

# ENC Series

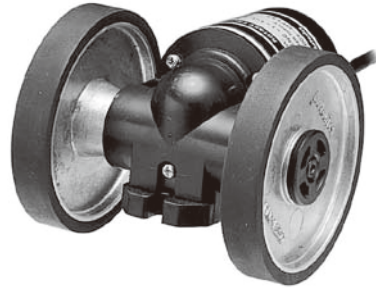
## Wheel type of Incremental Rotary Encoder

### ■ Features

- Suitable for measuring the length or speed of target moving successively by wheel type
- The output waveform according to measuring distance is proportional to the unit of International Measurement type (Meter or inch)
- Power supply : 5VDC, 12-24VDC ±5%

### ■ Applications

- Various packing machine, sheet manufacturing, textile machinery, and general industrial machinery etc.



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



### ■ Ordering information

ENC	-	1	-	1	-	N	-	24	-	
Series	Output phase	Min. measuring unit		Output		Power supply		Cable		
Wheel type	1 : A, B phase	1 : 1mm 3 : 1m 5 : 0.1yd	2 : 1cm 4 : 0.01yd 6 : 1yd	T : Totem pole output N : NPN open collector output V : Voltage output		5 : 5VDC ±5% 24 : 12-24VDC ±5%		No mark : Cable type C : Connector cable type(※)		

※Cable length : 250mm

### ■ Specifications

Item	Wheel type of incremental rotary encoder		
Resolution(P/R)	Refer to resolution(Next page)		
Electrical specification	Output phase	A, 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
		NPN open collector output	Load current : Max. 30mA, Residual voltage : Max. 0.4VDC
		Voltage output	Load current : Max. 10mA, Residual voltage : Max. 0.4VDC
	Response time (Rise/Fall)	Totem pole output	Max. 1μs
		NPN open collector output	
		Voltage output	
	Max. Response frequency	180kHz	
	Power supply	5VDC ±5%(Ripple P-P : Max. 5%), 12-24VDC ±5%(Ripple P-P : Max. 5%)	
	Current consumption	Max. 80mA(disconnection of the load)	
Insulation resistance	Min. 100MΩ(at 500VDC megger between all terminals and case)		
Dielectric strength	750VAC 50/60Hz for 1 minute(Between all terminals and case)		
Connection	Cable type, 250mm connector cable type		
Mechanical specification	Starting torque	Depend on coefficient of friction	
	Max. allowable revolution <sup>※1</sup>	5000rpm	
Vibration	1.5mm amplitude or 300m/s <sup>2</sup> at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 2 hours		
Shock	Approx. Max. 75G		
Environment	Ambient temperature	-10 to 70°C(at non-freezing status), storage : -25 to 85°C	
	Ambient humidity	35 to 85%RH, storage : 35 to 90%RH	
Cable	ø5, 5-wire, Length : 2m, Shield cable(Line driver output : ø5, 8-wire) (AWG24, Core diameter : 0.08mm, Number of cores : 40, Insulator out diameter : ø1)		
Protection	IP50(IEC standard)		
Approval	CE		
Unit weight	Approx. 494g		

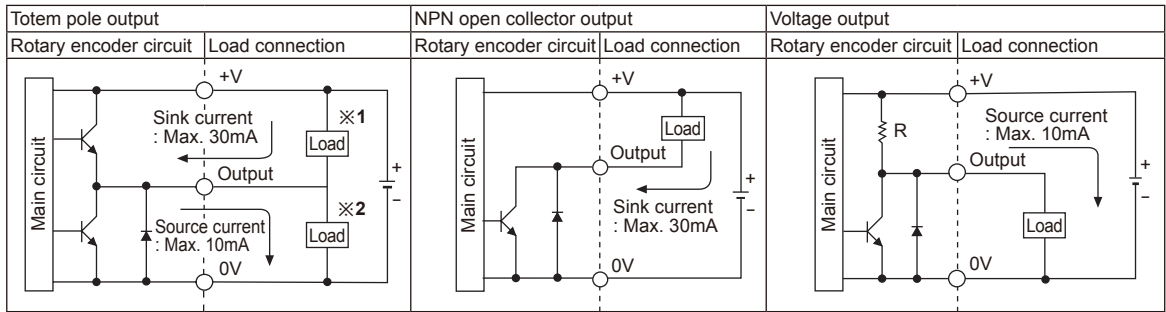
※1: Make sure that. Max response revolution should be lower than or equal to max. allowable revolution when selecting the resolution.

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

※Environment resistance is rated at no freezing or condensation.

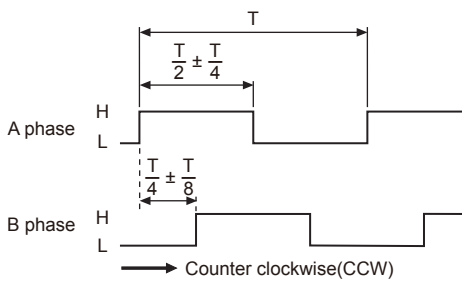
# Incremental Wheel type

## Control output diagram



- The output circuits of A, B phase are the same.
- Totem pole output type can be used for NPN open collector type(※1) or voltage output type(※2).

## Output waveform



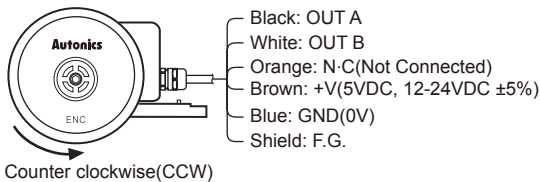
※CCW: Based on wheel rotation direction.

## Resolution

No	The number of encoder pulse	Gear ratio	Wheel circumference	Moving distance per 1pulse
1	250Pulse	1:1	250mm	1mm/1Pulse
2	100Pulse	4:1	250mm	1cm/1Pulse
3	1Pulse	4:1	250mm	1m/1Pulse
4	100Pulse	4:1	228.6mm (0.25/yd)	0.01yd/1Pulse
5	10Pulse	4:1	228.6mm (0.25/yd)	0.1yd/1Pulse
6	1Pulse	4:1	228.6mm (0.25/yd)	1yd/1Pulse

## Connections

### ◎ Cable type



- ※Unused wires must be insulated.
- ※The metal case and shield wire of encoder must be grounded(F.G.)

### ◎ Connector cable type

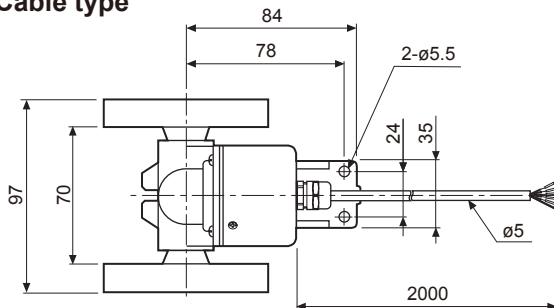


Pin No	Cable color	Function
①	Black	OUT A
②	White	OUT B
③	Orange	N-C
④	Brown	+V
⑤	Blue	GND
⑥	Shield	F.G.

※F.G.(Field Ground) : It must be grounded separately.

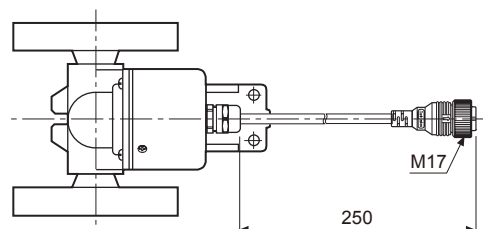
## Dimensions

### ◎ Cable type



- ※The wheel circumference is changed according to model(ø), please refer to resolution chart.
- ※Connector cable is sold separately and see G-10 for specifications.

### ◎ Connector cable type



Cable for cable type	Cable for connector cable type
ø5, 5-wire, Length : 2000mm, Shield cable	ø5, 5-wire, Length : 250mm, Shield cable

(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 mode power supply

(Q) Stepper motor& Driver&Controller

(R) Graphic/Logic panel

(S) Field network device

(T) Software

(U) Other