

# Абсолютные датчики углового перемещения серии ENP

## Технические характеристики

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## Серии ENP

### Абсолютные датчики углового перемещения с выступающим валом и диаметром корпуса 60 мм

Модели датчиков абсолютного перемещения серии ENP с диаметром корпуса 60 мм и делением шага 360 теперь предлагаются с источником питания 12–24 В пост. тока, что делает их очень удобными в эксплуатации. Новые модели служат для преобразования абсолютного угла поворота в двоично-десятичный код и являются высокоточными приборами, которые сохраняют абсолютное положение при непредвиденных перебоях в питании. Применяются на обрабатывающем оборудовании.

#### Отличительные особенности

##### Особенности

- \* Источник питания 12–24 В пост. тока у моделей с делением шага 360 (новые модели в серии).
- \* Применяются для преобразования абсолютного угла поворота в двоично-десятичный код.
- \* Защита от внешних динамических нагрузок.
- \* Сохранение абсолютного положения в случае перебоев в электропитании.

#### Области применения

- \* Автоматическое управление погрузкой автомобиля в системе башенной парковки.



<b>ENP</b>	-	<b>1</b>	<b>1</b>	<b>1</b>	<b>R</b>	-	<b>360</b>	-	<b>P</b>
Series	Output code	Output method	Power supply	Rotating direction	Resolution/1 revolution	Control output			
Diameter $\phi$ 60mm (Shaft diameter: $\phi$ 10mm)	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 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			

#### Технические характеристики

Type		Diameter $\phi$ 60mm shaft type Absolute Rotary encoder	
Model	PNP open collector output	ENP-111□-006-P	
	NPN open collector output	ENP-101□-006-N	
Resolution		6 division	
Output phase		TP(Timing Pulse): 2 bit TS(Signal Pulse) : 4 bit (BCD, EP)	
Output angle		TP1: 53° $\pm$ 30° TP2: 15° $\pm$ 30° P: 60° $\pm$ 30° TS: 56° $\pm$ 30°	
Control output	PNP open collector output	Output voltage: Min. (Power voltage-1.5)VDC, Load current: Max. 32mA	
		Load current: Max. 32mA, Residual voltage: Max. 1VDC	
Response time	PNP open collector output	ToN=500ns, ToFF=Max. 2.5 $\mu$ s (Cable length: 1m, I sink = 32mA)	
	NPN open collector output	ToN=400ns, ToFF=Max. 1.5 $\mu$ s (Cable length: 1m, I sink = 32mA)	
Max. Response frequency		20kHz	
Power supply		12-24VDC $\pm$ 5% (Ripple P-P: Max. 5%)	
Current consumption		Max. 150mA(Disconnection of the load)	
Insulation resistance		Max. 20M $\Omega$ (at 500VDC megger between all terminals and case)	
Dielectric strength		500VAC 50/60Hz for 1 minute (between all terminals and case)	
Connection		Cable outgoing type	
Mechanical spec.	Starting torque	Max. 500gf.cm(0.05N.m)	
	Moment of inertia	Max. 300g.cm <sup>2</sup> (3 $\times$ 10 <sup>-5</sup> kg.m <sup>2</sup> )	
	Shaft loading	Radial: 10kgf, Thrust: 2.5kgf	
	Mechanical revolution	3600rpm	

Vibration		1.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z direction for 2 hours	
Shock		Max. 75G	
Environment	Ambient temperature	-10 to 60°C, Storage: -25 to 85°C	
	Ambient humidity	35 to 85%RH, Storage: 35 to 90%RH	
Protection		IP50(IEC standards)	
Cable		ø8mm, 12P, Length: 1m, Double shield cable (AWG 24, Core wire diameter: 0.08mm, No. of core wire: 40, Insulator out diameter: ø1)	
Accessory		Mounting bracket, Coupling	
Unit weight		Approx. 577g	
× Environment resistance is rated at no freezing or condensation.			
<b>Type</b>		<b>Diameter ø 60mm shaft type Absolute Rotary encoder</b>	
<b>Model</b>	<b>PNP open collector output</b>	<b>ENP-111□-008-P</b>	
	<b>NPN open collector output</b>	<b>ENP-101□-008-N</b>	
Resolution		8 division	
Electrical specification	Output phase	TP(Timing Pulse): 2 bit TS(Signal Pulse) : 5 bit (BCD, EP)	
	Output angle	TP1: 39°±30' TP2: 15°±30' P: 45°±30' TS: 42°±30'	
	Control output	PNP open collector output	Output voltage: Min.(Power voltage-1.5) VDC, Load current: Max. 32mA
			Load current: Max. 32mA, Residual voltage: Max. 1VDC
	Response time	PNP open collector output	ToN=500ns, ToFF=Max. 2.5µs (Cable length: 1m, I sink = 32mA)
		NPN open collector output	ToN=400ns, ToFF=Max. 1.5µs (Cable length: 1m, I sink = 32mA)
	Max. Response frequency		20kHz
	Power supply		12-24VDC ±5% (Ripple P-P: Max. 5%)
	Current consumption		Max. 150mA(Disconnection of the load)
	Insulation resistance		Max. 20MΩ (at 500VDC megger between all terminals and case)
	Dielectric strength		500VAC 50/60Hz for 1 minute (between all terminals and case)
	Connection		Cable outgoing type



Connection		Cable outgoing type	
Mechanical spec.	Starting torque	Max. 500gf.cm(0.05N.m)	
	Moment of inertia	Max. 300g.cm <sup>2</sup> (3×10 <sup>-5</sup> kg.m <sup>2</sup> )	
	Shaft loading	Radial: 10kgf, Thrust: 2.5kgf	
	Mechanical revolution	3600rpm	
Vibration		1.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z direction for 2 hours	
Shock		Max. 75G	
Environment	Ambient temperature	-10 to 60℃, Storage: -25 to 85℃	
	Ambient humidity	35 to 85%RH, Storage: 35 to 90%RH	
Protection		IP50(IEC standards)	
Cable		ø8mm, 12P, Length: 1m, Double shield cable (AWG 24, Core wire diameter: 0.08mm, No. of core wire: 40, Insulator out diameter: ø1)	
Accessory		Mounting bracket, Coupling	
Unit weight		Approx. 577g	
※ Environment resistance is rated at no freezing or condensation.			
<b>Type</b>		<b>Diameter ø 60mm shaft type Absolute Rotary encoder</b>	
<b>Model</b>	<b>PNP open collector output</b>	<b>ENP-111□-012-P</b>	
	<b>NPN open collector output</b>	<b>ENP-101□-012-N</b>	
Resolution		12 division	
Electrical specification	Output phase		TP(Timing Pulse): 2 bit TS(Signal Pulse) : 6 bit (BCD, EP)
	Output angle		TP1: 3°±30° TP2: 15°±30° P: 30°±30° TS: 26°±30°
	Control output	PNP open collector output	Output voltage: Min.(Power voltage-1.5) VDC, Load current: Max. 32mA
			Load current: Max. 32mA, Residual voltage: Max. 1VDC
	Response time	PNP open collector output	ToN=500ns, ToFF=Max. 2.5μs (Cable length: 1m, I sink = 32mA)
		NPN open collector output	ToN=400ns, ToFF=Max. 1.5μs (Cable length: 1m, I sink = 32mA)
	Max. Response frequency		20kHz
	Power supply		12-24VDC ±5%

		(Ripple P-P: Max. 5%)
	Current consumption	Max. 150mA(Disconnection of the load)
	Insulation resistance	Max. 20MΩ (at 500VDC megger between all terminals and case)
	Dielectric strength	500VAC 50/60Hz for 1 minute (between all terminals and case)
	Connection	Cable outgoing type
Mechanical spec.	Starting torque	Max. 500gf.cm(0.05N.m)
	Moment of inertia	Max. 300g.cm <sup>2</sup> (3x10 <sup>-5</sup> kg.m <sup>2</sup> )
	Shaft loading	Radial: 10kgf, Thrust: 2.5kgf
	Mechanical revolution	3600rpm
Vibration		1.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z direction for 2 hours
Shock		Max. 75G
Environment	Ambient temperature	-10 to 60°C, Storage: -25 to 85°C
	Ambient humidity	35 to 85%RH, Storage: 35 to 90%RH
Protection		IP50(IEC standards)
Cable		ø8mm, 12P, Length: 1m, Double shield cable (AWG 24, Core wire diameter: 0.08mm, No. of core wire: 40, Insulator out diameter: ø1)
Accessory		Mounting bracket, Coupling
Unit weight		Approx. 577g
※ Environment resistance is rated at no freezing or condensation.		
<b>Type</b>		<b>Diameter ø 60mm shaft type Absolute Rotary encoder</b>
<b>Model</b>	<b>PNP open collector output</b>	<b>ENP-111□-016-P</b>
	<b>NPN open collector output</b>	<b>ENP-101□-016-N</b>
Resolution		16 division
Output phase		TP(Timing Pulse): 2 bit TS(Signal Pulse) : 6 bit (BCD, EP)
Output angle		TP1: 2°±30° TP2: 11.25°±30° P: 22.5°±30° TS: 19.5°±30°
Control output	PNP open collector output	Output voltage: Min.(Power voltage-1.5) VDC, Load current: Max. 32mA
		Load current: Max. 32mA, Residual voltage: Max. 1VDC
	PNP open	ToN=500ns, ToFF=Max. 2.5μs

Electrical specific	Response time	collector output	(Cable length: 1m, I sink = 32mA)
		NPN open collector output	ToN=400ns, ToFF=Max. 1.5 $\mu$ s (Cable length: 1m, I sink = 32mA)
	Max. Response frequency		20kHz
	Power supply		12-24VDC $\pm$ 5% (Ripple P-P: Max. 5%)
	Current consumption		Max. 150mA(Disconnection of the load)
	Insulation resistance		Max. 20M $\Omega$ (at 500VDC megger between all terminals and case)
	Dielectric strength		500VAC 50/60Hz for 1 minute (between all terminals and case)
Connection		Cable outgoing type	
Mechanical spec.	Starting torque		Max. 500gf.cm(0.05N.m)
	Moment of inertia		Max. 300g.cm <sup>2</sup> (3 $\times$ 10 <sup>-5</sup> kg.m <sup>2</sup> )
	Shaft loading		Radial: 10kgf, Thrust: 2.5kgf
	Mechanical revolution		3600rpm
Vibration		1.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z direction for 2 hours	
Shock		Max. 75G	
Environment	Ambient temperature		-10 to 60 $^{\circ}$ C, Storage: -25 to 85 $^{\circ}$ C
	Ambient humidity		35 to 85%RH, Storage: 35 to 90%RH
Protection		IP50(IEC standards)	
Cable		$\phi$ 8mm, 12P, Length: 1m, Double shield cable (AWG 24, Core wire diameter: 0.08mm, No. of core wire: 40, Insulator out diameter: $\phi$ 1)	
Accessory		Mounting bracket, Coupling	
Unit weight		Approx. 577g	
		※ Environment resistance is rated at no freezing or condensation.	
Type		Diameter $\phi$ 60mm shaft type Absolute Rotary encoder	
Model	PNP open collector output		ENP-111□-024-P
	NPN open collector output		ENP-101□-024-N
Resolution		24 division	
Output phase		TP(Timing Pulse): 2 bit TS(Signal Pulse) : 7 bit (BCD, EP)	
Output angle		TP1: 8 $^{\circ}$ $\pm$ 30' TP2: 3 $^{\circ}$ $\pm$ 30'	



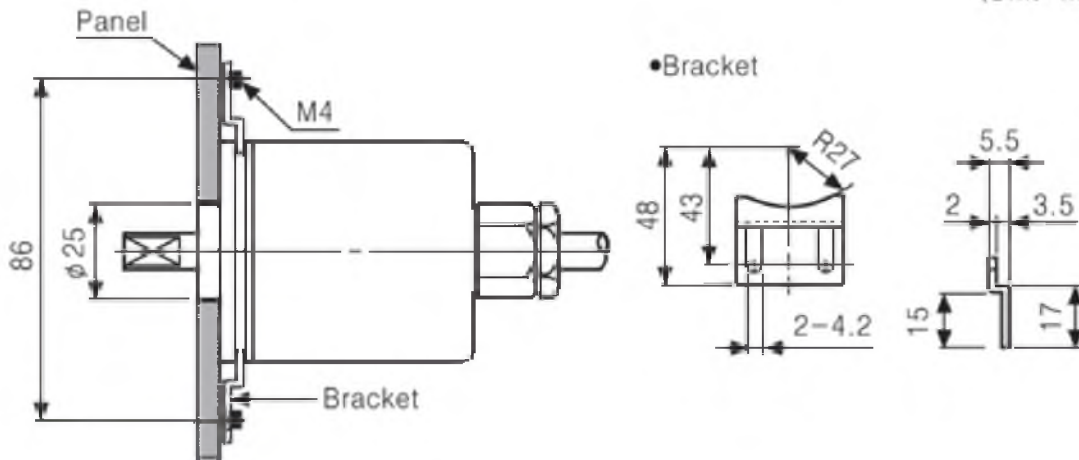
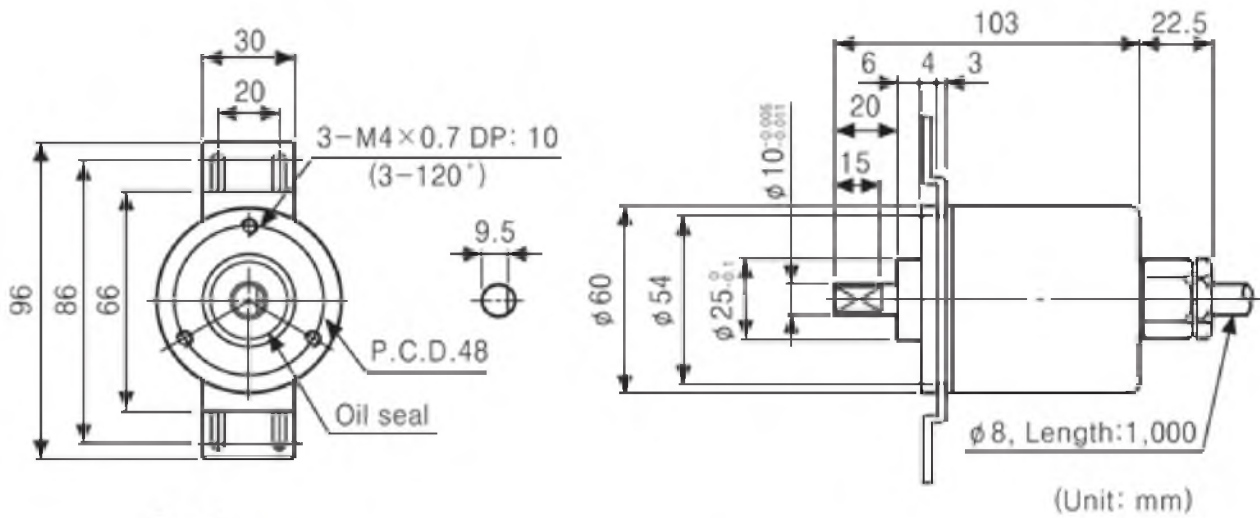
		Output angle	P: 15°±30° TS: 11°±30°
Electrical specification	Control output	PNP open collector output	Output voltage: Min.(Power voltage-1.5)VDC, Load current: Max. 32mA
			Load current: Max. 32mA, Residual voltage: Max. 1VDC
	Response time	PNP open collector output	ToN=500ns, ToFF=Max. 2.5µs (Cable length: 1m, I sink = 32mA)
		NPN open collector output	ToN=400ns, ToFF=Max. 1.5µs (Cable length: 1m, I sink = 32mA)
	Max. Response frequency		20kHz
	Power supply		12-24VDC ±5% (Ripple P-P: Max. 5%)
	Current consumption		Max. 150mA(Disconnection of the load)
	Insulation resistance		Max. 20MΩ (at 500VDC megger between all terminals and case)
	Dielectric strength		500VAC 50/60Hz for 1 minute (between all terminals and case)
	Connection		Cable outgoing type
Mechanical spec.	Starting torque		Max. 500gf.cm(0.05N.m)
	Moment of inertia		Max. 300g.cm <sup>2</sup> (3x10 <sup>-5</sup> kg.m <sup>2</sup> )
	Shaft loading		Radial: 10kgf, Thrust: 2.5kgf
	Mechanical revolution		3600rpm
Vibration		1.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z direction for 2 hours	
Shock		Max. 75G	
Environment	Ambient temperature		-10 to 60°C, Storage: -25 to 85°C
	Ambient humidity		35 to 85%RH, Storage: 35 to 90%RH
Protection		IP50(IEC standards)	
Cable		ø8mm, 12P, Length: 1m, Double shield cable (AWG 24, Core wire diameter: 0.08mm, No. of core wire: 40, Insulator out diameter: ø1)	
Accessory		Mounting bracket, Coupling	
Unit weight		Approx. 577g	
		※ Environment resistance is rated at no freezing or condensation.	
<b>Type</b>		<b>Diameter ø 60mm shaft type Absolute Rotary encoder</b>	
	<b>PNP open collector output</b>	<b>ENP-11□□-360-P</b>	



Model	connector output		
	NPN open collector output	ENP-10□□-360-N	
Resolution			360 division
Output phase			TS(Signal Pulse): 10 bit (BCD)
Output angle			TS: 1°±30'
Electrical specification	Control output	PNP open collector output	Output voltage: Min.(Power voltage-1.5)VDC, Load current: Max. 32mA
			Load current: Max. 32mA, Residual voltage: Max. 1VDC
	Response time	PNP open collector output	ToN=500ns, ToFF=Max. 2.5 $\mu$ s (Cable length: 1m, I sink = 32mA)
		NPN open collector output	ToN=400ns, ToFF=Max. 1.5 $\mu$ s (Cable length: 1m, I sink = 32mA)
	Max. Response frequency		20kHz
	Power supply		5-12VDC $\pm$ 5%, 12-24VDC $\pm$ 5% (Ripple P-P: Max. 5%)
	Current consumption		Max. 200mA (Disconnection of the load)
	Insulation resistance		Max. 20M $\Omega$ (at 500VDC megger between all terminals and case)
	Dielectric strength		500VAC 50/60Hz for 1 minute (between all terminals and case)
	Connection		Cable outgoing type
Mechanical spec.	Starting torque		Max. 500gf.cm(0.05N.m)
	Moment of inertia		Max. 300g.cm <sup>2</sup> (3 $\times$ 10 <sup>-5</sup> kg.m <sup>2</sup> )
	Shaft loading		Radial: 10kgf, Thrust: 2.5kgf
	Mechanical revolution		3600rpm
Vibration			1.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z direction for 2 hours
Shock			Max. 75G
Environment	Ambient temperature		-10 to 60 $^{\circ}$ C, Storage: -25 to 85 $^{\circ}$ C
	Ambient humidity		35 to 85%RH, Storage: 35 to 90%RH
Protection			IP50(IEC standards)
Cable			$\phi$ 8mm, 12P, Length: 1m, Double shield cable (AWG 24, Core wire diameter: 0.08mm, No. of core wire: 40, Insulator out diameter: $\phi$ 1)

Accessory	Mounting bracket, Coupling
Unit weight	Approx. 690g
	※ Environment resistance is rated at no freezing or condensation.

Размеры



Руководство пользователя

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