Encoder Specifications

Motor Frame Size: 28 mm (1.10 in.)

Item		Specifications
	Encoder Code	**R15**
Type		Incremental
Resolution		200 P/R
Output		2-Channel A, B
Input Current		21 mA (Typ.)
Input Voltage		5 VDC±10%
Output Type		TTL
Output Voltage	Low	0.4 VDC, 6 mA
	High	2.4 VDC, −1 mA
Response Frequency		60 kHz (Max.)

Motor Frame Size: 35 mm (1.38 in.), 42 mm (1.65 in.), 56.4 mm (2.22 in.)

Item		Specifications			
	Encoder Code	**R15**	**R16**	**R25**	**R26**
Type		Incremental			
Resolution		200 P/R	400 P/R	200 P/R	400 P/R
Output		2-Channel A, B		3-Channel A, B, Index	
Input Current		27 mA (Typ.)			
Input Voltage		5 VDC±10%			
Output Type		TTL			
Output Voltage (TTL)	Low	0.5 VDC, 8 mA			
	High	2.0 VDC, −8 mA			
Response Frequency		300 kHz (Max.)			

Encoder Pin-Outs

Motor Frame Size: 28 mm (1.10 in.)

Motor Pin No.	Lead Wire Color of Connection Cable for Encoder	Encoder Code **R15**
1	Red	+5 VDC Power
2	Blue	A Channel
3	Black	GND
4	Yellow	B Channel

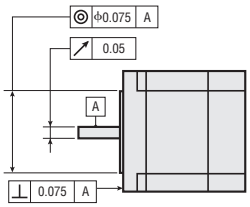
Motor Frame Size: 35 mm (1.38 in.), 42 mm (1.65 in.), 56.4 mm (2.22 in.)

Motor Pin No.	Lead Wire Color of Connection Cable for Encoder	Encoder Code	
		R15, **R16**	**R25**, **R26**
1	Brown	GND	
2	Purple	–	Index Channel
3	Blue	A Channel	
4	Orange	+5 VDC Power	
5	Yellow	B Channel	

General Specifications

Specifications		Motor
Heat-Resistant Class		130 (B)
Insulation Resistance		100 MΩ or more when 500 VDC megger is applied between the windings and the case under normal ambient temperature and humidity.
Dielectric Strength		Sufficient to withstand 1.0 kVAC at 60Hz applied between the windings and the case for 1 minute, under normal ambient temperature and humidity. (0.5 kV for models with a frame size of 42 mm (1.65 in.))
Operating Environment (In operation)	Ambient Temperature	−10～+50°C (+14～+122°F) (non-freezing)
	Ambient Humidity	85% max. (non-condensing)
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.
Temperature Rise		・ Unipolar, **PKP21□D**, **PKP243D**, **PKP245D** and **SH** geared type: Temperature rise of the windings is 80°C (144°F) or less (measured by the resistance change method) at the rated voltage, at standstill, and 2-phases excited. ・ **PKP22□D**, **PKP23□D**, **PKP244D**, **PKP246D** and **PKP26□D**: Temperature rise of the windings is 80°C (144°F) or less (measured by the resistance change method) at the rated voltage, at standstill, and 2-phases excited. The following motors are measured with a radiation plate (material aluminum). **PKP22□D** and **PKP23□D**: 115×115×5 mm (4.53×4.53×0.20 in.) **PKP244D** and **PKP246D**: 175×175×5 mm (6.89×6.89×0.20 in.) **PKP26□D**: 250×250×10mm (9.84×9.84×0.39 in.)
Stop Position Accuracy*1		±3 arc minutes (±0.05°) [**PKP21□D**: ±5 arc minutes (±0.083°)]
Shaft Runout		0.05 mm (0.002 in.) T.I.R.*4
Radial Play*2		0.025 mm (0.001 in.) max. (load 5 N (1.12 lb.))
Axial Play*3		0.075 mm (0.003 in.) max. (load 10 N (2.2 lb.))
Concentricity of Installing Pilot to the Shaft		0.075 mm (0.003 in.) T.I.R.*4
Perpendicularity of Installation Surface to the Shaft		0.075 mm (0.003 in.) T.I.R.*4

*1 This value is for full step under no load. (The value changes with the size of the load.)
*2 Radial Play: Displacement in shaft position in the radial direction when a 5 N (1.12 lb.) load is applied in the vertical direction to the tip of the motor shaft.
*3 Axial Play: Displacement in shaft position in the axial direction when a 10 N (2.2 lb.) load is applied to the motor shaft in the axial direction.
*4 T. I. R. (Total Indicator Reading): The total dial gauge reading when the measurement section is rotated one revolution centered on the reference axis center.



Note

●Do not measure insulation resistance or perform the dielectric strength test while the motor and driver are connected.

Permissible Overhung Load and Permissible Thrust Load

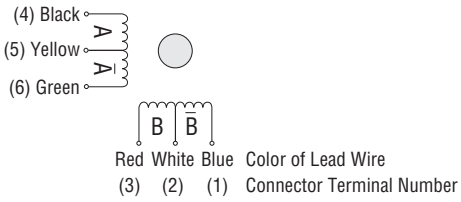
Unit = N (lb.)

Type	Motor Frame Size	Model	Gear Ratio	Permissible Overhung Load Distance from Shaft End mm [in.] 0 [0]	5 [0.2]	10 [0.39]	15 [0.59]	20 [0.79]	Permissible Thrust Load
Standard Type	20 mm (0.79 in.)	**PKP213**, **PKP214**	–	12 (2.7)	15 (3.3)	–	–	–	Motor Mass or Less
	28 mm (1.10 in.)	**PKP223**, **PKP224**, **PKP225**		25 (5.6)	34 (7.6)	52 (11.7)	–	–	
	35 mm (1.38 in.)	**PKP233**, **PKP235**		20 (4.5)	25 (5.6)	34 (7.6)	52 (11.7)	–	
	42 mm (1.65 in.)	**PKP243**, **PKP244**, **PKP245**, **PKP246**		20 (4.5)	25 (5.6)	34 (7.6)	52 (11.7)	–	
	56.4 mm (2.22 in.)	**PKP264**, **PKP266**, **PKP268**		61 (13.7)	73 (16.4)	90 (20.2)	110 (24.7)	160 (36)	
SH Geared Type	28 mm (1.10 in.)	**PKP223**	**7.2**, **9**, **10**, **18**, **36**	15 (3.3)	17 (3.8)	20 (4.5)	23 (5.1)	–	10 (2.2)
	42 mm (1.65 in.)	**PKP243**	**3.6**, **7.2**, **9**, **10**, **18**, **36**	10 (2.2)	15 (3.3)	20 (4.5)	30 (6.7)	–	15 (3.3)
	60 mm (2.36 in.)	**PKP264**	**3.6**, **7.2**, **9**, **10**	30 (6.7)	40 (9)	50 (11.2)	60 (13.5)	70 (15.7)	30 (6.7)
			18, **36**	80 (18)	100 (22)	120 (27)	140 (31)	160 (36)	

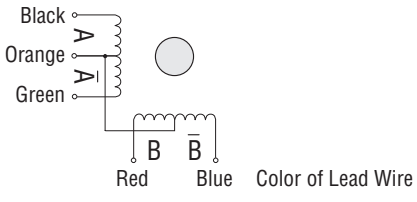
●The applicable motor products are listed such that the model can be determined.

Inner Wiring Diagram for Motor

●Unipolar 6 Lead Wires



●Unipolar 5 Lead Wires



●Bipolar 4 Lead Wires