Diameter ϕ50mm 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.**

CE

▣Ordering information

EP50S	8	–	1024	–	1	R	–	P	–	24

Series	Inside	Pulse/1Revolution	Output code	Revolution direction	Control output	Power supply
Diameter ϕ50mm shaft type	ϕ8mm	Refer to revsolution	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 ϕ50mm 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℃(at non-freezing status), Storage:-25 ~ 85℃
Ambient humidity			35~85%RH, Storage: 35~90%RH
Protection			IP64(IEC standard)
Cable			ϕ7mm, 15P, Length : 2m, Shield cable
Accessory			Fixing bracket, Coupling
Unit weight			Approx. 380g
Approval			CE

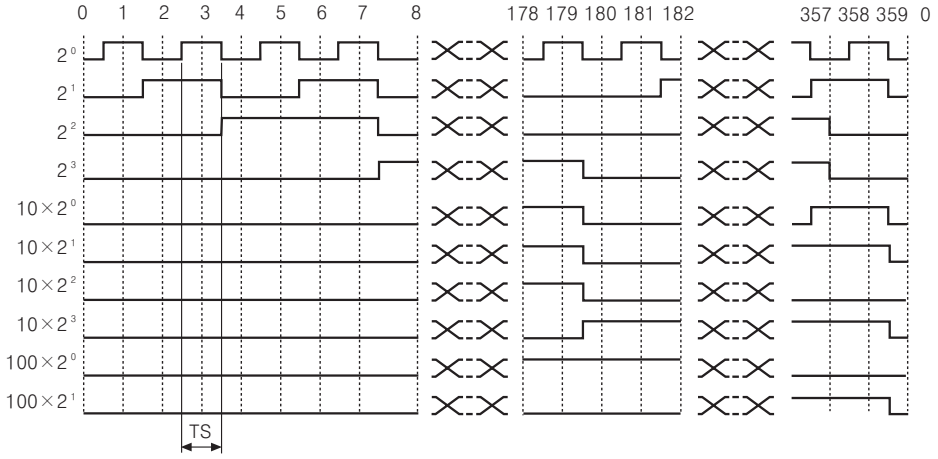
※**(Note1)**"*" Marked division in resolution is being developed. Not indicated type is customizable.

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

▣Output waveform

●360 division (BCD CODE output)

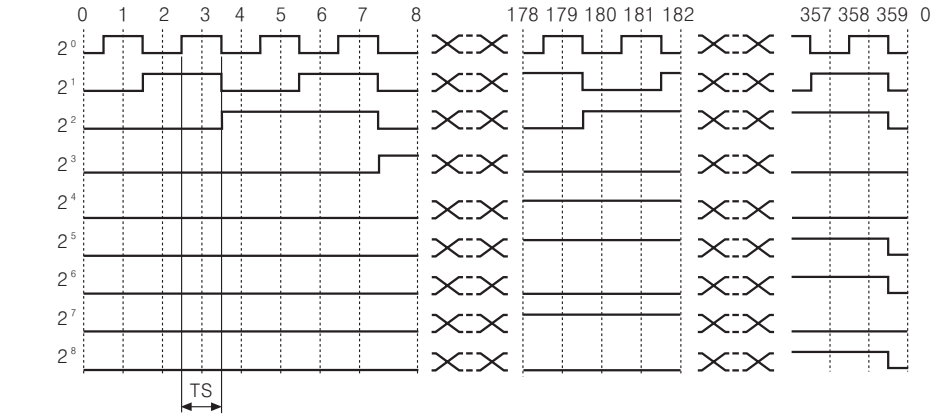
Model	EP50S8-360-1□-P-□



※TS=1° ±25'
※(Note)Above waveform is based on the positive logic. (The output waveform of negative logic is opposite to the above waveform.)

●360 division (BINARY CODE output)

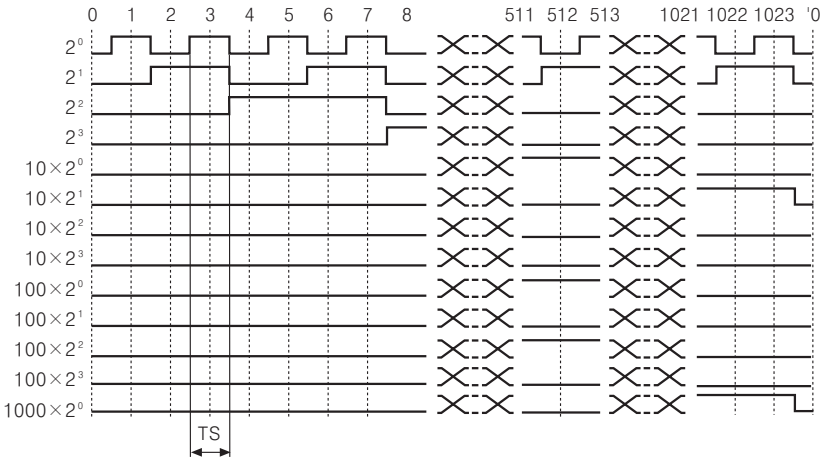
Model	EP50S8-360-2□-P-□



※TS=1° ±25'
※(Note)Above waveform is based on the positive logic. (The output waveform of negative logic is opposite to the above waveform.)

●1024 division (BCD CODE output)

Model	EP50S8-1024-1□-P-□

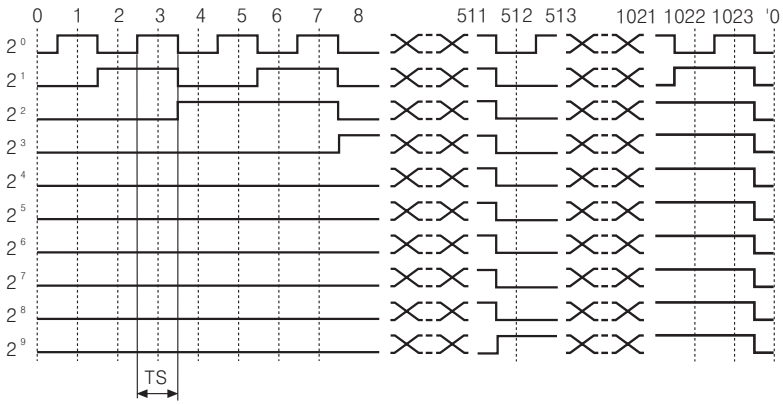


※TS=0.3515° ±15'
※(Note)Above waveform is based on the positive logic. (The output waveform of negative logic is opposite to the above waveform.)

▣Output waveform

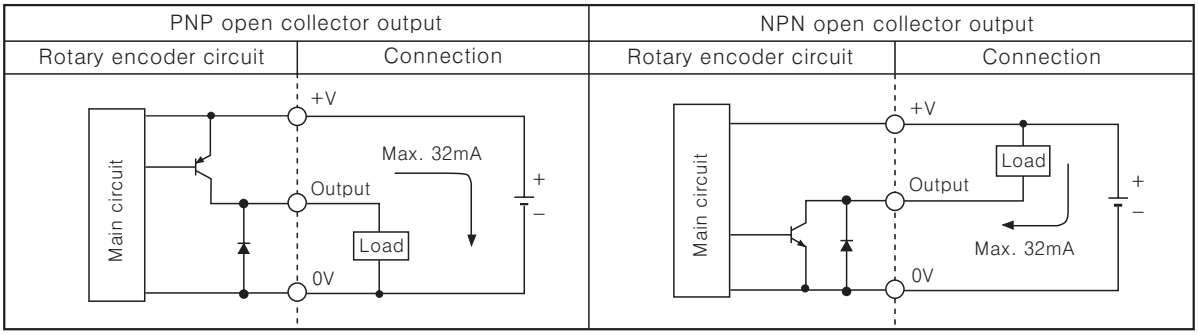
●1024 division (BINARY CODE output)

Model	EP50S8-1024-2□-P-□



※TS=0.3515° ±15'
※(Note)Above waveform is based on the positive logic. (The output waveform of negative logic is opposite to the above waveform.)

▣Control output diagram



※Output circuit of all phases is same.

▣Connections

●BCD Code

	Resolution / Color	6 division	8 division	12 division	16 division	24 division	32 division	40 division	45 division	60 division	64 division	90 division	128 division	180 division	256 division	360 division	512 division	720 division	1024 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	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	2^3
	Blue	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	(2^1 ×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)	(2^2 ×10)	(2^2 ×10)	(2^2 ×10)	(2^2 ×10)	(2^2 ×10)	(2^2 ×10)	(2^2 ×10)	(2^2 ×10)	(2^2 ×10)	(2^2 ×10)	(2^2 ×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)
	White/Red	NC				EP	EP	EP	NC				(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)
	White/Yellow	NC															(2^2 ×100)	(2^2 ×100)	(2^2 ×100)
	White/Blue	NC																	(2^3 ×100)
	White/Purple	NC																	(2°×1000)
	Shiled wire	F.G																	

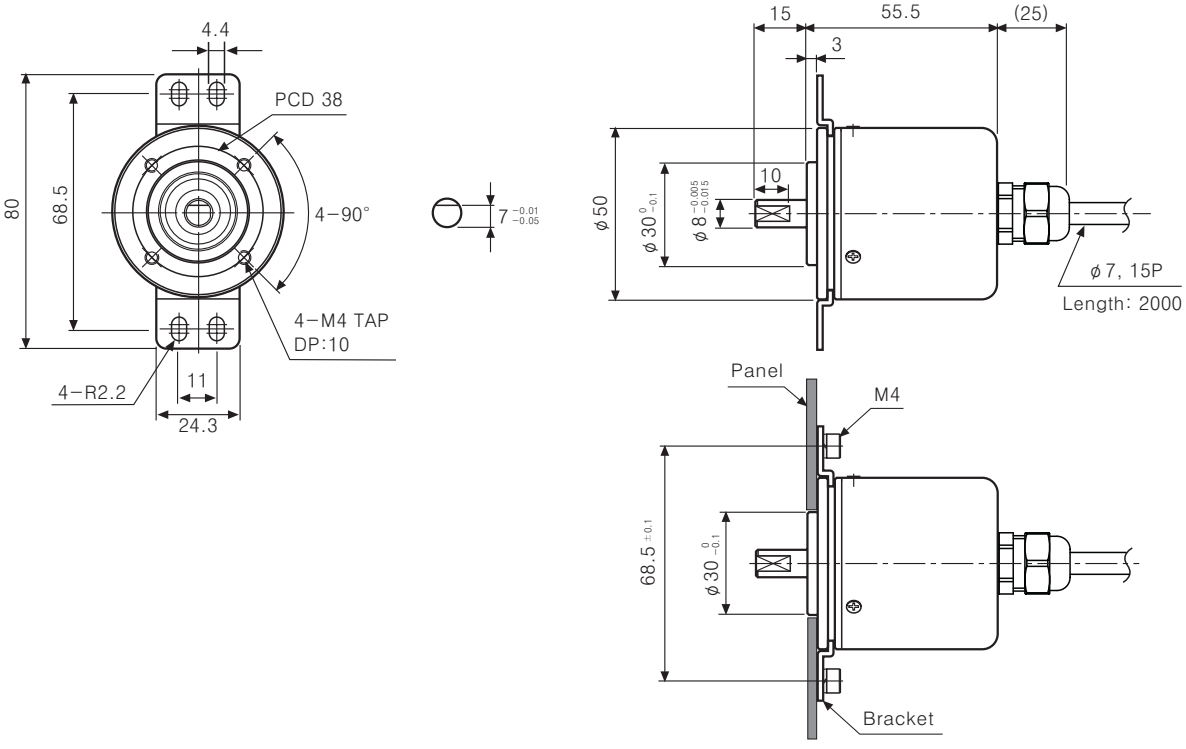
▣Connections

●Binary code

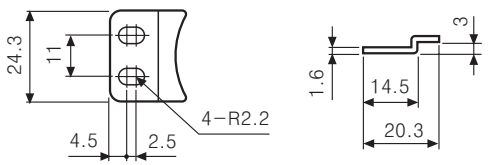
Color \ Resolution		6 division	8 division	12 division	16 division	24 division	32 division	40 division	45 division	60 division	64 division	90 division	128 division	180 division	256 division	360 division	512 division	720 division	1024 division
Power	White	+V																	
	Black	GND(0V)																	
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	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	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	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	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	2^6
	White/Brown	NC				EP	EP	2^5	NC					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
	White/Orange	NC																2^9	2^9
	White/Yellow	NC																	
	White/Blue	NC																	
	White/Purple	NC																	
	Shiled 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.

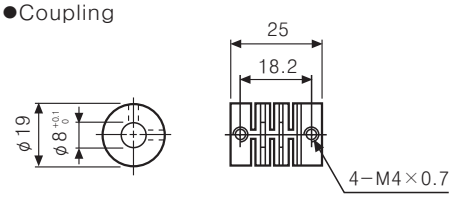
▣Dimensions



●Bracket



●Coupling



(Unit:mm)