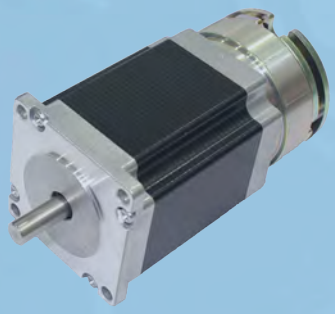
POWER STEP



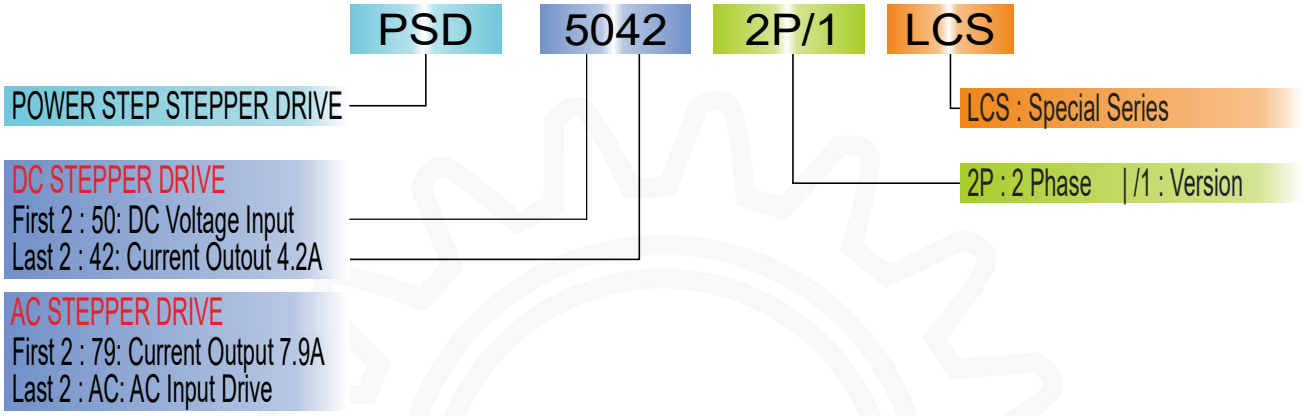
Motion Solution

MOTION SOLUTION
Ideas to Motion Control Solution

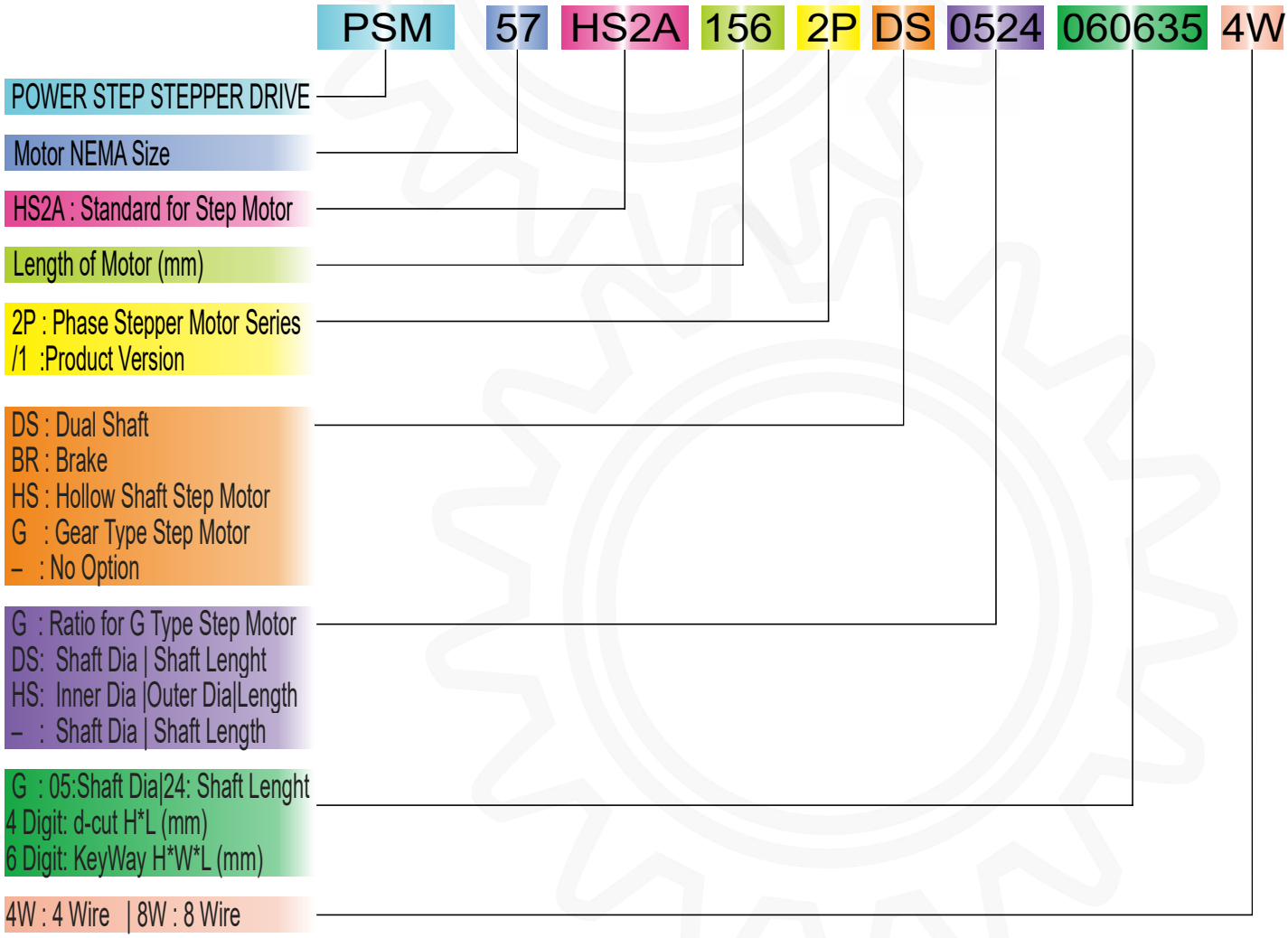
ORDER CODE :

- POWER STEP DRIVER
- POWER STEP MOTOR
- STEPSERVO DRIVER
- STEPSERVO MOTOR
- INTEGRATED STEP SERVO

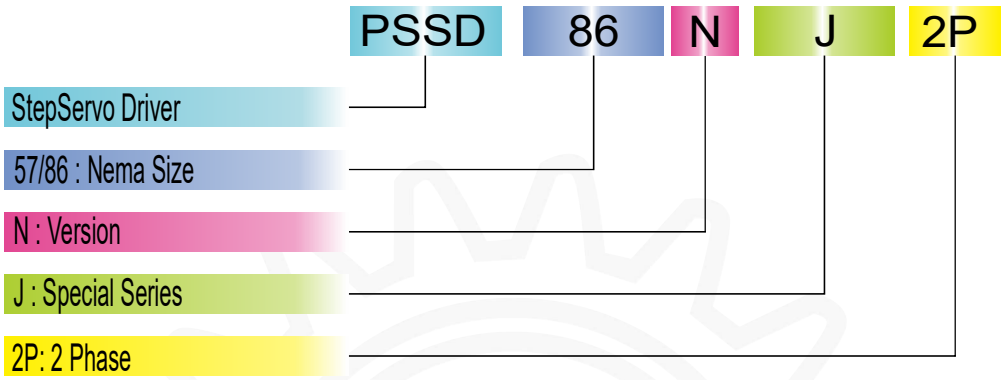
Order Coding : Step Driver



Order Coding : Step Motor



Order Coding : StepServo Driver

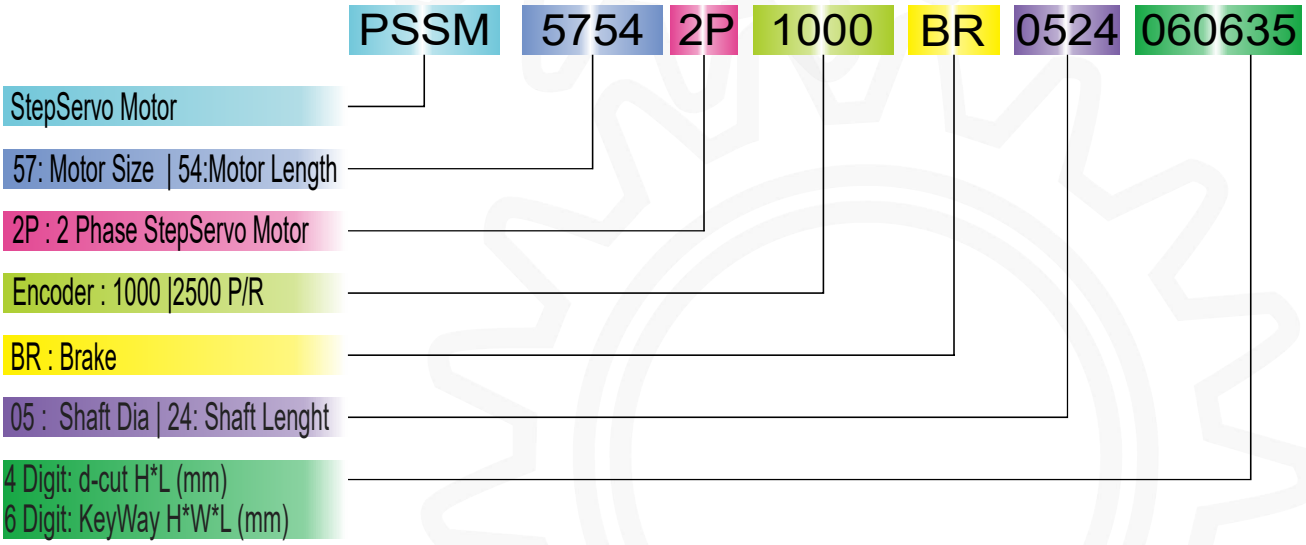


Specifications

Model	Current (A)	Voltage (V)	Motor	Weight (KG)	Dimension (mm)	Control Signal
PSSD57-N-J-2P	0 - 6 A	DC (24-48V)	57, 86	0.27	118X75.5X34	Differential
PSSD86H-N-J-2P	0 - 7 A	AC (24-70V) DC (30-100V)	57, 86	0.6	150X97.5X53	Differential
PSSD9060-2P	0 - 6 A	AC (50-90V)	86	0.6	150X97.5X53	Differential

Note:The default setting for the driver's control is Step/Direction Mode. Please inform the manufacturer if you need CW/CCW mode.

Order Coding : StepServo Motor



Model	Step Angle (Deg)	Holding Torque (N.m)	Current/ Phase (A)	Resistance/ Phase (A)	Inductance/ Phase (mH)	Detent Torque ($g\text{-}cm^2$)	Rotor Inertial ($g\text{-}cm^3$)	Lead Wire	Weight (KG)	Length (mm)
PSSM5754-2P	1.8	1.2	4.0	0.44	1.4	400	280	4	0.72	81
PSSM5780-2P	1.8	2	5.0	0.36	1.8	700	480	4	1.1	101
PSSM6087-2P	1.8	3	5.0	0.45	2.1	690	690	4	1.3	110
PSSM8680-2P	1.8	4.5	6.0	0.34	2.5	1300	1800	4	2.6	109
PSSM86118-2P	1.8	8.2	6.0	0.53	4.7	2500	3600	4	4.3	146
PSSM86156-2P	1.8	12	6.0	0.75	12	4000	4000	4	5.1	183

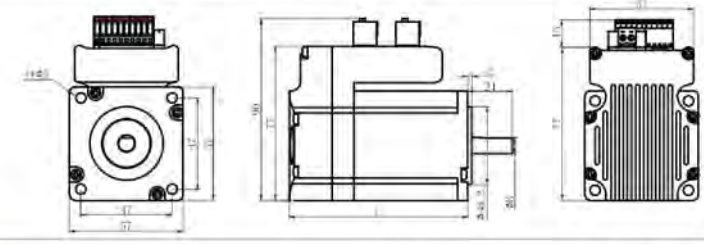
Order Coding : Integrated StepServo Motor

PSSIDM | 57 | 106 | 2 | 0821 | 0815

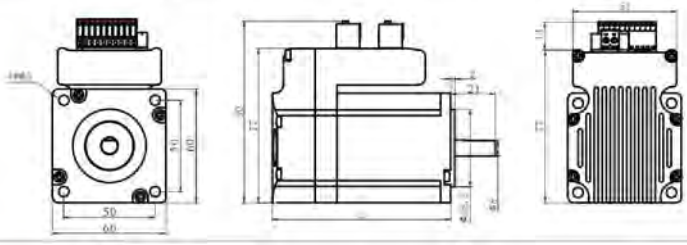
- PSSIDM — Integrated StepServo Motor
- 57 — Motor Flange Size
- 106 — Motor Length in mm: 85/106/118
- 2 — Torque in N : 1/2/3
- 0821 — Shaft Dia | Shaft Length
- 0815 — 4 Digit: d-cut H*L (mm)

Dimensions

PSSIDM57



PSSIDM60



PSSIDM57	
Part No.	Length(mm)
PSSIDM57-85-1-0821-0815	85
PSSIDM57-106-2-0821-0815	106

PSSIDM60	
Part No.	Length(mm)
PSSIDM60-118-3-3-821-0815	118

STEPPER MOTOR :

- PSD4015-2P
- PSD5042-2P/1/LCS
- PSD6056-2P
- PSD8079-2P
- PSD79AC-2P
- PSD92AC-2P
- PSM42
- PSM57
- PSM86
- PSM110

Power Step PSD4015-2P

Key Features

- 18 to 36VDC Supply Voltage
- H-Bridge, 2 Phase Bi-polar Micro-stepping Drive
- Suitable for 2-phase, 4, 6 and 8 leads step motors, with Nema size 16 to 23
- Output current selectable from 0.21~1.5A peak
- Compact credit card size package
- Optically isolated single ended TTL inputs for Pulse, Direction and Enable signal inputs
- Selectable resolutions up to 12800 steps
- Over Voltage, Coil to Coil and Coil to Ground short circuit protection.

Introduction

PSD4015−2P is a bi-polar two phase micro-stepping drive in a compact credit card size package. It is design for ultimate performance at a very cost efficient operation. It is best suited for two phase small size motor, which requires very little current, to deliver good speed and torque result. The single ended Pulse, Direction and Enable inputs with Opto−coupler pull up, interface perfectly with majority of the PLC output or PLC motion controller, shortening set up time.

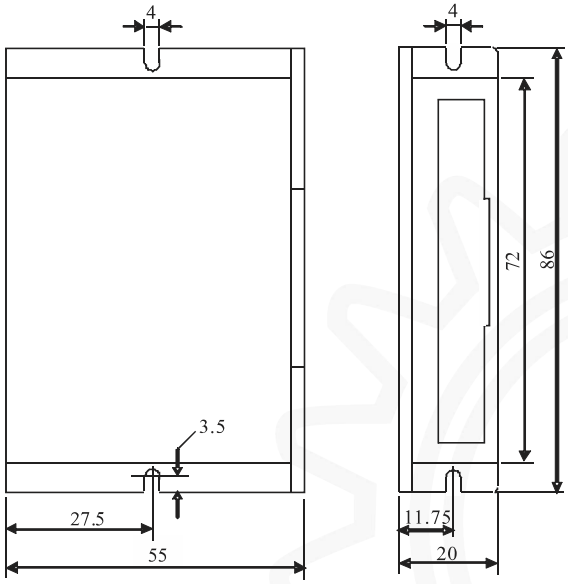
With an automatic optimization speed control technique, the PowerStep series drive output is very stable, with almost zero vibration and noise, performing close to a servo system, allowing the motor to operate smoothly. That helps to fulfill a design requirement of low noise, low heat and high performance.helps to fulfill a design requirement of low noise, low heat and high performance.

Specifications

Parameters		Min	Typical	Max	Unit
Output Current (Peak)		0.21	-	1.5	Amps
Supply voltage		18	24	36	VDC
Logic Input Current		7	10	15	mA
Pulse input frequency		-	-	200	KHz
Low Level Time		2.5	-	-	μsec
Cooling	Natural Cooling or Forced Convection				
Environment	Space	Avoid dust, oil frost and corrosive gases			
	Ambient Temperature	−10°C−60°C			
	Humidity	< 80%RH			
	Vibration	5.9m/s² Max			
Storage Temp.	-10°C −80°C				
Weight	Approx. 150 gram				

Dimensions

Dimensions in mm



Current Setting

Current Setting (A)	SW1	SW2	SW3
0.21	OFF	ON	ON
0.42	ON	OFF	ON
0.63	OFF	OFF	ON
0.84	ON	ON	OFF
1.05	OFF	ON	OFF
1.26	ON	OFF	OFF
1.50	OFF	OFF	OFF

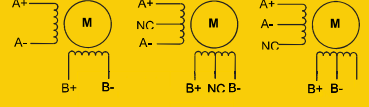
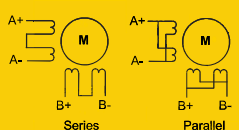
Microstep Setting

Step / Rev	SW4	SW5	SW6
200	ON	ON	ON
400	OFF	ON	ON
800	ON	OFF	ON
1600	OFF	OFF	ON
3200	ON	ON	OFF
6400	OFF	ON	OFF
12800	ON	OFF	OFF

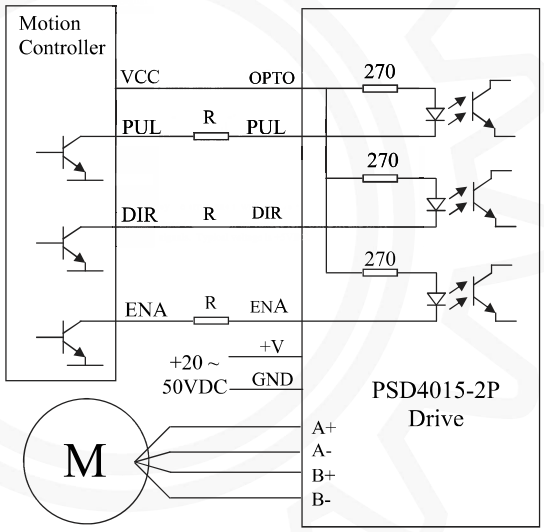
P1 Pin Assignment

Signal	Function and Descriptions
PUL+	Pulse or Step Input TTL differential input with low-going pulse, 1.5 µs min width. For +12V or +24V operation, a current limiting resistor had to be pull up or connected in series from the PUL+ to the VCC.
PUL-	
DIR+	Direction Input Logic High = positive (CW) rotation—4.0 ~ 5.0V Logic Low = negative (CCW) rotation—0 ~ 0.5V The DIR signal must be stable for at least 5ms before the drive receives the first pulse.
DIR-	
ENA+	Enable Input Logic High = Drive Enabled Logic Low = Drive Disabled This input, if left unconnected, is regconised as Logic High by the drive, and it will be enabled.
ENA-	

P2 Pin Assignment

P2 Signal	Function and Descriptions
GND	DC Power Ground
+V	DC Power Supply, +15VDC ~ +40VDC
A+, A-	
B+, B-	

Wiring



R=0 if VCC=5V
R=1K(Power>0.125W) if VCC=12V;
R=2K(Power>0.125W) if VCC=24V;
R must be connected to control signal terminal.

Power Step PSD5042-2P/1-LCS

Key Features

- 20 to 50VDC Supply Voltage
- H-Bridge, 2 Phase Bi-polar Micro-stepping Drive
- Suitable for 2-phase, 4, 6 and 8 leads step motors, with Nema size 16 to 34
- Output current selectable from 1.0 ~ 4.2A peak
- Current reduction by 50% automatically, when motor standstill mode is enabled
- Pulse Input frequency up to 200 kHz
- Optically isolated differential TTL inputs for Pulse, Direction and Enable signal inputs
- Selectable resolutions up to 25000 steps
- Over Voltage, Coil to Coil and Coil to Ground short circuit protection.
- Can be programmed by HISU Programmer
- Can Drive small Stepper motor without problem

Introduction

PSD5042-2P/1-LCS is a cost effective, high performance bi-polar two phase micro-stepping drive applying pure-sinusoidal current control technique. It is best suited for the applications that desired extreme low noise and heat. It operates well in an environment, where electricity supply experience instability and fluctuation.

The general pseudo-sinusoidal current control technology adopted by majority of the drive produced distorted sine wave, and current ripple, resulting in vibration, noise and motor heating. This results in motor degrading over time, reducing in motor performance and shortens the usage life.

With an automatic optimization speed control technique, the PowerStep series drive output is very stable, with almost zero vibration and noise, performing close to a servo system, allowing the motor to operate smoothly. That helps to fulfill a design requirement of low noise, low heat and high performance.

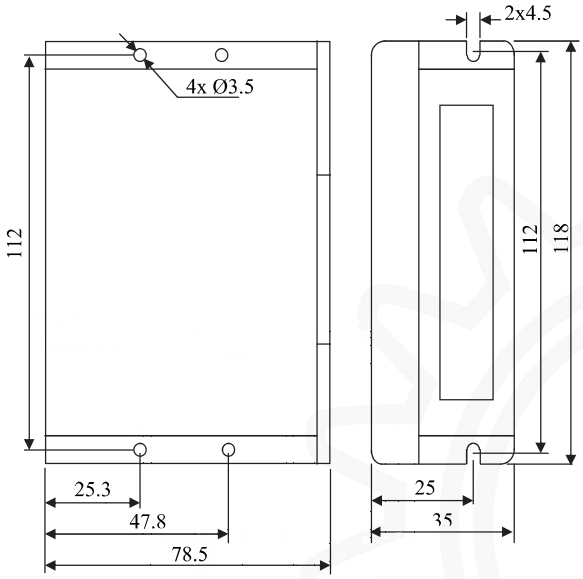
Self Test/Run Mode Dip Switch is provided for user to test the drive without connecting controller. In addition, Dip Switch is also provided to switch between 2 pulse train and Pul/Dir input interface.

Specifications

Parameters		Min	Typical	Max	Unit
Output Current (Peak)		1.0	–	4.2	Amps
Supply voltage		24	36	48	VDC
Logic Input Current		7	10	15	mA
Pulse input frequency		–	–	200	KHz
Low Level Time		2.5	–	–	μsec
Cooling		Natural Cooling or Forced Convection			
Environment	Space	Avoid dust, oil frost and corrosive gases			
	Ambient Temperature	−10°C−60°C			
	Humidity	< 80%RH			
	Vibration	5.9m/s² Max			
Storage Temp.	-10°C −80°C				
Weight	Approx. 260 gram				

Dimensions

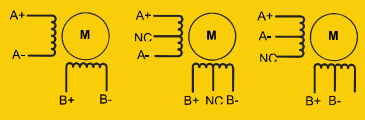
Dimensions in mm



P1 Pin Assignment

Signal	Function and Descriptions
PUL+	Pulse or Step Input TTL differential input with low-going pulse, 1.5 µs min width. For +12V or +24V operation, a current limiting resistor had to be pull up or connected in series from the PUL+ to the VCC.
PUL-	
DIR+	Direction Input Logic High = positive (CW) rotation—4.0 ~ 5.0V Logic Low = negative (CCW) rotation—0 ~ 0.5V The DIR signal must be stable for at least 5ms before the drive receives the first pulse.
DIR-	
ENA+	Enable Input Logic High = Drive Enabled Logic Low = Drive Disabled This input, if left unconnected, is regconised as Logic High by the drive, and it will be enabled.
ENA-	

P2 Pin Assignment

P2 Signal	Function and Descriptions
GND	DC Power Ground
+V	DC Power Supply, +24VDC ~ +58VDC
A+, A-	
B+, B-	

Current Setting

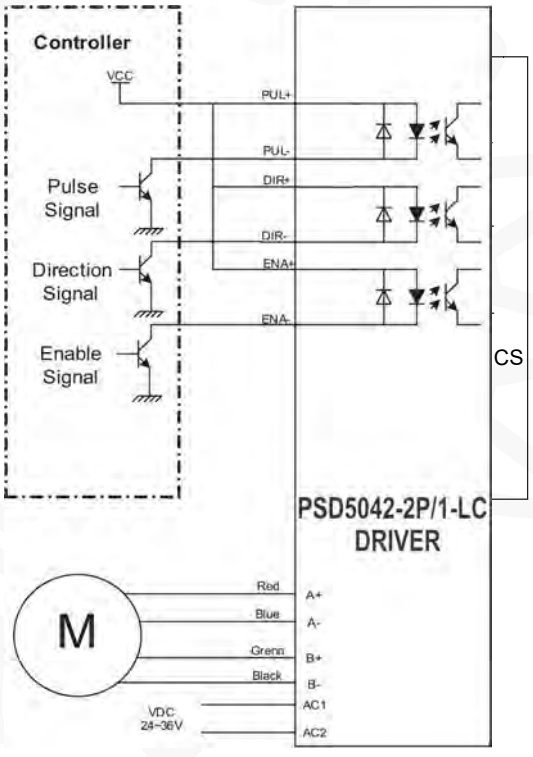
Current Setting (A)	SW1	SW2	SW3
1.0	ON	ON	ON
1.46	OFF	ON	ON
1.91	ON	OFF	ON
2.37	OFF	OFF	ON
2.84	ON	ON	OFF
3.31	OFF	ON	OFF
3.76	ON	OFF	OFF
4.20	OFF	OFF	OFF

Microstep Setting

	SW5	SW6	SW7	SW8
400	OFF	ON	ON	ON
800	ON	OFF	ON	ON
1600	OFF	OFF	ON	ON
3200	ON	ON	OFF	ON
6400	OFF	ON	OFF	ON
12800	ON	OFF	OFF	ON
25600	OFF	OFF	OFF	ON
1000	ON	ON	ON	OFF
2000	OFF	ON	ON	OFF
4000	ON	OFF	ON	OFF
5000	OFF	OFF	ON	OFF
8000	ON	ON	OFF	OFF
10000	OFF	ON	OFF	OFF
20000	ON	OFF	OFF	OFF
25000	OFF	OFF	OFF	OFF

* SW4: ON=Full current, SW4 : OFF=Half current

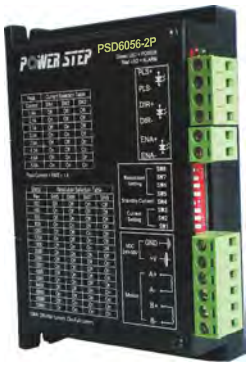
Wiring



VCC =5V ~ 24V

Power Step PSD6056-2P

Key Features



- 24 to 48VDC Supply Voltage
- H-Bridge, 2 Phase Bi-polar Micro-stepping Drive
- Suitable for 2-phase, 4, 6 and 8 leads step motors, with Nema size 17 to 34
- Output current selectable from 1.4~5.6A peak
- Current reduction by 50% automatically, when motor standstill mode is enabled
- Pulse Input frequency up to 200 kHz
- Optically isolated differential TTL inputs for Pulse, Direction and Enable signal inputs
- Selectable resolutions up to12800 steps
- Over Voltage, Coil to Coil and Coil to Ground short circuit protection.

Introduction

PSD6056-2P is a cost effective, high performance bi-polar two phase micro-stepping drive applying pure-sinusoidal current control technique. It is best suited for the applications that desired extreme low noise and heat. It operates well in an environment, where electricity supply experience instability and fluctuation.

The general pseudo-sinusoidal current control technology adopted by majority of the drive produced distorted sine wave, and current ripple, resulting in vibration, noise and motor heating. This results in motor degrading over time, reducing in motor performance and shortens the usage life.

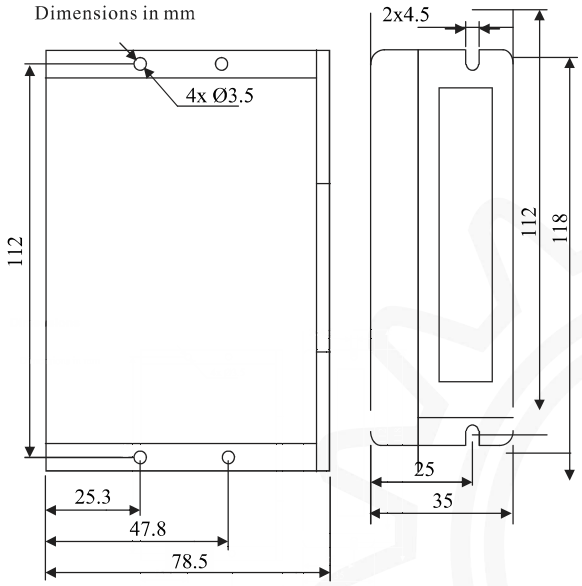
With an automatic optimization speed control technique, the PowerStep series drive output is very stable, with almost zero vibration and noise, performing close to a servo system, allowing the motor to operate smoothly. That helps to fulfill a design requirement of low noise, low heat and high performance.

Specifications

Parameters		Min	Typical	Max	Unit
Output Current (Peak)		1.4	–	5.6	Amps
Supply voltage		24	36	48	VDC
Logic Input Current		7	10	15	mA
Pulse input frequency		–	–	200	KHz
Low Level Time		2. 5	–	–	μsec
Cooling	Natural Cooling or Forced Convection				
Environment	Space	Avoid dust, oil frost and corrosive gases			
	Ambient Temperature	−10°C−60°C			
	Humidity	< 80%RH			
	Vibration	5.9m/s² Max			
Storage Temp.	-10°C −80°C				
Weight	Approx. 260 gram				

Dimensions

Dimensions in mm



Current Setting

Current Setting (A)	SW1	SW2	SW3
1.4	OFF	OFF	OFF
2.1	ON	OFF	OFF
2.7	OFF	ON	OFF
3.2	ON	ON	OFF
3.8	OFF	OFF	ON
4.3	ON	OFF	ON
4.9	OFF	ON	ON
5.6	ON	ON	ON

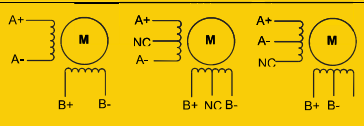
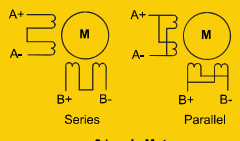
Microstep Setting

Step / Rev	SW5	SW6	SW7	SW8
200	OFF	OFF	OFF	OFF
400	ON	OFF	OFF	OFF
500	OFF	ON	OFF	OFF
800	ON	ON	OFF	OFF
1000	OFF	OFF	ON	OFF
1250	ON	OFF	ON	OFF
1600	OFF	ON	ON	OFF
2000	ON	ON	ON	OFF
2500	OFF	OFF	OFF	ON
3200	ON	OFF	OFF	ON
4000	OFF	ON	OFF	ON
5000	ON	ON	OFF	ON
6400	OFF	OFF	ON	ON
8000	ON	OFF	ON	ON
10000	OFF	ON	ON	ON
12800	ON	ON	ON	ON

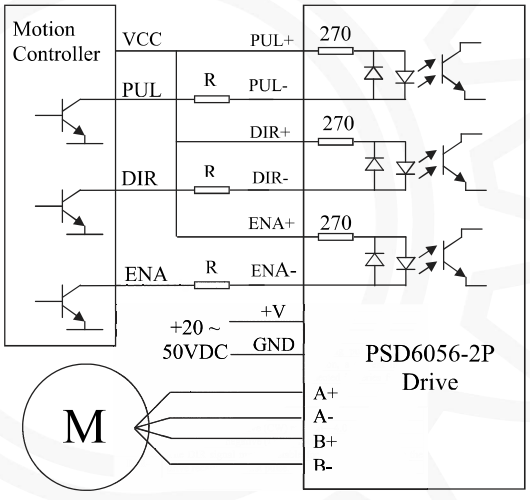
P1 Pin Assignment

Signal	Function and Descriptions
PUL+	Pulse or Step Input TTL differential input with low-going pulse, 1.5 µs min width. For +12V or +24V operation, a current limiting resistor had to be pull up or connected in series from the PUL+ to the VCC.
PUL-	
DIR+	Direction Input Logic High = positive (CW) rotation—4.0 ~ 5.0V Logic Low = negative (CCW) rotation—0 ~ 0.5V The DIR signal must be stable for at least 5ms before the drive receives the first pulse.
DIR-	
ENA+	Enable Input Logic High = Drive Enabled Logic Low = Drive Disabled This input, if left unconnected, is regconised as Logic High by the drive, and it will be enabled.
ENA-	

P2 Pin Assignment

P2 Signal	Function and Descriptions
GND	DC Power Ground
+V	DC Power Supply, +24VDC ~ +58VDC
A+, A-	
B+, B-	

Wiring



R=0 if VCC=5V
R=1K(Power>0.125W) if VCC=12V;
R=2K(Power>0.125W) if VCC=24V;
R must be connected to control signal terminal.

Power Step PSD8079-2P

Key Features

- 24 to 80VDC Supply Voltage
- H-Bridge, 2 Phase Bi-polar Micro-stepping Drive
- Suitable for 2-phase, 4, 6 and 8 leads step motors, with Nema size 23 to 42
- Output current selectable from 1.8~7.9A peak
- Current reduction by 50% automatically, when motor standstill mode is enabled
- Pulse Input frequency up to 200 kHz
- Optically isolated differential TTL inputs for Pulse, Direction and Enable signal inputs
- Selectable resolutions up to 12800 steps
- Over Voltage, Coil to Coil and Coil to Ground short circuit protection.

Introduction

PSD8079-2P is a cost effective, high performance bi-polar two phase micro-stepping drive applying pure-sinusoidal current control technique. It is best suited for the applications that desired extreme low noise and heat. It operates well in an environment, where electricity supply experience instability and fluctuation.

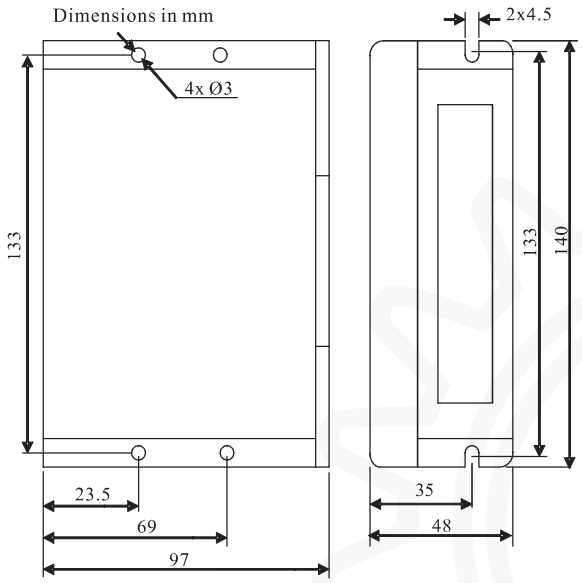
The general pseudo-sinusoidal current control technology adopted by majority of the drive produced distorted sine wave, and current ripple, resulting in vibration, noise and motor heating. This results in motor degrading over time, reducing in motor performance and shortens the usage life.

With an automatic optimization speed control technique, the PowerStep series drive output is very stable, with almost zero vibration and noise, performing close to a servo system, allowing the motor to operate smoothly. That helps to fulfill a design requirement of low noise, low heat and high performance.

Specifications

Parameters		Min	Typical	Max	Unit
Output Current (Peak)		1.8	–	7.9	Amps
Supply voltage		24	48	80	VDC
Logic Input Current		7	10	15	mA
Pulse input frequency		–	–	200	KHz
Low Level Time		2.5	–	–	μsec
Cooling	Natural Cooling or Forced Convection				
Environment	Space	Avoid dust, oil frost and corrosive gases			
	Ambient Temperature	−10°C−60°C			
	Humidity	< 80%RH			
	Vibration	5.9m/s² Max			
Storage Temp.	-10°C −80°C				
Weight	Approx. 600gram				

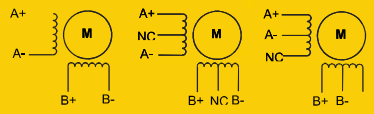
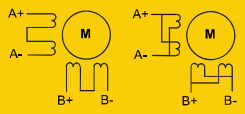
Dimensions



P1 Pin Assignment

Signal	Function and Descriptions
PUL+	Pulse or Step Input TTL differential input with low-going pulse, 1.5 µs min width. For +12V or +24V operation, a current limiting resistor had to be pull up or connected in series from the PUL+ to the VCC.
PUL-	
DIR+	Direction Input Logic High = positive (CW) rotation—4.0 ~ 5.0V Logic Low = negative (CCW) rotation—0 ~ 0.5V The DIR signal must be stable for at least 5ms before the drive receives the first pulse.
DIR-	
ENA+	Enable Input Logic High = Drive Enabled Logic Low = Drive Disabled This input, if left unconnected, is regconised as Logic High by the drive, and it will be enabled.
ENA-	

P2 Pin Assignment

P2 Signal	Function and Descriptions
GND	DC Power Ground
+V	DC Power Supply, +24VDC ~ +80VDC
A+, A-	
B+, B-	

Current Setting

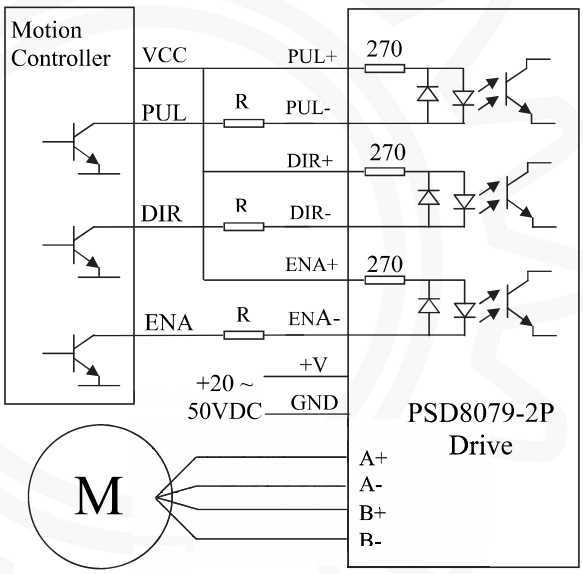
Current Setting (A	SW1	SW2	SW3
1.8	OFF	OFF	OFF
2.5	ON	OFF	OFF
3.5	OFF	ON	OFF
4.3	ON	ON	OFF
5.2	OFF	OFF	ON
6.0	ON	OFF	ON
7.0	OFF	ON	ON
7.8	ON	ON	ON

Microstep Setting

Step / Rev	SW5	SW6	SW7	SW8
200	OFF	OFF	OFF	OFF
400	ON	OFF	OFF	OFF
500	OFF	ON	OFF	OFF
800	ON	ON	OFF	OFF
1000	OFF	OFF	ON	OFF
1250	ON	OFF	ON	OFF
1600	OFF	ON	ON	OFF
2000	ON	ON	ON	OFF
2500	OFF	OFF	OFF	ON
3200	ON	OFF	OFF	ON
4000	OFF	ON	OFF	ON
5000	ON	ON	OFF	ON
6400	OFF	OFF	ON	ON
8000	ON	OFF	ON	ON
10000	OFF	ON	ON	ON
12800	ON	ON	ON	ON

* SW4: ON=Full current, SW4 : OFF=Half current

Wiring



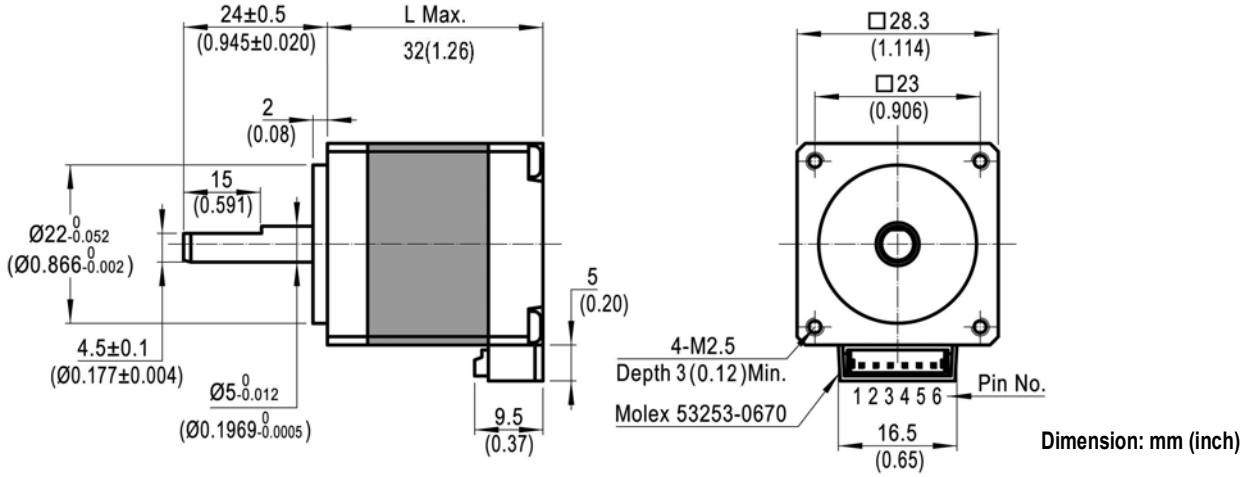
R=0 if VCC=5V
R=1K(Power>0.125W) if VCC=12V;
R=2K(Power>0.125W) if VCC=24V;
R must be connected to control signal terminal.

Nema 11 Size - 2 Phase Hybrid Step Motor

Features
Low Vibration
Low Noise
Smooth Movement

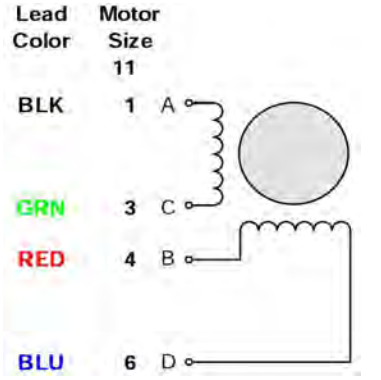
General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 4

Mechanical Dimensions (mm)

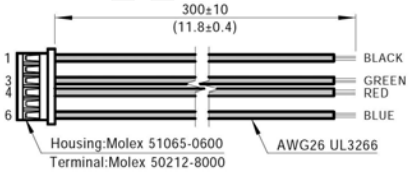


Dimension: mm (inch)

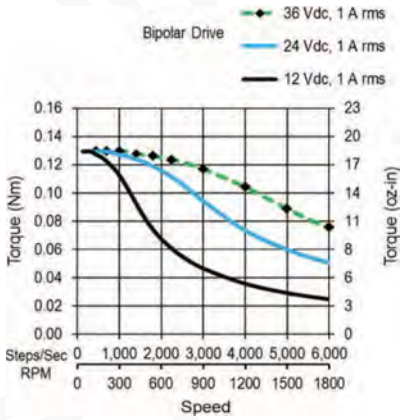
Wiring Diagram



Motor Cable



Speed/Torque Graph



Electrical Specifications

Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial (g-cm²)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	No of Motor Leads
PSM28HS2A31-2P-4100	0.9	1	2.7	2.5	50	9	0.1	31	5	4

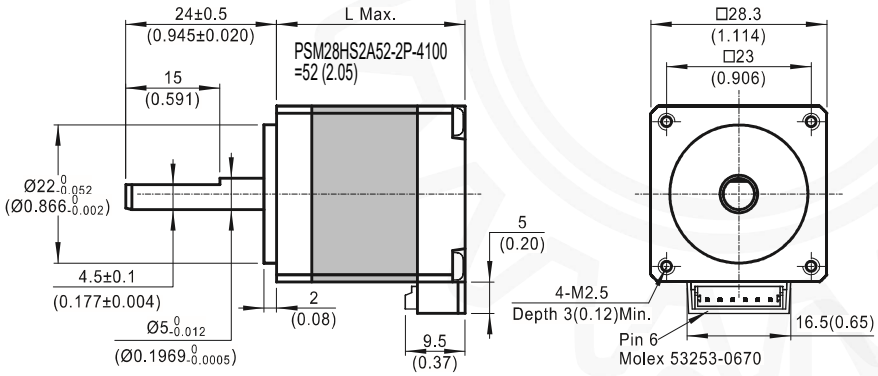
Nema 11 Size - 2 Phase Hybrid Step Motor

Features
Low Vibration
Low Noise
Smooth Movement

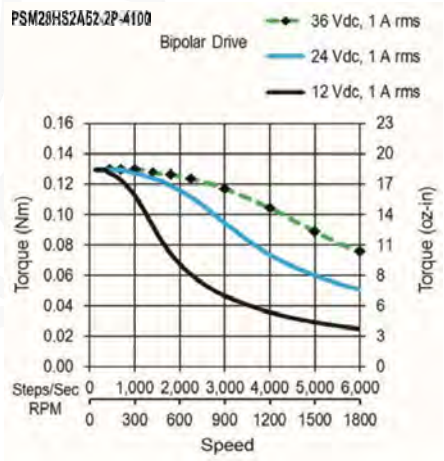
General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 4

Mechanical Dimensions (mm)

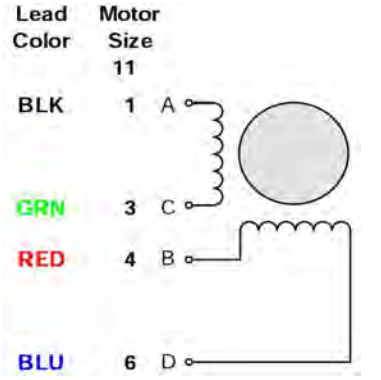
Dimensions: mm (in)



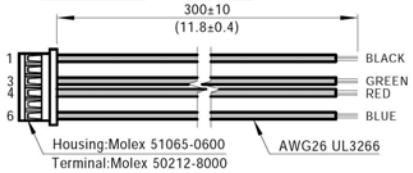
Speed/Torque Graph

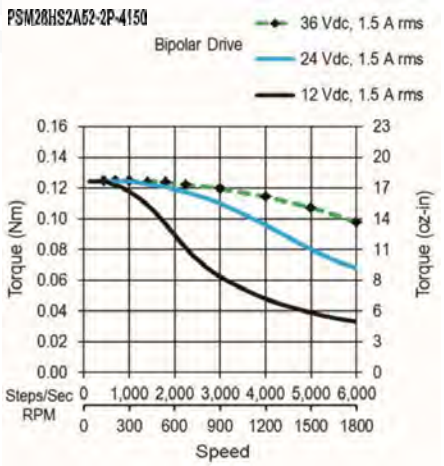


Wiring Diagram



Motor Cable





Electrical Specifications

Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial (g-cm²)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	No of Motor Leads
PSM28HS2A52-2P-4100	1.7	1	3.7	3.1	80	8	0.2	52	5	4
PSM28HS2A52-2P-4150	1.7	1.5	1.65	1.48	80	8	0.2	52	5	4

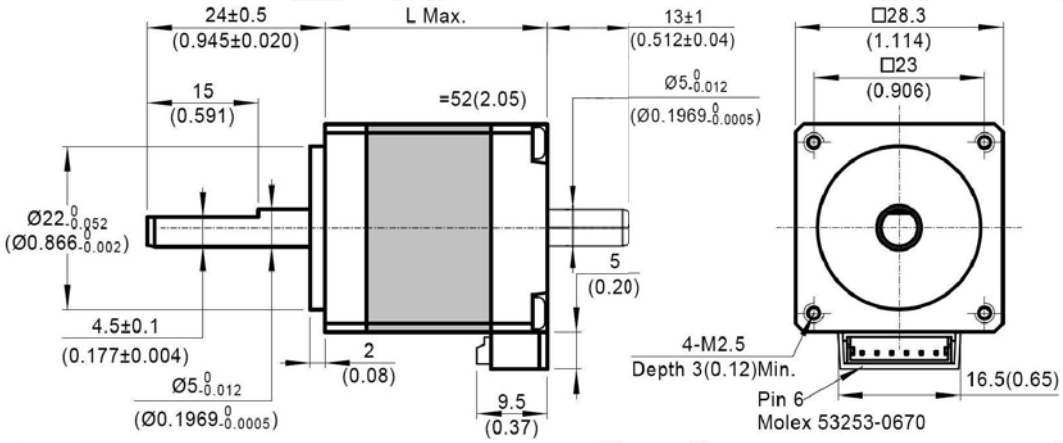
Nema 11 Size - 2 Phase Hybrid Step Motor

Features
Low Vibration
Low Noise
Smooth Movement

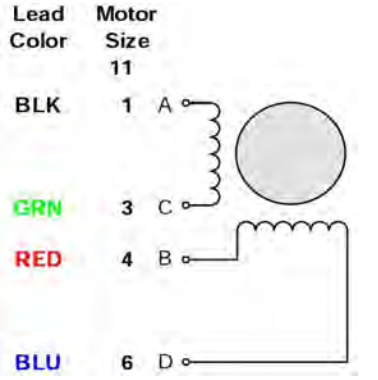
General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 4

Mechanical Dimensions (mm)

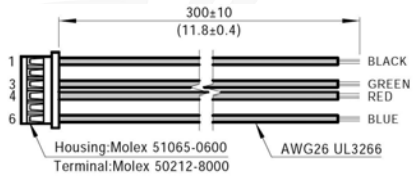
Dimensions: mm (in)



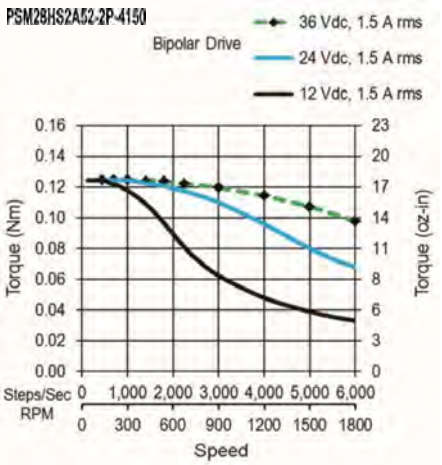
Wiring Diagram



Motor Cable



Speed/Torque Graph



Electrical Specifications

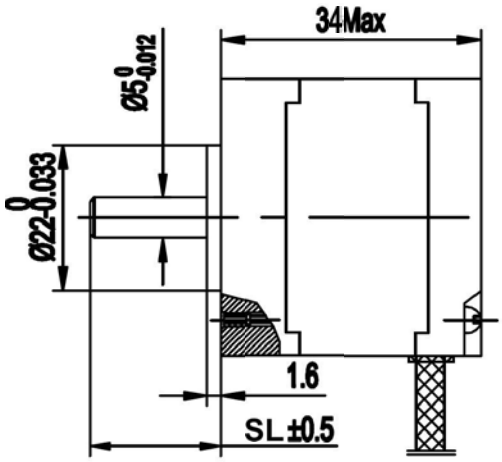
Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial (g-cm²)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	No of Motor Leads
PSM28HS2A52-2P-DS-4150	1.7	1.5	1.65	1.48	80	8	0.2	52	5	4

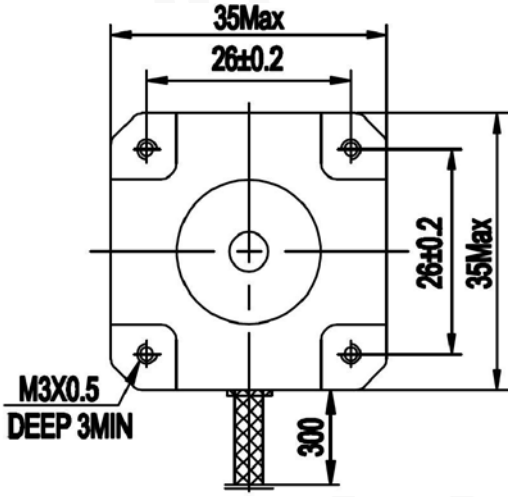
Nema 14 Size - 2 Phase Hybrid Step Motor

Features
Low Vibration
Low Noise
Smooth Movement

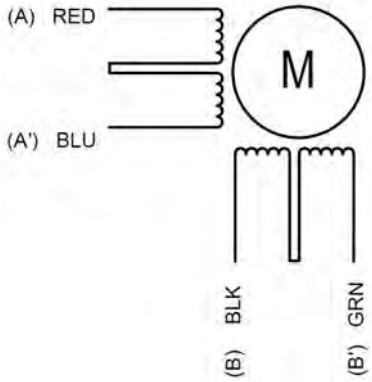
General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 4

Mechanical Dimensions (mm)





Wiring Diagram



FULL STEP 2 PHASE-EX.,
WHEN FACING MOUNTING END (X)

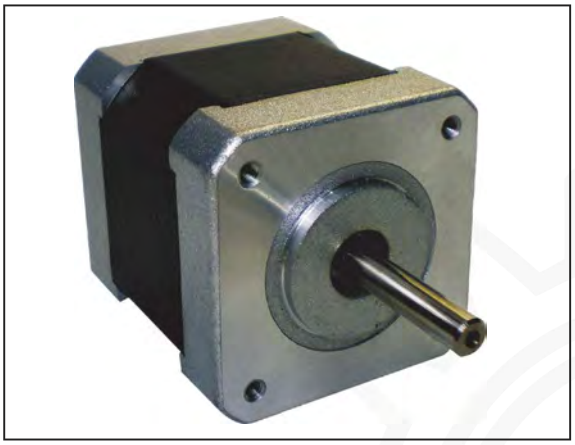
STEP	A	B	A'	B'
1	+	+	-	-
2	-	+	+	-
3	-	-	+	+
4	+	-	-	+

CCW
CW

Electrical Specifications

Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial (g-cm²)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	Shaft Length SL (mm)
PSM35HS2A34-2P	1.11	0.75	5.7	7	50	14	0.18	34	5	24
PSM35HS2A34-2P-SL16.5	1.11	0.75	5.7	7	50	14	0.18	34	5	16.5

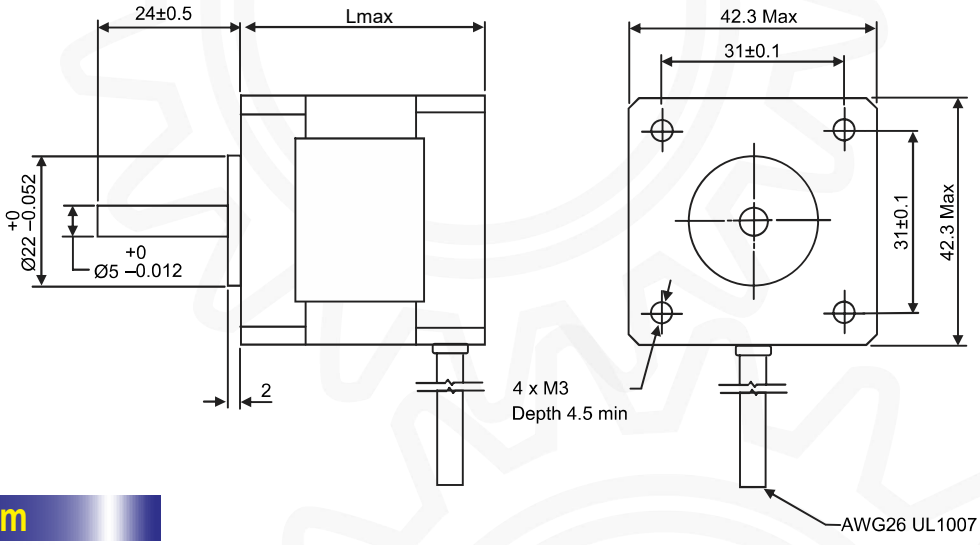
Nema 17 Size - 2 Phase Hybrid Step Motor



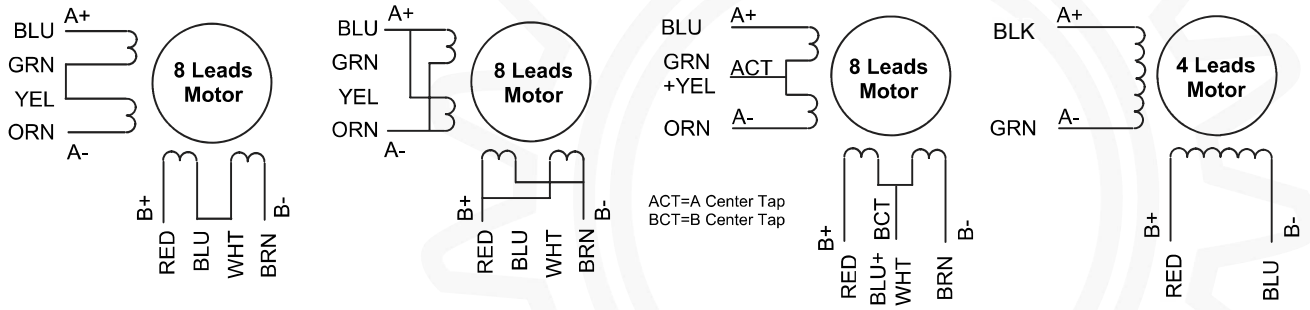
Features
Low Vibration
Low Noise
Smooth Movement

General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 4 or 8

Mechanical Dimensions (mm)



Wiring Diagram



Electrical Specifications

Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial (g-cm²)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	No of Motor Leads
PSM42HS2A25-2P	1.7	0.4	24	36	200	20	0.15	25	5	4
PSM42HS2A40-2P	3.2	0.4	10	17	150	57	0.24	40	5	4
PSM42HS2A48-2P-4W	4.4	2.5	1.25	2.5	200	82	0.34	48	5	4
PSM42HS2A48-2P-8W	3.4	1.0 (S) / 2.0 (P)	4.6	4	200	82	0.34	48	5	8
PSM42HS2A60-2P-4W	8.5	1.7	2.5	6.5	300	117	0.5	60	5	4

Nema 17 Size - 2 Phase Hybrid Step Motor

Features

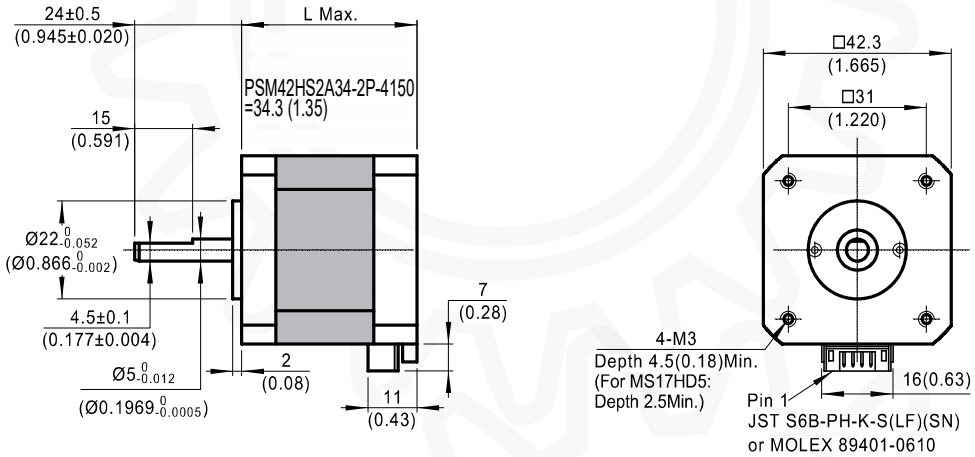
Low Vibration
Low Noise
Smooth Movement
Step Accuracy +-5%
UL Recognized File E465363, RoHS

General Specifications

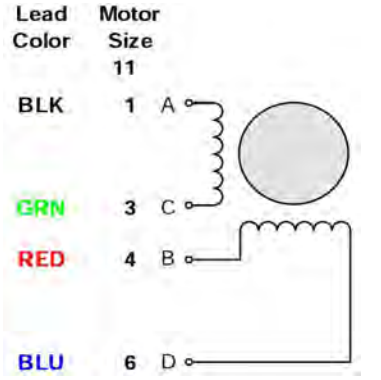
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 4

Mechanical Dimensions (mm)

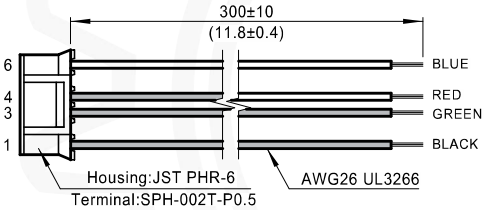
Dimensions: mm (in)



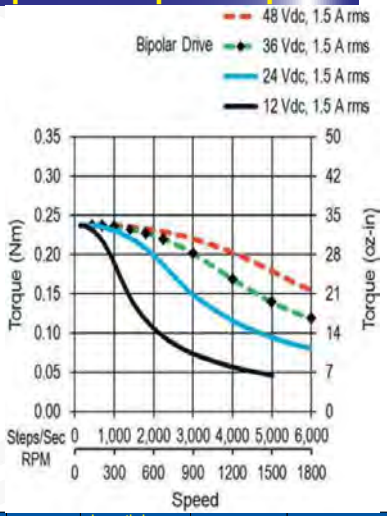
Wiring Diagram



Motor Cable



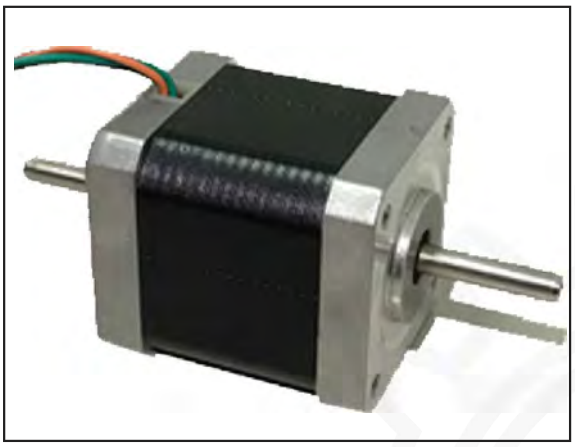
Speed/Torque Graph



Electrical Specifications

Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial (g-cm²)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	No of Motor Leads
PSM42HS2A34-2P-4150	3.2	1.5	1.7	2.9	122	38	0.21	34.3	5	4

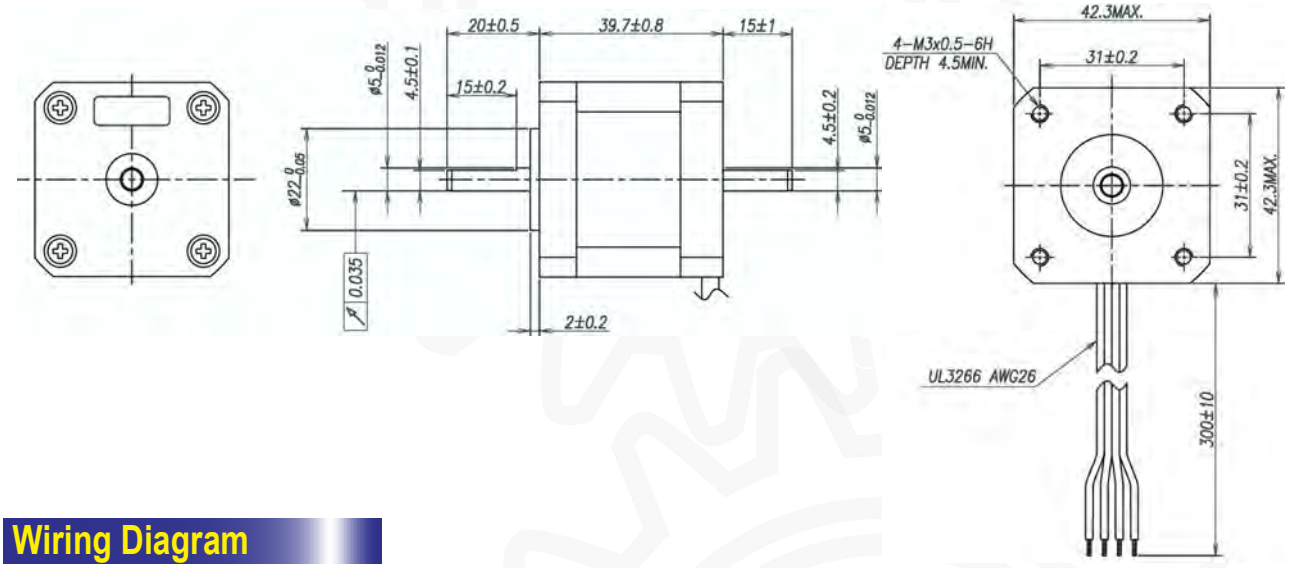
Nema 17 Size - 2 Phase Hybrid Dual Shaft Motor



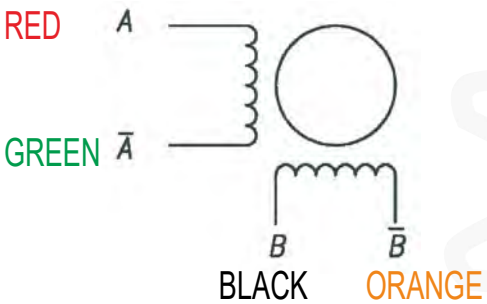
Features
Low Vibration
Low Noise
Smooth Movement

General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 4 or 8

Mechanical Dimensions (mm)



Wiring Diagram



EXCITING SEQUENCE VS. DIRECTION OF ROTATION

WHEN WXCITING SEQUENCE AS SHOWN IN THE TABLE SPECIFIED, MOTOR SHAFT WILL BE CLOCKWISE ROTATE WHEN VIEWED FROM MOUNTING END.

CW ↓

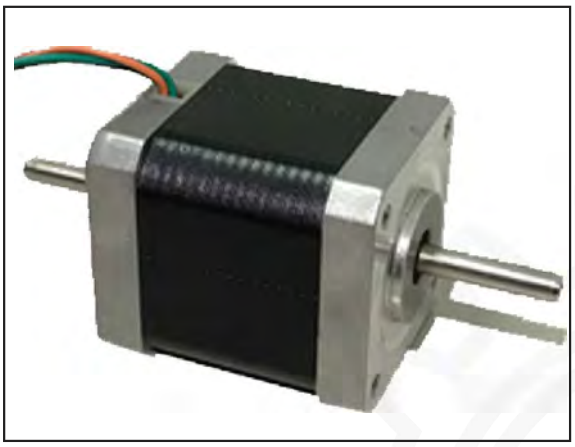
STEP	A	B	A-	B-
1	+	+	–	–
2	–	+	+	–
3	–	–	+	+
4	+	–	–	+

↑ CCW

Electrical Specifications

Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial (g-cm²)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	No of Motor Leads
PSM42HS2A40-2P-DS	4.3	1.7	1.8	3.3	150	57	0.29	40	5	4

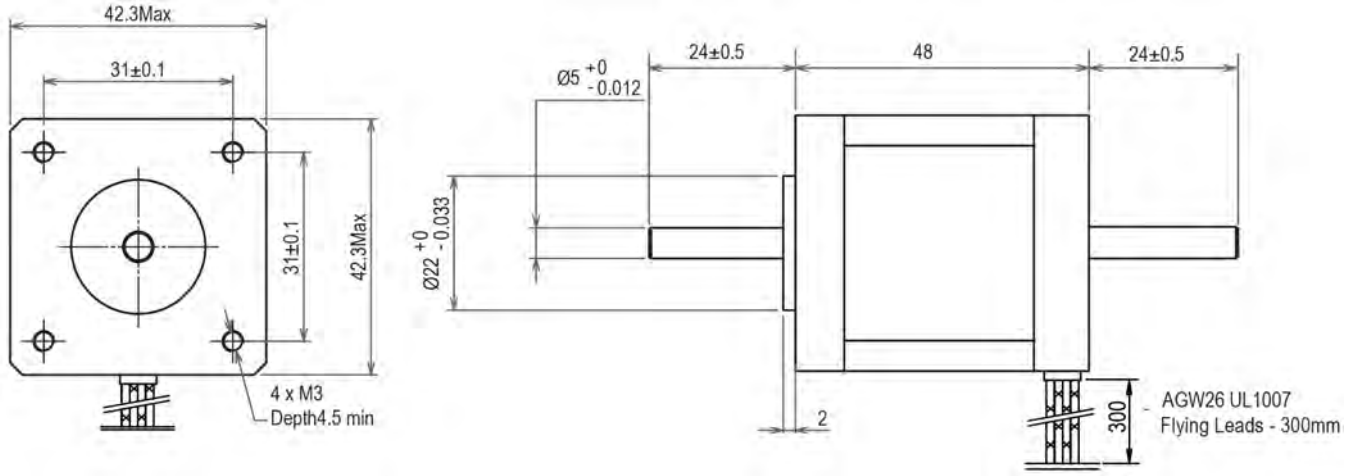
Nema 17 Size - 2 Phase Hybrid Dual Shaft Motor



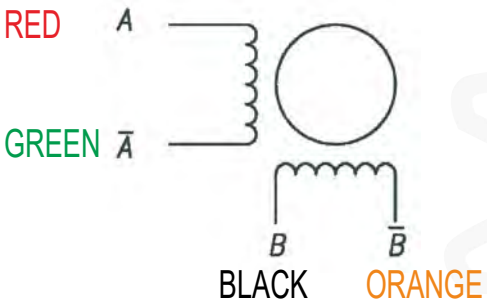
Features
Low Vibration
Low Noise
Smooth Movement

General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 4 or 8

Mechanical Dimensions (mm)



Wiring Diagram



FULL STEP 2 PHASE -=Ex.,
WHEN FACING MOUNTING END (X).

CW ↓

STEP	A	B	A-	B-
1	+	+	–	–
2	–	+	+	–
3	–	–	+	+
4	+	–	–	+

↑ CCW

Electrical Specifications

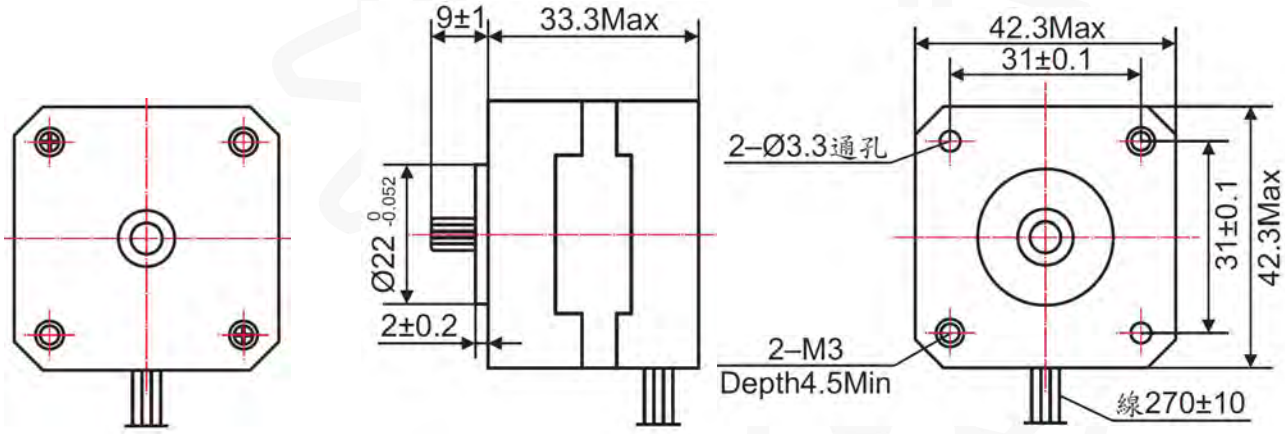
Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial (g-cm²)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	No of Motor Leads
PSM42HS2A48-2P-DS	3.4	1	4.6	4	200	82	0.34	40	5	4

Nema 17 Size - 2 Phase Hybrid Geared Motor

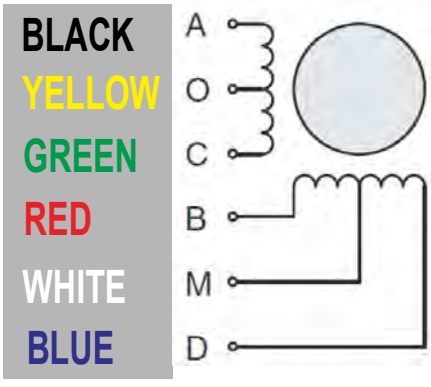
Features
Low Vibration
Low Noise
Smooth Movement

General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 6
Step Motor With Gear (ratio 25/100)

Mechanical Dimensions (mm)



Wiring Diagram



Sequence Model
Uni-Polar Full Step

STEP	A	B	C	D	O	M
1	–	–			+	+
2		–	–		+	+
3			–	–	+	+
4	–			–	+	+

CW

CCW

CW & CCW rotation when seen from the flange side of the motor

Electrical Specifications

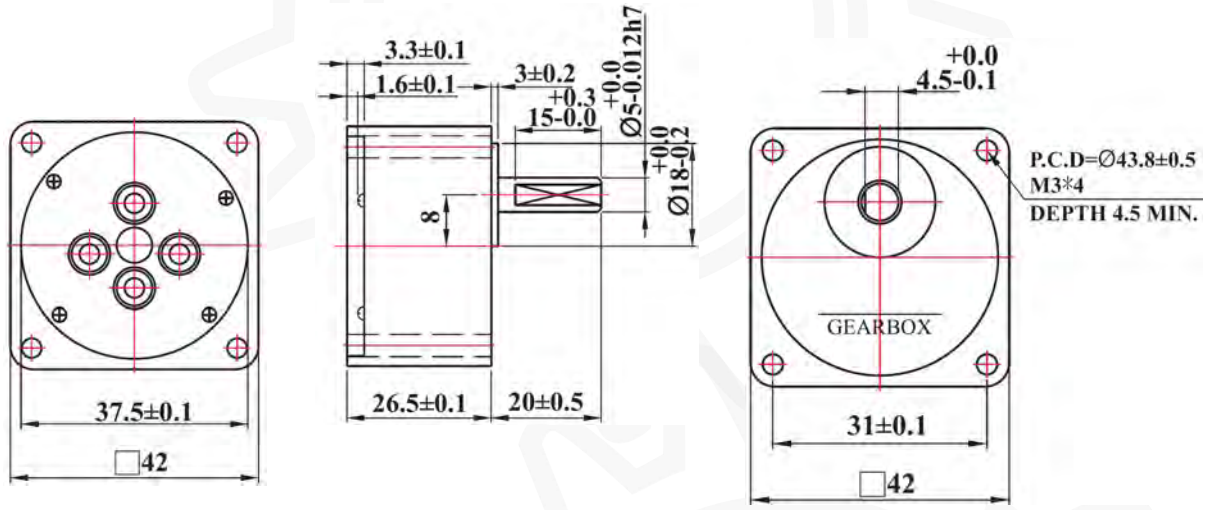
Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial (g-cm²)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	No of Motor Leads
PSM42HS2A34-2P-G	1.6	0.95	4.2	2.5	120	38	0.21	34	-	6

Nema 17 Size - 2 Phase Hybrid Geared Motor

Features
Low Vibration
Low Noise
Smooth Movement

General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 6
Step Motor With Gear (ratio 25/100)

Mechanical Dimensions (mm)



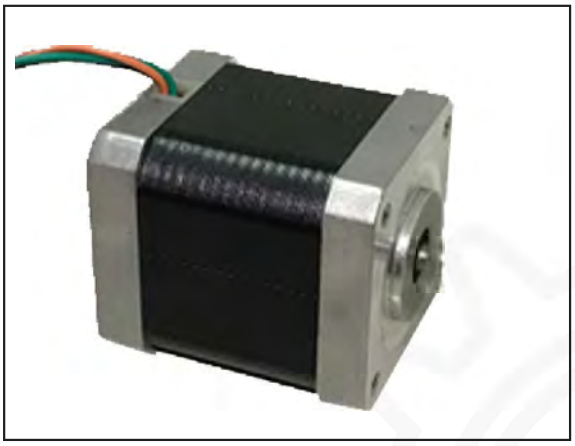
Gear Specifications

Gear Specification		
42mm Square Flange/ ratio 25 and 100/ 0.45 Kg		
Shaft : $Ø5mm^{+0}_{-0.012}$ Accuracy :H7 (1500rpm~3600rpm)		
Torque :	1.32 N.m	13.2 kg.fcm
Axial Load :	19.8 N.m	1.98 kg.f
Radial Load :	26 N.m	2.6 kg.f

Order Code

Order Code Step Motor With Gear	
PSM42HS2A34-G-25K	Motor C/W Gear Ratio 25
PSM42HS2A34-G-100K	Motor C/W Gear Ratio 100

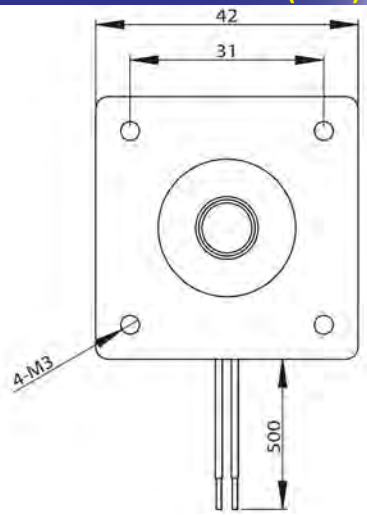
Nema 17 Size - 2 Phase Hybrid Hollow Shaft Motor

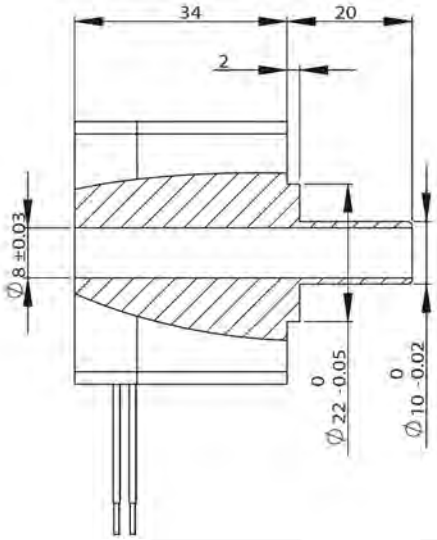


Features
Low Vibration
Low Noise
Smooth Movement

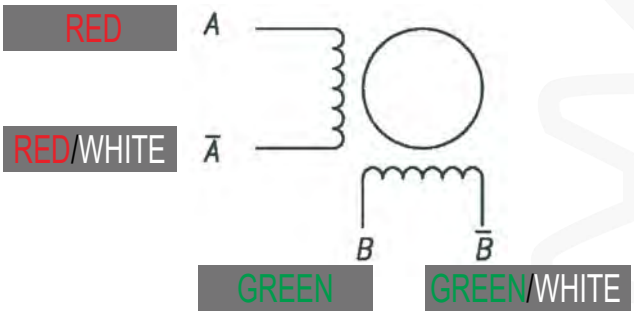
General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 4 or 8

Mechanical Dimensions (mm)





Wiring Diagram



FULL STEP 2 PHASE -=Ex.,
WHEN FACING MOUNTING END (X).

CW

STEP	A	B	A-	B-
1	+	+	–	–
2	–	+	+	–
3	–	–	+	+
4	+	–	–	+

CCW

Electrical Specifications

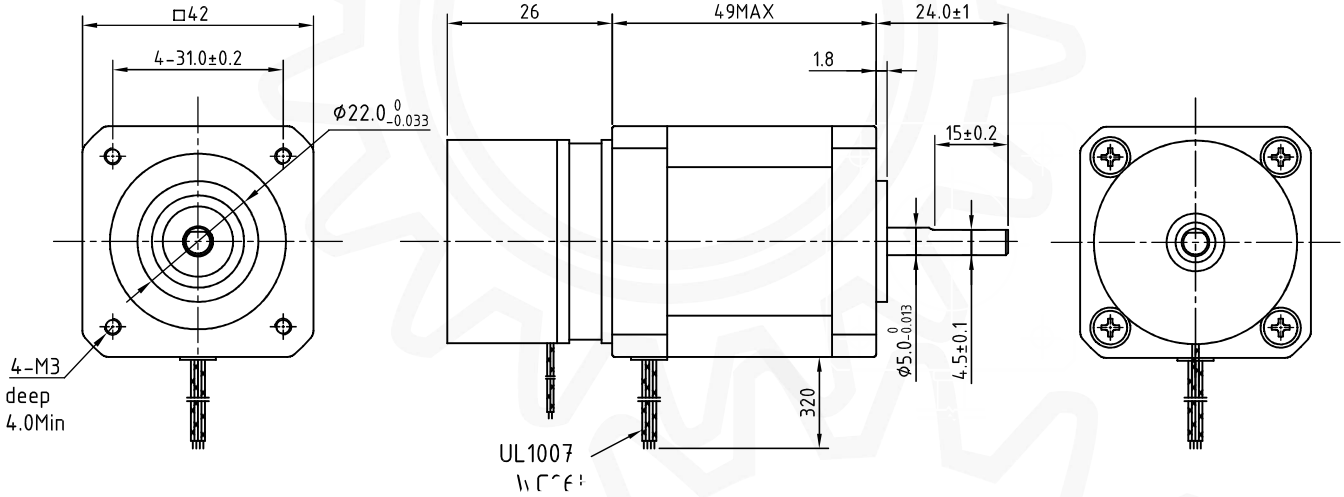
Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial (g-cm²)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	No of Motor Leads
PSM42HS2A34-2P-HS-081020-4W	3.5	1.5	1.6	4	200	82	0.34	34	10	4

Nema 17 Size - 2 Phase Hybrid Hollow Shaft Motor

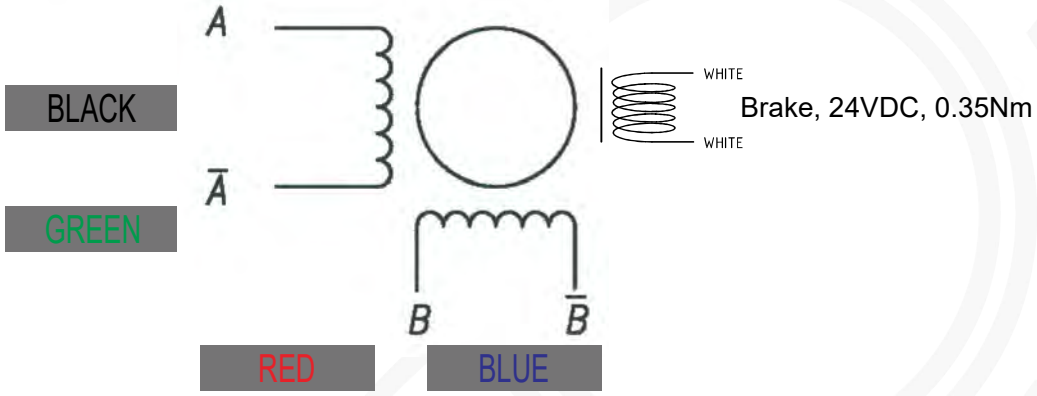
Features
Low Vibration
Low Noise
Smooth Movement

General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 4 or 8

Mechanical Dimensions (mm)



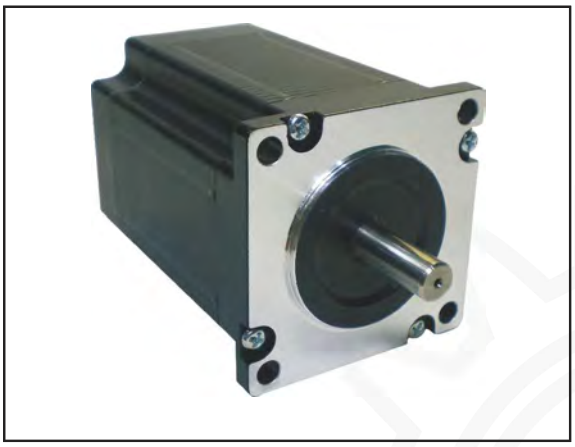
Wiring Diagram



Electrical Specifications

Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial (g-cm²)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	No of Motor Leads
PSM42HS2A34-2P-HS-081020-4W	4.8	1.2	3.1	7.9	200	77	0.36	48	5	4

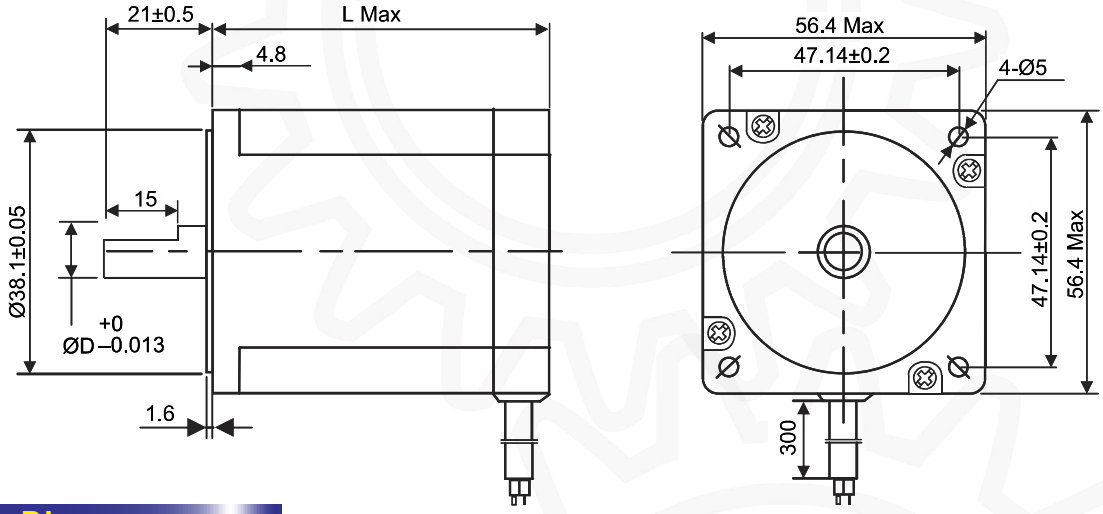
Nema 23 Size - 2 Phase Hybrid Step Motor



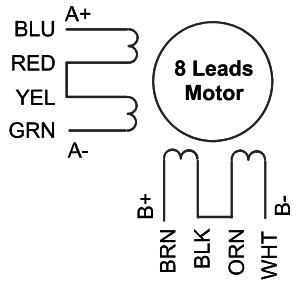
Features
High Torque
Low Noise
Smooth Movement

General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 8

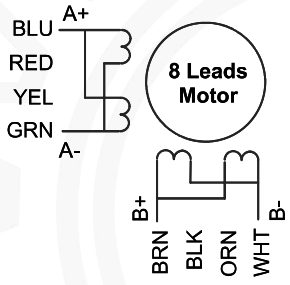
Mechanical Dimensions (mm)



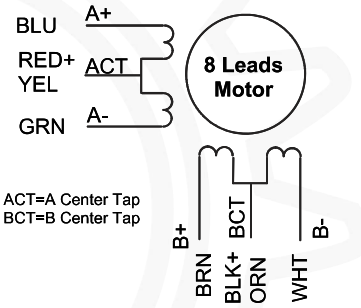
Wiring Diagram



Series Connection



Parallel Connection



Uni-Polar Connection

Electrical Specifications

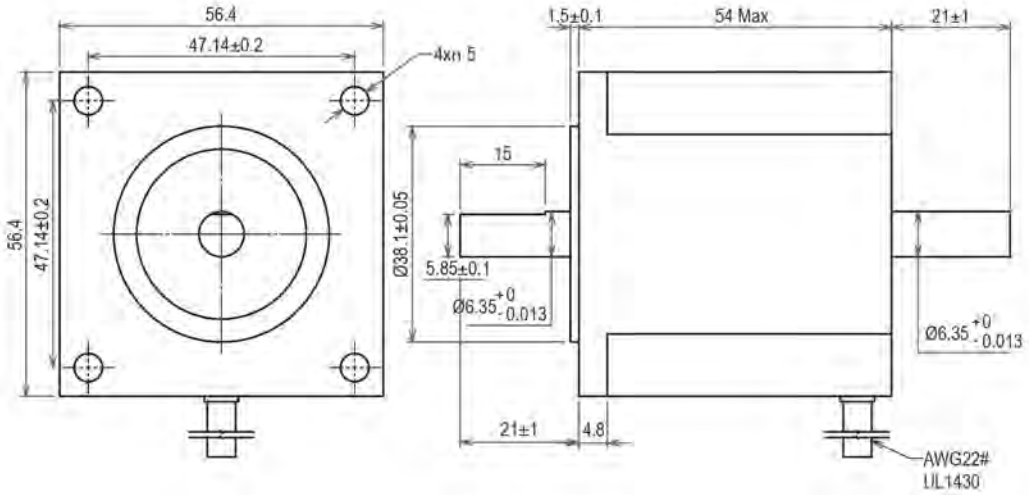
Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial (g-cm²)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	Flat Cutout (mm)
PSM57HS2A54-2P	9	1.5 (S) / 3.0 (P)	0.8	1.2	400	280	0.6	54	6.35	0.8X15
PSM57HS2A81-2P	20.4	2.5 (S) / 5.0 (P)	0.4	1.8	700	480	1.15	81	8	0.8X15
PSM57HS2A106-2P/1	26.5	2.5 (S) / 5.0 (P)	1.2	2.4	1224	1000	1.25	106	8	0.8X15

Nema 23 Size - 2 Phase Hybrid Dual Shaft Motor(8W)

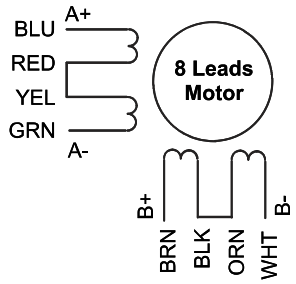
Features
High Torque
Low Noise
Smooth Movement

General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 8

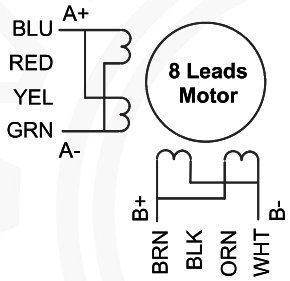
Mechanical Dimensions (mm)



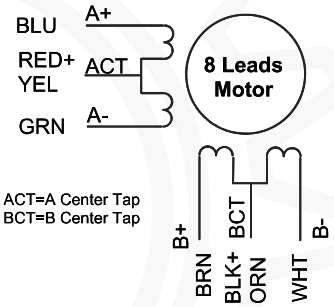
Wiring Diagram



Series Connection



Parallel Connection



Uni-Polar Connection

Electrical Specifications

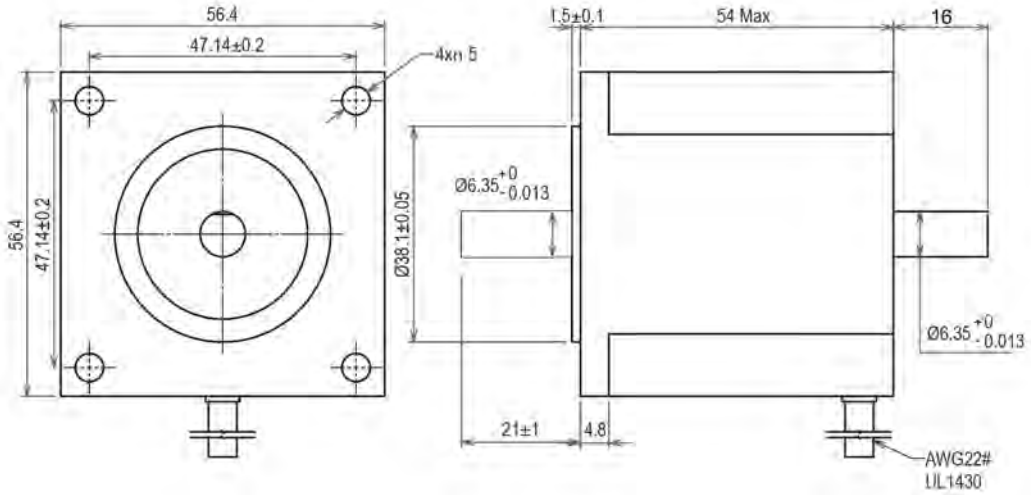
Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial ($g\text{-}cm^2$)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	Flat Cutout (mm)
PSM57HS2A54-2P-DS-8W	9	1.5 (S) / 3.0 (P)	0.8	1.2	400	280	0.6	54	6.35	0.8X15

Nema 23 Size - 2 Phase Hybrid Dual Shaft Motor(4W)

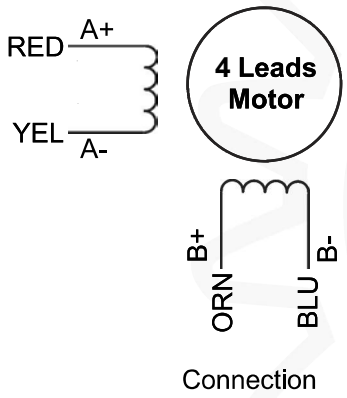
Features
High Torque
Low Noise
Smooth Movement

General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 8

Mechanical Dimensions (mm)



Wiring Diagram



Connection

Electrical Specifications

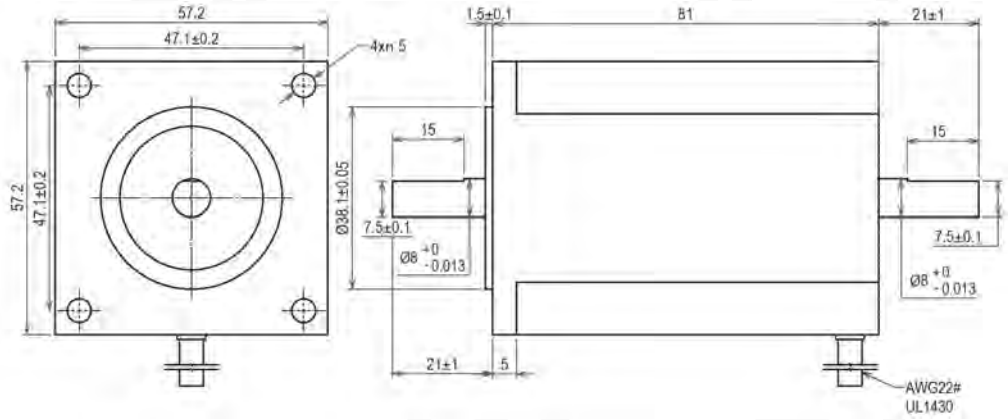
Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial (g-cm²)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	Flat Cutout (mm)
PSM57HS2A54-2P-DS-4W	12	4	0.43	1.1	900	450	0.8	54	6.35	--------

Nema 23 Size - 2 Phase Hybrid Dual Shaft Motor

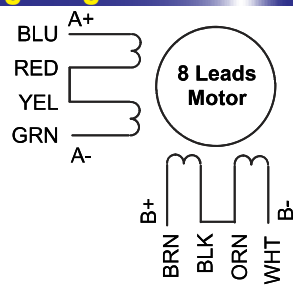
Features
High Torque
Low Noise
Smooth Movement

General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 8

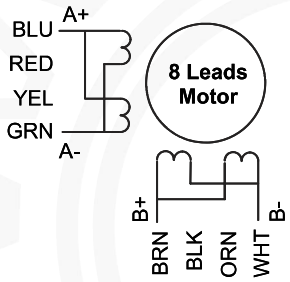
Mechanical Dimensions (mm)



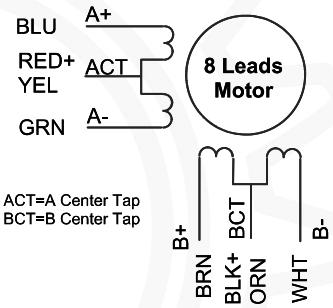
Wiring Diagram



Series Connection



Parallel Connection



Uni-Polar Connection

Electrical Specifications

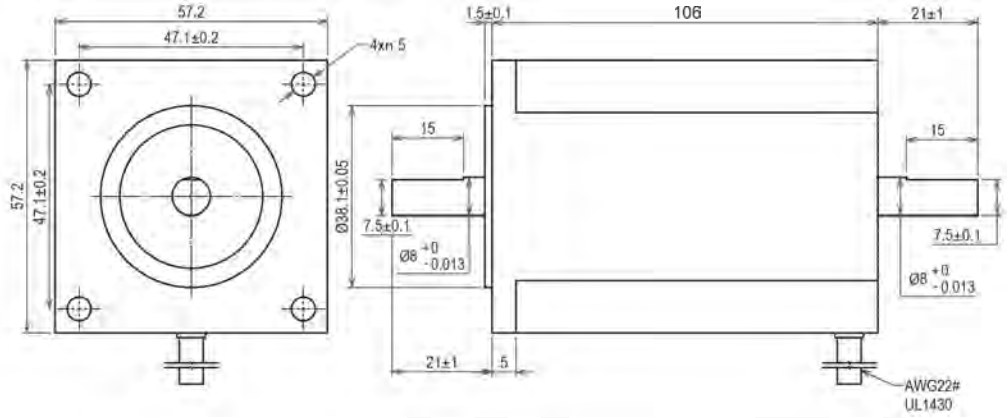
Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial (g-cm²)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	Flat Cutout (mm)
PSM57HS2A81-2P-DS	20	2.5 (S) / 5.0 (P)	0.4	1.8	700	480	1.15	81	8	0.8X15

Nema 23 Size - 2 Phase Hybrid Dual Shaft Motor

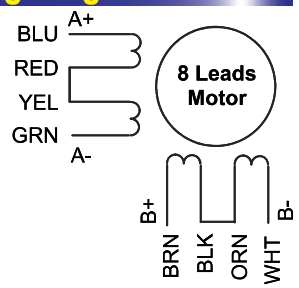
Features
High Torque
Low Noise
Smooth Movement

General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 8

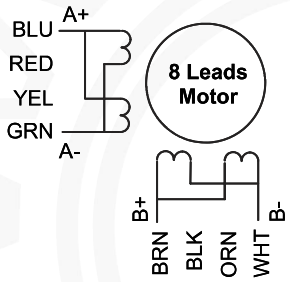
Mechanical Dimensions (mm)



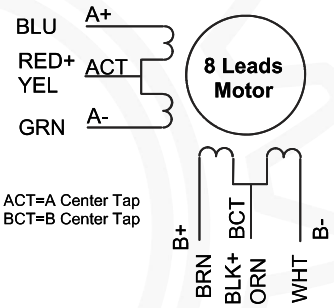
Wiring Diagram



Series Connection



Parallel Connection



Uni-Polar Connection

Electrical Specifications

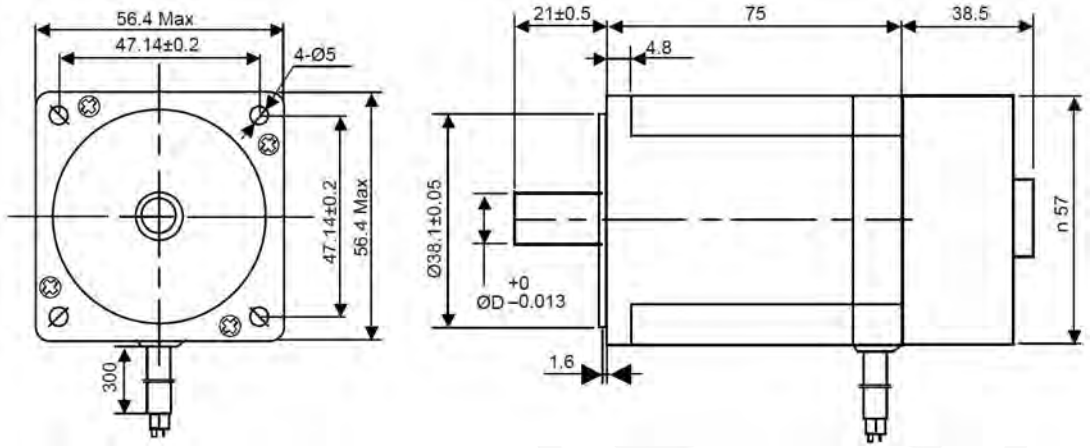
Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial (g-cm²)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	Flat Cutout (mm)
PSM57HS2A106-2P/1-DS	26.5	2.5 (S) / 5.0 (P)	1.2	2.4	1224	1000	1.25	106	8	0.8X15

Nema 23 Size - 2 Phase Hybrid Brake Step Motor

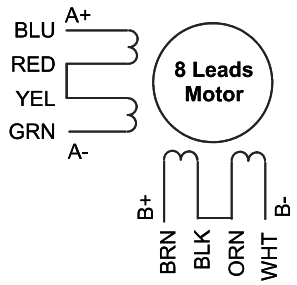
Features
High Torque
Low Noise
Smooth Movement

General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 8

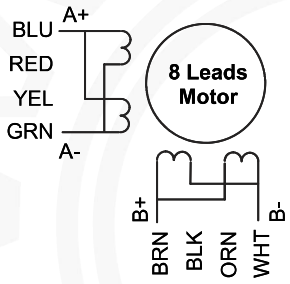
Mechanical Dimensions (mm)



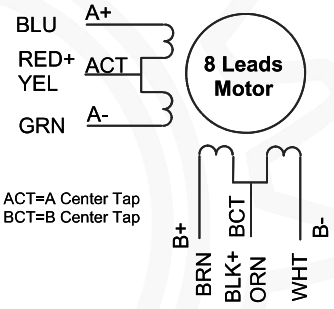
Wiring Diagram



Series Connection



Parallel Connection



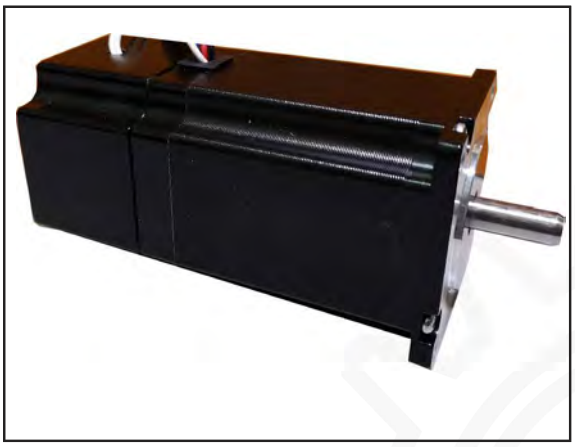
Uni-Polar Connection

Electrical Specifications

Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase Ω	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial (g-cm²)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	Flat Cutout (mm)
PSM57HS2A76-2P-BR	22	3.0	0.7	1.8	700	480	1.55	76	8	NA

Brake Type	Voltage (DC)	Resistance (Ω)	Power (W)	Insulation Class	Dynamic Friction Torque kgm (Nm)	Dynamic Friction Torque kgm (Nm)	Dynamic Voltage (V)	Gap (mm)
Electromagnetic Brake	24	58	0.7	F	0.18 (1.8)	0.2 (2.0)	16	(0.1 ~0.18)

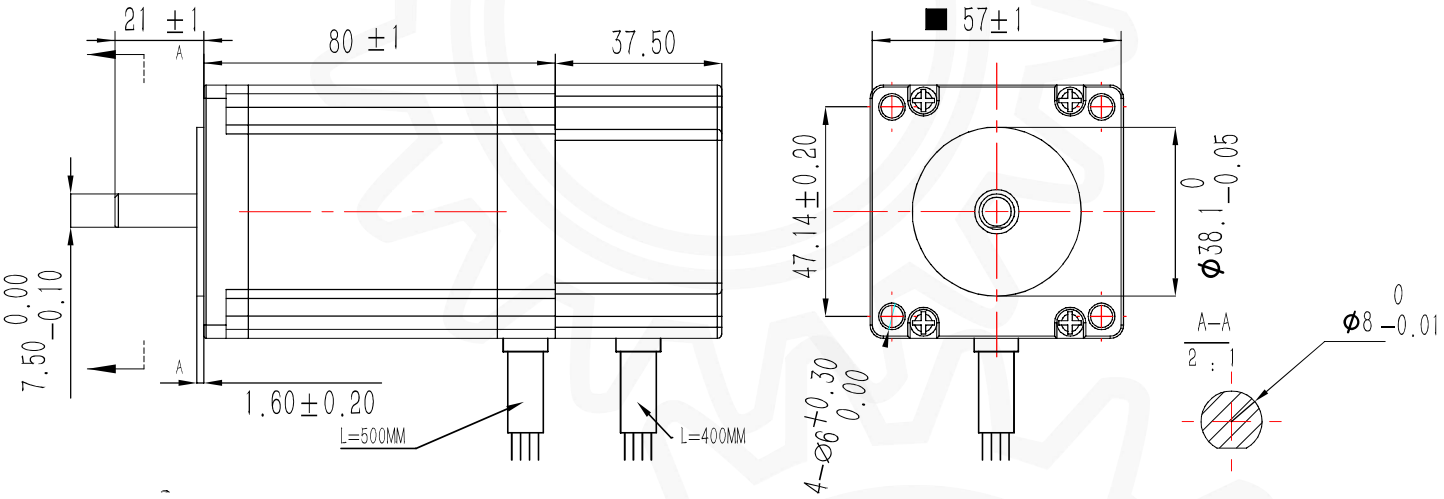
Nema 23 Size - 2 Phase Hybrid Brake Step Motor



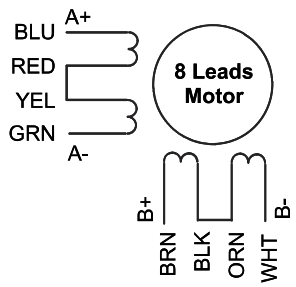
Features
High Torque
Low Noise
Smooth Movement

General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 8

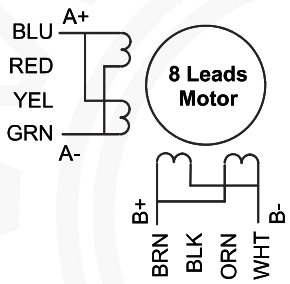
Mechanical Dimensions (mm)



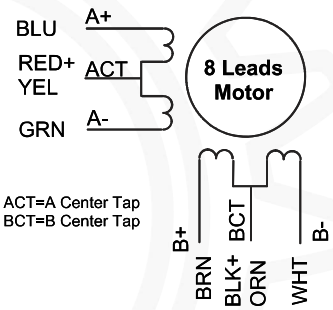
Wiring Diagram



Series Connection



Parallel Connection

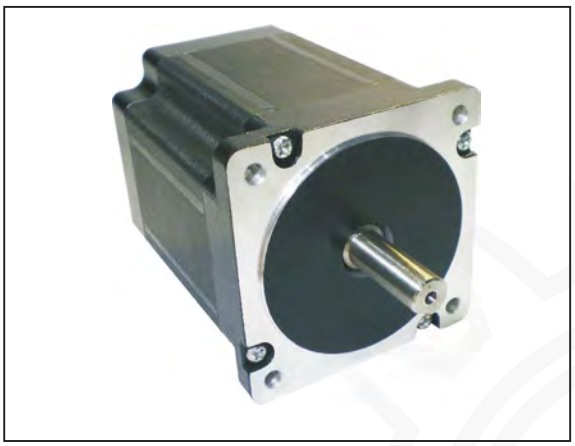


Uni-Polar Connection

Electrical Specifications

Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial (g-cm²)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	Flat Cutout (mm)
PSM57HS2A81-2P-BR	20.4	2.5 (S) / 5.0 (P)	0.4	1.8	700	480	1.15	81	8	0.8X15

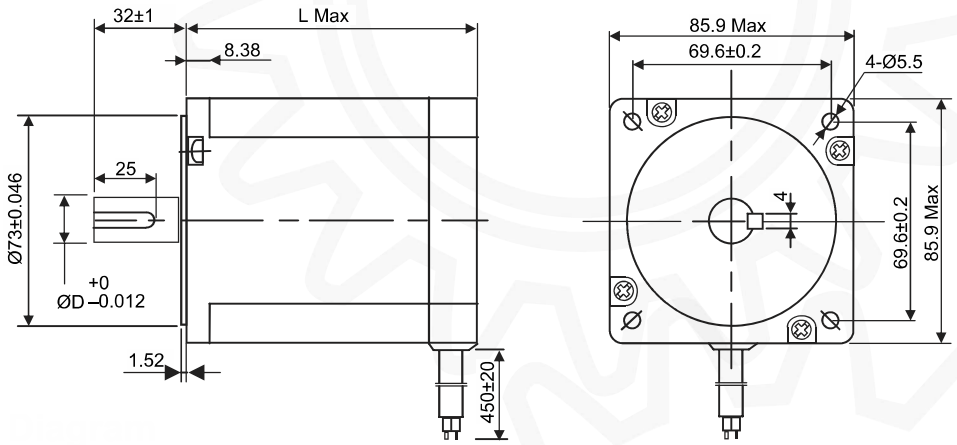
Nema 34 Size - 2 Phase Hybrid Step Motor



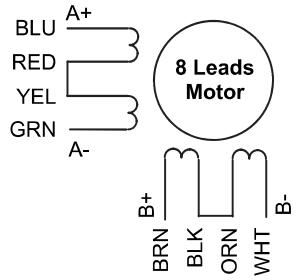
Features
High Torque
Low Noise
High Acceleration

General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 8

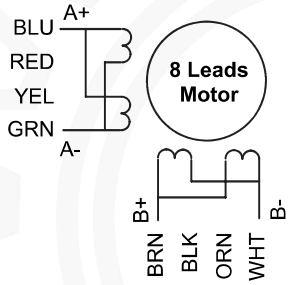
Mechanical Dimensions (mm)



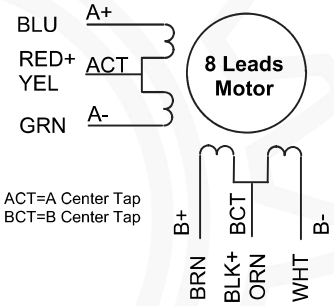
Wiring Diagram



Series Connection



Parallel Connection



Uni-Polar Connection

Electrical Specifications

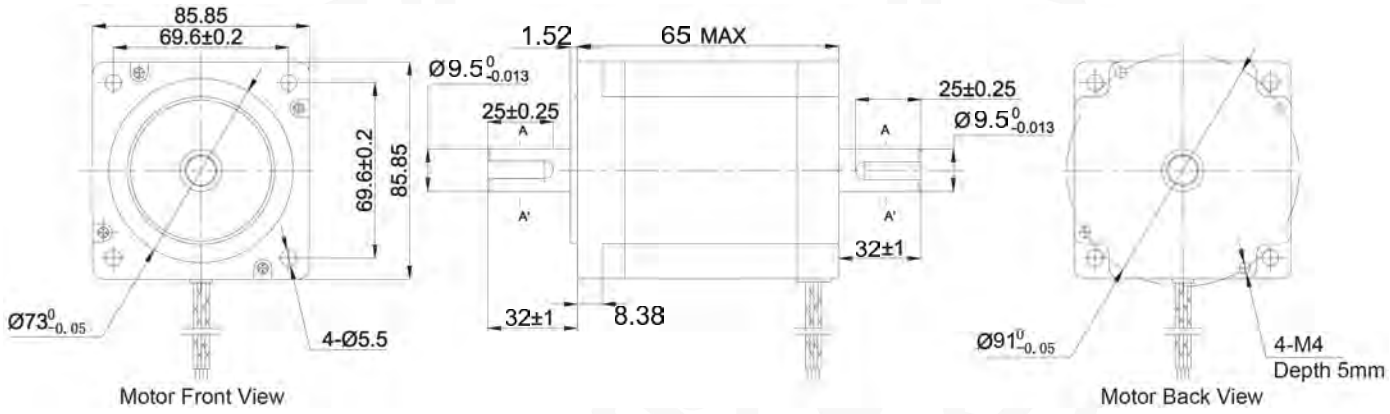
Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial (g-cm²)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	Flat Cutout (mm)
PSM86HS2A65-2P	35	2.0 (S) / 4.0 (P)	1.4	3.9	800	1000	2	65	9.5	0.8X25
PSM86HS2A80-2P	45	3.0 (S) / 6.0 (P)	0.8	3.5	1300	1400	2.3	80	12.7	1.0X25
PSM86HS2A118-2P	85	3.0 (S) / 6.0 (P)	0.87	4.4	2500	2700	3.8	118	12.7	2.0X25
PSM86HS2A156-2P	120	3.0 (S) / 6.0 (P)	1.12	6.4	4000	4000	5.4	156	15.875	2.0X25

Nema 34 Size - 2 Phase Hybrid Step Dual Shaft Motor

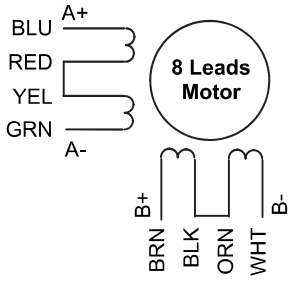
Features
High Torque
Low Noise
High Acceleration

General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 8

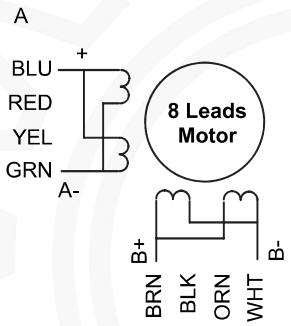
Mechanical Dimensions (mm)



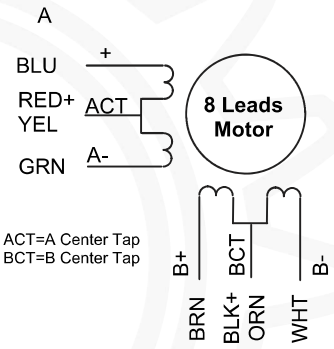
Wiring Diagram



Series Connection



Parallel Connection



Uni-Polar Connection

Electrical Specifications

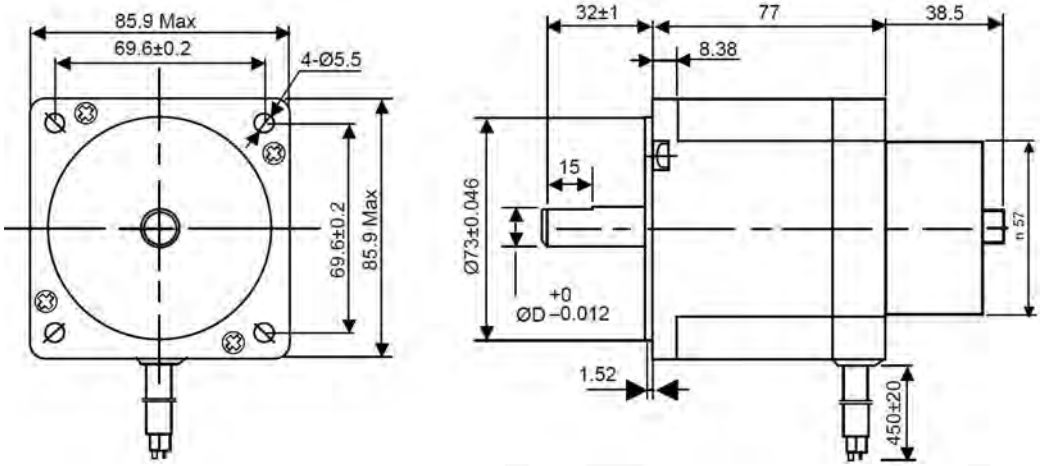
Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial ($g\text{-}cm^2$)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	Flat Cutout (mm)
PSM86HS2A65-2P-DS	35	2.0 (S) / 4.0 (P)	1.4	3.9	800	1400	1.7	65	9.5	0.8X25

Nema 34 Size - 2 Phase Hybrid Brake Step Motor

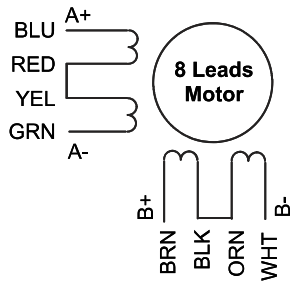
Features
High Torque
Low Noise
Smooth Movement

General Specifications
Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 8

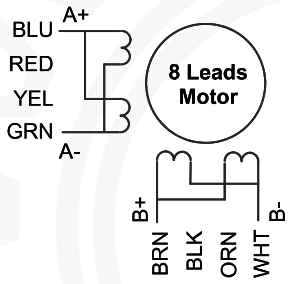
Mechanical Dimensions (mm)



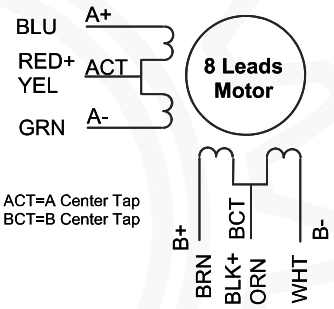
Wiring Diagram



Series Connection



Parallel Connection



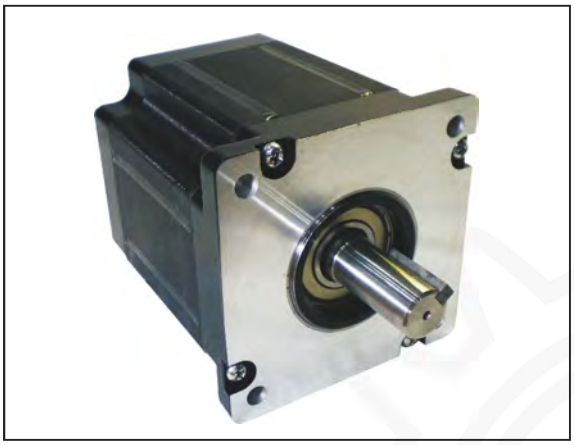
Uni-Polar Connection

Electrical Specifications

Model	Holding Torque (kgcm)	Current/Phase (A)	Resistance/Phase Ω	Inductance/Phase (mH)	Detent Torque (gcm)	Rotor Inertial (g-cm²)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	Flat Cutout (mm)
PSM86HS2A80-2P-BR	45	4.2	0.8	3.5	1300	1400	2.75	117.5	12.7	0.8 x 15

Brake Type	Voltage (DC)	Resistance (Ω)	Power (W)	Insulation Class	Dynamic Friction Torque kgm (Nm)	Dynamic Friction Torque kgm (Nm)	Dynamic Voltage (V)	Gap (mm)
Electromagnetic Brake	24	58	10	F	0.18 (1.8)	0.2 (2.0)	16	(0.1 ~0.18)

Nema 42 Size - 2 Phase Hybrid Step Motor



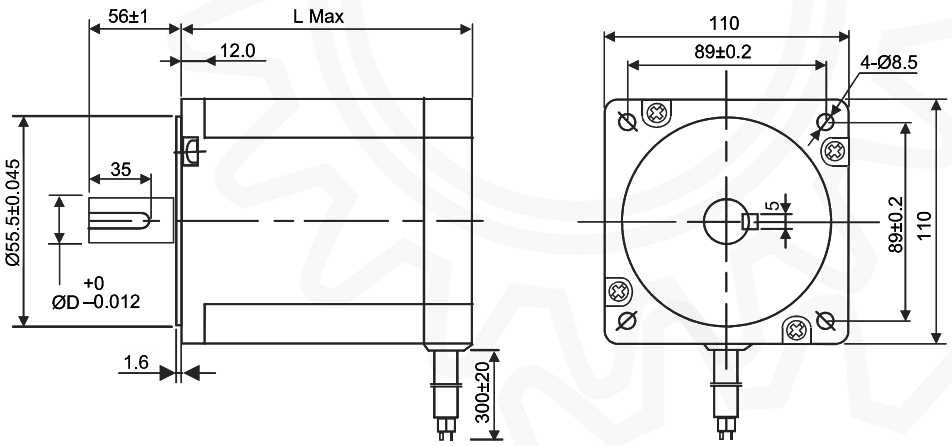
Features

High Torque
High Acceleration Performance
Able to withstand Higher Loading
Longer Life span

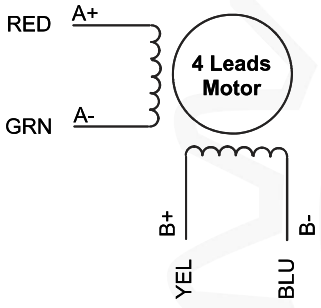
General Specifications

Step Angle : 1.8°
Insulation Class : B
No of Motor Leads : 4

Mechanical Dimensions (mm)



Wiring Diagram



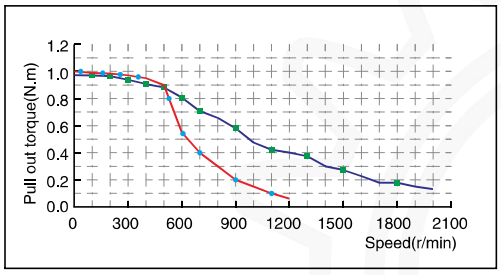
Motor Connection

Electrical Specifications

Model	Holding Torque (Nm)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Detent Torque (Kgcm)	Rotor Inertial (Kg-cm^2)	Weight (kg)	Length Lmax (mm)	Shaft OD (mm)	Flat Cutout (mm)
PSM110HS2A115-2P	12	6	0.47	7	3	6	5.8	115	19	5.0X35
PSM110HS2A150-2P	20	6	0.9	16	6	11	8.4	150	19	5.0X35
PSM110HS2A165-2P	24	6	0.65	14	7.5	13	9.5	165	19	5.0X35

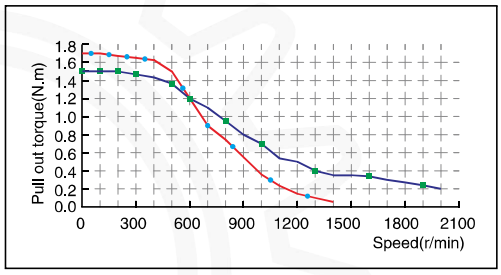
Standard 2 Phase Stepper Motor Graph

2 phase step motor torque-frequency characteristic
PSM57HS 2A54-2P



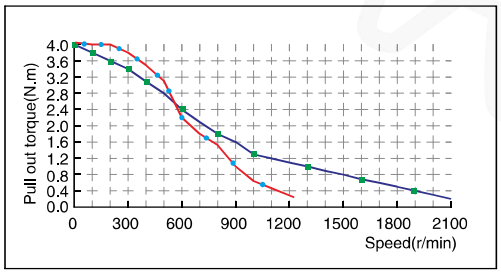
Motor item：PSM57HS 2A54–2P
Tested voltage：36VDC
: Parallel connection
: cascade connection
tested drive PSD6056–2P
tested mode：8 step/revolution(1600PPR)
tested current 3.8A(rated)
tested current 2.1A(rated)

2 phase step motor torque-frequency characteristic
PSM57HS 2A81-2P



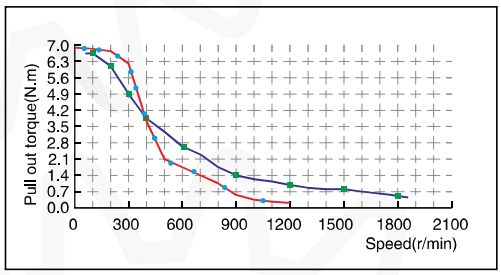
Motor item：PSM57HS 2A81–2P
Tested voltage：36VDC
: Parallel connection
: cascade connection
tested drive PSD6056–2P
tested mode：8 step/revolution(1600PPR)
tested current 4.3A(rated)
tested current 2.1A(rated)

2 phase step motor torque-frequency characteristic
PSM86HS 2A80-2P



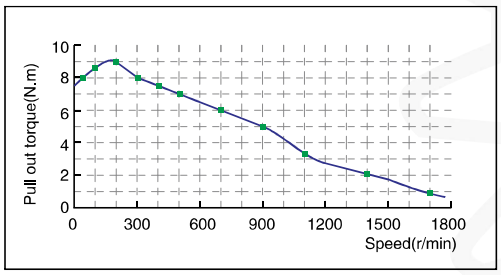
Motor item：PSM86HS 2A80–2P
Tested voltage：60VDC
: Parallel connection
: cascade connection
tested drive PSD8079–2P
tested mode：16 step/revolution(3200PPR)
tested current 5.0A(rated)
tested current 3.1A(rated)

2 phase step motor torque-frequency characteristic
PSM86HS 2A118-2P



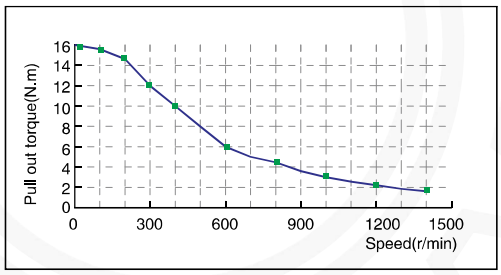
Motor item：PSM86HS 2A118–2P
Tested voltage：75VDC
: Parallel connection
: cascade connection
tested drive PSD8079–2P
tested mode：16 step/revolution(3200PPR)
tested current 5.0A(rated)
tested current 3.1A(rated)

2 phase step motor torque-frequency characteristic
PSM110HS 2A115-2P



Motor item：PSM110HS2A115–2P
Tested voltage：220VAC
: tested current 3.7A(rated)
tested drive PSD79AC–2P
tested mode：16step/revolution(3200PPR)

2 phase step motor torque-frequency characteristic
PSM110HS 2A150-2P



Motor item：PSM110HS2A150–2P
Tested voltage：220VAC
: tested current 4.3A(rated)
tested drive PSD79AC–2P
tested mode：8step/revolution(1600PPR)

CLOSED LOOP MOTOR :

- PSSD57
- PSSD86H
- PSSD9060
- CLOSED LOOP MOTOR
- PSSID57
- PSSID60

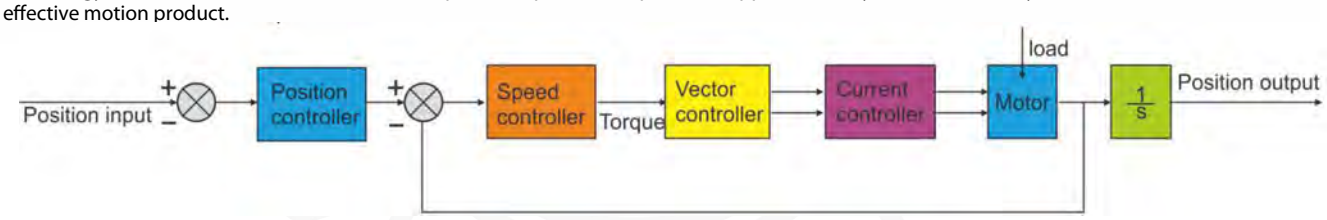
Hybrid Step Servo Drive System

Main Features

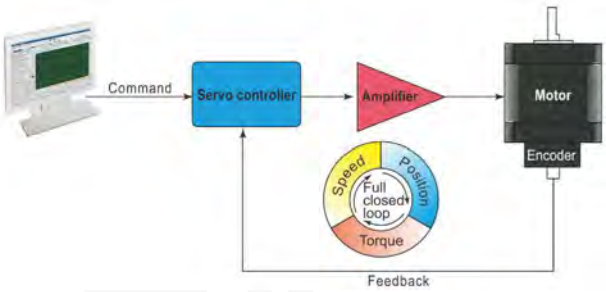
- Full Closed Loop
- High Efficiency
- High Torque
- High Speed
- Low Heat
- Smooth / Accurate
- High Speed Response
- External Parameter Programmer

Introduction

PSSD Hybrid Step Servo Drive system integrate servo control technology into the digital stepper drive. It uses the control technology which include the control of current, speed and position loop of the stepper control system. This is a very cost effective motion product.



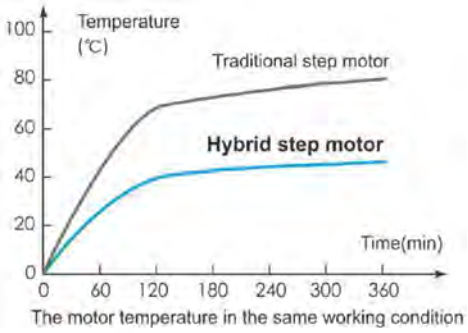
Closed Loop System



1. High performance of speed and position control is achievable.
2. Control System is able to adaptor to wide variation of inertial load/friction load.
3. The StepServo motor with 1000CPR support vector closed loop system which eliminate miss-step problem.

Low Heat/ High Efficiency

1. Adjust torque of motor accordingly to load requirement, thus reduce heat of motor as compare to conventional step motor
2. The current of the motor is reduced to minimal under stop condition
3. It save energy and is able to produce 100% output torque when system required



The motor temperature in the same working condition

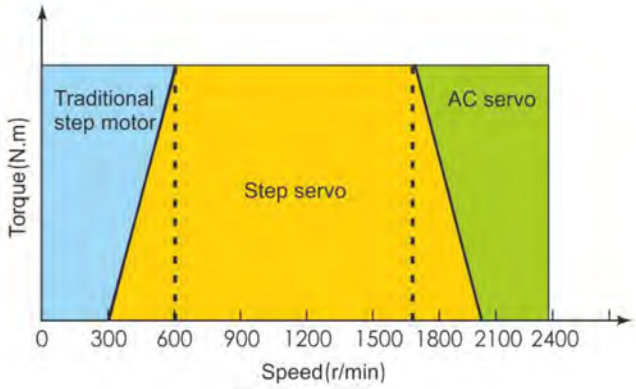
Smooth & Accurate

Base on the feedback encoder's space vector current control algorithm and vector smoothing filtering technique, it eliminate the low frequency resonance cause by the traditional step motor. It is able to run smoothly under low speed range and this greatly reduce the noise and vibration problem faced by the conventional stepper motor.

High Speed Response

Hybrid has the advantage of real-time synchronization over traditional stepper system on the position response, input and output command. it is very suitable for high response system and process no vibration during steady state.

Application of Point to Point positioning, the advance servo control technology provide high dynamic response with a large output torque if required by system which has very far superior performance as compare to traditional stepper system

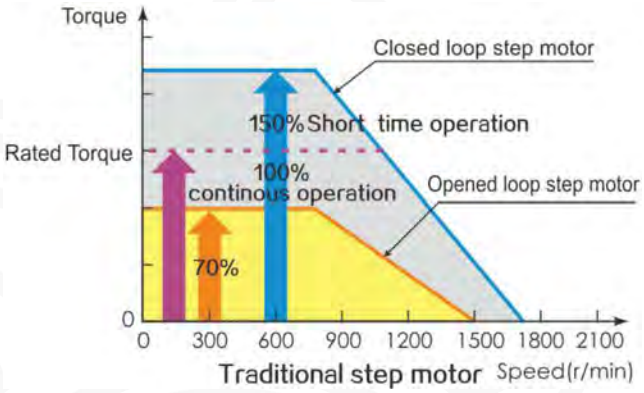


Traditioal step motor:short distance, medium and low speed(300-600RPM)
StepStep motor:medium and short distance, medium and high speed(600-2000RPM)
AC Servo motor:Long distance, high speed(more than 2000RPM)

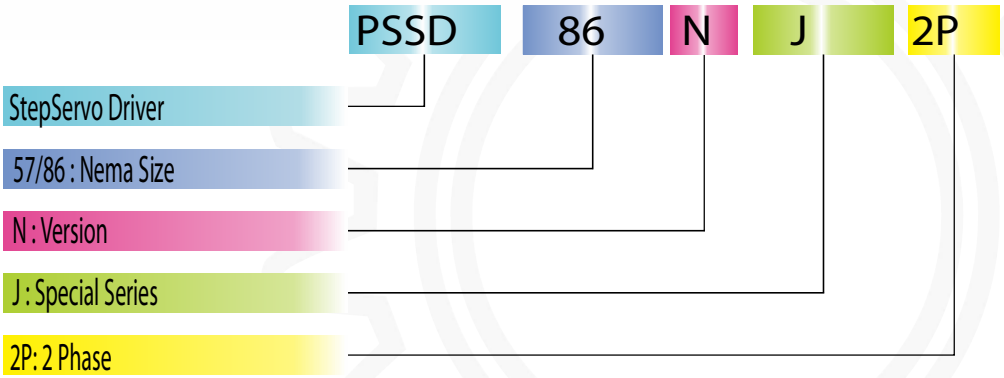
High Torque/Speed

Hybrid Step Servo system adopts the optimised current control mode, the torque of the motor can be 100% fully utilised and it is not necessary to consider oversize torque safety factor during design stage.

The torque of the step servo motor is increase by 30% comparing to a traditional stepper motor, which implies that the motor can output high torque during high speed opertion.



Order Coding : StepServo Driver



Specifications

Model	Current (A)	Voltage (V)	Motor	Weight (KG)	Dimension (mm)	Control Signal
PSSD57-N-J-2P	0 - 6 A	DC (24-48V)	57, 86	0.27	118X75.5X34	Differential
PSSD86H-N-J-2P	0 - 7 A	AC (24-70V) DC (30-100V)	57, 86	0.6	150X97.5X53	Differential
PSSD9060-2P	0 - 6 A	AC (50-90V)	86	0.6	150X97.5X53	Differential

Note:The default setting for the driver's control is Step/Direction Mode. Please inform the manufacturer if you need CW/CCW mode.

Main Features

- No Mis-step, High Accuracy in Position
- 100% Rated Output Torque
- Variable Current Control Technology. High Current Efficiency
- Reduced vibration, Smooth and Reliable
- Built in Acceleration/Deceleration
- User Defined Micro Step Setting
- compatible with 1000 and 2500 lines encoder
- No tune adjustment in Generation Application
- Lack of Phase/ Over Current/ Over Voltage Protection
- Indicating Status LED

Introduction

PSSD57 two phase hybrid step servo drive system integrate servo control technology as the control system. It employ control method which include current loop, speed loop and position loop control. This drive has both the advantage of stepper and servo system and is a very cost effective motion control product.

Electrical Specification

Parameters	Min	Typical	Max	Unit
Supply voltage	24V	36V	60V	VDC
Output Current (Peak)	-	-	6.0	Amps
Logic Input Current	-	10	-	mA
Pulse input frequency	-	-	200	KHz
Low Level Time	2.5	-	-	μsec

Environment Specification

Cooling	Natural Cooling or Forced Convection	
Environment	Space	Avoid dust, oil frost and corrosive gases
	Ambient Temperature	-20°C—+80°C
	Humidity	<80%RH
	Vibration	5.9m/s² Max
Storage Temp.	-20°C—+80°C	
Weight	Approx. 300 gram	

Dip Switch Setting

Microstep Resolution Setting :

Step / Rev.	SW3	SW4	SW5	SW6
Default	ON	ON	ON	ON
800	OFF	ON	ON	ON
1600	ON	OFF	ON	ON
3200	OFF	OFF	ON	ON
6400	ON	ON	OFF	ON
12800	OFF	ON	OFF	ON
25600	ON	OFF	OFF	ON
51200	OFF	OFF	OFF	ON
1000	ON	ON	ON	OFF
2000	OFF	ON	ON	OFF
4000	ON	OFF	ON	OFF
5000	OFF	OFF	ON	OFF
8000	ON	ON	OFF	OFF
10000	OFF	ON	OFF	OFF
20000	ON	OFF	OFF	OFF
40000	OFF	OFF	OFF	OFF

Input Edge Settings :

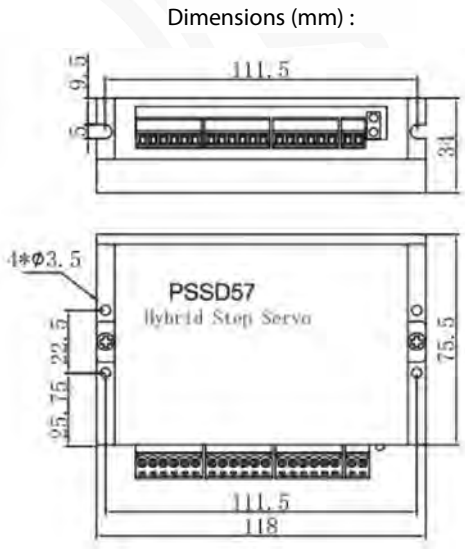
*SW1 : Dip Switch
check Input Edge Setting
OFF:Rising Edge
ON :Trailing Edge

Logical Direction Settings :

*SW2 : Dip Switch
Changing motor direction
OFF: CCW
ON : CW

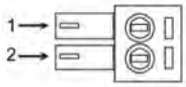
Dimensions

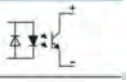
Dimensions (mm) :



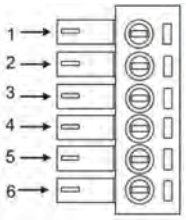
Port Assigment

1. ALM Signal Output Port



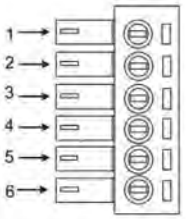
Port	Symbol	Name	Remark
1	ALM+	Alarm output +	
2	ALM-	Alarm output -	

2. Control Signal Input Port



Port	Symbol	Name	Remark
1	PLS+	Pulse signal +	Compatible with 5V or 24V
2	PLS-	Pulse signal -	
3	DIR+	Direction signal+	Compatible with 5V or 24V
4	DIR-	Direction signal-	
5	ENA+	Enable signal +	Compatible with 5V or 24V
6	ENA-	Enable signal -	

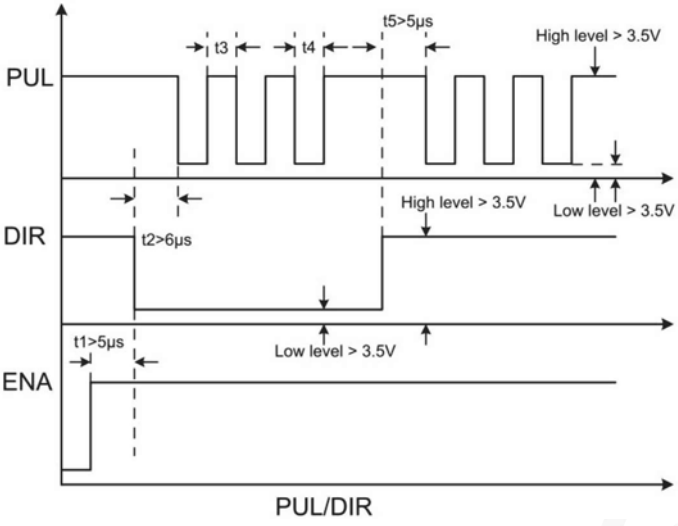
3. Power Interface Ports



1	Motor Phase Wire Input Ports	A+	Phase A+(Red)	Motor Phase A
2		A-	Phase A- (Blue)	
3		B+	Phase B+(Green)	Motor Phase B
4		B-	Phase B-(Black)	
5	Power Input Ports	VCC	Input Power +	24-50V DC
6		GND	Input Power-	

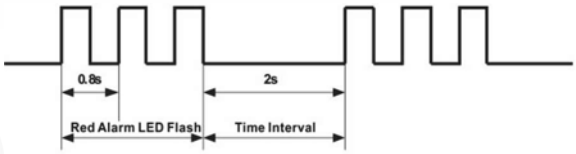
Control Signals

In order to maintain proper operation of the step servo system, PUL,DIR and ENA are supplied to the driver with the below rule and condition :



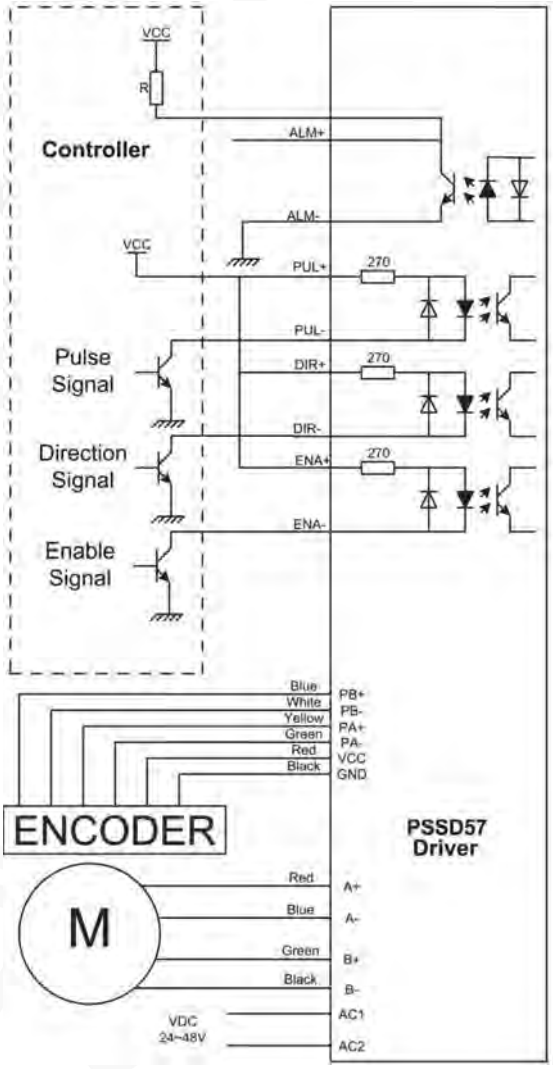
Remark:
a. t1 : ENA must be ahead of DIR by at least 5 us. Usually, ENA+ and ENA- are NC (not connected).
b. t2 : DIR must be ahead of PUL active edge by 6us to ensure correct direction.
c. t3 : Pulse width not less than 2.5us.
d. t4 : Low level width not less than 2.5us.

Fault Alarm (LED Flicker)



Flicker Frequency	Description to the Faults
1	Error occurs when the motor coil current exceeds the drive's current limit.
2	Voltage reference error in the drive
3	Parameters upload error in the drive
4	Error occurs when the input voltage exceeds the drive's voltage limit.
5	Error occurs when the actual position following error exceeds the limit which is set by the position error limit.

Wiring



Remark: *VCC is compatible with 5V or 24V:
R1 (3~5K) must be connected to control signal terminal.

Main Features

- No Mis-step, High Accuracy in Position
- 100% Rated Output Torque
- Variable Current Control Technology. High Current Efficiency
- Reduced vibration, Smooth and Reliable
- Built in Acceleration/Deceleration
- User Defined Micro Step Setting
- compatible with 1000 and 2500 lines encoder
- No tune adjustment in Generation Application
- Lack of Phase/ Over Current/ Over Voltage Protection
- Indicating Status LED

Introduction

PSSD86H two phase hybrid step servo drive system integrate servo control technology as the control system. It employ control method which include current loop, speed loop and position loop control. This drive has both the advantage of stepper and servo system and is a very cost effective motion control product.

Electrical Specification

Parameters	Min	Typical	Max	Unit
Supply voltage	24V	60V	75V	VAC
Output Current (Peak)	-	-	8.0	Amps
Logic Input Current	-	10	-	mA
Pulse input frequency	-	-	200	KHz
Low Level Time	2.5	-	-	μsec

Environment Specification

Cooling	Natural Cooling or Forced Convection	
Environment	Space	Avoid dust, oil frost and corrosive gases
	Ambient Temperature	-20°C—+80°C
	Humidity	<80%RH
	Vibration	5.9m/s² Max
Storage Temp.	-20°C—+80°C	
Weight	Approx. 580 gram	

Dip Switch Setting

Microstep Resolution Setting :

Step / Rev.	SW3	SW4	SW5	SW6
Default	ON	ON	ON	ON
800	OFF	ON	ON	ON
1600	ON	OFF	ON	ON
3200	OFF	OFF	ON	ON
6400	ON	ON	OFF	ON
12800	OFF	ON	OFF	ON
25600	ON	OFF	OFF	ON
51200	OFF	OFF	OFF	ON
1000	ON	ON	ON	OFF
2000	OFF	ON	ON	OFF
4000	ON	OFF	ON	OFF
5000	OFF	OFF	ON	OFF
8000	ON	ON	OFF	OFF
10000	OFF	ON	OFF	OFF
20000	ON	OFF	OFF	OFF
40000	OFF	OFF	OFF	OFF

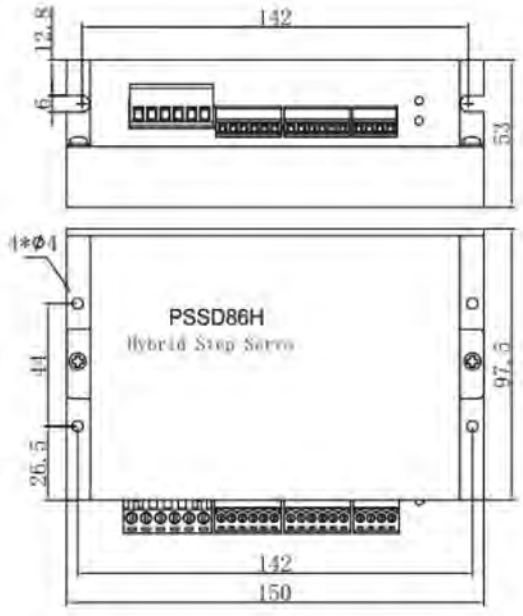
Input Edge Settings :

*SW1 : Dip Switch
check Input Edge Setting
OFF:Rising Edge
ON :Trailing Edge

Logical Direction Settings :

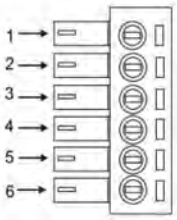
*SW2 : Dip Switch
Changing motor direction
OFF: CCW
ON : CW

Dimensions



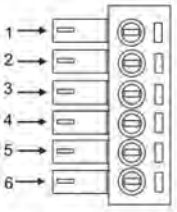
Port Assigment

1. Control Signal Input Port



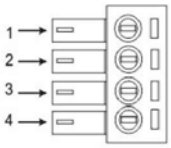
Port	Symbol	Name	Remark
1	DIR-	Pulse signal +	Compatible with 5V or 24V
2	DIR+	Pulse signal -	
3	PUL-	Direction signal+	Compatible with 5V or 24V
4	PUL+	Direction signal-	
5	ENA-	Enable signal +	Compatible with 5V or 24V
6	ENA+	Enable signal -	

2. Power Interface Port



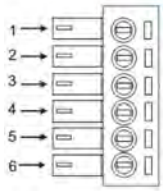
1	Motor Phase Wire Input Ports	A+	Phase A+(Red)	Motor Phase A
2		A-	Phase A- (Blue)	
3		B+	Phase B+(Green)	Motor Phase B
4		B-	Phase B-(Black)	
5	Power Input Ports	VCC	Input Power +	AC24V-75V DC30-110V
6		GND	Input Power-	

3. ALM and PEND Signal Output Port



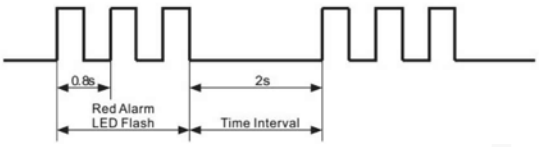
Port	Symbol	Name	Remark
1	PEND+	In position signal output +	
2	PEND-	In position signal output -	
3	ALM+	Alarm output +	
4	ALM-	Alarm output -	

4. Encoder Feedback Signal Input Port



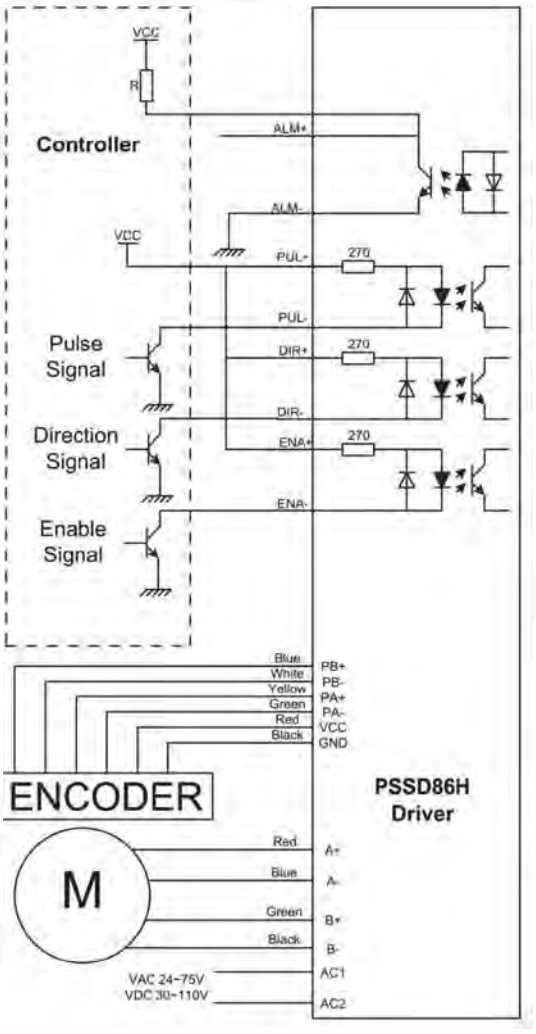
Port	Symbol	Name	Wiring color
1	PB+	Encoder phase B +	Blue
2	PB-	Encoder phase B -	White
3	PA+	Encoder phase A +	Yellow
4	PA-	Encoder phase A -	Green
5	VCC	Input power	Red
6	GND	Input power ground	Black

Fault Alarm (LED Flicker)



Flicker Frequency	Description to the Faults
1	Error occurs when the motor coil current exceeds the drive's current limit.
2	Voltage reference error in the drive
3	Parameters upload error in the drive
4	Error occurs when the input voltage exceeds the drive's voltage limit.
5	Error occurs when the actual position following error exceeds the limit which is set by the position error limit.

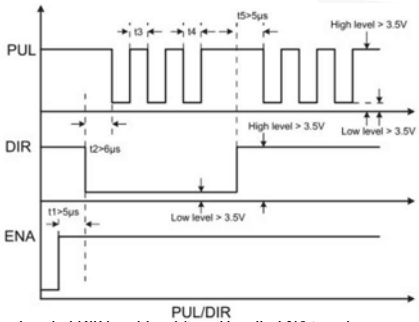
Wiring



Remark: *VCC is compatible with 5V or 24V:
R1 (3~5K) must be connected to control signal terminal.

Control Signals

In order to maintain proper operation of the step servo system, PUL,DIR and ENA are supplied to the driver with the below rule and condition :



Remark:
a. t1 : ENA must be ahead of DIR by at least 5 us. Usually, ENA+ and ENA- are NC (not connected).
b. t2 : DIR must be ahead of PUL active edge by 6us to ensure correct direction.
c. t3 : Pulse width not less than 2.5us.
d. t4 : Low level width not less than 2.5us.

Main Features

- No Mis-step, High Accuracy in Position
- 100% Rated Output Torque
- Variable Current Control Technology. High Current Efficiency
- Reduced vibration, Smooth and Reliable
- Built in Acceleration/Deceleration
- User Defined Micro Step Setting
- compatible with 1000 and 2500 lines encoder
- No tune adjustment in Generation Application
- Lack of Phase/ Over Current/ Over Voltage Protection
- Indicating Status LED
- 7-Segment LED to Display Status of Drive

Introduction

The PSSD9060 step servo drive system integrate the servo control technology into it core control and uses the latest 32 bit DSP with the advance servo control algorithm for Position Control. Comparing to the conventional stepper drive, it avoid miss-step problem of the old stepper motor, and effective control the temperature rise of the motor, which in term reduce motor vibration and enhance the performance of the motor at high speed range. Despite of all above advantages, it is a very cost effective system as compare to servo motor system.

Application

It is suitable for automation and equipment which required large torque, such as engraving machine, wire stripping machine, marking machine cutting machine, laser photo composing machine, plotting instrument, numerical control machine tool, automatic assembly equipment and so on.

Dimensions

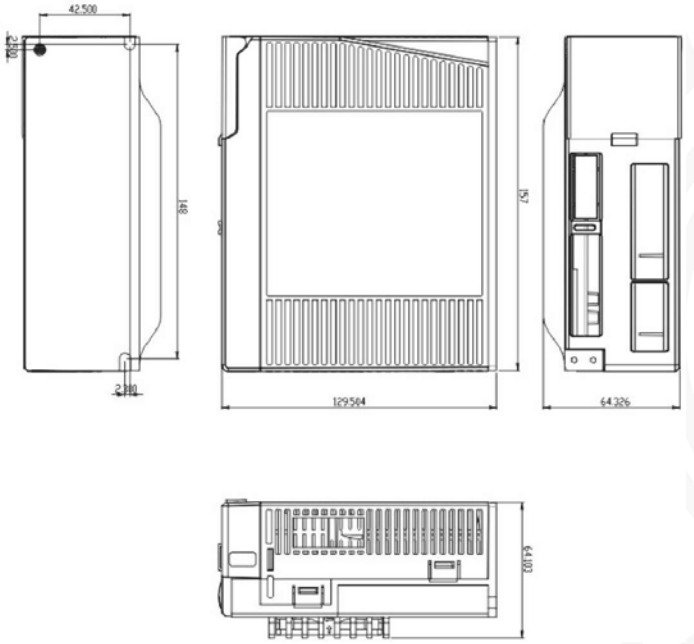


Fig. 1 Mechanical installation size (mm)
Notice: Please include the size of the terminal and ventilation cooling Fan while designing the installation space.

Specification

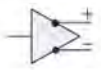
Input Voltage		50~90VAC
Continuous Current Output		6.0A
Maximum Input Frequency		Can be set through the internal parameters
Signal Input Current		7~20mA（10mA Typical）
Default Communication Rate		57.6Kbps
Protections		• Over current peak value 12A±10% • Over voltage value 200VDC • The range of over position error can be set by the front panel or HISU
Overall Dimensions(mm)		140×70×56
Weight		Approximate 1500g
Environment specifications	Environment	Avoid dust, oil fog and corrosive gasses
	Operating Temperature	0~70℃
	Storage Temperature	-20℃~+65℃
	Humidity	40~90%RH
	Cooling method	Natural cooling or forced air cooling

Port Assigment

1. Control Signal Input Port

Port	Symbol	Definition	Remark
1	AC1	Power input port L	50~90VAC between L and N
2	AC2	Power input port N	
3	A+	Motor connection port A+	
4	A-	Motor connection port A-	
5	B+	Motor connection port B+	
6	B-	Motor connection port B-	

2. Control Signal Interface Ports(44 Pins DB)

Port	Symbol	Definition	Remark
1	IN+	Input port +	Preserved function
2	IN-	Input port -	Preserved function
3	PUL+	Pulse signal input +	Compatible with 5V and 24V
4	PUL-	Pulse signal input -	
5	DIR+	Direction signal input +	Compatible with 5V and 24V
6	DIR-	Direction signal input -	
7	ALM+	Alarm signal output +	
8	ALM-	Alarm signal output -	
9	Pend+	Position signal output +	
10	Pend-	Position signal output -	
11	ENA+	Enable signal input +	ompatible with 5V and 24V
12	ENA-	Enable signal input -	
13	OUTZ+	Encoder Z phase output +	
29	OUTZ-	Encoder Z phase output -	
14	OUTB+	Encoder B phase output +	
15	OUTB-	Encoder B phase output -	
31	BRAKE+	Brake signal output +	
32	BRAKE-	Brake signal output -	
30	OUTA-	Encoder A phase output -	
44	OUTA+	Encoder A phase output +	

3. RS232 Communication Interface Ports

RS 232 interface port pin assignment are as below:

Rs232	Connect to the PC or HISU adjuster with a special serial cable. Never disconnect or connect it while the power source is energized. It is suggested to use twisted-pair or shielded wire (less than 2m).

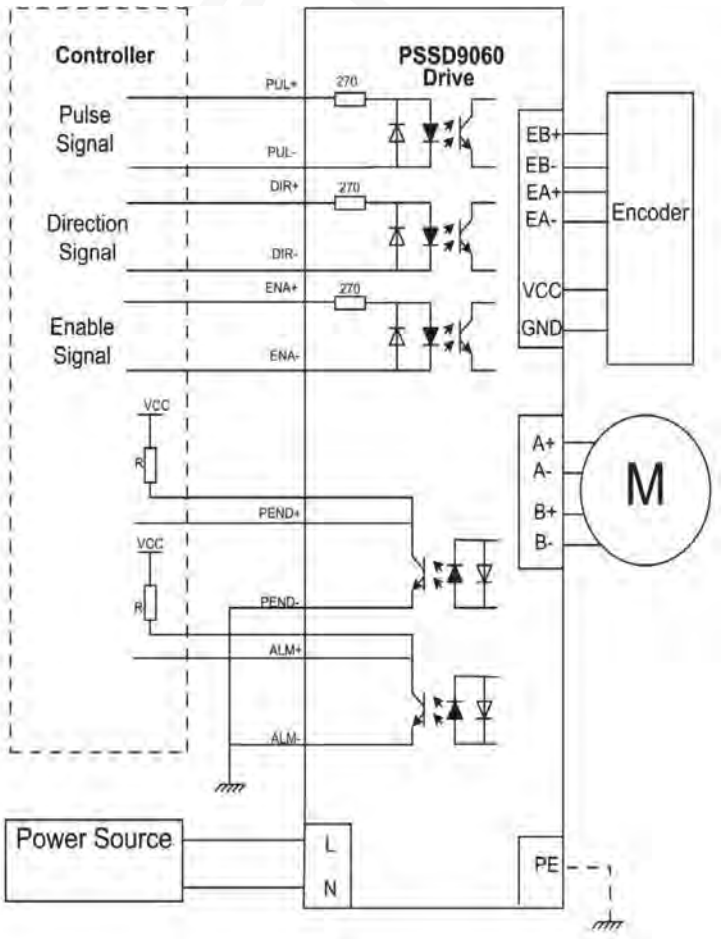
Port	Symbol	Definition	Picture
1	GND	Power Ground	
2	TxD	RS232 Transmission Port	
3	5V	For external HISU	
4	RxD	RS232 Receiving Port	
5、6	NC	Not Connection	

Attention: In case of causing any damage, please confirm the connection cables between PSSD9060-2P and HISU before using it.

Fault Alarm Display

Data display	Fault cause
	Over current in the motor
	Current sensor alarm
	Parameters upload alarm
	Over voltage in power supply
	Over position error alarm
	Missing phase alarm
	Drive off -line

Wiring



Typical connection of PSSD9060-2P

Attention : R (3~5K) must be connected to control signal terminal.
VCC is compatible with 5V or 24V;
The power source :AC50V ~AC90V is based on matching motor.

Hybrid StepServo Motor

Order Coding : StepServo Motor

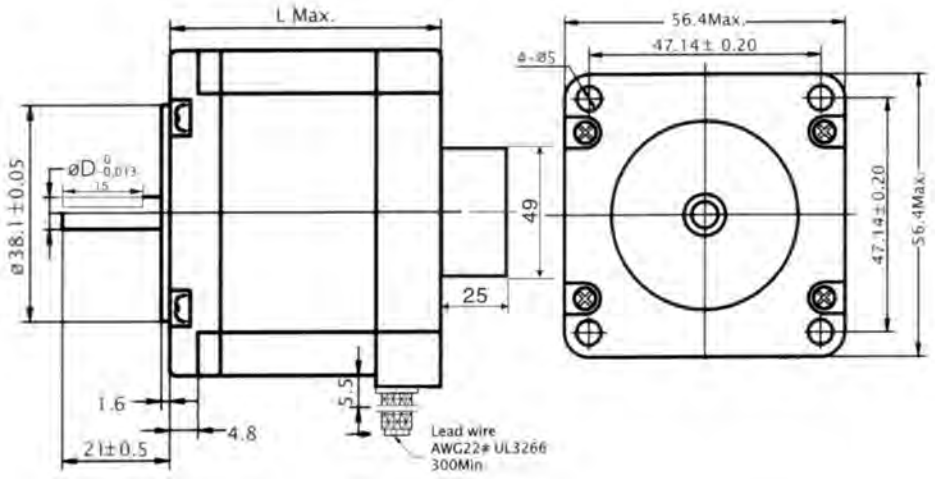
PSSM | 5754 | 2P | 1000 | BR | 0524 | 060635

- PSSM: StepServo Motor
- 5754: 57: Motor Size | 54:Motor Length
- 2P: 2P : 2 Phase StepServo Motor
- 1000: Encoder : 1000 | 2500 P/R
- BR: BR : Brake
- 0524: 05 : Shaft Dia | 24: Shaft Lenght
- 060635: 4 Digit: d-cut H*L (mm) / 6 Digit: KeyWay H*W*L (mm)

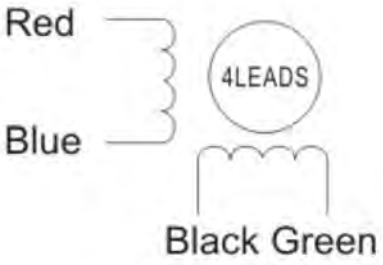
Model	Step Angle (Deg)	Holding Torque (N.m)	Current/ Phase (A)	Resistance/ Phase (A)	Inductance/ Phase (mH)	Detent Torque (g-cm)	Rotor Inertial (g-cm²)	Lead Wire	Weight (KG)	Length LMAX (mm)
PSSM5754-2P	1.8	1.2	4.0	0.44	1.4	400	280	4	0.72	81
PSSM5780-2P	1.8	2	5.0	0.36	1.8	700	480	4	1.1	101
PSSM6087-2P	1.8	3	5.0	0.45	2.1	690	690	4	1.3	110
PSSM8680-2P	1.8	4.5	6.0	0.34	2.5	1300	1800	4	2.6	109
PSSM86118-2P	1.8	8.2	6.0	0.53	4.7	2500	3600	4	4.3	146
PSSM86156-2P	1.8	12	6.0	0.75	12	4000	4000	4	5.1	183

Hybrid StepServo Motor

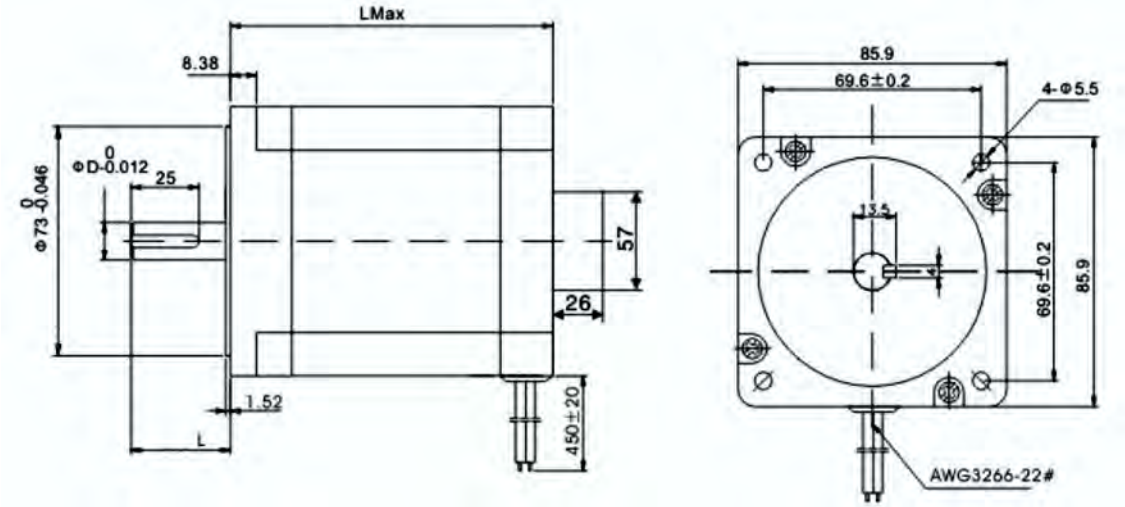
PSSM57 SERIES



WIRING

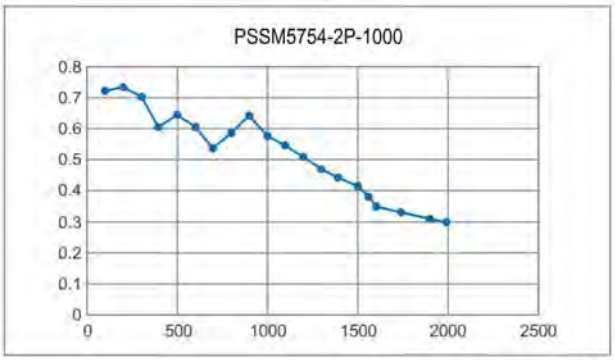


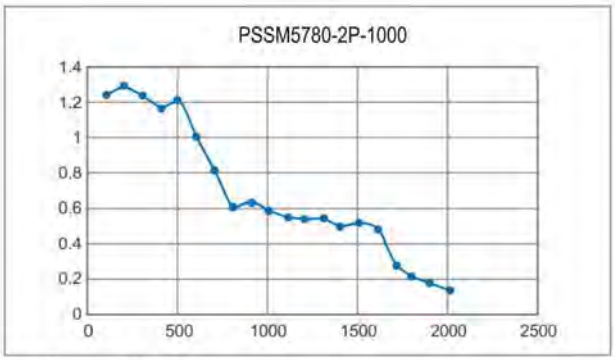
PSSM86 SERIES



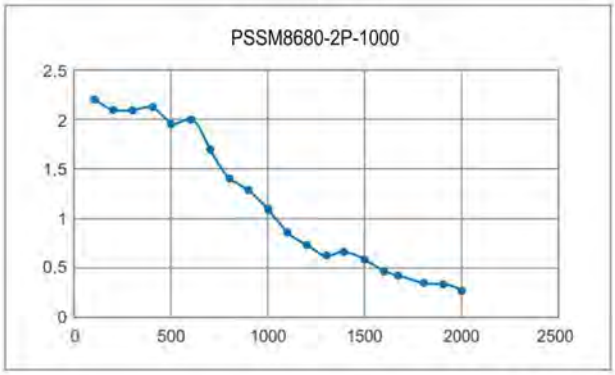
Model No.	Shaft mm(D)	Key (mm)	L(mm)
PSSM5754-2P-1000	Φ6.35	0.8 × 15	21
PSSM5780-2P-1000	Φ8.00	0.8 × 15	21
PSSM8665-2P-1000	Φ9.50	0.8 × 25	32
PSSM8695-2P-1000	Φ14.00	1.0 × 25	32
PSSM86118-2P-1000	Φ14.00	2.0 × 25	40

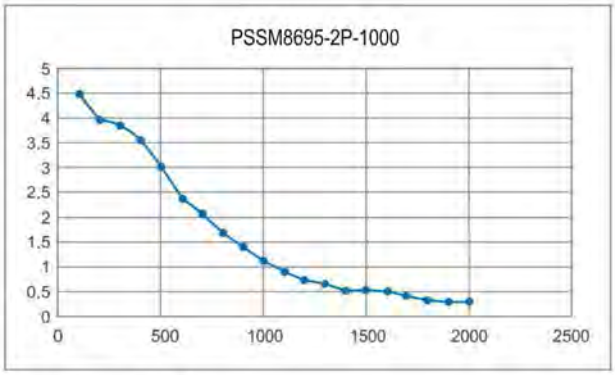
Standard 2 Phase Hybrid StepServo Motor Graph



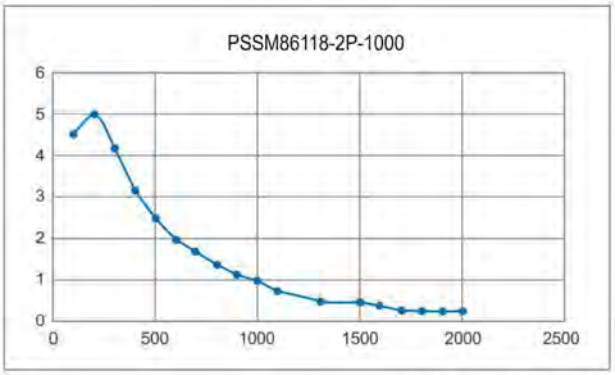


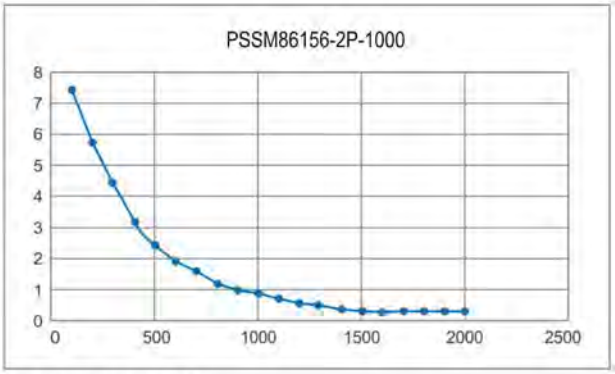
test driver： PSSD57 test voltage：48VDC





test driver： PSSD86H test voltage：70VAC





test driver： PSSD86H test voltage：70VAC

POWER STEP

Integrated Step Servo Drive System

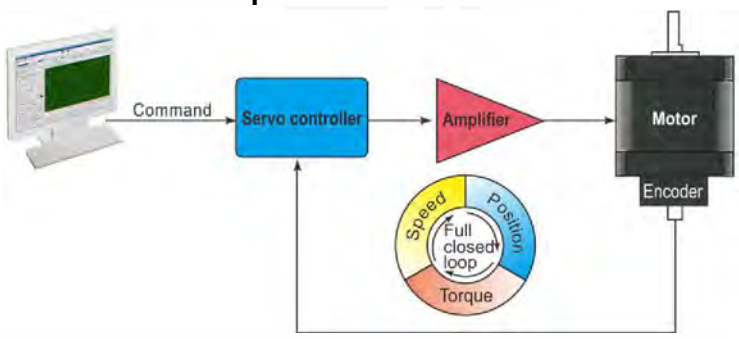
Order Coding : Integrated StepServo Motor

PSSIDM 57 106 2 0821 0815

- Integrated StepServo Motor
- Motor Flange Size
- Motor Length in mm: 85/106/118
- Torque in N : 1/2/3
- Shaft Dia | Shaft Length
- 4 Digit: d-cut H*L (mm)

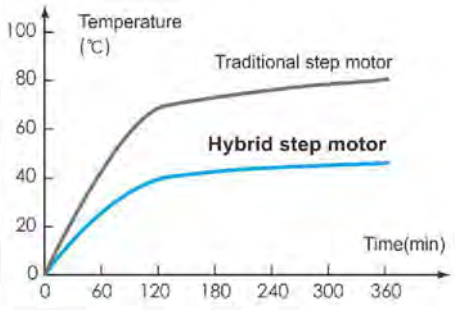
Main Features

1. Full Closed Loop without MISS-STEP



1. Accurate position/ speed control is achievable even with high performance system application.
2. High robustness control can adapt to a wide variation of inertial load and frictional load.
3. The motor with 1000PPR encoder support closed loop vector control which solve the MISS-STEP problem of conventional stepper motor system.

2. Low Heat/ High Efficiency



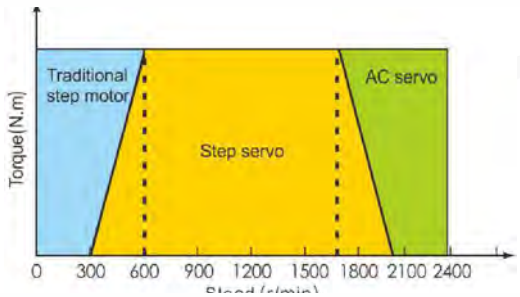
1. Adjust output current to actual load condition, thus reducing motor heat problem as in conventional stepper motor.
2. Current is almost zero under standstill condition.
3. The output motor current is nearly 100% torque output with a very cost effective costing comparing to other servo system.

3. High Speed Response

The Hybrid step servo drive system integrate the servo control technology into it core control and uses the latest 32 bit DSP with the advance servo control algorithm for Position Control. Comparing to the conventional stepper drive, it avoid miss-step problem of the old stepper motor, and effective control the temperature rise of the motor, which in term reduce motor vibration and enhance the performance of the motor at high speed range. Despite of all above advantages, it is a very cost effective system as compare to servo motor system.

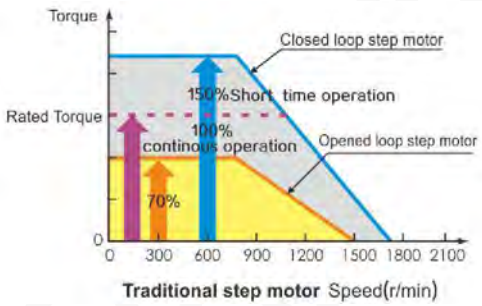
4. Smooth and Accurate

Space Vector current control algorithm and vector smoothing filtering technology based on encoder feedback, can well resist low frequency resonance on the traditional stepper motors. Motor can run smoothly at low speed.



Traditioal step motor:short distance, medium and low speed(300-600RPM)
StepStep motor:medium and short distance, medium and high speed(600-2000RPM)
AC Servo motor:Long distance, high speed(more than 2000RPM)

5. High Torque/ High Speed



1. Hybrid step servo drive system adopts the optimized current control mode, 100% of motor torque can be fully utilised.
2. High torque output can simplified complexity of gearbox in certain case.
3. The speed of hybrid step servo is improve by 30% as compare to the conventional open loop stepper motor and can maintain with high torque with high speed.

Port Assignment

Communicatrion Port

Model	Pulse mode
PSSIDM57	+5V TX GND RX GND
PSSIDM60	

Input/Output Port

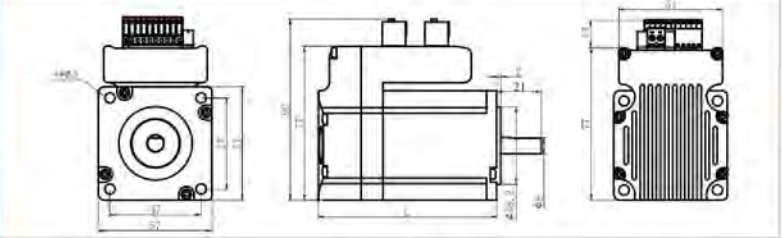
Model	Pulse mode
PSSIDM57	PUL+ PUL− DIR+ DIR− ENA+ ENA− PEND+ PEND− ALM+ ALM−
PSSIDM60	

Dip Switch Setting

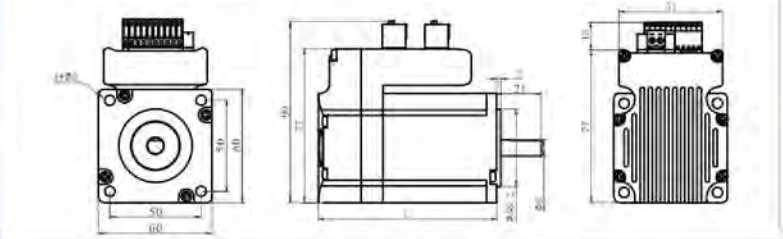
Pluse/rev	SW1	SW2	SW3	SW4	Pluse/rev	SW1	SW2	SW3	SW4
Default	On	On	On	On	1000	On	On	On	Off
800	Off	On	On	On	2000	Off	On	On	Off
1600	On	Off	On	On	4000	On	Off	On	Off
3200	Off	Off	On	On	5000	Off	Off	On	Off
6400	On	On	Off	On	8000	On	On	Off	Off
12800	Off	On	Off	On	10000	Off	On	Off	Off
25600	On	Off	Off	On	20000	On	Off	Off	Off
51200	Off	Off	Off	On	40000	Off	Off	Off	Off

[Dimensions

PSSIDM57



PSSIDM60



PSSIDM57	
Part No.	Length(mm)
PSSIDM57-85-1-0821-0815	85
PSSIDM57-106-2-0821-0815	106

PSSIDM60	
Part No.	Length(mm)
PSSIDM60-118-3-3-821-0815	118

Controller :

- PSDC4040-2P
- PS-SAC40
- PSSAC996340

PSDC4040-2P Integrated Drive Stepper Controller

Main Features

- Programmable Integrated Controller and Drive
- Output up to 4.0 Amps per phase
- Resolution up to 128000 Pulse Per Revolution
- 12 - 40 VDC Power Input
- 9 Digital Input / 8 Digital Output
- 1 X Analogue Input for Jog Speed Control
- Can be Standalone operation
- Receive SCL command using RS232
- User Friendly software interface

Introduction

The PSD4040-2P is a integrated Controller and Drive package with powerful, precise and effiecnt MOSFET driver providing up to 4.0 amps per phase and micro stepping resolution up to 12800 steps per revolution. All I/O including, Home, Limit+ and Limit- are optically isolated, 5 to 24 Vdc, with sinking or sourcing signals The phase current and resolution can be congured using Microsoft Windows-based development software, through RS232C or Rs485. Control of JOG speed and direction can be switched between external mode and internal mode. Connects to PC through RS232/RS485 for programming (cable included) for easy set up and programming

Electrical Specification

Supply voltage	JM4040MI	20	-	40	VDC
	JM8060MI	24	-	80	VDC
Output current	JM4040MI	0.2	-	4	A
	JM8060MI	1.3	-	6	A
Control signal input current		5	10	15	mA
		0	-	160	KHz
		2	-	-	us
Turn signal minimum width		2	-	-	us

Environment Specification

Cooling method	Natural or forced cooling	
Environment	Using the occasion	Avoid dust, oil mist and corrosive gases
	Working temp	0°C - +50°C
	Highest temp	90% RH9 (No condensation)
	Vibration	5.9m/s^2 max
	Storage temp	-20°C - +85°C

PS-SAC40 Single Axis Stepper Controller

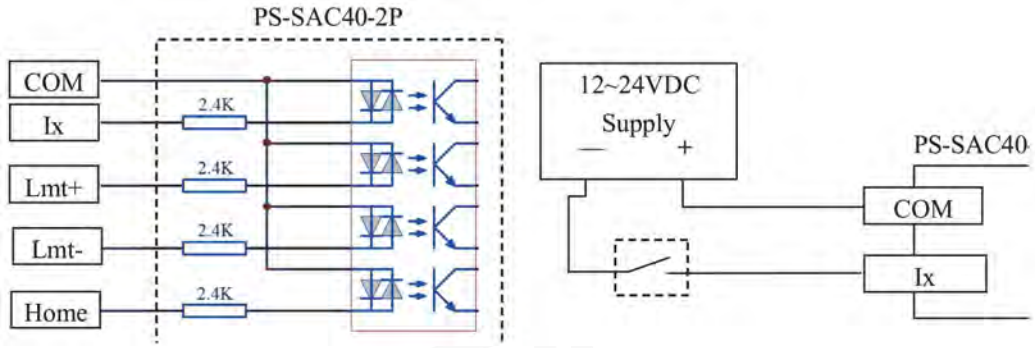
Main Features

- DC 12-24VDC Input
- 9 Programmable optically isolated input port 2.4K internal current limiting resistor
- 8 Programmable optically isolated output signal port
- Max. output current of 500mA
- Home, Jog+, Jog- opto-isolated inputs
- JOG Speed and direction control can be set to Internal /External Mode
- RS 232 /RS 485 Selectable
- Host through RS232/RS485 serial port to send SCP instruction (Drive Programming Language) to achieve real time control, connecting drive to PC, PLC or MCU

Interface Circuit

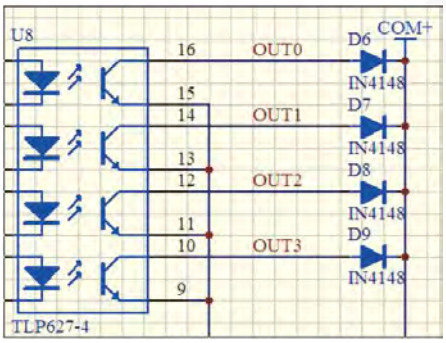
Input Circuit:

Input port includes:I0~I8, LIMIT+,LIMIT-,HOME.Where input I7 and I8 can be used as the direction of the movement of the JOG control input.



Output Circuit:

The maximum drive current output port is 120mA, maximum voltage of 40V, and with freewheeling diode, which is particularly useful for driving inductive loads.



Note: Optocoupler input port is bidirectional, COM Terminal can be connected to the positive terminal of the power supply, and the power ground.
Limit+, Limit -, and Home input circuit is the same as input circuit I0~I8

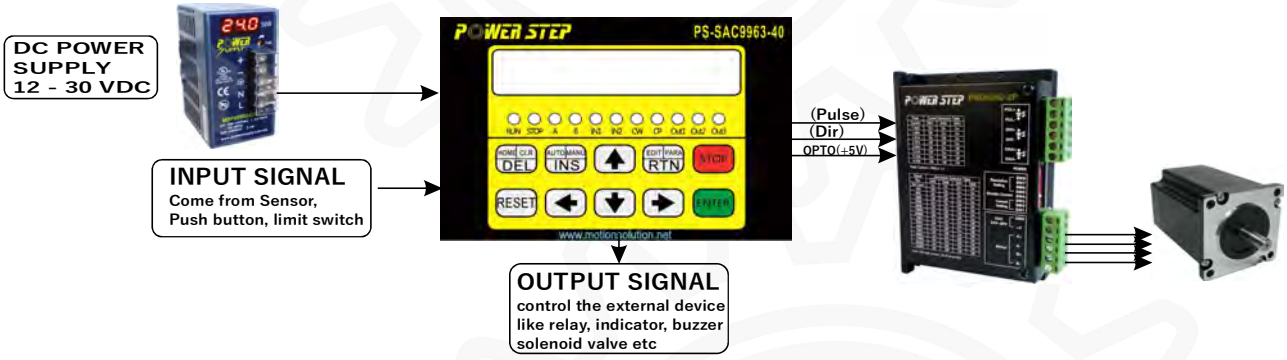
POWER STEP

PSSAC996340 Single Axis Stepper Controller

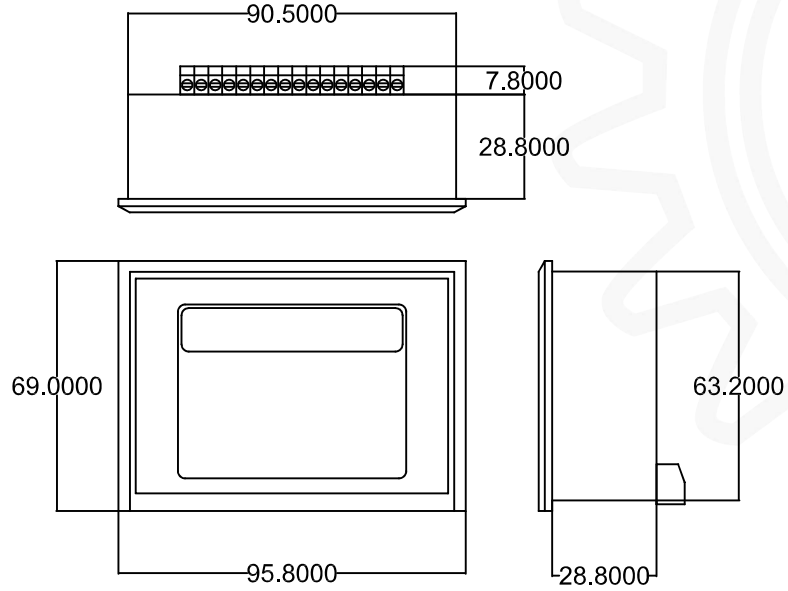
Main Features

- Single Axis Control
- Can be use for Stepper / Servo
- Max output frequency : 39.99Khz
- Program : of 99 line
- Opto isolated 6 Input / 3 Output
- Operation Mode : Auto/Manual/Program/Parameter Setting
- Display : 8 digit of 7 segment LED Display
- Command : 14 command
- Origin Function : Origin Direction selectable
- Acc/Dec programmable with 2 setting : L/H
- Max Position Setting : -7999999 to +7999999

Typical Application



Dimensions



Input/Output Circuit