### **Autonics**

## **ROTARY ENCODER (ABSOLUTE TYPE) ENP SERIES**



Thank you for choosing our Autonics product Please read the following safety considerations before use.

### Safety Considerations

- Please observe all safety considerations for safe and proper product operation to avoid hazards.
- $st \Lambda$  symbol represents caution due to special circumstances in which hazards may occur.
- ▲ Warning Failure to follow these instructions may result in serious injury or death ⚠ Caution Failure to follow these instructions may result in personal injury or product damage

### **⚠** Warning

- Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)
   Failure to follow this instruction may result in fire, personal injury, or economic loss.
- 2. Install on a device panel to use.
  Failure to follow this instruction may result in fire.
- railure to follow this instruction may result in fire.

  3. Do not connect, repair, or inspect the unit while connected to a power source. Failure to follow this instruction may result in fire.

  4. Check 'Connections' before wiring.
  Failure to follow this instruction may result in fire.

  5. Do not disassemble or modify the unit.
  Failure to follow this instruction may result in fire.

### **∧** Caution

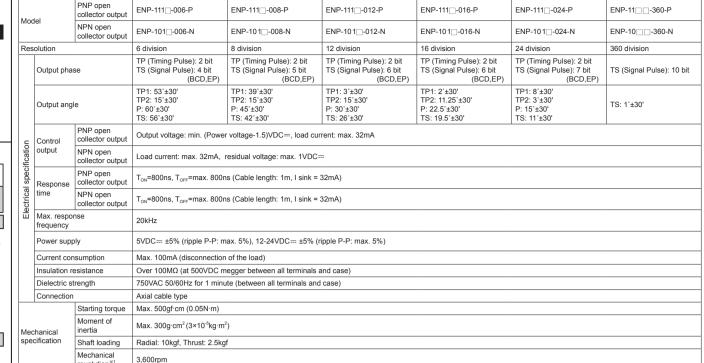
- 1. Use the unit within the rated specifications.
- Failure to follow this instruction may result in fire or product damage 2. Do not short the load.
- Do not short the load.
   Failure to follow this instruction may result in product damage by fire.
   Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.
   Failure to follow this instruction may result in fire or explosion.
   Do not use the unit near the place where there is the equipment which generates strong magnetic force or high frequency noise and strong alkaline, strong acidic exists.
   Failure to follow this instruction may result in product damage.

### Ordering Information

ENP	- 1	1	1	R	- 360	- P
Series		Output method	Power supply		Resolutions/ revolution	Control output
Ø60mm (Shaft diameter : Ø10mm)	BCD code	0 : Negative logic 1 : Positive logic	±5%	F: Output value increase at CW direction R: Output value increase at CCW direction	006: 6 division 008: 8 division 012: 12 division 016: 16 division 024: 24 division 360: 360 division	N: NPN open collector output P: PNP open collector output

### Specifications

Ø60mm shaft type Absolute Rotary encoder



Ø8mm, 12-wire, 1m, Double shield cable (AWG 24, core wire diameter: 0.08mm, number of cores: 40, insulator diameter: Ø1mm)

Weight\*2 Approx. 478g (Approx. 400g) ※1: Make sure that max. response revolution should be lower than or equal to max. allowable revolution when selecting the resoultion.

1.5mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 2 hours

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

IP50 (IEC standard)

Mounting bracket, coupling

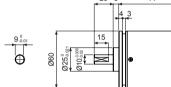
-10 to 70°C, storage: -25 to 85°C

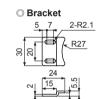
35 to 85%RH, storage: 35 to 90%RH

X2: The weight includes packaging. The weight in parentehsis is for unit only. \*Environment resistance is rated at no freezing or condensation

### Dimensions







revolution\*

Ambient temp.

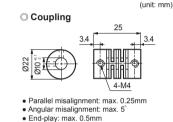
Ambient humi.

Vibration

Cable Accessor

Environment

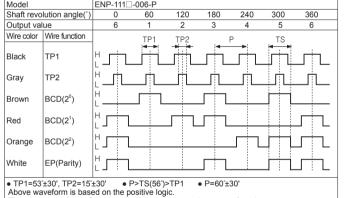
Protection structure



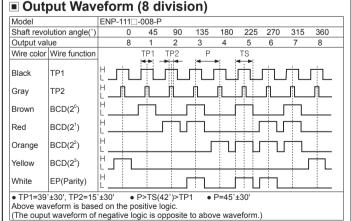
XDo not load overweight on the shaft

- \*Do not put strong impact when insert a coupling into shaft.
- Failure to follow this instruction may result in product damage. \*\*Fix the unit or a coupling by a wrench under 0.15 N·m of torque. \*When you install this unit, if eccentricity and deflection angle are larger, it may shorten the life cycle of this unit.

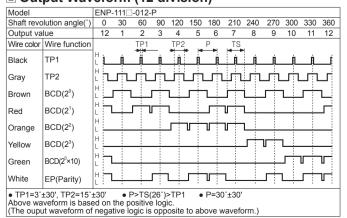
### Output Waveform (6 division)



(The ouput waveform of negative logic is opposite to above waveform.)

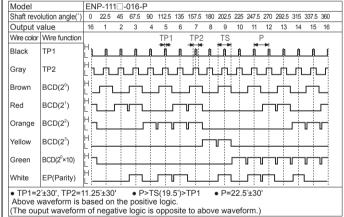


## Output Waveform (12 division)

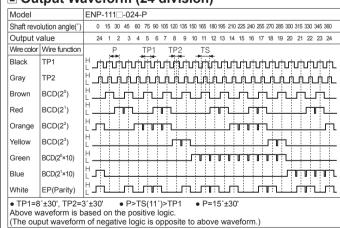


The above specifications are subject to change and some models may be discontinued without notice \*Be sure to follow cautions written in the instruction manual, and the technical descriptions (catalog, homepage).

### Output Waveform (16 division)



### Output Waveform (24 division)



## ■ Output Waveform (360 division)

Model		ENP-11□□-360-P								
Shaft revolution angle(°)		0 1 2 3 4 5 · · · · · · 198 199 200 201 202 · · · · · · 356 357 358 359 36								
Output value		0 1 2 3 4 5 198 199 200 201 202 356 357 358								
Wire color	Wire function	TS TS TS								
Black	BCD(2°)	Ľunfinx::xufinux::xufin								
Brown	BCD(21)	#								
Red	BCD(2 <sup>2</sup> )	#XXXXXXX								
Orange	BCD(23)	tı xiix								
Yellow	BCD(2 <sup>0</sup> ×10)	#1X::XX::X								
Green	BCD(2 <sup>1</sup> ×10)	[tx::xx::x								
Blue	BCD(2 <sup>2</sup> ×10)	#1XIIXXIIX								
Violet	BCD(23×10)	#XXXXXX								
Gray	BCD(2º×100)	#1x::x=x::x=								
White	BCD(2 <sup>1</sup> ×100)	tı xiix xiix								

### Connections

Resolution Wire color		6 division	8 division	12 division	16 division	24 division	360 division
Davis	White**1	+V					
Power	Black*1	GND(0V)					
	Shield wire	F.G.					
Output wire	Black	Black TP1 <sup>×2</sup>					
	Brown	2°	2°	2°	2°	2°	2 <sup>1</sup>
	Red	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2 <sup>2</sup>
	Orange	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>2</sup>	2 <sup>3</sup>
	Yellow	N·C	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2 <sup>3</sup>	2°×10
	Green	N·C	N·C	2°×10	2°×10	2°×10	21×10
	Blue	N·C	N·C	N·C	N·C	21×10	2 <sup>2</sup> ×10
	Purple	N·C		2 <sup>3</sup> ×10			
	Gray	TP2 <sup>*2</sup>		2°×100			
	White	EP(Parity)*3					
	Shield wire	F.G.					

x1: Insulator external diameter is Ø1.5mm. **%2**: TP1/TP2

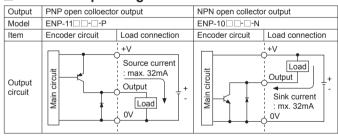
Because low resolution model has long output signal period, this signal for enable is easy to determine signal recognization point about output. %3: EP

Parity signal. It outputs odd parity

\*Unused wire must be insulated.\*Encoder case and shield wire must be grounded.

»N·C: Not Connected. \*Output cable must not be short-circuited, because Driver IC is used in output circuit. \*Do not apply tensile strength over 30N to the cable.

## Control Output Diagram



\*The output circuit of each output signal is the same

### Cautions during Use

- 1. Follow instructions in 'Cautions during Use'. Otherwise, It may cause unexpected accidents.
- 2. 5VDC, 12-24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- 3. For using the unit with the equipment which generates noise (switching regulator, inverter, servo motor, etc.), ground the shield wire to the F.G. terminal.
- 4. Ground the shield wire to the F.G. terminal.
- sing switching mode power supply, frame ground (F.G.) terminal of power
- supply should be grounded. 6. Wire as short as possible and keep away from high voltage lines or power lines,
- to prevent inductive noise. 7. Check the wire type and response frequency when extending wire because of
- distortion of waveform or residual voltage increment etc by line resistance or capacity between lines.
- 8. This unit may be used in the following environments.
- ①Indoors (in the environment condition rated in 'Specifications') ②Altitude max 2.000m ③Pollution degree 2
- 4 Installation category II

### Main Products

- Photoelectric Sensors Temperature Controllers
- Fiber Optic Sensors Temperature/Humidity Transducers SSRs/Power Controllers
- Door Side Sensors Counters
- Area Sensors ■ Timers
- Proximity Sensors
  - Panel Meters
- Pressure Sensors Tachometer/Pulse (Rate) Meters ■ Rotary Encoders ■ Display Units
- Connector/Sockets
   Sensor Controllers
- Switching Mode Power Supplies
- Control Switches/Lamps/Buzzers ■ I/O Terminal Blocks & Cables
- Stepper Motors/Drivers/Motion Controllers ■ Graphic/Logic Panels
- Field Network Devices
- Laser Marking System (Fiber, CO₂, Nd: YAG) Laser Welding/Cutting System

# Autonics Corporation

**■** HEADQUARTERS 18, Bansong-ro 513 be Korea, 48002 TEL: 82-51-519-3232

■ E-mail: sales@autonics.com

DRW171378AB