

Autonics

ROTARY ENCODER(HAND TYPE) ENH 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 pluses on the rotary shaft.

Ordering information

ENH	100	1	T	24
Series	Pulse/ 1Revolution	Click stop position	Output	Power supply
Handle type	25 P/R 100 P/R	1 : Normal "H" 2 : Normal "L"	T : Totem pole output V : Voltage output L : Line driver output	5 : 5VDC ±5% 24 : 12~24VDC ±5%

*The power of Line driver is only for 5VDC

*The above specification are changeable without notice anytime.

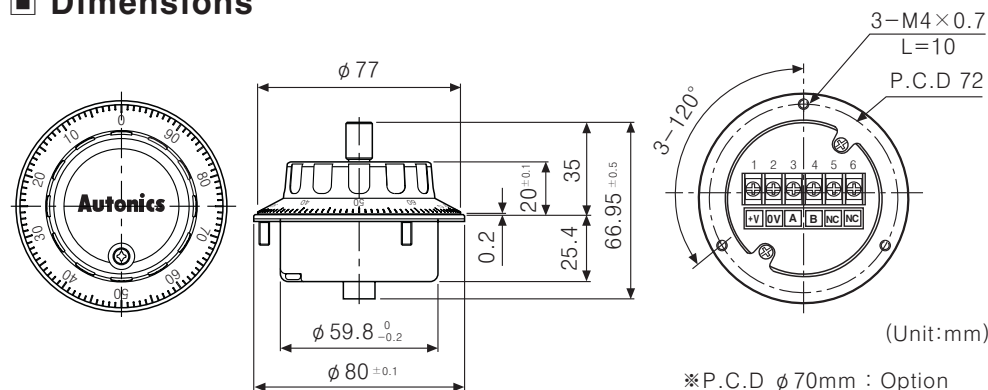
Specifications

Item	Handle type Incremental Rotary encoder	
Model	Totempole output	ENH-□-1-T-□, ENH-□-2-T-□
	Voltage output	ENH-□-1-V-□, ENH-□-2-V-□
	Line driver output	ENH-□-1-L-□, ENH-□-2-L-□
Resolution (P/R)	25P/R, 100P/R(Not indicated type is available to customize)	
Output phase	A, B phase (Line driver output A, \bar{A} , B, \bar{B} phase)	
Phase difference of output	Output between A and B phase : $\frac{T}{4} \pm \frac{T}{8}$ (T=1cycle of A phase)	
Control output	Totempole output	• Low Load current:Max. 30mA, Residual voltage:Max. 0.4VDC • High Load current:Max. 10mA, Output voltage(Power supply 5VDC):Min. (Power supply-2.0)VDC, Output voltage(Power supply 12~24VDC):Min. (Power supply-3.0)VDC
	Voltage output	Load current:Max. 10mA, Residual voltage:Max. 0.4VDC
	Line driver output	• Low Load current:Max. 20mA, Residual:Max. 0.5V • High Load current:Max. -20mA, Output voltage:Min. 2.5V
Response time (Rise & Fall)	Totempole output	Max. 1μs
	Voltage output	Max. 1μs
	Line driver output	Max. 0.2μs
Power supply	Totempole output	• 5VDC ±5%(Ripple P-P:Max. 5%) • 12~24VDC ±5%(Ripple P-P:Max. 5%)
	Voltage output	
	Line driver output	5VDC ±5%(Ripple P-P:Max. 5%)
Current consumption	Max. 40mA(disconnection of the load), Line driver output:Max. 50mA(disconnection of the load)	
Max. Response frequency	10kHz	
Insulation resistance	Min. 100MΩ(at 500VDC between all terminals and case)	
Dielectric strength	750VAC 50/60Hz for 1 minute(Between all terminals and case)	
Connection	Terminal block type	
Mechanical specification	Starting torque	Max. 1kgf·cm(0.098N·m)
	Shaft loading	Radial:2kgf, Thrust:1kgf
	Mechanical revolution	(Note1) Max. 200rpm(Normal), 600rpm(Peak)
Vibration	1.5mm amplitude at frequency of 10~55Hz in each of X, Y, Z directions for 2 hours	
Shock	Max. 50G	
Ambient temperature	-10~70°C(at non-freezing status), Storage:-25~85°C	
Ambient humidity	35~85%RH, Storage: 35~90%RH	
Protection	IP50(IEC standard)	
Weight	Approx. 300g	

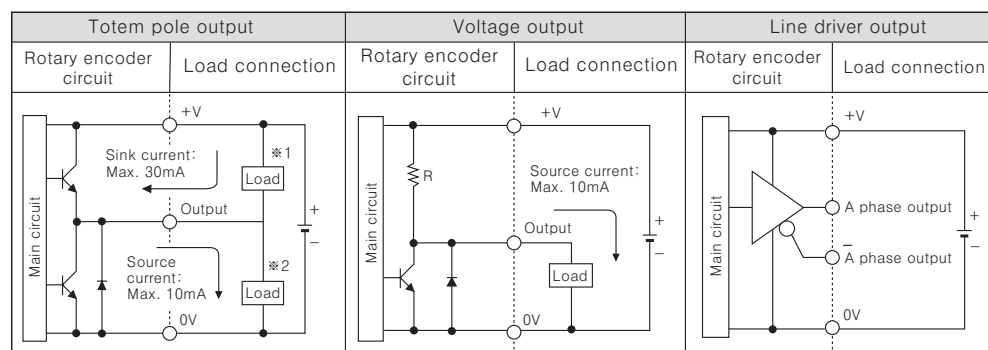
* (Note1) Max. allowable revolution ≥ Max. response revolution

$$[\text{Max. response revolution}(\text{rpm}) = \frac{\text{Max. response frequency}}{\text{Resolution}} \times 60 \text{ sec}]$$
 Please select the resolution to make lower max. revolution than max. allowable revolution.

Dimensions



Control output diagram

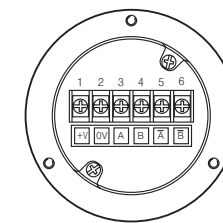
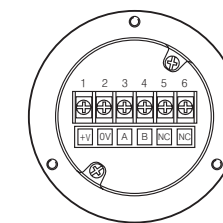


* The output circuit of A, B, Z phase are the same. (Line Driver output is A, \bar{A} , B, \bar{B} , Z, \bar{Z})
 * Totem pole output can be used for NPN open collector type(*1) or voltage output type(*2).

Connections

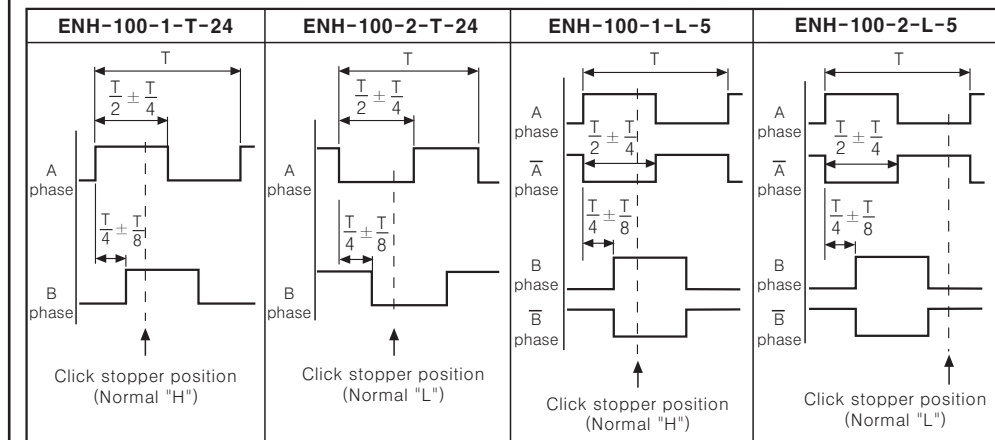
• Totempole output / Voltage output

• Line driver output



*Do not use terminals 5 and 6.

Output waveform



*Click stopper position Normal "H" or Normal "L" : It shows the wave form when the handle is stopped.

Caution for using

- 1. Installation**
 - ① This unit is consisted of precision components. Therefore please treat this product carefully.
 - ② Panel for installing this unit should be good earth ground.
 - ③ When the surge occurred in power source, please install a surge absorber for removing surge.
 - 2. For using**
 - ① Please use attached Sil Twist pair wire and use proper receiver for RS-422A communication.
 - ② Do not connect and cut circuit off during power on. It may result in damage to this unit.
 - 3. Environment**
 - ① Please do not use this unit with below environment, it results in malfunction.
 - ① Place where strong magnet field or electric noise are occurred.
 - ② Place where is beyond of rating temperature or humidity.
 - 4. Vibration and Impact**
 - ① Do not put strong impact when mount this unit on panel.
 - ② Please fix this unit firmly when mount it in order to avoid malfunction by residual vibration.
 - 5. Wire connection**
 - ① If 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.
 - ② Please make the cable as shorter as it can be in order to avoid noise affection.
 - ③ Please fix terminal block firmly for not escaped when pull the wire from terminal block with 10N strength.
- *It may cause malfunction if above instructions are not followed.

Major products

- PROXIMITY SENSOR ■ PHOTOELECTRIC SENSOR
- AREA SENSOR ■ FIBER OPTIC SENSOR
- DOOR/DOOR SIDE SENSOR
- PRESSURE SENSOR
- ROTARY ENCODER ■ COUNTER
- TIMER ■ TEMPERATURE CONTROLLER
- TEMPERATURE/HUMIDITY TRANSDUCER
- POWER CONTROLLER ■ PANEL METER
- TACHO/LINE SPEED/PULSE METER
- DISPLAY UNIT ■ SENSOR CONTROLLER
- SWITCHING POWER SUPPLY
- GRAPHIC PANEL
- 5-PHASE STEPPING MOTOR & DRIVER & CONTROLLER
- LASER MARKING SYSTEM(CO2, Nd:YAG)

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