## Shaft Type Ø68mm Incremental Rotary Encoder

▣ Features

- Ø68mm, shaft diameter: Ø15mm
- High speed response frequency: 180kHz
- Radial connector type
- Suitable for tooling machinery
- Protection structure IP65 (IEC standard) (tentative water-proof/oil)
- High shaft loading capabilities (allowable load weight is 10kgf)

⚠ **Please read "Safety Considerations" in operation manual before using.**
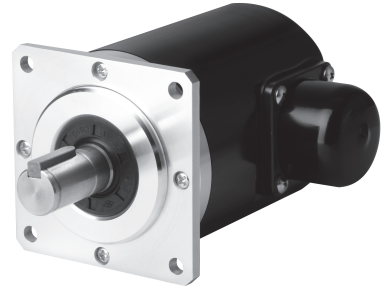
▣ Ordering Information

E68S	15	– 1024	– 6	– L	– 5
Series	Shaft diameter	Pulses/revolution	Output phase	Control output	Power supply
Ø68mm, shaft type	Ø15mm	500, 600, 1024	6: A, $\overline{A}$, B, $\overline{B}$, Z, $\overline{Z}$	L: Line driver output	5VDC ±5%

※Connector standard: MS3102A20-29P

▣ Specifications

Item		Shaft Type Ø68mm Incremental Rotary Encoder
Resolution (PPR)[1]		500, 600, 1024
Electrical specification	Output phase	A, $\overline{A}$, B, $\overline{B}$, Z, $\overline{Z}$ phase
	Phase difference of output	Phase difference between A and B: $\frac{T}{4} \pm \frac{T}{8}$ (T=1 cycle of A phase)
	Control output	• [Low] - Load current: max. 20mA, residual voltage: max. 0.5VDC⎓ • [High] - Load current: max. -20mA, output voltage: min. 2.5VDC⎓
	Response time (rise/fall)	Max. 0.5µs (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	Over 100MΩ (at 500VDC megger) (between all terminals and case)
	Dielectric strength	750VAC 50/60Hz for 1 minute (between all terminals and case)
	Connection	Radial connector type (MS3102A20-29P)
Mechanical specification	Starting torque	Max. 1.5kgf·cm (0.15N·m)
	Shaft loading	Radial: max. 20kgf, Thrust: max. 10kgf
	Max. allowable revolution[2]	6,500rpm
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℃, storage: -25 to 85℃
	Ambient humidity	35 to 85%RH, storage: 35 to 90%RH
Protection structure		IP65 (IEC standard)
Unit weight		Approx. 550g

※1: Not indicated resolutions are available customizable.
※2: Make sure that max. response revolution should be lower than or equal to max. allowable revolution when selecting the resolution.
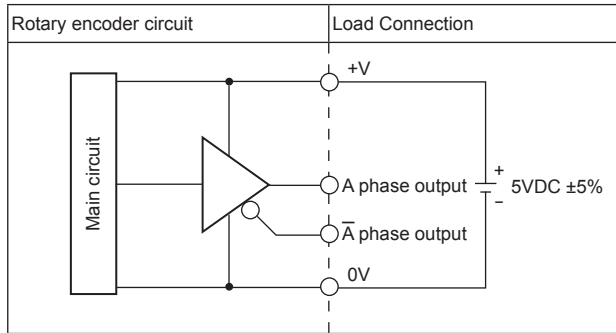
$$[\text{Max. response revolution (rpm)} = \frac{\text{Max. response frequency}}{\text{Resolution}} \times 60 \text{ sec}]$$

※Environment resistance is rated at no freezing or condensation.

■ Control Output Diagram

Rotary encoder circuit	Load Connection

+V

A phase output

$\overline{A}$ phase output

0V

5VDC ±5%

Main circuit

※All output circuits of A, $\overline{A}$, B, $\overline{B}$, Z, $\overline{Z}$ phase are same.

■ Output Waveform

A phase — H, L

$\frac{T}{2} \pm \frac{T}{4}$

$\overline{A}$ phase — H, L

$\frac{T}{4} \pm \frac{T}{8}$

B phase — H, L

$\overline{B}$ phase — H, L

Z phase — H, L

$T \pm \frac{T}{2}$

$\overline{Z}$ phase — H, L

Clockwise (CW) →

CW
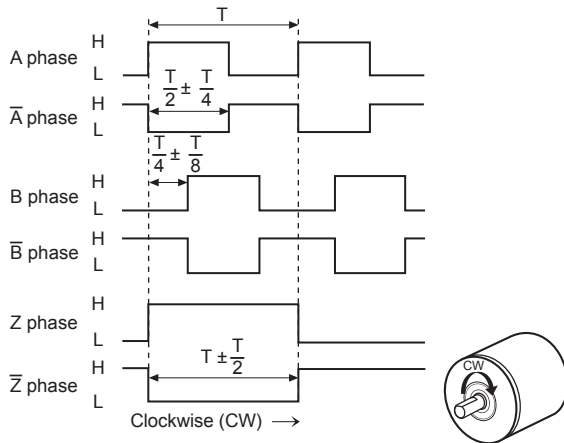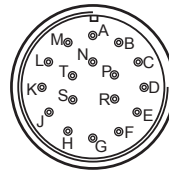
■ Connections

Pin No.	Connection
A	A phase
B	Z phase
C	B phase
D, F, G, J, L, S	N·C
E, H	5VDC
K, M	0V
N	$\overline{A}$ phase
P	$\overline{Z}$ phase
R	$\overline{B}$ phase
T	Shield (F.G.)

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

■ Dimensions

(unit: mm)

Ø68

51.4

56

56

□68

4-Ø5.4

67.5

MS310A20-29P

$Ø50^{\ 0}_{-0.1}$

$Ø15^{\ 0}_{-0.05}$

30

33

90

$4.5^{-0.1}_{-0.2}$

$5^{+0.03}_{+0.01}$

17.5

Autonics