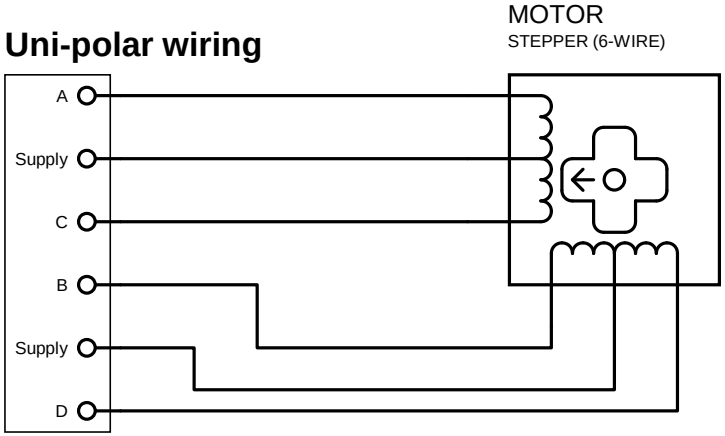
Uni-polar wiring



For use with older control cards.
Current is 1x the unipolar rating.

A resistor is often used in each supply line so that a higher voltage can be used to improve the motor response. This is called an LR drive. The resistor is to limit the current through the motor.

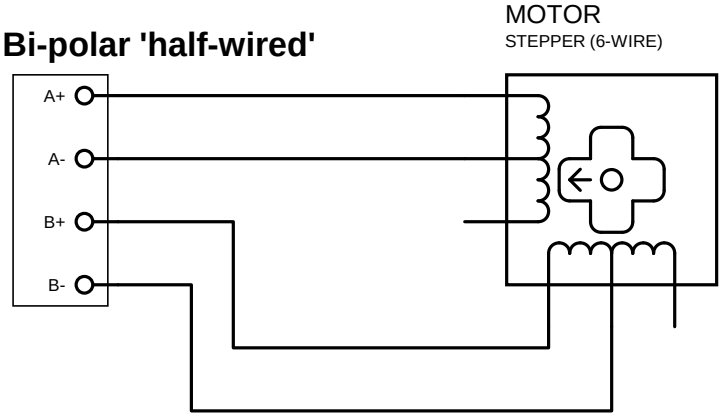
MUST NOT BE USED WITH BI-POLAR DRIVES!

Bi-polar parallel

6 wire stepper motors cannot be wired for bi-polar parallel operation because there is only a single winding with a centre-tap.

8-wire motors have seperate windings which can be wired in series to mimic a 6 wire motor or in parallel to mimic a 4 wire motor.

Bi-polar 'half-wired'

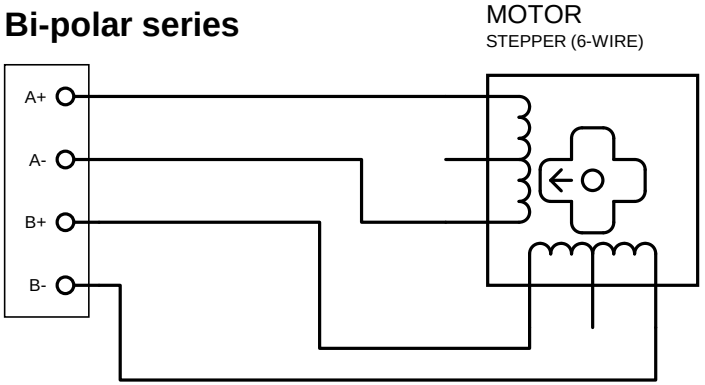


One pole of each winding and the centre tap are connected the other pole of each winding should be taped off and isolated.

Current is as rated for uni-polar drive (1x).

Provides lower torque than bi-polar series but a higher top speed.

Bi-polar series



Current is 0.707x (/1.414) the unipolar rating.

The centre taps are not connected and should be taped off and isolated.

Provides good low end torque but restricts the top speed of the motor.

Current ratings...

Most motors with 6- or 8-wires will quote the current for a single winding (this is called the uni-polar rating).

When the windings are combined for bi-polar use the current will increase by a factor of 1.414 (square-root of 2) or decrease by the same factor depending on whether the windings are connected in parallel or in series.

The other rating on the motor is the nominal voltage or, in some cases, the resistance of the phase (you can get the nominal voltage by multiplying the current by the reistance).

With bi-polar drives a higher voltage than the nominal voltage is used - the drive limits the current across the coil so that the motor does not burn-out (which it would if the higher voltage was connected continuously).

Because the coils have some inductance the power passing through the coils will be higher than the theoretical amount and it is necessary to reduce the current as the over-voltage is increased. A good indicator of whether the current needs to be reduced is if the motor gets warm or hot to the touch.

TITLE:	DATE:
6 wire stepper motors	09/10/10
	PAGE:
BY: Alex Mackinnon / CDE Ltd. REV: 1	1/1