



CLOSED LOOP STEPPER MOTOR DRIVE



SS57 User manual

Closed Loop Stepper Motor Drive

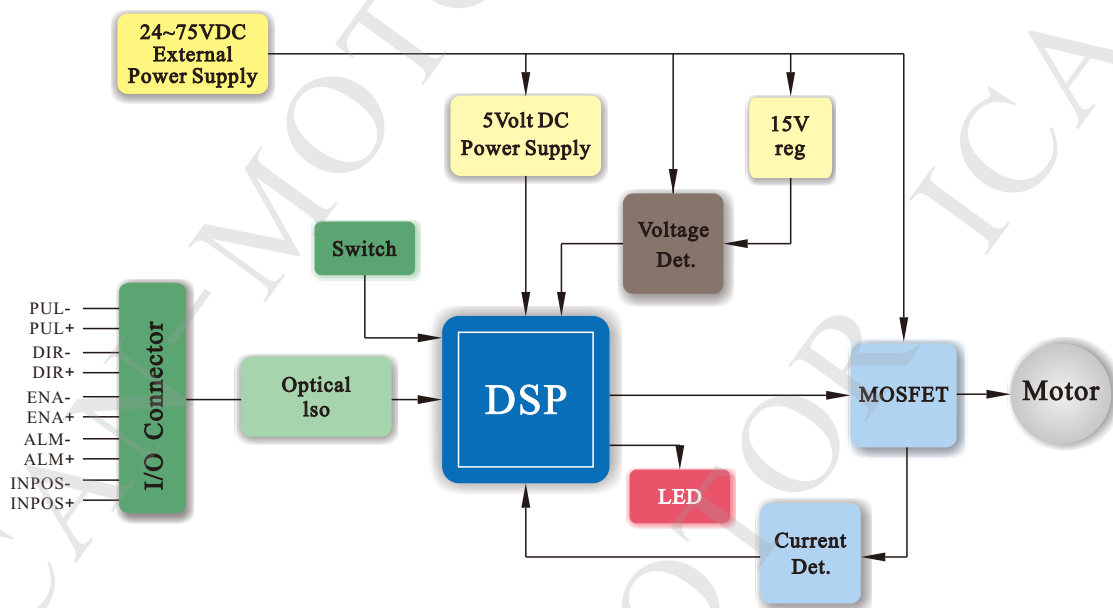
SS57

■ Brief introduction

With high performance encoder, SS57 stepper servo driver gives position feedback signal to Cortex-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 Cortex-M4 ARM 32bit processor
- Smooth & Accurate
- High Torque
- Output current 7A
- Easy Tuning
- Closed loop
- Low Heating/High Efficiency
- Fast Response
- Resolution is 25600
- Pulse&Dir and CW/CCW control

■ Functional diagram



■ Electrical performance and environment indicators

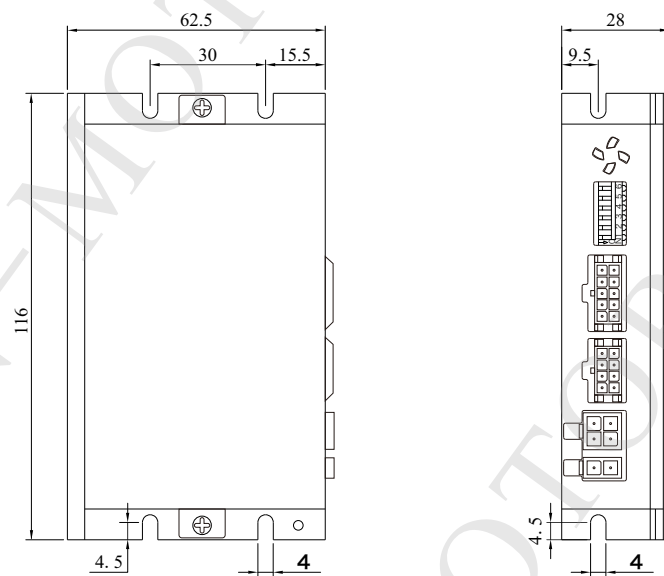
● Electrical Specifications

Parameter	Min.	Typical	Max.	Unit
Power supply	24	48	75	VDC
Output Current	1	-	7.0	A
Input pulse frequency	1	-	2M	Hz
Input pulse width	250	-	5E+8	ns
Direction signal width	62.5	-	-	μ s
Input signal voltage	3.6	5	24	VDC
Output Signal voltage	-	-	100	mA
Output signal current	-	-	30	vdc

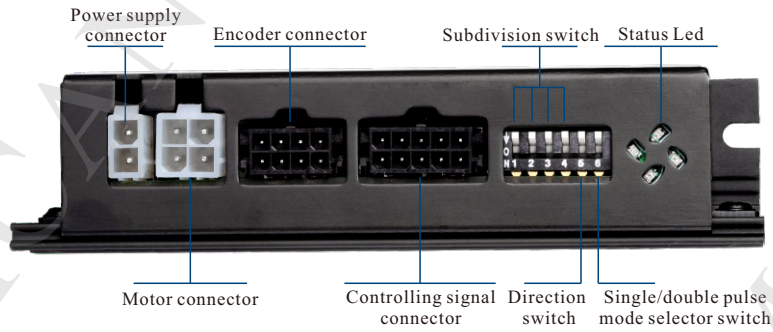
● Environment Indicators

Heat Sinking Method	Natural cooling or fan-forced cooling
Atmosphere	Avoid dust, oily mist and corrosive air
Operating Temperature	- 10~40°C
Ambient Humidity	90% or less (non-condensing)
Storage Temperature	- 10 ~70°C
Vibration Resistance	5.9m/s ² maximum

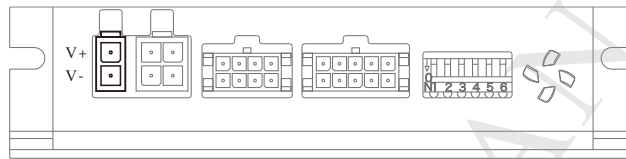
■ Dimension (Units: mm)



■ Drive interface and wiring diagram

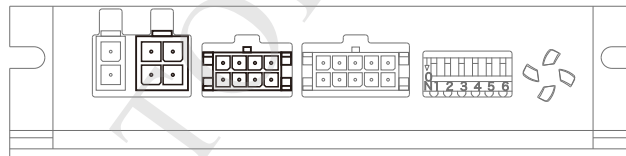


● DC Power supply



CN1	Functional Description
V+	Power supply positive electrode (24-75VDC)
V-	Power supply negative electrode (Hall sensor negative electrode)

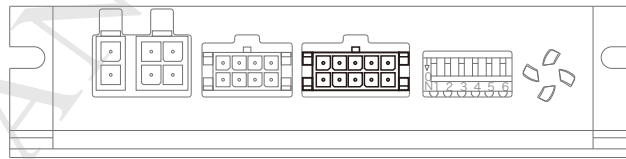
● Motor and encoder connector



CN2	Functional Description
A+	Motor phase A+
A-	Motor phase A-
B+	Motor phase B+
B-	Motor phase B-

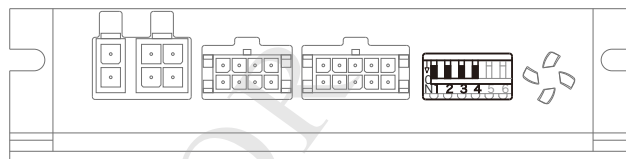
CN3	Terminal	Functional Description
1	GND	GND
2	5V	+5V power supply for encoder
3	NC	No connection
4	NC	No connection
5	B-	Encoder B-
6	B+	Encoder B+
7	A-	Encoder A-
8	A+	Encoder A+

● Control signal connector



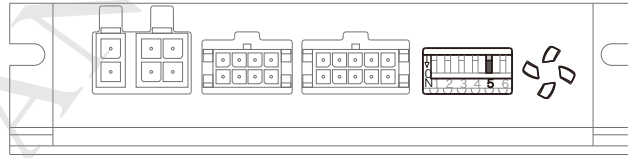
CN4	Signal category	Functional Description
1	PUL-	Pulse Input- /CW Input-
2	PUL+	Pulse Input+/CW Input+
3	DIR-	Direction Input- /CWW Input-
4	DIR+	Direction Input+/CWW Input+
5	EN-	Enable Input -
6	EN+	Enable input+
7	ALM-	Fault Output-
8	ALM+	Fault Output+
9	INPOS-	In position Output-
0	INPOS+	In position Output+

● Subdivision 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

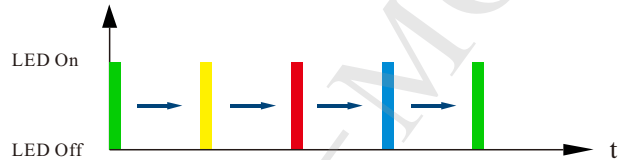
● Initial direction selection



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

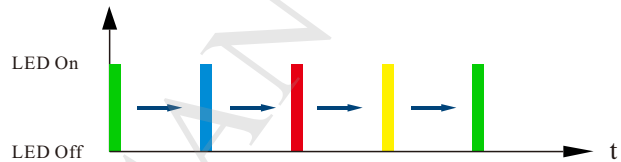
Motor rotates anticlockwise

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

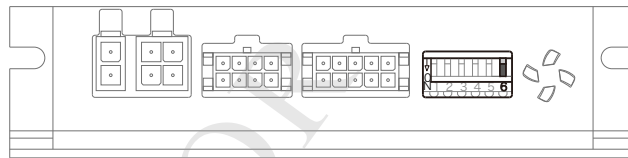


Motor rotates clockwise

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



● Pulse&Direction mode selection

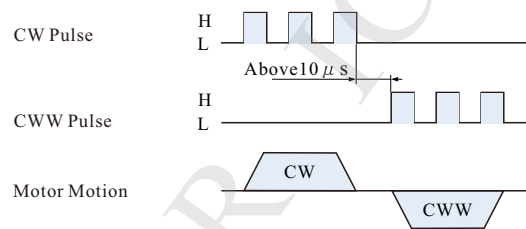


SW6=OFF, Pulse&Dir Mode; SW6=ON, CW&CCW Mode

! The setting will take effect after recycle the power

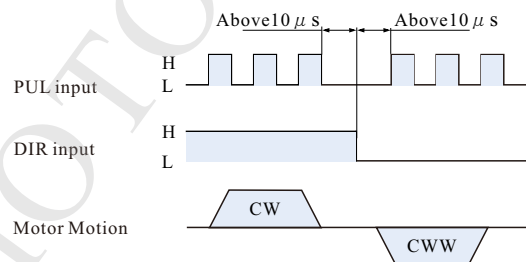
CW/CCW Pulse

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.

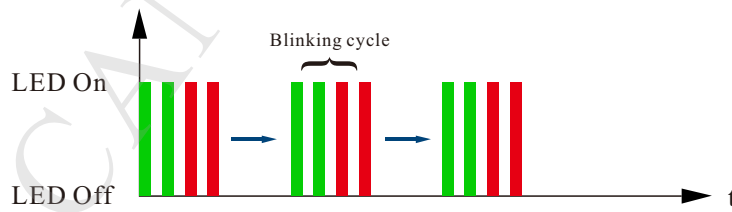


Pulse & Direction










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 status



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



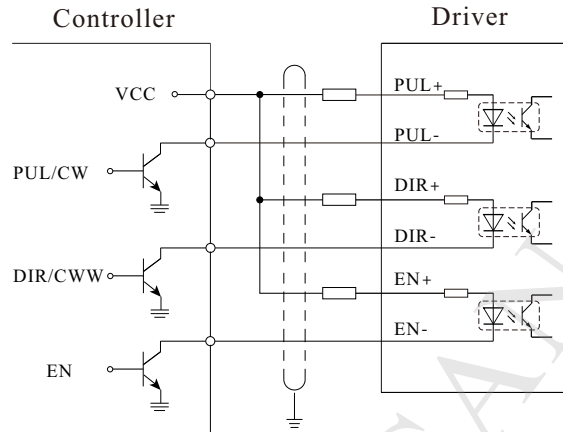
Notice: Turning on power is banned when driver hasn't been connected with motor, power positive and negative pole will ruin the driver.

■ Description of Input/output Signals

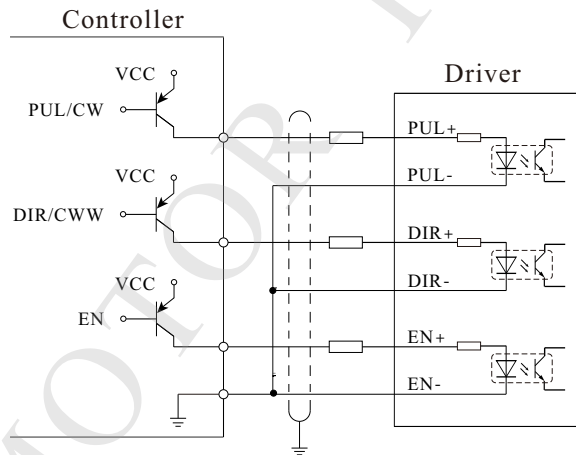
● Input signal

The signal input is OC input, the voltage is DC5V-24V. The largest frequency of pulse and direction signal is 200KHZ. The pulse rising edge is valid.

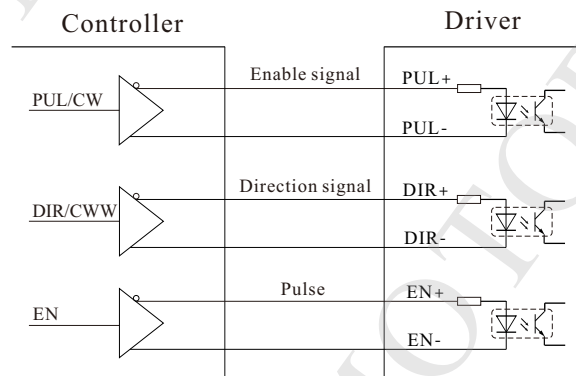
Common anode



Common cathode



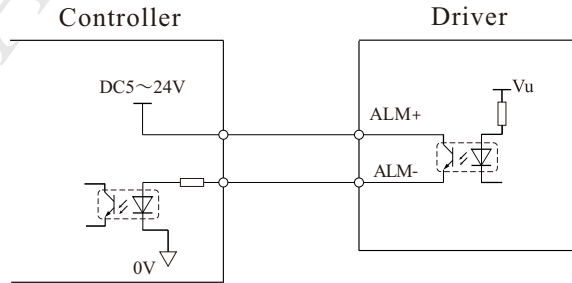
Difference



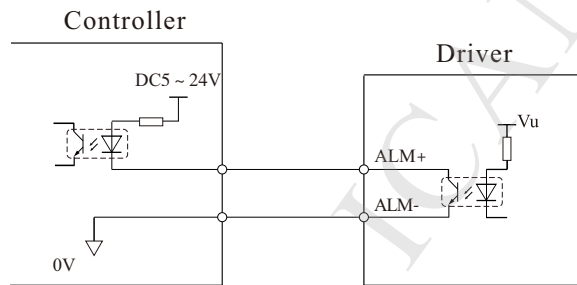
● Alarm signal output

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

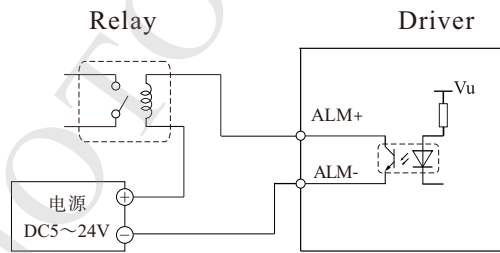
Common anode



Common cathode

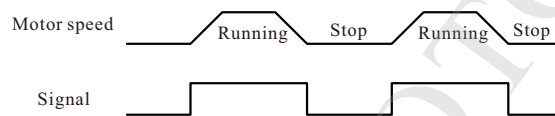


Relay



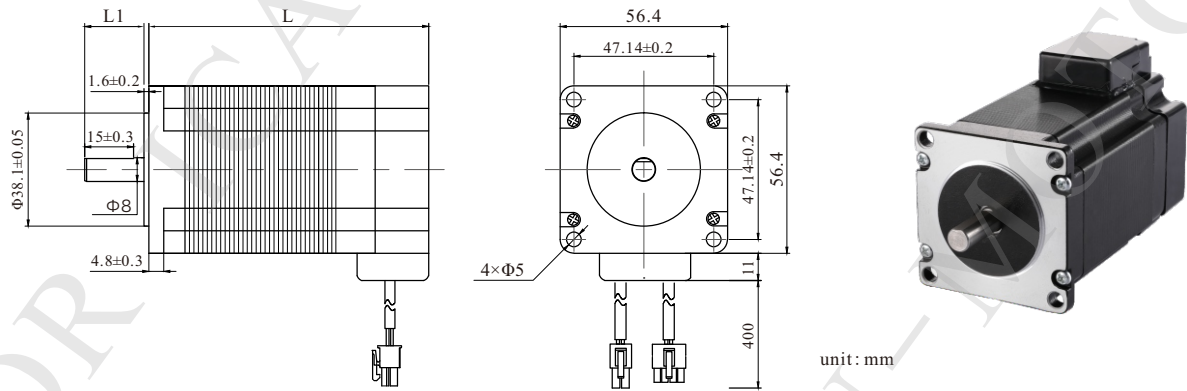
● In Position Output signal

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

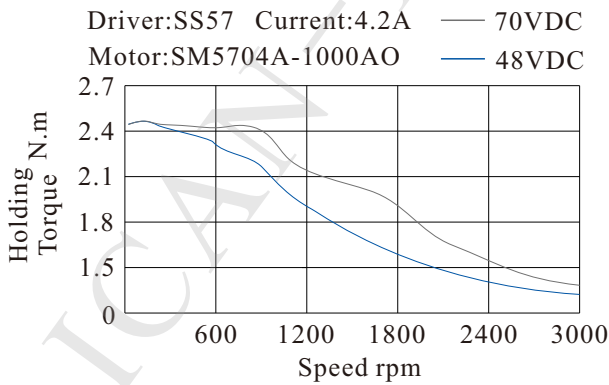
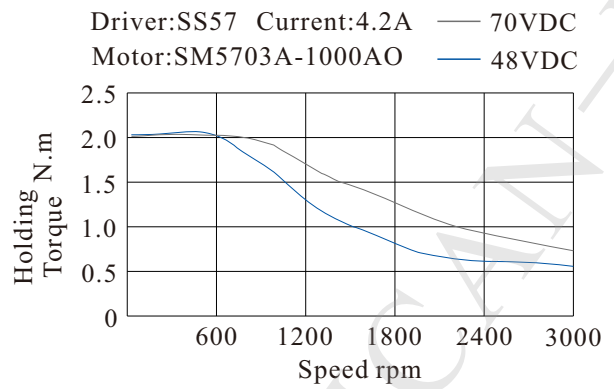
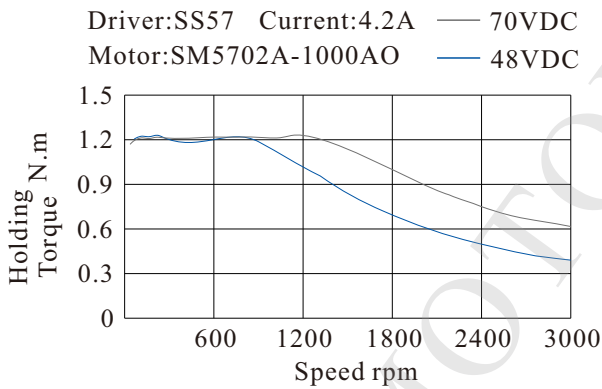


■ Recommended motor

- 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



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



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