

# ENH Series

## Incremental manual handle type Rotary encoder

### ■ Features

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



### ■ Application

- Industrial tooling machinery

**⚠ Please read "Caution for your safety" in operation manual before using.**

### ■ Ordering information

ENH	–	100	–	1	–	T	–	24
Series		Pulse/1Revolution		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 $\pm 5\%$ 24 : 12–24VDC $\pm 5\%$

※The power of Line driver is only for 5VDC

### ■ Specifications

Item	Incremental manual handle type of rotary encoder		
Resolution(P/R)	<b>(Note1)</b> 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=1cycle of A phase)	
	Control output	Totem pole output	<ul style="list-style-type: none"> <li>• Low <math>\Rightarrow</math> Load current : Max. 30mA, Residual voltage : Max. 0.4VDC</li> <li>• High <math>\Rightarrow</math> 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</li> </ul>
		Voltage output	Load current : Max. 10mA, Residual voltage : Max. 0.4VDC
		Line driver output	<ul style="list-style-type: none"> <li>• Low <math>\Rightarrow</math> Load current : Max. 20mA, Residual voltage : Max. 0.5VDC</li> <li>• High <math>\Rightarrow</math> Load current : Max. –20mA, Output voltage : Min. 2.5VDC</li> </ul>
	Response time (Rise/Fall)	Totem pole output	Max. 1 $\mu$ s
		Voltage output	Max. 1 $\mu$ s
		Line driver output	Max. 0.2 $\mu$ s
	Power supply	<ul style="list-style-type: none"> <li>• 5VDC <math>\pm 5\%</math> (Ripple P–P : Max. 5%)</li> <li>• 12–24VDC <math>\pm 5\%</math> (Ripple P–P : Max. 5%)</li> </ul>	
	Current consumption	Max. 40mA (disconnection of the load), Line driver output : Max. 50mA (disconnection of the load)	
	Max. Response 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	Terminal block type		
Mechanical specification	Starting torque	Max. 1kgf · cm (0.098N · m)	
	Shaft loading	Radial : 2kgf, Thrust : 1kgf	
	Max. allowable revolution	<b>(Note2)</b> 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		
Ambient temperature	–10 ~ 70°C (at non–freezing status), Storage : –25 to 85°C		
Ambient humidity	35 to 85%RH, Storage : 35 to 90%RH		
Protection	IP50 (IEC standard)		
Unit weight	Approx. 300g		

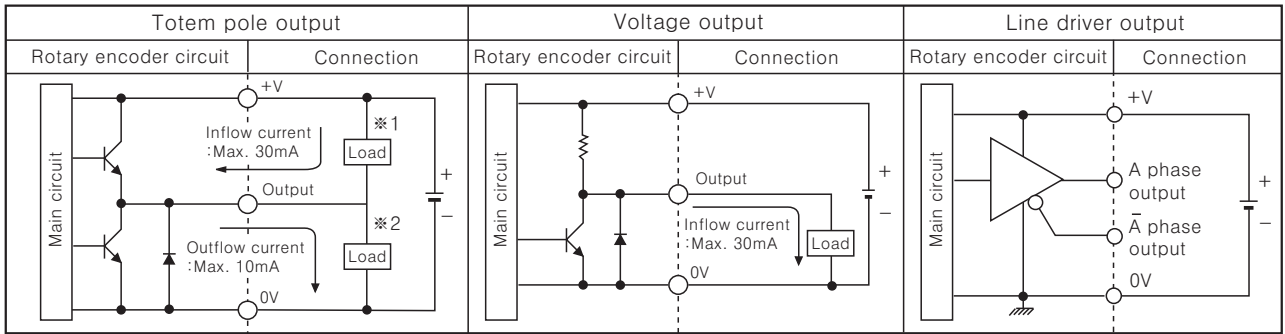
※ **(Note1)** Not indicated type is customizable.

※ **(Note2)** Max. allowable revolution  $\geq$  Max. response revolution 【Max. response revolution (rpm) =  $\frac{\text{Max. response frequency}}{\text{Resolution}} \times 60 \text{ sec.}$ 】

Make sure that max. response revolution should be lower than max. allowable revolution when selecting the resolution.

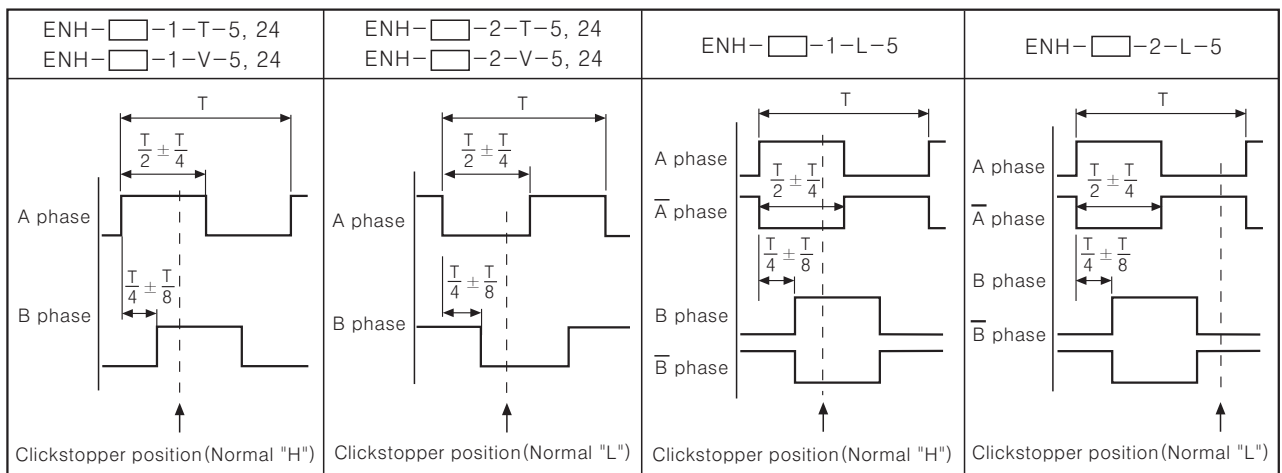
# Incremental Manual Handle Type

## Control output diagram



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

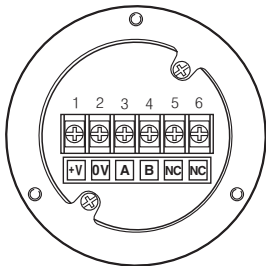
## Output waveform



\*Clickstopper position Normal "H" or Normal "L": It shows the waveform when the handle is not stopped.

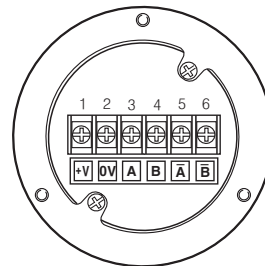
## Connections

●Totem pole output / Voltage output

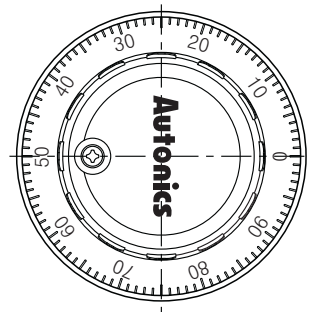
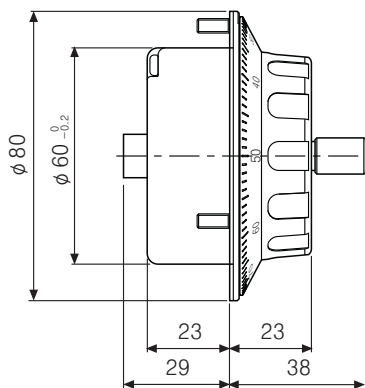
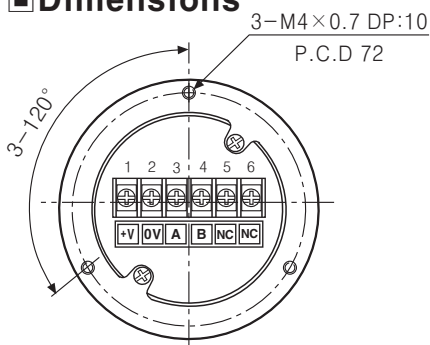


\*Do not use terminal No. 5, 6.

●Line driver output



## Dimensions



(Unit:mm)

\*  $\phi$  70mm PCD mounting hole type is customizable.

(A)	Photo electric sensor
(B)	Fiber optic sensor
(C)	Door/Area sensor
(D)	Proximity sensor
(E)	Pressure sensor
(F)	Rotary encoder
(G)	Connector/Socket
(H)	Temp. controller
(I)	SSR/Power controller
(J)	Counter
(K)	Timer
(L)	Panel meter
(M)	Tacho/Speed/Pulse meter
(N)	Display unit
(O)	Sensor controller
(P)	Switching power supply
(Q)	Stepping motor & Driver & Controller
(R)	Graphic/Logic panel
(S)	Field network device
(T)	Production stoppage models & replacement