

# Autonics

## ROTARY ENCODER(INCREMENTAL TYPE)

### E15S2-36-2-N-5-R

M A N U A L



Thank you very much for selecting Autonics products.  
For your safety, please read the following before using.

#### Caution for your safety

⊗ Please keep these instructions and review them before using this unit.

⊗ Please observe the cautions that follow;

**⚠ Warning** Serious injury may result if instructions are not followed.

**⚠ Caution** Product may be damaged, or injury may result if instructions are not followed.

⊗ The following is an explanation of the symbols used in the operation manual.

⚠ Caution: Injury or danger may occur under special conditions.

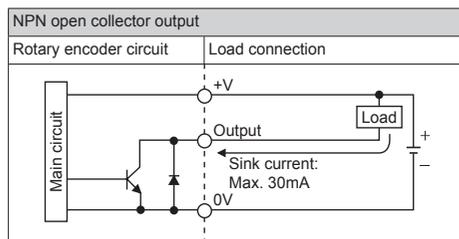
#### Warning

- In case of using this unit with machinery(Ex: nuclear power control, medical equipment, ship, vehicle, train, airplane, combustion apparatus, safety device, crime/disaster prevention equipment, etc) which may cause damages to human life or property, it is required to install fail-safe device.  
It may cause a fire, human injury or damage to property.

#### Caution

- It should be protected from water or oil.  
It may cause damage or miscontrol due to malfunction.
- Please observe the voltage range.  
It may shorten the life cycle or damage to the product.
- Please check the polarity of power and wrong wiring.  
It may result in damage to this unit.
- Do not short circuit the load.  
It may result in damage to this unit.

#### Control output diagram



⊗ The above specifications are subject to change and some models may be discontinued without notice.

#### Specifications

Item	ø15mm Shaft type Incremental Rotary Encoder	
Model	E15S2-36-2-N-5-R	
Resolution(P/R)	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)
Mechanical specification	Insulation resistance	Min. 100MΩ(at 500VDC megger between all terminals and case)
	Dielectric strength	500VAC 50/60Hz for 1 min.(between all terminals and case)
	Connection	Cable type
	Starting torque	Max. 10gf cm(10×10 <sup>-4</sup> N·m)
	Moment of inertia	Max. 0.5g cm <sup>2</sup> (5×10 <sup>-9</sup> kg m <sup>2</sup> )
	Shaft loading	Radial: 200gf, Thrust : 200gf
	Max. allowable revolution <sup>*1</sup>	3000rpm
Vibration	1.5mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 2 hours	
Shock	Approx. 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	IP50(IEC standards)	
Cable	Ø3mm, 4-wire, length:500mm, Flexible PVC insulation shielded cable (AWG30, Core diameter:0.102mm, Number of cores: 7, Insulator diameter: Ø0.71mm)	
Accessory	Ø2mm Coupling	
Weight <sup>*2</sup>	Approx. 37g(Approx. 14g)	

⊗ \*1: Max. allowable revolution ≥ Max. response revolution

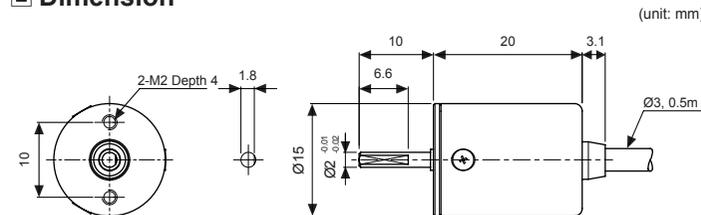
$$[\text{Max. response revolution}(\text{rpm}) = \frac{\text{Max. response frequency}}{\text{Resolution}} \times 60 \text{ sec}]$$

Please select the resolution to make lower max. response revolution than max. allowable revolution.

⊗ \*2: The weight with packaging and the weight in parentheses is only unit weight.

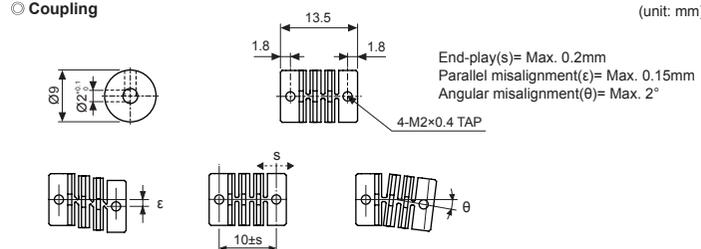
⊗ Environment resistance is rated at no freezing or condensation.

#### Dimension



#### Accessory

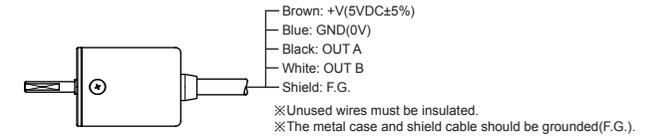
##### Coupling



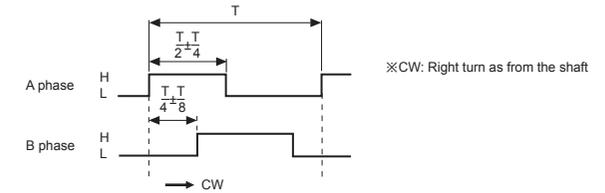
⊗ When mounting the coupling to the encoder shaft, if there is combined misalignment (parallel, angular misalignment(ε)) between rotating encoder shaft and mate shaft, it may cause encoder and coupling's life cycle to shorten.

⊗ Do not load overweight on the shaft.

#### Connections



#### Output waveform



#### Caution for using

##### 1. Installation

- This unit consists of precision components. If you drop this unit, it may lose the function.  
Please treat this product carefully.
- For the installation, please check the assembly dimension of counterpart, then try not to occur the offset between shaft hole and the object. It might shorten the life cycle of the product.
- Do not put strong impact when inserting coupling into shaft.
- Fix the unit or coupling by wrench under 0.15N·m of torque.

##### 2. For using

- The shield cable should be grounded(F.G.). (Encoder + Motor + Panel F.G.)
- Do not connect and cut circuit off during power on. It may cause damage to this unit.
- When the power source is Switching Power, please install the surge absorber in power line and wire should be short in order not to be influenced by noise.

##### 3. Environment

- Please do not use this unit with below environment, it cause malfunction.
- Place where this unit or component may be damaged by strong vibration or impact.
  - Place where there are lots of flammable or corrosive gases.
  - Place where strong magnet field or electric noise are occurred.
  - Place where is beyond of rating temperature or humidity.
  - Place where strong acids or alkali near by.

##### 4. Vibration and Impact

- When the strong impact loads on this unit, the error pulse may occur as if the slit is revolving.
- Please fix this unit firmly when mount this unit in order to avoid malfunction by residual vibration.

##### 5. Wire connection

- Do not pull out the unit after connection with over the rated force(15N).
- If use the cable of encoder and high voltage line or power cable in the same conduit, it may cause a malfunction or mechanical trouble. Please wire separately or use separated conduit.
- Please check wire and response frequency when extend wire because of distortion of waveform or residual voltage increment etc by line resistance or capacity between lines.

⊗ It may cause malfunction if above instructions are not followed.

#### Major product

- Photoelectric sensors
- Fiber optic sensors
- Door sensors
- Door side sensors
- Area sensors
- Proximity sensors
- Pressure sensors
- Rotary encoders
- Connectors/Sockets
- Switching mode power supplies
- Control switches/Lamps/Buzzers
- I/O Terminal Blocks & Cables
- Stepper motors/drivers/motion controllers
- Graphic/Logic panels
- Field network devices
- Laser marking system(Fiber, CO<sub>2</sub>, Nd:YAG)
- Laser welding/soldering system
- Temperature controllers
- Temperature/Humidity transducers
- SSR/Power controllers
- Counters
- Timers
- Panel meters
- Tachometer/Pulse(Rate)meters
- Display units
- Sensor controllers

**Autonics Corporation**  
http://www.autonics.com

Satisfiable Partner For Factory Automation

HEAD QUARTERS:  
18, Bansong-ro 513beon-gil, Haeundae-gu, Busan, Korea

OVERSEAS SALES:  
#402-404, Bucheon Techno Park, 655, Pyeongcheon-ro, Wornmi-gu, Bucheon, Gyeonggi-do, Korea  
TEL: 82-32-610-2730 / FAX: 82-32-329-0728  
E-mail: sales@autonics.com