

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		Control output	Power supply	Cable
Wheel type	1: A, B	1: 1mm 2: 1cm 3: 1m	4: 0.01yd 5: 0.1yd 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: Cable connector type (※)

※Cable length: 250mm

■ Specifications

Item	Wheel type of incremental rotary encoder		
Resolution (P/R) ^{※1}	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=1cycle 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 (Cable length: 2m, I sink = 20mA)
		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, Cable connector type		
Mechanical specification	Starting torque	Depend on coefficient of friction	
	Max. allowable revolution ^{※2}	5000rpm	
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. 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	Cable type	Ø5mm, 4-wire, Length: 2m, Shield cable (AWG24, Core diameter: 0.08mm, Number of cores: 40, Insulator out diameter: Ø1mm)	
	Cable connector type	Ø5mm, 5-wire, Length: 250mm, Shield cable (AWG24, Core diameter: 0.08mm, Number of cores: 40, Insulator out diameter: Ø1mm)	
Protection structure	IP50 (IEC standard)		
Approval	CE		
Unit weight	Approx. 494g		

※1: Not indicated resolutions are customizable.

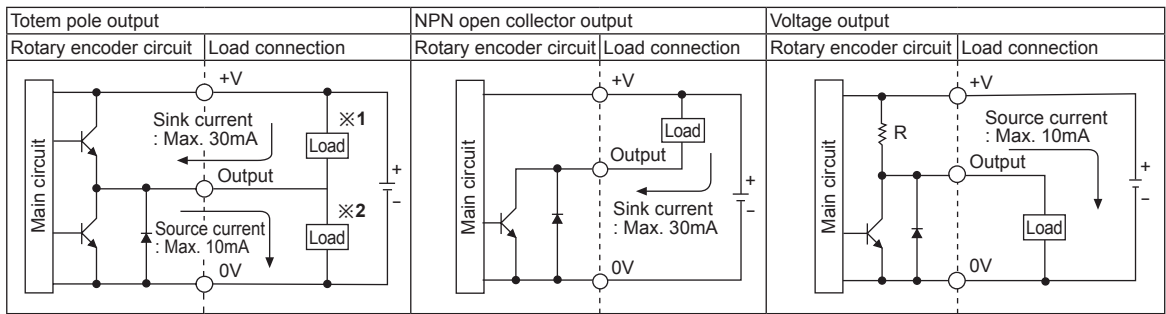
※Environment resistance is rated at no freezing or condensation.

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

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

Incremental Wheel Type

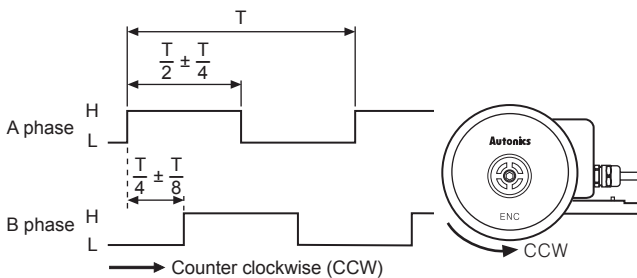
Control Output Diagram



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

Output Waveform

- Totem pole output / NPN open collector output / Voltage output

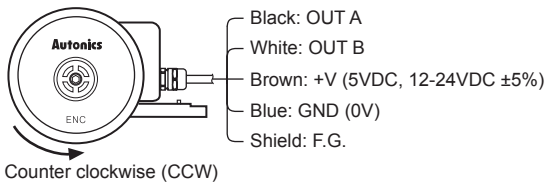


Resolution

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.)

◎ Cable connector type

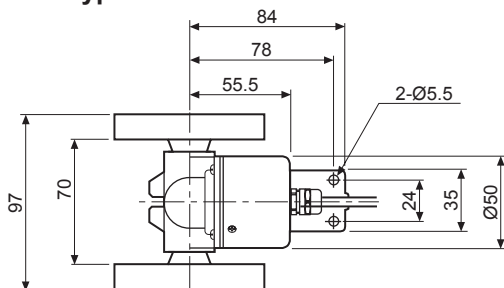


Pin No	Cable color	Function
①	Black	OUT A
②	White	OUT B
③	Orange	N-C
④	Brown	+V
⑤	Blue	GND
⑥	Shield	F.G.

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

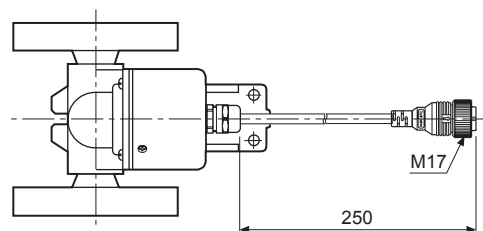
Dimensions

◎ Cable type



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

◎ Cable connector type



Cable for cable type	Cable for cable connector type
Ø5mm, 4-wire, Length: 2000mm, Shield cable	Ø5mm, 5-wire, Length: 250mm, Shield cable

(A) Photoelectric Sensors

(B) Fiber Optic Sensors

(C) Door/Area Sensors

(D) Proximity Sensors

(E) Pressure Sensors

(F) Rotary Encoders

(G) Connectors/ 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