

∅ 50mm Shaft Absolute Type


Diameter ∅ 50mm Shaft type Absolute Rotary encoder

■ Features

- Compact size of external diameter 50mm
- Various output code: BCD, Binary, Gray Code (Customizable)
- Various and high resolution (720, 1024 divisions)
- IP 64 (Partial waterproof, Oil proof)

■ Applications

Precision machine tool, Fabric machinery, Robot, Parking system

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



■ Ordering information

EP50S	8	1024	1	R	P	24
Series	Inside	Pulse/1Revolution	Output code	Revolution direction	Control output	Power supply
Diameter ∅ 50mm shaft type	∅ 8mm	Refer to resolution	1 : BCD Code 2 : Binary Code 3 : Gray Code	F : Output value increase at CW direction R : Output value increase at CCW direction	P : PNP open collector output N : NPN open collector output	5 : 5VDC ± 5% 24 : 12-24VDC ± 5%

* Gray code is customizable.

■ Specifications

Item	Diameter ∅ 50mm shaft type of Absolute rotary encoder		
Resolution	(Note1) *6, *8, *12, *16, *24, *32, *40, 45, 60, 64, 90, 128, 180, 256, 360, 512, 720, 1024		
Electrical specification	Output code/Output angle	Refer to "Output waveform"	
	Control output	PNP open collector output	Output voltage : Min. (Power supply - 1.5)VDC, Load current : Max. 32mA
		NPN open collector output	Load current : Max. 32mA, Residual voltage : Max. 1VDC
	Response time (Rise/Fall)	Ton=800nsec, Toff=Max. 800nsec (Cable length:2m, I sink=32mA)	
	Max. Response frequency	35kHz	
	Power supply	• 5VDC ± 5% (Ripple P-P : Max. 5%) • 12-24VDC ± 5% (Ripple P-P : Max. 5%)	
	Current consumption	Max. 100mA (disconnection of the load)	
	Insulation resistance	Min. 100MΩ (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 (Cable gland)		
Mechanical specification	Starting torque	Max. 40gf • cm (0.004N • m)	
	Rotor inertia	Max. 40g • cm ² (4 × 10 ⁻⁶ kg • m ²)	
	Shaft loading	Radial : 10kgf, Thrust : 2.5kgf	
	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	IP64 (IEC standard)		
Cable	∅ 7mm, 15P, Length : 2m, Shield cable		
Accessory	Fixing bracket, Coupling		
Unit weight	Approx. 380g		
Approval	CE		

* **(Note1)** "*" Marked division in resolution is being developed. Not indicated type is customizable.

* **(Note2)** Max. allowable revolution ≥ Max. response revolution **[**Max. response revolution (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

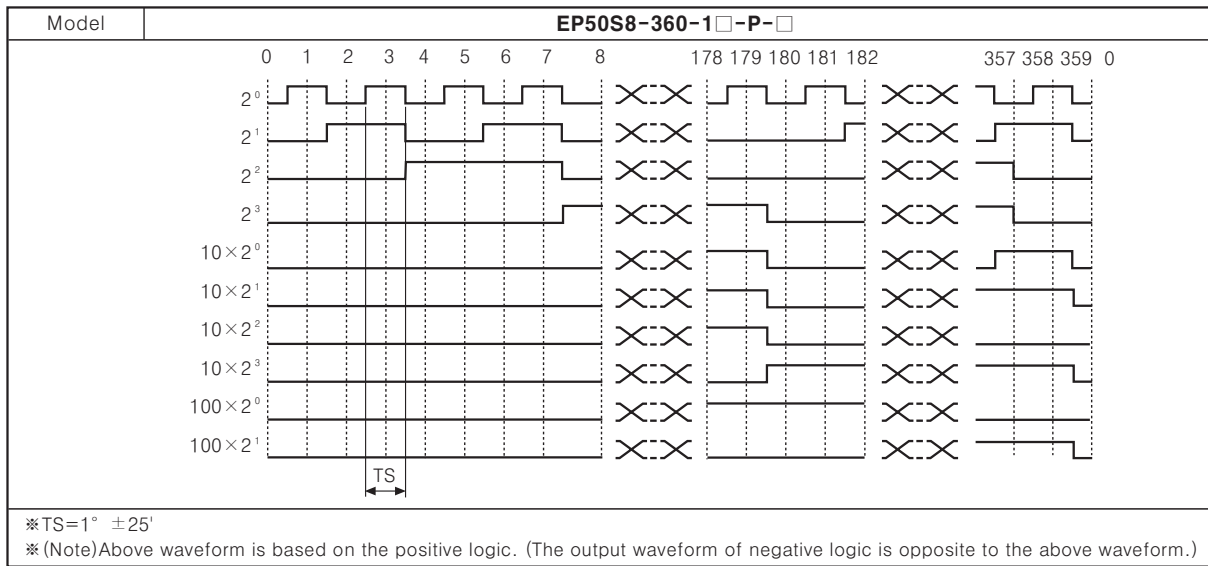
(O) Graphic panel

(P) Production stoppage models & replacement

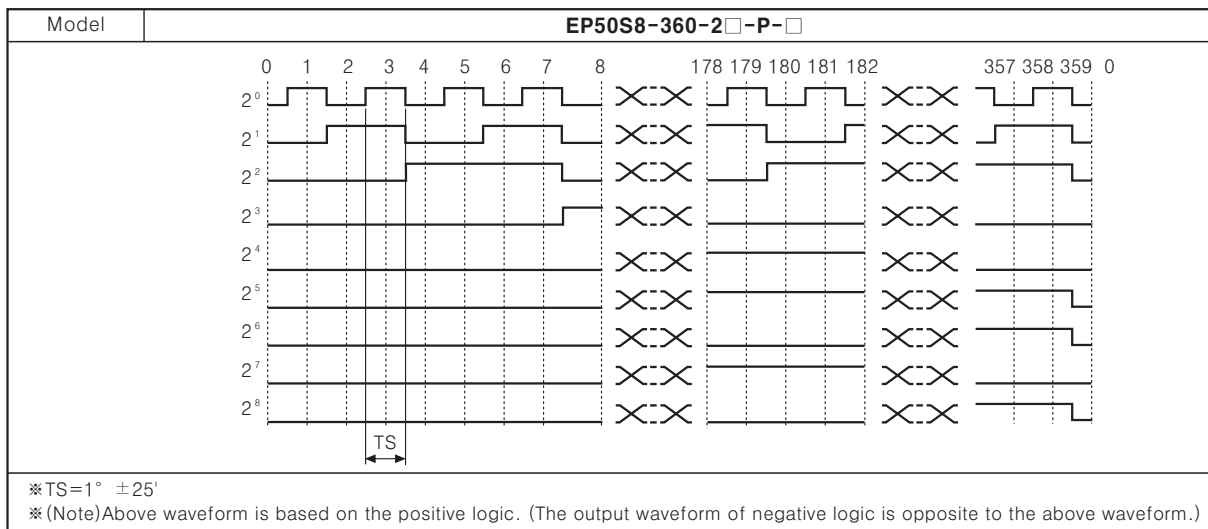
EP50S Series

Output waveform

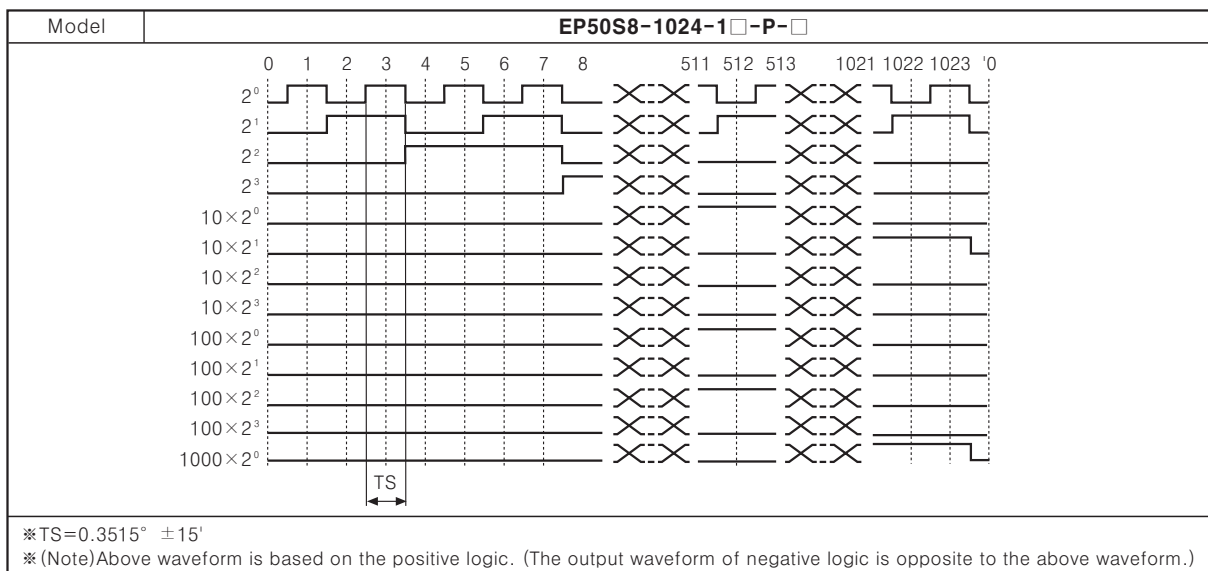
●360 division (BCD CODE output)



●360 division (BINARY CODE output)



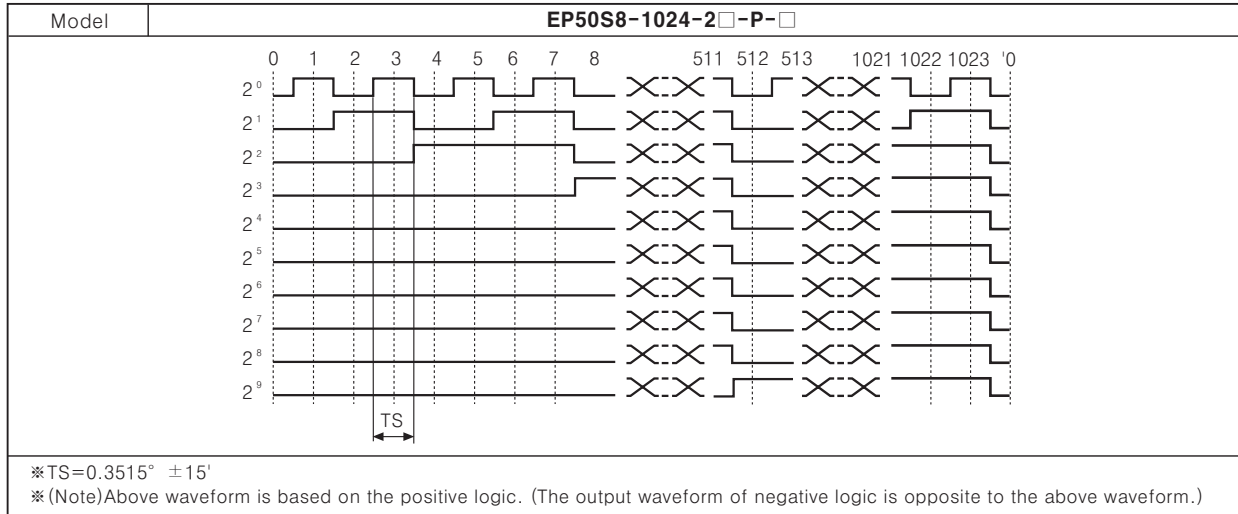
●1024 division (BCD CODE output)



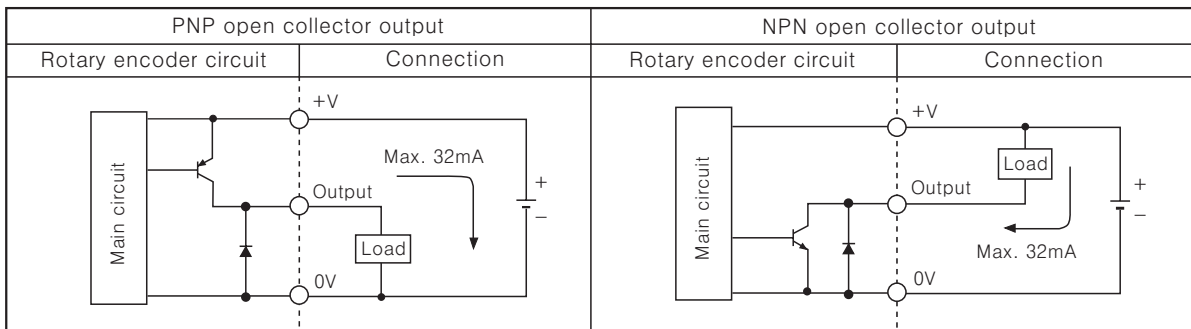
∅ 50mm Shaft Absolute Type

Output waveform

1024 division (BINARY CODE output)



Control output diagram



※Output circuit of all phases is same.

Connections

BCD Code

Resolution	6	8	12	16	24	32	40	45	60	64	90	128	180	256	360	512	720	1024			
Color	division	division	division	division	division	division	division	division	division	division	division	division	division	division	division	division	division	division			
Power	White	+V																			
	Black	GND(0V)																			
Output	Brown	TP1	TP1	TP1	TP1	TP1	TP1	TP1	2°	2°	2°	2°	2°	2°	2°	2°	2°	2°	2°		
	Red	TP2	TP2	TP2	TP2	TP2	TP2	TP2	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹		
	Orange	2°	2°	2°	2°	2°	2°	2°	2°	2°	2°	2°	2°	2°	2°	2°	2°	2°	2°	2°	
	Yellow	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹	2 ³	2 ³	2 ³	2 ³	2 ³	2 ³	2 ³	2 ³	2 ³	2 ³	2 ³	
	Blue	2 ²	2 ²	2 ²	2 ²	2 ²	2 ²	2 ²	2 ²	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	
	Purple	EP		2 ³	2 ³	2 ³	2 ³	2 ³	2 ³	(2 ¹ ×10)	(2 ¹ ×10)	(2 ¹ ×10)	(2 ¹ ×10)	(2 ¹ ×10)	(2 ¹ ×10)	(2 ¹ ×10)	(2 ¹ ×10)	(2 ¹ ×10)	(2 ¹ ×10)	(2 ¹ ×10)	
	Gray	NC		(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	
	White/Brown	NC		EP	EP	(2 ¹ ×10)	(2 ¹ ×10)	(2 ¹ ×10)	NC			(2 ³ ×10)	(2 ³ ×10)	(2 ³ ×10)	(2 ³ ×10)	(2 ³ ×10)	(2 ³ ×10)	(2 ³ ×10)	(2 ³ ×10)	(2 ³ ×10)	
	White/Red	NC				EP	EP	EP	NC				(2°×100)	(2°×100)	(2°×100)	(2°×100)	(2°×100)	(2°×100)	(2°×100)	(2°×100)	
	White/Orange	NC												(2 ¹ ×100)	(2 ¹ ×100)	(2 ¹ ×100)	(2 ¹ ×100)	(2 ¹ ×100)	(2 ¹ ×100)	(2 ¹ ×100)	(2 ¹ ×100)
	White/Yellow	NC															(2 ² ×100)	(2 ² ×100)	(2 ² ×100)	(2 ² ×100)	
	White/Blue	NC																			
	White/Purple	NC																			
Shielded wire	F.G																				

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EP50S Series

Connections

Binary code

Resolution	6	8	12	16	24	32	40	45	60	64	90	128	180	256	360	512	720	1024
Color	division	division	division	division	division	division	division	division	division	division	division	division	division	division	division	division	division	division
Power																		
White	+V																	
Black	GND(0V)																	
Output	Brown	TP1	TP1	TP1	TP1	TP1	TP1	TP1	2°	2°	2°	2°	2°	2°	2°	2°	2°	2°
	Red	TP2	TP2	TP2	TP2	TP2	TP2	TP2	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹
	Orange	2°	2°	2°	2°	2°	2°	2°	2 ²	2 ²	2 ²	2 ²	2 ²	2 ²	2 ²	2 ²	2 ²	2 ²
	Yellow	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹	2 ¹	2 ³	2 ³	2 ³	2 ³	2 ³	2 ³	2 ³	2 ³	2 ³	2 ³
	Blue	2 ²	2 ²	2 ²	2 ²	2 ²	2 ²	2 ²	2 ⁴	2 ⁴	2 ⁴	2 ⁴	2 ⁴	2 ⁴	2 ⁴	2 ⁴	2 ⁴	2 ⁴
	Purple	EP	EP	2 ³	2 ³	2 ³	2 ³	2 ³	2 ⁵	2 ⁵	2 ⁵	2 ⁵	2 ⁵	2 ⁵	2 ⁵	2 ⁵	2 ⁵	2 ⁵
	Gray	NC		EP	EP	2 ⁴	2 ⁴	2 ⁴	NC			2 ⁶	2 ⁶	2 ⁶	2 ⁶	2 ⁶	2 ⁶	2 ⁶
	White/Brown	NC			EP	EP	2 ⁵	NC				2 ⁷	2 ⁷	2 ⁷	2 ⁷	2 ⁷	2 ⁷	2 ⁷
	White/Red	NC					EP	NC					2 ⁸	2 ⁸	2 ⁸	2 ⁸	2 ⁸	
	White/Orange	NC																
	White/Yellow	NC																
	White/Blue	NC																
	White/Purple	NC																
	Shielded wire	F.G																

※ Unused wires must be insulated.

※ The metal case and shield wire of encoder should be grounded(F.G).

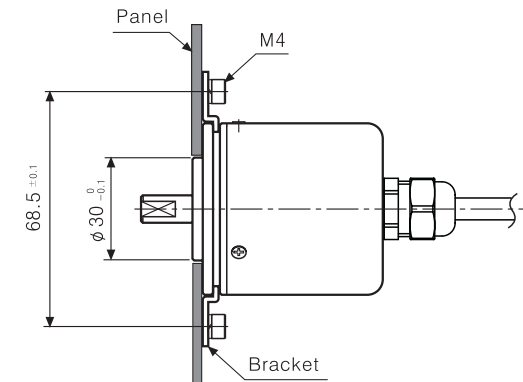
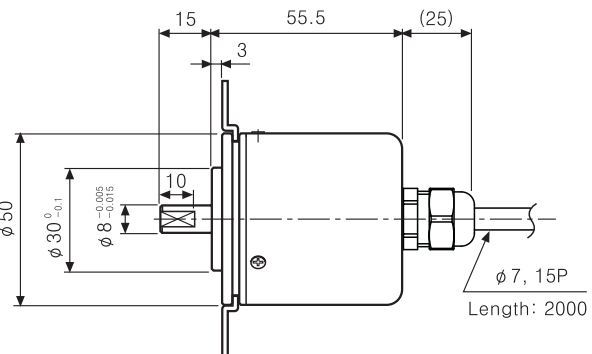
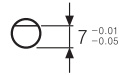
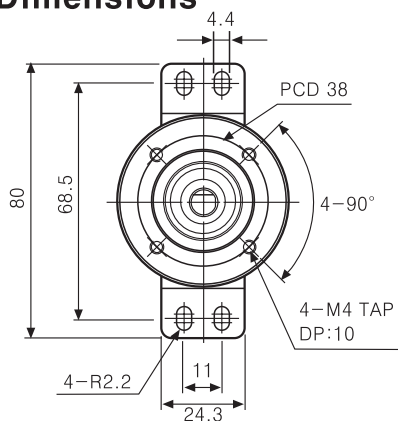
※ NC : Not Connected.

※ TP1/TP2 : It is an enablement signal to decide signal recognition for output easily because, output signal cycle is long in low resolution model.

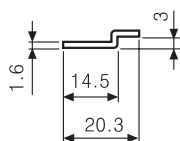
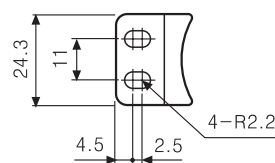
※ Ep : It is a parity signal to be outputted as odd number of parity.

※ Output cable must not be short-circuited, because Driver IC is used in output circuit.

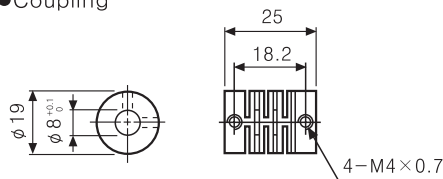
Dimensions



Bracket



Coupling



(Unit:mm)



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