


# Incremental $\phi$ 80mm Hollow Shaft Type

## Diameter $\phi$ 80mm Hollow shaft type Incremental Rotary encoder

### ■ Features

- External diameter  $\phi$  80mm, Inner diameter of shaft  $\phi$  30mm,  $\phi$  32mm (Customizable)
- Able to install directly at motor or machinery without coupling
- Power supply : 5VDC, 12–24VDC  $\pm$ 5%
- Various output types

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



### ■ Ordering information


<b>E80H</b>	<b>30</b>	<b>3200</b>	<b>3</b>	<b>N</b>	<b>24</b>	
Series	Shaft diameter	Pulse/1 Revolution	Output phase	Output	Power supply	Cable
Diameter $\phi$ 80mm, hollow shaft type	$\phi$ 30mm $\phi$ 32mm	60, 100, 360, 500, 512, 1024, 3200	3 : A, B, Z 6 : A, $\bar{A}$ , B, $\bar{B}$ , Z, $\bar{Z}$	T : Totem pole output N : NPN open collector output V : Voltage output L : Line driver output(*)	5 : 5VDC $\pm$ 5% 24 : 12–24VDC $\pm$ 5%	No mark: Normal type (*) C: Cable outgoing connector type

⇒ Shaft inside diameter  $\phi$  32mm is customizable.

\*The power of Line driver is only for 5VDC

\*Cable length : 250mm

### ■ Specifications

Item	Diameter $\phi$ 80mm hollow shaft type of Incremental rotary encoder		
Resolution (P/R)	<b>(Note1)</b> 60, 100, 360, 500, 512, 1024, 3200		
Electrical specification	Output phase	A, B, Z phase (Line driver output A, $\bar{A}$ , B, $\bar{B}$ , Z, $\bar{Z}$ 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	Totem pole output	• Low ⇒ Load current: Max. 30mA, Residual voltage : Max. 0.4VDC • High ⇒ 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
		Line driver output	• Low ⇒ Load current : Max. 20mA, Residual : Max. 0.5VDC • High ⇒ Load current : Max. –20mA, Output voltage : Min. 2.5VDC
	Response time (Rise/Fall)	Totem pole output	Max. 1 $\mu$ s
		NPN open collector output	Max. 1 $\mu$ s
		Voltage output	Max. 1 $\mu$ s
		Line driver output	Max. 0.5 $\mu$ s
	Max. Response frequency	200kHz	
	Power supply	• 5VDC $\pm$ 5% (Ripple P–P: Max. 5%) • 12–24VDC $\pm$ 5% (Ripple P–P: Max. 5%)	
	Current consumption	Max. 80mA (disconnection of the load), Line driver output: Max. 50mA (disconnection of the load)	
	Insulation resistance	Min. 100M $\Omega$ (at 500VDC mega between all terminals and case)	
Dielectric strength	750VAC 50/60Hz for 1 minute (Between all terminals and case)		
Connection	Cable outgoing type, 200mm cable outgoing connector type		
Mechanical specification	Starting torque	Max. 200gf • cm (0.02N • m)	
	Rotor inertia	Max. 800g • cm <sup>2</sup> (8 $\times$ 10 <sup>–5</sup> kg • m <sup>2</sup> )	
	Shaft loading	Radial : 5kgf, Thrust : 2.5kgf	
	Max. allowable revolution	<b>(Note2)</b> 3600rpm	
Vibration	1.5mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours		
Shock	Max. 75G		
Ambient temperature	–10 ~ 70 $^{\circ}$ C (at non-freezing status), Storage : –25 ~ 85 $^{\circ}$ C		
Ambient humidity	35~85%RH, Storage : 35~90%RH		
Protection	IP50 (IEC standard)		
Cable	$\phi$ 5mm, 5P, Length : 2m, Shield cable (Line driver output : $\phi$ 5mm, 8P)		
Accessory	Spring bracket		
Unit weight	Approx. 560g		
Approval	 (Except for Line driver output)		

\* **(Note1)** Not indicated type is customizable.

\* **(Note2)** Max. allowable revolution  $\geq$  Max. response revolution [Max. response revolution (rpm) =  $\frac{\text{Max. response frequency}}{\text{Resolution}} \times 60 \text{ sec}$ ]

(A) Counter

(B) Timer

(C) Temp. controller

(D) Power controller

(E) Panel meter

(F) Tacho/Speed/Pulse meter

(G) Display unit

(H) Sensor controller

(I) Switching power supply

(J) Proximity sensor

(K) Photo electric sensor

(L) Pressure sensor

(M) Rotary encoder

(N) Stepping motor & Driver & Controller

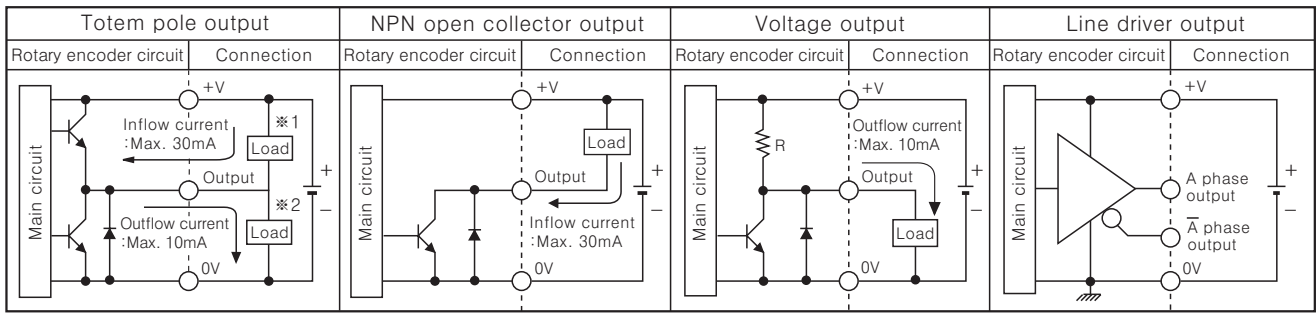
(O) Graphic panel

(P) Field network device

(Q) Production stoppage models & replacement

# E80H Series

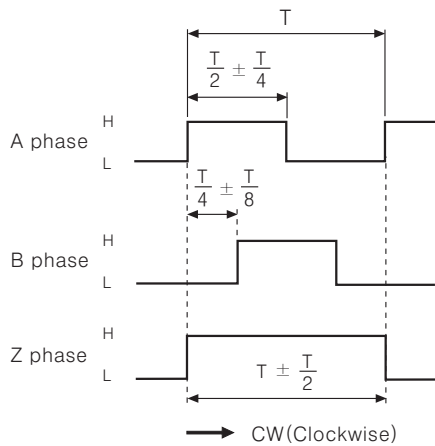
## Control output diagram



※ Totem pole output type can be used for NPN open collector output type(※1) or Voltage output type(※2).  
 ※ All output circuits of A, B, Z phase is same. (Line driver output is for A,  $\bar{A}$ , B,  $\bar{B}$ , Z,  $\bar{Z}$ )

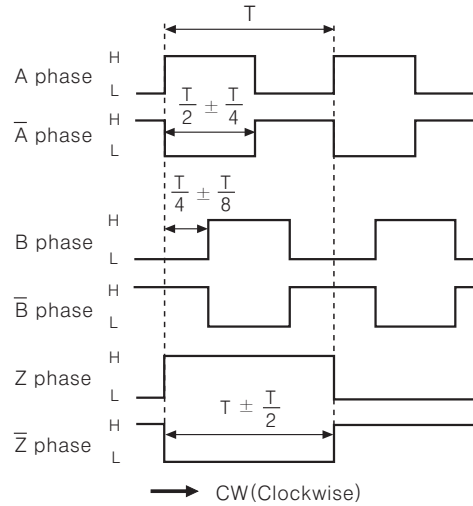
## Output waveform

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



※ CW : As viewed from the shaft

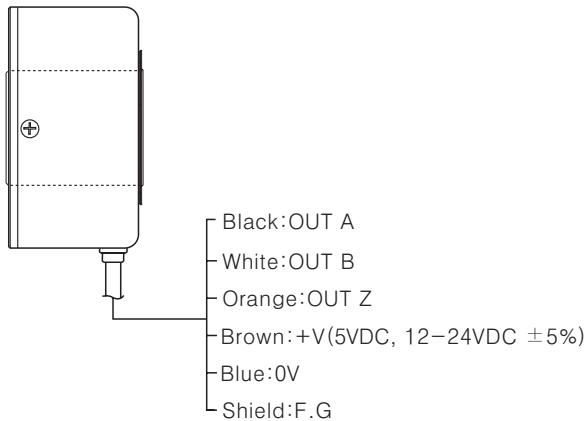
● Line driver output



## Connections

### Normal type

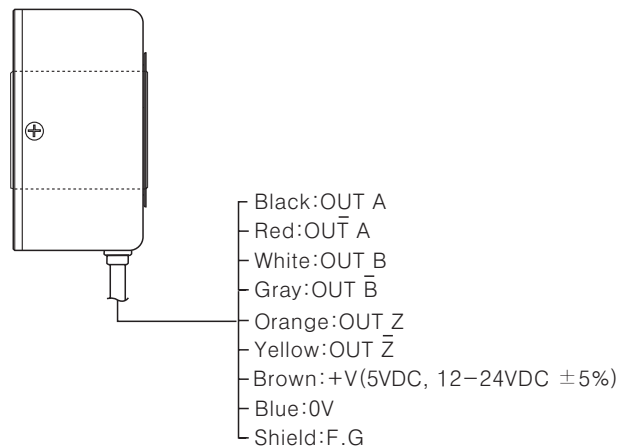
● Totem pole output / NPN open collector output / Voltage output



※ Unused wires must be insulated.

※ The metal case and shield cable should be grounded(F.G).

● Line driver output

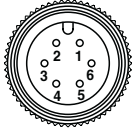


# Incremental $\phi$ 80mm Hollow Shaft Type

## ■ Connection

### ■ Cable outgoing connector type

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



- Line driver output



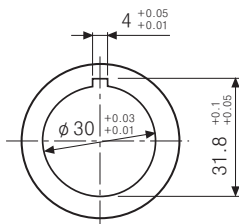
Totem pole output NPN open collector output Voltage output			Line driver output		
Pin No	Function	Cable color	Pin No	Function	Cable color
①	OUT A	Black	①	OUT A	Black
②	OUT B	White	②	OUT $\bar{A}$	Red
③	OUT Z	Orange	③	+V	Brown
④	+V	Brown	④	GND	Blue
⑤	GND	Blue	⑤	OUT B	White
⑥	F.G	Shield	⑥	OUT $\bar{B}$	Gray
			⑦	OUT Z	Orange
			⑧	OUT $\bar{Z}$	Yellow
			⑨	F.G	Shield

\*F.G(Field Ground):It should be grounded separately.

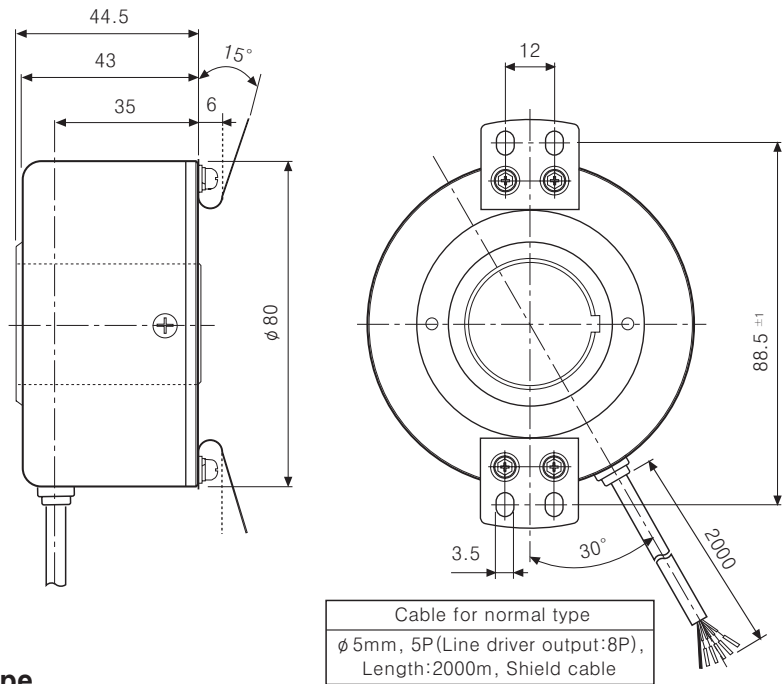
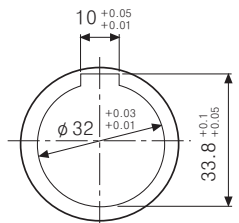
## ■ Dimensions

### ■ Normal type

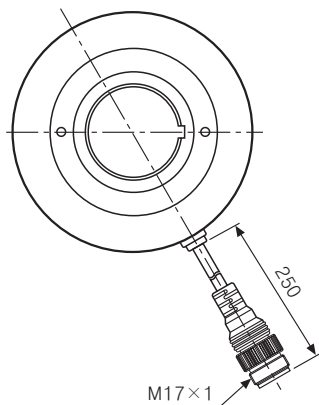
- Inner diameter of shaft(Standard)



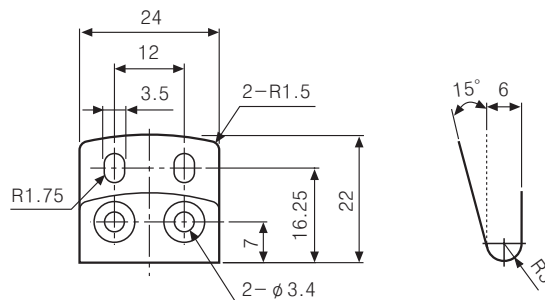
- Inner diameter of shaft(Customizable)



### ■ Cable outgoing connector type



### ● Bracket



\*Connector cable is customizable and see M-57 for specifications.

(A)  
Counter

(B)  
Timer

(C)  
Temp.  
controller

(D)  
Power  
controller

(E)  
Panel  
meter

(F)  
Tacho/  
Speed/  
Pulse  
meter

(G)  
Display  
unit

(H)  
Sensor  
controller

(I)  
Switching  
power  
supply

(J)  
Proximity  
sensor

(K)  
Photo  
electric  
sensor

(L)  
Pressure  
sensor

(M)  
Rotary  
encoder

(N)  
Stepping  
motor &  
Driver &  
Controller

(O)  
Graphic  
panel

(P)  
Field  
network  
device

(Q)  
Production  
stoppage  
models &  
replacement