DRW171362AA

RusAutomation **Autonics**

ROTARY ENCODER(INCREMENTAL TYPE)

E15S2-36-2-N-5-R

INSTRUCTION MANUAL

Thank you for choosing our Autonics product.
Please read the following safety considerations before use.

■ Safety Considerations

※Please observe all safety considerations for safe and proper product operation to avoid hazards.
※⚠ symbol represents caution due to special circumstances in which hazards may occur.

⚠ **Warning** Failure to follow these instructions may result in serious injury or death.
⚠ **Caution** Failure to follow these instructions may result in personal injury or product damage.

⚠ Warning

1. **Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)**
   Failure to follow this instruction may result in fire, personal injury, or economic loss.
2. **Install on a device panel to use.**
   Failure to follow this instruction may result in fire.
3. **Do not connect, repair, or inspect the unit while connected to a power source.**
   Failure to follow this instruction may result in fire.
4. **Check 'Connections' before wiring.**
   Failure to follow this instruction may result in fire.
5. **Do not disassemble or modify the unit.**
   Failure to follow this instruction may result in fire.

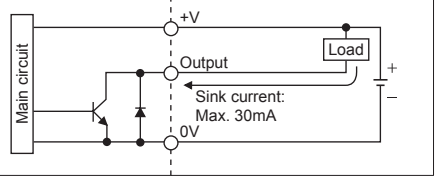
⚠ Caution

1. **Use the unit within the rated specifications.**
   Failure to follow this instruction may result in fire or product damage.
2. **Do not short the load.**
   Failure to follow this instruction may result in product damage by fire.
3. **Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.**
   Failure to follow this instruction may result in fire or explosion.
4. **Do not use the unit near the place where there is the equipment which generates strong magnetic force or high frequency noise and strong alkaline, strong acidic exists.**
   Failure to follow this instruction may result in product damage.

■ Control Output Diagram

NPN open collector output

Rotary encoder circuit	Load connection



※**The above specifications are subject to change and some models may be discontinued without notice.**
※**Be sure to follow cautions written in the instruction manual, and the technical descriptions (catalog, homepage).**

■ Specifications

Item		Ø15mm Shaft type Incremental Rotary Encoder
Model		**E15S2-36-2-N-5-R**
Resolution(PPR)		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=1cycle 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	Min. 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(10×10⁻³ N·m)
	Moment of inertia	Max. 0.5g·cm²(5×10⁻⁶kg·m²)
	Shaft loading	Radial: 200gf, Thrust : 200gf
	Max. allowable revolution※1	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℃, Storage: -20 to 80℃
	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		Ø2mmCoupling
Weight※2		Approx. 37g(Approx. 14g)

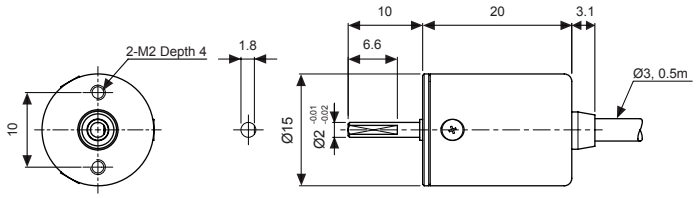
※1: Max. allowable revolution ≥ Max. response revolution

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

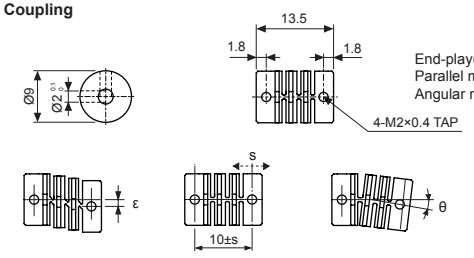
(unit: mm)



■ Accessory

◎ **Coupling**

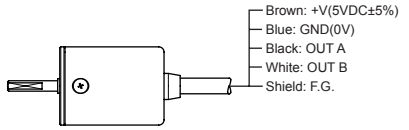
(unit: mm)



End-play(s)= Max. 0 2mm
Parallel misalignment(ε)= Max. 0.15mm
Angular misalignment(θ)= Max. 2°

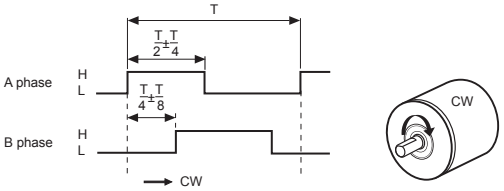
※Do not load overweight on the shaft.
※Do not put strong impact when insert a coupling into shaft.
Failure to follow this instruction may result in product damage.
※Fix the unit or a coupling by a wrench under 0.15 N m of torque.
※When you install this unit, if eccentricity and deflection angle are larger, it may shorten the life cycle of this unit.

■ 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.

■ Output Waveform



■ Cautions during Use

1. Follow instruc ions in 'Cautions during Use'. Otherwise, It may cause unexpected accidents.
2. 5VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
3. For using the unit with the equipment which generates noise (switching regulator, inverter, servo motor, etc.), ground he shield wire to the F.G. terminal.
4. Ground the shield wire to the F.G. terminal.
5. When using switching mode power supply, frame ground (F.G.) terminal of power supply should be grounded.
6. Wire as short as possible and keep away from high voltage lines or power lines, to prevent inductive noise.
7. Check the wire type and response frequency when extending wire because of distortion of waveform or residual voltage increment etc by line resistance or capacity between lines.
8. This unit may be used in the following environments.
   ①Indoors (in the environment condition rated in 'Specifications')
   ②Altitude max. 2,000m
   ③Pollution degree 2
   ④Installation category II

■ Major Products

- Photoelectric Sensors
- Fiber Optic Sensors
- Door Sensors
- Door Side Sensors
- Area Sensors
- Proximity Sensors
- Pressure Sensors
- Rotary Encoders
- Connector/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_2, Nd: YAG)
- Laser Welding/Cutting System
- Temperature Controllers
- Temperature/Humidity Transducers
- SSRs/Power Controllers
- Counters
- Timers
- Panel Meters
- Tachometer/Pulse (Rate) Meters
- Display Units
- Sensor Controllers