

MDB-6B & MDB-12B

SPECIFICATIONS:

Instruction Set Overview:

Single board stepping motor drivers. Series MDB designed and manufactured by Advanced Control Systems Corporation, are of unipolar, bi-level design for high speed performance and high efficiency.

Driver Model MDB-6B and MDB-12B accept direction information (voltage level) and step pulses; converts this information into specific sequence of high power output switches. These switches control currents in the stepping motor windings. The output sequence is standard full or half-step sequence (mode). Selection between full or half-step mode is by means of an on board jumper or edge connector strapping.

Because of the bi-level operation, the current limiting resistor losses are minimized and yet high speed operation can be achieved.

There is a potentiometer adjustment on board (high voltage pulse-width adjustment) with which the mechanical resonances of the overall system can be compensated.

Logic circuitry of the MDB series driver are optically isolated from the power portion of the driver in order not to introduce the ground noise to the rest of the control circuits.

Application Instructions:

1. Connect MDB-6B or MDB-12B per connection diagram.
2. Set motor winding idle current for requiring holding torque by adjusting the idle current limiting resistor RL. Measure it with DC current meter directly in the center tap of the windings.
3. Ramp the motor to the highest required operating speed. Adjust two trim-pots in the driver board for smooth operation of the stepping motor at that speed. Turning trim-pots clockwise more power is applied to the motor. Both trim-pots are to be adjusted approximately the same.
4. Check the motor operation for all operating speed and ramps. Readjust pots slightly if required.

Notes:

1. The motor windings idle current is to be held as low as possible for cooler motor operation.
2. For the best performance, current adjustments are to be made when overall mechanical system is fully assembled.
3. Maximal heat sink temperature allowed is +80°C. Forced air cooling might be required when driving high current motors.
4. Edge connector: 22 pin single readout, 0.156" spacing.
5. Motor power supplies are to be unregulated with 5,000µF output capacitors.

Step Pulse Requirements:

- Output of step pulse generator is to be open collector device.
- Output of direction control line is to be open collector.
- For best results, the step pulse duty cycle is to be close to 50% in full step mode.
- In half-step mode, the step pulse duty cycle is not required; The pulse width-20 micro sec. minimum.

Power Requirements:

- The MDB-6B and MDB-12B require three power sources:
- 5 VDC for logic circuitry of the driver.
 - 10-12 VDDC, up to 12 Amps which depends on the stepping motor used. This is low level voltage.
 - 36-42 VDC, up to 12 Amps (depends on the stepping motor connected to the driver).
 - All power sources can be unregulated.

Speed Range:

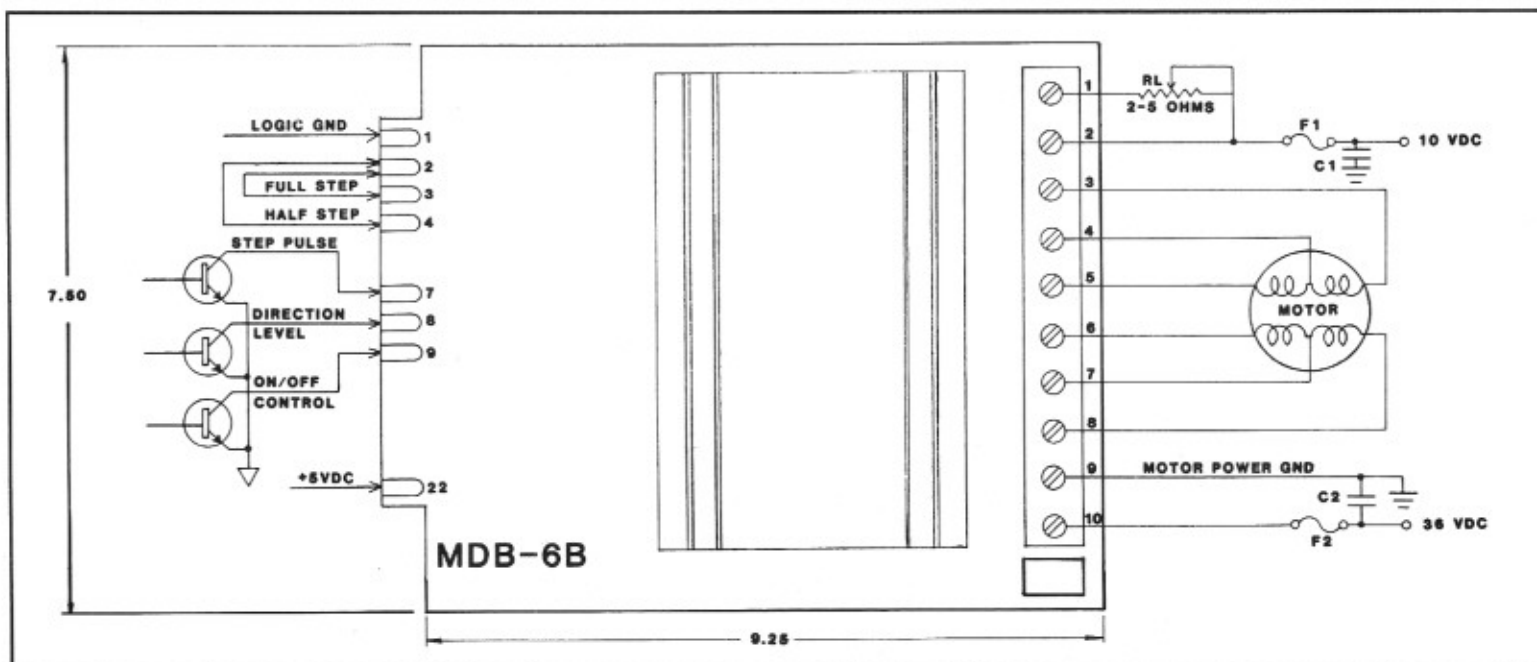
- Full step Mode: 0-20,000 steps/sec.
Half-step Mode: 0-40,000 half steps/sec.

Physical Dimensions:

7.5" x 9.25" P.C. Boards.

Environmental Requirements:

- Operating Temperature: +10°C to 50°C
Storage Temperature: -20° to 85°C
Max. Heat Sink Temperature: +80°C
Humidity: 20% to 95% (No condensation)



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