

EP58 Series

Diameter ϕ 58mm Shaft/Hollow Built-in type Absolute Rotary encoder

NEW

Features

- Diameter ϕ 58mm flange type
- Applicable to various mounting environments
- Various output code: BCD, Binary, Gray Code (Customizable)
- Various and high resolution (720, 1024 divisions)



Applications

Precision machine tool, Fabric machinery, Robot, Parking system

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



Ordering information

EP58SC	10	1024	1	R	P	24	
Series Diameter ϕ 58mm	Shaft diameter		Resolution/1revolution	Output code	Rotating direction	Control output	Power supply
SC: Shaft Clamping	External	10 ϕ 10mm	Refer to resolution	1:BCD Code 2:Binary Code 3:Gray Code	F:Output value increases at CW direction R:Output value increases at CCW direction *Shaft based	P:PNP open collector output N:NPN open collector output	5:5VDC \pm 5% 24:12-24VDC \pm 5%
SS: Shaft Synchro		6 ϕ 6mm					
HB:Hollow Built-in형	Inner	8 ϕ 8mm					

*Gray code is customizable.

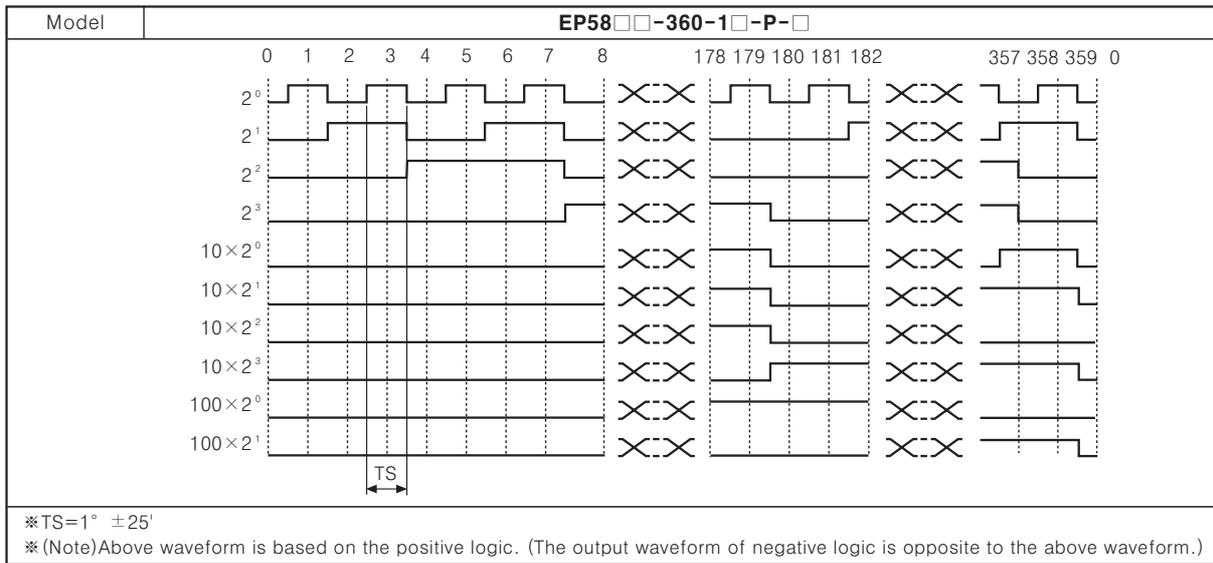
Specifications

Type		Diameter ϕ 58mm Absolute Rotary Encoder							
Resolution		720, 360, 180, 90, 45 division			1024, 512, 256, 128, 64 division				
Output code		BCD Code	Binary Code	Gray Code		BCD Code	Binary Code	Gray Code	
Electrical specification	Output phase/ Output angle	720 division	TS:Signal Pulse (11bit) TS:0.5° \pm 25'	TS:Signal Pulse (10bit) TS:0.5° \pm 25'	TS:Signal Pulse (10bit) TS:1° \pm 25'	1024 division	TS:Signal Pulse (13bit) TS:0.3515° \pm 15'	TS:Signal Pulse (10bit) TS:0.3515° \pm 15'	TS:Signal Pulse (10bit) TS:0.703° \pm 15'
		360 division	TS:Signal Pulse (10bit) TS:1° \pm 25'	TS:Signal Pulse (9bit) TS:1° \pm 25'	TS:Signal Pulse (9bit) TS:2° \pm 25'	512 division	TS:Signal Pulse (11bit) TS:0.703° \pm 15'	TS:Signal Pulse (9bit) TS:0.703° \pm 15'	TS:Signal Pulse (9bit) TS:1.406° \pm 15'
		180 division	TS:Signal Pulse (9bit) TS:2° \pm 25'	TS:Signal Pulse (8bit) TS:2° \pm 25'	TS:Signal Pulse (8bit) TS:4° \pm 25'	256 division	TS:Signal Pulse (10bit) TS:1.406° \pm 15'	TS:Signal Pulse (8bit) TS:1.406° \pm 15'	TS:Signal Pulse (8bit) TS:2.8125° \pm 15'
		90 division	TS:Signal Pulse (8bit) TS:4° \pm 25'	TS:Signal Pulse (7bit) TS:4° \pm 25'	TS:Signal Pulse (7bit) TS:8° \pm 25'	128 division	TS:Signal Pulse (9bit) TS:2.8125° \pm 15'	TS:Signal Pulse (7bit) TS:2.8125° \pm 15'	TS:Signal Pulse (7bit) TS:5.625° \pm 15'
		45 division	TS:Signal Pulse (7bit) TS:8° \pm 25'	TS:Signal Pulse (6bit) TS:8° \pm 25'	TS:Signal Pulse (6bit) TS:16° \pm 25'	64 division	TS:Signal Pulse (7bit) TS:5.625° \pm 15'	TS:Signal Pulse (6bit) TS:5.625° \pm 15'	TS:Signal Pulse (6bit) TS:11.25° \pm 15'
Control output	PNP open collector output	Output voltage : Min.(Power supply-1.5VDC), Load current : Max. 32mA							
	NPN open collector output	Load current : Max. 32mA, Residual voltage : Max. 1VDC							
Response time (Rising time, Falling time)		Ton=800nsec, Toff=Max. 800nsec(Cable : 2m, I sink = 32mA)							
Max. Response frequency		35kHz							
Power supply		●5VDC \pm 5% (Ripple P-P : Max. 5%)			●12-24VDC \pm 5% (Ripple P-P : Max. 5%)				
Current consumption		Max. 100mA(disconnection of the load)							
Insulation resistance		Min. 100M Ω (at 500VDC mega for all terminals and case)							
Dielectric strength		750VAC 50/60Hz for 1 minute(all terminals and case)							
Connection		Cable outgoing type(Cable gland)							
Mechanical specification	Starting torque	●SC/SS type : Max. 40gf \cdot cm(0.004N \cdot m)			●HB type : Max. 90gf \cdot cm(0.009N \cdot m)				
	Moment of inertia	●SC/SS type : Max. 15g \cdot cm ² (1.5 \times 10 ⁻⁶ kg \cdot m ²)			●HB type : Max. 20g \cdot cm ² (2.0 \times 10 ⁻⁶ kg \cdot m ²)				
	Shaft loading	●SC/SS type : Radial: 10kg \cdot f, Thrust : 2.5kg \cdot f			●HB type : Radial: 2kg \cdot f, Thrust : 1kg \cdot f				
	Max. allowable revolution	3000rpm							
Vibration		1.5mm amplitude at frequency of 10 to 55Hz(for one minute cycle) in each of X, Y, Z direction for 2 hours							
Shock		Max. 50G							
Ambient temperature		-10 ~ 70°C (at non-freezing status), Storage:-25 ~ 85°C							
Ambient humidity		35 ~ 85%RH, Storage:35 ~ 90%RH							
Protection		IP50(IEC standard)							
Cable		ϕ 7mm, 15P, Length:2m, Shield cable							
Accessories		ϕ 10mm(SC type)/ ϕ 6mm(SS type) coupling, Fixing bracket							
Unit weight		●Clamping : Approx. 435g		●Synchro : Approx. 415g		●Built-in : Approx. 410g			
Approval		CE							

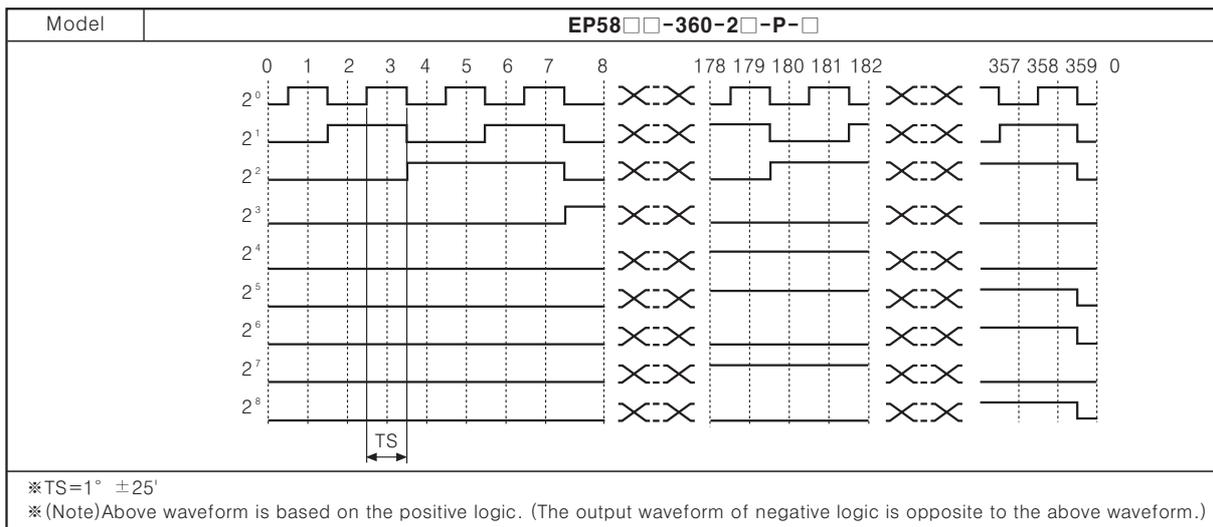
∅ 58mm Shaft/Hollow Built-in Absolute Type

Output waveform

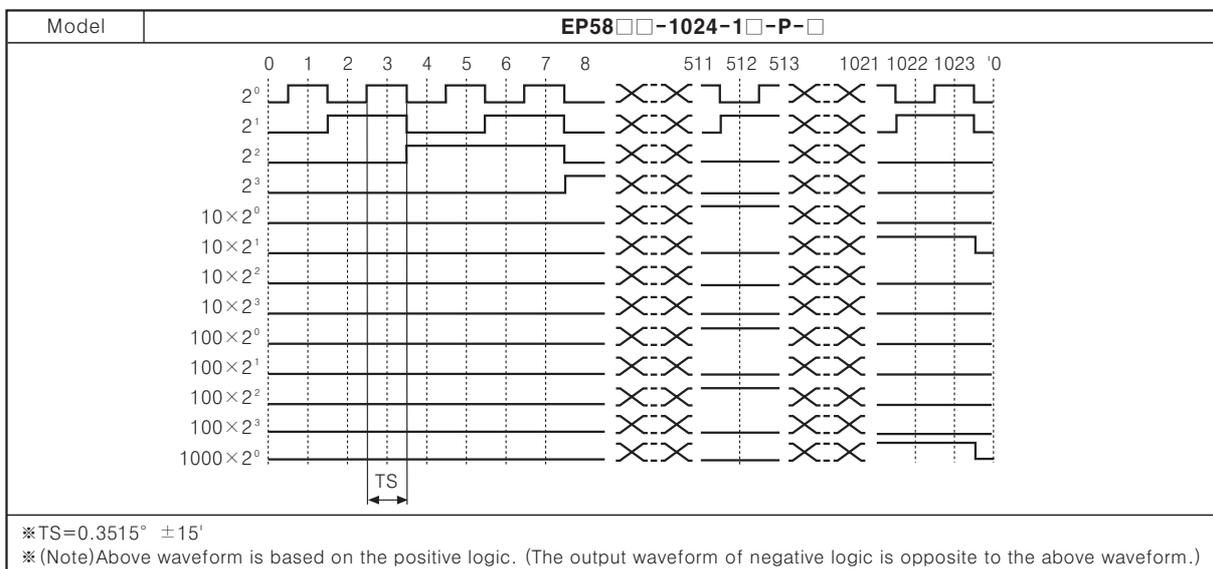
●360 division (BCD CODE output)



●360 division (BINARY CODE output)



●1024 division (BCD CODE 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

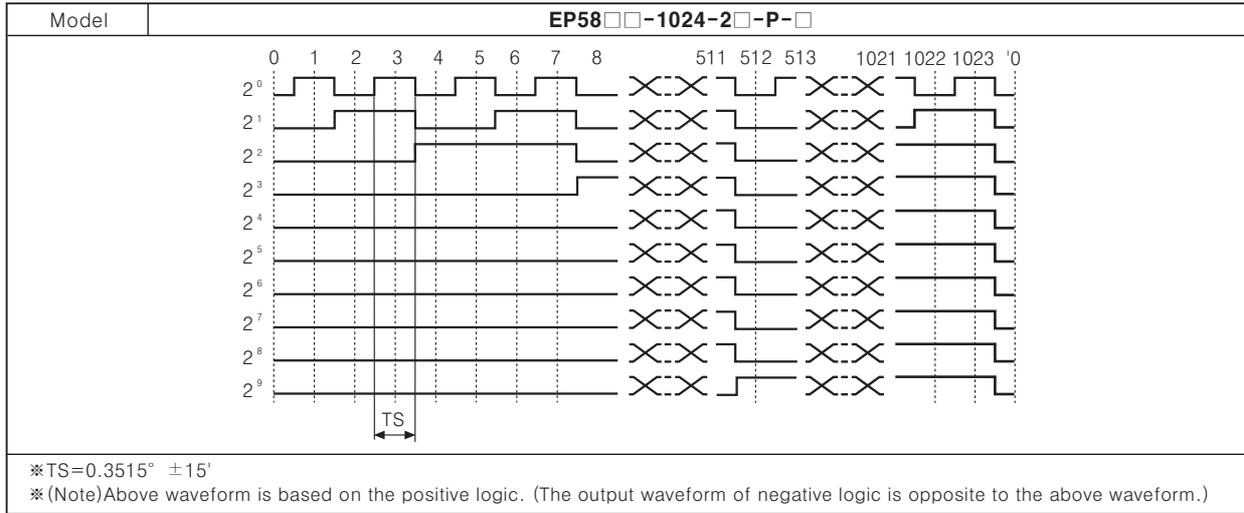
(P)
Field
network
device

(Q)
Production
stoppage
models &
replacement

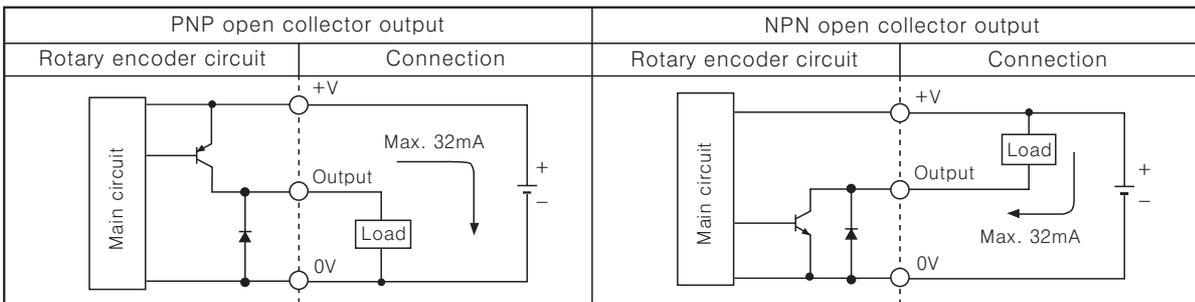
EP58 Series

Output waveform

1024 division (BINARY CODE output)



Control output diagram



※Output circuits of all phase are the same.

Connections

BCD Code

Resolution (Division)	45	64	90	128	180	256	360	512	720	1024	
Color											
Power	White	+V									
	Black	GND(0V)									
Output wire	Brown	2^0									
	Red	2^1									
	Orange	2^2									
	Yellow	2^3									
	Blue	$(2^0 \times 10)$									
	Purple	$(2^1 \times 10)$									
	Gray	$(2^2 \times 10)$									
	White/Brown	N.C	$(2^3 \times 10)$								
	White/Red	N.C	$(2^0 \times 100)$								
	White/Orange	N.C		$(2^1 \times 100)$							
	White/Yellow	N.C			$(2^2 \times 100)$						
	White/Blue	N.C				$(2^3 \times 100)$					
	White/Purple	N.C					$(2^0 \times 1000)$				
Shield wire	F.G										

Binary Code / Gray Code

Resolution (Division)	45	64	90	128	180	256	360	512	720	1024	
Color											
Power	White	+V									
	Black	GND(0V)									
Output wire	Brown	2^0									
	Red	2^1									
	Orange	2^2									
	Yellow	2^3									
	Blue	2^4									
	Purple	2^5									
	Gray	N.C	2^6								
	White/Brown	N.C		2^7							
	White/Red	N.C			2^8						
	White/Orange	N.C				2^9					
	White/Yellow	N.C									
	White/Blue	N.C									
	White/Purple	N.C									
Shield wire	F.G										

※Non-using wires must insulated.

※Encoder case and shield wire must be grounded.

※N.C(Not Connected) : Not using.

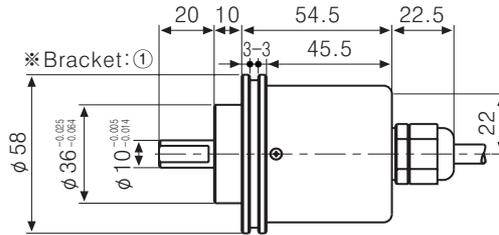
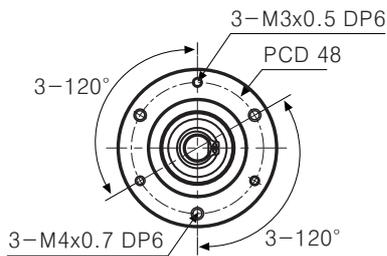
※Dedicated Driver IC is used for output circuit. Be careful to prevent short from occurring when wiring output lines.

∅ 58mm Shaft/Hollow Built-in Absolute Type

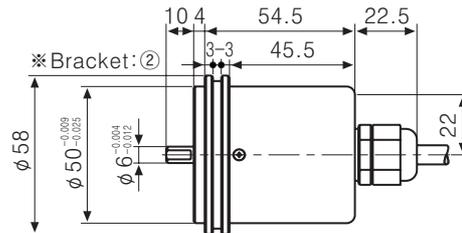
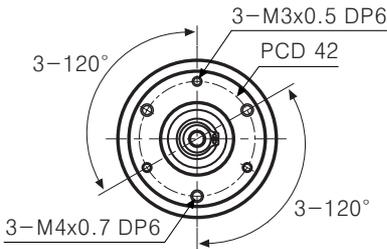
■ Dimensions

(Unit:mm)

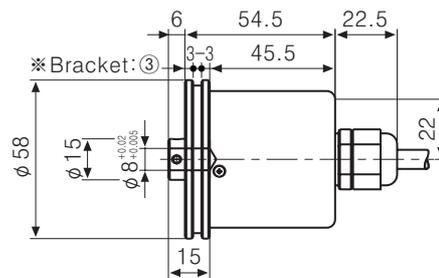
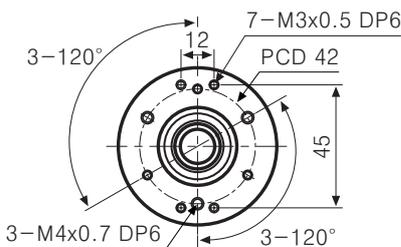
■ Shaft Clamping type



■ Shaft Synchro type

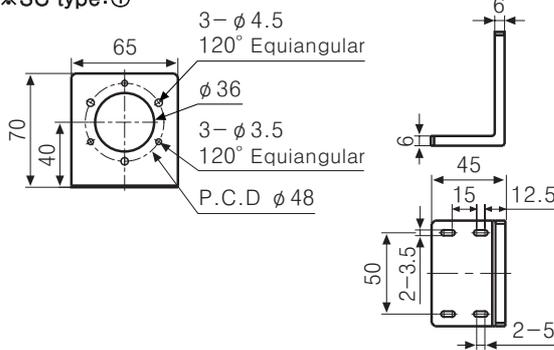


■ Hollow Built-in type

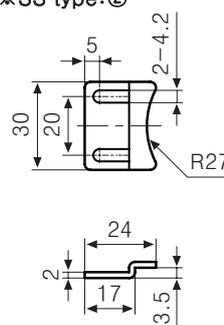


● Bracket

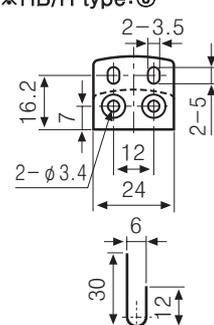
※SC type:①



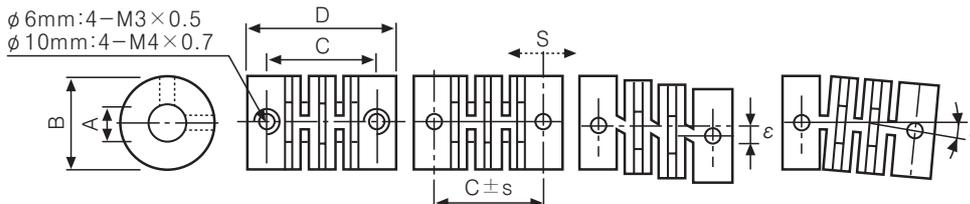
※SS type:②



※HB/H type:③



● Coupling (EP58SC10/EP58SS6 Series)



$s = 0.5\text{mm Max.}$
 $\varepsilon = 0.25\text{mm Max.}$
 $\theta = 5^\circ \text{ Max.}$

(Unit:mm)

Type	Item	A	B	C	D
EP58SS6 ∅6mm		$\phi 6^{+0.1}_0$	$\phi 15$	16.5	22
EP58SC10 ∅10mm		$\phi 10^{+0.1}_0$	$\phi 22$	18.2	25

※ When mounting the coupling to encoder shaft, if there is big eccentricity or bend between rotating encoder shaft and mate shaft, it may cause encoder and coupling's life cycle to shorten.
 ※ Do not load overweight on the shaft.

- (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