

## Manual Handle Type Incremental Rotary Encoder

### ■ Features

- Suitable for manual pulse input type such as numerically controlled or milling machinery
- Terminal connection type
- Power supply: 5VDC ±5%, 12-24VDC ±5%

### ■ Applications

- Industrial tooling machinery



**⚠ Please read "Safety Considerations" in operation manual before using.**



### ■ Ordering Information

<b>ENH</b>	-	<b>100</b>	-	<b>1</b>	-	<b>T</b>	-	<b>24</b>
Series		Pulses/revolution		Clickstopper position		Control output		Power supply
Handle type		25, 100		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.

### ■ Specifications

Item	Manual Handle Type Incremental Rotary Encoder		
Resolution (PPR) <sup>※1</sup>	25, 100		
Electrical specification	Output phase	A, B phase (line driver output A, $\bar{A}$ , B, $\bar{B}$ phase)	
	Phase difference of output	Phase difference between A and B: $\frac{T}{4} \pm \frac{T}{8}$ (T= 1 cycle of A phase)	
	Control output	Totem pole output	• [Low] - Load current: max. 30mA, Residual voltage: max. 0.4VDC= • [High] - Load current: max. 10mA Output voltage (power voltage 5VDC=): min. (power voltage-2.0)VDC= Output voltage (power voltage 12-24VDC=): min. (power voltage-3.0) VDC=
		Voltage output	Load current: max. 10mA, Residual voltage: max. 0.4VDC=
		Line driver output	• [Low] - Load current: max. 20mA, Residual voltage: max. 0.5VDC= • [High] - Load current: max. -20mA, Output voltage: min. 2.5VDC=
	Response time (rise/fall)	Totem pole output	Max. 1μs (cable length: 1m, I sink = 20mA)
		Voltage output	
		Line driver output	Max. 0.2μs (cable length: 1m, I sink = 20mA)
	Power supply	• 5VDC= ±5% (ripple P-P: max.5%) • 12-24VDC= ±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	Over 100MΩ (at 500VDC megger 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: max. 2kgf, Thrust: max. 1kgf	
	Max. allowable revolution <sup>※2</sup>	Max. 200rpm (normal), 600rpm (peak)	
Vibration	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours		
Shock	Approx. max. 50G		
Environment	Ambient temperature	-10 to 70°C, storage: -25 to 85°C	
	Ambient humidity	35 to 85%RH, storage: 35 to 90°C	
Protection structure	IP50 (IEC standard)		
Approval	CE (except for line driver output)		
Weight <sup>※3</sup>	Approx. 330g (approx. 260g)		

※1: Not indicated resolutions are customizable.

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

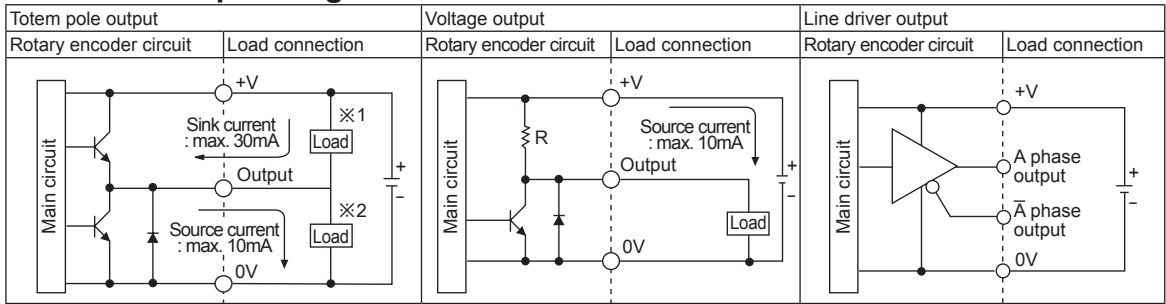
$$[\text{Max. response revolution (rpm)}] = \frac{\text{Max. response frequency}}{\text{Resolution}} \times 60 \text{ sec}$$

※3: The weight includes packaging. The weight in parenthesis is for unit only.

※Environment resistance is rated at no freezing or condensation.

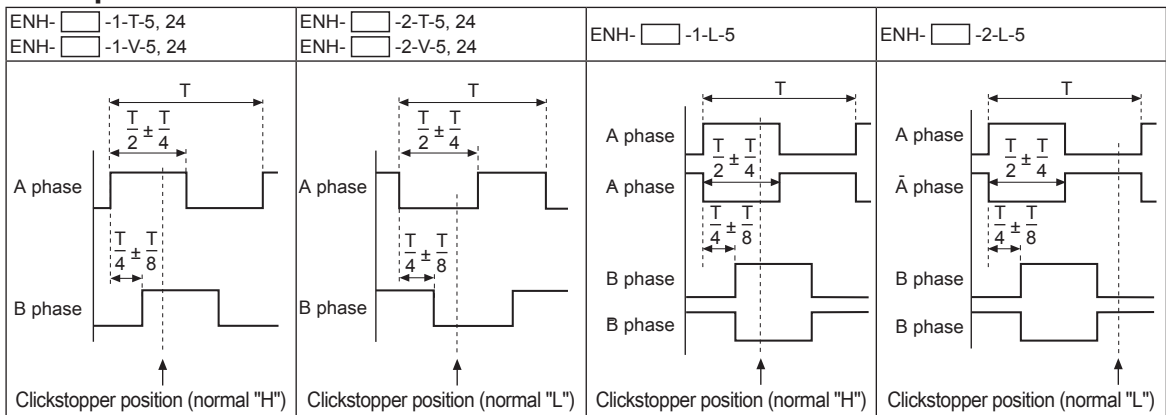
# Manual Handle Incremental Type

## Control Output Diagram



- The output circuits for A, B phase (line driver output is A,  $\bar{A}$ , B,  $\bar{B}$  phase) are same.
- Totem pole output can be used for NPN open collector type (※1) or voltage output type (※2).

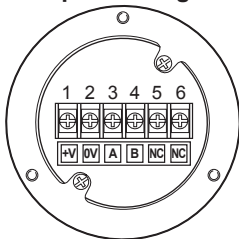
## Output Waveform



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

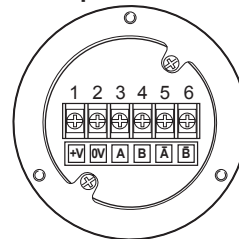
## Connections

### •Totem pole output / Voltage output

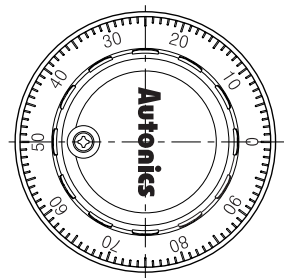
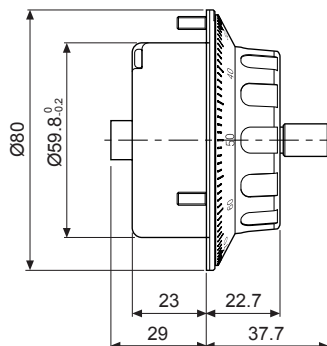
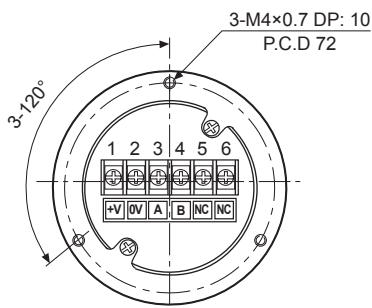


※Do not use terminal No. 5, 6.

### •Line driver output



## Dimensions



※Ø70mm P.C.D mounting hole type is customizable.

- (A) Photoelectric Sensors
- (B) Fiber Optic Sensors
- (C) Door/Area Sensors
- (D) Proximity Sensors
- (E) Pressure Sensors
- (F) Rotary Encoders
- (G) Connectors/ Connector Cables/ Sensor Distribution Boxes/Sockets
- (H) Temperature Controllers
- (I) SSRs / Power Controllers
- (J) Counters
- (K) Timers
- (L) Panel Meters
- (M) Tacho / Speed / Pulse Meters
- (N) Display Units
- (O) Sensor Controllers
- (P) Switching Mode Power Supplies
- (Q) Stepper Motors & Drivers & Controllers
- (R) Graphic/ Logic Panels
- (S) Field Network Devices
- (T) Software