

3MS 220M

3MS220M is constant angle constant torque microstepping drive. This type drive supplies regulated phase current for supply voltages between AC110-220V. It is designed for use with the 3-phase hybrid stepper of all kinds with 86-130mm outside diameter and 7.0A current max. The circuitry this type drive adopts is similar to the circuit of servo control in theory. This circuitry enable the motor run smoothly at low speed nearly without vibration and noise, the motor's torque at high speed is much greater than the 2-phase and 5-phase hybrid stepping motors'. The precision of location can reach up to 30000 step/ R. It is widely used large, medium numerical control equipment with high resolution such as carving machine, medium numerical machine, packaging machine etc.

Features

- High reliability, low price
- 16-channel constant angle, constant torque micro steps. Highest resolution: 30000 steps/R
- Highest response frequency: 200Kpps
- Winding current will be reduced to set value when no step pulse command is received for 0.1 second.
- Bipolar constant current chopping mode
- Optically isolated signals I/O
- Drive current is adjustable from 0.7A/phase to 7.0A/phase departing into 16 parts.
- Single supply (AC110-220V)
- Phase remembering function.

Current setting

1. STOP/Im is the potentiometer which can set the output current of holding status to 20%-80% of the normal output current (motor phase current).(Increase with the CW rotation, decrease with the CCW rotation).
2. RUN/Im is the switch to set the normal output current.

R-I	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Q2HB110M Im(A)	0.3	0.7	1.0	1.3	1.7	2.0	2.3	2.6	3.0	3.3	3.6	4.0	4.3	4.6	4.9	5.2

Micro step setting

3MS220M drive has two groups of micro steps totally 15 channels. The micro step is set by 16-bit DIP switch (SK). (Take the SK1 group as an example.)

SK1	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
Pulse/ R	400	500	600	750	1000	1200	1500	2000	2500	3000	5000	6000	7500	10000	15000	30000

SK2 is the second group, the setting method is the same as the first group.

When the SM signal is low voltage the SK1 group is chosen. When high voltage, SK2 group is chosen. Users can set the two groups to different micro step. Using the low micro step at high speed, high micro step at low speed.

DIP switch function

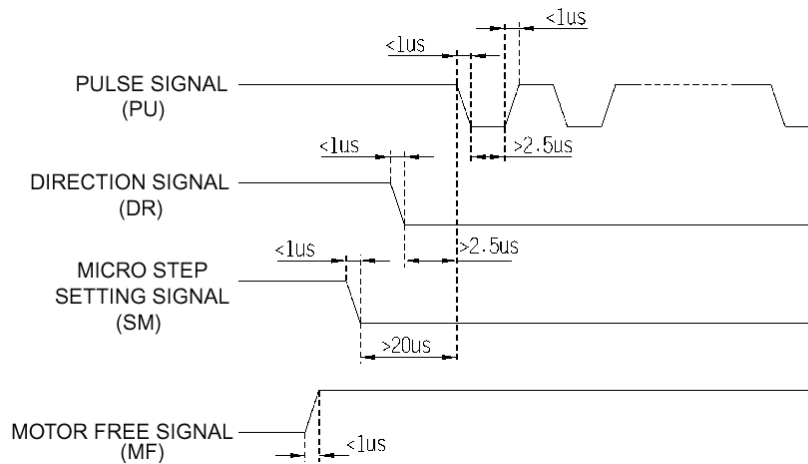
DP1	OFF, double pulses: PU is the “+” step pulse, DR is the “-” step pulse.
	ON, single pulse: PU is the step pulse , DR is the direction controller

signal table

Mark symbol	Function	Note
MF+	Anode of optical isolated inputs	Connected to +5V power. Driven voltage: +5V-+24V, R is needed when the voltage is over 5V, please refer to page 5 input signals for details.
MF-	Motor free signal	Low voltage effective, the current of the winding is cut off, the driver stops working, the motor is in a free status.
SM+	Anode of optical isolated inputs	
SM-	Micro step choosing	Low voltage: run at the micro step set by SK1; High voltage: run at the micro step set by SK2. Input resistance 220
DR+	Anode of optical isolated inputs	
DR-	DP1=ON, DR: direction control signal	Used to change the motor’s running direction. Input resistance is 220 .Requiring: low voltage level 0-0.5V, high voltage level 4-5V. pulse width >2.5 μ s
	DP1=OFF, DR: CCW step pulse signal	
PU+	Anode of optical isolated inputs	
PU-	DP1=ON, PU: step pulse signal.	Each negative pulse edge triggers one motor step. Input resistance is 220 .Requiring: low voltage level 0-0.5V, high voltage level 4-5V. pulse width >2.5 μ s
	DP1=OFF, PU: CW step pulse signal.	
TM+	Anode of optical isolated original outputs	Enabled when the energized motor’s windings are on the origin; optical isolated outputs (high voltage level).
TM-	Cathode of optical isolated original outputs	Connect TM+ to the resistance to limit the signal’s current,

		connect TM-to the output ground. The maximum driven current: 50mA, the highest voltage : 50V.
~AC	Power	AC110~220V
U	Motor's connection	
V		
2		

Inputs signals oscillogram



Note:

1. The input voltage cannot over AC220V
2. The voltage of the input control signal is 5V, a series resistance is necessary to limit the current when the voltage level over 5V.
3. When the temperature of driver is over 70C the overheat indicator will light and the drive will stop working until the temperature falls down to 50C. A radiator is needed when the overheat protection occurs.
4. If the over-current indicator (load short circuit occurs) OH lights, please check the motor's connection and other short circuit failure, eliminate the failure and restart it.
5. Indicator OH will light when low voltage occurs (When the voltage is less than DC12V).
6. POWER indicator will light when the drive is electrified.