

# CB Series

## ROTARY ENCODER



- **OUTSIDE:  $\phi 38$ (Shaft  $\phi 6$ ), PCD30**
- **WIDE RANGE OF HIGH RESOLUTION MODELS**
- **HIGH RELIABILITY AND PERFORMANCE**
- **ECONOMICAL**
- **UNIVERSAL MOUNTING-FITS TO ALMOST ALL STANDARD MOUNTING DIMENSIONS**
- **SUITABLE FOR GENERAL OR INDUSTRIAL APPLICATIONS**

### ■ MODEL SELECTION

CB -

#### OUTPUT

- C : Open Collector Output
- V : Voltage Output
- D : Line Driver Output (5VDC only)

#### SUPPLY VOLTAGE

- H : DC12 - 24V (Open Collector Output only)
- L : DC5 - 12V

#### RESOLUTION

100	100 PPR
200	200 PPR
250	250 PPR
300	300 PPR
360	360 PPR

400	400 PPR
500	500 PPR
600	600 PPR
800	800 PPR

1000	1000 PPR
1024	1024 PPR
1200	1200 PPR
1500	1500 PPR

1800	1800 PPR
2000	2000 PPR
2048	2048 PPR
2500	2500 PPR

### ■ CIRCUIT OF OUTPUT SIGNAL

Vcc  
Sig  
0V

### ■ CONNECTION

Signal	COLOR OF WIRE	
	HC/LC/LV Type	LD Type
Vcc	Brown	Brown
0V	Blue	Blue
A	Black	Black
$\bar{A}$	—	Black/Red
B	White	White
$\bar{B}$	—	White/Red
Z	Orange	Orange
$\bar{Z}$	—	Orange/Red or Orange/White

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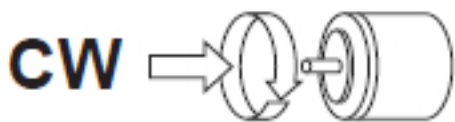
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## SPECIFICATIONS

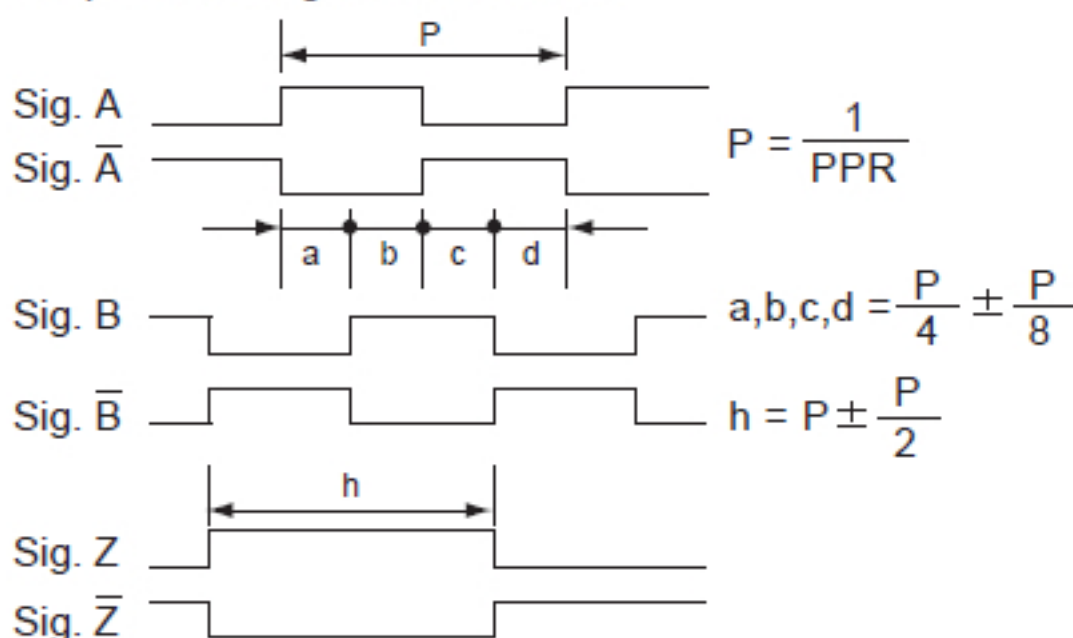
ELECTRICAL	Model	CB-□HC	CB-□LC	CB-□LV	CB-□LD
	Power Supply (Ripple 3% max.)	DC12-24V±10%	DC5-12V±10%		DC5V±10%
	Current Consumption	50 mA max.			
	Output	Open Collector		Voltage	Line Driver
	Output Signal	90° Quadrature + Zero Marking			
	Output Phase	A,B,Z			A,B,Z,Ā,Ḃ,Z̄
	Output Capacity	Sink Current: 35 mA max. Residual Voltage: 0.5V max.	Sink Current 20 mA max.	± 20 mA	
	Max. Applied Voltage	30V max.			
	Output Voltage	—	H: Supply Voltage - 1V min. L: 0.5 V max.	H: 2.5 V min. L: 0.5 V max.	
	Max. Freq. Response	100 kHz			
	Signal Rise/Fall Time (Pull-up resistor 2.2kΩ, 1m Cable)	1 μs max.			0.1 μs max.
	Insulation Resistance	20MΩ min. (DC100V Megger)			
	Output Impedance (Voltage Output only)	—	2.2kΩ	—	
	Cable Length	500 <sup>+10</sup> mm			
	Outside Diameter	φ 5.1 mm			
MECHANICAL	Max. Speed of Shaft	6000 rpm			
	Moment of Inertia	6x10 <sup>-7</sup> kg·m <sup>2</sup> max.			
	Starting Torque	1.0x10 <sup>-3</sup> N·m max.			
	Angular Acceleration	10 <sup>5</sup> rad/s <sup>2</sup>			
	Max. Shaft Loading	Radial	25N max.		
		Axial	15N max.		
Weight	Approx. 120g (with 0.5m Cable)				
ENVIRONMENTAL	Operating Temperature	-10 - +70 °C (Non-Condensing, Non-Freezing)			
	Storage Temperature	-25 - +80 °C (Non-Condensing, Non-Freezing)			
	Operating Humidity	35 - 95% (Non-Condensing)			
	Vibration Resistance	10~55 Hz, Width (P-P) 1.5mm (2 hours each in X,Y,Z Direction)			
	Shock Resistance	6 ms, 980 m/s <sup>2</sup> (3 times each in X,Y,Z Direction)			
	Protection	Equivalent to IP50			

## WAVEFORM



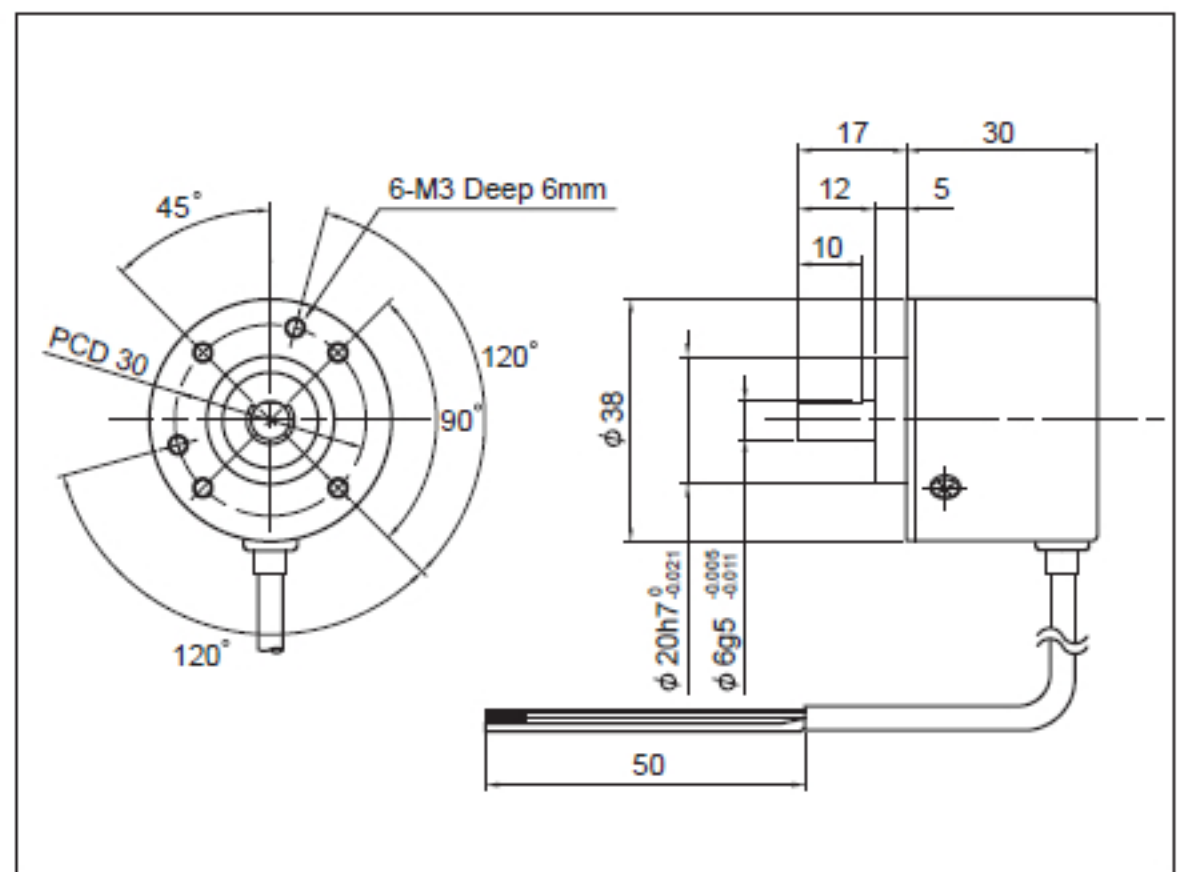
These figures show the waveforms when the shaft is rotated Clockwise (CW) when viewing towards the encoder shaft.

A pulse at Signal A should be completed within the period that Signal Z is at H-Level.



Phase  $\bar{A}, \bar{B}, \bar{Z}$  are applicable only for Type D Output.

## DIMENSIONS



\* Specifications Subject to Change Without Prior Notice  
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**LINE SEIKI CO., LTD.**

# CE SERIES

## INCREMENTAL ROTARY ENCODER

Outside Diameter 30mm (Shaft  $\phi 4$ ) PCD 22

Economical

Voltage output type

Suitable for General or Industrial Applications

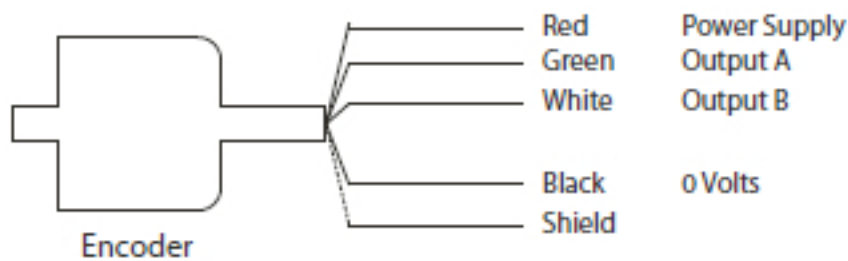


### STANDARD MODELS

PPR	Serial Number	CE (30 $\phi$ )
	60	CE - 60
	100	CE - 100
	200	CE - 200
	250	CE - 250
	300	CE - 300
	360	CE - 360
	400	CE - 400
	500	CE - 500

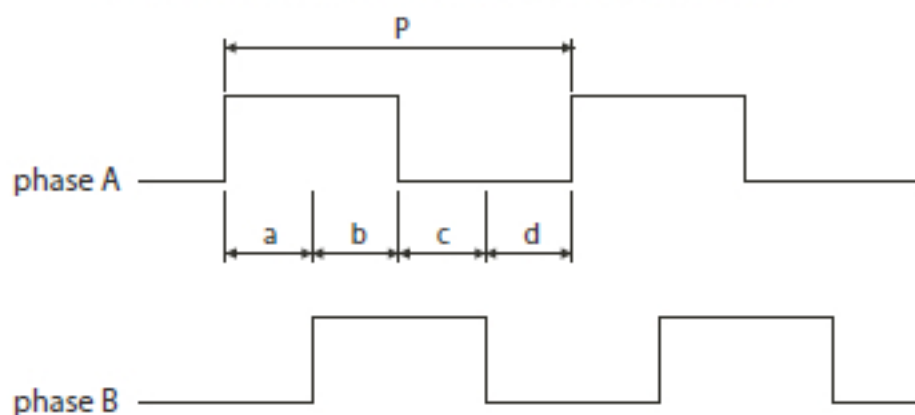
Add "S" at the end of Model No. for 1 signal output (only signal A).  
ex. CE-100S

### CONNECTIONS

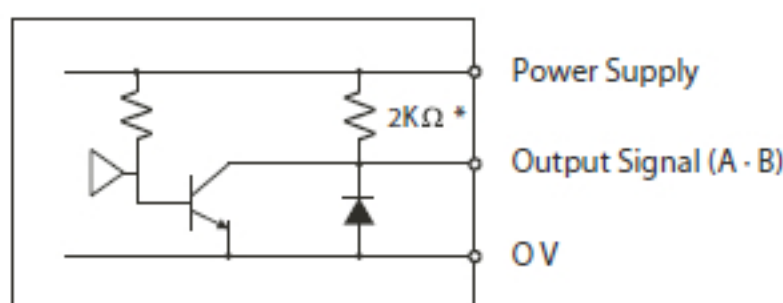


### OUTPUT WAVEFORM

→ clockwise rotation when viewed from the top of the shaft.



### OUTPUT WIRING



### HANDLING GUIDE

- To protect an encoder from any shock or vibration that may be caused by the joining machine, put the center of encoder's shaft and machine's shaft together without aberration and inclination.

Use our coupling models for the right joining.

- Be sure to wire the encoder correctly as a wrong wiring may cause the inner circuit breakdown.

- Do not wire the cable parallel with other power lines from the protection against the noise.

- Use a shield wire for the extension of cable.

### SPECIFICATIONS

		CE
Electrical	Power Supply	5 - 12V DC $\pm 5\%$
	Output Signal	Voltage / 90° Quadrature x 2 Signals
	Output Voltage	Logic 1 = 4 to 11V DC (Reduced -1V from Power Supply) Logic 0 = 0.5 VDC or less
	Maximum Response	60 KHz
	Current Consumption	40 mA maximum (20 mA for S Type)
	Sink Current	20 mA maximum
	Output Impedance	2 K $\Omega$
	Operating Temperature	-10°C - +70°C
	Mechanical	Maximum Speed of Shaft Input
Maximum of Inertia of Shaft		2g-cm <sup>2</sup> Maximum
Starting Torque		10gf-cm Maximum
Angular Speed		1 x 10 <sup>5</sup> rad / sec <sup>2</sup>
Maximum Radial Loading		1 Kg
Maximum Axial Loading		0.5 Kg
Vibration		10Hz to 50Hz · 1.5mm·2h
Shock		50 G / 11 ms
Weight (Approximately)		100 grams

· Signal A and Signal B are 90° quadrature

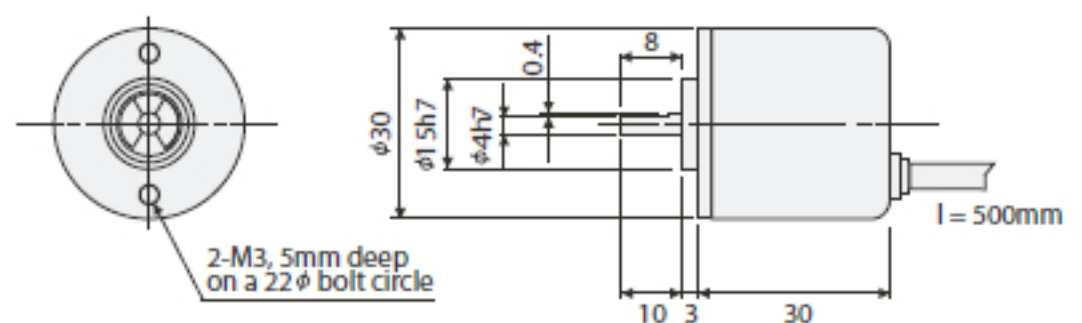
$$P = \frac{1}{PPR}$$

· Accuracy

$$a \cdot b \cdot c \cdot d = \frac{P}{4} \pm \frac{P}{8}$$

$$h = P \pm \frac{P}{2}$$

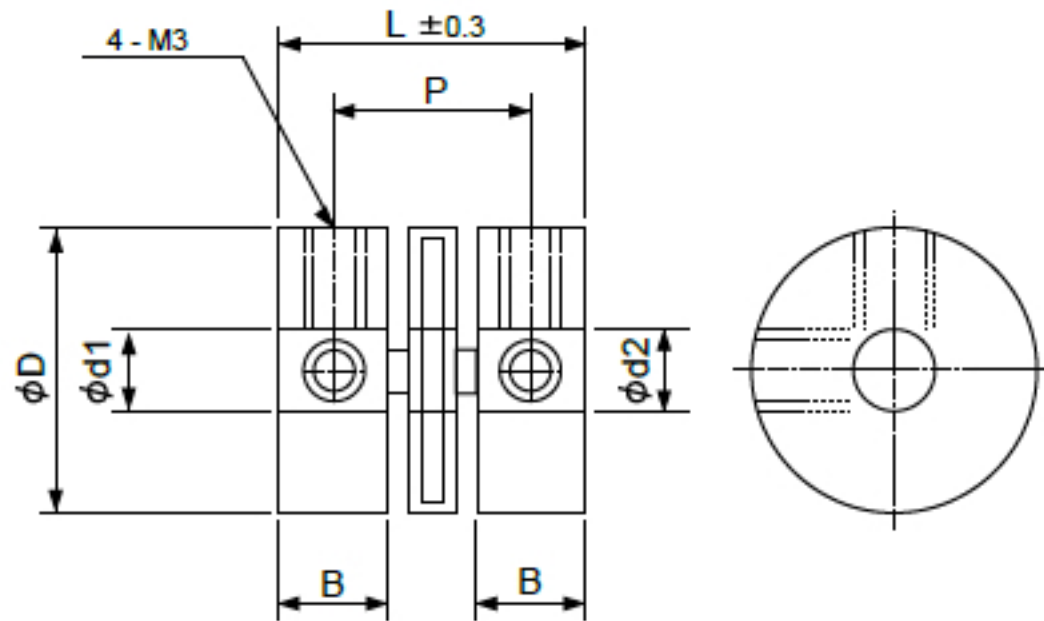
### DIMENSIONS



# ACCESSORIES for ROTARY ENCODERS

## COUPLING

### ● Dimensions (mm)



Model	d1	d2	D	L	P	B
C-44	4	4	14	15	9.5	5
C-46	4	6	15	16	9.8	5.5
C-55	5	5	14	15	9.8	5.2
C-56	5	6	15	16	9.8	5.5
C-66	6	6	15	16	9.8	5.5
C-68	6	8	18	18	13	5.5
C-88	8	8	18	18	13	5.5

\* Please confirm the diameter of the rotating shaft and the diameter of the encoder's shaft.

### ● Specification

Model	Rated Torque	Curved Angle of Shaft	Setting Screw	Torque for Screw	Material	Color	Weight
C-44	0.5 Nm	5° max	M3 x 4 4pcs	200m Nm	Polyacetal	Black	2.4g
C-46	0.7 Nm						3.0g
C-55	0.7 Nm						2.7g
C-56	0.7 Nm						3.0g
C-66	0.8 Nm		Glass Fiber Reinforced PBT	250m Nm			4.0g
C-68	1.0 Nm						
C-88	1.0 Nm						

\* Temp. Range : -20 - +60°C

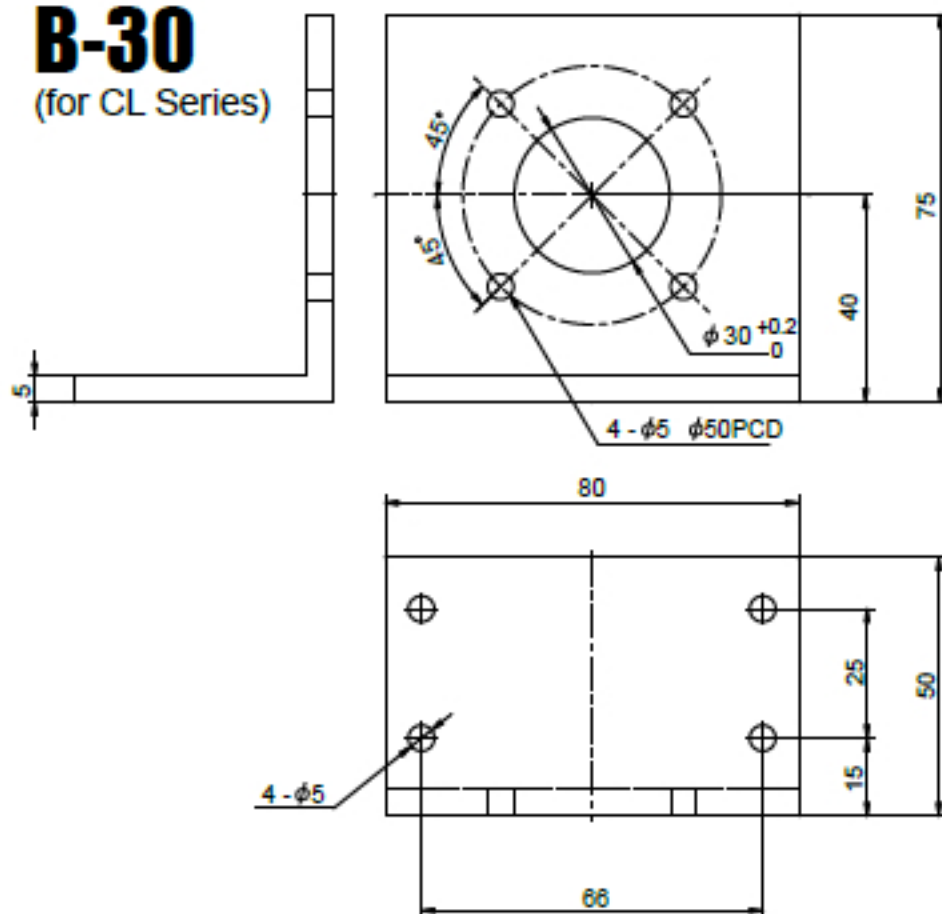
## MOUNTING BRACKET

\* Bracket is not used for CB Series. B-15 only used for CE Series.

### ● Dimensions (mm)

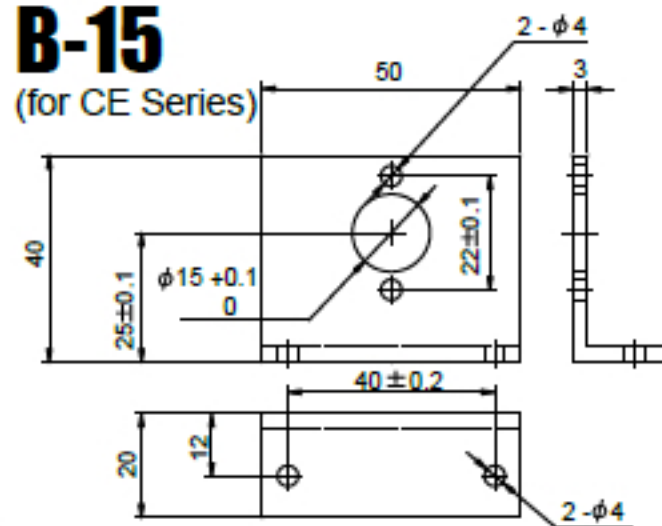
#### B-30

(for CL Series)



#### B-15

(for CE Series)



### ● Material : Aluminum

### ● Installation Method

