Regulated Power Supply with Battery Backup

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(Positive Rail) Inductor Surge PowerCircuit1 Suppression Circuit Current Smoothed LM317 Circuit Power In MOV Surge Diode Bridge Output Spike Limited Power Input 15v 2+ amps Flat DC Output: 13.8-14.4v Suppression Circuit Circuit Power (AC or DC) for batterv (Negative Rail) Dp Notes: LED-Red Do NOT ignore the fuses (4 total) in these circuits. Rfuse A reversed battery or short circuit could EASILY damage or destroy it. 1000 LED-Red Fuse-Battery is designed to blow if the battery is reversed. 12v Lead Acid (13.2-13.8v charging) The LED-Red's will light if there is a battery fuse problem. **Fuse-Battery** Choose fuses based on current for each individual circuit (obviously). Batterv Note how the diodes channel the power to PowerCircuit2. Dc fuse Dp=Diode-Protect, Dc=Diode-Current (and must be current rated). All diodes in the current path must be rated for that current or above. Do NOT leave any out as a reversed battery or short circuit could destroy it. The average diode has a 0.6v drop. Increase the regulator's output accordingly. PowerCircuit2 Adujsted & Regulated Dc Input PowerCircuit1 will both be charging the battery and supply PowerCircuit2. LM317 Circuit Power Out to Application Dp PowerCircuit1 will need a HUGE heat sink to charge an empty battery. Output: 1.25-10v with Battery Backup Use a GOOD volt meter to double check the battery is getting 13.2-13.8v.

Re-verify battery voltages after the first night.

Improper charging voltages will quickly destroy a good battery.

Choose a battery amp-hour rating long enough to hold up the application. Example: A good 6Ah battery will provide ~2 amps for 3 hours (2x3=6). It wouldn't be hard to modify this to a 6v or 24v version instead of 12v. If more power is needed, use the current boosted versions of the LM317 circuit and possibly add IDENTICAL batteries in parallel. A large current discrete transistor regulator may also replace PowerCircuit1.