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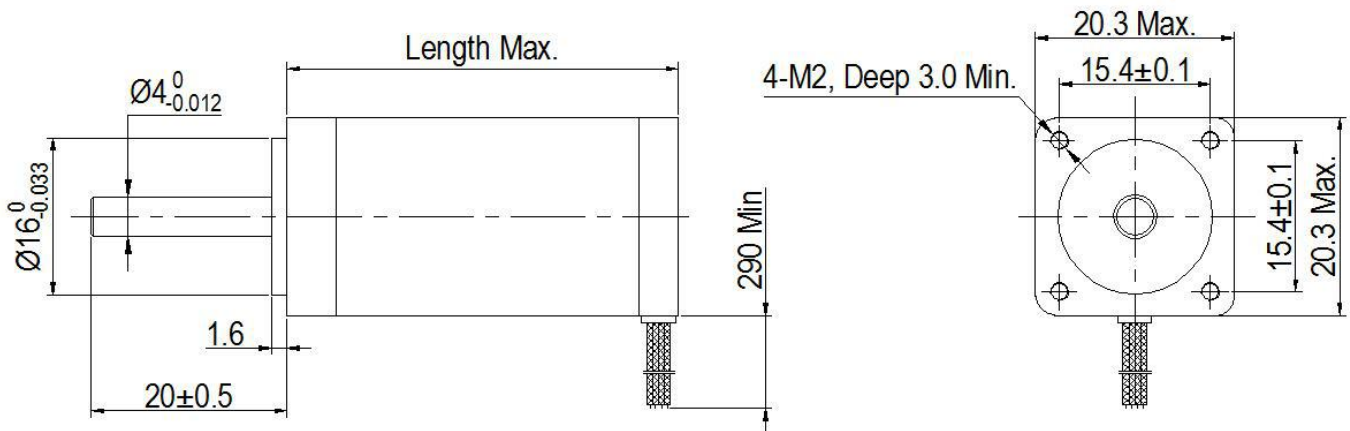
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# 1.8° Size 20mm Hybrid Stepper Motor



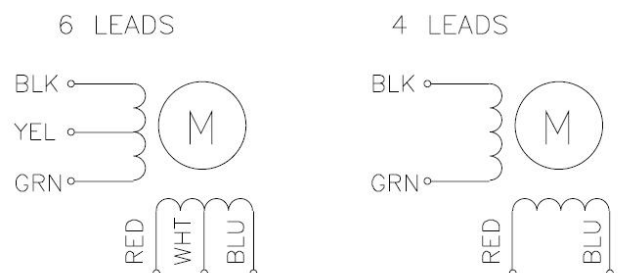
Item	General Specifications
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	max. 80°C (rated current, 2 phase on)
Ambient Temperature	-20°C~+50°C
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	max. 0.02 (450g-load)
Shaft Axial Play	max. 0.08 (450g-load)
Max. radial force	20N (20mm from the flange)
Max. axial force	2N



## Configuration

- Encoder
- Brakes
- Gears
- Shaft Modification and double shaft
- Other winding voltage possible
- Other Types available with special length

## Wiring Diagram



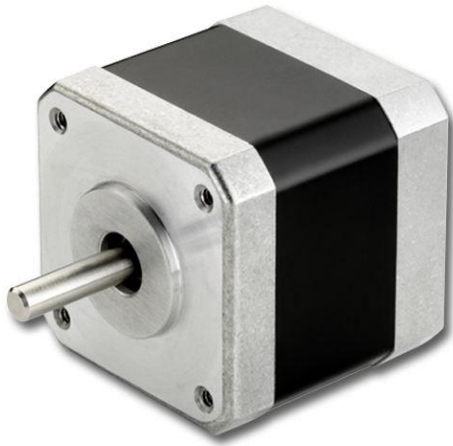
## 1.8° Size 20mm Hybrid Stepper Motor

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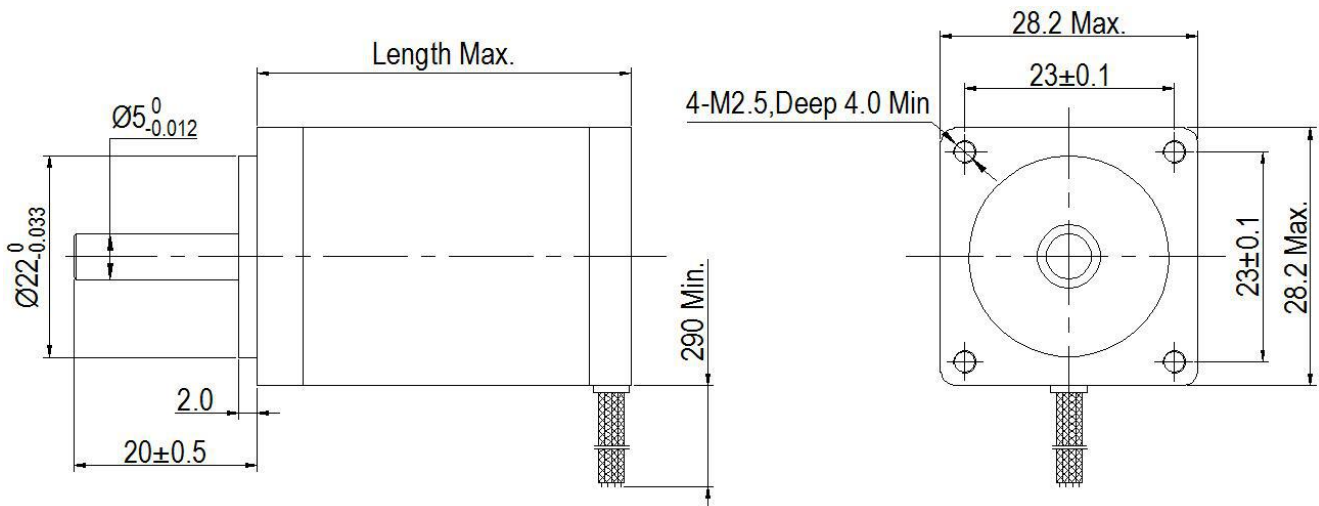
### Specification

Type	Voltage /phase [V]	Current /phase [A]	Resistance /phase [Ω]	Inductance /phase [mH]	Holding Torque [Ncm]	Detent Torque [Ncm]	# of Leads	Weight [kg]	Length [mm]
M020HB0204-28S0	4.6	0.2	23	8.2	1.4	0.2	4	0.05	28
M020HB0604-28S0	1.92	0.6	3.2	0.9	1.4	0.2	4	0.05	28
M020HB0204-33S0	5	0.2	25	8.4	1.8	0.3	4	0.07	33
M020HB0604-33S0	3.9	0.6	4.5	1.7	1.8	0.3	4	0.07	33
M020HB0604-40S0	3.48	0.6	5.5	1.8	3.0	0.5	4	0.08	40
M020HB0804-40S0	4.32	0.8	5.4	1.5	3.0	0.5	4	0.08	40

# 1.8° Size 28mm Hybrid Stepper Motor



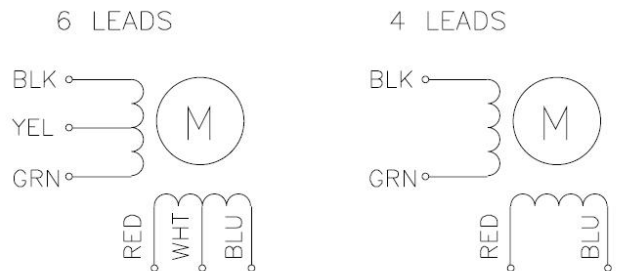
Item	General Specifications
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	max. 80°C (rated current, 2 phase on)
Ambient Temperature	-20°C~+50°C
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	max. 0.02 (450g-load)
Shaft Axial Play	max. 0.08 (450g-load)
Max. radial force	28N (20mm from the flange)
Max. axial force	10N



## Configuration

- Encoder
- Brakes
- Gears
- Shaft Modification and double shaft
- Other winding voltage possible
- Other Types available with special length

## Wiring Diagram



## 1.8° Size 28mm Hybrid Stepper Motor

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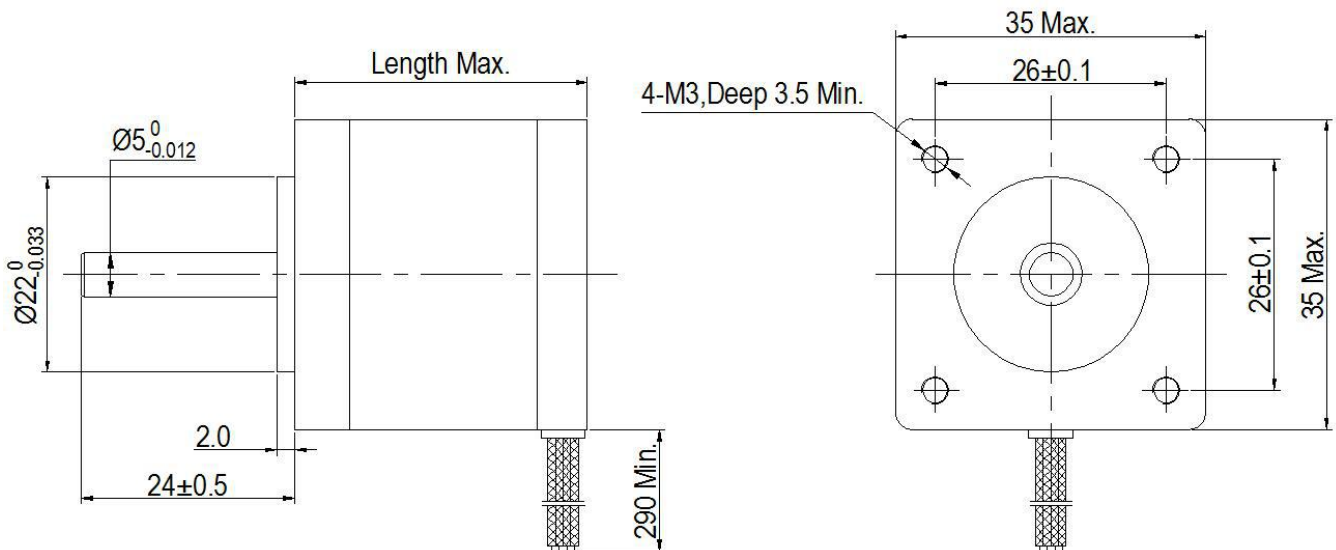
### Specification

Type	Voltage /phase [V]	Current /phase [A]	Resistance /phase [Ω]	Inductance /phase [mH]	Holding Torque [Ncm]	Detent Torque [Ncm]	# of Leads	Weight [kg]	Length [mm]
M028HB0354-28S0	4.2	0.35	12	5.8	4.5	0.3	4	0.105	28
M028HB0604-28S0	2.52	0.6	4.2	2.2	4.5	0.3	4	0.105	28
M028HB0674-33S0	3.8	0.67	5.6	3.4	6.0	0.4	4	0.110	33
M028HB0956-33S0	2.66	0.95	2.8	0.8	4.3	0.4	6	0.110	33
M028HB0354-41S0	7.0	0.35	20	15	6.0	0.5	4	0.140	41
M028HB0604-41S0	4.2	0.6	7.0	6.0	6.0	0.5	4	0.140	41
M028HB0674-50S0	6.2	0.67	9.4	7.2	12	0.8	4	0.200	50
M028HB0956-50S0	4.4	0.95	4.6	1.8	12	0.8	6	0.200	50

# 0.9° Size 35mm Hybrid Stepper Motor



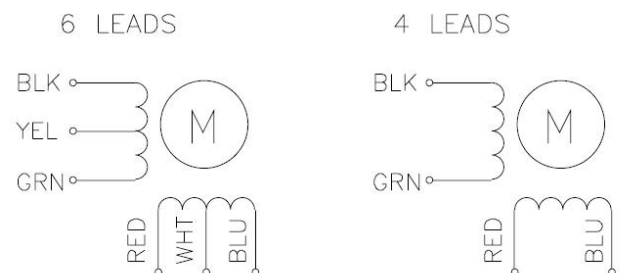
Item	General Specifications
Step Angle	0.9°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	max. 80°C (rated current, 2 phase on)
Ambient Temperature	-20°C~+50°C
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	max. 0.02 (450g-load)
Shaft Axial Play	max. 0.08 (450g-load)
Max. radial force	28N (20mm from the flange)
Max. axial force	10N



## Configuration

- Encoder
- Brakes
- Gears
- Shaft Modification and double shaft
- Other winding voltage possible
- Other Types available with special length

## Wiring Diagram



## 0.9° Size 35mm Hybrid Stepper Motor

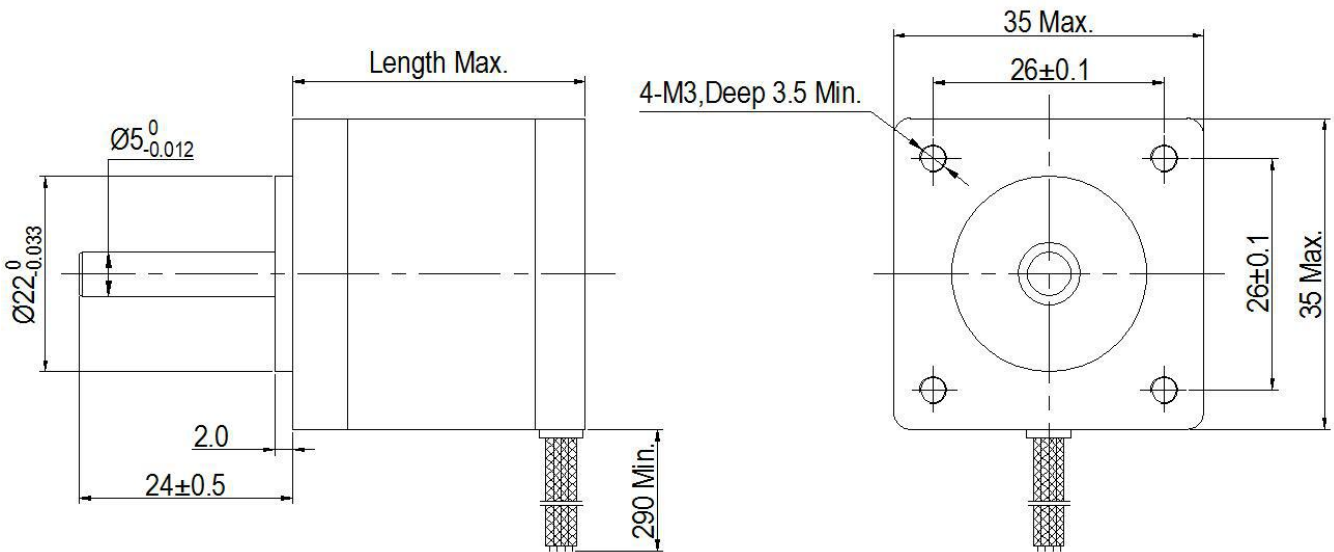
### Specification

Type	Voltage /phase [V]	Current /phase [A]	Resistance /phase [Ω]	Inductance /phase [mH]	Holding Torque [Ncm]	Detent Torque [Ncm]	# of Leads	Weight [kg]	Length [mm]
M035HB0364-28S1	7.9	0.36	22	20	9	0.3	4	0.130	28
M035HB0406-28S1	12	0.4	30	12	8	0.3	6	0.150	28
M035HB0804-28S1	3.6	0.8	4.5	4.2	9	0.3	4	0.130	28
M035HB0406-33S1	12	0.4	30	18	10	0.6	6	0.190	33
M035HB0554-33S1	6.6	0.55	12	19	14	0.6	4	0.190	33
M035HB0804-33S1	4.8	0.8	6.0	10	14	0.6	4	0.190	33

# 1.8° Size 35mm Hybrid Stepper Motor



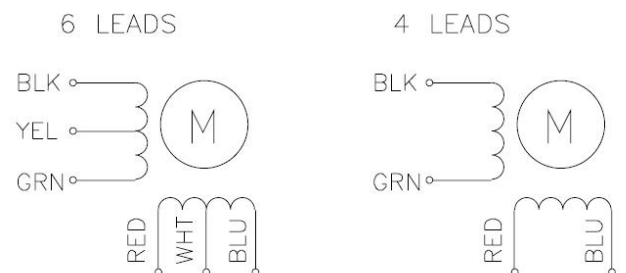
Item	General Specifications
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	max. 80°C (rated current, 2 phase on)
Ambient Temperature	-20°C~+50°C
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	max. 0.02 (450g-load)
Shaft Axial Play	max. 0.08 (450g-load)
Max. radial force	28N (20mm from the flange)
Max. axial force	10N



## Configuration

- Encoder
- Brakes
- Gears
- Shaft Modification and double shaft
- Other winding voltage possible
- Other Types available with special length

## Wiring Diagram





## 1.8° Size 35mm Hybrid Stepper Motor

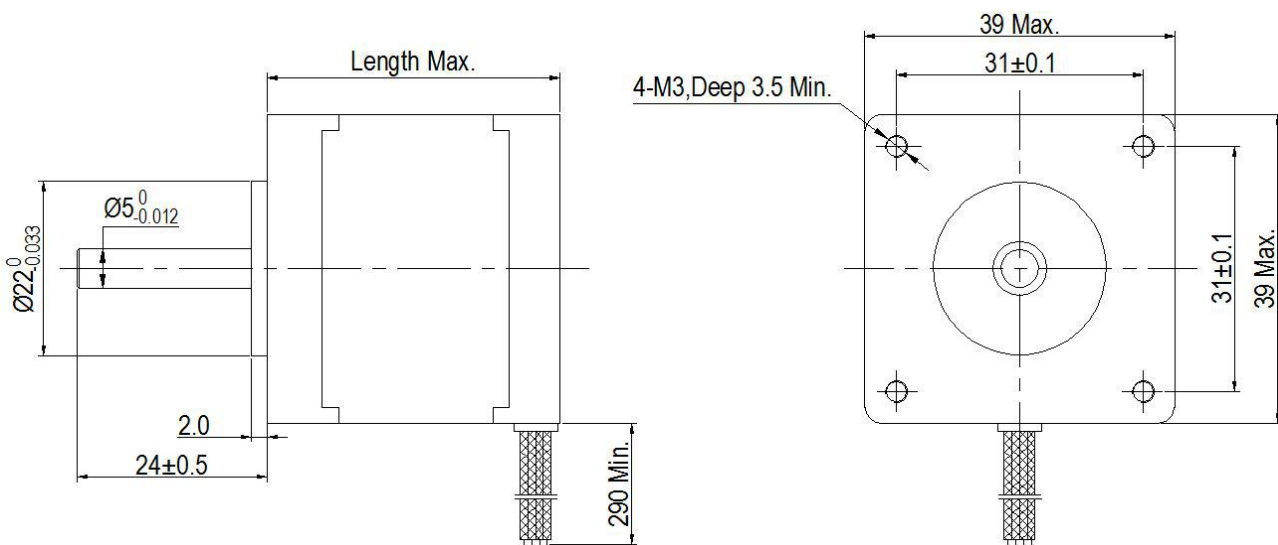
### Specification

Type	Voltage /phase [V]	Current /phase [A]	Resistance /phase [Ω]	Inductance /phase [mH]	Holding Torque [Ncm]	Detent Torque [Ncm]	# of Leads	Weight [kg]	Length [mm]
M035HB0404-20S0	10.8	0.4	27	17	6.5	0.5	4	0.100	20
M035HB0506-20S0	12	0.5	24	9	6.0	0.8	6	0.100	20
M035HB0734-20S0	6.57	0.73	9.0	4.0	6.0	0.5	4	0.100	20
M035HB0404-26S0	14	0.4	35	16	7.0	0.6	4	0.110	26
M035HB0754-26S0	3.2	0.75	4.3	4	7.0	0.6	4	0.110	26
M035HB0406-28S0	12	0.4	30	15	12.5	0.8	6	0.120	28
M035HB0804-28S0	4.3	0.8	5.4	7.6	12.5	0.8	4	0.120	28
M035HB1004-28S0	3.5	1.0	3.5	3.5	12.5	0.8	4	0.140	28
M035HB0506-33S0	11	0.5	22	14.2	10	1.0	6	0.170	33
M035HB0804-33S0	5.2	0.8	6.5	9.8	18	1.0	4	0.160	33

# 0.9° Size 39mm Hybrid Stepper Motor



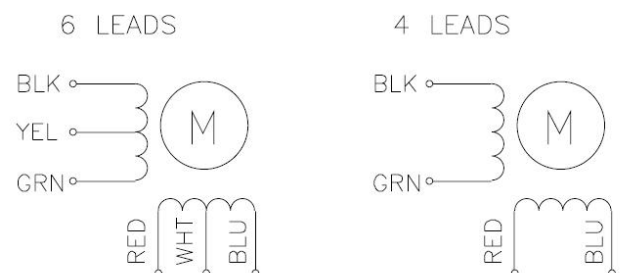
Item	General Specifications
Step Angle	0.9°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	max. 80°C (rated current, 2 phase on)
Ambient Temperature	-20°C~+50°C
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	max. 0.02 (450g-load)
Shaft Axial Play	max. 0.08 (450g-load)
Max. radial force	28N (20mm from the flange)
Max. axial force	10N



## Configuration

- Encoder
- Brakes
- Gears
- Shaft Modification and double shaft
- Other winding voltage possible
- Other Types available with special length

## Wiring Diagram



## 0.9° Size 39mm Hybrid Stepper Motor

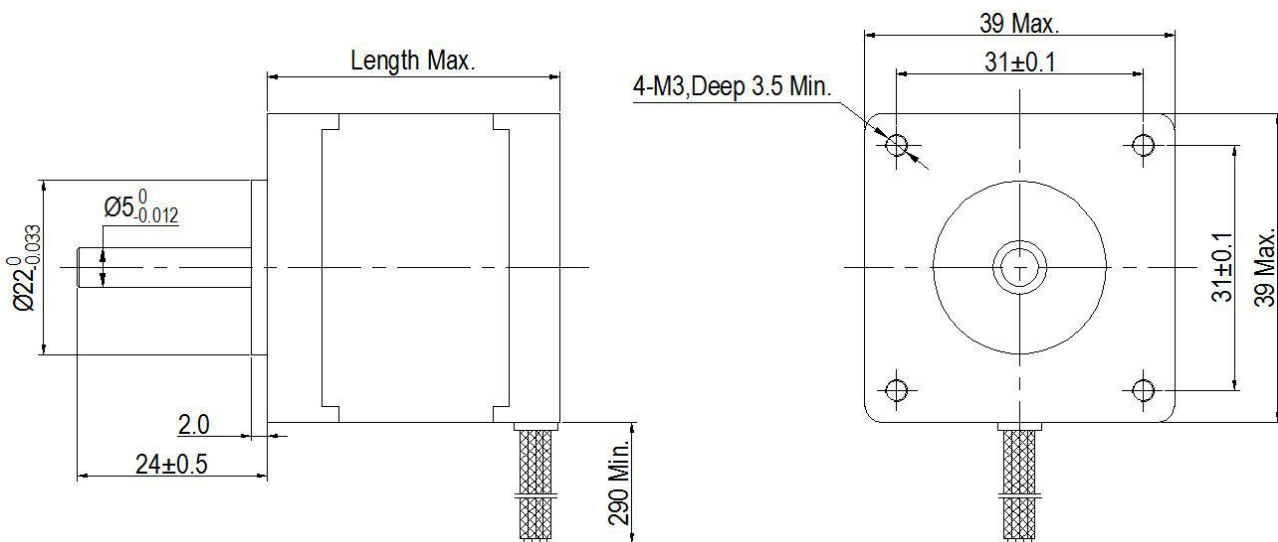
### Specification

Type	Voltage /phase [V]	Current /phase [A]	Resistance /phase [Ω]	Inductance /phase [mH]	Holding Torque [Ncm]	Detent Torque [Ncm]	# of Leads	Weight [kg]	Length [mm]
M039HB0504-20S1	4.0	0.5	8.0	8.4	8.0	0.5	4	0.100	20
M042HB0506-26S1	12	0.5	24	13	10	0.95	6	0.150	26
M042HB0604-26S1	5.4	0.6	9.0	16	14	0.8	4	0.150	26
M042HB0406-33S1	12	0.4	30	16	12	1.1	6	0.160	33
M042HB0604-33S1	5.4	0.6	9.0	15	16	1.1	4	0.160	33
M042HB1204-33S1	3.0	1.2	2.5	3.6	16	1.1	4	0.160	33
M042HB0406-40S1	12	0.4	30	26	18	1.4	6	0.210	40
M042HB0604-40S1	7.2	0.6	12	20	22	1.4	4	0.210	40
M042HB1204-40S1	3.84	1.2	3.2	5.5	22	1.4	4	0.210	40

## 1.8° Size 39mm Hybrid Stepper Motor



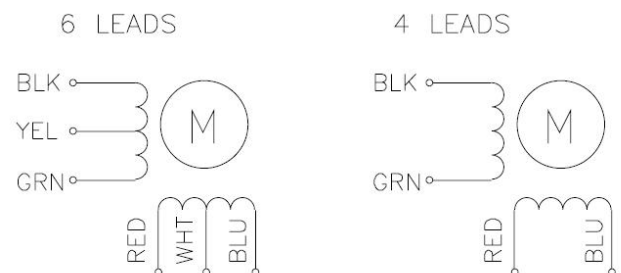
Item	General Specifications
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	max. 80°C (rated current, 2 phase on)
Ambient Temperature	-20°C~+50°C
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	max. 0.02 (450g-load)
Shaft Axial Play	max. 0.08 (450g-load)
Max. radial force	28N (20mm from the flange)
Max. axial force	10N



### Configuration

- Encoder
- Brakes
- Gears
- Shaft Modification and double shaft
- Other winding voltage possible
- Other Types available with special length

### Wiring Diagram

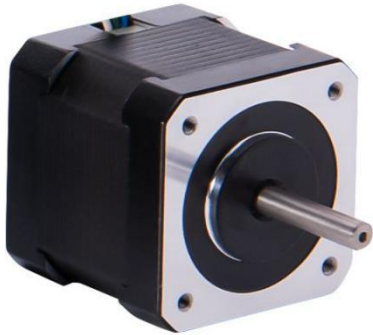


## 1.8° Size 39mm Hybrid Stepper Motor

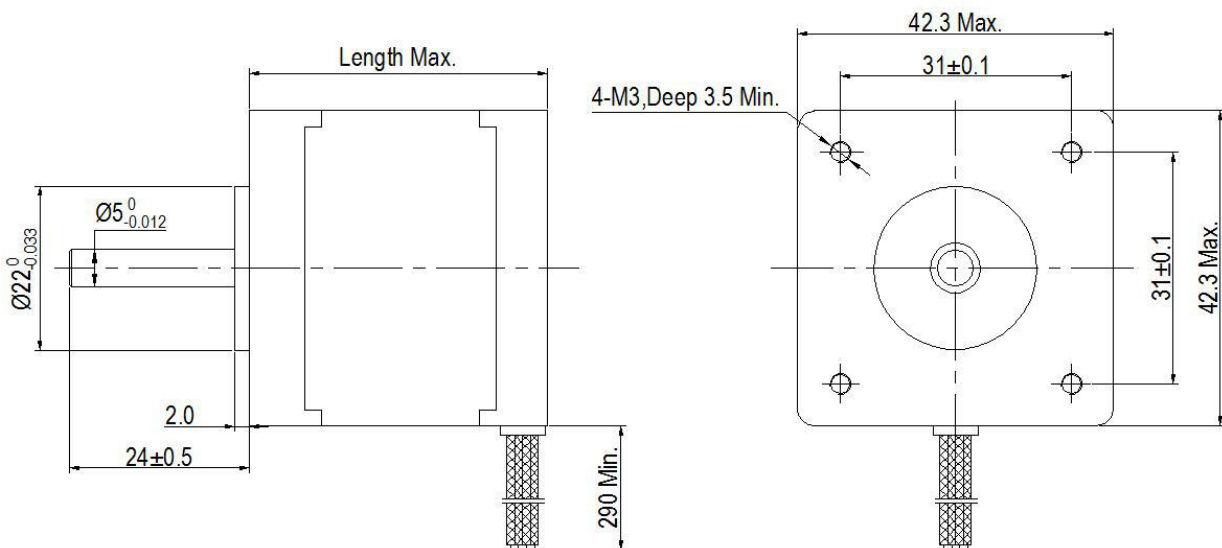
### Specification

Type	Voltage /phase [V]	Current /phase [A]	Resistance /phase [Ω]	Inductance /phase [mH]	Holding Torque [Ncm]	Detent Torque [Ncm]	# of Leads	Weight [kg]	Length [mm]
M039HB0404-20S0	2.7	0.4	6.5	5.4	5.0	0.5	4	0.120	20
M039HB0484-20S0	12	0.48	25	22	10	0.5	4	0.120	20
M039HB1704-20S0	2.8	1.7	1.65	1.5	12	0.5	4	0.120	20
M039HB0404-34S0	12	0.4	30	34.5	22	1.2	4	0.180	34
M039HB0604-34S0	9.0	0.6	15	16	22	1.2	4	0.180	34
M039HB1004-34S0	5.0	1.0	5.0	3.0	20	1.2	4	0.180	34
M039HB0406-38S0	12	0.4	30	22	18	1.2	6	0.210	38
M039HB0604-38S0	7.5	0.6	12	20	24	1.2	4	0.210	38
M039HB1204-38S0	4.56	1.2	3.8	6.5	24	1.2	4	0.210	38

# 0.9° Size 42mm Hybrid Stepper Motor



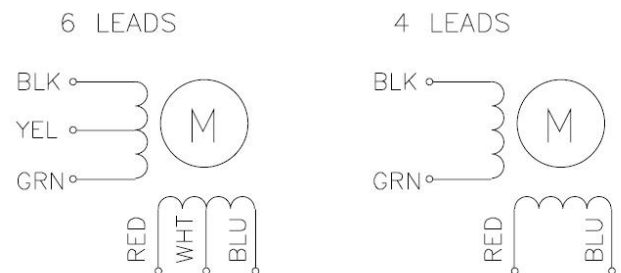
Item	General Specifications
Step Angle	0.9°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	max. 80°C (rated current, 2 phase on)
Ambient Temperature	-20°C~+50°C
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	max. 0.02 (450g-load)
Shaft Axial Play	max. 0.08 (450g-load)
Max. radial force	28N (20mm from the flange)
Max. axial force	10N



## Configuration

- Encoder
- Brakes
- Gears
- Shaft Modification and double shaft
- Other winding voltage possible
- Other Types available with special length

## Wiring Diagram



## 0.9° Size 42mm Hybrid Stepper Motor

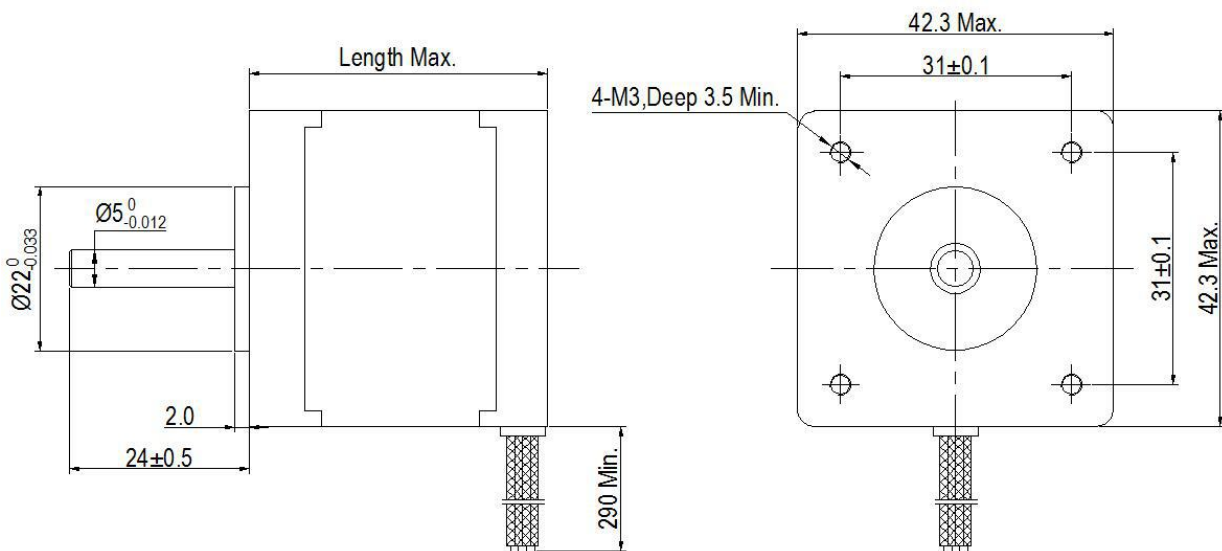
### Specification

Type	Voltage /phase [V]	Current /phase [A]	Resistance /phase [Ω]	Inductance /phase [mH]	Holding Torque [Ncm]	Detent Torque [Ncm]	# of Leads	Weight [kg]	Length [mm]
M042HB0404-33S1	3.12	0.4	7.8	18.5	20	1.2	4	0.22	33
M042HB0606-33S1	6.78	0.6	11.3	11.3	19	2.0	6	0.22	33
M042HB1204-33S1	3.24	1.2	2.7	5.2	23	2.0	4	0.22	33
M042HB0406-40S1	11.2	0.4	28	30	30	2.2	6	0.28	40
M042HB0806-40S1	5.44	0.8	6.8	10.2	30	2.2	6	0.28	40
M042HB1206-40S1	3.24	1.2	2.7	3.8	30	2.2	6	0.28	40
M042HB1704-40S1	2.38	1.7	1.4	3.8	38	2.2	4	0.28	40
M042HB0406-48S1	12	0.4	30	28	40	2.5	6	0.35	48
M042HB1704-48S1	3.06	1.7	1.8	4.0	40	2.5	4	0.35	48
M042HB2404-48S1	2.4	2.4	1.0	1.8	40	2.5	4	0.36	48

# 1.8° Size 42mm Hybrid Stepper Motor



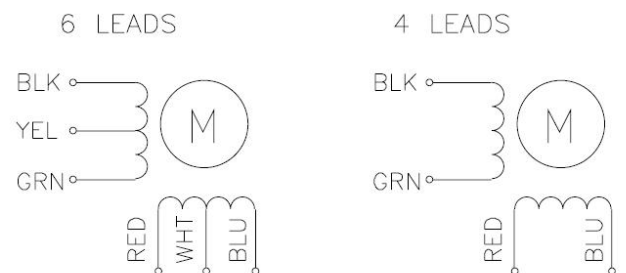
Item	General Specifications
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	max. 80°C (rated current, 2 phase on)
Ambient Temperature	-20°C~+50°C
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	max. 0.02 (450g-load)
Shaft Axial Play	max. 0.08 (450g-load)
Max. radial force	28N (20mm from the flange)
Max. axial force	10N



## Configuration

- Encoder
- Brakes
- Gears
- Shaft Modification and double shaft
- Other winding voltage possible
- Other Types available with special length

## Wiring Diagram





## 1.8° Size 42mm Hybrid Stepper Motor

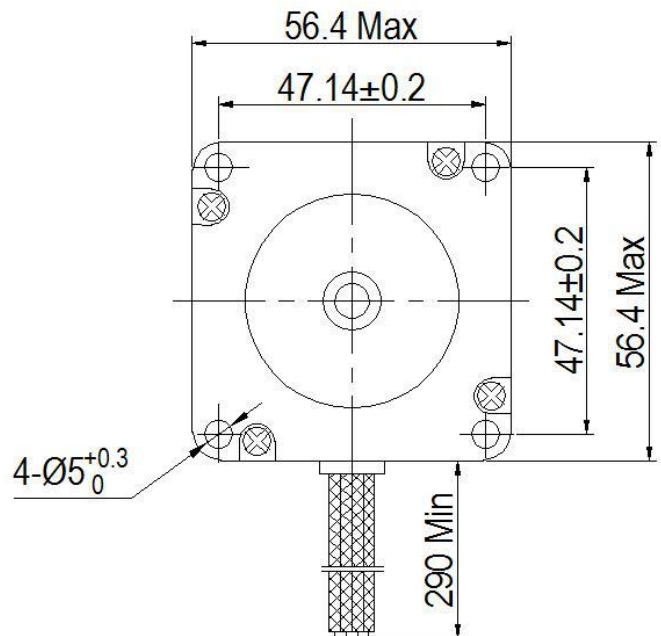
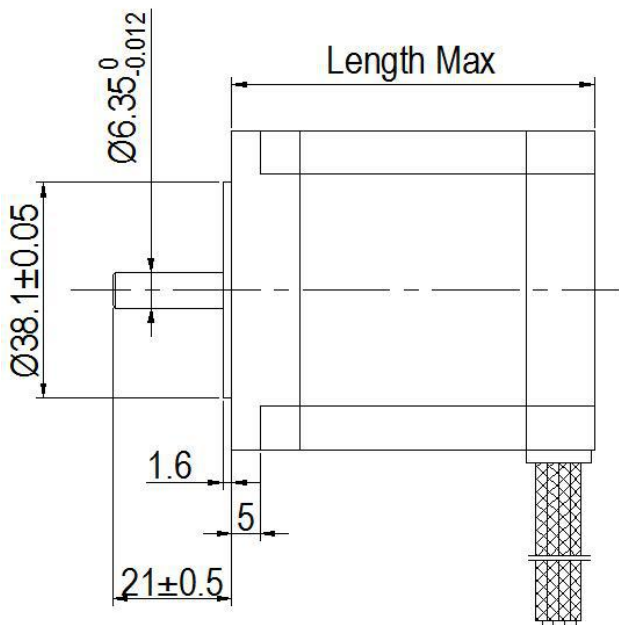
### Specification

Type	Voltage /phase [V]	Current /phase [A]	Resistance /phase [ $\Omega$ ]	Inductance /phase [mH]	Holding Torque [Ncm]	Detent Torque [Ncm]	# of Leads	Weight [kg]	Length [mm]
M042HB0404-34S0	12	0.4	30	38	32	1.6	4	0.22	34
M042HB0306-34S0	10.26	0.3	34.2	25.5	22	2.0	6	0.22	34
M042HB1304-34S0	3.26	1.3	2.45	4.0	30	1.2	4	0.22	34
M042HB0406-40S0	12	0.4	30	28.2	38	1.5	6	0.28	40
M042HB0404-40S0	5.0	0.4	12.5	21	22	2.2	4	0.28	40
M042HB1204-40S0	1.8	1.2	1.5	2.8	40	2.2	4	0.28	40
M042HB1206-40S0	3.6	1.2	3.0	2.8	40	2.2	6	0.28	40
M042HB1704-40S0	2.55	1.7	1.5	2.8	54	2.2	4	0.28	40
M042HB0406-48S0	12	0.4	30	28	40	2.8	6	0.36	48
M042HB1008-48S0	4.6	1.0	4.6	4.0	48	2.8	8	0.36	48
M042HB1304-48S0	4.16	1.3	3.2	5.5	52	2.8	4	0.36	48
M042HB2506-48S0	3.1	2.5	1.25	1.8	58	2.8	4	0.36	48
M042HB1504-57S0	3.75	1.5	2.5	6.5	70	2.8	4	0.46	57
M042HB0864-60S0	4.25	0.86	4.94	11.45	70	3.0	4	0.48	60
M042HB2304-64S0	3.17	2.3	1.38	2.57	70	3.0	4	0.50	64

# 0.9° Size 57mm Hybrid Stepper Motor



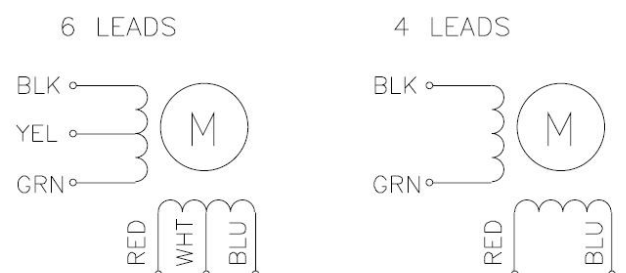
Item	General Specifications
Step Angle	0.9°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	max. 80°C (rated current, 2 phase on)
Ambient Temperature	-20°C~+50°C
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	max. 0.02 (450g-load)
Shaft Axial Play	max. 0.08 (450g-load)
Max. radial force	75N (20mm from the flange)
Max. axial force	15N



## Configuration

- Encoder
- Brakes
- Gears
- Shaft Modification and double shaft
- Other winding voltage possible
- Other Types available with special length

## Wiring Diagram



## 0.9° Size 57mm Hybrid Stepper Motor

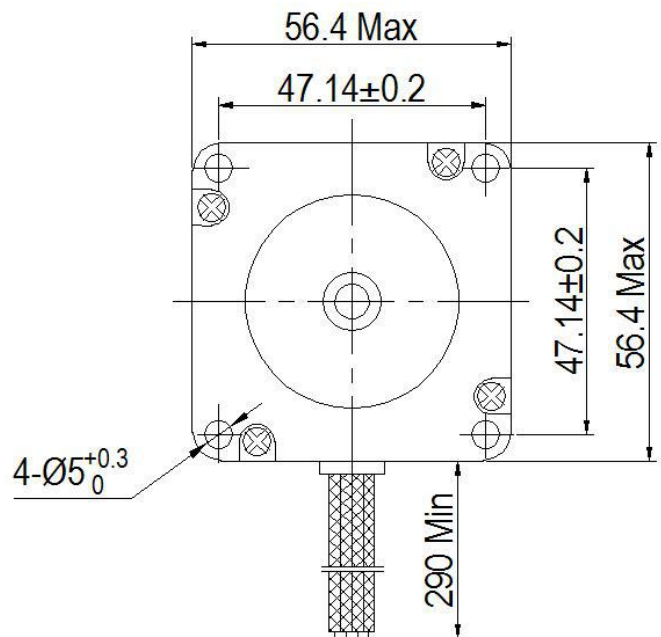
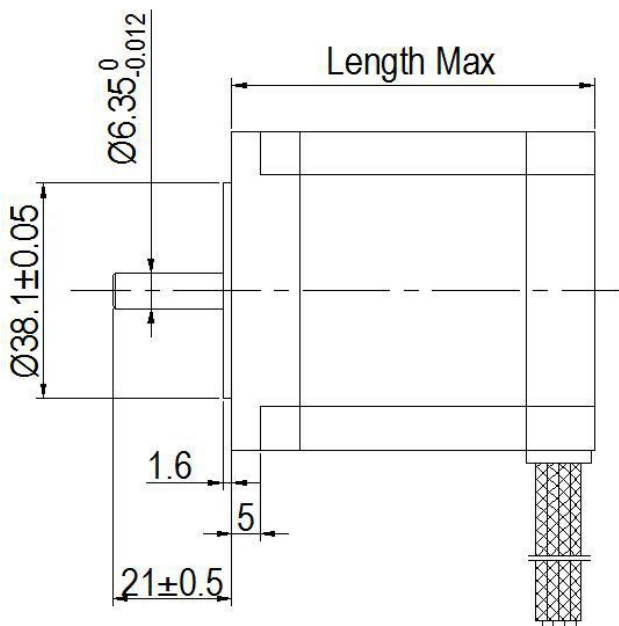
### Specification

Type	Voltage /phase [V]	Current /phase [A]	Resistance /phase [Ω]	Inductance /phase [mH]	Holding Torque [Ncm]	Detent Torque [Ncm]	# of Leads	Weight [kg]	Length [mm]
M057HB1006-41S1	4.2	1.0	4.2	6.0	24	2.1	6	0.45	41
M057HB2006-41S1	2.4	2.0	1.2	2.1	30	2.1	6	0.45	41
M057HB0604-51S1	6.6	0.6	11	33	90	2.6	4	0.56	51
M057HB1704-51S1	6.8	1.7	4	14	90	2.6	4	0.56	51
M057HB2006-56S1	3.26	2.0	1.65	4.5	100	4.0	6	0.7	56
M057HB3004-56S1	2.2	3.0	0.73	3.0	120	4.0	4	0.7	56
M057HB4204-56S1	1.68	4.2	0.4	1.5	125	4.0	4	0.7	56
M057HB1004-64S1	7.8	1.0	7.8	29.2	120	5.0	4	0.85	64
M057HB4204-64S1	1.8	4.2	0.43	1.6	120	5.0	4	0.85	64
M057HB1006-76S1	8.6	1.0	8.6	23.2	135	6.8	6	1.05	76
M057HB2504-76S1	4.5	2.5	1.8	8.8	150	6.8	4	1.05	76
M057HB4204-76S1	2.1	4.2	0.51	2.4	180	6.8	4	1.05	76

## 1.8° Size 57mm Hybrid Stepper Motor



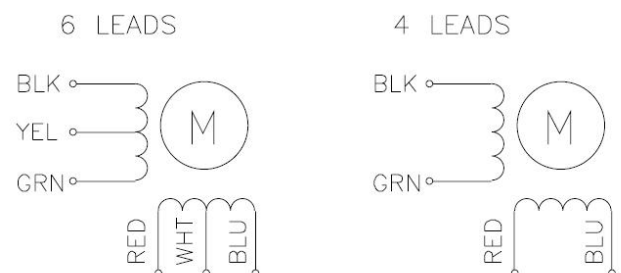
Item	General Specifications
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	max. 80°C (rated current, 2 phase on)
Ambient Temperature	-20°C~+50°C
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	max. 0.02 (450g-load)
Shaft Axial Play	max. 0.08 (450g-load)
Max. radial force	75N (20mm from the flange)
Max. axial force	15N



### Configuration

- Encoder
- Brakes
- Gears
- Shaft Modification and double shaft
- Other winding voltage possible
- Other Types available with special length

### Wiring Diagram



## 1.8° Size 57mm Hybrid Stepper Motor

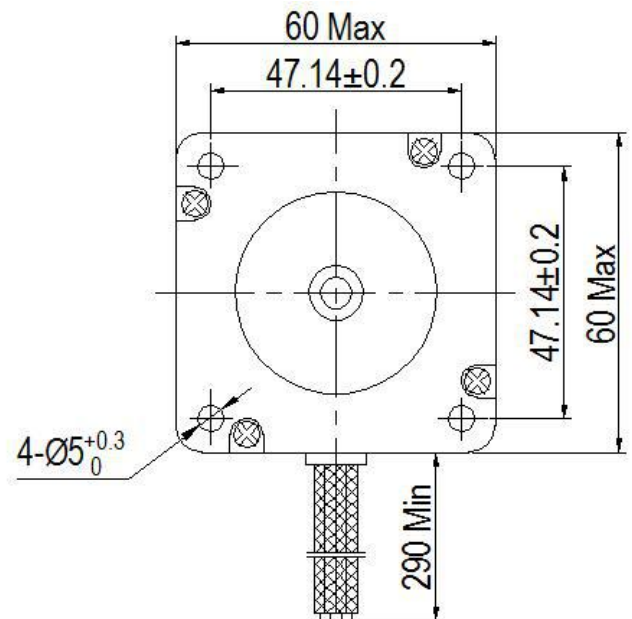
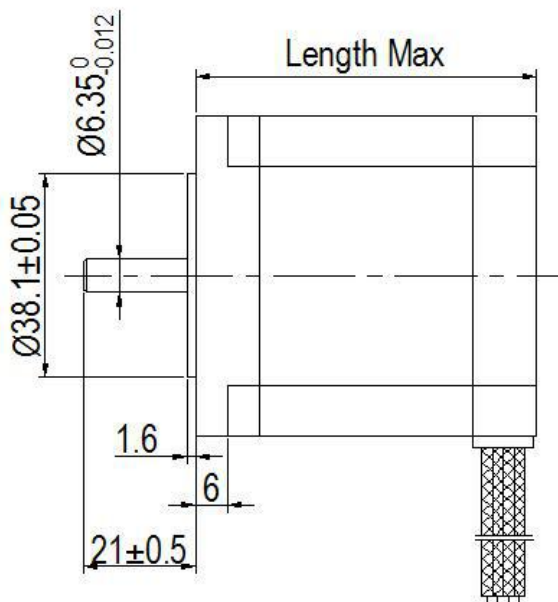
### Specification

Type	Voltage /phase [V]	Current /phase [A]	Resistance /phase [Ω]	Inductance /phase [mH]	Holding Torque [Ncm]	Detent Torque [Ncm]	# of Leads	Weight [kg]	Length [mm]
M057HB3004-76S0	2.7	3.0	0.9	3.8	190	6.5	4	1.05	76
M057HB4008-80S0	3.2	4.0	0.8	1.8	150	6.8	8	1.05	80
M057HB1004-84S0	9	1.0	9	40	230	7.2	4	1.2	84
M057HB1508-84S0	13.5	1.5	9	40	230	7.2	8	1.2	84
M057HB3004-100S0	4.2	3.0	1.4	5.5	300	10	4	1.5	100
M057HB4204-100S0	2.94	4.2	0.7	3	300	10	4	1.5	100
M057HB3004-112S0	4.5	3	1.5	7.0	300	12	4	1.7	112
M057HB4204-112S0	3.36	4.2	0.8	3.7	300	12	4	1.7	112

# 1.8° Size 60mm Hybrid Stepper Motor



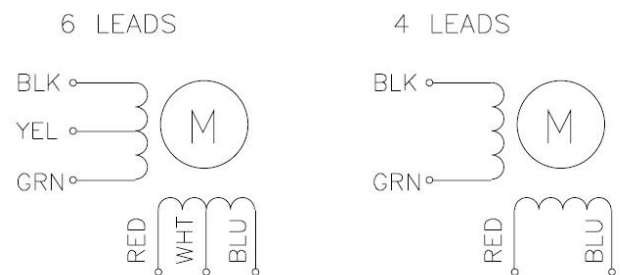
Item	General Specifications
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	max. 80°C (rated current, 2 phase on)
Ambient Temperature	-20°C~+50°C
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	max. 0.02 (450g-load)
Shaft Axial Play	max. 0.08 (450g-load)
Max. radial force	75N (20mm from the flange)
Max. axial force	15N



## Configuration

- Encoder
- Brakes
- Gears
- Shaft Modification and double shaft
- Other winding voltage possible
- Other Types available with special length

## Wiring Diagram



## 1.8° Size 60mm Hybrid Stepper Motor

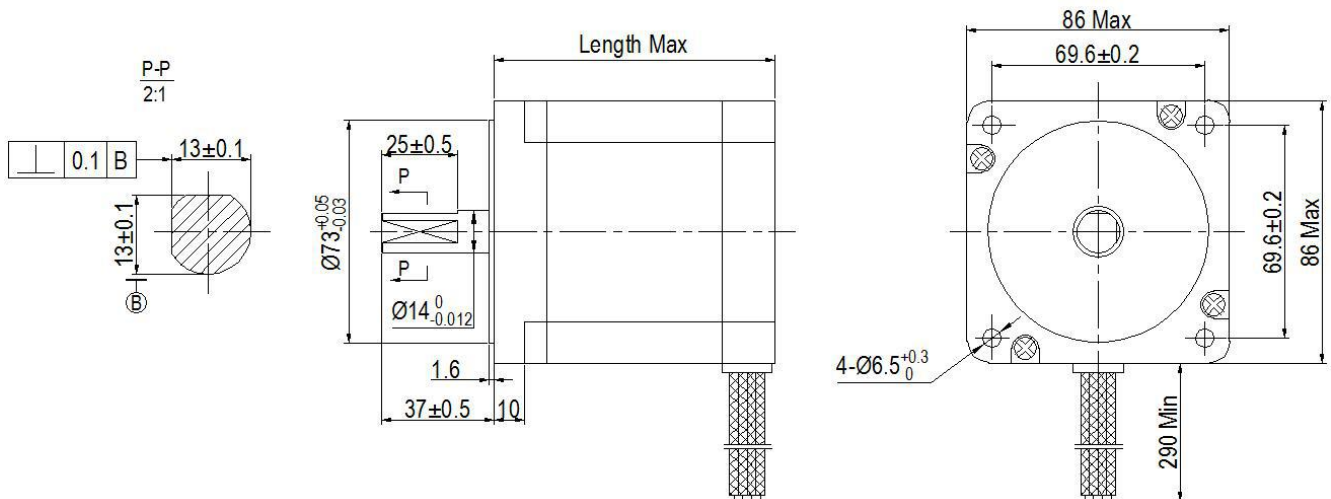
### Specification

Type	Voltage /phase [V]	Current /phase [A]	Resistance /phase [Ω]	Inductance /phase [mH]	Holding Torque [Ncm]	Detent Torque [Ncm]	# of Leads	Weight [kg]	Length [mm]
M060HB2504-45S0	2.5	2.5	1.0	2.2	85	3.5	4	0.55	45
M060HB2504-56S0	3.1	2.5	1.25	4.2	160	4.0	4	0.58	56
M060HB3004-56S0	2.4	3.0	0.8	2.4	160	4.0	4	0.58	56
M060HB4204-56S0	1.68	4.2	0.4	1.2	160	4.0	4	0.58	56
M060HB2504-64S0	3.75	2.5	1.5	4.5	180	5.0	4	0.85	64
M060HB3004-64S0	2.4	3.0	0.8	2.3	180	5.0	4	0.85	64
M060HB4204-64S0	2.3	4.2	0.55	1.2	180	5.0	4	0.85	64
M060HB2504-76S0	4.5	2.5	1.8	6.2	220	7.0	4	1.15	76
M060HB3004-76S0	3.0	3.0	1.0	3.5	220	7.0	4	1.15	76
M060HB3004-90S0	4.2	3.0	1.4	5.5	260	12	4	1.4	90
M060HB4204-90S0	5.0	4.2	1.2	5.0	260	12	4	1.4	90

## 0.9° Size 86mm Hybrid Stepper Motor



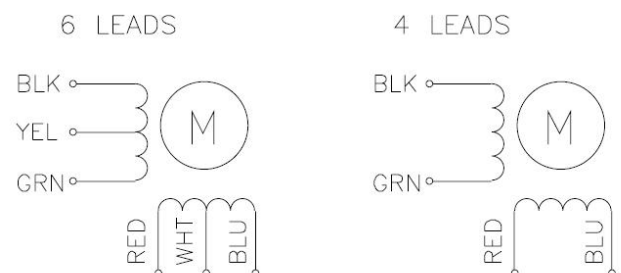
Item	General Specifications
Step Angle	0.9°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	max. 80°C (rated current, 2 phase on)
Ambient Temperature	-20°C~+50°C
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	max. 0.02 (450g-load)
Shaft Axial Play	max. 0.08 (450g-load)
Max. radial force	220N (20mm from the flange)
Max. axial force	60N



### Configuration

- Encoder
- Brakes
- Gears
- Shaft Modification and double shaft
- Other winding voltage possible
- Other Types available with special length

### Wiring Diagram





## 0.9° Size 86mm Hybrid Stepper Motor

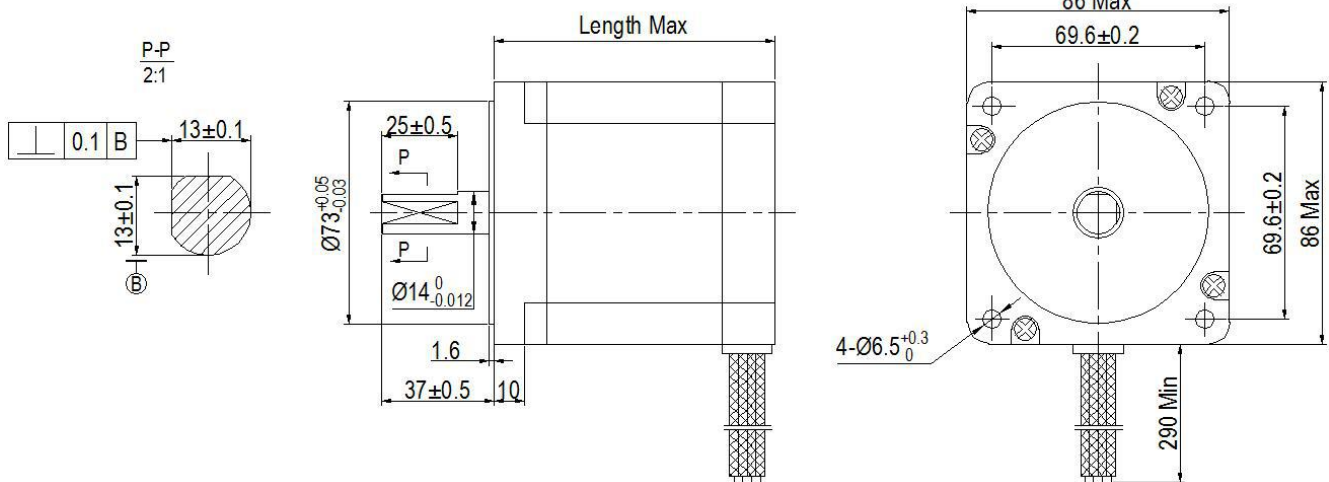
### Specification

Type	Voltage /phase [V]	Current /phase [A]	Resistance /phase [Ω]	Inductance /phase [mH]	Holding Torque [Ncm]	Detent Torque [Ncm]	# of Leads	Weight [kg]	Length [mm]
M086HB2708-68S1	3.24	2.7	1.2	3.5	200	5.0	8	2.0	68
M086HB4008-68S1	2.0	4.0	0.5	2.0	250	5.0	8	2.0	68
M086HB2708-78S1	4.32	2.7	1.6	5.6	270	5.8	8	2.5	78
M086HB4008-78S1	2.8	4.0	0.7	3.0	270	5.8	8	2.5	78
M086HB4008-98S1	2.8	4.0	0.7	4.55	450	8.5	8	3.0	98
M086HB5008-98S1	2.5	5.0	0.5	2.4	450	8.5	8	3.0	98
M086HB2708-116S1	5.4	2.7	2.0	11.5	520	11	8	3.8	116
M086HB4008-116S1	4.4	4.0	1.1	5.5	520	11	8	3.8	116
M086HB2708-126S1	6.75	2.7	2.5	12.5	580	16.5	8	4.0	126
M086HB4008-126S1	5.2	4.0	1.3	5.8	580	16.5	8	4.0	126
M086HB2708-151S1	7.83	2.7	2.9	17.5	780	20.5	8	5.0	151
M086HB4008-151S1	5.6	4.0	1.4	9.2	780	20.5	8	5.0	151

# 1.8° Size 86mm Hybrid Stepper Motor



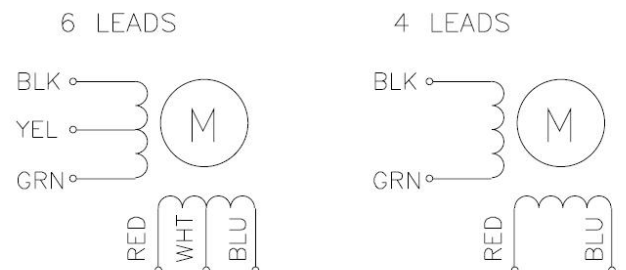
Item	General Specifications
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	max. 80°C (rated current, 2 phase on)
Ambient Temperature	-20°C~+50°C
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	max. 0.02 (450g-load)
Shaft Axial Play	max. 0.08 (450g-load)
Max. radial force	220N (20mm from the flange)
Max. axial force	60N



## Configuration

- Encoder
- Brakes
- Gears
- Shaft Modification and double shaft
- Other winding voltage possible
- Other Types available with special length

## Wiring Diagram



## 1.8° Size 86mm Hybrid Stepper Motor

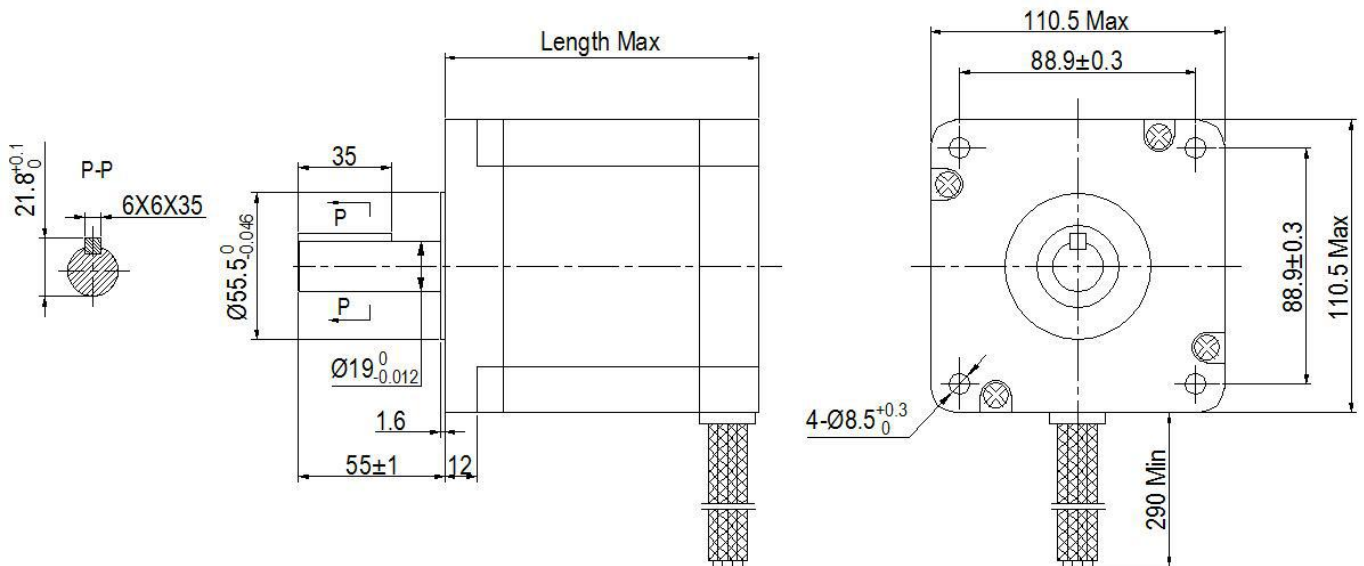
### Specification

Type	Voltage /phase [V]	Current /phase [A]	Resistance /phase [Ω]	Inductance /phase [mH]	Holding Torque [Ncm]	Detent Torque [Ncm]	# of Leads	Weight [kg]	Length [mm]
M086HB2808-68S0	3.9	2.8	1.4	3.9	350	5.5	8	1.7	68
M086HB5904-68S0	1.5	5.9	0.25	1.6	350	5.5	4	1.7	68
M086HB4004-80S0	1.6	4.0	0.41	2.5	400	6.5	4	2.3	80
M086HB4008-80S0	2.8	4.0	0.7	3.0	400	6.5	8	2.3	80
M086HB5604-80S0	1.9	5.6	0.34	2.9	400	6.5	4	2.3	80
M086HB2008-98S0	6.4	2.0	3.2	15	700	9.5	8	3.0	98
M086HB4008-98S0	3.2	4.0	0.8	3.5	700	9.5	8	3.0	98
M086HB5604-98S0	2.1	5.6	0.39	3.76	750	9.5	4	3.0	98
M086HB3504-116S0	1.9	3.5	0.55	6.5	840	12.5	4	3.8	116
M086HB5604-116S0	2.8	5.6	0.5	5.5	840	12.5	4	3.8	116
M086HB4908-116S0	4.6	4.9	0.95	5.2	850	12.5	8	3.8	116
M086HB6008-116S0	3.6	6.0	0.6	3.3	900	12.5	8	3.8	116
M086HB4008-126S0	5.0	4.0	1.26	5.6	1000	18.2	8	4.0	126
M086HB3504-151S0	5.6	3.5	1.6	20	1050	24.5	4	5.0	151
M086HB6008-151S0	4.9	6.0	0.82	4.8	1050	24.5	8	5.0	151
M086HB6004-151S0	3.6	6.0	0.6	8	1100	24.5	4	5.0	151

# 1.8° Size 110mm Hybrid Stepper Motor



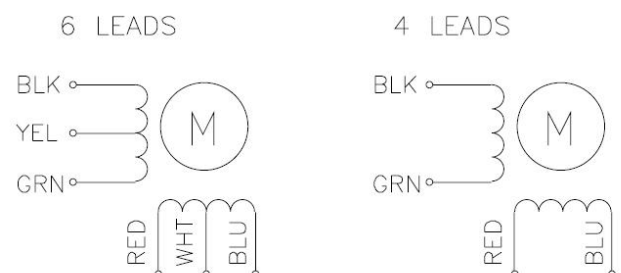
Item	General Specifications
Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	max. 80°C (rated current, 2 phase on)
Ambient Temperature	-20°C~+50°C
Insulation Resistance	min. 100MΩ, 500VDC
Dielectric Strength	1800VAC for 1s 5mA
Shaft Radial Play	max. 0.02 (450g-load)
Shaft Axial Play	max. 0.08 (450g-load)
Max. radial force	220N (20mm from the flange)
Max. axial force	60N



## Configuration

- Encoder
- Brakes
- Gears
- Shaft Modification and double shaft
- Other winding voltage possible
- Other Types available with special length

## Wiring Diagram



## 1.8° Size 110mm Hybrid Stepper Motor

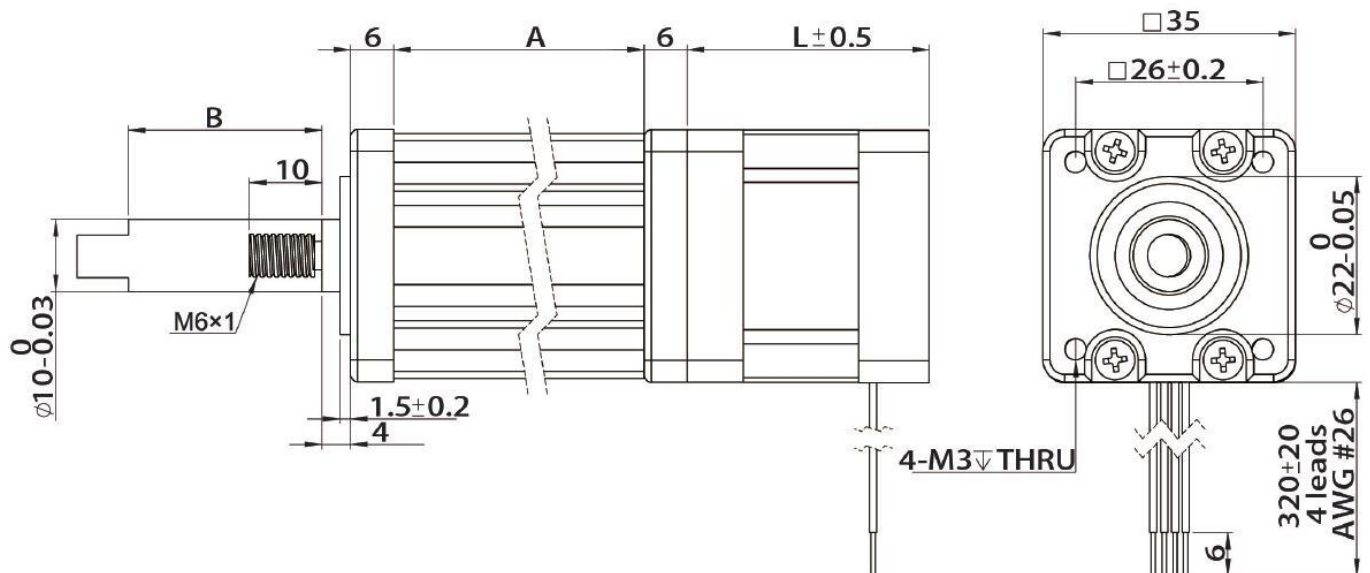
### Specification

Type	Voltage /phase [V]	Current /phase [A]	Resistance /phase [Ω]	Inductance /phase [mH]	Holding Torque [Ncm]	Detent Torque [Ncm]	# of Leads	Weight [kg]	Length [mm]
M110HB6004-100S0	2.75	6.0	0.5	6.0	1250	3	4	5	100
M110HB6004-115S0	2.2	6.0	0.37	4.9	1500	3	4	6	115
M110HB6004-150S0	4.8	6.0	0.8	15	2300	5.9	4	8.4	150
M110HB6504-201S0	7.8	6.5	1.2	22	2800	9.5	4	11.7	201
M110HB8004-201S0	5.6	8.0	0.7	14	2800	9.5	4	11.7	201

## 35 mm Hybrid linear stepper



### Dimensions



### Motor Specification

Type	Voltage /phase [V]	Current /phase [A]	Resistance /phase [ $\Omega$ ]	Inductance /phase [mH]	# of Leads	Weight [kg]	Length, "L" [mm]
M007TI0000-35-34	6.6	0.5	13.2	14.0	4	189	33.6
M003TI0000-35-34	3.3	1.0	3.5	3.6	4	189	33.6
M002TI0000-35-34	2.2	1.5	1.8	1.9	4	189	33.6
M012TI0000-35-46	12.0	0.5	24.0	29.0	4	210	45.6
M006TI0000-35-46	6.0	1.0	6.0	7.2	4	210	45.6
M004TI0000-35-46	4.0	1.5	2.7	3.2	4	210	45.6

Insulation Class: B

Ambient Temperature:  $-20^{\circ}\text{C} \sim +55^{\circ}\text{C}$

## 35 mm Hybrid linear stepper

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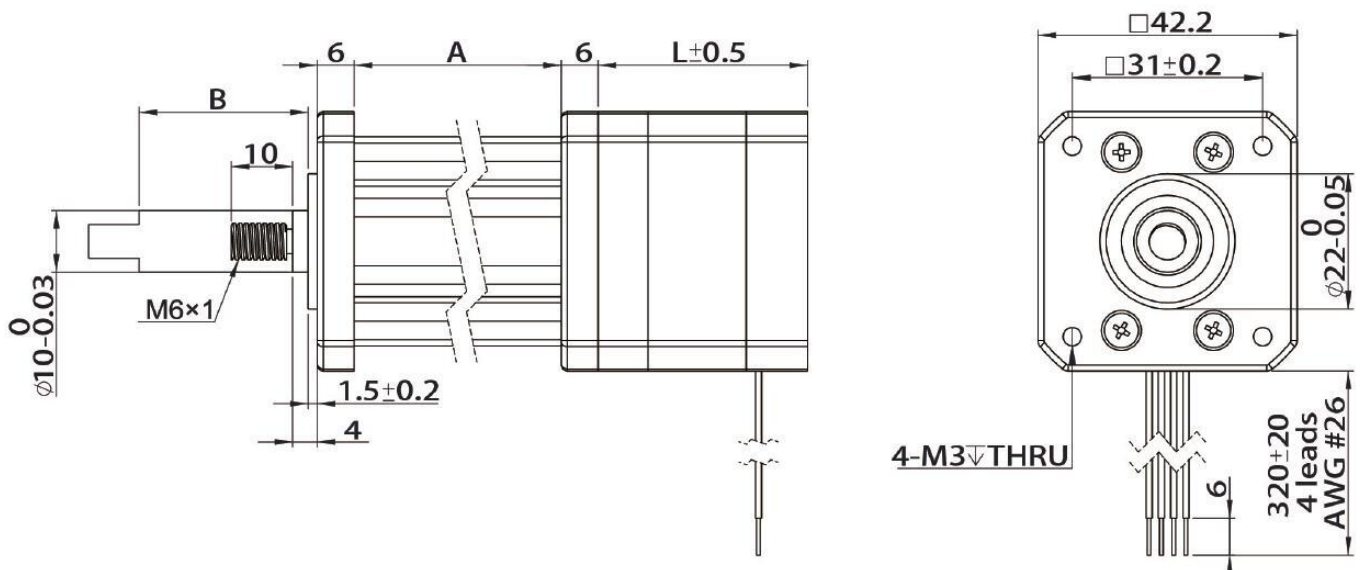
### Stroke Specification

Stroke "B", Inch (mm)	Dimension "A", mm
0.50 (12.70)	35.70
0.75 (19.05)	42.05
1.00 (25.40)	48.40
1.25 (31.80)	54.80
1.50 (38.10)	61.10
2.00 (50.80)	73.80
2.50 (63.50)	86.50

## 42 mm Hybrid linear stepper



### Dimensions



### Motor Specification

Type	Voltage /phase [V]	Current /phase [A]	Resistance /phase [ $\Omega$ ]	Inductance /phase [mH]	# of Leads	Weight [kg]	Length, "L" [mm]
M007TI0000-42-34	7.2	0.5	14.4	19.8	4	254	34.1
M003TI0000-42-34	3.6	1.0	3.6	5.0	4	254	34.1
M002TI0000-42-34	2.4	1.5	1.9	2.2	4	254	34.1
M011TI0000-42-48	11.0	0.5	22.0	46.0	4	386	48.1
M005TI0000-42-48	4.5	1.2	3.8	8.0	4	386	48.1
M002TI0000-42-48	2.2	2.5	0.9	1.8	4	386	48.1

Insulation Class: B

Ambient Temperature:  $-20^{\circ}\text{C} \sim +55^{\circ}\text{C}$



## 42 mm Hybrid linear stepper

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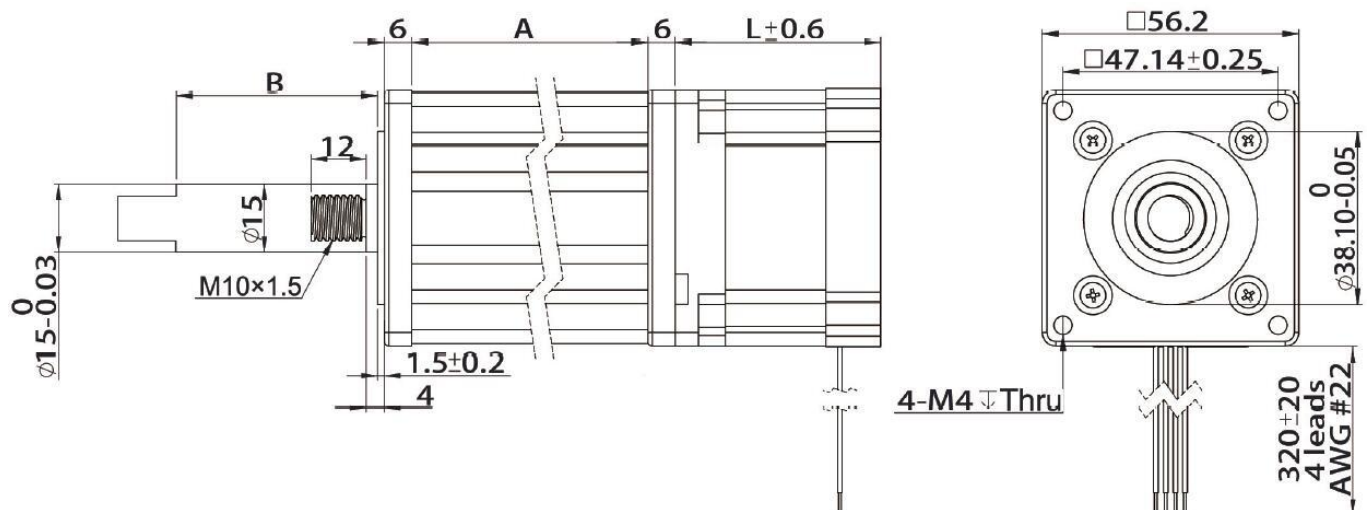
### Stroke Specification

Stroke "B", Inch (mm)	Dimension "A", mm
0.50 (12.70)	35.70
0.75 (19.05)	42.05
1.00 (25.40)	48.40
1.25 (31.80)	54.80
1.50 (38.10)	61.10
2.00 (50.80)	73.80
2.50 (63.50)	86.50

## 57 mm Hybrid linear stepper



### Dimensions



### Motor Specification

Type	Voltage /phase [V]	Current /phase [A]	Resistance /phase [ $\Omega$ ]	Inductance /phase [mH]	# of Leads	Weight [kg]	Length, "L" [mm]
M006TI0000-57-45	6.4	1.0	6.4	16.4	4	585	45
M003TI0000-57-45	3.2	2.0	1.6	4.1	4	585	45
M002TI0000-57-45	2.1	3.0	0.8	1.7	4	585	45
M011TI0000-57-65	10.8	1.0	11.5	32.0	4	880	65
M004TI0000-57-65	4.2	2.5	2.0	5.2	4	880	65
M002TI0000-57-65	2.4	4.0	0.7	2.0	4	880	65

Insulation Class: B

Ambient Temperature:  $-20^{\circ}\text{C} \sim +55^{\circ}\text{C}$

## 57 mm Hybrid linear stepper

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### Stroke Specification

Stroke "B", Inch (mm)	Dimension "A", mm
0.50 (12.70)	45.70
0.75 (19.05)	52.05
1.00 (25.40)	58.40
1.25 (31.80)	64.80
1.50 (38.10)	71.10
2.00 (50.80)	83.80
2.50 (63.50)	96.50

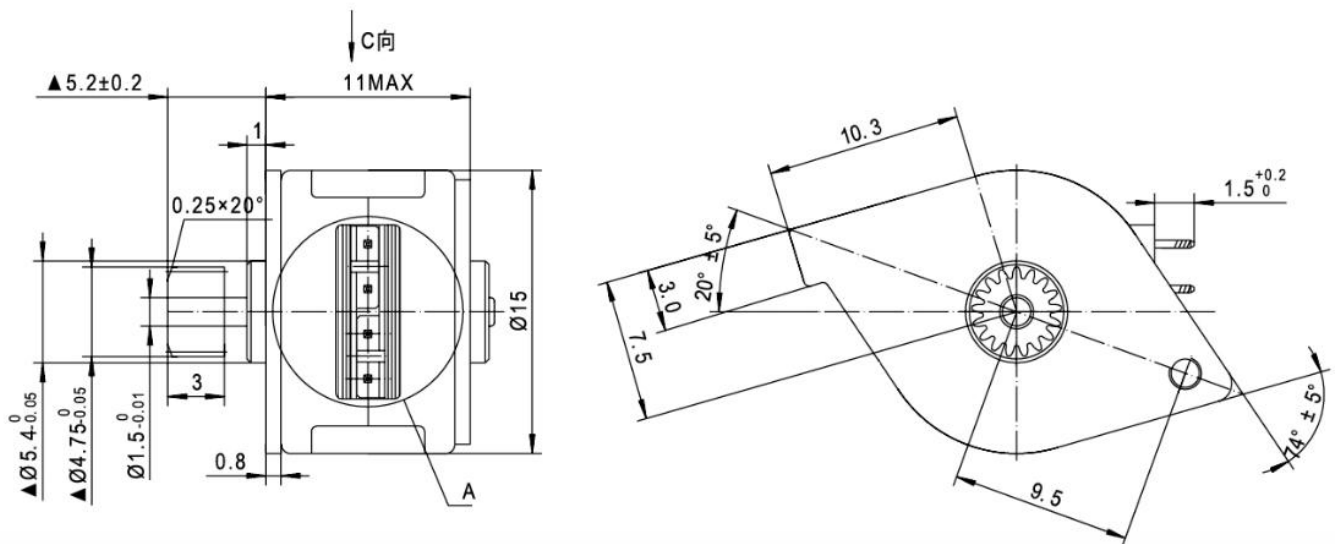
# 18° Size 15mm PM Stepper Motor



## Typical Applications

- Micro-thermal printer
- Medical equipment
- CCTV monitor

## Mechanical dimensions: mm



# 18° Size 15mm PM Stepper Motor



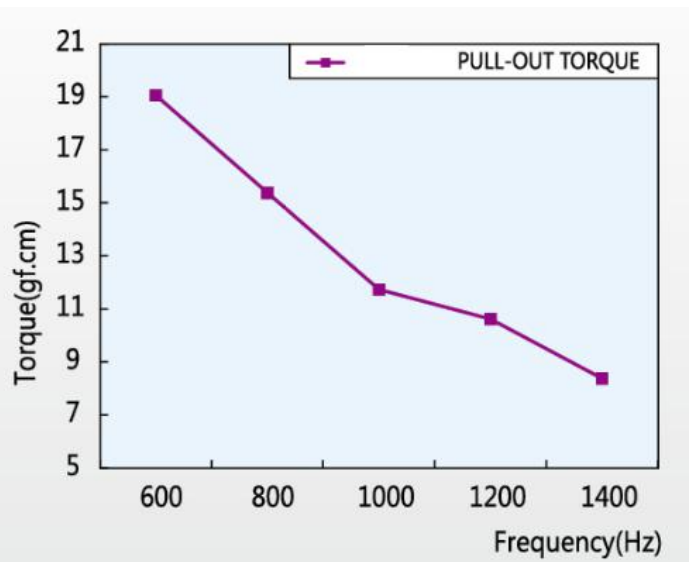
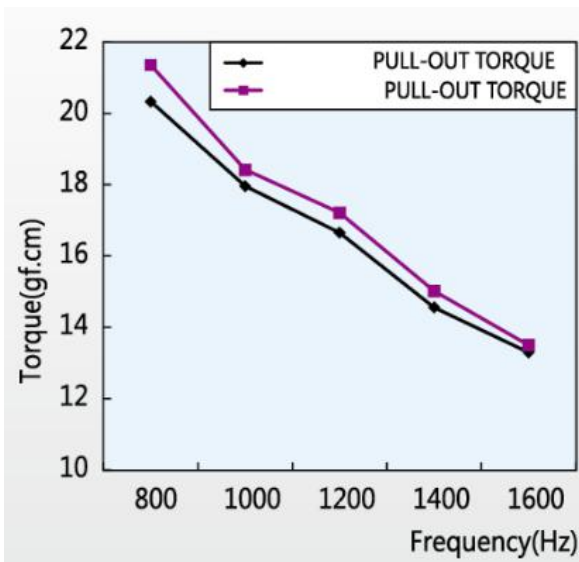
## Specification

Type	Step Angle [°]	Drive method	Drive circuit	Drive Voltage [V]	Coil Resistance/ phase [Ω]	Insulation Resistance	Dielectric strength	Class of insulation
M015PM0 050-11S7	18°	2-2PHASE	BIPOLAR	5	12	100MΩ min	500VAC 1min	E
M015PM0 072-11S7	18°	2-2PHASE	BIPOLAR	7.2	30	100MΩ min	500VAC 1min	E
M015PM0 055-11S7	18°	2-2PHASE	BIPOLAR	5.5	10	100MΩ min	500VAC 1min	E

## Motors performance curves

5VDC

7.2VDC



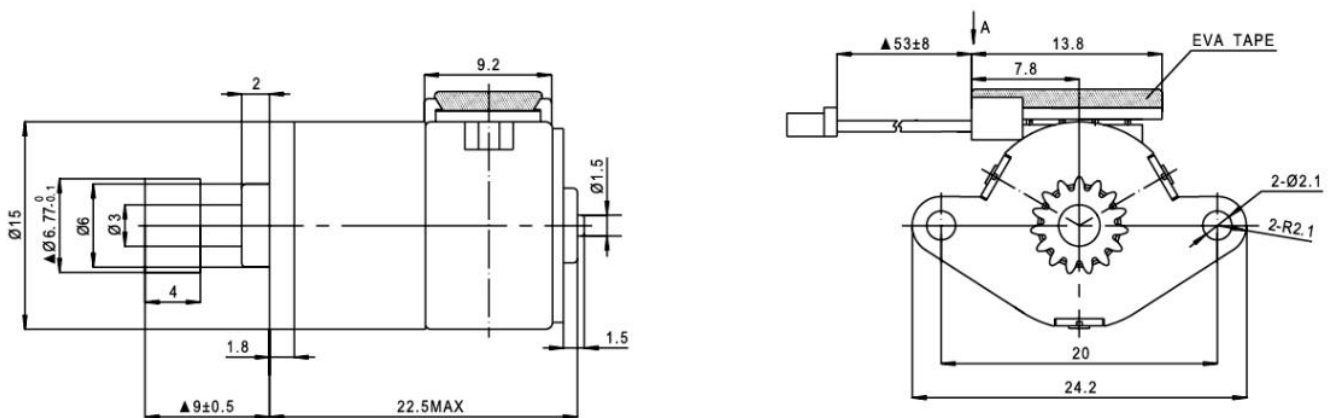
# 18° Size 15mm-SG PM Stepper Motor



## Typical Applications

- Precision optics instrument
- Medical equipment
- CCTV monitor
- Video phone system

## Mechanical dimensions: mm

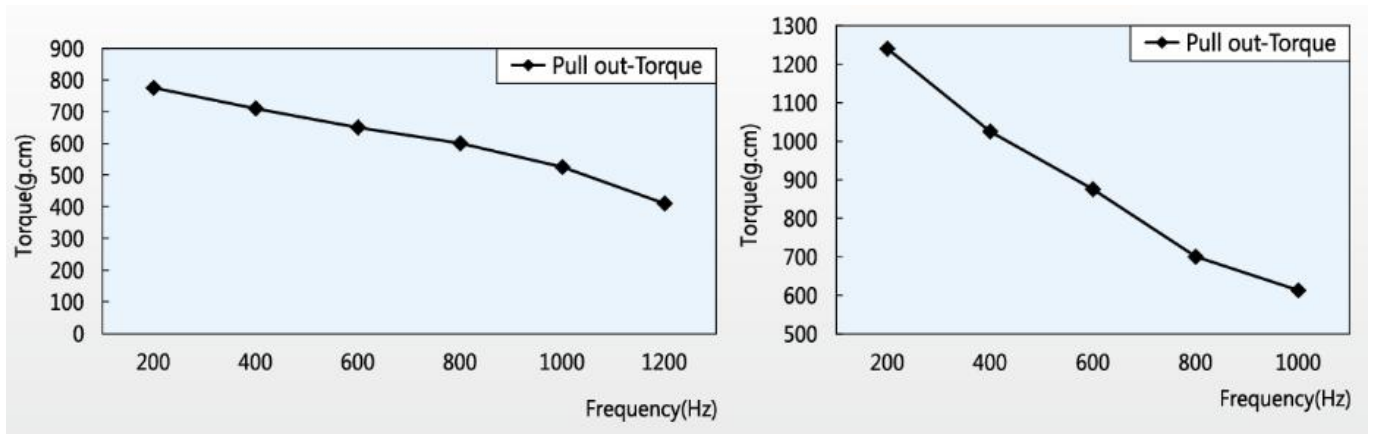


# 18° Size 15mm-SG PM Stepper Motor

## Specification

Type	Step Angle [°]	Reduction ratio	Drive method	Drive circuit	Drive Voltage [V]	Coil Resistance/ phase [Ω]	Insulation Resistance	Dielectric strength	Class of insulation
M015PM005-21S7-SG050	18°	1/50	2-2PHASE	BIPOLAR	5	10	100MΩ min	500VAC 1min	E
M015PM005-21S7-SG100	18°	1/100	2-2PHASE	BIPOLAR	5	14	100MΩ min	500VAC 1min	E

## Motors performance curves



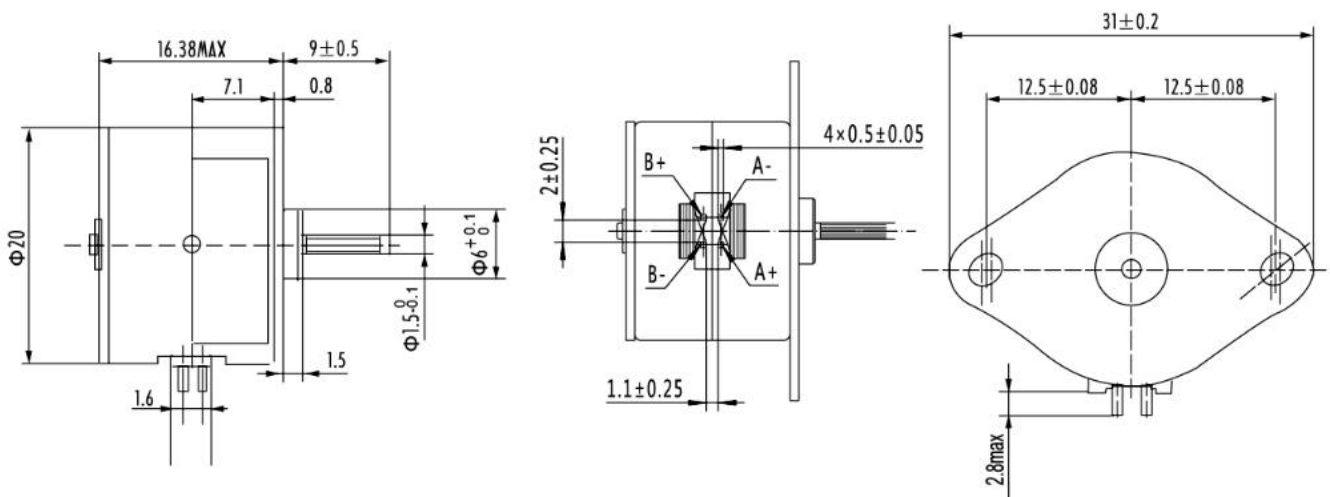
# 15° Size 20mm PM Stepper Motor



## Typical Applications

- Precision optics instrument
- Time indicating mechanism
- Communication network modules
- Miniprinter

## Mechanical dimensions: mm





# 15° Size 20mm PM Stepper Motor



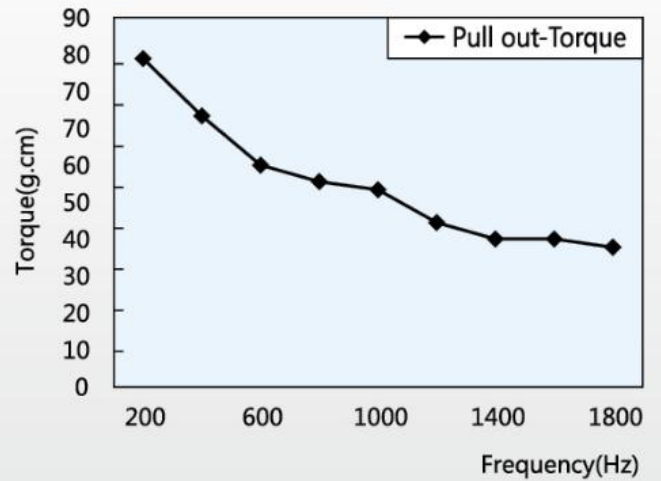
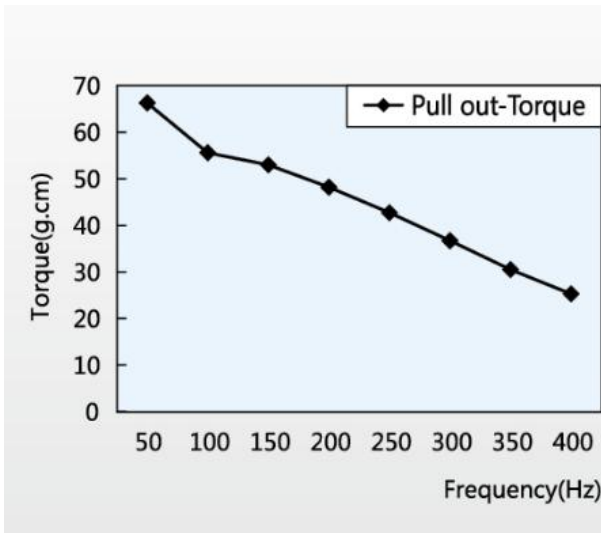
## Specification

Type	Step Angle [°]	Drive method	Drive circuit	Drive Voltage [V]	Current /phase [mA]	Coil Resistance/ phase[Ω]	Insulation Resistance	Dielectric strength	Class of insulation
M020PM 010-16S6	15°	2-2PHASE	BIPOLAR	10.2	--	80	100MΩ min	500VAC 1min	E
M020PM 024-16S6	15°	2-2PHASE	UNIPOLAR	24	350	11	100MΩ min	500VAC 1min	E

## Motors performance curves

10.2VDC

24VDC



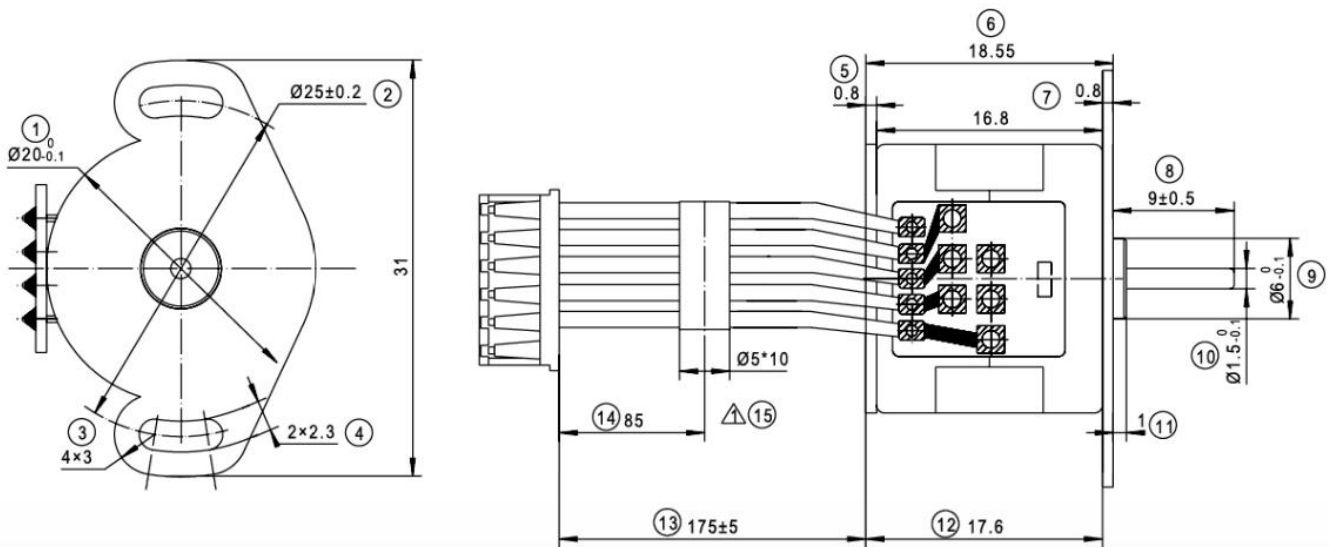
# 18° Size 20mm-1 PM Stepper Motor



## Typical Applications

- Precision optics instrument
- Time indicating mechanism
- Communication network modules
- Miniprinter

## Mechanical dimensions: mm



# 18° Size 20mm-1 PM Stepper Motor



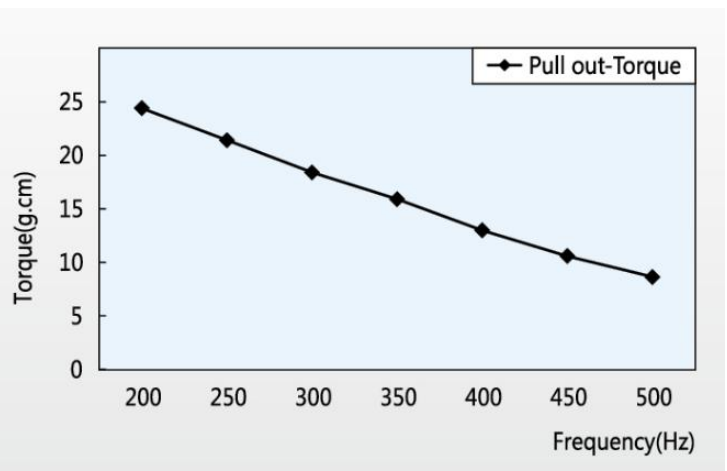
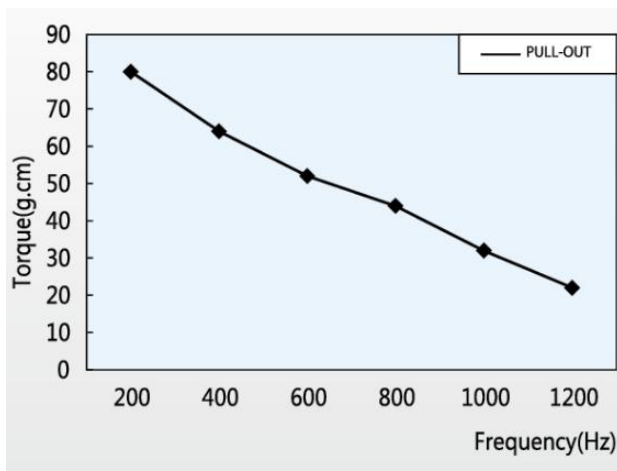
## Specification

Type	Step Angle [°]	Drive method	Drive circuit	Drive Voltage [V]	Current /phase [mA]	Coil Resistance/ phase[Ω]	Insulation Resistance	Dielectric strength	Class of insulation
M020PM 007-18S7	18°	2-2PHASE	BIPOLAR	7.2	--	13	100MΩ min	500VAC 1min	E
M020PM 006-18S7	18°	2-2PHASE	UNIPOLAR	6	--	40	100MΩ min	500VAC 1min	E
M020P M024-18S7	18°	2-2PHASE	BIPOLAR	24	350	18	100MΩ min	500VAC 1min	E

## Motors performance curves

7.2VDC

6VDC



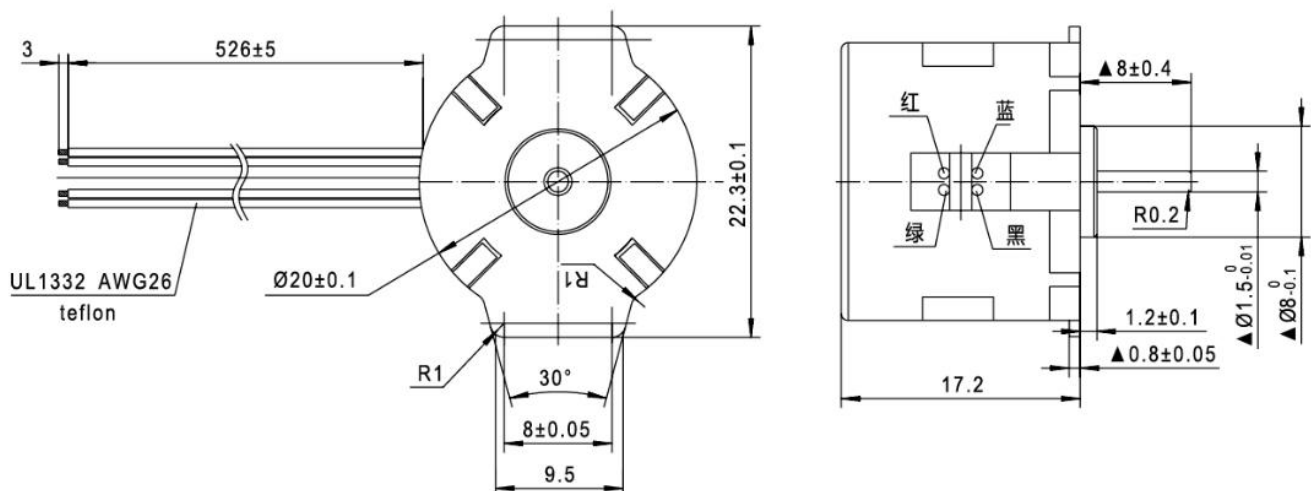
# 18° Size 20mm-2 PM Stepper Motor



## Typical Applications

- Precision optics instrument
- Time indicating mechanism
- Communication network modules
- Valve control
- Auto chair

## Mechanical dimensions: mm



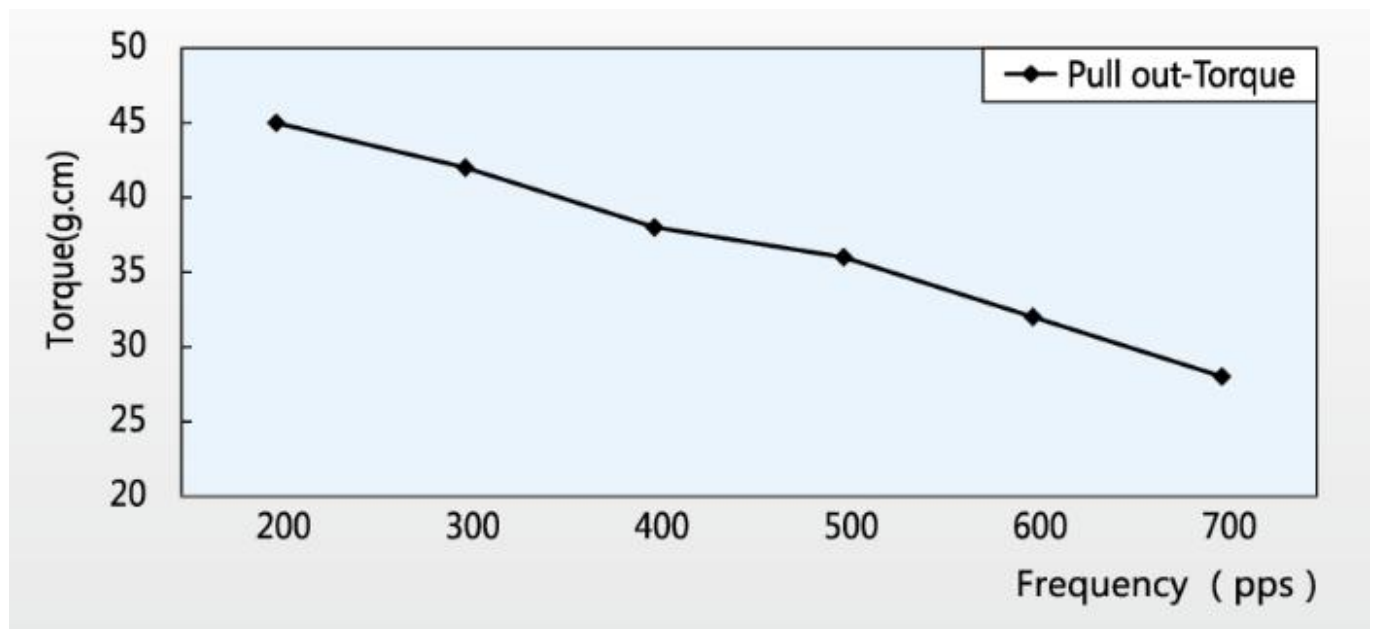
# 18° Size 20mm-2 PM Stepper Motor



## Specification

Type	Step Angle [° ]	Drive method	Drive circuit	Drive Voltage [V]	Current /phase [mA]	Coil Resistance/ phase[Ω ]	Insulation Resistance	Dielectric strength	Class of insulation
M020PM 012-17S7	18°	2-2PHASE	BIPOLAR	12	150	40	100MΩ min	500VAC 1min	E

## Motors performance curves



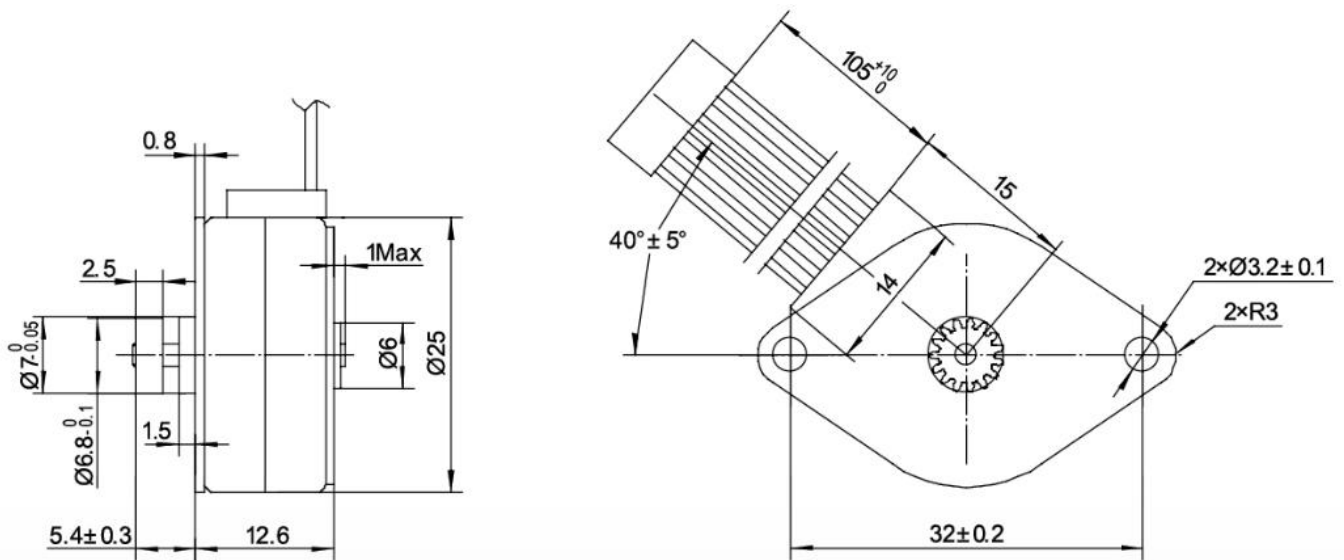
## 7.5° Size 25mm PM Stepper Motor



### Typical Applications

- Miniprinter
- Electrical expansion value control
- Sanitary appliance

### Mechanical dimensions: mm



# 7.5° Size 25mm PM Stepper Motor



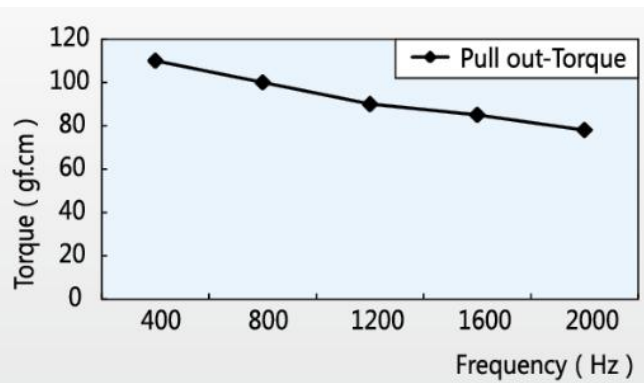
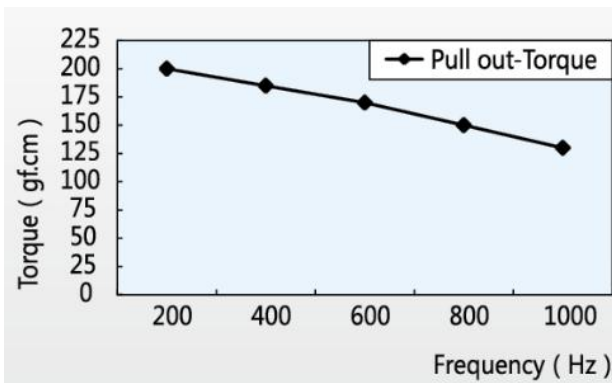
## Specification

Type	Step Angle [°]	Drive method	Drive circuit	Drive Voltage [V]	Current /phase [mA]	Coil Resistance/ phase [Ω]	Insulation Resistance	Dielectric strength	Class of insulation
M025PM 024-12S5	7.5°	2-2PHASE	UNIPOL AR	24	--	50	100MΩ min	500VAC 1min	E

## Motors performance curves

UNIPOLAR CONST.VOLT(at 24V,50Ω)

BIPOlar CHOPPER(at 24V,350mA,15Ω)



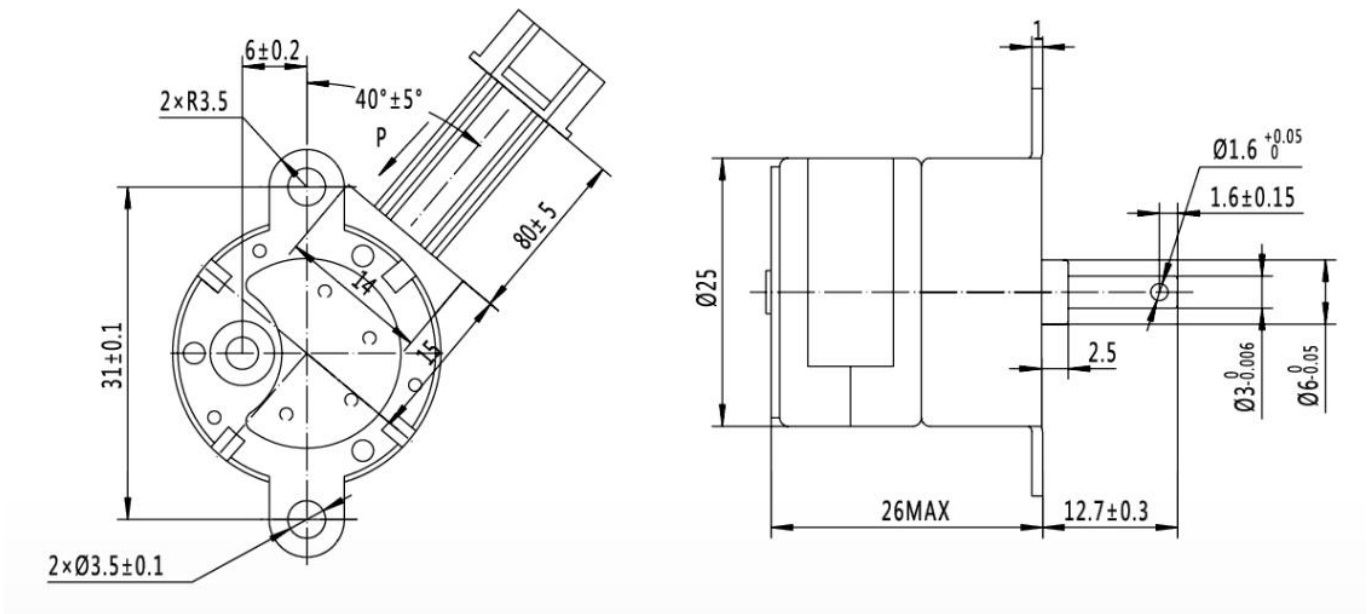
## 7.5° Size 25mm-SG PM Stepper Motor



### Typical Applications

- Miniprinter
- Electrical expansion value control

### Mechanical dimensions: mm



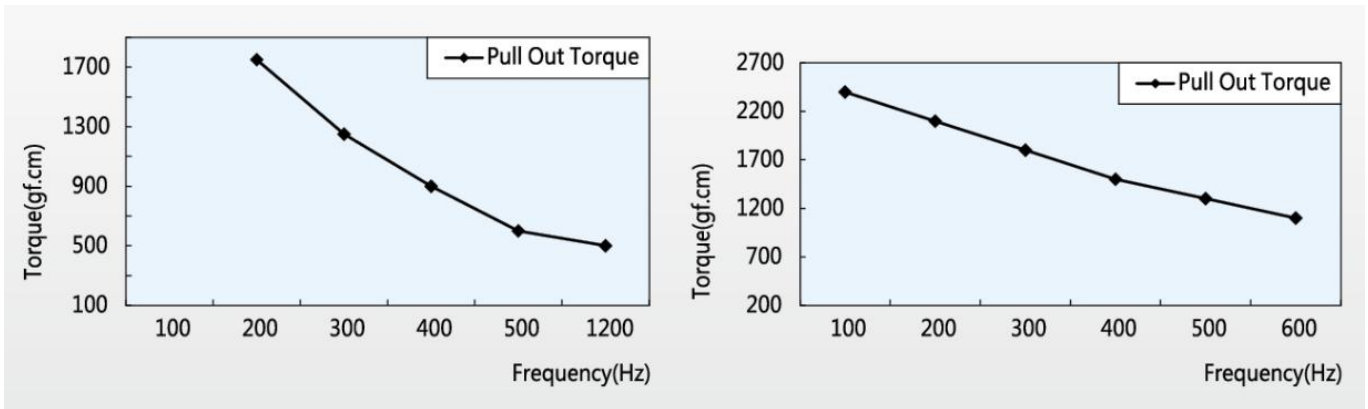


## 7.5° Size 25mm-SG PM Stepper Motor

### Specification

Type	Step Angle [°]	Reduction ratio	Drive method	Drive circuit	Drive Voltage [V]	Coil Resistance/phase[Ω]	Insulation Resistance	Dielectric strength	Class of insulation
M025PM005-26S5-SG012	7.5°	1/12.5	2-2PHASE	BIPOLAR	5	10	100MΩ min	500VAC 1min	E
M025PM012-26S5-SG050	7.5°	1/50	2-2PHASE	BIPOLAR	12	30	100MΩ min	500VAC 1min	E

### Motors performance curves



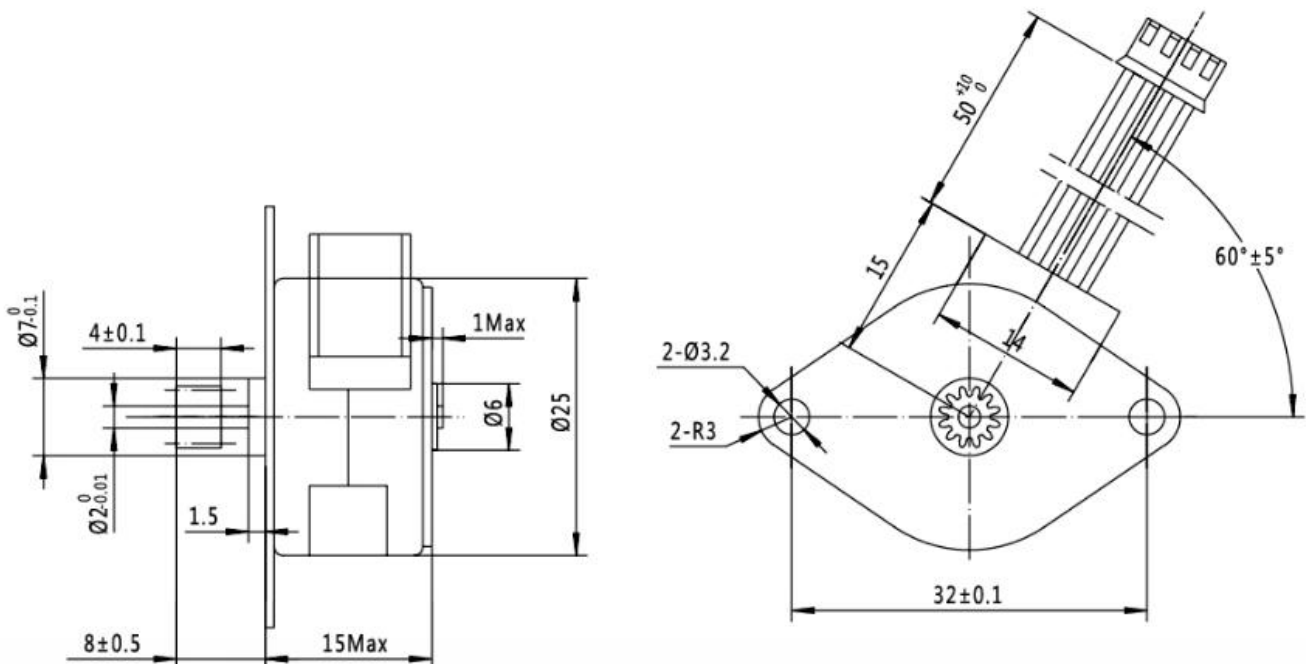
# 15° Size 25mm PM Stepper Motor



## Typical Applications

- Miniprinter
- Electrical expansion value control
- Sanitary appliance

## Mechanical dimensions: mm



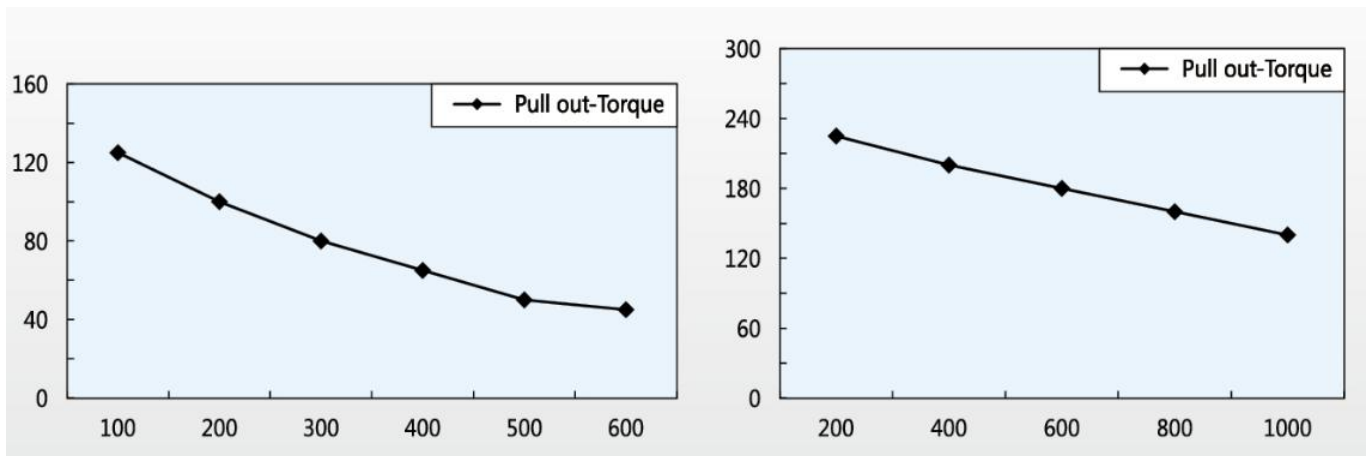
# 15° Size 25mm PM Stepper Motor



## Specification

Type	Step Angle [°]	Drive method	Drive circuit	Drive Voltage [V]	Current /phase [mA]	Coil Resistance/ phase [Ω]	Insulation Resistance	Dielectric strength	Class of insulation
M025PM 012-15S6	15°	2-2PHASE	UNIPOLAR	12	--	50	100MΩ min	500VAC 1min	E
M025PM 024-15S6	15°	2-2PHASE	BIPOLAR	24	600	10	100MΩ min	500VAC 1min	E

## Motors performance curves



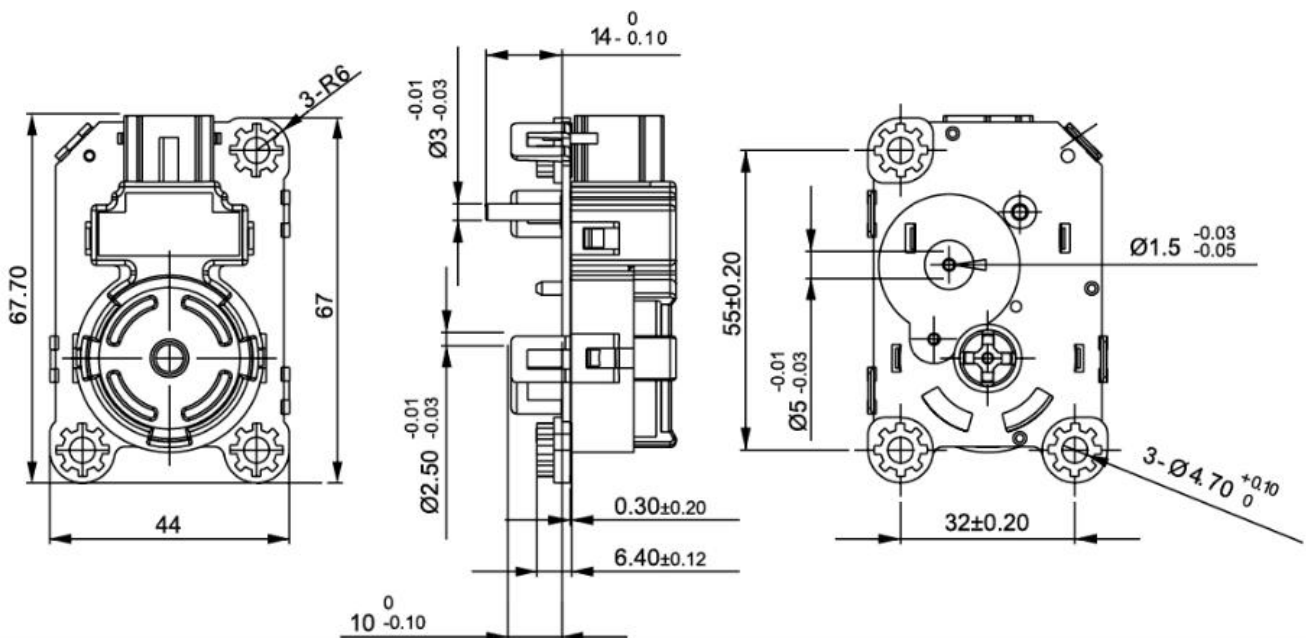
# 15° Size 30mm PM Stepper Motor



## Typical Applications

- Automotive air conditioner

## Mechanical dimensions: mm



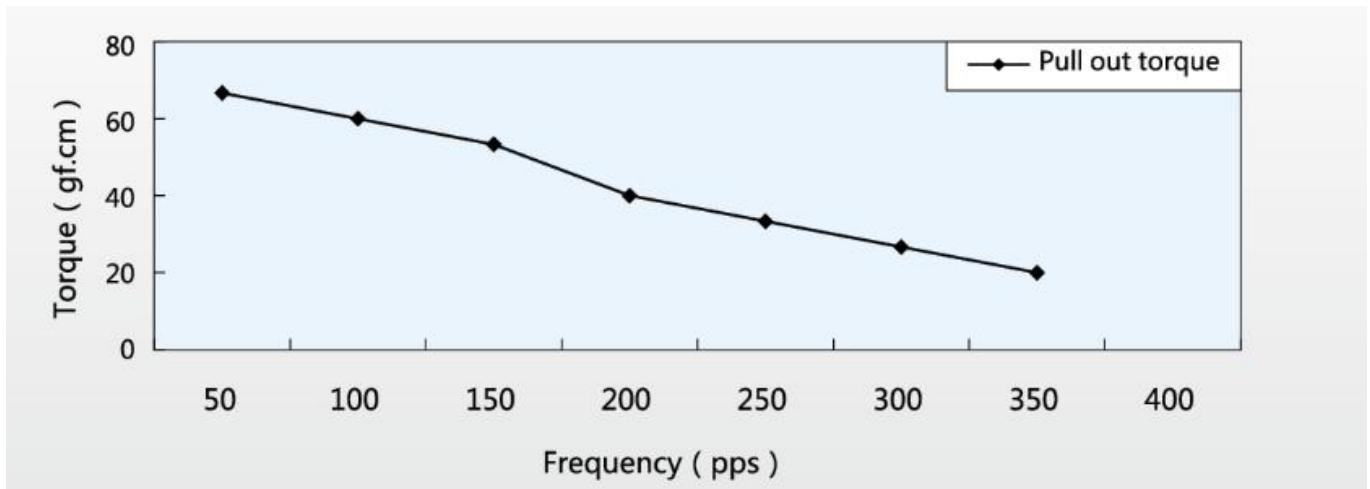
# 15° Size 30mm PM Stepper Motor



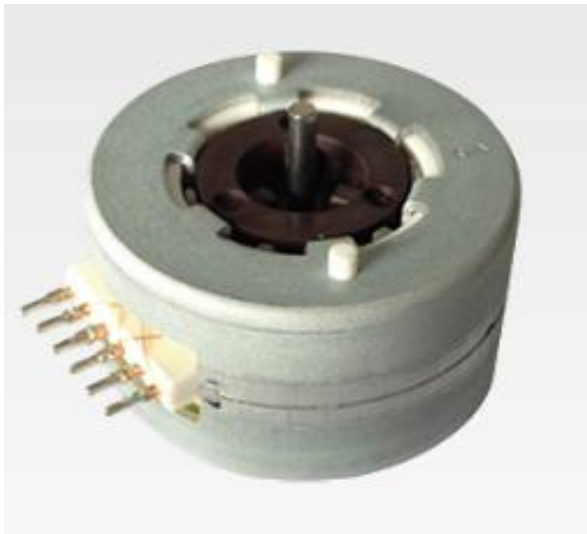
## Specification

Type	Step Angle [°]	Drive method	Drive circuit	Drive Voltage [V]	Coil Resistance/phase[Ω]	Insulation Resistance	Dielectric strength	Class of insulation
M030PM0 12-20S6	15°	2- 2PHASE	UNIPOL AR	12	81	100MΩ min	500VAC 1min	E

## Motors performance curves



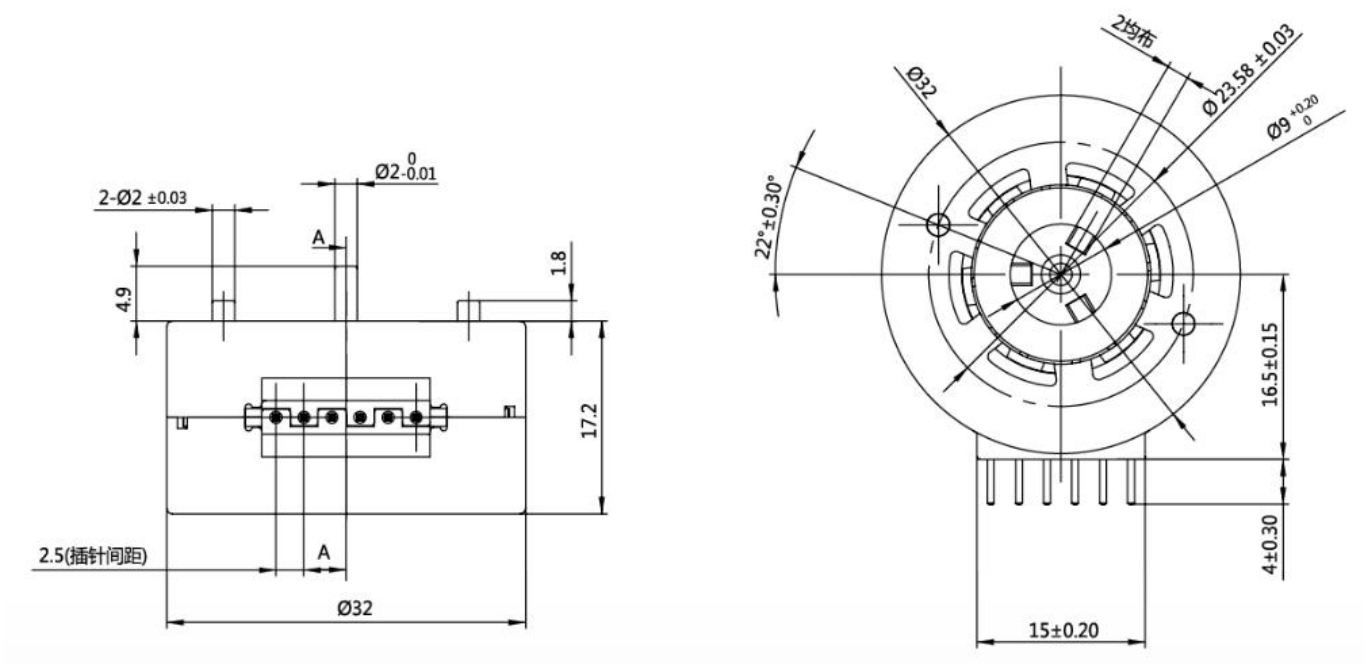
# 15° Size 32mm PM Stepper Motor



## Typical Applications

- Automotive air conditioner
- Commercial humidifier
- Value control

## Mechanical dimensions: mm



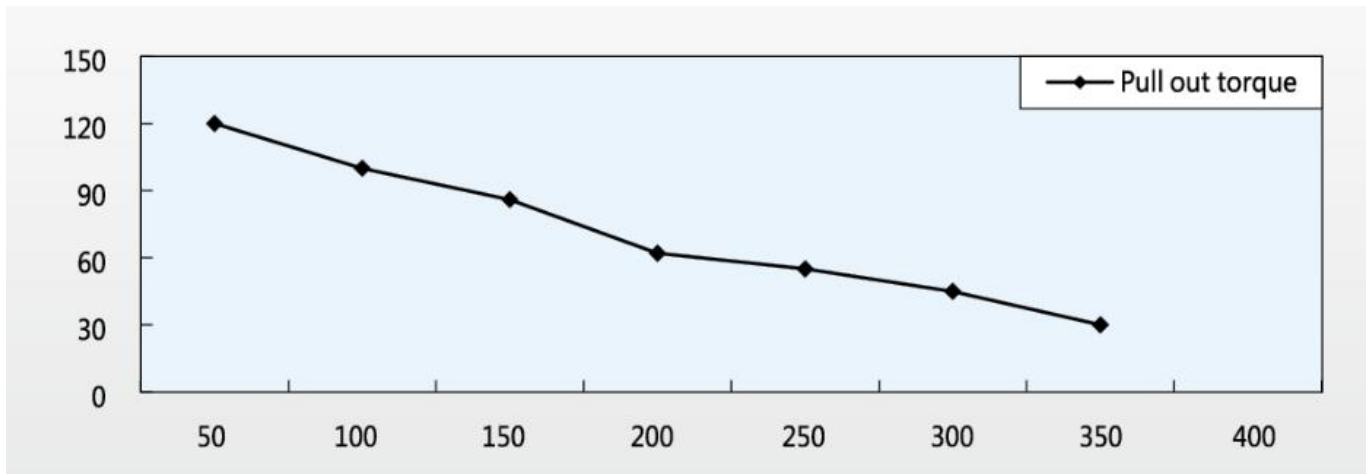
# 15° Size 32mm PM Stepper Motor



## Specification

Type	Step Angle [°]	Drive method	Drive circuit	Drive Voltage [V]	Coil Resistance/ phase[Ω]	Insulation Resistance	Dielectric strength	Class of insulation
M032PM0 12-17S6	15°	2- 2PHASE	UNIPOL AR	12	65	100MΩ min	500VAC 1min	E

## Motors performance curves



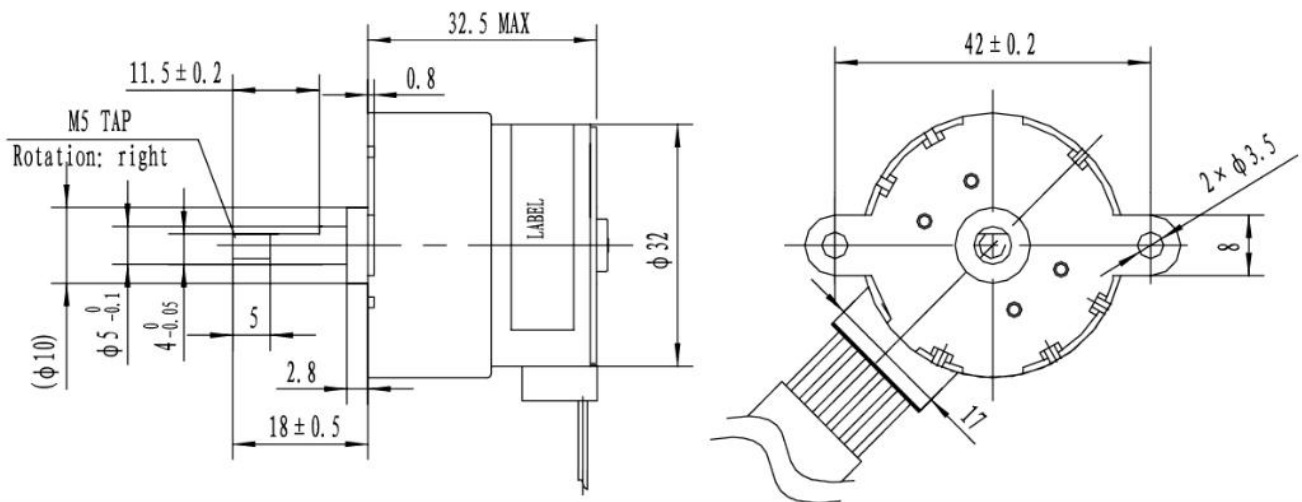
# 15° Size 32mm-SG PM Stepper Motor



## Typical Applications

- Automotive air conditioner
- Commercial humidifier

## Mechanical dimensions: mm



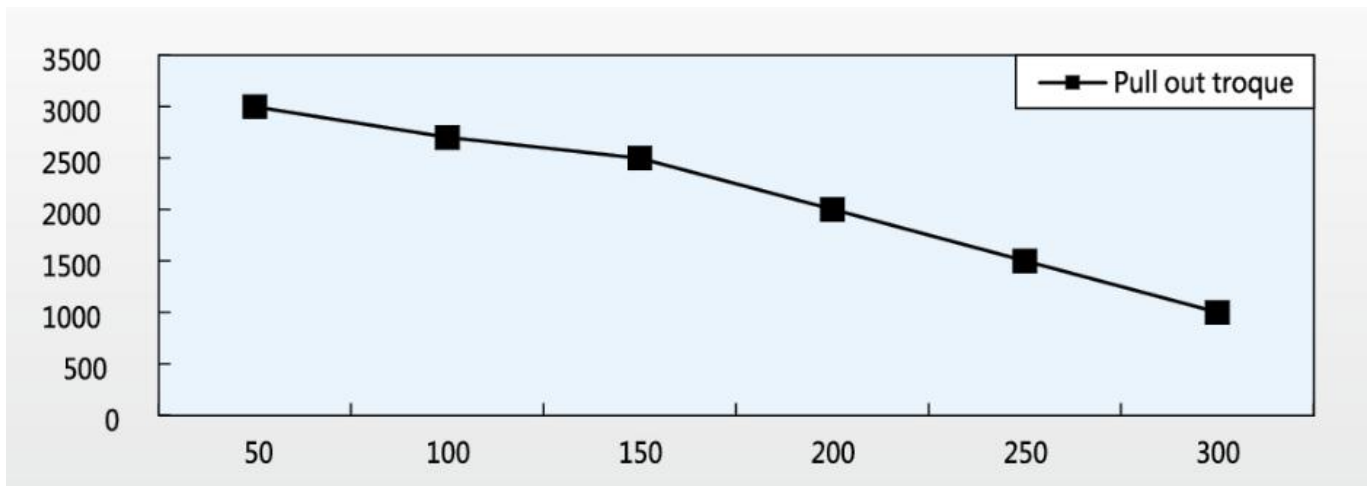


# 15° Size 32mm-SG PM Stepper Motor

## Specification

Type	Step Angle [°]	Reduction ratio	Drive method	Drive circuit	Drive Voltage [V]	Coil Resistance/phase [Ω]	Insulation Resistance	Dielectric strength	Class of insulation
M032PM 012-32S6-SG042	15°	1/42.5	2-2PHASE	UNIPO LAR	12	70	100M Ω min	500VAC 1min	E

## Motors performance curves



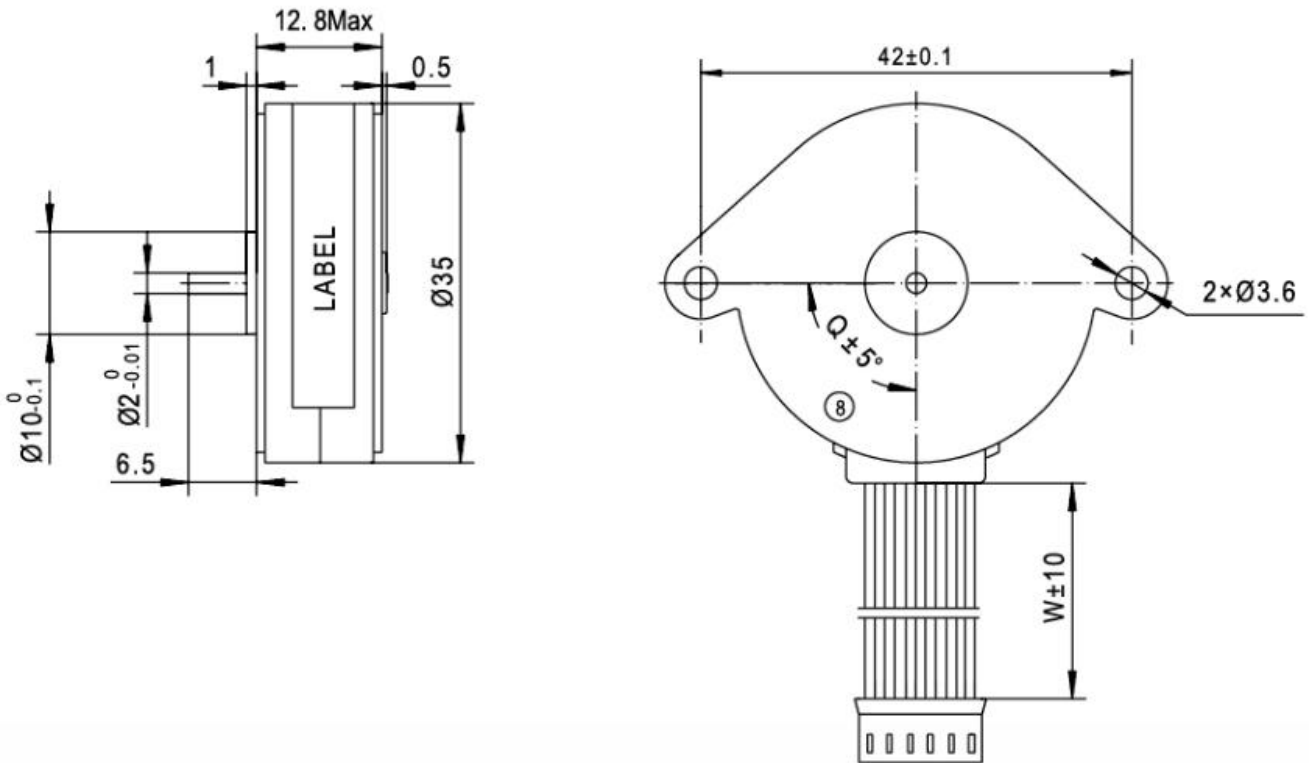


### Typical Applications

- Typical applications
- Grill shutter actuator
- Printer
- Copycat
- Fax machine
- Scanner
- Sanitary appliance

## 7.5° Size 35mm PM Stepper Motor

### Mechanical dimensions: mm



### Specification

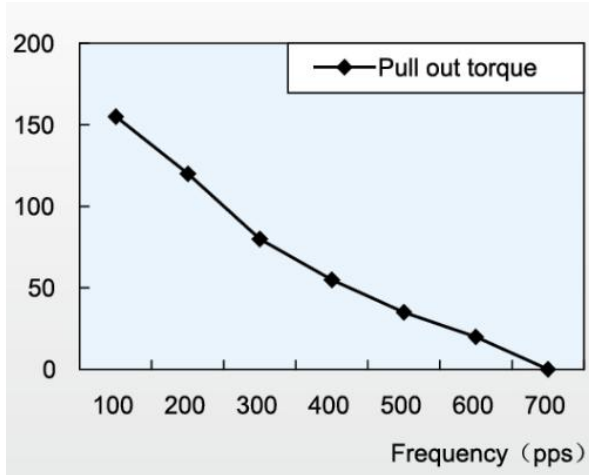
Type	Step Angle [°]	Drive method	Drive circuit	Drive Voltage [V]	Coil Resistance/phase [Ω]	Insulation Resistance	Dielectric strength	Class of insulation	Standard Thickness [mm]
M035PM 024-12S5	7.5°	2- 2PHASE	UNIPOL AR	24	60	100MΩ min	500VAC 1min	E	22.2/15.5/1 2.5

# 7.5° Size 35mm PM Stepper Motor

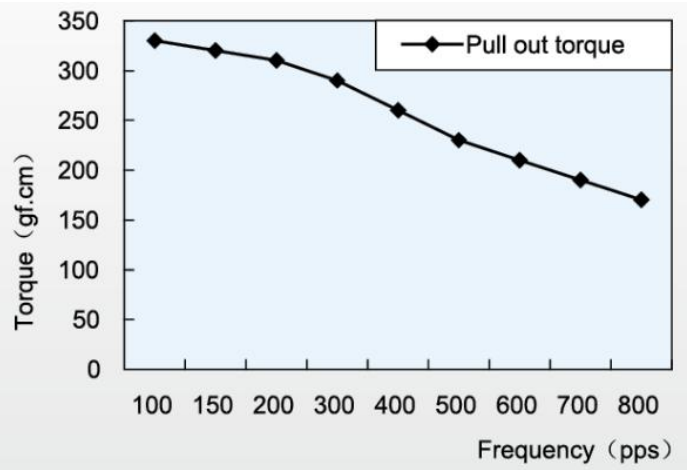


## Motors performance curves

UNIPOLAR CONST.VOLT(at 24V, 60Ω)



BIPOLAR CHOPPER(at 12V, 90Ω)



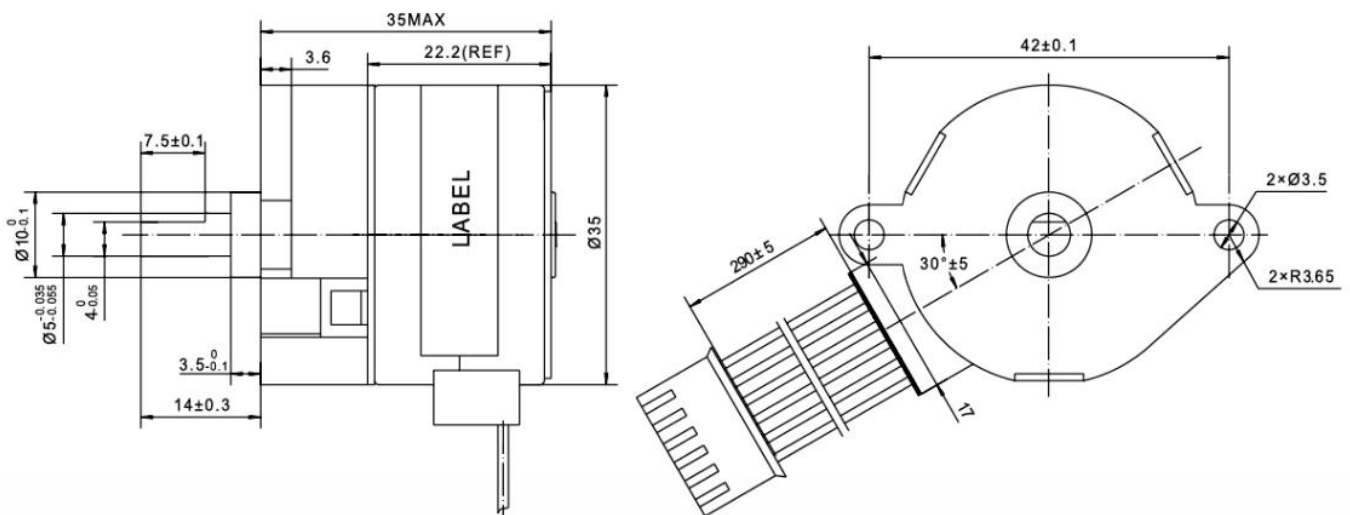
## 7.5° Size 35mm-SG PM Stepper Motor



### Typical Applications

- Commercial humidifier
- Sanitary appliance

### Mechanical dimensions: mm



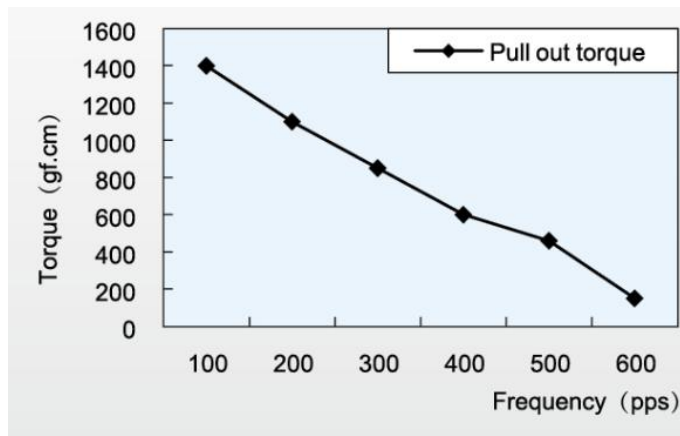
## 7.5° Size 35mm-SG PM Stepper Motor

### Specification

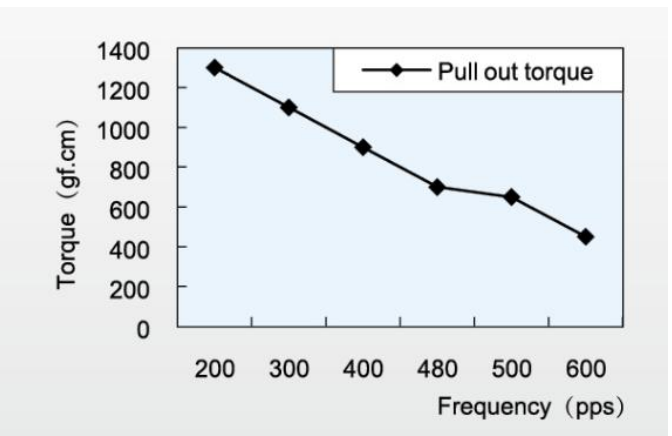
Type	Step Angle [°]	Reduction ratio	Drive method	Drive circuit	Drive Voltage [V]	Coil Resistance/phase [Ω]	Insulation Resistance	Dielectric strength	Class of insulation
M035PM 012-35S5-SG004	7.5°	1/4	2-PHASE	UNIPOLAR	12	40	100M Ω min	500VAC 1min	E
M035PM 024-35S5-SG004	7.5°	1/4	2-PHASE	UNIPOLAR	24	90	100M Ω min	500VAC 1min	E

### Motors performance curves

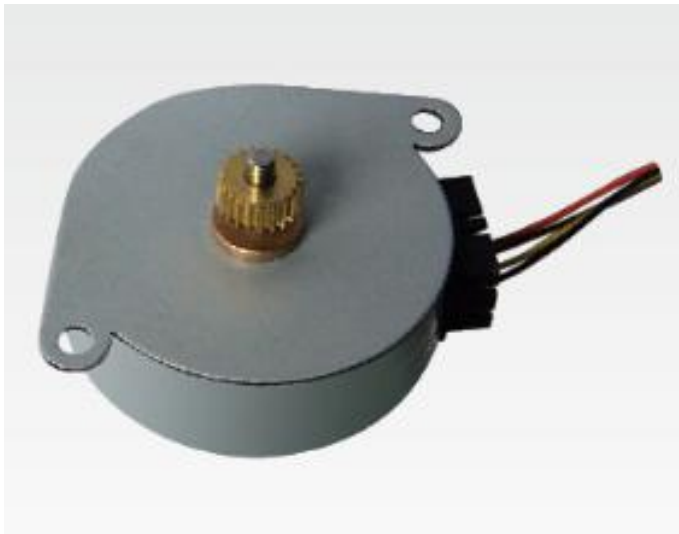
UNIPOLAR CONST.VOLT(at 12V, 40 Ω)



UNIPOLAR CONST.VOLT(at 24V, 90 Ω)



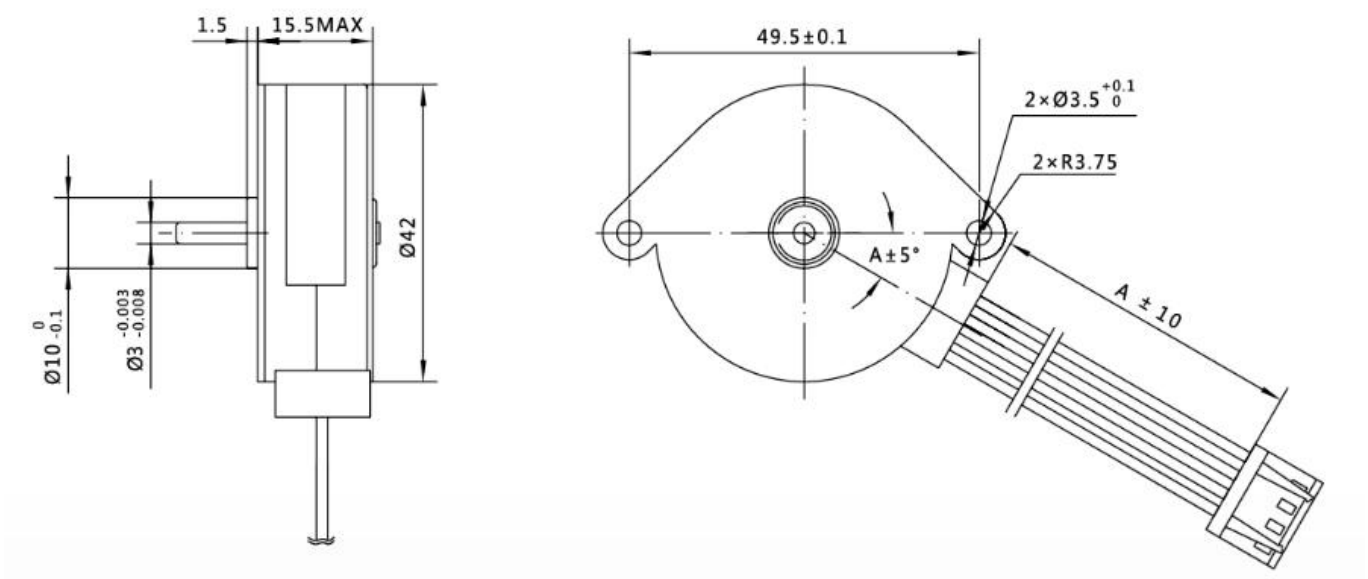
## 7.5° Size 42mm PM Stepper Motor



### Typical Applications

- OA financial equipment
- Auto lamps
- Intelligent sanitary
- Value control
- Automatic control

### Mechanical dimensions: mm



# 7.5° Size 42mm PM Stepper Motor



## Specification

Type	Step Angle [°]	Drive method	Drive circuit	Drive Voltage [V]	Current /phase [mA]	Coil Resistance/ phase[Ω]	Insulation Resistance	Dielectnic strength	Class of insulation	Standard Thicknes <sub>s</sub> [mm]
M042PM 034-15S5	7.5°	2-2PHAS E	UNIPOL AR	34	900	4	100MΩ min	500VAC 1min	E	15.5/17.7/23
M042PM 014-15S5	7.5°	2-2PHAS E	BIPOLA R	14	400	5	100MΩ min	500VAC 1min	E	

## Motors performance curves

34VDC

