

## Shaft Type Ø15mm Incremental Rotary Encoder

### ■ Features

- Ultra-compact (Ø15mm) and ultra-lightweight (14g)
- Easy installation in tight or limited spaces
- Low moment of inertia
- Power supply: 5VDC ±5%



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

### ■ Ordering Information

|                                |   |  |
|--------------------------------|---|--|
| Item                           |   | Shaft Type Ø15mm Incremental Rotary Encoder  |
| Model                          |   | E15S2-36-2-N-5-R   |
| Resolution (PPR) <sup>※1</sup> |   | 36   |
| Electrical specification       | Output phase                            | A, B phase   |
|                                | Phase difference of output              | Phase difference between A and B: $\frac{T}{4} \pm \frac{T}{8}$ (T=1 cycle of A phase)   |
|                                | Control output                          | NPN open collector output - Load current: max. 30mA, Residual voltage: max. 0.4VDC=  |
|                                | Response time (rise/fall)               | Max. 1μs (cable length: 1m, I sink=20mA)   |
|                                | Max. response frequency                 | 10kHz  |
|                                | Power supply                            | 5VDC= ±5% (ripple P-P: max. 5%)  |
|                                | Current consumption                     | Max. 50mA (disconnection of the load)  |
|                                | Insulation resistance                   | Over 100MΩ (at 500VDC megger between all terminals and case)   |
|                                | Dielectric strength                     | 500VAC 50/60Hz for 1 min (between all terminals and case)  |
|                                | Connection                              | Axial cable type   |
| Mechanical specification       | Starting torque                         | Max. 10gf·cm (9.8×10 <sup>-4</sup> N·m)  |
|                                | Moment of inertia                       | Max. 0.5g·cm <sup>2</sup> (5×10 <sup>-8</sup> kg·m <sup>2</sup> )  |
|                                | Shaft loading                           | Radial: 200gf, Thrust: 200gf   |
|                                | Max. allowable revolution <sup>※2</sup> | 3,000rpm   |
| 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 70°C, storage: -20 to 80°C  |
|                                | Ambient humidity                        | 35 to 85%RH, storage: 35 to 90%RH  |
| Protection structure           |   | IP50 (IEC standard)  |
| Cable                          |   | Ø3mm, 4-wire, 500mm, Flexible PVC insulation shielded cable (AWG30, core diameter: 0.102mm, number of cores: 7, insulator diameter: Ø0.71mm) |
| Accessory                      |   | Ø2mm coupling  |
| Weight <sup>※3</sup>           |   | Approx. 37g (approx. 14g)  |

※1: Not indicated resolutions are customizable.

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

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

※3: The weight includes packaging. The weight in parenthesis is for unit only.

※Environment resistance is rated at no freezing or condensation.

SENSORS

CONTROLLERS

MOTION DEVICES

SOFTWARE

(A) Photoelectric Sensors

(B) Fiber Optic Sensors

(C) LIDAR

(D) Door/Area Sensors

(E) Vision Sensors

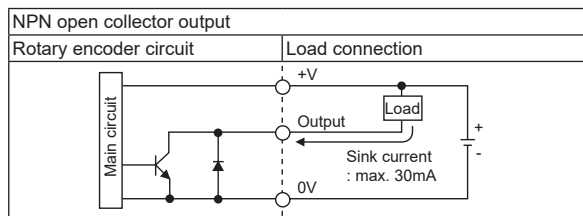
(F) Proximity Sensors

(G) Pressure Sensors

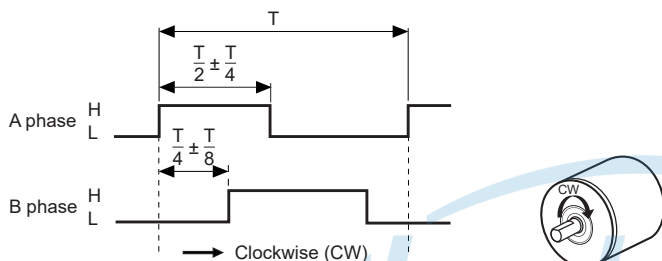
(H) Rotary Encoders

(I) Connectors/ Connector Cables/ Sensor Distribution Boxes/ Sockets

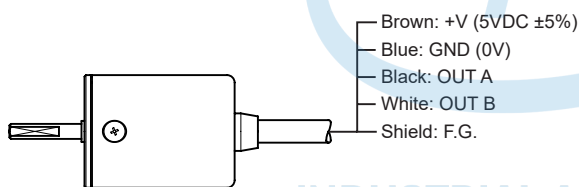
## Control Output Diagram



## Output Waveform

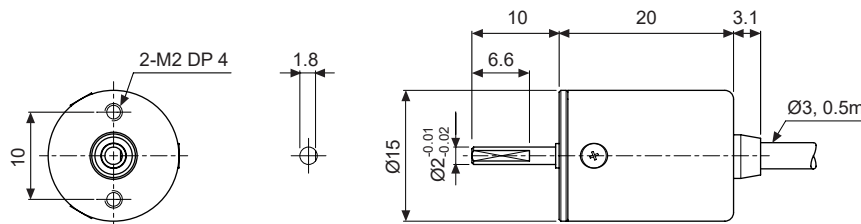


## Connections



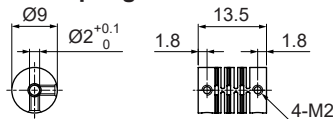
- ※ Unused wires must be insulated.
- ※ The metal case and shield cable should be grounded (F.G.).
- ※ Do not apply tensile strength over 15N to the cable.

## Dimensions



(unit: mm)

## Coupling



- Parallel misalignment: max. 0.15mm
- Angular misalignment: max. 2°
- 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.