Inductive Absolute Rotary Encoder

인덕티브 앱솔루트 로터리 엔코더 (IA Series)

IAS-E-02-003002

※ The Inductive 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

IA40H	8		1024	B	F	S	24

Series	Shaft Inner diameter	Body material	Resolution	Output code	Rotating direction	Control output	Power supply
IA40: Ø40㎜ H : Hollow HB: Hollow Built-in	6: Ø6㎜ 8: Ø8㎜	No mark: Aluminum P: Plastic (PA66-GF30)	Refer to Resolution	B:Binary Code G:Gray Code	The rotation seen from the shaft F:clockwise count increment R:Counter-clockwise count increment	S: SSI Line driver	5 : 5VDC 24: 12~24VDC

※ 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

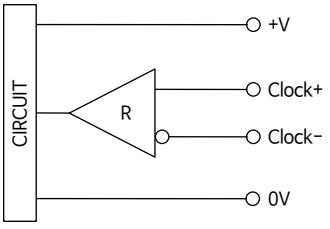
■ SSI Line driver output

Function	Color	Function	Color
CLOCK+	Green	CLOCK-	Yellow
DATA+	White	DATA-	Blue
+V	Red	GND(0V)	Black
Shield	F.G.	-	

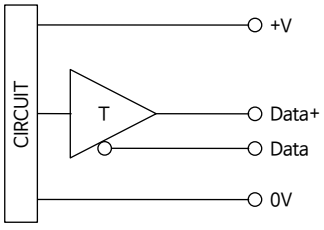
※ Unused wires must be insulated.
※ The encoder and shield cable must be grounded (F.G.).
※ F.G. (Frame Ground) must be grounded separately.

Control output diagram

■ SSI Line driver Clock input



■ SSI Line driver Data output

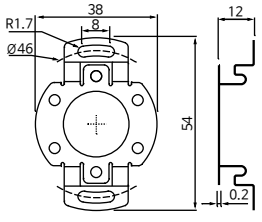


※ SSI Line driver input, output level: 3.3VDC ~ 5VDC

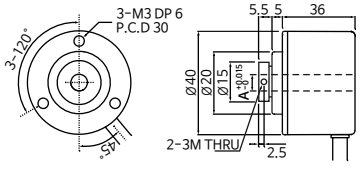
Dimensions

※Unit:㎜

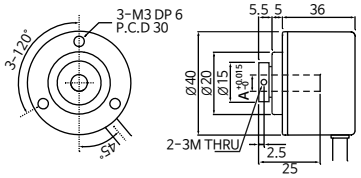
■ **Bracket** : IA40H, IA40HB



■ **IA40H**: Hollow type



■ **IA40HB**: Hollow Built-in type



	A
IA40H(B)6	Ø6
IA40H(B)8	Ø8

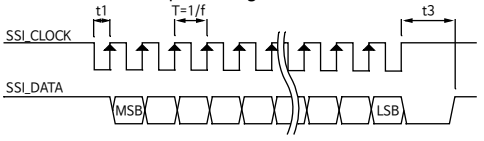
Specifications

Model		Outside diameter Ø40㎜, Ø50㎜ Inductive absolute rotary encoder
Power supply		5VDC±5%, 5VDC~24VDC±5% (Ripple P-P : Max. 5%)
Current consumption		Max. 100㎃(no load)
Resolution	Resolution(Single-Turn)	60,64,100,128,200,256,300,360,500,512,720,1000,1024,2048,4096
	Multi-Turn	16384 revolution(14bit) ※Multi-Turn is reset when the product is powered on/off.
Control Output	Output code	Binary Code, Gray Code
	Output signal	SSI(Synchronous Serial Interface) Line driver output
	Line driver output	Load current : 「H」Level Io = Max. -20㎃, 「L」Level Is = Max. 20㎃ Output voltage: Min. 2.5VDC, Vs = Max. 0.5VDC
Control Input	Clock input level	3.3VDC ~ 5VDC
	Clock input frequency	50㎑ ~ 500㎑
Hysteresis		± 1LSB
Max. Response frequency		30㎑
Max. Allowable revolution		5,000rpm
Shaft loading		Radial: Max. 2㎏·f, Thrust: Max. 1㎏·f
Shock		Max. 50G
Vibration		Max. 5G
Protection		IA40HB:IP50, IA40H:IP40 ※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
IA40H(B) Series		Radial cable type
Cable		Shield cable, Length: 1.5m
Accessory		Product, Bracket, 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

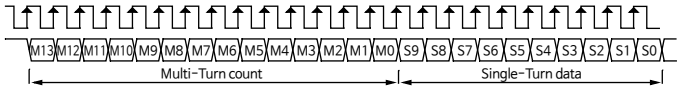
Output Waveform

■ SSI Line driver output timing chart



CLOCK frequency (f)	50㎑ ~500㎑
T	T: 2㎲ ~20㎲
	1㎲ < t1 < 10㎲
Monoflop Time (t3)	15㎲ < t3 < 30㎲

■ SSI Line driver output data output



Clock input bit	Data output	Data output bit
1	Multi-Turn count	13bit(MSB)
2		12bit
3		11bit
4		10bit
5		9bit
6		8bit
7		7bit
8		6bit
9		5bit
10		4bit
11		3bit
12		2bit
13		1bit
14		0bit(LSB)

Clock input bit	Data output	Data output bit
15	Single-Turn data	9bit(MSB)
16		8bit
17		7bit
18		6bit
19		5bit
20		4bit
21		3bit
22		2bit
23		1bit
24		0bit(LSB)

※ **Multi-Turn**: Rotations,
Single-Turn: Resolution of 1 revolution

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