

# STD3722M

## 3 -Phase Digital Hybrid Stepper Driver

### Features

1. 3-phase digital stepper driver, adoption of 32-bit DSP technology
2. Low-noise, low-vibration and low temperature rising
3. Voltage 110v-220VAC
4. With 8 stalls output current setting, peak current 7.0A
5. With 16 stalls microstep subdivision setting, the highest resolution of 60000 steps / turn
6. Automatic half current, self-test, over voltage, under voltage, over current protection
7. Internal optical isolation, the highest response frequency of up to 200Kpps
8. Suitable for nema42, nema52 3-phase Hybrid stepper motor between 1.2-7.0A
9. When the step pulse stops for more than 100ms, the coil current is automatically reduced to half of the set current, effectively reducing the motor heat
10. Signal voltage : 5V ~ 24V compatible
11. Working temperature: -30 °C ~ 85 °C

### Current selection

| Current | D1  | D2  | D3  | D4  |
|---------|-----|-----|-----|-----|
| 1.2A    | off | off | off | off |
| 1.5A    | off | off | off | on  |
| 2.0A    | off | off | on  | off |
| 2.3A    | off | off | on  | on  |
| 2.5A    | off | on  | off | off |
| 3.0A    | off | on  | off | on  |
| 3.2A    | off | on  | on  | off |
| 3.6A    | off | on  | on  | on  |
| 4.0A    | on  | off | off | off |
| 4.5A    | on  | off | off | on  |
| 5.0A    | on  | off | on  | off |
| 5.3A    | on  | off | on  | on  |
| 5.8A    | on  | on  | off | off |
| 6.2A    | on  | on  | off | on  |
| 6.5A    | on  | on  | on  | off |
| 7.0A    | on  | on  | on  | on  |

### Microstep selection

| Pulse/Rev | D1 | D2  | D3  | D4  |
|-----------|----|-----|-----|-----|
| 400       | on | on  | on  | on  |
| 500       | on | on  | on  | off |
| 600       | on | on  | off | on  |
| 800       | on | on  | off | off |
| 1000      | on | off | on  | on  |

|       |     |     |     |     |
|-------|-----|-----|-----|-----|
| 1200  | on  | off | on  | off |
| 2000  | on  | off | off | on  |
| 3000  | on  | off | off | off |
| 4000  | off | on  | on  | on  |
| 5000  | off | on  | on  | off |
| 6000  | off | on  | off | on  |
| 10000 | off | on  | off | off |
| 12000 | off | off | on  | on  |
| 20000 | off | off | on  | off |
| 30000 | off | off | off | on  |
| 60000 | off | off | off | off |

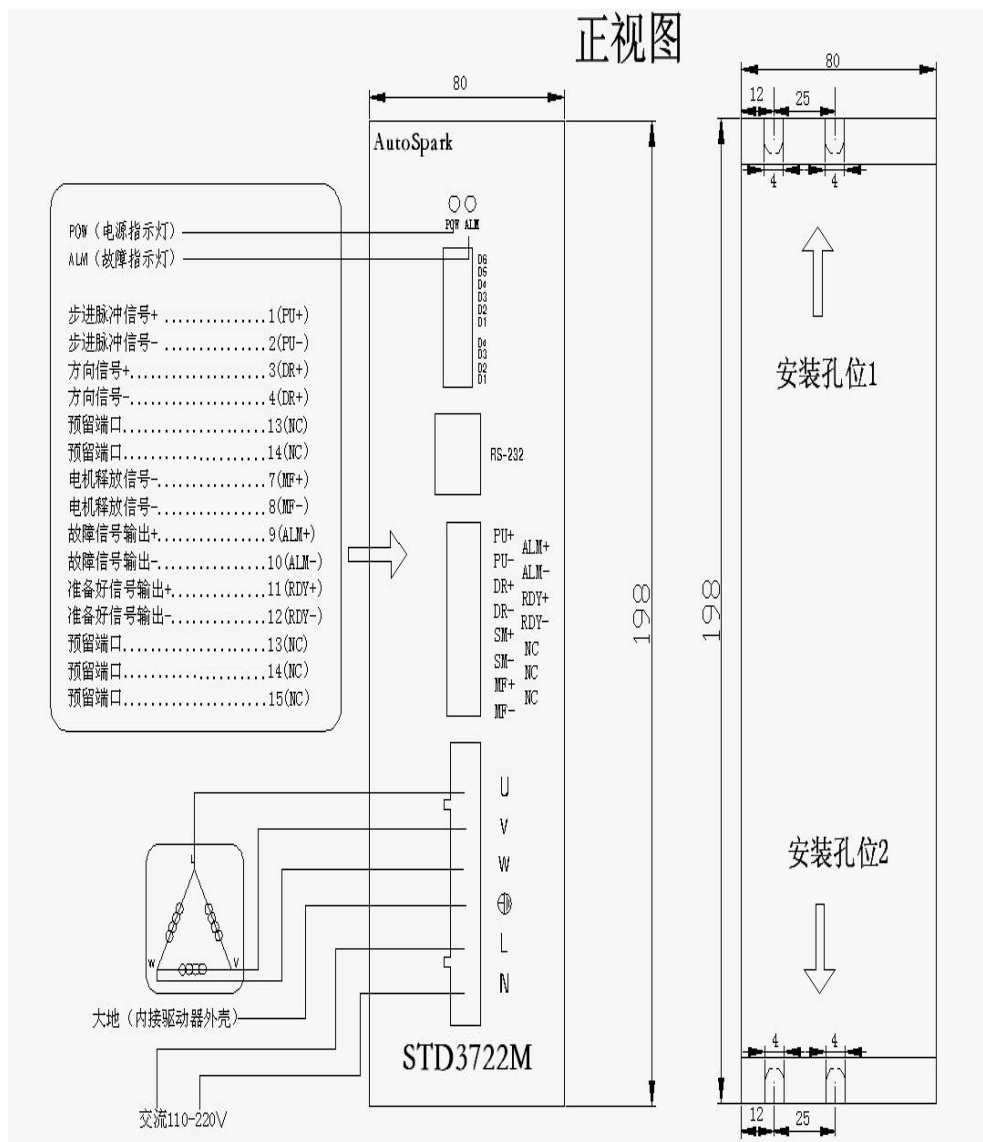
Note:

D5: ON, double pulse: PU is forward step pulse signal, DR is reverse step pulse signal

OFF, single pulse: PU is the step pulse signal, DR is the direction control signal

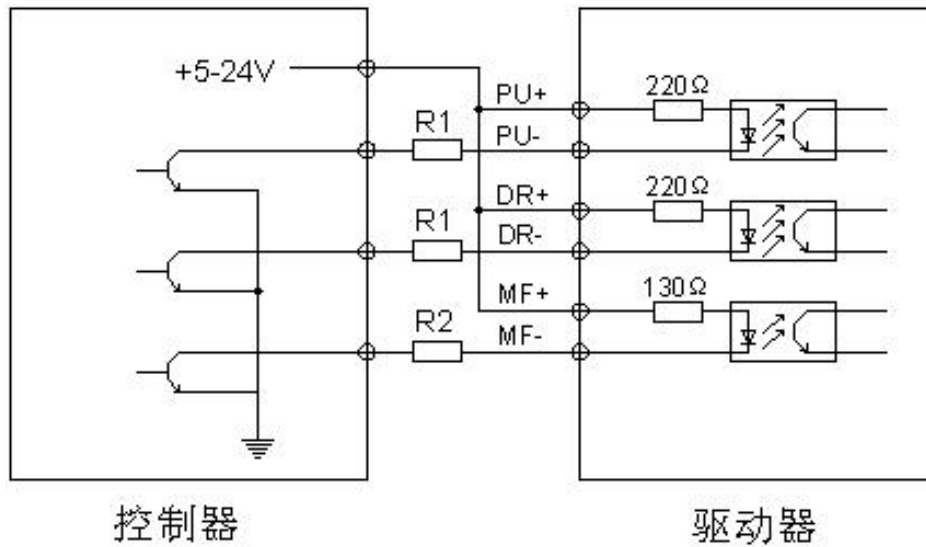
D6: automatic detection switch (OFF when receiving external pulse, ON the drive to the internal speed of 30 r / min)

### Mechanical Dimension(mm)

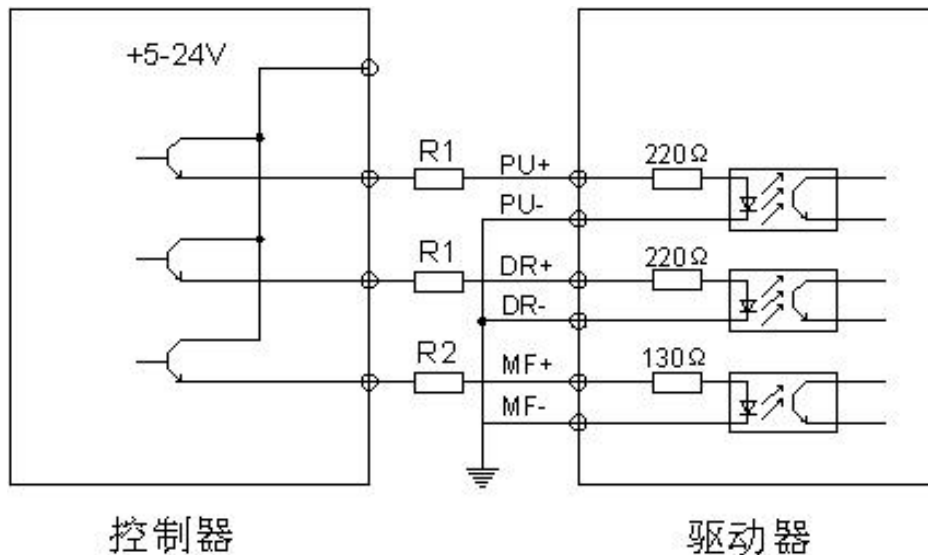


## Signal Input Interface Ports

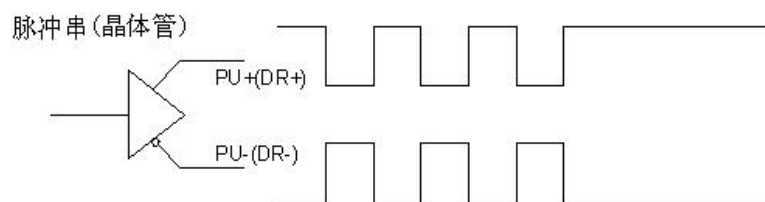
### ★ Connections to Common Anode



### ★ Connections to Common Cathode



### ★ Connections to Differential Signal



## Signal Ports (DB15) Description

| Port definition | Pin number | Symbol | Features     | Annotations   |
|-----------------|------------|--------|--------------|---|
| RS-232          | 1          | RX     | Receive data | Connected to the controller port TX (function retained) |

|          |     |      |  |  |
|----------|-----|------|--|--|
|          | 2   | TX   | Send data  | Connected to the controller port RX (function retained)  |
|          | 8   | GND  | Ground line  | Connected to the controller port ground line (function retention)  |
| DB15     | 1   | PU+  | Input pulse signal positive terminal                         | connect the signal power supply, + 5V-+24 V can be driven  |
|          | 2   | PU-  | DP5= OFF, PU is step pulse signal                            | The falling edge is valid. When the pulse goes from high to low, the motor takes a step, and the internal current limiting resistor 220 Ω requires: low level 0-0.5V, high level 24V or less, pulse width> 2.5 μ S |
|          |     |      | DP5=ON, PU is positive phase step pulse signal               |  |
|          | 3   | DR+  | Input direction signal positive terminal                     | connect the signal power supply, + 5V-+24 V can be driven  |
|          | 4   | DR-  | DP5= OFF, DR is direction pulse signal                       | Used to change the motor steering. Requirements: low level 0-0.5V, high level 24V or less, pulse width> 2.5 μ S  |
|          |     |      | DP5=ON, DR is reverse pulse signal                           |  |
|          | 5   | MF+  | Input motor release signal (enable signal) positive terminal | connect the signal power supply, + 5V-+24 V can be driven  |
|          | 6   | MF-  | Motor release signal (enable signal) negative terminal       | When motor is off power and driver stop working, the motor is in free state  |
|          | 7   | NC   |  | invalid  |
|          | 8   | NC   |  | invalid  |
|          | 9   | ALM+ | Fault output signal positive terminal                        | over current, over heating alarm   |
|          | 10  | ALM- | Fault output signal negative terminal                        |  |
|          | 11  | RDY+ | Ready output signal positive terminal                        | Indicate the driver is ready to work   |
|          | 12  | RDY- | Ready output signal negative terminal                        |  |
| 13,14,15 | NC  |      | invalid  |  |
| Motor,   | 1,2 | L,N  | Power supply   | 110v ~ 220v  |

|                         |   |    |             |                                |
|-------------------------|---|----|-------------|--------------------------------|
| power<br>supply<br>side | 3 | PE | Ground line | Earth (built-in drive housing) |
|                         | 4 | U  | Motor lines |                                |
|                         | 5 | V  |             |                                |
|                         | 6 | W  |             |                                |

## Possible problems & Solutions

| Appearance               | Possible reason  | Measures  |
|--------------------------|--|---|
| The motor does not turn  | The indicator light is not displayed                             | Check whether the power supply is normal  |
|                          | The fault indicator is on  | Check if the driver is overcurrent, overheat, lack of motor                     |
|                          | Drive control mode selection does not match                      | Choose the appropriate control mode   |
|                          | The motor shaft is locked and the motor is not moving            | Check the external control signal   |
|                          | The indicator light is normal and the motor shaft is not locked  | Check if the MF signal is valid   |
| Motor whistle            | The drive running current does not match the motor rated current | Set the driver operating current to the motor rated current                     |
|                          | Acceleration time is too short                                   | Lengthen the acceleration time or increase the drive pulse filter constant      |
|                          | The maximum speed setting is too large                           | Reduce the maximum speed  |
| Location is not accurate | The microstep is not right                                       | Select the correct microstep  |
|                          | Motor load is too large  | Replace the motor or increase the operating current of the drive as appropriate |

|                             |  |   |
|-----------------------------|--|---|
| Leak current                | The driver, the motor is not reliably grounded                               | Put the driver, the motor reliably grounded   |
| Driver, motor serious fever | The driver has a large operating current or poor external thermal conditions | Properly reduce the driver operating current or increase the driver and motor ventilation |

## Caution

- 1, the input voltage is 220V, more than 260V or voltage instability, please use with the isolation transformer;
- 2, the input pulse signal falling edge is valid, the need to rise when the effective time in advance, we can cooperate with the Secretary modified;
- 3, the drive temperature exceeds 75 degrees when the drive stops working, fault indicator ALM light, until the drive temperature dropped to 50 degrees, the drive needs to re-power to resume work. Excessive protection should be installed Please install the radiator;
- 4, over-current (load short-circuit) fault indicator ALM light, please check the motor wiring and other short-circuit fault, remove the need to re-power recovery;
- 5, no motor fault indicator ALM light, please check the motor wiring, excluding the need to re-power recovery