3-Phase hybrid stepper drive

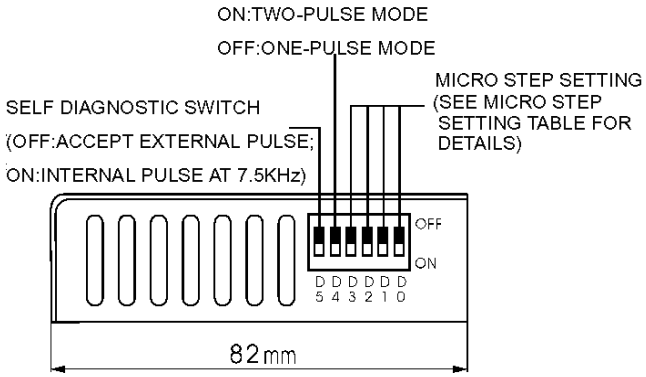
3MS60M

3MS60M is constant angle constant torque microstepping drive. This type drive supplies regulated phase current for supply voltages between 16-60V. It is designed for use with the 3-phase hybrid stepper of all kinds with25-136mm outside diameter and 5.8A 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 60000 step/ R. It is widely used small numerical control equipment where high resolution is needed such as mechanic equipment, robotics, apparatus and instruments, carving machine, laser labeling, laser inner carving machine etc.

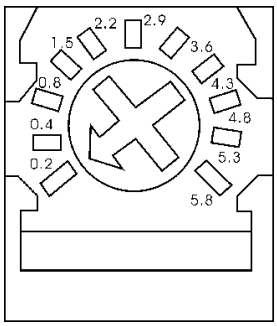
Features

- High reliability, low price
- 16-channel constant angle constant torque micro steps. Highest resolution: 60000 step/R
- Unique control circuitry
- 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 continually adjustable from 0.2A/phase to 5.8A/phase
- Single supply (DC16-60V)

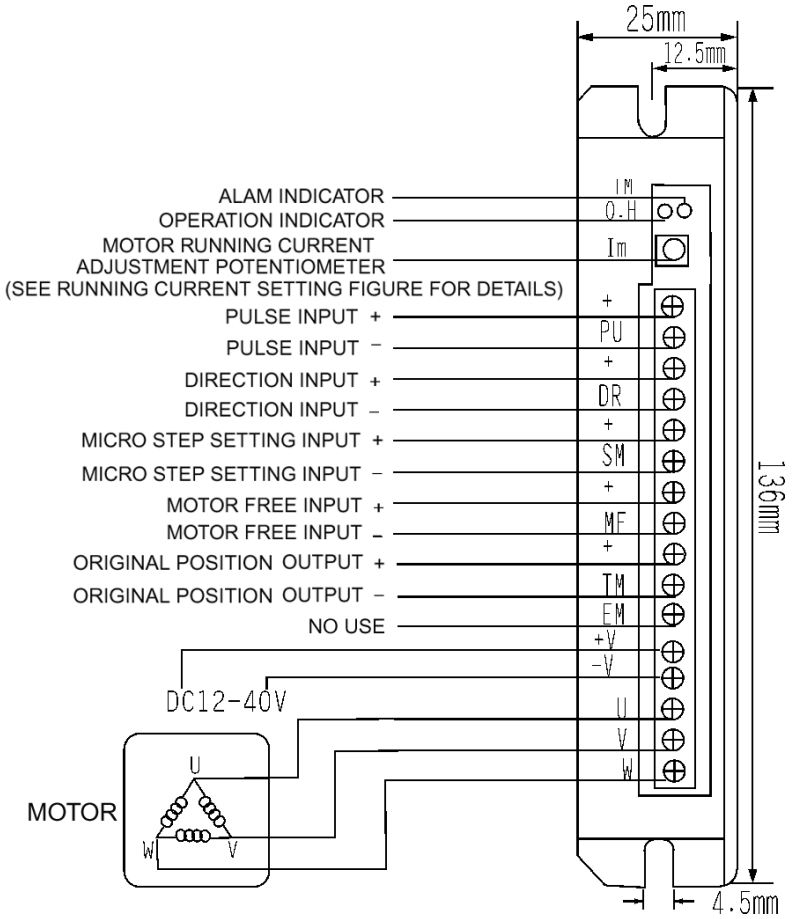
DIP SWITCHES



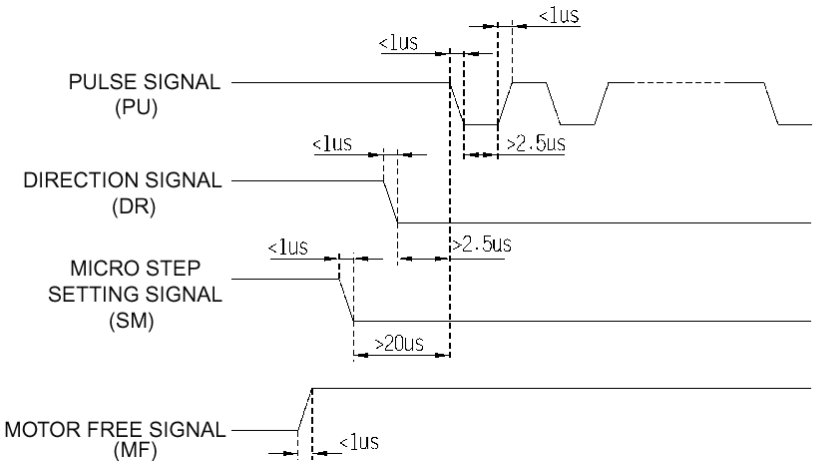
RUNNING CURRENT SETTING



Drive's diagram



Input signal oscillogram



Note:

1. Do not connect the power reverse. The input voltage cannot over DC60V
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)。

Q3HB64MA/B micro step setting table

Q3HB64MA: steps/R	400	500	600	800	1000	1200	2000	3000	4000	5000	6000	10000	12000	20000	30000	60000
Q3HB64MB: steps/R	400	800	1600	3200	6400	12800	25600	51200	51200	51200	51200	51200	51200	51200	51200	51200
D0	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
D1	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
D2	ON	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF
D3	ON	ON	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
D4	ON=Two-Pulse Mode: PU = CW Pulse; DR = CCW Pulse															
	OFF=One-Pulse Mode：PU = Pulse; DR = Direction															
D5	Self Diagnostic: OFF=External Pulse; ON=Internal Pulse (7.5KHz)															

signal table

Mark symbol	Function	Note
TM	Running indicator light	When the TM is effective the green LBD will light.
O.H	Failure indicator light	The red LBD will light when over-current, low voltage or overheat occurs.
Im	Potentiometer for setting winding current	Adjust the phase current of the motor. Decrease with the CCW rotation，increase with CW rotation。
+	Anode of optical isolated inputs	Connected to +5V power supply. Driven voltage: +5V-+24V, R is needed when the voltage is over 5V, please refer to page 5 input signals for details.
PU	D4=OFF, PU: step pulse signal. D4=ON, PU: CW step pulse signal.	Each negative pulse edge triggers one motor step. Input resistance is 220Ω.Requiring: low voltage level 0-0.5V, high voltage level 4-5V. pulse width >2.5μs
+	Anode of optical isolated inputs	Connected to +5V power supply. Driven voltage: +5V-+24V, R is needed when the voltage is over 5V, please refer to page 4 output signals for details
DR	D4=OFF, DR: direction signal. D4=ON, DR: CCW step pulse signal.	Used to change the motor's running direction. Input resistance is 430Ω.Requiring: low voltage level 0-0.5V, high voltage level 4-5V. pulse width >2.5μs
+	Anode of optical isolated inputs	Connected to +5V power supply. Driven voltage: +5V-+24V, a R is needed when the voltage over 5V, please refer to page 5 input signals for details.

SM	Micro step choosing signal	High voltage: run at the micro step set by D0-D3; Low voltage: run at half step (600/R)
+	Anode of optical isolated inputs	Connected to +5V power supply. Driven voltage: +5V-+24V, a R is needed when the voltage is over 5V, please refer to page 5 input signals for details.
MF	Motor free signal	The current of the winding is cut off, the driver stops working. The motor is in a free status.
+	Anode of optical isolated output signal of origin	Enabled when the energized motor's windings are on the origin (B,-A energized); optical isolated outputs (high voltage level).
TM	Cathode of optical isolated output of origin	Connect + to the resistance to limit the current of output signals, TM to the ground of outputs, maximum driving current 50mA, highest voltage 50V
+V	Anode of power	DC16-60V
-V	Cathode of power	
U	Motor's connection	
V		
W		