Kinco

Stepper System

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Kinco®

Stepper System

Product Catalog

Kinco Automation（Shanghai）Ltd.

Corporate Profile

Kinco Automation (Shanghai) Ltd. and its subsidiary, Kinco Electric (Shenzhen) Ltd., are private high-tech enterprises specialized in the research, development, and production of automation products. Kinco controls such companies as JAT Kinco Electric Shenzhen Ltd., and Kinavo Servo Motor (Changzhou) Ltd., and owns two well-known brands, eView and Kinco. Kinco has established full line of automation products such as industrial human-machine interfaces, AC servo systems, stepper systems, PLC and industrial fieldbus products with proprietary intellectual property rights. Kinco has become a leading supplier of machine automation solutions in China.

Undertaking the mission of "Providing automation solutions to global customers", Kinco focuses on the development of automation technology since its founding. Now Kinco has acquired technology and knowledge for control, drive, human-machine interface and system integration. By adopting international standards and following the trends in automation industry, we developed PLC products compatible with IEC-61131-3 standard, intellectual AC servo drives, leading HMI products in China and fieldbus products. Kinco is capable of making customized products/solutions/services fit the customer's needs best based on our technology platform.

Kinco has established R&D centers in Shenzhen, Shanghai, Beijing, Changzhou and Germany. We implement total quality management measures complying with ISO9001 standard throughout the marketing, R&D, production, and sales processes. We support our customers at home with a branch and distributor system covering mainland China. We appoint reliable partners to be distributors in overseas markets. Kinco is a customer-oriented company, always listening to customers' needs, cooperating with market leaders in emerging industries, providing first-rate automation solutions. Kinco products are widely used in industries such as textile machines, packaging machines, transportation systems and others. Kinco HMI is the No.1 domestic brands in China market. Kinco brand and products have been awarded by renowned media and organizations within the automation community.

Sticking to the business philosophy of "Caring people, pursuing excellence" and the value of "customer intimacy", Kinco advocates the corporate spirit of performance-oriented innovation, cooperation and efficiency. With the vision of "Automation creates wonderful life" in our minds, Kinco is always trying its best to be the partner of your every success and creates values for you.

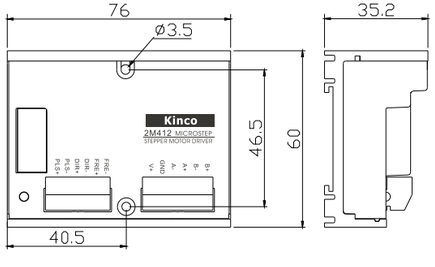
Our Brand: Kinco® | eView®

CONTENTS

Kinco 2M412 Stepper Motor Driver (Two-phase Bipolar Micro Step)

- The maximum supply voltage can reach 40V;
- The bipolar constant current drive mode is taken, with a maximum drive current up to 1.2A per phase, which can drive any two-phase bipolar hybrid stepper motors with a current less than 1.2A;
- The drive output phase current of a motor can be regulated through the DIP switch, to match motors of different specifications;
- A DIP switch is used to set the automatic half current function of motors in statically locked status, which can greatly reduce heat dissipation of the motors;
- A dedicated control chip is used, with a maximum of 256/200 subdivisions. The subdivision function can be set by the DIP switch, to ensure the best operation stability;
- Optical coupling devices are used for the isolation of the input circuit of the control signals to reduce interference of external noises.

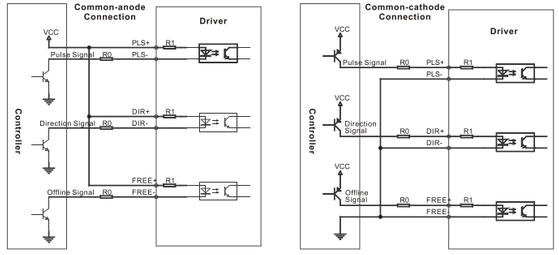
Mechanical Dimensions Unit:mm



Technical Specifications

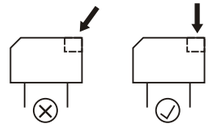
Supply voltage	12 ~ 40V DC
Output phase current	0.2 ~ 1.2A
Control signal input current	6 ~ 16mA
Cooling method	Natural air cooling
Operating environment	Avoid the environment with a great amount of metallic powder, oil mist, or erosive gases
Operating temperature	-10℃ ~ +45℃
Operating humidity	<85% (non-condensing)
Weight	0.13Kg

Typical Wring Diagram



Precautions

1. Please poke the DIP switch correctly as following figure.



2. When the voltage of the control signal is 5V, then the resistors in the connection figure are 0Ω.
When the voltage of the control signal is 24V, then the resistors in the connection figure are 2KΩ.

Functions of DIP Switch

There is a red 8-bit function setting switch at the top of the driver, which is used to set the working mode and parameters of the driver. Please carefully read the reference before use. Do remember to cut off the power before changing the settings of the DIP switch.

The front view of the DIP switch is as follows:

Serial Number	Function of ON	Function of OFF	Remarks
DIP1~DIP4	Subdivision setting	Subdivision setting	
DIP5	Half current of static current	Full current of static current	
DIP6~DIP8	Output current setting	Output current setting	

The subdivision setting table			DIP1 is ON	DIP1 is OFF
DIP2	DIP3	DIP4	subdivision	subdivision
ON	ON	ON	N/A*	2
OFF	ON	ON	4	4
ON	OFF	ON	8	5
OFF	OFF	ON	16	10
ON	ON	OFF	32	25
OFF	ON	OFF	64	50
ON	OFF	OFF	128	100
OFF	OFF	OFF	256	200

* N/A indicates invalid. The rotary switch is forbidden setting as N/A.

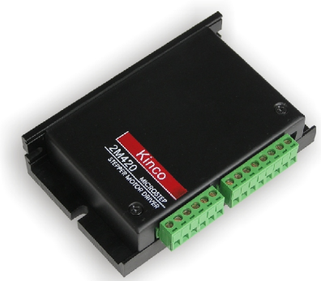
Current Regulation

There is a red 8-bit function setting switch at the top of the driver, which is used to set the working mode and parameters of the driver. Please carefully read the reference before use. Do remember to cut off the power before changing the settings of the DIP switch.

The front view of the DIP switch is as follows:

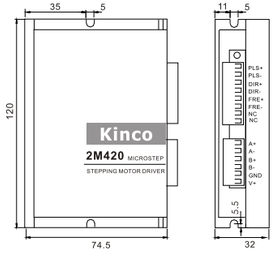
The output phase current setting table			
DIP6	DIP7	DIP8	Output Current
OFF	OFF	OFF	0.20A
OFF	OFF	ON	0.35A
OFF	ON	OFF	0.50A
OFF	ON	ON	0.65A
ON	OFF	OFF	0.80A
ON	OFF	ON	0.90A
ON	ON	OFF	1.00A
ON	ON	ON	1.20A

Kinco 2M420 Stepper Motor Driver (Two-phase Bipolar Micro Step)



- The maximum supply voltage can reach 40V, which can provide better dynamic drive performance;
- The bipolar constant current drive mode is taken, with a maximum drive current up to 2.5A per phase, which can drive any two-phase bipolar hybrid stepper motors with a current less than 2.5A;
- The drive output phase current of a motor can be regulated through the DIP switch, to match motors of different specifications;
- A DIP switch is used to set the automatic half current function of motors in statically locked status, which can greatly reduce heat dissipation of the motors;
- A dedicated control chip is used, with a maximum of 256/200 subdivisions. The subdivision function can be set by the DIP switch, to ensure the best operation stability;
- Optical coupling devices are used for the isolation of the input circuit of the control signals to reduce interference of external noises.

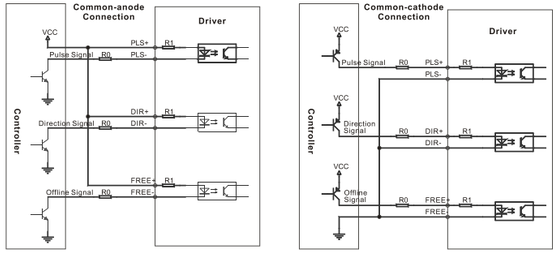
Mechanical Dimensions Unit:mm



Technical Specifications

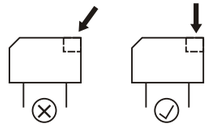
Supply voltage	24 ~ 40V DC
Output phase current	0.3 ~ 2.5A
Control signal input current	6 ~ 16mA
Cooling method	Natural air cooling
Operating environment	Avoid the environment with a great amount of metallic powder, oil mist, or erosive gases
Operating temperature	-10℃ ~ +45℃
Operating humidity	<85% (non-condensing)
Weight	0.4Kg

Typical Wring Diagram



Precautions

1. Please poke the DIP switch correctly as following figure.

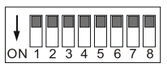


2. When the voltage of the control signal is 5V, then the resistors in the connection figure are 0Ω.
When the voltage of the control signal is 24V, then the resistors in the connection figure are 2KΩ.

Functions of DIP Switch

There is a red 8-bit function setting switch at the top of the driver, which is used to set the working mode and parameters of the driver. Please carefully read the reference before use. Do remember to cut off the power before changing the settings of the DIP switch.

The front view of the DIP switch is as follows:



Serial Number	Function of ON	Function of OFF	Remarks
DIP1~DIP4	Subdivision setting	Subdivision setting	
DIP5	Half current of static current	Full current of static current	
DIP6~DIP8	Output current setting	Output current setting	

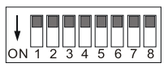
The subdivision setting table			DIP1 is ON	DIP1 is OFF
DIP2	DIP3	DIP4	subdivision	subdivision
ON	ON	ON	N/A*	2
OFF	ON	ON	4	4
ON	OFF	ON	8	5
OFF	OFF	ON	16	10
ON	ON	OFF	32	25
OFF	ON	OFF	64	50
ON	OFF	OFF	128	100
OFF	OFF	OFF	256	200

* N/A indicates invalid. The rotary switch is forbidden setting as N/A.

Current Regulation

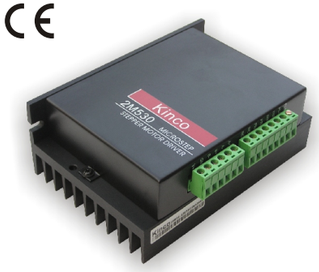
There is a red 8-bit function setting switch at the top of the driver, which is used to set the working mode and parameters of the driver. Please carefully read the reference before use. Do remember to cut off the power before changing the settings of the DIP switch.

The front view of the DIP switch is as follows:



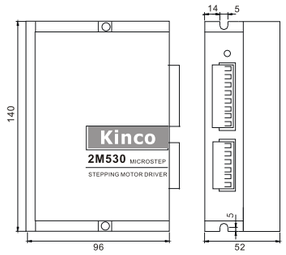
The output phase current setting table			
DIP6	DIP7	DIP8	Output Current
ON	ON	ON	0.3A
ON	ON	OFF	0.6A
ON	OFF	ON	0.8A
ON	OFF	OFF	1.2A
OFF	ON	ON	1.4A
OFF	ON	OFF	1.6A
OFF	OFF	ON	2.0A
OFF	OFF	OFF	2.5A

Kinco 2M530 Stepper Motor Driver (Two-phase Bipolar Micro Step)



- The maximum supply voltage can reach 48V;
- The bipolar constant current drive mode is taken, with a maximum drive current up to 3.5A per phase, which can drive any two-phase bipolar hybrid stepper motors with a current less than 3.5A;
- The drive output phase current of a motor can be regulated through the DIP switch, to match motors of different specifications;
- Supporting automatic half current function of motors in statically locked status, which can greatly reduce heat dissipation of the motors;
- A dedicated control chip is used, with a maximum of 256/200 subdivisions. The subdivision function can be set by the DIP switch, to ensure the best operation stability;
- Supporting offline function so that the output current of a motor can be cut off if necessary;
- Optical coupling devices are used for the isolation of the input circuit of the control signals to reduce interference of external noises.

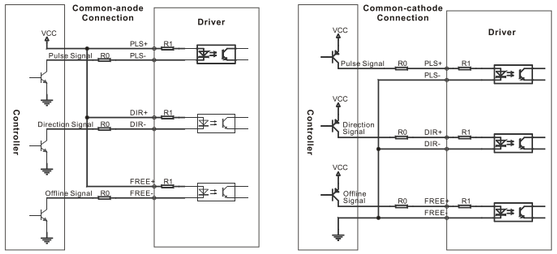
Mechanical Dimensions Unit:mm



Technical Specifications

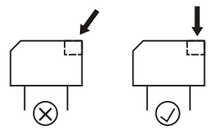
Supply voltage	24 ~ 48V DC
Output phase current	1.2 ~ 3.5A
Control signal input current	6 ~ 16mA
Cooling method	Natural air cooling
Operating environment	Avoid the environment with a great amount of metallic powder, oil mist, or erosive gases
Operating temperature	-10℃ ~ +45℃
Operating humidity	<85% (non-condensing)
Weight	0.7Kg

Typical Wring Diagram



Precautions

1. Please poke the DIP switch correctly as following figure.

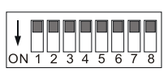


2. When the voltage of the control signal is 5V, then the resistors in the connection figure are 0Ω.
When the voltage of the control signal is 24V, then the resistors in the connection figure are 2KΩ.

Functions of DIP Switch

⚠ There is a red 8-bit function setting switch at the top of the driver, which is used to set the working mode and parameters of the driver. Please carefully read the reference before use. Do remember to cut off the power before changing the settings of the DIP switch.

The front view of the DIP switch is as follows:



Serial Number	Function of ON	Function of OFF	Remarks
DIP1~DIP4	Subdivision setting	Subdivision setting	
DIP5	Half current of static current	Full current of static current	
DIP6~DIP8	Output current setting	Output current setting	

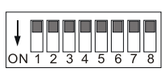
The subdivision setting table			DIP1 is ON	DIP1 is OFF
DIP2	DIP3	DIP4	subdivision	subdivision
ON	ON	ON	N/A*	2
OFF	ON	ON	4	4
ON	OFF	ON	8	5
OFF	OFF	ON	16	10
ON	ON	OFF	32	25
OFF	ON	OFF	64	50
ON	OFF	OFF	128	100
OFF	OFF	OFF	256	200

* N/A indicates invalid. The rotary switch is forbidden setting as N/A.

Current Regulation

⚠ There is a red 8-bit function setting switch at the top of the driver, which is used to set the working mode and parameters of the driver. Please carefully read the reference before use. Do remember to cut off the power before changing the settings of the DIP switch.

The front view of the DIP switch is as follows:



The output phase current setting table			
DIP6	DIP7	DIP8	Output Current
ON	ON	ON	1.2A
ON	ON	OFF	1.5A
ON	OFF	ON	1.8A
ON	OFF	OFF	2.0A
OFF	ON	ON	2.5A
OFF	ON	OFF	2.8A
OFF	OFF	ON	3.0A
OFF	OFF	OFF	3.5A

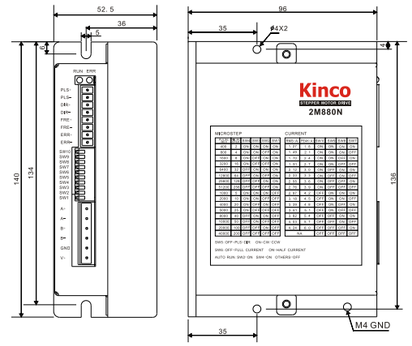
Kinco 2M880N Stepper Motor Driver (Two-phase Bipolar Micro Step)

- High performance,low price.
- Automatic parameter adjustable regulation
- Supporting driver test running function
- Supporting phase memory function
- Supporting PLS+DIR and CW/CCW control signal
- Supporting optocoupler isolation ERR signal output function and interaction with the upper computer
- Supporting half-current function
- Opto-isolation signal input, with pulse response frequency up to 400 KHz
- The maximum micro-step is 256
- With the protection function of over-voltage, under-voltage, over-current, overheat

Technical Specifications

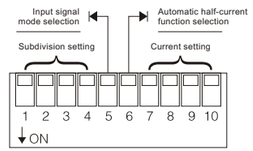
Input voltage		24 ~ 70V DC
Voltage for overvoltage protection		85V
Voltage for undervoltage protection		15V
Temperature for overheat protection		>80℃
Output current (peak,Unit: A)		2.4/2.8/3.2/3.6/4.0/4.4/4.8/ 5.2/5.6/6.0/6.4/6.8/7.2/ 7.6/8.0,total 15 setting values.
Micro step		2/4/5/8/10/16/20/25/32/40/50/64/100/128/200/256, total 16 subdivisions.
Input signal		PLS(CW), DIR(CCW), FREE; Current range:6~16mA
Output signal		ERR, open collector output, maximum current: 20mA
Control		PLS+DIR; CW/CCW
Operation indication		Combination of Run and Error LED.
Protection		Over-voltage, under-voltage, short circuit, overheat
Cooling method		Nature air cooling
Environment	Operation environment	Avoid the environment with great amount of metallic powder, oil mist, or erosive gases.
	Operation humidity	<85%, RH (non-condensing or water drops)
	Operation temperature	0℃ ~ +40℃
	Storage temperature	-20℃ ~ +70℃
Weight (net)		0.71Kg
Dimensions		140 x 96 x 52.5 mm
Ingress protection		IP20

Mechanical Dimensions Unit:mm



Instructions for rotary switch setting

Function setting:
Input signal mode selection: SW5=OFF: Single pulse input (PLS+DIR);
SW5=ON: Double pulse input. (CW/CCW)
Automatic half-current: SW6=ON: valid. SW6=OFF: invalid.
Test running: SW4=ON, SW2=ON, others are OFF: vlaid.



Subdivision setting			SW1=ON	SW1=OFF	Current setting			SW10=ON	SW10=OFF
SW2	SW3	SW4	Subdivision		SW7	SW8	SW9	Current (Peak, unit:A)	
ON	ON	ON	2	5	ON	ON	ON	2.4	5.6
OFF	ON	ON	4	10	OFF	ON	ON	2.8	6.0
ON	OFF	ON	8	20	ON	OFF	ON	3.2	6.4
OFF	OFF	ON	16	25	OFF	OFF	ON	3.6	6.8
ON	ON	OFF	32	40	ON	ON	OFF	4.0	7.2
OFF	ON	OFF	64	50	OFF	ON	OFF	4.4	7.6
ON	OFF	OFF	128	100	ON	OFF	OFF	4.8	8.0
OFF	OFF	OFF	256	200	OFF	OFF	OFF	5.2	NA

* DIP switch is forbidden to set as N/A, or the driver will be alarm automatically.

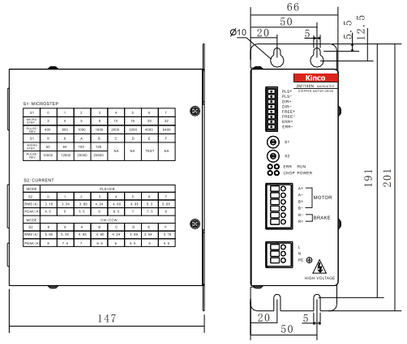
Kinco 2M1180N Stepper Motor Driver (Two-phase Bipolar Micro Step)

- High-performance, low prices;
- The input voltage of 2M1180N is 77VAC~123VAC (single-phase);
- Automatic parameter adjustable regulation;
- Phase memory technology: the driver will record the phase position of the motor when the motor stopped, when re-power the driver, the motor won't shake anymore;
- PLS+DIR and CW/CCW control signal available;
- Supply Optocoupler isolated ERR output signal;
- Automatic semi-current locking, reduce the motor's heat drastically;
- Optocoupler isolated signal input circuit. The maximum frequency of control signal is up to 400k Hz;
- 12 micro-step value, the maximum micro-step value is 128;
- With the protection function of overvoltage, undervoltage, short circuit and heat protection.

Technical Specifications

Parameter		Value
Input voltage		Single phase 77VAC~123VAC, (50Hz)
Output current		4.5A, 5A, 5.5A, 6A, 6.5A, 7A, 7.5A, 8A
Micro step		2/ 4/ 5/ 8/ 10/ 16/ 20/ 32/ 50/ 64/ 100/ 128
Input signal		PLS, DIR, FREE (current limit: 6~16 mA)
Control signal mode		PLS+DIR, CW/CCW
Output signal		Port: ERR (maximum current: 10mA)
Protection		Overvoltage, undervoltage, short circuit and heat protection.
Brake mode *		Available to connect the power resister. Need custom.
Cooling way		Fan cooling
Environment	Operation environment	Avoid the environment with great amount of metallic powder, oil mist, or erosive gases.
	Operation humidity	<85%, RH
	Operation temperature	0℃ ~ +40℃
	Storage temperature	-20℃ ~ +70℃
Weight		1.5Kg
Dimensions		201 x 147 x 66 mm
Ingress protection		IP20

Mechanical Dimensions Unit:mm



Function of Rotary Switch

S1, Micro-step:

S1	0	1	2	3	4	5	6	7
Microstep	2	4	5	8	10	16	20	32
Pulse/rev	400	800	1000	1600	2000	3200	4000	6400
S1	8	9	A	B	C	D	E	F
Microstep	50	64	100	128	NA	NA	TEST	NA
Pulse/rev	10000	12800	20000	25600				

S2, Current:

Mode	PLS+DIR							
S2	0	1	2	3	4	5	6	7
Rms(A)	3.18	3.54	3.89	4.24	4.60	4.95	5.30	5.65
Peak(A)	4.5	5	5.5	6	6.5	7	7.5	8
Mode	CW/CCW							
S2	8	9	A	B	C	D	E	F
Rms(A)	5.65	5.30	4.95	4.60	4.24	3.89	3.54	3.18
Peak(A)	8	7.5	7	6.5	6	5.5	5	4.5

* DIP switch is forbidden to set as N/A, or the driver will be alarm automatically.

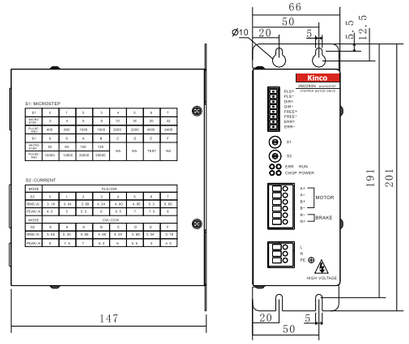
Kinco 2M2280N Stepper Motor Driver (Two-phase Bipolar Micro Step)

- High-performance, low prices;
- The input voltage of 2M2280N is 187VAC~253VAC (single-phase), help you to reduce the cost of transformer;
- Automatic parameter adjustable regulation;
- 2M2280N apply the test running function;
- Phase memory technology: the driver will record the phase position of the motor when the motor stopped, when re-power the driver, the motor won't shake anymore;
- PLS+DIR and CW/CCW control signal available;
- Provide Optocoupler isolated ERR output signal;
- Automatic semi-current locking, reduce the motor's heat drastically;
- Optocoupler isolated signal input circuit. The maximum frequency of control signal is up to 400k Hz;
- 12 micro-step value, the maximum micro-step value is 128;
- With the protection function of overvoltage, undervoltage, short circuit and heat protection.

Technical Specifications

Parameter		Value
Input voltage		Single phase 220V AC ±15%(50Hz) (187VAC~253VAC)
Output current		4.5A, 5A, 5.5A, 6A, 6.5A, 7A, 7.5A, 8A
Micro step		2/ 4/ 5/ 8/ 10/ 16/ 20/ 32/ 50/ 64/ 100/ 128
Input signal		PLS, DIR, FREE (current limit: 6~16 mA)
Control signal mode		PLS+DIR, CW/CCW
Output signal		Port: ERR (maximum current: 10mA)
Protection		Overvoltage, undervoltage, short circuit and heat protection.
Brake mode *		Available to connect the power resister. Need custom.
Cooling way		Fan cooling
Environment	Operation environment	Avoid the environment with great amount of metallic powder, oil mist, or erosive gases.
	Operation humidity	<85%, RH
	Operation temperature	0℃ ~ +40℃
	Storage temperature	-20℃ ~ +70℃
Weight		1.5Kg
Dimensions		201 x 147 x 66 mm
Ingress protection		IP20

Mechanical Dimensions Unit:mm



Function of Rotary Switch

S1, Micro-step:

S1	0	1	2	3	4	5	6	7
Microstep	2	4	5	8	10	16	20	32
Pulse/rev	400	800	1000	1600	2000	3200	4000	6400
S1	8	9	A	B	C	D	E	F
Microstep	50	64	100	128	NA	NA	TEST	NA
Pulse/rev	10000	12800	20000	25600				

S2, Current:

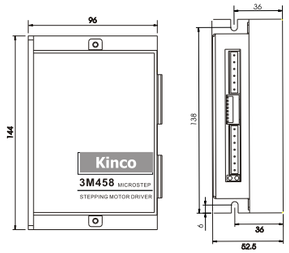
Mode	PLS+DIR							
S2	0	1	2	3	4	5	6	7
Rms(A)	3.18	3.54	3.89	4.24	4.60	4.95	5.30	5.65
Peak(A)	4.5	5	5.5	6	6.5	7	7.5	8
Mode	CW/CCW							
S2	8	9	A	B	C	D	E	F
Rms(A)	5.65	5.30	4.95	4.60	4.24	3.89	3.54	3.18
Peak(A)	8	7.5	7	6.5	6	5.5	5	4.5

* DIP switch is forbidden to set as N/A, or the driver will be alarm automatically.

Kinco 3M458 Stepper Motor Driver (Three-phase)

- The AC servo drive principle is used, providing AC servo rotation characteristics and three-phase sine wave current output;
- The internal drive DC voltage reaches 40V, which can provide better high-speed;
- Supporting automatic half current function of motors in statically locked status, which can greatly reduce heat dissipation of the motors;
- Supporting subdivision function up to 10,000 steps/revolution; the subdivision function can be set through the DIP switch to ensure the best operation stability;
- It has little the resonance and creeping area common to stepper motors. The output phase current can be set through the DIP switch, featuring very low operation noise, closing to the AC servo level;
- Optical coupling devices are used for the isolation of the input circuit of the control signals to reduce interference of external noises;
- The sine current drive mode is taken so that the no-load start frequency of a motor can reach about 5KHz (100 steps/revolution).

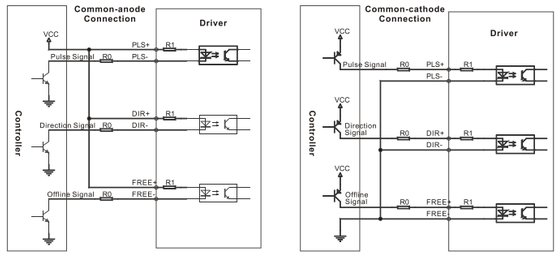
Mechanical Dimensions Unit:mm



Technical Specifications

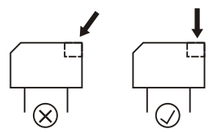
Supply voltage	24 ~ 40V DC
Output phase current	3.0 ~ 5.8A
Control signal input current	6 ~ 16mA
Cooling method	Natural air cooling
Operating environment	Avoid the environment with a great amount of metallic powder, oil mist, or erosive gases
Operating temperature	-10℃ ~ +45℃
Operating humidity	<85% (non-condensing)
Weight	0.7Kg

Typical Wring Diagram



Precautions

1. Please poke the DIP switch correctly as following figure.

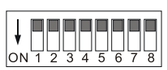


2. When the voltage of the control signal is 5V, then the resistors in the connection figure are 0Ω.
When the voltage of the control signal is 24V, then the resistors in the connection figure are 2KΩ.

Functions of DIP Switch

⚠ There is a red 8-bit DIP function setting switch in the middle of the connecting terminal at a side of the driver. It can be used to set the working mode and parameters of the driver. Please carefully read the reference before use.

The front view of the DIP switch is as follows:



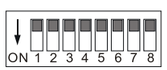
Serial Number	Function of ON	Function of OFF	Remarks
DIP1~DIP3	Subdivision setting	Subdivision setting	
DIP4	Full current of static current	Half current of static current	
DIP5~DIP8	Output current setting	Output current setting	

The subdivision setting table			
DIP1	**DIP2**	**DIP3**	**Subdivision**
ON	ON	ON	400 steps/revolution
ON	ON	OFF	500 steps/revolution
ON	OFF	ON	600 steps/revolution
ON	OFF	OFF	1000 steps/revolution
OFF	ON	ON	2000 steps/revolution
OFF	ON	OFF	4000 steps/revolution
OFF	OFF	ON	5000 steps/revolution
OFF	OFF	OFF	10000 steps/revolution

Current Regulation

⚠ There is a red 8-bit DIP function setting switch in the middle of the connecting terminal at a side of the driver. It can be used to set the working mode and parameters of the driver. Please carefully read the reference before use.

The front view of the DIP switch is as follows:



The output phase current setting table				
DIP5	**DIP6**	**DIP7**	**DIP8**	**Output Current**
OFF	OFF	OFF	OFF	3.0A
OFF	OFF	OFF	ON	4.0A
OFF	OFF	ON	ON	4.6A
OFF	ON	ON	ON	5.2A
ON	ON	ON	ON	5.8A

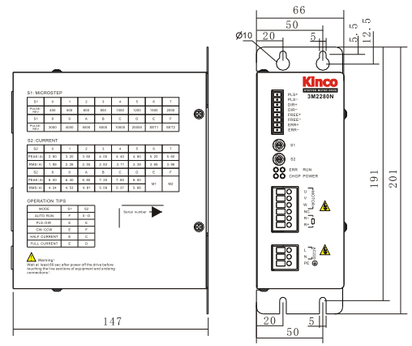
Kinco 3M2280N Stepper Motor Driver (Three-phase)

- High performance, low cost, and diversified functions;
- The input voltage of 3M2280N is 187V~253V;
- Automatic parameter adjustable regulation;
- Driver test running function;
- Phase memory function;
- PLS+DIR and CW/CCW control signal available;
- Optocoupler isolation I/O. There is an ERR signal output;
- The driver will reduce the phase current of the motor by a half in 1.5 seconds;
- Opto-isolation signal input, with pulse response frequency up to 400 KHz;
- 14 micro-step value, the maximum micro-step value is 20000 pulse/rev. The maximum output phase current is 8A(Peak);
- With the protection function of over-voltage, under-voltage, over-current, overheat;
- With step smooth filter, can smooth the input pulse, reduce the transient motion of motor, make the motor runs more smoothly.

Technical Specifications

Parameter	Description
Input voltage	Single phase 220V AC ±15% (50Hz)(187VAC~253VAC)
Phase current	2.8, 3.2, 3.6, 4.0, 4.4, 4.8, 5.2, 5.6, 6, 6.4, 6.8, 7.2, 7.6 8.0 (peak, unit: A)
Micro step	400, 500, 600, 800, 1000, 1200, 1500, 2000, 3000, 4000, 5000, 6000, 10000, 20000 (unit: pulse/rev)
Input signal	Three control signal ports: PLS(CW)/DIR(CCW)/FRE; current range: 6 ~16mA
Control signal input method	PLS+DIR; CW/CCW
Output signal	ERR, open collector output, max current: 10mA
Automatic half-current	The driver will reduce the phase current of the motor by a half in 1.5 seconds
Protection	Over-voltage, under-voltage, short circuit, and overheat protection
Absorbing circuit*	Need customize, used to absorb the energy feed back by the motor
Cooling method	Forced air cooling
Environment — Operation environment	Avoid the environment with great amount of metallic powder, oil mist, or erosive gases.
Environment — Operation humidity	<85%, RH (non-condensing or water drops)
Environment — Operation temperature	0℃ ~ +40℃
Environment — Storage temperature	-20℃ ~ +70℃
Weight (net)	1.5Kg
Dimensions	201 x 147 x 66 mm
Ingress protection	IP20

Mechanical Dimensions Unit:mm



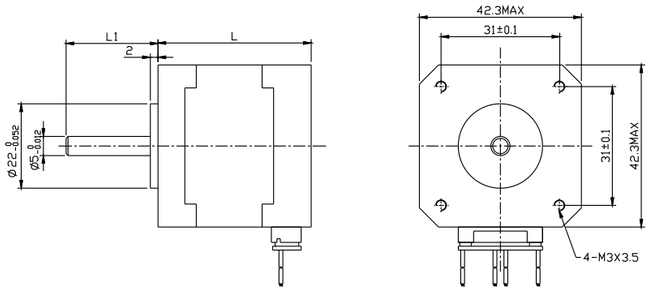
Operation Table

S1, Micro-step:								
S1	0	1	2	3	4	5	6	7
Pulse/rev	400	500	600	800	1000	1200	1500	2000
S1	8	9	A	B	C	D	E	F
Pulse/rev	3000	4000	5000	6000	10000	20000	SET1	SET2

S2, Current:								
Mode	PLS+DIR							
S2	0	1	2	3	4	5	6	7
Peak(A)	2.80	3.20	3.60	4.00	4.40	4.80	5.20	5.60
Rms(A)	1.98	2.26	2.55	2.83	3.11	3.39	3.68	3.96
Mode	CW/CCW							
S2	8	9	A	B	C	D	E	F
Peak(A)	6.00	6.40	6.80	7.20	7.60	8.00	M1	M2
Rms(A)	4.24	4.53	4.81	5.09	5.37	5.66		

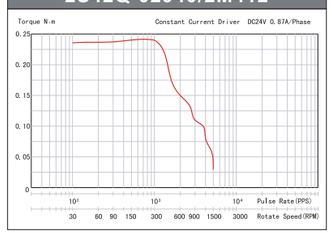
Mode	S1	S2	Method
Auto Run	F	0~D	Set the s1&s2 as S1=F,S2=0~D when driver is power off, then power on the driver, the motor will run automatically.
PLS+DIR	E	E	Set S1 and S2 as the "MODE settings (as the left table)" when driver is power off, then power on the driver, the 4 standards LED will run as: , this means the mode setting is success, then reboot the driver, the driver will work in setting mode.
CW/CCW	E	F	
HALF CURRENT	E	C	
FULL CURRENT	E	D	
Step smooth filter enable	F	F	Enable smoothing acceleration/ deceleration function.
Step smooth filter disable	F	E	Enable immediately response mode.

Kinco Two-phase Stepper Motor /42 Series

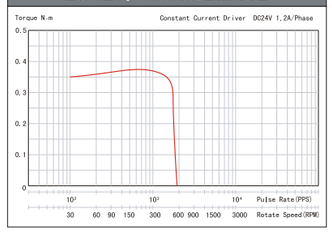


Technical Specifications	2S42Q-03848	2S42Q-02940
Step angle	1.8°±5%	1.8°±5%
Phase current (A)	1.2	0.87
Holding torque (Nm)	0.32	0.24
Damping torque (Nm)	0.02	0.015
Winding resistance (Ω)	3.2±10%	3.3±10%
Winding inductance (mH)	6.0±20%	5.0±20%
Motor inertia (kg.cm²)	0.08	0.06
Motor length L (mm)	48	40
Motor length L1 (mm)	24±0.5	22±0.5
Number of lead wires	4	4
Insulation class	B	
Withstand voltage level	300V AC 1S 5mA	
Max. axial load (N)	10	
Max. radial load (N)	21	
Operating temperature	-20℃ ~ 50℃	
Surface temperature rise	Max.80℃ (rated phase current after two phases are connected)	
Insulation impedance	Minimum 100MΩ, 500V DC	
Weight (kg)	0.34	0.24
Lead wire length (mm)	400±5	500±3

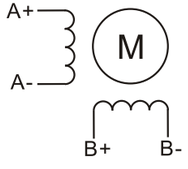
Torque-frequency Curve of 2S42Q-02940/2M412



Torque-frequency Curve of 2S42Q-03848/2M412



Motor Cable



Four lead wires of Two-phase Motor

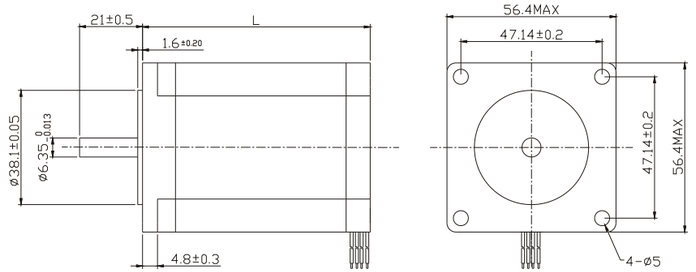
2S42Q-03848

Wire Color	Motor Signal
Brown	A+
Orange	A-
Grey	B+
Green	B-

2S42Q-02940

Wire Color	Motor Signal
Red	A+
Yellow	A-
Orange	B+
Brown	B-

Kinco Two-phase Stepper Motor /56 Series

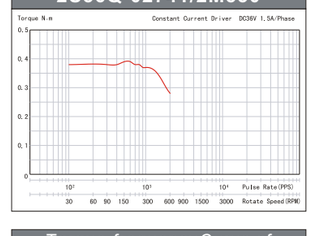


Note: Where, the shaft diameter of **2S56Q-030B5** is 8mm.

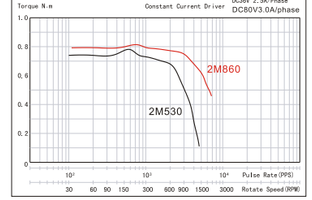
Technical Specifications	2S56Q-030B5	2S56Q-02976	2S56Q-02054	2S56Q-02741
Step angle	1.8°±5%	1.8°±5%	1.8°±5%	1.8°±5%
Phase current (A)	6.0	3.0	3.0	1.5
Holding torque (Nm)	2.5	1.5	0.9	0.5
Damping torque (Nm)	0.12	0.07	0.04	0.02
Winding resistance (Ω)	0.5±10%	0.95±15%	0.65±15%	1.8±10%
Winding inductance (mH)	1.8±20%	3.4±20%	2.5±20%	4.1±20%
Motor inertia (kg.cm²)	0.75	0.46	0.26	0.14
Motor length L (mm)	111	76	54	41
Number of lead wires	4			
Insulation class	B			
Withstand voltage level	600V AC 1S 5mA			
Max. axial load (N)	15			
Max. radial load (N)	75			
Operating temperature	-20℃ ~ 50℃			
Surface temperature rise	Max.80℃ (rated phase current after two phases are connected)			
Insulation impedance	Minimum 100MΩ, 500V DC			
Weight (kg)	1.5	1.0	0.6	0.42
Lead wire length (mm)	300±10	300±10*		

* The outlet wire of2S56Q-02741 is in plug-inform

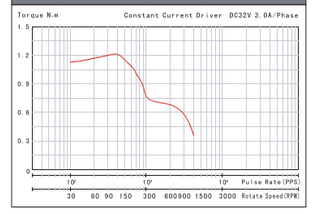
Torque-frequency Curve of 2S56Q-02741/2M530



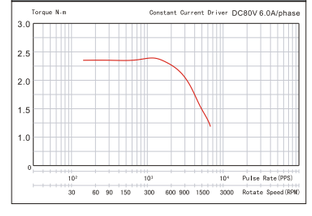
Torque-frequency Curve of 2S56Q-02054/2M530 2S56Q-02054/2M860



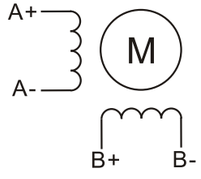
Torque-frequency Curve of 2S56Q-02976/2M530



Torque-frequency Curve of 2S56Q-030B5/2M860

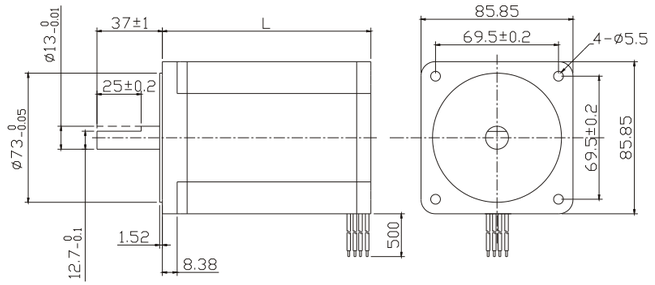


Motor Cable



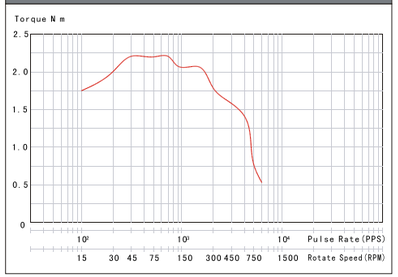
Four lead wires of Two-phase Motor

Wire Color	Motor Signal
Red	A+
Blue	A-
Green	B+
Black	B-

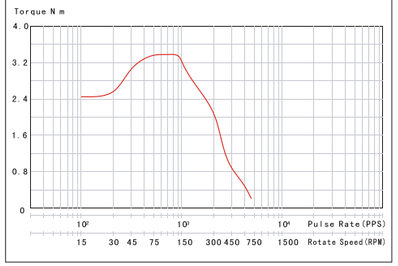


Technical Specifications	2S86Q-069B8	2S86Q-05180	2S86Q-03865
Step angle	1.8°±5%	1.8°±5%	1.8°±5%
Phase current (A)	3.0	3.0	3.0
Holding torque (Nm)	8.5	4.5	3.4
Damping torque (Nm)	0.24	0.12	0.08
Winding resistance (Ω)	2.3±10%	1.7±10%	1.25±10%
Winding inductance (mH)	26±20%	16±20%	7.0±20%
Motor inertia (kg.cm²)	3.4	1.4	1.0
Motor length L (mm)	118	80	65
Number of lead wires	4		
Insulation class	B		
Withstand voltage level	1200V AC 1S 5mA		
Max. axial load (N)	60		
Max. radial load (N)	220		
Operating temperature	-20℃ ~ 50℃		
Surface temperature rise	Max.80℃ (rated phase current after two phases are connected)		
Insulation impedance	Minimum 100MΩ, 500V DC		
Weight (kg)	3.7	2.3	1.7

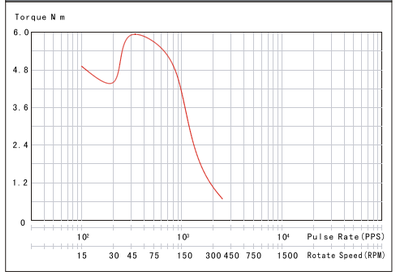
Torque-frequency Curve of
2S86Q-03865/2M530



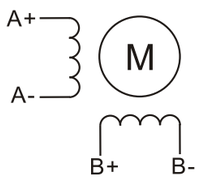
Torque-frequency Curve of
2S86Q-05180/2M530



Torque-frequency Curve of
2S86Q-069B8/2M530

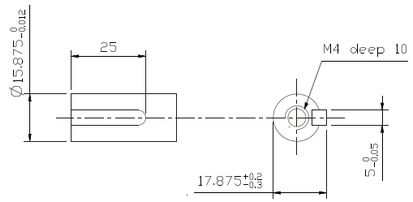


Motor Cable



Four lead wires of Two-phase Motor

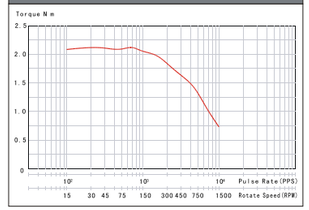
Wire Color	Motor Signal
Black	A+
Green	A-
Red	B+
Blue	B-



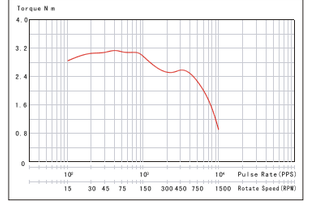
Note: Where, the shaft diameter of **2S86Q-051F6** is 15.875mm, and key is a 5x5x25mm flat key.

Technical Specifications	2S86Q-051F6	2S86Q-030B8	2S86Q-03080	2S86Q-01865
Step angle	1.8°±5%	1.8°±5%	1.8°±5%	1.8°±5%
Phase current (A)	6.0	6.0	6.0	6.0
Holding torque (Nm)	12.8	8.5	4.5	3.1
Damping torque (Nm)	0.36	0.24	0.12	0.08
Winding resistance (Ω)	0.85±10%	0.6±10%	0.38±10%	0.3±10%
Winding inductance (mH)	10±20%	6±20%	3.5±20%	1.7±20%
Motor inertia (kg.cm²)	4.0	3.4	1.4	1.0
Motor length L (mm)	156	118	80	65
Number of lead wires	4			
Insulation class	B			
Withstand voltage level	1200V AC 1S 5mA			
Max. axial load (N)	60			
Max. radial load (N)	220			
Operating temperature	-20℃ ~ 50℃			
Surface temperature rise	Max.80℃ (rated phase current after two phases are connected)			
Insulation impedance	Minimum 100MΩ, 500V DC			
Weight (kg)	5.3	3.7	2.3	1.7

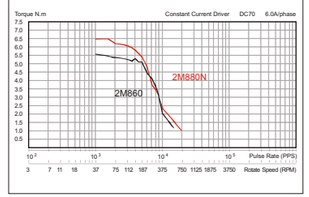
Torque-frequency Curve of
2S86Q-01865/2M860



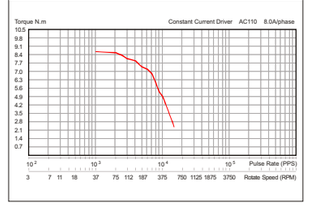
Torque-frequency Curve of
2S86Q-03080/2M860



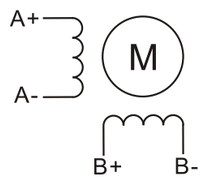
Torque-frequency Curve of (8 subdivisions)
2S86Q-030B8/2M880N&2M860N



Torque-frequency Curve of (8 subdivisions)
2S86Q-051F6/2M1180N



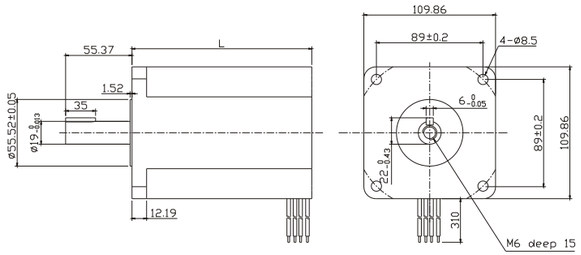
Motor Cable



Four lead wires of Two-phase Motor

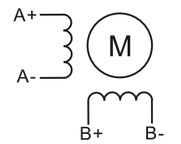
Wire Color	Motor Signal
Black	A+
Green	A-
Red	B+
Blue	B-

Kinco Two-phase Stepper Motor /110 Series



Motor Cable

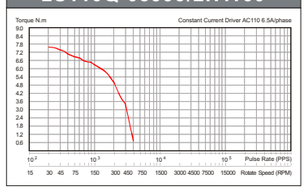
Wire Color	Motor Signal
Black	A+
Green	A-
Red	B+
Blue	B-



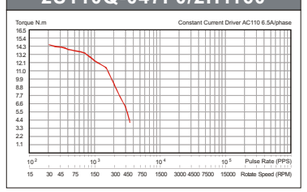
Four lead wires of Two-phaseMotor

Technical Specifications	2S110Q-054K1	2S110Q-047F0	2S110Q-03999
Step angle	1.8°±5%	1.8°±5%	1.8°±5%
Phase current (A)	8.0	6.5	5.5
Holding torque (Nm)	30.0	21.0	11.7
Damping torque (Nm)	0.75	0.59	0.3
Winding resistance (Ω)	0.67±10%	0.72±10%	0.7±10%
Winding inductance (mH)	11±20%	12.8±20%	9.8±20%
Motor inertia (kg.cm²)	16.2	10.9	5.5
Motor length L (mm)	201	150	99
Number of lead wires	4		
Insulation class	B		
Withstand voltage level	1200V AC 1S 5mA		
Max. axial load (N)	60		
Max. radial load (N)	220		
Operating temperature	-20℃ ~ 50℃		
Surface temperature rise	Max.80℃ (rated phase current after two phases are connected)		
Insulation impedance	Minimum 100MΩ, 500V DC		
Weight (kg)	11.7	8.4	5.0

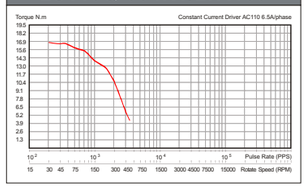
Torque-frequency Curve of
2S110Q-03999/2H1160



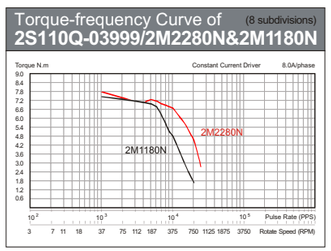
Torque-frequency Curve of
2S110Q-047F0/2H1160



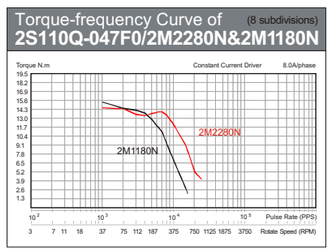
Torque-frequency Curve of
2S110Q-054K1/2H1160



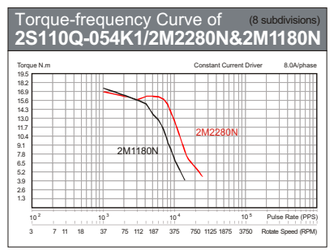
Torque-frequency Curve of (8 subdivisions)
2S110Q-03999/2M2280N&2M1180N



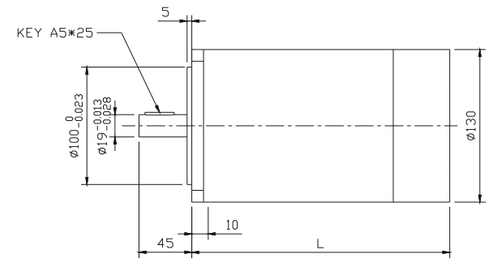
Torque-frequency Curve of (8 subdivisions)
2S110Q-047F0/2M2280N&2M1180N

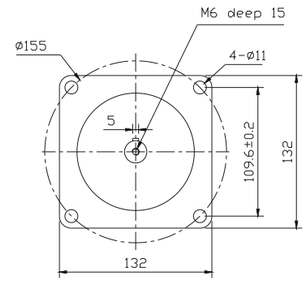


Torque-frequency Curve of (8 subdivisions)
2S110Q-054K1/2M2280N&2M1180N



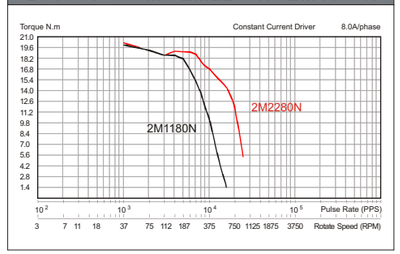
Kinco Two-phase Stepper Motor /130 Series



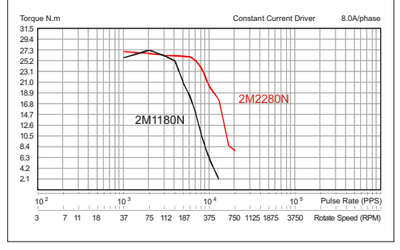


Technical Specifications	2S130Y-063R8	2S130Y-039M0
Step angle	1.8°±5%	1.8°±5%
Phase current (A)	7.0	6.0
Holding torque (Nm)	40.0	27.0
Damping torque (Nm)	1.5	0.8
Winding resistance (Ω)	0.9±10%	0.65±10%
Winding inductance (mH)	9.5±20%	13.8±20%
Motor inertia (kg.cm²)	48.4	33.3
Motor length L (mm)	230	165
Number of lead wires	4	
Insulation class	B	
Withstand voltage level	1800V AC 1S 5mA	
Max. axial load (N)	60	
Max. radial load (N)	220	
Operating temperature	-20℃ ~ 50℃	
Surface temperature rise	Max.80℃ (rated phase current after two phases are connected)	
Insulation impedance	Minimum 100MΩ, 500V DC	
Weight (kg)	19.0	13.0

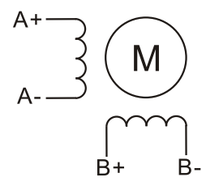
Torque-frequency Curve of (8 subdivisions)
2S130Y-039M0/2M2280N&2M1180N



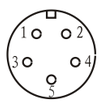
Torque-frequency Curve of (8 subdivisions)
2S130Y-063R8/2M2280N&2M1180N



Motor Cable



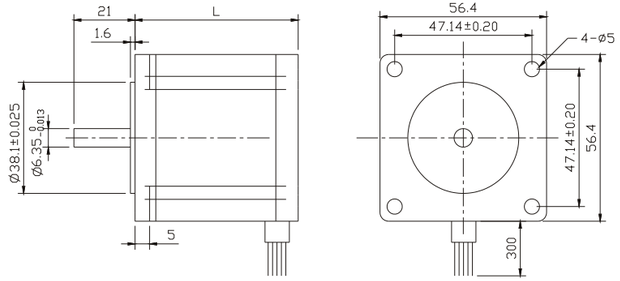
Four lead wires of Two-phase Motor



Pinout of motor connector

Pin	Motor Signal
1	A+
2	A-
3	B+
4	B-
5	GND

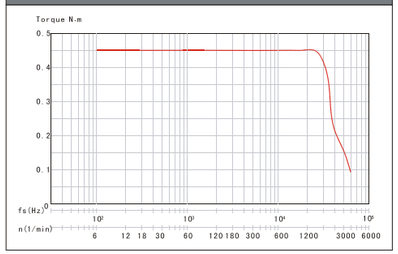
Kinco Three-phase Stepper Motor /57 Series



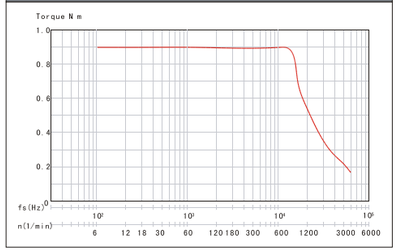
Note: Where, the shaft diameter of **3S57Q-04079** is 8mm.

Technical Specifications	3S57Q-04079	3S57Q-04056	3S57Q-04042
Step angle	1.2°±5%	1.2°±5%	1.2°±5%
Phase current (A)	5.8	5.6	5.2
Holding torque (Nm)	1.5	0.9	0.45
Damping torque (Nm)	0.07	0.04	0.02
Phase resistance (Ω)	1.05±10%	0.7±10%	1.3±10%
Phase inductance (mH)	2.4±20%	1.7±20%	1.4±20%
Motor inertia (kg.cm²)	0.48	0.3	0.11
Motor length L (mm)	79	56	42
Number of lead wires	6		
Insulation class	B		
Withstand voltage level	600V AC 1S 5mA		
Max. axial load (N)	15		
Max. radial load (N)	75		
Operating temperature	-20℃ ~ 50℃		
Surface temperature rise	Max.80℃ (rated phase current after two phases are connected)		
Insulation impedance	Minimum 100MΩ, 500V DC		
Weight (kg)	1	0.72	0.45

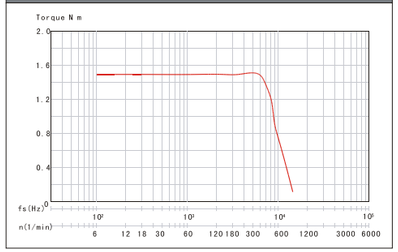
Torque-frequency Curve of **3S57Q-04042/3M458**



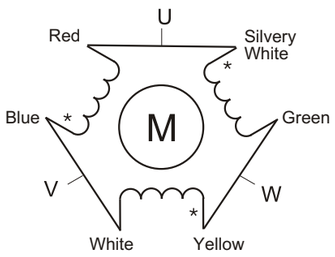
Torque-frequency Curve of **3S57Q-04056/3M458**



Torque-frequency Curve of **3S57Q-04079/3M458**



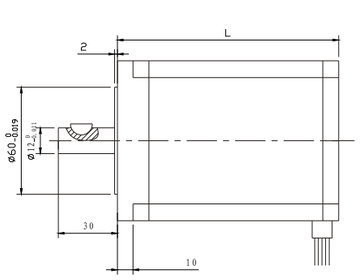
Motor Cable

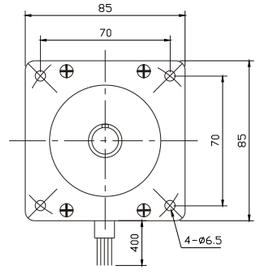


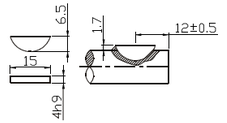
Six lead wires of three-phase motor

Wire Color	Motor Signal
Red	U
Silvery White	
Blue	V
White	
Yellow	W
Green	

Kinco Three-phase Stepper Motor /85 Series



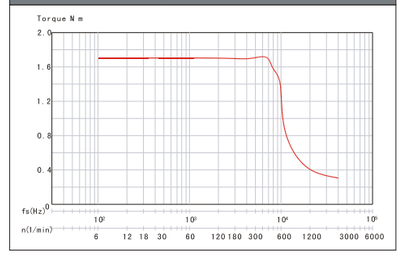




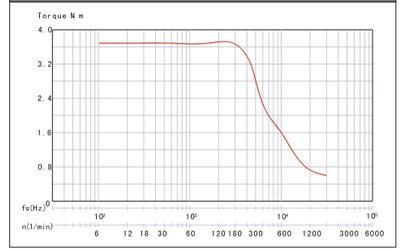
Note: All keys of the motor have a whitney key. Refer to the above figure for dimensions.

Technical Specifications	3S85Q-04097	3S85Q-04067
Step angle	1.2°±5%	1.2°±5%
Phase current (A)	5.8	5.8
Holding torque (Nm)	4.0	2.0
Damping torque (Nm)	0.12	0.08
Phase resistance (Ω)	1.1±10%	0.6±10%
Phase inductance (mH)	4.6±20%	1.8±20%
Motor inertia (kg.cm²)	2.32	1.1
Motor length L (mm)	97	67
Number of lead wires	6	
Insulation class	B	
Withstand voltage level	600V AC 1S 5mA	
Max. axial load (N)	60	
Max. radial load (N)	220	
Operating temperature	-20℃ ~ 50℃	
Surface temperature rise	Max.80℃ (rated phase current after two phases are connected)	
Insulation impedance	Minimum 100MΩ, 500V DC	
Weight (kg)	2.7	1.65

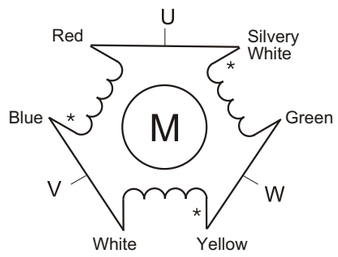
Torque-frequency Curve of **3S85Q-04067/3M458**



Torque-frequency Curve of **3S85Q-04097/3M458**



Motor Cable

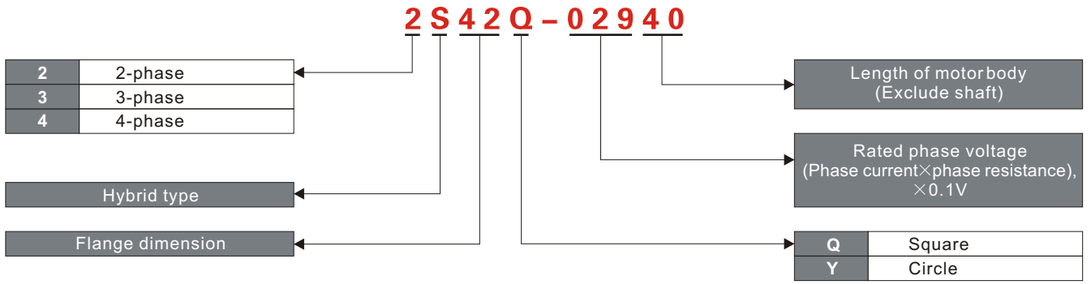


Six lead wires of three-phase motor

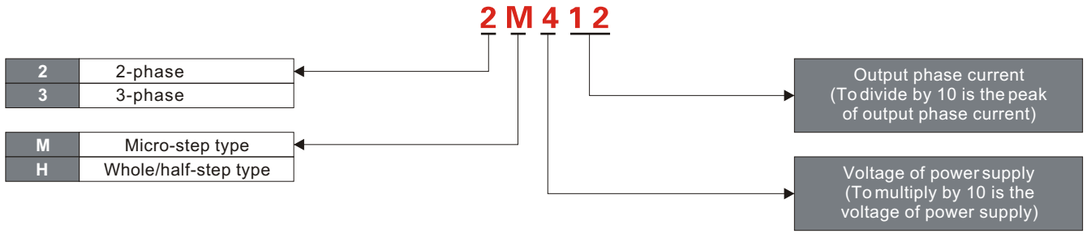
Wire Color	Motor Signal
Red	U
Silvery White	
Blue	V
White	
Yellow	W
Green	

Denomination Rules of Stepper Motor/Driver

Denomination Rules of Stepper Motor

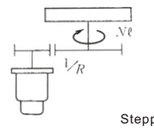
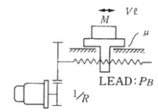
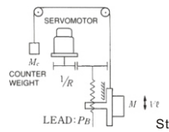
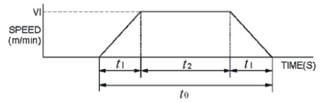
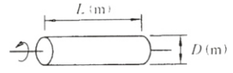
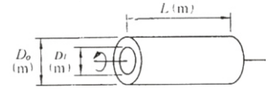


Denomination Rules of Stepper Driver



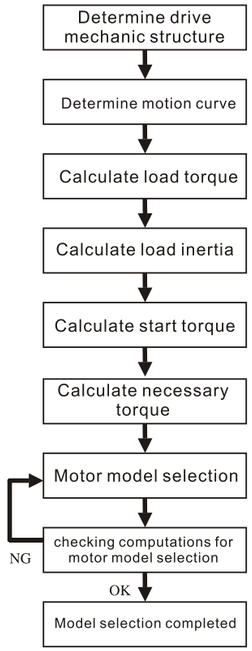
Whole-step,half-step,subdivision(micro-step).
The main difference is the control precision of the motor coil current.Generally stepper motor has a character of low frequency vibration.It can improve the stability of motor in low speed.

Guide to Model Selection of Stepper Motors

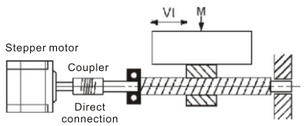
Motion Mode		Rotational Motion	Linear Motion: Horizontal axial direction	Linear Motion: Vertical axial direction
Mechanical structure		 Stepper Motor	 Stepper Motor	 Stepper Motor
		N ι : Drive speed (r/min) V ι : Load speed (m/min) T ι : Load torque (N/m) μ : Friction coefficient PB : Screw lead (m) M : Quality of linear motion part (kg) Mc : Weight quality (kg) 1/R : Gear reduction ratio η : Friction coefficient		
Speed curve				
Single travel(m)		$l=\frac{Vl}{60}\left(t_0-t_1\right)$		
Drive speed(rpm)		Nl	$Nl=\frac{Vl}{P_B}$	$Nl=\frac{Vl}{P_B}$
Rotational speed of motor(rpm)		$N_M=Nl\cdot R$		
Load torque(N.m)		$T_L=\frac{Tl}{R\cdot\eta}$	$T_L=\frac{\mu\cdot g\cdot M\cdot P_B}{2\pi\cdot R\cdot\eta}$	$T_L=\frac{g\cdot\left(M-M_C\right)\cdot P_B}{2\pi\cdot R\cdot\eta}$
Load Inertia ($kg.m^2$)		$J_L=J_{L1}+J_{L2}+J_{L3}$		
	Linear motion		$J_{L1}=M\cdot\left(\frac{P_B}{2\pi R}\right)^2$	$J_{L1}=\left(M+M_C\right)\cdot\left(\frac{P_B}{2\pi R}\right)^2$
	Rotational motion	Solid cylinder $J_K=\frac{\pi}{32}\rho\cdot L\cdot D^4$ · Solid Cylinder :  Hollow cylinder: $J_K=\frac{\pi}{32}\rho\cdot L\cdot\left(D_0{}^4-D_1{}^4\right)$ · Hollow Cylinder :  Inertia loaded to motor shaft gear input: $J_{L2}=J_K$ Gear output: $J_{L3}=\frac{J_K}{R^2}$	density: iron $\rho=7.9\times10^3\ \left(kg/m^3\right)$ Aluminum: $\rho=2.7\times10^3\ \left(kg/m^3\right)$ Brass: $\rho=8.5\times10^3\ \left(kg/m^3\right)$ Nylon: $\rho=1.1\times10^3\ \left(kg/m^3\right)$	
Start torque(N.m)		$T_S=\frac{2\pi\cdot N_M\left(J_M+J_L\right)}{60\times t_1}$	J_M indicates the inertia of the motor rotator (Unit: $kg.m^2$)	
Necessary torque(N.m)		$T_M=(T_L+T_S)\times S$	S indicates the safety coefficient, normally 2 ~ 3.	

Model Selection of Stepper Motors

Model Selection Procedure



Example for Model Selection



Speed: Vl = 1.5m/min

Quality of slide part: M= 50 kg

Screw length: L_B = 1.4m

Screw diameter: D_B = 0.012m

Screw lead: P_B = 0.004m

Coupler quality: M_C = 0.2 kg

Outer diameter of coupler Dc=0.04m

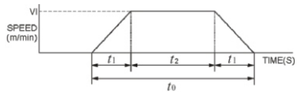
Friction coefficient: μ = 0.3

Movement distance: l = 0.00275n

Motion time: t_0=1.2s

Mechanical efficiency: η = 0.9

(1) Speed curve



Acceleration time $t_1=t_0-\frac{l}{Vl}=1.2-\frac{0.0275}{1.5\div 60}=0.1(s)$

(2) rotation speed of motor

$N_M=\frac{Vl}{P_B}=\frac{1.5}{0.004}=375(rpm)$

(3) Load torque

$T_L=\frac{\mu\cdot g\cdot M\cdot P_B}{2\pi\eta}=\frac{0.3\times 9.8\times 50\times 0.004}{2\pi\times 0.9}=0.104(N\cdot m)$

(4) Load inertia

Linear motion: $J_{LM}=M\left(\frac{P_B}{2\pi}\right)^2=50\times\left(\frac{0.004}{2\pi}\right)^2=0.2\times10^{-4}\ (kg\cdot m^2)$

Ball screw: $J_B=\frac{\pi}{32}\rho\cdot L_B\cdot D_B{}^4=\frac{\pi}{32}\times7.87\times10^3\times1.4\times(0.012)^4=0.224\times10^{-4}\ (kg\cdot m^2)$

Coupler: $J_C=\frac{1}{8}M_C\cdot D_C{}^2=\frac{1}{8}\times0.2\times(0.04)^2=0.4\times10^{-4}\ (kg\cdot m^2)$

Load inertia: $J_L=J_{LM}+J_B+J_C=0.824\times10^{-4}\ (kg\cdot m^2)$

(5) Motor torque

Start torque $T_S=\frac{2\pi N_M(J_M+J_L)}{60t_1}=\frac{2\pi\times375\times(J_M+0.824\times10^{-4})}{60\times0.1}=0.032+392.5J_M\ (N\cdot m)$

Necessary torque: $T_M=(T_L+T_S)\times S=(T_L+T_S)\times2=0.272+0.08\times10^4 J_M\ (N\cdot m)$

S indicates the safety coefficient, normally 2.

J_M indicates the inertia of the motor rotator (Unit: kg.m^2)

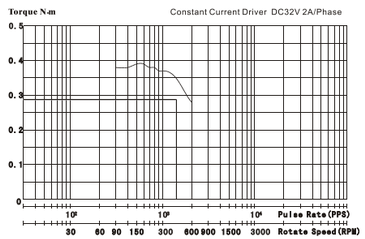
(6) Motor selection

Based on the above calculation, preliminarily this motor model is selected, i.e., 2S56Q-02741. rotator

Inertia J_M = $0.135\times10^{-4}\ kg\cdot m^2$

$T_M=0.272+0.08\times10^4\times0.135\times10^{-4}=0.283(N\cdot m)$

2S56Q-02741

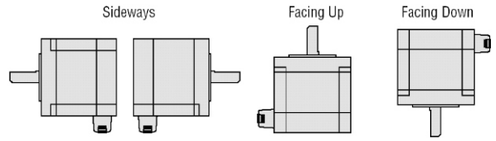


Refer to the torque-frequency curve of 2S56Q-02741.The output torque of the motor meets the requirements, so this motor is selected.

Installation Instructions for Stepper Motors

Installation Direction

There is no limitation for the installation direction of motors, but normally motors are horizontally installed. They also support vertical downward or upward installation.
Regardless of the installation direction of motors, please do not apply excessive vertical or horizontal load to the shaft of a motor.



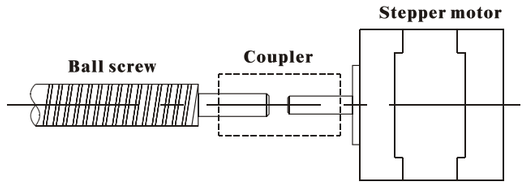
Installation

Please install the motor closely on a metallic surface with perfect heat conductivity.

Recommended Motor Installation Position

Motors shall be installed in positions meeting the following conditions:

1.Indoor;
2.The temperature inside the control cabinet shall range from -10° C ~ +50° C (non-freezing);
3.The humidity inside the control cabinet shall be less than 85% (non-condensing);
4.Free from erosive gases or dust;
5.Free from water or oil (if available, please install a sheath);
6.Perfect ventilation and heat dissipation.



Note:
Do not disassemble the motor;
Do not apply any impact to the motor shaft;
Do not install the motor in a place where it might bear long-term vibration, so as to avoid any possible damage to the motor shaft.

Aligned Connection of Load

When a load is connected to the motor shaft, make sure that the load shaft aligns with the motor shaft. It is recommended that an anti-backlash flexible coupler or other appropriate devices are used to meet this requirement.

Mechanical processing is forbidden for the motor shaft. Please contact your supplier if it is really necessary.