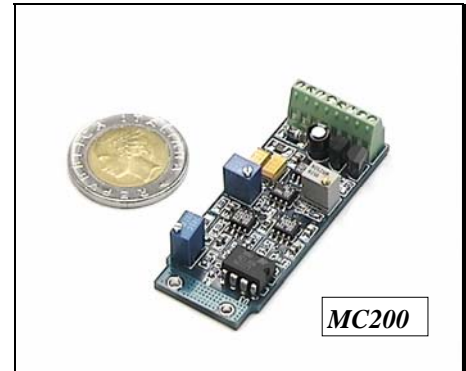


# MC200 Motor Speed Control Card

December 26, 2000

## Description

- The Instech MC200 Motor Control Card as been designed to regulate the speed of small DC permanent-magnet brush motors. The Card is capable of delivering a maximum motor current of 200 mA, can drive motors in either uni-directional or bi-directional configuration, in its simplest configuration it requires only an external potentiometer, a simple DC power supply, and a motor.
- The Card design uses a Pseudo-tachometer feedback circuit which extracts the back EMF of the motor to regulate its speed, the circuit does not require a tachometer or encoder, and uses only two wires to run the motor.



## Electrical Specifications

Model - MC200	
Rated maximum output load current	200 mA
Power Supply voltage input range	+8 to 18 VDC
Maximum Power Supply Voltage	18 VDC max
Max quiescent current	15 mA @ 18 VDC
On-board regulated voltage available	+/- 1.235 ref-volts
Control voltage at 100% full speed	Variable
Power Input Diode protection	Yes
Board Dimensions	2.3"x0.9" (58x23 mm)

## Sample Application Circuits

Bi-directional center-tap potentiometer configuration

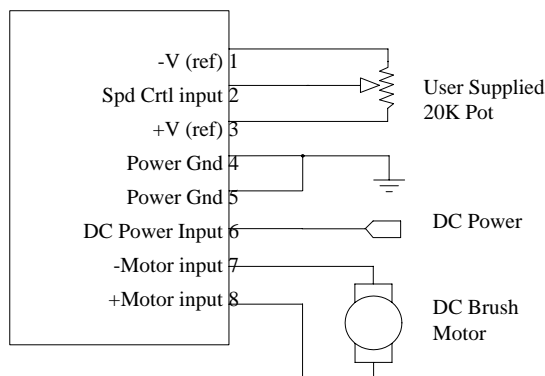


Figure 1

## Electrical Setup Instructions

### Step 1. Motor Installation

- Wire motor +positive terminal to connector J1 Pin-8
- Wire motor -Negative terminal to connector J1 Pin-7
- Wire a shorting wire from J1 Pin-2 to Pin-4 this forces the input speed signal to 0 volts.
- Place a Voltmeter across the motor.
- Proceed to the next step

### Step 2. Motor Balancing - (Zero Speed Input)

- Turn R3 about 5 turns in CCW position
- Apply power to the Card, note Max DC input voltage is 18Vdc higher voltages will damage the on board circuitry.
- Turn R3 CW and monitor the voltage across the motor, this voltage will increase as you get closer toward the motor balance and ultimately will make motor oscillate. As soon as you sense the motor oscillation turn R3 in CWW until oscillation just stops, then ¼ turn more. After this adjustment look at the motor voltage if its above 75 mV turn R16 to lower this reading down close to 50 to 60 mV or lower.
- Proceed to the next step.

### Step 3. Motor Speed Range Adjustment

- Turn R9, speed adjustment CCW for lowest gain. Apply full scale voltage to J1 pin-2 by either turning the external 20K potentiometer as shown in figure 3 fully CW or by using an external control power source such as a D/A converter. Turn R9 CW until desired maximum motor voltage his reached. For example if a motor with a nominal voltage rating of 12 Volts is being used, adjust R9 so that 12 volts is measured across J1 connector pins 7 and 8.

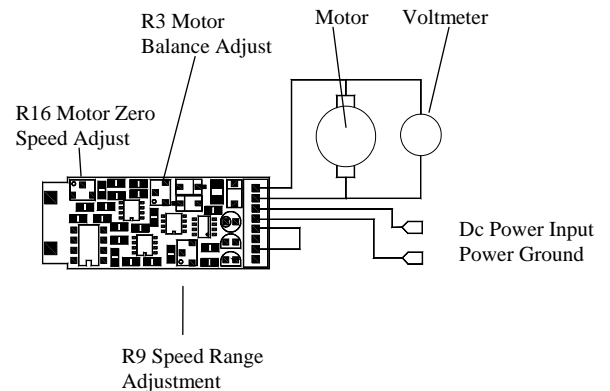


Figure 2

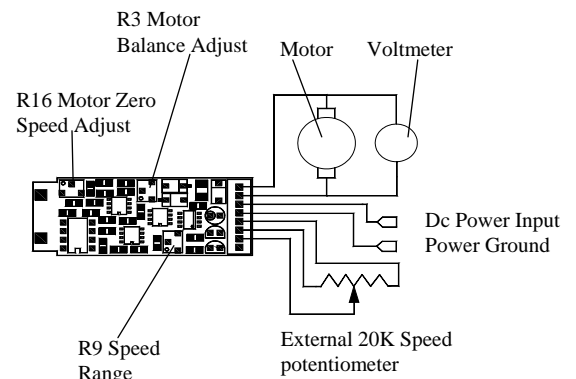


Figure 3