

E80H Series

Diameter ϕ 80mm Hollow shaft type Incremental Rotary encoder

■ Features

- External diameter ϕ 80mm, Inner diameter of shaft ϕ 30mm, ϕ 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

E80H	30	–	3200	–	3	–	N	–	24	–	
Series	Shaft diameter		Pulse/1 Revolution		Output phase		Output		Power supply		Cable
Diameter ϕ 80mm, hollow shaft type	ϕ 30mm ϕ 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 ϕ 32mm is customizable.

*The power of Line driver is only for 5VDC

*Cable length : 250mm

■ Specifications

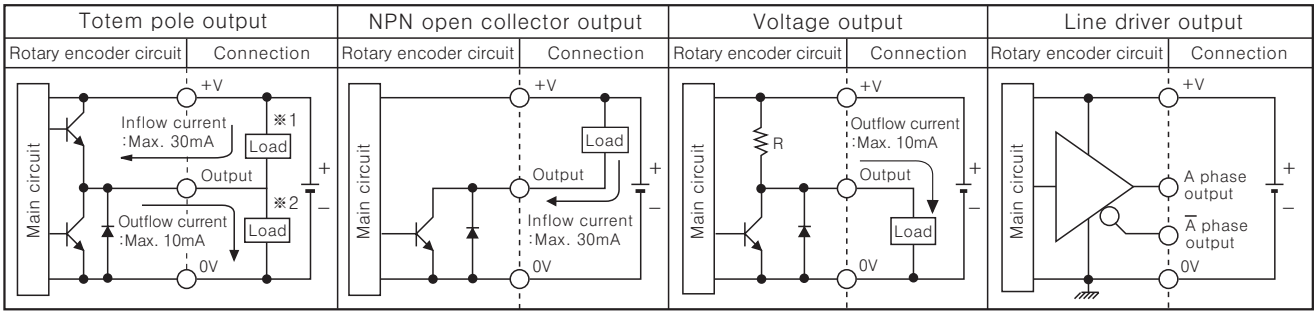
Item		Diameter ϕ 80mm hollow shaft type of Incremental rotary encoder	
Resolution (P/R)		(Note1)	60, 100, 360, 500, 512, 1024, 3200
Electrical specification	Output phase	A, B, Z phase (Line driver output A, $\bar{A}$, B, $\bar{B}$, Z, $\bar{Z}$ phase)	
	Phase difference of output	Phase difference between A and B : $\frac{T}{4} \pm \frac{T}{8}$ (T=1 cycle of A phase)	
	Control output	Totem pole output	• Low $\Rightarrow$ 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
		Line driver output	• Low $\Rightarrow$ Load current : Max. 20mA, Residual : Max. 0.5VDC • High $\Rightarrow$ Load current : Max. –20mA, Output voltage : Min. 2.5VDC
	Response time (Rise/Fall)	Totem pole output	Max. 1 μ s
		NPN open collector output	Max. 1 μ s
		Voltage output	Max. 1 μ s
		Line driver output	Max. 0.5 μ 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 Ω (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 $\cdot$ cm (0.02N $\cdot$ m)	
	Rotor inertia	Max. 800g $\cdot$ cm ² (8×10^{-5} kg $\cdot$ m ²)	
	Shaft loading	Radial : 5kgf, Thrust : 2.5kgf	
	Max. allowable revolution	(Note2)	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		ϕ 5mm, 5P, Length : 2m, Shield cable (Line driver output : ϕ 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 $\left[\text{Max. response revolution (rpm)} = \frac{\text{Max. response frequency}}{\text{Resolution}} \times 60 \text{ sec} \right]$

Incremental ϕ 80mm Hollow Shaft Type

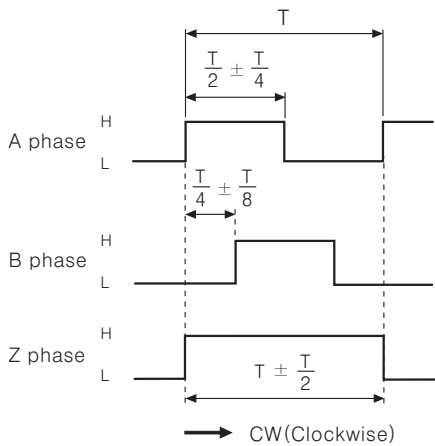
Control output diagram



※ 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, $\bar{Z}$)

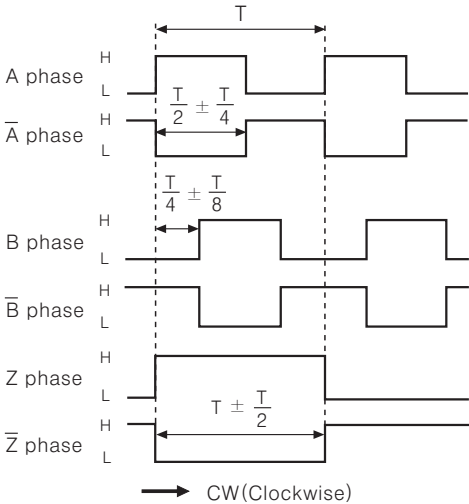
Output waveform

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



※ CW : As viewed from the shaft

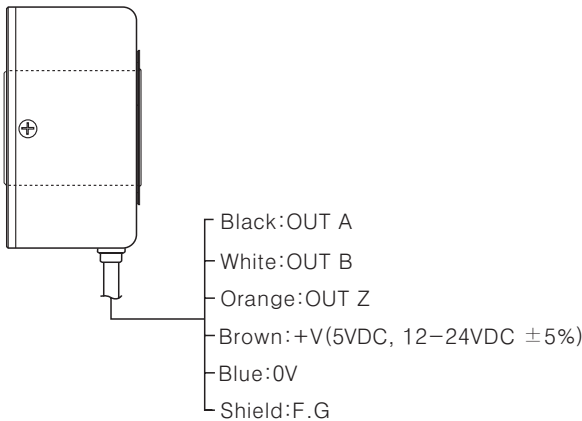
● Line driver output



Connections

Normal type

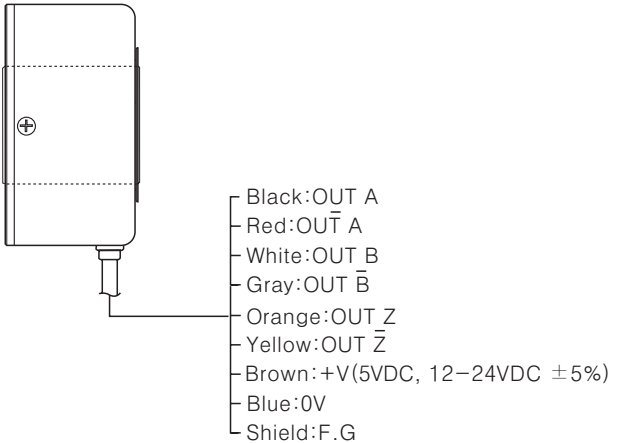
● Totem pole output / NPN open collector output
/ Voltage output



※ Unused wires must be insulated.

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

● Line driver output



(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

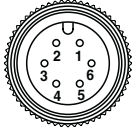
(P) Production stoppage models & replacement

E80H Series

■ 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

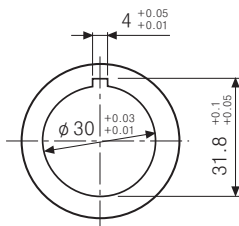
※ F.G (Field Ground): It should be grounded separately.

■ Dimensions

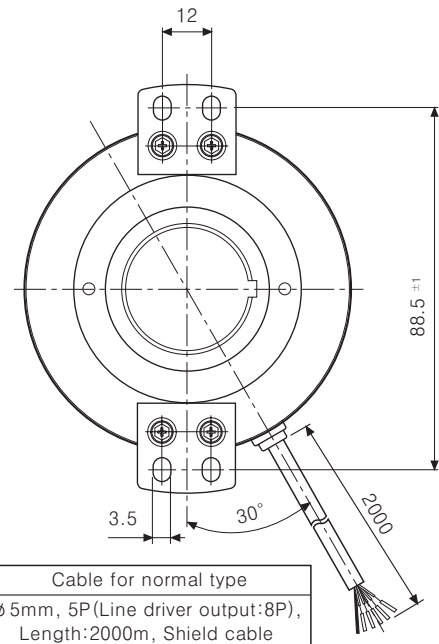
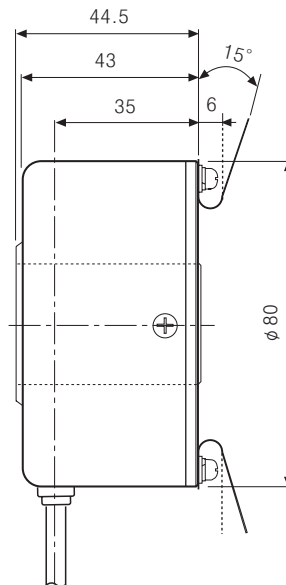
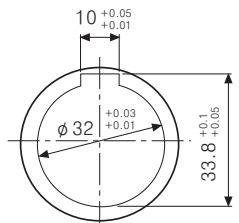
■ Normal type

(Unit:mm)

- Inner diameter of shaft (Standard)

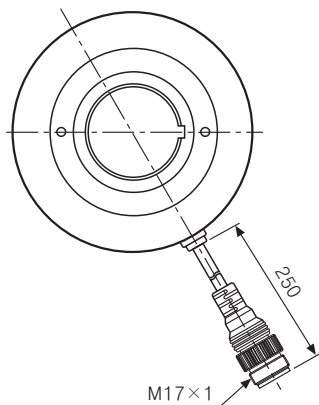


- Inner diameter of shaft (Customizable)

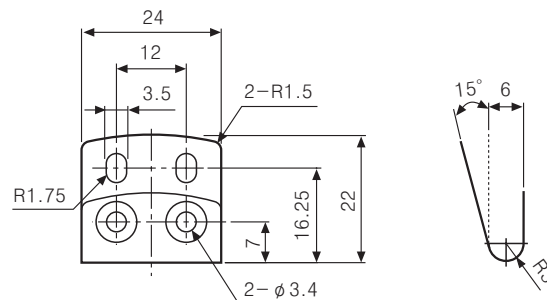


Cable for normal type
 φ5mm, 5P (Line driver output: 8P),
 Length: 2000m, Shield cable

■ Cable outgoing connector type



- Bracket



※ Connector cable is customizable and see M-46 for specifications.