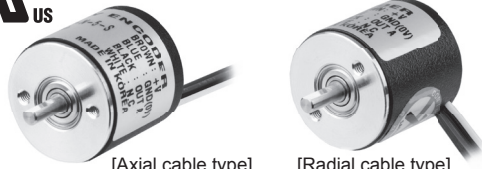


Autonics

ROTARY ENCODER(INCREMENTAL TYPE)

E18S SERIES

INSTRUCTION MANUAL



[Axial cable type] [Radial cable type]

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.
- ⊗ **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

- 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.
- Install on a device panel to use.**
Failure to follow this instruction may result in fire.
- Do not connect, repair, or inspect the unit while connected to a power source.**
Failure to follow this instruction may result in fire.
- Check 'Connections' before wiring.**
Failure to follow this instruction may result in fire.
- Do not disassemble or modify the unit.**
Failure to follow this instruction may result in fire.

⚠ Caution

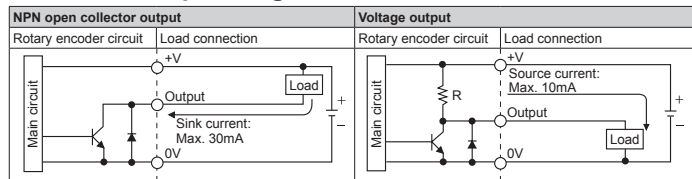
- Use the unit within the rated specifications.**
Failure to follow this instruction may result in fire or product damage.
- Do not short the load.**
Failure to follow this instruction may result in product damage by fire.
- Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.**
Failure to follow this instruction may result in fire or explosion.
- 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.

■ Ordering Information

E18S - 2.5 - 200 - 1 - N - 5 - R

Series	Shaft diameter	Pulses/ Revolution	Output phase	Control output	Power supply	Cable
Diameter Ø18mm shaft type	2: Ø2mm 2.5: Ø2.5mm	100, 200, 300, 400	1: A	N: NPN open collector output V: Voltage output	5: 5VDC ±5%	R: Axial cable type S: Radial cable type

■ Control Output Diagram



- ⊗ 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).

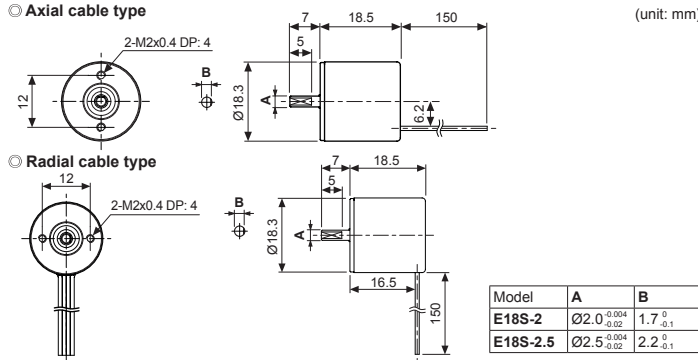
■ Specifications

Item	Diameter Ø18mm shaft type of incremental rotary encoder	
Model	E18S-□-□-1-N-5-□	
NPN open collector output	E18S-□-□-1-N-5-□	
Voltage output	E18S-□-□-1-V-5-□	
Resolution(PPR) ^{*1}	100, 200, 300, 400	
Output phase	A phase	
Control output	NPN open collector output	Load current: Max. 30mA, Residual voltage: Max. 0.4VDC≒
	Voltage output	Load current: Max. 10mA, Residual voltage: Max. 0.4VDC≒
Response time (rise/fall)	NPN open collector output	Max. 1μs (cable length: 1m, I sink = 20mA)
	Voltage output	
Max. Response frequency	25KHz	
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, radial cable type	
Mechanical specification	Starting torque	Max. 10gf·cm (9.8×10 ⁻⁴ N·m)
	Moment of inertia	Max. 0.5g·cm ² (5×10 ⁻⁹ kg·m ²)
	Shaft loading	Radial: 200gf, Thrust: 200gf
	Max. allowable revolution ^{*2}	6000rpm
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	Ø0.98mm, 4-wire, Length: 150mm, Flat ribbon cable (AWG26, Core diameter: 0.16mm, Number of cores: 7, Insulator diameter: Ø0.98mm)	
Accessory	Ø2mm coupling(supplied only for Ø2mm shaft diameter model.)	
Approval	CE, RoHS	
Weight ^{*3}	Ø2mm Shaft diameter model:	Approx. 35.4g(approx. 12g)
	Ø2.5mm Shaft diameter model:	Approx. 34.2g(approx. 12g)

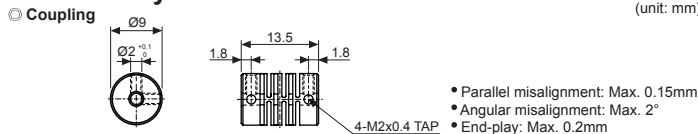
- *1: Not indicated resolutions are customizable.
- *2: Make sure that Max. response revolution should be lower than or equal to max. allowable revolution when selecting the resolution.

$$\text{[Max. response revolution(rpm)]} = \frac{\text{Max. response frequency} \times 60 \text{ sec}}{\text{Resolution}}$$
- *3: The weight includes packaging. The weight in parentheses is for unit only.
- ⊗ Environment resistance is rated at no freezing or condensation.

■ Dimensions



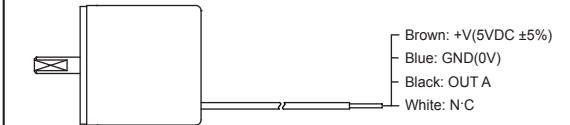
■ Accessory



- ⊗ 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

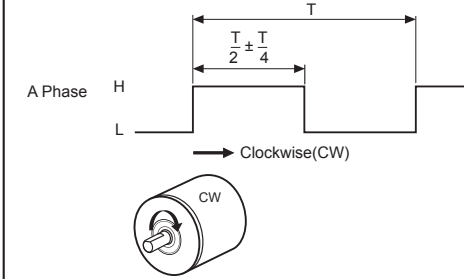
- NPN open collector output/Voltage output



⊗ Do not apply tensile strength over 10N to the cable.

■ Output Waveform

- NPN open collector output / Voltage output



■ Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, It may cause unexpected accidents.
- 5VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- For using the unit with the equipment which generates noise (switching regulator, inverter, servo motor, etc.), ground the shield wire to the F.G. terminal.
- When using switching mode power supply, frame ground (F.G.) terminal of power supply should be grounded.
- 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.
- This unit may be used in the following environments.
 - Indoors (in the environment condition rated in 'Specifications')
 - Altitude max. 2,000m
 - Pollution degree 2
 - Installation category II

■ Major Products

- Photoelectric Sensors
- Temperature Controllers
- Fiber Optic Sensors
- Temperature/Humidity Transducers
- Door Sensors
- SSRs/Power Controllers
- Door Side Sensors
- Counters
- Area Sensors
- Timers
- Proximity Sensors
- Panel Meters
- Pressure Sensors
- Tachometer/Pulse (Rate) Meters
- Rotary Encoders
- Display Units
- Connector/Sockets
- Sensor Controllers
- 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, CO₂, Nd: YAG)
- Laser Welding/Cutting System

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