

ENP Series

Diameter ϕ 60mm shaft type ABSOLUTE Rotary encoder

■ Features

- Able to measure absolute variable angle with BCD code.
- Strong against external impact.
- Memorize the absolute position when power cut.

■ Application

- Precision numerical control machine for industrial plant.

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



■ Ordering information

ENP - 1 - 1 - 1 - R - 360 - 1

Series	Output code	Output	Power supply	Rotating direction	Pulse/1Revolution	Control output
Diameter ϕ 60mm shaft type	1 : BCD code	0 : Negative logic 1 : Positive logic	0 : 5-12VDC \pm 5% 1 : 12-24VDC \pm 5%	F : Output value increase at CW direction R : Output value increase at CCW direction	006 : 6 division 016 : 16 division 008 : 8 division 024 : 24 division 012 : 12 division 360 : 360 division	1 : PNP open collector output 2 : NPN open collector output

*Since the output type is related with control output, please select the model name in specification when you order the item.

■ Specifications

Item		Diameter ϕ 60mm shaft type ABSOLUTE Rotary encoder						
Model	PNP open collector output	ENP-111□-006-1	ENP-111□-008-1	ENP-111□-012-1	ENP-111□-016-1	ENP-111□-024-1	ENP-110□-360-1	
	NPN open collector output	ENP-101□-006-2	ENP-101□-008-2	ENP-101□-012-2	ENP-101□-016-2	ENP-101□-024-2	ENP-100□-360-2	
Resolution		6 division	8 division	12 division	16 division	24 division	360 division	
Output phase	TP(Timing Pulse) : 2bit	TP(Timing Pulse) : 2bit	TP(Timing Pulse) : 2bit	TP(Timing Pulse) : 2bit	TP(Timing Pulse) : 2bit	TP(Timing Pulse) : 2bit	TS(Signal Pulse) : 10bit(BCD)	
	TS(Signal Pulse) : 4bit(BCD, EP)	TS(Signal Pulse) : 5bit(BCD, EP)	TS(Signal Pulse) : 6bit(BCD, EP)	TS(Signal Pulse) : 7bit(BCD, EP)	TS(Signal Pulse) : 8bit(BCD, EP)	TS(Signal Pulse) : 9bit(BCD, EP)		
Output of phase differences	TP1:53° \pm 30'	TP1:39° \pm 30'	TP1:3° \pm 30'	TP1:2° \pm 30'	TP1:8° \pm 30'	TP1:1° \pm 30'	TS:1° \pm 30'	
	TP2:15° \pm 30'	TP2:15° \pm 30'	TP2:15° \pm 30'	TP2:11.25° \pm 30'	TP2:3° \pm 30'	TP2:1° \pm 30'		
	P:60° \pm 30'	P:45° \pm 30'	P:30° \pm 30'	P:22.5° \pm 30'	P:15° \pm 30'	P:11° \pm 30'		
	TS:56° \pm 30'	TS:42° \pm 30'	TS:26° \pm 30'	TS:19.5° \pm 30'	TS:11° \pm 30'	TS:7° \pm 30'		
Control output	PNP open collector output	Output voltage : Min. (Power supply-1.5)VDC, Load current : Max. 32mA						
	NPN open collector output	Load current : Max. 32mA, Residual voltage : Max. 1VDC						
Response time (Rise & Fall)	PNP open collector output	TON=500ns, TOFF=Max. 2.5 μ s (Cable length:1m, I sink =32mA)						
	NPN open collector output	TON=400ns, TOFF=Max. 1.5 μ s (Cable length:1m, I sink =32mA)						
Max. Response frequency		20kHz						
Power supply		12-24VDC \pm 5% (Ripple P-P:Max. 5%)					5-12VDC \pm 5% (Ripple P-P:Max. 5%)	
Current consumption		Max. 150mA (disconnection of the load)				Max. 200mA (disconnection of the load)		
Insulation resistance		Min. 20M Ω (at 500VDC)						
Dielectric strength		500VAC 50/60Hz for 1 minute (Between all terminals and case)						
Connection		Cable outgoing connection						
Mechanical specification	Starting torque	Max. 500gf · cm(0.05N · m)						
	Moment of inertia	Max. 300g · cm ² (3 \times 10 ⁻⁵ kg · m ²)						
	Shaft loading	Radial : 10kgf, Thrust : 2.5kgf						
	Deviation of shaft position	Radial : Max. 0.1mm, Thrust : Max. 0.2mm						
	Mechanical revolution	(★Note1)		3600rpm				
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 ~ 60°C (at non-freezing status), Storage:-25 ~ 85°C						
Ambient humidity		35~85%RH, Storage : 35~90%RH						
Protection		IP50(IEC specification)						
Cable		12P, ϕ 8mm, Length : 1m, Double shield cable						
Accessory		Mounting bracket, Coupling						
Weight		Approx. 577g					Approx. 690g	

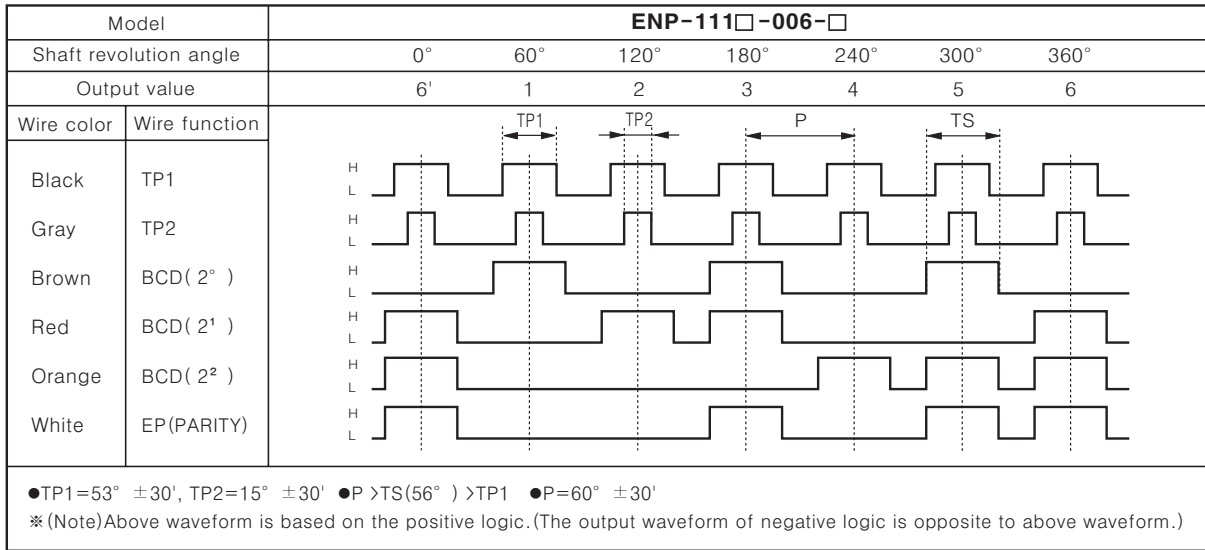
※(★Note1)Max. allowable revolution \geq Max. response revolution 【Max. response revolution(rpm) = $\frac{\text{Max. response frequency}}{\text{Resolution}} \times 60 \text{ sec}$ 】

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

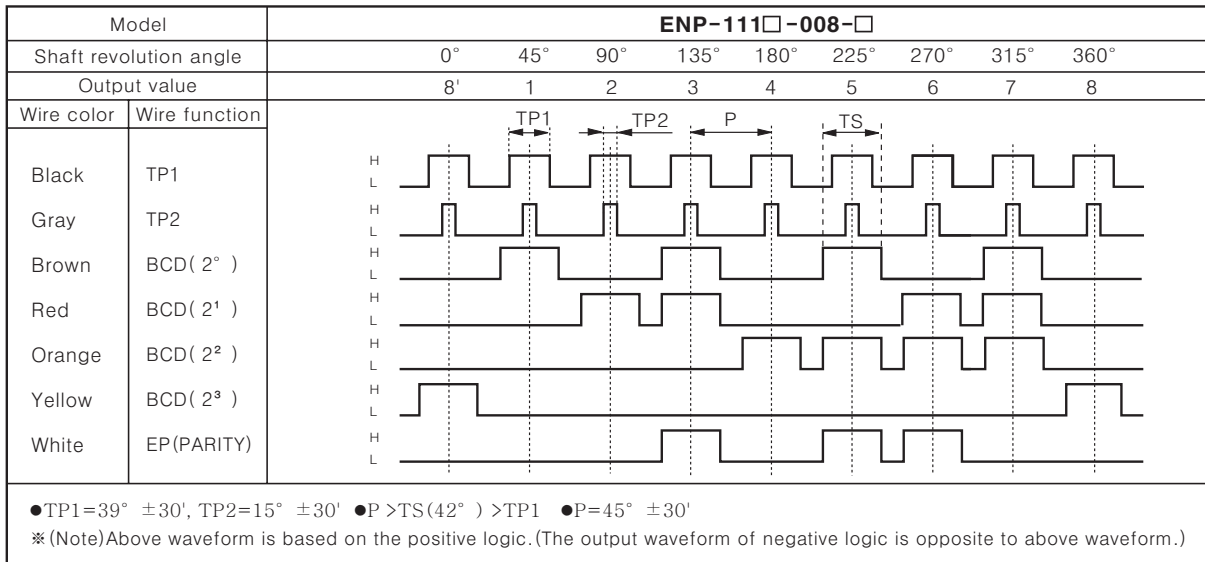
Absolute ϕ 60 Standard Shaft Type

Output waveform

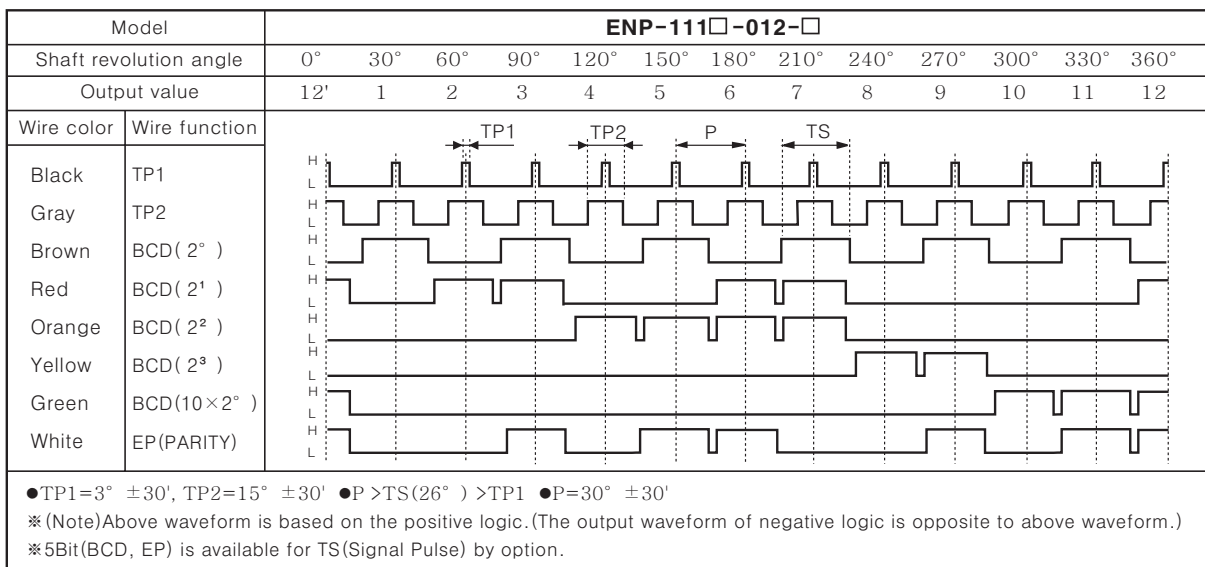
6 division



8 division



12 division



(A)
Counter

(B)
Timer

(C)
Temp.
controller

(D)
Power
controller

(E)
Panel
meter

(F)
Tacho/
Speed/
Pulse
meter

(G)
Display
unit

(H)
Sensor
controller

(I)
Proximity
sensor

(J)
Photo
electric
sensor

(K)
Pressure
sensor

(L)
Rotary
encoder

(M)
5-Phase
stepping
motor &
Driver &
Controller

