Power Distribution System PCB

Conceptual Design

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Power Supply

4 Batteries
- 3 Cells Each
- 11.1v Cells
- Lithium Polymer
- 2650 mAh per Battery
- Connected in Parallel
- 20-30C Discharge, meaning 20*2.65=53 to 79.5 Amps are available per battery

For our batteries we will use a standard XT-60 connector to prevent reverse voltage, and will use a digital display for test operators to view the rover's operating voltage. We will not have an input switch.

Power Requirements

Count	Voltage	Max Amperes	Name
1	12v	0.42A	Camera GT1920C
2	12v	0.40A	Lighthouse Beacon
2	12v	20A (Stalled)	Drive Motors
2	12v	0.42A	Steering Motors
1	5v	3A	Odroid
1	5v	0.08A	GPS
1	5v	0.05A	IMU

Maximum 5v Current: 3.13a

Maximum 12v Current: 42.06A
Maximum Theoretical Current: 45.19A
Total Nominal Current: 4.09A

- For our motors and any other high current components we will use XT-60 connectors which are rated for 60 Amps.
- All connectors used will be non-reversible.
- 12v Connectors >= 7
- 5v Connectors >= 3
- We anticipate our voltage regulators to have roughly 90% efficiency, and our regulated 12v and 5v subsystems should have a nominal current draw of 0.9A and 1.8A respectively.
- We don't plan on monitoring voltage or controlling power to any subsystems.
- Since our power source is 12v we will need to convert, regulate, and distribute 5v to three or more components.
- We will also regulate power to all of our 12v components except for our motors.