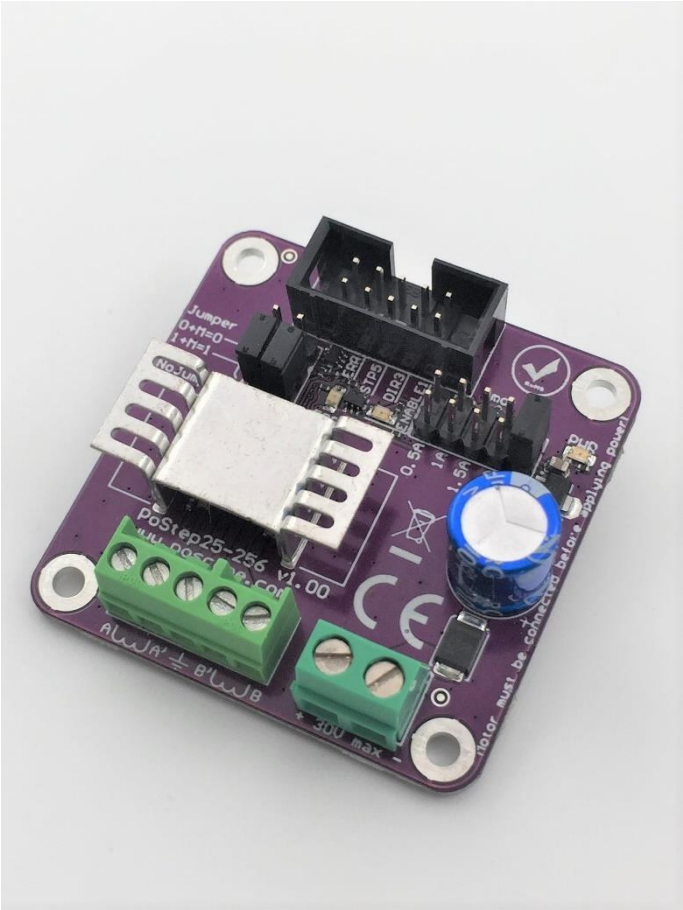
PoLabs

PoStep25-256 user's manual v1.0



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PoStep25-256 user's manual

Description

The PoStep25-256 is a high-performance, cost-effective stepping motor driver to implement intelligent stepping motor control – Smooth tune. The driver incorporates an advanced architecture and surface mount technology to archive an exceptional power density.

PoStep25-256 features

- 0.5 to 2.5 Amps Phase Current,
- Simple current setting with jumper,
- Compatible with 4, 6 and 8 wire stepper motors of any voltage,
- +9 VDC to +30 VDC Power Supply,
- Reverse supply voltage protection,
- 1, 2, 4, 8, 16, 32, 64, 128 and 256 Micro-steps per Step,
- 500 kHz Max Step Rate
- 3.3 V and 5 V logic compatible inputs,
- 0°C to 70°C operating temperature,
- LED power, Error and Enable Indicators,
- Small size 48 mm X 48 mm,
- Smoother and silently movement of stepper motor,
- Improved torque,
- Protection Features:
    - Overcurrent protection,
    - Open Load detection,
    - Thermal Shutdown,
    - Fault Condition Output,
    - Undervoltage Lockout.

Smooth tune control

The Smooth tune control - is a largest advantage of PoStep25-256 in front of others drivers on market. Intelligent stepper motor control, increasing stepper motor efficiency and system performance, eliminate motor noise at low speeds and at standby. Making the control precise.

Board use requirements

Step, direction and enable inputs. 9-30 VDC power supply, connected bipolar stepper motor **before** applying power. Do not connect or disconnect a motor while the driver is energized. This could cause permanent damage to the driver.

LEDs description

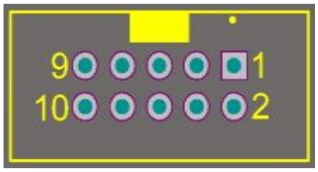
- PWR (green) when power is applied. It must be illuminated.
- ENBL (green) – Enable. It must be illuminated.
- ERR (red) – Error. It is illuminated on these errors: Overtemperature, Overcurrent. Controller must cool down or short circuit must be illuminated. After that Switch power down.

Connection and setting

1. Mount the PoStep to the stable surface. If PoStep25-256 will be mounted to metal surface, please isolate it.
2. Set micro stepping switch to required micro stepping multiplier according to printing on the driver.
3. Put current limit jumper to required position: 0.5 A, 1 A, 1.5 A, 2 A or 2.5 A.
4. Connect step, direction, enable and GND to PoStep25-256
5. Connect motor. Use thick wires, at least 1mm² or more.
6. Connect power supply. Use thick (at least 1mm²) and as short is possible wires. Connect each motor driver directly to power supply with + and GND.

10 pin IDC connector pinout

Pin	Function
1	nEnable (0=enable, 1=disable)
3	direction
5	step
7	Error (from PoStep to controller)
2, 4, 6, 8, 10	GND
9	Not connected



Microstepping settings

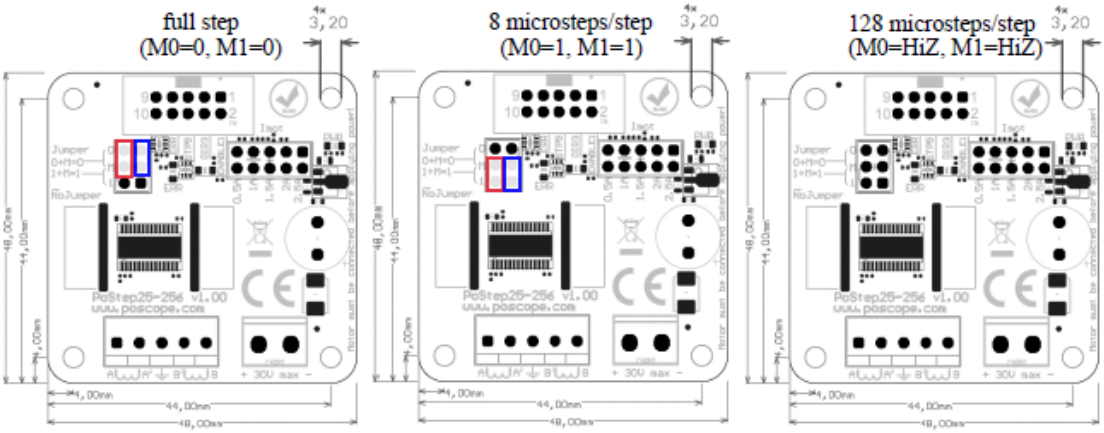
PoStep25-256 can be set to full step, half step and up to 256 microstepping.

M0	M1	STEP
0	**0**	**Full step**
1	0	½ Non circular
HiZ	0	½
0	1	¼
1	1	8 microsteps/step
HiZ	1	16 microsteps/step
0	HiZ	32 microsteps/step
HiZ	HiZ	128 microsteps/step
1	HiZ	256 microsteps/step

Microsteps per full-step	Incremental holding torque per microstep
1	100%
2	70.71%
4	38.27%
8	19.51%
16	9.80%
32	4.91%
64	2.45%
128	1.23%
256	0.61%

1. Microstepping setting – jumpers

(Example: How to setup microstepping considering table above)



Power dissipation

The PoStep25-256 has maximum current rating of 2,5A. For currents over 1,5A, please consider to add additional fan to keep IC cool. If the PoStep25-256 is mounted in enclosure, it must have vent holes and probably fan to blow hot air to outside.

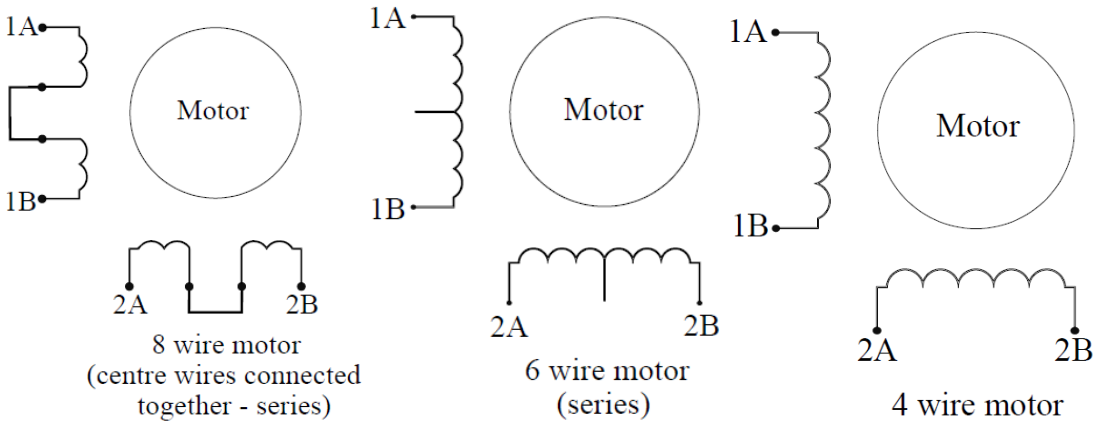
Motor connections

The drive will work with 4-wire, 6-wire or 8-wire stepper motors.

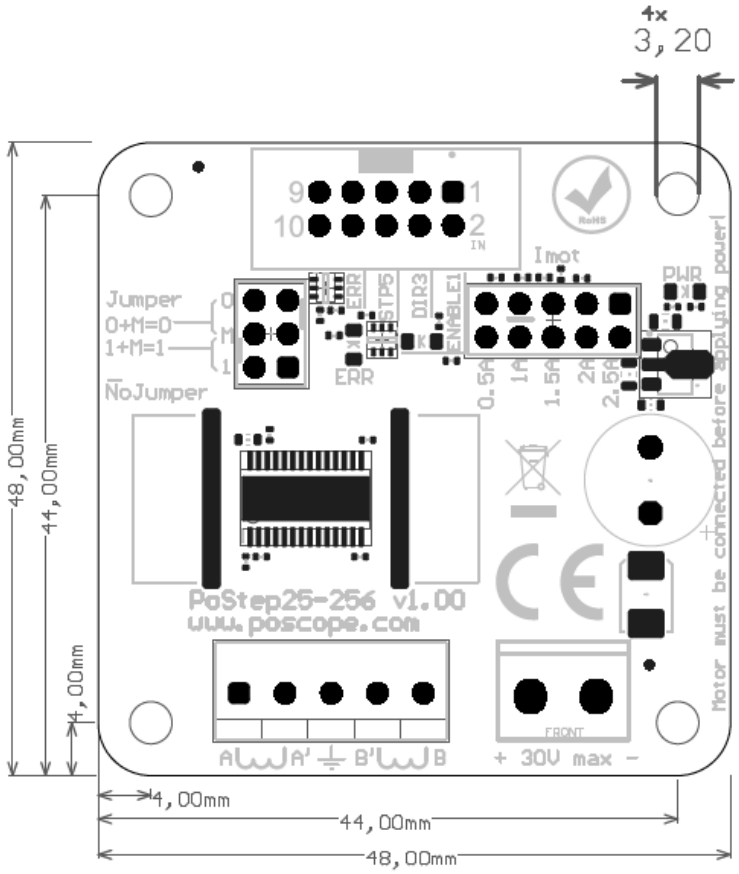
4-wire motors are truly bipolar, and can be run as such.

6-wire motors can be wired two ways to work with the bipolar drive.

8-wire motors can be run in parallel or serial mode. Parallel mode needs higher current, has lower inductance and better torque, serial mode needs lower current and has lower torque.



Layout



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