2PH

2-PH Microstepping Motor Driver

DM545

1/128(max.) 4.5A(peak) 24 to 50VDC

Description

- SPWM current control
- With good command function, running smoothly at lower subdivisions.
- Flexible current and subdivision settings, to meet requirements for Multiple applications.
- Protection: undervoltage , overvoltage, overcurrent, overheated, Interphase short circuit etc.
- Matching Nema 23, 24 & Part of Nema 34 stepper motors.

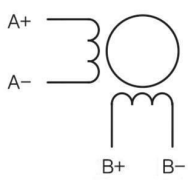
Recommed Motor

Model	Body Length	Rated Current
23HS5420	51mm	2A
23HS6620	56mm	2A
23HS8630	76mm	3A
23HS8430	76mm	3A
23HS2430	115mm	3A
23HS2840	115mm	4A
24HS9440D8	90mm	4A
34HS7840	78mm	4A

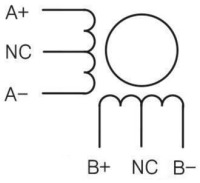
Feature

Supply Voltage	24~48VDC (including ripple)
Supply Current	70% of motor winding phase current
Current Setting	8 different sets of Output Current
Microstep Setting	15 different sets of Microsteps
Control Mode	PUL + DIR and CW + CCW
Driving Method	Bipolar Constant Current Chopper Mode
Idle Current	50% of Current setting Value
Operating ENV.	0~40℃,Non condensing,5.9m/S²
Storage ENV.	-20~70℃,Avoid Direct Sunlight
Weight	About 240gs

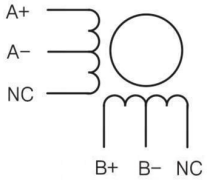
Wiring Diagram



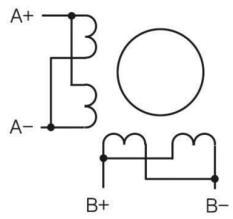
A-4 Leads Motor Connection



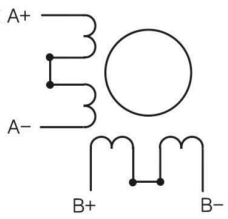
B-6 Leads Motor Winding Connection



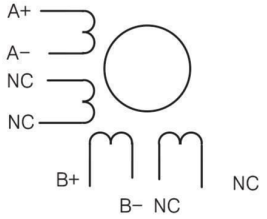
C-6 Leads Motor Half Winding Connection



D-8 Leads Parallel Connection



E-8 Leads Series Connection

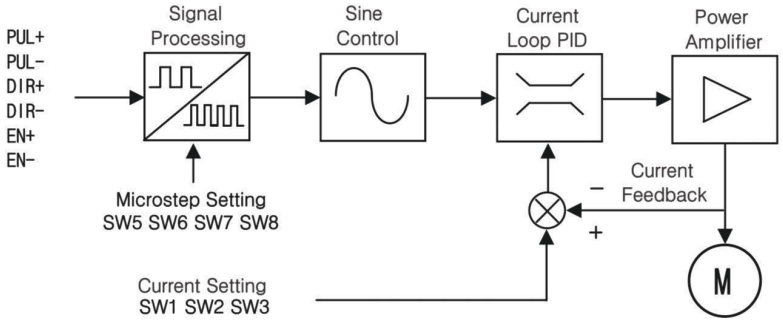


F-8 Leads Motor Half Winding Connection

Caution:

- As for 6 & 8 leading wires, the motor is labeled as single winding electric parameters.
- 6 wires' motor is the whole winding, compared with single resistor,its phase resistance is two times, while its phase inductance is 4 times than individual winding one.Thus, the motor can get higher holding torque, also it can reduce max speed. It should be set 70% of rated current, to reduce temperature rising.
- When motors of 8 wires are connected in parallel, its phase resistance is 1/2 of individual winding one, also its speed is much higher, while connected in series, its phase resistance is two times than individual winding one, and phase inductance is four times than individual winding one, so its holding torque is much larger. It should be set 70% of rated current, to reduce temperature rising.

Functional Diagram

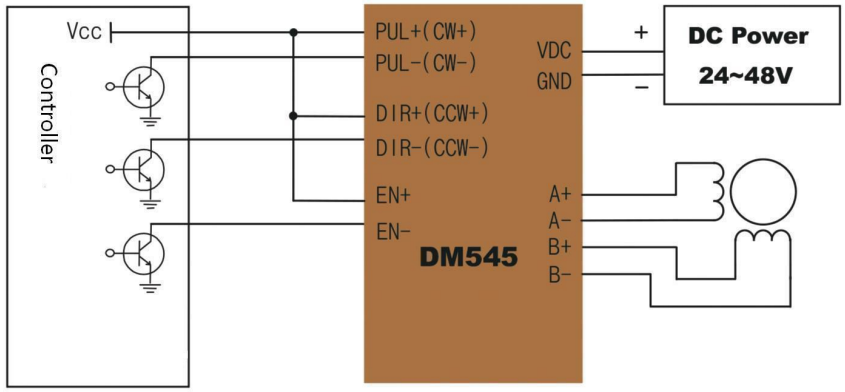


Electrical Characteristics	Min.	Typ.	Max.	Unit
Supply Voltage	+20	--	+48	VDC
Output Current (Peak)	1	--	4.5	Amps
PUL Step Instruction Pulse Frequency	--	--	1000	KHz
PUL Step Instruction Pulse Width T1	500	--	--	ns
DIR Instruction Leading Time T2	50	--	--	us
PUL Step Instruction Response Time	--	0.5 Instruction Cycles	--	--

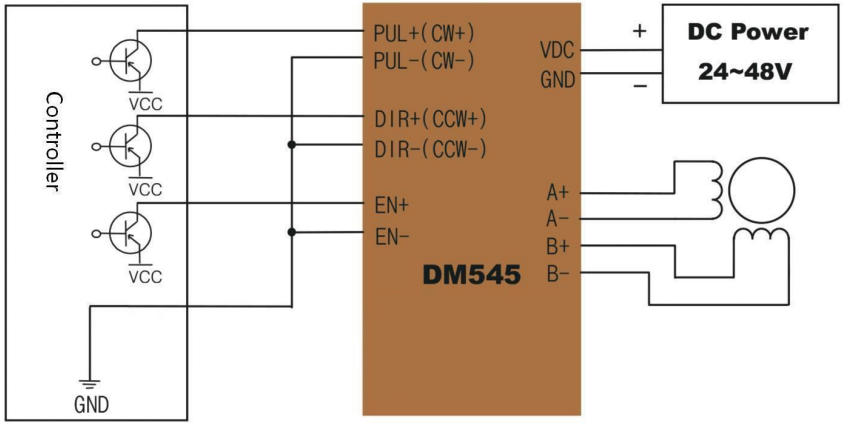
Electrical Characteristics	Min.	Typ.	Max.	Unit
EN Offline Instruction response time T3	--	4	--	ms
Control Signal Voltage	+3.5	+5	+28	VDC
ALM Output Current	--	--	100	mA
Power Supply Alarm Thresholds	+18	--	+55	VDC
Temperature Alarm Thresholds	-10	--	+70	℃

Typical Connection

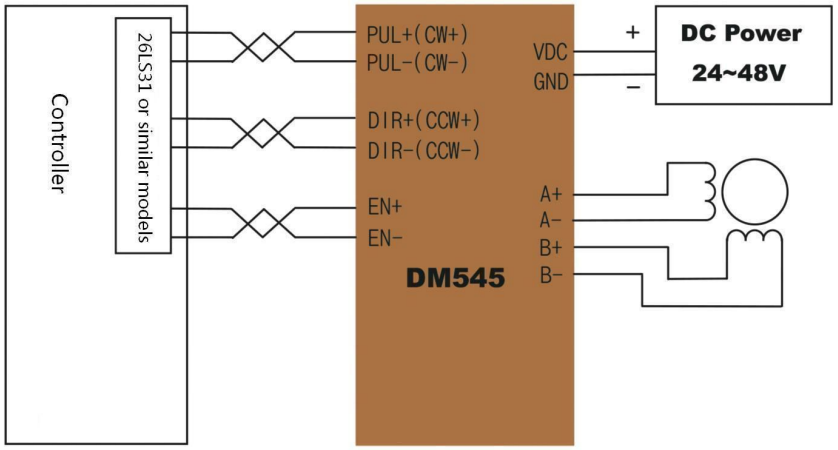
A -- Positive Connection



B -- Negative Connection

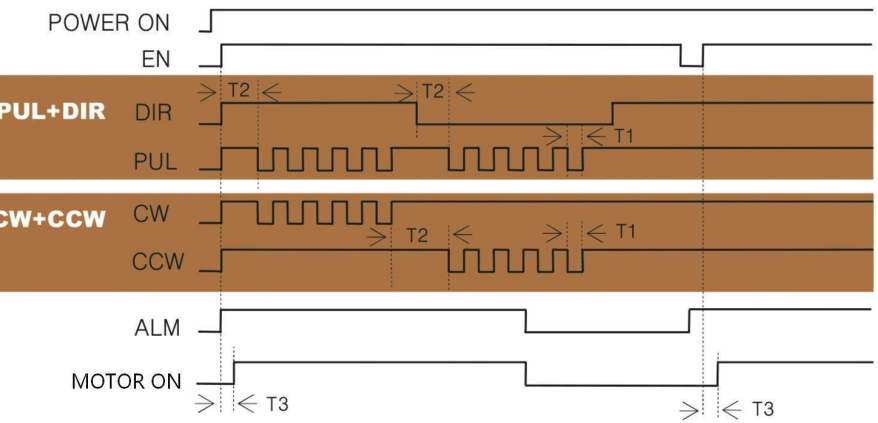


C -- Differential Connection



- PUL (CW) & DIR (CCW) signals' input method is High-speed optocoupler isolation, and they support 3 different connections: Positive, Negative and Differential Modes. Also pulse's falling edge is effective; besides Wide voltage' s range is from 3.5VDC to 28VDC, also it is compatible with all controller devices in the market and there is no need to connect in series.
- EN Signal is always offline state, when it works, the motor is Non-excitation, This EN Signal can be used as driver' s alarm reset.
- ALM+ & ALM- signals are used to test if driver works or not, also to check open-collector output is effective or not. When the driver works, ALM+ & ALM Signals are not conductive. When driver doesn' t work or it is offline, these 2 signals will be closed. And it can withstand 100mA max current and 30VDC max voltages.

Input And Output Sequence

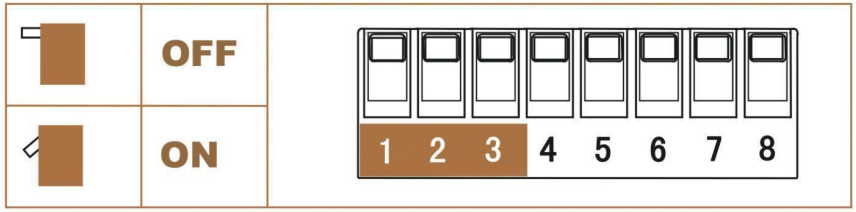


Light State

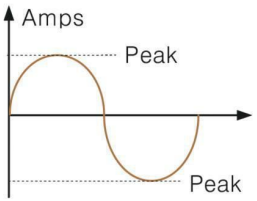
Driver's Working State	Description	Lights Display
Working properly	Green light always turns on	
Driver without power,offline state	Green light is flashing	
Driver overheat	Green light always turns on , while red light flashing once	
Driver' s internal power supply work wrongly	Green light always turns on , while red light flashing 3 times	
Driver' s internal power supply under-voltage	Green light always turns on , while red light flashing 4 times	
Driver' s internal power supply over-voltage	Green light always turns on , while red light flashing 4 times	
Driver over-current or motor' s wire short circuit	Green light always turns on , while red light flashing 5 times	
Motor' s wire open circuit or disconnected	Green light always turns on , while red light flashing 6 times	

Output Current Setting

- To match different motors,drivers' output current should be corresponded. It should be referred to motor's labeled current, which is called Peak Current.
- Adjusting three bits (SW1, 2, 3) of the DIP switch, can change driver' s output voltage. Pressing DOWN is for DIP switch "ON" state, Going UP is for "OFF" state.



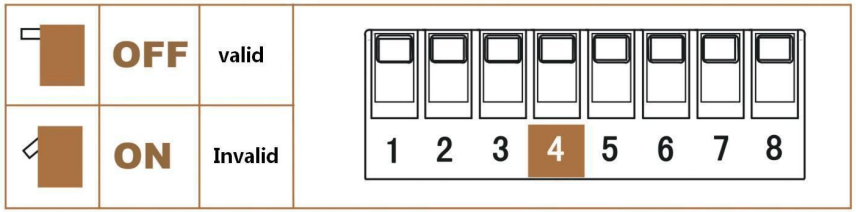
Peak(A)	RMS (A)	SW1	SW2	SW3
1.00	0.71	ON	ON	ON
1.46	1.04	OFF	ON	ON
1.92	1.36	ON	OFF	ON
2.37	1.69	OFF	OFF	ON
3.00	2.14	ON	ON	OFF
3.50	2.47	OFF	ON	OFF
4.00	2.86	ON	OFF	OFF
4.50	3.21	OFF	OFF	OFF



Peak = RMS *1.414

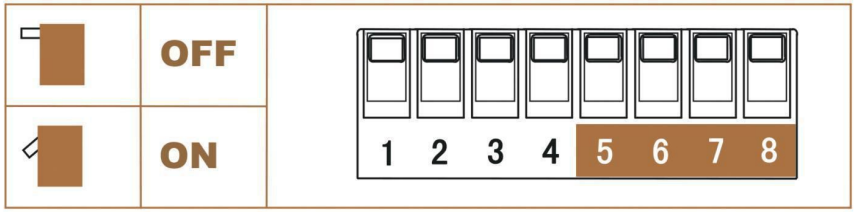
Idle Current

When drivers don' t work, Idle current can be used to reduce motors' heating. Idle current is half of driver' s output current,DIP switch (SW4) can set Idle current is effective or not.



Micro-step Setting

Micro-step is the best choice to reduce the noise and vibration, which can be setted by four bits (SW5,6,7,8) of the DIP switch.



Pulse/rev	Microstep	SW5	SW6	SW7	SW8
200	1	ON	ON	ON	ON
400	2	OFF	ON	ON	ON
800	4	ON	OFF	ON	ON
1600	8	OFF	OFF	ON	ON
3200	16	ON	ON	OFF	ON
6400	32	OFF	ON	OFF	ON
12800	64	ON	OFF	OFF	ON
25600	128	OFF	OFF	OFF	ON
1000	5	ON	ON	ON	OFF
2000	10	OFF	ON	ON	OFF
4000	20	ON	OFF	ON	OFF
5000	25	OFF	OFF	ON	OFF
8000	40	ON	ON	OFF	OFF
10000	50	OFF	ON	OFF	OFF
20000	100	ON	OFF	OFF	OFF
25000	125	OFF	OFF	OFF	OFF

Torque curve for Best Matching Motors