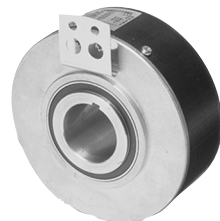


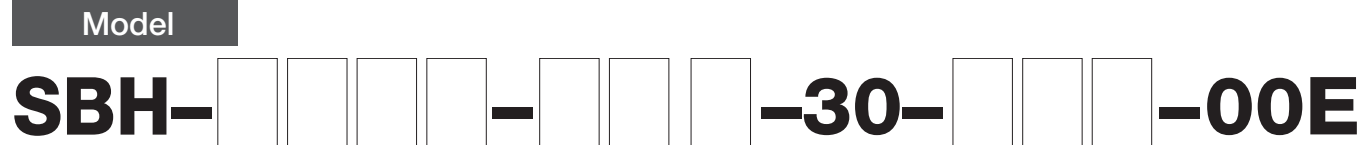
**BUILT-IN TYPE**

**SBH Model**



**Large Size Model**

- The Largest Shaft Diameter 30mm.
- High Resolution up to 10000 P/R.



Resolution

0512	512 P/R
1024	1024 P/R
4096	4096 P/R *
8192	8192 P/R *
100	10000 P/R *

\*Line Driver Only

Cable Length

- 050 : 500mm
- 100 : 1000mm
- 300 : 3000mm

Output Mode

- No Indication : Voltage Output
- C : Open Collector Output
- D : Line Driver Output
- T : Push-Pull Output

Signals

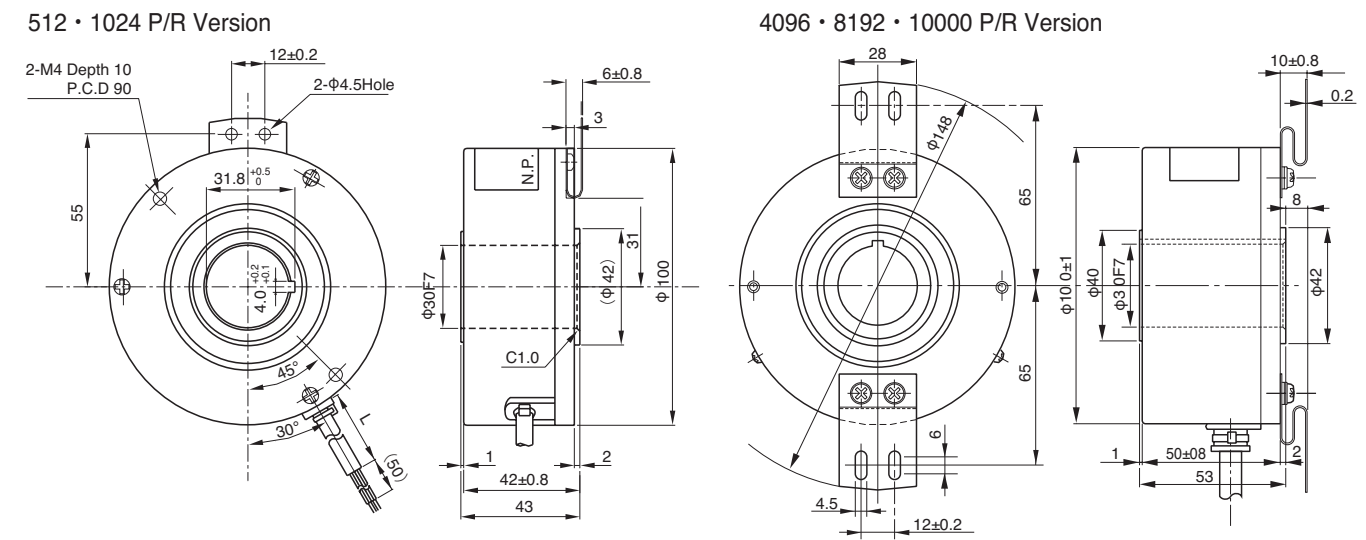
- 2 : AB90° Phase Difference
- 2M : AB90° Phase Difference + Index Signal
- 5M : AB90° Phase Difference + Index Signal

Hollow Shaft Diameter 30 : φ30

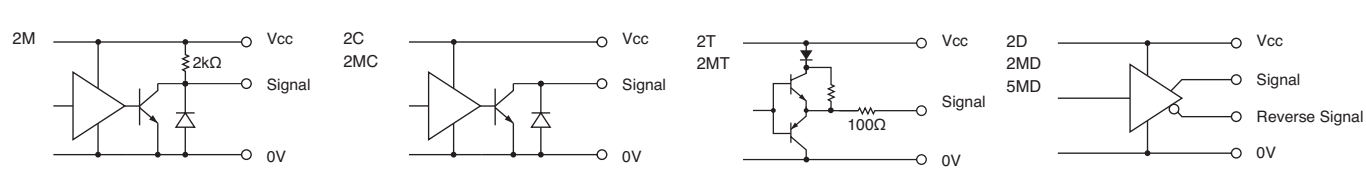
Complying with RoHS

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**External Dimension**



**Output Circuit**



**Electrical Spec**

TYPE	2M	2C·2MC	2T·2MT	2D·2MD	2MD(4096P/R)	5MD
Power Supply(Vcc)	DC5V±10%		DC 10.8~13.2 V	DC 4.75~5.25 V	DC 12V±10%	DC 5V±10%
Current Consumption	45 mA Max		60 mA Max	150 mA Max	270 mA Max	210 mA Max
Output Voltage	"H"	Vcc -1V Min	-	Vcc -2.5V Min	2.5 V Min	
	"L" *1	0.5V Max		3 V Max	0.5 V Max	
Maximum Sink Current	20mA		40mA	20 mA		
Rise & Fall Time	1 μs Max			200 ns Max		
Maximum Frequency Response	200kHz	150kHz	200kHz	35kHz	68.27 kHz	

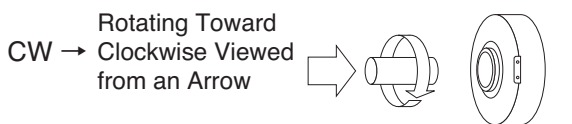
\*1) at Maximum Sink Current

**Electrical Connections**

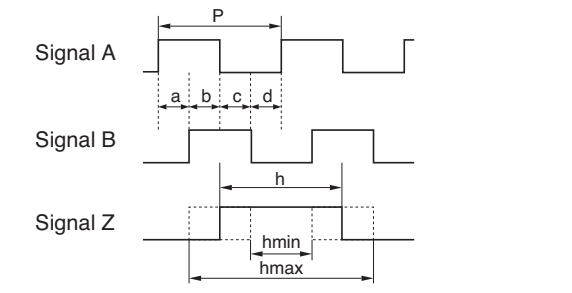
Color	Signal
Red	Power Supply(Vcc)
Black	0V
Blue or Green	Signal A
White	Signal B
Yellow	Signal Z
Shield	F. G

\*Contact us.

**Wave Form**



Rising point of A-Signal is always at one point while Z-Signal is at H-Level in CW.

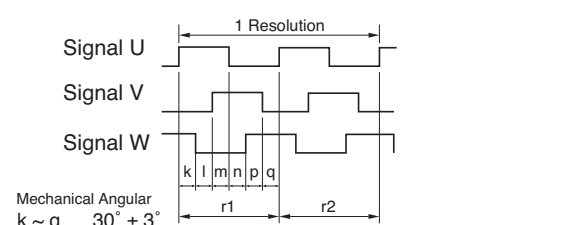


$$P = \frac{1}{\text{Resolution}}$$

$$a, b, c, d = \frac{P}{4} \pm \frac{P}{8} \quad \frac{P}{2} \leq h \leq \frac{3P}{2}$$

Wave Ratio (Duty); 50 ± 25 (%)

Only for 5M  
•When UVW phases output are 4 poles at 120°.



Mechanical Angular k ~ q 30° ± 3°  
r1, r2 180° ± 1°  
Position Relation between U and Z phases  
Mechanical Angular 0° ± 2°  
\* A B Z U V W signal are reverse signal of ABZUVW.

**Environmental Spec**

	512 • 1024 P/R	4096•8192•10000 P/R
Starting Torque	7.35x10 <sup>-2</sup> N · m Max	49x10 <sup>-3</sup> N · m Max
Angular Acceleration	1x10 <sup>4</sup> rad/s <sup>2</sup>	
Shaft Loading	Thrust	19.6N / 9.8N
	Radial	39.2N / 19.6N
Moment of Inertia	1.5x10 <sup>-4</sup> kg · m <sup>2</sup>	1.8x10 <sup>-4</sup> kg · m <sup>2</sup>
Maximum Permissible Speed	Continuous : 500min <sup>-1</sup> Instantaneous : 2500min <sup>-1</sup>	500min <sup>-1</sup>
Net Weight(Without Cable)	1kg Max	

**Environmental Spec**

	512•1024 P/R	4096•8192•10000 P/R
Operating Temperature	-10°C~+70°C	
Storage Temperature	-20°C~+80°C	-20°C~+85°C
Humidity	RH 85% Max No Condensation	
Vibration	50 Hz / 1.5mm X,Y,Z Each 2h	
Shock	490m/s <sup>2</sup> ,11ms X, Y, Z Each 3 times	