iCAN Automation

CLOSED LOOP STEPPER MOTOR DRIVE

SS57
User manual

Dongguan ICAN Technology Co., Ltd

Closed Loop Stepper Motor Drive

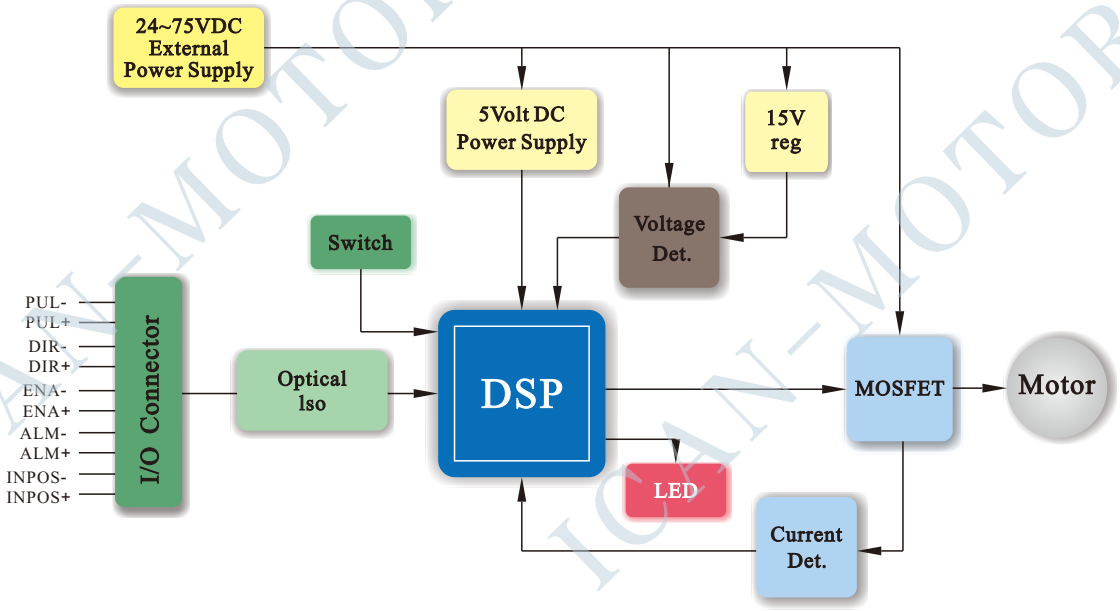
SS57

Brief introduction

With high performance encoder, SS57 stepper servo driver gives position feedback signal to Cotex-M4 ARM processor and adjust the location every 50us. It has more accurate control both while running and static positioning compared with many other similar products. SS57 is used for 57mm closed loop stepper motor. The Step-Servo is an innovative revolution for the world of stepper motor, it enhances the stepper motors with servo technology to create a product with exceptional feature and broad capability.

- New Cotex-M4 ARM 32bit processor
- Smooth &Accurate
- High Torque
- Output current 7A
- Easy Tunning
- Closed loop
- Low Heating/High Efficiency
- Fast Response
- Resolution is 25600
- Pulse&Dir and CW/CCW control

Functional diagram



Electrical performance and environment indicators

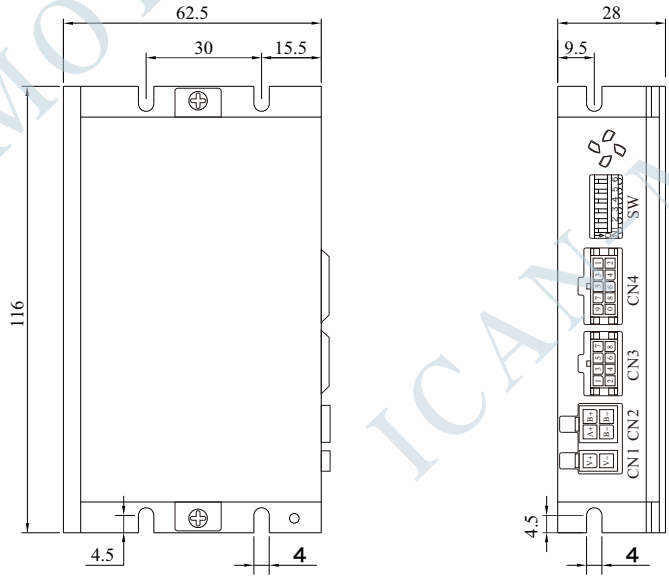
Electrical Specifications

Parameter	Min.	Typical	Max.	Unit
Power supply	24	48	75	VDC
Output Current	1	–	7.0	A
Input pulse frequency	1	–	500K	Hz
Input pulse width	250	–	5E+8	ns
Direction signal width	62.5	–	–	μs
Input signal voltage	3.6	5	24	VDC
Output Signal voltage	-	-	100	mA
Output signal current	-	-	30	vdc

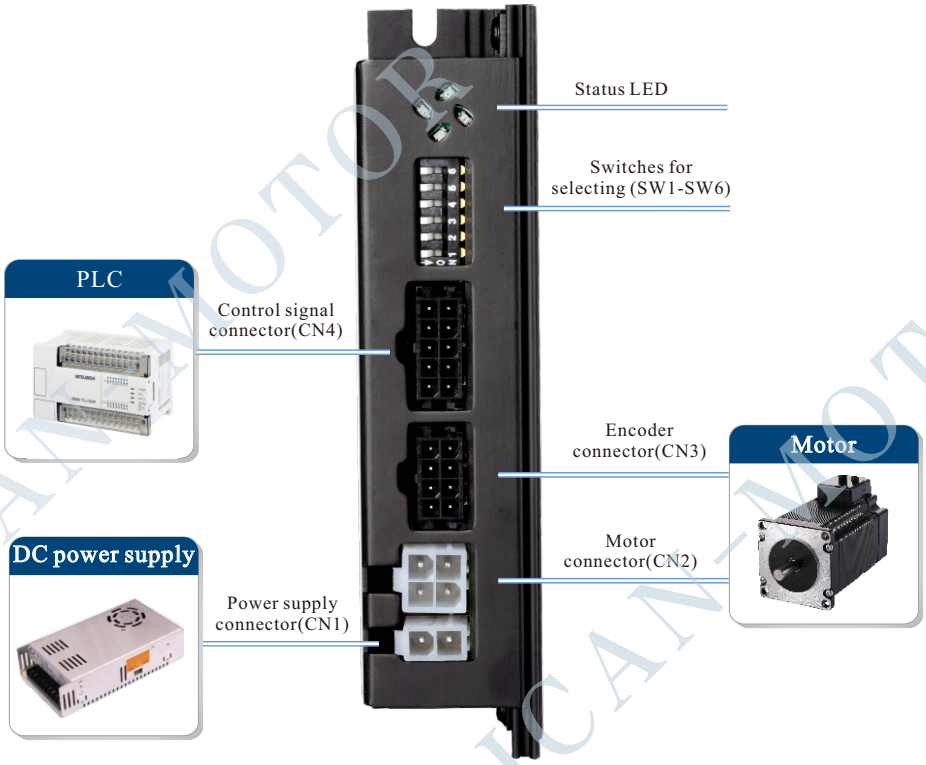
Environment Indicators

Heat Sinking Method	Natural cooling or fan-forced cooling
Atmosphere	Avoid dust, oily mist and corrosive air
Operating Temperature	-10~40℃
Ambient Humidity	90% or less (non-condensing)
Storage Temperature	-10~70℃
Vibration Resistance	5.9m/s² maximum

Dimension (Units: mm)

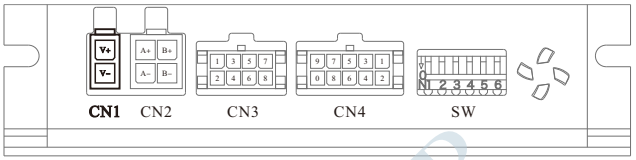


Drive interface and wiring diagram



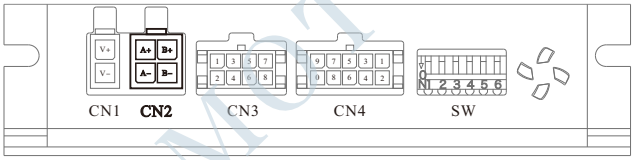
Power supply connector(CN1)

CN1	Input/Output	Function description
V−	Input	Power supply-
V+	Input	Power supply+(DC24-75V)



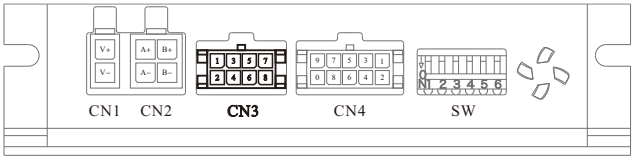
Motor connector(CN2)

CN2	Input/Output	Function description
B−	Input	Motor phase B -
B+	Input	Motor phase B+
A−	Input	Motor phase A -
A+	Input	Motor phase A+



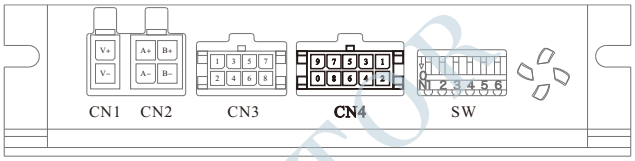
Encoder connector(CN3)

编号	Connector	Input/Output	Function description
1	GND	Output	GND
2	5V	Output	+5V power supply for encoder
3	NC	–	No connection
4	NC	–	No connection
5	B−	Input	Encoder B -
6	B+	Input	Encoder B+
7	A−	Input	Encoder A -
8	A+	Input	Encoder A+



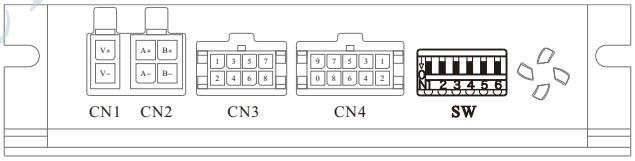
Control signal connector(CN4)

No.	Connector	Colour	Input/Output	Function description
1	PUL–	Black green	Input	Pulse Input–/CW Input–
2	PUL+	Green	Input	Pulse Input+/CW Input+
3	DIR–	Black white	Input	Direction Input - /CWW Input -
4	DIR+	Black	Input	Direction Input+/CWW Input+
5	ENA–	Yellow black	Input	Enable Input -
6	ENA+	Yellow	Input	Enable Input +
7	ALM–	Red white	Output	Fault Output–
8	ALM+	Red	Output	Fault Output+
9	INPOS-	Blue black	Output	In position Output–
0	INPOS+	Blue	Output	In position Output+



Function selection switches

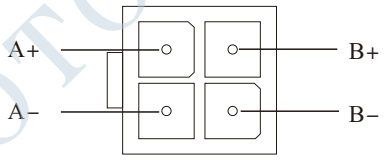
Nama	Function description
SW1～SW4	Micro stepping setting
SW5	Initial direction selection
SW6	Single/double pulse matching



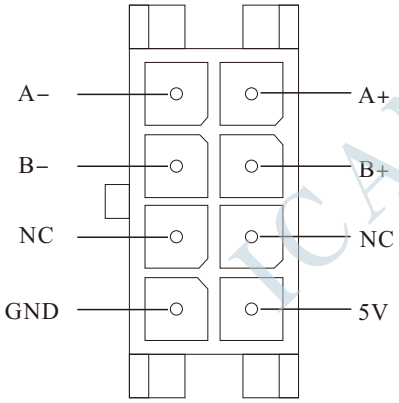
Connecting the motor

Closed loop stepper motor has two output cable, one is for motor and another is for encoder.

- Motor cable



- Encoder cable

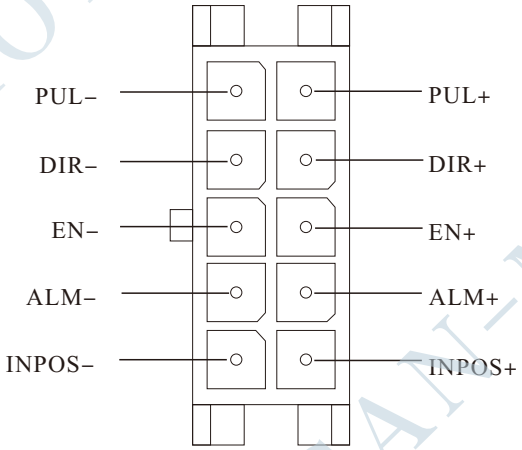


Don't tear motor/ encoder cable to damage the motor.
(For example, taking motor with cable, put heavy things on it)

Description of Input/output Signals

SS57 closed stepper motor driver input/output terminal:

- 6 line optically isolation digital sign input, 5-24V
- 2 line optically isolation digital sign output, 30V/100mA

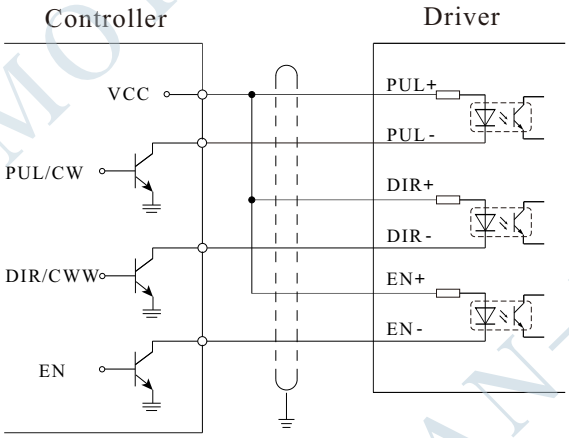


Input

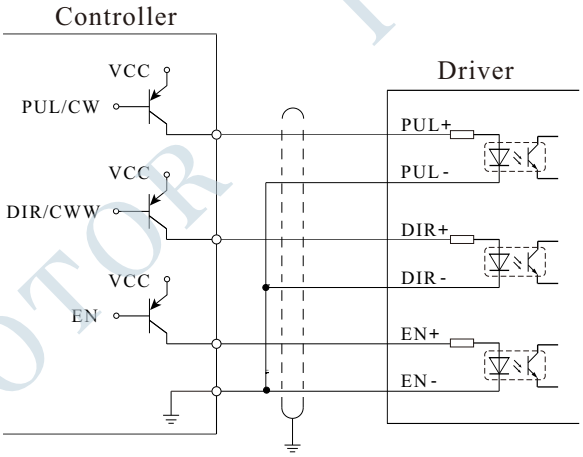
Input signal

The signal input is OC input, the voltage is DC5V-24V. The largest frequency of pulse and direction signal is 500KHZ. The pulse rising edge is valid.

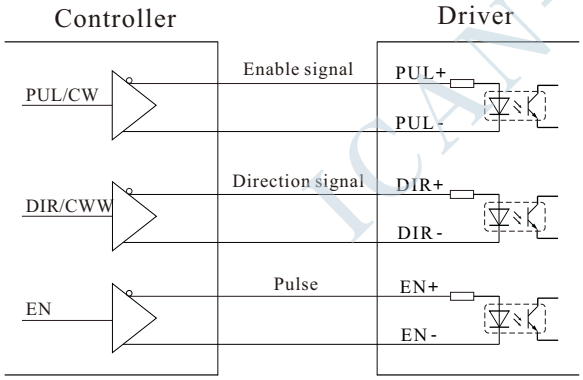
Common anode



Common cathode



Difference



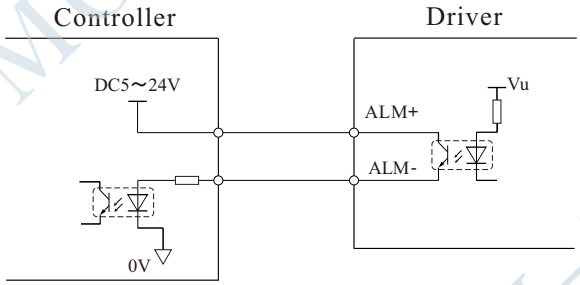
Output

Alarm signal output

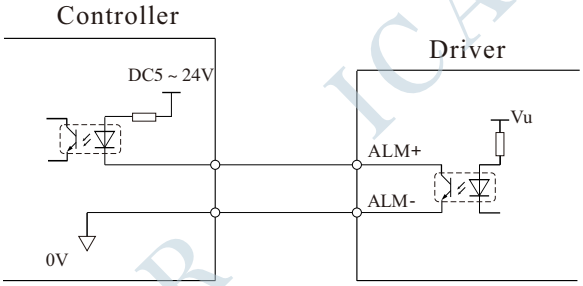
Alarm signal is OC. The largest voltage is 30V and the largest current is 100mA

Notice: Don't connect output with voltage over 30V, 100mA

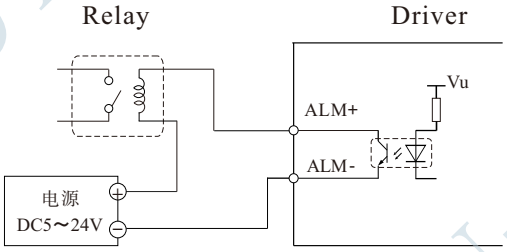
Common anode



Common cathode

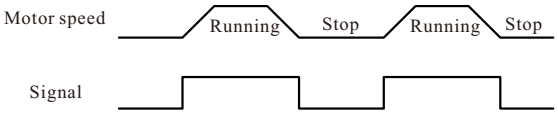


Relay



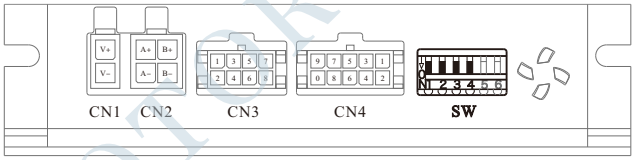
In Position Output signal

When the motor is running, the INPOS is high level, when the motor stops, INPOS is low level.



Function setting

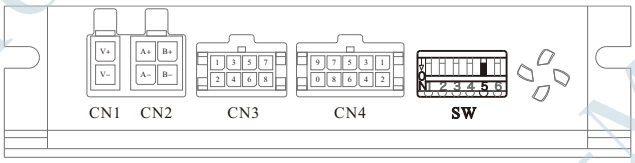
Microstepping



The microstep resolution is set by the SW1, SW2, SW3 and SW4 switches. There are 16 settings.

Subdivision (Step/r)	SW1	SW2	SW3	SW4
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

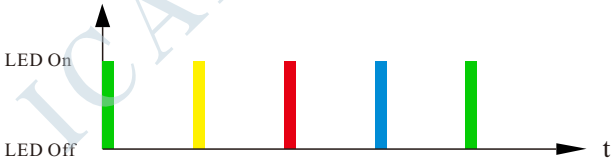
Initial direction selection



SW5=ON, Motor rotates anticlockwise; SW5=OFF, Motor rotates clockwise (factory setting)

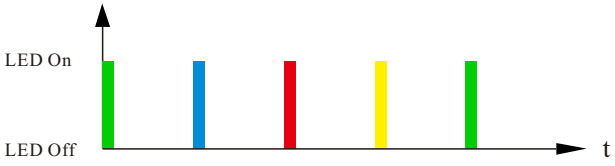
Motor rotates anticlockwise

When motor rotates anticlockwise, status LED flickers as Green-Yellow-Red-Blue-Green.

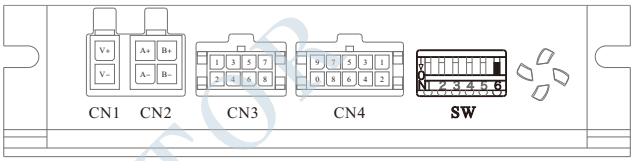


Motor rotates clockwise

When motor rotates clockwise, status LED flickers as Green- Blue-Red-Yellow-Green.



Pulse&Direction mode selection

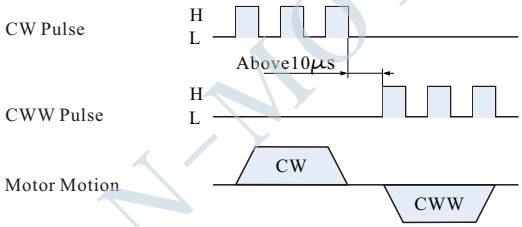


SW6=OFF, Pulse&Dir Mode; SW6=ON, CW&CCW Mode

The setting will take effect after recycle the power

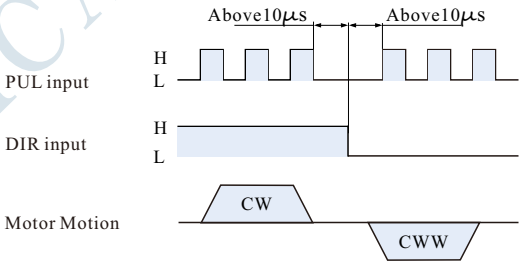
CW/CCW Pulse

When pulse is input at PUL/CW terminal, the motor will rotate by one step in one direction.
When pulse is input at DIR/CWW terminal, the motor will rotate by one step in the other direction.

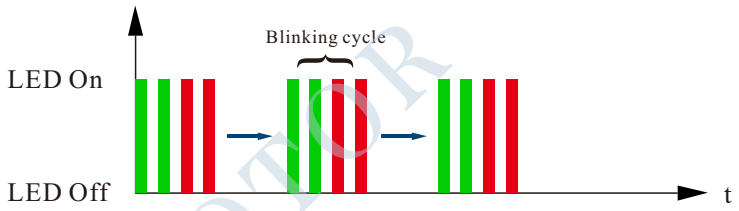


Pulse & Direction

When pulse is input at PUL terminal, and DIR terminal is high voltage, the motor will rotate by one step in one direction.
When pulse is input at PUL terminal, and DIR terminal is low voltage, the motor will rotate by one step in the other direction.



LED Error Codes



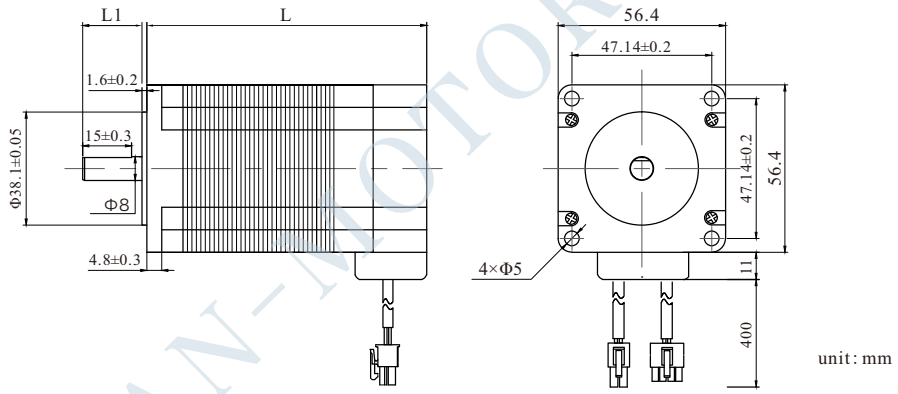
When alarm LED is on, please check the reason as following tab.

LED	Motion status/Alarm
Green, yellow, red, blue circulation flashing	Motor rotates clockwise normally
Green, blue, red, yellow circulation flashing	Motor rotates anticlockwise normally
2 green, 2red circulation flashing	Over current protection
2 green, 3red circulation flashing	Open circuit protection
2 green, 4red circulation flashing	Over voltage protection
2 green, 5red circulation flashing	Under voltage protection
3 green, 2red circulation flashing	Overload protection
Flashing blue	In position output
Flashing red	Enable status

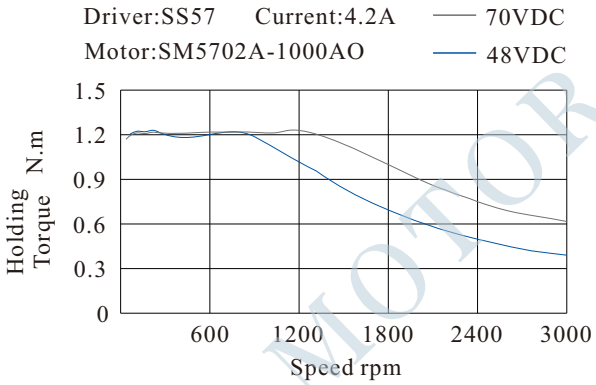
Notice: Turning on power is banned when driver hasn't been connected with motor, power positive and negative pole will ruin the driver.

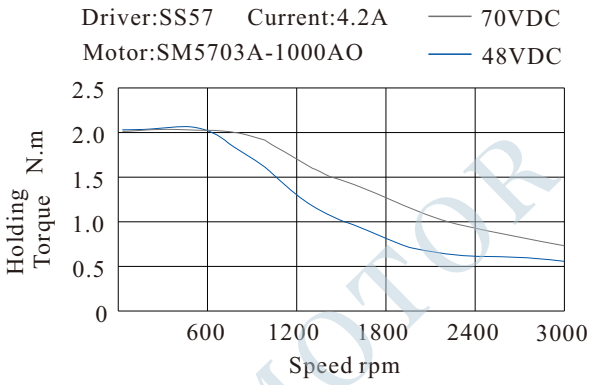
Recommended motor

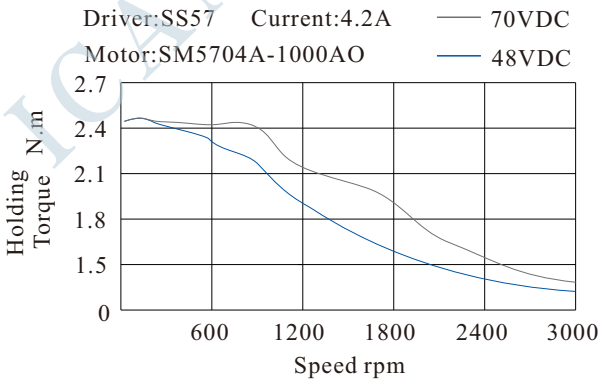
- Nema 23 closed loop stepper motor



Model	Holding Torque(Nm)	Current/ phase(A)	Resistance (Ω)	Inductance (mH)	Diameter of axle X(mm)	Axial length L1(mm)	Motor Length L(mm)	Encoder Resolution
SM5702A-1000AO	1.2	4.2	0.4	1.4	8	19	74	1000
SM5703A-1000AO	2.1	4.2	0.55	2.0	8	19	94	1000
SM5704A-1000AO	2.5	4.2	0.6	1.8	8	20	116	1000



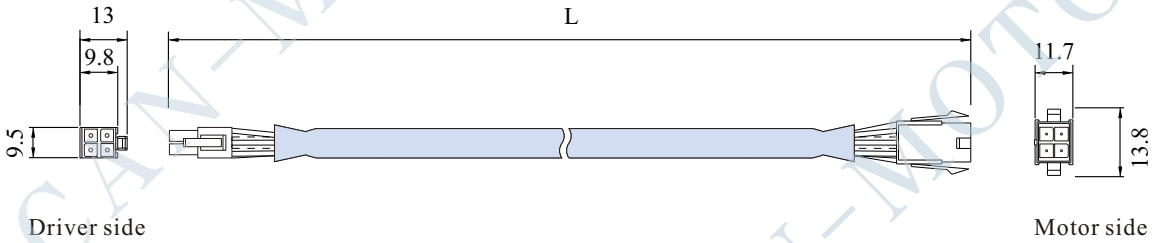




Accessories

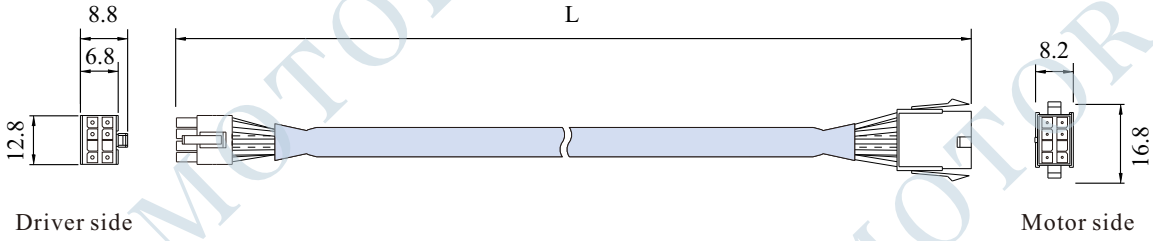
Naming rule for motor cable

SW	–	50	G	M	03
Series name		Cable cross section	Cable category	Cable use	Cable length
SW: SW series			G:Universal cable F:High soft cable	M:Motor cable	01:1M 03:3M 05:5M



Naming rule for encoder cable

SW	–	14	F	E	03
Series name		Cable cross section	Cable category	Cable use	Cable length
SW: SW series			F:High soft cable	E:Encoder cable	01:1M 03:3M 05:5M



Cable list

Name	Cable material	Model number		
		Cable 1M	Cable 3M	Cable 5M
Motor cable	General (not resistant to bending)	SW50GM01	SW50GM03	SW50GM05
	High soft (resistant to bending 500W times)	SW50FM01	SW50FM03	SW50FM05
Encoder cable	High soft (resistant to bending 500W times)	SW14FE01	SW14FE03	SW14FE05

1. Make sure all the cable terminals are connected well to avoid short circuit and damage the driver
2. Use Shielded Twisted Pair(STP) as encoder and control line to enhance anti-jamming capability.

After sale service

Warranty period

Dongguan ICAN Technology provides warranty for 1 year from the date of shipping.

Maintenance process

1) Get the maintenance permission

2) Ship the package to the following address: 4/F, Block B, RuiLian Zhenxing Industrial Park, Wanjiang District, Dongguan City, Guangdong Province

Tel: 86-0769-22327568

Return policy

1. After use or man-made damage condition (etc, wrong wiring), no return

2. ICAN Technology guarantees the product quality, but product incompatibility is not in the return or maintain condition.

3. Customers don't use the products under the specified electrical performance and environment indicators, no maintain condition

Automation

Dongguan ICAN Technology Co., Ltd

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