

# Stepping System catalogue



- AC servo      ■ Stepping drive motor      ■ Induction asynchronous servo
- Linear motor drive      ■ Industry-specific servo
- Control product integration customization

# Serving customers and adding value to customers

## Company Profile

Hangzhou Bergerda Automation Technology Co., Ltd. is located in a beautiful paradise on earth - Hangzhou, China. It is a high-tech enterprise that provides global customers with servo, stepping, frequency conversion, brushless motor drive control products, and industrial drive control solutions. Excellence in product development, efficient and high-quality production, enthusiastic and caring service. Always take the customer's needs as its responsibility.

Bergerda's motor control products include AC servo drives and servo motors, stepping drives and stepping motors, inductive asynchronous servo drives and motors, linear motor DD motors and drives, and custom control solutions for all types of industries. Widely used in textile packaging, CNC machine tools, printing, embroidery, sculpture, advertising, laser, electronics and other automated machinery. At present, there are twelve types of stepping systems, including three series of B series, D series and E series, nearly 30 kinds of specifications servo systems, NS digital series and LS closed loop series. S series induction asynchronous servo, L series linear motor servo and DD motor drive. T-series CNC turret-dedicated servos and P-series plastic machinery-specific servos and so on which include control and control integrated industrial solutions. We have become a professional company with a complete product line in Chinese motion control industry. Perfect pre-sale, sales, after-sales service, from customer design machine selection, equipment debugging, post-maintenance, always with patience, enthusiasm, professional service to return customers.

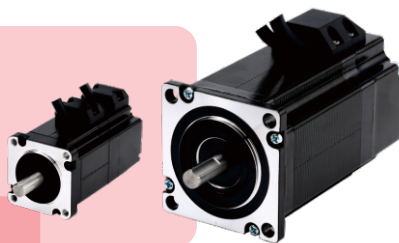
The company fully implements the concept of "professional, quality, and service". With high-tech products, excellent quality, and high-quality services, customers can be assured of their ease of use, adding value to customers and realizing the long-term development of the company.

Based in the domestic market, Bergerda has established sales and service networks in Zhejiang, Jiangsu, Guangdong, Fujian, Shandong, Hunan and Guangxi. In foreign markets, products are exported to the United States, Brazil, Colombia, Russia and other countries and regions.



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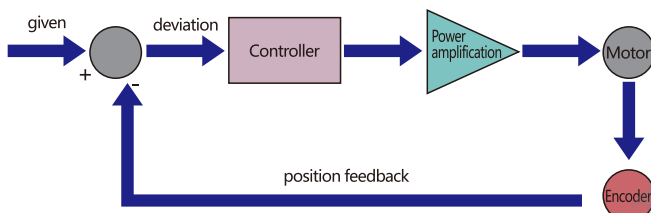
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# Closed-loop stepping technology features

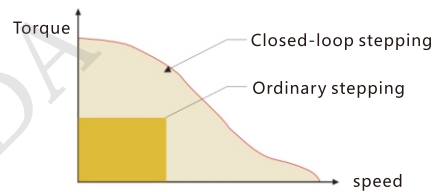
## Do not lose step

Use of photoelectric encoder feedback motor position constitutes a closed-loop stepping drive system; The traditional stepping motor drive system may cause lost step or stall during sudden load, so it is necessary to reserve a large torque margin; and the closed loop stepping driver will collect the current position information every 50us, and according to the position error information adjusts the current, corrects the position, and prevents step loss.



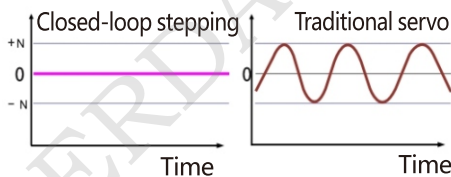
## High torque

Ordinary stepping drive systems typically require a 30% torque margin to prevent lost step. Closed-loop stepping can use 100% of the motor torque to improve efficiency. Closed-loop stepping According to the position of the motor detected by the encoder, the magnitude and phase of the current are adjusted during overload, so that the torque of the motor at the current speed is kept to a maximum



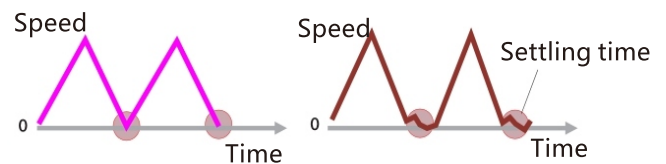
## Stop without oscillation

The traditional servo system is an error tracking system. When reaching the target position, the error is close to zero, the torque fluctuates in a certain range, causing the shaft to oscillate; and the closed-loop stepping system utilizes the low-speed large torque characteristics of the stepping motor when the motor reaches the target position. No oscillation will occur. This feature is suitable for visual inspection applications



## Fast response

The characteristic of the stepping motor is that the rotor is synchronized with the given pulse to achieve fast positioning. Suitable for quick positioning of short distances. The position sampling speed of traditional servo systems is slow and there is a large settling time.



## No gain adjustment

Traditional servo systems require complex, lengthy, and time-consuming various gain tunings depending on the load. Closed-loop stepping utilizes the unique torque characteristics of a stepping motor to match the encoder's position correction, enabling stable and reliable performance without the need for complex gain tuning. Particularly suitable for low rigidity loads (eg pulley drive systems).

## Low heat

An ordinary stepping drive system operates with a constant current. The closed loop stepping drive system adjusts the current according to the load fluctuation. Can reduce heat, improve energy efficiency.

## LS series closed loop stepping introduction

The closed-loop stepping drive of Bergerda is based on an ordinary open-loop stepping motor combined with position feedback and servo algorithm to form a high-speed, high-torque, high-precision, low-vibration, low-heat, No-lose-step stepping scheme. LS series stepping servo driver, based on the platform of IT company's new 32-bit DSP processing chip, utilizes magnetic field orientation (FOC) and weak magnetic control algorithm design in servo driver, and has all-round performance beyond ordinary stepping.

- Built-in PID parameter adjustment function enables the motor to better meet the application of different types of loads.
- Built-in field weakening control algorithm reduces the magnetic field characteristics of the motor at high speed and maintains power.
- Built-in current vector control function makes the motor have servo current characteristics and low heat generation.
- Built-in micro-step instruction algorithm, so that the motor speed stage to maintain stable, low vibration.
- Built-in 4000pulse resolution encoder feedback, so that the motor accuracy, never lost step.

The servo control direction combined with the characteristics of the stepping motor enables the LS series closed-loop stepping driver to better perform the performance of the stepping motor and replace the same power servo application, making the automation equipment the most cost-effective new choice.

Application: It is especially good for users who want small noise and high speed equipment. For example: engraving machine, stripping machine, marking machine, cutting machine, solid crystal machine, plotter, CNC machine tools, automatic assembly equipment.

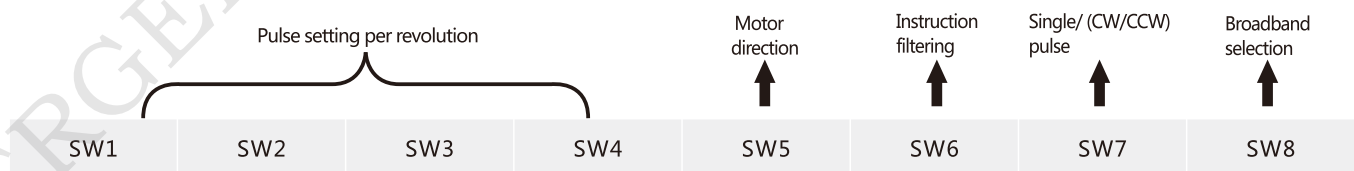
### Drive function description

Drive function	Instructions
Command pulse form	The standard LS series driver signal interface is in pulse form and can accept three types of pulse command signals; 1. Pulse & Direction (PUL + DIR); 2. Double Pulse (CW + CCW); 3. Quadrature Pulse (A/B Quadrature Pulse)
Alarm Output	The alarm output port ALM is used to output the drive operation status to the external control circuit. When the driver is in the error state and normal operating state, ALM outputs different optocoupler levels. Alarm signals can be reused as in-position signals.
Control algorithm is optional	The leading space vector servo control algorithm and the traditional advance angle control algorithm are optional, and the user can arbitrarily select according to the occasion.
The highest pulse frequency is optional	With the highest pulse frequency of 200K and 1MHZ as standard, optional debugging software can modify any maximum pulse frequency within 1M.
Wide voltage range on Signal terminal	The pulse, direction, and enable signal input interface voltages are 3.3 to 24V compatible, eliminating the need for a series limiting resistor.
Seven status LED displays	The LS series driver has two operating states and five fault LED indication functions, allowing the user to clearly confirm the status of the driver.

### Technical specifications

model	Peak current	Weight	Input voltage range	Pulse limit frequency	output signal	Encoder feedback signal	Subdivisions	Pulse level	Operating temperature	Use humidity
2LS556	6	300g	18-50VDC	1M	Alarm/in place	AB differential input	200-51200	3.3-24V	0-50°C	40~90%RH
2LS860	8	600g	18-80VAC	1M	Alarm/in place	AB differential input	200-51200	3.3-24V	0-50°C	40~90%RH

### 2LS556 dialing and operation parameter settings



After the change, you need to power off and restart:

### 2LS860 dialing and operation parameter settings



After the change, you need to power off and restart:

# 2LS556

Based on the platform of TI's new 32-bit multi-channel DSP processing chip, the magnetic field orientation and high-speed flux-weakening algorithm in the servo driver are designed to achieve excellent performance.

The built-in vector control design and servo demodulation function of the driver, combined with the feedback of the closed-loop motor encoder, make the stepping servo system have the features of low noise, low heating, no lost steps and higher application speed, and can improve the intelligent equipment system performance in all directions.



- Pulse mode: single pulse/ CW/CCW pulse/quadrature pulse
- Signal level: 3.3-24V compatible, PLC applications without string resistance.
- Typical applications: lock screw machine, servo dispensing machine, stripping machine, labeling machine, medical detector, electronic assembly equipment, etc. The application effect is particularly good in a device where the user desires high rotation speed and high torque.

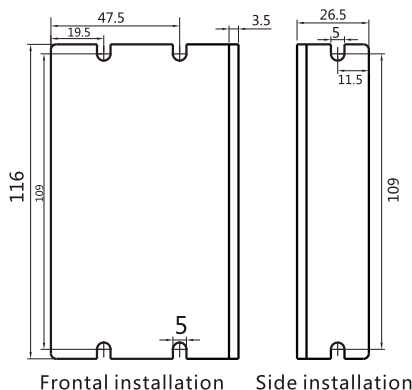
## Drive function description

Drive function	Operating Instructions
Microstep subdivision setting	SW1-SW4 four dial codes are used to select a total of 16 files of microsteps. When the user sets the subdivision, electric motion should be stopped first. For detailed microstep subdivision settings, please see the drive panel description. Other subdivisions can be set through the debug software.
Running direction setting	SW5 is used to select the initial direction of rotation of the motor. It is necessary to power off and restart the drive to make effect.
Pulse smoothing selection	Sw6 is used to select whether to enable the internal S-type command smoothing function. Turn on this function when ON to make the driver input pulse signal smoother. It is necessary to power off and restarts the drive to make effect.
Pulse mode selection	Sw7 is used to select the input pulse mode, off is the pulse & direction, and on is CW/CCW pulse. It can also be modified to quadrature pulses by the debug software. It is necessary to power off and restart the drive to make effect.
Signal interface	PUL+ and PUL- are the positive and negative ends of the control pulse signal; DIR+ and DIR- are the positive and negative ends of the direction signal; ENA+ and ENA- are the positive and negative ends of the enable signal; ALM+ and ALM- are the Positive and negative ends of alarm output signals.
Encoder interface	E8+ and E8- are encoder B direction signals; EA+ and EA- are encoder A direction signals; VCC and GND are encoder power interfaces.
Motor interface	A+, A-, B+, B- are the stepping servo motor winding interfaces, which must be linked with the motor identification color and cannot be exchanged.
Power interface	V+, V- are the positive and negative terminals of the input DC power supply, and the NC is empty. 2LS556 operating voltage range 24-50 VDC, voltage power greater than 150W.
LED	The driver has two indicators, red and green. The green light is the power indicator. The green light flashes after the driver is powered on. The red light is the fault indicator. The red light flickers when there is a fault in the gear and the encoder is misaligned. After the fault is cleared, the red light goes out. When an alarm occurs on the drive, it must be powered on again to clear the fault.
Installation Notes	Dimensions: 116 * 70 * 27mm, mounting hole spacing 109. Can be horizontal or vertical installation, but it should be close to the metal cabinet for better cooling

## Driver operating status LED indication

LED status	Drive status
	Drive is not enabled
	The driver is working properly
	Drive overcurrent
	Driver input voltage overvoltage
	Drive internal voltage error
	Tracking error out of bounds
	Encoder phase abnormality

## Installation size:



## Microstep subdivision setting

Steps / Turn	SW1	SW2	SW3	SW4
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
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8000	on	on	off	off
10000	off	on	off	off
20000	on	off	off	off
40000	off	off	off	off

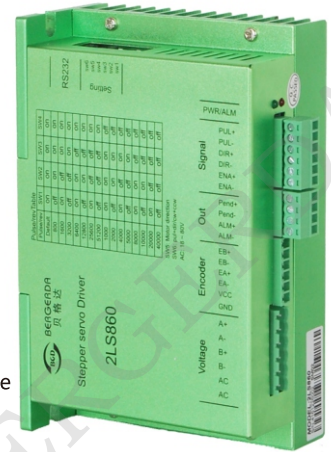
## Function selection

SW5	Running direction	on	Forward
		off	Reverse
SW6	Instruction smoothing	on	S-type acceleration and deceleration becomes effective
		off	S-type acceleration and deceleration is invalid

## 2LS860

Based on the platform of TI's new 32-bit multi-channel DSP processing chip, the magnetic field orientation and high-speed flux-weakening algorithm in the servo driver are designed to achieve excellent performance.

The built-in vector control design and servo demodulation function of the driver, combined with the feedback of the closed-loop motor encoder, make the stepping servo system have the features of low noise, low heating, no lost steps and higher application speed, and can improve the intelligent equipment system performance in all directions.



- Pulse mode: single pulse/ CW/CCW pulse/quadrature pulse
- Signal level: 3.3-24V compatible, PLC applications without string resistance.
- Typical applications: lock screw machine, servo dispensing machine, stripping machine, labeling machine, medical detector, electronic assembly equipment, etc. The application effect is particularly good in a device where the user desires high rotation speed and high torque.

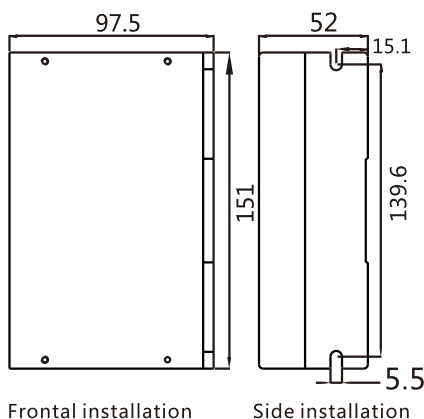
### Drive function description

Drive function	Operating Instructions
Microstep subdivision setting	SW1-SW4 four dial codes are used to select a total of 16 files of microsteps. When the user sets the subdivision, electric motion should be stopped first. For detailed microstep subdivision settings, please see the drive panel description. Other subdivisions can be set through the debug software.
Running direction setting	SW5 is used to select the initial direction of rotation of the motor. It is necessary to power off and restart the drive to make effect.
Pulse mode selection	SW7 is used to select the input pulse mode, off is the pulse & direction, and on is CW/CCW pulse. It can also be modified to quadrature pulses by the debug software. It is necessary to power off and restart the drive to make effect.
Signal interface	PUL+ and PUL- are the positive and negative ends of the control pulse signal; DIR+ and DIR- are the positive and negative ends of the direction signal; ENA+ and ENA- are the positive and negative ends of the enable signal; ALM+ and ALM- are the Positive and negative ends of alarm output signals. PEND+ and PEND- are the positive and negative ends of the in-position output signal.
Encoder interface	E8+ and E8- are encoder B direction signals; EA+ and EA- are encoder A direction signals; VCC and GND are encoder power interfaces.
Motor interface	A+, A-, B+, B- are the stepping servo motor winding interfaces, which must be linked with the motor identification color and cannot be exchanged.
Power interface	AC and AC are universal inputs for AC and DC power supplies. 2LS860 operating voltage range 18-80VAC or 24-100VDC, voltage power greater than 200W.
LED	The driver has two indicators, red and green. The green light is the power indicator. The green light flashes after the driver is powered on. The red light is the fault indicator. The red light flickers when there is a fault in the gear and the encoder is misaligned. After the fault is cleared, the red light goes out. When an alarm occurs on the drive, it must be powered on again to clear the fault.
Installation Notes	Dimensions: 151 * 97 * 52mm, mounting hole spacing 142. Can be horizontal or vertical installation, but it should be close to the metal cabinet for better cooling

### Driver operating status LED indication

LED status	Drive status
● Green light	Drive is not enabled
●● Green flashing	The driver is working properly
●● Green, ● Red	Drive overcurrent
●● Green, ●● Red	Driver input voltage overvoltage
●● Green, ●●● Red	Drive internal voltage error
●● Green, ●●● Red	Tracking error out of bounds
●● Green, ●●●● Red	Encoder phase abnormality

### Installation size:

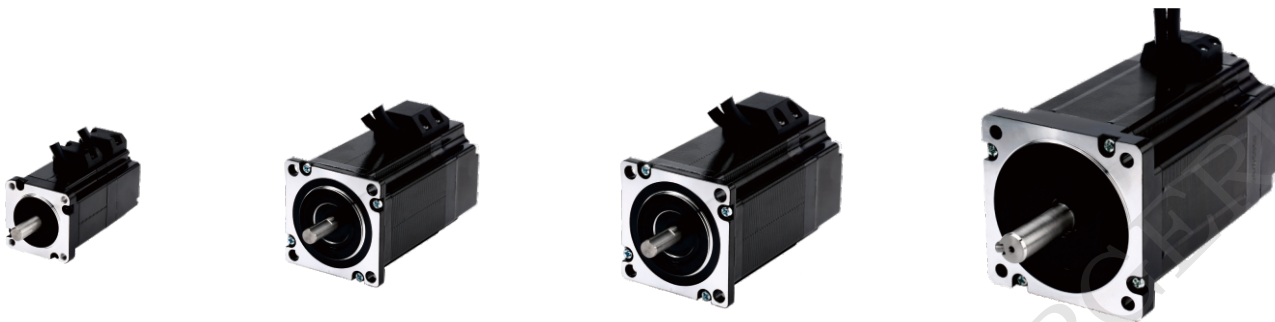


### Microstep subdivision setting

Steps / Turn	SW1	SW2	SW3	SW4
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

### Function selection

SW5	Running direction	on	Forward
		off	Reverse
SW6	Instruction smoothing	on	CW/CCW Double pulse CW/CCW
		off	&DIR Single Pulse & DIR



42BG03-EC

 57BG10-EC  
57BG20-EC

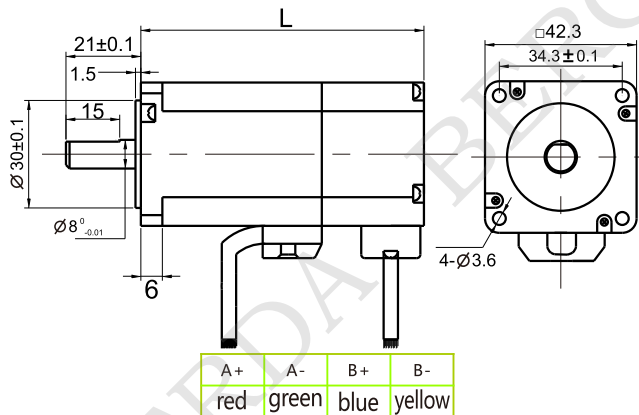
60BG30-EC

 86BG40-EC  
86BG80-EC

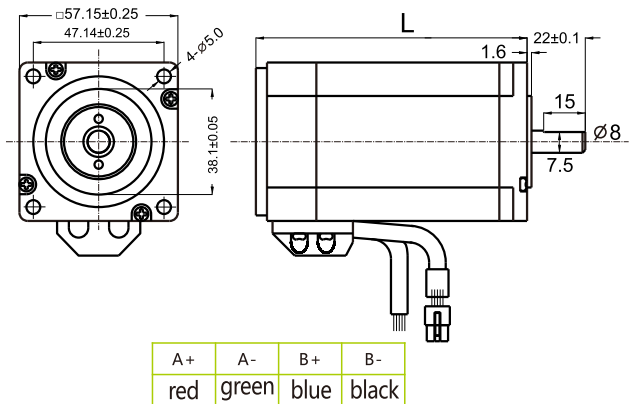
### Technical specifications

model	Phase	Step angle (°)	Holding torque N.M	Rated current A	Phase inductance mH	Phase resistance Ohm	Number of leads	Rotor inertia (g.cm <sup>2</sup> )	Shaft diameter mm	Encoder resolution	Body length (L) mm
42BG03-EC	2	1.8	0.3	2.0	1.9	2.0	4	77	8	1000	79
57BG10-EC	2	1.8	1.0	2.8	1.2	0.8	4	260	8	1000	73
57BG20-EC	2	1.8	2.0	4.0	1.8	0.8	4	460	8	1000	97
60BG30-EC	2	1.8	3.0	5.0	1.8	0.45	4	690	8	1000	108
86BG40-EC	2	1.8	4.0	6.0	3.5	0.8	4	1400	14	1000	98
86BG80-EC	2	1.8	8.0	6.0	5.2	0.95	4	2800	14	1000	136

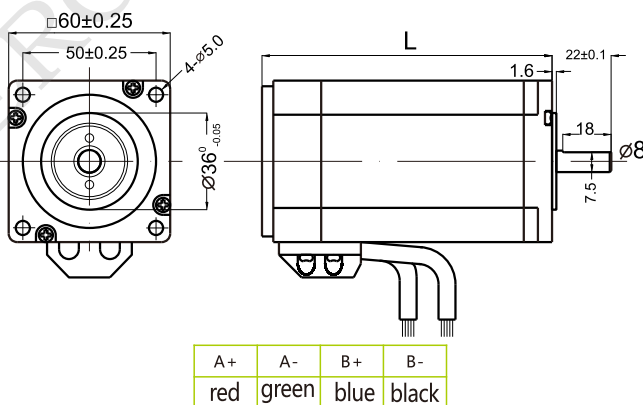
#### 42 Series Size



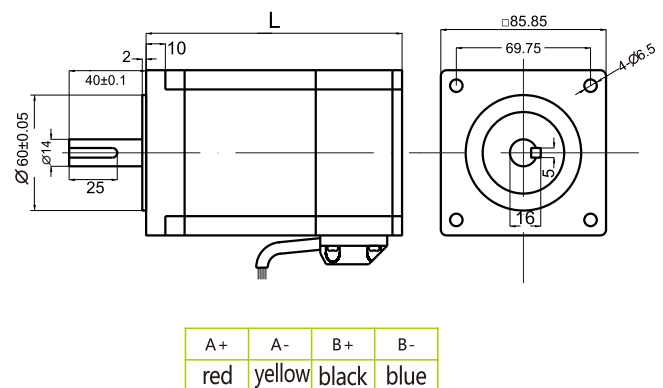
#### 57 Series Size



#### 60 Series Size

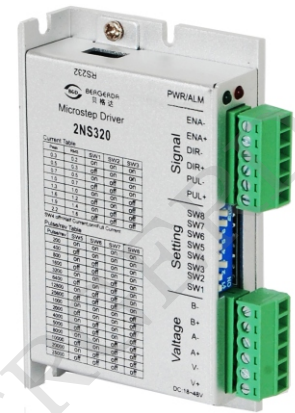


#### 86 Series Size



# 2NS320

Based on TI's new 32-bit multi-channel DSP processing chip platform, using internal PID current control algorithm design, with excellent performance. The built-in micro-segmentation technology and the automatic tuning function of the power-on parameter make the driver have the characteristics of low noise, low vibration, low heat and high-speed high-moment output, and can be well adapted to most applications of stepping motors.



- Pulse mode: single pulse/CW/CCW pulse/quadrature pulse
- Signal level: 3.3-24V compatible, PLC applications without string resistance.
- Typical applications: stripping machine, marking machine, cutting machine, laser equipment, visual positioning, automatic equipment and so on. The application effect is particularly good in a device where the user desires high speed and small noise.

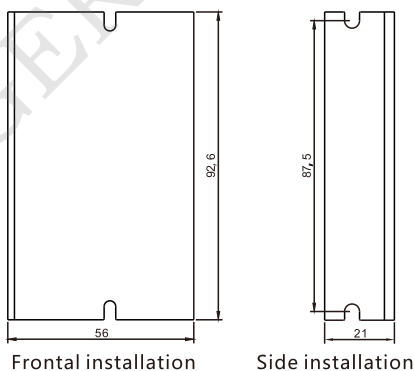
## Drive function description

Drive function	Operating Instructions
Microstep subdivision setting	SW1-SW4 four dial codes are used to select a total of 16 files of microsteps. When the user sets the subdivision, electric motion should be stopped first. For detailed microstep subdivision settings, please see the drive panel description. Other subdivisions can be set through the debug software.
Output current setting	SW1-SW3 three dial switches are used to select a total of 8 output currents. For the specific output current setting, please see the driver panel description.
Automatic half-flow function	Users can set the drive's automatic half-current function through SW4. Off indicates that the quiescent current is set to half of the operating current, and on indicates that the quiescent current is the same as the operating current. In general use, SW4 should be set to off, so that the heat generated by the motor and driver can be reduced and the reliability can be improved. The current is automatically halved approximately 0.4 seconds after the burst stops.
Signal interface	PUL+ and PUL- are the positive and negative ends of the control pulse signal; DIR+ and DIR- are the positive and negative ends of the direction signal; ENA+ and ENA- are the positive and negative ends of the enable signal;
Motor interface	A+ and A- are connected to the positive and negative terminals of the A-phase winding of the stepping motor; B+ and B- are connected to the positive and negative terminals of the B-phase winding of the stepping motor. When A, B two-phase windings are exchanged, the motor can be in the opposite direction.
Power interface	Using DC power supply, the working voltage range is recommended 24-48VDC, voltage power greater than 100W.
LED	The driver has two indicators, red and green. The green light is the power indicator. The green light flashes after the driver is powered on. The red light is the fault indicator. The red light flickers when there is a fault in the gear and the encoder is misaligned. After the fault is cleared, the red light goes out. When an alarm occurs on the drive, it must be powered on again to clear the fault.
Installation Notes	Dimensions: 92.6 * 56 * 21mm, mounting hole spacing 86. Can be horizontal or vertical installation, but it should be close to the metal cabinet for better cooling

## Driver operating status LED indication

LED status	Drive status
● Green light	Drive is not enabled
●● Green flashing	The driver is working properly
●●● 1green, 1red	Drive overcurrent
●●●● 1 green, 2 red	Driver input voltage overvoltage
●●●●● 1 green, 3 red	Drive internal voltage error

## Installation size:



## Half/full flow settings

The current is half of the operating current when the motor is idle

The current is equal to the operating current value when the motor is idle

Half flow	SW4
Half flow	off
Full flow	on

## Operating current setting

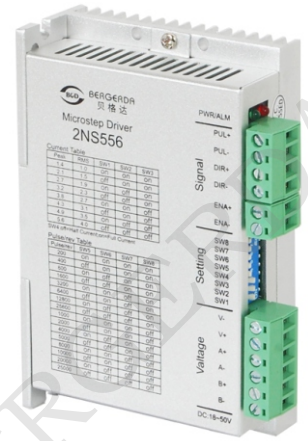
Output current peak	Output current effective value	SW1	SW2	SW3
0.3A	0.2A	on	on	on
0.5A	0.3A	off	on	on
0.7A	0.5A	on	off	on
1.0A	0.7A	off	off	on
1.3A	1.0A	on	on	off
1.6A	1.2A	off	on	off
1.9A	1.4A	on	off	off
2.2A	1.6A	off	off	off

## Microstep subdivision setting

Steps / Turn	SW5	SW6	SW7	SW8
200	on	on	on	on
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

# 2NS556

Based on TI's new 32-bit multi-channel DSP processing chip platform, using internal PID current control algorithm design, with excellent performance. The built-in micro-segmentation technology and the automatic tuning function of the power-on parameter make the driver have the characteristics of low noise, low vibration, low heat and high-speed high-moment output, and can be well adapted to most applications of stepping motors.



- Pulse mode: single pulse/CW/CCW pulse/quadrature pulse
- Signal level: 3.3-24V compatible, PLC applications without string resistance.
- Typical applications: engraving machines, marking machines, cutting machines, laser equipment, plotters, CNC machine tools, automatic equipment equipment, etc. The application effect is particularly good in a device where the user desires high speed and small noise.

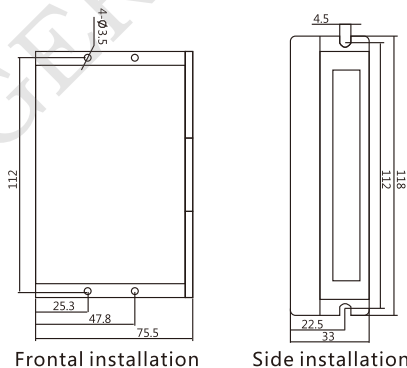
## Drive function description

Drive function	Operating Instructions
Microstep subdivision setting	SW1-SW4 four dial codes are used to select a total of 16 files of microsteps. When the user sets the subdivision, electric motion should be stopped first. For detailed microstep subdivision settings, please see the drive panel description. Other subdivisions can be set through the debug software.
Output current setting	SW1-SW3 three dial switches are used to select a total of 8 output currents. For the specific output current setting, please see the driver panel description.
Automatic half-flow function	Users can set the drive's automatic half-current function through SW4. Off indicates that the quiescent current is set to half of the operating current, and on indicates that the quiescent current is the same as the operating current. In general use, SW4 should be set to off, so that the heat generated by the motor and driver can be reduced and the reliability can be improved. The current is automatically halved approximately 0.4 seconds after the burst stops.
Signal interface	PUL+ and PUL- are the positive and negative ends of the control pulse signal; DIR+ and DIR- are the positive and negative ends of the direction signal; ENA+ and ENA- are the positive and negative ends of the enable signal;
Motor interface	A+ and A- are connected to the positive and negative terminals of the A-phase winding of the stepping motor; B+ and B- are connected to the positive and negative terminals of the B-phase winding of the stepping motor. When A, B two-phase windings are exchanged, the motor can be in the opposite direction.
Power interface	Using DC power supply, R60 working voltage range is recommended 24-50VDC, voltage power greater than 150W.
LED	The driver has two indicators, red and green. The green light is the power indicator. The green light flashes after the driver is powered on. The red light is the fault indicator. The red light flickers when there is a fault in the gear and the encoder is misaligned. After the fault is cleared, the red light goes out. When an alarm occurs on the drive, it must be powered on again to clear the fault.
Installation Notes	Dimensions: 118 * 76 * 33mm, mounting hole spacing 112. Can be horizontal or vertical installation, but it should be close to the metal cabinet for better cooling

## Driver operating status LED indication

LED status	Drive status
● Green light	Drive is not enabled
●● Green flashing	The driver is working properly
●● 1green, 1red	Drive overcurrent
●●● 1 green, 2 red	Driver input voltage overvoltage
●●●● 1 green, 3 red	Drive internal voltage error

## Installation size:



## Half/full flow settings

The current is half of the operating current when the motor is idle

The current is equal to the operating current value when the motor is idle

Half flow

Full flow

SW4

off

on

## Operating current setting

Output current peak	Output current effective value	SW1	SW2	SW3
1.4A	1.0A	on	on	on
2.1A	1.5A	off	on	on
2.7A	1.9A	on	off	on
3.2A	2.3A	off	off	on
3.8A	2.7A	on	on	off
4.3A	3.1A	off	on	off
4.9A	3.5A	on	off	off
5.6A	4.0A	off	off	off

## Microstep subdivision setting

Steps / Turn	SW5	SW6	SW7	SW8
200	on	on	on	on
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

# 2NS860

Based on TI's new 32-bit multi-channel DSP processing chip platform, using internal PID current control algorithm design, with excellent performance. The built-in micro-segmentation technology and the automatic tuning function of the power-on parameter make the driver have the characteristics of low noise, low vibration, low heat and high-speed high-moment output, and can be well adapted to most applications of stepping motors.

- Pulse mode: single pulse/CW/CCW pulse/quadrature pulse
- Signal level: 3.3-24V compatible, PLC applications without string resistance.
- Typical applications: engraving machines, marking machines, cutting machines, laser equipment, plotters, CNC machine tools, automatic equipment equipment, etc. The application effect is particularly good in a device where the user desires high speed and small noise.



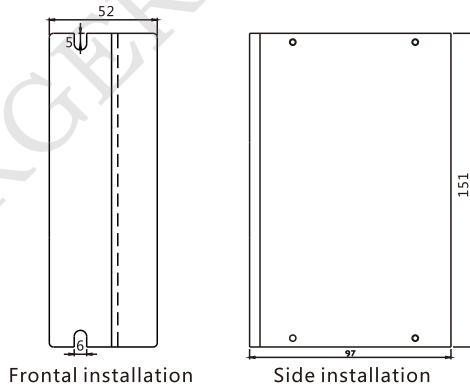
## Drive function description

Drive function	Operating Instructions
Microstep subdivision setting	SW1-SW4 four dial codes are used to select a total of 16 files of microsteps. When the user sets the subdivision, electric motion should be stopped first. For detailed microstep subdivision settings, please see the drive panel description. Other subdivisions can be set through the debug software.
Output current setting	SW1-SW3 three dial switches are used to select a total of 8 output currents. For the specific output current setting, please see the driver panel description.
Automatic half-flow function	Users can set the drive's automatic half-current function through SW4. Off indicates that the quiescent current is set to half of the operating current, and on indicates that the quiescent current is the same as the operating current. In general use, SW4 should be set to off, so that the heat generated by the motor and driver can be reduced and the reliability can be improved. The current is automatically halved approximately 0.4 seconds after the burst stops.
Signal interface	PUL+ and PUL- are the positive and negative ends of the control pulse signal; DIR+ and DIR- are the positive and negative ends of the direction signal; ENA+ and ENA- are the positive and negative ends of the enable signal;
Motor interface	A+ and A- are connected to the positive and negative terminals of the A-phase winding of the stepping motor; B+ and B- are connected to the positive and negative terminals of the B-phase winding of the stepping motor. When A, B two-phase windings are exchanged, the motor can be in the opposite direction.
Power interface	Power supply AC and DC universal, the working voltage range is recommended to 24-100V or AC 20-80V, voltage power greater than 200W.
LED	The driver has two indicators, red and green. The green light is the power indicator. The green light flashes after the driver is powered on. The red light is the fault indicator. The red light flickers when there is a fault in the gear and the encoder is misaligned. After the fault is cleared, the red light goes out. When an alarm occurs on the drive, it must be powered on again to clear the fault.
Installation Notes	Dimensions: 151 * 97 * 52mm, mounting hole spacing 142. Can be horizontal or vertical installation, but it should be close to the metal cabinet for better cooling

## Driver operating status LED indication

LED status	Drive status
● Green light	Drive is not enabled
●● Green flashing	The driver is working properly
●●● 1green, 1red	Drive overcurrent
●●●● 1 green, 2 red	Driver input voltage overvoltage
●●●●● 1 green, 3 red	Drive internal voltage error

## Installation size:



## Half/full flow settings

The current is half of the operating current when the motor is idle Half flow **SW4** **off**

The current is equal to the operating current value when the motor is idle Full flow **SW4** **on**

## Operating current setting

Output current peak	Output current effective value	SW1	SW2	SW3
2.40A	2.00A	on	on	on
3.08A	2.57A	off	on	on
3.77A	3.14A	on	off	on
4.45A	3.71A	off	off	on
5.14A	4.28A	on	on	off
5.83A	4.86A	off	on	off
6.52A	5.43A	on	off	off
7.20A	6.00A	off	off	off

## Microstep subdivision setting

Steps / Turn	SW5	SW6	SW7	SW8
400	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

# 3NS2270

Based on TI's new 32-bit DSP processing chip platform, the internal PID current control algorithm design, with excellent performance. The built-in micro-segmentation technology and the automatic tuning function of the power-on parameter make the driver have the characteristics of low noise, low vibration, low heat generation and high-speed high torque output. In addition, the patented three-phase demodulation algorithm can give full play to the low-speed resonance and small torque ripple characteristics of the phase stepping motor, and can be well adapted to applications requiring higher stability.

- Pulse mode: single pulse/ CW/CCW pulse/quadrature pulse
- Signal level: 3.3-24V compatible, PLC applications without string resistance.
- Typical applications: potting machines, engraving machines, cutting machines, laser equipment, CNC machine tools, automatic equipment and so on. The application effect is particularly good in a device where the user desires high speed and small noise.



## Drive function description

Drive function	Operating Instructions
Microstep subdivision setting	SW1-SW4 four dial codes are used to select a total of 16 files of microsteps. When the user sets the subdivision, electric motion should be stopped first. For detailed microstep subdivision settings, please see the drive panel description. Other subdivisions can be set through the debug software.
Output current setting	SW1-SW3 three dial switches are used to select a total of 16 output currents. For the specific output current setting, please see the driver panel description.
Pulse smoothing and bandwidth selection	The SW9 dial code is used to select the pulse smoothing function of the driver. Off means turn this feature off, on means turn this feature on. SW0 is used to select the bandwidth of the driver. The maximum pass pulse frequency is 200KHZ when off, and the maximum pass pulse frequency is 1MHZ when on.
Signal interface	PUL+ and PUL- are the positive and negative ends of the control pulse signal; DIR+ and DIR- are the positive and negative ends of the direction signal; ENA+ and ENA- are the positive and negative ends of the enable signal; ALM+ and ALM- are the positive and negative terminals of the alarm output signal; RDY+ and RDY- are the positive and negative terminals of the in-position signal.
Motor interface	U, V, W butt the motor windings U, V, W, Arbitrarily swapping two of the three winding wires can change the direction of the motor, PE ground wire.
Power interface	The working voltage range is recommended for AC 110-230V. It is recommended to add a filter (EMI FILTER) before the power supply circuit.
LED	The driver has two indicators, red and green. The green light is the power indicator. The green light flashes after the driver is powered on. The red light is the fault indicator. The red light flickers when there is a fault in the gear and the encoder is misaligned. After the fault is cleared, the red light goes out. When an alarm occurs on the drive, it must be powered on again to clear the fault.
Installation Notes	Dimensions: 203 * 147 * 78mm, mounting hole spacing 193. Can be horizontal or vertical installation, but it should be close to the metal cabinet for better cooling

## Operating current setting

RMS(A)	SW1	SW2	SW3	SW4
0.7	on	on	on	on
1.1	off	on	on	on
1.6	on	off	on	on
2.0	off	off	on	on
2.4	on	on	off	on
2.8	off	on	off	on
3.2	on	off	off	on
3.6	off	off	off	on
4.0	on	on	on	off
4.5	off	on	on	off
5.0	on	off	on	off
5.4	off	off	on	off
5.8	on	on	off	off
6.2	off	on	off	off
6.6	on	off	off	off
7.0	off	off	off	off

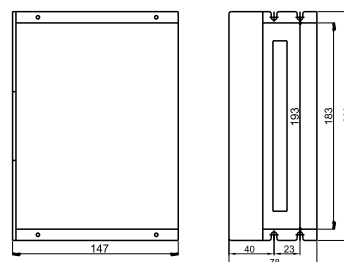
## Microstep subdivision setting

Steps / Turn	SW5	SW6	SW7	SW8
400	on	on	on	on
500	off	on	on	on
600	on	off	on	on
800	off	off	on	on
1000	on	on	off	on
1200	off	on	off	on
2000	on	off	off	on
3000	off	off	off	on
4000	on	on	on	off
5000	off	on	on	off
6000	on	off	on	off
10000	off	off	on	off
12000	on	on	off	off
20000	off	on	off	off
30000	on	off	off	off
60000	off	off	off	off

## Driver operating status LED indication

LED status	Drive status
● Green light	Drive is not enabled
●● Green flashing	The driver is working properly
●●● 1green, 1red	Drive overcurrent
●●●● 1 green, 2 red	Driver input voltage overvoltage
●●●●● 1 green, 3 red	Drive internal voltage error

## Installation size:



## 42 series two-phase stepping motor

### General specifications

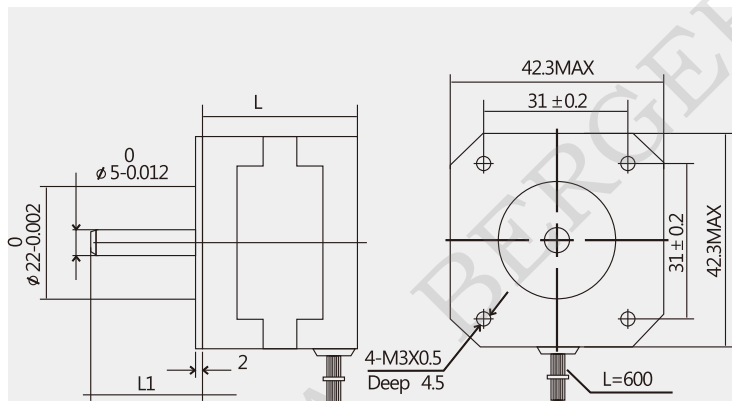
Step accuracy	±5% (Whole step, Empty load)
Temperature rise	80 °C Max
Ambient temperature	-10 °C — +50 °C
Insulation resistance	100MΩmin. 500VDC
Pressure resistance	500VAC for one minute
Radial runout	0.06 Max. (450g-load)
Axial runout	0.08 Max. (450g-load)



### Technical specifications

Model	Phase	Step angle (°)	Holding torque N.M	Rated current A	Phase inductance mH	Phase resistance Ohm	Number of leads	Rotor inertia (g.cm <sup>2</sup> )	Shaft diameter mm	Motor weight Kg	Body length L(mm)	Axis length L1(mm)
42BG40	2	1.8	0.22	1.2	5.5	2.5	4	57	5	0.24	40	24
42BG48	2	1.8	0.34	1.5	5.0	2.6	4	82	5	0.34	48	24
42BG60	2	1.8	0.71	1.8	4.8	2.0	4	114	5	0.5	60	24

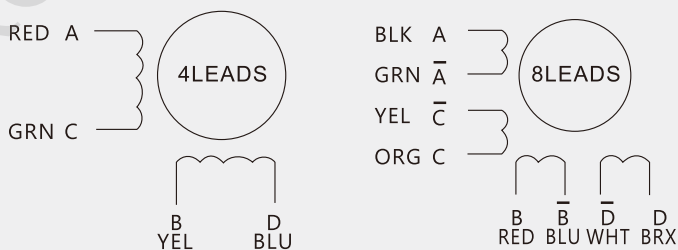
### Dimensions



### Lead connection

connection	Driver wiring	Corresponding motor leads	Applications
Tandem	A+	A	Low speed
	A-	C	
	B+	B	
	B-	D	
	Vacant	$\bar{A}\bar{C}$ connect	
in parallel	Vacant	$\bar{B}\bar{D}$ connect	high speed
	A+	$\bar{A}\bar{C}$	
	A-	$\bar{A}\bar{C}$	
	B+	$\bar{B}\bar{D}$	
	B-	$\bar{B}\bar{D}$	

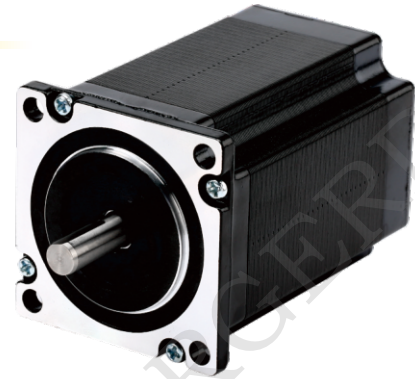
### Wiring diagram



## 57 series two-phase stepping motor

### General specifications

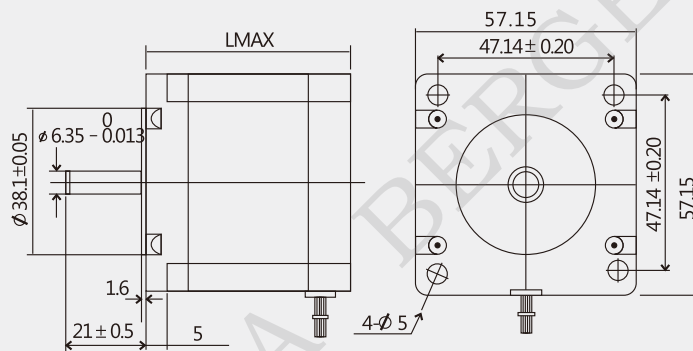
Step accuracy	±5% (Whole step, Empty load)
Temperature rise	80 °C Max
Ambient temperature	-10 °C — +50 °C
Insulation resistance	100MΩmin. 500VDC
Pressure resistance	500VAC for one minute
Radial runout	0.06 Max. (450g-load)
Axial runout	0.08 Max. (450g-load)



### Technical specifications

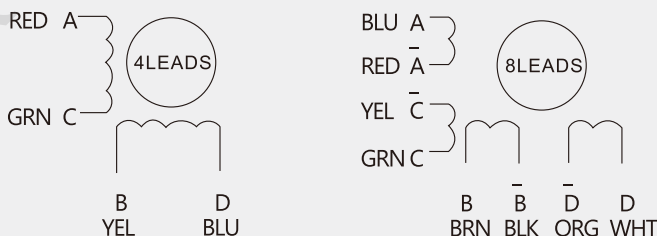
Model	Phase	Step angle (°)	Holding torque N.M	Rated current A	Phase inductance mH	Phase resistance Ohm	Number of leads	Rotor inertia (g.cm <sup>2</sup> )	Shaft diameter mm	Motor weight Kg	Body length L(mm)
57BG55	2	1.8	0.9	2.8	1.2	0.8	4	260	6.35	0.6	55
57BG76	2	1.8	1.5	2.8	2.1	1.0	4	460	6.35	1.0	76
57BG80	2	1.8	2.0	4.0	1.8	0.8	4	460	8	1.1	80

### Dimensions



\*The above is only the representative product 57BG80 motor shaft diameter is 8mm, with a platform.

### Wiring diagram



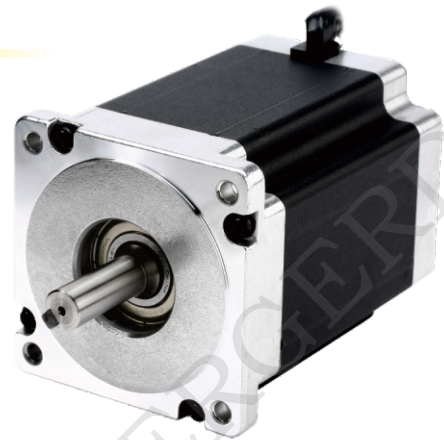
### Lead connection

connection	Driver wiring	Corresponding motor leads	Applications
Tandem	A+	A	Low speed
	A-	C	
	B+	B	
	B-	D	
	Vacant	$\overline{AC}$ connect	
in parallel	Vacant	$\overline{BD}$ connect	high speed
	A+	$\overline{AC}$	
	A-	$\overline{AC}$	
	B+	$\overline{BD}$	
	B-	$\overline{BD}$	

## 86 series two-phase stepping motor

### General specifications

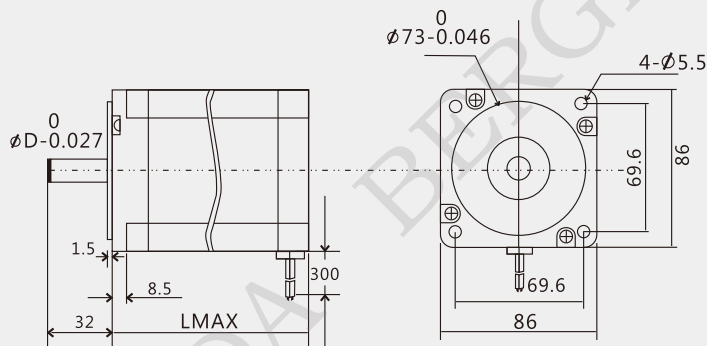
Step accuracy	±5% (Whole step, Empty load)
Temperature rise	80 °C Max
Ambient temperature	-10 °C — +50 °C
Insulation resistance	100MΩmin. 500VDC
Pressure resistance	500VAC for one minute
Radial runout	0.06 Max. (450g-load)
Axial runout	0.08 Max. (450g-load)



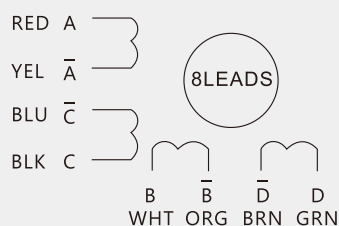
### Technical specifications

Model	Phase	Step angle (°)	Holding torque N.M	Rated current A	Phase inductance mH	Phase resistance Ohm	Number of leads	Rotor inertia (g.cm <sup>2</sup> )	Shaft diameter mm	Motor weight Kg	Body length L(mm)
86BG65	2	1.8	3.5	2.8	3.9	1.4	8	800	0.8	2	65
86BG80	2	1.8	4.5	4.2	3.5	0.8	8	1400	1.3	2.3	80
86BG118	2	1.8	8.5	4.9	5.2	0.95	8	2800	2.5	3.8	118
86BG156	2	1.8	12	4.9	8.7	1.4	8	4000	3.8	5.4	156

### Dimensions



### Wiring diagram

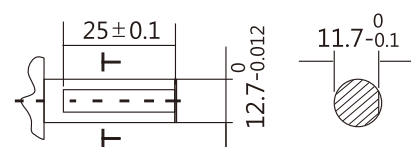
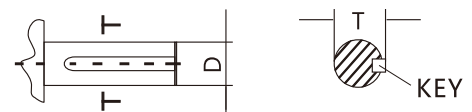


### Lead connection

connection	Driver wiring	Corresponding motor leads	Applications
Tandem	A+	A	Low speed
	A-	C	
	B+	B	
	B-	D	
	Vacant	$\bar{A}\bar{C}$ connect	
in parallel	Vacant	$\bar{B}\bar{D}$ connect	high speed
	A+	$A\bar{C}$	
	A-	$\bar{A}C$	
	B+	$B\bar{D}$	
	B-	$\bar{B}D$	

### Motor shaft detailed parameters

	T	KEY	D
86BG65	/	/	9.5
86BG80	/	/	12.7
86BG118	14.7	5*5*25	12.7
86BG156	17.875	5*5*25	15.875



# 110/130 series three-phase stepping motor

## General specifications

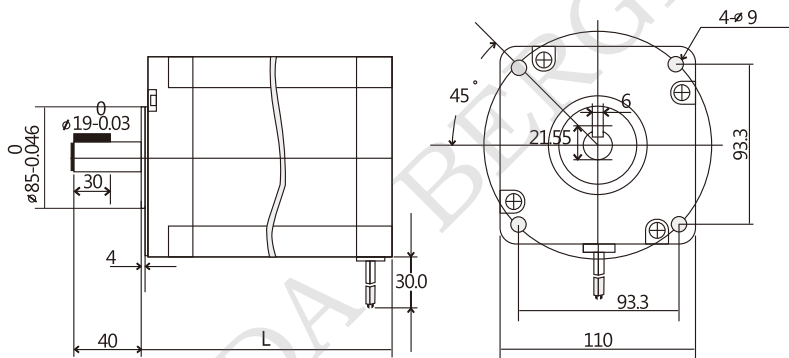
Step accuracy	±5% (Whole step, Empty load)
Temperature rise	80 °C Max
Ambient temperature	-10 °C — +50 °C
Insulation resistance	100MΩmin. 500VDC
Pressure resistance	500VAC for one minute
Radial runout	0.06 Max. (450g-load)
Axial runout	0.08 Max. (450g-load)



## Technical specifications

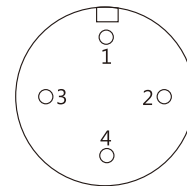
Model	Phase	Step angle (°)	Holding torque N.M	Rated current A	Phase inductance mH	Phase resistance Ohm	Number of leads	Rotor inertia (g.cm <sup>2</sup> )	Shaft diameter mm	Motor weight Kg	Body length L(mm)
3H110BG150	3	1.2	12	6	2.7	0.6	4	9.7	19	6.3	151
3H110BG185	3	1.2	16	6.5	3.0	0.7	4	13.6	19	8.5	185
3H110BG220	3	1.2	20	6.9	2.5	0.6	4	17.4	19	10.7	219
3H130BG168	3	1.2	23	5.0	7.3	1.8	4	25.0	19	13.2	168
3H130BG225	3	1.2	36	6.0	17.9	2.8	4	35.0	19	18.4	225
3H130BG280	3	1.2	50	6.0	21.5	21.5	4	45.5	19	22.8	280

## Dimensions

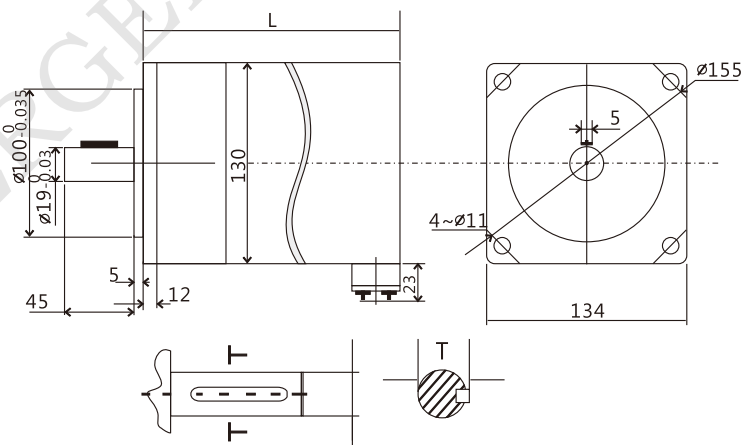


## Wiring diagram

Driver wiring	Corresponding motor leads
U	1
V	2
W	3
PE	4

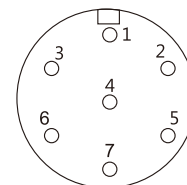


## Dimensions



## Wiring diagram

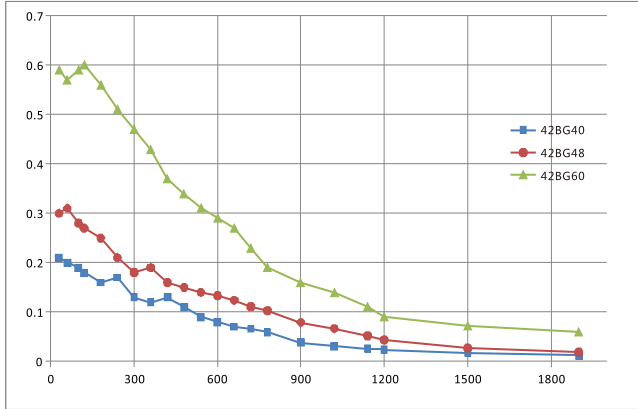
Driver wiring	Corresponding motor leads
U	1
V	3
W	5
PE	7



T = 21  
KEY=5×5×30

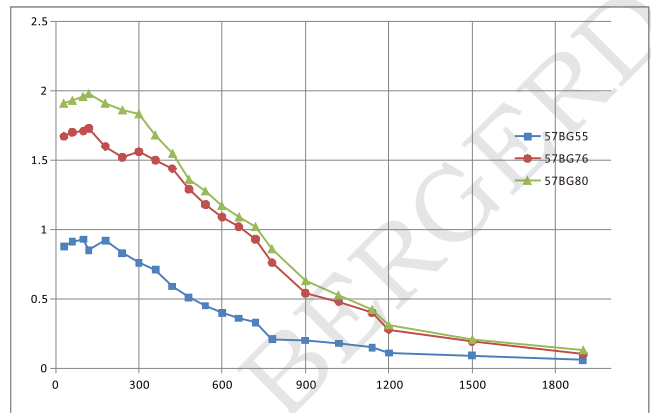
# Bergerda stepping motor torque curve

### 42 Series two-phase stepping motor torque curve



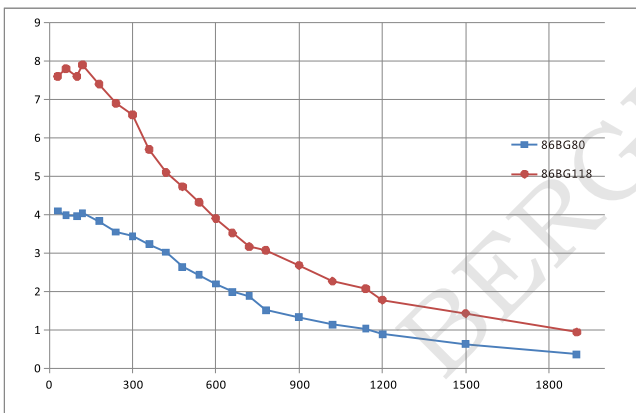
Drive : 2NS320      Current : Rated  
Voltage : 24V DC      Mirco step : 1600

### 57 Series two-phase stepping motor torque curve



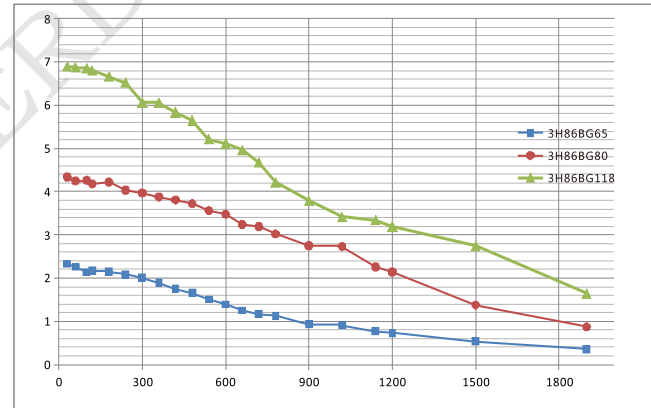
Drive : 2NS556      Current : Rated  
Voltage : 36V DC      Mirco step : 1600

### 86 Series two-phase stepping motor torque curve



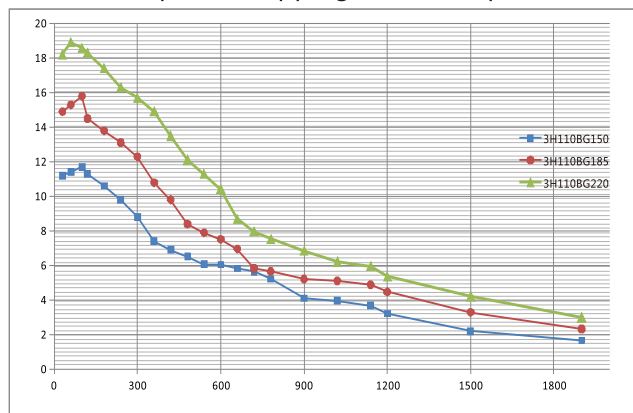
Drive : 2NS860      Current : Rated  
Voltage : 48V AC      Mirco step : 1600

### 86 Three-phase stepping motor torque curve



Drive : 3NS860      Current : Rated  
Voltage : 48V AC      Mirco step : 1600

### 110 Three-phase stepping motor torque curve



Drive : 3NS2270      Current : Rated  
Voltage : 220V AC      Mirco step : 1600

# Stepping motor application case

The independent research and development of the company's motion controller, AC servo drive, AC servo motor has been widely used in textile packaging, CNC machine tools, printing, embroidery, sculpture, electronic manufacturing and other automated machinery.



Embroidery machine



Industrial robot



laser cutter



Laser welding machine



Silk printer



Engraving machine



Flying-Probe Tester



LED Mounter



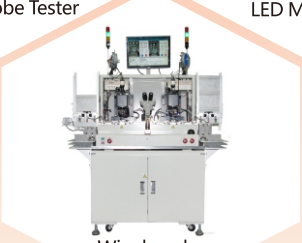
CNC machine tools



CNC machining center



AOI detection



Wire bonder



Die Bonder

# Our market



COMMITTED TO MACHINE INTELLIGENCE, FOCUS MOTOR CONTROL



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