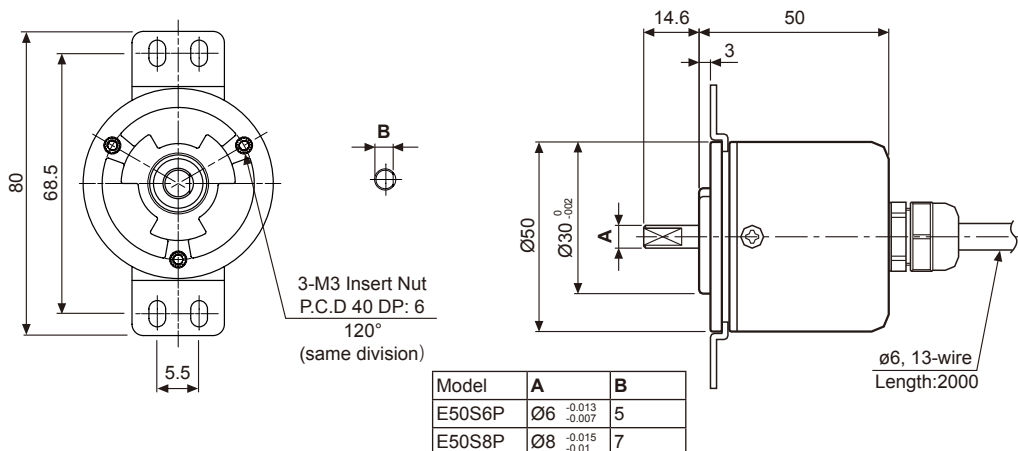
Connections

Gray Code

Color	Resolution	360-division
	Power	
White	+V(5VDC, 12-24VDC)	
Boack	0V(GND)	
Output wire	Brown	2 ⁰
	Red	2 ¹
	Orange	2 ²
	Yellow	2 ³
	Blue	2 ⁴
	Purple	2 ⁵
	Gray	2 ⁶
	White/Brown	2 ⁷
	White/Red	2 ⁸
	White/Orange	N-C
Shield wire	F.G.	

Dimensions

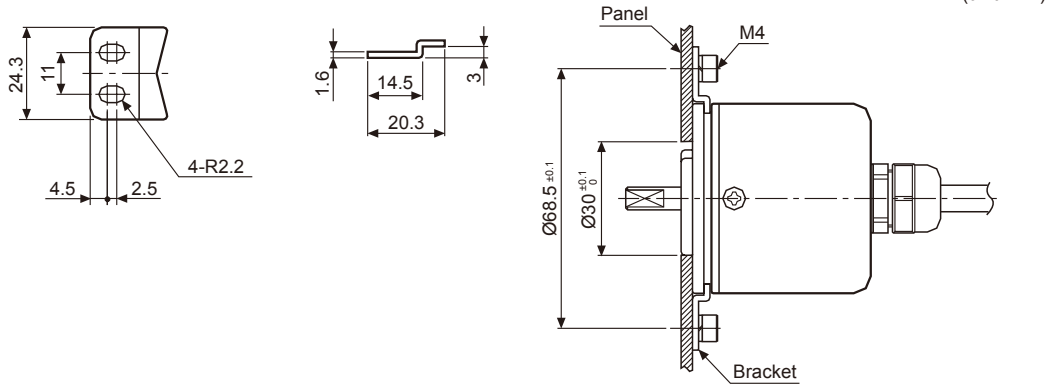
(unit: mm)



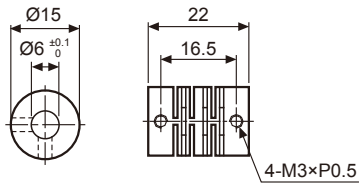
ø50mm Shaft Absolute type

■ Dimensions

• Bracket



• Coupling



- Parallel misalignment : Max. 0.25mm
- Angular misalignment : Max. 5°
- End-play : Max. 0.2mm

※For parallel misalignment, angular misalignment, end-play terms, refer to the F-78 page.

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