

# Selection Guide

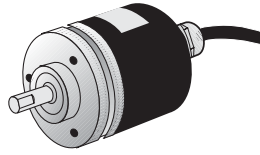
## ROTARY ENCODER(EP50S SERIES)

### Ordering information

EP50S	-	8	-	1024	-	1	-	R	-	P	-	24
Series	Shaft diameter	Pulse/1 Revolution	Output code	Rotating direction	Control output	Power supply						
Diameter φ 50mm shaft type	φ 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 an option.

### Specifications

Item	Diameter φ 50mm shaft type Absolute Rotary encoder		
Model	PNP open collector output	EP50S8 - □ - □ - P - □	
	NPN open collector output	EP50S8 - □ - □ - N - □	
Appearances	 <p>[ φ 50mm, L91.5mm]</p>		
Resolution	6, 8, 12, 16, 24, 32, 40, 45, 64, 90, 128, 180, 256, 360, 512, 720, 1024 division (Not indicated type is available to customize)		
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)	
	Dielectric strength	750VAC 50/60Hz for 1 minute (Between all terminals and case)	
	Connection	Cable outgoing type	
Mechanical specification	Starting torque	Max. 40gf · cm (0.004N · m)	
	Rotor inertia	Max. 40g · cm <sup>2</sup> (4 × 10 <sup>-6</sup> kg · m <sup>2</sup> )	
	Shaft loading	Radial : 10kgf, Thrust : 2.5kgf	
	Deviation of shaft position	Radial : Max. 0.1mm, Thrust : 0.2mm	
	Max. allowable revolution	(★Note1)	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	15P, φ 7mm, Length : 2m, Shield cable		
Accessory	Mounting bracket, Coupling		
Unit weight	Approx. 380g		
Approval	CE		

※ (★Note1) Max. allowable revolution ≥ Max. response revolution 【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.

## ROTARY ENCODER(EP50S SERIES)

### ■ Connections

#### ●BCD Code

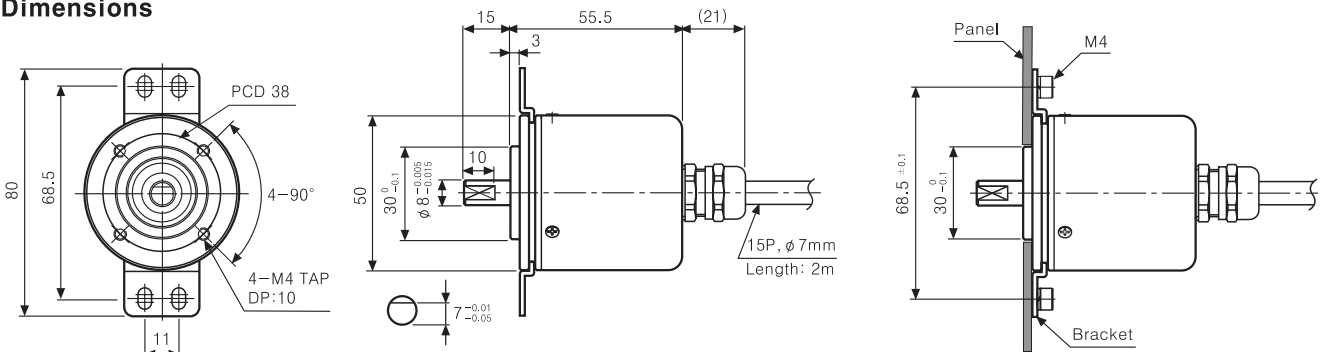
Resolution Color	6 division	8 division	12 division	16 division	24 division	32 division	40 division	45 division	64 division	90 division	128 division	180 division	256 division	360 division	512 division	720 division	1024 division	
Power White	+V																	
Black	0V																	
Brown	TP1	TP1	TP1	TP1	TP1	TP1	TP1	2°	2°	2°	2°	2°	2°	2°	2°	2°	2°	
Red	TP2	TP2	TP2	TP2	TP2	TP2	TP2	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	
Orange	2°	2°	2°	2°	2°	2°	2°	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	
Yellow	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	
Blue	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	(2°×10)	
Purple	EP		2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	(2 <sup>1</sup> ×10)	(2 <sup>1</sup> ×10)	(2 <sup>1</sup> ×10)	(2 <sup>1</sup> ×10)	(2 <sup>1</sup> ×10)	(2 <sup>1</sup> ×10)	(2 <sup>1</sup> ×10)	(2 <sup>1</sup> ×10)	(2 <sup>1</sup> ×10)	(2 <sup>1</sup> ×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)	
White/Brown	NC		EP	EP	(2 <sup>1</sup> ×10)	(2 <sup>1</sup> ×10)	(2 <sup>1</sup> ×10)	NC		(2 <sup>3</sup> ×10)	(2 <sup>3</sup> ×10)	(2 <sup>3</sup> ×10)	(2 <sup>3</sup> ×10)	(2 <sup>3</sup> ×10)	(2 <sup>3</sup> ×10)	(2 <sup>3</sup> ×10)	(2 <sup>3</sup> ×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 <sup>1</sup> ×100)	(2 <sup>1</sup> ×100)	(2 <sup>1</sup> ×100)	(2 <sup>1</sup> ×100)	(2 <sup>1</sup> ×100)	(2 <sup>1</sup> ×100)
White/Yellow	NC														(2°×100)	(2°×100)	(2°×100)	(2°×100)
White/Blue	NC																(2°×1000)	
White/Purple	NC																(2°×1000)	
Shielded wire	F.G																	

#### ●Binary code

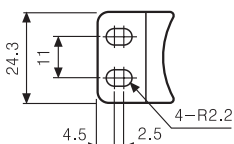
Resolution Color	6 division	8 division	12 division	16 division	24 division	32 division	40 division	45 division	64 division	90 division	128 division	180 division	256 division	360 division	512 division	720 division	1024 division
Power White	+V																
Black	0V																
Brown	TP1	TP1	TP1	TP1	TP1	TP1	TP1	2°	2°	2°	2°	2°	2°	2°	2°	2°	2°
Red	TP2	TP2	TP2	TP2	TP2	TP2	TP2	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>
Orange	2°	2°	2°	2°	2°	2°	2°	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>
Yellow	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>
Blue	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>4</sup>	2 <sup>4</sup>	2 <sup>4</sup>	2 <sup>4</sup>	2 <sup>4</sup>	2 <sup>4</sup>	2 <sup>4</sup>	2 <sup>4</sup>	2 <sup>4</sup>	2 <sup>4</sup>
Purple	EP	EP	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>5</sup>	2 <sup>5</sup>	2 <sup>5</sup>	2 <sup>5</sup>	2 <sup>5</sup>	2 <sup>5</sup>	2 <sup>5</sup>	2 <sup>5</sup>	2 <sup>5</sup>	2 <sup>5</sup>
Gray	NC		EP	EP	2 <sup>4</sup>	2 <sup>4</sup>	2 <sup>4</sup>	NC		2 <sup>6</sup>	2 <sup>6</sup>	2 <sup>6</sup>	2 <sup>6</sup>	2 <sup>6</sup>	2 <sup>6</sup>	2 <sup>6</sup>	2 <sup>6</sup>
White/Brown	NC			EP	EP	2 <sup>5</sup>	NC			2 <sup>7</sup>	2 <sup>7</sup>	2 <sup>7</sup>	2 <sup>7</sup>	2 <sup>7</sup>	2 <sup>7</sup>	2 <sup>7</sup>	2 <sup>7</sup>
White/Red	NC				EP	NC				2 <sup>8</sup>	2 <sup>8</sup>	2 <sup>8</sup>	2 <sup>8</sup>	2 <sup>8</sup>	2 <sup>8</sup>	2 <sup>8</sup>	2 <sup>8</sup>
White/Orange	NC														2 <sup>9</sup>	2 <sup>9</sup>	
White/Yellow	NC																
White/Blue	NC																
White/Purple	NC																
Shielded wire	F.G																

- \* Unused wires must be insulated.
- \* Metal case and shield wire should be grounded.
- \* NC : Not Connected.
- \* Output cable must not be short-circuited due to Driver IC is used in output circuit.

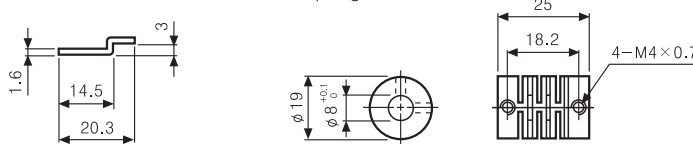
### ■ Dimensions



#### ●Bracket



#### ●Coupling



Unit:mm