

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	Control 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=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 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 (Cable length: 2m, I sink = 20mA)
		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 ² (1.5×10 ⁻⁶ kg·m ²) • HB/H type: Max. 20g·cm ² (2×10 ⁻⁶ kg·m ²)	
	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 at frequency of 10 to 55Hz (for 1 min.) in each X, Y, Z direction 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 structure	IP50 (IEC standard)		
Cable	Ø5mm, 5-wire, Length: 2m, Shield cable (Line driver output: Ø5mm, 8-wire) AWG24, Core diameter: 0.08mm, Number of cores: 40, Insulator out diameter: Ø1mm)		
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		

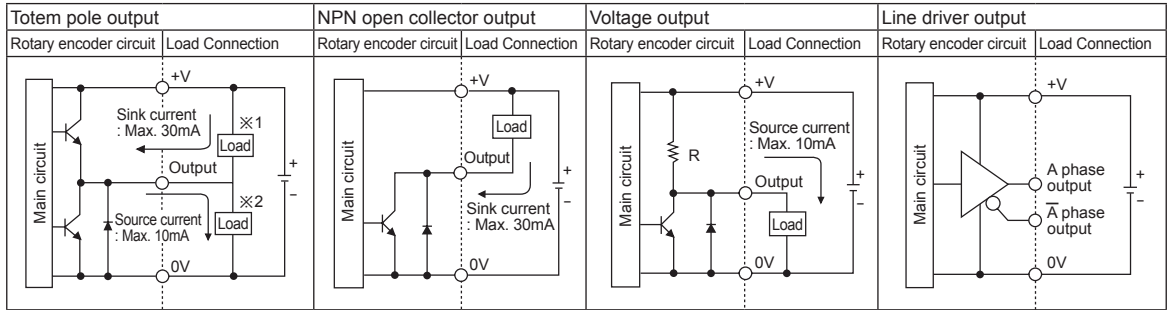
*1: 1, 2, 5, 12 P/R output A and B phase only. (Line driver output is for A, \bar{A} , B, \bar{B} phase) [In case of hollow shaft type, 6000, 8000 P/R excluded]
Not indicated resolutions are customizable.

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

※Environment resistance is rated at no freezing or condensation.
[Max. response revolution (rpm)] = $\frac{\text{Max. response frequency}}{\text{Resolution}} \times 60 \text{ sec}$

Incremental Ø58mm Shaft/Hollow Shaft/Built-In Type

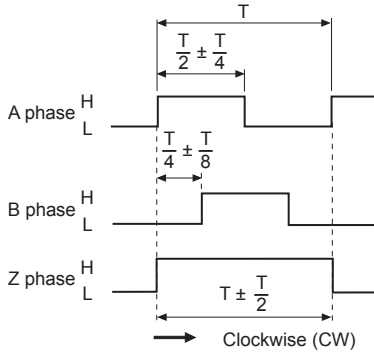
Control Output Diagram



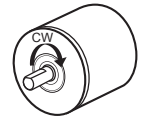
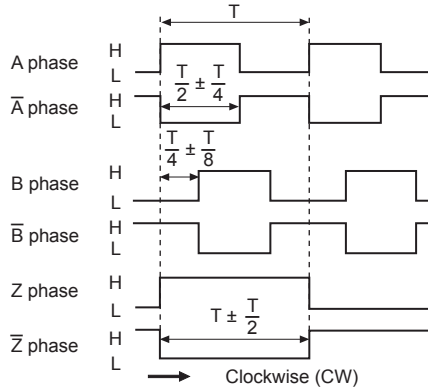
- Totem pole output type can be used for NPN open collector output type (※1) or Voltage output type (※2).
- All output circuits of A, B, Z phase are same. (Line driver output is A, \bar{A} , B, \bar{B} , Z, \bar{Z})

Output Waveform

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



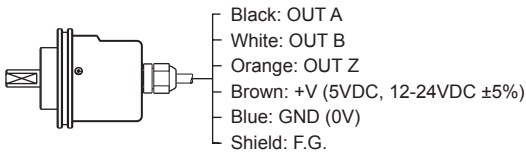
- Line driver output



Connections

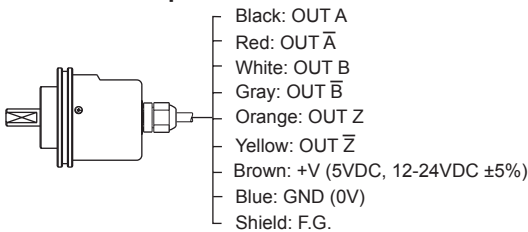
◎ Cable type

- 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/ 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) Photoelectric Sensors

(B) Fiber Optic Sensors

(C) Door/Area Sensors

(D) Proximity Sensors

(E) Pressure Sensors

(F) Rotary Encoders

(G) Connectors/ Sockets

(H) Temperature Controllers

(I) SSRs / Power Controllers

(J) Counters

(K) Timers

(L) Panel Meters

(M) Tacho / Speed / Pulse Meters

(N) Display Units

(O) Sensor Controllers

(P) Switching Mode Power Supplies

(Q) Stepper Motors & Drivers & Controllers

(R) Graphic/ Logic Panels

(S) Field Network Devices

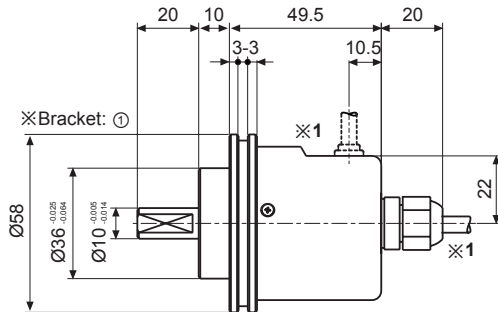
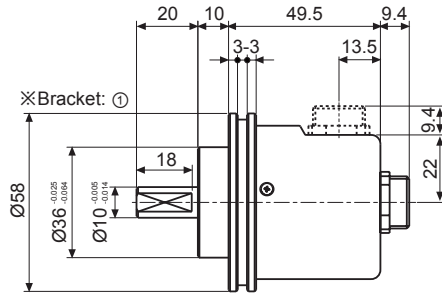
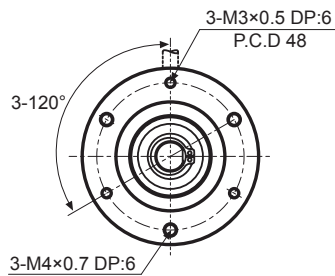
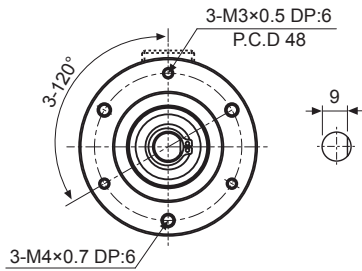
(T) Software

E58 Series

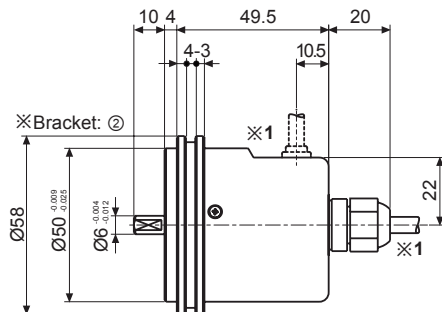
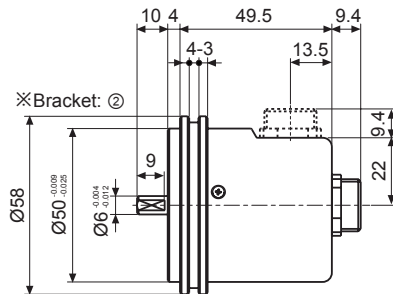
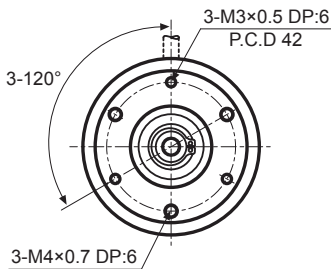
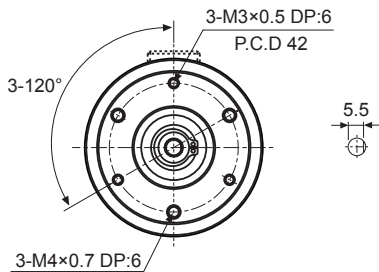
■ Dimensions

◎ Shaft clamping type

(unit: mm)

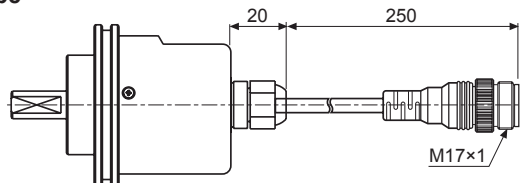


◎ Shaft synchro type



※1: Cable for cable type
 Ø5mm, 5-wire (Line driver output: 8-wire),
 Length: 2000mm, Shield cable

● Cable connector type

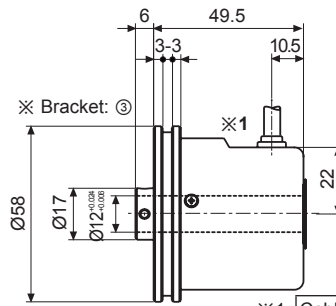
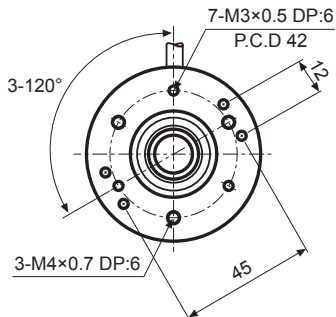


※Connector cable is sold separately
 and refer to page G-10 for
 specifications.

Incremental Ø58mm Shaft/Hollow Shaft/Built-In Type

■ Dimensions

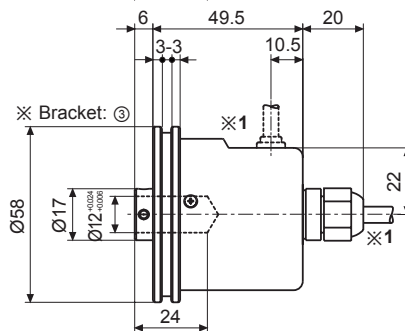
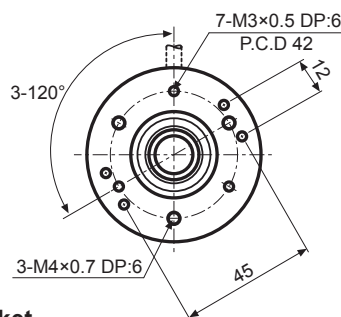
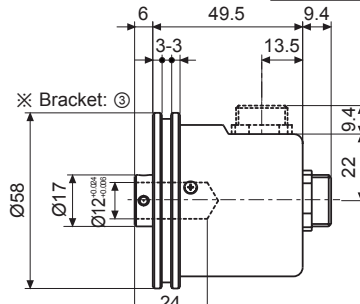
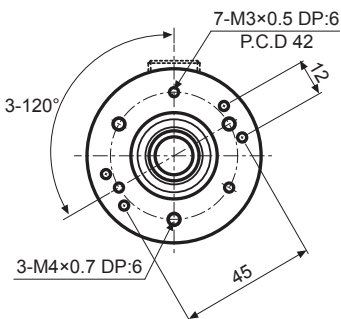
◎ Hollow type



(unit: mm)

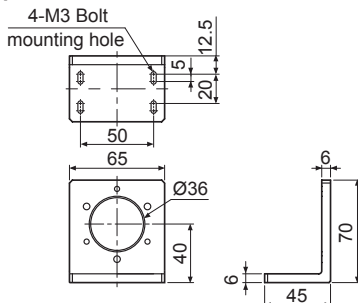
※1: Cable for cable type
Ø5mm, 5-wire (Line driver output: 8-wire),
Length: 2000mm, Shield cable

◎ Hollow built-in type

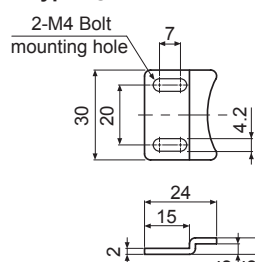


● Bracket

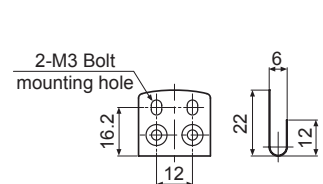
※SC type: ①



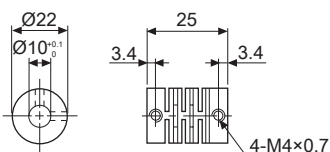
※SS type: ②



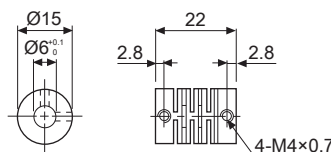
※HB/H type: ③



● 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 page F-71.

※ For flexible coupling (ERB Series) information, refer to page F-64.

(A)	Photoelectric Sensors
(B)	Fiber Optic Sensors
(C)	Door/Area Sensors
(D)	Proximity Sensors
(E)	Pressure Sensors
(F)	Rotary Encoders
(G)	Connectors/ Sockets
(H)	Temperature Controllers
(I)	SSRs / Power Controllers
(J)	Counters
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(S)	Field Network Devices
(T)	Software