礪鋒機電

PRIMOPAL MOTOR

PrimoPal Motor Co., Ltd. is a joint-venture manufacturing, engineering and trading company, located at the free-trade zone of Shanghai, China. PrimoPal specializes in development, production and selling of various high-quality and cost-effective precision motor and motion control products, including Hybrid stepper motors, PM stepper motors, Linear actuators, Close-loop stepper motors, Brushless DC motors, Brushless servo motors, AC servo motors, PM DC motors, AC induction motors, Synchronous motors, Gear motors, Stepper drives, Brushless DC drives, Hybrid servo drives, AC servo drives, Brushless servo drives, Brush servo drives, Encoders, Spur gearboxes, Planetary gearheads, Brakes, Power supplies, Accessories, and so on.

Since establishment, PrimoPal is committed to providing outstanding quality, economical solutions, impeccable support and after-sales service for every client. Our manufacturing bases are equipped with advanced quality testing devices, precise injection molding machines, auto high-speed punches, auto winding machines and other advanced manufacturing equipment. It makes us have the ability of continuously providing products with superior quality. Besides, we have an engineering team with many years of experience in motor design and application engineering. This ability of offering custom products often gives our customers the great benefit.

For PrimoPal, the customer is not only a buyer, but also a long-term business partner. We work not only to meet their expectations, but also to exceed them through continuous cycles of learning. We believe it is the key to a successful business relationship that understanding our customer's goals, delivering what our customers need and when they need it. To demonstrate our commitment to all our customers, PrimoPal has adopted "Bringing out the Best in Motion" as our official slogan, which means our ultimate goal is to become one of the world's top level companies in the industry of precision motor and motion control system. The pursuit of excellence encourages all PrimoPal employees to forge ahead into improving our business processes and increasing our management efficiency. We have no doubt that our endeavors enable us to maintain strong presence in the competitive market.

Now, let us help you find the right solution for your motor and motion control systems.

ISO 9001 CE RoHS Compliant UL

Hybrid Stepper Motor
Hybrid Stepper Gear Motor
IP65 Stepper Motor
PM Stepper Motor
PM Stepper Gear Motor
Stepper Drive

A

PHB Series
Hybrid Stepper Motor

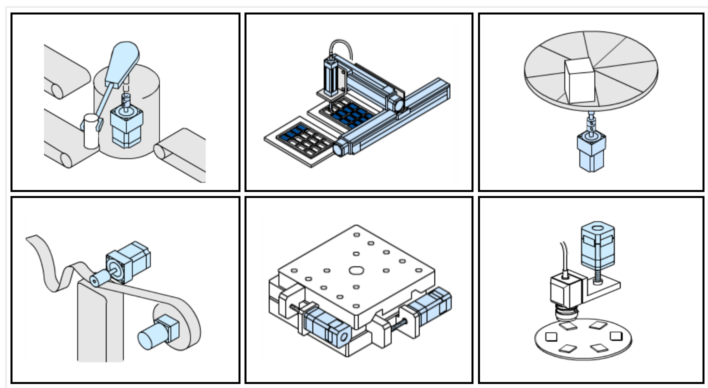
Description

PrimoPal specializes in offering 2-phase, 3-phase and 5-phase hybrid stepper motors, covering a wide range of applications with a frame size of NEMA 8 to 42. Made of high quality cold roll sheet copper and anti-high temperature permanent magnet, all of PrimoPal's hybrid stepper motors are a complete design of high reliability, high accuracy, and featuring low noise, low vibration, low motor heating and smooth run. Besides conventional solutions, custom housing and winding, shaft modification, as well as encoder, brake, gearbox adders are also available to optimize the product's performance for you needs.

Applications

PrimoPal's PHB Series stepper motors are widely used in kinds of applications. Typical ones are shown as follows.

- Automation and inspection
- Conveyor transfer
- Cut-to-length metal, plastic, fabric, etc.
- Industrial HVAC
- Material handling
- Medical equipment
- Office peripheral equipment
- Packaging systems
- Pick-and-place applications
- Printing systems
- Robotics
- Semiconductor manufacturing
- Many others



Part Number

PHB □□ □ □□ – □ □□ □□

PrimoPal Hybrid Stepper Motor

Frame Size
(O.D. in mm)

Step Angle

Y: 1.8°, Square, small rotor
S: 1.8°, Square, middle/large rotor
K: 1.8°, round
M: 0.9°, Square
D: 0.9°, round
W: 0.9°, new design
E: 3.6°
T: 1.2°
R: 3.75°
F: 0.72°
G: 0.36°

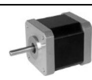
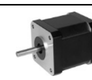
Motor Length
(mm)

Lead Wires
3/4/5/6/8: Number of Lead Wires

Electric Variation
Variety of current, torque, etc

Mechanical Variation
Variety of shaft, lead wire, etc

Standard Versions

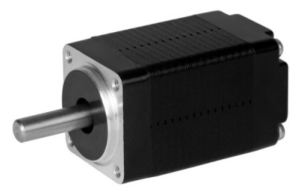
Frame Size					
NEMA 8	 1.8°				
NEMA 10	 1.8° Round				
NEMA 11	 1.8°				
NEMA 14	 1.8°	 0.9°	 0.9° Round		
NEMA 16	 1.8°	 0.9°	 0.36°		
NEMA 17	 1.8°	 0.9°	 3.6°	 3.75°	 1.2°
NEMA 23	 1.8°	 1.8° Round	 0.9°	 1.2°	
NEMA 24	 1.8°	 1.2°	 0.72°		
NEMA 34	 1.8°	 1.8° Round	 0.9°	 1.2°	 0.72° Round
NEMA 42	 1.8°	 1.2°			

PHB20Y Series

NEMA 8 | 1.8°

Hybrid Stepper Motor
Hybrid Stepper Gear Motor
IP65 Stepper Motor
PM Stepper Motor
PM Stepper Gear Motor
Stepper Drive

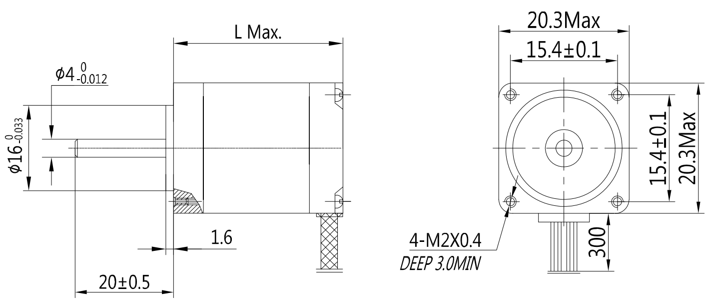
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



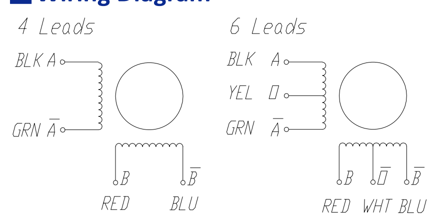
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	$g.cm^2$	# of Leads	g	mm
PHB20Y28-402	0.2	23	8.2	1.4	0.2	2.5	Bi (4)	50	28
PHB20Y28-406	0.6	3.2	0.9	1.4	0.2	2.5	Bi (4)	50	28
PHB20Y34-402	0.2	25	8.4	1.8	0.3	3.2	Bi (4)	70	34
PHB20Y34-406	0.6	4.5	1.2	1.8	0.3	3.2	Bi (4)	70	34
PHB20Y40-402	0.2	32	8.8	2.4	0.5	4.5	Bi (4)	82	40
PHB20Y40-406	0.6	5.8	1.6	2.4	0.5	4.5	Bi (4)	82	40

Mechanical Dimension



Wiring Diagram



PrimoPal Motor · No. 2218 Hunan Road, Shanghai 201204, China · Tel +86 21 5018 7836 · Fax +86 21 5017 9351 · www.primopal.com · sales@primopal.com

PHB26K Series

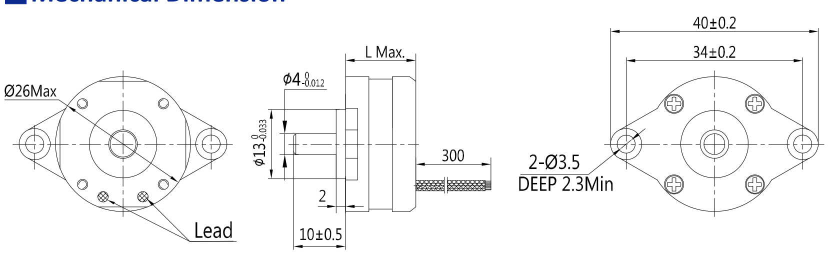
NEMA 10 | 1.8° | Round

Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max. (rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)

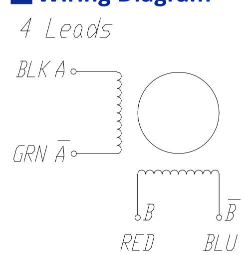
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	g.cm^2	# of Leads	g	mm
PHB26K13-420	0.3	20	3.2	1.2	0.2	2.5	Bi (4)	50	13.5

Mechanical Dimension



Wiring Diagram



PHB28Y Series

2 Phase Hybrid Stepper Motor

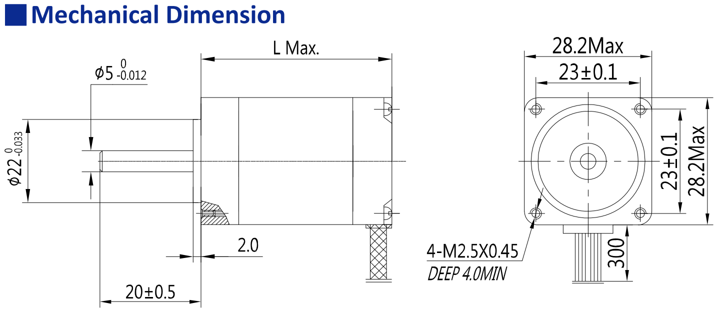
NEMA 11 | 1.8°

Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max. (rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)

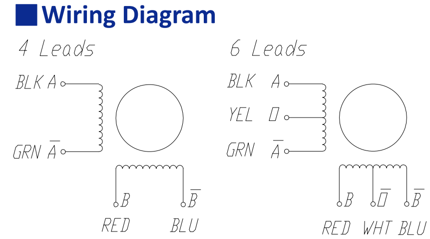
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	g.cm^2	# of Leads	g	mm
PHB28Y28-401	0.6	4.2	2.2	4.5	0.3	6	Bi (4)	95	28
PHB28Y28-402	0.35	12	5.8	4.5	0.3	6	Bi (4)	95	28
PHB28Y33-401	0.6	5.5	3.2	6.0	0.4	8	Bi (4)	110	33
PHB28Y33-402	0.35	15	9.2	6.0	0.4	8	Bi (4)	110	33
PHB28Y41-401	0.6	7.0	6.0	8.0	0.5	11	Bi (4)	140	41
PHB28Y41-402	0.35	20	15	8.0	0.5	11	Bi (4)	140	41
PHB28Y50-401	0.6	9.0	7.2	10	0.8	13	Bi (4)	180	50
PHB28Y50-402	0.35	24	18.5	10	0.8	13	Bi (4)	180	50

Mechanical Dimension



Wiring Diagram



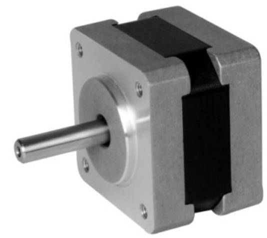
PrimoPal Motor · No. 2218 Hunan Road, Shanghai 201204, China · Tel +86 21 5018 7836 · Fax +86 21 5017 9351 · www.primopal.com · sales@primopal.com

PHB35Y Series

2 Phase Hybrid Stepper Motor

NEMA 14 | 1.8°

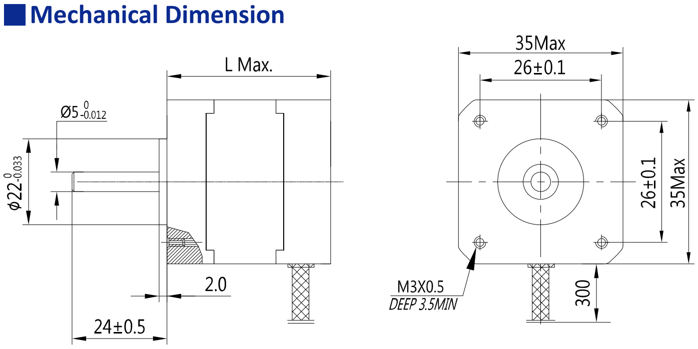
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



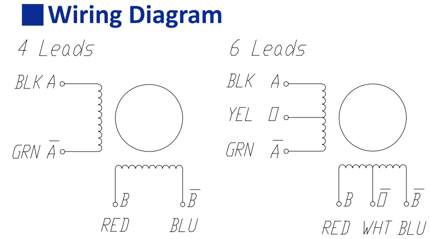
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	g.cm^2	# of Leads	g	mm
PHB35Y20-404	0.4	22	16	5	0.5	9	Bi (4)	90	20
PHB35Y26-402	0.8	4.2	4.5	10	0.6	10	Bi (4)	110	26
PHB35Y28-401	0.46	20	14	12	0.8	11	Bi (4)	120	28
PHB35Y28-402	0.8	5.0	5.0	12	0.8	11	Bi (4)	120	28
PHB35Y28-630	0.4	30	11	9	0.8	11	Uni (6)	120	28
PHB35Y34-401	0.42	25	32	18	1.0	13	Bi (4)	160	34
PHB35Y34-402	0.8	6.5	9.8	18	1.0	13	Bi (4)	160	34
PHB35Y34-630	0.4	30	22	12	1.0	13	Uni (6)	160	34
PHB35Y42-402	0.8	10.5	13	22	1.5	22	Bi (4)	200	42
PHB35Y52-415	1.5	3.5	7.6	30	2.0	26	Bi (4)	230	52
PHB35Y52-418	1.8	2.5	5.0	30	2.0	26	Bi (4)	230	52

Mechanical Dimension



Wiring Diagram

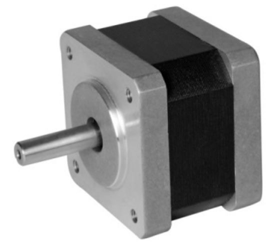


PHB35W Series

2 Phase Hybrid Stepper Motor

NEMA 14 | 0.9°

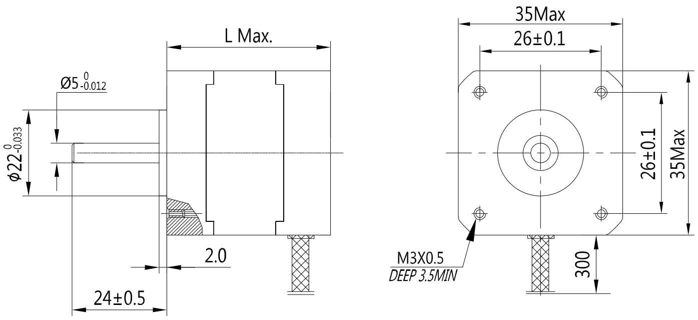
Step Angle	0.9°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



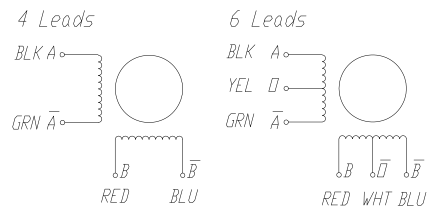
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	$g.cm^2$	# of Leads	g	mm
PHB35W20-404	0.4	24	18	5	0.2	10	Bi (4)	120	20
PHB35W28-405	0.55	10	9.5	9	0.3	12	Bi (4)	130	28
PHB35W28-408	0.8	4.5	4.5	9	0.3	12	Bi (4)	130	28
PHB35W28-436	0.36	22	20	9	0.3	12	Bi (4)	130	28
PHB35W28-630	0.4	30	12	8	0.3	12	Uni (6)	130	28
PHB35W34-402	0.55	12	19	14	0.6	18	Bi (4)	190	34
PHB35W34-403	0.8	6.0	10	14	0.6	18	Bi (4)	190	34
PHB35W34-436	0.36	28	42	14	0.6	18	Bi (4)	190	34
PHB35W34-630	0.4	30	18	10	0.6	18	Uni (6)	190	34

Mechanical Dimension



Wiring Diagram



PrimoPal Motor · No. 2218 Hunan Road, Shanghai 201204, China · Tel +86 21 5018 7836 · Fax +86 21 5017 9351 · www.primopal.com · sales@primopal.com

PHB36D Series

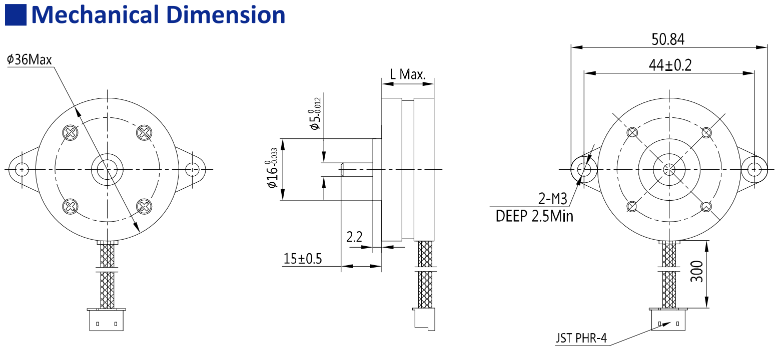
NEMA 14 | 0.9° | Round

Step Angle	0.9°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)

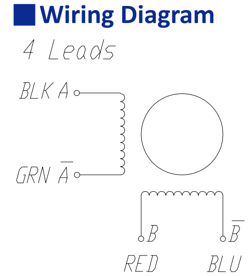
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	g.cm^2	# of Leads	g	mm
PHB36D13-403	0.3	19	9	3.2	0.3	3	Bi (4)	40	13.5
PHB36D15-403	0.3	16.8	8.2	4.2	0.5	4	Bi (4)	55	15.2
PHB36D20-445	0.45	14.5	12.5	9.0	0.8	6	Bi (4)	95	19.7

Mechanical Dimension



Wiring Diagram

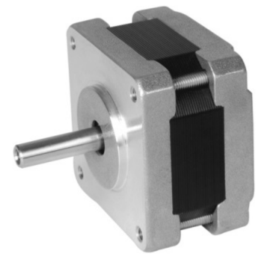


PHB39Y Series

2 Phase Hybrid Stepper Motor

NEMA 16 | 1.8°

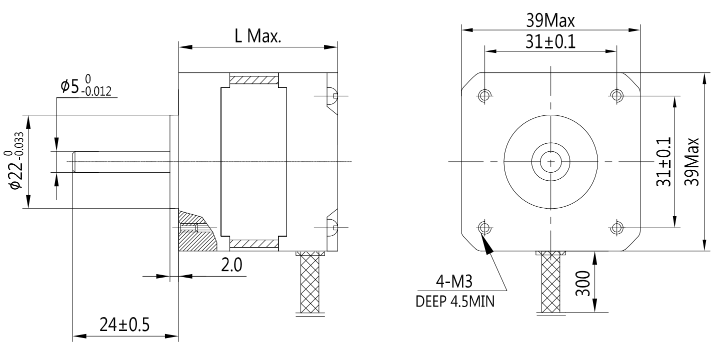
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



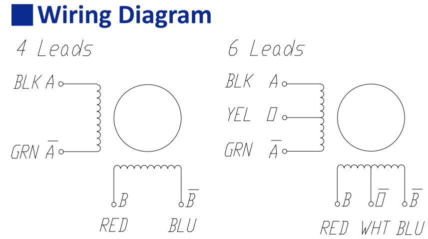
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	g.cm^2	# of Leads	g	mm
PHB39Y20-401	0.42	18	12	8	0.5	12	Bi (4)	100	20
PHB39Y26-401	0.6	9	10	14	0.8	14	Bi (4)	120	26
PHB39Y34-401	0.6	12	13	18	1.0	19	Bi (4)	160	34
PHB39Y34-402	1.2	3.2	3.0	16	1.0	19	Bi (4)	160	34
PHB39Y34-630	0.4	30	14	12	1.0	19	Uni (6)	160	34
PHB39Y40-401	0.6	12	20	24	1.2	24	Bi (4)	210	40
PHB39Y40-402	1.2	3.8	6.5	24	1.2	24	Bi (4)	210	40
PHB39Y40-630	0.4	30	22	18	1.2	24	Uni (6)	210	40

Mechanical Dimension



Wiring Diagram



PrimoPal Motor · No. 2218 Hunan Road, Shanghai 201204, China · Tel +86 21 5018 7836 · Fax +86 21 5017 9351 · www.primopal.com · sales@primopal.com

PHB39M Series

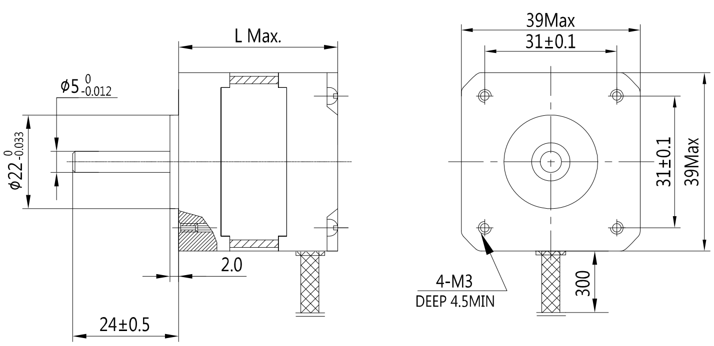
NEMA 16 | 0.9°

Step Angle	0.9°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)

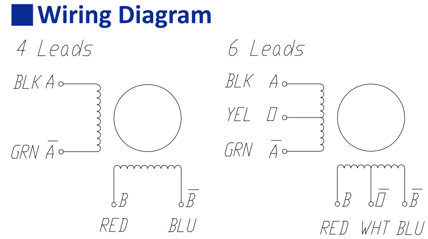
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	g.cm^2	# of Leads	g	mm
PHB39M20-401	0.42	20	16	8	0.5	15	Bi (4)	100	20
PHB39M26-401	0.6	9	16	14	0.8	18	Bi (4)	120	26
PHB39M34-401	0.6	9	15	16	1.1	23	Bi (4)	160	34
PHB39M34-402	1.2	2.5	3.6	16	1.1	23	Bi (4)	160	34
PHB39M34-630	0.4	30	16	12	1.1	23	Uni (6)	160	34
PHB39M40-401	0.6	12	20	22	1.4	30	Bi (4)	210	40
PHB39M40-402	1.2	3.2	5.5	22	1.4	30	Bi (4)	210	40
PHB39M40-630	0.4	30	26	18	1.4	30	Uni (6)	210	40

Mechanical Dimension



Wiring Diagram



PHB39G Series

5 Phase Hybrid Stepper Motor

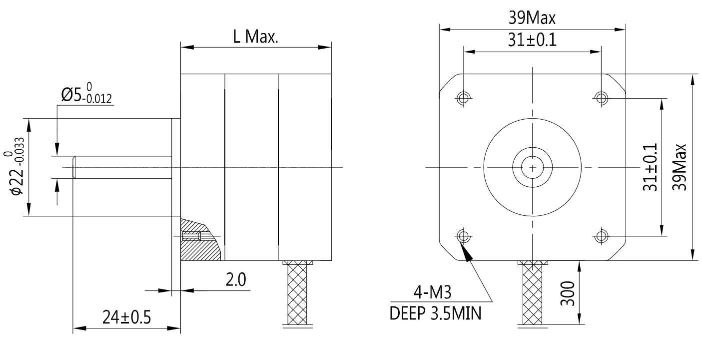
NEMA 16 | 0.36°

Step Angle	0.36°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)

Specifications

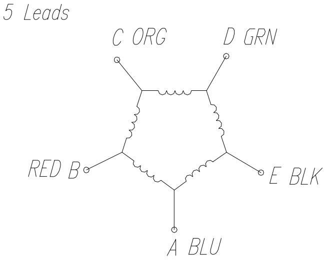
Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	# of Leads	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	$g.cm^2$	Pin	g	mm
PHB39G31-508	0.75	1.8	1.8	7.5	1.2	14	5	140	31
PHB39G40-508	0.75	2.5	2.5	13.5	1.6	25	5	200	40

Mechanical Dimension



Wiring Diagram

5 Leads



PrimoPal Motor · No. 2218 Hunan Road, Shanghai 201204, China · Tel +86 21 5018 7836 · Fax +86 21 5017 9351 · www.primopal.com · sales@primopal.com

PHB42E Series

2 Phase Hybrid Stepper Motor

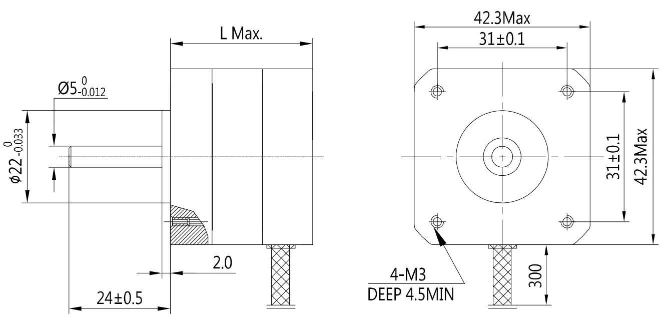
NEMA 17 | 3.6°

Step Angle	3.6°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)

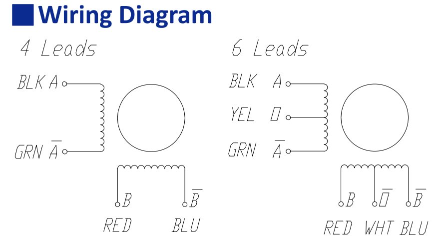
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	$g.cm^2$	# of Leads	g	mm
PHB42E34-401	0.52	12	13.5	12	1.6	34	Bi (4)	220	34
PHB42E34-602	0.6	10.5	4.5	8.5	1.6	34	Uni (6)	220	34
PHB42E34-616	0.16	75	28	8	1.6	34	Uni (6)	220	34

Mechanical Dimension



Wiring Diagram

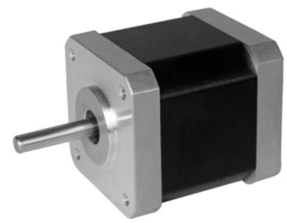


PHB42S Series

2 Phase Hybrid Stepper Motor

NEMA 17 | 1.8°

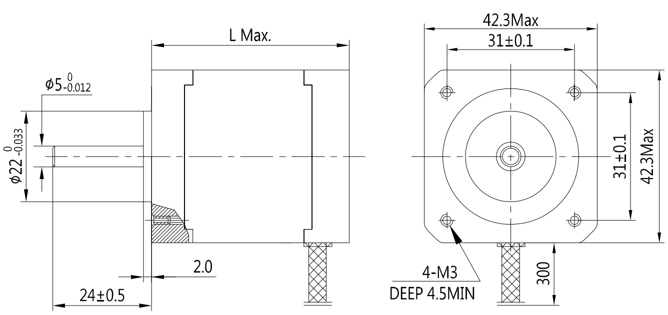
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



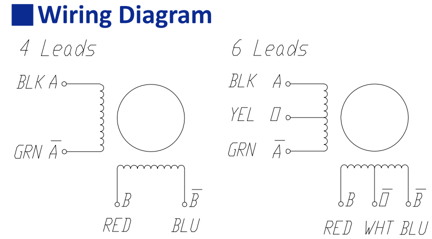
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	$g.cm^2$	# of Leads	g	mm
PHB42S20-410	0.8	3.8	4.5	10	1.0	24	Bi (4)	120	20
PHB42S28-406	0.6	8.0	10	12	1.2	30	Bi (4)	150	28
PHB42S34-401	1.3	2.4	2.8	28	1.6	34	Bi (4)	220	34
PHB42S34-402	1.7	1.2	1.8	28	1.6	34	Bi (4)	220	34
PHB42S34-430	0.4	30	35	28	1.6	34	Bi (4)	220	34
PHB42S34-630	0.4	30	18	21	1.6	34	Uni (6)	220	34
PHB42S40-401	1.3	2.5	5.0	40	2.2	54	Bi (4)	280	40
PHB42S40-402	1.7	1.5	2.8	40	2.2	54	Bi (4)	280	40
PHB42S40-601	1. 2	3.2	2.8	28	2.2	54	Uni (6)	280	40
PHB42S40-630	0.4	30	28	28	2.2	54	Uni (6)	280	40
PHB42S48-401	1.3	3.2	5.5	52	2.6	68	Bi (4)	350	48
PHB42S48-402	1.7	1.8	3.2	52	2.6	68	Bi (4)	350	48
PHB42S48-403	2.3	1.2	1.6	52	2.6	68	Bi (4)	350	48
PHB42S48-630	0.4	30	38	34	2.6	68	Uni (6)	350	48
PHB42S60-403	2.3	1.4	2.5	70	3.6	80	Bi (4)	480	60
PHB42S63-403	2.3	1.5	2.2	80	4.0	85	Bi (4)	500	63

Mechanical Dimension



Wiring Diagram

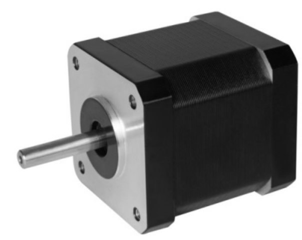


PrimoPal Motor · No. 2218 Hunan Road, Shanghai 201204, China · Tel +86 21 5018 7836 · Fax +86 21 5017 9351 · www.primopal.com · sales@primopal.com

PHB42W Series

NEMA 17 | 0.9°

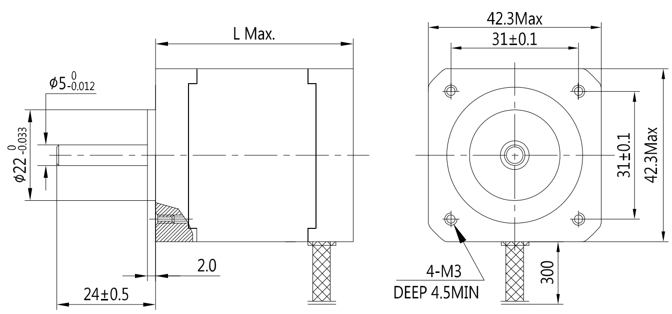
Step Angle	0.9°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



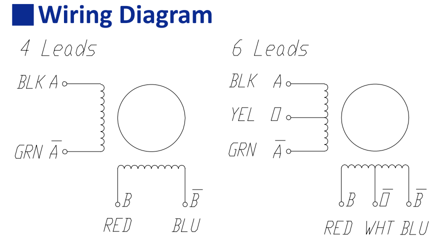
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	g.cm^2	# of Leads	g	mm
PHB42W21-403	0.3	25	36	8	0.7	15	Bi (4)	120	21
PHB42W28-406	0.6	9	9	10	0.9	20	Bi (4)	150	28
PHB42W34-401	1.3	2.4	3.6	24	1.2	34	Bi (4)	220	34
PHB42W34-402	1.7	1.2	2.2	24	1.2	34	Bi (4)	220	34
PHB42W34-430	0.4	30	45	24	1.2	34	Bi (4)	220	34
PHB42W34-630	0.4	30	22	20	1.2	34	Uni (6)	220	34
PHB42W40-401	1.3	2.5	6.2	36	1.8	54	Bi (4)	280	40
PHB42W40-402	1.7	1.5	3.8	36	1.8	54	Bi (4)	280	40
PHB42W40-601	1.2	3.2	3.8	26	1.8	54	Uni (6)	280	40
PHB42W40-630	0.4	30	34	26	1.8	54	Uni (6)	280	40
PHB42W48-401	1.3	3.0	7.0	42	2.2	68	Bi (4)	350	48
PHB42W48-402	1.7	1.8	4.0	42	2.2	68	Bi (4)	350	48
PHB42W48-403	2.3	1.2	2.0	42	2.2	68	Bi (4)	350	48
PHB42W48-630	0.4	30	28	27	2.2	68	Uni (6)	350	48

Mechanical Dimension



Wiring Diagram

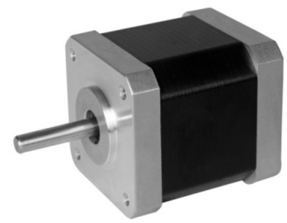


PHB42R Series

3 Phase Hybrid Stepper Motor

NEMA 17 | 3.75°

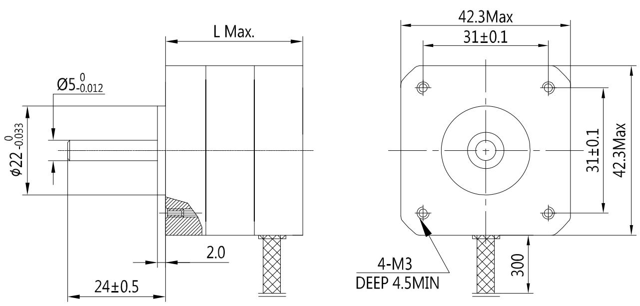
Step Angle	3.75°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



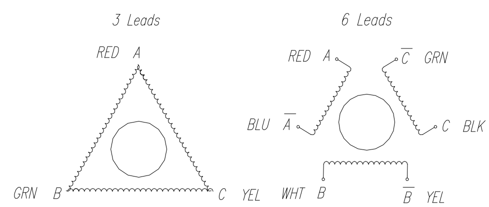
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	# of Leads	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	g.cm^2	Pin	g	mm
PHB42R40-315	1.5	2.5	5.5	20	2.2	54	3	280	40
PHB42R48-315	1.5	3.6	7.0	30	2.6	68	3	350	48

Mechanical Dimension



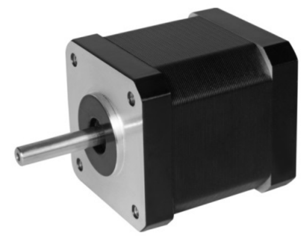
Wiring Diagram



PrimoPal Motor · No. 2218 Hunan Road, Shanghai 201204, China · Tel +86 21 5018 7836 · Fax +86 21 5017 9351 · www.primopal.com · sales@primopal.com

PHB42T Series

NEMA 17 | 1.2°

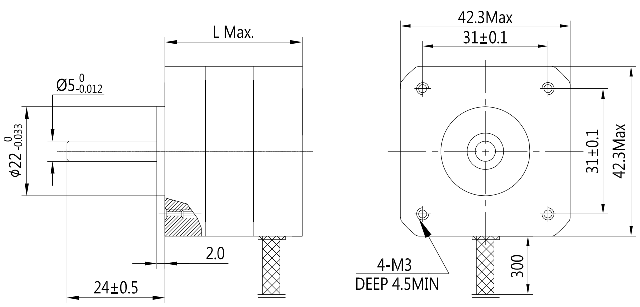


Step Angle	1.2°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)

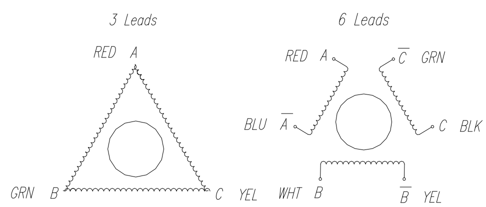
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	# of Leads	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	$g.cm^2$	Pin	g	mm
PHB42T34-330	3.0	0.65	0.2	10	1.6	34	3	220	34
PHB42T40-330	3.0	0.79	0.35	20	2.2	54	3	280	40
PHB42T48-330	3.0	0.98	0.43	27	2.6	68	3	350	48

Mechanical Dimension



Wiring Diagram



PHB57K Series

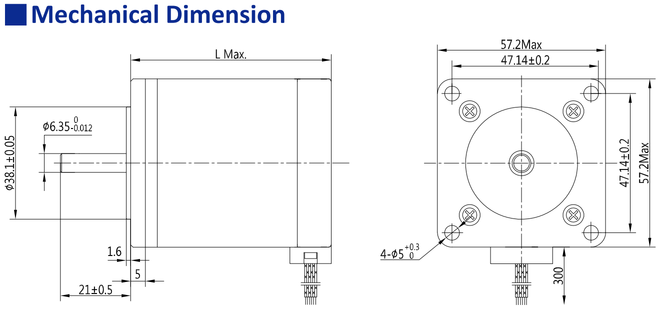
NEMA 23 | 1.8° | Round

Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)

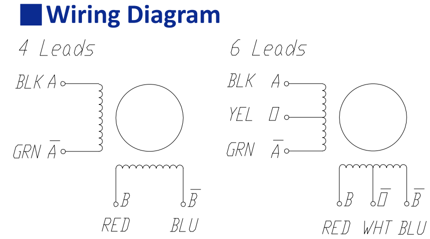
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	g.cm^2	# of Leads	g	mm
PHB57K41-401	1.55	1.8	3.5	22	3.5	60	Bi (4)	450	41
PHB57K41-402	2.1	0.8	1.4	32	3.5	60	Bi (4)	450	41
PHB57K41-601	0.38	32	30	30	3.5	60	Uni (6)	450	41
PHB57K41-602	1.5	1.5	1.4	24	3.5	60	Uni (6)	450	41
PHB57K51-401	1.4	2.5	6.2	62	5.5	118	Bi (4)	600	51
PHB57K51-402	2.0	1.3	3.2	62	5.5	118	Bi (4)	600	51
PHB57K51-601	0.38	32	28	38	5.5	118	Uni (6)	600	51
PHB57K51-602	0.85	7.1	8.5	45	5.5	118	Uni (6)	600	51
PHB57K51-603	1.4	2.5	3.2	45	5.5	118	Uni (6)	600	51
PHB57K56-401	2.5	1.2	3.0	80	6.5	145	Bi (4)	650	56
PHB57K56-601	0.6	20	20	60	6.5	145	Uni (6)	650	56
PHB57K56-602	1.2	5.0	6.8	60	6.5	145	Uni (6)	650	56
PHB57K56-603	1.6	2.5	3.2	60	6.5	145	Uni (6)	650	56
PHB57K56-604	2.4	1.0	1.2	60	6.5	145	Uni (6)	650	56
PHB57K76-402	4.2	0.6	1.4	110	9.5	230	Bi (4)	800	76
PHB57K76-403	2.1	2.2	6.2	110	9.5	230	Bi (4)	800	76
PHB57K76-404	3.6	0.8	2.2	110	9.5	230	Bi (4)	800	76

Mechanical Dimension



Wiring Diagram



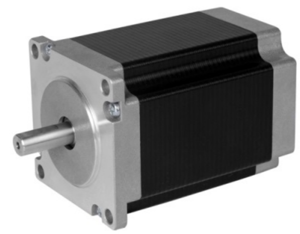
Hybrid Stepper Motor
Hybrid Stepper Gear Motor
IP65 Stepper Motor
PM Stepper Motor
PM Stepper Gear Motor
Stepper Drive

PrimoPal Motor · No. 2218 Hunan Road, Shanghai 201204, China · Tel +86 21 5018 7836 · Fax +86 21 5017 9351 · www.primopal.com · sales@primopal.com

PHB57S Series

NEMA 23 | 1.8°

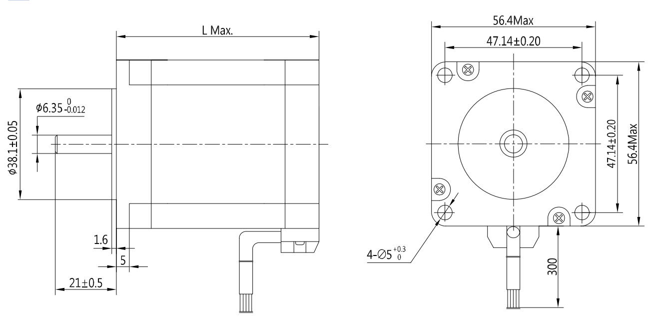
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



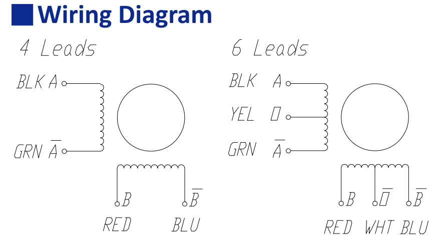
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	g.cm^2	# of Leads	g	mm
PHB57S41-412	0.62	12	24	55	2.5	150	Bi (4)	470	41
PHB57S41-420	2.0	1.2	2.5	55	2.5	150	Bi (4)	470	41
PHB57S41-601	1.0	5.2	5.5	40	2.5	150	Uni (6)	470	41
PHB57S45-406	0.62	12	26	80	2.8	190	Bi (4)	520	45
PHB57S45-425	2.5	1.0	2.2	80	2.8	190	Bi (4)	520	45
PHB57S51-406	0.62	13	28	90	3.0	230	Bi (4)	590	51
PHB57S51-425	2.5	1.2	3.2	90	3.0	230	Bi (4)	590	51
PHB57S51-601	0.8	6.8	9.2	70	3.0	230	Uni (6)	590	51
PHB57S56-425	2.5	1.3	4.2	110	3.5	280	Bi (4)	680	56
PHB57S56-430	3.0	0.8	2.4	110	3.5	280	Bi (4)	680	56
PHB57S56-404	4.2	0.4	1.2	110	3.5	280	Bi (4)	680	56
PHB57S56-601	1.5	3.2	5.5	90	3.5	280	Uni (6)	680	56
PHB57S64-401	1.0	7.5	20	150	5.0	380	Bi (4)	850	64
PHB57S64-425	2.5	1.5	4.5	150	5.0	380	Bi (4)	850	64
PHB57S64-430	3.0	0.8	2.3	150	5.0	380	Bi (4)	850	64
PHB57S64-404	4.2	0.55	1.2	150	5.0	380	Bi (4)	850	64
PHB57S76-425	2.5	1.8	6.5	180	6.0	440	Bi (4)	1050	76
PHB57S76-430	3.0	1.0	3.5	180	6.0	440	Bi (4)	1050	76
PHB57S76-404	4.2	0.6	1.8	180	6.0	440	Bi (4)	1050	76
PHB57S76-601	1.5	4.5	7.8	140	6.0	440	Uni (6)	1050	76
PHB57S100-430	3.0	1.4	5.5	250	10	680	Bi (4)	1250	100
PHB57S100-404	4.2	0.8	3.0	250	10	680	Bi (4)	1250	100
PHB57S112-430	3.0	1.6	6.8	280	12	800	Bi (4)	1400	112
PHB57S112-404	4.2	0.9	3.8	280	12	800	Bi (4)	1400	112

Mechanical Dimension



Wiring Diagram



PHB57M Series

2 Phase Hybrid Stepper Motor

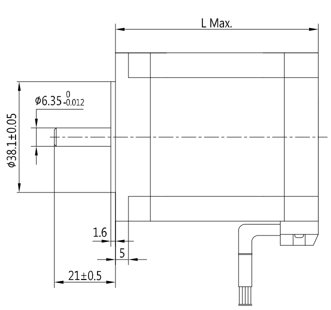
NEMA 23 | 0.9°

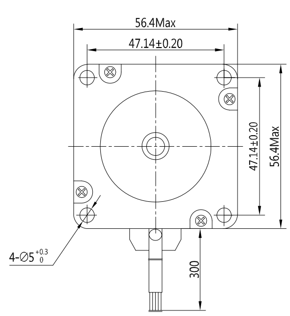
Step Angle	0.9°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)

Specifications

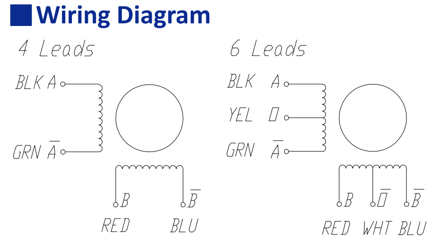
Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	$g.cm^2$	# of Leads	g	mm
PHB57M41-406	0.62	12	28	32	2.5	150	Bi (4)	470	41
PHB57M41-420	2.0	1.2	3.0	32	2.5	150	Bi (4)	470	41
PHB57M41-601	1.0	5.2	6.2	24	2.5	150	Uni (6)	470	41
PHB57M45-425	2.5	1.0	3.0	62	2.8	190	Bi (4)	520	45
PHB57M51-406	0.62	13	34	70	3.0	230	Bi (4)	590	51
PHB57M51-425	2.5	1.2	3.8	70	3.0	230	Bi (4)	590	51
PHB57M56-425	2.5	1.3	5.2	100	3.5	280	Bi (4)	680	56
PHB57M56-430	3.0	0.8	2.8	100	3.5	280	Bi (4)	680	56
PHB57M56-404	4.2	0.4	1.5	100	3.5	280	Bi (4)	680	56
PHB57M56-601	1.5	3.2	6.5	82	3.5	280	Uni (6)	680	56
PHB57M64-401	1.0	7.5	28	110	5.0	380	Bi (4)	850	64
PHB57M64-425	2.5	1.5	5.8	110	5.0	380	Bi (4)	850	64
PHB57M64-430	3.0	0.9	3.0	110	5.0	380	Bi (4)	850	64
PHB57M64-404	4.2	0.55	1.5	110	5.0	380	Bi (4)	850	64
PHB57M76-425	2.5	1.8	8.2	150	6.0	440	Bi (4)	1050	76
PHB57M76-430	3.0	1.0	4.3	150	6.0	440	Bi (4)	1050	76
PHB57M76-404	4.2	0.65	2.2	150	6.0	440	Bi (4)	1050	76
PHB57M76-601	1.5	4.5	10	125	6.0	440	Uni (6)	1050	76

Mechanical Dimension





Wiring Diagram

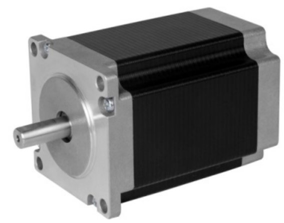


PrimoPal Motor · No. 2218 Hunan Road, Shanghai 201204, China · Tel +86 21 5018 7836 · Fax +86 21 5017 9351 · www.primopal.com · sales@primopal.com

PHB57T Series

NEMA 23 | 1.2°

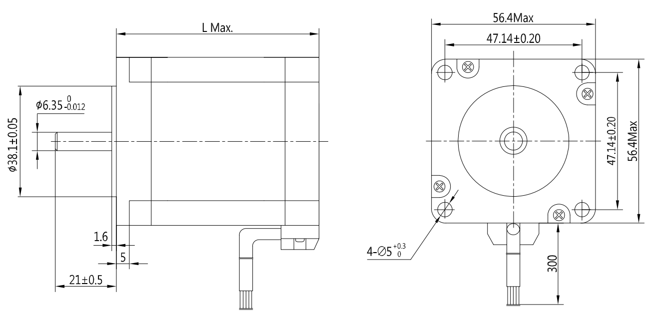
Step Angle	1.2°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



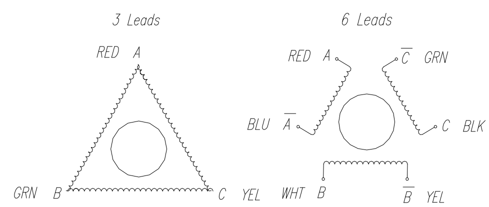
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	# of Leads	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	g.cm^2	Pin	g	mm
PHB57T56-607	4.6	0.7	1.7	80	4.0	300	6	700	56
PHB57T78-608	5.2	0.8	1.8	150	7.0	440	6	1050	78
PHB57T80-620	3.1	0.65	2.0	160	8.0	480	6	1100	80

Mechanical Dimension



Wiring Diagram

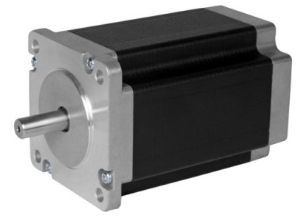


PHB60S Series

2 Phase Hybrid Stepper Motor

NEMA 24 | 1.8°

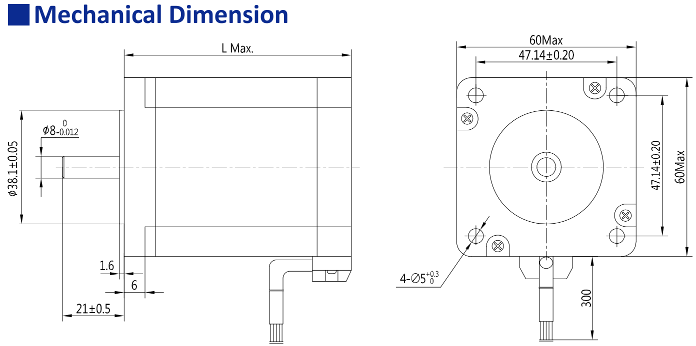
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



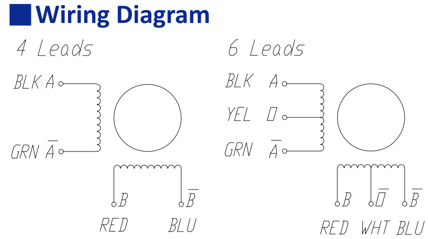
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	g.cm^2	# of Leads	g	mm
PHB60S41-420	2.0	1.2	2.5	64	3.0	180	Bi (4)	500	41
PHB60S45-425	2.5	1.0	2.2	85	3.5	200	Bi (4)	550	45
PHB60S51-425	2.5	1.2	3.2	140	4.0	250	Bi (4)	600	51
PHB60S56-425	2.5	1.3	4.2	160	4.0	350	Bi (4)	700	56
PHB60S56-430	3.0	0.8	2.4	160	4.0	350	Bi (4)	700	56
PHB60S56-404	4.2	0.4	1.2	160	4.0	350	Bi (4)	700	56
PHB60S64-425	2.5	1.5	4.5	180	5.0	450	Bi (4)	950	64
PHB60S64-430	3.0	0.8	2.3	180	5.0	450	Bi (4)	950	64
PHB60S64-404	4.2	0.55	1.2	180	5.0	450	Bi (4)	950	64
PHB60S76-425	2.5	1.8	6.5	220	7.0	550	Bi (4)	1150	76
PHB60S76-430	3.0	1.0	3.5	220	7.0	550	Bi (4)	1150	76
PHB60S76-404	4.2	0.6	1.8	220	7.0	550	Bi (4)	1150	76
PHB60S90-430	3.0	1.4	5.5	260	12.0	780	Bi (4)	1400	90
PHB60S90-404	4.2	0.8	3.0	260	12.0	780	Bi (4)	1400	90

Mechanical Dimension



Wiring Diagram

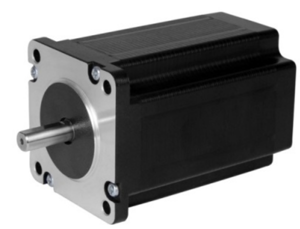


PrimoPal Motor · No. 2218 Hunan Road, Shanghai 201204, China · Tel +86 21 5018 7836 · Fax +86 21 5017 9351 · www.primopal.com · sales@primopal.com

PHB60T Series

NEMA 24 | 1.2°

Step Angle	1.2°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)

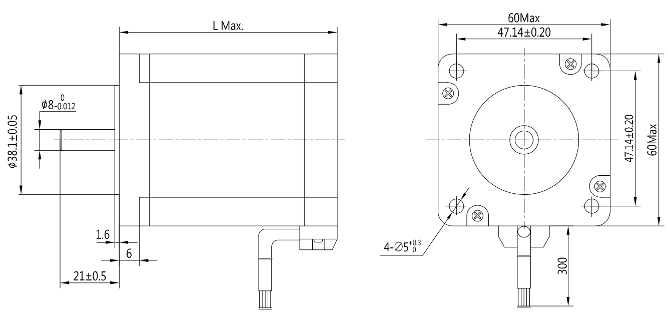


Hybrid Stepper Motor
Hybrid Stepper Gear Motor
IP65 Stepper Motor
PM Stepper Motor
PM Stepper Gear Motor
Stepper Drive

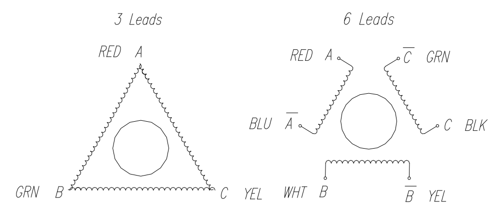
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	# of Leads	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	g.cm^2	Pin	g	mm
PHB60T54-335	3.5	0.8	1.8	80	3.5	280	3	580	54
PHB60T54-346	4.6	0.5	0.8	80	3.5	280	3	580	54
PHB60T64-335	3.5	1.0	2.5	110	5.0	380	3	950	64
PHB60T64-346	4.6	0.7	1.2	110	5.0	380	3	950	64
PHB60T76-335	3.5	1.2	3.2	130	6.5	440	3	1150	76
PHB60T76-346	4.6	0.8	1.5	130	6.5	440	3	1150	76
PHB60T90-335	3.5	1.5	4.5	160	8.0	580	3	1400	90
PHB60T90-346	4.6	1.0	2.5	160	8.0	580	3	1400	90

Mechanical Dimension



Wiring Diagram



PHB60F Series

5 Phase Hybrid Stepper Motor

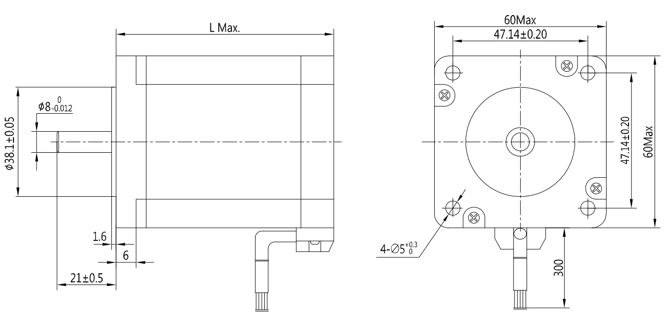
NEMA 24 | 0.72°

Step Angle	0.72°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	500 VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)

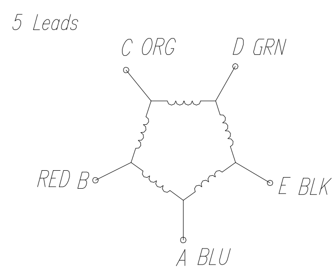
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	# of Leads	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	g.cm^2	Pin	g	mm
PHB60F45-508	0.75	2.6	4.6	55	3.0	250	5	600	45
PHB60F45-515	1.5	0.65	0.9	55	3.0	250	5	600	45
PHB60F54-508	0.75	3.3	8.2	80	3.5	280	5	780	54
PHB60F54-515	1.5	0.77	1.6	80	3.5	280	5	780	54
PHB60F64-508	0.75	4	9.2	100	5.0	380	5	920	64
PHB60F64-515	1.5	0.8	1.8	100	5.0	380	5	920	64
PHB60F76-508	0.75	5	13.5	130	6.5	440	5	1200	76
PHB60F76-515	1.5	0.98	2.6	130	6.5	440	5	1200	76
PHB60F90-508	0.75	5.8	19.5	160	8.0	580	5	1400	90
PHB60F90-515	1.5	1.2	3.8	160	8.0	580	5	1400	90

Mechanical Dimension



Wiring Diagram



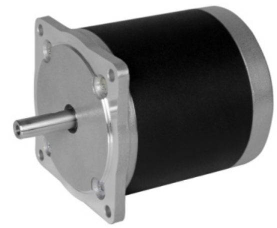
PrimoPal Motor · No. 2218 Hunan Road, Shanghai 201204, China · Tel +86 21 5018 7836 · Fax +86 21 5017 9351 · www.primopal.com · sales@primopal.com

PHB86K Series

2 Phase Hybrid Stepper Motor

NEMA 34 | 1.8° | Round

Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	1500VAC for one minute
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



Specifications

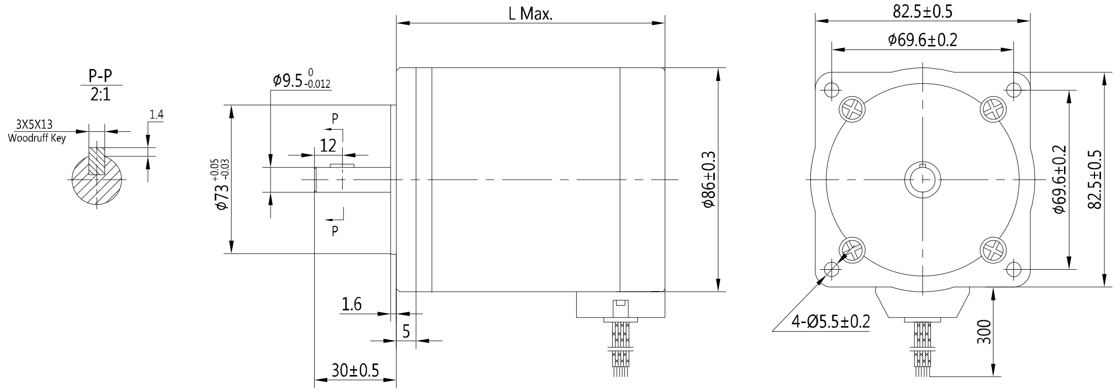
Model	Current	Resistance	Inductance	Holding Torque	Bi/Unipolar	Detent Torque	Rotor Inertia	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	# of Leads	N.cm	$Kg.cm^2$	kg	mm
	3.0	0.95	7.2	250	Bi-P (8)				
PHB86K63-801	1.5	3.8	28.8	250	Bi-S (8)	4.5	0.64	1.6	63
	2.1	1.9	7.2	180	Uni (8)				
	3.8	0.6	4.5	250	Bi-P (8)				
PHB86K63-802	1.9	2.4	18.0	250	Bi-S (8)	4.5	0.64	1.6	63
	2.7	1.2	4.5	180	Uni (8)				
	5.6	0.34	2.0	250	Bi-P (8)				
PHB86K63-803	2.8	1.36	8.0	250	Bi-S (8)	4.5	0.64	1.6	63
	4.0	0.68	2.0	180	Uni (8)				
	7.0	0.23	1.5	250	Bi-P (8)				
PHB86K63-804	3.5	0.9	6.0	250	Bi-S (8)	4.5	0.64	1.6	63
	5.0	0.45	1.5	180	Uni (8)				
	3.0	1.4	15	450	Bi-P (8)				
PHB86K92-801	1.5	5.4	60	450	Bi-S (8)	6.5	1.30	2.6	92
	2.1	2.7	15	320	Uni (8)				
	3.8	0.85	9.0	450	Bi-P (8)				
PHB86K92-802	1.9	3.4	36.0	450	Bi-S (8)	6.5	1.30	2.6	92
	2.7	1.7	9.0	320	Uni (8)				
	5.6	0.45	3.8	450	Bi-P (8)				
PHB86K92-803	2.8	1.8	15.2	450	Bi-S (8)	6.5	1.30	2.6	92
	4.0	0.9	3.8	320	Uni (8)				
	7.0	0.3	2.8	450	Bi-P (8)				
PHB86K92-804	3.5	1.2	11.2	450	Bi-S (8)	6.5	1.30	2.6	92
	5.0	0.6	2.8	320	Uni (8)				

PHB86K Series

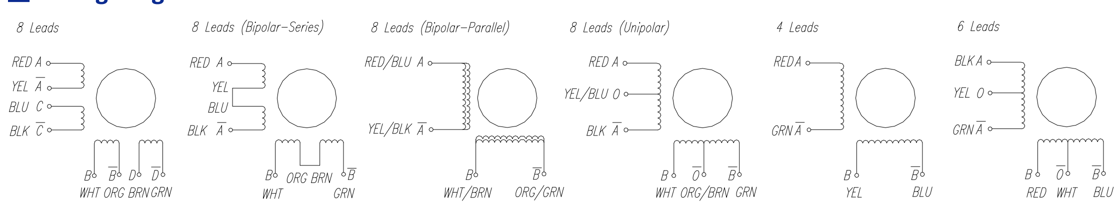
Specifications (Continued)

Model	Current	Resistance	Inductance	Holding Torque	Bi/Unipolar	Detent Torque	Rotor Inertia	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	# of Leads	N.cm	$kg.cm^2$	kg	mm
PHB86K122-802	3.8	1.25	12.5	630	Bi-P (8)	10.5	1.90	3.8	122
	1.9	5.0	50	630	Bi-S (8)				
	2.7	2.5	12.5	450	Uni (8)				
PHB86K122-803	5.6	0.55	5.6	630	Bi-P (8)	10.5	1.90	3.8	122
	2.8	2.2	22.4	630	Bi-S (8)				
	4.0	1.1	5.6	450	Uni (8)				
PHB86K122-804	7.0	0.4	3.6	630	Bi-P (8)	10.5	1.90	3.8	122
	3.5	1.6	14.4	630	Bi-S (8)				
	5.0	0.8	3.6	450	Uni (8)				

Mechanical Dimension



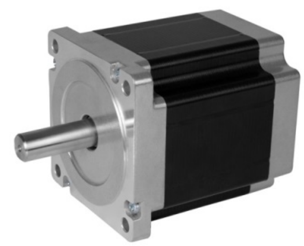
Wiring Diagram



PrimoPal Motor · No. 2218 Hunan Road, Shanghai 201204, China · Tel +86 21 5018 7836 · Fax +86 21 5017 9351 · www.primopal.com · sales@primopal.com

NEMA 34 | 1.8°

Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	820VAC, 1s, 3mA
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



Specifications

Model	Current	Resistance	Inductance	Holding Torque	Bi/Unipolar	Detent Torque	Rotor Inertia	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	# of Leads	N.cm	kg.cm^2	kg	mm
	3.8	0.6	3.5	310	Bi-P (8)				
PHB86S66-801	1.9	2.4	14.0	310	Bi-S (8)	5.5	0.85	2.0	66
	2.7	1.2	3.5	220	Uni (8)				
	5.6	0.3	1.6	310	Bi-P (8)				
PHB86S66-802	2.8	1.2	6.4	310	Bi-S (8)	5.5	0.85	2.0	66
	4.0	0.6	1.6	220	Uni (8)				
	7.0	0.2	1.0	310	Bi-P (8)				
PHB86S66-803	3.5	0.8	4.0	310	Bi-S (8)	5.5	0.85	2.0	66
	5.0	0.4	1.0	220	Uni (8)				
	3.8	0.8	5.6	420	Bi-P (8)				
PHB86S78-801	1.9	3.2	22.4	420	Bi-S (8)	6.5	1.05	2.5	78
	2.7	1.6	5.6	300	Uni (8)				
	5.6	0.35	3.0	420	Bi-P (8)				
PHB86S78-802	2.8	1.4	12.0	420	Bi-S (8)	6.5	1.05	2.5	78
	4.0	0.7	3.0	300	Uni (8)				
	7.0	0.25	1.8	420	Bi-P (8)				
PHB86S78-803	3.5	1.0	7.2	420	Bi-S (8)	6.5	1.05	2.5	78
	5.0	0.5	1.8	300	Uni (8)				
	3.8	0.95	8.6	650	Bi-P (8)				
PHB86S98-801	1.9	3.8	34.4	650	Bi-S (8)	9.5	1.55	3.0	98
	2.7	1.9	8.6	490	Uni (8)				
	5.6	0.5	4.1	650	Bi-P (8)				
PHB86S98-802	2.8	2.0	16.4	650	Bi-S (8)	9.5	1.55	3.0	98
	4.0	1.0	4.1	490	Uni (8)				
	7.0	0.32	2.4	650	Bi-P (8)				
PHB86S98-803	3.5	1.3	9.6	650	Bi-S (8)	9.5	1.55	3.0	98
	5.0	0.65	2.4	490	Uni (8)				

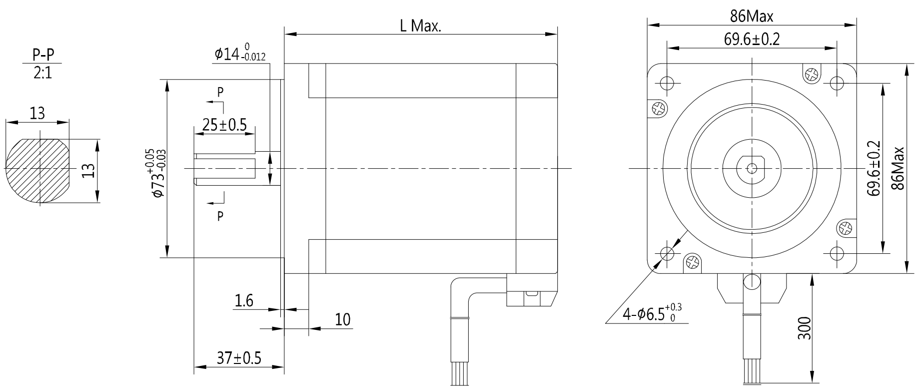
PHB86S Series

2 Phase Hybrid Stepper Motor

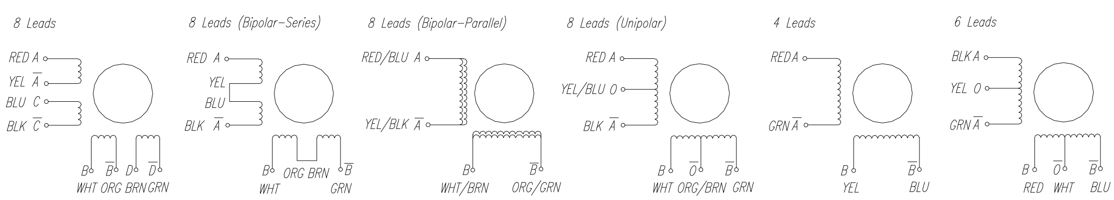
Specifications (Continued)

Model	Current	Resistance	Inductance	Holding Torque	Bi/Unipolar	Detent Torque	Rotor Inertia	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	# of Leads	N.cm	$kg.cm^2$	kg	mm
PHB86S114-801	3.8	1.0	11.5	820	Bi-P (8)	12.5	1.80	4.0	114
	1.9	4.0	46	820	Bi-S (8)				
	2.7	2.0	11.5	580	Uni (8)				
PHB86S114-802	5.6	0.55	5.5	820	Bi-P (8)	12.5	1.80	4.0	114
	2.8	2.2	22.0	820	Bi-S (8)				
	4.0	1.1	5.5	580	Uni (8)				
PHB86S114-803	7.0	0.4	3.2	820	Bi-P (8)	12.5	1.80	4.0	114
	3.5	1.5	12.8	820	Bi-S (8)				
	5.0	0.75	3.2	580	Uni (8)				
PHB86S126-801	3.8	1.25	12.5	900	Bi-P (8)	18.5	2.20	4.5	126
	1.9	5.0	50	900	Bi-S (8)				
	2.7	2.5	12.5	640	Uni (8)				
PHB86S126-802	5.6	0.65	5.8	900	Bi-P (8)	18.5	2.20	4.5	126
	2.8	2.6	23.2	900	Bi-S (8)				
	4.0	1.3	5.8	640	Uni (8)				
PHB86S126-803	7.0	0.43	3.4	900	Bi-P (8)	18.5	2.20	4.5	126
	3.5	1.7	13.6	900	Bi-S (8)				
	5.0	0.85	3.4	640	Uni (8)				
PHB86S150-801	3.8	1.5	17.5	1200	Bi-P (8)	24.5	2.50	5.0	150
	1.9	5.8	70	1200	Bi-S (8)				
	2.7	2.9	17.5	850	Uni (8)				
PHB86S150-802	5.6	0.7	9.2	1200	Bi-P (8)	24.5	2.50	5.0	150
	2.8	2.8	36.8	1200	Bi-S (8)				
	4.0	1.4	9.2	850	Uni (8)				
PHB86S150-803	7.0	0.45	5.2	1200	Bi-P (8)	24.5	2.50	5.0	150
	3.5	1.8	20.8	1200	Bi-S (8)				
	5.0	0.9	5.2	850	Uni (8)				

Mechanical Dimension



Wiring Diagram



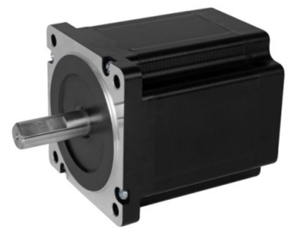
PrimoPal Motor · No. 2218 Hunan Road, Shanghai 201204, China · Tel +86 21 5018 7836 · Fax +86 21 5017 9351 · www.primopal.com · sales@primopal.com

PHB86M Series

2 Phase Hybrid Stepper Motor

NEMA 34 | 0.9°

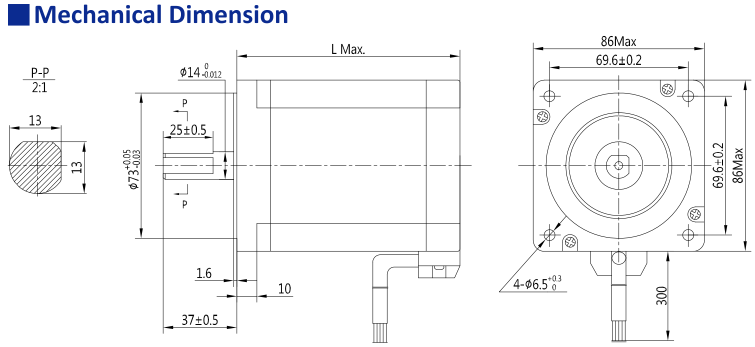
Step Angle	0.9°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	820VAC, 1s, 3mA
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



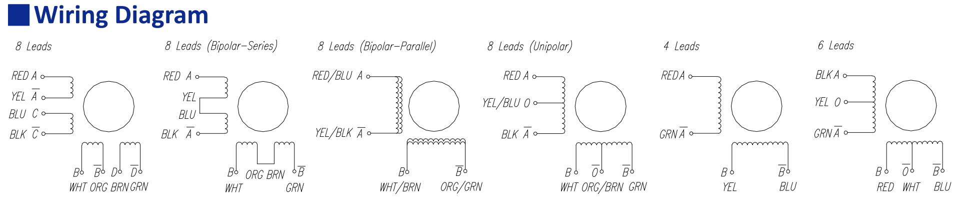
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	kg.cm^2	# of Leads	kg	mm
PHB86M66-801	2.7	1.2	3.5	200	5.0	0.85	Uni (8)	2.0	66
PHB86M66-802	4.0	0.6	1.6	200	5.0	0.85	Uni (8)	2.0	66
PHB86M66-803	5.0	0.4	1.0	200	5.0	0.85	Uni (8)	2.0	66
PHB86M78-801	2.7	1.6	5.6	270	5.8	1.05	Uni (8)	2.5	78
PHB86M78-802	4.0	0.7	3.0	270	5.8	1.05	Uni (8)	2.5	78
PHB86M78-803	5.0	0.5	1.8	270	5.8	1.05	Uni (8)	2.5	78
PHB86M98-801	2.7	1.9	8.6	450	8.5	1.55	Uni (8)	3.0	98
PHB86M98-802	4.0	1.0	4.1	450	8.5	1.55	Uni (8)	3.0	98
PHB86M98-803	5.0	0.65	2.4	450	8.5	1.55	Uni (8)	3.0	98
PHB86M114-801	2.7	2.0	11.5	520	11.0	1.80	Uni (8)	4.0	114
PHB86M114-802	4.0	1.1	5.5	520	11.0	1.80	Uni (8)	4.0	114
PHB86M114-803	5.0	0.75	3.2	520	11.0	1.80	Uni (8)	4.0	114
PHB86M126-801	2.7	2.5	12.5	580	16.5	2.20	Uni (8)	4.5	126
PHB86M126-802	4.0	1.3	5.8	580	16.5	2.20	Uni (8)	4.5	126
PHB86M126-803	5.0	0.85	3.4	580	16.5	2.20	Uni (8)	4.5	126
PHB86M150-801	2.7	2.9	17.5	780	20.5	2.50	Uni (8)	5.0	150
PHB86M150-802	4.0	1.4	9.2	780	20.5	2.50	Uni (8)	5.0	150
PHB86M150-803	5.0	0.9	5.2	780	20.5	2.50	Uni (8)	5.0	150

Mechanical Dimension



Wiring Diagram

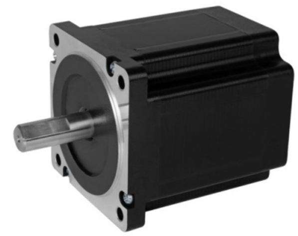


PHB86T Series

3 Phase Hybrid Stepper Motor

NEMA 34 | 1.2°

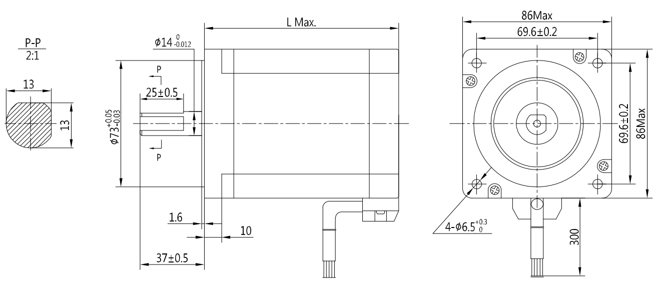
Step Angle	1.2°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	820VAC, 1s, 3mA
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



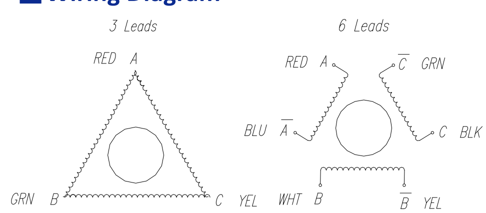
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	# of Leads	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	kg.cm^2	Pin	kg	mm
PHB86T66-335	3.5	1.2	2.5	210	3.5	0.85	3	2.0	66
PHB86T66-345	4.5	0.7	1.5	210	3.5	0.85	3	2.0	66
PHB86T66-368	6.8	0.3	0.65	210	3.5	0.85	3	2.0	66
PHB86T78-335	3.5	1.6	5.0	270	5.8	1.05	3	2.5	78
PHB86T78-345	4.5	1.0	3.0	270	5.8	1.05	3	2.5	78
PHB86T78-368	6.8	0.42	1.3	270	5.8	1.05	3	2.5	78
PHB86T98-335	3.5	2.5	6.5	450	8.5	1.55	3	3.0	98
PHB86T98-345	4.5	1.4	3.9	450	8.5	1.55	3	3.0	98
PHB86T98-368	6.8	0.6	1.7	450	8.5	1.55	3	3.0	98
PHB86T114-335	3.5	3.1	8.2	520	11.0	1.80	3	4.0	114
PHB86T114-345	4.5	1.8	4.8	520	11.0	1.80	3	4.0	114
PHB86T114-368	6.8	0.75	2.1	520	11.0	1.80	3	4.0	114
PHB86T126-335	3.5	3.5	9.8	580	16.5	2.20	3	4.5	126
PHB86T126-345	4.5	2.1	6.2	580	16.5	2.20	3	4.5	126
PHB86T126-368	6.8	0.9	2.6	580	16.5	2.20	3	4.5	126
PHB86T150-335	3.5	4.5	13.2	780	20.5	2.5	3	5.0	150
PHB86T150-345	4.5	2.6	8.2	780	20.5	2.5	3	5.0	150
PHB86T150-368	6.8	1.1	3.5	780	20.5	2.5	3	5.0	150

Mechanical Dimension



Wiring Diagram



PrimoPal Motor · No. 2218 Hunan Road, Shanghai 201204, China · Tel +86 21 5018 7836 · Fax +86 21 5017 9351 · www.primopal.com · sales@primopal.com

PHB86F Series

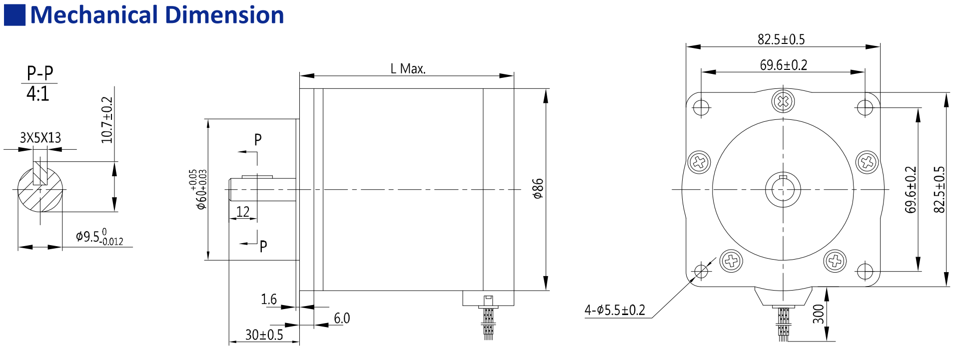
NEMA 34 | 0.72° | Round

Step Angle	0.72°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	820VAC, 1s, 3mA
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)

Specifications

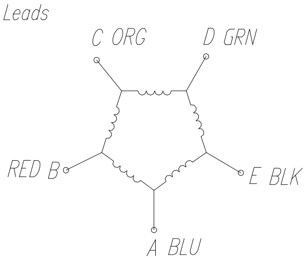
Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	# of Leads	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.cm	N.cm	$kg.cm^2$	Pin	kg	mm
PHB86F63-508	0.8	5.5	24	180	4.5	0.64	5	1.6	63
PHB86F63-515	1.5	1.5	5.6	180	4.5	0.64	5	1.6	63
PHB86F92-515	1.5	2.0	11	320	6.5	1.30	5	2.6	92
PHB86F122-515	1.5	2.5	12	450	10.5	1.90	5	3.8	122

Mechanical Dimension



Wiring Diagram

5 Leads



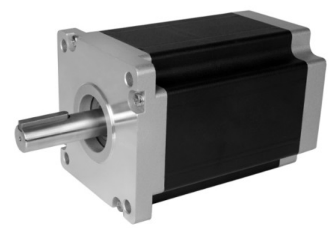
Hybrid Stepper Motor
Hybrid Stepper Gear Motor
IP65 Stepper Motor
PM Stepper Motor
PM Stepper Gear Motor
Stepper Drive

PHB110S Series

2 Phase Hybrid Stepper Motor

NEMA 42 | 1.8°

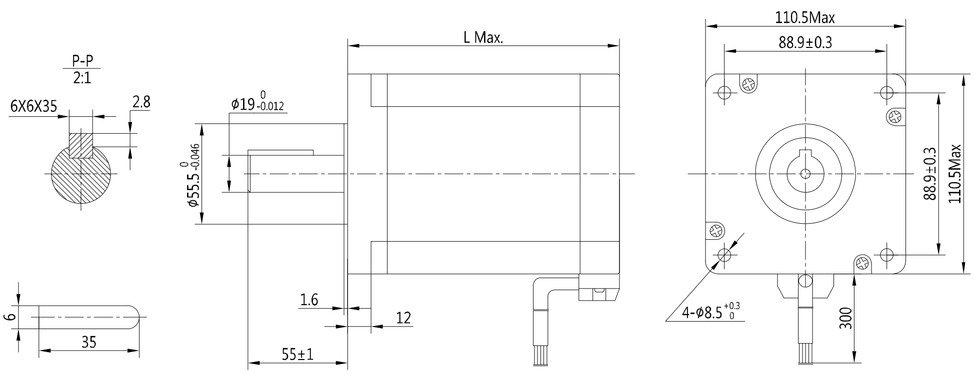
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current, 2 phase on)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	1800VAC, 1s, 5mA
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



Specifications

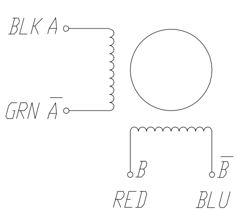
Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	Bi/Unipolar	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.m	N.cm	$kg.cm^2$	# of Leads	Kg	mm
PHB110S100-460	6.0	0.5	6.0	12.0	20.5	4.0	Bi (4)	5.0	100
PHB110S117-460	6.0	0.57	7.5	15.0	24.5	6.0	Bi (4)	5.8	117
PHB110S126-460	6.0	0.66	10.5	18.0	28.5	9.0	Bi (4)	6.8	126
PHB110S150-460	6.0	0.8	13.5	22.0	35.5	11.0	Bi (4)	8.4	150
PHB110S165-460	6.0	0.87	16.0	26.0	45.5	13.0	Bi (4)	9.3	165
PHB110S200-460	6.0	1.1	22.0	29.0	65.5	25.0	Bi (4)	12.0	200
PHB110S200-480	8.0	0.65	13.5	29.0	65.5	25.0	Bi (4)	12.0	200

Mechanical Dimension



Wiring Diagram

4 Leads

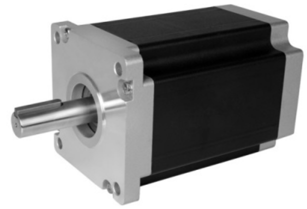


PrimoPal Motor · No. 2218 Hunan Road, Shanghai 201204, China · Tel +86 21 5018 7836 · Fax +86 21 5017 9351 · www.primopal.com · sales@primopal.com

PHB110T Series

NEMA 42 | 1.2°

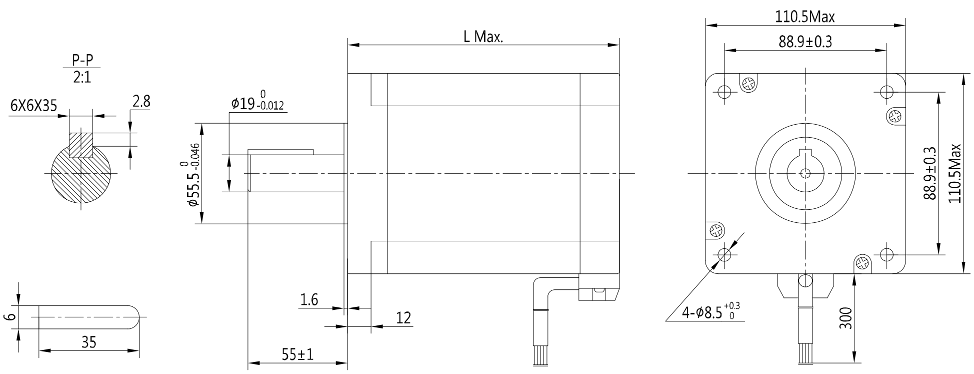
Step Angle	1.2°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80 °C Max.(rated current)
Ambient Temperature	-20 °C ~ +50 °C
Insulation Resistance	100 MΩ Min., 500VDC
Dielectric Strength	1800VAC, 1s, 5mA
Shaft Radial Play	0.02 Max. (450 g-load)
Shaft Axial Play	0.08 Max. (450 g-load)



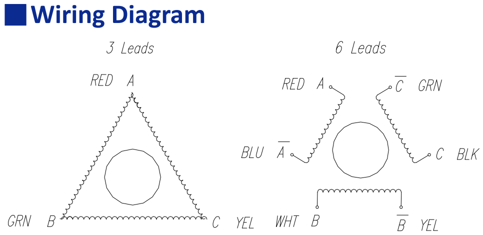
Specifications

Model	Current	Resistance	Inductance	Holding Torque	Detent Torque	Rotor Inertia	# of Leads	Weight	Length
	A/Ø	Ω/Ø	mH/Ø	N.m	N.cm	kg.cm^2	Pin	kg	mm
PHB110T126-360	6.0	0.8	6.0	11.0	28.5	9.0	3	6.8	126
PHB110T150-360	6.0	1.0	8.0	12.5	35.5	11.0	3	8.4	150
PHB110T165-360	6.0	1.2	9.5	14.0	45.5	13.0	3	9.3	165
PHB110T200-360	6.0	1.45	13.2	15.5	65.5	25.0	3	12.0	200

Mechanical Dimension

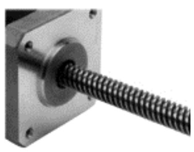


Wiring Diagram



Custom Design

PrimoPal has an engineering team with many years of experience in motor design and application engineering. We have solved numerous complex motion control problems with both standard and customized solutions. If your application demands something unusual or unique, we can engineer a design to optimize the product's performance for your needs.

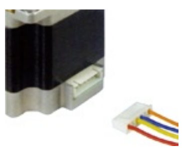


Multiple Shaft Options

- Single or Dual
- Pulley
- D-cut
- Hollow
- Knurl……

Multiple Lead Wire Options

- Custom color code
- Heat shrink tube
- Flying or bundled
- Pins
- Connectors ……



Lead Wire Connectors

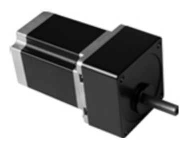
- Molex
- Tyco/AMP
- Woodhead
- Cvilux……

Custom Winding

- Custom windings can be provided, based on your application's needs

Bearings and Lubricants

- Ball bearings
- Stainless steel bearings
- Seals
- Special lubricants for high temperature……



Value added Assemblies

- Encoder
- Gearhead
- Brake
- Higher IP……

Custom Housing

- Specific motors can be provided to meet your environmental, mechanical, and dimensional requirements

Yours…

- Any specific requirements of custom design products? PrimoPal can do more for you!

PrimoPal Motor · No. 2218 Hunan Road, Shanghai 201204, China · Tel +86 21 5018 7836 · Fax +86 21 5017 9351 · www.primopal.com · sales@primopal.com