

# 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% 24: 12-24VDC ±5%	No mark: Cable type C: Connector cable type (Cable length: 250mm) CR: Axial connector type 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 • 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 • 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) (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 • 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]

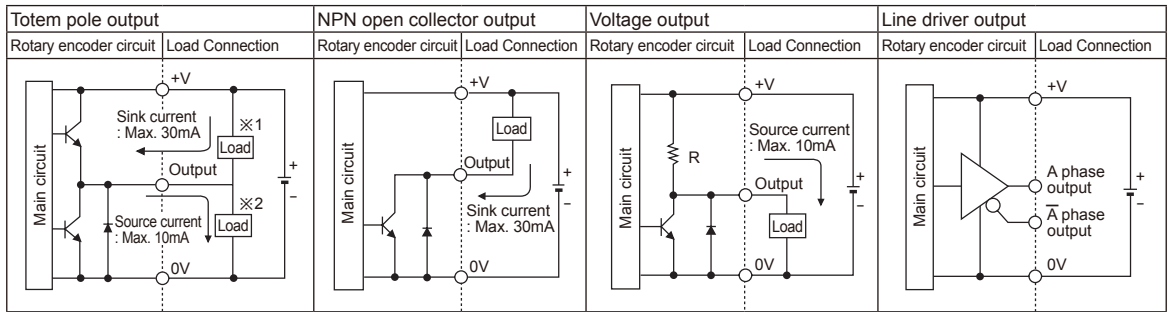
※2: Make sure that. Max response revolution should be lower than or equal to max. allowable revolution when selecting the resolution.

[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

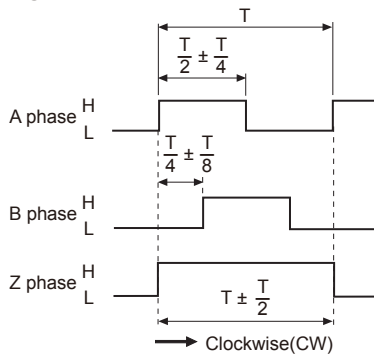
## Control output diagram



- 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,  $\bar{Z}$ )

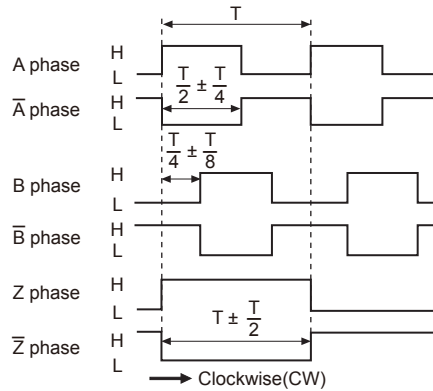
## Output waveform

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



※CW : Right turn as from the shaft

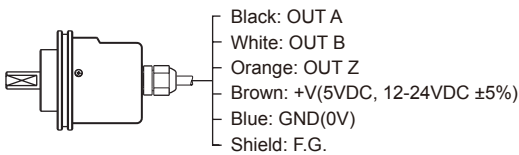
- Line driver output



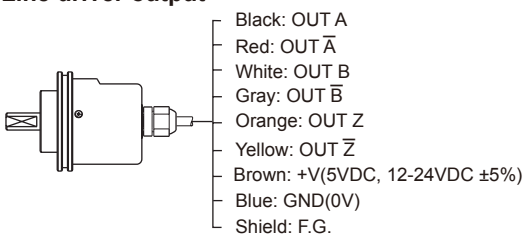
## Connections

### ◎ Cable type

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

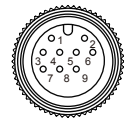


- Line driver output



### ◎ Connector cable type / 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.

(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

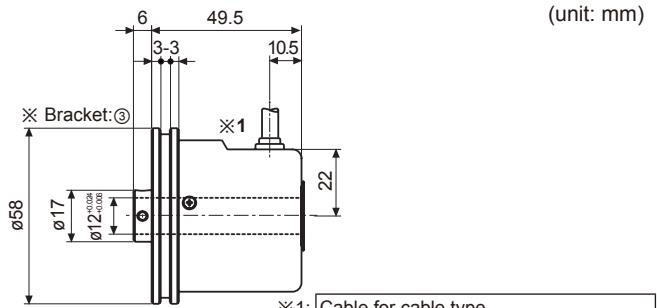
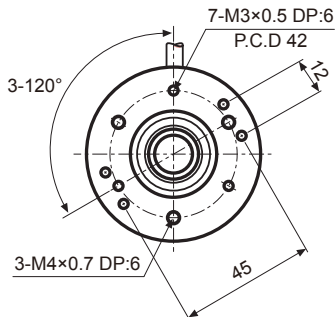
(U) Other



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

## ■ Dimensions

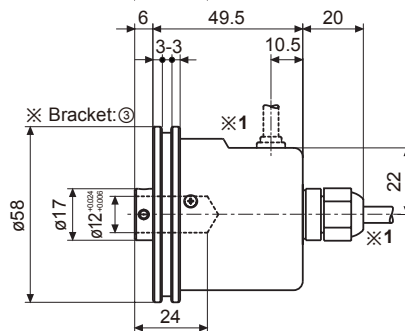
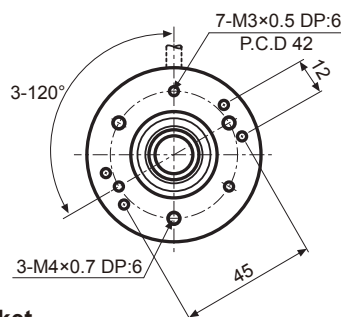
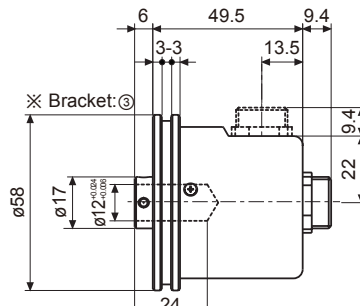
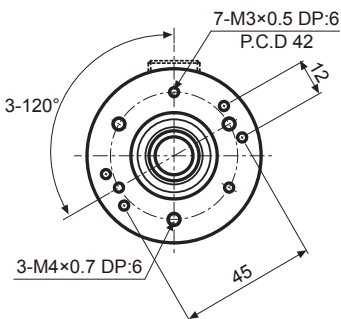
### ◎ Hollow type



(unit: mm)

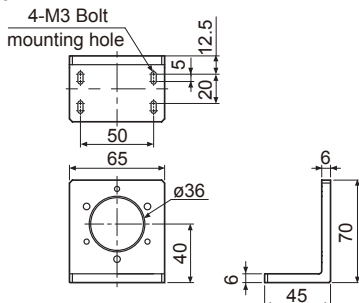
※1: Cable for cable type  
ø5, 5-wire (Line driver output : 8-wire),  
Length : 2000, Shield cable

### ◎ Hollow built-in type

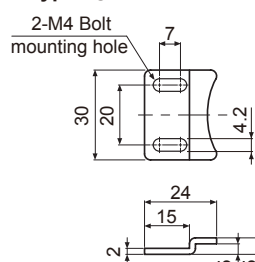


## ● Bracket

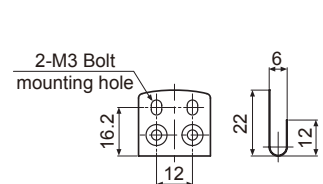
### ※SC type: ①



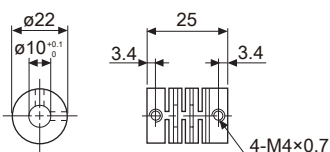
### ※SS type: ②



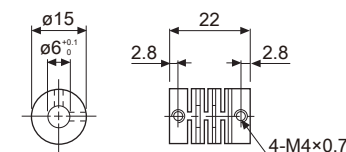
### ※HB/H type: ③



### ● 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