

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



## EPM50 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 multi-turn absolute rotary encoders
- Output interface options: Parallel, SSI (Synchronous Serial Interface)
- 23-bit (8,388,608) total resolution
  - 10-bit single-turn (1,024 divisions)
  - 13-bit multi-turn (8,192 revolutions)
- Zero-point reset with single-turn data reset and multi-turn count reset functions
- Position memory backup
- CW / CCW direction setting function
- Overflow alarm (OVF) function
- Latch function (Parallel output type only)
- IP64 protection structure (IEC standard)

### Ordering Information

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

**EPM50 S 8 - 10 13 - B - ① - 24 - ②**

#### ① Control output

PN: Parallel NPN open collector output  
S: SSI Line driver output

#### ② Connection

No mark: Axial cable type  
S: Radial cable type

### Product Components

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

### Specifications

Model	EPM50S8-1013-B-PN-24-□	EPM50S8-1013-B-S-24-□
<b>Resolution</b>	Single-turn: 1024 division, 10 bit Multi-turn: 8192 revolution, 13 bit	
<b>Rotation limit when power OFF</b> <sup>01)</sup>	± 90°	
<b>Output code</b>	Binary 2 code	24 bit, Binary 2 code
<b>Output signal</b>	Single-turn data, Multi-turn count, Overflow alarm (OVF) <sup>02)</sup>	
<b>Control output</b>	Parallel NPN open collector output	SSI (Synchronous Serial Interface) Line driver output
Inflow current	≤ 32 mA	≤ 20 mA
Residual voltage	≤ 1 VDC≐	≤ 0.5 VDC≐
Outflow current	-	≤ -20 mA
Output voltage	-	≥ 2.5 VDC≐
<b>Output logic</b>	Negative logic output	-
<b>Response speed</b> <sup>03)</sup>	≤ 1 μs	-
<b>Single-turn data reset</b> <sup>04)</sup> <b>Multi-turn count reset</b> <sup>05)</sup> <b>Direction Clear</b>	Input level: 0 - 1 VDC≐ Input logic: Low Active, OPEN or HIGH in common use Input time: ≥ 100 ms	
<b>Latch</b>	Input level: 0 - 1 VDC≐ Input logic: Low Active, OPEN or HIGH in common use Input time: ≥ 500 μs	-
<b>Clock</b>	-	Input level: 5 VDC≐ ± 5% Input frequency: 100 kHz to 1 MHz
<b>Max. response freq.</b>	50 kHz	-
<b>Max. allowable revolution</b> <sup>06)</sup>	3,000 rpm	
<b>Starting torque</b>	≤ 0.0069 N m	
<b>Inertia moment</b>	≤ 40 g·cm <sup>2</sup> (4 × 10 <sup>-6</sup> kg·m <sup>2</sup> )	
<b>Allowable shaft load</b>	Radial: 10 kgf, Thrust: 2.5 kgf	
<b>Unit weight (packaged)</b>	≈ 475 g (≈ 560 g)	≈ 324 g (≈ 409 g)
<b>Approval</b>	CE EAC	

01) It calibrates the multi-turn count by comparing single-turn data before/after power off without counting multi-turn count when power off. Correct multi-turn count cannot be obtained if a rotating operation exceeding ± 90° is performed at the rotation position when power off.

02) Outputs when multi-turn count is out of counting range (0 to 8191 revolution).

03) Based on cable length: 2 m, I sink = 32 mA

04) If the single-turn data reset signal is applied, the single-turn data will be initialized to 0.

05) If the multi-turn count reset signal is applied, the multi-turn count will be initialized to 0.

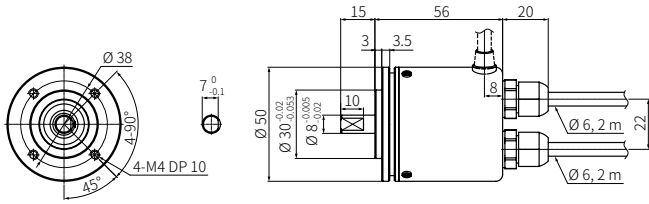
06) For parallel model Select resolution to satisfy Max. allowable revolution ≥ Max. response revolution  
[max. response revolution (rpm) =  $\frac{\text{max. response frequency}}{\text{resolution}} \times 60 \text{ sec}$ ]

<b>Power supply</b>	12 - 24 VDC≐ ± 5% (ripple P-P: ≤ 5%)
<b>Current consumption</b>	Parallel NPN open collector output: ≤ 100 mA (no load) SSI Line driver output: ≤ 150 mA (no load)
<b>Insulation resistance</b>	Between all terminals and case: ≥ 100 MΩ (500 VDC≐ megger)
<b>Dielectric strength</b>	Between all terminals and case: 750 VAC ~ 50 / 60 Hz for 1 minute
<b>Vibration</b>	1 mm double amplitude at frequency 10 to 55 Hz (for 1 minute) in each X, Y, Z direction for 2 hours
<b>Shock</b>	≤ 50 G
<b>Ambient temp.</b>	-10 to 70 °C, storage: -25 to 85 °C (no freezing or condensation)
<b>Ambient humi.</b>	35 to 85%RH, storage: 35 to 90%RH (no freezing or condensation)
<b>Protection rating</b>	Axial cable type: IP64 (IEC standard), Radial cable type: IP50 (IEC standard)
<b>Connection</b>	Axial / Radial cable type model (cable gland)
<b>Cable spec.</b>	Ø 6 mm, 2 m, shield cable Parallel NPN open collector output: 17-wire × 2, SSI Line driver output: 10-wire
<b>Wire spec.</b>	AWG28 (0.08 mm), insulator diameter: Ø 0.8 mm Parallel NPN open collector output: 17-core, SSI Line driver output: 19-core

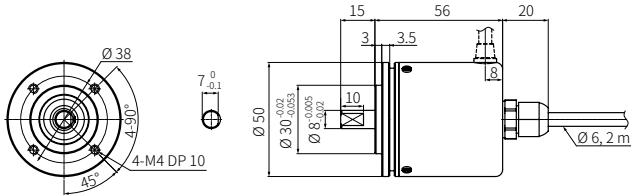
## Dimensions

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

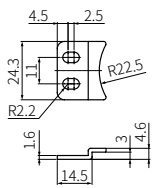
### ■ Parallele NPN open collector output



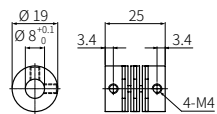
### ■ SSI Line driver output



### ■ Bracket



### ■ Coupling



- Parallel misalignment:  $\leq 0.25$  mm
- Angular misalignment:  $\leq 5^\circ$
- End-play:  $\leq 0.5$  mm