E15S Series

Diameter Ø15mm(Shaft type) Incremental Rotary Encoder

◼ Features

- **Diameter Ø15mm of miniature rotary encoder**
- Easy installation at narrow space
- Small moment of inertia
- Power supply : 5VDC ±5%

⚠ **Please read "Caution for your safety" in operation manual before using.**

◼ Ordering information

Item		Diameter ø15mm Shaft type Incremental Rotary Encoder
Model		E15S2-36-2-N-5-R
Resolution(P/R)		36
Electrical specification	Output phase	A, B phase
	Phase difference of output	Phase difference between A and B: $\frac{T}{4} \pm \frac{T}{8}$ (T=1cycle of A phase)
	Control output	NPN open collector output - Load current: Max. 30mA, Residual voltage: Max. 0.4VDC
	Response time (Rise/Fall)	Max. 1μs(cable length: 1m, I sink=20mA)
	Max. response frequency	10kHz
	Power supply	5VDC ±5%(Ripple P-P: Max. 5%)
	Current consumption	Max. 50mA (disconnection of the load)
	Insulation resistance	Max. 100MΩ(at 500VDC megger between all terminals and case)
	Dielectric strength	500VAC 50/60Hz for 1 min. (between all terminals and case)
	Connection	Cable type
Mechanical specification	Starting torque	Max. 10gf·cm(10×10^{-4}N·m)
	Moment of inertia	Max. 0.5g·cm²(5×10^{-8}kg·m²)
	Shaft loading	Radial: 200gf, Thrust : 200gf
	Max. allowable revolution[※1]	3000rpm
Vibration		1.5mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 2 hours
Shock		Approx. 50G
Environment	Ambient temperature	-10 to 70℃, storage: -20 to 80℃
	Ambient humidity	35 to 85%RH, storage: 35 to 90%RH
Protection		IP50(IEC standards)
Cable		Ø3mm, 4-wire, length:500mm, Flexible PVC insulation shielded cable (AWG30, Core diameter:0.102mm, Number of cores: 7, Insulator diameter: Ø0.71mm)
Accessory		Ø2mm coupling
Weight[※2]		Approx. 37g(Approx. 14g)

※1: Make sure that. Max response revolution should be lower than or equal to max. allowable revolution when selecting the resolution.
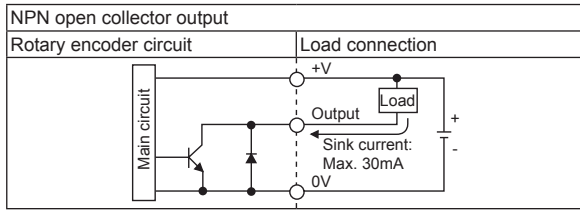
[Max. response revolution(rpm)= $\frac{\text{Max. response frequency}}{\text{Resolution}}$ × 60 sec]

※2: The weight includes packaging. The weight in parentheses is for unit only.

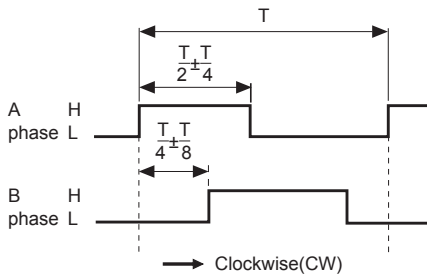※Environment resistance is rated at no freezing or condensation.

Autonics

Incremental Ø15mm Shaft type
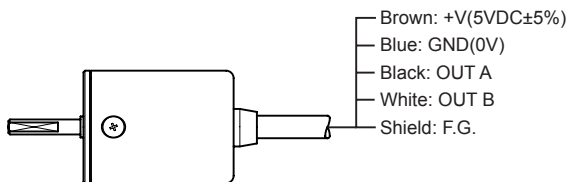
▣ Control output diagram

NPN open collector output	
Rotary encoder circuit	Load connection

+V

Load

Output

Sink current: Max. 30mA

0V

Main circuit

▣ Output waveform
● NPN open collector output

T

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

A phase H L

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

B phase H L

→ Clockwise(CW)

※ CW: Right turn as from the shaft

▣ Connections
● NPN open collector output

— Brown: +V(5VDC±5%)
— Blue: GND(0V)
— Black: OUT A
— White: OUT B
— Shield: F.G.
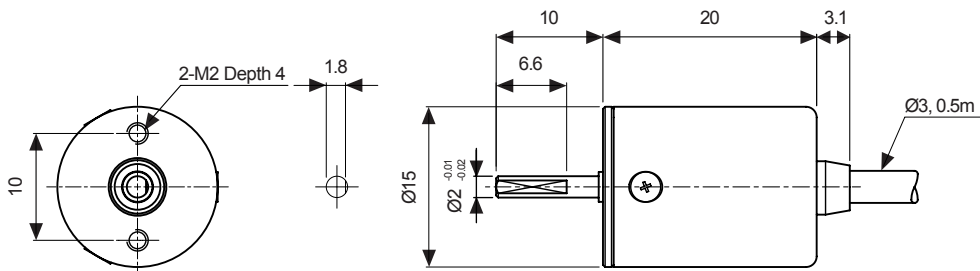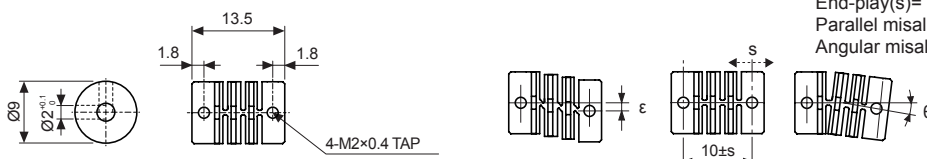
※Unused wires must be insulated.
※The metal case and shield cable should be grounded(F.G.).

▣ Dimensions

(unit: mm)

2-M2 Depth 4
1.8
10
Ø15
Ø2 -0.01/-0.02
10
6.6
20
3.1
Ø3, 0.5m

● Coupling(E15S)

13.5
1.8 1.8
Ø9
Ø2 +0.1/0
4-M2×0.4 TAP
ε
s
10±s
θ

End-play(s)= Max. 0.2mm
Parallel misalignment(ε)= Max. 0.15mm
Angular misalignment(θ)= Max. 2°

※When mounting the coupling to the encoder shaft, if there is combined misalignment (parallel, angular misalignment) between rotating encoder shaft and mate shaft, it may cause encoder and coupling's life cycle to shorten.
※Do not load overweight on the shaft.