

# Magnetic Encoder

Position & Velocity Sensor  
Rotary Encoder for Servo Motor



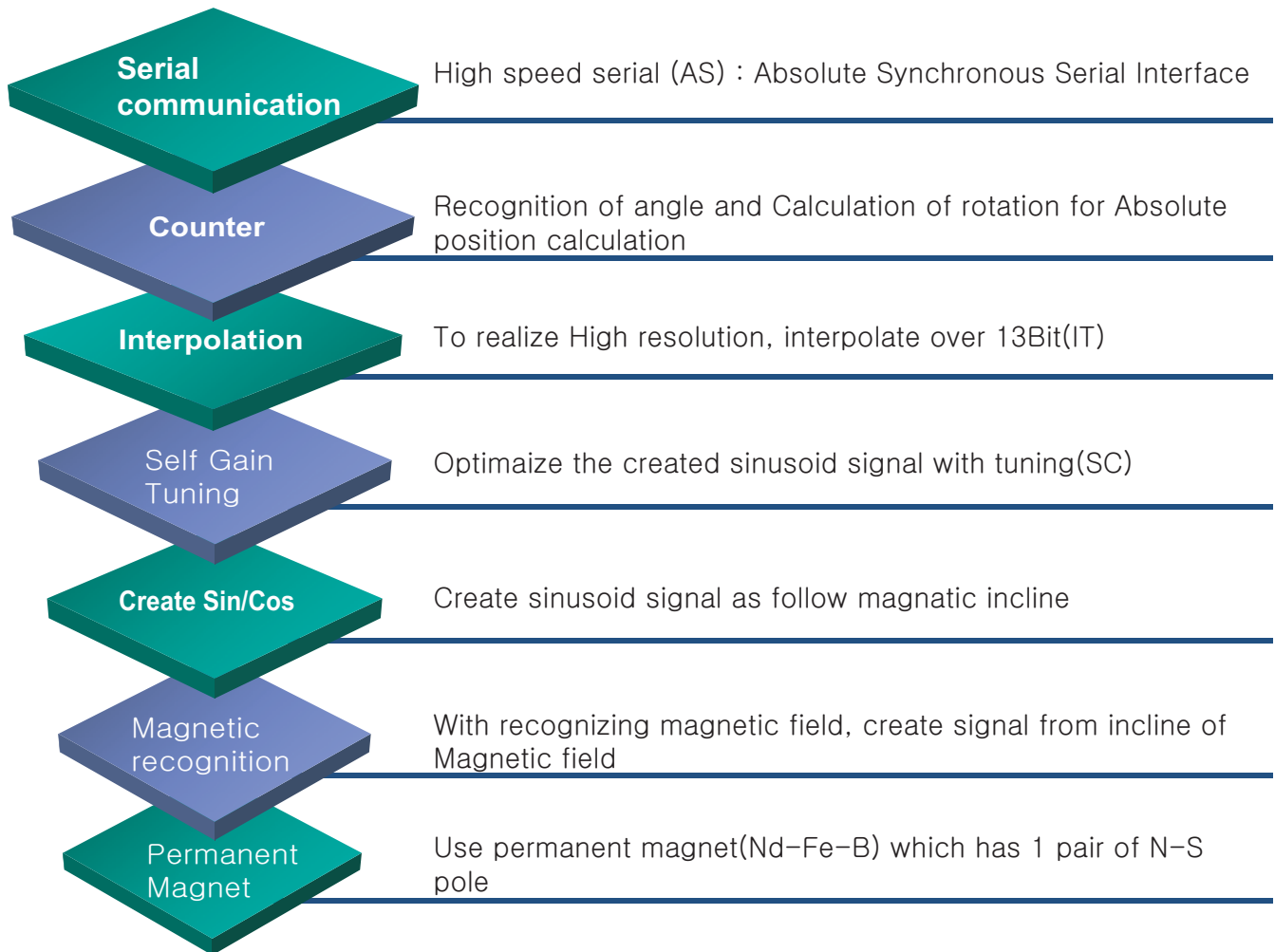


### For Servo Motors

### Water, Oil, Dust & Vibration Resistance

- Various output signal type
  - Absolute Synchronous Serial Interface(Max. 13bit, SSI)
  - Incremental square wave (Max. 13bit)
  - Sine/Cosine wave(1cycle/rev)
- Built-in Type
  - Easy assembly with rough tolerance between Permanent magnet(rotor) and Sensing part(stator)
  - Bearingless type. Rotor and stator is separated completely.
  - With non-contacted design, free of rust, vibration and lubrication
- Vibration resistance
  - The signal from optical encoder can be deformed from vibration. but magnetic encoder have very strong Vibration resistance(10G, G : Acceleration of Gravity)
- Anti-environment
  - Optical encoder can be made signal error from Oil, rust. but magnetic encoder has strong resistance from absorbed oil.
  - Using compact and strong Magnet(Nd-Fe-B), minimize external magnetic field influence
- Auto gain tuning
  - Keep Optimized signal with real time monitoring for signal and self-gain tuning when the signal is strong or weak from Temp. or mechanical deformation.
- Small & Thin Design
  - With Dia. 20mm, Thickness 20mm, it can be reduced over 70% of size compare with Optical encoder.

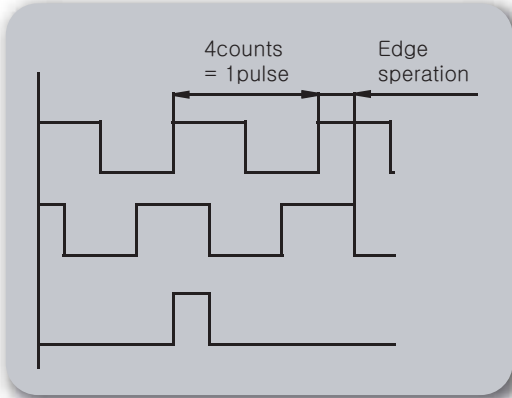
## Principle



## Wiring Index

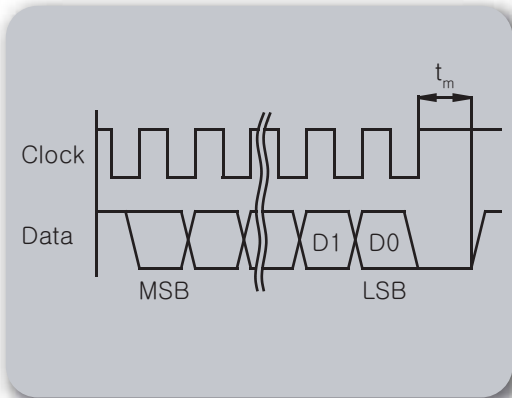
Cable Color	Output Signal		
	AS	SC	IT
Red	Vcc	Vcc	Vcc
Black	GND	GND	GND
Green	Data	Sine Wave	A Signal
Blue	$\overline{\text{Data}}$	$\overline{\text{Sine Wave}}$	$\overline{\text{A}}$ Signal
White	Clock	Cosine Wave	B Signal
Pink	$\overline{\text{Clock}}$	$\overline{\text{Cosine Wave}}$	$\overline{\text{B}}$ Signal
Yellow	-	-	Z Signal
Orange	-	-	$\overline{\text{Z}}$ Signal
Shield	Shield	Shield	Shield

## Incremental Square Wave



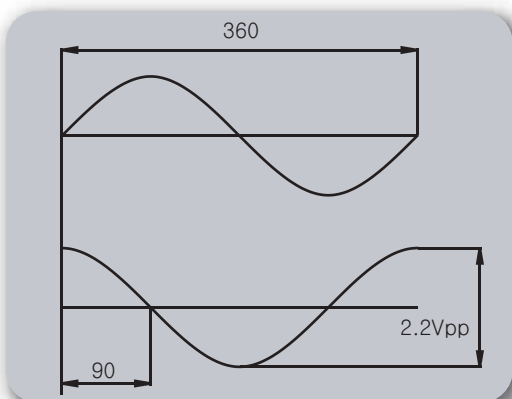
Power supply	5V ± 5%		
Power Consumption	50mA		
Output Signal	A, -A, B, -B, Z, -Z		
Max. cable length	20m		
Operating Temp.	-25~80°C		
Edge separation	Min. 1µsec		
Accuracy	±1°		
Time delay	Max. 100(~512p/r), 300µsec(~2048p/r)		
Resolutions	256pulse/rev	Max Speed	10,000rpm
	512pulse/rev		10,000rpm
	1024pulse/rev		5,000rpm
	2048pulse/rev		2,000rpm

## Absolute Synchronous Serial Interface



Power supply	5V ± 5%		
Power Consumption	50mA		
Data outputs	Serial data(RS422A)		
Data inputs	Clock(RS422A)		
Max. cable length	100m		
Operating Temp.	-25~80°C		
Accuracy	±1°		
Time delay	Max. 100(~512p/r), 300µsec(~2048p/r)		
Resolutions	1024counts/rev	Max Speed	10,000rpm
	2048counts/rev		10,000rpm
	4096counts/rev		5,000rpm
	8192counts/rev		2,000rpm

## Analog Sine/Cosine Wave



Power supply	5V ± 5%		
Resolution	One cycle per revolution		
Power Consumption	50mA		
Output Signal	Sine & Cosine wave		
Signal amplitude	1.1±0.2Vpp		
Max. cable length	3m		
Operating Temp.	-25~80°C		
Accuracy	±1°		
Max. speed	60,000rpm		
Output impedance	720Ω		
Time delay	Max. 100(~512p/r), 300µsec(~2048p/r)		

## Model Codes

### ME 2 - Output - Resolutions - Cable Length

ME2 : Magnetic Encoder Dia. 20mm  
ME3 : Magnetic Encoder Dia. 30mm  
MES : Magnetic Encoder For Servo motor

AS : Absolute SSI  
SC : Sine & Cosine wave  
IT : Incremental square wave

1: 1m, 2: 2m 3: 3m

Output : AS  
8192 counts/rev  
Output : SC  
0001 cycle/rev  
Output : IT  
0256 pulse/rev  
0512 pulse/rev  
1024 pulse/rev  
2048 pulse/rev

## Types

Standalone

Magnet & Joint Block



Magnetic Encoder

For Servo motor



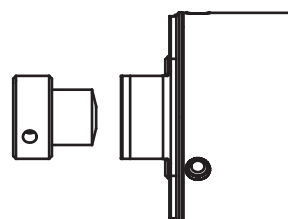
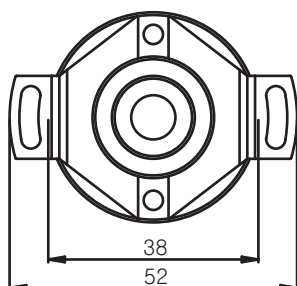
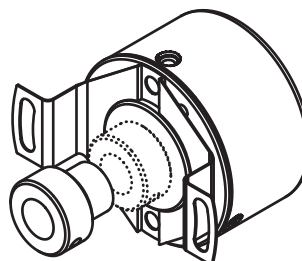
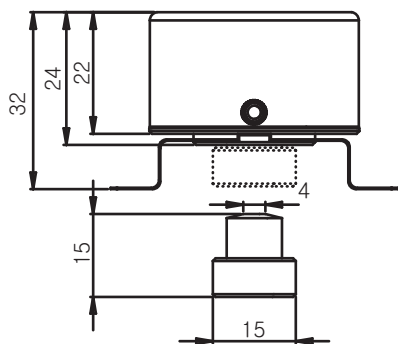
Magnet in the moter shaft



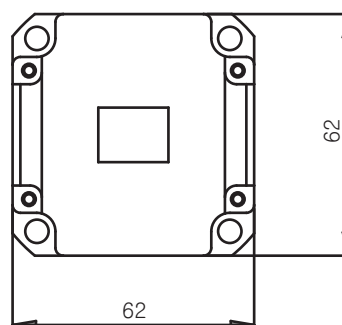
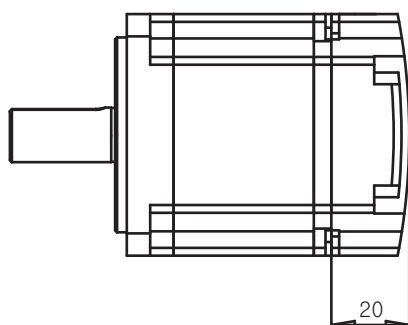
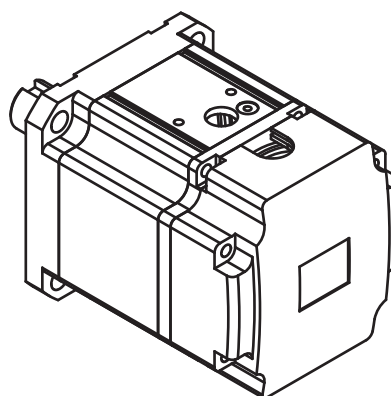
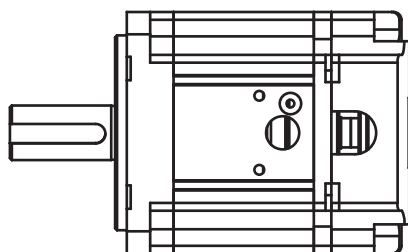
Magnetic Encoder

## Dimension

### Standalone



### For Servo motor



## Technical data

### Response

Magnetic Encoder has very excellent performance in hard environment and vibration and it is free of Friction, Abrasion and Lubrication so, can be used semi-permanently.

With its easy assembled design, can apply various solution as Built-in type.

As Magnetic encoder is magnetic induction type, Time(Pulse) delay is essential. so response frequency is needed. but when we tested it compared with optical incremental encoder. There was not big differency. because the delay from mechanical load when the motor is started is bigger than magnetic induction.

Tested Item : Magnetic Encoder(Incremental, 2048pulse/rev)

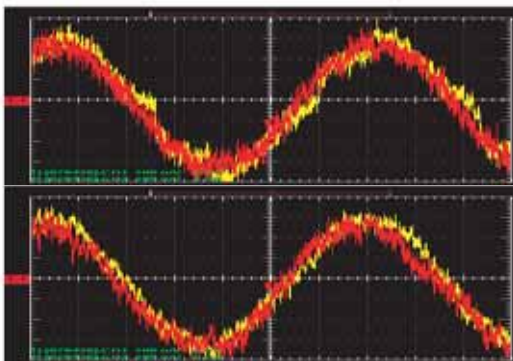
Optical Encoder(Incremental, 2048pulse/rev)

100W Servo motor & Servo drive

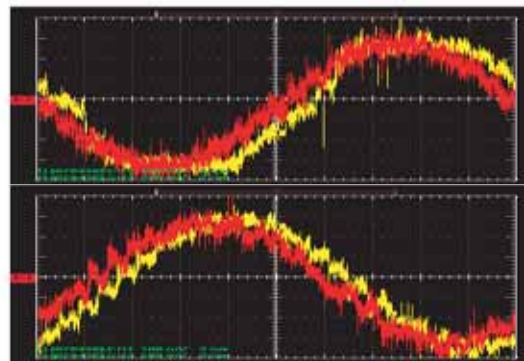
Speed : 300, 1500, 3000rpm

Frequency : 1~50Hz

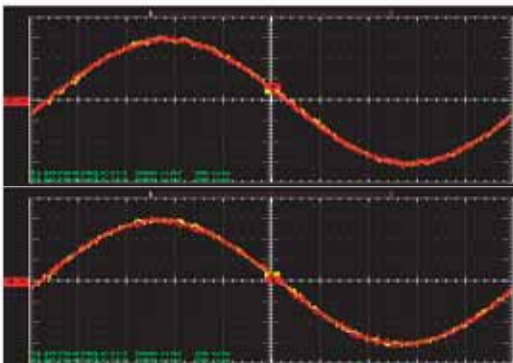
300rpm & 10Hz



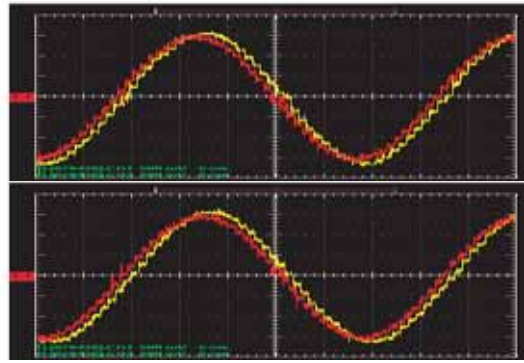
300rpm & 50Hz



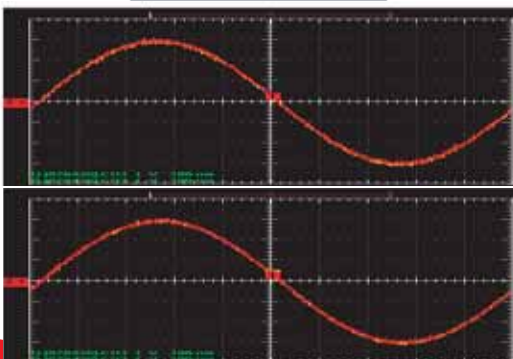
1500rpm & 5Hz



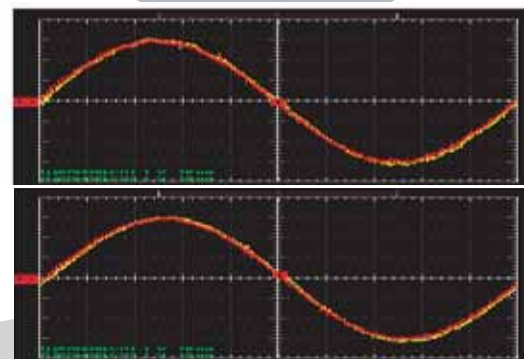
1500rpm & 30Hz



3000rpm & 1Hz



3000rpm & 10Hz





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