

# φ 80 Heavy Duty Hollow Shaft Type

## Diameter φ 80mm hollow type INCREMENTAL Rotary encoder

### ■ Features

- External diameter φ 80mm, Axis inside diameter φ 30mm, φ 32mm (Option)
- Able to install at the motor or machinery without coupling
- Power supply : 5VDC, 12–24VDC ±5%
- Various output types



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



### ■ Ordering information

<b>E80H</b>	<b>30</b>	<b>1024</b>	<b>3</b>	<b>2</b>	<b>24</b>	
Series	Shaft diameter	Pulse/1 Revolution	Output phase	Output	Power supply	Cable
Diameter φ 80mm, hollow type	φ 30mm φ 32mm	60, 100, 360, 500, 512, 1024	3 : A, B, Z 6 : A, $\bar{A}$ , B, $\bar{B}$ , Z, $\bar{Z}$	1 : Totem pole output 2 : NPN open collector output 3 : Voltage output L : Line driver output (*)	5 : 5VDC ±5% 24 : 12–24VDC ±5%	No mark: Normal type (*) Cable outgoing connector type

⇒ Shaft inside diameter φ 32mm is optional.

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

\*Cable length : 200mm

### ■ Specifications

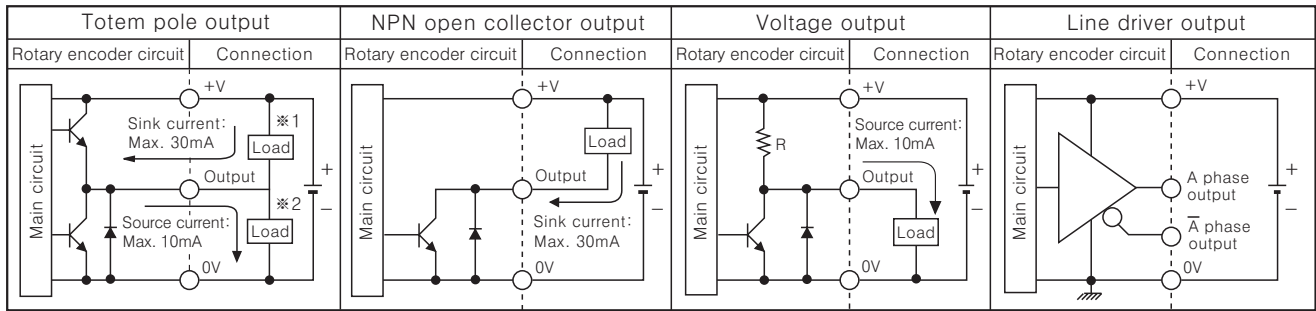
Item	Diameter φ 80mm hollow type Incremental Rotary encoder		
Resolution(P/R)	60, 100, 360, 500, 512, 1024 (Not indicated type is available to customize)		
Electrical specification	Output phase	A, B, Z phase (Line driver output A, $\bar{A}$ , B, $\bar{B}$ , Z, $\bar{Z}$ phase)	
	Phase difference of output	Output between A and B phase : $\frac{T}{4} \pm \frac{T}{8}$ (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 : Min. (Power voltage–1.5)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. 0.5V High ⇒ Load current : Max. –20mA, Output voltage : Min. 2.5V
	Response time (Rise/Fall)	Totem pole output	Max. 1μs
		NPN open collector output	Max. 1μs
		Voltage output	Max. 1μs
		Line driver output	Max. 0.5μs
	Max. Response frequency	150kHz	
	Power supply	• 5VDC ±5% • 12–24VDC ±5%	
	Current consumption	Max. 60mA (disconnection of the load), Line driver output: Max. 50mA (disconnection of the load)	
	Insulation resistance	Min. 100MΩ (at 500VDC)	
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)	
	Moment of inertia	Max. 800g · cm <sup>2</sup> (8 × 10 <sup>-5</sup> kg · m <sup>2</sup> )	
	Shaft loading	Radial : 5kgf, Thrust : 2.5kgf	
	Max. allowable revolution	<b>(★Note1)</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°C (at non-freezing status), Storage : –25 ~ 85°C		
Ambient humidity	35~85%RH, Storage : 35~90%RH		
Protection	IP50 (IEC specification)		
Cable	5P, φ 5mm, Length : 2m, Shield cable (Line driver output : 8P, φ 5mm)		
Accessory	Spring bracket		
Weight	Approx. 560g		
Approval	CE (Except Line driver output)		

※ **(★Note1)** Max. allowable revolution ≥ Max. response revolution **[**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.

- (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) Proximity sensor
- (J) Photo electric sensor
- (K) Pressure sensor
- (L) Rotary encoder
- (M) 5-Phase stepping motor & Driver & Controller

# E80H Series

## Control output diagram

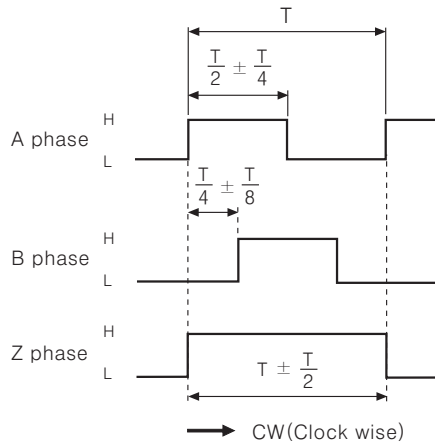


※ Totem pole output type can be used for NPN open collector output type(※1) or Voltage output type(※2).

※ All output circuits are the same A, B, Z phase(Line driver output is A,  $\bar{A}$ , B,  $\bar{B}$ , Z,  $\bar{Z}$ )

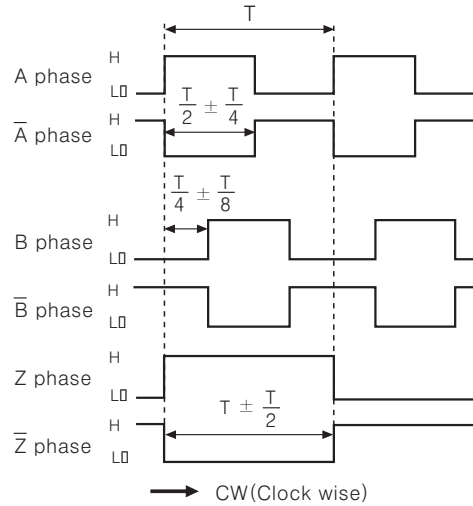
## Output waveform

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



※ Inverse type of Z phase is optional.

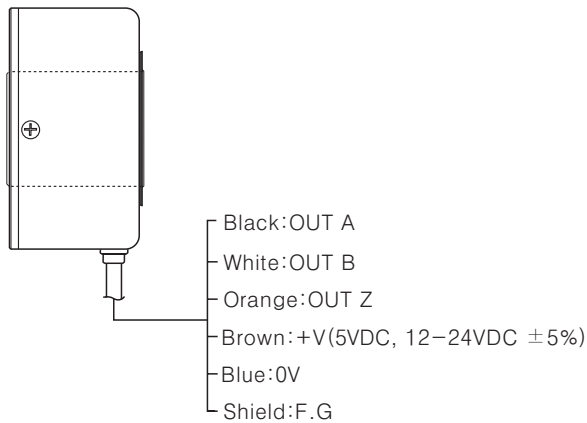
● Line driver output



## Connections

### Normal type

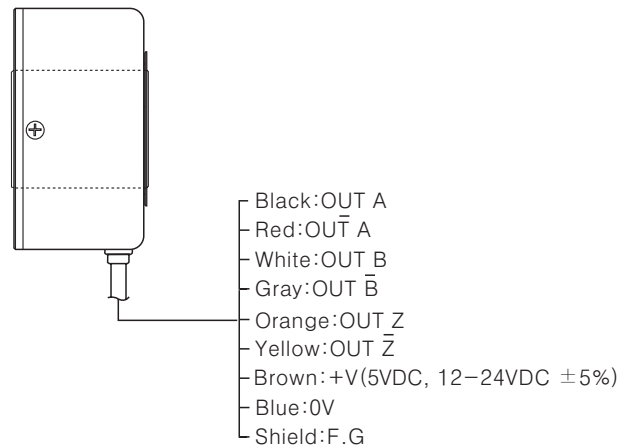
● Totem pole output / NPN open collector output / Voltage output



※ Unused wires must be insulated.

※ The body of encoder is connected to a shield.

● Line driver output



# φ 80 Heavy Duty Hollow Shaft Type

## Connections

### Cable outgoing connector type



Pin No.	Cable color	Totem pole output NPN open collector output Voltage output	Line driver output
①	Black	OUT A	OUT A
②	Red	N.C	OUT $\bar{A}$
③	Brown	+V	+V
④	Blue	GND	GND
⑤	White	OUT B	OUT B
⑥	Gray	N.C	OUT $\bar{B}$
⑦	Orange	OUT Z	OUT Z
⑧	Yellow	N.C	OUT $\bar{Z}$
⑨	Shield	F.G	F.G
⑩	Purple	N.C	N.C

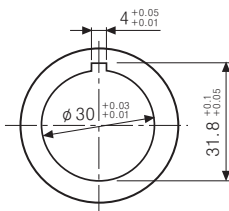
\*N.C(Not Connected)

\*F.G(Field Ground)

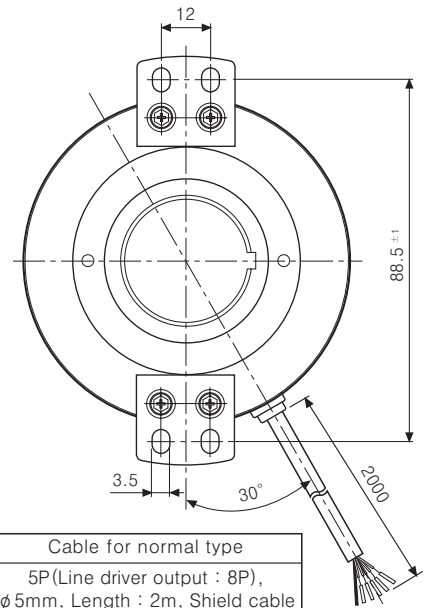
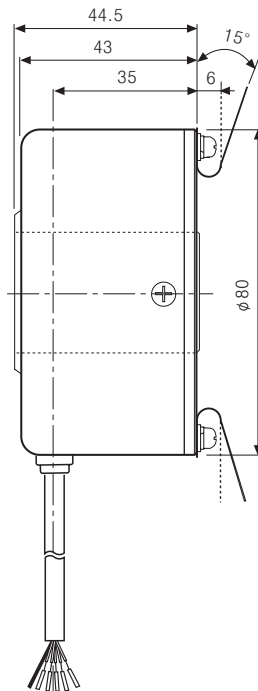
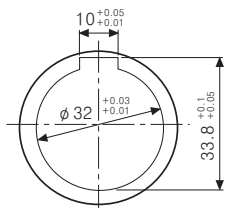
## Dimensions

### Normal type

- Shaft inner diameter standard



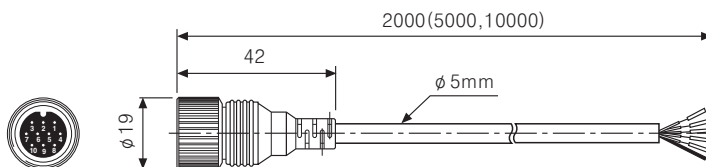
- Shaft inner diameter (Option)



Cable for normal type  
5P (Line driver output : 8P),  
φ 5mm, Length : 2m, Shield cable

### Cable outgoing connector type

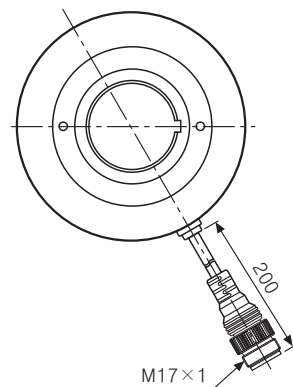
- Connector cable (Accessory)



Connector cable model	
Line driver output	EC8-2(Standard), EC8-5, EC8-10
Etc.	EC5-2(Standard), EC5-5, EC5-10

Connector cable model	
EC	5 - 2
	└─ Cable length(m)
	└─ The number of cables
	└─ Connector cable of Encoder

\*A cable length is optional.



M17×1

Unit:mm

(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)  
Proximity  
sensor

(J)  
Photo  
electric  
sensor

(K)  
Pressure  
sensor

(L)  
Rotary  
encoder

(M)  
5-Phase  
stepping  
motor &  
Driver &  
Controller