

# E58 Series

## Diameter ø58mm Shaft type/Hollow type/Built-in type Incremental Rotary Encoder

### ■ Features

- Diameter ø58mm flange type
- Suitable for measuring angle, position, revolution, speed, acceleration and distance
- Power supply : 5VDC, 12-24VDC ±5%

### ■ Applications

- Various tooling machinery, packing machine and general industrial machinery etc.

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



### ■ Ordering information

**E58SC**    **10**    -    **8000**    -    **3**       **N**    -    **24**    -    \_\_\_\_\_

| Series Diameter ø58mm | Shaft diameter |      |                      | Pulse/1Revolution   | Output phase                                  | Output                | Power supply                    | Cable   |
|-----------------------|----------------|------|----------------------|---------------------|---|-----------------------|---------------------------------|---|
| SC: Shaft Clamping    | External       | 10   | ø10mm                | Refer to resolution | 2: A, B                                       | T: Totem pole output  | 5: 5VDC ±5%<br>24: 12-24VDC ±5% | No mark: Cable type<br>C: Connector cable type (Cable length: 250mm)<br>CR: Axial connector type<br>CS: Radial connector type |
| SS: Shaft Synchro     | 6              | ø6mm | 3: A, B, Z(Standard) |                     | N: NPN open collector output                  |                       |                                 |   |
| H: Hollow             | Inner          | 12   | ø12mm                |                     | 4: A, $\bar{A}$ , B, $\bar{B}$                | V: Voltage output     |                                 |   |
| HB: Hollow Built-in   |                |      |                      |                     | 6: A, $\bar{A}$ , B, $\bar{B}$ , Z, $\bar{Z}$ | L: Line driver output |                                 |   |

※Standard : E58SC10-[PULSE]-3-N-24-CR    ※Customizable model specifications are available.    ※Standard cable for shaft/built-in encoder is axial cable type. Standard cable for hollow shaft encoder is radial cable type.

### ■ Specifications

| Item                     | Diameter ø58mm incremental rotary encoder   |   |  |
|--------------------------|---|---|--|
| Resolution(P/R)*1        | *1, *2, *5, 10, *12, 15, 20, 23, 25, 30, 35, 40, 45, 50, 60, 75, 100, 120, 125, 150, 192, 200, 240, 250, 256, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 1500, 1800, 2000, 2048, 2500, 3000, 3600, 5000, 6000, 8000 |   |  |
| 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=1cycle of A phase)  |  |
|                          | Control output  | Totem pole output   | • Low - Load current : Max. 30mA, Residual voltage : Max. 0.4VDC<br>• High - Load current : Max. 10mA, Output voltage(Power voltage 5VDC) : Min. (Power voltage-2.0)VDC, Output voltage(Power voltage 12-24VDC) : Min. (Power voltage-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 voltage : Max. 0.5VDC<br>• High - Load current : Max. -20mA, Output voltage(Power voltage 5VDC) : Min. (Power voltage-2.5)VDC, Output voltage(Power voltage 12-24VDC) : Min. (Power voltage-3.0)VDC |
|                          | Response time (Rise/Fall)   | Totem pole output   | Max. 1μs   |
|                          |   | NPN open collector output   |  |
|                          |   | Voltage output  |  |
|                          |   | Line driver output  |  |
|                          | Max. Response frequency   | 300kHz  |  |
|                          | Power supply  | • 5VDC ±5%(Ripple P-P : Max. 5%)    • 2-24VDC ±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. 100MΩ(at 500VDC mega for all terminals and case)   |  |
| Dielectric strength      | 750VAC 50/60Hz for 1 minute(all terminals and case)   |   |  |
| Connection               | Cable type, 250mm connector cable type, Connector type(Axial, Radial)   |   |  |
| Mechanical specification | Starting torque   | • SC/SS type : Max. 40gf·cm(0.004N·m)    • HB/H type : Max. 90gf·cm(0.009N·m)   |  |
|                          | Moment of inertia   | • SC/SS type : Max. 15g·cm <sup>2</sup> (1.5×10 <sup>-6</sup> kg·m <sup>2</sup> )    • HB/H type : Max. 20g·cm <sup>2</sup> (2×10 <sup>-6</sup> kg·m <sup>2</sup> ) |  |
|                          | Shaft loading   | • SC/SS type - Radia : Max. 10kg·f, Thrust : Max. 2.5kg·f    • HB/H type - Radial : Max. 2kg·f, Thrust : Max. 1kg·f   |  |
|                          | Max. allowable revolution**2  | 5000rpm   |  |
| Vibration                | 1.5mm amplitude or 300m/s <sup>2</sup> at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 2 hours   |   |  |
| Shock                    | Approx. Max. 75G  |   |  |
| Environment              | Ambient temperature   | -10 to 70°C, storage : -25 to 85°C  |  |
|                          | Ambient humidity  | 35 to 85%RH, storage : 35 to 90%RH  |  |
| Protection               | IP50(IEC standard)  |   |  |
| Cable                    | ø5, 5-wire, Length : 2m, Shield cable(Line driver output : ø5, 8-wire)<br>(AWG24, Core diameter : 0.08mm, Number of cores : 40, Insulator out diameter : ø1)  |   |  |
| Accessory                | ø10mm(SC type) / ø6mm(SS type) coupling, Fixing bracket   |   |  |
| Approval                 | CE (Except Line driver output)  |   |  |
| Unit weight              | • SC-CS/CR type : Approx. 230g, SS-CS/CR type : Approx. 205g, HB-CS/CR type : Approx. 200g<br>• SC type : Approx. 310g, SS type : Approx. 285g, HB type : Approx. 270g, H type : Approx. 270g                                 |   |  |

※1: 1, 2, 5, 12 P/R output A and B phase only.(But Line driver output : A,  $\bar{A}$ , B,  $\bar{B}$  phase) [In case of hollow shaft type, 6000, 8000 P/R excluded]

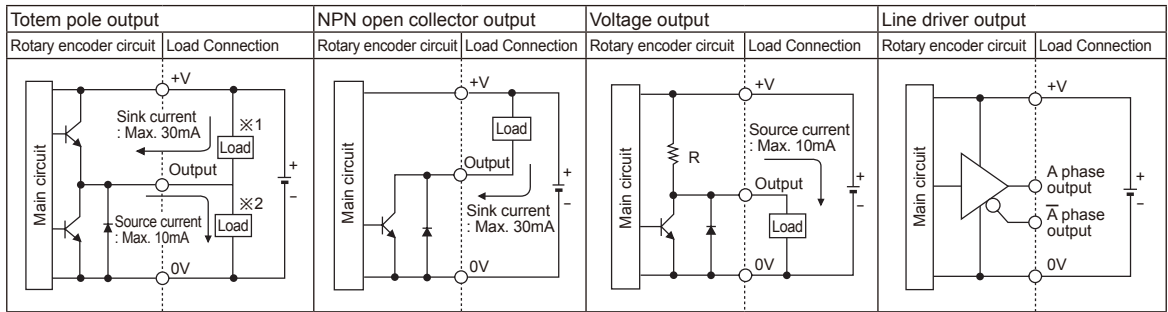
※2: Make sure that. Max response revolution should be lower than or equal to max. allowable revolution when selecting the resolution.

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

※Environment resistance is rated at no freezing or condensation.

# Incremental ø58mm Shaft/Hollow Shaft/Built-in type

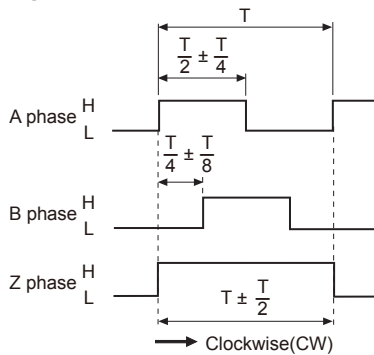
## Control output diagram



- 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 are the same. (Line driver output is A,  $\bar{A}$ , B,  $\bar{B}$ , Z,  $\bar{Z}$ )

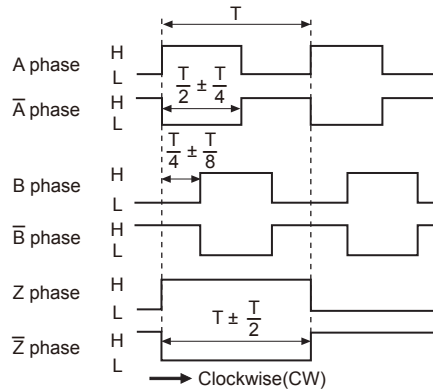
## Output waveform

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



※CW : Right turn as from the shaft

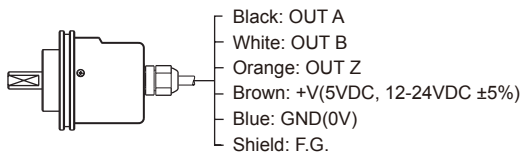
- Line driver output



## Connections

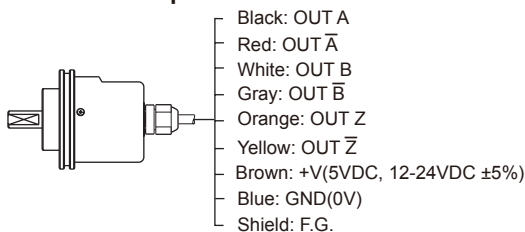
### ◎ Cable type

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



- ※Unused wires must be insulated.
- ※The metal and shield cable of encoder should be grounded(F.G.)

- Line driver output



### ◎ Connector cable type / Connector type

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



| Totem pole output/<br>NPN open collector output/<br>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.

(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 mode power supply

(Q) Stepper motor& Driver&Controller

(R) Graphic/Logic panel

(S) Field network device

(T) Software

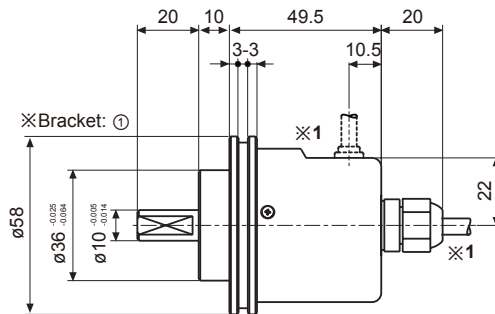
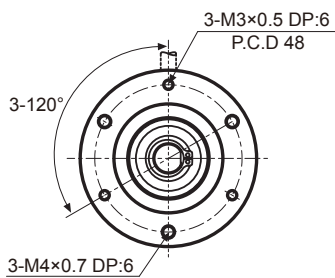
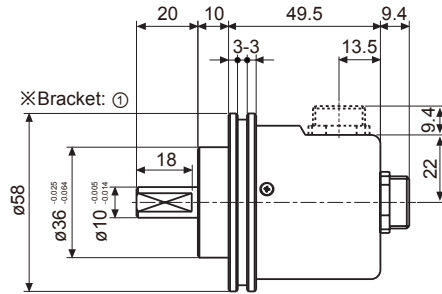
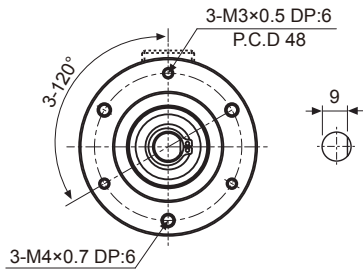
(U) Other

# E58 Series

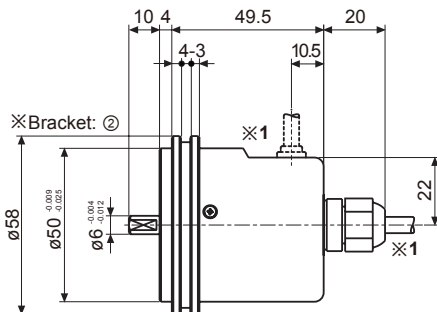
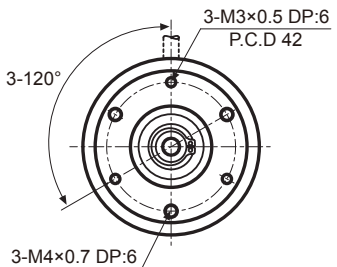
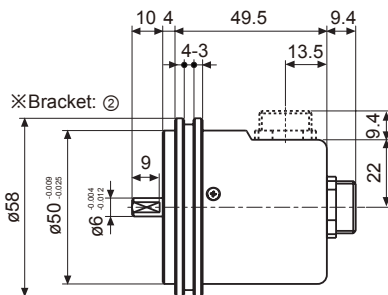
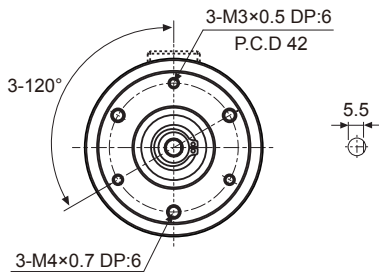
## ■ Dimensions

### ◎ Shaft clamping type

(unit: mm)

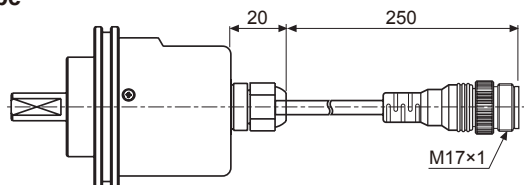


### ◎ Shaft synchro type



※1: Cable for cable type  
ø5, 5-wire (Line driver output: 8-wire),  
Length: 2000, Shield cable

### ● Cable connector type

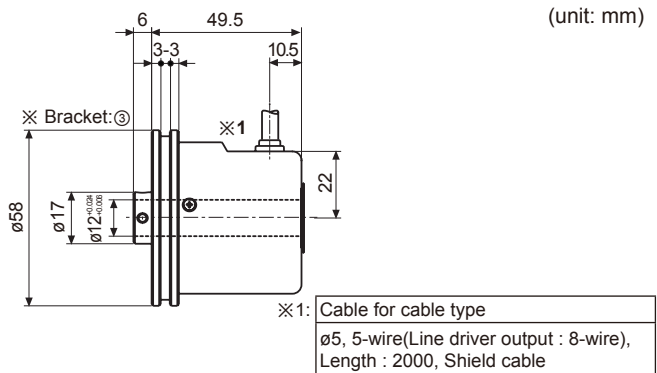
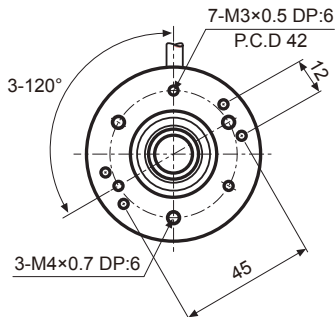


※ Connector cable is customizable and refer to the G-10 for specifications.

# Incremental ø58mm Shaft/Hollow Shaft/Built-in type

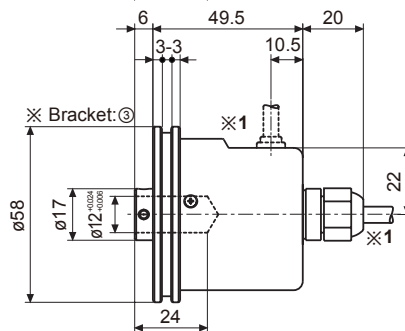
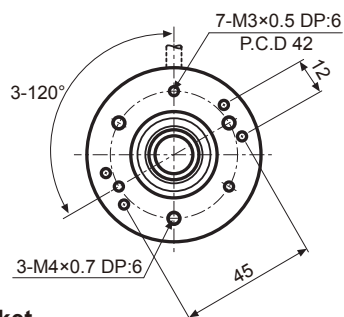
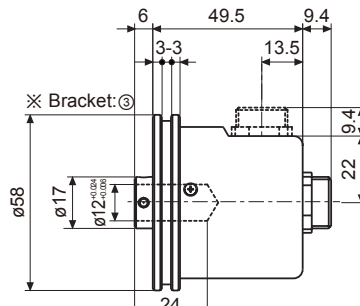
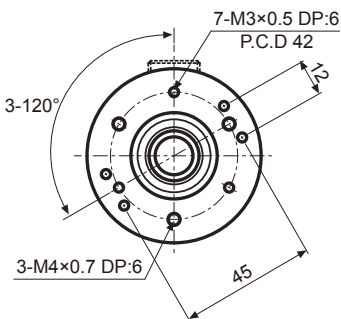
## ■ Dimensions

### ◎ Hollow type



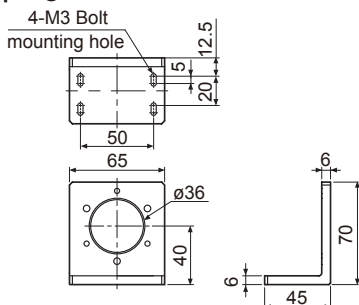
(unit: mm)

### ◎ Hollow built-in type

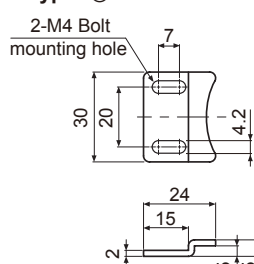


## ● Bracket

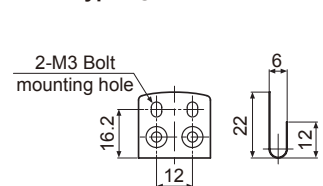
### ※SC type: ①



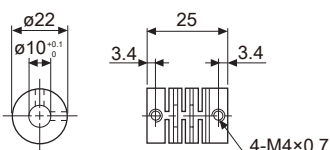
### ※SS type: ②



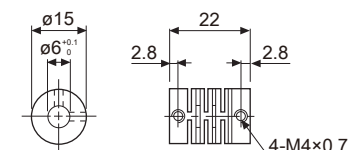
### ※HB/H type: ③



### ● ø10 Coupling (E58SC10 Series)



### ● ø6 Coupling (E58SS6 Series)



- Parallel misalignment: Max. 0.25mm
- Angular misalignment: Max. 5°
- End-play: Max. 0.2mm

※ For parallel misalignment, angular misalignment, end-play terms, refer to the F-77 page.  
 ※ For flexible coupling (ERB Series) information, refer to the F-70 page.

|     |                                  |
|-----|----------------------------------|
| (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 mode power supply      |
| (Q) | Stepper motor& Driver&Controller |
| (R) | Graphic/ Logic panel             |
| (S) | Field network device             |
| (T) | Software                         |
| (U) | Other                            |