

ENC Series

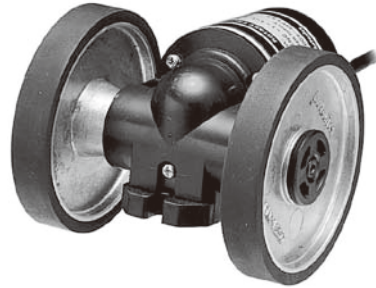
Wheel type of Incremental Rotary Encoder

■ 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 ^{※1} | 5000rpm | |
| Vibration | 1.5mm amplitude or 300m/s ² 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 | | |

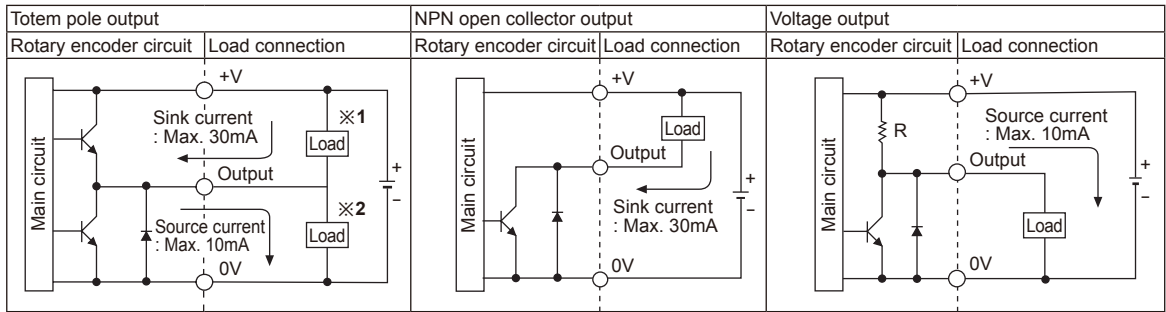
※1: Make sure that. Max response revolution should be lower than or equal to max. allowable revolution when selecting the resolution.

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

※Environment resistance is rated at no freezing or condensation.

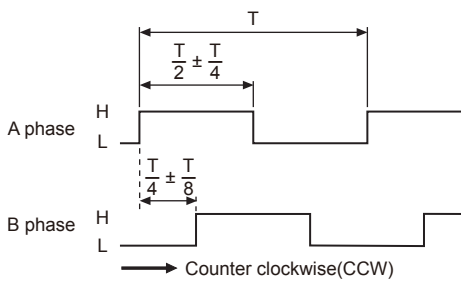
Incremental Wheel type

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



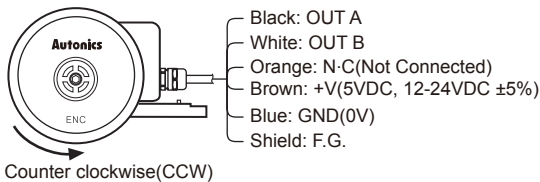
※CCW: Based on wheel rotation direction.

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

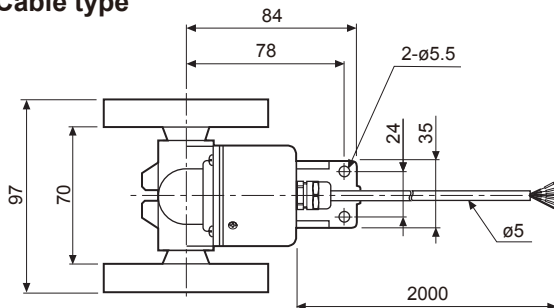


| Pin No | Cable color | Function |
|--------|-------------|----------|
| ① | Black | OUT A |
| ② | White | OUT B |
| ③ | Orange | N-C |
| ④ | Brown | +V |
| ⑤ | Blue | GND |
| ⑥ | Shield | F.G. |

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

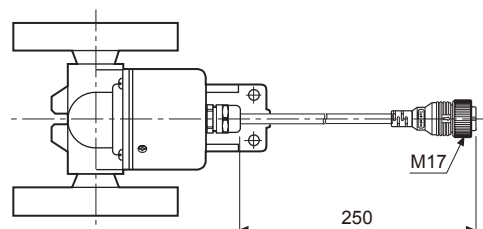
Dimensions

◎ 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