

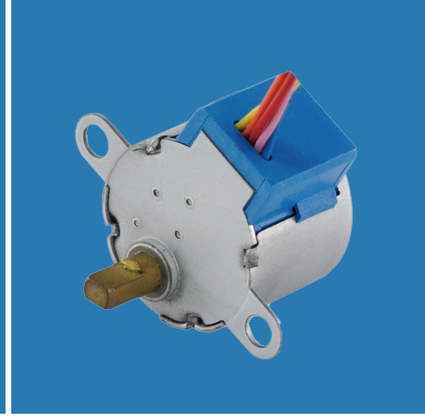
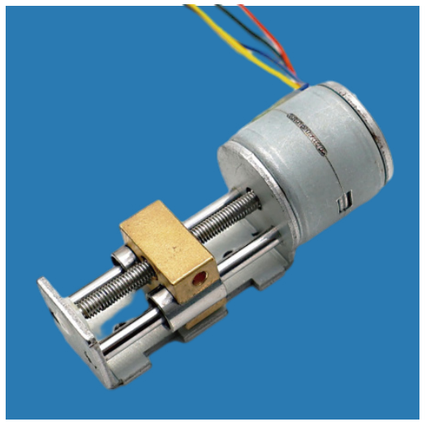

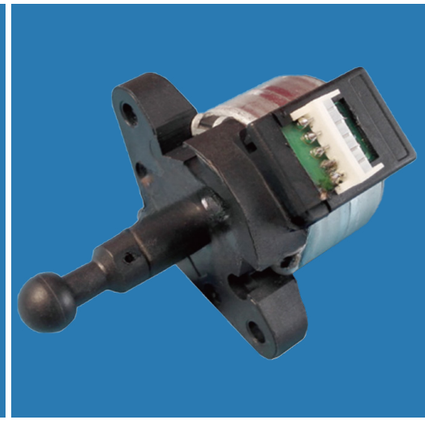


**Shanghai PrimoPal Precision Motor Co., Ltd.**

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# PERMANENT MAGNET STEPPER MOTOR

**Shanghai PrimoPal Precision Motor Co., Ltd.**




2026
2025 REV5.1

# COMPANY PROFILE

## MISSION

- Making life more intelligent

## VISION

- Becoming a well-known brand in the precision motor and motion control industry

## VALUES

- Customer oriented
- Rigorous and Pragmatic
- Striving for Excellence
- Achieving Team Success

Entering into the hybrid stepper motor business in 2007, PrimoPal has grown to where it is now one of China's top manufacturers of stepper motors, brushless motors, servo motors, and an integrated provider of related motion control products and solutions. PrimoPal has become the reliable partner for many industries, from factory automation components to the smart home appliance, from the intelligent management system of large industrial equipment to the control actuator in automotive and telecommunication devices.

Highly recognized for high performance and quality products, now PrimoPal offers four major series of products: stepper motors, brushless DC motors, servo motors and linear motors. Production capacity exceeds more than 2 million motors per year. PrimoPal also has several joint venture companies who specialize in the production of PMDC motors, motion controllers and precision gearboxes. We sell nearly 3 million different motors and companion products to customers worldwide every year.

Our manufacturing bases are equipped with advanced quality testing devices, precise honing machines, auto winding machines, CNC machining centers, 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.

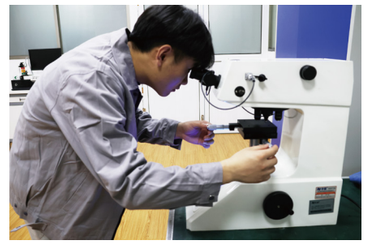
We have no doubt that our endeavors enable us to maintain strong presence in the competitive market. To demonstrate our commitment to all our customers, PrimoPal has adopted "Bringing out the Best in Motion" as our official slogan, which means our ultimate goal is to become one of the world's top-level companies in the industry of precision motor and motion control system.

**16+**

**Years Manufacturer**

**15000m²**

**Industrial Park**



**23+**

**Automatic Production Lines**





# TABLE OF CONTENTS

# PMS SERIES

## PM ROTARY STEPPER MOTOR

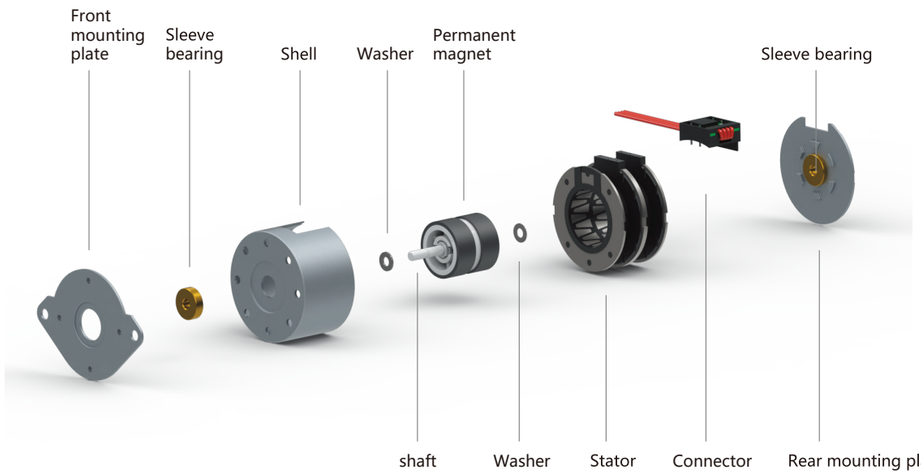
## DESCRIPTION

PrimoPal's PMS series PM stepper motors feature high dynamic torque at low speed and large basic step angles. These motors are available from 8mm to 64mm in outside diameter, with standard and customized features that make this product ideal for medical, instrumentation and valve applications. Besides conventional solutions, custom housing and winding, shaft modification, linear actuator, as well as gearbox adders are also available to optimize the product's performance for you needs.

## APPLICATION

PrimoPal's PMS series PM stepper motors are widely used in kinds of applications, such as automotive instruments, printers, scanners, copy machines, fax machines, card readers, medical equipment and other industrial & office automation equipment.

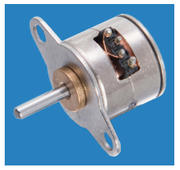
## BASIC STRUCTURE




## PART NUMBER NAMING RULE

| PMS | □□ | □ | □□ | – | □□ | □□ |
|---|---|---|---|---|---|---|
| **PrimoPal PM Rotary Stepper Motor** | **Base Frame** (O.D. in mm) | **Motor Length** L: Long Type S: Short Type | **NO. of Steps per Revolution** 20: Step Angle 18° 24: Step Angle 15° 48: Step Angle 7.5° | | **Electric Variation** Variety of voltage, current, etc | **Mechanical Variation** Variety of shaft, lead wire, etc |

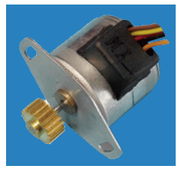
## STANDARD VERSIONS



**PMS08 Series**
Frame Size: Ø8mm
Step Angle: 18°
Page: 03-04

**PMS10 Series**
Frame Size: Ø10mm
Step Angle: 18°
Page: 05-06

**PMS15 Series**
Frame Size: Ø15mm
Step Angle: 18°
Page: 07-08

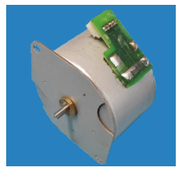


**PMS20 Series**
Frame Size: Ø20mm
Step Angle: 18°
Page: 09-10

**PMS25 Series**
Frame Size: Ø25mm
Step Angle: 7.5°/15°
Page: 11-12

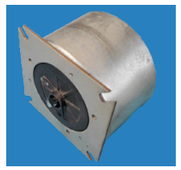
**PMS35 Series**
Frame Size: Ø35mm
Step Angle: 7.5°/15°
Page: 13-14

**PMS42 Series**
Frame Size: Ø42mm
Step Angle: 7.5°/3.75°/3.6°
Page: 15-16



**PMS49 Series**
Frame Size: Ø49mm
Step Angle: 7.5°
Page: 17-18

**PMS57 Series**
Frame Size: Ø57mm
Step Angle: 7.5°
Page: 19-20



**PMS64 Series**
Frame Size: Ø64mm
Step Angle: 11.25°
Page: 21-22

# Ø8mm 18°

# PMS08 Series

Step Angle Accuracy: ±8% (Full Step, No load)

Resistance Accuracy: ±10%

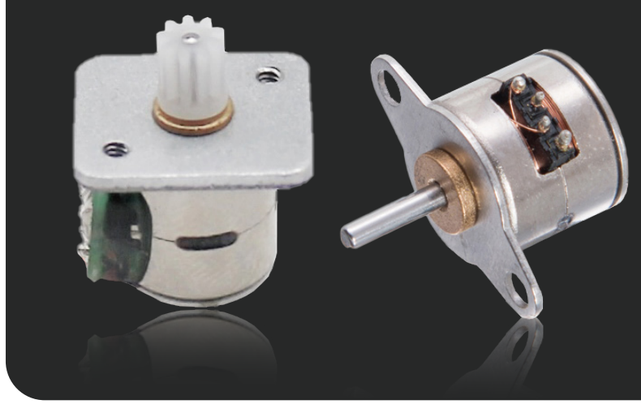
Inductance Accuracy: ±20%

Ambient Temperature: -10℃~50℃

Insulation Resistance: 100MΩ Min.(At 500VDC)

Dielectric Strength: RMS for 2 Sec(At 650±50VAC)

Insulation Class: Class E



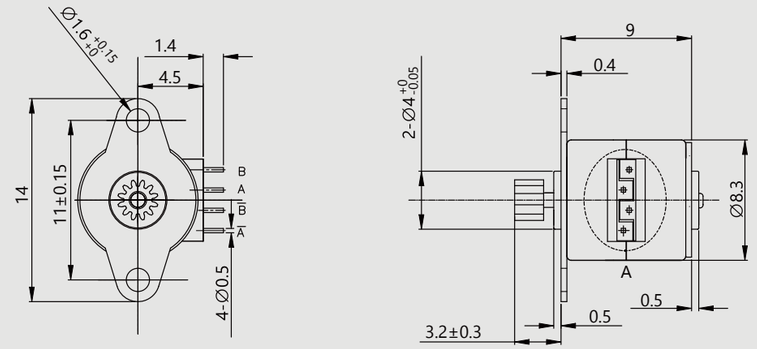
Small Size

Low Inertia

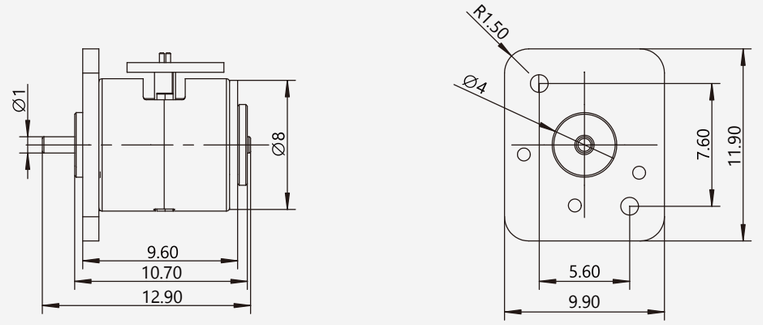
Fast Response

## TYPICAL OUTLINE

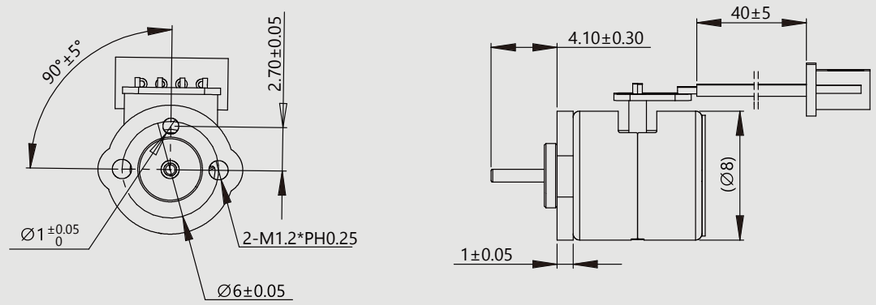
### Fig 1




### Fig 2




### Fig 3

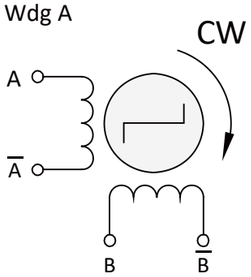



## SPECIFICATIONS

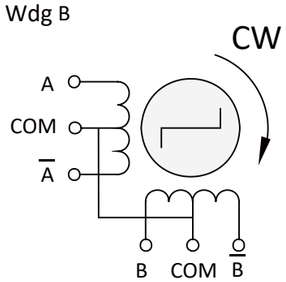
| Series | Model Number | Step Angle | No. of Phase | Voltage | Current | Resistance | Pull-in Rate | Pull-in Torque | Holding Torque | Detent Torque | Drawing | Wiring Diagram |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | pps | g.cm/pps | g.cm | g.cm | Fig | Wdg |
| PMS08L20 | PMS08L20-01 | 18 | 2 | 3.3 | 0.2 | 16.3 | 800 | 2/200 | 10.0 | 5.0 | 1 | A |
| | PMS08L20-02 | 18 | 2 | 3.0 | 0.3 | 10 | 800 | 4/200 | 10.0 | 5.0 | 2 | A |
| | PMS08L20-03 | 18 | 2 | 5.0 | 0.17 | 30 | 800 | 4.5/200 | 10.0 | 5.0 | 3 | A |

## WIRING DIAGRAM

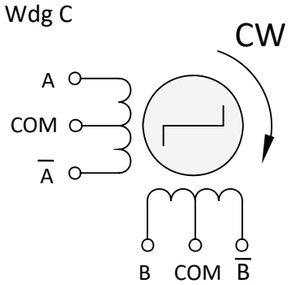
Wdg A




Wdg B




Wdg C



# Ø10mm 18°

# PMS10 Series

Step Angle Accuracy: ±8% (Full Step, No load)

Resistance Accuracy: ±10%

Inductance Accuracy: ±20%

Ambient Temperature: -10℃~50℃

Insulation Resistance: 100MΩ Min.(At 500VDC)

Dielectric Strength: RMS for 2 Sec(At 650±50VAC)

Insulation Class: Class E

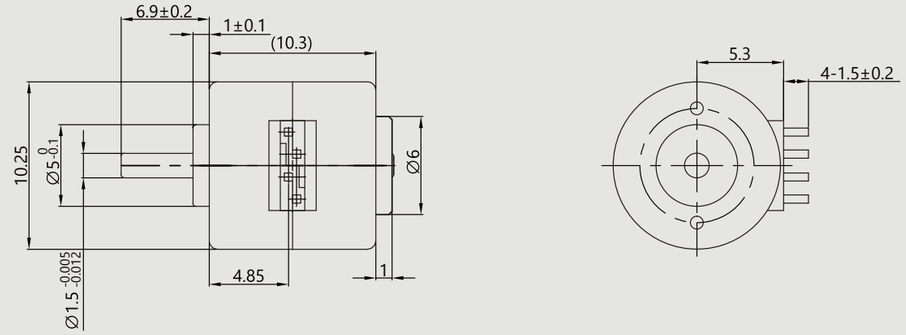
Small Size

Low Inertia

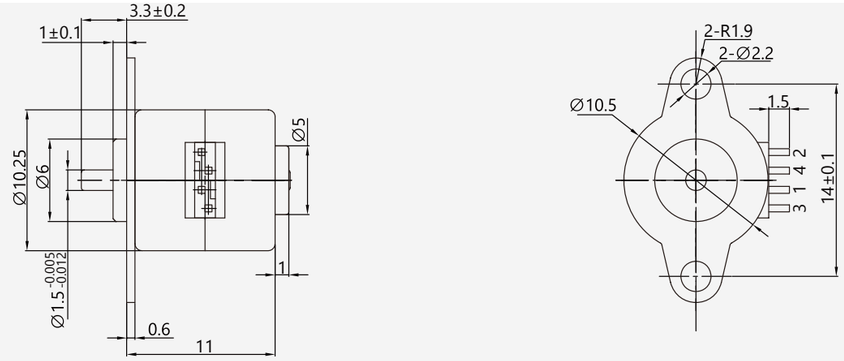
Fast Response

## TYPICAL OUTLINE

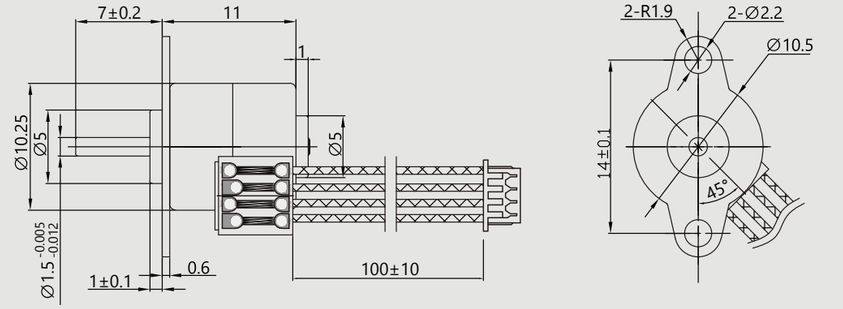
### Fig 1




### Fig 2




### Fig 3

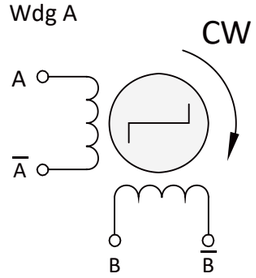



## SPECIFICATIONS

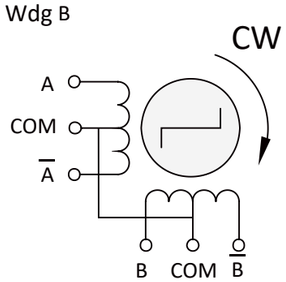
| Series | Model Number | Step Angle | No. of Phase | Voltage | Current | Resistance | Pull-in Rate | Pull-in Torque | Holding Torque | Detent Torque | Drawing | Wiring Diagram |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | pps | g.cm/pps | g.cm | g.cm | Fig | Wdg |
| PMS10L20 | PMS10L20-01 | 18 | 2 | 3.3 | 0.22 | 15 | 800 | 6/500 | 16.3 | 10 | 1 | A |
| | PMS10L20-04 | 18 | 2 | 3.3 | 0.22 | 15 | 800 | 6/500 | 16.3 | 10 | 2 | A |
| | PMS10L20-05 | 18 | 2 | 5.2 | 0.2 | 26 | 800 | 12/500 | 20 | 10 | 3 | A |

## WIRING DIAGRAM

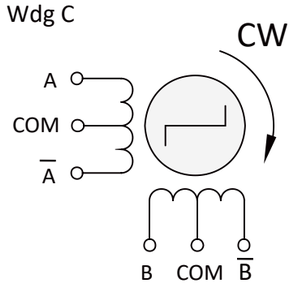
Wdg A




Wdg B




Wdg C



# Ø15mm 18°
# PMS15 Series

Step Angle Accuracy: ±8% (Full Step, No load)

Resistance Accuracy: ±10%

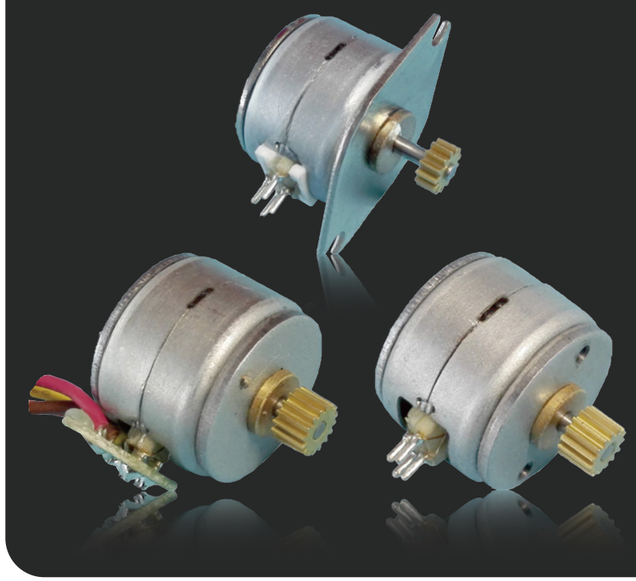
Inductance Accuracy: ±20%

Ambient Temperature: -10℃~50℃

Insulation Resistance: 100MΩ Min.(At 500VDC)

Dielectric Strength: RMS for 2 Sec(At 650±50VAC)

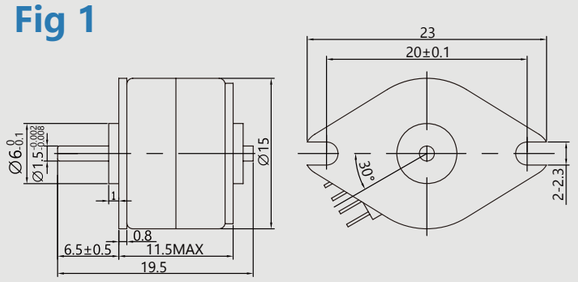
Insulation Class: Class E



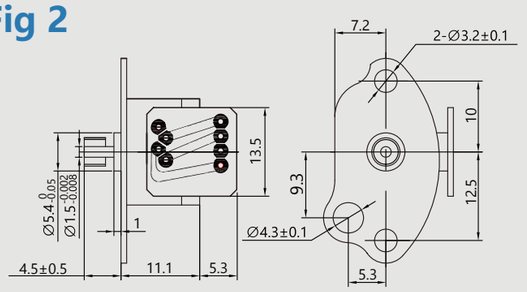
Small Size | Low Inertia | Fast Response

## TYPICAL OUTLINE

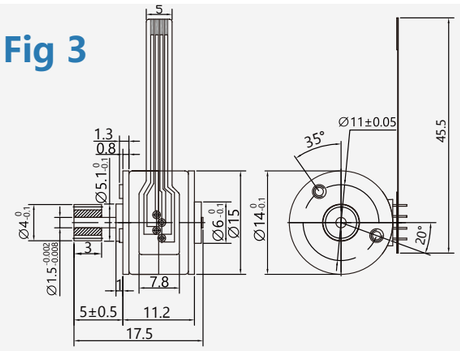
### Fig 1



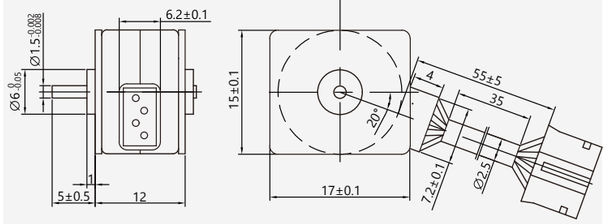

### Fig 2



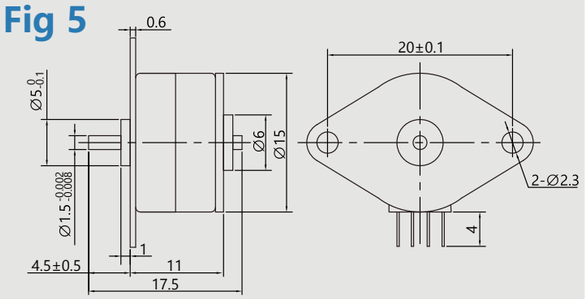

### Fig 3



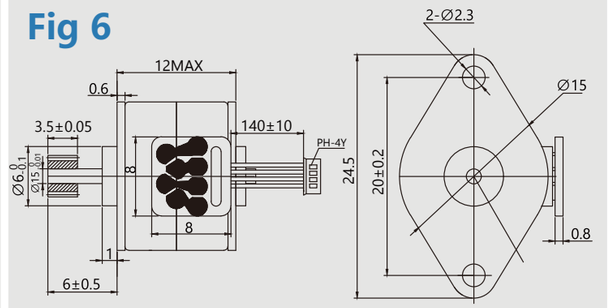

### Fig 4




### Fig 5




### Fig 6

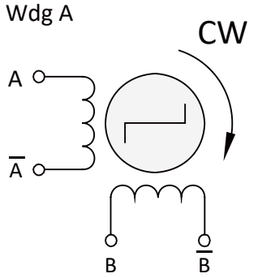



## SPECIFICATIONS

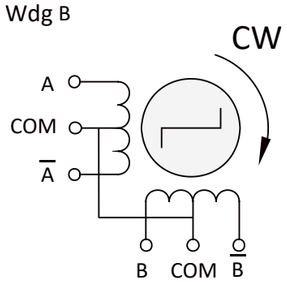
| Series | Model Number | Step Angle | No. of Phase | Voltage | Current | Resistance | Pull-in Rate | Pull-in Torque | Holding Torque | Detent Torque | Drawing | Wiring Diagram |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | pps | g.cm/pps | g.cm | g.cm | Fig | Wdg |
| PMS15L20 | PMS15L20-01 | 18 | 2 | 5 | 0.5 | 10 | 1400 | 14/500 | 27 | 10 | 1 | A |
| | PMS15L20-08 | 18 | 2 | 7.5 | 0.15 | 50 | 1100 | 6/600 | 25 | 10 | 2 | A |
| | PMS15L20-17 | 18 | 2 | 5 | 0.33 | 15 | 950 | 8.5/100 | 25 | 5 | 3 | A |
| | PMS15L20-18 | 18 | 2 | 12 | 0.04 | 300 | 1200 | 3/1000 | 40 | 10 | 4 | A |
| | PMS15L20-19 | 18 | 2 | 12 | 0.065 | 190 | 900 | 5/500 | 40 | 16 | 5 | A |
| | PMS15L20-91 | 18 | 2 | 5 | 0.33 | 15 | 950 | 8.5/100 | 25 | 10 | 6 | A |

## WIRING DIAGRAM

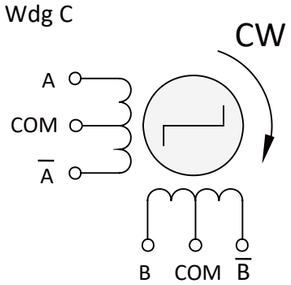
Wdg A




Wdg B




Wdg C



# Ø20mm 18°
# PMS20 Series

Step Angle Accuracy: ±8% (Full Step, No load)

Resistance Accuracy: ±10%

Inductance Accuracy: ±20%

Ambient Temperature: -10℃~50℃

Insulation Resistance: 100MΩ Min.(At 500VDC)

Dielectric Strength: RMS for 2 Sec(At 650±50VAC)

Insulation Class: Class E

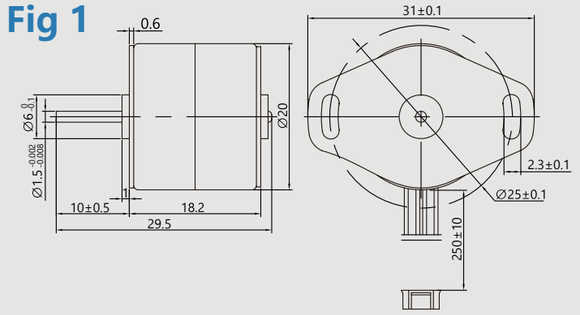
Small Size | Low Inertia | Fast Response

## SPECIFICATIONS

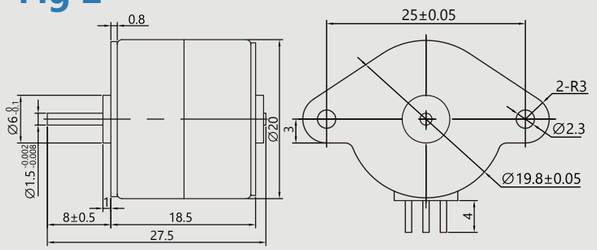
| Series | Model Number | Step Angle | No. of Phase | Voltage | Current | Resistance | Pull-in Rate | Pull-in Torque | Holding Torque | Detent Torque | Drawing | Wiring Diagram |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | pps | g.cm/pps | g.cm | g.cm | Fig | Wdg |
| PMS20L20 | PMS20L20-01 | 18 | 2 | 5 | 0.5 | 10 | 600 | 10/200 | 60 | 20 | 1 | A |
| | PMS20L20-02 | 18 | 2 | 5 | 0.39 | 13 | 500 | 5/200 | 40 | 20 | 2 | A |
| | PMS20L20-1B | 18 | 2 | 12 | 0.08 | 280 | 800 | 13/100 | 90 | 20 | 3 | A |
| | PMS20L20-14 | 18 | 4 | 12 | 0.4 | 30 | 850 | 25/100 | 55 | 20 | 4 | C |

## TYPICAL OUTLINE

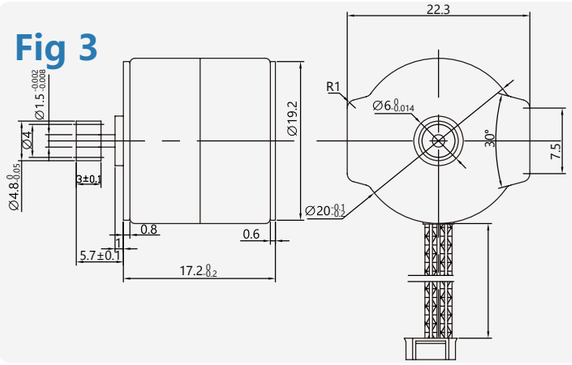
### Fig 1



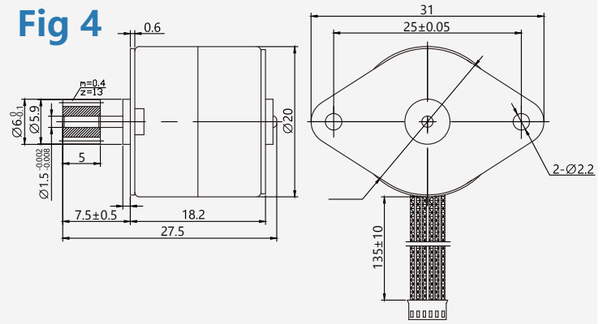

### Fig 2




### Fig 3

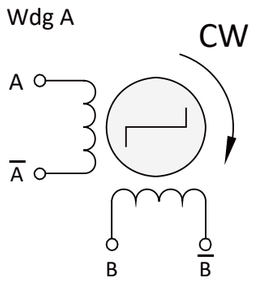



### Fig 4

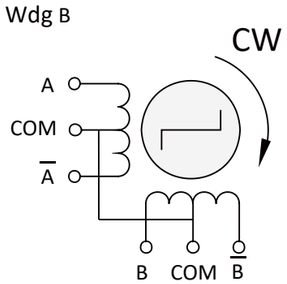



## WIRING DIAGRAM

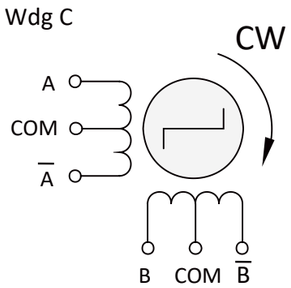
Wdg A




Wdg B




Wdg C



# Ø25mm 7.5°/15°
# PMS25 Series

Step Angle Accuracy: ±8% (Full Step, No load)

Resistance Accuracy: ±10%

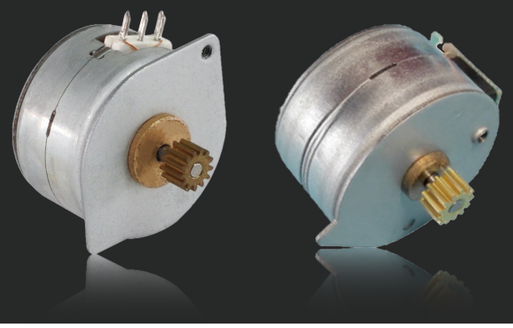
Inductance Accuracy: ±20%

Ambient Temperature: -10℃~50℃

Insulation Resistance: 100MΩ Min.(At 500VDC)

Dielectric Strength: RMS for 2 Sec(At 650±50VAC)

Insulation Class: Class E



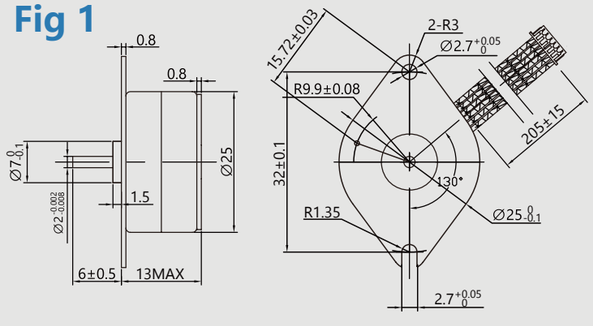
Small Size | Low Inertia | Fast Response

## SPECIFICATIONS

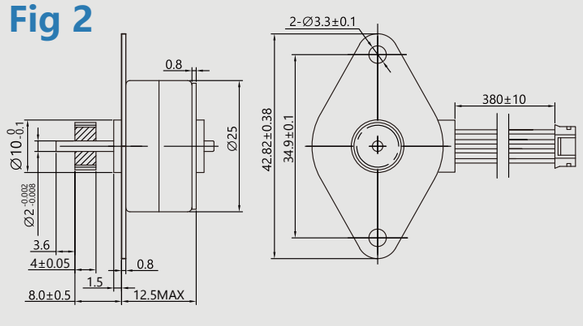
| Series | Model Number | Step Angle | No. of Phase | Voltage | Current | Resistance | Pull-in Rate | Pull-in Torque | Holding Torque | Detent Torque | Drawing | Wiring Diagram |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | pps | g.cm/pps | g.cm | g.cm | Fig | Wdg |
| PMS25S48 | PMS25S48-02 | 7.5 | 4 | 12 | 0.375 | 32 | 850 | 30/100 | 130 | 30 | 1 | A |
| | PMS25S48-40 | 7.5 | 2 | 5 | 0.25 | 20 | 580 | 20/100 | 90 | 30 | 2 | A |
| PMS25L24 | PMS25L24-01 | 15 | 4 | 9 | 0.45 | 20 | 600 | 20/200 | 135 | 60 | 3 | C |
| | PMS25L24-02 | 15 | 4 | 12 | 0.4 | 30 | 580 | 40/100 | 130 | 75 | 4 | C |
| | PMS25L24-40 | 15 | 2 | 24 | 0.275 | 16 | 870 | 40/100 | 125 | 70 | 5 | A |
| PMS25L48 | PMS25L48-01 | 7.5 | 4 | 5 | 0.5 | 10 | 750 | 40/100 | 120 | 45 | 6 | C |
| | PMS25L48-29 | 7.5 | 4 | 24 | 0.4 | 60 | 950 | 60/200 | 200 | 50 | 7 | C |

## TYPICAL OUTLINE

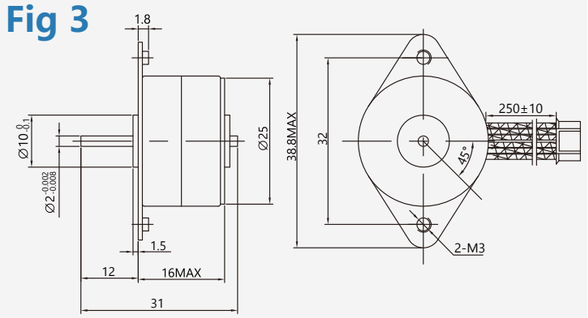
### Fig 1



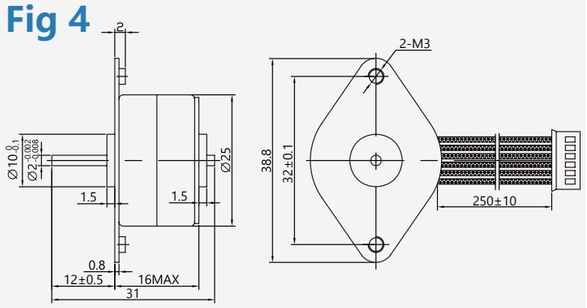

### Fig 2



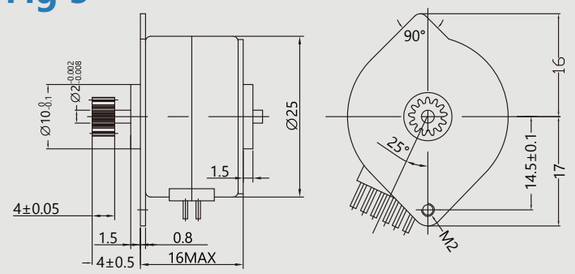

### Fig 3



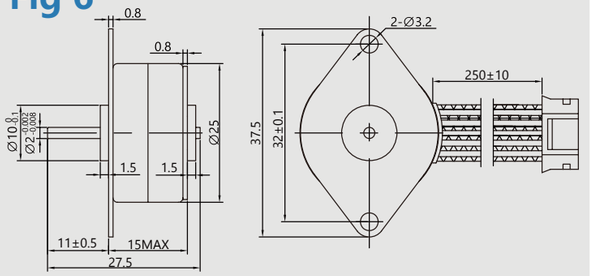

### Fig 4



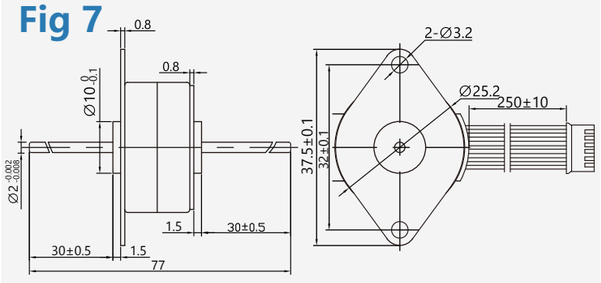

### Fig 5




### Fig 6

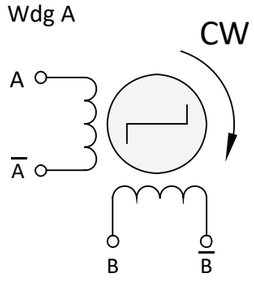



### Fig 7

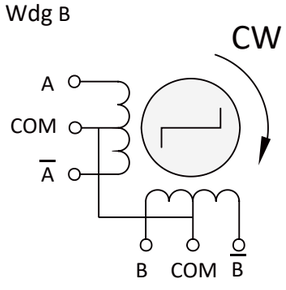



## WIRING DIAGRAM

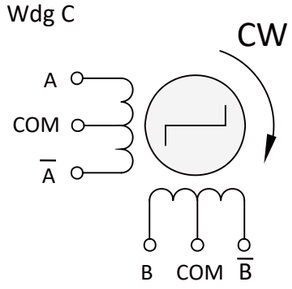
Wdg A




Wdg B




Wdg C



# Ø35mm 7.5°/15° PMS35 Series

Step Angle Accuracy: ±8% (Full Step, No load)

Resistance Accuracy: ±10%

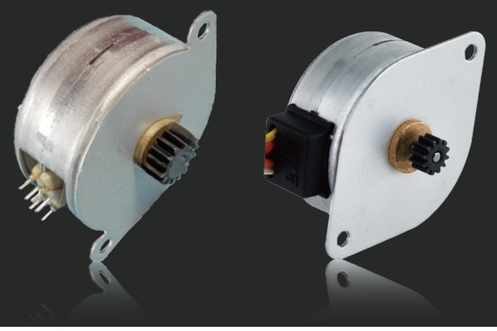
Inductance Accuracy: ±20%

Ambient Temperature: -10℃~50℃

Insulation Resistance: 100MΩ Min.(At 500VDC)

Dielectric Strength: RMS for 2 Sec(At 650±50VAC)

Insulation Class: Class E



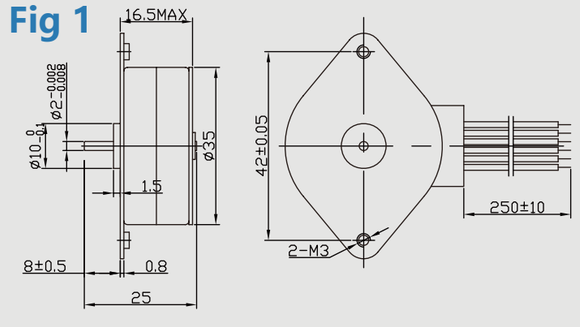
Small Size | Low Inertia | Fast Response

## SPECIFICATIONS

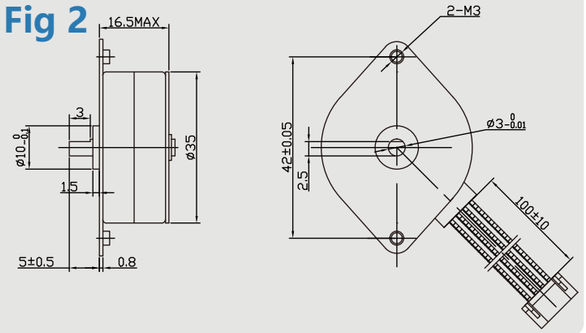
| Series | Model Number | Step Angle | No. of Phase | Voltage | Current | Resistance | Pull-in Rate | Pull-in Torque | Holding Torque | Detent Torque | Drawing | Wiring Diagram |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | pps | g.cm/pps | g.cm | g.cm | Fig | Wdg |
| PMS35S48 | PMS35S48-02 | 7.5 | 4 | 12 | 0.26 | 47 | 420 | 80/200 | 300 | 65 | 1 | B |
| | PMS35S48-50 | 7.5 | 2 | 24 | 0.48 | 50 | 750 | 270/150 | 500 | 40 | 2 | A |
| | PMS35S48-1B | 7.5 | 2 | 5 | 0.67 | 7.5 | 430 | 75/200 | 400 | 75 | 3 | A |
| PMS35L24 | PMS35L24-01 | 15 | 4 | 24 | 0.282 | 85 | 430 | 110/100 | 450 | 125 | 4 | B |
| | PMS35L24-05 | 15 | 2 | 12 | 0.12 | 100 | 150 | 35/100 | 360 | 200 | 5 | A |
| PMS35L48 | PMS35L48-01 | 7.5 | 2 | 12 | 0.2 | 60 | 350 | 100/200 | 550 | 125 | 6 | A |
| | PMS35L48-02 | 7.5 | 4 | 24 | 0.22 | 110 | 350 | 90/100 | 550 | 45 | 7 | B |
| | PMS35L48-09 | 7.5 | 4 | 18 | 1.3 | 13.5 | 580 | 120/200 | 800 | 125 | 8 | B |
| | PMS35L48-59 | 7.5 | 4 | 24 | 0.5 | 5.5 | 390 | 185/100 | 650 | 130 | 9 | B |

## TYPICAL OUTLINE

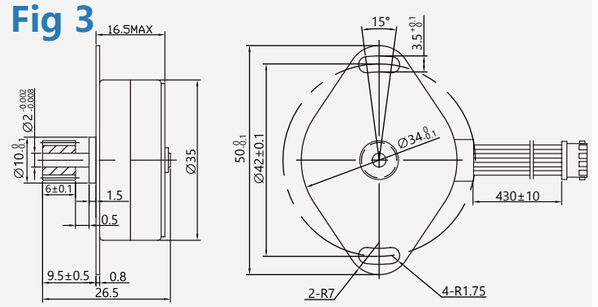
### Fig 1



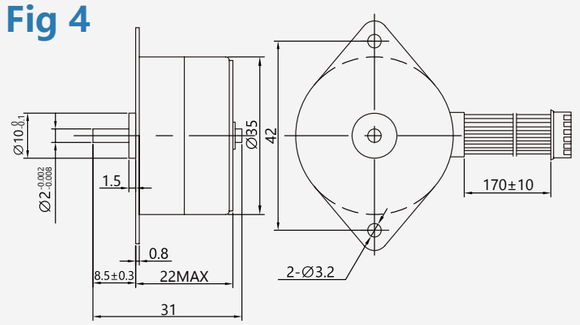

### Fig 2



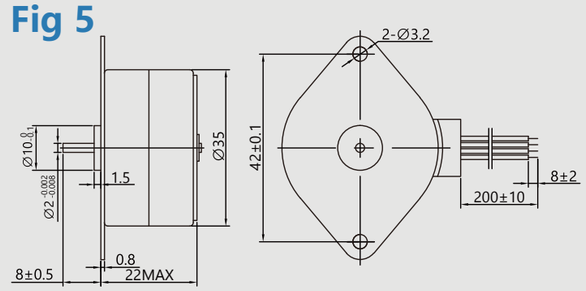

### Fig 3



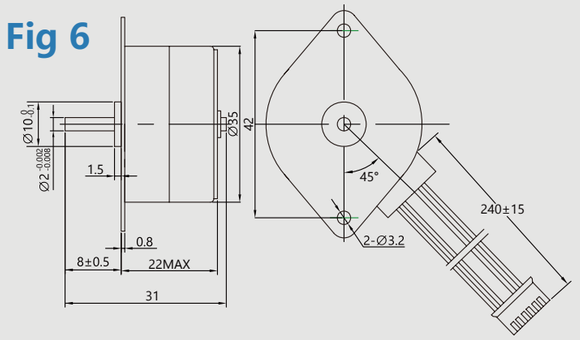

### Fig 4



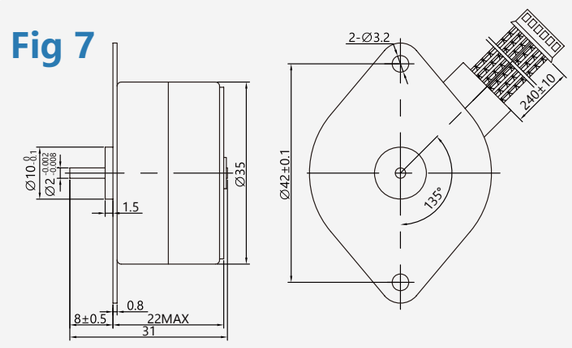

### Fig 5



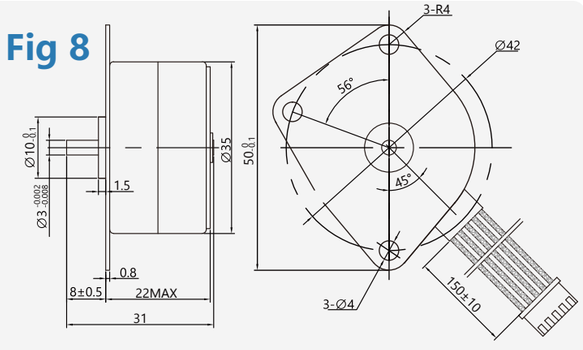

### Fig 6



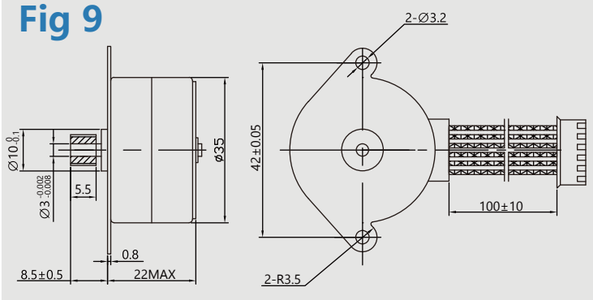

### Fig 7



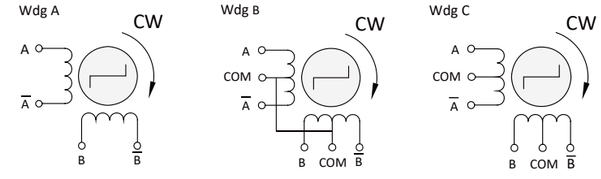

### Fig 8




### Fig 9




## WIRING DIAGRAM



# Ø42mm 7.5°/3.75°/3.6° PMS42 Series

Step Angle Accuracy: ±8% (Full Step, No load)

Resistance Accuracy: ±10%

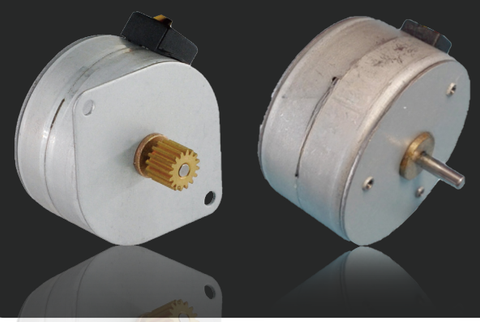
Inductance Accuracy: ±20%

Ambient Temperature: -10℃~50℃

Insulation Resistance: 100MΩ Min.(At 500VDC)

Dielectric Strength: RMS for 2 Sec(At 650±50VAC)

Insulation Class: Class E



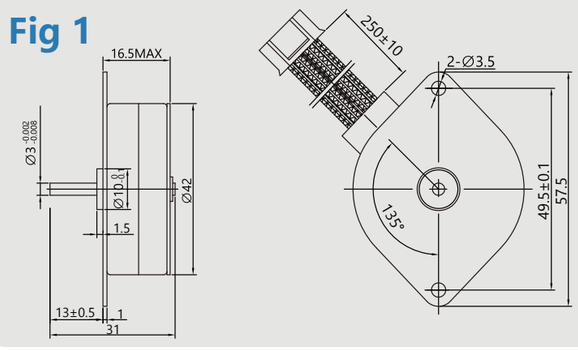
Small Size | Low Inertia | Fast Response

## SPECIFICATIONS

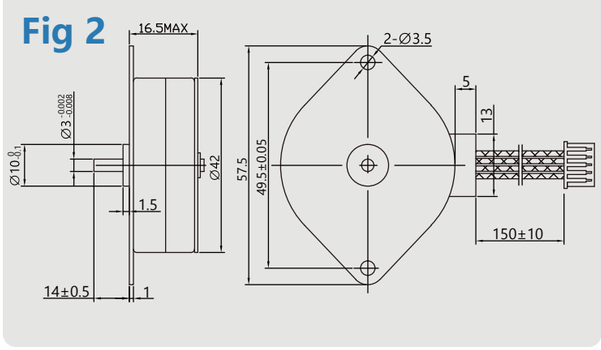
| Series | Model Number | Step Angle | No. of Phase | Voltage | Current | Resistance | Pull-in Rate | Pull-in Torque | Holding Torque | Detent Torque | Drawing | Wiring Diagram |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | pps | g.cm/pps | g.cm | g.cm | Fig | Wdg |
| PMS42S48 | PMS42S48-01 | 7.5 | 4 | 12 | 0.3 | 40 | 350 | 70/200 | 550 | 100 | 1 | B |
| | PMS42S48-03 | 7.5 | 2 | 24 | 0.75 | 8 | 550 | 340/100 | 900 | 120 | 2 | A |
| | PMS42S48-11 | 7.5 | 4 | 12 | 0.21 | 57 | 310 | 95/200 | 650 | 100 | 3 | B |
| PMS42L48 | PMS42L48-02 | 7.5 | 4 | 24 | 0.24 | 100 | 340 | 270/100 | 800 | 210 | 4 | B |
| | PMS42L48-4H | 7.5 | 2 | 24 | 0.6 | 5.8 | 550 | 450/100 | 700 | 280 | 5 | A |
| | PMS42L48-09 | 7.5 | 2 | 9 | 0.58 | 15.5 | 530 | 120/500 | 800 | 125 | 6 | B |
| | PMS42L48-10 | 7.5 | 2 | 5 | 0.96 | 5.2 | 250 | 500/100 | 1200 | 210 | 7 | A |
| PMS42S96 | PMS42S96-10 | 3.75 | 2 | 5 | 0.42 | 12 | 350 | 160/100 | 500 | 110 | 8 | A |
| PMS42S100 | PMS42S100-03 | 3.6 | 4 | 12 | 0.16 | 75 | 380 | 14/300 | 420 | 60 | 9 | C |

## TYPICAL OUTLINE

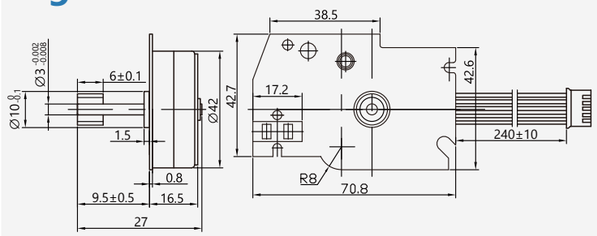
### Fig 1



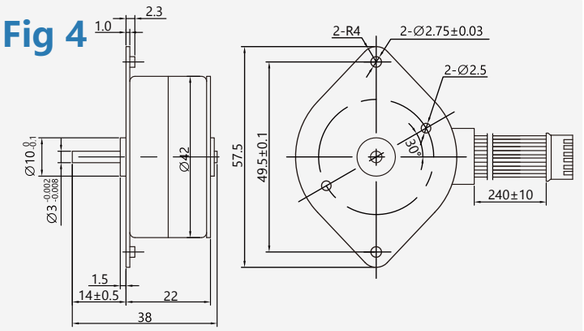

### Fig 2



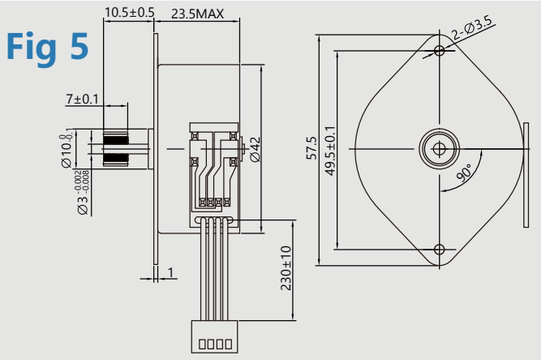

### Fig 3



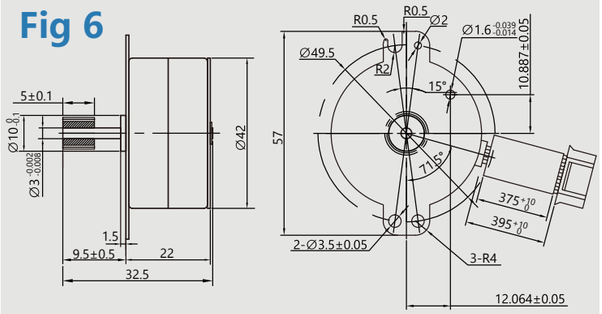

### Fig 4



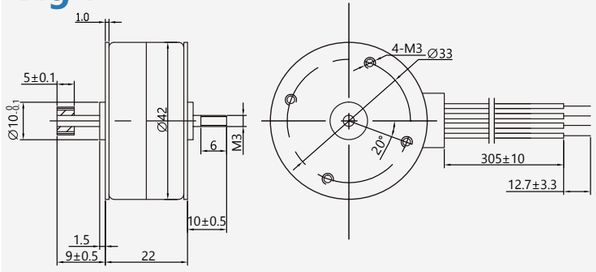

### Fig 5



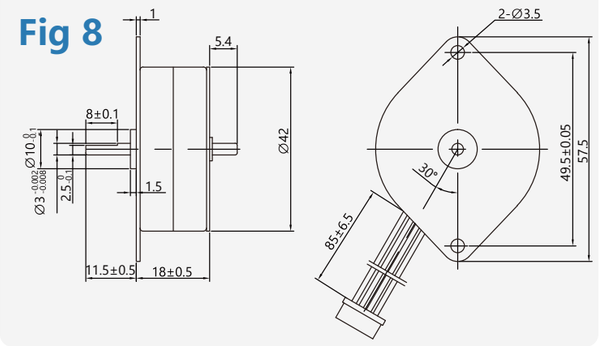

### Fig 6



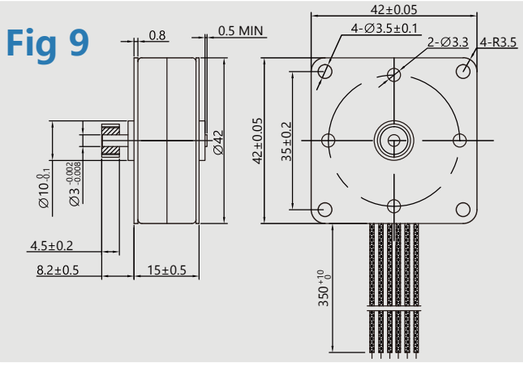

### Fig 7



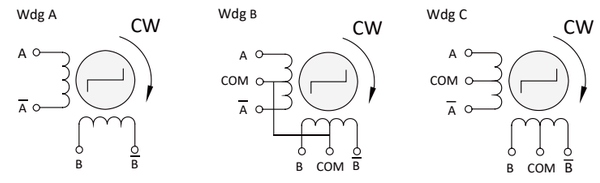

### Fig 8




### Fig 9




## WIRING DIAGRAM



# Ø49mm 7.5°

# PMS49 Series

Step Angle Accuracy: ±8% (Full Step, No load)

Resistance Accuracy: ±10%

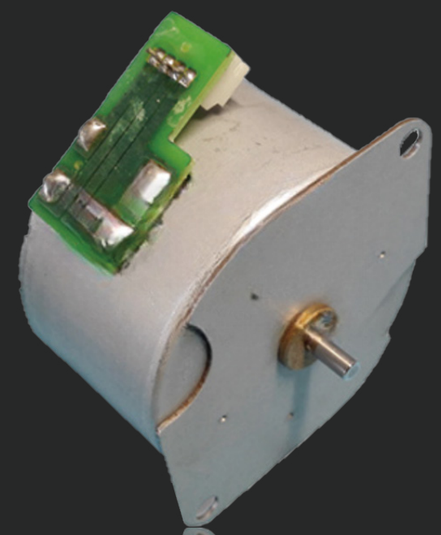
Inductance Accuracy: ±20%

Ambient Temperature: -10℃~50℃

Insulation Resistance: 100MΩ Min.(At 500VDC)

Dielectric Strength: RMS for 2 Sec(At 650±50VAC)

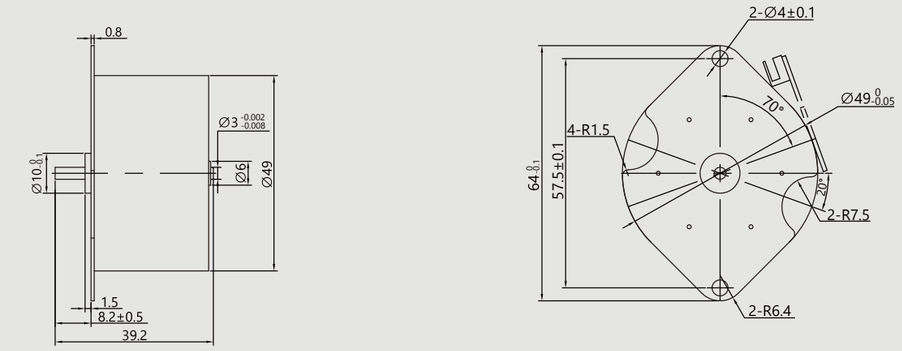
Insulation Class: Class E



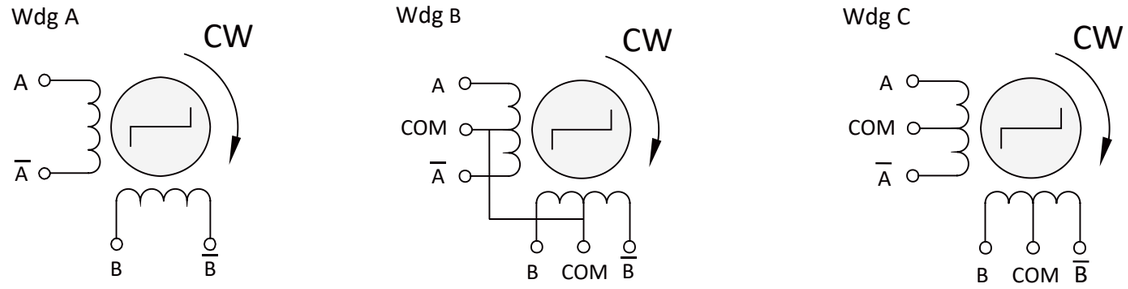
Small Size Low Inertia Fast Response

## TYPICAL OUTLINE

Fig 1




## WIRING DIAGRAM




## SPECIFICATIONS

| Series | Model Number | Step Angle | No. of Phase | Voltage | Current | Resistance | Pull-in Rate | Pull-in Torque | Holding Torque | Detent Torque | Drawing | Wiring Diagram |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | pps | g.cm/pps | g.cm | g.cm | Fig | Wdg |
| PMS49L48 | PMS49L48-02 | 7.5 | 2 | 5 | 0.9 | 5.5 | 180 | 260/100 | 1700 | 350 | 1 | A |

# Ø57mm 7.5°

# PMS57 Series

Step Angle Accuracy: ±8% (Full Step, No load)

Resistance Accuracy: ±10%

Inductance Accuracy: ±20%

Ambient Temperature: -10℃~50℃

Insulation Resistance: 100MΩ Min.(At 500VDC)

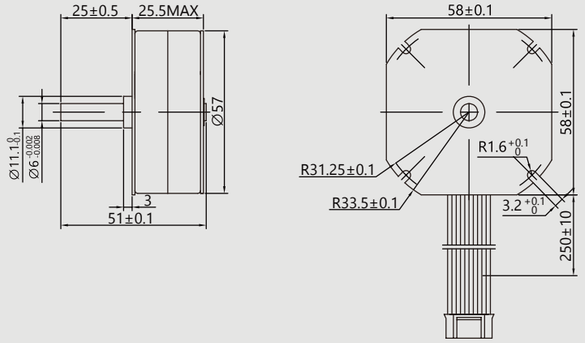
Dielectric Strength: RMS for 2 Sec(At 650±50VAC)

Insulation Class: Class E

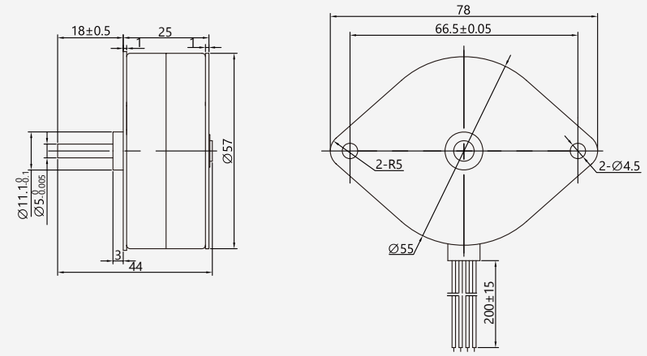
Small Size  Low Inertia  Fast Response

## TYPICAL OUTLINE

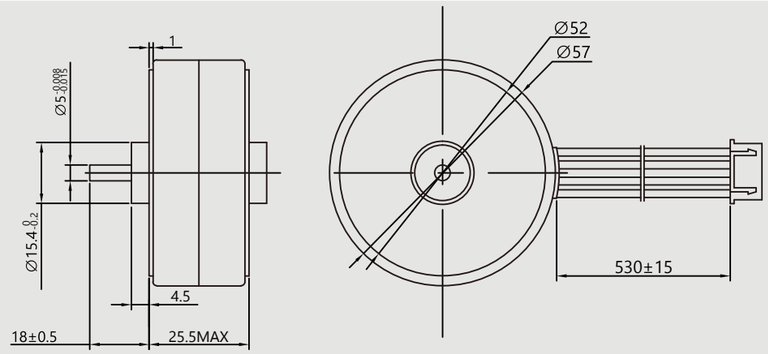
### Fig 1




### Fig 2




### Fig 3

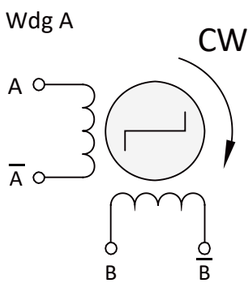



## SPECIFICATIONS

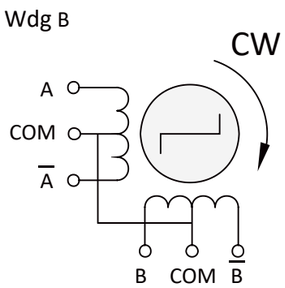
| Series | Model Number | Step Angle | No. of Phase | Voltage | Current | Resistance | Pull-in Rate | Pull-in Torque | Holding Torque | Detent Torque | Drawing | Wiring Diagram |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | pps | g.cm/pps | g.cm | g.cm | Fig | Wdg |
| PMS57L48 | PMS57L48-01 | 7.5 | 4 | 12 | 0.6 | 21 | 190 | 320/200 | 1500 | 425 | 1 | B |
| | PMS57L48-03 | 7.5 | 2 | 5.6 | 0.625 | 9 | 160 | 120/100 | 1200 | 425 | 2 | A |
| | PMS57L48-36 | 7.5 | 2 | 24 | 0.5 | 9 | 400 | 800/100 | 1500 | 400 | 3 | A |

## WIRING DIAGRAM

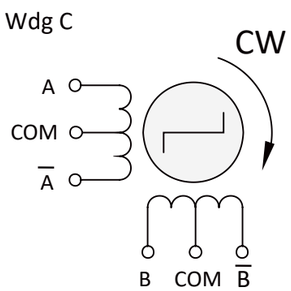
Wdg A




Wdg B




Wdg C



# Ø64mm 11.25°

# PMS64 Series

Step Angle Accuracy: ±8% (Full Step, No load)

Resistance Accuracy: ±10%

Inductance Accuracy: ±20%

Ambient Temperature: -10℃~50℃

Insulation Resistance: 100MΩ Min.(At 500VDC)

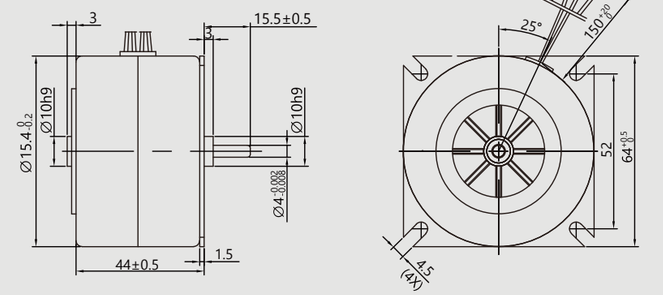
Dielectric Strength: RMS for 2 Sec(At 650±50VAC)

Insulation Class: Class E

Small Size | Low Inertia | Fast Response

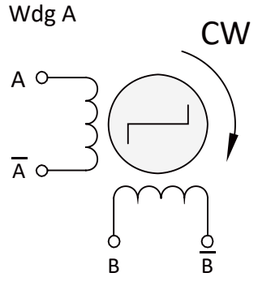
## TYPICAL OUTLINE

### Fig 1

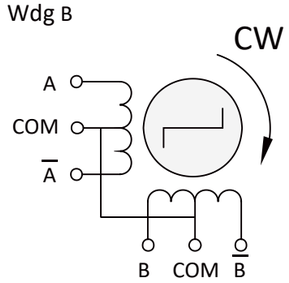



## WIRING DIAGRAM

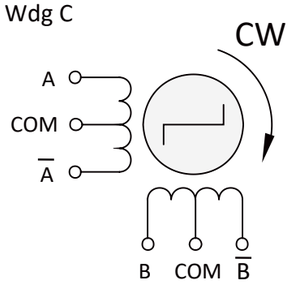
Wdg A




Wdg B




Wdg C




## SPECIFICATIONS

| Series | Model Number | Step Angle | No. of Phase | Voltage | Current | Resistance | Pull-in Rate | Pull-in Torque | Holding Torque | Detent Torque | Drawing | Wiring Diagram |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | pps | g.cm/pps | g.cm | g.cm | Fig | Wdg |
| PMS64L32 | PMS64L32-02 | 11.25 | 2 | 4.5 | 1.25 | 3.7 | 120 | 450/100 | 3000 | 1300 | 1 | A |

# PML SERIES
# CAN-STACK STEPPER LINEAR ACTUATOR

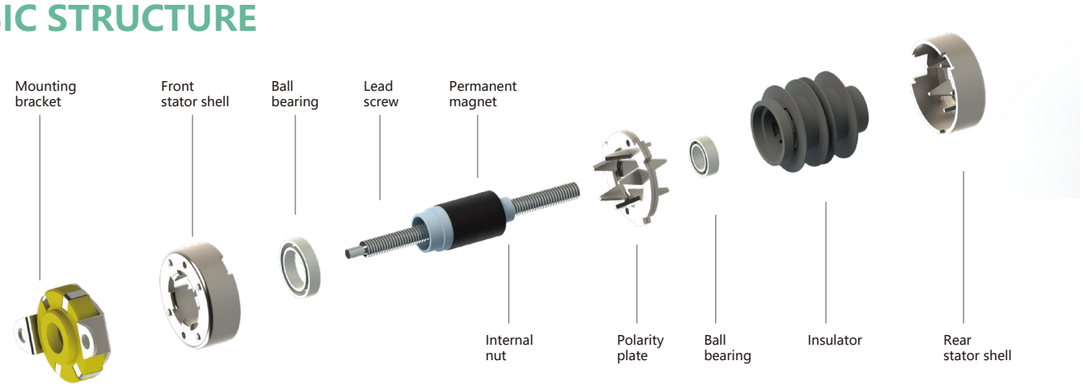
## DESCRIPTION

PrimoPal provides five sizes, 15mm, 20mm, 25mm, 36mm and 46mm PM stepper linear actuators. For each size, three types of linear structures are available, non-captive, external and captive. Step travel varies from 0.0127 to 0.1mm/step and the maximum linear force can reach 275N.

## APPLICATION

PrimoPal's PML series PM stepper motors are widely used in kinds of applications, such as industrial automation, semi-conductor manufacturing, medical equipment, laboratory instrument, mobile equipment, and so on.

## BASIC STRUCTURE




## LEAD SCREW CODE TABLE

| Motor Size (mm) | Screw Diameter (mm) | Screw Lead (mm) | Travel per Step (mm) | | | Max Thrust (N) | Power Consumption (w) | Screw Lead Code |
|---|---|---|---|---|---|---|---|---|
| | | | 7.5° | 15° | 18° | | | |
| Ø15 | Ø3.0 | 0.5 | | | 0.025 | 15 | 1.6 | AD |
| | | 1.0 | | | 0.05 | | | AB |
| | | 2.0 | | | 0.1 | | | F |
| Ø20 | Ø3.5 | 0.6096 | 0.0127 | 0.0254 | | 35 | 3.4 | AA |
| | | 1.2192 | 0.0254 | 0.0508 | | | | B |
| | | 2.4384 | 0.0508 | 0.1016 | | | | J |
| Ø25 | Ø3.5 | 0.6096 | 0.0127 | 0.0254 | | 65 | 3.9 | AA |
| | | 1.2192 | 0.0254 | 0.0508 | | | | B |
| | | 2.4384 | 0.0508 | 0.1016 | | | | J |
| Ø36 | Ø6.35 | 0.6096 | 0.0127 | 0.0254 | | 115 | 5.6 | AA |
| | | 1.2192 | 0.0254 | 0.0508 | | | | B |
| | | 2.4384 | 0.0508 | 0.1016 | | | | J |
| Ø46 | Ø6.35 | 0.6096 | 0.0127 | | | 275 | 10 | AA |
| | | 1.2192 | 0.0254 | | | | | B |
| | | 2.4384 | 0.0508 | | | | | J |

## STANDARD VERSIONS

| | | | |
|---|---|---|---|
| PML15 Dia.15mm (P25-26) |  External | |  Captive |
| PML20 Dia.20mm (P27-30) |  External |  Non-captive |  Captive |
| PML25 Dia.25mm (P31-34) |  External |  Non-captive |  Captive |
| PML36 Dia.36mm (P35-38) |  External |  Non-captive |  Captive |
| PML46 Dia.46mm (P39-41) |  External |  Non-captive |  Captive |

## PART NUMBER NAMING RULE

**PML** □□ □ □□ – □ □ □□ – □ □□□

**PML** — PrimoPal Can-Stack Stepper Linear Actuator

□□ — **Frame Size**
20: Ø20mm
25: Ø25mm
.....

□ — **Movement Type**
E: External
N: Non-captive
C: Captive

□□ — **Body Length**
30:30mm
40:40mm
.....

□ — **No. of Lead Wires**
4: 4 Pins
6: 6 Pins
.....

□ — **Step Angle**
S: 7.5°
T: 15°
.....

□□ — **Electric Specs**
Variety of current, resistance, etc

□ — **Lead Screw Code**
Refer to the table of lead screw code

□□□ — **Lead Screw Specs**
Variety of dia., length, etc

# Dia.15mm
# PML15 Series

## MOTOR SPECS

| | 15mm Frame | | |
|---|---|---|---|
| Model | PML15□11-4F04 | PML15□11-4F05 | PML15□11-4F12 |
| Polarity | Bi-polar | | |
| Linear actuator type | External, Captive | | |
| Step angle | 18° | | |
| Winding | 4V | 5V | 12V |
| Phase current | 200mA | 160mA | 70mA |
| Phase resistance | 20Ω | 33 | 180Ω |
| Phase inductance | 50.6mH | 8.7mH | 49mH |
| Power consumption | 1.6W | | |
| Rotor inertia | 1gcm² | | |
| Insulation class | Class B | | |
| Insulation resistance | 20MΩ, 500V DC | | |
| Weight | 15g | | |

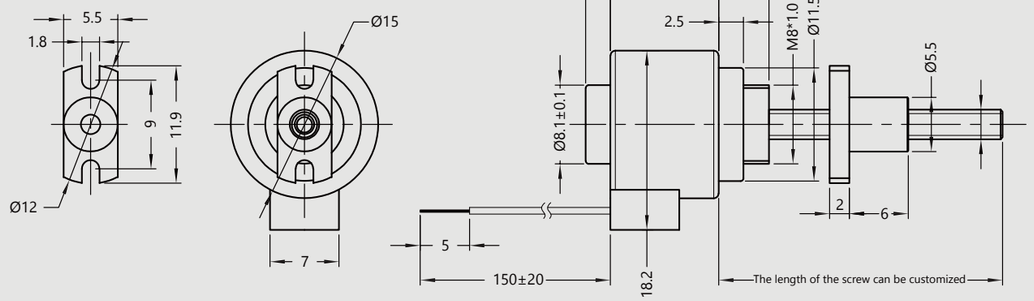
Note: External type(E) or Captive type(C) is available, please specify it with the blank box when ordering.

## TRAVEL PER STEP AND LEAD SCREW CODE

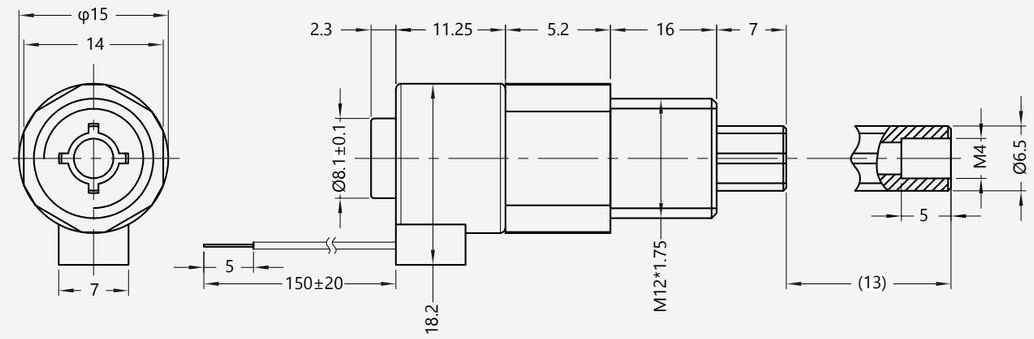
| Step Angle | Screw Lead Code | Screw Diameter | | Screw Lead | | Travel/Step | |
|---|---|---|---|---|---|---|---|
| | | inch | mm | inch | mm | inch | mm |
| 18° | AD | 0.118 | 3.0 | 0.020 | 0.5 | 0.001 | 0.025 |
| | AB | | | 0.039 | 1.0 | 0.002 | 0.05 |
| | F | | | 0.079 | 2.0 | 0.0039 | 0.1 |

## TYPICAL DIMENSION

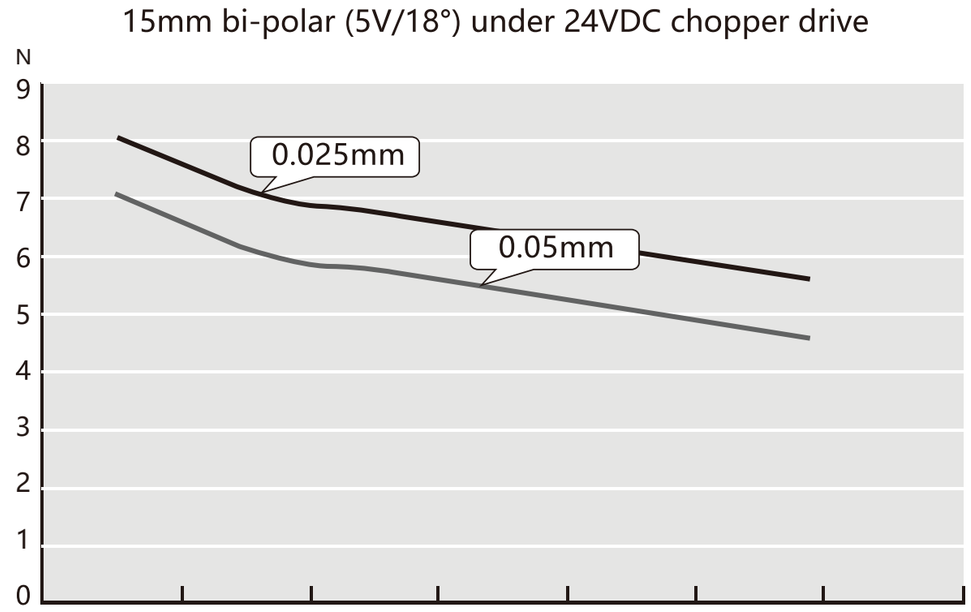
### External




### Captive

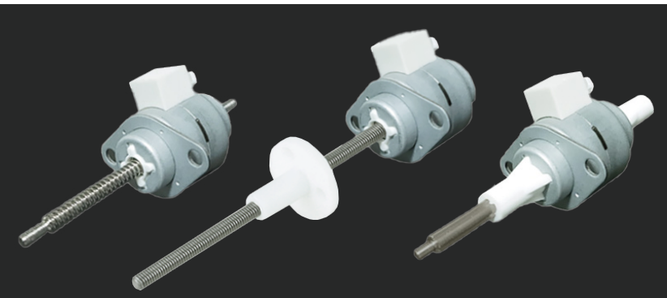



## SPEED THRUST CURVE




| | | | | | | |
|---|---|---|---|---|---|---|
| AD (mm/s) | 5 | 10 | 20 | 30 | 40 | 50 |
| AB (mm/s) | 10 | 20 | 40 | 60 | 80 | 100 |
| Speed r/Min | 600 | 1200 | 1800 | 2400 | 3000 | 3600 |
| Pulse PPS | 200 | 400 | 600 | 800 | 1000 | 1200 |

# Dia.20mm PML20 Series



## MOTOR SPECS

| 20mm Frame | | | | |
|---|---|---|---|---|
| Model | PML20□16-4S05 | PML20□16-4S12 | PML20□16-4T05 | PML20□16-4T12 |
| Polarity | Bi-polar | | | |
| Linear actuator type | Captive, Non-captive, External | | | |
| Step angle | 7.5° | | 15° | |
| Winding | 5V | 12V | 5V | 12V |
| Phase current | 370mA | 160mA | 370mA | 160mA |
| Phase resistance | 13.5Ω | 74.5Ω | 13.5Ω | 76Ω |
| Phase inductance | 6.5mH | 36mH | 4mH | 25mH |
| Power consumption | 3.4W | | | |
| Rotor inertia | 1.05gcm² | | | |
| Insulation class | Class B | | | |
| Insulation resistance | 100MΩ | | | |
| Weight | 35g | | | |
| Bearing | Ball Bearing | | | |

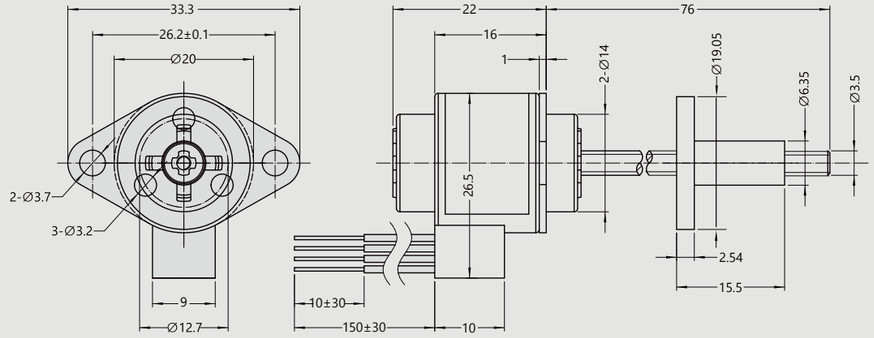
Note: Non-captive type(N), External type(E) or Captive type(C) is available, and please specify it with the blank box when ordering.

## TRAVEL PER STEP AND LEAD SCREW CODE

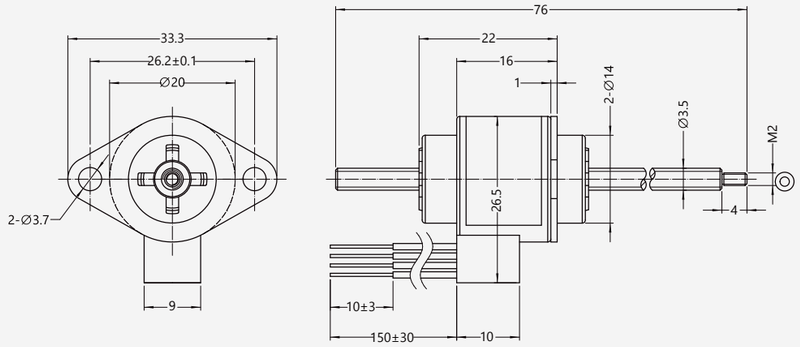
| Step Angle | Screw Lead Code | Screw Diameter | | Screw Lead | | Travel/Step | |
|---|---|---|---|---|---|---|---|
| | | inch | mm | inch | mm | inch | mm |
| 7.5° | AA | 0.138 | 3.5052 | 0.024 | 0.6096 | 0.0005 | 0.0127 |
| | B | 0.138 | 3.5052 | 0.048 | 1.2192 | 0.0010 | 0.0254 |
| | J | 0.138 | 3.5052 | 0.096 | 2.4384 | 0.0020 | 0.0508 |
| 15° | AA | 0.138 | 3.5052 | 0.024 | 0.6096 | 0.0010 | 0.0254 |
| | B | 0.138 | 3.5052 | 0.048 | 1.2192 | 0.0020 | 0.0508 |
| | J | 0.138 | 3.5052 | 0.096 | 2.4384 | 0.0040 | 0.1016 |

## TYPICAL DIMENSION

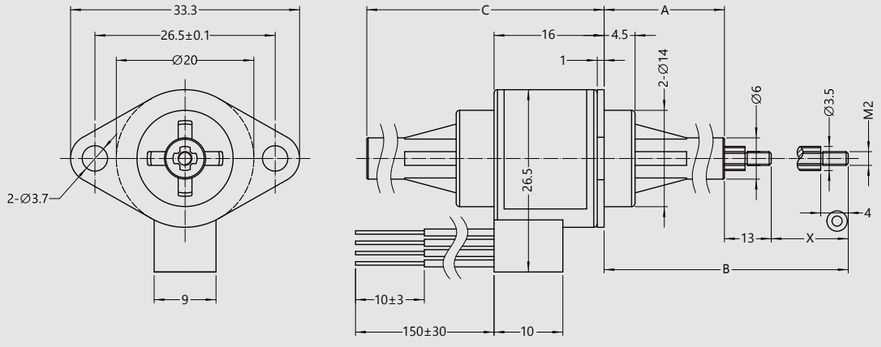
### External




### Non-Captive



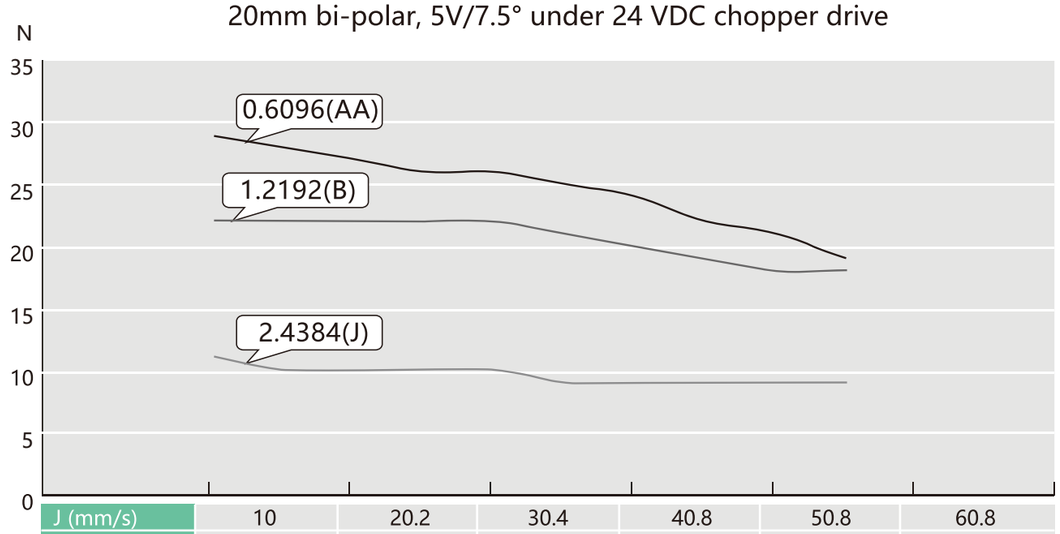

### Captive




| Stroke X | Front extension A | Rear extension B | Body length C (MAX) |
|---|---|---|---|
| 13 | 13.5±0.25 | 40.5 | 30.5 |
| 18 | 17.5±0.25 | 48.5 | 34.5 |
| 25 | 24.5±0.25 | 62.5 | 41.5 |
| 31 | 30.5±0.25 | 74.5 | 47.5 |

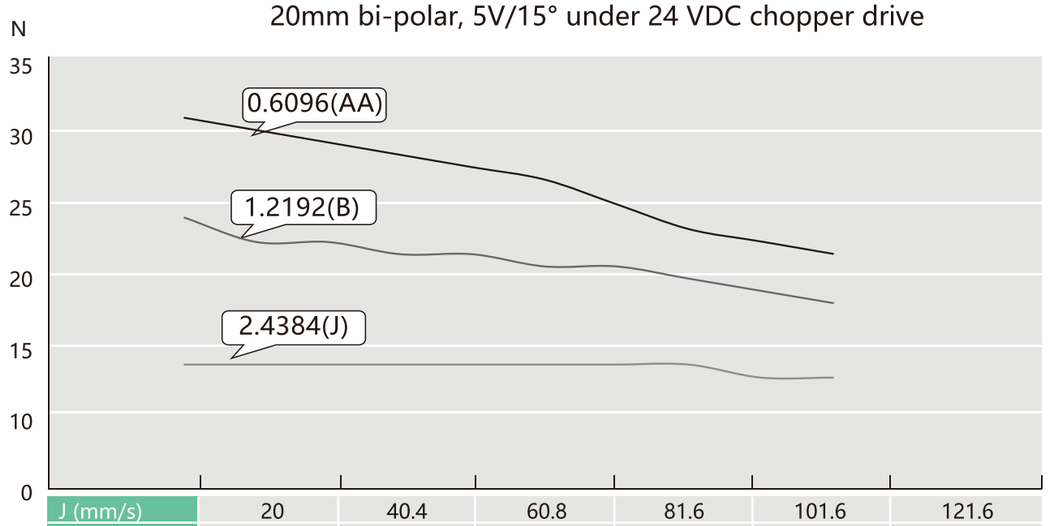
## SPEED THRUST CURVES

20mm bi-polar, 5V/7.5° under 24 VDC chopper drive



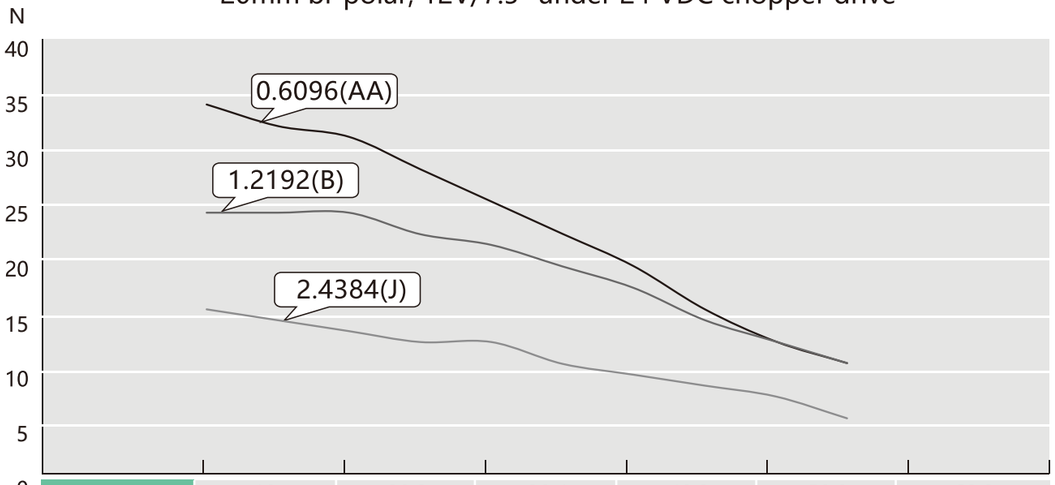

| J (mm/s) | 10 | 20.2 | 30.4 | 40.8 | 50.8 | 60.8 |
|---|---|---|---|---|---|---|
| B (mm/s) | 5 | 10.2 | 15.2 | 20.4 | 25.4 | 30.4 |
| AA (mm/s) | 2.5 | 5.1 | 7.6 | 10.2 | 12.7 | 15.2 |
| Speed r/Min | 250 | 500 | 750 | 1000 | 1250 | 1500 |
| Pulse PPS | 200 | 400 | 600 | 800 | 1000 | 1200 |

20mm bi-polar, 5V/15° under 24 VDC chopper drive



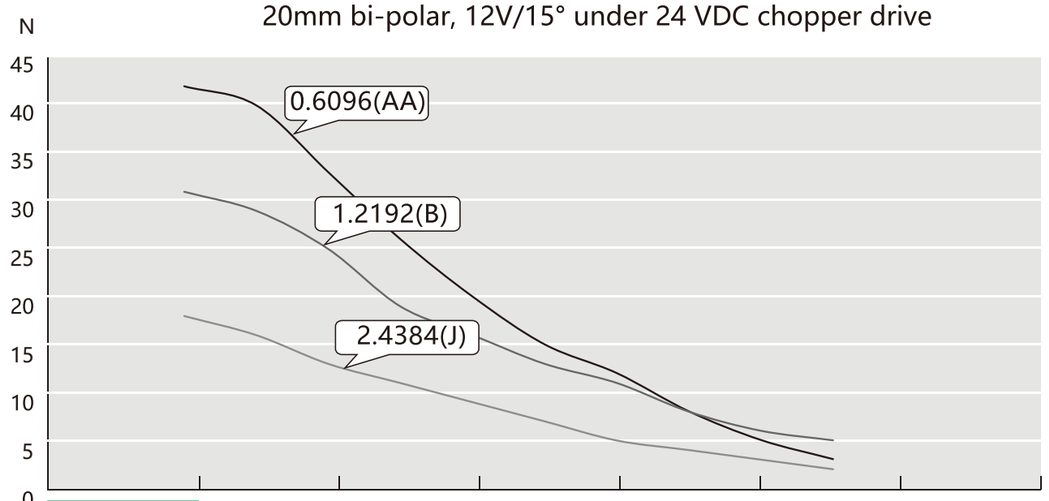

| J (mm/s) | 20 | 40.4 | 60.8 | 81.6 | 101.6 | 121.6 |
|---|---|---|---|---|---|---|
| B (mm/s) | 10 | 20.2 | 30.4 | 40.8 | 50.8 | 60.8 |
| AA (mm/s) | 5 | 10.2 | 15.2 | 20.4 | 25.4 | 30.4 |
| Speed r/Min | 500 | 1000 | 1500 | 2000 | 2500 | 3000 |
| Pulse PPS | 200 | 400 | 600 | 800 | 1000 | 1200 |

20mm bi-polar, 12V/7.5° under 24 VDC chopper drive



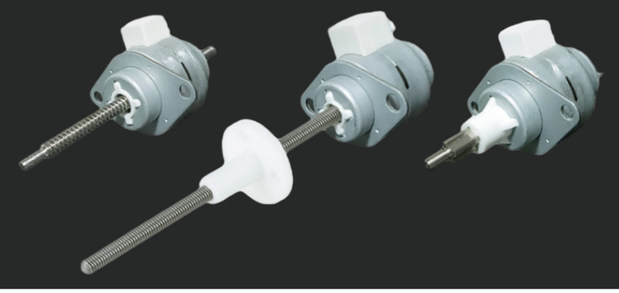

| J (mm/s) | 10 | 20.2 | 30.4 | 40.8 | 50.8 | 60.8 |
|---|---|---|---|---|---|---|
| B (mm/s) | 5 | 10.2 | 15.2 | 20.4 | 25.4 | 30.4 |
| AA (mm/s) | 2.5 | 5.1 | 7.6 | 10.2 | 12.7 | 15.2 |
| Speed r/Min | 250 | 500 | 750 | 1000 | 1250 | 1500 |
| Pulse PPS | 200 | 400 | 600 | 800 | 1000 | 1200 |

20mm bi-polar, 12V/15° under 24 VDC chopper drive




| J (mm/s) | 20 | 40.4 | 60.8 | 81.6 | 101.6 | 121.6 |
|---|---|---|---|---|---|---|
| B (mm/s) | 10 | 20.2 | 30.4 | 40.8 | 50.8 | 60.8 |
| AA (mm/s) | 5 | 10.2 | 15.2 | 20.4 | 25.4 | 30.4 |
| Speed r/Min | 500 | 1000 | 1500 | 2000 | 2500 | 3000 |
| Pulse PPS | 200 | 400 | 600 | 800 | 1000 | 1200 |

# Dia.25mm PML25 Series



## MOTOR SPECS

| | 25mm Frame | | | |
|---|---|---|---|---|
| Model | PML25□16-4S05 | PML25□16-4S12 | PML25□16-4T05 | PML25□16-4T12 |
| Polarity | Bi-polar | | | |
| Linear actuator type | Captive, Non-captive, External | | | |
| Step angle | 7.5° | | 15° | |
| Winding | 5V | 12V | 5V | 12V |
| Phase current | 370mA | 160mA | 370mA | 160mA |
| Phase resistance | 13.5Ω | 70Ω | 13.5Ω | 70Ω |
| Phase inductance | 12.5mH | 65mH | 9.5mH | 47mH |
| Power consumption | 3.85W | | | |
| Rotor inertia | 1.08gcm² | | | |
| Insulation class | Class B | | | |
| Insulation resistance | 100MΩ | | | |
| Weight | 50g | | | |
| Bearing | Ball Bearing | | | |

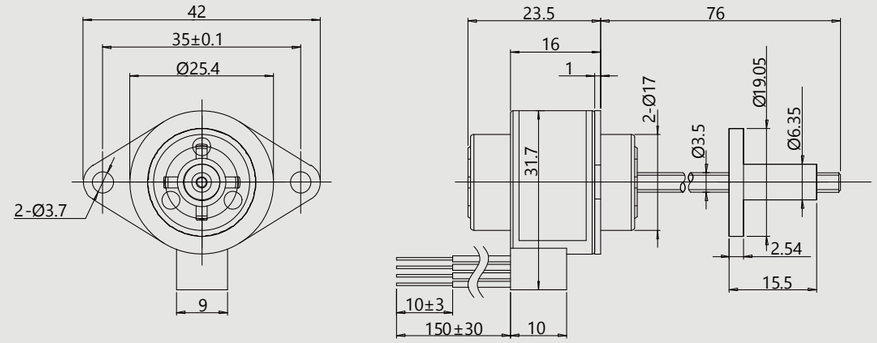
Note: Non-captive type(N), External type(E) or Captive type(C) is available, and please specify it with the blank box when ordering.

## TRAVEL PER STEP AND LEAD SCREW CODE

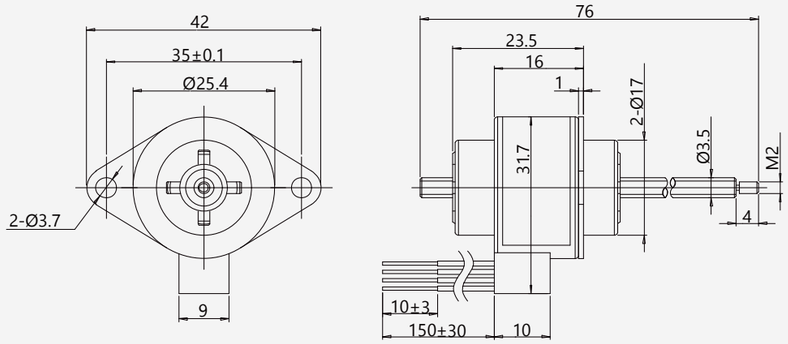
| Step Angle | Screw Lead Code | Screw Diameter | | Screw Lead | | Travel/Step | |
|---|---|---|---|---|---|---|---|
| | | inch | mm | inch | mm | inch | mm |
| 7.5° | AA | 0.138 | 3.5052 | 0.024 | 0.6096 | 0.0005 | 0.0127 |
| | B | 0.138 | 3.5052 | 0.048 | 1.2192 | 0.0010 | 0.0254 |
| | J | 0.138 | 3.5052 | 0.096 | 2.4384 | 0.0020 | 0.0508 |
| 15° | AA | 0.138 | 3.5052 | 0.024 | 0.6096 | 0.0010 | 0.0254 |
| | B | 0.138 | 3.5052 | 0.048 | 1.2192 | 0.0020 | 0.0508 |
| | J | 0.138 | 3.5052 | 0.096 | 2.4384 | 0.0040 | 0.1016 |

## TYPICAL DIMENSION

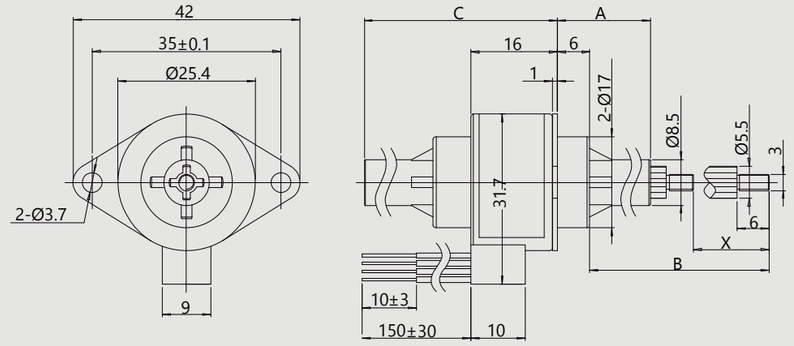
### External




### Non-Captive



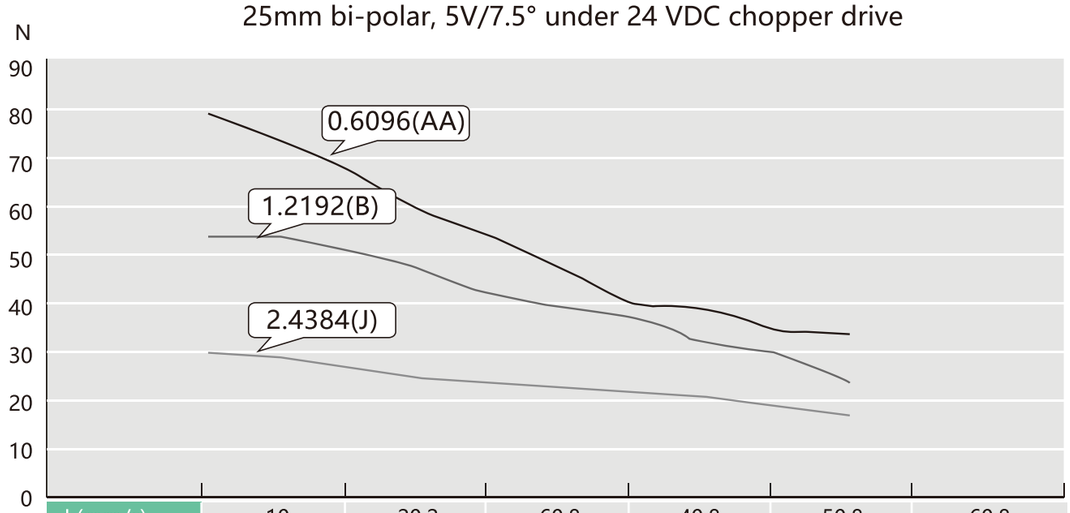

### Captive




| Stroke X | Front extension A | Rear extension B | Body length C (MAX) |
|---|---|---|---|
| 13 | 10.5±0.25 | 36.5 | 27.5 |
| 18 | 15.5±0.25 | 46.5 | 32.5 |
| 25 | 22.5±0.25 | 60.5 | 39.5 |
| 31 | 28.5±0.25 | 72.5 | 45.5 |

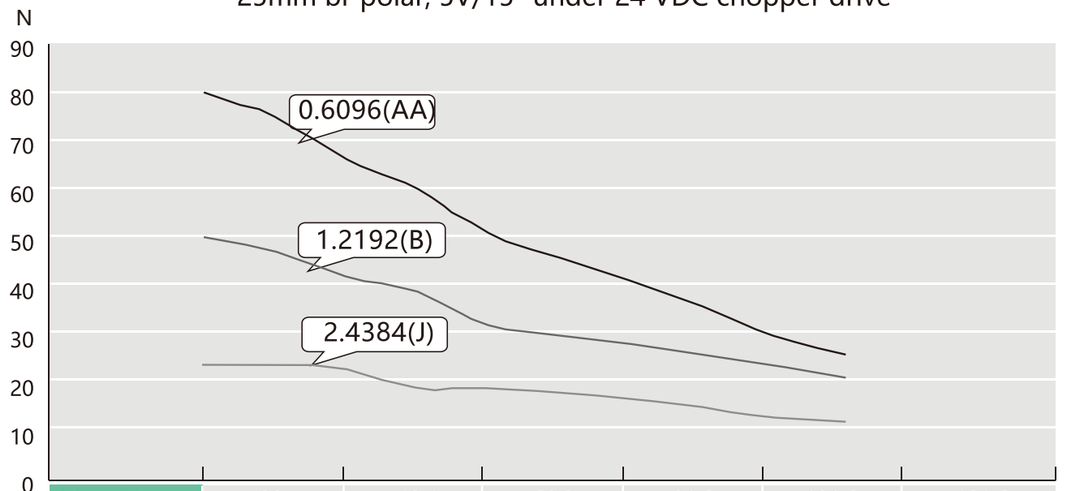
# SPEED THRUST CURVES

25mm bi-polar, 5V/7.5° under 24 VDC chopper drive



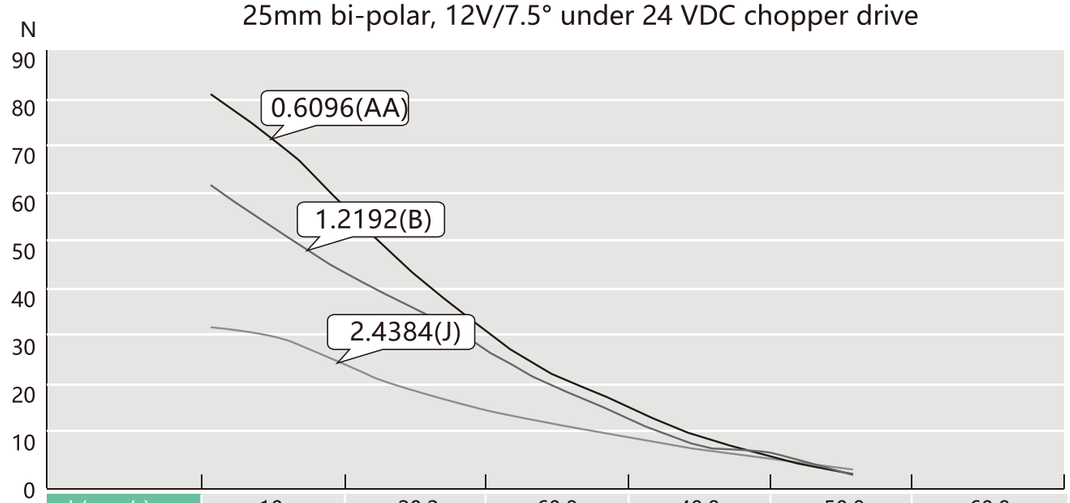

| J (mm/s) | 10 | 20.2 | 60.8 | 40.8 | 50.8 | 60.8 |
|---|---|---|---|---|---|---|
| B (mm/s) | 5 | 10.2 | 30.4 | 20.4 | 25.4 | 30.4 |
| AA (mm/s) | 2.5 | 5.1 | 15.2 | 10.2 | 12.7 | 15.2 |
| Speed r/Min | 250 | 500 | 750 | 1000 | 1250 | 1500 |
| Pulse PPS | 200 | 400 | 600 | 800 | 1000 | 1200 |

25mm bi-polar, 5V/15° under 24 VDC chopper drive



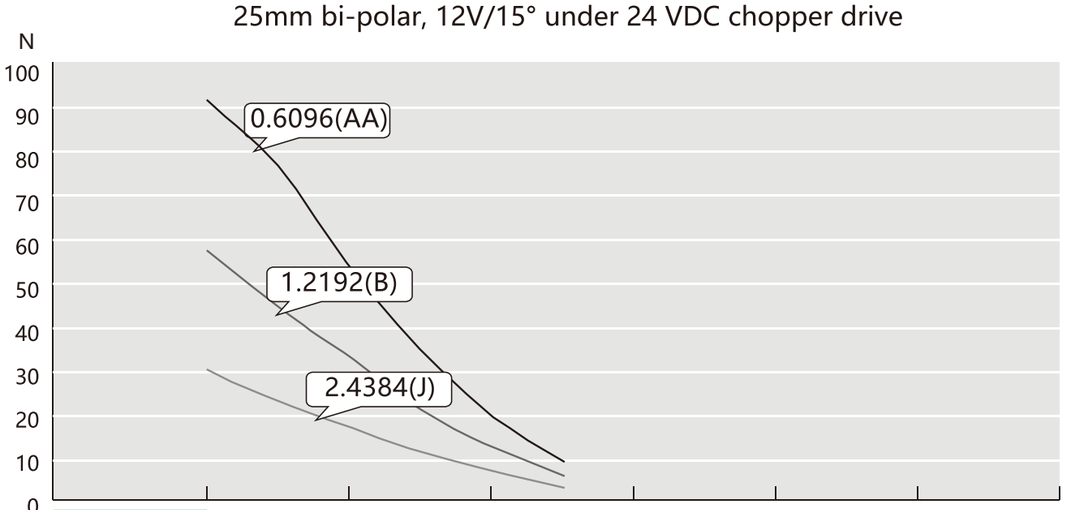

| J (mm/s) | 20 | 40.4 | 60.8 | 81.6 | 101.6 | 121.6 |
|---|---|---|---|---|---|---|
| B (mm/s) | 10 | 20.4 | 30.4 | 40.8 | 50.8 | 60.8 |
| AA (mm/s) | 5.0 | 10.2 | 15.2 | 20.4 | 25.4 | 30.4 |
| Speed r/Min | 500 | 1000 | 1500 | 2000 | 2500 | 3000 |
| Pulse PPS | 200 | 400 | 600 | 800 | 1000 | 1200 |

25mm bi-polar, 12V/7.5° under 24 VDC chopper drive




| J (mm/s) | 10 | 20.2 | 60.8 | 40.8 | 50.8 | 60.8 |
|---|---|---|---|---|---|---|
| B (mm/s) | 5 | 10.2 | 30.4 | 20.4 | 25.4 | 30.4 |
| AA (mm/s) | 2.5 | 5.1 | 15.2 | 10.2 | 12.7 | 15.2 |
| Speed r/Min | 250 | 500 | 750 | 1000 | 1250 | 1500 |
| Pulse PPS | 200 | 400 | 600 | 800 | 1000 | 1200 |

25mm bi-polar, 12V/15° under 24 VDC chopper drive




| J (mm/s) | 20 | 40.4 | 60.8 | 81.6 | 101.6 | 121.6 |
|---|---|---|---|---|---|---|
| B (mm/s) | 10 | 20.4 | 30.4 | 40.8 | 50.8 | 60.8 |
| AA (mm/s) | 5.0 | 10.2 | 15.2 | 20.4 | 25.4 | 30.4 |
| Speed r/Min | 500 | 1000 | 1500 | 2000 | 2500 | 3000 |
| Pulse PPS | 200 | 400 | 600 | 800 | 1000 | 1200 |

# Dia.36mm
# PML36 Series

## MOTOR SPECS

| | 36mm Frame | | | |
|---|---|---|---|---|
| Model | PML36□19-4S05 | PML36□19-4S12 | PML36□19-4T05 | PML36□19-4T12 |
| Polarity | Bi-polar | | | |
| Linear actuator type | Captive, Non-captive, External | | | |
| Step angle | 7.5° | | 15° | |
| Winding | 5V | 12V | 5V | 12V |
| Phase current | 560mA | 230mA | 560mA | 230mA |
| Phase resistance | 9Ω | 52Ω | 9Ω | 52Ω |
| Phase inductance | 11.5mH | 72mH | 8mH | 56mH |
| Power consumption | 5.6W | | | |
| Rotor inertia | 8.5gcm² | | | |
| Insulation class | Class B | | | |
| Insulation resistance | 100MΩ | | | |
| Weight | 120g | | | |
| Bearing | Ball Bearing | | | |

Note: Non-captive type(N), External type(E) or Captive type(C) is available, and please specify it with the blank box when ordering.

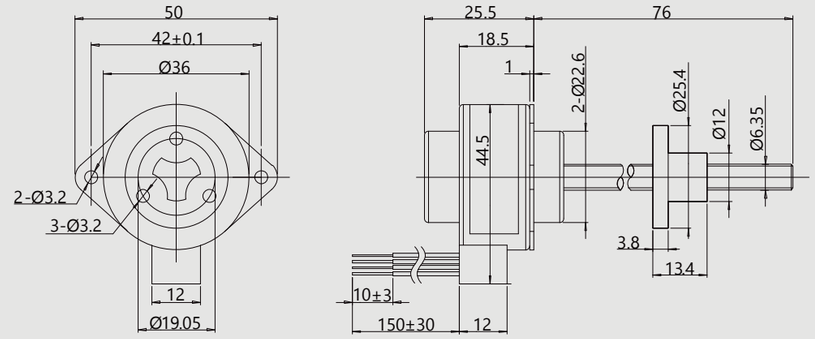
## TRAVEL PER STEP AND LEAD SCREW CODE

| Step Angle | Screw Lead Code | Screw Diameter | | Screw Lead | | Travel/Step | |
|---|---|---|---|---|---|---|---|
| | | inch | mm | inch | mm | inch | mm |
| 7.5° | AA | 0.25 | 6.35 | 0.024 | 0.6096 | 0.0005 | 0.0127 |
| | B | 0.25 | 6.35 | 0.048 | 1.2192 | 0.0010 | 0.0254 |
| | J | 0.25 | 6.35 | 0.096 | 2.4384 | 0.0020 | 0.0508 |
| 15° | AA | 0.25 | 6.35 | 0.024 | 0.6096 | 0.0010 | 0.0254 |
| | B | 0.25 | 6.35 | 0.048 | 1.2192 | 0.0020 | 0.0508 |
| | J | 0.25 | 6.35 | 0.096 | 2.4384 | 0.0040 | 0.1016 |

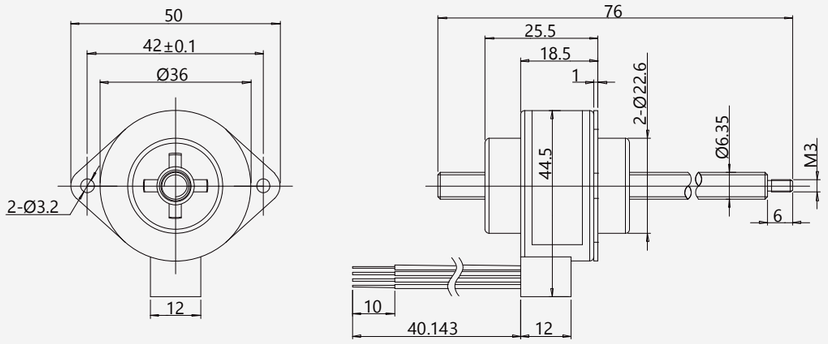


## TYPICAL DIMENSION

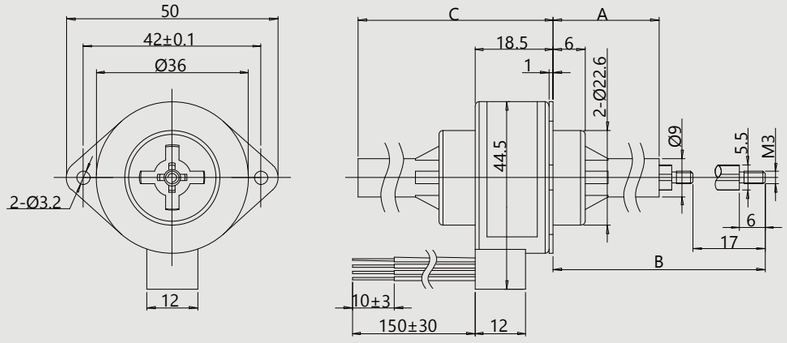
### External




### Non-Captive



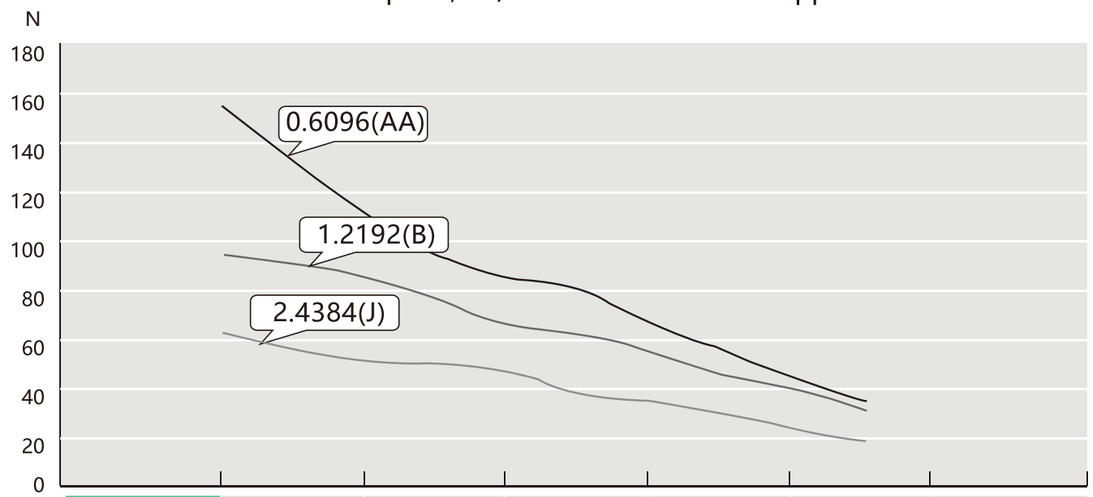

### Captive




| Stroke X | Front extension A | Rear extension B | Body length C (MAX) |
|---|---|---|---|
| 16 | 12±0.25 | 41 | 31.5 |
| 25 | 21±0.25 | 59 | 40.5 |
| 38 | 34±0.25 | 85 | 53.5 |

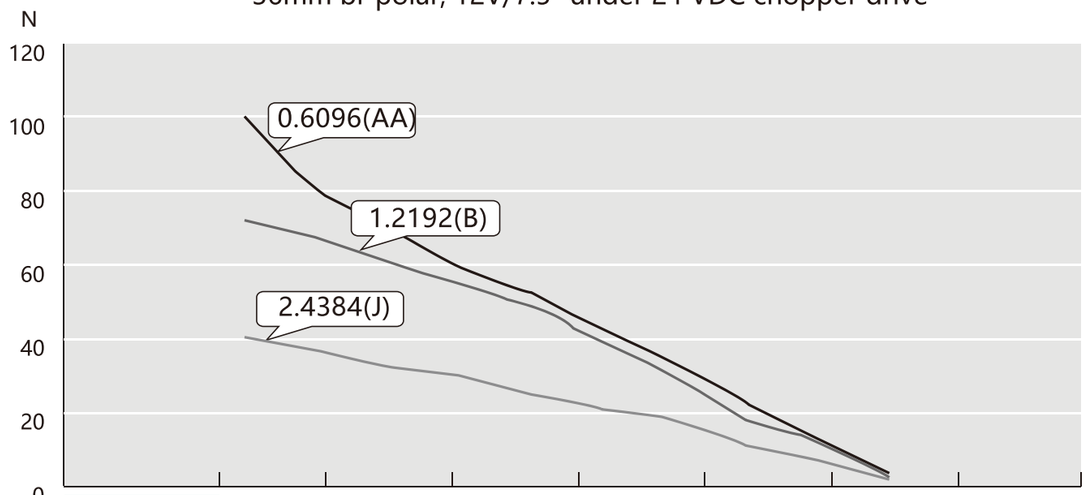
# SPEED THRUST CURVES

36mm bi-polar, 5V/7.5° under 24 VDC chopper drive



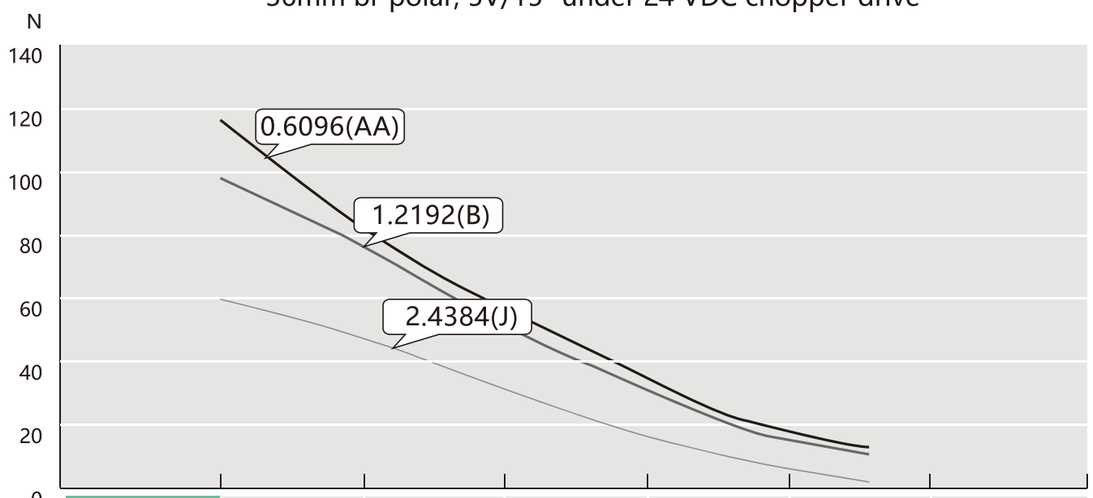

| J (mm/s) | 10 | 20.2 | 30.4 | 40.8 | 50.8 | 60.8 |
|---|---|---|---|---|---|---|
| B (mm/s) | 5 | 10.2 | 15.2 | 20.4 | 25.4 | 30.4 |
| AA (mm/s) | 2.5 | 5.1 | 7.6 | 10.2 | 12.7 | 15.2 |
| Speed r/Min | 250 | 500 | 750 | 1000 | 1250 | 1500 |
| Pulse PPS | 200 | 400 | 600 | 800 | 1000 | 1200 |

36mm bi-polar, 12V/7.5° under 24 VDC chopper drive



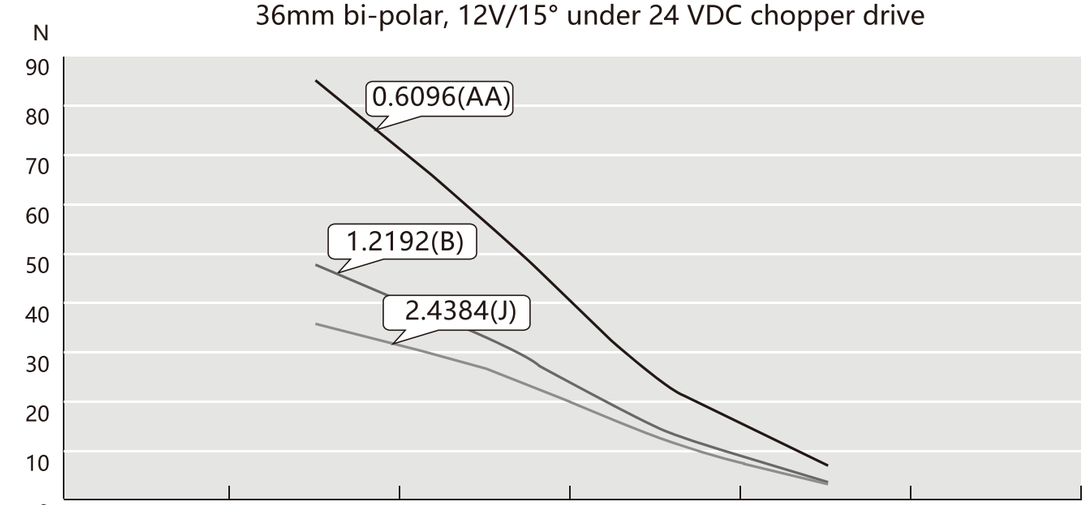

| J (mm/s) | 5 | 10 | 15.1 | 20.2 | 25.3 | 30.4 | 35.4 |
|---|---|---|---|---|---|---|---|
| B (mm/s) | 2.5 | 5 | 7.5 | 10.2 | 12.5 | 15.2 | 17.7 |
| AA (mm/s) | 1.25 | 2.5 | 3.8 | 5.1 | 6.3 | 7.6 | 8.9 |
| Speed r/Min | 125 | 250 | 375 | 500 | 625 | 750 | 875 |
| Pulse PPS | 100 | 200 | 300 | 400 | 500 | 600 | 700 |

36mm bi-polar, 5V/15° under 24 VDC chopper drive



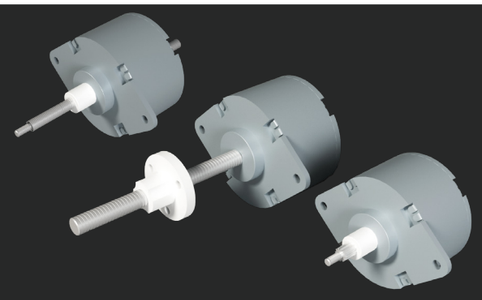

| J (mm/s) | 20 | 40.4 | 60.8 | 81.6 | 101.6 | 121.6 |
|---|---|---|---|---|---|---|
| B (mm/s) | 10 | 20.4 | 30.4 | 40.8 | 50.8 | 60.8 |
| AA (mm/s) | 5 | 10.2 | 15.2 | 20.4 | 25.4 | 30.4 |
| Speed r/Min | 500 | 1000 | 1500 | 2000 | 2500 | 3000 |
| Pulse PPS | 200 | 400 | 600 | 800 | 1000 | 1200 |

36mm bi-polar, 12V/15° under 24 VDC chopper drive




| J (mm/s) | 10 | 20 | 20.2 | 40.4 | 50.8 |
|---|---|---|---|---|---|
| B (mm/s) | 5 | 10 | 15.1 | 20.2 | 25,4 |
| AA (mm/s) | 2.5 | 5 | 7.6 | 10.2 | 12.7 |
| Speed r/Min | 250 | 500 | 750 | 1000 | 1250 |
| Pulse PPS | 100 | 200 | 300 | 400 | 500 |

# Dia.46mm
# PML46 Series



## MOTOR SPECS

| 46mm Frame | | |
|---|---|---|
| Model | PML46□29-4S05 | PML46□29-4S12 |
| Polarity | Bi-polar | |
| Linear actuator type | Captive, Non-captive, External | |
| Step angle | 7.5° | |
| Winding | 5V | 12V |
| Phase current | 1000mA | 410mA |
| Phase resistance | 5Ω | 29Ω |
| Phase inductance | 9mH | 52mH |
| Power consumption | 10W | |
| Rotor inertia | 25.5gcm2 | |
| Insulation class | Class B | |
| Insulation resistance | 100MΩ, 500V DC | |
| Weight | 250g | |
| Bearing | Ball Bearing | |

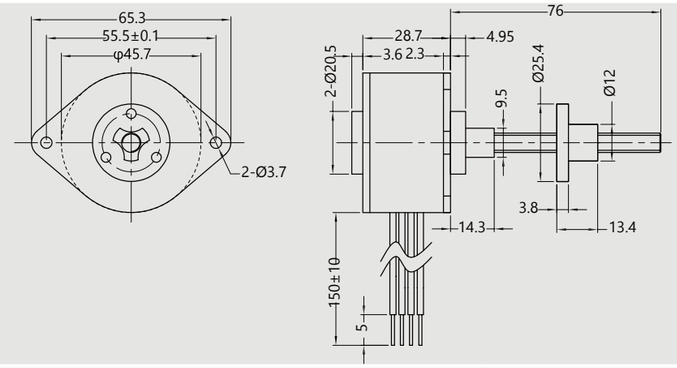
Note: Non-captive type(N), External type(E) or Captive type(C) is available, and please specify it with the blank box when ordering.

## TRAVEL PER STEP AND LEAD SCREW CODE

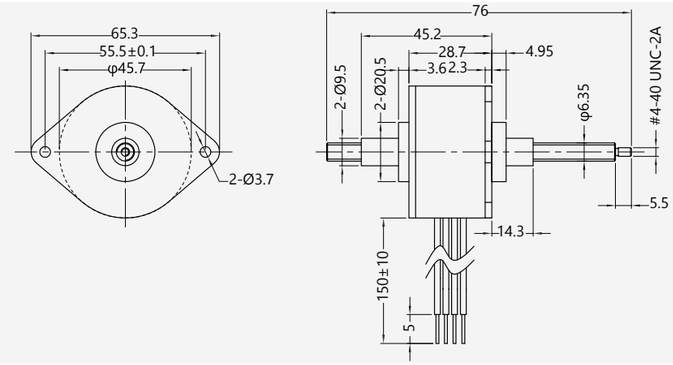
| Step Angle | Screw Lead Code | Screw Diameter | | Screw Lead | | Travel/Step | |
|---|---|---|---|---|---|---|---|
| | | inch | mm | inch | mm | inch | mm |
| 7.5° | AA | 0.25 | 6.35 | 0.024 | 0.6096 | 0.0005 | 0.0127 |
| | B | 0.25 | 6.35 | 0.048 | 1.2192 | 0.0010 | 0.0254 |
| | J | 0.25 | 6.35 | 0.096 | 2.4384 | 0.0020 | 0.0508 |

## TYPICAL DIMENSION

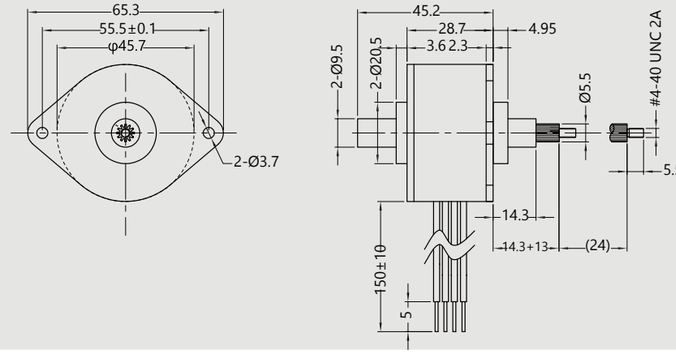
### External




### Non-Captive

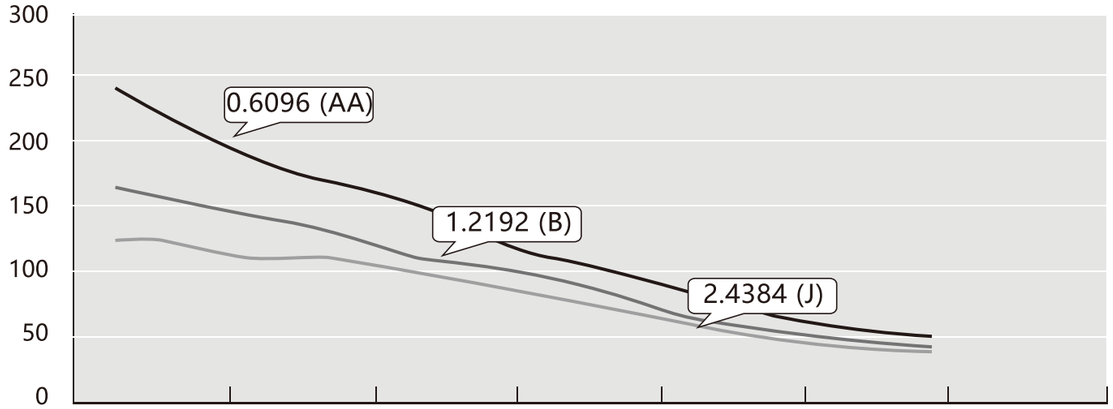



### Captive



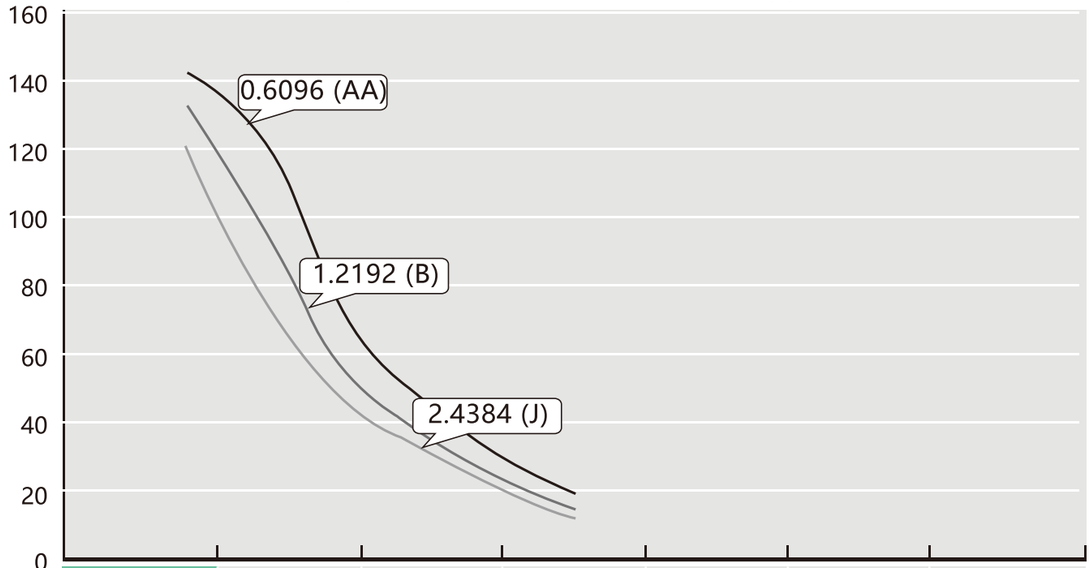
## SPEED THRUST CURVES

46mm bi-polar, 5V/7.5° under 24 VDC chopper drive




| J (mm/s) | 10 | 20.2 | 30.4 | 40.8 | 50.8 | 60.8 |
|---|---|---|---|---|---|---|
| B (mm/s) | 5 | 10.2 | 15.2 | 20.4 | 25.4 | 30.4 |
| AA (mm/s) | 2.5 | 5.1 | 7.6 | 10.2 | 12.7 | 15.2 |
| Speed r/Min | 250 | 500 | 750 | 1000 | 1250 | 1500 |
| Pulse PPS | 200 | 400 | 600 | 800 | 1000 | 1200 |

46mm bi-polar, 12V/7.5° under 24 VDC chopper drive




| J (mm/s) | 10 | 20.2 | 30.4 | 40.8 | 50.8 | 60.8 |
|---|---|---|---|---|---|---|
| B (mm/s) | 5 | 10.2 | 15.2 | 20.4 | 25.4 | 30.4 |
| AA (mm/s) | 2.5 | 5.1 | 7.6 | 10.2 | 12.7 | 15.2 |
| Speed r/Min | 250 | 500 | 750 | 1000 | 1250 | 1500 |
| Pulse PPS | 200 | 400 | 600 | 800 | 1000 | 1200 |

# PMG SERIES

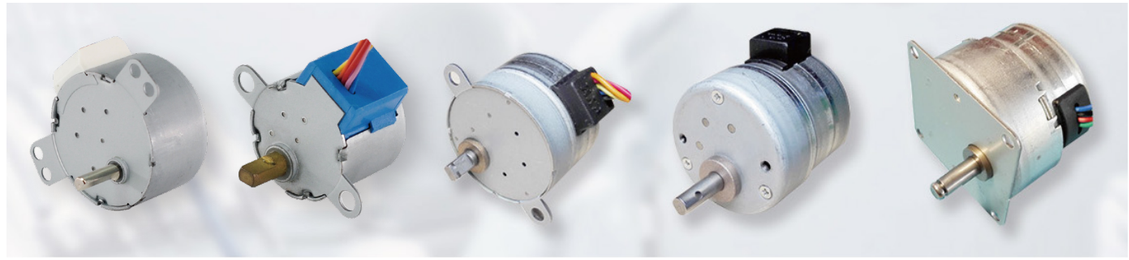
## PM STEPPER GEAR MOTOR

## DESCRIPTION

PrimoPal's PMG Series PM Stepper Gear motor includes ordinary type (motor with gears inside) and precision type (motor with added gearbox). These motors offer a wide range of gear ratios in a compact size, along with high output and high resolution, especially the precision-type ones. They are low-cost solutions and can perfectly meet your needs of motion or automation control. Besides, custom motor winding and gear head specs are also available.

## APPLICATION

PrimoPal's PMG Series PM Stepper Gear motors are widely used in kinds of applications, such as air-conditioners, printers, photocopiers, power tools and other industrial & office automation equipment.



## PART NUMBER NAMING RULE

- **Built-in Gear Type**

| PMG | □□ | N | □ | □ | — | □□ | □□ |
|---|---|---|---|---|---|---|---|
| **PrimoPal PM Stepper Gear Motor** | **Base Frame** (O.D. in mm) | **Built-in Gear Type** | **No. of Phase** | **No. of Pole-Pairs** | | **Electric Variation** Variety of voltage, current,etc | **Mechanical Variation** Variety of shaft, lead wire, etc |

- **Gearbox Type**

| PMG | □□ | P | □□ | — | □□ | □□ |
|---|---|---|---|---|---|---|
| **PrimoPal PM Stepper Gear Motor** | **Base Frame** (O.D. in mm) | **Gearbox Type** | **Reduction Ratio** 05: 5:0<br>10: 10:1<br>30: 30:1 | | **Electric Variation** Variety of voltage, current, etc | **Mechanical Variation** Variety of shaft, lead wire, etc |

## STANDARD VERSIONS

### • Built-in Gear Type

**PMG20N Series**
Frame Size: Ø20mm
Step Angle: 7.5°
Page: 45

**PMG24N Series**
Frame Size: Ø24mm
Step Angle: 5.625°
Page: 46

**PMG28N Series**
Frame Size: Ø28mm
Step Angle: 5.625°
Page: 47

**PMG30N Series**
Frame Size: Ø30mm
Step Angle: 7.5°
Page: 48

**PMG35N Series**
Frame Size: Ø35mm
Step Angle: 7.5°/3.75°
Page: 49-50

### • Gearbox Type

**PMG08P Series**
Frame Size: Ø8mm
Step Angle: 18°
Page: 51

**PMG10P Series**
Frame Size: Ø10mm
Step Angle: 18°
Page: 52

**PMG15P Series**
Frame Size: Ø15mm
Step Angle: 18°
Page: 53-54

**PMG25P Series**
Frame Size: Ø25mm
Step Angle: 7.5°/15°
Page: 55-56

**PMG35P Series**
Frame Size: Ø35mm
Step Angle: 7.5°/15°
Page: 57-58

**PMG42P Series**
Frame Size: Ø42mm
Step Angle: 7.5°/15°
Page: 59-60

# Ø20mm
# Built-in Gear Type
# PMG20N Series

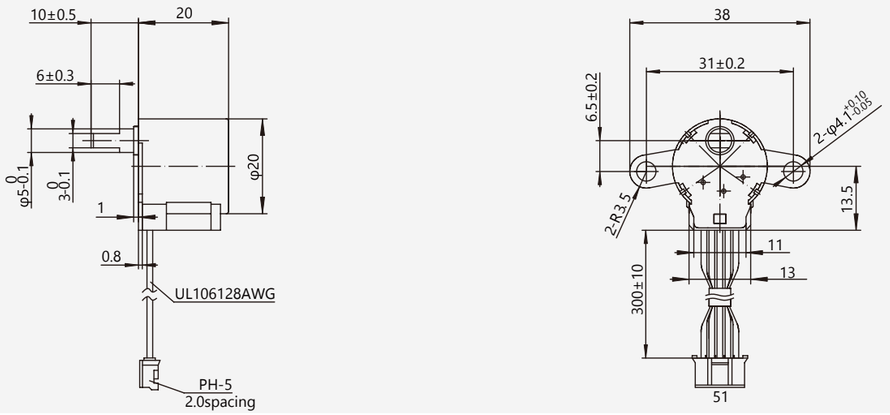
Step Angle Accuracy: ±8%
Resistance Accuracy: ±10%
Inductance Accuracy: ±20%
Ambient Temperature: -10℃~50℃
Insulation Resistance: 100MΩ Min.(at 500VDC)
Dielectric Strength: RMS for 2 Sec(at 650±50VAC)
Insulation Class: Class E

Small Size Low Speed High Torque

## SPECIFICATIONS

| Series | Model Number | Phase Number | Voltage | Resistance | Pull-in Torque | Pull-in Rate | Pull-out Rate | Detent Torque | Step Angle | Gear Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | V | Ω | mN.m at 100pps | pps | pps | mN.m | ° | |
| PMG20N26 | PMG20N26-02 | 2 | 5 | 20 | ≥39.2 | ≥600 | ≥1,000 | ≥25 | 7.5°/34 | 34:1 |
| | PMG20N26-10 | 2 | 12 | 100 | ≥58.8 | ≥600 | ≥1,000 | ≥39.2 | 7.5°/85 | 85:1 |
| PMG20N46 | PMG20N46-13 | 4 | 12 | 130 | ≥58.8 | ≥600 | ≥1,000 | ≥39.2 | 7.5°/85 | 85:1 |
| | PMG20N46-02 | 4 | 5 | 20 | ≥58.8 | ≥600 | ≥1,000 | ≥39.2 | 7.5°/85 | 85:1 |

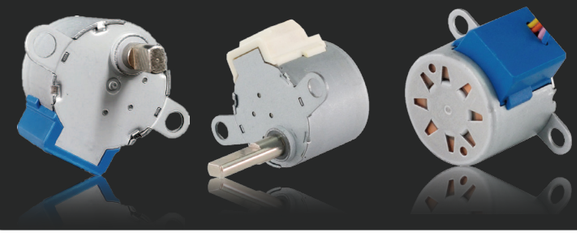
## TYPICAL OUTLINE






# Ø24mm
# Built-in Gear Type
# PMG24N Series

Step Angle Accuracy: ±8%
Resistance Accuracy: ±10%
Inductance Accuracy: ±20%
Ambient Temperature: -10℃~50℃
Insulation Resistance: 100MΩ Min.(at 500VDC)
Dielectric Strength: RMS for 2 Sec(at 650±50VAC)
Insulation Class: Class E

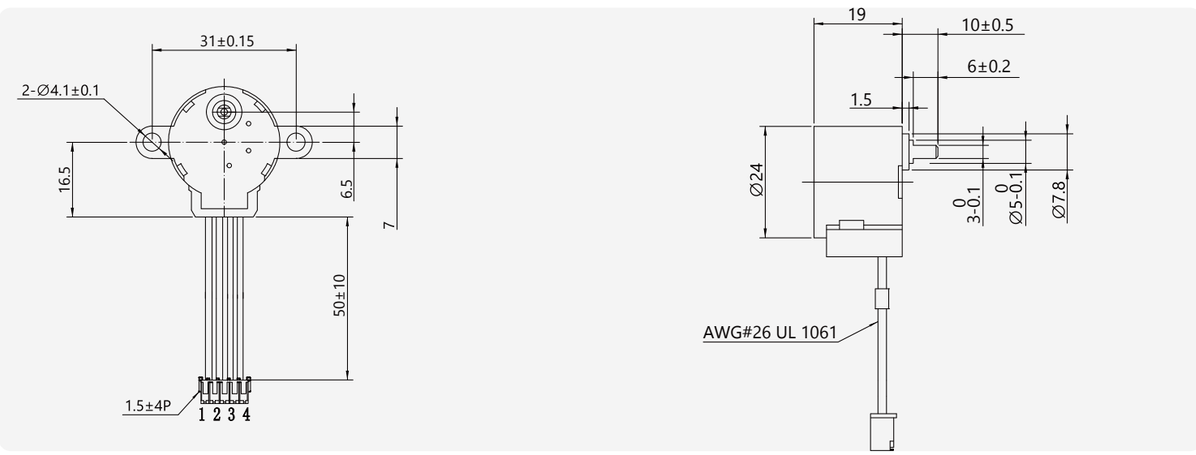


Small Size Low Speed High Torque

## SPECIFICATIONS

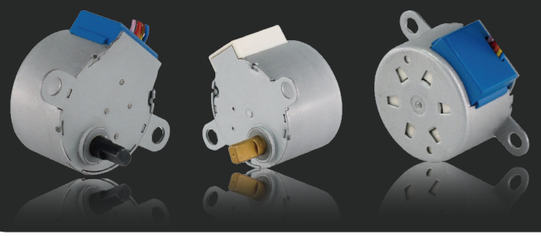
| Series | Model Number | Phase Number | Voltage | Resistance | Pull-in Torque | Pull-in Rate | Pull-out Rate | Detent Torque | Step Angle | Gear Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | V | Ω | mN.m at 100pps | pps | pps | mN.m | ° | |
| PMG24N28 | PMG24N28-05 | 2 | 8 | 50 | ≥30 | ≥600 | ≥1,000 | ≥20 | 5.625°/16 | 16:1 |
| | PMG24N28-10 | 2 | 12 | 100 | ≥45 | ≥600 | ≥1,000 | ≥35 | 5.625°/25 | 25:1 |
| | PMG24N28-02 | 2 | 5 | 20 | ≥50 | ≥600 | ≥1,000 | ≥39.2 | 5.625°/32 | 32:1 |
| PMG24N48 | PMG24N48-15 | 4 | 12 | 150 | ≥70 | ≥600 | ≥1,000 | ≥20 | 5.625°/16 | 16:1 |
| | PMG24N48-06 | 4 | 12 | 60 | ≥150 | ≥600 | ≥1,000 | ≥39.2 | 5.625°/64 | 64:1 |
| | PMG24N48-20 | 4 | 12 | 200 | ≥80 | ≥600 | ≥1,000 | ≥39.2 | 5.625°/64 | 64:1 |
| | PMG24N48-30 | 4 | 24 | 300 | ≥150 | ≥600 | ≥1,000 | ≥39.2 | 5.625°/64 | 64:1 |
| | PMG24N48-02 | 4 | 5 | 20 | ≥60 | ≥600 | ≥1,000 | ≥39.2 | 5.625°/90 | 90:1 |

## TYPICAL OUTLINE



# Ø28mm
# Built-in Gear Type
# PMG28N Series

Step Angle Accuracy: ±8%
Resistance Accuracy: ±10%
Inductance Accuracy: ±20%
Ambient Temperature: -10℃~50℃
Insulation Resistance: 100MΩ Min.(at 500VDC)
Dielectric Strength: RMS for 2 Sec(at 650±50VAC)
Insulation Class: Class E

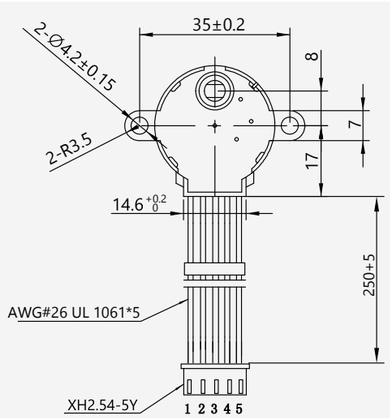


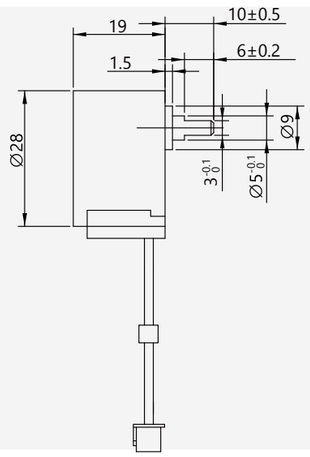
Small Size | Low Speed | High Torque

## SPECIFICATIONS

| Series | Model Number | Phase Number | Voltage | Resistance | Pull-in Torque | Pull-in Rate | Pull-out Rate | Detent Torque | Step Angle | Gear Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | V | Ω | mN.m at 100pps | pps | pps | mN.m | ° | |
| PMG28N28 | PMG28N28-05 | 2 | 5 | 20 | ≥29.4 | ≥600 | ≥1,000 | ≥29.4 | 5.625°/16 | 16:1 |
| | PMG28N28-10 | 2 | 12 | 100 | ≥39.4 | ≥600 | ≥1,000 | ≥29.4 | 5.625°/25 | 25:1 |
| | PMG28N28-02 | 2 | 5 | 20 | ≥49 | ≥600 | ≥1,000 | ≥39.4 | 5.625°/32 | 32:1 |
| PMG28N48 | PMG28N48-15 | 4 | 12 | 110 | ≥49 | ≥600 | ≥1,000 | ≥39.4 | 5.625°/36 | 36:1 |
| | PMG28N48-06 | 4 | 12 | 60 | ≥49 | ≥600 | ≥1,000 | ≥39.4 | 5.625°/36 | 36:1 |
| | PMG28N48-20 | 4 | 12 | 200 | ≥68.8 | ≥600 | ≥1,000 | ≥39.4 | 5.625°/64 | 64:1 |
| | PMG28N48-30 | 4 | 24 | 300 | ≥147 | ≥600 | ≥1,000 | ≥49 | 5.625°/64 | 64:1 |
| | PMG28N48-02 | 4 | 12 | 200 | ≥98 | ≥600 | ≥1,000 | ≥49 | 5.625°/90 | 90:1 |

## TYPICAL OUTLINE

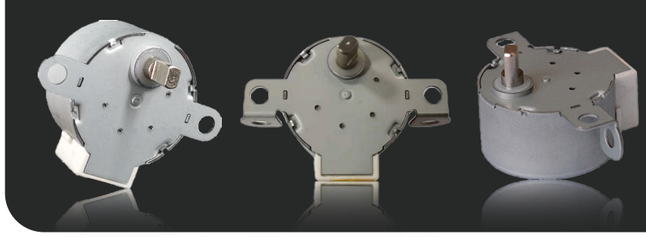





# Ø30mm
# Built-in Gear Type
# PMG30N Series

Step Angle Accuracy: ±8%
Resistance Accuracy: ±10%
Inductance Accuracy: ±20%
Ambient Temperature: -10℃~50℃
Insulation Resistance: 100MΩ Min.(at 500VDC)
Dielectric Strength: RMS for 2 Sec(at 650±50VAC)
Insulation Class: Class E

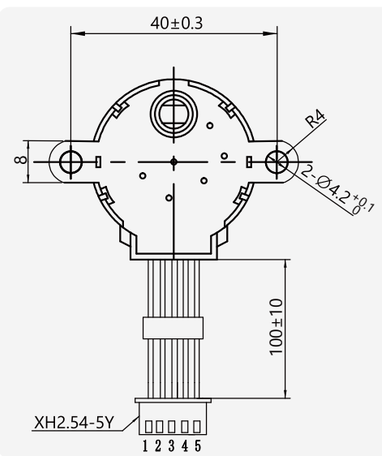


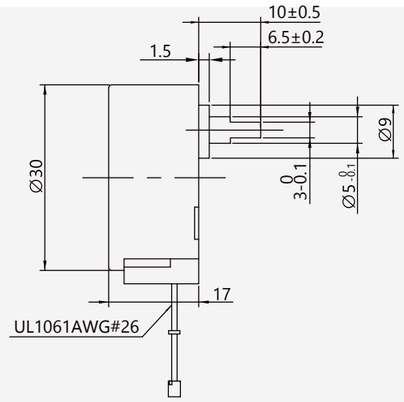
Small Size | Low Speed | High Torque

## SPECIFICATIONS

| Series | Model Number | Phase Number | Voltage | Resistance | Pull-in Torque | Pull-in Rate | Pull-out Rate | Detent Torque | Step Angle | Gear Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | V | Ω | mN.m at 100pps | pps | pps | mN.m | ° | |
| PMG30N26 | PMG30N26-05 | 2 | 12 | 100 | ≥147 | ≥600 | ≥800 | ≥78.4 | 7.5°/85 | 85:1 |
| PMG30N46 | PMG30N46-10 | 4 | 12 | 130 | ≥78.4 | ≥600 | ≥800 | ≥39.2 | 7.5°/85 | 85:1 |
| | PMG30N46-02 | 4 | 12 | 200 | ≥58.8 | ≥350 | ≥600 | ≥39.2 | 7.5°/85 | 85:1 |

## TYPICAL OUTLINE



# Ø35mm
# Built-in Gear Type
# PMG35N Series

Step Angle Accuracy: ±8%
Resistance Accuracy: ±10%
Inductance Accuracy: ±20%
Ambient Temperature: -10℃~50℃
Insulation Resistance: 100MΩ Min.(at 500VDC)
Dielectric Strength: RMS for 2 Sec(at 650±50VAC)
Insulation Class: Class E

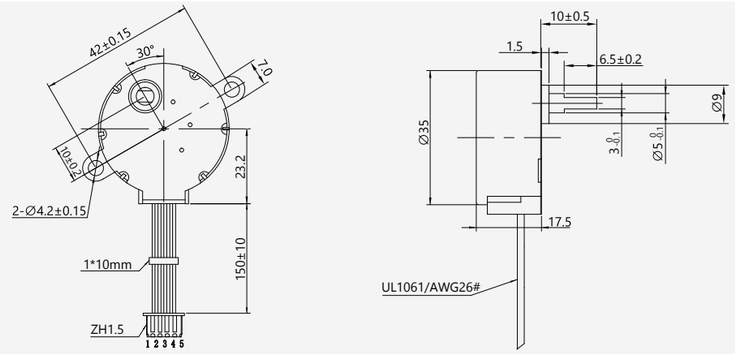
Small Size | Low Speed | High Torque

## SPECIFICATIONS

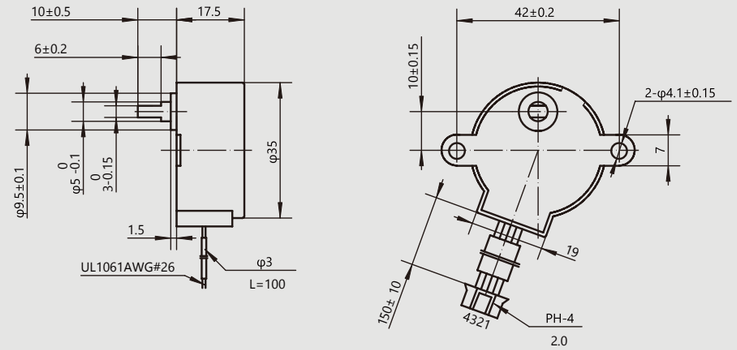
| Series | Model Number | Phase Number | Voltage | Resistance | Pull-in Torque | Pull-in Frequency | Pull-out Frequency | Detent Torque | Step Angle | Gear Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | V | Ω | mN.m at 100pps | pps | pps | mN.m | ° | |
| PMG35N26 | PMG35N26-05 | 2 | 5 | 15 | ≥198 | ≥600 | ≥700 | ≥88.2 | 7.5°/85 | 85:1 |
| | PMG35N26-20 | 2 | 5 | 20 | ≥58.8 | ≥600 | ≥700 | ≥49 | 7.5°/30 | 30:1 |
| | PMG35N26-12 | 2 | 12 | 70 | ≥68.8 | ≥600 | ≥700 | ≥49 | 7.5°/42 | 42:1 |
| PMG35N46 | PMG35N46-12 | 4 | 12 | 90 | ≥98 | ≥350 | ≥600 | ≥49 | 7.5°/43.75 | 43.75:1 |
| | PMG35N46-13 | 4 | 12 | 130 | ≥117.6 | ≥350 | ≥600 | ≥88.2 | 7.5°/85 | 85:1 |
| | PMG35N46-30 | 4 | 24 | 300 | ≥127.4 | ≥350 | ≥600 | ≥88.2 | 7.5°/85 | 85:1 |
| PMG35N212 | PMG35N212-12 | 2 | 12 | 12 | ≥220 | ≥400 | ≥500 | ≥147 | 3.75°/22.3 | 22.3:1 |
| | PMG35N212-40 | 2 | 12 | 40 | ≥300 | ≥400 | ≥500 | ≥147 | 3.75°/42.5 | 42.5:1 |
| PMG35N412 | PMG35N412-70 | 4 | 12 | 70 | ≥300 | ≥400 | ≥500 | ≥147 | 3.75°/42.5 | 42.5:1 |
| | PMG35N412-20 | 4 | 5 | 20 | ≥296 | ≥400 | ≥500 | ≥147 | 3.75°/42.5 | 42.5:1 |
| | PMG35N412-200 | 4 | 12 | 200 | ≥200 | ≥400 | ≥500 | ≥147 | 3.75°/42.5 | 42.5:1 |
| | PMG35N412-400 | 4 | 24 | 400 | ≥300 | ≥400 | ≥500 | ≥147 | 3.75°/42.5 | 42.5:1 |
| | PMG35N412-600 | 4 | 24 | 600 | ≥150 | ≥400 | ≥500 | ≥47 | 3.75°/42.5 | 42.5:1 |
| | PMG35N412-70B | 4 | 12 | 130 | ≥600 | ≥400 | ≥500 | ≥300 | 3.75°/80 | 80:1 |
| | PMG35N412-280 | 4 | 24 | 300 | ≥600 | ≥400 | ≥500 | ≥300 | 3.75°/80 | 80:1 |

## TYPICAL OUTLINE

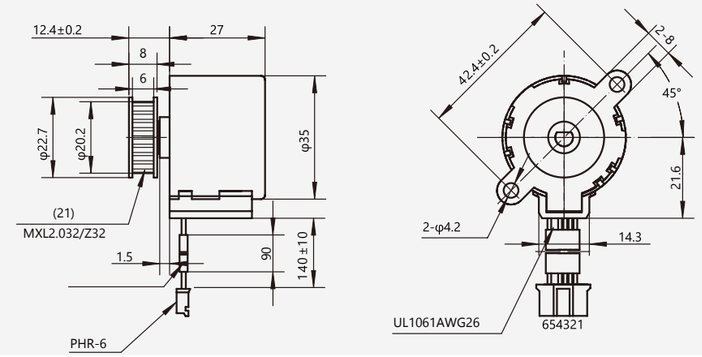
### Fig 1



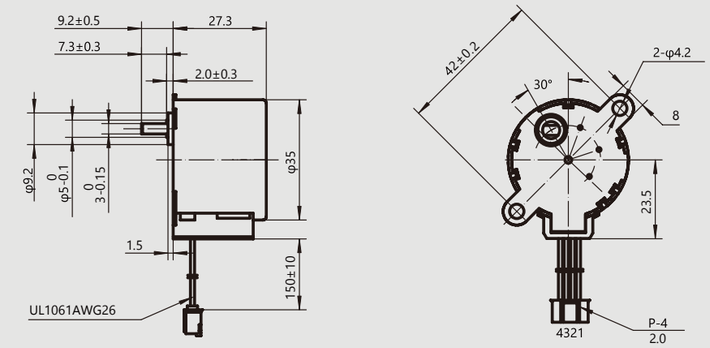

### Fig 2




### Fig 3




### Fig 4



# Ø8mm Gearbox Type PMG08P Series

Step Angle Accuracy: ±8%
Resistance Accuracy: ±10%
Inductance Accuracy: ±20%
Ambient Temperature: -10℃~50℃
Insulation Resistance: 100MΩ Min.(at 500VDC)
Dielectric Strength: RMS for 2 Sec(at 650±50VAC)
Insulation Class: Class E

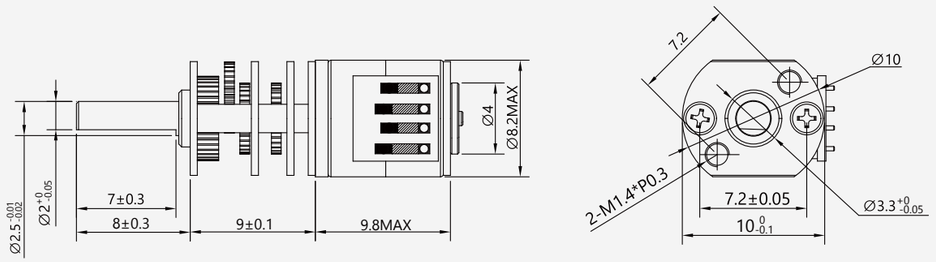
Small Size | Low Speed | High Torque

## SPECIFICATIONS

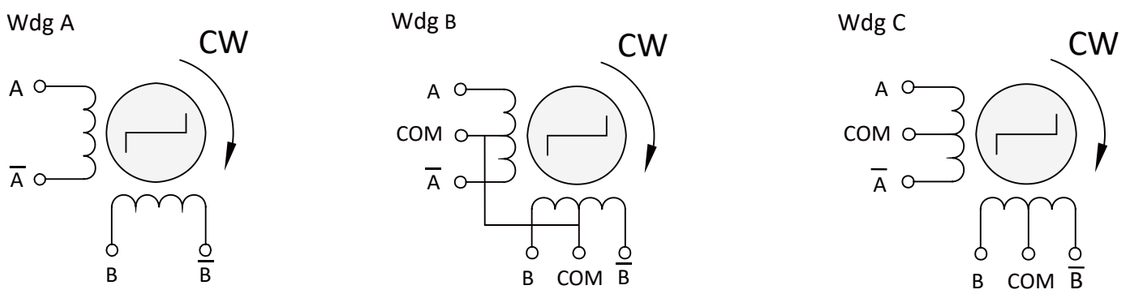
| Series | Model Number | Step Angle | No. of Phase | Voltage | Current | Resistance | Gear Ratio | Pull-in Rate | Pull-in Torque | Holding Torque | Drawing | Wiring Diagram |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | | pps | g.cm/pps | g.cm | Fig | Wdg |
| PMG08P20 | PMG08P20-01 | 18 | 2 | 3.3 | 0.2 | 16.3 | 20:1 | 600 | 60/200 | 300 | 1 | A |
| PMG08P50 | PMG08P50-01 | 18 | 2 | 3.0 | 0.3 | 10 | 50:1 | 400 | 150/200 | 250 | 1 | A |

## TYPICAL OUTLINE

### Fig 1



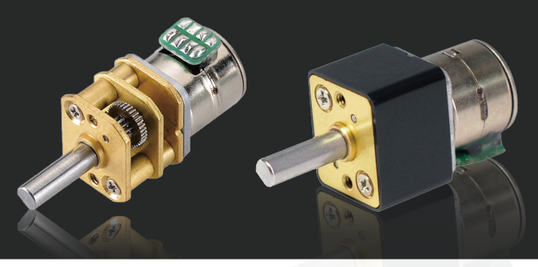

## WIRING DIAGRAM






# Ø10mm Gearbox Type PMG10P Series

Step Angle Accuracy: ±8%
Resistance Accuracy: ±10%
Inductance Accuracy: ±20%
Ambient Temperature: -10℃~50℃
Insulation Resistance: 100MΩ Min.(at 500VDC)
Dielectric Strength: RMS for 2 Sec(at 650±50VAC)
Insulation Class: Class E



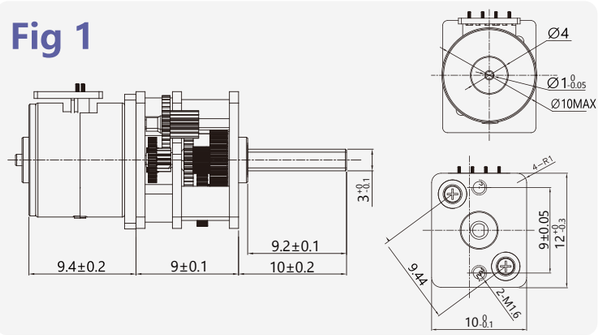
Small Size | Low Speed | High Torque

## SPECIFICATIONS

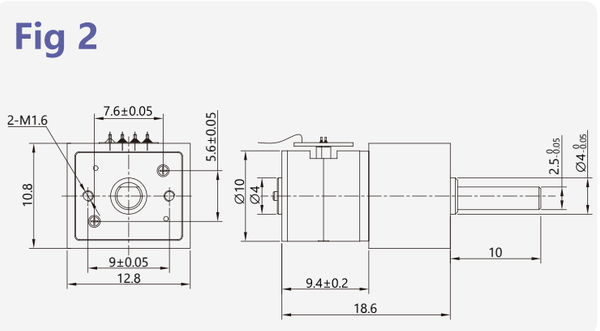
| Series | Model Number | Step Angle | No. of Phase | Voltage | Current | Resistance | Gear Ratio | Pull-in Rate | Pull-in Torque | Holding Torque | Drawing | Wiring Diagram |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | | pps | g.cm/pps | g.cm | Fig | Wdg |
| PMG10P20 | PMG10P20-01 | 18 | 2 | 5.0 | 0.5 | 10 | 20:1 | 600 | 80/200 | 200 | 1 | A |
| PMG10P50 | PMG10P50-01 | 18 | 2 | 5.0 | 0.25 | 20 | 50:1 | 400 | 200/200 | 500 | 2 | A |

## TYPICAL OUTLINE

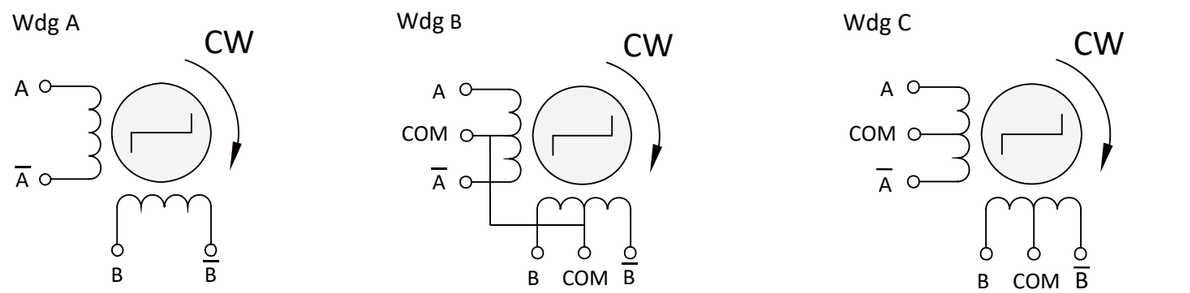
### Fig 1




### Fig 2




## WIRING DIAGRAM



# Ø15mm Gearbox Type PMG15P Series

Step Angle Accuracy: ±8%

Resistance Accuracy: ±10%

Inductance Accuracy: ±20%

Ambient Temperature: -10℃~50℃

Insulation Resistance: 100MΩ Min.(at 500VDC)

Dielectric Strength: RMS for 2 Sec(at 650±50VAC)

Insulation Class: Class E

Small Size

Low Speed

High Torque

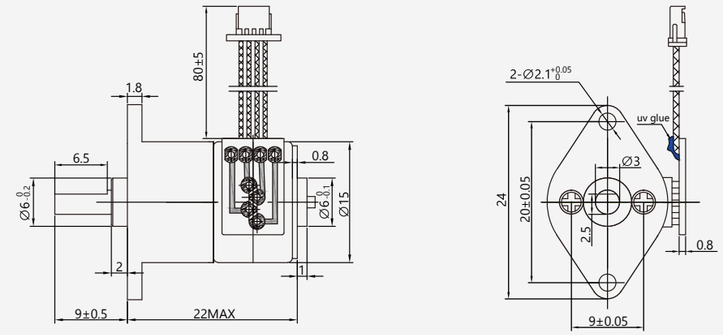
## SPECIFICATIONS

| Series | Model Number | Step Angle | No. of Phase | Voltage | Current | Resistance | Gear Ratio | Pull-in Rate | Pull-in Torque | Holding Torque | Drawing | Wiring Diagram |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | | pps | g.cm/pps | g.cm | Fig | Wdg |
| PMG15P10 | PMG15P10-02 | 18 | 2 | 5 | 0.53 | 9.5 | 10:1 | 900 | 80/200 | 300 | 1 | A |
| PMG15P50 | PMG15P50-05 | 18 | 2 | 5 | 0.5 | 10 | 50:1 | 1280 | 280/200 | 1350 | 2 | A |
| | PMG15P50-28 | 18 | 2 | 3 | 0.33 | 9 | 50:1 | 800 | 300/350 | 800 | 3 | A |
| | PMG15P50-31 | 18 | 2 | 5 | 0.83 | 6 | 50:1 | 1100 | 550/350 | 850 | 1 | A |
| PMG15P100 | PMG15P100-05 | 18 | 2 | 3 | 0.5 | 6 | 100:1 | 900 | 700/100 | 1250 | 1 | A |
| PMG15P102.5 | PMG15P102.5-05 | 18 | 2 | 5 | 0.5 | 10 | 102.5:1 | 1000 | 350/200 | 2000 | 2 | A |

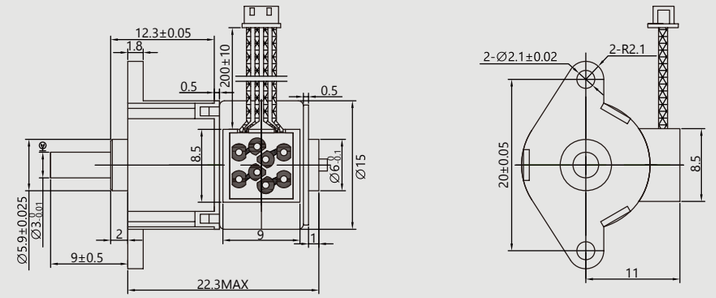


## TYPICAL OUTLINE

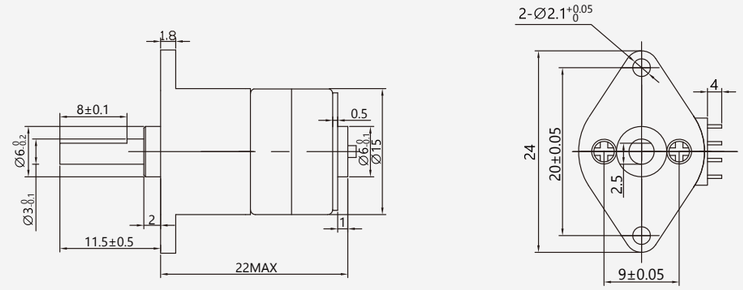
### Fig 1




### Fig 2

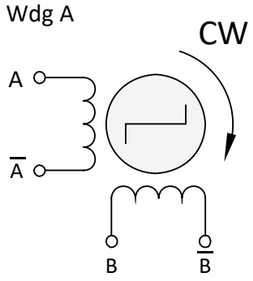



### Fig 3

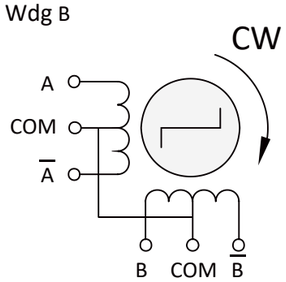



## WIRING DIAGRAM

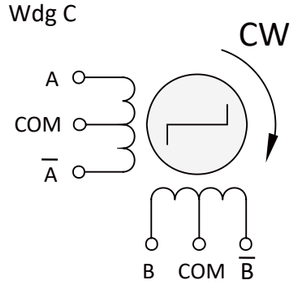
Wdg A




Wdg B




Wdg C



# Ø25mm Gearbox Type PMG25P Series

Step Angle Accuracy: ±8%

Resistance Accuracy: ±10%

Inductance Accuracy: ±20%

Ambient Temperature: -10℃~50℃

Insulation Resistance: 100MΩ Min.(at 500VDC)

Dielectric Strength: RMS for 2 Sec(at 650±50VAC)

Insulation Class: Class E

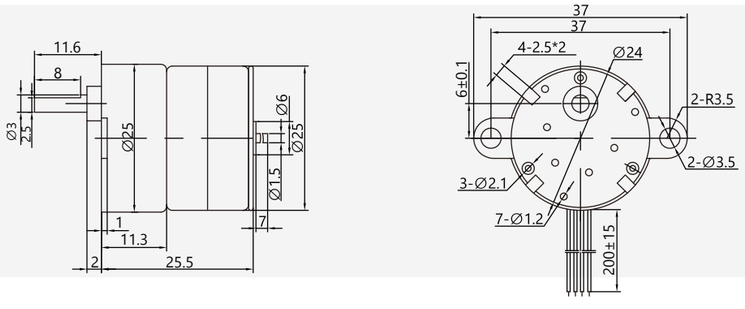
Small Size | Low Speed | High Torque

## SPECIFICATIONS

| Series | Model Number | Step Angle | No. of Phase | Voltage | Current | Resistance | Gear Ratio | Pull-in Rate | Pull-in Torque | Holding Torque | Drawing | Wiring Diagram |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | | pps | g.cm/pps | g.cm | Fig | Wdg |
| PMG25P05 | PMG25P05-02 | 7.5 | 2 | 3.5 | 0.36 | 9.6 | 5:1 | 420 | 100/200 | 500 | 1 | A |
| PMG25P10 | PMG25P10-01 | 7.5 | 4 | 5 | 0.5 | 10 | 10:1 | 720 | 400/100 | 1100 | 2 | C |
| PMG25P15 | PMG25P15-01 | 7.5 | 4 | 12 | 0.1 | 120 | 15:1 | 500 | 280/200 | 1000 | 1 | B |
| PMG25P20 | PMG25P20-01 | 15 | 4 | 12 | 0.08 | 150 | 20:1 | 600 | 500/100 | 1000 | 1 | C |
| | PMG25P20-37 | 7.5 | 2 | 5 | 0.5 | 10 | 20:1 | 650 | 900/100 | 2500 | 2 | A |
| PMG25P30 | PMG25P30-01 | 7.5 | 4 | 4 | 0.11 | 120 | 30:1 | 680 | 750/300 | 4000 | 1 | C |
| | PMG25P30-05 | 7.5 | 4 | 5 | 0.26 | 19.6 | 30:1 | 530 | 500/100 | 2000 | 3 | B |
| PMG25P49 | PMG25P49-02 | 7.5 | 2 | 12 | 0.3 | 20 | 47.32:1 | 900 | 2000/500 | 8000 | 4 | A |
| | PMG25P49-11 | 7.5 | 2 | 12 | 0.3 | 20 | 47.32:1 | 900 | 2000/500 | 8000 | 5 | A |
| PMG25P60 | PMG25P60-06 | 7.5 | 2 | 12 | 0.12 | 100 | 60:1 | 650 | 2200/200 | 5000 | 6 | A |
| PMG25P75 | PMG25P75-01 | 7.5 | 4 | 12 | 0.083 | 145 | 75:1 | 690 | 1100/410 | 7500 | 1 | C |
| PMG25P76 | PMG25P76-01 | 15 | 4 | 5 | 0.25 | 20 | 76:1 | 430 | 720/200 | 5000 | 7 | C |
| PMG25P100 | PMG25P100-15 | 7.5 | 2 | 12 | 0.1 | 12.7 | 100:1 | 560 | 1200/200 | 3000 | 2 | A |

## TYPICAL OUTLINE

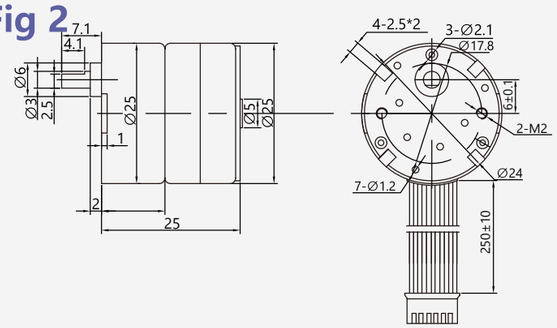
### Fig 1



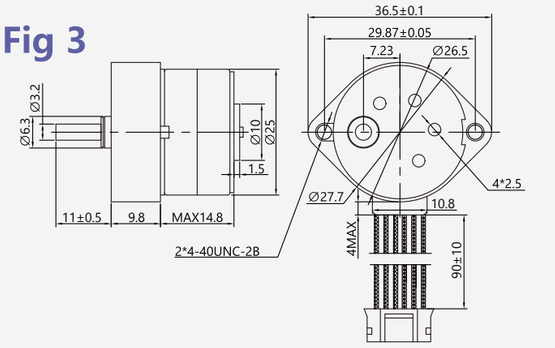



## TYPICAL OUTLINE

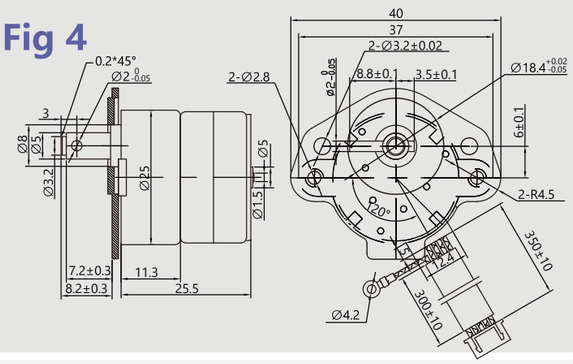
### Fig 2



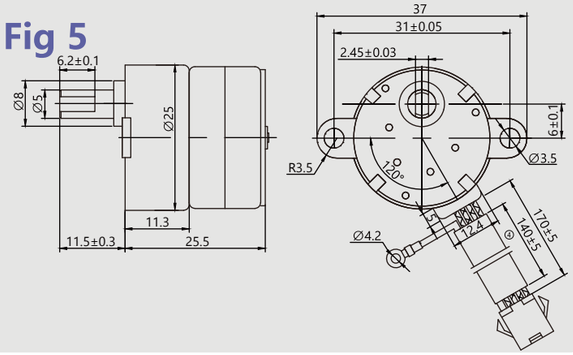

### Fig 3



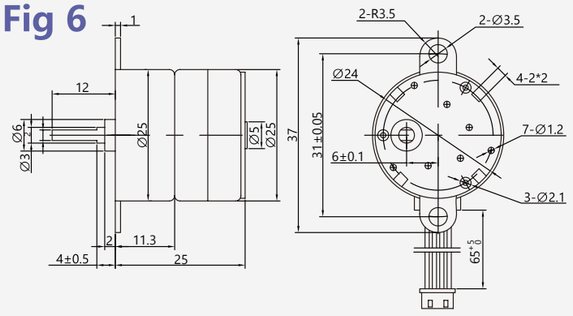

### Fig 4



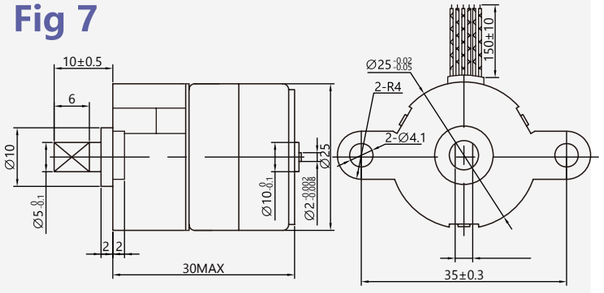

### Fig 5




### Fig 6

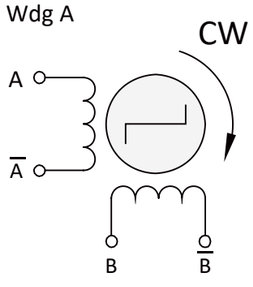



### Fig 7

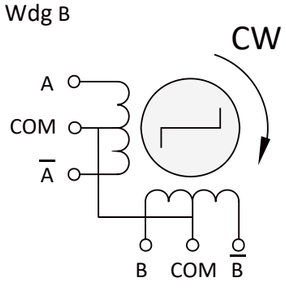



## WIRING DIAGRAM

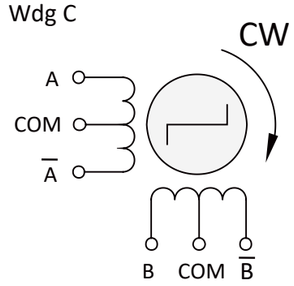
Wdg A




Wdg B




Wdg C



# Ø35mm Gearbox Type PMG35P Series

Step Angle Accuracy: ±8%

Resistance Accuracy: ±10%

Inductance Accuracy: ±20%

Ambient Temperature: -10℃~50℃

Insulation Resistance: 100MΩ Min.(at 500VDC)

Dielectric Strength: RMS for 2 Sec(at 650±50VAC)

Insulation Class: Class E

Small Size | Low Speed | High Torque

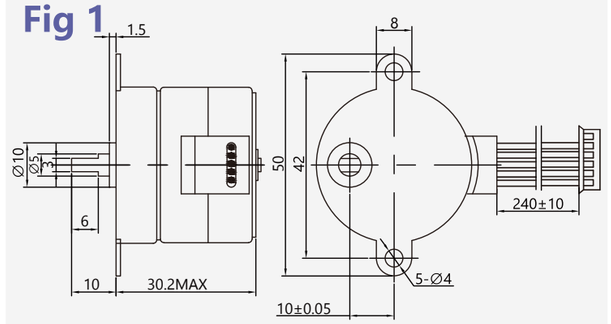
## SPECIFICATIONS

| Series | Model Number | Step Angle | No. of Phase | Voltage | Current | Resistance | Gear Ratio | Pull-in Rate | Pull-in Torque | Holding Torque | Drawing | Wiring Diagram |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | | pps | g.cm/pps | g.cm | Fig | Wdg |
| PMG35P02 | PMG35P02-04 | 7.5 | 4 | 12 | 0.4 | 30 | 2:1 | 270 | 270/200 | 1500 | 1 | B |
| PMG35P05 | PMG35P05-02 | 7.5 | 4 | 12 | 0.4 | 30 | 5:1 | 360 | 700/200 | 2500 | 1 | B |
| PMG35P06 | PMG35P06-03 | 7.5 | 4 | 12 | 0.4 | 30 | 6:1 | 360 | 800/200 | 3000 | 1 | B |
| PMG35P08 | PMG35P08-01 | 7.5 | 4 | 12 | 0.4 | 30 | 8.4:1 | 370 | 800/300 | 2000 | 1 | B |
| PMG35P10 | PMG35P10-01 | 7.5 | 2 | 12 | 0.27 | 45 | 10.8:1 | 320 | 1200/100 | 2300 | 2 | A |
| PMG35P19 | PMG35P19-01 | 7.5 | 4 | 12 | 0.4 | 30 | 19:1 | 360 | 2500/200 | 10000 | 1 | B |
| PMG35P30 | PMG35P30-01 | 7.5 | 4 | 12 | 0.4 | 30 | 30:1 | 360 | 2500/300 | 12000 | 1 | B |
| PMG35P50 | PMG35P50-02 | 15 | 2 | 12 | 0.133 | 90 | 50:1 | 300 | 1700/100 | 10000 | 3 | A |
| PMG35P60 | PMG35P60-01 | 7.5 | 4 | 12 | 0.4 | 30 | 60:1 | 370 | 3000/300 | 10000 | 1 | B |
| | PMG35P60-20 | 7.5 | 2 | 12 | 0.4 | 30 | 60:1 | 420 | 5000/500 | 8000 | 4 | A |
| PMG35P75 | PMG35P75-03 | 7.5 | 4 | 24 | 0.5 | 48 | 75:1 | 410 | 4000/400 | 7000 | 2 | C |
| PMG35P100 | PMG35P100-01 | 15 | 2 | 6 | 0.32 | 18.5 | 100:1 | 310 | 5000/100 | 10000 | 5 | A |
| PMG35P120 | PMG35P120-01 | 7.5 | 4 | 12 | 0.4 | 30 | 120:1 | 370 | 8000/300 | 10000 | 1 | B |
| PMG35P266 | PMG35P266-01 | 7.5 | 4 | 12 | 0.4 | 30 | 266:1 | 280 | 10000/200 | 12000 | 6 | B |

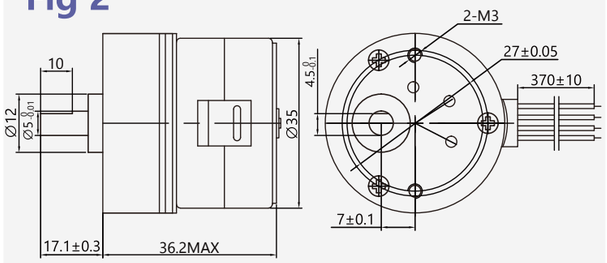


## TYPICAL OUTLINE

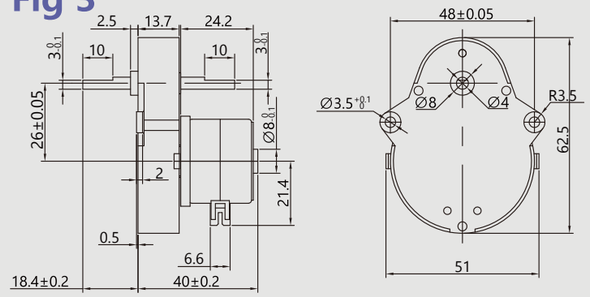
### Fig 1



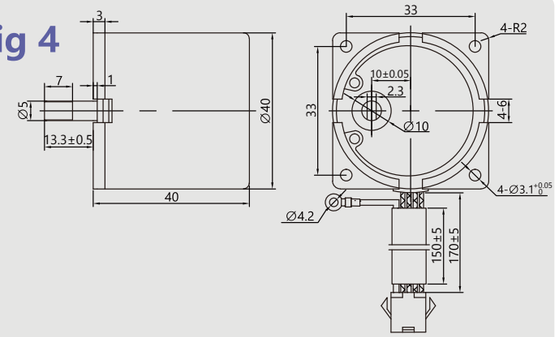

### Fig 2



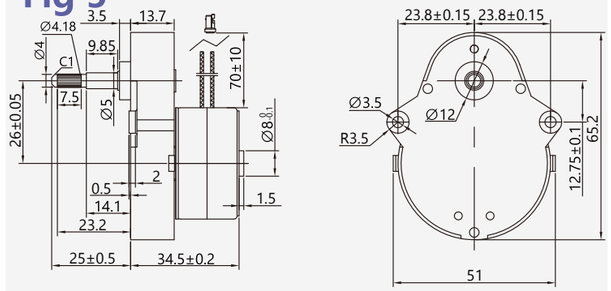

### Fig 3



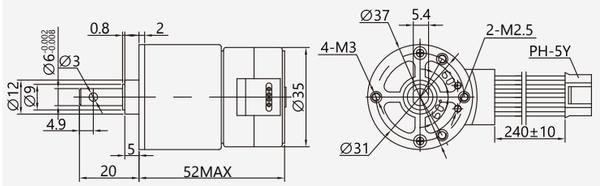

### Fig 4




### Fig 5

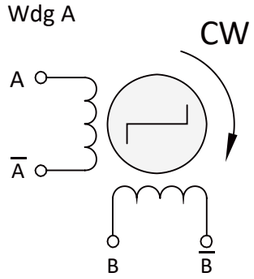



### Fig 6

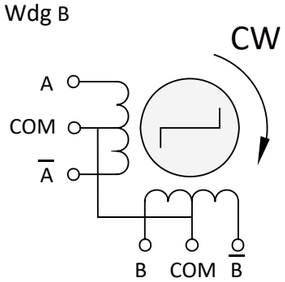



## WIRING DIAGRAM

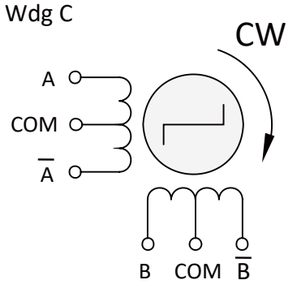
Wdg A




Wdg B




Wdg C



# Ø42mm Gearbox Type PMG42P Series

Step Angle Accuracy: ±8%

Resistance Accuracy: ±10%

Inductance Accuracy: ±20%

Ambient Temperature: -10℃~50℃

Insulation Resistance: 100MΩ Min.(at 500VDC)

Dielectric Strength: RMS for 2 Sec(at 650±50VAC)

Insulation Class: Class E

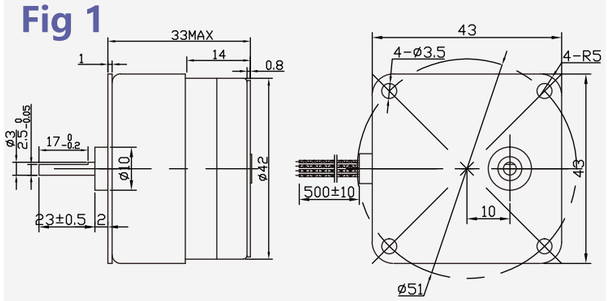
Small Size | Low Speed | High Torque

## SPECIFICATIONS

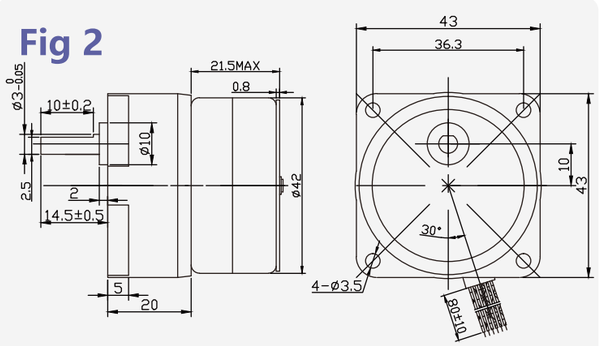
| Series | Model Number | Step Angle | No. of Phase | Voltage | Current | Resistance | Gear Ratio | Pull-in Rate | Pull-in Torque | Holding Torque | Drawing | Wiring Diagram |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | | pps | g.cm/pps | g.cm | Fig | Wdg |
| PMG42P03 | PMG42P03-01 | 7.5 | 2 | 12 | 0.22 | 54 | 3:1 | 270 | 800/200 | 2000 | 1 | A |
| PMG42P05 | PMG42P05-01 | 7.5 | 4 | 12 | 0.5 | 10.7 | 5:1 | 450 | 1300/100 | 5000 | 2 | C |
| PMG42P07 | PMG42P07-01 | 7.5 | 2 | 12 | 0.22 | 54 | 7:1 | 300 | 1000/200 | 3000 | 1 | A |
| PMG42P10 | PMG42P10-6A | 7.5 | 2 | 24 | 0.133 | 180 | 10:1 | 260 | 1600/100 | 7000 | 3 | A |
| PMG42P15 | PMG42P15-01 | 7.5 | 4 | 12 | 0.18 | 66 | 15:1 | 270 | 1500/100 | 9000 | 2 | C |
| PMG42P20 | PMG42P20-01 | 15 | 4 | 12 | 0.18 | 66 | 20:1 | 240 | 1200/100 | 6000 | 4 | C |
| PMG42P24 | PMG42P24-01 | 7.5 | 4 | 12 | 0.44 | 27 | 24:1 | 380 | 1600/200 | 13000 | 5 | B |
| PMG42P25 | PMG42P25-06 | 7.5 | 4 | 24 | 0.08 | 300 | 25:1 | 260 | 1000/100 | 10000 | 6 | B |
| PMG42P30 | PMG42P30-01 | 15 | 4 | 12 | 0.18 | 66 | 30:1 | 240 | 1700/100 | 5000 | 7 | C |
| PMG42P50 | PMG42P50-19 | 7.5 | 2 | 5 | 0.56 | 9 | 50:1 | 230 | 6500/200 | 10000 | 8 | A |

## TYPICAL OUTLINE

### Fig 1

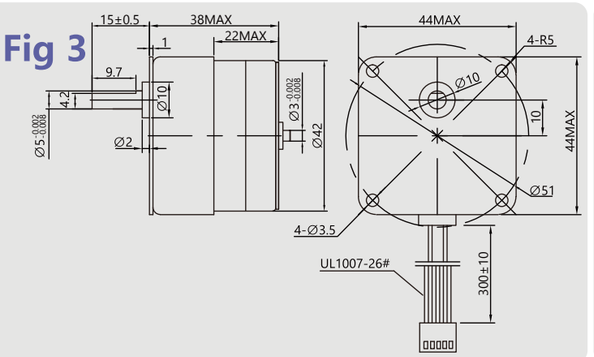



### Fig 2

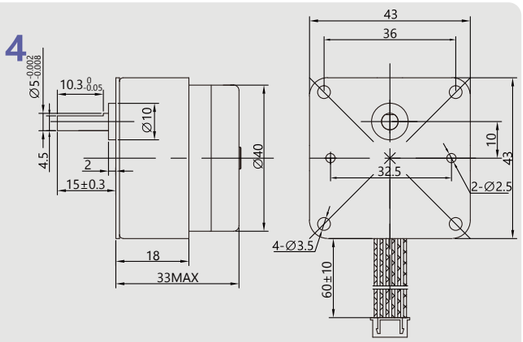




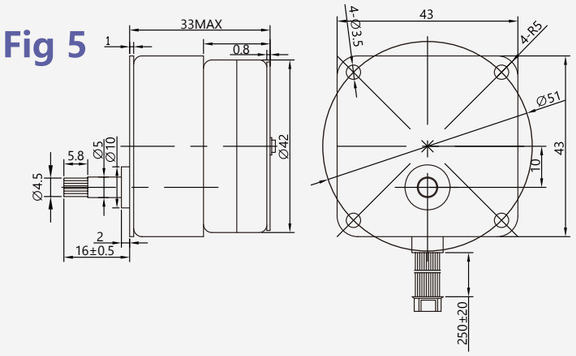

### Fig 3



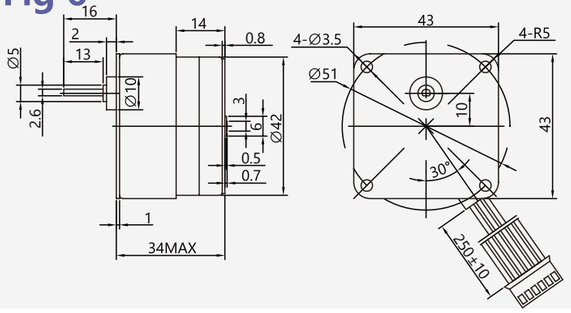

### Fig 4




### Fig 5




### Fig 6




### Fig 7

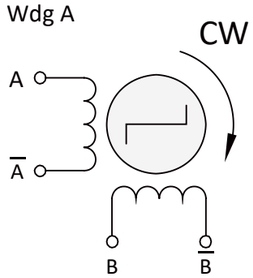



### Fig 8

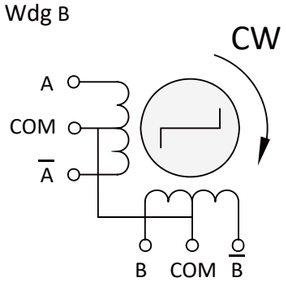



## WIRING DIAGRAM

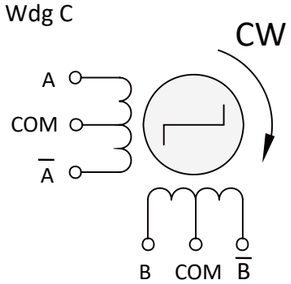
Wdg A




Wdg B




Wdg C



# PSM SERIES
# PM LINEAR SLIDER

## DESCRIPTION

PrimoPal's PSM series linear sliders can achieve ±0.05mm repeat positioning accuracy without encoder feedback, making them ideal for precision adjustment scenarios. These modules feature millisecond-level response speeds, and their permanent magnet rotors provide high holding torque, ensuring smooth low-speed motion. With advantages such as high cost-effectiveness, maintenance-free operation, and strong anti-interference capability, they often serve as the optimal solution for mid-to-low dynamic applications that do not require closed-loop feedback.

## APPLICATION

PrimoPal's PSM series linear sliders are widely used in cameras, smart home devices, printers, medical beauty equipment, massage and healthcare devices, industrial automation systems, and more.

## PART NUMBER NAMING RULE

PSM □□ □ □□ – □□ □□□

- **PSM** — **PrimoPal PM Linear Slider**
- □□ — **Base Frame** (O.D. in mm)
- □ — **Motor Length** L: Long Type S: Short Type
- □□ — **NO. of Steps per Revolution** 20: Step Angle 18° 24: Step Angle 15° 48: Step Angle 7.5°
- □□ — **Electric Variation** Variety of voltage, current, etc
- □□□ — **Linear Module Variafion** Variety of Stroke, Pitch Slider, etc

## STANDARD VERSIONS

**PSM08 Series**
Frame Size: Ø8mm
Step Angle: 18°
Page: 62

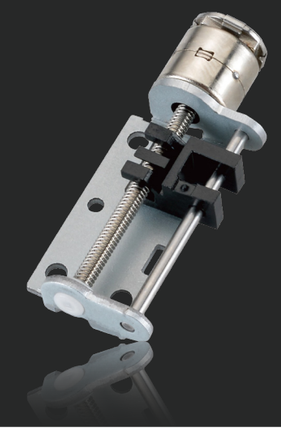
**PSM10 Series**
Frame Size: Ø10mm
Step Angle: 18°
Page: 63

**PSM15 Series**
Frame Size: Ø15mm
Step Angle: 18°
Page: 64

**PSM20 Series**
Frame Size: Ø20mm
Step Angle: 18°
Page: 65



# Ø8mm 18°
# PSM08 Series



## SPECIFICATIONS

| Series | Model Number | Step Angle | No.of Phase | Voltage | Current | Resistance | Pull-in Rate | Pull-in Torque | Holding Torque | Detent Torque |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | pps | g.cm/pps | g.cm | g.cm |
| PSM08L20 | PSM08L20-01 | 18 | 2 | 3.3 | 0.2 | 16.3 | 800 | 2/200 | 10.0 | 5.0 |
| | PSM08L20-02 | 18 | 2 | 3.0 | 0.3 | 10 | 800 | 4/200 | 10.0 | 5.0 |
| | PSM08L20-03 | 18 | 2 | 5.0 | 0.17 | 30 | 800 | 4.5/200 | 10.0 | 5.0 |

## TYPICAL OUTLINE

**Fig 1**

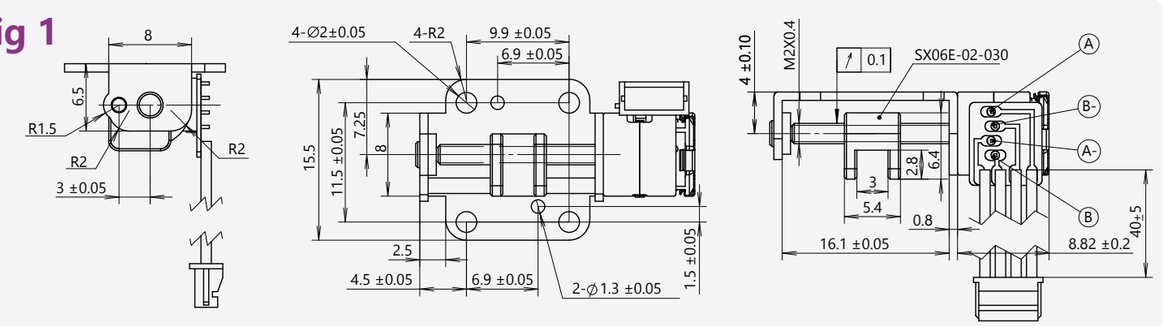
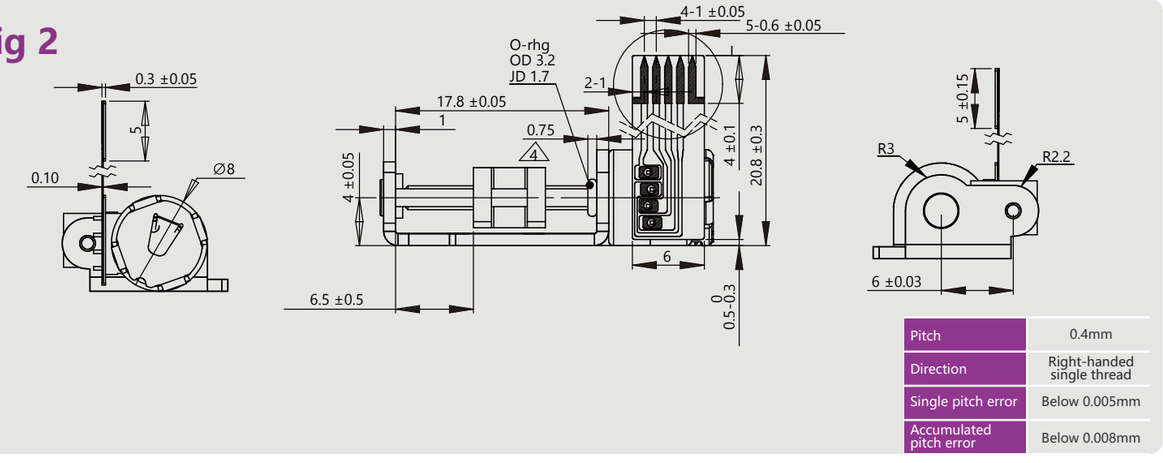
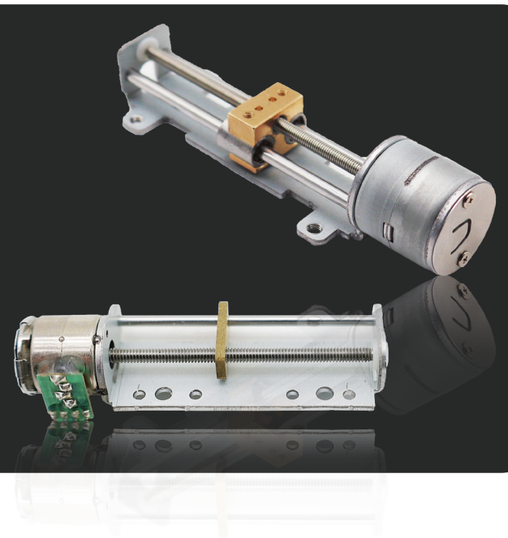



**Fig 2**




| | |
|---|---|
| Pitch | 0.4mm |
| Direction | Right-handed single thread |
| Single pitch error | Below 0.005mm |
| Accumulated pitch error | Below 0.008mm |

# Ø10mm 18°
# PSM10 Series



## SPECIFICATIONS

| Series | Model Number | Step Angle | No.of Phase | Voltage | Current | Resistance | Pull-in Rate | Pull-in Torque | Holding Torque | Detent Torque |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | pps | g.cm/pps | g.cm | g.cm |
| PSM10L20 | PSM10L20-01 | 18 | 2 | 3.3 | 0.22 | 15 | 800 | 6/500 | 16.3 | 10 |
| | PSM10L20-04 | 18 | 2 | 3.3 | 0.22 | 15 | 800 | 6/500 | 16.3 | 10 |
| | PSM10L20-05 | 18 | 2 | 12 | 0.2 | 26 | 800 | 12/500 | 20 | 10 |

## TYPICAL OUTLINE

Fig 1

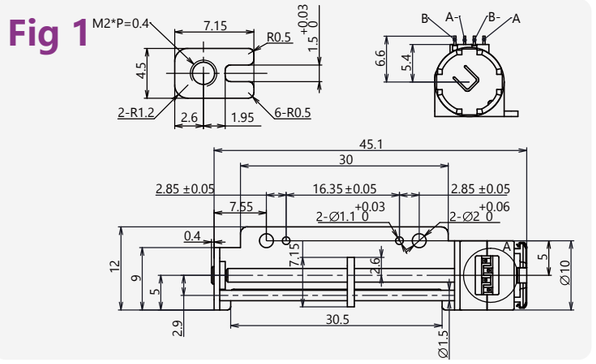



Fig 2

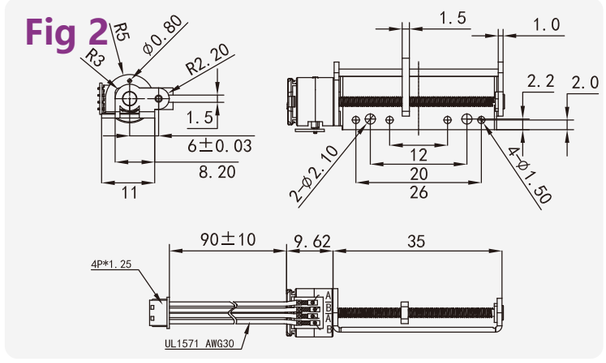
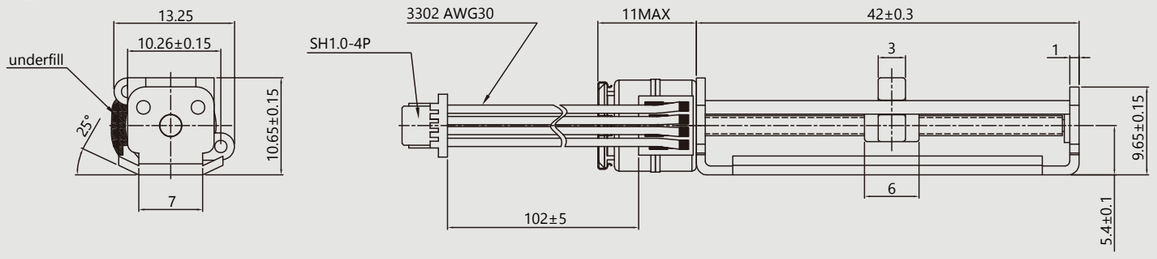
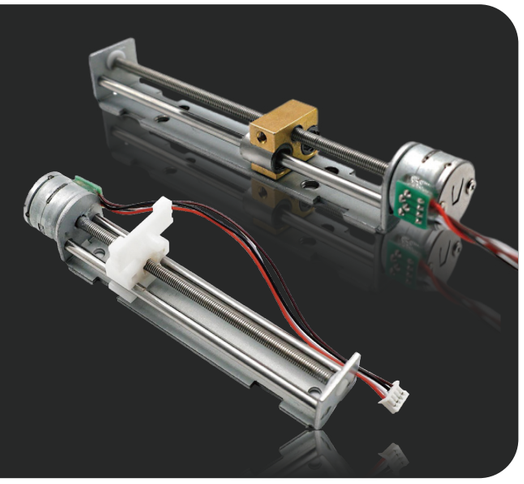



Fig 3






# Ø15mm 18°
# PSM15 Series



## SPECIFICATIONS

| Series | Model Number | Step Angle | No.of Phase | Voltage | Current | Resistance | Pull-in Rate | Pull-in Torque | Holding Torque | Detent Torque |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | pps | g.cm/pps | g.cm | g.cm |
| PSM15L20 | PSM15L20-01 | 18 | 2 | 5 | 0.5 | 10 | 1400 | 14/500 | 27 | 10 |
| | PSM15L20-08 | 18 | 2 | 7.2 | 0.15 | 50 | 1100 | 6/600 | 25 | 10 |
| | PSM15L20-17 | 18 | 2 | 5 | 0.33 | 15 | 950 | 8.5/100 | 25 | 5 |
| | PSM15L20-18 | 18 | 2 | 12 | 0.04 | 300 | 1200 | 3/1000 | 40 | 10 |
| | PSM15L20-19 | 18 | 2 | 12 | 0.065 | 190 | 900 | 5/500 | 40 | 16 |
| | PSM15L20-91 | 18 | 2 | 5 | 0.33 | 15 | 950 | 8.5/100 | 25 | 10 |

## TYPICAL OUTLINE

Fig 1

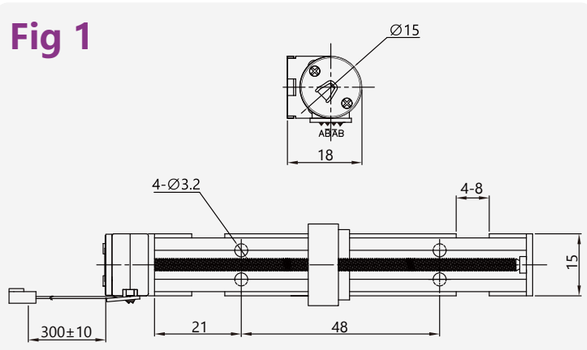



Fig 2

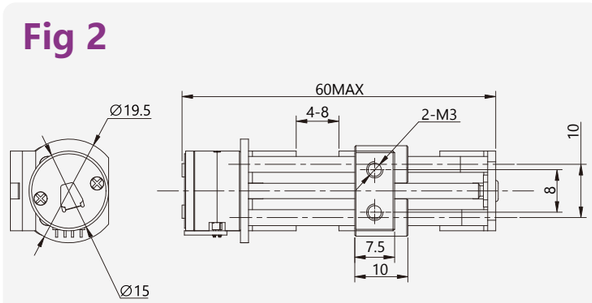
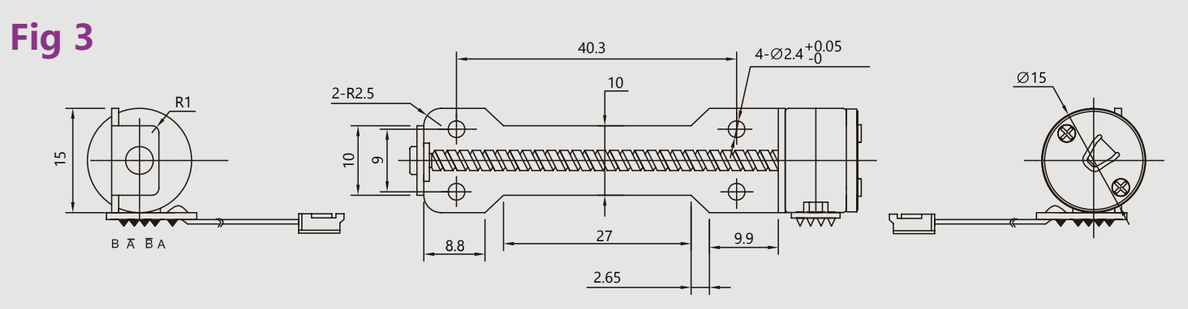



Fig 3



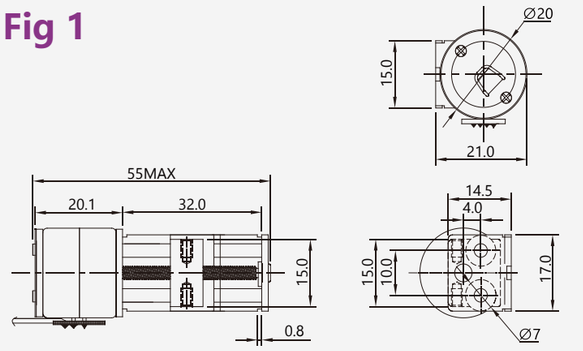
# Ø20mm 18°
# PSM20 Series

## SPECIFICATIONS

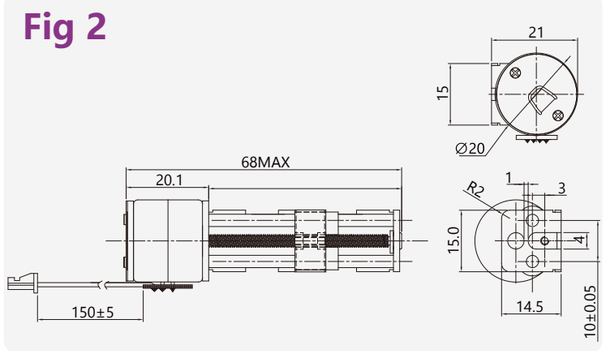
| Series | Model Number | Step Angle | No.of Phase | Voltage | Current | Resistance | Pull-in Rate | Pull-in Torque | Holding Torque | Detent Torque |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | pps | g.cm/pps | g.cm | g.cm |
| PSM20L20 | PSM20L20-01 | 18 | 2 | 5 | 0.5 | 10 | 600 | 10/200 | 60 | 20 |
| | PSM20L20-02 | 18 | 2 | 5 | 0.39 | 13 | 500 | 5/200 | 40 | 20 |
| | PSM20L20-1B | 18 | 2 | 12 | 0.08 | 280 | 800 | 13/100 | 90 | 20 |
| | PSM20L20-14 | 18 | 4 | 12 | 0.4 | 30 | 850 | 25/100 | 55 | 20 |

## TYPICAL OUTLINE

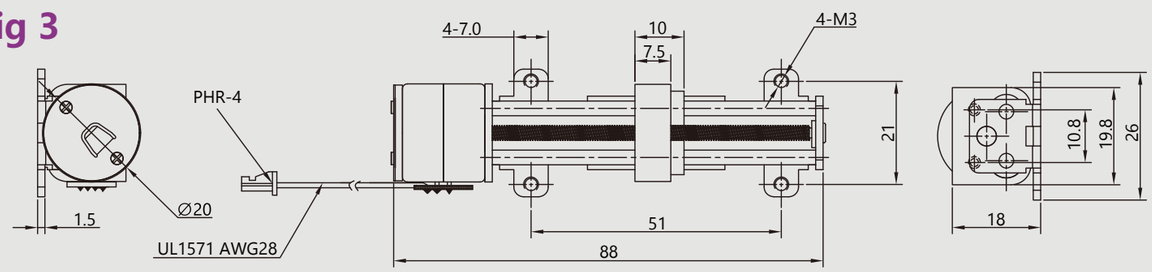
### Fig 1




### Fig 2




### Fig 3



# PDS SERIES
# IDLE SPEED MOTOR

## DESCRIPTION

When the engine is in an idle state (such as when parked, in neutral, or waiting at a traffic light), the throttle valve is nearly closed, resulting in minimal air intake. The idle speed motor adjusts the opening of the bypass air passage to provide additional air, ensuring the engine receives sufficient airflow to maintain a stable idle speed and prevent stalling. This type of motor offers high stability, precision, and long service life, guaranteeing smooth engine operation under various conditions while optimizing fuel efficiency and emission control.

## APPLICATION

PrimoPal's PDS Series idle speed motors are widely used in throttle valve body control for various automotive applications.

## PART NUMBER NAMING RULE

**PDS** □□ □ □□ – □□ □□

**PDS**
**PrimoPal Idle Speed Motor**

**Base Frame**
(O.D. in mm)

**Step Angle**
T: 15°
S: 7.5°
F: 18°

**NO. of Steps per Revolution**
20: Step Angle 18°
24: Step Angle 15°
48: Step Angle 7.5°

**Electric Variation**
Variety of voltage, current, etc

**Mechanical Variation**
Variety of shaft, lead wire, etc

## STANDARD VERSIONS

**PDS15 Series**
Step Angle: 18°
Page: 68

**PDS25 Series**
Step Angle: 15°
Page: 69

**PDS35 Series**
Step Angle: 15°
Page: 70-71



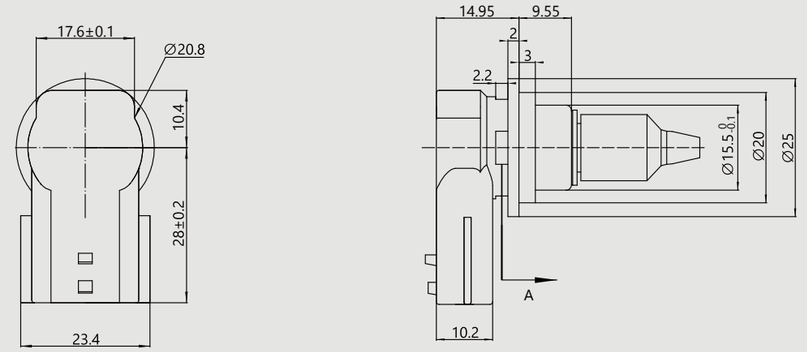
## PDS15 Series

## SPECIFICATIONS

| Series | Model Number | Step Angle | No. of Phase | Voltage | Current | Resistance | Travel Length per Step | Stroke | Thrust | Drawing |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | mm | mm | N | Fig |
| PDS15F20 | PDS15F20-01 | 18 | 2 | 12 | 0.13 | 93 | 0.03 | ≥6 | 8 at 200pps | 1 |

## TYPICAL DIMENSION

**Fig 1**



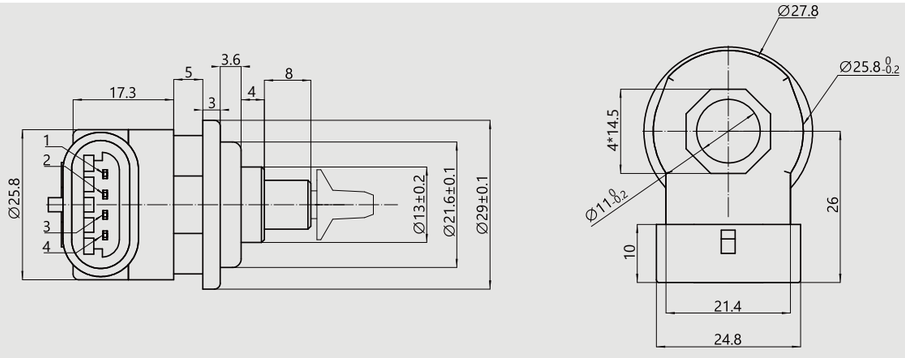
# PDS25 Series

## SPECIFICATIONS

| Series | Model Number | Step Angle | No. of Phase | Voltage | Current | Resistance | Travel Length per Step | Stroke | Thrust | Drawing |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | mm | mm | N | Fig |
| PDS25T24 | PDS25T24-01 | 15 | 2 | 12 | 0.23 | 53 | 0.0417 | ≥10 | 20 at 200pps | 1 |

## TYPICAL DIMENSION

**Fig 1**





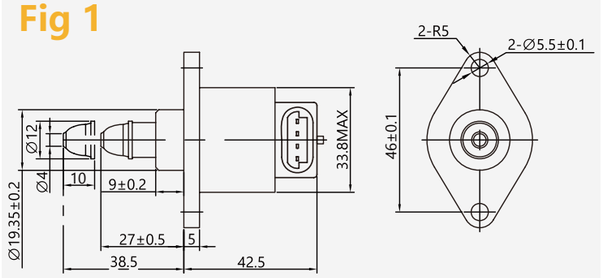

# PDS35 Series

## SPECIFICATIONS

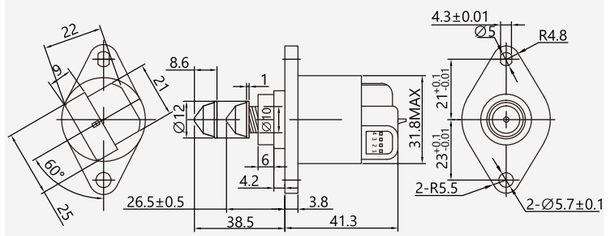
| Series | Model Number | Step Angle | No. of Phase | Voltage | Current | Resistance | Travel Length per Step | Stroke | Thrust | Drawing |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ° | | V | A | Ω | mm | mm | N | Fig |
| PDS35T24 | PDS35T24-1B | 15 | 2 | 12 | 0.23 | 53 | 0.0417 | ≥12 | 20 at 130pps | 1 |
| | PDS35T24-2F | 15 | 2 | 12 | 0.34 | 35 | 0.0417 | ≥12 | 35 at 130pps | 2 |
| | PDS35T24-03 | 15 | 2 | 12 | 0.35 | 8.3 | 0.036 | ≥10.8 | 25 at 250pps | 3 |
| | PDS35T24-3T | 15 | 2 | 12 | 0.23 | 53 | 0.0417 | ≥12 | 20 at 130pps | 4 |
| | PDS35T24-20 | 15 | 2 | 12 | 0.23 | 53 | 0.0417 | ≥12 | 20 at 130pps | 5 |
| | PDS35T24-43 | 15 | 2 | 12 | 0.24 | 50 | 0.0417 | ≥8.5 | 17 at 200pps | 6 |
| | PDS35T24-49 | 15 | 2 | 12 | 0.26 | 46 | 0.0417 | ≥12 | 28 at 130pps | 7 |

# TYPICAL DIMENSION

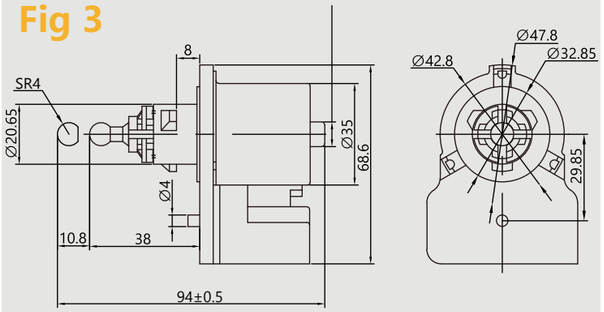
## Fig 1



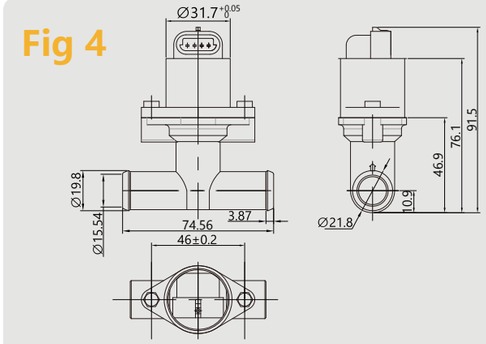

## Fig 2



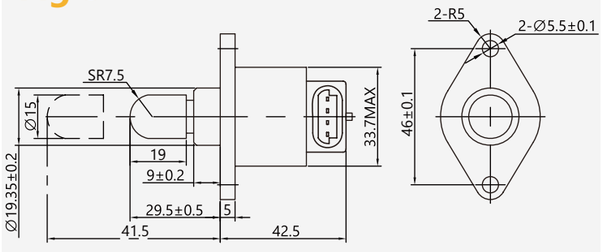

## Fig 3



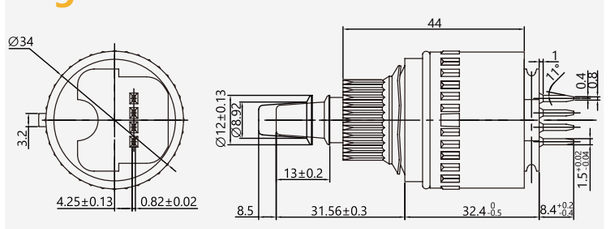

## Fig 4



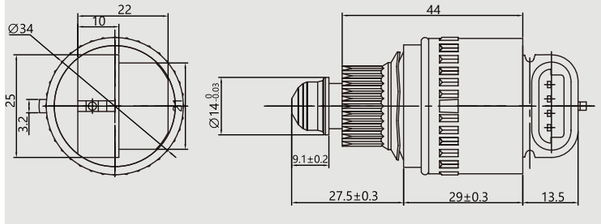

## Fig 5




## Fig 6




## Fig 7



# PAL SERIES
# AUTOMOTIVE HEADLIGHT MOTOR

## DESCRIPTION

PrimoPal's PAL Series automobile headlight motor is primarily used in automotive headlight dynamic adjustment systems. Its open-loop control characteristic enables precise angle adjustment without feedback. Additionally, it delivers millisecond-level dynamic response, meeting real-time road condition requirements. The permanent magnet design ensures reliability in harsh automotive environments. Compared to traditional DC motors, it is more energy-efficient and operates without brush noise.

## APPLICATION

PrimoPal's PAL Series automobile headlight motors are widely used in precise beam control of intelligent headlights (such as adaptive headlights, AFS, matrix LED headlights).

## PART NUMBER NAMING RULE

**PAL** – □□ – □ – □□ – □□ – □□

- **PAL** — **PrimoPal Automotive Headlight Motor**
- □□ — **Base Frame** (O.D. in mm)
- □ — **Step Angle**
  T: 15°
  S: 7.5°
  F: 18°
- □□ — **NO. of Steps per Revolution**
  20: Step Angle 18°
  24: Step Angle 15°
  48: Step Angle 7.5°
- □□ — **Electric Variation**
  Variety of voltage, current, etc
- □□ — **Mechanical Variation**
  Variety of shaft, lead wire, etc

## STANDARD VERSIONS

**PAL35 Series**
Step Angle: 15°
Page: 74

**PAL48 Series**
Step Angle: 15°
Page: 75

**PAL52 Series**
Step Angle: 15°
Page: 76



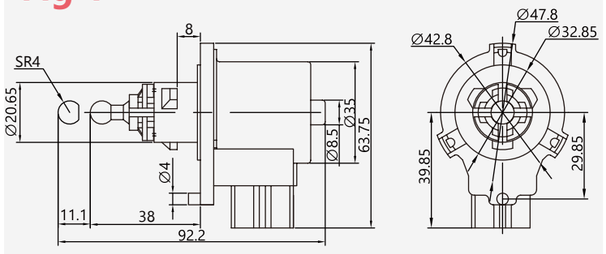
## PAL35 Series

## SPECIFICATIONS

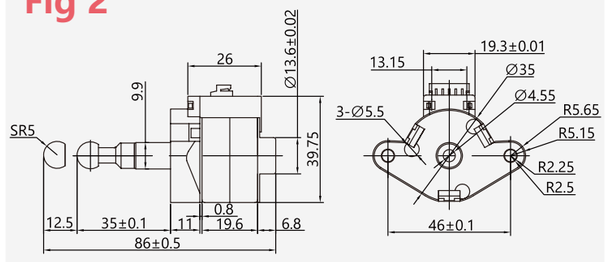
| Series | Model Number | No. of Phase | Voltage | Current | Resistance | Travel Length per Step | Electric Stroke | Manual Stroke | Thrust | Drawing |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | V | A | Ω | mm | mm | mm | N | Fig |
| PAL35T24 | PAL35T24-01 | 2 | 12 | 1.45 | 8.3 | 0.036 | ≥10.8 | | 25 at 250pps | 1 |
| | PAL35T24-02 | 2 | 4 | 0.5 | 8 | 0.033 | ≥12.5 | | 55 at 400pps | 2 |
| | PAL35T24-04 | 4 | 4 | 0.5 | 8 | 0.033 | ≥8 | | 28 at 200pps | 3 |

## TYPICAL DIMENSION

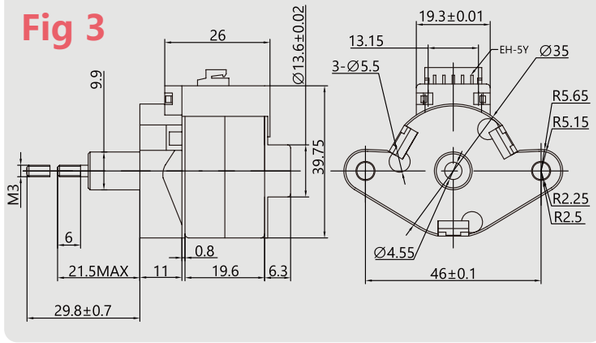
### Fig 1




### Fig 2




### Fig 3



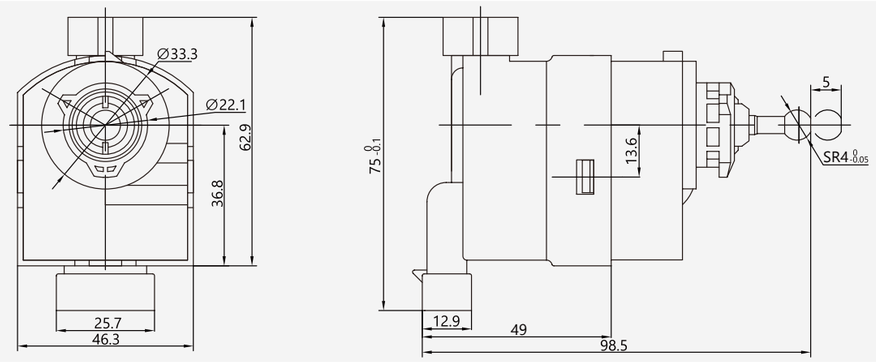
# PAL48 Series

## SPECIFICATIONS

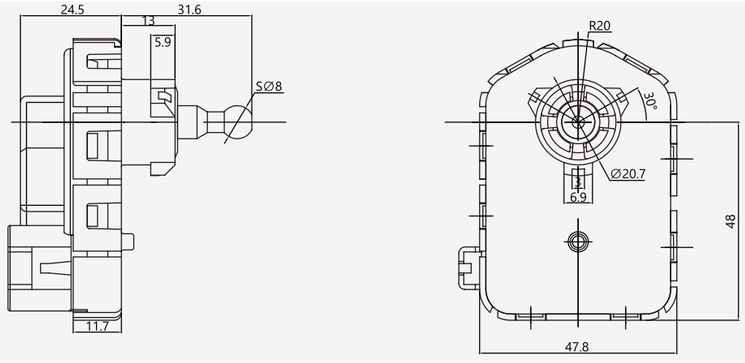
| Series | Model Number | No. of Phase | Voltage | Current | Electric Stroke | Manual Stroke | Thrust | Drawing |
|---|---|---|---|---|---|---|---|---|
| | | | V | A | mm | mm | N | Fig |
| PAL48T24 | PAL48T24-01 | 2 | 24 | < 140 | ≥5 | ≥5 | ≥60 | 1 |
| | PAL48T24-02 | 2 | 12 | < 120 | ≥2.46 | | ≥70 | 2 |

## TYPICAL DIMENSION

### Fig 1




### Fig 2






# PAL52 Series

## SPECIFICATIONS

| Series | Model Number | No. of Phase | Voltage | Current | Electric Stroke | Manual Stroke | Thrust | Drawing |
|---|---|---|---|---|---|---|---|---|
| | | | V | A | mm | mm | N | Fig |
| PAL52T24 | PAL52T24-01 | 2 | 12 | < 150 | ≥4.8 | ≥4.8 | ≥70 | 1 |

## TYPICAL DIMENSION

### Fig 1