

# Selection Guide

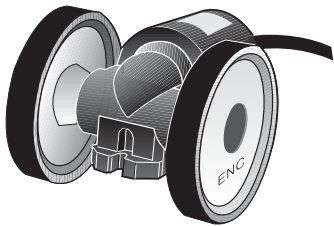
## ROTARY ENCODER(ENC SERIES)

### 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 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: Normal type (※) C: Cable outgoing connector type					

\* Cable length: 250mm

### Specifications

Item		Wheel type Incremental Rotary encoder																																											
Model	Totem Pole output	ENC-1-□-T-5-□	ENC-1-□-T-24-□																																										
	NPN open collector output	ENC-1-□-N-5-□	ENC-1-□-N-24-□																																										
	Voltage output	ENC-1-□-V-5-□	ENC-1-□-V-24-□																																										
Appearances		 <table border="1" style="margin-left: 20px;"> <caption>●Pulses/Revolution</caption> <thead> <tr> <th>NO</th> <th>Min. measuring unit</th> <th>Moving distance per 1 pulse</th> <th>Gear ratio</th> <th>Wheel circumference</th> <th>Slit(P/R)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1mm</td> <td>1mm/P</td> <td>2 : 1</td> <td>250mm</td> <td>500Pulse</td> </tr> <tr> <td>2</td> <td>1cm</td> <td>1cm/P</td> <td>4 : 1</td> <td>250mm</td> <td>100Pulse</td> </tr> <tr> <td>3</td> <td>1m</td> <td>1m/P</td> <td>4 : 1</td> <td>250mm</td> <td>1Pulse</td> </tr> <tr> <td>4</td> <td>0.01yd</td> <td>0.01yd/P</td> <td>4 : 1</td> <td>228.6mm(0.25/yd)</td> <td>100Pulse</td> </tr> <tr> <td>5</td> <td>0.1yd</td> <td>0.1yd/P</td> <td>4 : 1</td> <td>228.6mm(0.25/yd)</td> <td>10Pulse</td> </tr> <tr> <td>6</td> <td>1yd</td> <td>1yd/P</td> <td>4 : 1</td> <td>228.6mm(0.25/yd)</td> <td>1Pulse</td> </tr> </tbody> </table>		NO	Min. measuring unit	Moving distance per 1 pulse	Gear ratio	Wheel circumference	Slit(P/R)	1	1mm	1mm/P	2 : 1	250mm	500Pulse	2	1cm	1cm/P	4 : 1	250mm	100Pulse	3	1m	1m/P	4 : 1	250mm	1Pulse	4	0.01yd	0.01yd/P	4 : 1	228.6mm(0.25/yd)	100Pulse	5	0.1yd	0.1yd/P	4 : 1	228.6mm(0.25/yd)	10Pulse	6	1yd	1yd/P	4 : 1	228.6mm(0.25/yd)	1Pulse
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Resolution(P/R)		Refer to the above table for resolution																																											
Electrical specification	Output phase	A, B phase																																											
	Phase difference of output	Output between A and B phase : $\frac{T}{4} \pm \frac{T}{8}$ (T=1cycle of A phase)																																											
	Control output	Totem pole output	<ul style="list-style-type: none"> <li>Low ⇨ Load current : Max. 30mA, Residual voltage : Max. 0.4VDC</li> <li>High ⇨ Load current : Max. 10mA, Output voltage : Min. (Power supply-1.5)VDC</li> </ul>																																										
		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	Max. 1μs																																										
		Voltage output	Max. 1μs																																										
	Max. Response frequency	180kHz																																											
	Power supply	5VDC ±5% (Ripple P-P:Max. 5%), 12-24VDC ±5% (Ripple P-P:Max. 5%)																																											
Current consumption	Max. 60mA (disconnection of the load)																																												
Insulation resistance	Min. 100MΩ (at 500VDC)																																												
Dielectric strength	750VAC 50/60Hz for 1 minute (Between all terminals and case)																																												
Connection	Cable outgoing type, 200mm cable outgoing connector type																																												
Mechanical specification	Starting torque	Dependent on coefficient of friction																																											
	Max. allowable revolution	<b>(★Note1)</b> 5000rpm																																											
Vibration	1.5mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours																																												
Shock	Max. 75G																																												
Ambient temperature	-10 ~ 70°C (at non-freezing status), Storage: -25 ~ 85°C																																												
Ambient humidity	35~85%RH, Storage: 35~90%RH																																												
Cable	5P, φ 5mm, Length:2m, Shield cable																																												
Protection	IP50 (IEC standard)																																												
Unit weight	Approx. 494g																																												

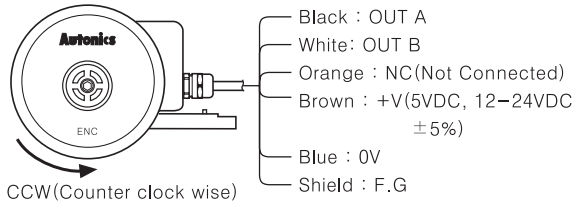
※(★Note1) Max. allowable revolution ≥ Max. response revolution 【Max. response revolution (rpm) =  $\frac{\text{Max. response frequency}}{\text{Resolution}} \times 60 \text{ sec}$ 】

Please select the resolution to make lower max. revolution than max. allowable revolution.

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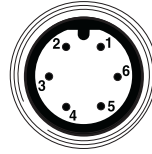
### ■Connections

#### ○Connector type



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

#### ○Cable outgoing connector type

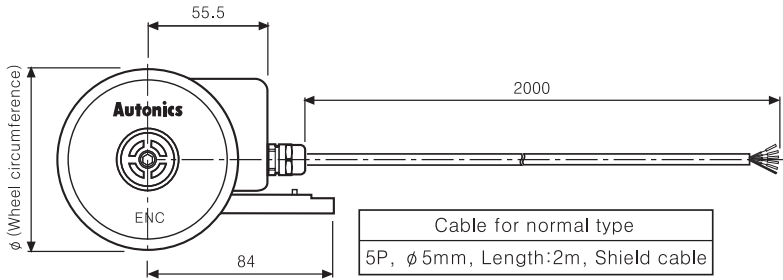


Pin No.	Totem pole output NPN open collector output Voltage output	
	Cable color	Function
①	Black	OUT A
②	White	OUT B
③	Orange	OUT Z
④	Brown	+V
⑤	Blue	GND
⑥	Shield	F.G

※F.G(Field Ground) : It should be grounded seperately.

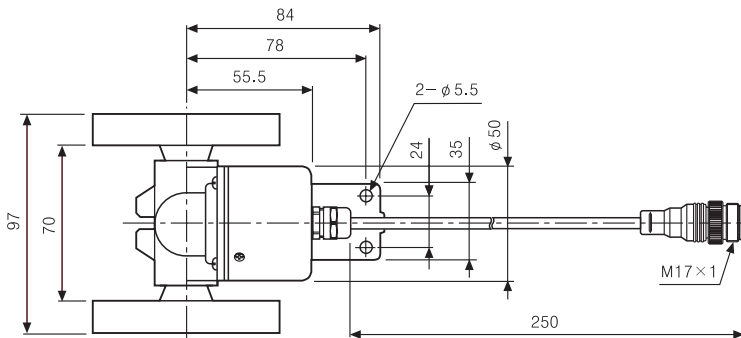
### ■Dimensions

#### ○Connector type



- ※The wheel circumference is changed according to model(φ), refer to resolution chart.
- ※The connector cable is optional and refer M-109 for the specification.

#### ○Cable outgoing connector type



#### ●Connector cable(Accessory)

