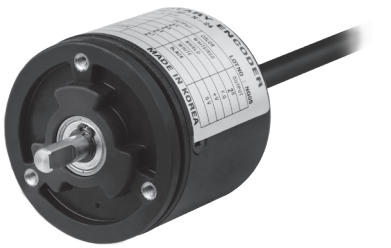
Shaft Type Ø50mm Plastic case, Single-turn Absolute Rotary Encoder

■ Features

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



■ Applications

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

Please read "Safety Considerations" in the instruction manual before using.

■ Ordering Information

EP50S **6** **P** – **360** – **3** **F** – **N** – **24**

Series	Shaft diameter	Outer material	Steps/revolution	Output code	Revolution direction	Control output	Power supply
Ø50mm shaft type	6: Ø6mm 8: Ø8mm	Plastic	180, 360	3: Shift gray code	F: Output value increases at CW direction R: Output value increase at CCW direction	N: NPN open collector output	5: 5VDC ±5% 24: 12-24VDC ±5%

■ Specifications

Item		Shaft Type Ø50mm Single-turn Absolute Rotary Encoder
Resolution		180, 360-division
Electrical specification	Output code	Gray code (shift gray code)
	Output phase / Output angle	TS: Signal Pulse (9-bit), TS: 2°±25'
	Control output	NPN open collector output - Load current: Max. 15mA, Residual voltage: Max. 1VDC
	Response time (rise/fall)	Ton=Max. 1μs, Toff=Max. 1μs (cable length: 2m, I sink = 15mA)
	Max. response frequency	20kHz
	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	Axial cable type (cable gland)
Mechanical specification	Starting torque	Max. 40gf·cm (0.004N·m)
	Moment of inertia	Max. 50g·cm² (5×10⁻⁶kg·m²)
	Shaft loading	Radial: 2kgf, Thrust: 1kgf
	Max. allowable revolution※1	3,000rpm
Insulation resistance		Over 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 at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours
Shock		Approx. max. 50G
Environment	Ambient temperature	-10 to 55℃, storage: -25 to 85℃
	Ambient humidity	35 to 85%RH, storage: 35 to 90%RH
Protection structure		IP50 (IEC standard)
Cable		Ø6mm, 12-wire, 2m, Shield cable (AWG24, core diameter: 0.08mm, number of cores: 40, insulator out diameter: Ø1mm)
Accessory		Fixing bracket, Coupling
Weight※2		Approx. 308g (approx. 280g)

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

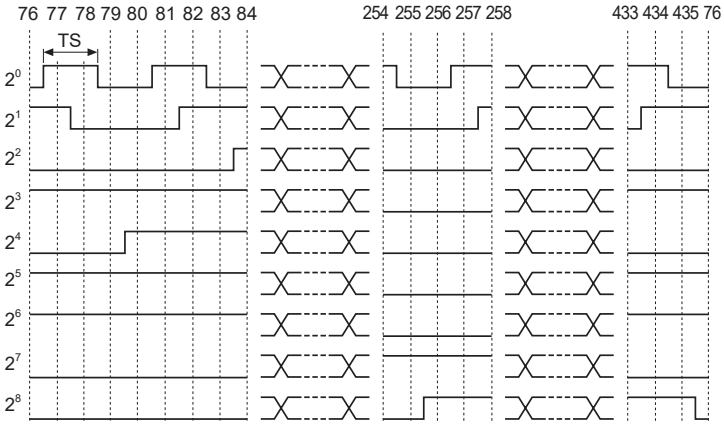
$$[\text{Max. response revolution (rpm)} = \frac{\text{Max. response frequency}}{\text{Resolution}} \times 60 \text{ sec}]$$

※2: The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.

■ Output Waveform

◎ 360-division

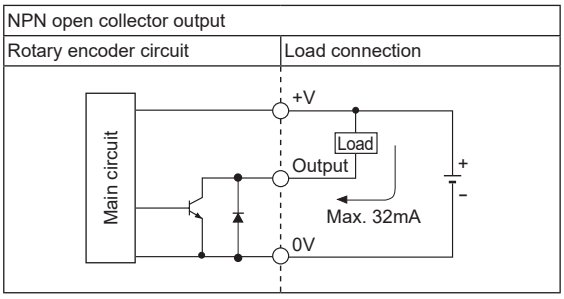
Model	EP50S□P-360-3F-N



※TS=2°±25'
※Above waveform is based on the positive logic. (the output waveform of negative logic is opposite to the above waveform.)

■ Control Output Diagram

NPN open collector output



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

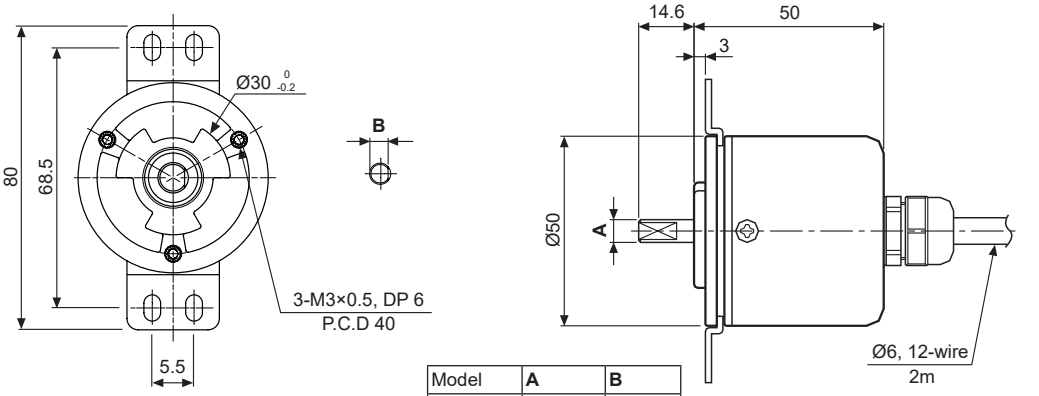
■ Connections

Color \ Resolution		360-division
Power	White	+V (5VDC, 12-24VDC)
	Black	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.

※Do not apply tensile strength over 30N to the cable.

▣ Dimensions

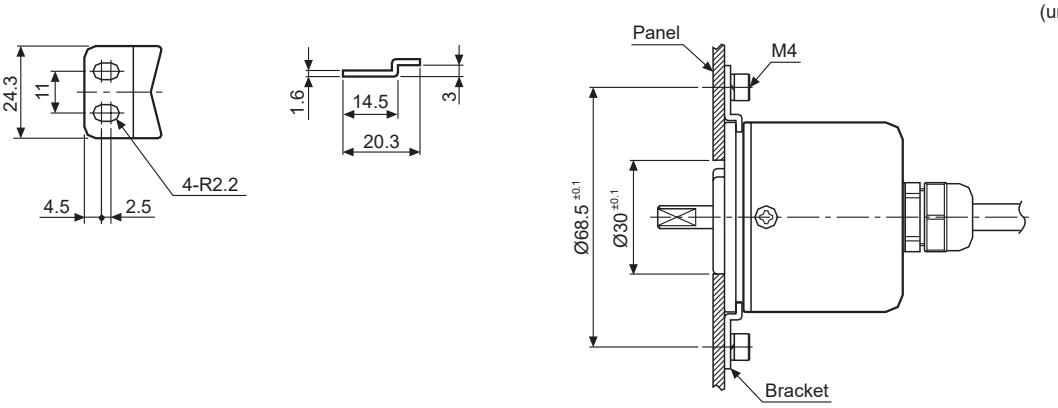
(unit: mm)



Model	A	B
E50S6P	Ø6 -0.013 -0.007	5
E50S8P	Ø8 -0.015 -0.01	7

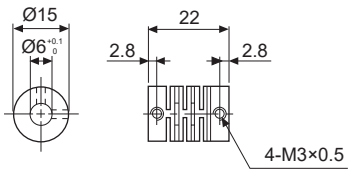
◎ Bracket

(unit: mm)

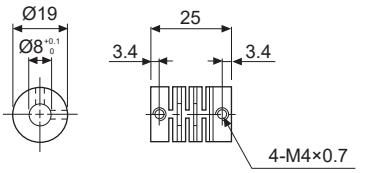


◎ Coupling

● Ø6mm coupling



● Ø8mm coupling



- Parallel misalignment: max. 0.25mm
- Angular misalignment: max. 5°
- End-play: max. 0.5mm

※Do not load overweight on the shaft.
※Do not put strong impact when insert a coupling into shaft. Failure to follow this instruction may result in product damage.
※Fix the unit or a coupling by a wrench under 0.15N·m of torque.
※When you install this unit, if eccentricity and deflection angle are larger, it may shorten the life cycle of this unit.
※For parallel misalignment, angular misalignment, end-play terms, refer to the "Glossary" section of Technical Description.
※For flexible coupling (ERB series) information, refer to the ERB series section.