

Incremental ϕ 80mm Hollow Shaft Type

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 ⇒ 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 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 • cm (0.02N • m) | |
| | Rotor inertia | Max. 800g • cm ² (8 \times 10 ^{–5} kg • 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 | CE (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

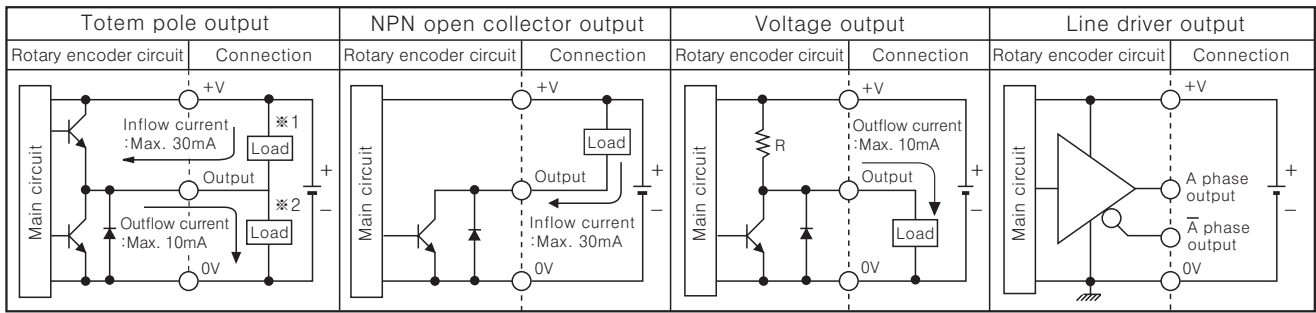
(O) Graphic panel

(P) Field network device

(Q) Production stoppage models & replacement

E80H Series

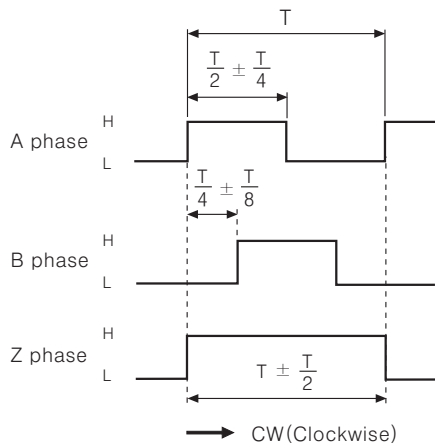
Control output diagram



※ 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})

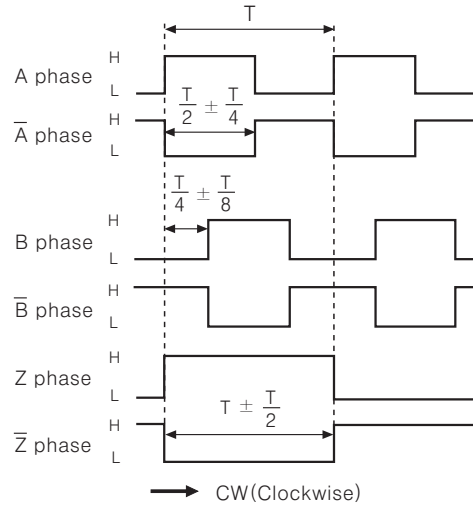
Output waveform

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



※ CW : As viewed from the shaft

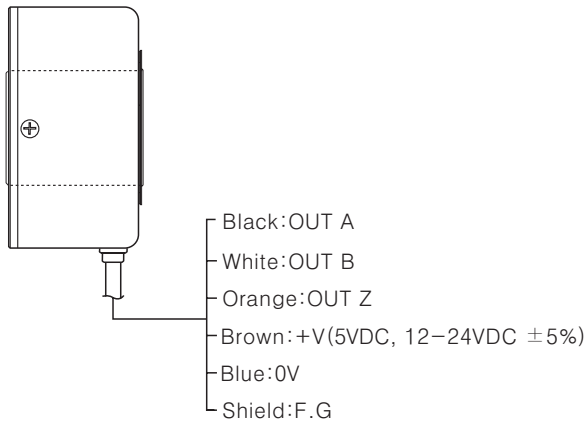
● Line driver output



Connections

Normal type

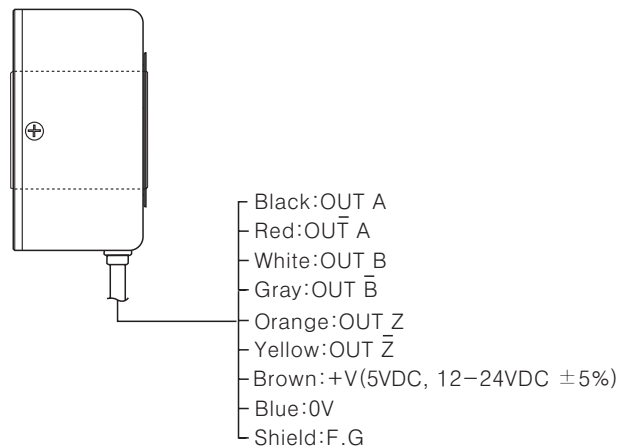
● Totem pole output / NPN open collector output / Voltage output



※ Unused wires must be insulated.

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

● Line driver output



Incremental $\phi 80$ mm Hollow Shaft Type

■ Connection

■ Cable outgoing connector type

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



- Line driver output



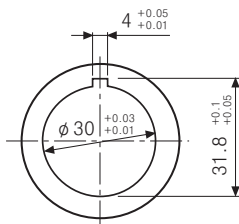
| Totem pole output NPN open collector output Voltage output | | | Line driver output | | |
|--|----------|-------------|--------------------|---------------|-------------|
| Pin No | Function | Cable color | Pin No | Function | Cable color |
| ① | OUT A | Black | ① | OUT A | Black |
| ② | OUT B | White | 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.

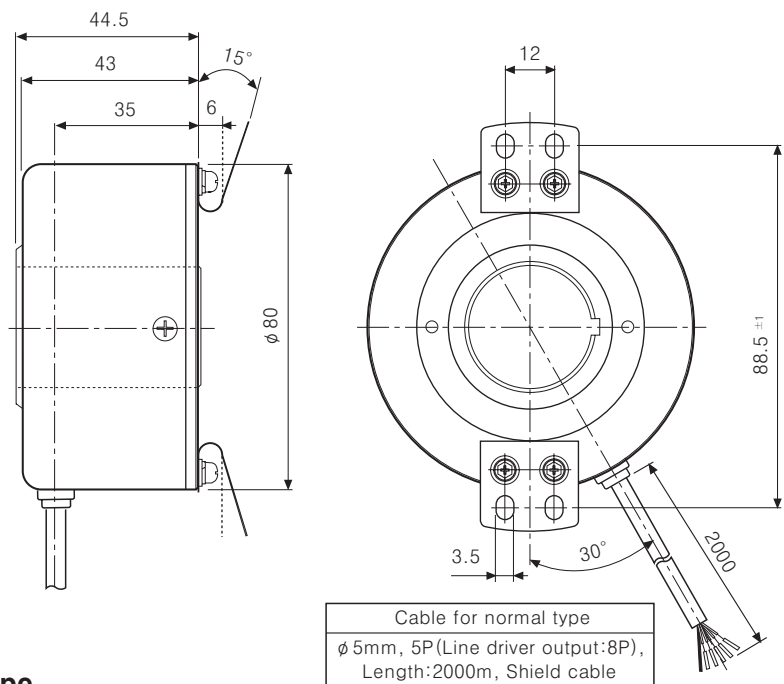
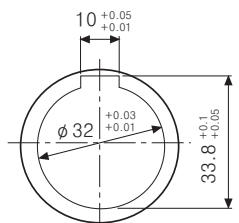
■ Dimensions

■ Normal type

- Inner diameter of shaft(Standard)

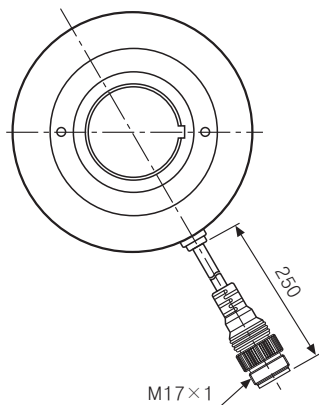


- Inner diameter of shaft(Customizable)

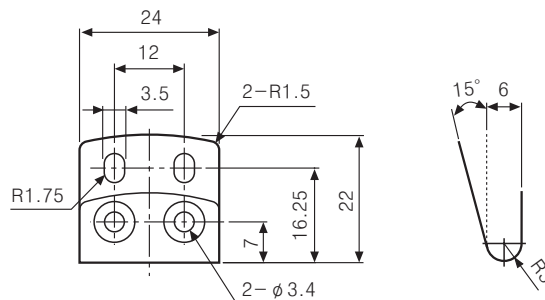


Cable for normal type
 $\phi 5$ mm, 5P(Line driver output:8P),
 Length:2000m, Shield cable

■ 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