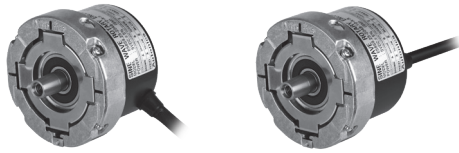


# Autonics ROTARY ENCODER (SINE WAVE INCREMENTAL TYPE) E58S SERIES

## 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

- 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.
- 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.
- 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.

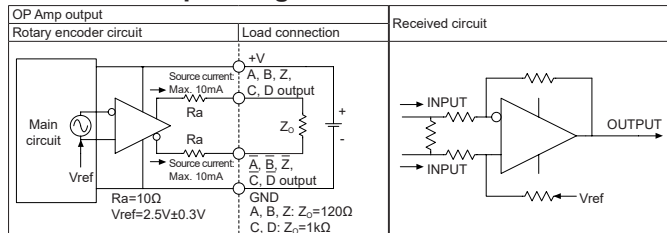
### ⚠ Caution

- 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 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

E58S	9.25	2048	10	A	5	R
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.

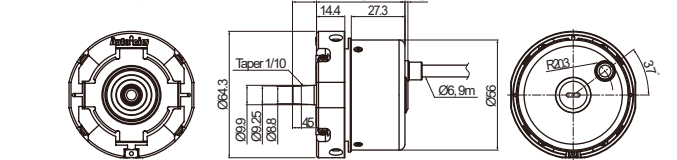
### ■ Specifications

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	$V_{op} = 0.5V \pm 0.1V$
	DC OFFSET	$V_{dc} = 2.5V \pm 0.3V$
	Max. Response frequency	200kHz
	Power supply	5VDC $\pm 5\%$ (ripple P-P: max. 5%)
	Current consumption	Max. 120mA (disconnection of the load)
	Insulation resistance	Over 100M $\Omega$ (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)	

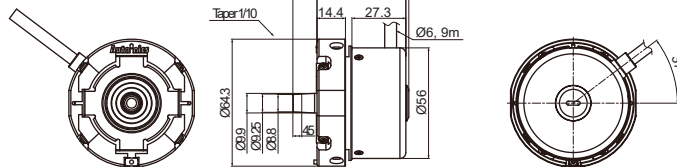
- ※1: Option is 7m, 15m.
- ※2: The weight includes packaging. The weight in parentheses is for unit only.
- ※ Environment resistance is rated at no freezing or condensation.

### ■ Dimensions

#### ○ Axial cable type

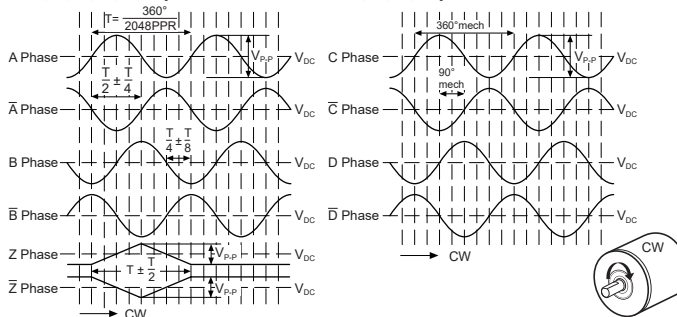


#### ○ Radial cable type

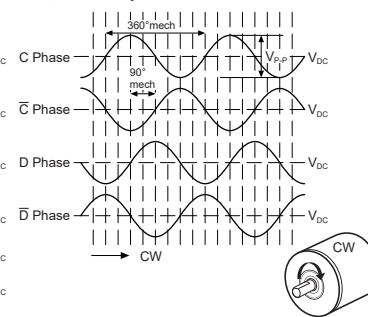


### ■ Output Waveforms

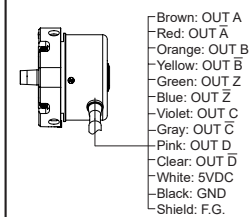
#### ○ A, $\bar{A}$ , B, $\bar{B}$ , Z, $\bar{Z}$ phase



#### ○ C, $\bar{C}$ , D, $\bar{D}$ phase

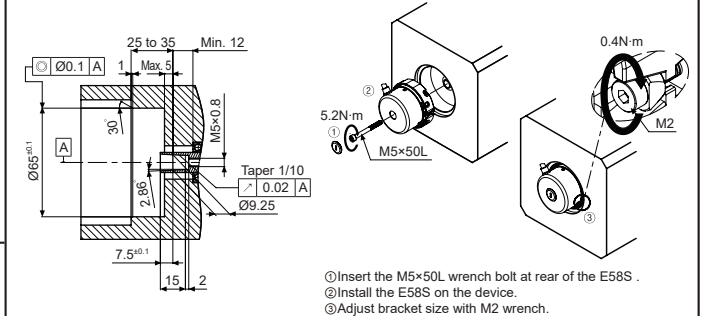


### ■ Connections



- ※ 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

- 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.
- 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.
- Wire as short as possible and keep away from high voltage lines or power lines, to prevent inductive noise.
- 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.
  - 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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