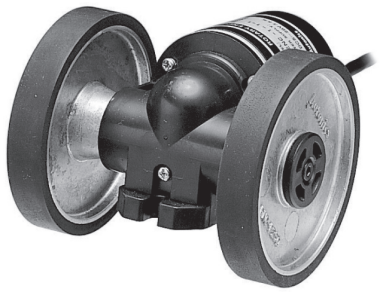
Wheel Type Incremental Rotary Encoder

■ 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 "Safety Considerations" in the instruction manual before using.

CE

■ 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 4: 0.01yd 2: 1cm 5: 0.1yd 3: 1m 6: 1yd	T: Totem pole output N: NPN open collector output V: Voltage output	5: 5VDC ±5% 24: 12-24VDC ±5%	No mark: Axial cable type C: Axial cable connector type

■ Specifications

Item			Wheel Type Incremental Rotary Encoder
Min. measuring unit			1mm/pulse, 1cm/pulse, 1m/pulse, 0.01yd/pulse, 0.1yd/pulse, 1yd/pulse
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		Over 100MΩ (at 500VDC megger between all terminals and case)
	Dielectric strength		750VAC 50/60Hz for 1 minute (between all terminals and case)
	Connection		Axial cable type, Axial cable connector type
Mechanical specification		Starting torque	Depend on coefficient of friction
		Max. allowable revolution※1	5,000rpm
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℃ (at non-freezing status), storage: -25 to 85℃
		Ambient humidity	35 to 85%RH, storage: 35 to 90%RH
Cable		Axial cable type	Ø5mm, 4-wire, 2m, Shield cable (AWG24, core diameter: 0.08mm, number of cores: 40, insulator out diameter: Ø1mm)
		Axial cable connector type	Ø5mm, 5-wire, 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

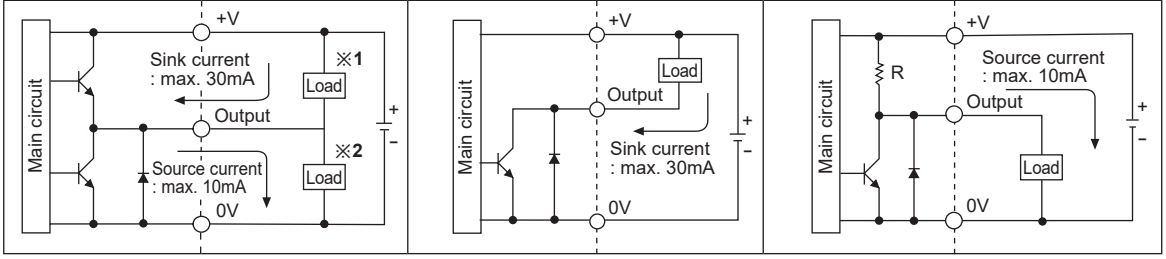
※1: Make sure that max. response revolution should be lower than or equal to max. allowable revolution when selecting the resolution.

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

※Environment resistance is rated at no freezing or condensation.

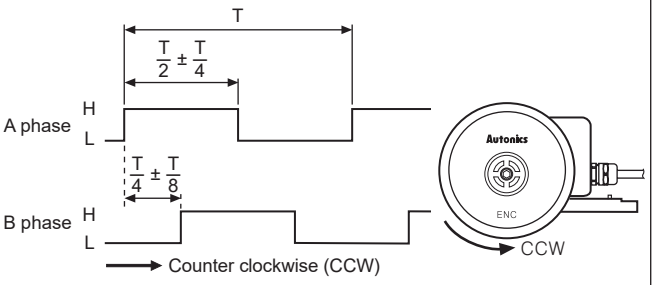
▣ Control Output Diagram

Totem pole output		NPN open collector output		Voltage output	
Rotary encoder circuit	Load connection	Rotary encoder circuit	Load connection	Rotary encoder circuit	Load connection



- 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



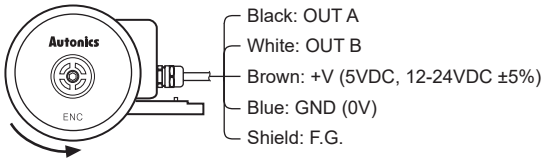
▣ Resolution

Wheel circumference	No※1	No. of encoder pulse	Gear ratio	Min. measuring unit
250mm	1	250-pulse	1:1	1mm/pulse
	2	100-pulse	4:1	1cm/pulse
	3	1-pulse	4:1	1m/pulse
228.6mm (0.25/yd)	4	100-pulse	4:1	0.01yd/pulse
	5	10-pulse	4:1	0.1yd/pulse
	6	1-pulse	4:1	1yd/pulse

※1: This table is for the numbers which represents 'min. measuring unit' in model name.

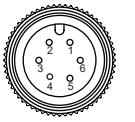
▣ Connections

◎ Axial cable type



※Unused wires must be insulated.
※The metal case and shield wire of encoder must be grounded (F.G.)
※Do not apply tensile strength over 30N to the cable.

◎ Axial cable connector type

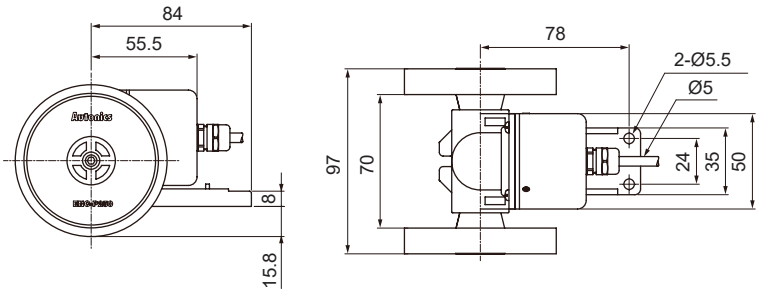


Pin No	Cable color	Function
①	Black	OUT A
②	White	OUT B
③	Orange	N·C
④	Brown	+V
⑤	Blue	GND
⑥	Shield	F.G.

※F.G. (field ground)
: It must be grounded separately.

▣ Dimensions

(unit: mm)



Cable for axial cable type
Ø5mm, 4-wire, Length: 2m, Shield cable
Cable for axial cable connector type
Ø5mm, 5-wire, Length: 250mm, Shield cable

※The wheel circumference(Ø) is changed according to model, please refer to resolution chart.
※Connector cable is sold separately and refer to the 'Connectors, Connector Cables, Sensor Distribution Boxes, Sockets' section.