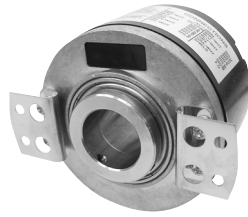


**BUILT-IN TYPE**

**SBE<sub>Model</sub>**

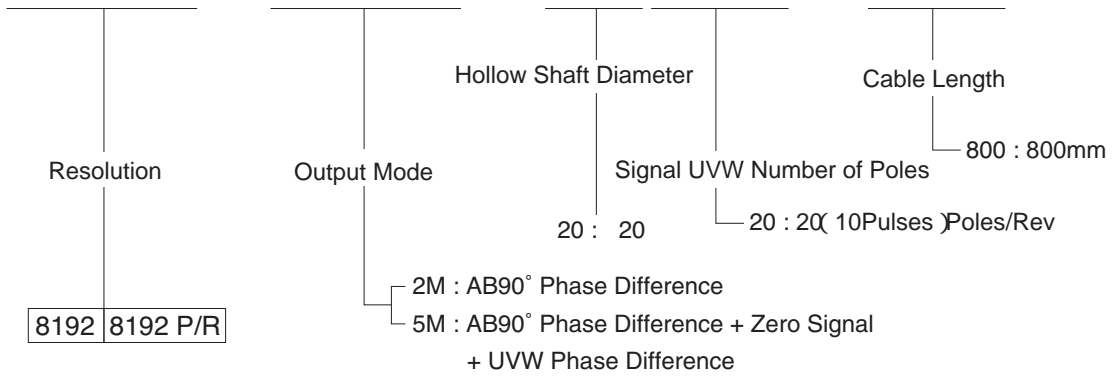


**Economical Model**

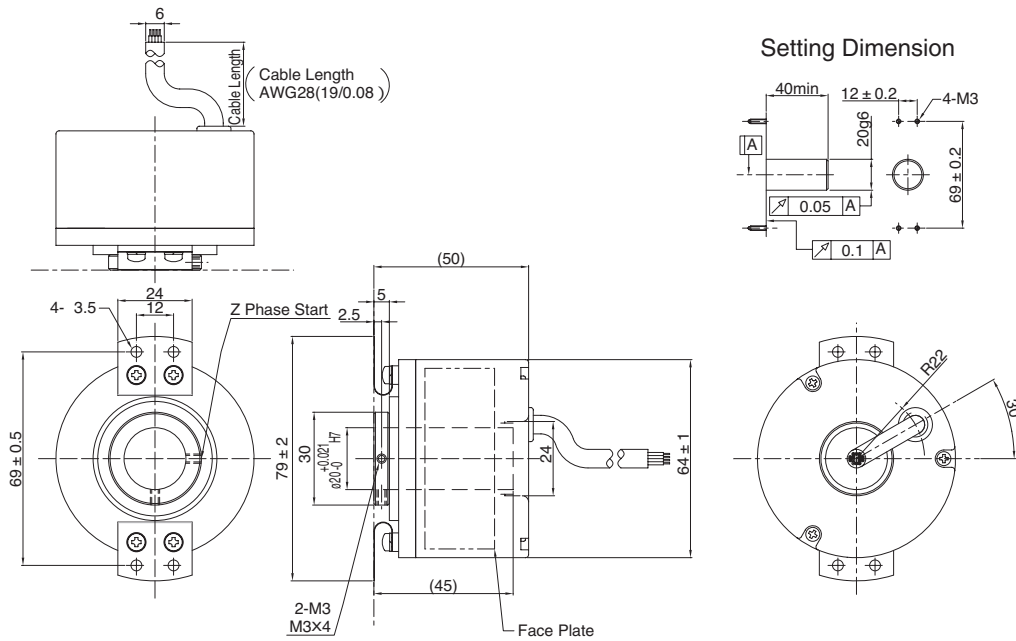
- Economical Version of Built-in.
- Big Sinking Current.(100mA)

**Model**

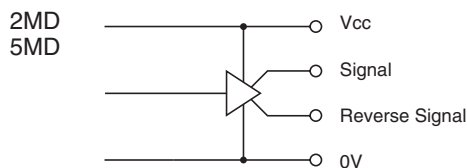
**SBE - 8192 - D - 20 - 800-00**



**External Dimension**



**Circuit of Output Signal**



### Electrical Spec.

TYPE		2MD	5MD
Supply Voltage		DC4.75 ~ 5.25V	
Requirement		250 mA Max	
Output Voltage	“H”	2.5 V or More	
	“L” ※1	0.5 V Max	
Maximum Output Current		20 mA MAX	
Rise & Fall Time		200 ns Max	
Maximum Frequency Response		140 kHz	

※1) at Maximum Output Current

### Electrical Connections

#### 2MD

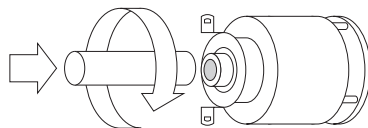
Color of Lead Wire	Description
Red	Power Source
Black	0V Common
Green	Signal A
Green or White	Signal Ā
Gray	Signal B
Gray or White	Signal B̄
Yellow	Signal Z
Yellow or White	Signal Z̄
Shielding	FG

#### 5MD

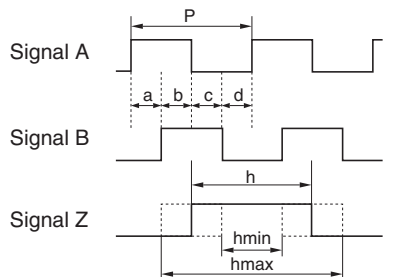
Color of Lead Wire	Description
Shielding	FG
Red	Power Source
Red or White	0V Common
Black	Signal A
Black or White	Signal Ā
Green	Signal B
Green or White	Signal B̄
Yellow	Signal Z
Yellow or White	Signal Z̄
Brown	Signal U
Brown or White	Signal Ū
Blue	Signal V
Blue or White	Signal V̄
Gray	Signal W
Gray or White	Signal W̄

### Wave Form.

CW Rotating Toward Clockwise  
Viewed from an Arrow



2MD  
5MD

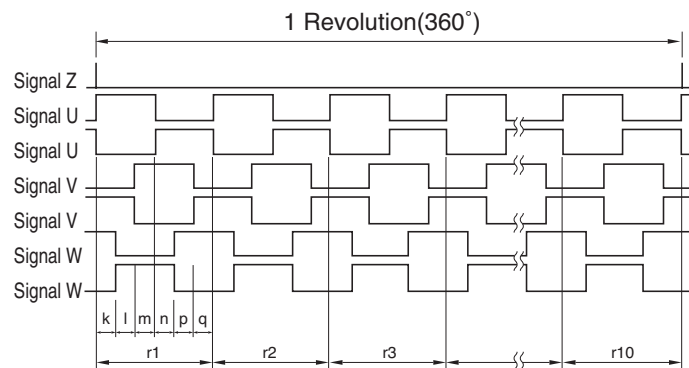


$$P = \frac{1}{1\text{Resolution}}$$

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

Wave Ratio (Duty); 50 ± 25 (%)

When UVW phases output are 20 poles



Mechanical Angular k ~ q 6° ± 1° Position Relation between U and Z phases  
r1, r10 36° ± 1° Mechanical Angular 0° ± 1°

### Mechanical Spec.

Starting Torque		9.8×10 <sup>-3</sup> N · m Max
Shaft Loading	Thrust axial	29.4N
	Radial	49N
Moment of Inertia		3.2×10 <sup>-4</sup> kg · m <sup>2</sup>
Maximum RPM		1000r/min
Net Weight		500g Max

### Environmental Spec.

Operating Temperature	-10°C ~ +70°C
Storage Temperature	-20°C ~ +80°C
Humidity	RH 85% Max No Condensation
Vibration	10~55 Hz / 1.5mm 2 h
Shock	490m/s <sup>2</sup> , 11ms X, Y, Z Each 3 times