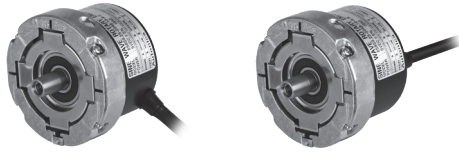


# Autonics ROTARY ENCODER (SINE WAVE INCREMENTAL TYPE) E58S SERIES

## 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.

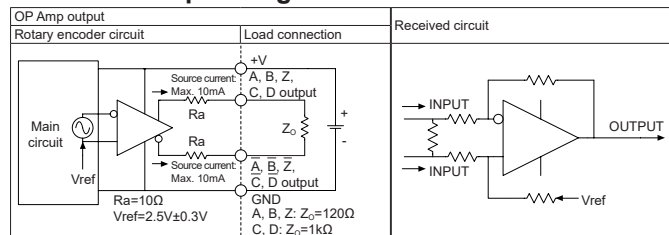
- ⚠ Warning**
- 1. **Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss.** (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)  
Failure to follow this instruction may result in personal injury, economic loss or fire.
- 2. **Do not use the unit in the place where flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.**  
Failure to follow this instruction may result in explosion or fire.
- 3. **Install on a device panel to use.**  
Failure to follow this instruction may result in fire.
- 4. **Do not connect, repair, or inspect the unit while connected to a power source.**  
Failure to follow this instruction may result in fire.
- 5. **Check 'Connections' before wiring.**  
Failure to follow this instruction may result in fire.
- 6. **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 near the place where there is the equipment which generates strong magnetic force or high frequency noise and strong alkaline, strong acid exists.**  
Failure to follow this instruction may result in product damage.

### ■ Ordering Information

<b>E58S</b>	<b>9.25</b>	<b>2048</b>	<b>10</b>	<b>A</b>	<b>5</b>	<b>R</b>
Series	Shaft diameter	Pulses/revolution	Output phase	Control output	Power supply	Cable
Diameter Ø58mm, shaft type	9.25	2048	10: A, $\bar{A}$ , B, $\bar{B}$ , Z, $\bar{Z}$ , C, C, D, $\bar{D}$	A: Analog sine wave OP Amp output	5: 5VDC ±5%	R: Axial cable type S: Radial cable type

### ■ Control Output Diagram



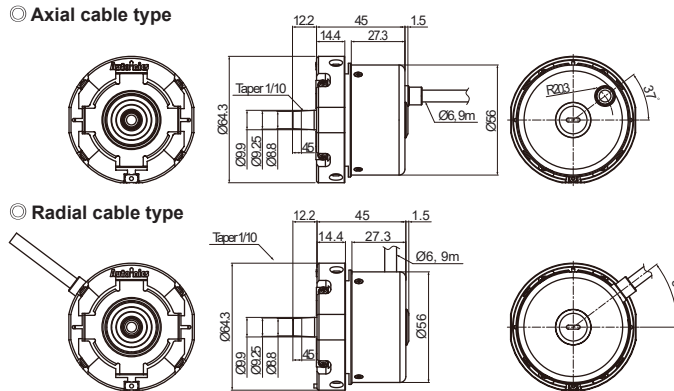
※ All output circuits of A,  $\bar{A}$ , B,  $\bar{B}$ , Z,  $\bar{Z}$ , C, C, D,  $\bar{D}$  phase are the same.  
※ The above specifications are subject to change and some models may be discontinued without notice.  
※ Be sure to follow cautions written in the instruction manual.

### ■ Specifications

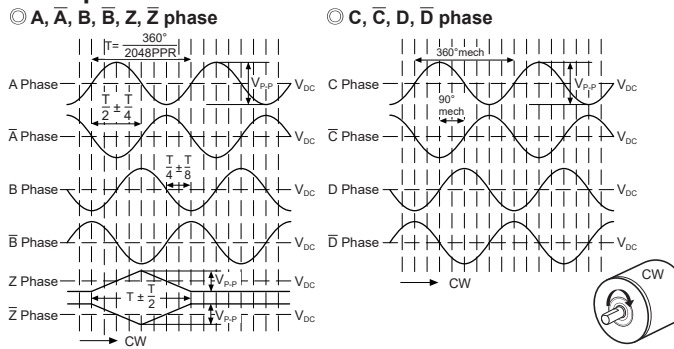
Item	Diameter Ø58mm shaft type SINE WAVE INCREMENTAL Rotary encoder	
Model	E58S9.25-2048-10-A-5-R	E58S9.25-2048-10-A-5-S
Revolution (PPR)	2,048	
Output phase	A, $\bar{A}$ , B, $\bar{B}$ , Z, $\bar{Z}$ , C, C, D, $\bar{D}$ phase	
Phase difference of output	Phase difference between A and B: $T \pm \frac{T}{8}$ (T=1cycle of A phase)	
	Phase difference between C and D: 90°	
Electrical specification	Output type	OP Amp output
	Control output	Output current: Max. 10mA
	Output voltage	V <sub>op</sub> = 0.5V ± 0.1V
	DC OFFSET	V <sub>dc</sub> = 2.5V ± 0.3V
	Max. Response frequency	200kHz
	Power supply	5VDC = ±5% (ripple P-P: max. 5%)
	Current consumption	Max. 120mA (disconnection of the load)
	Insulation resistance	Over 100MΩ (at 500VDC megger between all terminals and case)
	Dielectric strength	750VAC 50/60Hz for 1 minute (between all terminals and case)
	Connection	Axial cable type
Mechanical specification	Starting torque	Max. 100gf·cm (0.0098N·m)
	Moment of inertia	Max. 15g·cm <sup>2</sup> (1.5×10 <sup>-6</sup> kg·m <sup>2</sup> )
	Shaft loading	Radial: 10kgf, Thrust: 2.5kgf
	Max. allowable revolution	6,000rpm
Shaft	Taper shaft Ø9.25mm, Taper 1:10	
Vibration	1.5mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 2 hours	
Shock	Approx. max. 100G	
Environment	Ambient temp.	-20 to 100°C, storage: -25 to 100°C
	Ambient humi.	35 to 85%RH, storage: 35 to 90%RH
Protection structure	IP50 (IEC standard)	
Cable	Ø6mm, 17-wire, 9m <sup>3</sup> , Shield cable (AWG28, Core diameter: 0.08mm, Number of cores: 17, Insulator out diameter: Ø0.8mm)	
Accessory	M5×0.8 (50L), M5×0.8 (47L) wrench bolt	
Approval	CE	
Weight <sup>※2</sup>	Approx. 1.02kg (approx. 930g)	

※1: Option is 7m, 15m.  
※2: The weight includes packaging. The weight in parentheses is for unit only.  
※ Environment resistance is rated at no freezing or condensation.

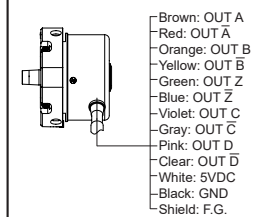
### ■ Dimensions



### ■ Output Waveforms

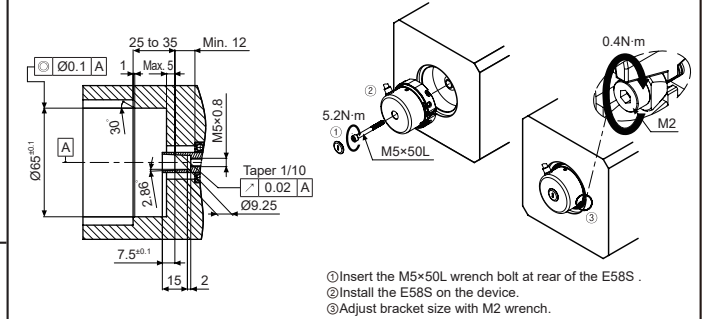


### ■ Connections



※ Unused wires must be insulated.  
※ The metal case and shield cable of encoder should be grounded (F.G.).  
※ Do not apply tensile strength over 30N to the cable.  
※ The output circuit has the dedicated IC and be sure not to short-circuit when wiring the output cables.

### ■ Installation



### ■ Cautions during Use

1. Follow instructions 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 the 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.
  - ① Indoors (in the environment condition rated in 'Specifications')
  - ② Altitude max. 2,000m
  - ③ Pollution degree 2
  - ④ Installation category II

### ■ Major Products

- 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., 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

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