Autonics

ROTARY ENCODER(INCREMENTAL TYPE)
E100H SERIES
M A N U A L

Thank you very much for selecting Autonics products.
For your safety, please read the following before using.

▣ Caution for your safety

※Please keep these instructions and review them before using this unit.

※Please observe the cautions that follow;

⚠ Warning Serious injury may result if instructions are not followed.

⚠ Caution Product may be damaged, or injury may result if instructions are not followed.

※The following is an explanation of the symbols used in the operation manual.
⚠caution:Injury or danger may occur under special conditions.

⚠ Warning

1. When use this unit for controlling highly affective equipment to human or properties. (Medical instrument, Vehicles, Train, Airplane, combustion apparatus, entertainment etc.), it requires installing a fail safety device.
It may cause serious human injury or a fire, property.

⚠ Caution

1. Do not drop water or oil on this unit.
It may cause damage or miscontrol due to malfunction.
2. Please observe voltage rating.
It may shorten the life cycle or damage to the product.
3. Please check the polarity of power and wrong wiring.
It may result in damage to this unit.
4. Do not short circuit the load.
It may result in damage to this unit.

▣ Outline

This Rotary Encoder is optical incremental type, these Encoder register position and angular speed determination by counting the number of pulses on the rotary shaft.

▣ Ordering information

E100H	1024	4	2
Series	Pulse/1Revolution	Output phase	Output
E100H (Diameter ϕ100mm, Inside diametert ϕ35mm hollow type Rotary encoder)	A, B : 256, 1024 C, D : 30 Z : 1	4 : A, B, C, D 6 : A, B, Z, $\overline{A}$, $\overline{B}$, $\overline{Z}$	2 : NPN open collector output 3 : Voltage output L : Line Driver output

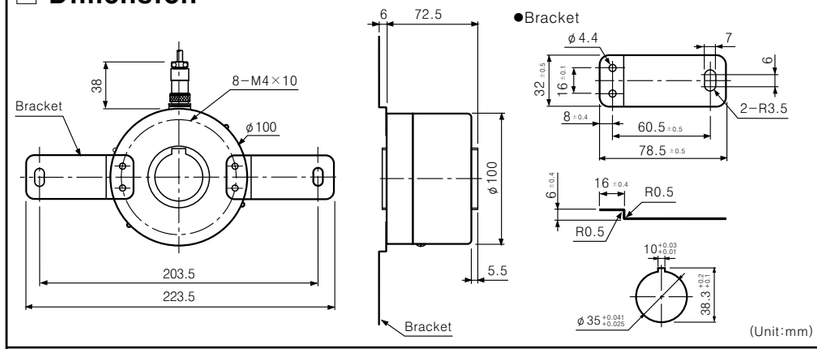
※The above specification are changeable without notice anytime.

▣ Specification

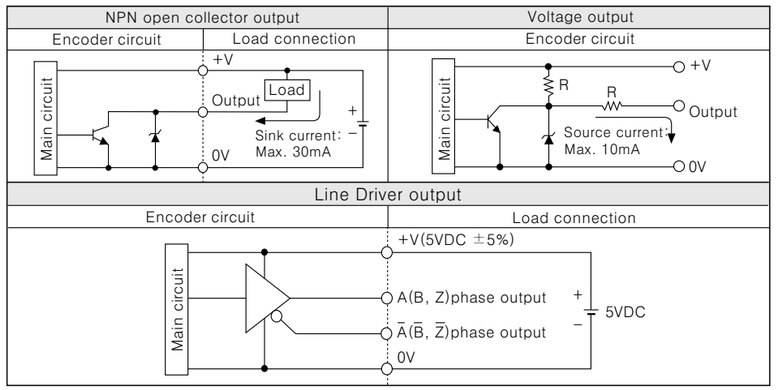
Item			Hollow type Rotary Encoder(Incremental Type)
Model		NPN open collector output	E100H-□□□□-□-2
		Line Driver output	E100H-□□□□-□-L (※)
Resoution			• A, B : 256(P/R), 1024(P/R) • C, D : 30(P/R) • Z : 1(P/R)
Electrical specification	Output phase		• A, B, C, D phase • A, B, Z, $\overline{A}$, $\overline{B}$, $\overline{Z}$
	Output of phase difference		• Phase difference between A and B : $\frac{T}{4} \pm \frac{T}{10}$(1cycle of A phase=T) • Phase difference between C and D : $\frac{T1}{4} \pm \frac{T1}{10}$(1cycle of C phase=T1)
	Control output	NPN open collector output	Load voltage:Max. 30V, Load current:Max. 30mA, Residual voltage:Max. 0.4V
		Line Driver output	Low ☞ Load current:20mA, Residual:Max. 0.5V High ☞ Load current:Max. −20mA, Output voltage:Min. 2.5V
	Response time (Rise & Fall)	NPN open collector output(Voltage output)	A, B : Max. 1㎲(Cable:1m, sink current=30mA) C, D : Max. 5㎲(Cable:1m, sink current=30mA)
		Line Driver output	Max. 1㎲(Cable:1m, sink current=20mA)
	Power supply	NPN open collector output	5VDC ±5%(Ripple P-P : Max. 5%)
		Line Driver output	
	Current consump-tion	NPN open collector output	Max. 70mA(No load)
		Line Driver output	Max. 100mA(No load)
	Max. Response frequency		256 P/R=13kHz, 1024 P/R=51kHz
	Connection		Connector type / Cable type(Option) ※Connection cable : 5m(Option:10m)
Mechanical specification	Starting torque		Max. 200gf • cm(19600 μN • m)
	Moment of inertia		800gf • cm² (8×10⁻⁵kg • m²)
	Shaft loading		Radial : 4kg, Thrust : 2kg
	Mechanical revolution(rpm)		3000rpm
Insulation resistance			Min. 100MΩ(at 500VDC)
Dielectric strength			750VAC 50/60Hz 1 minute(Between all terminals and case)
Vibration			1.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours
Shock			Max. 30G
Ambient temperature			−10 to 70℃(Non-freezing condition), Storage:−25 to 85℃
Ambient humidity			35 to 85%RH, Storage 35 to 90%RH
Protection			IP50(IEC)
Weight			Approx. 1200g
Accessory			Spring bracket
Approval			CE (Model with ※Mark is not approved)

※Voltage output type is optional for 5VDC.
※Control output type is optional by every model.
※Resolution and output phase can be developed or changed by company specification.

▣ Dimension

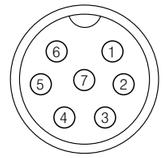
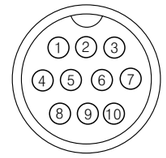


▣ Control output diagram



※All output circuit is A, B, Z phase(Line driver output is A, $\overline{A}$, B, $\overline{B}$, Z, $\overline{Z}$)

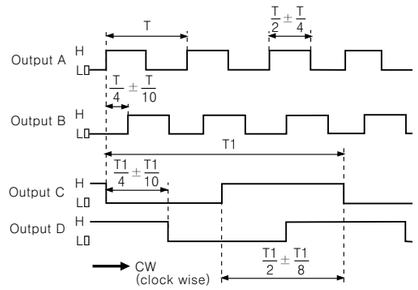
▣ Connection

NPN open collector output		Line Driver output	
	①Red:BP5A(VCC) ②Black:BNC2(GND) ③White:A phase ④Yellow:B phase ⑤Orange:C phase ⑥Green:D phase ⑦Shield:F.G.		①Brown:+5VDC ②Blue:0V ③Black:OUT A ④Red:OUT $\overline{A}$ ⑤Shield ⑥White:OUT B ⑦Gray:OUT $\overline{B}$ ⑧Orange:OUT Z ⑨Yellow:OUT $\overline{Z}$ ⑩N.C
●SCN-16-7P		●DC-20-10-RN	

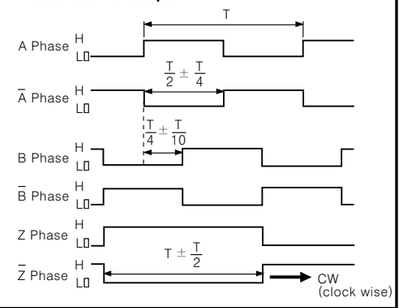
※Non-using wires must be insulated.

▣ Output waveform

●NPN open collector / Voltage output



●Line Driver output



▣ Caution for using

1. Installation
 ①This unit is consisted of precision components. Therefore please treat this product carefully.
 ②For the installation, please check the assembly dimension of mate target, then try not to occur the offset between them.
 ③Do not put strong impact when insert coupling into shaft.
2. For using
 ①Please connect shield wire to F.G terminal.
 ②Do not connect and cut circuit off during power on. It may result in damage to this unit.
 ③When the power source is a Switching power, please install the surge absorber in power line and wire should be short in order not to be influenced by noise.
 ④Please apply 5VDC to encoder when use Line Driver type.
3. Environment
 Please do not use this unit with below environment, it results in malfunction.
 ①Place where this unit or component may be damaged by strong vibration or impact.
 ②Place where there are lots of flammable or corrosive gases.
 ③Place where strong magnet field or electric noise are occurred.
 ④Place where is beyond of rating temperature or humidity.
 ⑤Place where strong acids or alkali near by.
4. Vibration and Impact
 ①When the strong impact loads on this unit, the error pulse may occur as if the slit is revolving.
 ②Please fix this unit firmly when mount it in order to avoid malfunction by residual vibration.
5. Wire connection
 ①If use the cable of encoder and high voltage line or power cable in the same conduit, it may cause a malfunction or mechanical trouble. Please wire separately or use separated conduit.
 ②Please check wire and response frequency when extend wire, distortion of waveform or residual voltage increment by line resistance or capacity between lines.

※It may cause malfunction if above instructions are not followed.

▣ Main products

■ COUNTER
■ TIMER
■ TEMPERATURE CONTROLLER
■ PANEL METER
■ TACHOMETER
■ LINE SPEED METER
■ DISPLAY UNIT
■ PROXIMITY SWITCH
■ PHOTOELECTRIC SENSOR
■ FIBER OPTIC SENSOR
■ PRESSURE SENSOR
■ ROTARY ENCODER
■ SENSOR CONTROLLER
■ POWER CONTROLLER
■ STEPPING MOTOR & DRIVER & CONTROLLER

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