

DD8727T4V1 stepper motor driver product manual (English version)

DD8727T4V1stepper moto driver

► 1. Introduction

Adopting the chip manufactured by Japan Sanyo, DD8727T4V1 is a high sub-division two- phase step motor driver developed by many times' optimization, which is suitable to drive the small and medium phase(the two or four phase current lower than 4A) hybrid step motor. Comparing with other driving mode, the new style bipolar constant current chopping driving technology enables the DD8727T4V1 output higher speed and power when you use the same motor. Its sub-division feature improves the motor operating accuracy, decreases the shaking and reduces the noise.

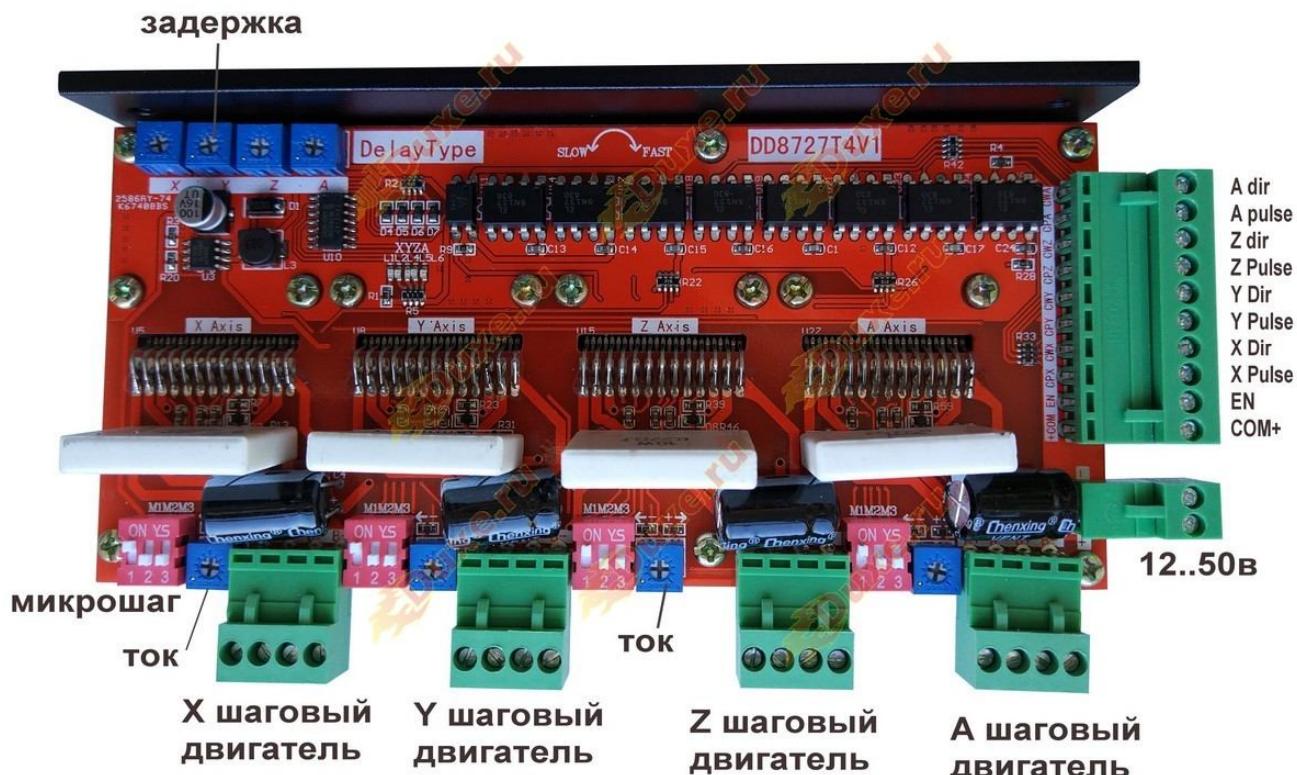
► 2. Specification

- 1) High performance, low price;
- 2) Constant current chopping driving technology;
- 3) Supply voltage 12~50VDC;
- 4) High-speed optocoupler signal isolation input;
- 5) 20Khz chopping wave frequency;
- 6) Subdivision accuracy 1, 2, 4, 8, 16, 32, 64,128 choosable;
- 7) Input electrical signal TTL compatibility;
- 8) Automatic current halving in rest;
- 9) Easy to assemble in terms of appearance design;
- 10) 4 axis stepper driver out;
- 11) Maximum driving current 4A;
- 12) Could drive any two or four-phase hybrid stepping motor with 4A phase one time.

► 3. Application fields

It is suitable to various kinds of small or middle size of automation equipment and instrument, like the small size engraving machine and chip mounter.

► 4. Wire connection definition



Control Port define:

| PORT | Function |
|------|------------------------------|
| + | Power Positive 12-50VDC |
| - | GND |
| +COM | COM(Positive of all signal) |
| EN | Negative of Enable |
| CPX | Negative of X AXIS PULSE |
| CWX | Negative of X AXIS direction |
| CPY | Negative of Y AXIS PULSE |
| CWY | Negative of Y AXIS direction |
| CPZ | Negative of Z AXIS PULSE |

| | |
|-----|------------------------------|
| CWZ | Negative of Z AXIS direction |
| CPA | Negative of A AXIS PULSE |
| CWA | Negative of A AXIS direction |

Strong Voltage signal interface

| signal | function |
|--------|--|
| VIN+ | Direct-current power 12~50V input+terminal, recommend to use 40V8A |
| GND | Direct-current power ground terminal |
| A+ | Step motor A+phase terminal |
| A- | Step motor A-phase terminal |
| B+ | Step motor B+phase terminal |
| B- | Step motor B-phase terminal |



CAUTION: This driver do not contain the anti-plug backward circuit, thus positive-negative reversal is prohibited! Otherwise, the driver will be damaged!

► 5. Electrical specification

Electrical specification (T=25°C)

| Description | DD8727T4V1 X Y Z single output parameters | | | |
|----------------------------------|---|---------------|------------|------|
| | Min. value | Typical value | Max. value | Unit |
| Output phase current | 0.5 | - | 4 | A |
| Input power source voltage | 12 | 36 | 50 | V |
| Logic input voltage | 3 | 5 | 7 | V |
| Logic input current | 5 | 10 | 15 | mA |
| Stepping motor impulse frequency | 0 | - | 150 | KHz |
| Min. impulse time | 1 | - | - | us |

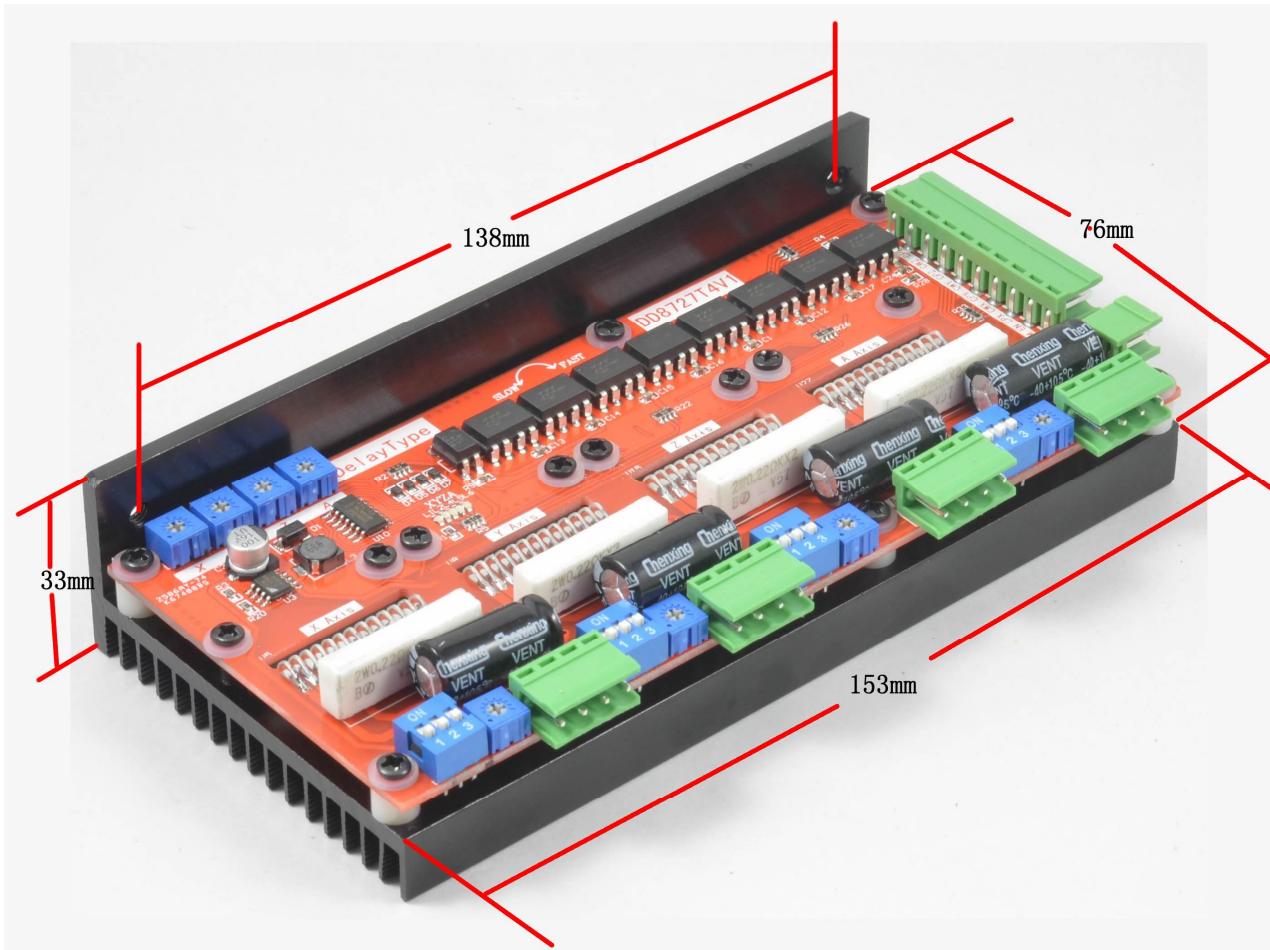
► 6. Operating environment and parameter

| | | |
|-----------------------|--------------|--|
| Cooling type | | Natural cooling or force-air cooling |
| Operating environment | Circumstance | Avoid the dust, oil mist and corrosive gas |

| | | |
|--|----------------------------|-------------|
| | Temperature | 0°C-+50°C |
| | Humidity | 40-90%RH |
| | Shake | 6m/s2 MAX |
| | Storage temperature | -20°C-+65°C |
| | Weight | 250g |



7. Machine installation size



8. Power supply

Machine could operate within the voltage of DC12V-50V. The common switch DC power supply and the transformer+bridge rectifier+capacitor filtering (capacitance range:2000U-5000U), both are allowable for the DD8727T4V1 driver's power supply. But the voltage wave crest shall less than 50V. It is recommended that the user adopt the 36V-40V DC power supply lest the power grid fluctuation exceeds the driver's voltage range.



Attention: 1, the polarity of the power supply mustn't be reversed.

2, Several drivers can share one power source in order to reduce the cost. But the rated

power and output current of the power source shall be increased; heat dissipation shall also be noticed.



9. Attenuation dial switch setting



10. Sub-division dial switch setting

| Sub-divisoin multiple | Step NO./Circle(1.8° /full step) | SW1 | SW2 | SW3 |
|-----------------------|----------------------------------|-----|-----|-----|
| 2 | 400 | OFF | OFF | OFF |
| 8 | 1600 | ON | OFF | OFF |
| 16 | 3200 | OFF | ON | OFF |
| 32 | 6400 | ON | ON | OFF |
| 64 | 12800 | OFF | OFF | ON |
| 128 | 25600 | ON | OFF | ON |
| 10 | 2000 | OFF | ON | ON |
| 20 | 4000 | ON | ON | ON |

► 11. Current dial switch setting

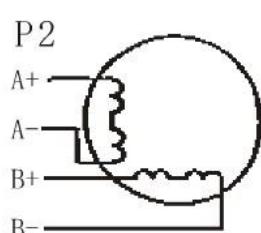


Current dial setting

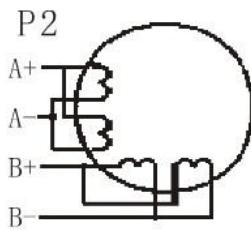
0.5 – 4A Current Adju

► 12. The motor wiring

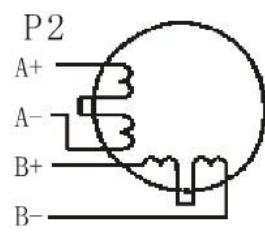
The FMD2740A driver can drive the four and six wire or the eight wire 2/4 phase motor under the phase current of 4A. Below is the way of connection for four, six and eight wire:



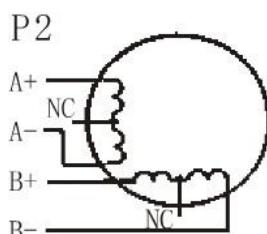
4线电机



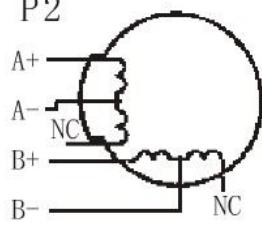
8线电机并行接法
高性能好



8线电机串行接法
低速力矩大



6线电机
高力矩模式



6线电机
高速模式

► 13. The matching of drive and motor

FMD2740A driver could drive the two phases and four phase motor manufactured by domestic and overseas company. It is needed to choose the suitable power supply and setting current in order to reach the satisfying effect. The height of power voltage decides the motor performance, while the electric current setting value decides the motor's output torque.

The setting of power supply voltage:

Generally speaking, the higher of the power supply voltage, the stronger of the motor high speed torque, which can avoid the breakdown in high speed. But on the other hand, if the voltage is too high, it will lead to the overvoltage protection, even damage the driver, and the machine would lead low speed shake under the high voltage.

Output electric current setting.

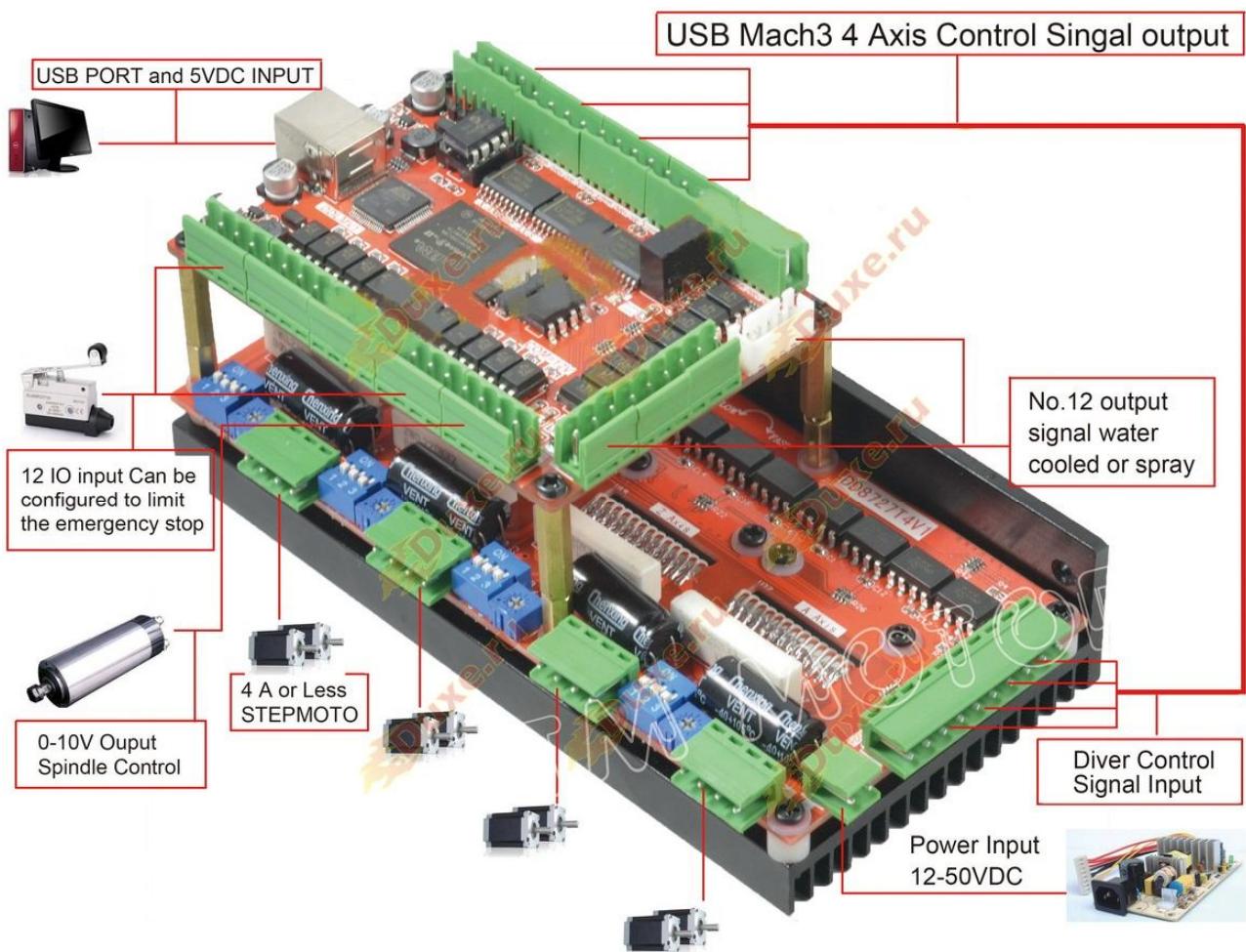
As to the same motor, the higher of the electric current setting value, the higher is the motor output torque, but the motor and driver also generate heat greatly under the high electric current. Therefore mostly the electricity value shall be set at warm but not too heat condition when the motor is under long term operation.



Attention: Please run the motor 15-30 minutes after setting the electricity, if the motor temperature is too high, the electricity setting value shall be reduced. If the motor output torque is not enough after setting the motor electricity value, the heat dissipation condition shall be improved to ensure that the motor and driver temperature are not too high.



14. Combination



USB Mach3 Connect to DD8727T3V1



| No | DD8727T4V1 input Port | USB Mach3 Output port |
|----|-----------------------|--------------------------|
| | COM+ | X /Y/ Z/ A/ B AXIS STEP+ |
| | En | NC |
| | CPX | X AXIS: STEP- |
| | CWX | X AXIS: DIR- |
| | CPY | Y AXIS: STEP- |
| | CWY | Y AXIS: DIR- |
| | CPZ | Z AXIS: STEP- |
| | CWZ | Z AXIS: DIR- |
| | CPA | A AXIS: STEP- |
| | CWA | A AXIS: DIR- |