

Magnetic Absolute Rotary Encoder

Magnetic absolute Rotary encoder (MA Series)

MAP-E-01-003002

※ The magnetic encoder is very durable because it does not use optical components.
※ It is an encoder of reliable and excellent quality that is applicable to the automated control industry.
※ The above specifications are subject to change without notice.

Ordering Information							
MA50S	8		1024	B	F	N	24
Series	Outside diameter	Body material	Resolution	Output code	Rotating direction	Control output	Power supply
MA40S: Ø40mm Shaft	6: Ø6mm 8: Ø8mm	No mark: Aluminum	Refer to Resolution	B: Binary Code G: Gray Code	The rotation seen from the shaft F: clockwise count increment R: Counter-clockwise count increment	N: NPN Open collector	5 : 5VDC 24 : 12~24VDC
MA50S: Ø50mm Shaft	8: Ø8mm	P: Plastic (PA66-GF30)					

※ The PA66-GF15 is a lightweight material with very high stiffness, excellent wear resistance, very high strength, and resistance to oil and fuel applied to the aviation, automobile and machine industries.

Connections					
■ Parallel NPN Open collector output					
Function	Color	Function	Color	Function	Color
2 ⁰	Brown	2 ⁴	Blue	2 ⁸	Light green
2 ¹	Orange	2 ⁵	White	2 ⁹	Light blue
2 ²	Yellow	2 ⁶	Gray	+V	Red
2 ³	Green	2 ⁷	Purple	GND(0V)	Black
-				Shield	F.G.

※ Unused wires must be insulated.
※ The encoder and shield cable must be grounded (F.G.).
※ F.G. (Frame Ground) must be grounded separately.

Control output diagram

■ Parallel NPN Open collector output

Dimensions

■ Coupling: MA40S6 ■ MA40S: Outside diameter Ø40mm ※Unit:mm

	C	D
MA40S6	Ø6	5
MA40S8	Ø8	7

■ Coupling: MA40S8, MA50S8 ■ MA50S: Outside diameter Ø50mm

Specifications		
Model		Outside diameter Ø40mm, Ø50mm Magnetic absolute rotary encoder
Power supply		5VDC ± 5%, 5VDC~24VDC ± 5% (Ripple P-P : Max. 5%)
Current consumption		Max. 100mA (no load)
Resolution (Single-Turn)		8,10,32,45,60,64,100,128,200,256,300,360,500,512,720,1000,1024
Control Output	Output code	Binary Code, Gray Code
	Control output	Parallel NPN Open Collector
	NPN Open collector output	Load current: Max. 30mA, Residual voltage: Max. 1VDC
Hysteresis		± 1LSB
Max. Response frequency		30kHz
Max. Allowable revolution		5,000rpm
Shaft loading		Radial: Max. 2kg·f, Thrust: Max. 1kg·f
Shock		Max. 50G
Vibration		Max. 5G
Protection		IP50 (IEC standard)
Environment	Ambient temperature	-10 ~ 70℃ (no freezing or condensation)
	Storage temperature	-20 ~ 85℃ (no freezing or condensation)
	Ambient humidity	35% ~ 85% RH
	Storage humidity	35% ~ 90% RH
MA50S Series		Axial cable type
MA40S Series		Radial cable type
Cable		Shield cable, Length: 1.5m
Accessory		Product, Coupling, Bolt, Instruction manual
Approval		CE ※excluding some items

※ Select resolution to satisfy Max. allowable revolution ≥ Max.response revolution
※ Max.response revolution (rpm) = (Max.response frequency / resolution) X 60 sec

Output Waveform

■ 1024 division Binary code

※ The waveform shown is a positive logic waveform. Negative logic output is obtained by inverting the waveform. (High=0, Low=1)

■ 1024 division Gray code

※ The waveform shown is a positive logic waveform. Negative logic output is obtained by inverting the waveform. (High=0, Low=1)
※ Gray code can solve the problem of individual bit delay since only one bit changes.

- Cautions during use
- Environment
- Please do not use this unit with below environment, or it may cause malfunction.
- 1) Place where this unit or component may be damaged by strong vibration or impact.
- 2) Place where there is a lot of flammable or corrosive gases.
- 3) Place where strong magnet field or electric noise occurs.
- 4) Place where strong acids or alkali near and direct ray of the sun.
- Cautions during installation
- 1) Do not load overweight on the shaft.
- 2) Do not put strong impact when insert a coupling into shaft.
- 3) If the coupling error (parallel misalignment, angular misalignment) between the shaft increases while installation, the life cycle of the coupling and the encoder can be shorten.
- 4) Do not connect, repair, or inspect the unit while connected to a power source.
- 5) If a big impact or strong vibration applies to the product it may cause pulse errors.
- Wire Connection
- 1) Do not pull out the wire with over 20N strength after fixing the unit and wiring the cable.
- 2) if wire encoder cable with high voltage line or power cable in the same conduit, it may cause a malfunction or mechanical problem. Please wire it separately or use separated conduit.
- Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss.
- 1) medical equipment, ship, vehicle, railways, aircraft, safety equipment, etc
- 2) Failure to follow this instruction may result in personal injury, economic loss or fire