

## 3MS110M Driver with microstep

### Features

- High performance, low price
- Provides 16 kinds of microstep selection , it can be set to 60000puls/rev
- Once the pulse stops for 100ms , the phase current will automatically reduce to preset value
- Bipolar constant current chopper control
- Photocoupler isolated input/output
- Adjustable drive current range from 0.6A/phase ~ 5.2A/phase
- Single power input, voltage range from AC60V~110V
- The upmost pulse response frequency amounts to 200Kpps
- Phase memorize ( Notes : Once the pulse stops for 5s , the driver will memorize the current phases automatically so that it can be resume after restart or MF signal changes from valid to invalid. )

### Typical application

- Carve machine
- Precise large size & middle size lathe
- Packing machine
- Polish equipment
- Constant speed application

### Description

3MS110M is a constant torque driver with microstep, voltage range from AC60V~130V , can match three phase hybrid step motors whose rated current under 5.2A、 flange size range from 86~110mm.This driver integrates high technology which similar to servo technology in theory , and can run the motor smoothly in low speed and hardly makes any noise or vibration. Further more the motor output torque is well larger than that of two phase and five phase motor. The microstep can be set to 60000pulse/rev.

### Electricity specification

Item	Minimum	Typical	Maximum
Supply voltage V ( AC )	60	100	110
Normal output ( A )	0.6	-	5.2
Logical input ( mA )		15	
Response frequency ( KHZ )	-	-	200
Pulse low state time ( $\mu$ S )	2.5	-	-

### Current setting

1 , STOP/Im is idle state current adjuster , it can be set to 20%~80% of the normal output current

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( Turning it clockwise will increase the current output, counter clockwise decrease )

2 , RUN/Im is normal running current adjuster ( The following table shows the information in detail )

R-1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
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

### Microstep setting

3MS110M microstep setting table is as follow

SK	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Pu/rev	6000	3000	2000	1200	1000	600	500	400	300	200	120	100	80	60	50	40

### DIP Switch setting

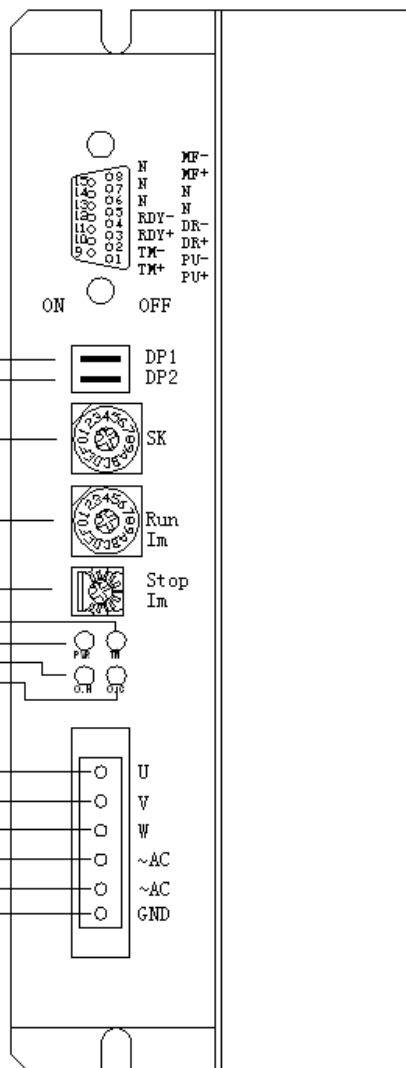
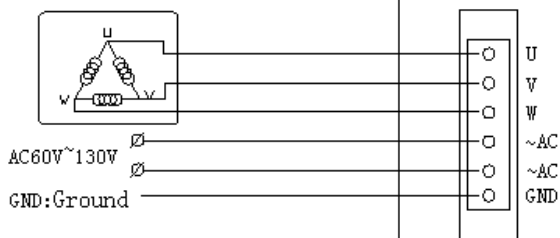
DP1	OFF : Accept pulse input ON : Send out 7.5KHz pulse by the driver
DP2	OFF : pulse + direction control ( PU is pulse signal , DR is direction signal ) ON : clockwise pulse (PU)+ counter clockwise pulse control ( DR )

### Driver onnection

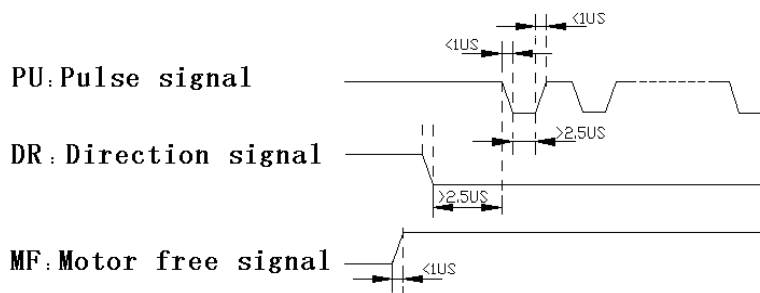
Notes:N is null terminal

- 1 (PU+):Pulse+
- 2 (PU-):Pulse-
- 3 (DR+):Direction signal  
(second series of pulse)+
- 4 (DR-):Direction signal  
(second series of pulse)-
- 7 (MF+):Motor free+
- 8 (MF-):Motor free-
- 9 (TM+):Origin output+
- 10 (TM-):Origin output-
- 11 (RDY+):Driver ready+
- 12 (RDY-):Driver ready-

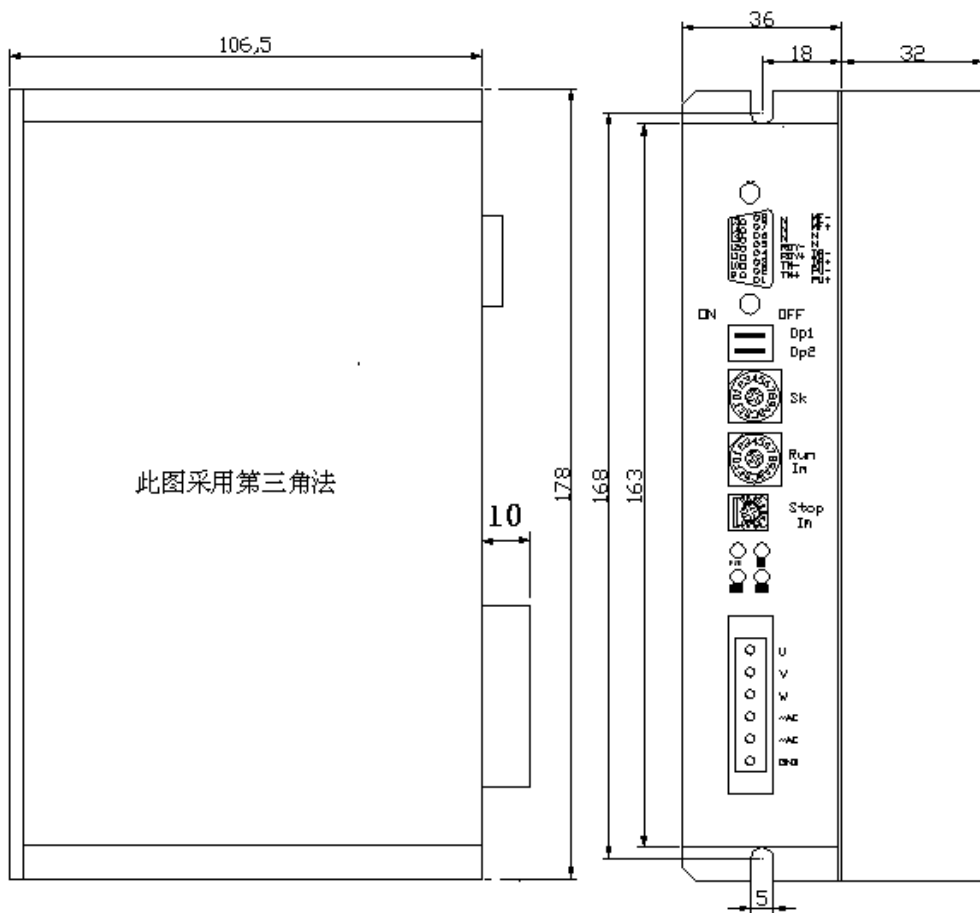
- Dp1:Self detect switch  
OFF:Accept pulse input  
ON:Sendout 7.5KHz pulse  
by the driver it self
- Dp2:Single/Double pulse control  
selection switch  
OFF:Pulse+direction control  
ON:Clockwise+counter clockwise  
control
- SK:Microstep setting
- Run:Working current setting
- Stop:Idle state current setting  
(20%~80%)
- TM:Origin/Pulse output indicator
- PWR:Power indicator
- O. H. :Overheat indicator
- O. C.:Overcurrent/Under voltage  
indicator



Input signal timing diagram



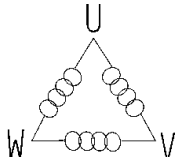
Installation dimensions ( unit : mm )



Indication LED description

ITEM	FUNCTION	NOTES
PWR	Power indicator	When power on, the green LED lights
TM	Origin/Pulse output indicator	Passing the origin or there is pulse output, the green LED lights
O.H	Malfunction indicator	When overheat occurs, the red LED lights
O.C	Overcurrent/Under voltage indicator	When current exceeds rated value or voltage lower rated value, the red LED lights

Terminal assignment

ITEM	FUNCTION	NOTES
PU+	Input signal positive side	It can connect +5V or +24V, but +24V should add an extra resistor
PU-	DP2=OFF,PU is pulse signal	Effects on falling edge ,the motor goes one step as the pulse input change from "high"to "low".Input resistance is 220Ω. Requirement : input low : 0 - 0.5V , input high:4 - 5V , pulse width>2.5μs
	DP2=ON , PU is clockwise pulse signal	
DR+	Input signal positive side	It can connect +5V or +24V, but +24V should add an extra resistor
DR-	DP2=OFF,DR is direction control signal	Use to change the direction. Input resistance is 220Ω. Requirement :input low : 0 ~ 0.5V ,input high:4 ~ 5V , pulse width>2.5μs
	DP2=ON,DR is counter clock pulse signal	
MF+	Input signal positive side	It can connect +5V or +24V, but +24V should add an extra resistor
MF-	Motor free signal	Once effects, it will cut off the motor current, the driver stops working and sets the motor free
TM+	Origin output signal positive side	This signal effects when the motor pass electrical origin
TM-	Origin output signal negative side	TM+ connects to the resistor , TM- connects to GND. Max output current 50mA , max voltage 50V.
RDY+	Driver ready signal positive side	The driver at normal state and ready for accepting control signals from controller
RDY-	Driver ready signal negative side	
AC ~	AC power	AC60V ~ 130V
U	Connect to the motor	
V		
W		

! Caution :

- 1 , Power should not exceed AC130V
- 2 , Input logic should be 5V , otherwise it should connect a resistor
- 3 , O.H is overheat indicator. Once the driver temperature exceeds 70°C,the current will be cut off automatically and the driver will resume working till the temperature drops to 50°C. If this happens, please install ventilation equipment.
- 4 , PWR is power indicator , it lights when power on.