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# User's Manual For MSD3PH220AC

## High Performance Microstepping Driver

**Model : MSD3PH220AC**

### **Introduction :**

**MSD3PH220AC** motor drive with constant angle and constant torque . The driven voltage ranges from AC110V to 220V. It can match 3-phase hybrid stepper motors whose rated current is under 8.0A and shaft diameter range from 86mm to 130mm. Owe to bipolar constant chopping circuit, it can make motors low noise and operated smoothly when in low speed; the torque is much greater than 2-phase and 5-phase stepper motor when in high speed. It is widely used in small-sized numerical control device such as medical machine, robot, instrumentation, curving machine, laser labeling machine, inner laser curving machine.

### **Feature**

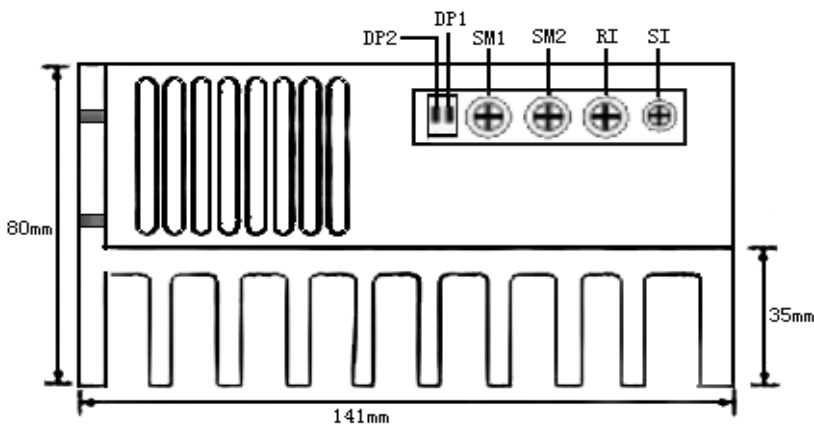
- Wide voltage range from AC110V to 220V
  - Driven current is adjustable in 16 channels ,the maxim is 8.0A/phase
  - The highest response frequency: 200Kpps
  - PWM Bipolar constant current chopping circuit
  - Single pulse or double pulse
  - Opto-isolated input/output
  - Less-voltage ,over-current, over-heating protection, high dependability
  - Phase remembering function (The driver remembers motor's phase when there's no input pulse is received for 5s and it recovers the motor's phase when the power on or signal MF is inactive)
  - The motor phase current is reduced to the setted value if it have stopped receiving the pulse edge 100ms.
  - High performance, low price
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- 16 channels constant angle and constant torque. Wide subdivision from 400s/r to 6000s/r, it can supply all kinds of motors according to adjust the phase circuit.

**Note**

1. Please don't reverse the power supply, supply voltage shouldn't exceed AC250V.
2. POWER is power indicator lights (green). When driver is working, the power light is on
3. ALARM is a alarm indicator light, it would be lighted if the drive temperature is over 70 °C, the drive shut off, or the voltage is less than AC 110V
- 4 try to avoid touching dust smeary or caustic gas

**Current setting**



1. **SI** is the rotary switch that can set output current of holding motor status as 20% -80% of normal output current (increase in CW, decrease in CCW).
2. **RI** is the rotary switch for adjustment of the motor current.

RI	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
A	0.8	1.3	1.8	2.2	2.6	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0

Normal current channel is B 6A

## Subdivision setting

SM352A drive has two groups of subdivision, and each group has 16 channels set by switch SM1/SM2.

SM1	F	E	D	C	B	A	9	8
s/r	400	500	600	800	1000	1200	2000	3000
7	6	5	4	3	2	1	0	
4000	5000	6000	10000	12000	20000	30000	60000	

SM2 is the second group. The subdivision setting of SM2 is same as SM1.

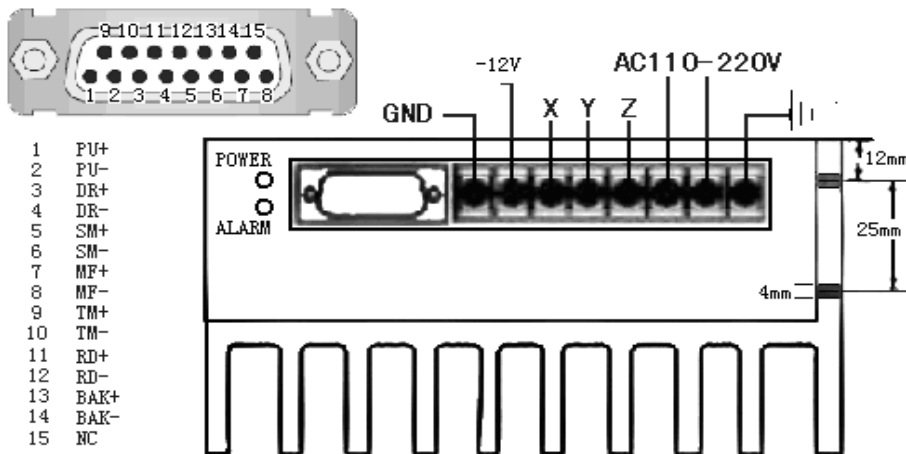
Choose SM1 group when subdivision choosing signal SM is low voltage and S M2 at high voltage

## Parameter switch function

**DP1: ON. double pulse .PU is positive signal. DR is negative pulse signal**

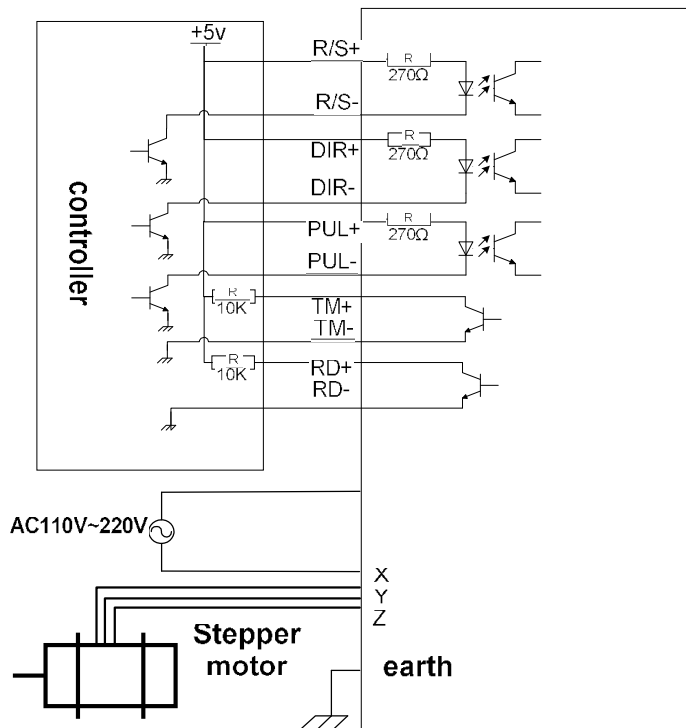
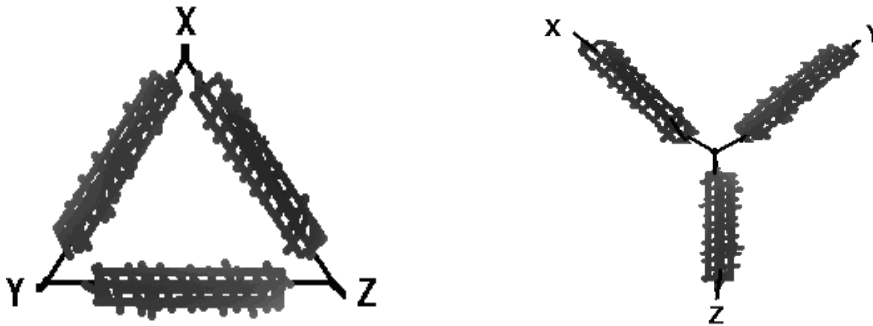
**DP1: OFF. single pulse .PU is pulse signal .DR is direction signal**

**DP2: self detect switch (OFF: accept pulse input. ON: the subdivision should be between 2000-10000 s/r)**



X, Y, Z Motor

## Drivers wiring diagram



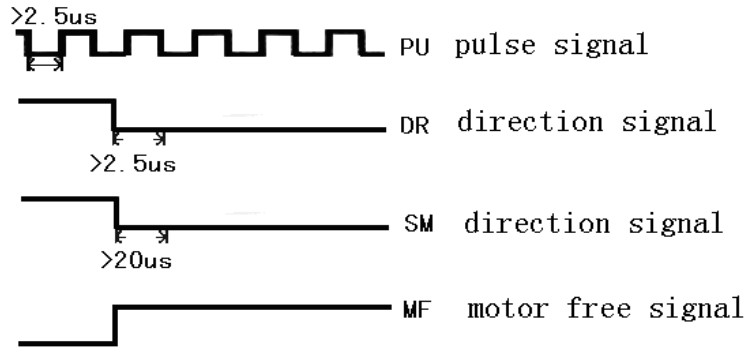
- When the inputting signal is 12 V, please carry 510  $\Omega$  resistances, and when inputting signal is 24 V, carry 510  $\Omega$  resistances.
- For the sake of using motor driver well, the user should follow the rule that strong signal should be divided with weak signal, to avoid the controlled signal being disturbed, you'd better use STP to carry signal if you can't distinguish them..

## Terminal function

PU+	Positive of opto-isolated	
PU-	DP1=ON, PU is pulse signal	With the falling edge of the signal PU, the motor executes an angular step. The input resistance is 220Ω. Low voltage 0-0.5V, high voltage 4-5V, pulse width>2.5μS.
	DP1=OFF, PU is positive pulse signal	
DR+	Positive of opto-isolated	
DR-	DP1=ON, DR is direction signal	Change the motor's direction of rotation. Input resistance is 220Ω. Low voltage 0-0.5V, high voltage 4-5V, pulse width>2.5μS
	DP1=OFF, DR DR is negative pulse signal	
SM+	Positive of opto-isolated	
SM-	Subdivision choosing signal	Choose subdivision by SM1 when the voltage is low and SM2 when the voltage is high. Input resistance is 220Ω.
MF+	Positive of opto-isolated	Connected to +5V power supply. Driven voltage range from +5V to +24V. Current-limiting resistance is needed when over 5V. ◦
MF-	Motor free signal	The motor current will be cut off and the drive stops working when it effects.
TM+	Positive of opto-isolated origin output signal	When the motor current is on, the motor is at the origin position. Opto-isolated output (high voltage). Connect TM+ to current-limiting
TM-	Negative of opto-isolated origin output signal t	

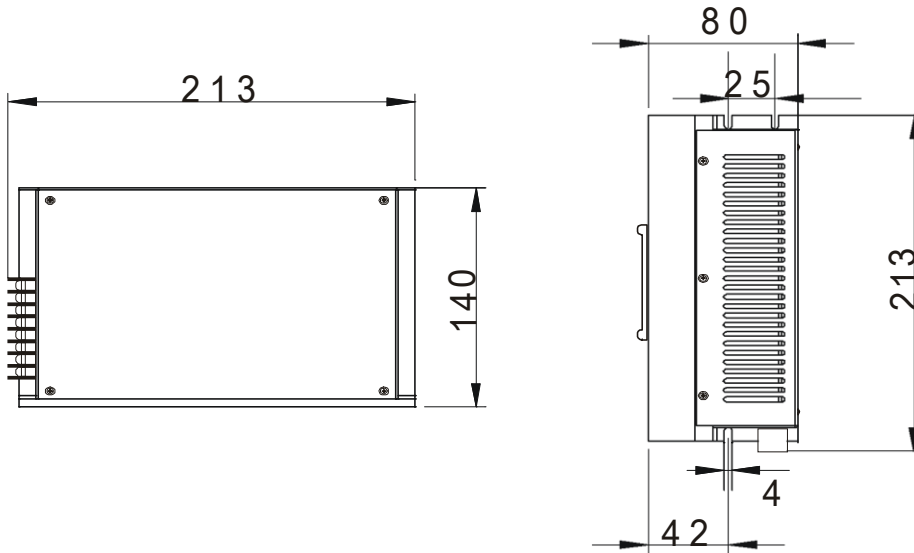
<b>RD+</b>	Positive of opto-isolated ready signal	It is active (low voltage) when the drive is ready for receiving controller's signal.
<b>RD-</b>	Negative of opto-isolated ready signal	
BAK+,BAK-is spare interface		

**The input signal waveform and timing map**



pulse up time or down time  $<2\mu s$

**Mechanical specifications (mm)**



Mechanical specifications : 213\*140\*80(mm)

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