

ENA Series Incremental Side-Mounting Type

Side-mounting Shaft type Incremental Rotary encoder

■ Features

- Strong die cast structure against external impact
- Convenient structure for direct mounting on the frame
- Connector type
- Power supply : 5VDC, 12-24VDC ±5%



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



■ Ordering information

ENA	-	5000	-	2	-	N	-	24
Series		Pulse/1Revolution		Output phase		Output		Power supply
Shaft type to be mounted at the side (External diameter of shaft : ϕ 10mm)		Refer to resolution		2 : A, B 3 : A, B, Z		T : Totem pole output N : NPN open collector output V : Voltage output		5 : 5VDC ±5% 24 : 12-24VDC ±5%

*Standard : ENA-□-2-N-24

*Standard : A, B

■ Specifications

Item		Shaft type of encoder to be mounted at the side(Incremental)		
Resolution(P/R)		(★Note1) *1, *2, *5, 10, *12, 15, 20, 23, 25, 30, 35, 40, 45, 50, 60, 75, 100, 120, 150, 192, 200, 240, 250, 256, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 1500, 1800, 2000, 2048, 2500, 3000, 3600, 5000		
Electrical specification	Output phase	A, B phase(Option : A, B, Z 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	Totem pole output	• Low \Rightarrow Load current:Max. 30mA, Residual voltage : Max. 0.4VDC • High \Rightarrow Load current:Max. 10mA, Output voltage(Power supply 5VDC):Min. (Power supply-2.0)VDC, Output voltage(Power supply 12-24VDC):Min. (Power supply-3.0)VDC	
		NPN open collector output	Load current : Max. 30mA, Residual voltage : Max. 0.4VDC	
		Voltage output	Load current : Max. 10mA, Residual voltage : Max. 0.4VDC	
	Response time (Rise/Fall)	Totem pole output	Max. 1 μ s	• Measuring condition \Rightarrow Cable length : 2m, I sink = Max. 20mA
		NPN open collector output	Max. 1 μ s	
		Voltage output	Max. 1 μ s	
	Max. Response frequency	300kHz		
	Power supply	• 5VDC ±5% (Ripple P-P : Max. 5%) • 12-24VDC ±5% (Ripple P-P : Max. 5%)		
Current consumption	Max. 80mA(disconnection of the load)			
Insulation resistance	Min. 100M Ω (at 500VDC megger between all terminals and case)			
Dielectric strength	750VAC 50/60Hz for 1 minute (Between all terminals and case)			
Connection	Connector type			
Mechanical specification	Starting torque	Max. 70gf · cm(0.007N · m)		
	Moment of inertia	Max. 80g · cm ² (8 × 10 ⁻⁶ kg · m ²)		
	Shaft loading	Radial : 10kgf, Thrust : 2.5kgf		
	Max. allowable revolution	(★Note2)	5000rpm	
Vibration	1.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours			
Shock	Max. 75G			
Ambient temperature	-10 to 70°C (at non-freezing status), Storage : -25 to 85°C			
Ambient humidity	35 to 85%RH, Storage : 35 to 90%RH			
Protection	IP50 (IEC standard)			
Cable	ϕ 5mm, 5P, Length : 2m, Shield cable			
Accessory	ϕ 10mm coupling			
Approval	CE (Except for line driver output)			
Unit weight	Approx. 345g			

※ **(★Note1)** '* pulse is only for A, B phase

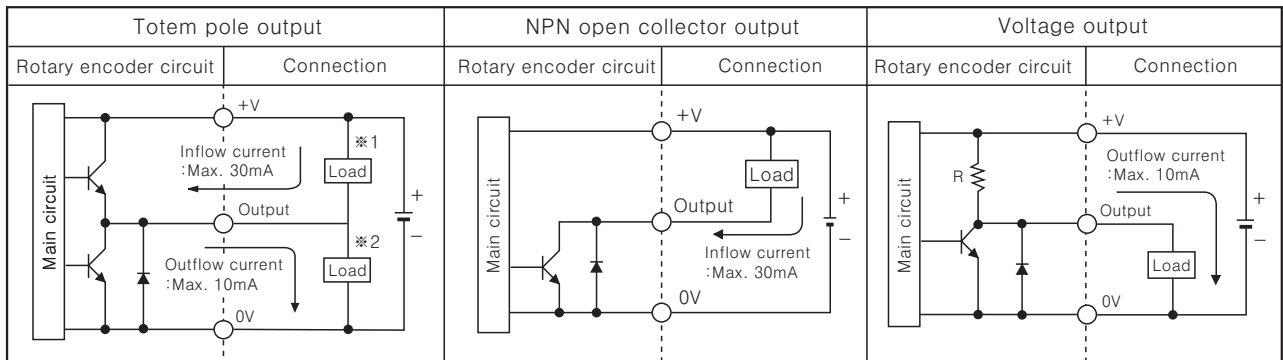
※ **(★Note2)** Max. allowable revolution \geq Max. response revolution 【Max. response revolution(rpm) = $\frac{\text{Max. response frequency}}{\text{Resolution}} \times 60 \text{ sec.}$ 】

Make sure that max. response revolution should be lower than max. allowable revolution when selecting the resolution.

- (A) Photo electric sensor
- (B) Fiber optic sensor
- (C) Door/Area sensor
- (D) Proximity sensor
- (E) Pressure sensor
- (F) Rotary encoder**
- (G) Connector/Socket
- (H) Temp. controller
- (I) SSR/Power controller
- (J) Counter
- (K) Timer
- (L) Panel meter
- (M) Tacho/Speed/Pulse meter
- (N) Display unit
- (O) Sensor controller
- (P) Switching power supply
- (Q) Stepping motor & Driver & Controller
- (R) Graphic/Logic panel
- (S) Field network device
- (T) Production stoppage models & replacement

ENA Series

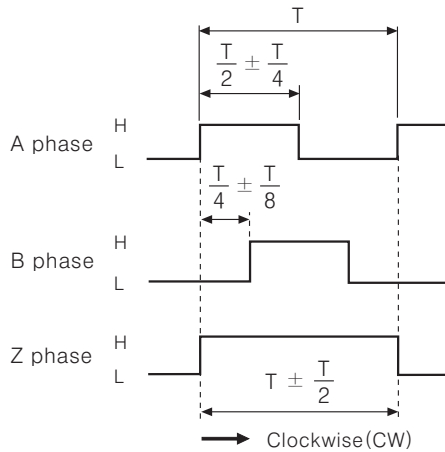
Control output diagram



- The output circuits of A, B phase (Option : A, B, Z phase) are the same.
- Totem pole output can be used for NPN open collector type (*1) or voltage output type (*2).

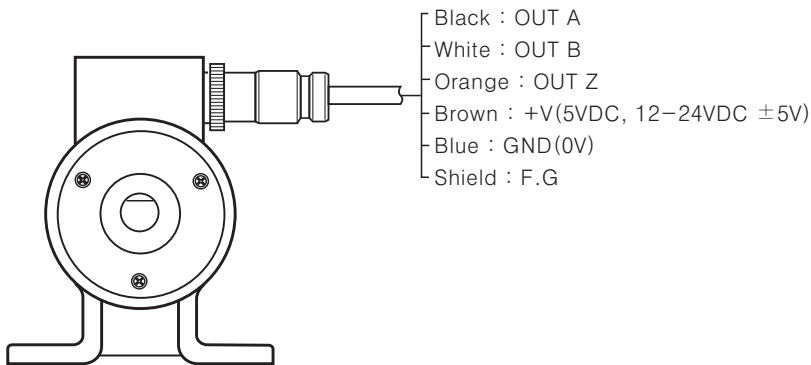
Output waveform

- Totem pole output / NPN open collector output / Voltage output



- *Z phase output is customizable.
- *CW : Right turn as from the shaft

Connections

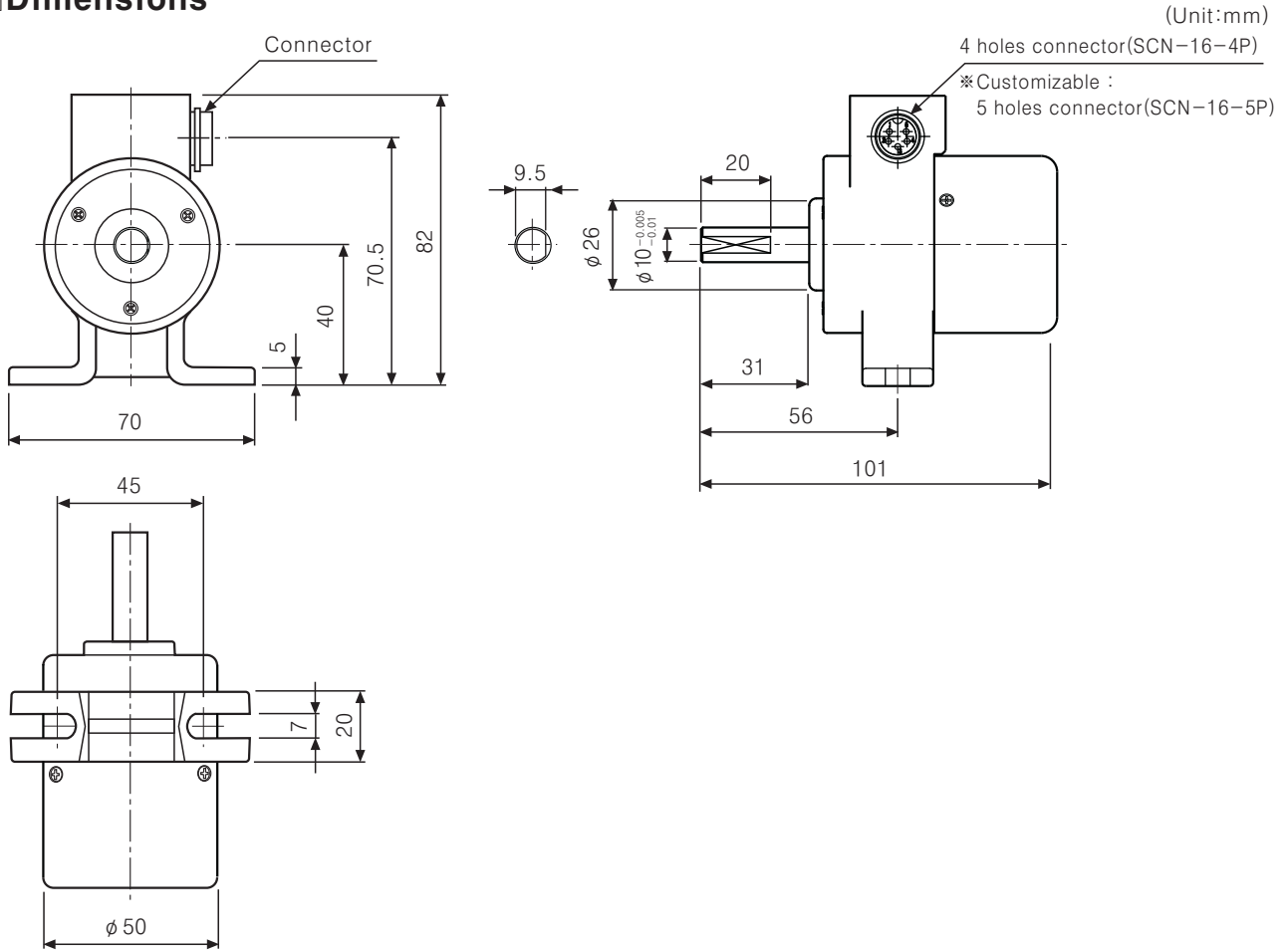


Pin No	Function	Cable color
①	A phase	Black
②	B phase	White
③	+V	Brown
④	0V	Blue
①	A phase	Black
②	B phase	White
③	Z phase	Orange
④	+V	Brown
⑤	0V	Blue

- *Z phase output is customizable.
- *Unused wires must be insulated.
- *The metal case and shield cable of encoder should be grounded (F.G).

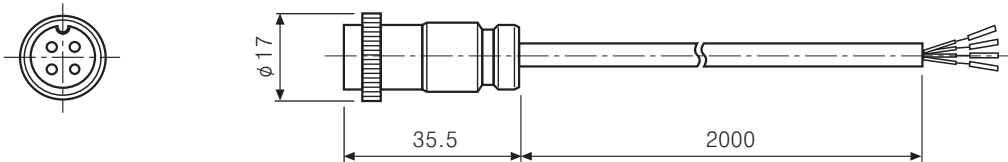
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■ Dimensions

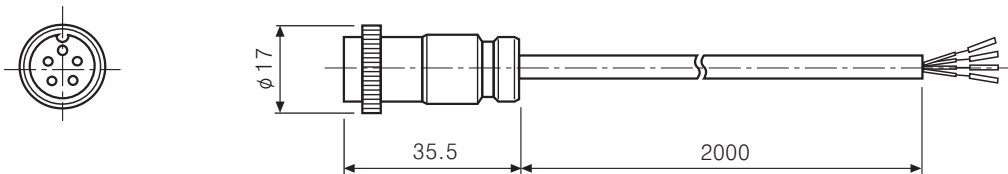


◎Connector cable

- ENA-□ - 2 - □ (Standard)

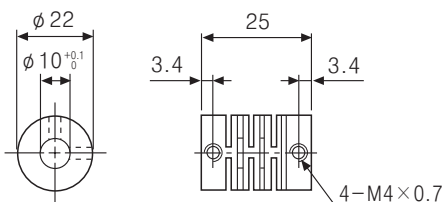


- ENA-□ - 3 - □ (Customizable)



*Connector cable is customizable and see G-6 for specifications.

◎Coupling



(A)	Photo electric sensor
(B)	Fiber optic sensor
(C)	Door/Area sensor
(D)	Proximity sensor
(E)	Pressure sensor
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(G)	Connector/Socket
(H)	Temp. controller
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