



# S30 Series



Rotary Encoder

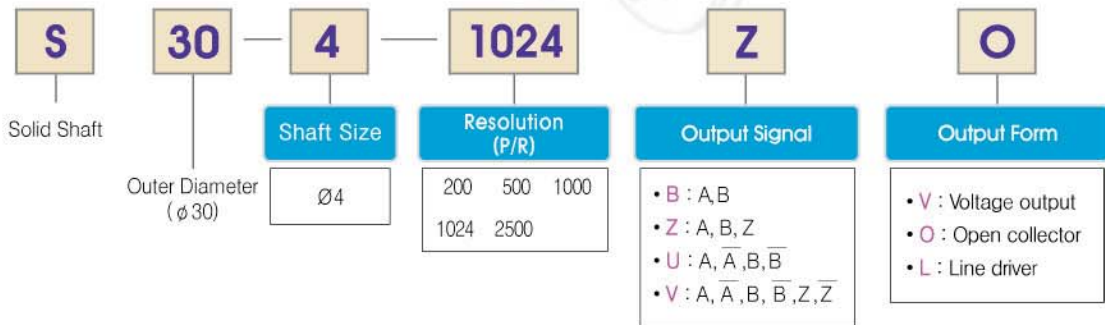
### Application

- Industrial application
- Measuring instruments

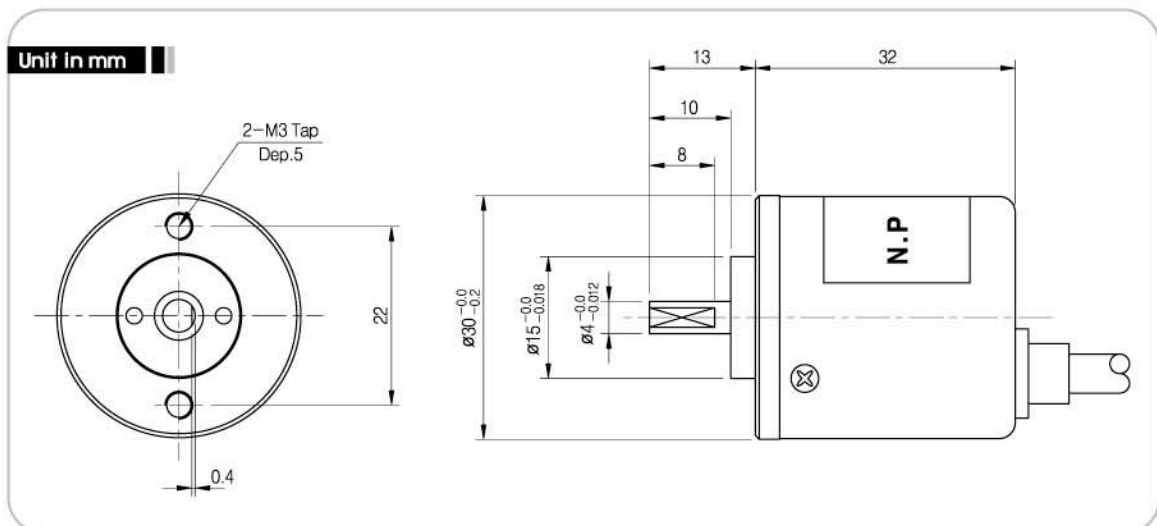
### Features

- Small model
- Various resolution

## Model



## External Dimension





## Specifications

Electrical Spec.			
Resolution	200 ~ 2500 P/R		
Out-put type	Output Form	Power Supply	Consuming Current
	Voltage Output Open Collector	DC +12V	80mA Max.
	Line Driver	DC +5V	150mA Max.
Maximum Response Frequency	150 kHz		
Cable Length	1m		

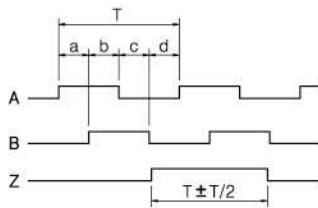
Mechanical Spec.	
Starting Torque	50g-cm Max.
Maximum number of revolution	3000 rpm
Allowable Shaft Load	Radial : 1.8kg Max. Axial : 0.9kg Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	100G
Degree of Protection	IP50

## Output Phase Shift

### Voltage Output, Open Collector

$$a + b, c + d = T/2 \pm T/8$$

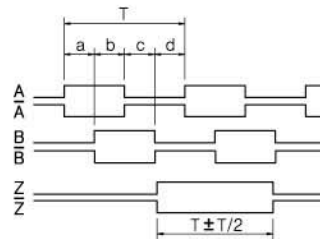
$$a, b, c, d = T/4 \pm T/8$$



### Line Driver

$$a + b, c + d = T/2 \pm T/8$$

$$a, b, c, d = T/4 \pm T/8$$



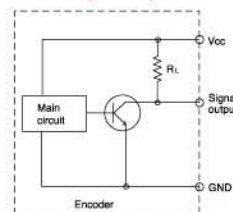
CW (Viewed from Shaft End)

## Connection Table

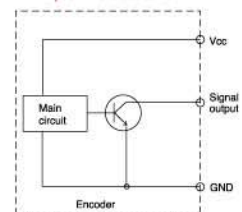
Cable's Color	Connection Table	
	Voltage Output Open Collector	Line Driver
Red	DC +12V	DC +5V
Black	Ground	Ground
Green	A	A
Blue	-	$\bar{A}$
White	B	B
Pink	-	$\bar{B}$
Yellow	Z	Z
Orange	-	$\bar{Z}$
Shield	Case Shield	

## Output Circuit

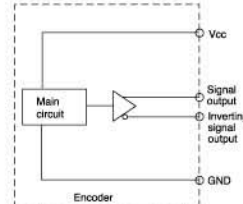
### Voltage Output



### Open Collector



### Line Driver





# S40 Series



Rotary Encoder

### Application

- Industrial application
- Measuring instruments

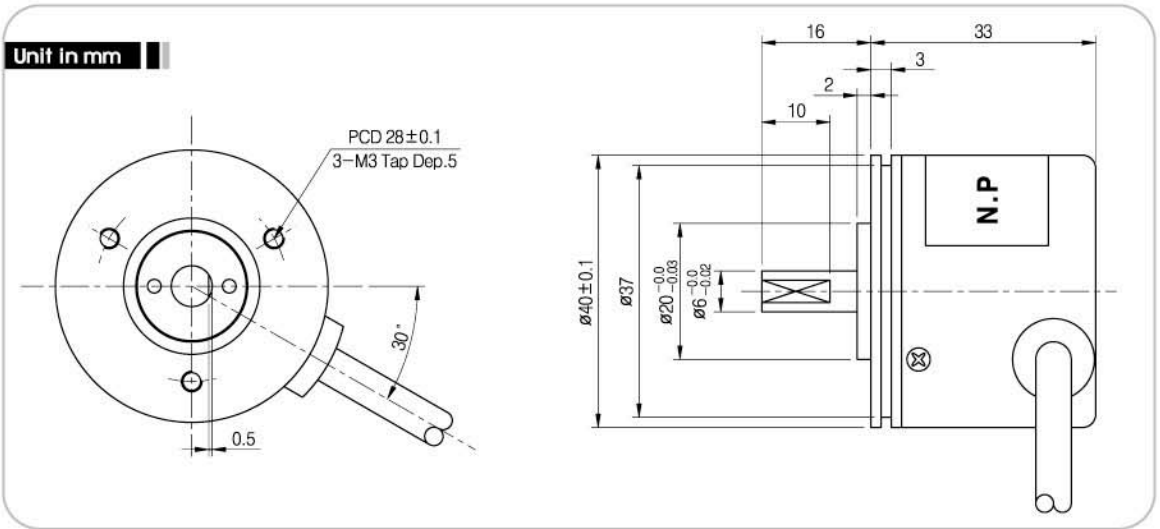
### Features

- Small model
- Wide ranging power source
- Various resolution

### Model

<b>S</b>	<b>40</b>	<b>6</b>	<b>3000</b>	<b>Z</b>	<b>O</b>																														
Solid Shaft	Outer Diameter (φ40)	Shaft Size	Resolution (P/R)	Output Signal	Output Form																														
		φ6	<table border="1"> <tr><td>0010</td><td>0030</td><td>0048</td></tr> <tr><td>0050</td><td>0060</td><td>0072</td></tr> <tr><td>0075</td><td>0100</td><td>0120</td></tr> <tr><td>0125</td><td>0192</td><td>0200</td></tr> <tr><td>0250</td><td>0256</td><td>0300</td></tr> <tr><td>0360</td><td>0400</td><td>0500</td></tr> <tr><td>0512</td><td>0600</td><td>0720</td></tr> <tr><td>1000</td><td>1024</td><td>1200</td></tr> <tr><td>2000</td><td>2048</td><td>2500</td></tr> <tr><td>3000</td><td>3600</td><td></td></tr> </table>	0010	0030	0048	0050	0060	0072	0075	0100	0120	0125	0192	0200	0250	0256	0300	0360	0400	0500	0512	0600	0720	1000	1024	1200	2000	2048	2500	3000	3600		<ul style="list-style-type: none"> <li>• B : A, B</li> <li>• Z : A, B, Z</li> <li>• Z̄ : A, B, Z̄</li> <li>• U : A, Ā, B, B̄</li> <li>• V : A, Ā, B, B̄, Z, Z̄</li> </ul>	<ul style="list-style-type: none"> <li>• V : Voltage output</li> <li>• O : Open collector</li> <li>• T : Totem pole</li> <li>• L : Line driver</li> <li>• C : Complemental</li> </ul>
0010	0030	0048																																	
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0360	0400	0500																																	
0512	0600	0720																																	
1000	1024	1200																																	
2000	2048	2500																																	
3000	3600																																		

### External Dimension





## Specifications

Electrical Spec.			
Resolution	10 ~ 3600 P/R		
Output type	Output Form	Power Supply	Consuming Current
	Voltage Output Open Collector Totem pole	DC +5V ~ +24V	70mA Max.
	Line Driver	DC +5V ± 5%	150mA Max.
Maximum Response Frequency	10 ~ 2048P/R	150 kHz	
	2500~ 3600P/R	300 kHz	
Cable Length	1m		

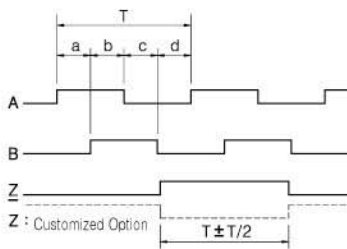
Mechanical Spec.	
Starting Torque	50g-cm Max.
Maximum number of revolution	7000 rpm
Allowable Shaft Load	Radial : 2.2kg Max. Axial : 1.1kg Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	50G
Degree of Protection	IP50

\* Complemental Power Supply : DC+15V

## Output Phase Shift

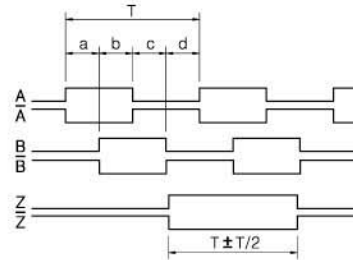
### Voltage Output, Open Collector, Totem Pole

$$\begin{aligned} a + b, c + d &= T/2 \pm T/10 \\ a, b, c, d &= T/4 \pm T/10 \end{aligned}$$



### Line Driver

$$\begin{aligned} a + b, c + d &= T/2 \pm T/10 \\ a, b, c, d &= T/4 \pm T/10 \end{aligned}$$



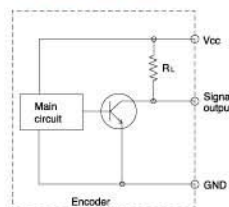
→ CW (Viewed from Shaft End)

## Connection Table

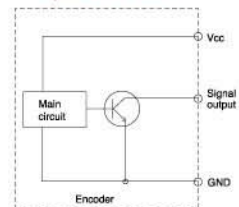
Cable's Color	Connection Table	
	Voltage Output Open Collector Totem Pole	Line Driver
Red	DC +5V ~ +24V	DC +5V
Black	Ground	Ground
Green	A	A
Blue	-	$\bar{A}$
White	B	B
Pink	-	$\bar{B}$
Yellow	Z	Z
Orange	-	$\bar{Z}$
Shield	Case Shield	

## Output Circuit

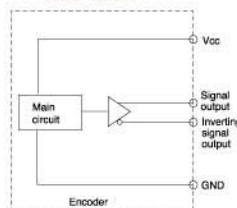
### Voltage Output



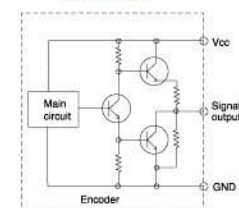
### Open Collector



### Line Driver



### Totem Pole





# S48 Series



Rotary Encoder

### Application

- Industrial application
- Measuring instruments

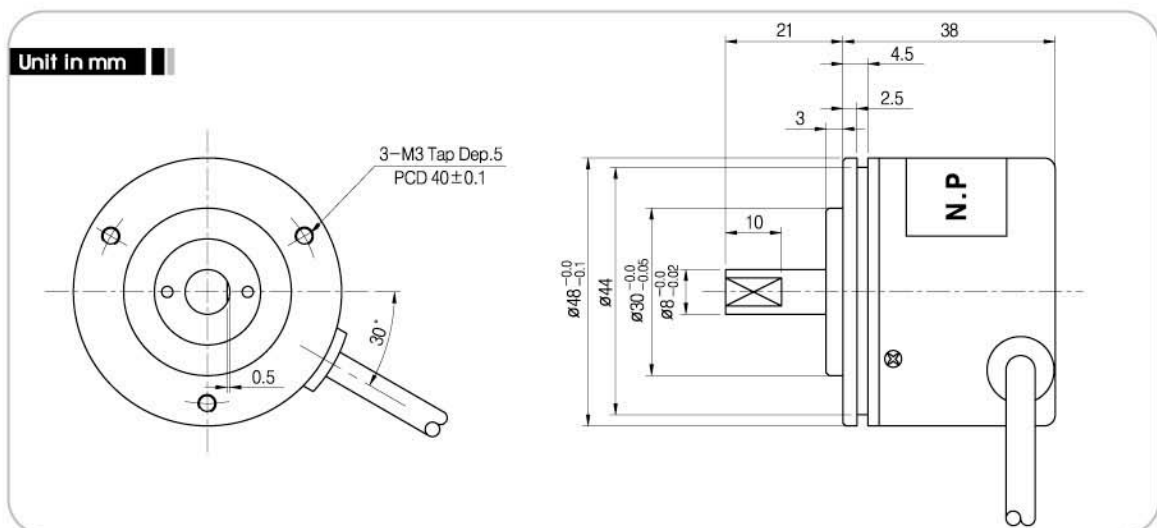
### Features

- High resolution
- Wide ranging power source
- Customized design available

### Model

<b>S</b>	<b>48</b>	<b>8</b>	<b>6000</b>	<b>Z</b>	<b>O</b>																																	
Solid Shaft	Outer Diameter (ø 48)	Shaft Size	Resolution (P/R)	Output Signal	Output Form																																	
		Ø8	<table border="1"> <tr><td>0010</td><td>0030</td><td>0048</td></tr> <tr><td>0050</td><td>0060</td><td>0072</td></tr> <tr><td>0075</td><td>0100</td><td>0120</td></tr> <tr><td>0125</td><td>0192</td><td>0200</td></tr> <tr><td>0250</td><td>0256</td><td>0300</td></tr> <tr><td>0360</td><td>0400</td><td>0500</td></tr> <tr><td>0512</td><td>0600</td><td>0720</td></tr> <tr><td>1000</td><td>1024</td><td>1200</td></tr> <tr><td>2000</td><td>2048</td><td>2500</td></tr> <tr><td>3000</td><td>3600</td><td>5000</td></tr> <tr><td>6000</td><td></td><td></td></tr> </table>	0010	0030	0048	0050	0060	0072	0075	0100	0120	0125	0192	0200	0250	0256	0300	0360	0400	0500	0512	0600	0720	1000	1024	1200	2000	2048	2500	3000	3600	5000	6000			<ul style="list-style-type: none"> <li>• <b>B</b> : A, B</li> <li>• <b>Z</b> : A, B, Z</li> <li>• <math>\overline{\text{Z}}</math> : A, B, <math>\overline{\text{Z}}</math></li> <li>• <b>U</b> : A, <math>\overline{\text{A}}</math>, B, <math>\overline{\text{B}}</math></li> <li>• <b>V</b> : A, <math>\overline{\text{A}}</math>, B, <math>\overline{\text{B}}</math>, Z, <math>\overline{\text{Z}}</math></li> </ul>	<ul style="list-style-type: none"> <li>• <b>V</b> : Voltage output</li> <li>• <b>O</b> : Open collector</li> <li>• <b>T</b> : Totem pole</li> <li>• <b>L</b> : L ine driver</li> <li>• <b>C</b> : C omplemental</li> </ul>
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2000	2048	2500																																				
3000	3600	5000																																				
6000																																						

### External Dimension





## Specifications

Electrical Spec.			
Resolution	10 ~ 6000 P/R		
Output type	Output Form	Power Supply	Consuming Current
	Voltage Output Open Collector Totem Pole	DC +5V ~ +24V	70mA Max.
	Line Driver	DC +5V ± 5%	150mA Max.
Maximum Response Frequency	10 ~ 2048P/R	150 kHz	
	2500 ~ 6000P/R	300 kHz	
Cable Length	1m		

Mechanical Spec.	
Starting Torque	80g-cm Max.
Maximum number of revolution	6000 rpm
Allowable Shaft Load	Radial : 2.5kg Max. Axial : 1.3kg Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	100G
Degree of Protection	IP50

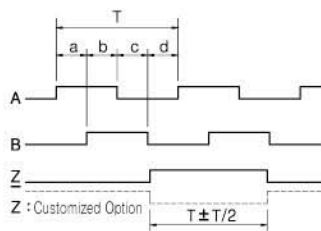
- \* Complimental Power Supply : DC+15V
- \* 5000 P/R Power Supply : DC+5 ~ +15V

## Output Phase Shift

### Voltage Output, Open Collector, Totem Pole

$$a + b, c + d = T/2 \pm T/10$$

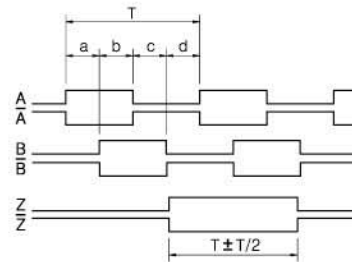
$$a, b, c, d = T/4 \pm T/10$$



### Line Driver

$$a + b, c + d = T/2 \pm T/10$$

$$a, b, c, d = T/4 \pm T/10$$

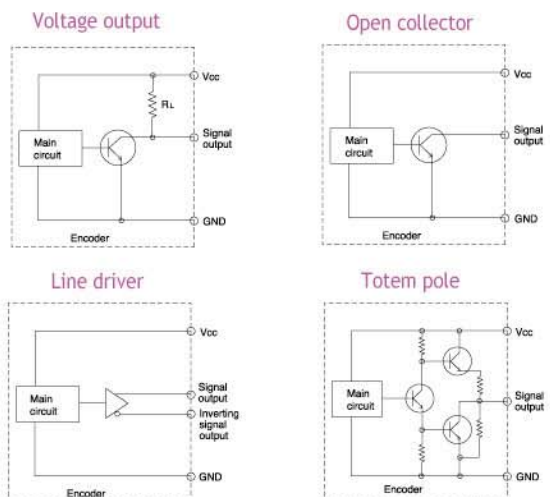


→ CW (Viewed from Shaft End)

## Connection Table

Cable's Color	Connection Table	
	Voltage Output Open Collector Totem Pole	Line Driver
Red	DC +5V ~ +24V	DC +5V
Black	Ground	Ground
Green	A	A
Blue	-	$\bar{A}$
White	B	B
Pink	-	$\bar{B}$
Yellow	Z	Z
Orange	-	$\bar{Z}$
Shield	Case Shield	

## Output Circuit





# S66 Series



Rotary Encoder

### Application

- Industrial application
- Measuring instruments

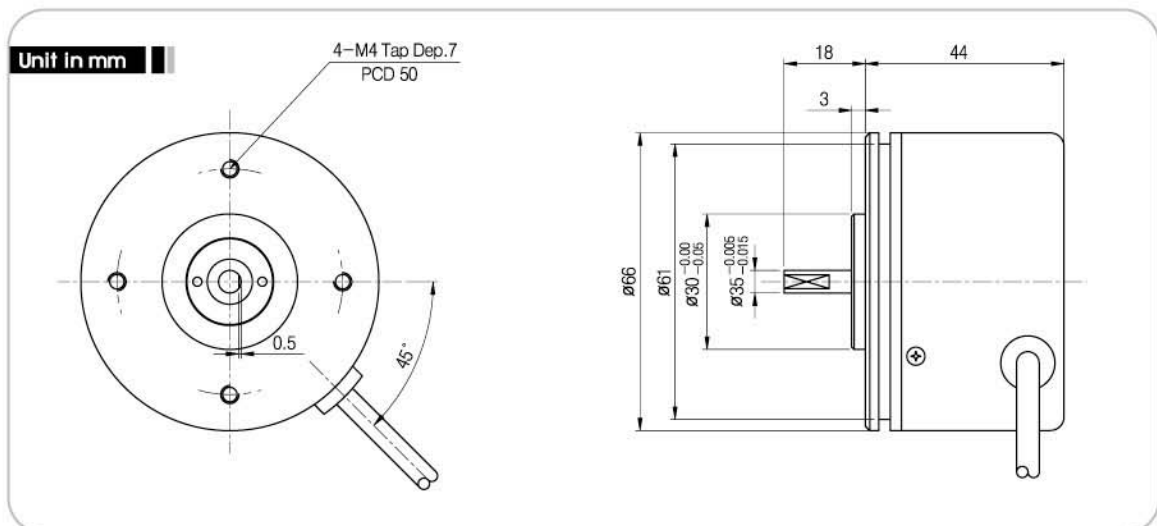
### Features

- Small shaft model
- Wide range of power source
- Customized design available

### Model

<b>S</b>	<b>66</b>	<b>5</b>	<b>6000</b>	<b>Z</b>	<b>O</b>																																	
Solid Shaft	Outer Diameter (ø66)	Shaft Size	Resolution (P/R)	Output Signal	Output Form																																	
		ø5	<table border="1"> <tr><td>0010</td><td>0030</td><td>0048</td></tr> <tr><td>0050</td><td>0060</td><td>0072</td></tr> <tr><td>0075</td><td>0100</td><td>0120</td></tr> <tr><td>0125</td><td>0192</td><td>0200</td></tr> <tr><td>0250</td><td>0256</td><td>0300</td></tr> <tr><td>0360</td><td>0400</td><td>0500</td></tr> <tr><td>0512</td><td>0600</td><td>0720</td></tr> <tr><td>1000</td><td>1024</td><td>1200</td></tr> <tr><td>2000</td><td>2048</td><td>2500</td></tr> <tr><td>3000</td><td>3600</td><td>5000</td></tr> <tr><td>6000</td><td></td><td></td></tr> </table>	0010	0030	0048	0050	0060	0072	0075	0100	0120	0125	0192	0200	0250	0256	0300	0360	0400	0500	0512	0600	0720	1000	1024	1200	2000	2048	2500	3000	3600	5000	6000			<ul style="list-style-type: none"> <li>• B : A, B</li> <li>• Z : A, B, Z</li> <li>• <math>\bar{Z}</math> : A, B, <math>\bar{Z}</math></li> <li>• U : A, <math>\bar{A}</math>, B, <math>\bar{B}</math></li> <li>• V : A, <math>\bar{A}</math>, B, <math>\bar{B}</math>, Z, <math>\bar{Z}</math></li> </ul>	<ul style="list-style-type: none"> <li>• V : Voltage output</li> <li>• O : Open collector</li> <li>• T : Totem pole</li> <li>• L : Line driver</li> <li>• C : Complementary</li> </ul>
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0512	0600	0720																																				
1000	1024	1200																																				
2000	2048	2500																																				
3000	3600	5000																																				
6000																																						

### External Dimension





## Specifications

Electrical Spec.			
Resolution	10 ~ 6000 P/R		
Output type	Output Form	Power Supply	Consuming Current
	Voltage Output Open Collector Totem Pole	DC +5V ~ +24V	70mA Max.
	Line Driver	DC +5V±5%	150mA Max.
Maximum Response Frequency	10 ~ 2048P/R	150 kHz	
	2500 ~ 6000P/R	300 kHz	
Cable Length	1m		

\* Complamental Power Supply : DC+15V

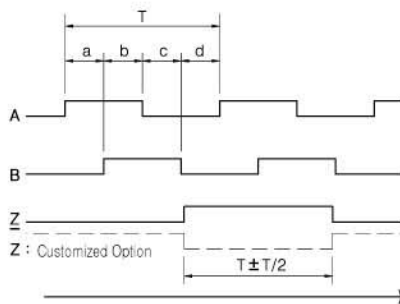
Mechanical Spec.	
Starting Torque	80g-cm Max.
Maximum number of revolution	5000 rpm
Allowable Shaft Load	Radial : 2.50kg Max. Axial : 1.3kg Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	50G
Degree of Protection	IP50

## Output Phase Shift

### Voltage Output, Open Collector, Totem Pole

$$a + b, c + d = T/2 \pm T/10$$

$$a, b, c, d = T/4 \pm T/10$$

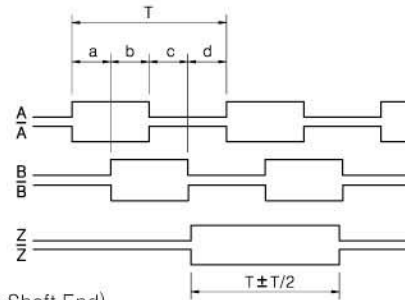


CW (Viewed from Shaft End)

### Line Driver

$$a + b, c + d = T/2 \pm T/10$$

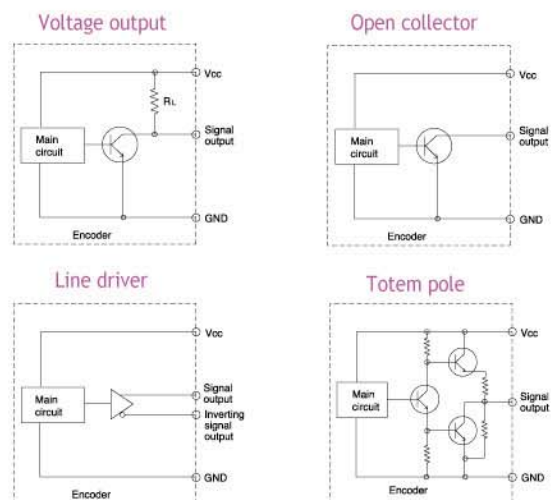
$$a, b, c, d = T/4 \pm T/10$$



## Connection Table

Cable's Color	Connection Table	
	Voltage Output Open Collector Totem Pole	Line Driver
Red	DC +5V ~ +24V	DC +5V
Black	Ground	Ground
Green	A	A
Blue	-	$\bar{A}$
White	B	B
Pink	-	$\bar{B}$
Yellow	Z	Z
Orange	-	$\bar{Z}$
Shield	Case Shield	

## Output Circuit







# S68 Series



Rotary Encoder

### Application

- Machine tools
- Industrial robots

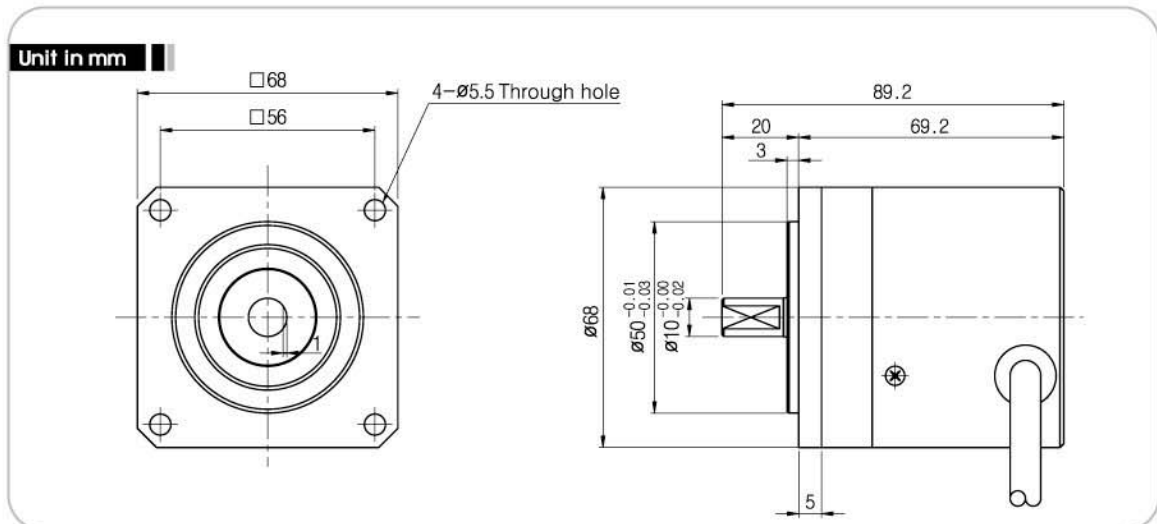
### Features

- Rigid bearing
- Various resolution

### Model

<b>S</b>	<b>68A</b>	<b>10</b>	<b>2048</b>	<b>Z</b>	<b>O</b>
Solid Shaft	Outer Diameter (ø 68)	Shaft Size	Resolution (P/R)	Output Signal	Output Form
		ø10	0100 0500 1000 1024 2000 2048	<ul style="list-style-type: none"> <li>• Z : A, B, Z</li> <li>• U : A, <math>\bar{A}</math>, B, <math>\bar{B}</math></li> <li>• V : A, <math>\bar{A}</math>, B, <math>\bar{B}</math>, Z, <math>\bar{Z}</math></li> </ul>	<ul style="list-style-type: none"> <li>• V : Voltage output</li> <li>• O : Open collector</li> <li>• T : Totem pole</li> <li>• L : Line driver</li> </ul>

### External Dimension





## Specifications

Electrical Spec.			
Resolution	100 ~ 2048 P/R		
Output type	Output Form	Power Supply	Consuming Current
	Voltage Output Open Collector	DC +12V ~ +15V	80mA Max.
	Totem Pole	DC +5V ~ +24V	
Line Driver	DC +5V ± 5%	150mA Max.	
Maximum Response Frequency	150 kHz Max.		
Cable Length	1m		

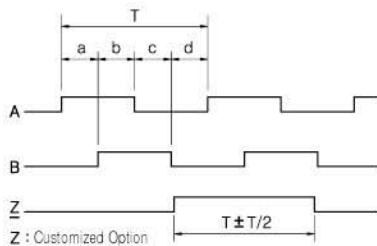
Mechanical Spec.	
Starting Torque	800g-cm Max.
Maximum number of revolution	3000 rpm
Allowable Shaft Load	Radial : 5.0kg Max. Axial : 5.0kg Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	50G
Degree of Protection	IP54

## Output Phase Shift

### Voltage Output, Open Collector, Totem Pole

$$a + b, c + d = T/2 \pm T/10$$

$$a, b, c, d = T/4 \pm T/10$$

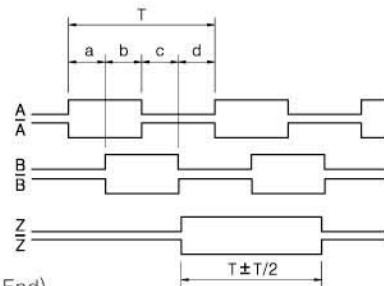


→ CW (Viewed from Shaft End)

### Line Driver

$$a + b, c + d = T/2 \pm T/10$$

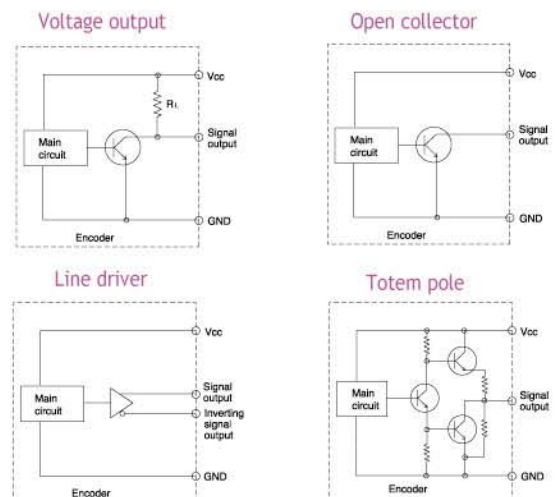
$$a, b, c, d = T/4 \pm T/10$$



## Connection Table

Cable's Color	Connection Table	
	Voltage Output Open Collector Totem Pole	Line Driver
Red	Refer to the above power supply's spec.	DC +5V
Black	Ground	Ground
Green	A	A
Blue	-	$\bar{A}$
White	B	B
Pink	-	$\bar{B}$
Yellow	Z	Z
Orange	-	$\bar{Z}$
Shield	Case Shield	

## Output Circuit





# S68 Series



Rotary Encoder

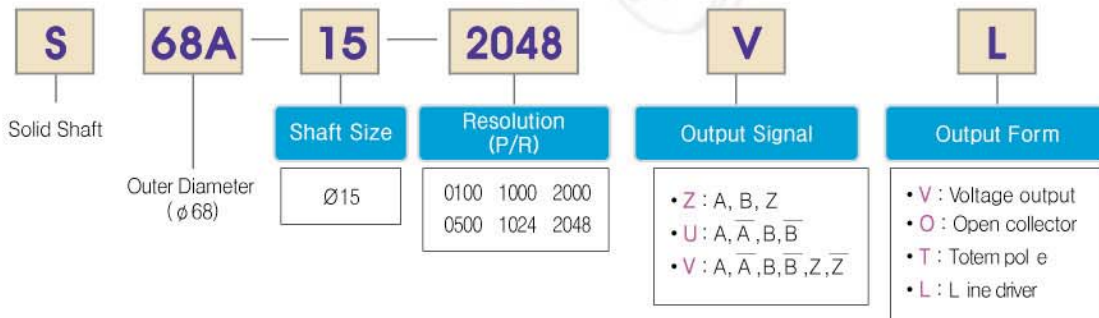
## Application

- Machine tools
- Industrial robots

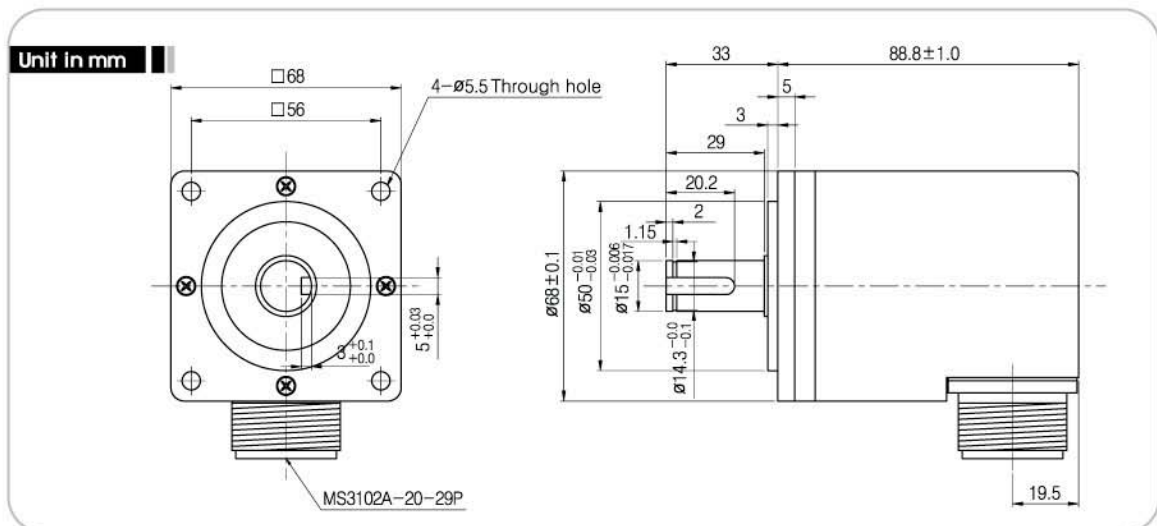
## Features

- Rigid bearing
- Water-proof construction
- Various resolution

## Model



## External Dimension





## Specifications

Electrical Spec.			
Resolution	100 ~ 2048 P/R		
Out-put type	Output Form	Power Supply	Consuming Current
	Voltage Output Open Collector	DC +12V ~ +15V	80mA Max.
	Totem Pole	DC +5V ~ +24V	
Line Driver	DC +5V	150mA Max.	
Maximum Response Frequency	150 kHz		
Connector	MS3102A-20-29P		

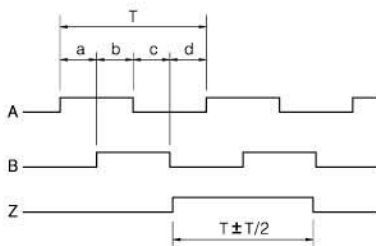
Mechanical Spec.	
Starting Torque	800g-cm Max.
Maximum number of revolution	8000 rpm
Allowable Shaft Load	Radial : 5.0kg Max. Axial : 5.0kg Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	50G
Degree of Protection	IP54

## Output Phase Shift

Voltage Output, Open Collector, Totem Pole

$$a + b, c + d = T/2 \pm T/10$$

$$a, b, c, d = T/4 \pm T/10$$

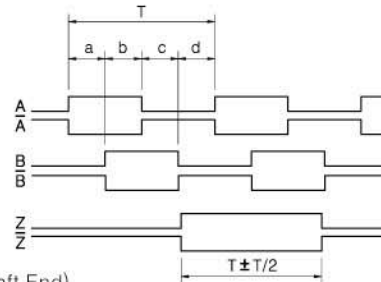


CW (Viewed from Shaft End)

Line Driver

$$a + b, c + d = T/2 \pm T/10$$

$$a, b, c, d = T/4 \pm T/10$$

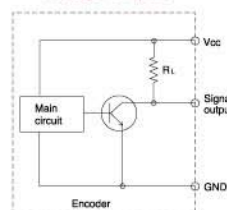


## Connection Table

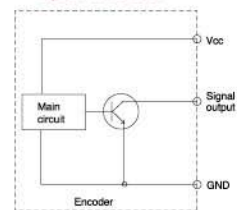
Pin code	Connection Table	
	Voltage Output Open Collector Totem Pole	Line Driver
H	Refer to the above power supply's spec.	DC +5V
K, M	Ground	Ground
A	A	A
N	-	$\bar{A}$
C	B	B
R	-	$\bar{B}$
B	Z	Z
P	-	$\bar{Z}$
T	Case Shield	

## Output Circuit

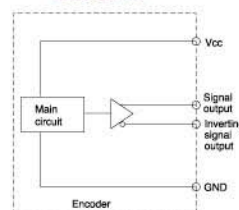
Voltage output



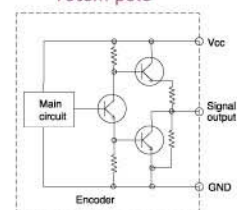
Open collector



Line driver



Totem pole





# S78 Series



Rotary Encoder

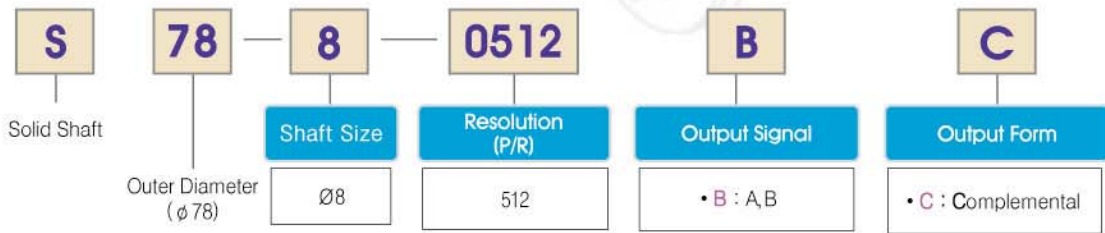
### Application

- Industrial application
- Elevator

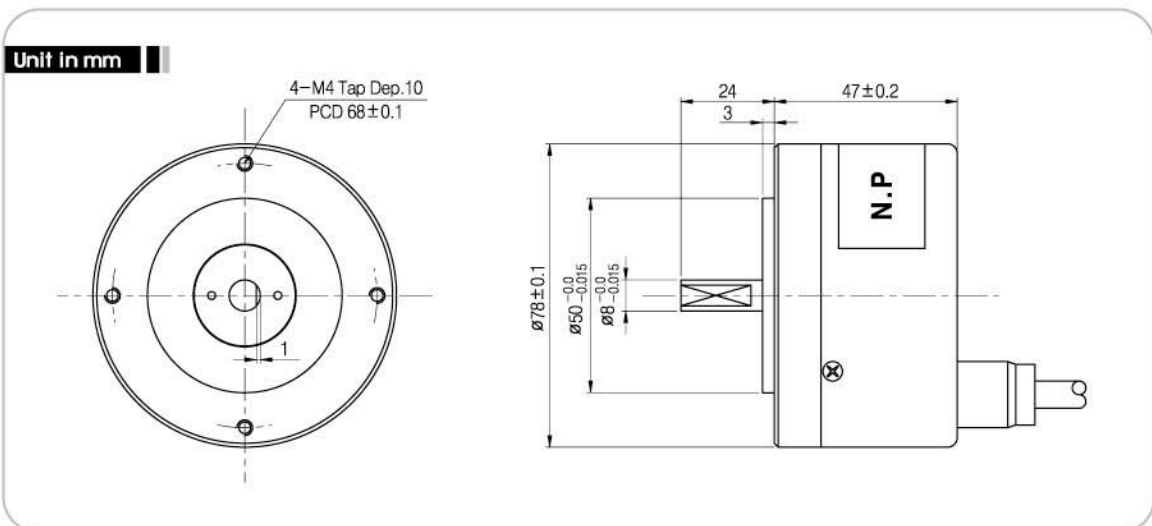
### Features

- Solid Shaft
- High reliability
- Customized design available

### Model



### External Dimension





## Specifications

Electrical Spec.			
Resolution	512 P/R		
Out-put type	Output Form	Power Supply	Consuming Current
	Complemental	DC +15V	100mA Max.
Maximum Response Frequency	150 kHz Max.		
Cable Length	8m		

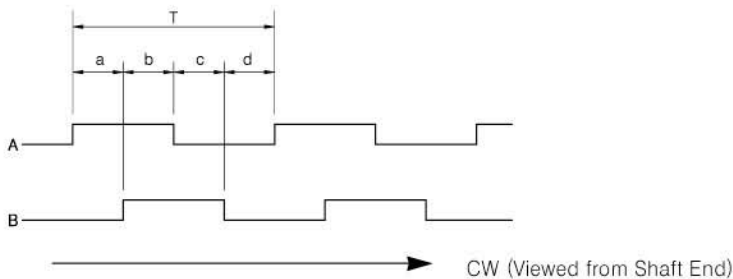
Mechanical Spec.	
Starting Torque	100g-cm Max.
Maximum number of revolution	5000 rpm
Allowable Shaft Load	Radial : 3.0kg Max. Axial : 1.5kg Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	100G
Degree of Protection	IP52

## Output Phase Shift

### Complemental

$$a + b, c + d = T/2 \pm T/8$$

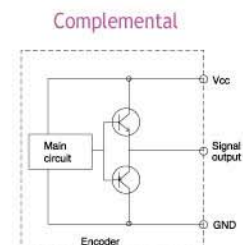
$$a, b, c, d = T/4 \pm T/8$$



## Connection Table

Cable's Color	Connection Table
	Complemental
Red	DC +15V
Black	Ground
Green	A
Orange	-
Yellow	B
White	-
Shield	Case Shield

## Output Circuit





# S128 Series



Rotary Encoder

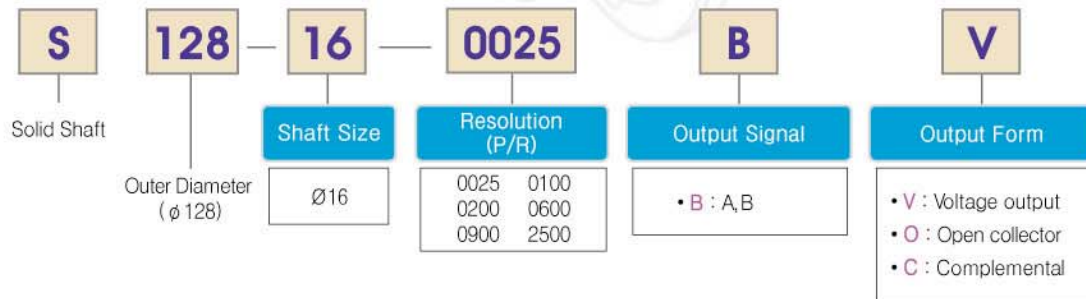
### Application

- Adjusting the position of iron steel line
- Machine tools

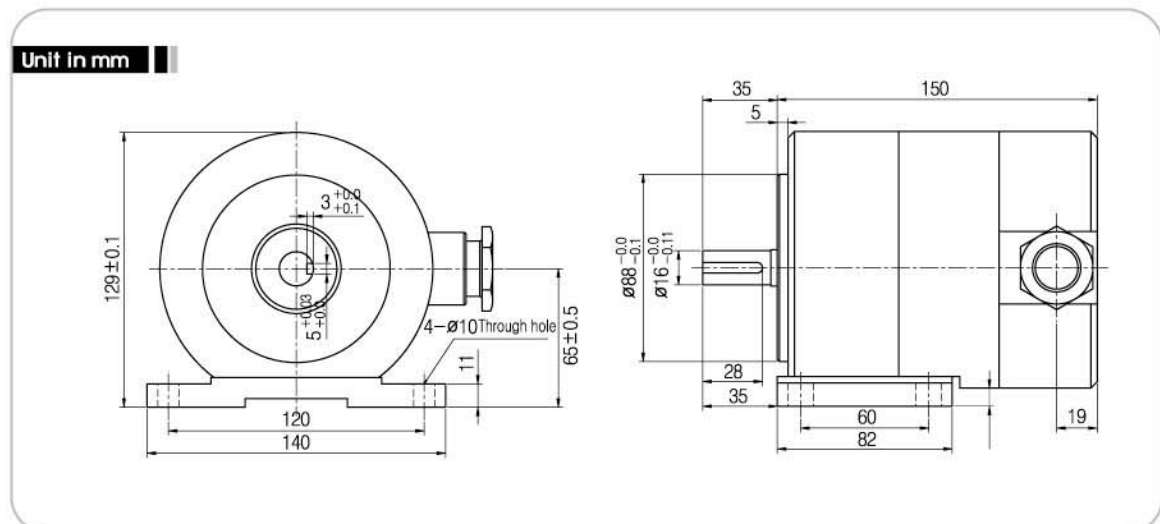
### Features

- Rigid type
- Water-proof
- Customized design available

### Model



### External Dimension





## Specifications

Electrical Spec.			
Resolution	25~2500 P/R		
Out-put type	Output Form	Power Supply	Consuming Current
	Voltage Output Open Collector Complemental	DC +24V	300mA Max.
	Maximum Response Frequency	100 kHz	
Connector	6P terminals		

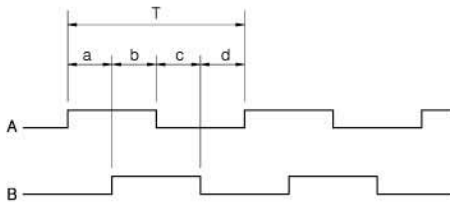
Mechanical Spec.	
Starting Torque	2kg-cm Max.
Maximum number of revolution	2500 rpm
Allowable Shaft Load	Radial : 5.0kg Max. Axial : 5.0kg Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	100G
Degree of Protection	IP54

## Output Phase Shift

Voltage Output, Open Collector, Complemental

$$a + b, c + d = T/2 \pm T/10$$

$$a, b, c, d = T/4 \pm T/10$$

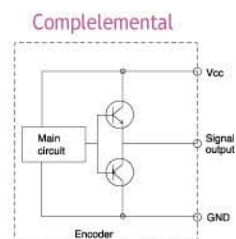
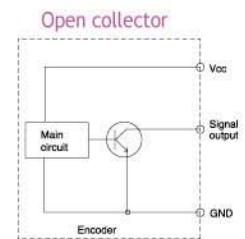
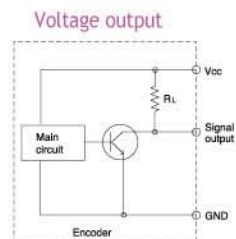


CCW (Viewed from Shaft End)

## Connection Table

Pin code	Connection Table
	Voltage Output Open Collector Complemental
A	Vcc +24V
B	B GND
C	A GND
D	A SIG
E	B SIG
F	GND

## Output Circuit







# H40 Series



Rotary Encoder

## Application

- Industrial application
- Measuring instruments

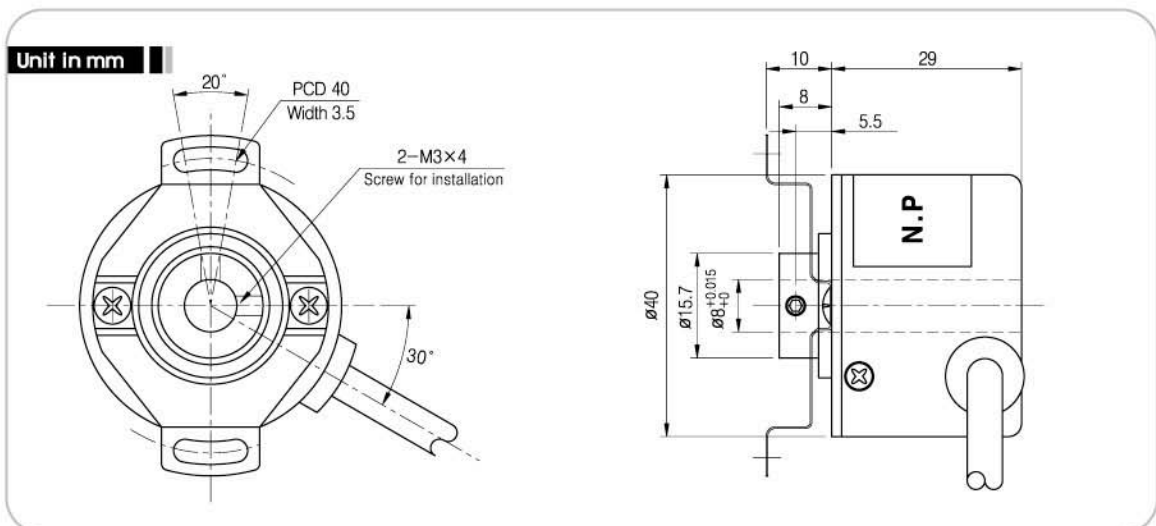
## Features

- Hollow Shaft
- Wide range of power source
- Easy to attach

## Model

<b>H</b>	<b>40</b>	<b>8</b>	<b>3600</b>	<b>Z</b>	<b>O</b>
Hollow Shaft	Outer Diameter (φ40)	Shaft Size	Resolution (P/R)	Output Signal	Output Form
		5 : φ5 6 : φ6 6.3 : φ6.3 8 : φ8	0010 0030 0050 0060 0072 0075 0100 0120 0125 0192 0200 0250 0256 0300 0360 0400 0500 0512 0600 0720 1000 1024 1200 2000 2048 2500 3000 3600	<ul style="list-style-type: none"> <li>• B : A, B</li> <li>• Z : A, B, Z</li> <li>• Z̄ : A, B, Z̄</li> <li>• U : A, Ā, B, B̄</li> <li>• V : A, Ā, B, B̄, Z, Z̄</li> </ul>	<ul style="list-style-type: none"> <li>• V : Voltage output</li> <li>• O : Open collector</li> <li>• T : Totem pole</li> <li>• L : Line driver</li> <li>• C : Complemental</li> </ul>

## External Dimension





## Specifications

Electrical Spec.			
Resolution	10 ~ 3600 P/R		
Output type	Output Form	Power Supply	Consuming Current
	Voltage Output Open Collector	DC +5V ~ +24V	70mA Max.
	Totem Pole	DC +5V, 24V	
Line Driver	DC +5V±5%	150mA Max.	
Maximum Response Frequency	10~720 P/R	150 kHz Max.	
	1000~3600 P/R	300 kHz Max.	
Cable Length	1m		

Mechanical Spec.	
Starting Torque	80g-cm Max.
Maximum number of revolution	6000 rpm
Allowable Shaft Load	Radial : 3.0kg Max. Axial : 1.5kg Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	50G
Degree of Protection	IP50

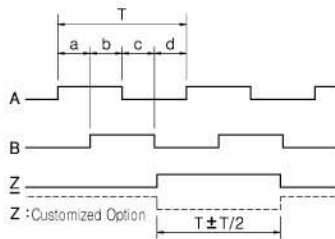
\* Complementary Power Supply : DC+15V

## Output Phase Shift

### Voltage Output, Open Collector, Totem Pole

$$a + b, c + d = T/2 \pm T/10$$

$$a, b, c, d = T/4 \pm T/10$$

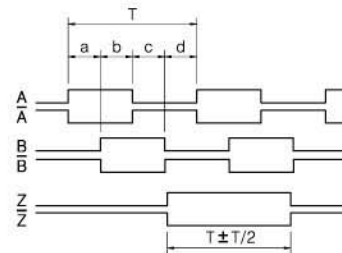


→ CW (Viewed from Shaft End)

### Line Driver

$$a + b, c + d = T/2 \pm T/10$$

$$a, b, c, d = T/4 \pm T/10$$

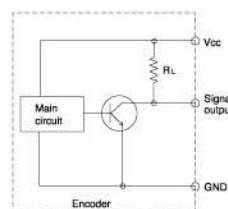


## Connection Table

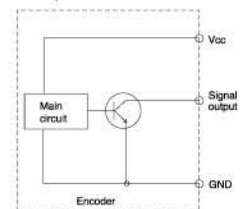
Cable's Color	Connection Table	
	Voltage Output Open Collector Totem Pole	Line Driver
Red	Refer to the above power supply's spec.	DC +5V
Black	Ground	Ground
Green	A	A
Blue	-	$\bar{A}$
White	B	B
Pink	-	$\bar{B}$
Yellow	Z	Z
Orange	-	$\bar{Z}$
Shield	Case Shield	

## Output Circuit

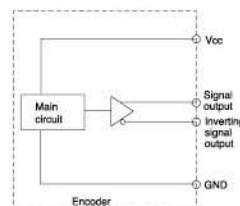
### Voltage output



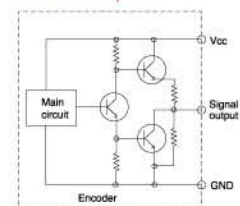
### Open collector



### Line driver



### Totem pole





# H45 Series



Rotary Encoder

### Application

- AC Servo Motor
- DC Servo motor

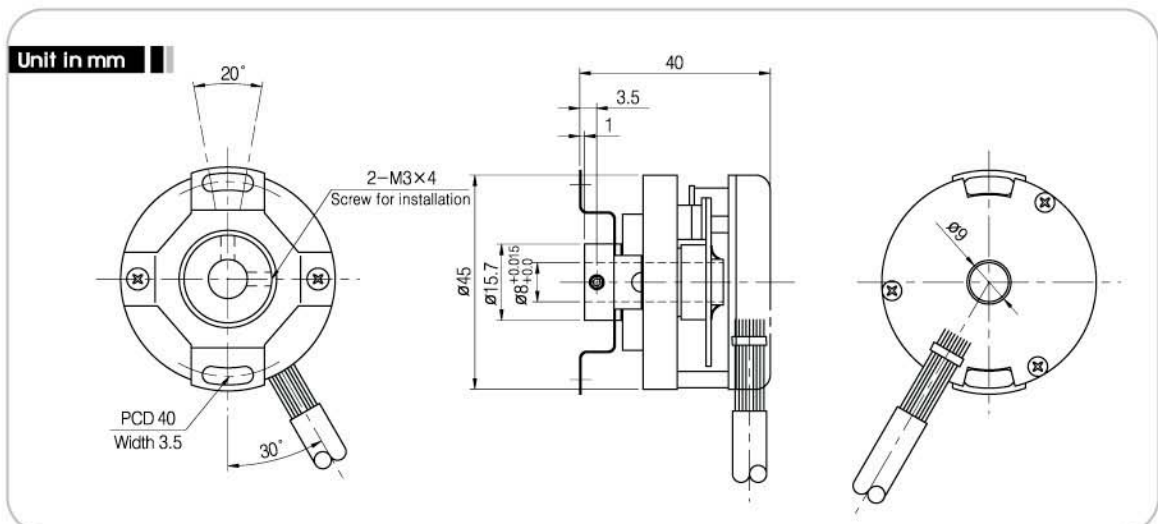
### Features

- High resolution
- High-response frequency
- Easy to attach

### Model

<b>H</b>	<b>45</b>	<b>8</b>	<b>6000</b>	<b>W</b>	<b>L</b>	<b>8</b>
Hollow Shaft	Outer Diameter (ø 45)	Shaft Size	Resolution (P/R)	Output Signal	Output Form	Pole
		ø8	2000 3000 2048 5000 2500 6000	<ul style="list-style-type: none"> <li>• <b>V</b> : A, Ā, B, B̄, Z, Z̄</li> <li>• <b>W</b> : A, Ā, B, B̄, Z, Z̄ U, Ū, V, V̄, W, W̄</li> </ul>	<ul style="list-style-type: none"> <li>• <b>L</b> : L line driver</li> </ul>	8

### External Dimension





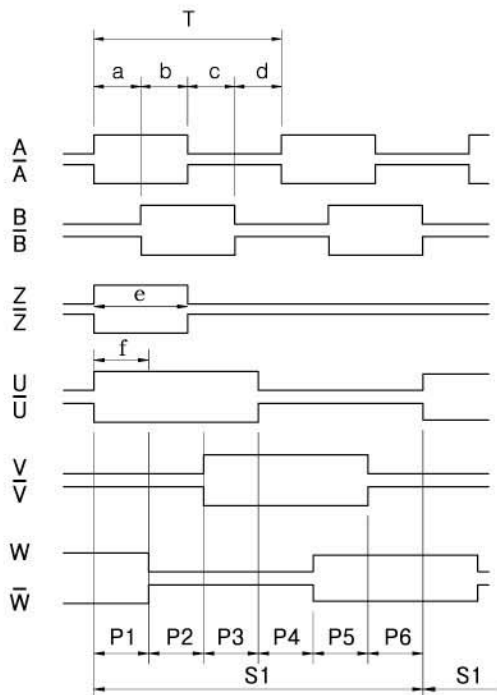
## Specifications

Electrical Spec.			
Resolution		2000~6000 P/R	
Output type	Output Form	Power Supply	Consuming Current
	Line Driver	DC +5V±5%	200mA Max.
Maximum Response Frequency		300 KHz	
Pole		8 Pole	

Mechanical Spec.	
Starting Torque	80g-cm Max.
Maximum number of revolution	6000 rpm
Allowable Shaft Load	Radial : 0.03mm TIR Max. Axial : 0.2mm TIR Max.
Operating Temp. Range	-20°C ~ +80°C
Internal Vibration	5G
Internal Shock	100G
Degree of Protection	IP00

## Output Phase Shift

$a + b, c + d = T/2 \pm T/10$   
 $a, b, c, d = T/4 \pm T/10$   
 $e = T \pm T/2$   
 $f = \text{From U channel (rise point) to Z channel center}(\pm 1^\circ)$



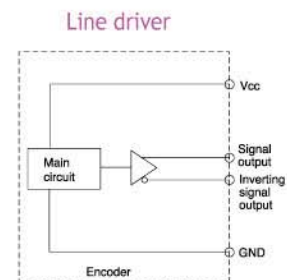
→ CCW (Viewed from Shaft End)

The number of poles	P1, P2, P3, P4, P5, P6	S1, S2 ---
8	$15^\circ \pm 0.9^\circ$	$90^\circ$

## Connection Table

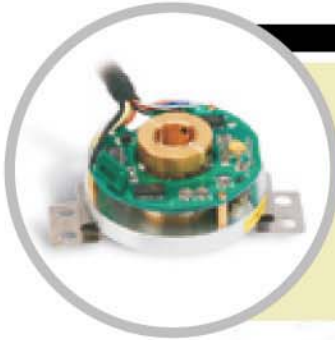
Cable's Color	Output Signal
Red	D.C +5V
Black	Ground
Green	A Ch
White / Green	$\bar{A}$ Ch
Gray	B Ch
White / Gray	$\bar{B}$ Ch
Yellow	Z Ch
White / Yellow	$\bar{Z}$ Ch
Brown	U Ch
White / Brown	$\bar{U}$ Ch
Blue	V Ch
White / Blue	$\bar{V}$ Ch
Orange	W Ch
White / Orange	$\bar{W}$ Ch
Shield	Case Shield

## Output Circuit





# H60 Series



Rotary Encoder

### Application

- AC Servo Motor
- DC Servo motor

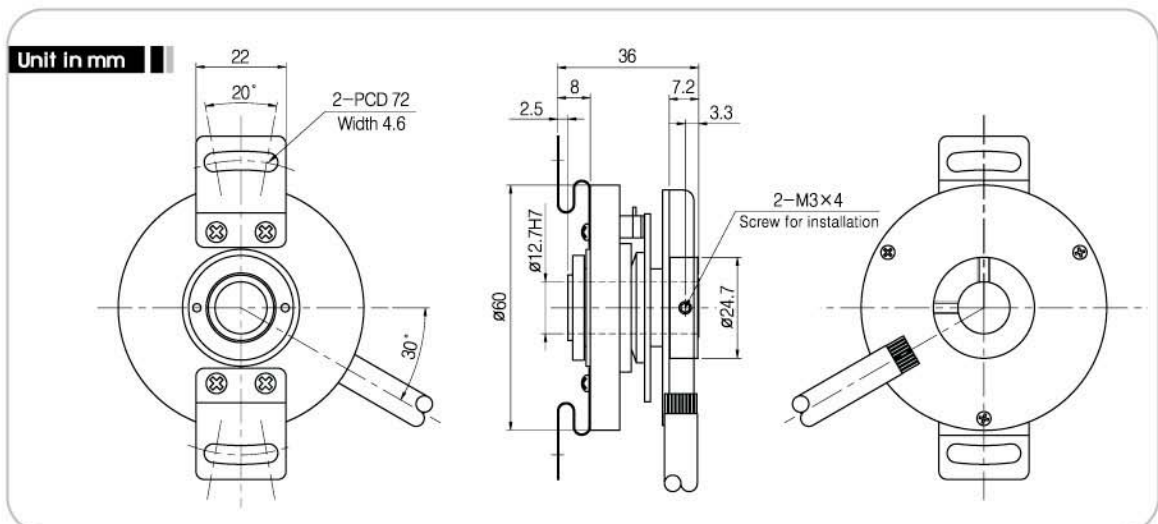
### Features

- High resolution
- High-response frequency
- Easy to attach

### Model

<b>H</b>	<b>60</b>	<b>12.7</b>	<b>2000</b>	<b>W</b>	<b>L</b>	<b>8</b>
Hollow Shaft	Outer Diameter (φ60)	Shaft Size	Resolution (P/R)	Output Signal	Output Form	Pole
		Ø12.7	2000 2048 3000 6000	• W : A, Ā, B, B̄, Z, Z̄ U, Ū, V, V̄, W, W̄	• L : L ine driver	8

### External Dimension





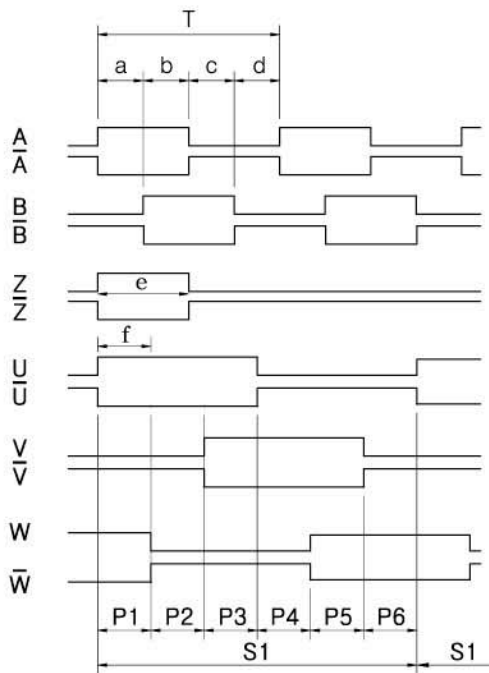
## Specifications

Electrical Spec.			
Resolution		2000~6000 P/R	
Output type	Output Form	Power Supply	Consuming Current
	Line Driver	DC +5V±5%	200mA Max.
Maximum Response Frequency		300 KHz	
Pole		8 Pole	

Mechanical Spec.	
Starting Torque	150g-cm Max.
Maximum number of revolution	6000 rpm
Allowable Shaft Load	Radial : 0.03mm TIR Max. Axial : 0.2mm TIR Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	50G
Degree of Protection	IP00

## Output Phase Shift

$a + b, c + d = T/2 \pm T/10$   
 $a, b, c, d = T/4 \pm T/10$   
 $e = T \pm T/2$   
 $f =$  From U channel (rise point) to Z channel center( $\pm 1^\circ$ )



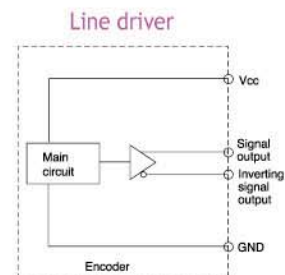
→ CCW (Viewed from Shaft End)

The number of poles	P1, P2, P3, P4, P5, P6	S1, S2 --
8	$15^\circ \pm 0.9^\circ$	$90^\circ$

## Connection Table

Cable's Color	Output Signal
Red	D.C +5V
Black	Ground
Green	A Ch
White / Green	$\bar{A}$ Ch
Gray	B Ch
White / Gray	$\bar{B}$ Ch
Yellow	Z Ch
White / Yellow	$\bar{Z}$ Ch
Brown	U Ch
White / Brown	$\bar{U}$ Ch
Blue	V Ch
White / Blue	$\bar{V}$ Ch
Orange	W Ch
White / Orange	$\bar{W}$ Ch
Shield	Case Shield

## Output Circuit





# H62 Series



Rotary Encoder

### Application

- Elevator
- A. G. V

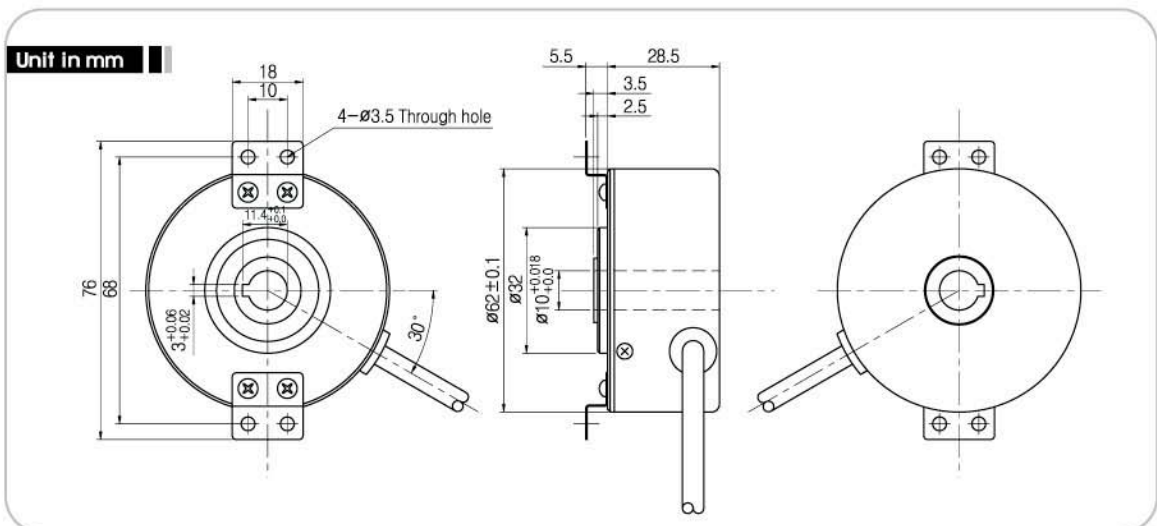
### Features

- Rigid type
- Strengthened anti-Noise characteristic
- Customized design available

## Model

<b>H</b>	<b>62</b>	<b>10</b>	<b>1024</b>	<b>V</b>	<b>L</b>
Hollow Shaft	Outer Diameter ( $\phi 62$ )	Shaft Size	Resolution (P/R)	Output Signal	Output Form
		8 : $\phi 8$ 9.5 : $\phi 9.5$ 10 : $\phi 10$	1000 1024 2048	<ul style="list-style-type: none"> <li>• B : A, B</li> <li>• Z : A, B, Z</li> <li>• U : A, <math>\bar{A}</math>, B, <math>\bar{B}</math></li> <li>• V : A, <math>\bar{A}</math>, B, <math>\bar{B}</math>, Z, <math>\bar{Z}</math></li> </ul>	<ul style="list-style-type: none"> <li>• V : Voltage output</li> <li>• O : Open collector</li> <li>• C : Complemental</li> <li>• L : L line driver</li> </ul>

## External Dimension





## Specifications

Electrical Spec.			
Resolution	1000 ~ 2048 P/R		
Output type	Output Form	Power Supply	Consuming Current
	Voltage Output Open Collector	DC +15V	70mA Max.
	Complemental	DC +5V ~ +12V	
Line Driver	DC +5V±5%	150mA Max.	
Maximum Response Frequency	300 kHz Max.		
Cable Length	1m		

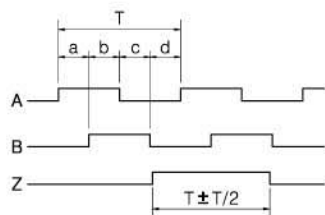
Mechanical Spec.	
Starting Torque	120g-cm Max.
Maximum number of revolution	5000 rpm
Allowable Shaft Load	Radial : 3.0kg Max. Axial : 1.5kg Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	100G
Degree of Protection	IP50

## Output Phase Shift

### Voltage Output, Open Collector, Complemental

$$a + b, c + d = T/2 \pm T/10$$

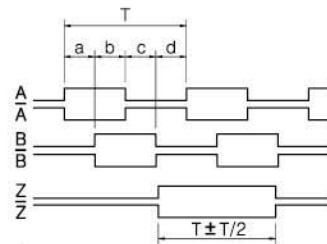
$$a, b, c, d = T/4 \pm T/10$$



### Line Driver

$$a + b, c + d = T/2 \pm T/10$$

$$a, b, c, d = T/4 \pm T/10$$

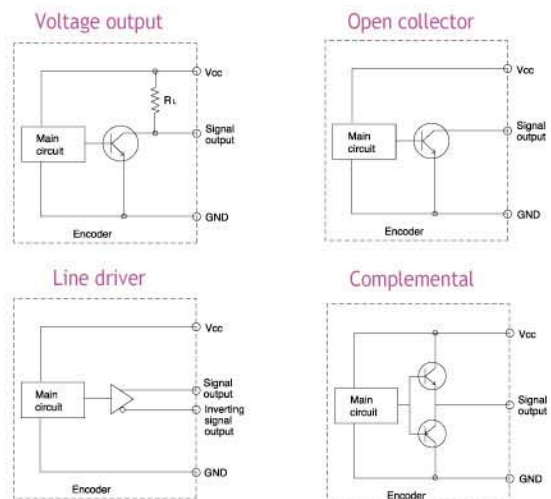


→ CW (Viewed from Shaft End)

## Connection Table

Cable's Color	Connection Table	
	Voltage Output Open Collector Complemental	Line Driver
Red	Refer to the above power supply's spec.	DC+5V
Black	Ground	Ground
Green	A	A
Blue	-	$\bar{A}$
White	B	B
Pink	-	$\bar{B}$
Yellow	Z	Z
Orange	-	$\bar{Z}$
Shield	Case Shield	

## Output Circuit







# H70 Series



Rotary Encoder

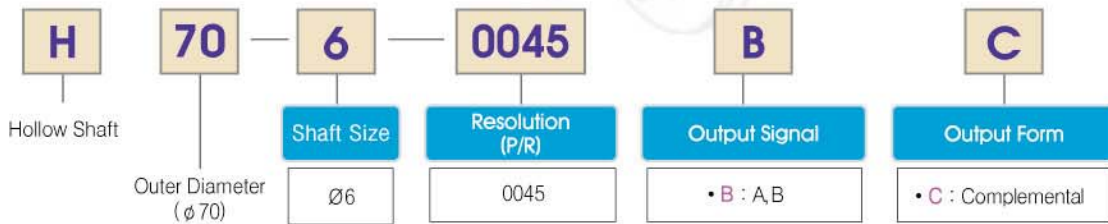
## Application

- Industrial application
- Textile machine

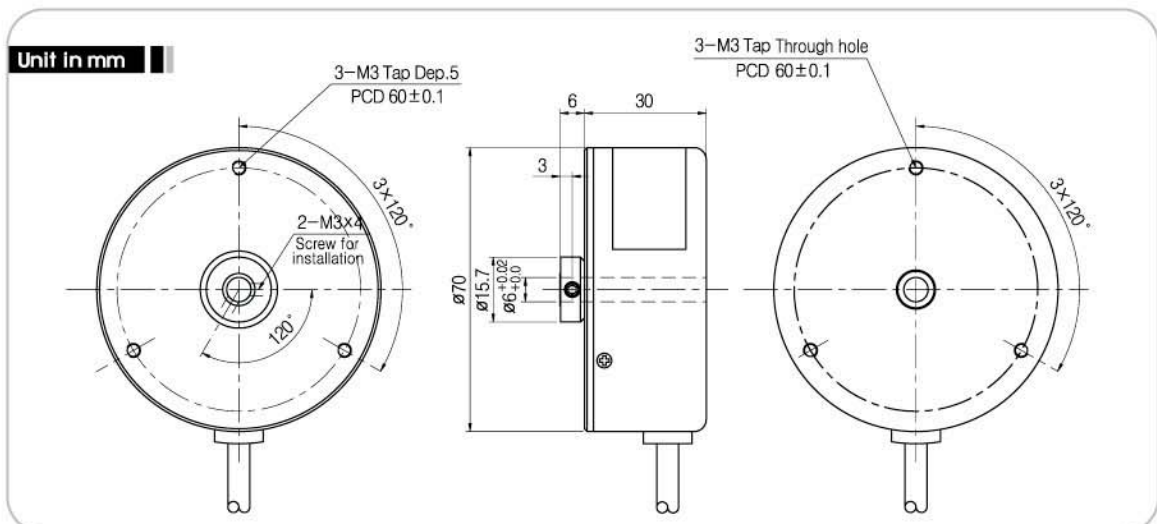
## Features

- Rigid type
- Wide range of power source
- High reliability

## Model



## External Dimension





## Specifications

Electrical Spec.			
Resolution	45 P/R		
Output type	Output Form	Power Supply	Consuming Current
	Complemental	DC +15V	70mA Max.
Maximum Response Frequency	5 kHz		
Cable Length	1m		

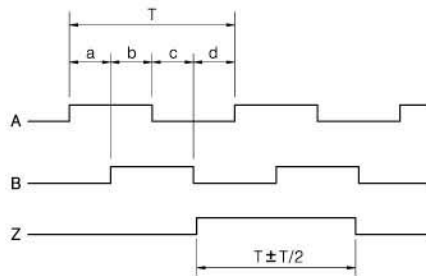
Mechanical Spec.	
Starting Torque	80g-cm Max.
Maximum number of revolution	6000 rpm
Allowable Shaft Load	Radial : 2.2kg Max. Axial : 1.1kg Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	50G
Degree of Protection	IP50

## Output Phase Shift

### Complemental

$$a + b, c + d = T/2 \pm T/10$$

$$a, b, c, d = T/4 \pm T/10$$

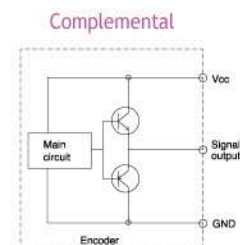


→ CCW (Viewed from Shaft End)

## Connection Table

Cable's Color	Connection Table
	Complemental
Red	DC +15V
Yellow	Ground
Green	A
Blue	-
White	B
Pink	-
Yellow	-
Orange	-
Shield	Case Shield

## Output Circuit





# H88 Series



Rotary Encoder

### Application

- Industrial application
- Parking system

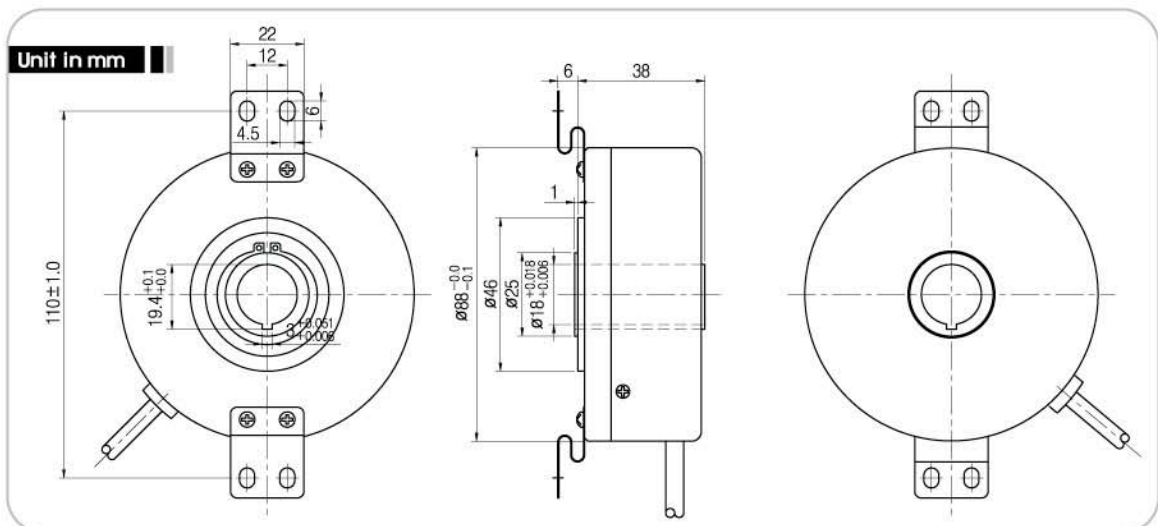
### Features

- Strengthened anti-Noise characteristic
- Easy to attach
- Customized design available

## Model

<b>H</b>	<b>88</b>	<b>18</b>	<b>1024</b>	<b>V</b>	<b>L</b>
Hollow Shaft	Outer Diameter (ø88)	Shaft Size ø18	Resolution (P/R) 512 1024	Output Signal	Output Form
				<ul style="list-style-type: none"> <li>• <b>B</b> : A, B</li> <li>• <b>Z</b> : A, B, Z</li> <li>• <b>U</b> : A, <math>\bar{A}</math>, B, <math>\bar{B}</math></li> <li>• <b>V</b> : A, <math>\bar{A}</math>, B, <math>\bar{B}</math>, Z, <math>\bar{Z}</math></li> </ul>	<ul style="list-style-type: none"> <li>• <b>V</b> : Voltage output</li> <li>• <b>O</b> : Open collector</li> <li>• <b>C</b> : C omplemental</li> <li>• <b>T</b> : Totem Pol e</li> <li>• <b>L</b> : L ine driver</li> </ul>

## External Dimension





## Specifications

Electrical Spec.			
Resolution	512,1024 P/R		
Output type	Output Form	Power Supply	Consuming Current
	Voltage Output Open Collector Complemental Totem Pole	DC +15V	70mA Max.
	Line Driver	DC +5V	150mA Max.
Maximum Response Frequency	150 kHz		
Cable Length	1m		

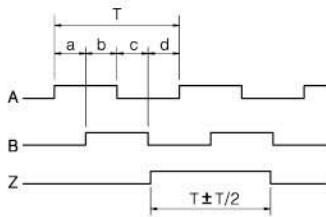
Mechanical Spec.	
Starting Torque	200g-cm Max.
Maximum number of revolution	3000 rpm
Allowable Shaft Load	Radial : 3.8kg Max. Axial : 1.9kg Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	100G
Degree of Protection	IP50

## Output Phase Shift

### Voltage Output, Open Collector, Complemental

$$a + b, c + d = T/2 \pm T/10$$

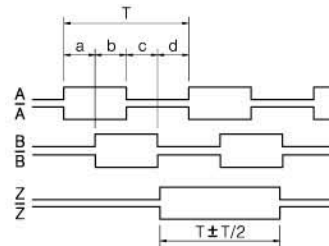
$$a, b, c, d = T/4 \pm T/10$$



### Line Driver

$$a + b, c + d = T/2 \pm T/10$$

$$a, b, c, d = T/4 \pm T/10$$



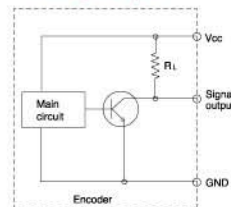
CCW (Viewed from Shaft End)

## Connection Table

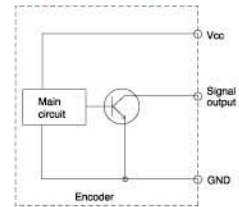
Cable's Color	Connection Table	
	Voltage Output Open Collector Complemental Totem Pole	Line Driver
Red	DC +15V	DC +5V
Black	Ground	Ground
Green	A	A
Blue	-	$\bar{A}$
White	B	B
Pink	-	$\bar{B}$
Yellow	Z	Z
Orange	-	$\bar{Z}$
Shield	Case Shield	

## Output Circuit

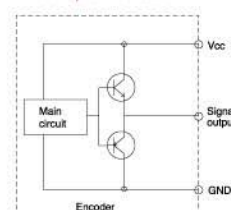
### Voltage output



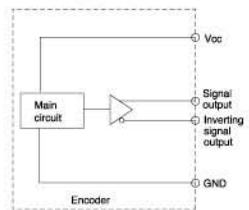
### Open collector



### Complemental



### Line driver





# H88 Series

Rotary Encoder



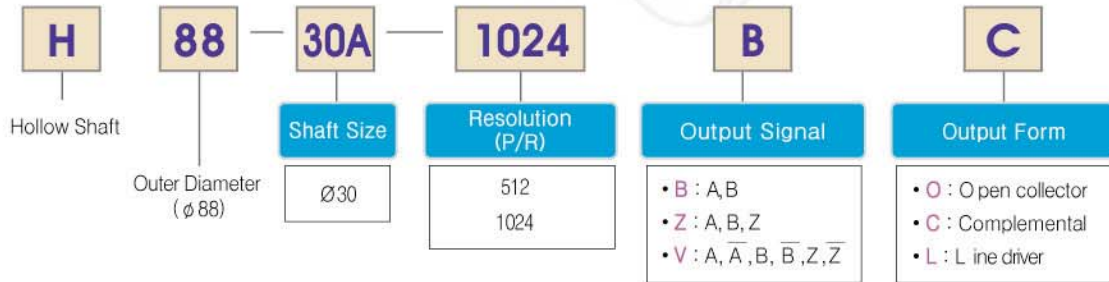
## Application

- Elevator

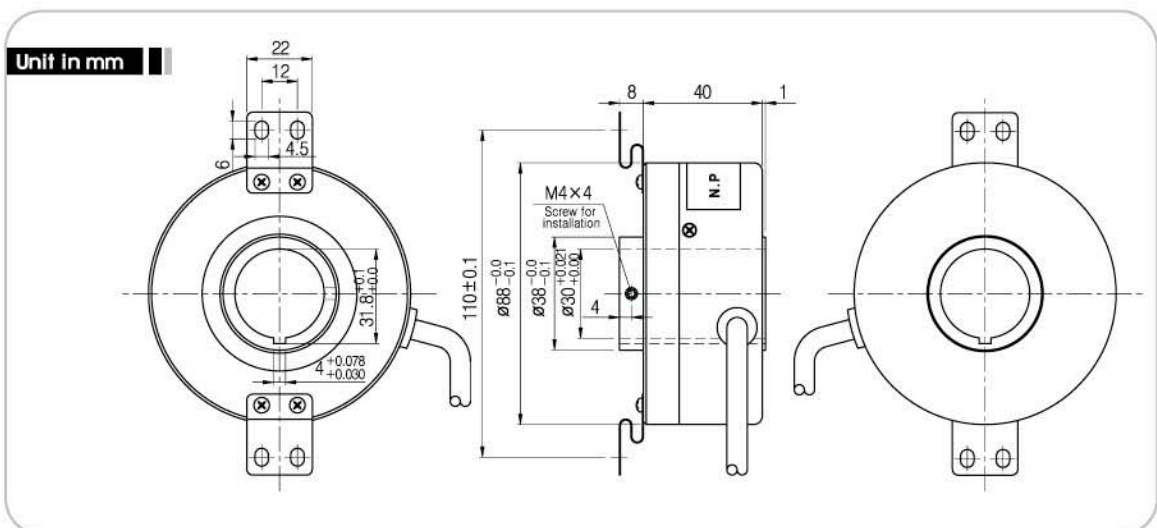
## Features

- Rigid bearing
- High reliability
- Customized design available

## Model



## External Dimension





## Specifications

Electrical Spec.			
Resolution	512,1024 P/R		
Output type	Output Form	Power Supply	Consuming Current
	Open Collector Complemental	DC +15V	150mA Max.
	Line Driver	DC +5V	200mA Max.
Maximum Response Frequency	100 kHz		
Cable Length	7m		

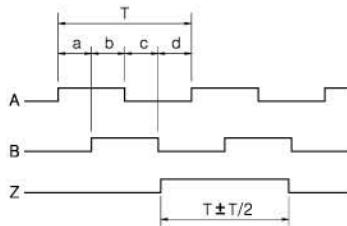
Mechanical Spec.	
Starting Torque	800g-cm Max.
Maximum number of revolution	3000 rpm
Allowable Shaft Load	Radial : 5.0kg Max. Axial : 2.5kg Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	50G
Degree of Protection	IP50

## Output Phase Shift

### Open Collector, Totem Pole, Complemental

$$a + b, c + d = T/2 \pm T/10$$

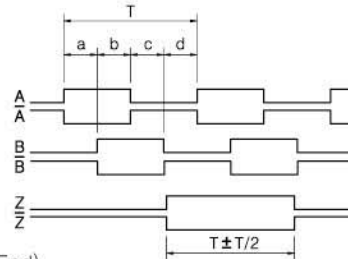
$$a, b, c, d = T/4 \pm T/10$$



### Line Driver

$$a + b, c + d = T/2 \pm T/10$$

$$a, b, c, d = T/4 \pm T/10$$

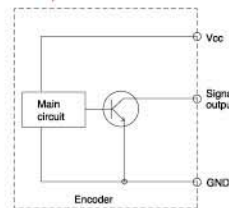


## Connection Table

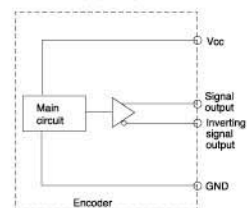
Cable's Color	Connection Table	
	Open Collector Complemental	Line Driver
Red	DC +15V	DC +5V
Black	Ground	Ground
Green	A	A
Orange	Sig. Ground	$\bar{Z}$
Yellow	B	Z
White	Sig. Ground	B
Blue	-	$\bar{A}$
Pink	-	$\bar{B}$
Shield	Case Shield	

## Output Circuit

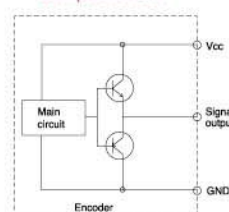
### Open collector



### Line driver



### Complemental





# H88 Series



Rotary Encoder

### Application

- Industrial application
- Elevator

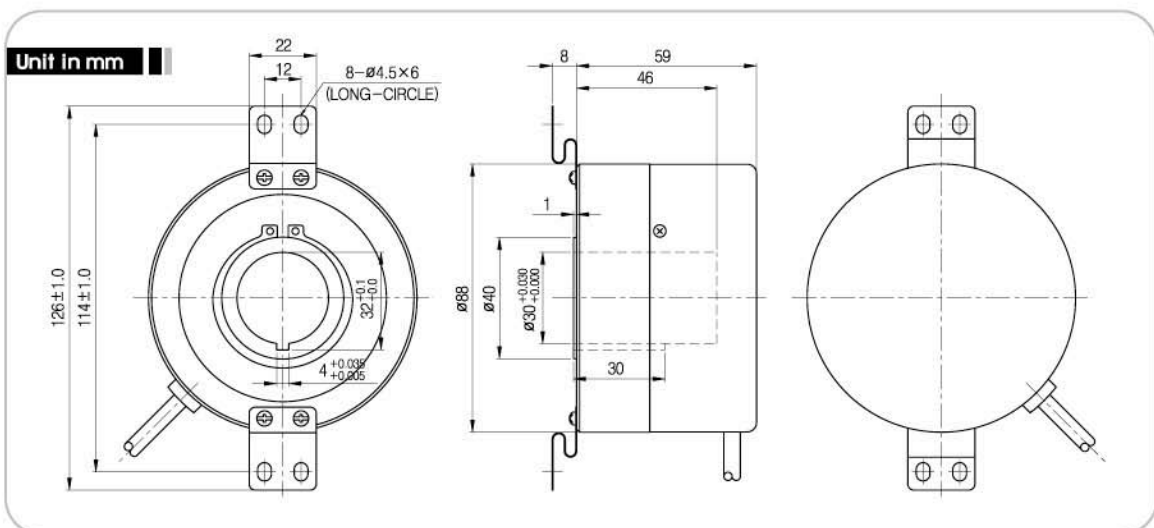
### Features

- Rigid bearing
- High reliability
- Customized design available

## Model

<b>H</b>	<b>88</b>	<b>30B</b>	<b>1024</b>	<b>B</b>	<b>O</b>
Hollow Shaft	Outer Diameter (ø88)	Shaft Size ø30	Resolution (P/R) 512 1024	Output Signal • B : A, B	Output Form • O : Open collector

## External Dimension





## Specifications

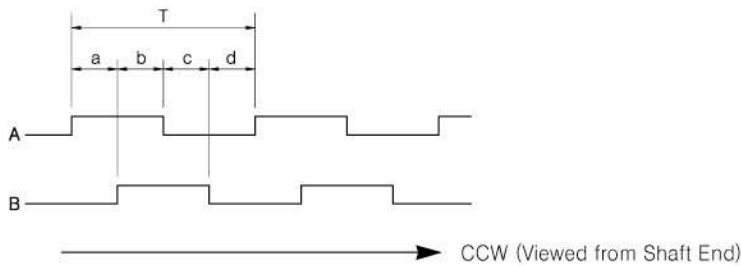
Electrical Spec.				Mechanical Spec.	
Resolution		512,1024 P/R		Starting Torque	
				800g-cm Max.	
Output type	Output Form	Power Supply	Consuming Current	Maximum number of revolution	
	Open Collector	DC +15V	150mA Max.	3000 rpm	
Maximum Response Frequency		100 kHz		Allowable Shaft Load	
				Radial : 5.0kg Max. Axial : 2.5kg Max.	
Cable Length		7m		Operating Temp. Range	
				-10°C ~ +70°C	
				Internal Vibration	
				5G	
				Internal Shock	
				100G	
				Degree of Protection	
				IP50	

## Output Phase Shift

### Open Collector

$$a + b, c + d = T/2 \pm T/10$$

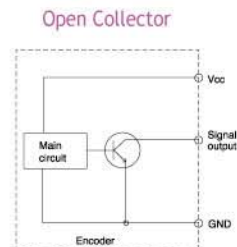
$$a, b, c, d = T/4 \pm T/10$$



## Connection Table

Cable's Color	Connection Table
	Open Collector
Red	DC +15V
Black	Ground
Yellow	A
White	A GND
Brown	B
Orange	B GND
Shield	Case Shield

## Output Circuit







# H88 Series

Rotary Encoder



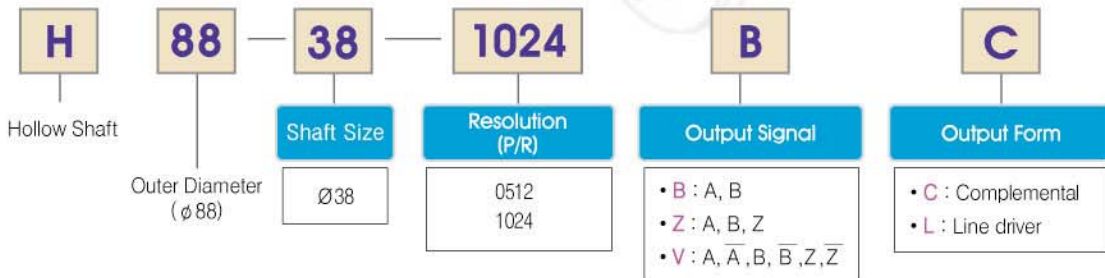
## Application

- Industrial application
- Elevator

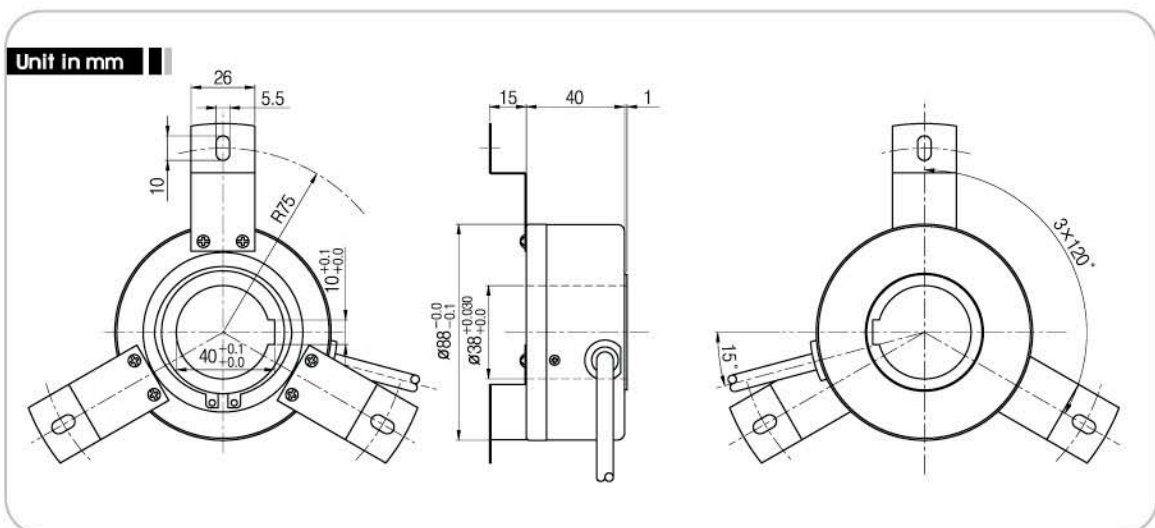
## Features

- High reliability
- Strengthened anti-Noise characteristic
- Customized design available

## Model



## External Dimension





## Specifications

Electrical Spec.			
Resolution	512,1024 P/R		
Output type	Output Form	Power Supply	Consuming Current
	Complemental	DC +15V	150mA Max.
	Line Driver	DC +5V	200mA Max.
Maximum Response Frequency	100 kHz		
Cable Length	1m		

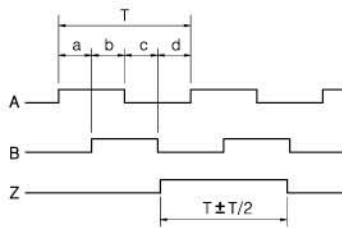
Mechanical Spec.	
Starting Torque	800g-cm Max.
Maximum number of revolution	3000 rpm
Allowable Shaft Load	Radial : 5.8kg Max. Axial : 1.9kg Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	100G
Degree of Protection	IP50

## Output Phase Shift

### Complemental

$$a + b, c + d = T/2 \pm T/10$$

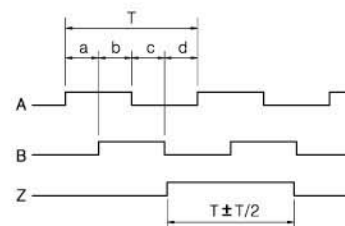
$$a, b, c, d = T/4 \pm T/10$$



### Line Driver

$$a + b, c + d = T/2 \pm T/10$$

$$a, b, c, d = T/4 \pm T/10$$

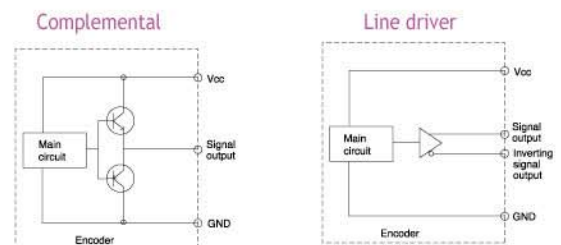


→ CW (Viewed from Shaft End)

## Connection Table

Cable's Color	Connection Table	
	Complemental	Line Driver
Red	DC +15V	DC +5V
Black	Ground	Ground
Green	A	A
Orange	Sig. Ground	$\bar{Z}$
Yellow	B	Z
White	Sig. Ground	B
Blue	-	$\bar{A}$
Pink	-	$\bar{B}$
Shield	Case Shield	

## Output Circuit





# H100 Series



Rotary Encoder

### Application

- Elevator
- Parking system

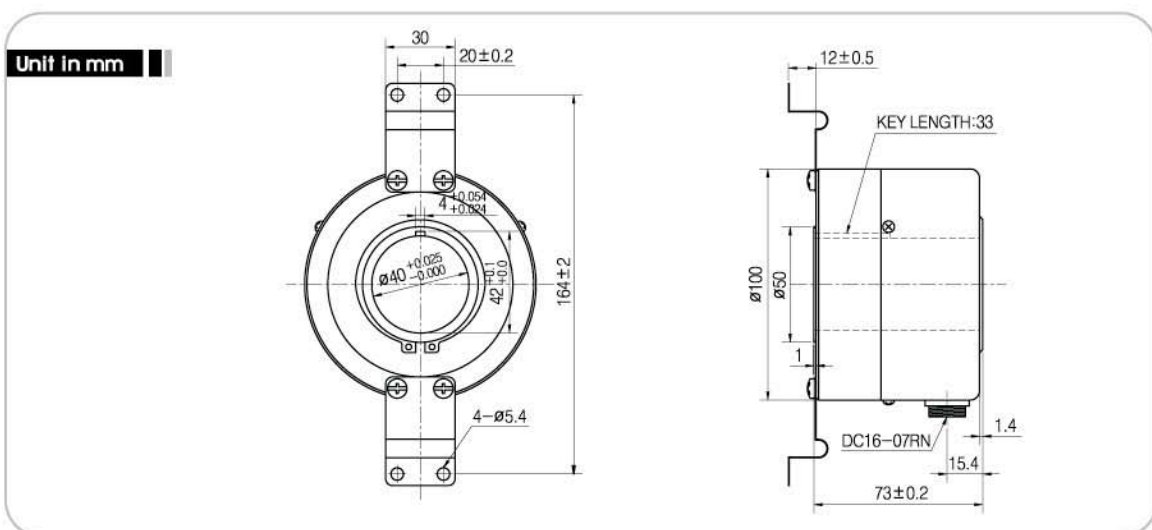
### Features

- Strengthened anti-Noise characteristic
- Easy to attach
- Customized design available

### Model

<b>H</b>	<b>100</b>	<b>40</b>	<b>1024</b>	<b>B</b>	<b>O</b>
Hollow Shaft	Outer Diameter (φ100)	Shaft Size Ø40	Resolution (P/R) 0512 1024	Output Signal • B : A, B • U : A, A̅, B, B̅	Output Form • O : Open collector • L : Line driver • T : Totem pole

### External Dimension





## Specifications

Electrical Spec.			
Resolution	512, 1024 P/R		
Output type	Output Form	Power Supply	Consuming Current
	Open Collector	DC +15V	100mA Max.
	Line Driver	DC +5V±5%	150mA Max.
Maximum Response Frequency	150 kHz Max.		
Cable Length	1m (other lengths also available)		

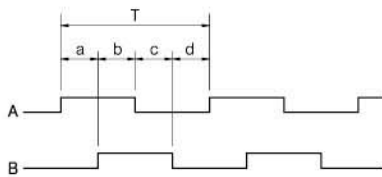
Mechanical Spec.	
Starting Torque	800g-cm Max.
Maximum number of revolution	3000 rpm
Allowable Shaft Load	Radial : 5.0kg Max. Axial : 2.5kg Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	100G
Degree of Protection	IP50

## Output Phase Shift

### Open Collector

$$a + b, c + d = T/2 \pm T/10$$

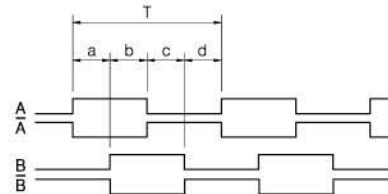
$$a, b, c, d = T/4 \pm T/10$$



### Line Driver

$$a + b, c + d = T/2 \pm T/10$$

$$a, b, c, d = T/4 \pm T/10$$



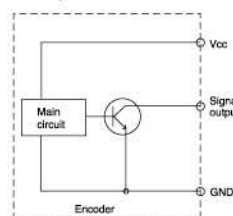
→ CCW (Viewed from Shaft End)

## Connection Table

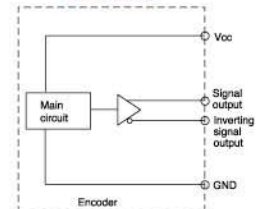
Cable's Color	Connection Table	
	Open Collector	Line driver
Red	DC +15V	DC +5V
Black	Ground	Ground
Yellow	A	A
Orange	Sig. Ground	$\bar{A}$
Brown	B	B
White	Sig. Ground	$\bar{B}$
Shield	Case Shield	

## Output Circuit

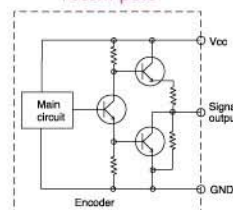
### Open collector



### Line driver



### Totem pole





# H108 Series



Rotary Encoder

### Application

- Elevator

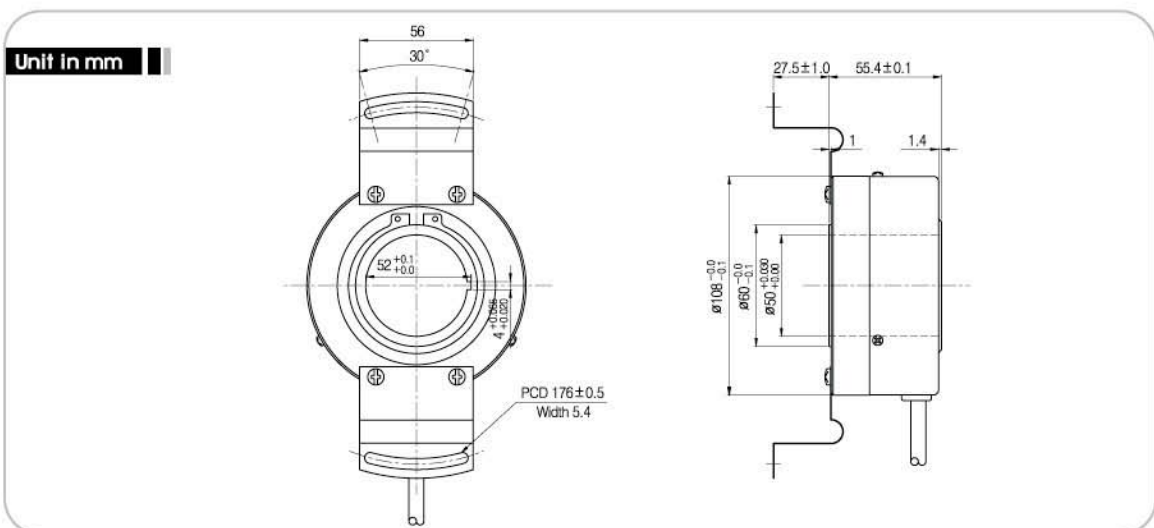
### Features

- High resolution
- High-response frequency
- Easy to attach

## Model

<b>H</b>	<b>108</b>	<b>50</b>	<b>4096</b>	<b>W</b>	<b>L</b>	<b>24</b>
Hollow Shaft	Outer Diameter (φ108)	Shaft Size	Resolution (P/R)	Output Signal	Output Form	Pole
		Ø50	4096	<ul style="list-style-type: none"> <li>• V : A, <math>\bar{A}</math>, B, <math>\bar{B}</math>, Z, <math>\bar{Z}</math></li> <li>• W : A, <math>\bar{A}</math>, B, <math>\bar{B}</math>, Z, <math>\bar{Z}</math> U, U, V, V, W, W</li> </ul>	<ul style="list-style-type: none"> <li>• L : L line driver</li> </ul>	24

## External Dimension





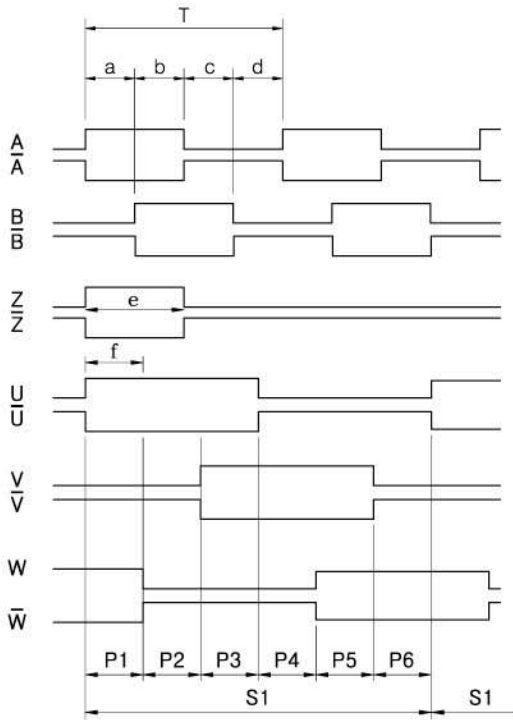
## Specifications

Electrical Spec.			
Resolution		4096 P/R	
Output type	Output Form	Power Supply	Consuming Current
	Line Driver	DC +5V±5%	200mA Max.
Maximum Response Frequency		300 kHz Max.	
Cable Length		7m	

Mechanical Spec.	
Starting Torque	800g-cm Max.
Maximum number of revolution	1200 rpm
Allowable Shaft Load	Radial : 0.03kg Max. Axial : 0.2kg Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	50G
Degree of Protection	IP50

## Output Phase Shift

$a + b, c + d = T/2 \pm T/10$   
 $a, b, c, d = T/4 \pm T/10$   
 $e = T \pm T/2$   
 $f = \text{From U channel (rise point) to Z channel center}(\pm 1^\circ)$



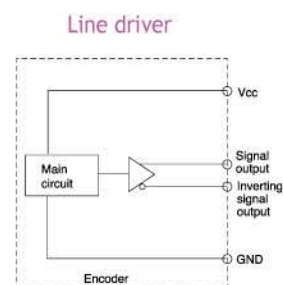
→ CCW (Viewed from Shaft End)

The number of poles	P1, P2, P3, P4, P5, P6	S1, S2 --
24	$5^\circ \pm 0.9^\circ$	$30^\circ$

## Connection Table

Cable Color	Output Signal
Red	D.C +5V
Black	Ground
Green	A Ch
White / Green	$\bar{A}$ Ch
Gray	B Ch
White / Gray	$\bar{B}$ Ch
Yellow	Z Ch
White / Yellow	$\bar{Z}$ Ch
Brown	U Ch
White / Brown	$\bar{U}$ Ch
Blue	V Ch
White / Blue	$\bar{V}$ Ch
Orange	W Ch
White / Orange	$\bar{W}$ Ch
Shield	Case Shield

## Output Circuit





# H128 Series



Rotary Encoder

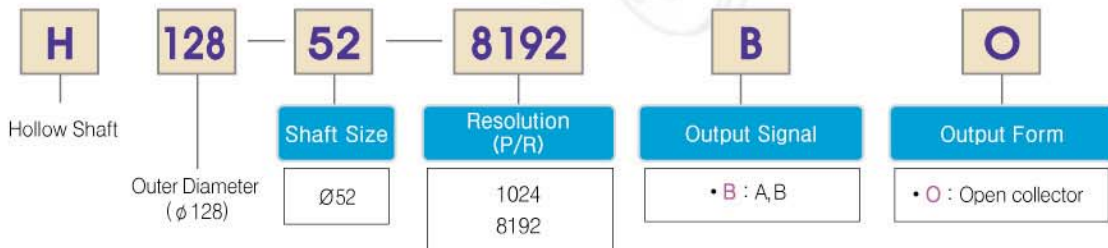
### Application

- Industrial application
- Measuring instruments

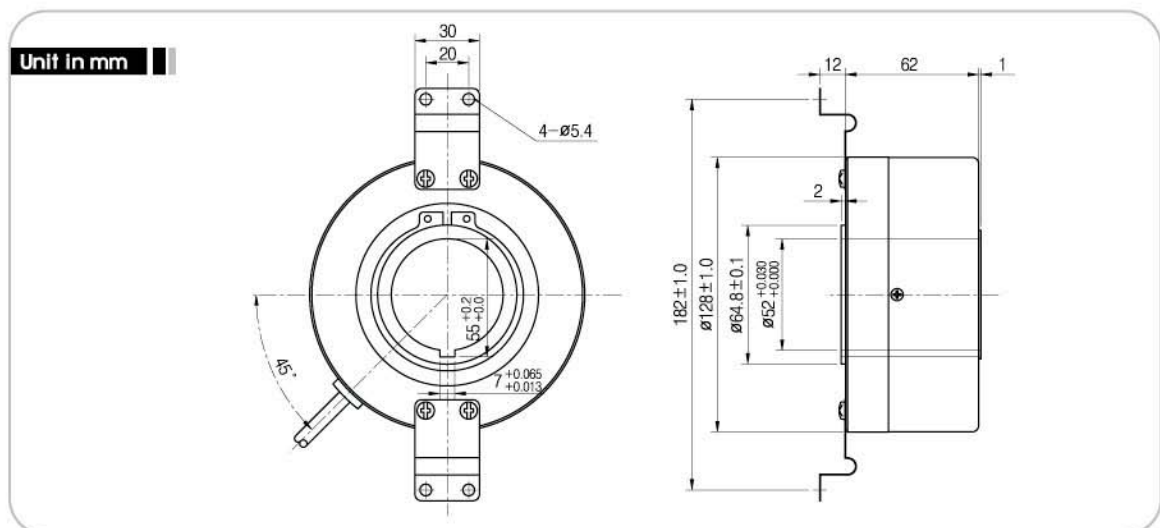
### Features

- High resolution
- High-reponse frequency
- Customized design available

## Model



## External Dimension





# SA58 Series



Rotary Encoder

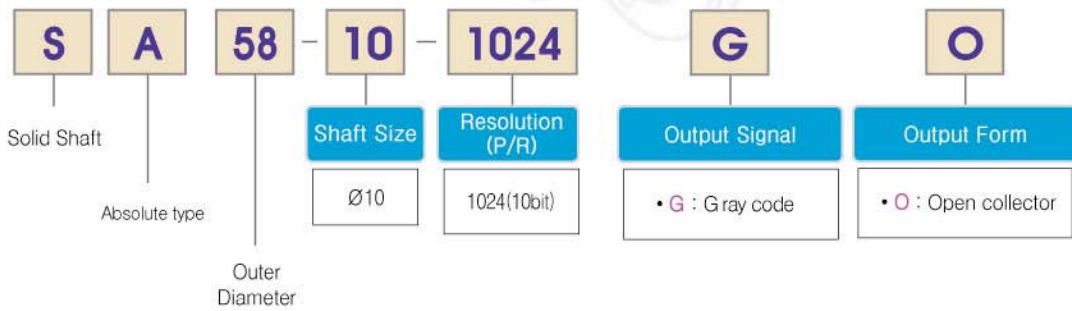
### Application

- Index table
- Textile machine

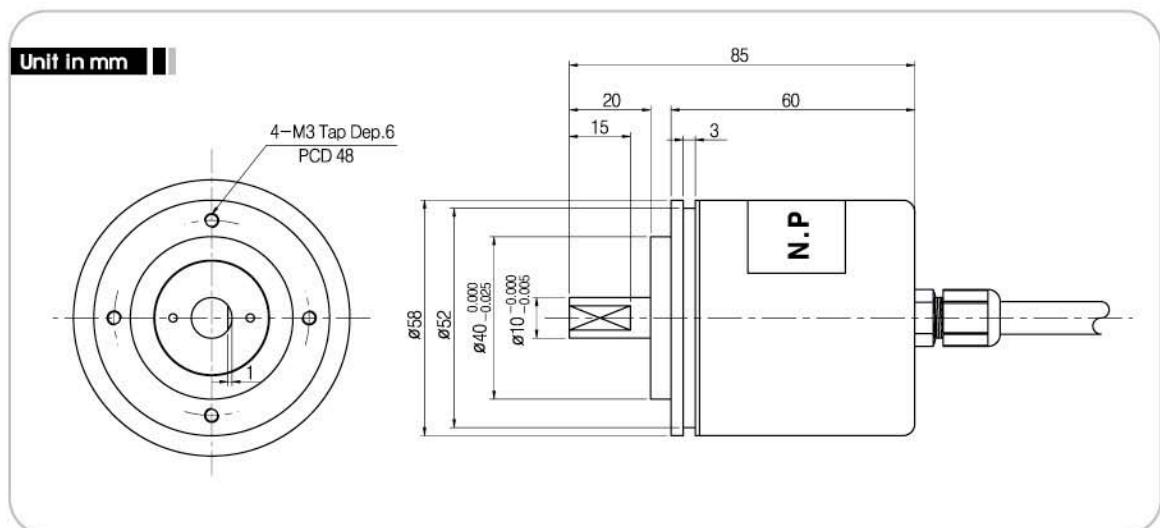
### Features

- Gray code
- Rigid bearing

## Model



## External Dimension







## Specifications

Electrical Spec.			
Resolution	1024,8192 P/R		
Output type	Output Form	Power Supply	Consuming Current
	Open Collector	DC +15V	100mA Max.
Maximum Response Frequency	100 kHz Max.		
Cable Length	7m		

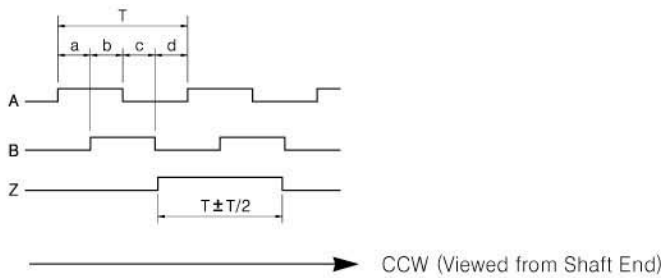
Mechanical Spec.	
Starting Torque	800g-cm Max.
Maximum number of revolution	800 rpm
Allowable Shaft Load	Radial : 5.0kg Max. Axial : 2.5kg Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	50G
Degree of Protection	IP50

## Output Phase Shift

### Open Collector

$$a + b, c + d = T/2 \pm T/8$$

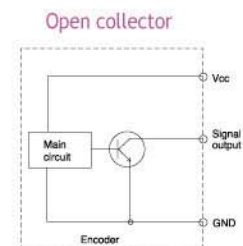
$$a, b, c, d = T/4 \pm T/8$$



## Connection Table

Cable's Color	Connection Table
	Open Collector
Red	DC +15V
Black	Ground
Yellow	A
Orange	Sig. Ground
Brown	B
White	Sig. Ground
Blue	-
Pink	-
Green	-
Shield	Case Shield

## Output Circuit



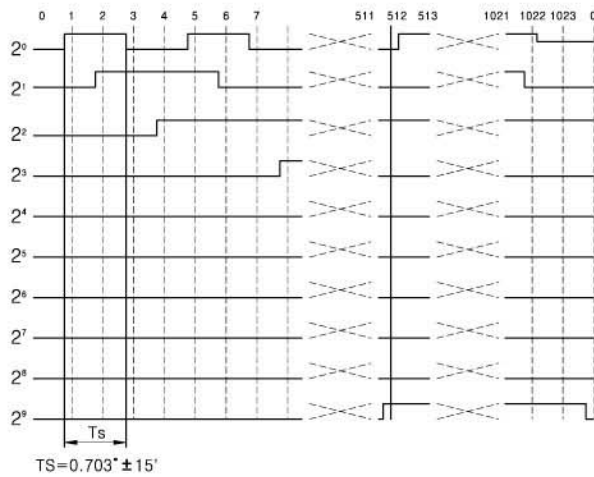


## Specifications

Electrical Spec.			
Resolution	1024 P/R(10Bit)		
Output type	Output Form	Power Supply	Consuming Current
	Open Collector	DC +5V ~ +24V	100mA Max.
	Output code	10 Bit Gray Code (1024)	
Maximum Response Frequency	10 kHz		
Cable Length	1m (other lengths also available)		

Mechanical Spec.	
Starting Torque	200g-cm Max.
Maximum number of revolution	3000 rpm
Allowable Shaft Load	Radial : 5.0kg Max. Axial : 2.5kg Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	100G
Degree of Protection	IP54

## Output Phase Shift

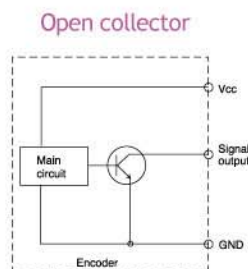


→ CW (Viewed from Shaft End)

## Connection Table

Cable's Color	Output Signal
Red	DC +5V ~ +24V
Black	Ground
Green	2 <sup>0</sup>
White / Green	2 <sup>1</sup>
Gray	2 <sup>2</sup>
White/ Gray	2 <sup>3</sup>
Yellow	2 <sup>4</sup>
White / Yellow	2 <sup>5</sup>
Brown	2 <sup>6</sup>
White / Brown	2 <sup>7</sup>
Blue	2 <sup>8</sup>
White/ Blue	2 <sup>9</sup>
Shield	Case Shield

## Output Circuit





# SM80 Series



Rotary Encoder

### Application

- NC tooling machine
- NC milling machine
- For other industries

### Features

- Half permanent durability
- High reliability
- Customer's logo is available

### Model

**SM**

Standard  
M.P.G

**80**

Outer Diameter  
( $\phi$ )

**N**

Normal

**0100**

Resolution  
(P/R)

0100

**U**

Output Signal

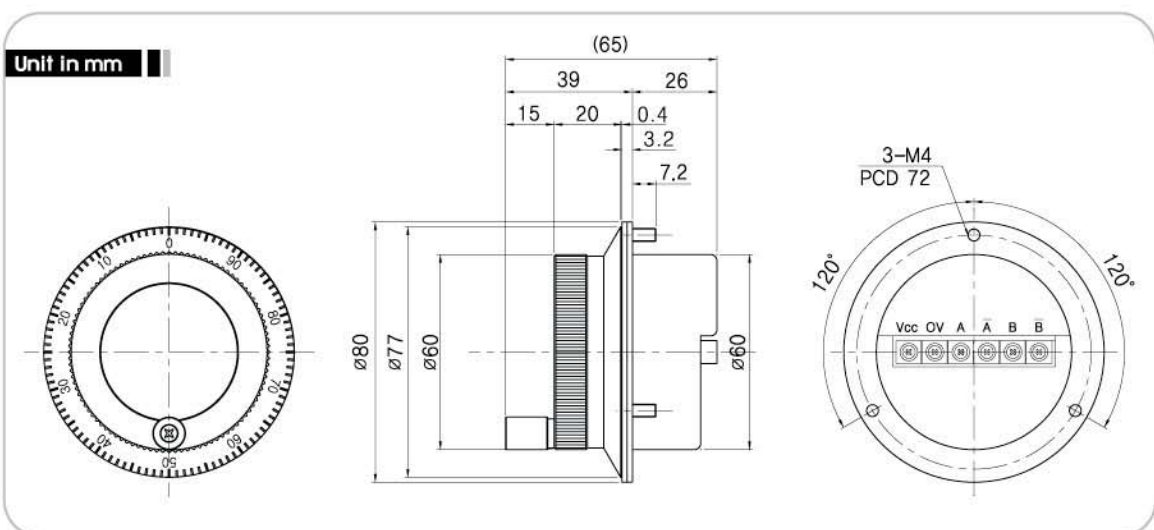
- B : A, B
- U : A,  $\bar{A}$ , B,  $\bar{B}$

**L**

Output Form

- V : Voltage output
- L : L ine driver
- O : Open collector

### External Dimension





## Specifications

Electrical Spec.			
Resolution	0100 P/R		
Output type	Output Form	Power Supply	Consuming Current
	Voltage Output Open Collector	DC +5V	80mA Max.
	Line Driver	DC +5V	150mA Max.
Maximum Response Frequency	5 kHz Max.		
Cable Length	6P terminals		

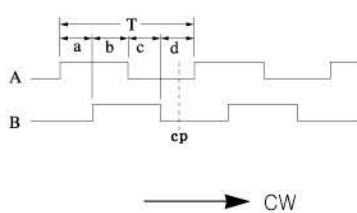
Mechanical Spec.	
Starting Torque	50g-cm Max.
Maximum number of revolution	600 rpm
Allowable Shaft Load	Radial : 1.8kg Max. Axial : 0.9kg Max.
Operating Temp. Range	-10°C ~ +70°C
Internal Vibration	5G
Internal Shock	50G
Degree of Protection	IP40

## Output Phase Shift

### Voltage Output, Open Collector

$$a + b, c + d = T/2 \pm T/8$$

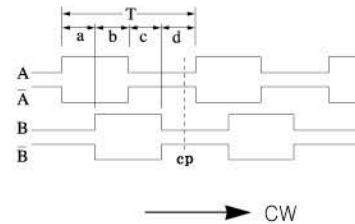
$$a, b, c, d = T/4 \pm T/8$$



### Line Driver

$$a + b, c + d = T/2 \pm T/8$$

$$a, b, c, d = T/4 \pm T/8$$

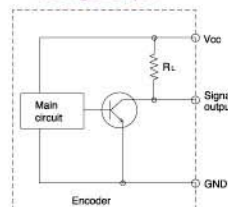


## Connection Table

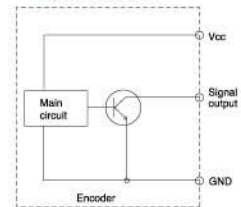
Cable Configuration					
OPEN COLLECTOR/VOLTAGE OUTPUT					
Vcc	0V	A		B	
(X)	(X)	(X)	(X)	(X)	(X)
LINE DRIVER					
Vcc	0V	A	$\bar{A}$	B	$\bar{B}$
(X)	(X)	(X)	(X)	(X)	(X)

## Output Circuit

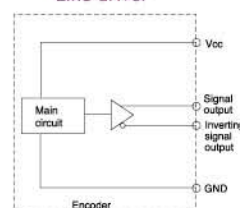
### Voltage output



### Open collector



### Line driver



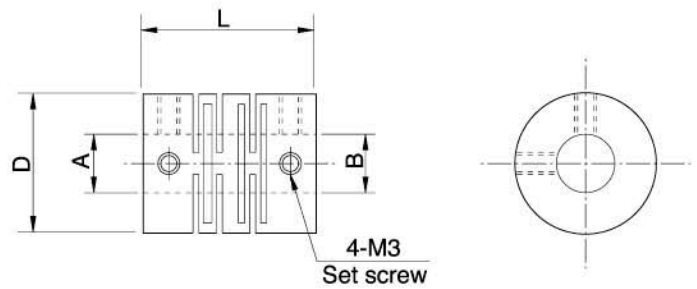


## Coupling

**Option**

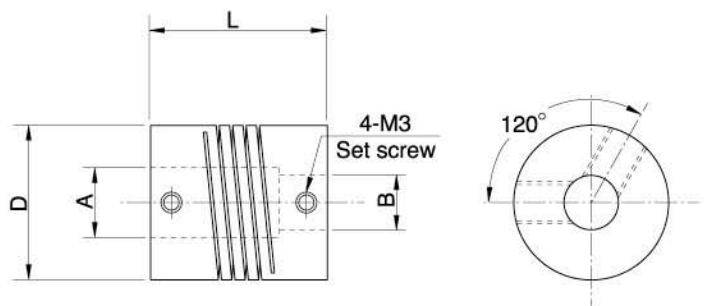
### Plastic coupling

Model	A	B	D	L
P 6-6	∅ 6	∅ 6	∅ 15	21.6
P 8-8	∅ 8	∅ 8	∅ 19	24



### Helical coupling

Model	A	B	D	L
H 6-6	∅ 6	∅ 6	∅ 19	22.2
H 8-8	∅ 8	∅ 8	∅ 22.2	22.2
H 6-10	∅ 6	∅ 10	∅ 22.2	22.2
H 8-10	∅ 8	∅ 10	∅ 22.2	22.2



### Disk coupling

Model	A	B	D	L
D 6-6	∅ 6	∅ 6	∅ 26	22.5
D 8-8	∅ 8	∅ 8	∅ 26	22.5
D 6-10	∅ 6	∅ 10	∅ 26	22.5
D 8-10	∅ 8	∅ 10	∅ 26	22.5

