

Autonics  
Portable handle type Rotary encoder(INCREMENTAL TYPE)  
ENHP 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 caution 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. In case of using this unit with machinery(Ex: nuclear power control, medical equipment, ship, vehicle, train, airplane, combustion apparatus, safety device, crime/disaster prevention equipment, etc) which may cause damages to human life or property, it is required to install fail-safe device.  
It may cause a fire, human injury or damage to property.

Caution

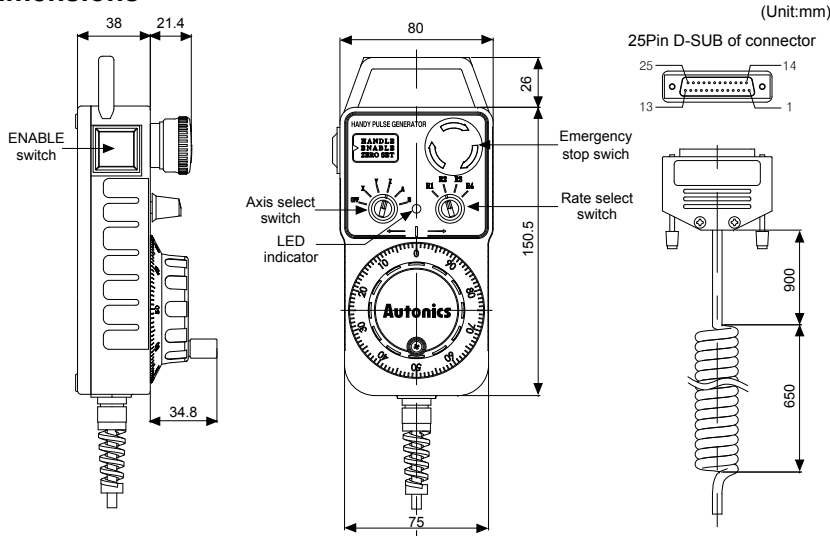
1. Do not drop water or oil on this unit.  
It may cause damage or miscontrol due to malfunction.
2. Please observe the rated voltage.  
It may shorten the life cycle or damage to the product.
3. Please check the polarity of power and wrong wiring.  
It may result in damage to this unit.
4. Do not short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

Ordering information

| Model           | Pulse/1Revolution | Clickstopper position | Control output     | Power supply |
|-----------------|-------------------|-----------------------|--------------------|--------------|
| ENHP-100-1-T-5  | 100 P/R           | Normal "H"            | Totem pole output  | 5VDC±5%      |
| ENHP-100-1-T-24 |                   |                       |                    | 12-24VDC±5%  |
| ENHP-100-2-T-5  |                   | Normal "L"            |                    | 5VDC±5%      |
| ENHP-100-2-T-24 |                   |                       |                    | 12-24VDC±5%  |
| ENHP-100-1-L-5  |                   | Normal "H"            | Line driver output | 5VDC±5%      |
| ENHP-100-2-L-5  |                   | Normal "L"            |                    |              |

※Line driver power is only 5VDC.

Dimensions



※The above specifications are subject to change without notice.

Specifications

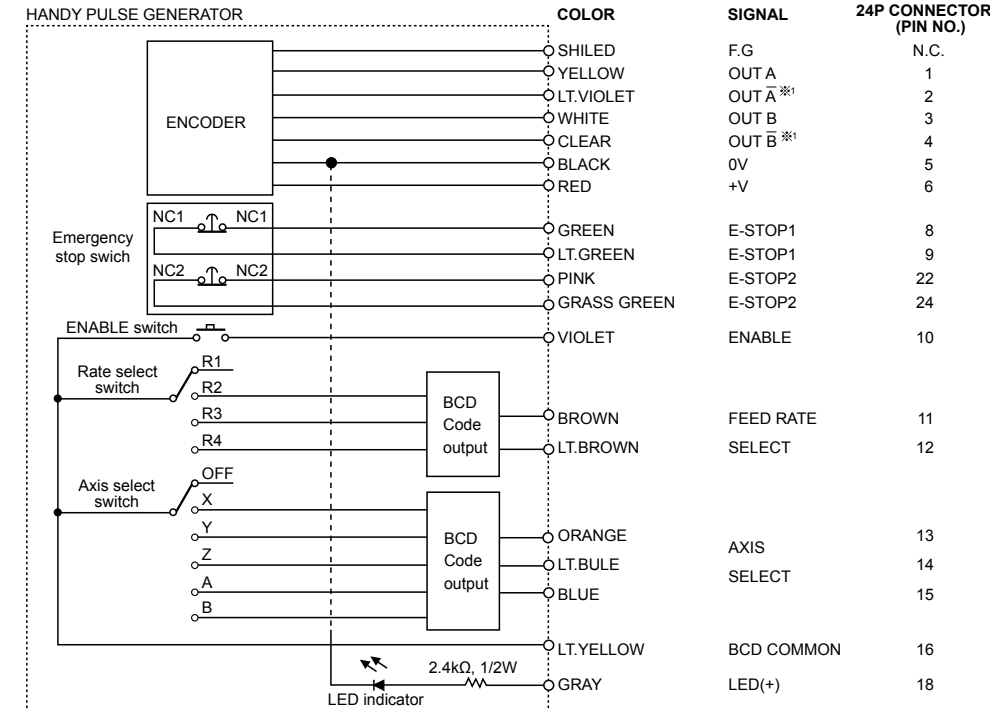
|                          |                            |   |  |   |  |
|--------------------------|----------------------------|---|--|---|--|
| Model                    |                            | ENHP-100-1-T-□, ENHP-100-2-T-□  |  | ENHP-100-1-L-5, ENHP-100-2-L-5  |  |
| Control output           |                            | Totem pole output   |  | Line driver output  |  |
| Resolution(P/R)          |                            | 100 P/R   |  |   |  |
| Output phase             |                            | A, B phase  |  | A, $\bar{A}$ , B, $\bar{B}$ phase   |  |
| Mechanical specification | Phase difference of output | Phase difference between A and B : $\frac{T}{4} \pm \frac{T}{8}$ (T=1 cycle of A phase)   |  |   |  |
|                          | Rotary switch output       | BCD Code output    ●AXIS SELECT SWITCH(OFF, X, Y, Z, A, B)<br>●RATE SELECT SWITCH(R1, R2, R3, R4)   |  |   |  |
|                          | Control output             | ●Low $\leq$ Low current : Max. 30mA,<br>Residual voltage : Max. 0.4VDC<br>●High $\leq$ Low current : Max. 10mA,<br>Output voltage (Power supply 5VDC):<br>Min. (Power supply-2.0)VDC,<br>Output voltage(Power supply 12-24VDC):<br>Min. (Power supply-3.0)VDC |  | ● Low $\leq$ Low current : Max. 20mA,<br>Residual voltage : Max. 0.5VDC<br><br>● High $\leq$ Low current : Max. -20mA,<br>Output voltage: Min. 2.5VDC |  |
|                          | Response time (Rise/Fall)  | Max. 1 $\mu$ S (Cable length: 1m, I sink=Max. 20mA)   |  | Max. 0.5 $\mu$ S (Cable length: 1m, I sink=Max. 20mA)   |  |
|                          | Power supply               | ●5VDC $\pm$ 5%(Ripple P-P: Max. 5%)<br>●12-24VDC $\pm$ 5%(Ripple P-P: Max. 5%)  |  | 5VDC $\pm$ 5%(Ripple P-P: Max. 5%)  |  |
|                          | Current consumption        | Max. 40mA(disconnection of the load)  |  | Min. 50mA(disconnection of the load)  |  |
|                          | Max. Respose frequency     | 10kHz   |  |   |  |
|                          | Insulation resistance      | Min.100M $\Omega$ (at 500VDC megger between all terminals and case)   |  |   |  |
|                          | Dielectric strength        | 750VAC 50/60Hz for 1 minute(Between all terminals and case)   |  |   |  |
|                          | Connection                 | 25Pin D-SUB of connector type   |  |   |  |
| Mechanical specification | Starting torque            | Max. 1kgf·cm(0.098N·m)  |  |   |  |
|                          | Shaft loading              | Radial: 2kgf, Thrust: 1kgf  |  |   |  |
|                          | Max. allowable revolution  | Max. 200rpm(Normal), 600rpm(Peak)   |  |   |  |
| Vibration                |                            | 1.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours  |  |   |  |
| Shock                    |                            | Max. 50G  |  |   |  |
| Envi-<br>ronment         | Ambient temperature        | -10 to 70°C, Storage: -25 to 85°C   |  |   |  |
|                          | Ambient humidity           | 35 to 85%RH, Storage: 35 to 90%RH   |  |   |  |
| Protection               |                            | IP50(IEC standards)   |  |   |  |
| Cable                    |                            | $\phi$ 5mm, 18P, Length: 8m, Spring code cable (AWG28, Core wire diameter:0.08mm, No. of core wire:18, Insulator out diameter:Ø0.7mm)   |  |   |  |
| Unit weight              |                            | Approx. 730g  |  |   |  |

※1: Make sure that max. response revolution should be lower than or equal to max. allowable revolution when selecting the resoultion.

$$[\text{Max. response revolution(rpm)}] = \frac{\text{Max. response frequency}}{\text{revolution}} \times 60 \text{ sec.}]$$

※The temperature or humidity mentioned in Environment indicates a non freezing or condensation environment.

Connections



AXIS SELECT

| AXIS   | BCD Code output |           |           |
|--------|-----------------|-----------|-----------|
|        | PIN NO.15       | PIN NO.14 | PIN NO.13 |
| OFF    | 0               | 0         | 0         |
| X axis | 0               | 0         | 1         |
| Y axis | 0               | 1         | 0         |
| Z axis | 0               | 1         | 1         |
| A axis | 1               | 0         | 0         |
| B axis | 1               | 0         | 1         |

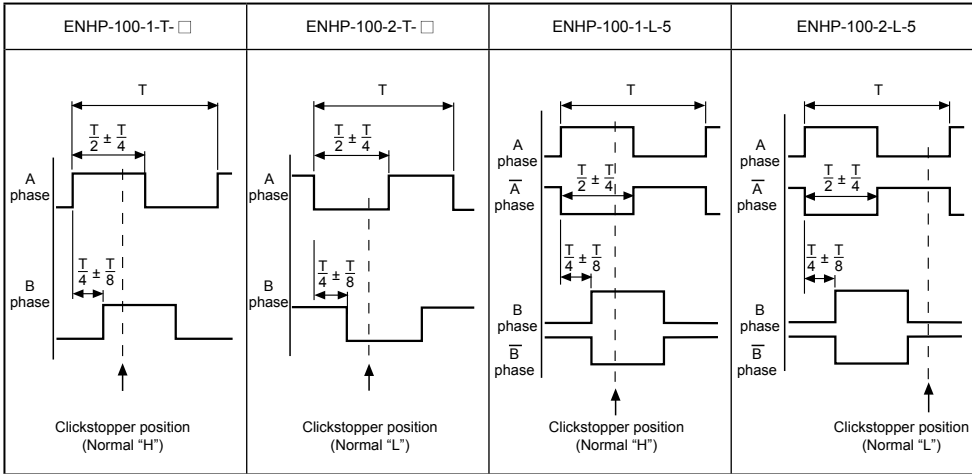
※1. Totem pole output does not have  $\bar{A}$ ,  $\bar{B}$  output signal.

※COMMON terminal (PIN NO.16) of Axis select switch and Rate select switch is common.

RATE SELECT

| RATE | BCD Code output |           |
|------|-----------------|-----------|
|      | PIN NO.12       | PIN NO.11 |
| R1   | 0               | 0         |
| R2   | 0               | 1         |
| R3   | 1               | 0         |
| R4   | 1               | 1         |

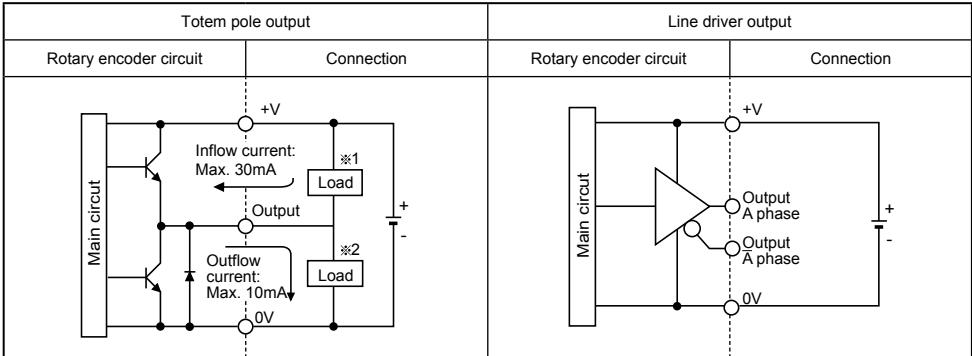
Output waveform



※Clickstopper position Normal "H" or Normal "L": It shows the waveform when the handles is stopped.

※Encoder revolution direction: It is clockwise (CW) from the dial.

Control output diagram



※The output circuits of A, B phase (Line driver output A,  $\bar{A}$ , B,  $\bar{B}$  phase) are the same.

※Totem pole output type can be used for NPN open collector output type (※1) or voltage output type (※2).

Caution for using

1. Installation

- ①This unit consists of precision components. If you drop this unit, it may lose the function.  
Please treat this product carefully.

2. For using

- ①Please use attached Sil Twist pair wire and use proper receiver for RS-422A communication.
- ②Do not cut or connect circuit when power is ON. It may cause damage to the unit.
- ③When the power source is Switching Power, it may cause surge. Install a surge absorber in power line.

3. Environment

- Please do not use this unit with below environment, or it may cause malfunction.
- ①Place where this unit or component may be damaged by strong vibration or impact.
- ②Place where there is a lot of flammable or corrosive gases.
- ③Place where strong magnet field or electric noise occurs.
- ④Place where there is beyond of the rated temperature or humidity.
- ⑤Place where strong acids or alkali near by.
- ⑥Place where there is the direct ray of the sun.

4. Vibration and Impact

- ①If a big impact or strong vibration applies to the product, it may cause pulse errors.  
Be sure that when installing this unit.

5. Wire connection

- ①If wiring 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.
- ②Wire should be shorter in order not to be influenced by noise.

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

Major products

- Proximity sensors
- Area sensors
- Display units
- Rotary encoders
- Power controllers
- Photoelectric sensors
- Door/Door side sensors
- Graphic/Logic panels
- Temperature controllers
- Tachometer/Pulse(Rate) meters
- Temperature/Humidity transducers
- Switching power supplies
- Stepping motors/drivers/motion controllers
- Field network devices
- Laser marking system(CO<sub>2</sub>, Nd:YAG)
- Laser welding/soldering system
- Counters
- Timers
- Panel meters
- Pressure sensors
- Fiber optic sensors
- Sensor controllers

**Autonics Corporation**  
http://www.autonics.com

Satisfiable Partner For Factory Automation

■ HEAD QUARTERS :  
41-5. Yongdang-dong, Yangsan-si, Gyeongnam, 626-847, Korea

■ OVERSEAS SALES :  
Bldg. 402 3rd FL., Bucheon Techno Park, 193, Yakdae-dong, Wonmi-gu, Bucheon-si, Gyeonggi-do, 420-734, Korea  
TEL : 82-32-610-2730 / FAX : 82-32-329-0728

■ E-mail : sales@autonics.com

The proposal of a product improvement and development  
:product@autonics.com