⊕ SYNTRON 森创

Three-phase Digital Stepper Motor Driver   SD-30807

Product Codes: 001112   **Low Vibration   Low Noise   Low Power**

Characteristics

◆ 32-bit DSP digital control mode

◆ Low vibration. low noise. low power

◆ Flexible micro-stepping, runs more smoothly

◆ Input signal photoelectric isolation

◆ Space-vector bipolar constant current

◆ Maximum output current is 7.0A

◆ Provide energy saving and automatic half-current lock feature

◆ Maximum 30000 steps/ rev and 16 kinds micro-stepping model

◆ Adapted to a total of Yang and single pulse mode

◆ CE

Performance Index

Electric Property（ambient temperature Tj＝25℃ ）

Power Supply	24V~ 70VDC, capacity 0.2KVA
Output Current	Peak current is 7.0 A (Max) (the output current can be set by panel dial switch
Drive Mode	Space-vector bipolar constant current
Exciting Type	400 steps/rev, 500 steps/rev, 600 steps/rev, 800 steps/rev, 1000 steps/rev, 1600 steps/rev, 2000 steps/rev, 3200 steps/rev, 4000 steps/rev, 5000 steps/rev, 6000 steps/rev, 6400 steps/rev, 7500 steps/rev, 8000 steps/rev, 10000 steps/rev, 30000 steps/rev
Insulation Resistance	At normal temperatures and pressures ＞100MΩ
Insulation Strength	At normal temperatures and pressures 0.5KV，1Min

Ambient Temperature and parameters

Cooling Model		Natural convection
Ambient Temperature	condition	Avoid dust, oil mist and corrosive gases
	Temperature	-5℃~ +40℃
	Humidity	＜80%RH, no condensation, no frosting
	Vibration	5.9m/s² Max
Storage	Temperature	-40℃~ +55℃

Temperature	Humidity	<93%RH, no condensation, no frosting
Dimension		135×77×46mm
Weight		0.5Kg

Functions and Operation

◆ Outstanding feature

Using 32-bit DSP all digital control mode, advanced space vector algorithm to optimize low-vibration and high-speed performance, and realize adaptive matching and optimizing control approach of a variety of motor, software update and easily upgrading.

Using micro-stepping algorithm to make the motor maintain optimal running performance whatever the drive set which subdivision and greatly improve the smooth and noise under low subdivision. Even if the user can not use the higher subdivision options due to the limit of control system output pulse frequency , can also get both of low-speed stability and high-speed, thereby reducing the requirements of control system, and help to reduce the overall cost of the system to improve performance.

◆ Power Supply

The drive internal switching power supply design can adapt to a wide voltage range. Users can choose 24V~70VDC depending on each situation. Capacity relates with the matching motor and setting current magnitude. Generally the higher rated supply voltage is conducive to improve high-speed torque of the motor, but it will increase the loss and temperature of the drive. The power supply must be noted the polarity, avoid reverse.

Users can customize AC drives, the power supply voltage should be controlled between 20V~50VDC.

◆ Micro-step selection

Users can select 16 kinds of micro-step models by the drive panel SW1, SW2, SW3, SW4 four dial switch. It provides common two-phase step and five-phase step. (see the micro-step selection table)

Note: if users change the micro-step model, the drive takes effect after power on again.

SW1	SW2	SW3	SW4	Steps/rev	SW1	SW2	SW3	SW4	Steps/rev
ON	ON	ON	ON	30000	OFF	OFF	ON	OFF	3200
OFF	ON	ON	ON	10000	ON	ON	OFF	OFF	2000
ON	ON	ON	OFF	8000	OFF	ON	OFF	OFF	1600
ON	OFF	ON	ON	7500	OFF	ON	OFF	ON	1000
OFF	ON	ON	OFF	6400	ON	OFF	OFF	OFF	800
OFF	OFF	ON	ON	6000	ON	OFF	OFF	ON	600
ON	ON	OFF	ON	5000	OFF	OFF	OFF	ON	500
ON	OFF	ON	OFF	4000	OFF	OFF	OFF	OFF	400

◆ Output Current Selection

The drive uses bipolar constant current model. The maximum output current value is 7.0A (peak). You can easily choose eight current values from 3.0A to 7.0A through different combinations of three switches on the side plate of the drive SW5, SW6 and SW7. (see the current selection table)

Note: if users change output current , the drive takes effect after power on again.

SW5	SW6	SW7	Current
OFF	OFF	OFF	3.0A
ON	OFF	OFF	3.5A
OFF	ON	OFF	4.0A
ON	ON	OFF	4.5A
OFF	OFF	ON	5.0A
ON	OFF	ON	5.5A
OFF	ON	ON	6.0A
ON	ON	ON	7.0A

◆ **Self-test mode Switch**

Users can choose on and off of the self-test model through 8th dial switch on the drive panel. When the self-test mode is open, the drive will observe the motor parameters before power on, and automatically finding the optimal control parameters. When self-test function is close, the drive will use the last testing motor parameter to work. So when the user firstly use drive and motor, you should adopt the self-test mode, then set the switch ' OFF ' to lock the current parameters and self-test optimization again after work station changed.

◆ **Mono-pulse mode**

The drive supports the standard single-pulse mode. The stepping pulse is form the pulse interface, by the direction of the port level determines the level of the direction of the motor.

Note: the drive power-on reset need 10 seconds, and then take effect after 10 seconds.

◆ **Automatic half current**

The drive will be in the half current state after working about 0.1 seconds and not receiving new pulse. Phase current is reduced to 50% of the standard value, to achieve the purpose of reducing power consumption. The drive will automatically exit half current state when receiving new pulse.

◆ **Offline Function**

When inputting offline signal, the drive will cut off the motor phase winding current to make the motor shaft in a free state. At the moment the stepping pulse will not be responded to. This state can effectively reduce the power consumption and temperature rise of the drive and motor. The drive will automatically recover to the phase-sequence before offline and restore the motor current after the offline control signal undo. When need not this feature, the offline end dangles.

◆ **Over-voltage Protection**

When the power supply voltage fluctuations or motor brake and other reasons lead to the DC-bus voltage exceeds 80VDC, the drive alarm light is red, and the drive stop driving motor, and should power off and power on again manually, then removing alarm.

◆ **Low-voltage Protection**

When the drive detects that input DC bus voltage is below 15VDC, the drive alarm light is red, then cut off the motor winding output and stop running. You should power off and re-power on to remove alarm. After the fault appears, you need to check supply voltage and capacity, and increase input voltage appropriately.

◆ **Functional Status Indicator**

The yellow LED is power indicator. When the drive connects supply power, the LED lights. When the drive is power off, the LED light is off. The red LED is malfunction indicator light. When the drive is

failure, the indicator light off in different ways. The red LED represents different fault information by the bright light. The following table shows:

Red Light Blinking Mode	Red Light Blinking Waveform	Fault instruction
On		Over current alarm
Blink 2 times by 1 second		AD sampling midpoint wrong
Blink 3 times by 1 second		No connect the motor lines or motor lines is poor contact or winding short circuit
Blink 4 times by 1 second		Low-voltage failure（voltage<15V）
Blink 5 times by second		Over-voltage failure（voltage>80V）

Control Signal

Pulse signal input   In order to ensure the reliable response of pulse signal, the duration of the optocoupler effective conduction should not be less than 2μs. The response frequency of the drive signal is 200KHz. High input frequency or sub-standard pulse width will not receive correct response.

Directional Signal Input   The signal is directional signal in the single pulse mode. The direction of motor is controlled by the internal optocoupler. When controlling motor direction, you should ensure that the direction signal leading before pulse signal about 5μs, and avoid the wrong response.

Off-line Signal Input   the motor phase current is off under the internal optocoupler conduction. The rotor is in a free state (off-line state). Optocoupler turns off, the motor current is restored to the size and direction before offline. When not use this feature, the offline signal terminal is unconnected.

The drive terminal is pluggable terminal. You can unplug their first, and then plug wired.
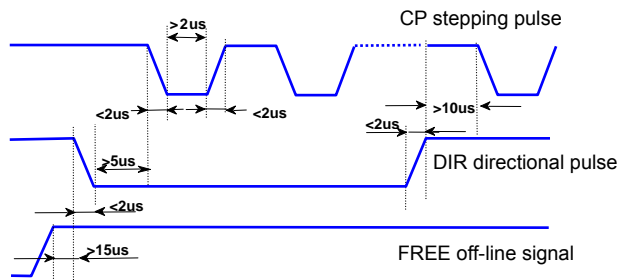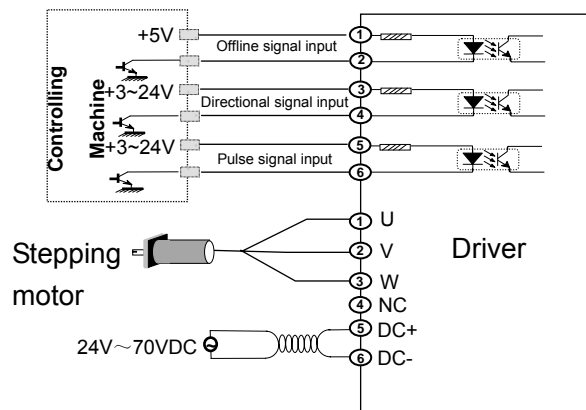
Input Interface Circuit
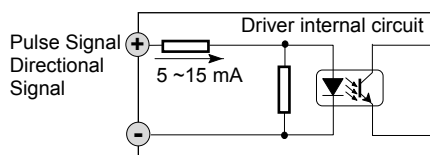
Note:
The interface can be adapted to TTL, OC,
differential signal format.
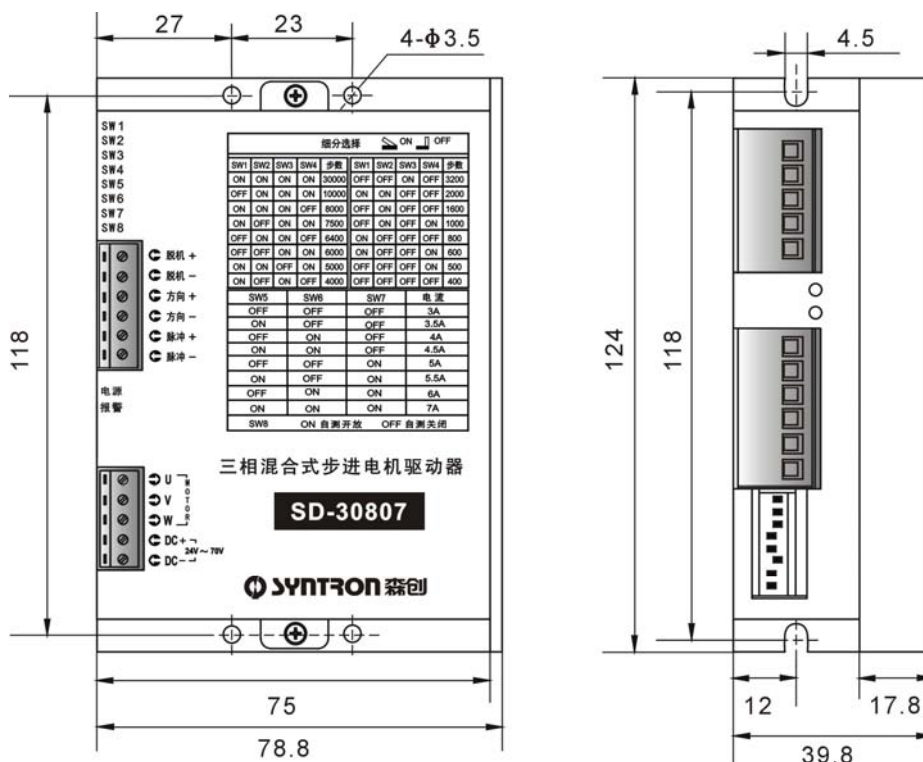The signal ports are adapted to +3V~24V voltage.

Input Signal Waveform and Timing

CP stepping pulse
>2us
<2us <2us >10us <2us
DIR directional pulse
≥5us
<2us
FREE off-line signal
≥15us

Wiring Diagram

Controlling Machine

+5V — Offline signal input — 1 2
+3~24V — Directional signal input — 3 4
+3~24V — Pulse signal input — 5 6

Stepping motor
Driver
1 U
2 V
3 W
4 NC
5 DC+
6 DC-
24V～70VDC

Dimension   [Unit：mm]

27   23   4-Φ3.5

SW1
SW2
SW3
SW4
SW5
SW6
SW7
SW8

118
75
78.8

脱机 +
脱机 −
方向 +
方向 −
脉冲 +
脉冲 −

电源
报警

U
V
W
DC+
DC−
24V～70V

细分选择   ON □ OFF

SW1	SW2	SW3	SW4	步数	SW1	SW2	SW3	SW4	步数
ON	ON	ON	ON	30000	OFF	OFF	OFF	OFF	3200
OFF	ON	ON	ON	10000	ON	ON	OFF	OFF	2000
ON	ON	ON	OFF	8000	OFF	ON	OFF	OFF	1600
ON	OFF	OFF	ON	7500	ON	OFF	OFF	ON	1000
OFF	ON	ON	OFF	6400	OFF	OFF	OFF	OFF	800
OFF	OFF	ON	ON	6000	ON	OFF	OFF	ON	600
ON	ON	OFF	ON	5000	OFF	OFF	OFF	ON	500
ON	ON	OFF	OFF	4000	ON	ON	OFF	ON	400

SW5	SW6	SW7	电流
OFF	OFF	OFF	3A
ON	OFF	OFF	3.5A
OFF	ON	OFF	4A
ON	ON	OFF	4.5A
OFF	OFF	ON	5A
ON	OFF	ON	5.5A
OFF	ON	ON	6A
ON	ON	ON	7A

SW8   ON 自测开放   OFF 自测关闭

三相混合式步进电机驱动器

SD-30807

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4.5
124   118
12   17.8
39.8

Products and services

Motion control motor and drive

◆ **Stepping motor system**

Two phase/three phase /five phase series

Motor diameter range: 28 mm ～ 130 mm

Motor torque range: 0.06 N·m ～ 45 N·m

Driver operating voltage range:

24VDC ～ 70VDC

100VAC ～ 220VAC

Driver output current range: 0.9A ～ 15A

Driver excitation modes: synchronism ～ 128 subdivide

◆ **AC servo system**

Motor diameter range: 60mm ～ 190 mm

Power range: 200W ～ 7500W

Speed range: 1000 rpm ～ 3000 rpm

Torque range: 0.64 N·m ～ 71.6 N·m

◆ **Brushless DC motor system**

Motor diameter range: 57 mm ～ 92 mm

Power range: 70W ～ 600W

Speed range: 1000 rpm ～ 8000 rpm

Torque range: 0.095 N·m ～ 1.9 N·m

Driver operating voltage range：48VDC，220VAC

High-speed brushless DC motor system

Power range: 200W ～ 1000W

Speed range: 10000 rpm ～ 20000 rpm

Torque range: 0.13 N·m ～ 1 N·m

Industry-specific control system

Digital winding cable control system
Electro-pattern-sewing control system
Pillow type packaging machine controller

Elasticizer ATTpw winding control system
Winding machine control system
Threading machine controller

Machine drive section

◆ Planetary reducer, linear motion section

Motion control system

◆ PLC, control cards, SC series controller, TRIO motion controller

Systems integration and services

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