Autonics

# ROTARY ENCODER(INCREMENTAL TYPE)

# E68S15 SERIES

## 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

**1. When use this unit for controlling highly affective equipment to human or properties. (Medical instrument, Vehicles, Train, Airplane, combustion apparatus, entertainment, etc.), it requires installing a fail safety device.**
It may cause serious human injury or a fire, property.

### ⚠ Caution

**1. Do not drop water or oil on this unit.**
It may cause damage or miscontrol due to malfunction.
**2. Please observe voltage rating.**
It may shorten the life cycle or damage to the product.
**3. Please check the polarity of power and wrong wiring.**
It may result in damage to this unit.
**4. Do not short circuit the load.**
It may result in damage to this unit.

## ▣ Ordering information

| E68S | 15 | 1024 | 6 | L | 5 |
|---|---|---|---|---|---|
| Series | Shaft diameter | Revolution | Output phase | Output | Power supply |
| Diameter ϕ68, Shaft type | ϕ15mm | 1024 P/R | 6 : A, $\overline{A}$, B, $\overline{B}$, Z, $\overline{Z}$ | L : Line Driver output | 5VDC ±5% |

※**The above specification are changeable without notice anytime.**

## ▣ Specifications

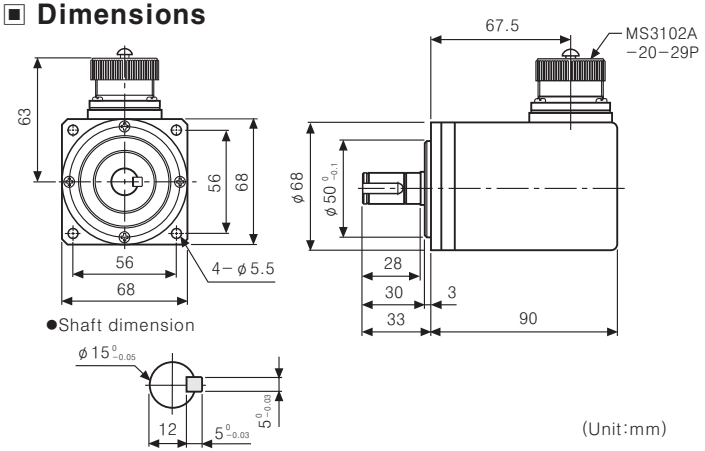
| | | |
|---|---|---|
| Item | | Diameter ϕ68mm shaft type Incremental Rotary encoder |
| Model | | **E68S15 -□□□□-□-L-5** |
| Resolution(P/R) | | 1024 P/R(Not indicated type is available to customize) |
| Electrical specification | Output phase | A phase, $\overline{A}$ phase, B phase, $\overline{B}$ phase, Z phase, $\overline{Z}$ phase |
| | Phase difference of output | Output between A and B phase: $\frac{T}{4} \pm \frac{T}{8}$ (T=1cycle of A phase) |
| | Control output | • Low ☞ Load current:Max. 20mA, Residual voltage:Max. 0.5VDC<br>• High ☞ Load current:Max. −20mA, Output voltage:Min. 2.5VDC |
| | Response time (Rise, Fall) | Max. 0.5㎲(Cable:1m, I sink = 20mA) |
| | Power supply | 5VDC ± 5%(Ripple P−P : Max. 5%) |
| | Max. Response frequency | 180kHz |
| | Current consumption | Max. 50mA(disconnection of the load) |
| | Insulation resistance | Min. 100MΩ(at 500VDC between all terminals and case) |
| | Dielectric strength | 750VAC 50/60Hz for 1 minute(Between all terminals and case) |
| | Connection | Connector connection :MS3102A20−29P |
| Mechanical specification | Starting torque | 1.5kgf • cm(Max. 0.15N • m) |
| | Moment of inertia | Radial : 20kgf, Thrust : 10kgf |
| | Max. allowable revolution | **(Note1)** 6,500rpm |
| Vibration | | 1.5mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours |
| Shock | | Max. 50G |
| Ambient temperature | | −10 ~ 70℃(at non−freezing status), Storage:−25 ~ 85℃ |
| Ambient humidity | | 35~85%RH, Storage: 35~90%RH |
| Protection | | IP64(IEC standard) |
| Weight | | Approx. 550g |

※**(Note1)** Max. allowable revolution ≧ Max. response revolution

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

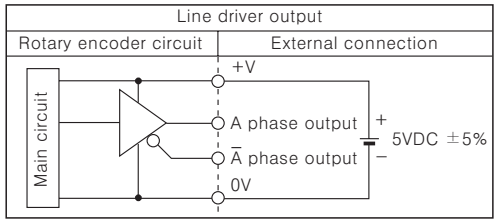
Please select the resolution to make lower max. revolution than max. allowable revolution.

## ▣ Dimensions



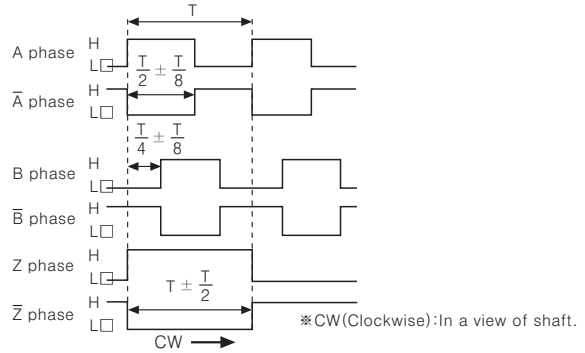

(Unit:mm)

## ▣ Control output diagram



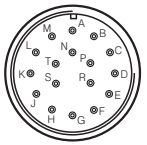

※All output circuit is the same A, $\overline{A}$, B, $\overline{B}$, Z, $\overline{Z}$ phase.

## ▣ Output waveform




※CW(Clockwise):In a view of shaft.

## ▣ Connections




※N.C : Not Connected.
※E and H terminals, K and M terminals are connected internally.

| Pin No. | Connection | Pin No. | Connection |
|---|---|---|---|
| A | A phase | K | 0V |
| B | Z phase | L | N.C |
| C | B phase | M | 0V |
| D | N.C | N | Ā phase |
| E | 5VDC | P | Z̄ phase |
| F | N.C | R | B̄ phase |
| G | N.C | S | N.C |
| H | 5VDC | T | Shield(F.G) |
| J | N.C | — | — |

## ▣ Caution for using

1. Installation
 ①This unit is consisted of precision components. Therefore please treat this product carefully.
 ②For the installation, please check the assembly dimension of mate target, then try not to occur the offset between them.
 ③When you install this unit, if eccentricity and deflection angle on it are larger, it may shorten the life cycle of this unit.
2. Environment
 Please do not use this unit with below environment, it results in malfunction.
 ①Place where this unit or component may be damaged by strong vibration or impact.
 ②Place where strong magnet field or electric noise are occurred.
 ③Place where is beyond of rating temperature or humidity.
3. Vibration and Impact
 ①Do not put strong impact when insert coupling into shaft.
 ②Please fix bracket firmly when mount it in order to avoid malfunction by residual vibration.
4. Wire connection
 ①If 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.
 ②When the power source is a Switching power, please install the surge absorber in power line and wire should be shorter in order not to be influenced by noise.
 ③Use SIL attached Twist Pair wire for cable lead or extension.
 ④Please connect shield wire to terminal of F.G.

※**It may cause malfunction if above instructions are not followed.**

## ▣ Major products

■ PROXIMITY SENSOR ■ PHOTOELECTRIC SENSOR ■ AREA SENSOR
■ FIBER OPTIC SENSOR ■ DOOR/DOOR SIDE SENSOR ■ PRESSURE SENSOR
■ ROTARY ENCODER ■ COUNTER
■ TIMER ■ TEMPERATURE CONTROLLER
■ TEMPERATURE/HUMIDITY TRANSDUCER
■ POWER CONTROLLER
■ PANEL METER
■ TACHO/LINE SPEED/PULSE METER
■ DISPLAY UNIT
■ SENSOR CONTROLLER
■ SWITCHING POWER SUPPLY
■ GRAPHIC PANEL
■ 5−PHASE STEPPING MOTOR & DRIVER & CONTROLLER
■ LASER MARKING SYSTEM($CO_2$, Nd:YAG)

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