

Lower-Cost DC Power Input 3 Phase

Microstepping Drive

三相细分驱动器



Cyclone's EM-DC3 microstepping drive is designed for a 12-40VDC input power requirement and provides current 0.5 to 5.8 Amps peak of current to the motor.

Features

Performance

Designed for use with motor inductance range of

0.5mH – 80 mH, Selectable resolution up to 60,000 steps/rev

Auto standby reduces motor current (and heating) at rest

Provides 0.5 Amps to 5.8 Amps (peak)

Single 12-40 VDC power supply input

Compatible with a variety of motors

Physical

Simplified, two-screw mounting

Overall dimensions 25x82x136mm

Convenient configuration DIP switches

Certified as UL-recognized component

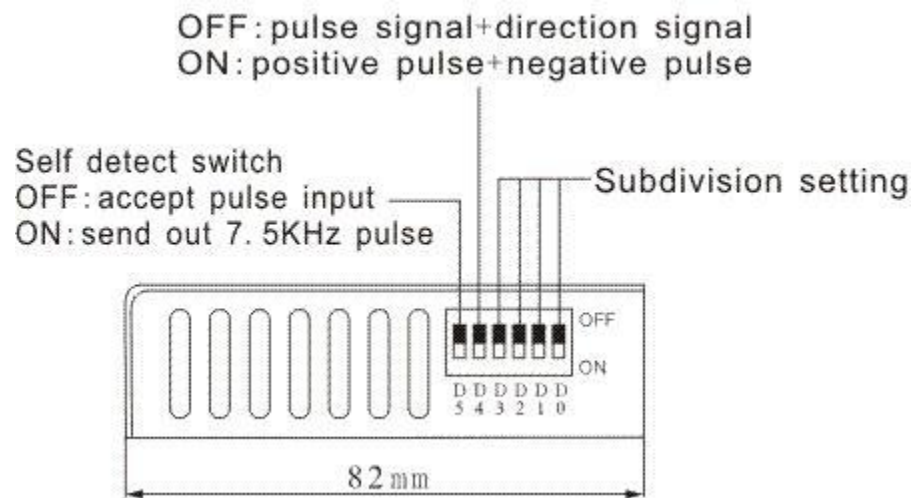
CE (LVD & EMC)

EM-DC3 is a constant angle and constant torque stepper motor drive. The driven voltage range from DC12V to 40V. It can match 3-phase hybrid stepper motors whose rated current is under 5.8A and shaft diameter range from 42mm to 86mm. Owe to bipolar constant chopping circuit, it can make motors low noise and operated smoothly when low speed; the torque is much greater than 2-phase and 5-phase stepper motor when 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.

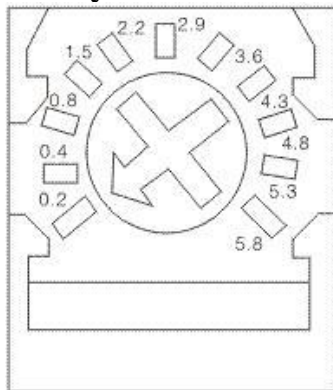
Feature

- High performance, low price
- 16 channels constant angle and constant torque, the highest subdivision is 60000 s/r
- Special control circuit
- Highest response frequency: 200Kpps
- The motor phase current is reduced to approximately 50% of the set current value 100ms after receiving the last pulse edge
- Bipolar constant current chopping circuit
- Opto-isolated input/output
- Driven current is adjustable continuously from 0.5A/phase to 5.8A/phase
- Single power supply, voltage arrange from DC12V to 40V

Parameter switches



Rotary switches for adjustment of the motor current



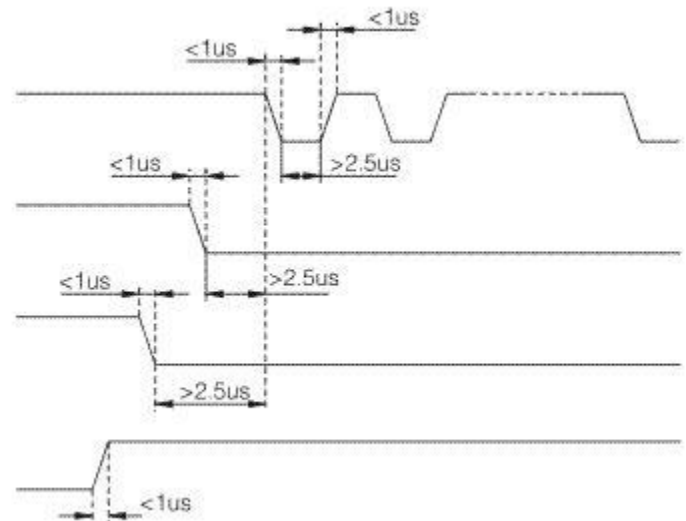
Input signal oscillogram

PU pulse signal

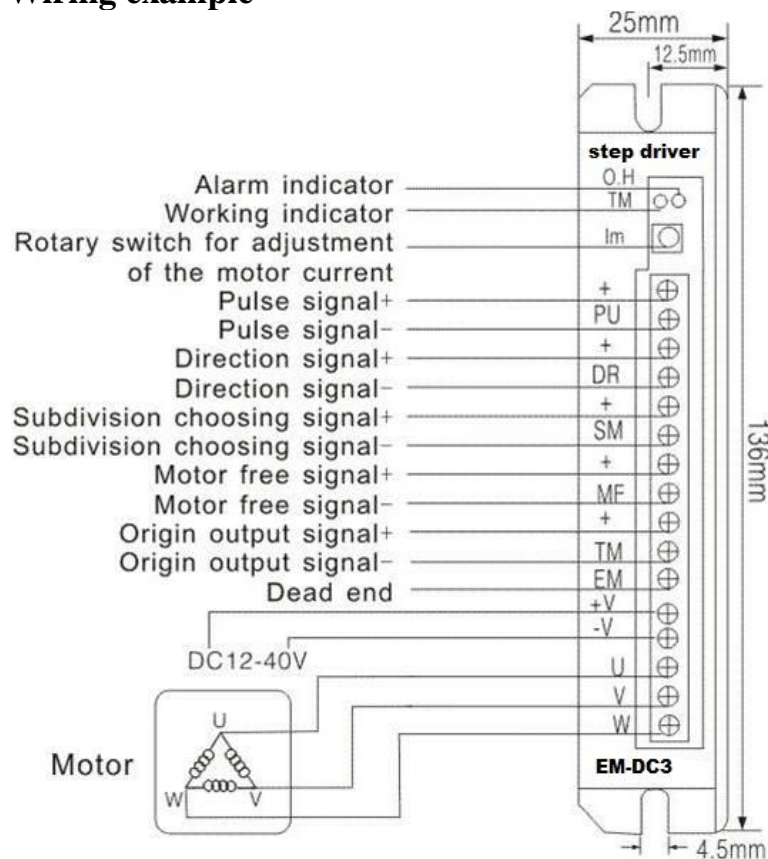
DR direction signal

SM subdivision choosing signal

MF motor free signal



Wiring example



Caution

1. Don't reverse the power supply, supply voltage shouldn't exceed DC40V.
2. Input control signal is 5V, current-limiting resistance should be connected when over 5V.
3. Alarm indicator lights and the drive shuts off if the drive temperature is over 70°C. It doesn't work until the temperature falls to 50°C. The heat sink is needed when overheat occurs.

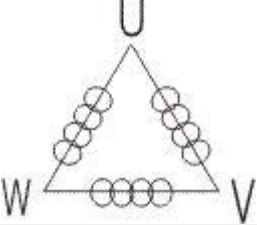
4. Alarm indicator lights when overcurrent (short of load) occurs. Please check motor's connection and other shorts and turn the power supply on after removing the trouble.
5. Alarm indicator lights when undervoltage (the voltage is less than DC12V) occurs.

Subdivision setting

Q3HB64MA s/r	400	500	600	800	1000	1200	2000	3000	4000	5000	6000	10000	12000	20000	30000	60000
Q3HB64MB s/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, double pulse: PU is positive pulse signal, DR is negative pulse signal OFF, single pulse: PU is pulse signal, DR is direction signal															
D5	Self detect switch (OFF: accept pulse input, ON: send out 7.5KHz pulse. The subdivision should be between 2000-10000 s/r)															

Terminal function

Mark	Function	Specification
TM	Working indicator	The green indicator lights when TM signal is effective.
O.H	Alarm indicator	The red indicator lights when overcurrent, undervoltage, overheat occurs.
Im	Rotary switch for adjustment of the motor current	Adjust motor's phase current. Turning it in CCW will decrease the current and turning it in CW will increase the current.
+	Positive of opto-isolated	Connected to +5V power supply. Driven voltage range from +5V to +24V. Current-limiting resistance is needed when over 5V.
PU	D4=OFF, 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.
	D4=ON, PU is positive pulse signal	
+	Positive of opto-isolated	Connected to +5V power supply. Driven voltage range from +5V to +24V. Current-limiting resistance is needed when over 5V.
DR	D4=OFF, 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
	D4=ON, DR is negative pulse signal	
+	Positive of opto-isolated	Connected to +5V power supply. Driven voltage range from +5V to +24V. Current-limiting resistance is needed when over 5V.
SM	Subdivision choosing signal	Work as the subdivision set by D0-D3 at high voltage and as half step (600s/r) at low level.
+	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.
+	Positive of opto-isolated	When the motor current is on, the motor is at the origin position; opto-

		isolated output (high level)
TM	Negative of opto-isolated	Connect + to current-limit resistance of output signal, TM to ground. The maximum current is 50mA, the highest voltage is 50V
+V	Positive of power	DC12~40V
-V	Negative of power	
U	Connection	
V		
W		