

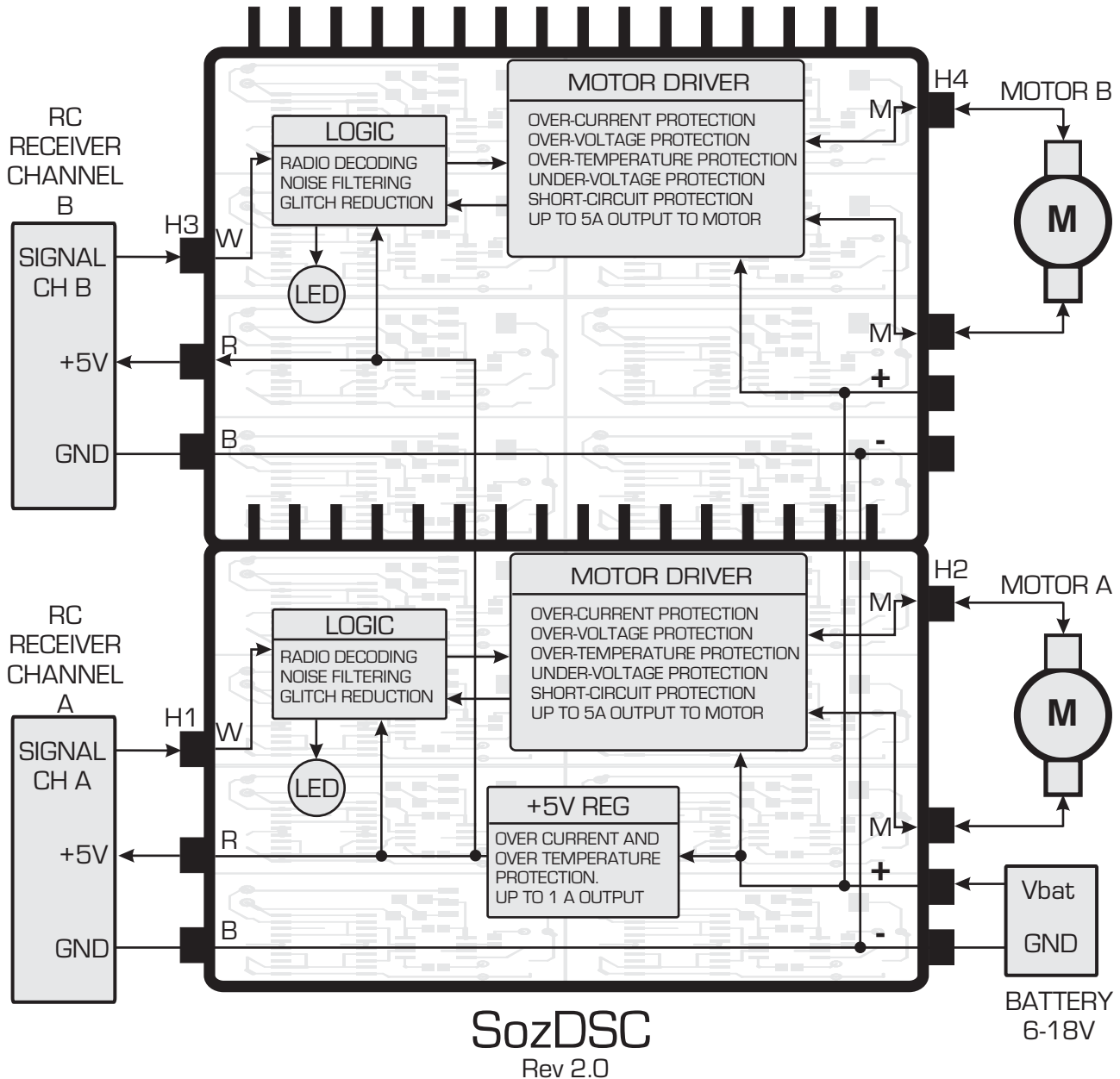
# SozDSC - SozBot Dual Speed Control rev 2.0

## Instruction Manual

doc rev 2.00

### Functional Block Diagram

The diagram below describes the function of the board and how it is hooked up to an RC receiver, battery pack and motor. The SozDSC is actually 2 identical boards attached together. There are 3 connections between the 2 boards. Battery +, Battery - and +5V.



### Electrical Specification

Recommended Input Voltage: 6 - 18V DC (overvoltage and undervoltage protected)

Maximum Current per motor: 5A (overcurrent protected)

Recommended Current Draw from +5V Regulator (BEC): 500mA Continuous

PWM Frequency: ~1kHz

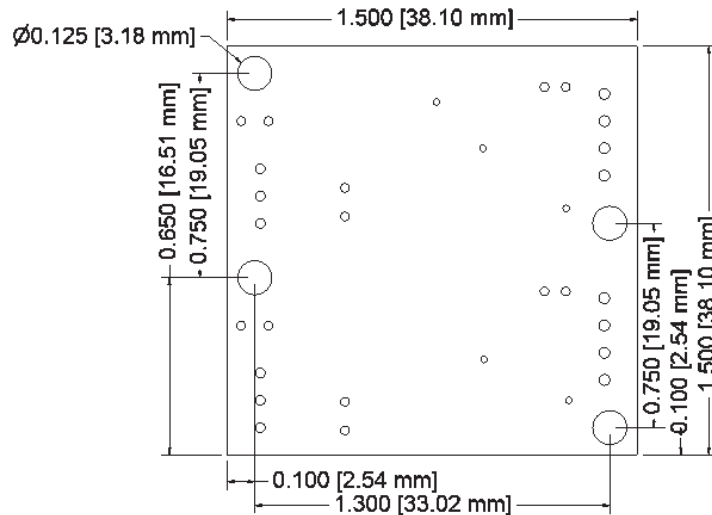
PWM Resolution: 32 Steps Forward and 32 Steps Reverse

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## Mechanical Specification

Weight: 0.41 oz (11.7 g)



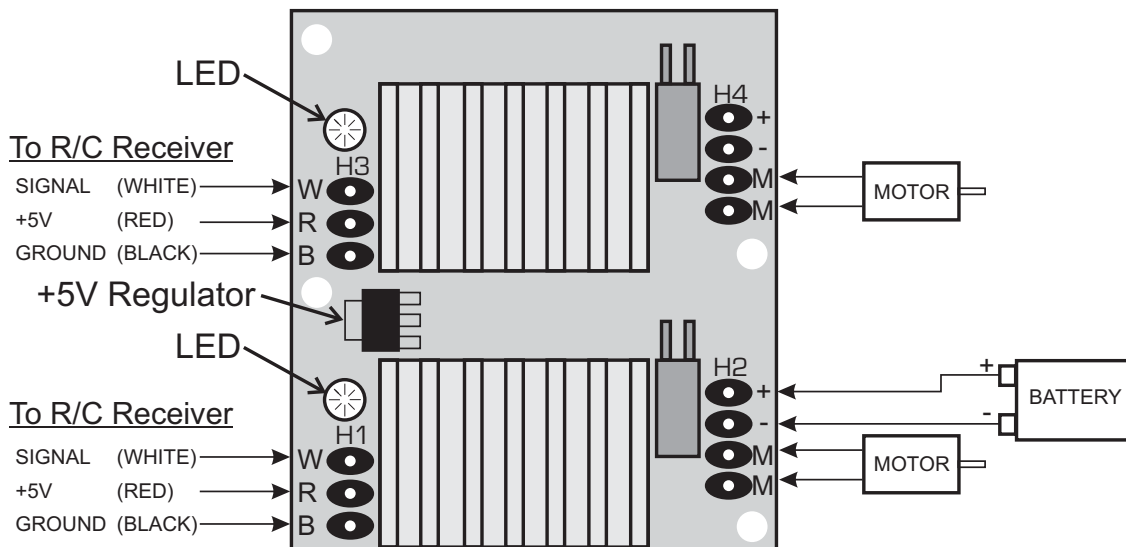
## Hookups

First solder a 3-lead radio connector to H1 and H3. Make sure to use the correct connector for your receiver. Manufacturers have different color schemes and pinouts for the 3 pin connector. If you do not wire up the 3 pins properly, you risk destroying the SOZDSC as well as your receiver!

Next wire up 2 motors to the 2 pins labeled **M** on H2 and H4. The motor polarity decides which direction your motor will turn. If they are not turning the direction you want, swap the pins.

Finally, connect your battery pins + and - on H2 and/or H4. The + and - battery inputs on H2 and H4 are connected together on the board. If you find you are continuously drawing more than 2 amps, you should connect the battery to both H2 and H4.

Be careful not to get the polarity wrong, the board does not have reverse polarity protection and hooking it up backwards will destroy the board.



### Operation

When the boards power up, the LED will blink once. Then the LED will remain off until it receives a valid signal from the receiver. When the RED LEDs are on, they give an indication of power and valid radio signal. If you move your control (stick or otherwise), the corresponding motor will move. With the radio control neutral (ie, stick centered), the motor should not move. You may need to adjust your trims if your motor is drifting at neutral.

### Tank Steer Mixing

A common drive scheme for driving robots is tank or skid steer using a 2 axis stick on an airplane radio transmitter or using the throttle and steer on a car transmitter. In either case, mixing the 2 channels is required. One method is to add an on-board mixer, but in the interest of saving weight, it is better to mix in the radio. If you are unsure about radio mixing for Elevation or V-Tail or if your radio cannot mix it, use an on-board mixer available from [www.veetail.com](http://www.veetail.com).

### Cutting the Board in Half

Cutting the board in half should be done with great care. Make sure to cut along the center line. A sharp Exacto blade works well. You will be severing 3 connections between the boards which will need to be re-connected. We do not recommend cutting the board unless it is absolutely necessary.

### Single Board Operation

If your robot only needs 1 board, cut the board in half and use the half with the voltage regulator installed. The +5V regulator (BEC) is a surface mount device that has 3 pins on one side and a tab on the other.

### Three or more boards on 1 Robot

If you need more than two boards, your 3rd and 4th board do not require a 5V regulator (BEC) on it, but if they do have one, it won't be a problem.

### Heat Sink

The board will generate heat under load. The heat sink will dissipate heat, but if your motor is continuously pulling 3+ amps, the board's over-temperature protection may kick in and shut down the board. Factors that affect heat dissipation include heat-sink orientation and airflow. If you are experiencing thermal shutdown (heat sink is very hot, robot starts fast, but slows down and resets after it cools for a few seconds) try mounting the board so the heat sink's fins are aligned vertically or exposed to airflow as the robot moves around. If you mount it in an enclosed box, make sure the heat sink has room around it so air can flow.

### Receivers

The board will work with all standard R/C systems (Futaba, Hitec, JR and Airtronics). Most receivers out there can be a bit big and heavy for a 1 lb robot, but there are some micro receivers available. GWS ([www.grandwing.com.tw](http://www.grandwing.com.tw)) makes a lightweight receiver (4 CH FM Pico 0.16oz, 4.4g). These tiny receivers tend to be glitchy, especially when the radio is turned off. The boards have built in glitch suppression, but occasionally glitches do happen. Always remember to keep your radio transmitter on at all times while the robot is powered up. This will help to reduce glitches. Also, put .01uF capacitors across all motor leads. PCM receivers do not have this problem so if you have a dangerous robot, it is best to use a PCM receiver.

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## Battery Power

The board can run on a 6V battery and will continue to run at voltages lower than 5.5V. For best results, its better to run off a higher voltage such as 7.2V or higher so you can get all the life out of the battery.. NiCad and NiMh batteries are an ideal choice for batteries for high draw motors.

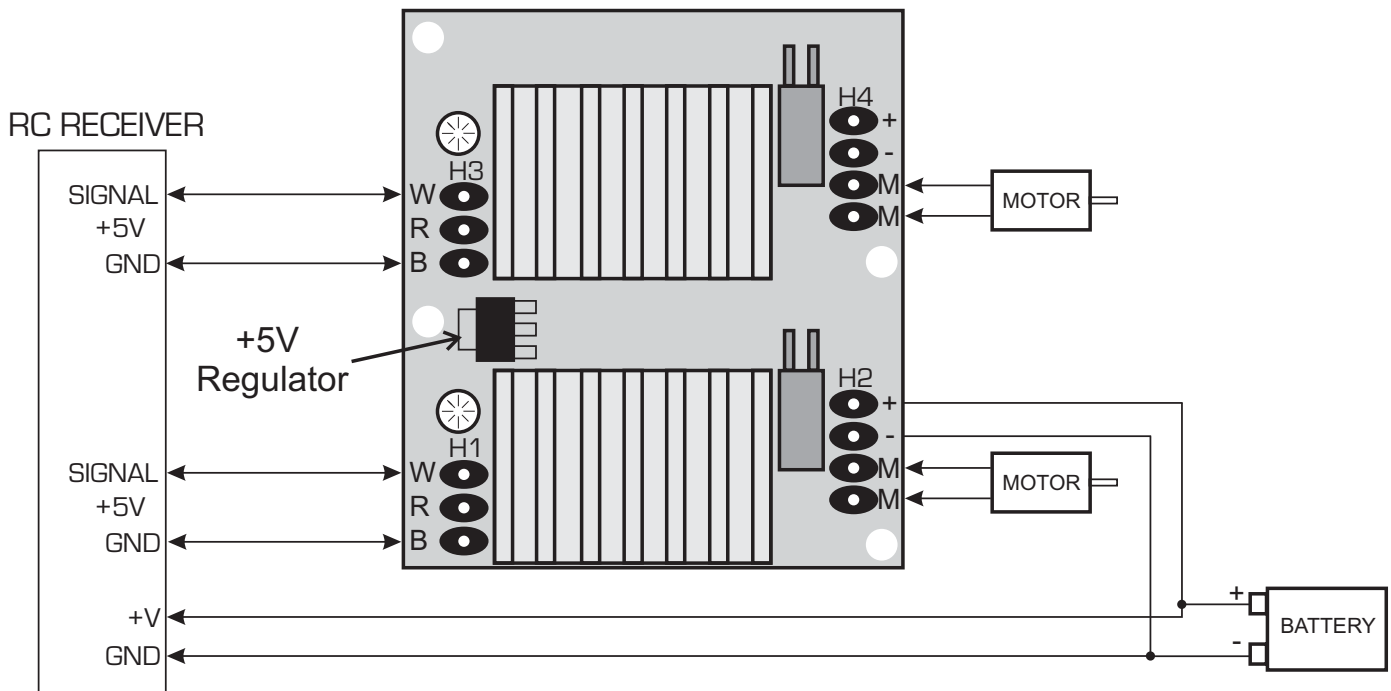
## For Robots using RC Servos

If your robot is also using RC servos, you do not want to use the on-board +5V Regulator (BEC - Battery Eliminating Circuit) to power your receiver. It is best to connect your battery directly to the receiver, thus powering any servos attached to the receiver. Make sure you check your receiver and servos to see if it can handle the battery voltage you are using. Too high a voltage and your receiver and servos may be damaged. Many receivers can handle up to 7.2V, but it is always best to check with the manufacturer's specifications.

The diagram below shows how to wire up the board for operation with R/C Servos.

1. On H1 and H3, do not connect the servo lead middle pin (labeled R for red) to the 3 pin receiver input connector on the board.
2. Connect the battery to H2, pins labeled + and -.
3. Connect the battery to your radio receiver.

Again, make sure the battery voltage you connect to the receiver won't harm it or the servos.



For technical help, please email [support@sozbots.com](mailto:support@sozbots.com).