# PM STEP MOTORS





## **PM STEP MOTORS**

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Product Overview

## **Product List**

#### Product Line Up

Series	Outer Diameter (mm)	Length (mm)	Step No.	Step Angle ( $^{\circ}$ )
8PM020S	8	8.5	20	18
10PM020S	10	8.5	20	18
15PM020S	15	11.4	20	18
15PM020D	15	20.1	20	18
20PM020S	20	14.3	20	18
20PM020L	20	19.3	20	18
25PM024S	25	12.5	24	15
25PM048S	25	12.5	48	7.5
25PM024L	25	17.0	24	15
25PM048L	25	17.0	48	7.5
28PN024L	28	15.0	24	15
35PM024S	35	15.3	24	15
35PM048S	35	15.3	48	7.5
35PM024L	35	21.3	24	15
35PM048L	35	21.3	48	7.5
42PM048S	42	15.3	48	7.5
42PM096S	42	15.3	96	3.75
42PM048L	42	21.3	48	7.5
42PM096L	42	21.3	96	3.75
Series	Outer Diameter (mm)	Shaft Stroke (mm)	Step No.	Step Travel (mm)
20LN024M	20	20	24	0.0254
20LN024L	20	12.5	24	0.0254
25LN024L	25	20	24	0.0508
25LN024S	25	13	24	0.0254
28LN024L	28	13	24	0.0420
35LN024L	35	36	24	0.0333
35LN024L	35	12	24	0.0333

Model Numbering System

	42	PM	048	L	1	-	003	(
	1							
Base frame code								
Outer diameter size: 42mm diameter = 42								
Motor type code								
PM: permanent magnet step motor		<u> </u>						
LN: permanent magnet linear step motor								
Step code								
020: 20 steps per rotation, 18° step angle								
024: 24 steps per rotation, 15° step angle								
048: 48 steps per rotation, 7.5° step angle								
096: 96 steps per rotation, 3.75° step angle								
Length code								
S: short version								
M: middle version								
L: long version								
Magnet grade code								
Resistance code								
Winding resistance: 30hm = 003								
Mechanical code								

Linear

## **MOONS**

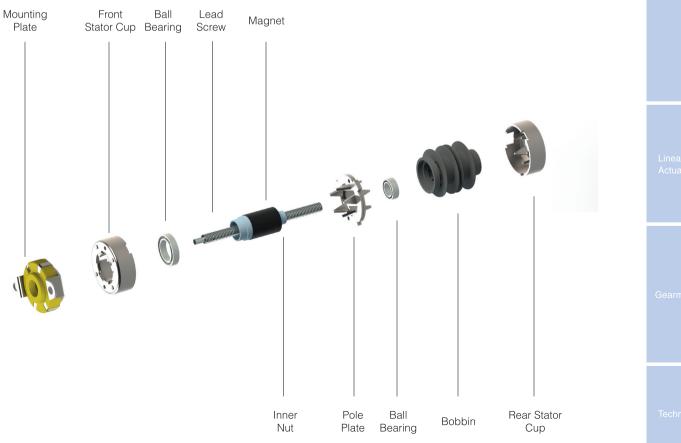
Product Overview

### **Rotary Motors**

Structure



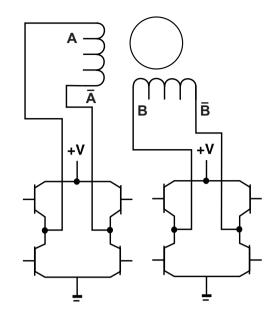
#### Linear Actuators



Product Overview

## **Operating Principles**

Schematic Diagrams



#### Step Sequence

CONNECTOR PIN LOCATION							
PIN NO.	COLOR CCW CW CW PHASE (SEEN FROM FLANGE SIDE)				PHASE		
1	BLACK	ON	ON			ON	Α
2	YELLOW			ON	ON		Ā
3	ORANGE		ON	ON			В
4	BROWN	ON			ON	ON	B

#### **Operating Principles**

In response to each individual control pulse and direction signal, the drive applies power to the motor windings to cause the rotor to take a step forward, a step in reverse, or hold in position.

For example, in a 7.5 degree two phase step motor: When both phases are energized with DC current, the motor will stop rotating and hold in position. The maximum torque the motor can hold in place with rated DC current, is the rated holding torque. If the current in one phase is reversed, the motor will move 1 step (7.5 degrees) in a known direction. If the current in the other phase had been reversed, the motor would move 1 step (7.5 degrees) in the other direction. As current is reversed in each phase in sequence, the motor continues to step in the desired direction. These steps are very accurate. For a 7.5 degree step motor, there are exactly 48 steps in one revolution.

Two phase stepping motors are furnished with two types of windings: bipolar or unipolar. In a bipolar motor there is one winding on each phase. The motor moves in steps as the current in each winding is reversed. This requires a drive with eight electronic switches. In a unipolar motor there are two windings on each phase. The two windings on each phase are connected in opposite directions. Phase current is reversed by turning on alternate windings on the same phase. This requires a drive with only four electronic switches. Bipolar operation typically provides 40% more holding torque than unipolar, because 100% of the winding is energized in the bipolar arrangement.

Linear Actuate

Product Overviev

Motors

## Rotary Motors

- Ø8mm
- Ø10mm
- Ø15mm
- Ø20mm
- Ø25mm
- Ø28mm
- Ø35mm
- Ø42mm



Linear Actuators

Technical

## 8PM020S - Ø8mm, S, 18°



٠	Phases	2
٠	Steps / Revolution	18°
٠	Shaft Load	
	Axial	
	Radial	0.2N
•	IP Rating	40
٠	Approvals	RoHS
٠	Operating Temp.	-30°C to +70°C
٠	Insulation Class	E, 130°C
٠	Insulation Resistance	50 MegOhms

#### Motor Data

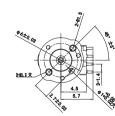
Model	8PM020S1-02001			
Lei	Length			
Step Angle		0	18	
Rated Current	Ar	nps	0.25	
Lieldine Tennue	10 <sup>-4</sup> Nm	Тур.	4	
Holding Torque	oz-in	Тур.	0.06	
Coil Resistance	Ohms	±10% @20°C	20	
Coil Inductance	mH	Тур.	2.8	
Deterrit	10 <sup>-4</sup> Nm	Max.	1.5	
Detent Torque	oz-in	Max.	0.02	
Datasta	gcm <sup>2</sup>		0.1	
Rotor Inertia	10 <sup>-4</sup> oz-in <sup>2</sup>		5.5	
N 4 - 4 10 4 - 1 1- 4	g		2.2	
Motor Weight	Lbs		0.005	

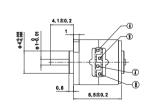
^ Preferred model

Dimensions: mm

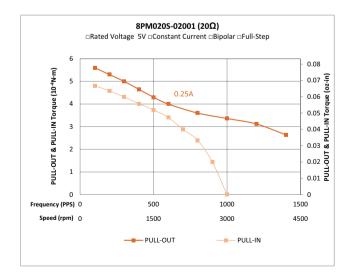
\_inear Actuators

Rotary Motors











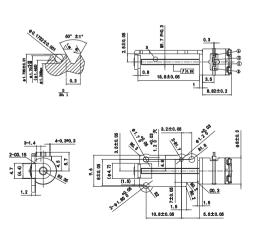
٠	Phases	2
٠	Steps / Revolution	18°
•	Shaft Load	
	Axial	
	Radial	0.2N
•	IP Rating	40
•	Approvals	RoHS
•	Operating Temp.	-30°C to +70°C
٠	Insulation Class	E, 120°C
•	Insulation Resistance	50 MegOhms

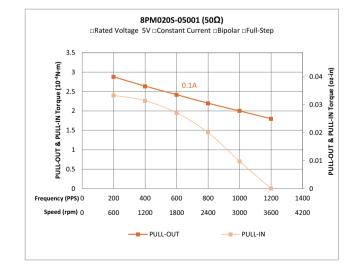
#### Motor Data

Model	8PM020S1-05001		
Le	Length		
Step Angle		0	18
Rated Current	Ar	nps	0.1
Listellin er Tammun	10 <sup>-4</sup> Nm	10 <sup>-4</sup> Nm Typ.	
Holding Torque	oz-in	Тур.	0.06
Coil Resistance	Ohms	±10% @ 20°C	50
Coil Inductance	mH	Тур.	18.2
Deterrit	10 <sup>-4</sup> Nm	Max.	1.5
Detent Torque	oz-in	Max.	0.02
Deterrite	gcm <sup>2</sup>		0.1
Rotor Inertia	10-4	oz-in²	5.5
		g	4
Motor Weight	L	bs	0.009

^ Preferred model

#### Dimensions: mm





Technical

### 10PM020S - Ø10mm, S, 18°



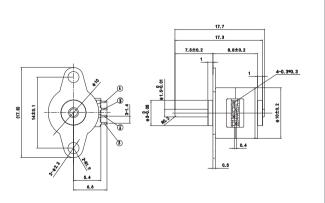
• 相数	2
● 步数/每圈	18°
● 轴负载	
轴向	
径向	1.5N
● IP等级	40
• 认证	RoHS
● 环境温度	−20° C to +60° C
• 绝缘等级	E, 120° C
• 绝缘电阻	50 MegOhms

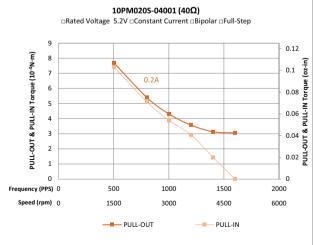
#### Motor Data

Model	10PM020S1-04001				
Ler	Length				
Step Angle		D	18		
Rated Current	An	nps	0.2		
Lielding Terring	10 <sup>-4</sup> Nm	Тур.	5		
Holding Torque	oz-in Typ.		0.07		
Coil Resistance	Ohms	±10% @ 20°C	40		
Coil Inductance	mH	Тур.	5.6		
Detent Territe	10 <sup>-4</sup> Nm Max.		2		
Detent Torque	oz-in Max.		0.03		
Datas Incertia	gcm <sup>2</sup>		0.3		
Holor Inertia	Rotor Inertia 10 <sup>-4</sup> oz-in <sup>2</sup>		16.4		
Matax Mainht		g	4		
Motor Weight	L	os	0.009		

^ Preferred model

Dimensions: mm





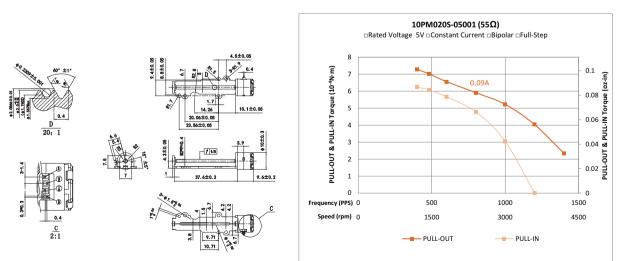


#### Motor Data

Model	10PM020S1-05001			
Le	Length			
Step Angle		0	18	
Rated Current	An	nps	0.09	
Holding Torque	10 <sup>-4</sup> Nm	Тур.	6	
Holding Torque	oz-in	Тур.	0.08	
Coil Resistance	Ohms	±10% @ 20°C	55	
Coil Inductance	mH	Тур.	7.2	
Detect Terring	10 <sup>-4</sup> Nm	Max.	2.5	
Detent Torque	oz-in	Max.	0.03	
Deterrie	gc	0.3		
Rotor Inertia	10-4 (	oz-in²	16.4	
Mater Mainht		g	8	
Motor Weight	Lbs		0.018	

^ Preferred model

#### Dimensions: mm



Rotary Motors

Linear Actuator

Gearmotors

Technical

## 15PM020S - Ø15mm, S, 18°



٠	Phases	2
٠	Steps / Revolution	20(18°)
٠	Shaft Load	
	Axial	1N
	Radial	5N
•	IP Rating	40
٠	Approvals	RoHS
•	Operating Temp.	-20°C to +50°C
•	Insulation Class	B, 130°C
•	Insulation Resistance	100 MegOhms

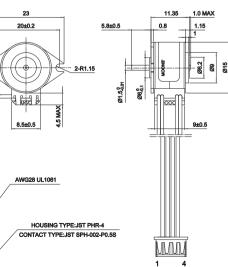
#### Motor Data

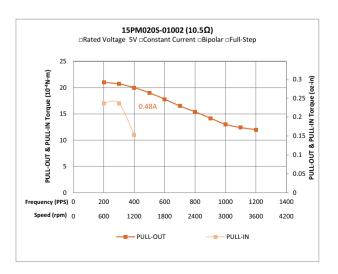
Model Number			15PM020S0-01002
Lei	ngth		11.35mm (0.45in.)
Step Angle		0	18
Rated Current	An	nps	0.48
Lielding Targue	10 <sup>-4</sup> Nm	Тур.	36
Holding Torque	oz-in	Тур.	0.5
Coil Resistance	Ohms	±10% @ 20°C	10.5
Coil Inductance	mH	Тур.	2.8
Detent Tayoua	10 <sup>-4</sup> Nm	Max.	13
Detent Torque	oz-in	Max.	0.18
Deter Inertie	gc	rm²	0.039
Rotor Inertia	10 <sup>-4</sup> oz-in <sup>2</sup>		2.1
Motor Waight		g	9
Motor Weight	L	bs	0.02

^ Preferred model

#### Dimensions: mm









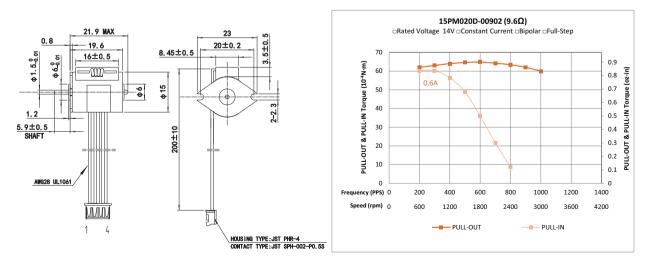
•	Phases	2
•	Steps / Revolution	20(18°)
٠	Shaft Load	
	Axial	1N
	Radial	5N
٠	IP Rating	40
٠	Approvals	RoHS
•	Operating Temp.	-20°C to +50°C
٠	Insulation Class	B, 130°C
٠	Insulation Resistance	100 MegOhms

#### Motor Data

Model Number			15PM020D0-00902
Ler	ngth		19.6mm (0.79in.)
Step Angle		o	18
Rated Current	An	nps	0.6
Lielding Torque	10 <sup>-4</sup> Nm	Тур.	72
Holding Torque	oz-in	Тур.	1.0
Coil Resistance	Ohms	±10% @ 20°C	9.6
Coil Inductance	mH	Тур.	2.65
Detent Taxoue	10 <sup>-4</sup> Nm Max.		14
Detent Torque	oz-in	Max.	0.19
Datas Inastia	gcm <sup>2</sup>		
Rotor Inertia	10 <sup>-4</sup> oz-in <sup>2</sup>		
Matax Maiabt		g	18
Motor Weight	L	bs	0.04

^ Preferred model

#### Dimensions: mm



Rotary Motors

Linear Actuator

Technical

## 20PM020S - Ø20mm, S, 18°



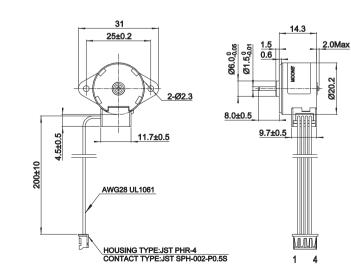
•	Phases	2
٠	Steps / Revolution	20(18°)
٠	Shaft Load	
	Axial	1N
	Radial	5N
•	IP Rating	40
٠	Approvals	RoHS
٠	Operating Temp.	-20°C to +50°C
٠	Insulation Class	B, 130°C
٠	Insulation Resistance	100 MegOhms

#### Motor Data

Model Number			20PM020S0-01002	20PM020S0-02501
Length			14.3mm (0.56in.)	
Step Angle		0	18	
Rated Current	Ar	nps	0.33	0.21
Listen Terrar	10 <sup>-4</sup> Nm	Тур.	85	85
Holding Torque	oz-in	Тур.	1.18	1.18
Coil Resistance	Ohms	±10% @ 20°C	10.3	25
Coil Inductance	mH	Тур.	5.1	11.7
Detent Torque	10 <sup>-4</sup> Nm	Max.	18	18
	oz-in	Max.	0.25	0.25
	go	cm <sup>2</sup>	0.25	0.25
Rotor Inertia	10-4	oz-in²	13.7	13.7
		g	21	
Motor Weight	L	bs	0.046	

^ Preferred model

#### Dimensions: mm



Ø20.2

1 4

Rotary Motors

1.2

1

0.8

0.6

0.4

0.2

0

1400

4200

(oz-in)

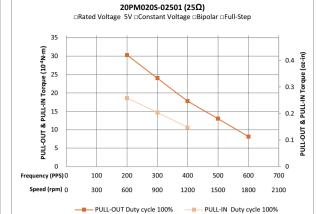
Torque

PULL-OUT & PULL-IN

Linear Actuator

Technical

20PM020S0-02501



20PM020S-02501 (25Ω)

Rated Voltage 12V 
 Constant Current 
 Bipolar 
 Full-Step

0.44A

90

80

70

60

50

40

30

20

10

0

0

0

0.31A

200

600

400

1200

PULL-OUT Duty cycle 25%
PULL-OUT Duty cycle 50%
PULL-OUT Duty cycle 100%

600

1800

800

2400

1000

3000

1200

3600

PULL-IN Duty cycle 25%
PULL-IN Duty cycle 50%
PULL-IN Duty cycle 100%

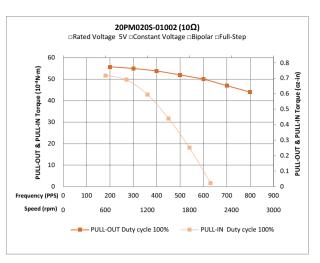
(10<sup>-4</sup>N·m)

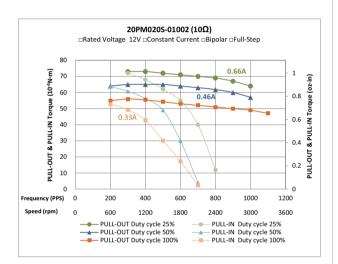
PULL-OUT & PULL-IN Torque

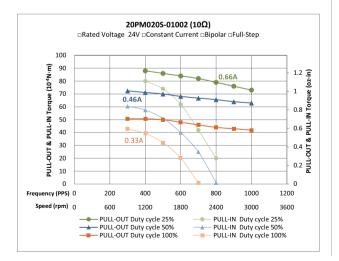
Frequency (PPS)

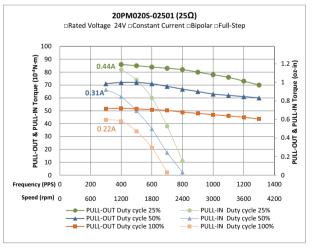
Speed (rpm)











### 20PM020L - Ø20mm, L, 18°



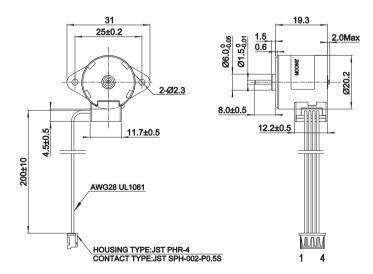
•	Phases	2
٠	Steps / Revolution	20(18°)
•	Shaft Load	
	Axial	1N
	Radial	5N
•	IP Rating	40
•	Approvals	RoHS
•	Operating Temp.	-20°C to +50°C
•	Insulation Class	B, 130°C
٠	Insulation Resistance	100 MegOhms

#### Motor Data

Model Number			20PM020L8-00702	20PM020L8-02101
Length			19.3mm	(0.76in.)
Step Angle		0	18	
Rated Current	Ar	nps	0.43	0.25
	10 <sup>-4</sup> Nm	Тур.	120	120
Holding Torque	oz-in	Тур.	1.67	1.67
Coil Resistance	Ohms	±10% @ 20°C	7	21.5
Coil Inductance	mH	Тур.	5.6	16.5
Datast	10 <sup>-4</sup> Nm	Max.	25	25
Detent Torque	oz-in	Max.	0.35	0.35
Datasta	go	cm <sup>2</sup>	0.41	0.41
Rotor Inertia	10-4	oz-in²	22.4	22.4
NA - t - v NA - i - i - t		g 27		7
Motor Weight	L	bs	0.060	

^ Preferred model

#### Dimensions: mm



Linear Actuators

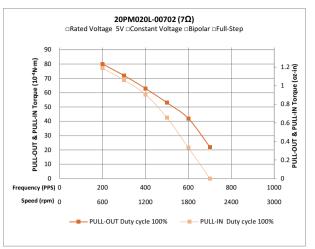
Rotary Motors

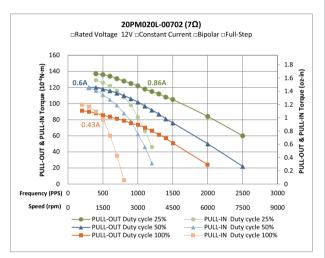
Rotary Motors

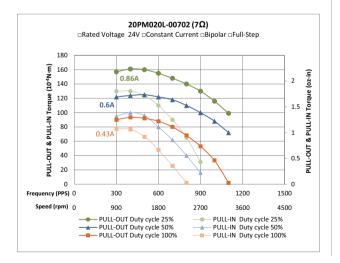
Linear Actuator

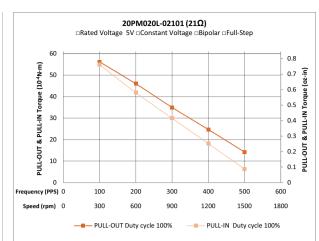
Technical

20PM020L8-00702

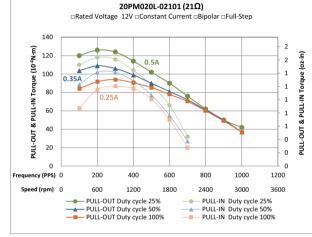


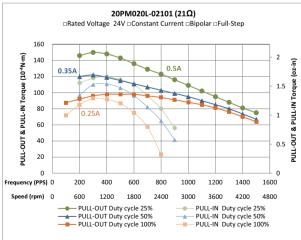






20PM020L8-02101





## 25PM024S - Ø25mm, S, 15°



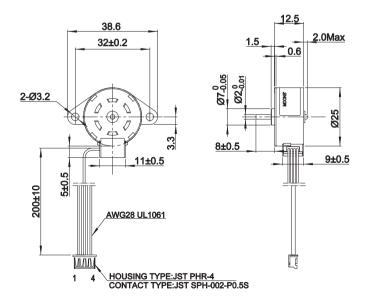
•	Phases	2
•	Steps / Revolution	15°
•	Shaft Load	
	Axial	1N
	Radial	5N
٠	IP Rating	40
٠	Approvals	RoHS
٠	Operating Temp.	-20°C to +50°C
٠	Insulation Class	B, 130°C
•	Insulation Resistance	100 MegOhms

#### Motor Data

Model Number			25PM024S8-00601	25PM024S8-01601	
	Length			12.5mm (0.49in.)	
Step Angle		0	15		
Rated Current	Ar	nps	0.5	0.32	
Listella a Tenence	10 <sup>-4</sup> Nm	Тур.	100	110	
Holding Torque	oz-in	Тур.	1.39	1.53	
Coil Resistance	Ohms	±10% @ 20°C	6	16	
Coil Inductance	mH	Тур.	3	8.6	
Deterrit	10 <sup>-4</sup> Nm	Max.	25	25	
Detent Torque	oz-in	Max.	0.35	0.35	
Datasta	go	cm <sup>2</sup>	0.56	0.56	
Rotor Inertia	10-4	oz-in²	30.6	30.6	
Mada - Mada inda		g	30		
Motor Weight	L	bs	0.066		

^ Preferred model

#### Dimensions: mm



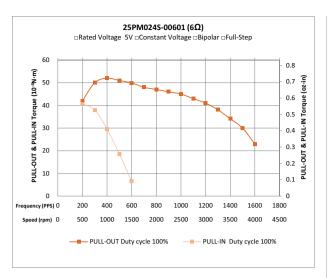
Linear Actuator

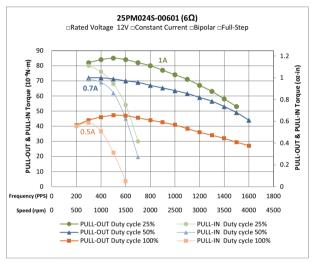
Rotary Motors

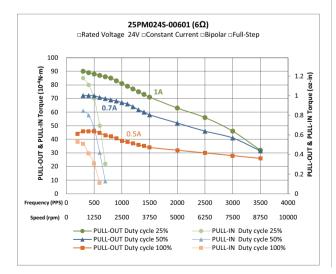
Rotary Motors

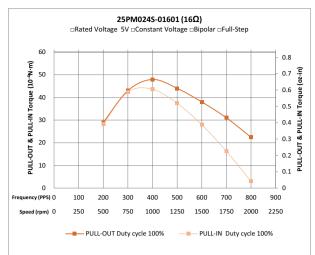
Linear Actuator

Technica

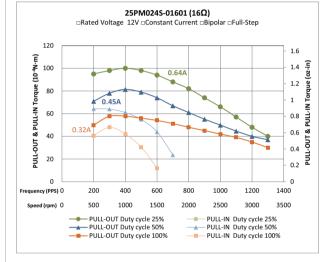


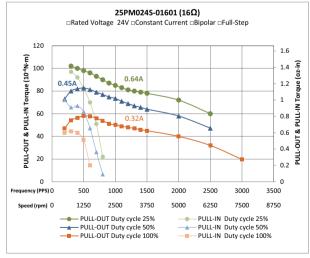






25PM024S8-01601





## 25PM048S - Ø25mm, S, 7.5°



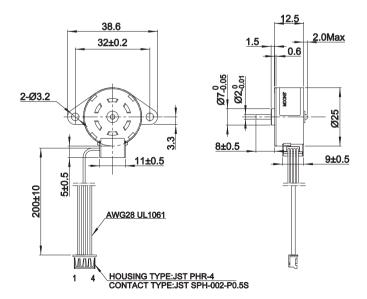
•	Phases	2
•	Steps / Revolution	7.5°
•	Shaft Load	
	Axial	1N
	Radial	5N
٠	IP Rating	40
٠	Approvals	RoHS
٠	Operating Temp.	-20°C to +50°C
٠	Insulation Class	B, 130°C
•	Insulation Resistance	100 MegOhms

#### Motor Data

Model Number			25PM048S9-00601	25PM048S9-01601	
	Length			12.5mm (0.49in.)	
Step Angle		0	7.5		
Rated Current	Ar	nps	0.5	0.32	
Listella a Tenerra	10 <sup>-4</sup> Nm	Тур.	160	160	
Holding Torque	oz-in	Тур.	2.22	2.22	
Coil Resistance	Ohms	±10% @ 20°C	6	16	
Coil Inductance	mH	Тур.	2.7	8	
Datast	10 <sup>-4</sup> Nm	Max.	25	25	
Detent Torque	oz-in	Max.	0.35	0.35	
Datasta	go	cm <sup>2</sup>	0.56	0.56	
Rotor Inertia	10-4	oz-in²	30.6	30.6	
N 4 - 4 - 11 N 4 - 1 - 1 - 4		g	30		
Motor Weight	L	bs	0.066		

^ Preferred model

#### Dimensions: mm



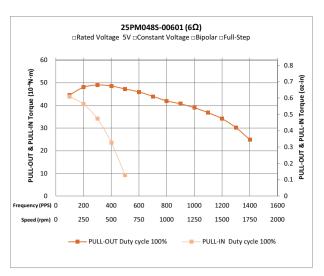
Linear Actuator

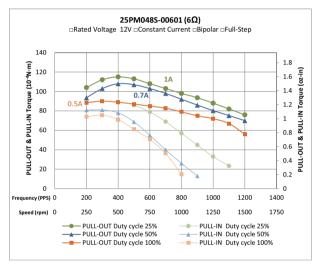
Rotary Motors

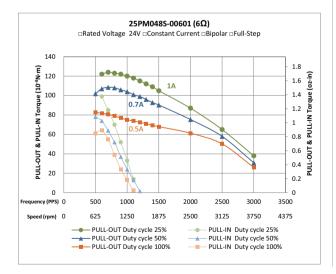
Rotary Motors

Linear Actuator

25PM048S9-00601

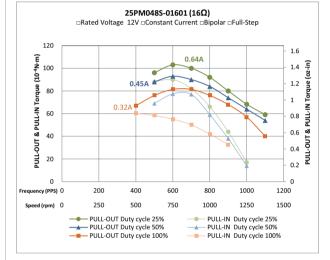








25PM048S9-01601





Technical

## 25PM024L - Ø25mm, L, 15°



٠	Phases	2
٠	Steps / Revolution	15°
٠	Shaft Load	
	Axial	1N
	Radial	5N
٠	IP Rating	40
٠	Approvals	RoHS
•	Operating Temp.	-20°C to +50°C
٠	Insulation Class	B, 130°C
٠	Insulation Resistance	100 MegOhms

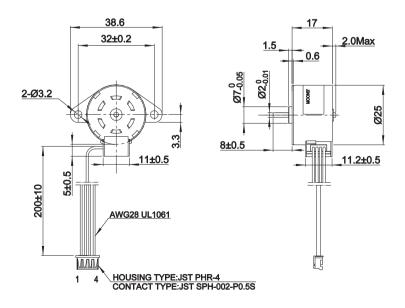
#### Motor Data

Мос	del Number	25PM024L6-00801	25PM024L6-01401	
	Length	17mm (0.67in.)		
Step Angle		0	1	5
Rated Current	An	nps	0.47	0.35
Listella a Tenerra	10 <sup>-4</sup> Nm	Тур.	170	180
Holding Torque	oz-in	Тур.	2.36	2.50
Coil Resistance	Ohms	±10% @ 20°C	8	14
Coil Inductance	mH	Тур.	6	11.5
Datast	10 <sup>-4</sup> Nm	Max.	25	25
Detent Torque	oz-in	Max.	0.35	0.35
Detector	gc	rm²	0.85	0.85
Rotor Inertia	10-4	oz-in²	46.5	46.5
		g	39	
Motor Weight	L	bs	0.086	

^ Preferred model

#### Dimensions: mm

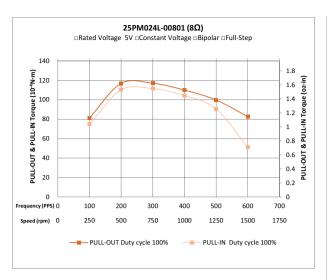
Linear Actuato

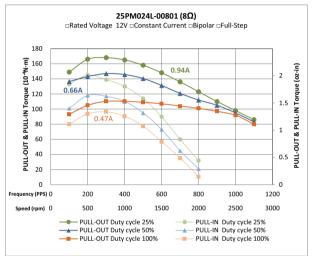


Rotary Motors

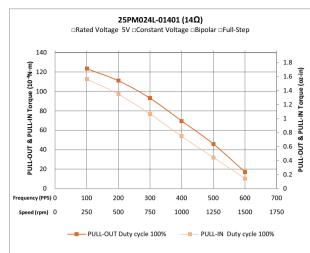
Linear Actuator

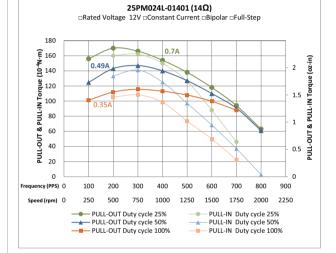
25PM024L6-01401

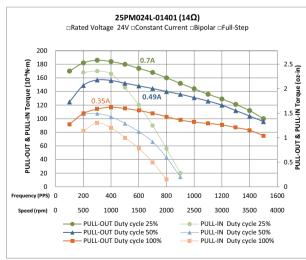












Technical

## 25PM048L - Ø25mm, L, 7.5°



٠	Phases	2
٠	Steps / Revolution	7.5°
٠	Shaft Load	
	Axial	1N
	Radial	5N
•	IP Rating	40
٠	Approvals	RoHS
•	Operating Temp.	-20°C to +50°C
٠	Insulation Class	B, 130°C
٠	Insulation Resistance	100 MegOhms

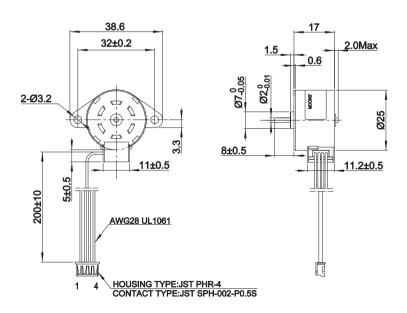
#### Motor Data

Mod	del Number	25PM048L6-00801	25PM048L6-01401	
	Length	17mm (0.67in.)		
Step Angle		0	7.5	
Rated Current	An	nps	0.47	0.35
Listella a Tenence	10 <sup>-4</sup> Nm	Тур.	250	270
Holding Torque	oz-in	Тур.	3.47	3.75
Coil Resistance	Ohms	±10% @ 20°C	8	14
Coil Inductance	mH	Тур.	7.5	13
Datast	10 <sup>-4</sup> Nm	Max.	45	45
Detent Torque	oz-in	Max.	0.63	0.63
Deter la estic	gc	rm <sup>2</sup>	0.85	0.85
Rotor Inertia	10-4	oz-in²	46.5	46.5
		g	39	
Motor Weight	L	bs	0.086	

^ Preferred model

#### Dimensions: mm

Rotary Motors



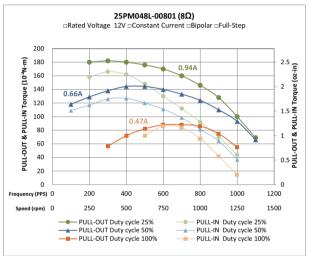
Rotary Motors

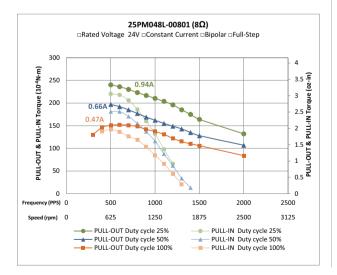
Linear Actuator

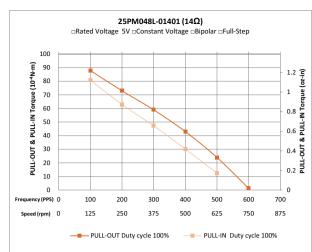
Technical

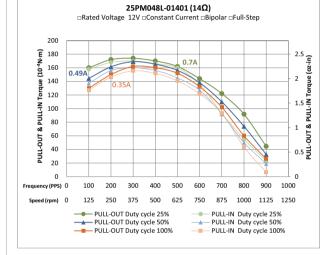
25PM048L6-01401

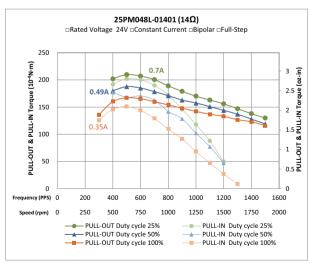












## 28PN024L - Ø28mm, L, 15°



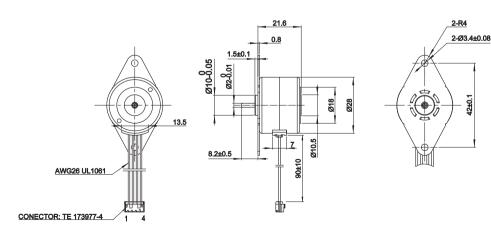
•	Phases	2
٠	Steps / Revolution	15°
٠	Shaft Load	
	Axial	1N
	Radial	5N
•	IP Rating	40
٠	Approvals	RoHS
٠	Operating Temp.	-15°C to +60°C
٠	Insulation Class	B, 130°C
٠	Insulation Resistance	100 MegOhms

#### Motor Data

Мос	lel Number	28PN024L8-00802	28PN024L6-02402	
Length			21.6mm (0.85in.)	
Step Angle		0	1	5
Rated Current	Ar	nps	0.5	0.16
Listella a Tennara	10 <sup>-4</sup> Nm	Тур.	330	160
Holding Torque	oz-in	Тур.	4.58	2.22
Coil Resistance	Ohms	±10% @ 20°C	8.5	24
Coil Inductance	mH	Тур.	7	18.4
Datast	10 <sup>-4</sup> Nm	Max.	65	50
Detent Torque	oz-in	Max.	0.90	0.69
Datasta	g	cm <sup>2</sup>	3.9	3.9
Rotor Inertia	10-4	oz-in²	213.3	213.3
N 4 - 4 - 11 N 4 - 1 - 1 - 4		g	60	
Motor Weight	L	.bs	0.132	

^ Preferred model

#### Dimensions: mm



Rotary Motors

Linear Actuato

MOONS'

28PN024L-02402

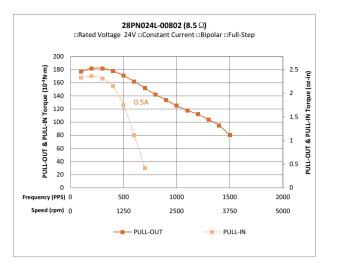
28PN024L-02402 (24 Ω) □Rated Voltage 24V □Constant Current □Bipolar □Full-Step

0.16A

Frequency (PPS) 0

Speed (rpm) 0

PULL-OUT & PULL-IN Torque (10-4N·m)





Linear Actuator

Gearmotors

Technical

## 35PM024S - Ø35mm, S, 15°



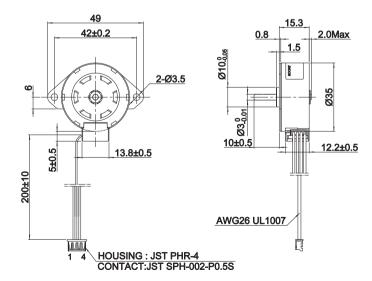
•	Phases	2
٠	Steps / Revolution	15°
•	Shaft Load	
	Axial	1N
	Radial	7.5N
٠	IP Rating	40
٠	Approvals	RoHS
•	Operating Temp.	-20°C to +50°C
•	Insulation Class	B, 130°C
•	Insulation Resistance	100 MegOhms

#### Motor Data

Mod	Model Number			35PM024S8-01201	35PM024S8-08001
l	Length		15.3mm (0.60in.)		
Step Angle		0		15	
Rated Current		Amps	0.6	0.38	0.15
Listella a Terraria	10 <sup>-4</sup> Nm	Тур.	220	220	220
Holding Torque	oz-in	Тур.	3.06	3.06	3.06
Coil Resistance	Ohms	±10% @ 20°C	5	12	80
Coil Inductance	mH	Тур.	4	10	73
Deterrit Territor	10 <sup>-4</sup> Nm	Max.	60	60	60
Detent Torque	oz-in	Max.	0.83	0.83	0.83
Detector		gcm <sup>2</sup>	2.9	2.9	2.9
Rotor Inertia	10	<sup>-4</sup> oz-in <sup>2</sup>	153	153	153
		g	70		
Motor Weight		Lbs	0.15		

^ Preferred model

#### Dimensions: mm

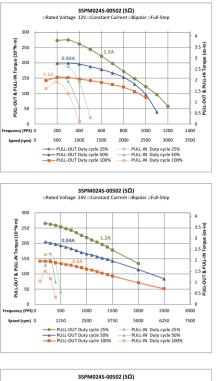


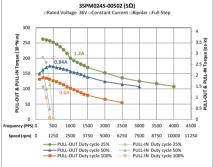
Linear Actuator

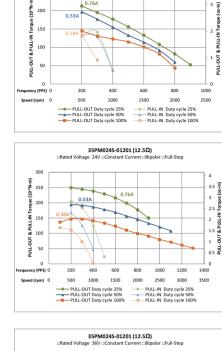
Rotary Motors

Motors

#### 35PM024S8-00502







35PM024S8-01201

Rated Volt

0 534

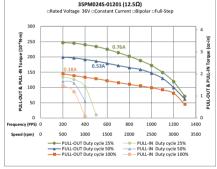
.76A

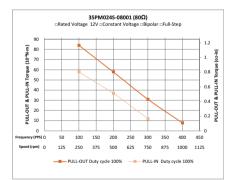
250

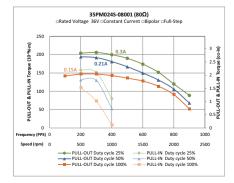
200

orqu 150

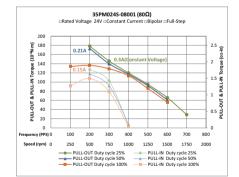
S PULL-IN 100 35PM024S-01201 (12.5Ω) The 12V Constant Current Dipolar Full-Step







#### 35PM024S8-08001



## 35PM048S - Ø35mm, S, 7.5°



•	Phases	2
•	Steps / Revolution	7.5°
•	Shaft Load	
	Axial	1N
	Radial	7.5N
٠	IP Rating	40
٠	Approvals	RoHS
٠	Operating Temp.	-20°C to +50°C
٠	Insulation Class	B, 130°C
•	Insulation Resistance	100 MegOhms

#### Motor Data

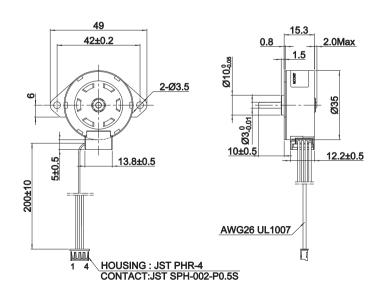
N	lodel Number		35PM048S0-00508	35PM048S0-01203	35PM048S0-08001	
Length		15.3mm (0.60in.)				
Step Angle		0		7.5		
Rated Current		Amps	0.6	0.38	0.15	
Lielding Terrore	10 <sup>-4</sup> Nm		480	460	460	
Holding Torque	oz-in	Тур.	6.67	6.39	6.39	
Coil Resistance	Ohms	±10% @ 20°C	5	12	80	
Coil Inductance	mH	Тур.	5.4	11.9	74	
Detent Terrere	10 <sup>-4</sup> Nm	Max.	75	75	75	
Detent Torque	oz-in	Max.	1.04	1.04	1.04	
Datas la astis		gcm <sup>2</sup>	2.9	2.9	2.9	
Rotor Inertia	10	<sup>-4</sup> oz-in <sup>2</sup>	153	153	153	
		g		70		
Motor Weight	Lbs		0.15			

^ Preferred model

#### Dimensions: mm

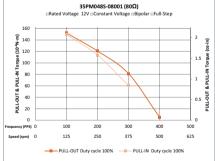
Linear Actuato

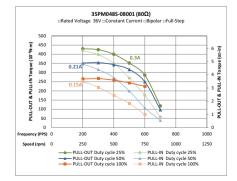
Rotary Motors

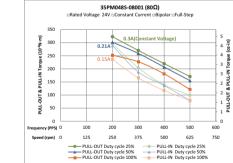


Motors

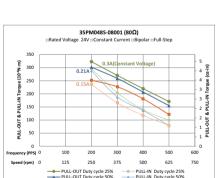












35PM048S0-01201 35PM048S-01201 (12.5Ω) □Rated Voltage 12V □Constant Current □Bipolar □Full-Step

0.76A

35PM048S-01201 (12.5Ω) □Rated Voltage 24V □Constant Current □Bipo

0.76A

-

PULL-OUT Duty cycle 25%

PULL-IN Duty cycle 25%
 PULL-IN Duty cycle 50%
 PULL-IN Duty cycle 100%

lar □Full-Step

PULL-IN Duty cycle 25%
 PULL-IN Duty cycle 50%
 PULL-IN Duty cycle 100%

lar □Full-Step

5 4 3 2 1 DOLL-OUT & PULL-OUT & P

PULL-OUT & PULL-IN Torque (oz-in)

6 5 4 3 2 1 DILL-OUT & PULL-IN Torque (oz-in)

1500 1750

PULL-IN Duty cycle 25%
 PULL-IN Duty cycle 50%
 PULL-IN Duty cycle 100%

Torque (10<sup>4</sup>N·m) 300 520

200 200 150

ncy (PPS) (

0.53A

PULL-OUT Duty cycle 25%
PULL-OUT Duty cycle 50%
PULL-OUT Duty cycle 100%

Rated Voltage 36V Constant C

0.534 ź 

PULL-OUT Duty cycle 25%
PULL-OUT Duty cycle 50%
PULL-OUT Duty cycle 100%

0.76A

35PM048S-01201 (12.5Ω)

Frequency (PPS) 0

Speed (rpm) 0

400

E. 

Frequency (PPS) 0

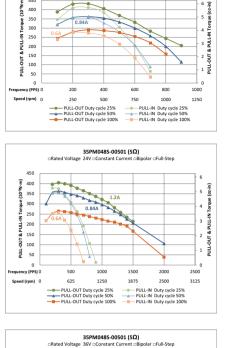
Speed (rpm) 0

PULL-OUT & PULL-IN Torque (10-4N-m)

PULL-OUT & PULL-IN Torque (10<sup>-4</sup>N·m)

Speed (rpm) 0

PULL-OUT 8  0.53A



1.2A

0.844

PULL-OUT Duty cycle 25%
PULL-OUT Duty cycle 50%
PULL-OUT Duty cycle 100%

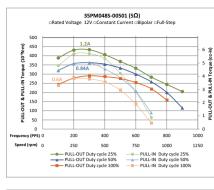
.

PULL-IN Duty cycle 25%
 PULL-IN Duty cycle 50%
 PULL-IN Duty cycle 1009

(m·N-01) anb or 1 NI-1104 & L00-1104 350 250 200 150 100 100 50

Speed (rpm) ()

Downloaded from Arrow.com.



35PM048S0-00501

## 35PM024L - Ø35mm, L, 15°



•	Phases	2
٠	Steps / Revolution	15°
•	Shaft Load	
	Axial	1N
	Radial	7.5N
٠	IP Rating	40
٠	Approvals	RoHS
٠	Operating Temp.	-20°C to +50°C
٠	Insulation Class	B, 130°C
٠	Insulation Resistance	100 MegOhms

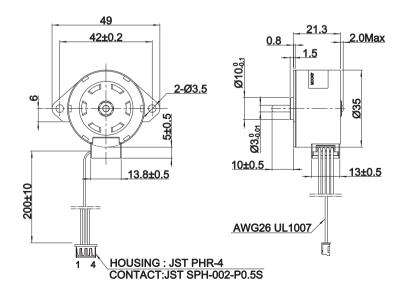
#### Motor Data

Mod	Model Number			35PM024L8-01202	35PM024L8-07501	
l	Length			21.3 mm (0.84 in.)		
Step Angle		0		15		
Rated Current	/	Amps	0.63	0.4	0.16	
Lielding Territo	10 <sup>-4</sup> Nm	Тур.	420	420	360	
Holding Torque	oz-in	Тур.	5.83	5.83	5.00	
Coil Resistance	Ohms	±10% @ 20°C	5.3	12.5	75	
Coil Inductance	mH	Тур.	7.7	18.2	87	
Detect Terring	10 <sup>-4</sup> Nm	Max.	75	75	75	
Detent Torque	oz-in	Max.	1.04	1.04	1.04	
Detector		gcm <sup>2</sup>	4.65	4.65	4.65	
Rotor Inertia	10	<sup>-4</sup> oz-in <sup>2</sup>	257	257	257	
N. 4 - 4 - 11 / A / - 1 - 1 - 4		g	90			
Motor Weight	Lbs		0.2			

^ Preferred model

#### Dimensions: mm





Motors

#### 35PM024L-01204 (12.5Ω) □Rated Voltage 12V □Constant Current □Bipolar □Full-Step 35PM024L-00502 (5Q) Rated Voltage 12V Constant Curre nt 🗆 Binolar 🗆 Full-Sten 450 400 (m·N-01) 300 250 1.26A 0.8A 400 2 4 3 2 1 PULL-OUT & PULL-IN Torque (oz-in) PULL-OUT & PULL-IN Torque (oz-in) 0.56A 350 0.88 300 250 L NI-1104 8 200 200 150 8 100-110 50 100 50 ncy (PPS) 0 100 200 300 500 Frequency (PPS) 0 100 200 300 400 500 600 700 800 reque 400 600 Speed (rpm) 0 250 500 750 1000 1250 1500 500 750 1000 1250 Speed (rpm) 0 250 1500 1750 2000 PULL-OUT Duty cycle 25% PULL-OUT Duty cycle 50% PULL-OUT Duty cycle 100% PULL-IN Duty cycle 25% PULL-IN Duty cycle 50% PULL-IN Duty cycle 100% PULL-OUT Duty cycle 25% PULL-IN Duty cycle 25% PULL-IN Duty cycle 50% PULL-IN Duty cycle 100% 35PM024L-01204 (12.5Ω) □Rated Voltage 24V □Constant Current □Bipolar □Full-Step 35PM024L-00502 (5Ω) □Rated Voltage 24V □Constant Current □Bi olar :::Full-Step (W-N-01) about 100 a 450 400 350 300 250 150 100 50 \_ PULL-OUT & PULL-IN Torque (o2-in) -OUT & PULL-IN Torque (oz-in) .8A 0.56A 0.87A 1 2 PULL-OUT 8 100 1 nd 50 800 1000 1200 200 400 600 requency (PPS) 0 200 400 600 800 1000 1200 1400 1600 Speed (rpm) 0 500 1000 1500 2000 2500 3000 3500 Speed (rpm) () 500 1000 1500 2000 2500 3000 4000

35PM024L8-01202

PULL-OUT Duty cycle 25%

0.8A

500

1250

PULL-OUT Duty cycle 25%
PULL-OUT Duty cycle 50%
PULL-OUT Duty cycle 100%

450

-

÷.

150 PULL-OUT 8

100

50

Frequency (PPS) 0

Speed (rpm) 0

350

250

Torque (10<sup>-4</sup>N·m) 300

PULL-G 50 0

requency (PPS) 0

Speed (rpm) 0

100

250

c

35PM024L-01204 (12.5Ω) □Rated Voltage 36V □Constant Current □Bipolar □Full-Step

-

1000

2500

35PM024L-07501 (75Ω) Rated Voltage 24V Constant Current Bipolar Full-Step

1500

3750

-

2000

5000

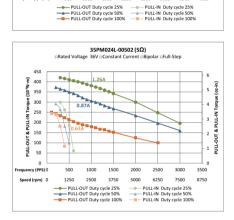
PULL-IN Duty cycle 25%
 PULL-IN Duty cycle 50%
 PULL-IN Duty cycle 100%

PULL-IN Duty cycle 25%
 PULL-IN Duty cycle 50%
 PULL-IN Duty cycle 100%

0

2500

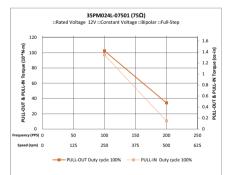
6250

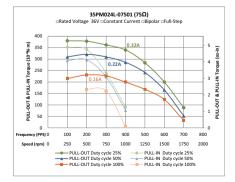


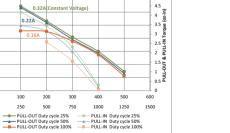
35PM024L8-00502

PULL-OUT & PULL-IN Torque (10<sup>-4</sup>N·m)

35PM024L8-07501







32

## 35PM048L - Ø35mm, L, 7.5°



•	Phases	2
•	Steps / Revolution	7.5°
•	Shaft Load	
	Axial	1N
	Radial	7.5N
•	IP Rating	40
•	Approvals	RoHS
•	Operating Temp.	-20°C to +50°C
•	Insulation Class	B, 130°C
٠	Insulation Resistance	100 MegOhms

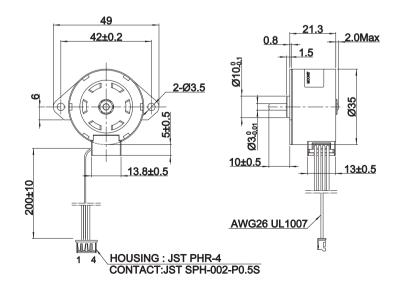
#### Motor Data

M	odel Number		35PM048L6-00501	35PM048L6-01201	35PM048L6-07501
Length			21.3 mm (0.84 in.)		
Step Angle	0		7.5		
Rated Current	Amps		0.63	0.4	0.16
Holding Torque	10 <sup>-4</sup> Nm	Тур.	620	620	620
	oz-in	Тур.	8.61	8.61	8.61
Coil Resistance	Ohms	±10% @ 20°C	5	12.5	75
Coil Inductance	mH	Тур.	8.6	21.3	102
Detent Torque	10 <sup>-4</sup> Nm	Max.	95	95	95
	oz-in	Max.	1.32	1.32	1.32
Rotor Inertia	gcm <sup>2</sup>		4.65	4.65	4.65
	10 <sup>-4</sup> oz-in <sup>2</sup>		257	257	257
Motor Weight	g		90		
	Lbs		0.2		

^ Preferred model

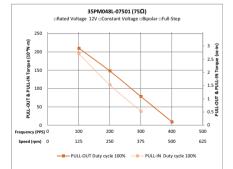
#### Dimensions: mm





Motors

#### 35PM048L6-07501



35PM048L6-00501

35PM048L-00506 (5Ω)

Rated Voltage 12V Constant Current Bipolar Full-Step

0 884

264

+

- PULL-IN Duty cycle 25% - PULL-IN Duty cycle 50% - PULL-IN Duty cycle 1009

nolar :::Full-Sten

0

1750 1500

POLL-OUT & PULL-IN Torque (oz-in)

5625

300

250

200 & PULL-IN Torque

150

100

Speed (rpm) ()

700

600

300

200

. 500

0.87A \* -

> 200 400 600 800 1000 1200 1400

250 500 750 1000 1250

□Rated Voltage

0.87A ۰.

500 1000 1500 2000 2500 3000 3500 4000 4500

PULL-OUT Duty cycle 25%
 PULL-OUT Duty cycle 50%
 PULL-OUT Duty cycle 100%

PULL-OUT Duty cycle 25%

D.63A

(m·N-01) a

& PULL-IN Torque 400

PULL-OUT 100

requency (PPS) 0

Speed (rpm) 0

700

600

500

400

300

200 DUT &

100

~

Speed (rpm) 0

PULL-IN Torqu

PULL-

100 200 300 400 500 600 700

125 250 375 500 625 750 875

PULL-OUT Duty cycle 25%
PULL-OUT Duty cycle 50%
PULL-OUT Duty cycle 100%
PULL-OUT Duty cycle 100%

35PM048L-00506 (5Ω) □Rated Voltage 24V □Constant Current □Ri

-

-

35PM048L-00506 (5Ω) 36V □Constant Current □Bio

625 1250 1875 2500 3125 3750 4375 5000

-

-

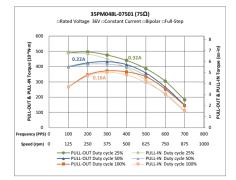
PULL-IN Duty cycle 25%
 PULL-IN Duty cycle 50%
 PULL-IN Duty cycle 100%

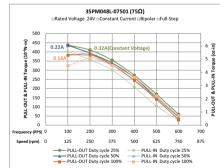
I Bipolar ⊡Full-Step

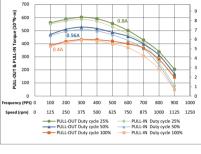
PULL-IN Duty cycle 25% PULL-IN Duty cycle 50% PULL-IN Duty cycle 1009

10<sup>-4</sup>N·m)

ULL-OUT 50

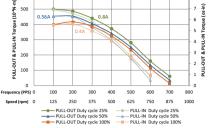








35PM048L-01201 (12.5Ω)

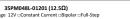


35PM048L6-01201

□Rated Volt

600

35PM048L-01201 (12.5Ω) □Rated Voltage 24V □Constant Current Of lar ⊐Eull-Sten 700 



## 42PM048S - Ø42mm, S, 7.5°



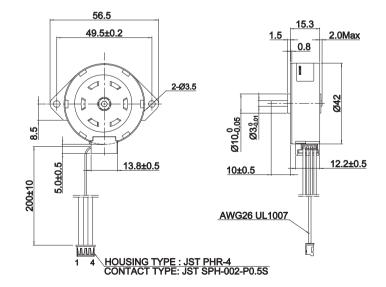
•	Phases	2
•	Steps / Revolution	7.5°
•	Shaft Load	
	Axial	1N
	Radial	7.5N
٠	IP Rating	40
٠	Approvals	RoHS
٠	Operating Temp.	-20°C to +50°C
٠	Insulation Class	B, 130°C
•	Insulation Resistance	100 MegOhms

#### Motor Data

Model Number			42PM048S8-00501	42PM048S8-01209	42PM048S8-08001
Length			15.3mm (0.60in.)		
Step Angle	0		7.5		
Rated Current	Amps		0.65	0.42	0.15
Listella er Tanana	10 <sup>-4</sup> Nm	Тур.	740	640	640
Holding Torque	oz-in	Тур.	10.28	8.89	8.89
Coil Resistance	Ohms	±10% @ 20°C	5.4	11.5	80
Coil Inductance	mH	Тур.	6	12	79
Detect Terrine	10 <sup>-4</sup> Nm	Max.	85	85	85
Detent Torque	oz-in	Max.	1.18	1.18	1.18
Deterrine	gcm <sup>2</sup>		7.26	7.26	7.26
Rotor Inertia	10 <sup>-4</sup> oz-in <sup>2</sup>		404	404	404
Motor Weight	g		90		
	Lbs		0.2		

^ Preferred model

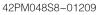
#### Dimensions: mm



Linear Actuator

Rotary Motors

Motors



42PM048S-01201 (12Ω) □Rated Voltage 12V □Constant Current □Bipolar □Full-Step

0.84A

10

8

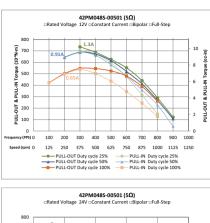
800

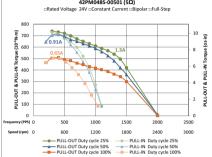
600

0.59

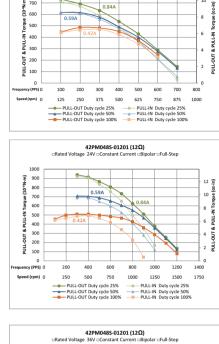
Ê 700

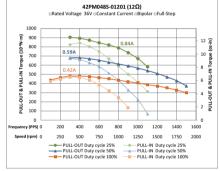




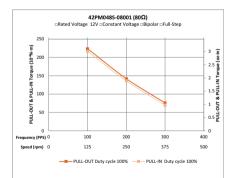


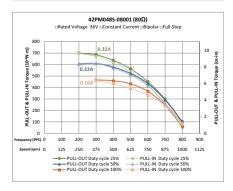


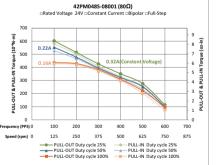




42PM048S8-08001







# 42PM096S - Ø42mm, S, 3.75°



٠	Phases	2
•	Steps / Revolution	3.75°
٠	Shaft Load	
	Axial	1N
	Radial	7.5N
٠	IP Rating	40
•	Approvals	RoHS
•	Operating Temp.	-20°C to +50°C
•	Insulation Class	B, 130°C
•	Insulation Resistance	100 MegOhms

#### Motor Data

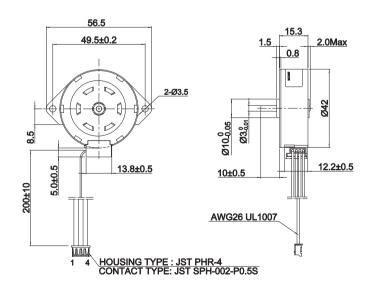
Mo	del Number		42PM096S4-00501	42PM096S4-01201	42PM096S4-08001	
Length			15.3mm (0.60in.)			
Step Angle		0		3.75		
Rated Current	ļ	Amps	0.65	0.42	0.15	
Lielding Termus	10 <sup>-4</sup> Nm	Тур.	540	540	540	
Holding Torque	oz-in	Тур.	7.50	7.50	7.50	
Coil Resistance	Ohms	±10% @ 20°C	5.5	11.5	80	
Coil Inductance	mH	Тур.	7.1	15.2	91	
Deterrt Terrerue	10 <sup>-4</sup> Nm	Max.	65	65	65	
Detent Torque	oz-in	Max.	0.90	0.90	0.90	
Determine	gcm <sup>2</sup>		7.26	7.26	7.26	
Rotor Inertia	10 <sup>-4</sup> oz-in <sup>2</sup>		404	404	404	
		g	90			
Motor Weight	Lbs		0.2			

^ Preferred model

#### Dimensions: mm

Linear Actuato

Rotary Motors



Motors

#### 42PM096S-01201 (12Ω) □Rated Voltage 12V □Constant Current □Bip 42PM096S-00501 (5Ω) □Rated Voltage 12V □Constant Current □Bip olar = Full-Step 0.84 & PULL-IN Torque (10<sup>-4</sup>N·m) PULL-OUT & PULL-IN Torque (oz-in) 1.59A 6 5 4 3 2 1 MIT-IN Lordine (02-in) 0.91A ULL-OUT requency (PPS) 0 requency (PPS) 0 Speed (rpm) 0 Speed (rpm) 0 PULL-OUT Duty cycle 25% PULL-OUT Duty cycle 50% PULL-OUT Duty cycle 100% PULL-OUT Duty cycle 25% PULL-OUT Duty cycle 50% PULL-OUT Duty cycle 100% - PULL-IN Duty cycle 25% - PULL-IN Duty cycle 50% - PULL-IN Duty cycle 100% PULL-IN Duty cycle 25% -PULL-IN Duty cycle 50% PULL-IN Duty cycle 100% 42PM096S-00501 (5Ω) □Rated Voltage 24V □Constant Current □Ri 42PM096S-01201 (12Ω) □Rated Voltage 24V □Constant Current □Rin olar :::Eull-Sten olar ¤Eull-Sten 0,91A 0,65A 9 9 7 6 7 8 9 1011-001 8 PULL-IN Torque (oz-in) (m·N+-01) 0.84A PULL-OUT & PULL-IN Torque (oz-in) 0.59/ orque § PULL-IN T 5 200 J 100 500

Speed (rpm) 0

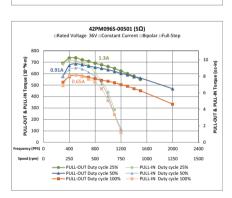
(m·N<sup>1</sup>-01) anbrot NI-III d & 000 500 200 100 100 100

cy (PPS) () 

Speed (rpm) ()

PULL-OUT Duty cycle 25%
PULL-OUT Duty cycle 50%
PULL-OUT Duty cycle 100%

Rated Voltage 36V Constant Cu



-

PULL-IN Duty cycle 25% PULL-IN Duty cycle 50% PULL-IN Duty cycle 100%

42PM096S4-00501

& PULL-IN Torque (10<sup>-4</sup>N·m)

PULL-OUT 8

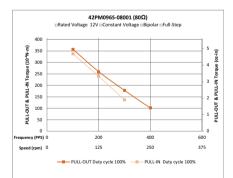
Ē

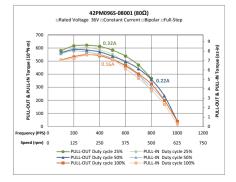
PULL-OUT & PULL-IN Torque (10<sup>-4</sup>

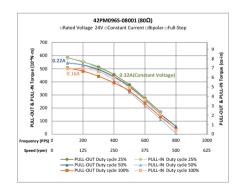
Speed (rpm) 0

PULL-OUT Duty cycle 25%
 PULL-OUT Duty cycle 50%
 PULL-OUT Duty cycle 100%

42PM096S4-08001







42PM096S4-01201

lar = Full-Step

PULL-IN Duty cycle 25% PULL-IN Duty cycle 50% PULL-IN Duty cycle 100%

olar 🗆 Full-Step

0.55%

. h, PULL-OUT & PULL-IN Torque (oz-in)

.

42PM096S-01201 (12Ω)

0.84A

PULL-OUT Duty cycle 25%
 PULL-OUT Duty cycle 25%
 PULL-OUT Duty cycle 50%
 PULL-OUT Duty cycle 100%
 PULL-IN Duty cycle 100%

1.47

## 42PM100S - Ø42mm, S, 3.6°



٠	Phases	2
٠	Steps / Revolution	3.6°
•	Shaft Load	
	Axial	1N
	Radial	7.5N
•	IP Rating	40
•	Approvals	RoHS
•	Operating Temp.	-20°C to +50°C
•	Insulation Class	B, 130°C
٠	Insulation Resistance	100 MegOhms

#### Motor Data

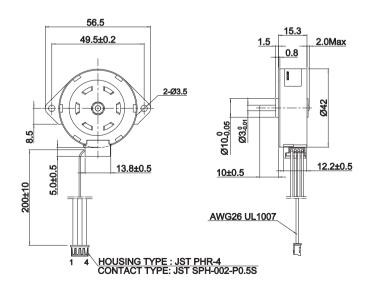
Мо	del Number		42PM100S4-00501	42PM100S4-01201	42PM100S4-08001	
	Length			15.3mm (0.60in.)		
Step Angle		0		3.6		
Rated Current	Ą	Amps	0.65	0.42	0.15	
Listelia e Tananca	10 <sup>-4</sup> Nm	Тур.	540	540	540	
Holding Torque	oz-in	Тур.	7.50	7.50	7.50	
Coil Resistance	Ohms	±10% @ 20°C	5.5	11.5	80	
Coil Inductance	mH	Тур.	6.6	14.3	87	
Detent Terring	10 <sup>-4</sup> Nm	Max.	65	65	65	
Detent Torque	oz-in	Max.	0.90	0.90	0.90	
Deterrie	gcm <sup>2</sup>		7.26	7.26	7.26	
Rotor Inertia	10 <sup>-4</sup> oz-in <sup>2</sup>		404	404	404	
Marka (Marka)		g	90			
Motor Weight	Lbs		0.2			

^ Preferred model

#### Dimensions: mm

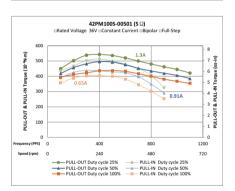
Linear Actuator

Rotary Motors



Motors

#### PULL-OUT & PULL-IN Torque (10<sup>-1</sup>N-m) requency (PPS) 0 Spee ed (rpm) 0 PULL-OUT Duty cycle 25% PULL-OUT Duty cycle 25% PULL-OUT Duty cycle 50% PULL-OUT Duty cycle 100% PULL-IN Duty cycle 25% PULL-IN Duty cycle 50% PULL-IN Duty cycle 100% PULL-IN Duty cycle 25% PULL-IN Duty cycle 50% PULL-IN Duty cycle 100% 42PM100S-01201 (12 Q) 42PM100S-00501 (5 Ω) □Rated Voltage 24V □Constant Current □Ri olar = Full-Step 1 34 & PULL-IN Torque (10<sup>-4</sup>N·m) 2 6 5 4 3 2 1 DILL-OUT & PULL-IN Torque (oz-in) 0.84A 0.59A PULL-OUT 8 Speed (rpm) - PULL-IN Duty cycle 25% - PULL-IN Duty cycle 50% - PULL-IN Duty cycle 100% PULL-OUT Duty cycle 25% PULL-OUT Duty cycle 50% PULL-OUT Duty cycle 100%



42PM100S4-00501

42PM100S-00501 (5 Ω) □Rated Voltage 12V □Constant Current □Bipolar □Full-Step

1 2 4

requency (PPS) 0

Speed (rpm) 0

PULL-OUT & PULL-IN Torque (10<sup>-4</sup>N·m)

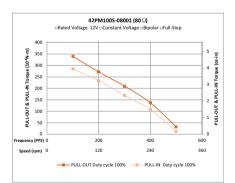
Speed (rpm) 0

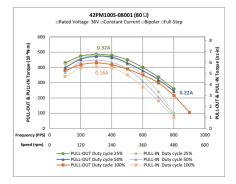
0.91A

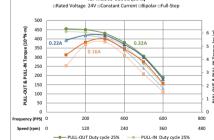
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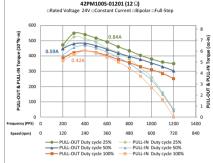
PULL-OUT & PULL-IN Torque (10<sup>-4</sup>N·m)

42PM100S4-08001









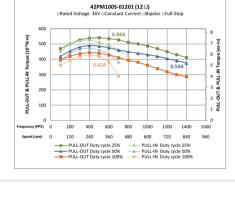
42PM100S4-01201

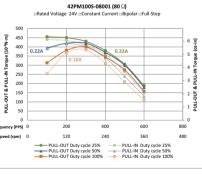
⊇) ⊐Bipolar ⊐Full-Step

42PM100S-01201 (12 Ω) □Rated Voltage 12V □Constant Current □Bip

0.84A

0.59A





# 42PM048L - Ø42mm, L, 7.5°



٠	Phases	2
٠	Steps / Revolution	7.5°
•	Shaft Load	
	Axial	1N
	Radial	7.5N
٠	IP Rating	40
•	Approvals	RoHS
٠	Operating Temp.	-20°C to +50°C
٠	Insulation Class	B, 130°C
٠	Insulation Resistance	100 MegOhms

#### Motor Data

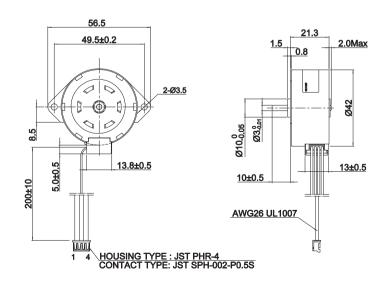
М	odel Number		42PM048L8-00302	42PM048L8-00703	42PM048L8-06001	
	Length			21.3 mm (0.84 in.)		
Step Angle		0		7.5		
Rated Current		Amps	0.85	0.55	0.2	
Lielding Teams	10 <sup>-4</sup> Nm	Тур.	950	950	1020	
Holding Torque	oz-in	Тур.	13.20	13.20	14.17	
Coil Resistance	Ohms	±10% @ 20°C	3.2	7	60	
Coil Inductance	mH	Тур.	4.7	11.8	90	
Detent Terraue	10 <sup>-4</sup> Nm	Max.	140	140	140	
Detent Torque	oz-in	Max.	1.94	1.94	1.94	
Deterrinentie	gcm <sup>2</sup>		11.57	11.57	11.57	
Rotor Inertia	10 <sup>-4</sup> oz-in <sup>2</sup>		601	601	601	
Motor Misisht		g	120			
Motor Weight	Lbs		0.26			

^ Preferred model

#### Dimensions: mm

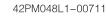
Linear Actuatoi

Rotary Motors



Motors

Downloaded from Arrow.com.



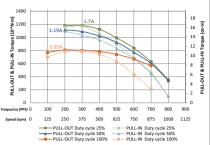
□Z) □Bipolar □Full-Step

16

42PM048L-00711 (7Ω) Rated Voltage 12V Constant Current Bi

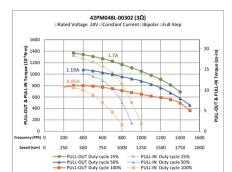
1200

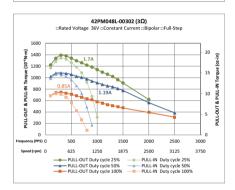


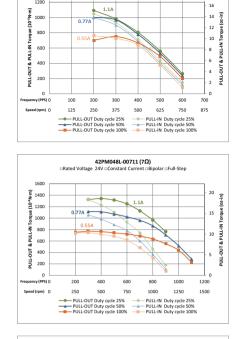


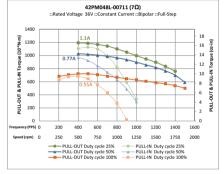
42PM048L1-00302

42PM048L-00302 (3Ω) □Rated Voltage 12V □Constant Current □Bi









42PM048L-06001 (60Ω)

□Rated Voltage 24V □Constant Curre

1200

1000

800

600

400

200

y (PPS) (

Speed (rpm) 0

PULL-OUT & PULL-IN Torque (

0.28A

100 200 300 400 500 600

125 250 375 500 625

PULL-OUT Duty cycle 25%

⊐Bipolar □Full-Step

PULL-IN Duty cycle 25% PULL-IN Duty cycle 50% PULL-IN Duty cycle 100

-

16

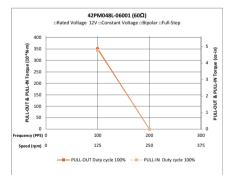
12

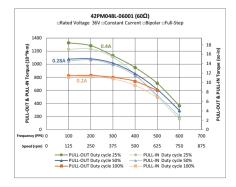
14 (ii-zo)

12 anbuot NI-110 d & LNO-110 d
 6 4 - 4
 7 2 - 4

750

42PM048L1-06001





# 42PM096L - Ø42mm, L, 3.75°



•	Phases	2
٠	Steps / Revolution	3.75°
•	Shaft Load	
	Axial	1N
	Radial	7.5N
•	IP Rating	40
•	Approvals	RoHS
•	Operating Temp.	-20°C to +50°C
•	Insulation Class	B, 130°C
٠	Insulation Resistance	100 MegOhms

#### Motor Data

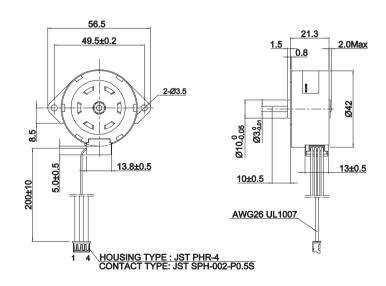
Μ	odel Number		42PM096L8-00301	42PM096L8-00701	42PM096L8-06001	
	Length			21.3 mm (0.84 in.)		
Step Angle		o		3.75		
Rated Current		Amps	0.85	0.55	0.2	
l la lalia e Tananna	10 <sup>-4</sup> Nm	Тур.	800	800	800	
Holding Torque	oz-in	Тур.	11.11	11.11	11.11	
Coil Resistance	Ohms	±10% @ 20°C	3.1	7	60	
Coil Inductance	mH	Тур.	5.5	12.1	100	
Datast	10-4 Nm	Max.	120	120	120	
Detent Torque	oz-in	Max.	1.67	1.67	1.67	
Datas la astia	gcm <sup>2</sup>		11.57	11.57	11.57	
Rotor Inertia	10 <sup>-4</sup> oz-in <sup>2</sup>		601	601	601	
	g		120			
Motor Weight	Lbs		0.26			

^ Preferred model

#### Dimensions: mm

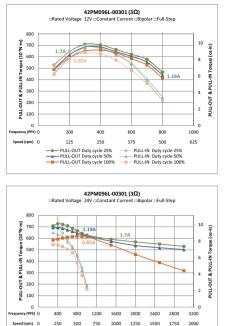
Linear Actuato

Rotary Motors

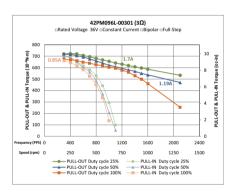


Motors

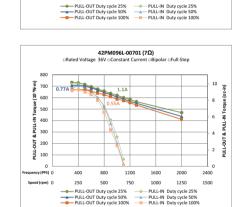
Actuator



42PM096L8-00301



PULL-OUT Duty cycle 25%
 PULL-OUT Duty cycle 50%
 PULL-OUT Duty cycle 100%



42PM096L8-00701

42PM096L-00701 (7Ω) □Rated Voltage 12V □Constant Current □Bipolar □Full-Step

Philling and the second second

0

10

8

6

Δ

2

PULL-OUT & PULL-IN Torque (oz-in)

1000

625

1.1A

400

250

42PM096L-00701 (7Ω)

600

375

.

1.1A

800

500

PULL-IN Duty cycle 25% PULL-IN Duty cycle 50% PULL-IN Duty cycle 1009

200

125

PULL-OUT Duty cycle 25%
PULL-OUT Duty cycle 50%
PULL-OUT Duty cycle 100%

400 600 800 1000 1200

700

0

requency (PPS) 0

Speed (rpm) 0

800

700

600

0.77A

125 250 375 500 625 750

orque

21 NI-1104 200

5 200

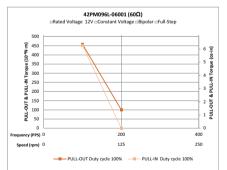
100 n

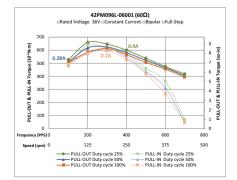
Speed (rpm) 0

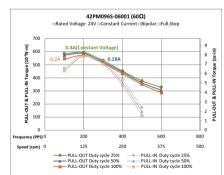
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à









Technical

44

# 42PM100L - Ø42mm, S, 3.6°



٠	Phases	2
٠	Steps / Revolution	3.6°
٠	Shaft Load	
	Axial	1N
	Radial	7.5N
•	IP Rating	40
•	Approvals	RoHS
•	Operating Temp.	-20°C to +50°C
•	Insulation Class	B, 130°C
٠	Insulation Resistance	100 MegOhms

#### Motor Data

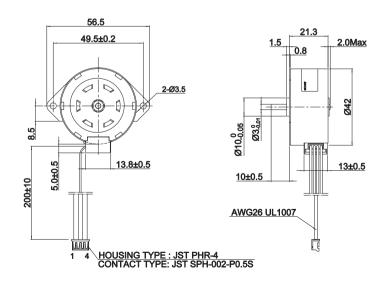
Мо	del Number		42PM100L8-00301	42PM100L8-00701	42PM100L8-06001	
	Length			21.3 mm (0.84 in.)		
Step Angle		0		3.6		
Rated Current	A	mps	0.85	0.55	0.2	
Lielding Territo	10 <sup>-4</sup> Nm	Тур.	850	850	850	
Holding Torque	oz-in	Тур.	11.81	11.81	11.81	
Coil Resistance	Ohms	±10% @ 20°C	3.1	7	60	
Coil Inductance	mH	Тур.	5.2	11.6	98	
Detert Terring	10 <sup>-4</sup> Nm	Max.	140	140	140	
Detent Torque	oz-in	Max.	1.94	1.94	1.94	
Deterrite	gcm <sup>2</sup>		11.57	11.57	11.57	
Rotor Inertia	10 <sup>-4</sup> oz-in <sup>2</sup>		601	601	601	
Mater Mainte		g	120			
Motor Weight	Lbs		0.26			

^ Preferred model

#### Dimensions: mm

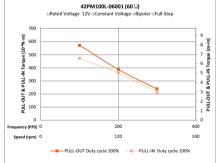
Linear Actuator

Rotary Motors



Motors





42PM100L8-00301

42PM100L-00301 (3 Ω) Rated Voltage 12V Constant Current Bipolar Full-Step

-

1.19A

PULL-IN Duty cycle 25% PULL-IN Duty cycle 50% PULL-IN Duty cycle 100%

nolar ⊐Full-Sten

PULL-IN Duty cycle 25% PULL-IN Duty cycle 50% PULL-IN Duty cycle 100%

ଘ) ⊐Bipolar ⊐Full-Step

1.19A

+

42PM100L-00301 (3 Ω)

1.7A 

PULL-OUT Duty cycle 25%
 PULL-OUT Duty cycle 25%
 PULL-IN Duty cycle 50%
 PULL-IN Duty cycle 50%
 PULL-IN Duty cycle 100%

36V □Constant Cu

PULL-OUT & PULL-IN Torque (oz-in)

500

ncy (PPS) ()

800 700 600 500 400 300 PULL-OUT & PULL-IN Torque (10<sup>-4</sup>N-m)

Speed (rpm) ()

(m·NF-01) europarte (10-100) 8 200 autor (10-100) 400 300 autor (10-100) 400

Speed (rpm) ()

y (PPS) ()

Speed (rpm) 0

1 7 4

PULL-OUT Duty cycle 25%
PULL-OUT Duty cycle 50%
PULL-OUT Duty cycle 100%

1.19A

□Rated Voltage

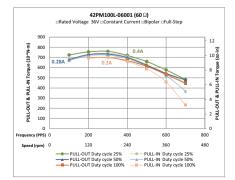
0.854

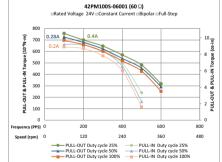
PULL-OUT Duty cycle 25%
PULL-OUT Duty cycle 50%
PULL-OUT Duty cycle 100%

42PM100L-00301 (3 Ω) □Rated Voltage 24V □Constant Current = Pi

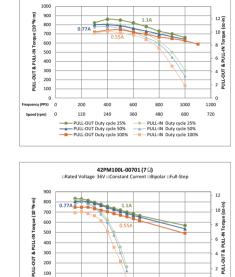
\*

PULL-OUT & PULL-IN Torque (10<sup>-4</sup>N·m)









42PM100L8-00701 42PM100L-00701 (7 Ω) □Rated Voltage 12V □Constant Current □Bipolar □Full-Step

42PM100L-00701 (7 Ω) □Rated Voltage 24V □Constant Current □Bipolar □Full-Step

-

PULL-IN Duty cycle 25% PULL-IN Duty cycle 50% PULL-IN Duty cycle 1009

1.14

0.77A

PULL-OUT Duty cycle 25%
PULL-OUT Duty cycle 50%
PULL-OUT Duty cycle 100%

° %

1 NI-TINI & LOO-TINI

PULL-IN Duty cycle 25%
 PULL-IN Duty cycle 50%
 PULL-IN Duty cycle 100%

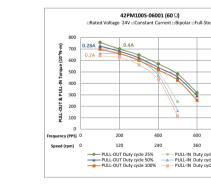
equency (PPS) 0

Speed (rpm) 0

y (PPS)

Speed (rpm) 

PULL-OUT & PULL-IN Torque (10<sup>-4</sup>N·m)



PULL-OUT Duty cycle 25%
PULL-OUT Duty cycle 50%
PULL-OUT Duty cycle 100%

## Note

Product Overviev

# Linear Actuators

- Ø20mm
- Ø25mm
- Ø28mm
- Ø35mm

Actuators

## 20LN024M0 - 00601 Non-Captive





•	Phases
•	Steps
•	Shaft Stroke
•	Linear Step Travel
•	Bearing System
•	Ambient Temp.
•	Insulation Class

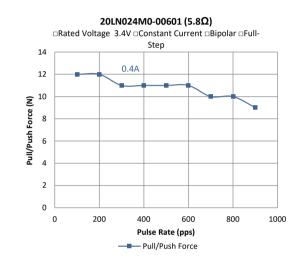
Insulation Resistance

#### 24 20 mm 0.0254 mm 2 Ball Bearings -10°C to +65°C B, 130°C 20MegOhms

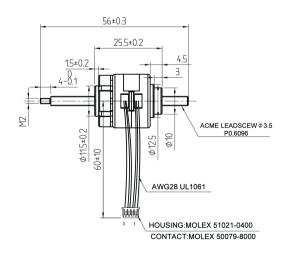
2

### Motor Data

Mod	20LN024M0-00601		
Step Angle		0	15
Constant Current		Amps	0.4
Holding Force	N	Тур.	30
Holding Force	oz	Тур.	107.9
Coil Resistance	Ohms	±7% @ 25°C	5.8
Coil Inductance	mH	±15%	2.85
Pull/Push Force	N	@ 400ppp	9
Fuil/Fusil Force	oz	@ 400pps	32.4
Roted Not Weight	g		27
Rated Net Weight	Lbs		0.060



### Dimensions: mm





otary

Linear Actuators

**MOONS** 



•	Phases	2
•	Steps	24
•	Shaft Stroke	12.5 mm
•	Linear Step Travel	0.0254 mm
•	Bearing System	2 Ball Bearings
•	Ambient Temp.	-10°C to +65°C
•	Insulation Class	B, 130°C
•	Insulation Resistance	20MegOhms

30 25

**Dull/Push Force (N)** 15 10

5 0 0

20LN024L8-00602 (6.8Ω) Rated Voltage 24V Constant Current Bipolar Full-Step

0.4A

200

400

Pulse Rate (pps) 

600

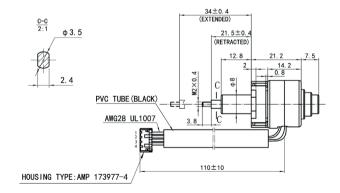
800

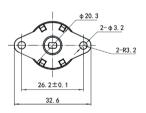
1000

#### Motor Data

Мос	20LN024L8-00602		
Step Angle		0	15
Constant Current		Amps	0.4
Loding Fores	N	Тур.	
Holding Force	oz	Тур.	
Coil Resistance	Ohms	±7% @ 25°C	6.8
Coil Inductance	mH	±15%	3.29
Pull/Push Force	N	@ 400pps	23
Full/Fush Force	oz		82.7
Potod Not Woisht	g		32
Rated Net Weight	Lbs		0.071

#### Dimensions: mm





## 25LN024L4 - 00801 Non-Captive



- Steps
- Shaft Stroke
- Linear Step Travel
- Bearing System
- Ambient Temp.
- Insulation Class
- Insulation Resistance

## m D.

2

24

20 mm

0.0508 mm

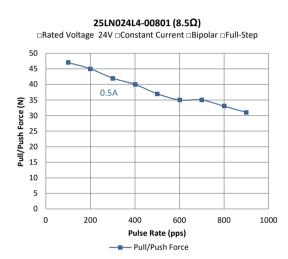
2 Ball Bearings

-10°C to +65°C B, 130°C

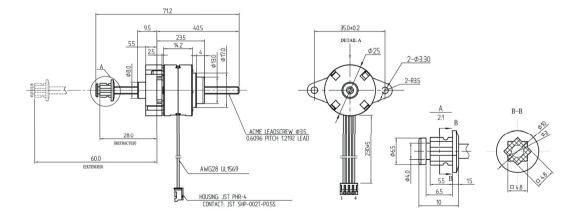
20MegOhms

#### Motor Data

Mo	25LN024L4-00801		
Step Angle		0	15
Constant Current		Amps	0.5
Lolding Force	N	Тур.	40
Holding Force	οz	Тур.	143.9
Coil Resistance	Ohms	±7% @ 25°C	8.5
Coil Inductance	mH	±15%	4.5
Pull/Push Force	N	@ 400pps	31.5
Pul/Push Force	oz		113.3
Dated Nat Weight	g		45
Rated Net Weight	Lbs		0.099



#### Dimensions: mm



Rotary

Linear Actuator

**MOONS** 



•	Phases	2
٠	Steps	24
٠	Shaft Stroke	13 mm
•	Linear Step Travel	0.0254 mm
•	Bearing System	2 Ball Bearings
٠	Ambient Temp.	-10°C to +65°C
٠	Insulation Class	B, 130°C
•	Insulation Resistance	20MegOhms

50

45

40

**bull/bush Force (N)** 30 25 20 15

25LN024S8-01402 (14Ω) Rated Voltage 12V Constant Current Bipolar Full-Step

-

600

800

1000

1

0.35A

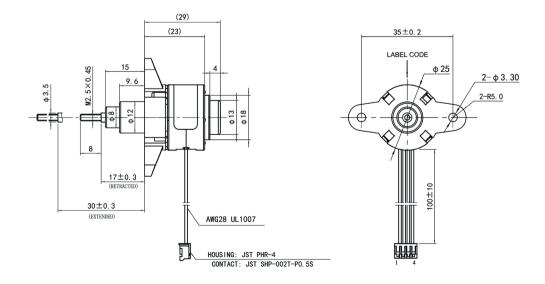
400 Pulse Rate (pps) 

200

#### Motor Data

Mo	25LN024S8-01402		
Step Angle		0	15
Constant Current		Amps	0.35
Loding Force	Ν	Тур.	40
Holding Force	oz	Тур.	143.9
Coil Resistance	Ohms	±7% @ 25°C	14
Coil Inductance	mH	±15%	9.1
	N	@ 400pps	32
Pull/Push Force	oz		115.1
Dated Nat Weight	g		45
Rated Net Weight	Lbs		0.099

#### Dimensions: mm



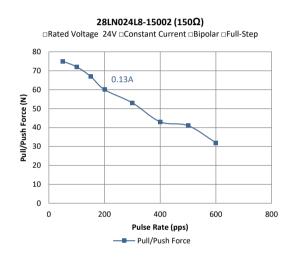
## 28LN024L8 - 15002 Captive



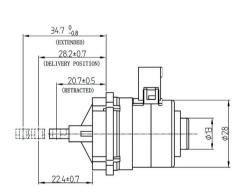
•	Phases	2
•	Steps	24
•	Shaft Stroke	13 mm
	Linear Step Travel	0.042 mm
	Bearing System	2 Ball Bearings
•	Ambient Temp.	-10°C to +80°C
,	Insulation Class	B, 130°C
•	Insulation Resistance	20MegOhms

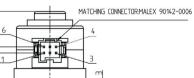
#### Motor Data

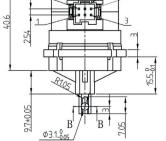
Мос	28LN024L8-15002		
Step Angle		0	15
Constant Current	Amps		0.13
Holding Force	Ν	Тур.	
	oz	Тур.	
Coil Resistance	Ohms	±7% @ 25°C	150
Coil Inductance	mH	±15%	112
Pull/Push Force	Ν	@ 400pps	45
Full/Fush Force	oz		161.9
Poted Net Weight	g		45
Rated Net Weight	Lbs		0.099

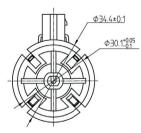


#### Dimensions: mm













•	Phases	2
٠	Steps	24
٠	Shaft Stroke	36 mm
٠	Linear Step Travel	0.0333 mm
•	Bearing System	2 Ball Bearings
•	Ambient Temp.	-20°C to +50°C
٠	Insulation Class	B, 130°C
٠	Insulation Resistance	100MegOhms

120 100

Pull/Push Force (N)

35LN024L6-00501 (4.6Ω) Rated Voltage 12V Constant Current Bipolar Full-Step

0.8A

400

Pulse Rate (pps) 

600

800

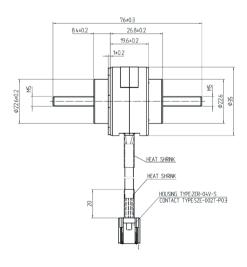
1000

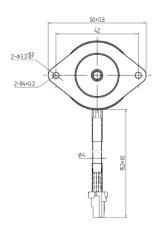
200

#### Motor Data

Мос	35LN024L6-00501				
Step Angle		0	15		
Constant Current		Amps	0.8		
	N	Тур.			
Holding Force	oz	Тур.			
Coil Resistance	Ohms	±7% @ 25°C	4.6		
Coil Inductance	mH	±15%	5		
Pull/Push Force	N	@ 400mma	50		
Full/Fush Force	oz	@ 400pps	179.9		
	g				
Rated Net Weight	Lbs				

## Dimensions: mm





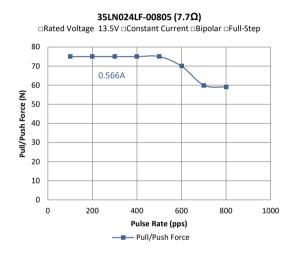
## 35LN024LF - 00805 Captive



- Steps
- Shaft Stroke
- Linear Step Travel
- Bearing System
- Ambient Temp.
- Insulation Class
- Insulation Resistance

#### Motor Data

Mo	35LN024LF-00805		
Step Angle		0	15
Constant Current	Amps		0.566
	N	Тур.	110
Holding Force	oz	Тур.	395.7
Coil Resistance	Ohms	±7% @ 25°C	7.7
Coil Inductance	mH	±15%	9.75
Pull/Push Force	Ν	@ 400mma	50
Full/Fusit Force	oz	@ 400pps	179.9
	g		
Rated Net Weight	Lbs		



2

24

12 mm

0.0333 mm

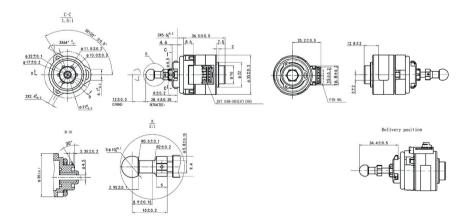
B, 130°C

2 Ball Bearings

-40°C to +120°C

100MegOhms

#### Dimensions: mm



Rotary

Linear Actuator

Product Overvie

# Gearmotor

PG15L PG16L PG22L

Rotary Motors

Linear Actuator

Gearmotors

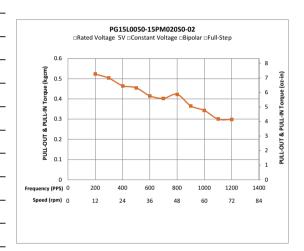


## PG15L0050-15PM020S0-02

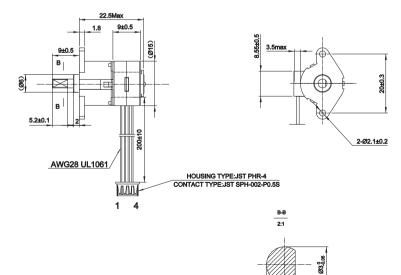


#### Motor Data

Phases		2	
Steps/Revolution		18°/50(0.36°)	
Rated Voltage	Vdc	5	
Frame Size	mm	15mm	
Length	mm	22.5	
Holding Torque	mNm	49 @200pps	
	oz-in		
Gear Ratio		50:1	
Resistance	Ohms ±10%@20°C	10	
Coil Type		Bi-Polar	
Insulations Class		Class E(120°C)	
IP Rating		IP40	
Weight	g	11	



#### Dimensions: mm



2.5.0

Linear Actuators

Product Overviev

Motor

Actuators

Gearmotors

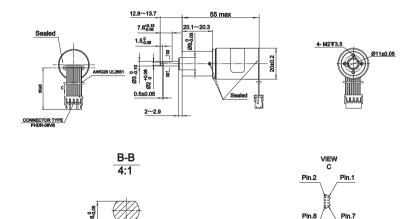
Technical

## Dimensions: mm

Motor Data

Phases

Steps/Revolution

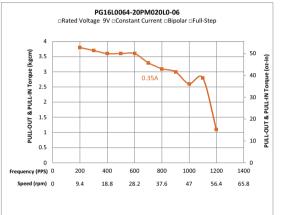




Hade a start

2

18°/64(0.28°)



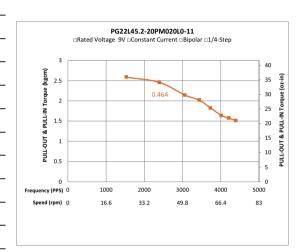


## PG22L45.2-20PM020L0-11



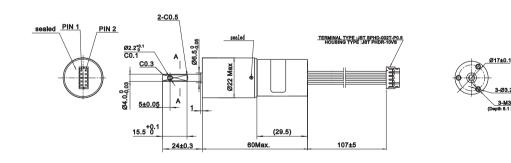
#### Motor Data

	2	
	18°/45(0.4°)	
Vdc	8.5	
mm	22mm	
mm	60	
mNm	200 @753pps	
oz-in		
	45.2:1	
Ohms ±10%@20°C	6.4	
	Bi-Polar	
	Class B(130°C)	
	IP56	
g	120	
	mm mm mNm oz-in Ohms ±10%@20°C	



#### Dimensions: mm

Linear



A-A 2:1

4

Structure of the state

## Dimensions: mm

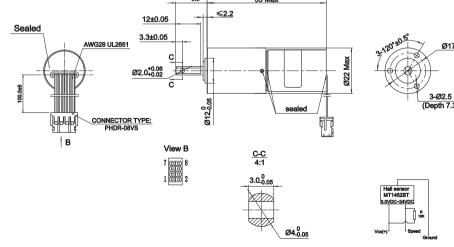
**IP** Rating

Weight

#### 15<sub>.0.5</sub> 55 Max ≤2.2 12±0.05 Sealed 3.3±0.05 AWG28 UL2651 С Ø22 Max Ø2.0+0.08 ē 100,0±5 3-Ø2.5 (Depth 7.3) Ø12.0.05 <u>h</u> 'n CONNECTOR TYPE: PHDR-08VS В View B <u>C-C</u> 4:1 7 😐 8 1 👓 2 3.0.0.05 V Ø4\_0.05

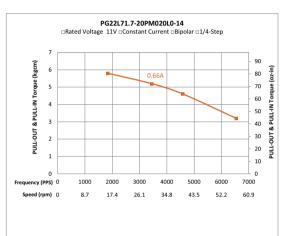
IP56

100



Motor Data		
Phases		2
Steps/Revolution		18°/72(0.25°)
Rated Voltage	Vdc	9.2
Frame Size	mm	22mm
Length	mm	55
Holding Torque	mNm	420 @384pps
	oz-in	
Gear Ratio		71.7:1
Resistance	Ohms ±10%@20°C	6.4
Coil Type		Bi-Polar
Insulations Class		Class B(130°C)

g





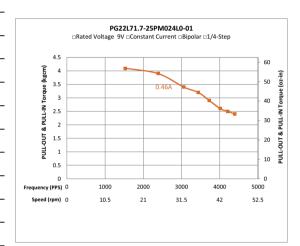
## PG22L71.7-25PM024L0-01



#### Motor Data

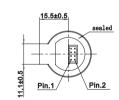
Motor Data			
Phases		2	
Steps/Revolution		15°/72(0.21°)	
Rated Voltage	Vdc	11	
Frame Size	mm	25mm	
Length	mm	58	
Holding Torque	mNm	500 @457pps	
	oz-in		
Gear Ratio		71.7:1	
Resistance	Ohms ±10%@20°C	4	
Coil Type		Bi-Polar	
Insulations Class		Class B(130°C)	
IP Rating		IP56	
Weight	g	100	

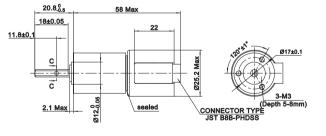
Hall Sensor MT1452BT

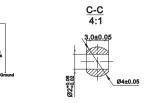


#### Dimensions: mm

Linear Actuator







61

Product Overviev

# **Technical**

Speed-Torque Characteristics
 About Rated Current
 Conversion Factors

Rotary

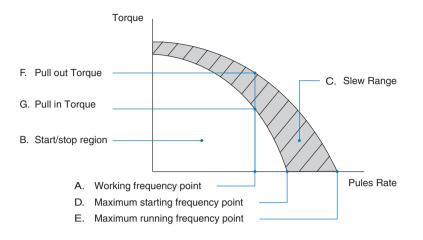


Linear Actuator

Gearmotors

## Speed-Torque Characteristics

The dynamic torque curve is an important aspect of stepping motor's output performance. The followings are some keyword explanations.



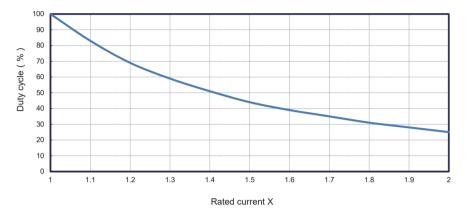
- A. Working frequency point express the stepping motors rotational speed versus the drive pulse rate. n = q \* Hz / (360 \* D)
  - n: rev/sec
  - Hz: the frequency value or the driver pulse rate. D:the subdividing value of motor driver q: the step angle of stepping motor
- B. Start/Stop region: the region in which a stepping motor can be directly started or stopped.
- C. Slew Range: the motor cannot be started directly in this area. It must be started in the start/stop region first and then accelerated to this area. In this area, the motor can not be directly stopped, either. Otherwise this will lead to losing-step. The motor must be decelerated back to the start/stop region before it can be stopped.
- D. Maximum starting frequency point at this point, the stepping motor can reach its maximum starting speed under unloaded condition.
- E. Maximum running frequency point at this point the stepping motor can reach its maximum running speed under an unloaded condition.
- F. Pull-in Torque: the maximum dynamic torque value that a stepping motor can load directly at the particular operating frequency point.
- G. Pull-out Torque: the maximum dynamic torque value that a stepping motor can load at the particular operating frequency point when the motor has been started. Because of the inertia of rotation the Pull-Out Torque is always larger than the Pull-In Torque.

## About Rated Current

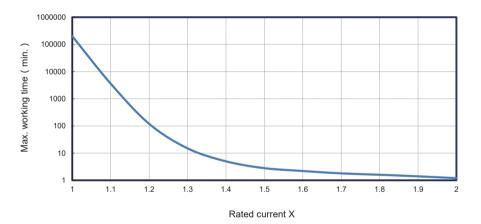
Rated current of PM stepper is limited by thermal characteristics.

In actual application, to get higher output torque we can supply with higher current, which extend rated value. In such case, the motor can't be in continuous working, otherwise the winding will be overheat even damage device. Duty cycle need to be not reach to 100%, also we must consider Max. working time - Ton Max.

### How to define the duty cycle with multiple of rated current



### How to calculate the max. Single working time with multiple of rated current



#### Motor winding temperature rising curve

Temperature rising percentage ( % ) Temperature rise time (min.)

Rotary Motors

Linear Actuator

# **Conversion Factors**

## Length

A B			m	inch	feet	
mm	<b>mm</b> 0.1		0.001	0.03937	0.003281	
cm	10		0.01	0.3937	0.03281	
m	1,000	100		39.37	3.281	
<b>inch</b> 25.4		2.54	0.0254		0.08333	
feet	304.8	30.48	0.348	12		

Multiply "A" units by conversion factor to obtain "B" units

#### • Force

AB	g	kgf	oz	lb	Newton	
g		0.001	0.03527	0.002205	0.0098	
kgf	kgf 1,000		35.27	22.05	9.807	
oz	<b>oz</b> 28.35 0.0283		0.0625		0.278	
lb	453.6	0.4536	16		4.448	
<b>Newton</b> 102		0.102	3.597	0.2248		

#### Torque

AB	Nm	Ncm	mNm	kgm*	kgcm*	gcm*	oz-in	lb-ft	lb-in
Nm		100	1,000	0.102	10.2	10,200	141.6	0.7376	8.851
Ncm	0.01		10	0.00102	0.102	102	1.416	0.007376	0.08851
mNm	0.001	0.1		0.000102	1.0102	10.2	0.1416	0.000738	0.008851
kgm*	9.807	980.7	9807		100	100,000	1,389	7.233	86.8
kgcm*	0.09807	9.807	98.07	0.01		1,000	13.89	0.07233	0.868
gcm*	9.81E-05	0.009807	0.09807	0.00001	0.001		0.01389	7.23E-05	0.000868
oz-in	0.007062	0.7062	7.062	0.00072	0.07201	72.01		0.00521	0.0625
lb-ft	1.356	135.6	135.6	0.1383	13.83	13,830	192		12
lb-in	0.113	11.3	113	0.01152	1.152	1,152	16	0.0833	

#### Inertia •

AB	kgm²	kgcm²	gcm²	oz-in²	oz-in- sec²	lb-in²	lb-in- sec²	lb-ft²	lb-ft- sec <sup>2</sup> (slug ft <sup>2</sup> )
kgm²		10,000	10,000,000	54,700	142	3,420	8.85	23.7	0.738
kgcm <sup>2</sup>	0.0001		1,000	5.47	0.0142	0.342	0.000885	0.00237	7.38E-05
gcm²	1E-07	0.001		0.00547	1.42E-05	0.000342	8.85E-07	2.37E-06	7.38E-08
oz-in²	1.83E-05	0.1829	183		0.00259	0.0625	0.000162	0.000434	1.35E-05
oz-in-sec <sup>2</sup>	0.00706	70.62	70,600	386		24.1	0.0625	0.168	0.00521
lb-in <sup>2</sup>	0.000293	2.926	2,930	16	0.0414		0.00259	0.00694	0.000216
lb-in-sec <sup>2</sup>	0.113	1,130	1,130,000	6,180	1.6	386		2.68	0.0833
lb-ft <sup>2</sup>	0.0421	421.4	421,000	2,300	5.97	144	0.373		0.318
lb-ft-sec <sup>2</sup> (slug ft <sup>2</sup> )	1.36	13,600	13,600,000	74,100	192	4,630	12	32.2	

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