# 50 mm Diameter Absolute Single-Turn Rotary Encoders (Optical)

## EP50 Series

CATALOG

**For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.**

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

## Features

- Ø 50 mm housing, Ø 8 mm solid shaft
- Various output code options: BCD, binary, Gray code
- Various resolutions: up to 10-bit (1024 divisions)
- IP64 protection structure (IEC standard)

## Ordering Information

This is only for reference, the actual prodcut does not support all combinations.
For selecting the specified model, follow the Autonics website.

| EP50 | S | 8 | - | ❶ | - | ❷ | ❸ | - | ❹ | - | ❺ |
|---|---|---|---|---|---|---|---|---|---|---|---|

**❶ Resolution**
Number: Refer to resolution in 'Output Phase / Output Angle'

**❷ Output code**
1: BCD code
2: Binary code
3: Gray code

**❸ Rotating direction**
F: Increase output when the rotating direction is clockwise base on facing the shaft
R: Increase output when the rotating direction is counter-clockwise base on facing the shaft

**❹ Control output**
N: NPN open collector output
P: PNP open collector output

**❺ Power supply**
5: 5 VDC⎓ ±5%
24: 12 - 24 VDC⎓ ±5%

## Product Components

- Product
- Instruction manual
- Bolt × 8
- Coupling × 1
- Bracket × 2

## Specifications

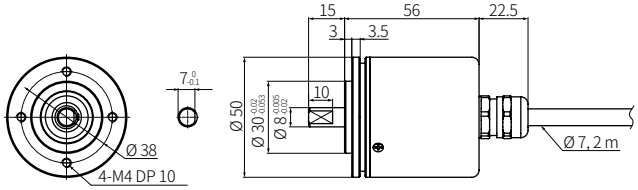
| Model | EP50S8-□-□□-N-□ | EP50S8-□-□□-P-□ |
|---|---|---|
| **Resolution** 01) | ≤ 1024 division | |
| **Output code** | BCD / Binary / Gray code model | |
| **Control output** | NPN open collector output | PNP open collector output |
| Inflow current | ≤ 32 mA | - |
| Residual voltage | ≤ 1 VDC⎓ | - |
| Outflow current | - | ≤ 32 mA |
| Output voltage | - | ≥ (power supply -1.5) VDC⎓ |
| **Response speed** 02) | $T_{on}$ ≤ 800 nsec, $T_{off}$ ≤ 800 nsec | |
| **Max. response freq.** | 35 kHz | |
| **Max. allowable revolution** 03) | 3,000 rpm | |
| **Starting torque** | ≤ 0.0069 N m | |
| **Inertia moment** | ≤ 40 g·cm² (4 × 10⁻⁶ kg·m²) | |
| **Allowable shaft load** | Radial: 10 kgf, Thrust: 2.5 kgf | |
| **Unit weight (packaged)** | ≈ 398 g (≈ 482 g) | |
| **Approval** | CE EAC | |

01) Refer to resolution in 'Output Phase / Output Angle'.
02) Based on cable length: 2 m, I sink = 32 mA
03) Select resolution to satisfy Max. allowable revolution ≥ Max. response revolution
[max. response revolution (rpm) = $\frac{\text{max. response frequency}}{\text{resolution}}$ × 60 sec]

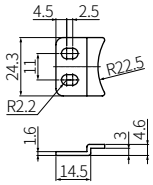
| | |
|---|---|
| **Power supply** | 5 VDC⎓ ± 5% (ripple P-P: ≤ 5%) /<br>12 - 24 VDC⎓ ± 5% (ripple P-P: ≤ 5%) model |
| **Current consumption** | ≤ 100 mA (no load) |
| **Insulation resistance** | Between all terminals and case: ≥ 100 MΩ (500 VDC⎓ megger) |
| **Dielectric strength** | Between all terminals and case: 750 VAC~ 50 / 60 Hz for 1 minute |
| **Vibration** | 1 mm double amplitude at frequency 10 to 55 Hz (for 1 minute) in each X, Y, Z direction for 2 hours |
| **Shock** | ≤ 50 G |
| **Ambient temp.** | -10 to 70 °C, storage: -25 to 85 °C (no freezing or condensation) |
| **Ambient humi.** | 35 to 85%RH, storage: 35 to 90%RH (no freezing or condensation) |
| **Protection rating** | IP64 (IEC standard) |
| **Connection** | Axial cable type (cable gland) |
| **Cable spec.** | Ø 7 mm, 15-wire, 2m, shield cable |
| **Wire spec.** | AWG28 (0.08 mm, 40-core), insulator diameter: Ø 0.8 mm |

## Dimensions

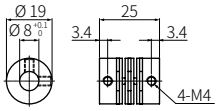
• Unit: mm, For the detailed drawings, follow the Autonics website.




### ■ Bracket




### ■ Coupling




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