**This is worksheet for Power Calculations:**

The two rechargeable Li-ion battery packs are rated: 14.8V 2600mAH.

1. Identify & list all the power consuming devices and component
2. Print the component name from datasheet per item
3. Provide currents drawn by the device for both the worst case scenario & nominal operation
4. Design a buck convertor with on-line aid.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Component/Device | Part number | Number of units | Worst case | Standby | Nominal Voltage | Total  power | Note |
| Beeper |  | 1 | 5mA | 0mA | 3.3V | 0.0165W |  |
| Nucleo |  | 1 | 76.9mA | 500uA | 3.3V | 0.254W |  |
| Ultrasonic Rangefinder |  | 1 | 20mA max | 2.5mA | 5V | 0.1W |  |
| LCD | Samtec KP-03 | 1 | 21mA | 600uA | 5V | 0.105W | LED backlight: 20mA |
| Stepper Motor Driver | DRV8884 | 1 | 8mA | 10uA | 14.8V | 0.1184W |  |
| DC Motor Driver | DRV8814 | 1 | 8mA | 10uA | 14.8V | 0.1184W |  |
| Serial Transceiver | ICL3232 | 1 | 10mA | 1mA | 3.3V | 0.033W |  |
| CAN Transceiver | MCP2542 | 1 | 140mA | 15uA | 5V | 0.7W |  |
| Inverting Schmitt trigger | 74LVC1G14 | 2 | 500uA | 2uA | 3.3V | 0.0033W |  |
| Power Monitor | INA219 | 1 | 1mA | 15uA | 3.3V | 0.0033W | Extra |
| LEDs |  | 5 | 10mA | 2mA | 3.3V | 0.033W |  |
| Servo |  | 1 | 300mA | 0mA | 5V | 1.5W |  |
| Stepper |  | 1 | 350mA | 0mA | 14.8V | 5.18W | One winding energized |
| DC Motor |  | 2 | 1A | 0mA | 14.8V | 29.6W | Stall current |
| Total VBat 14.8V |  |  | 2.35A |  | 14.8V | 41.83W |  |
|  |  |  |  |  |  |  |  |
| Total 3.3V |  |  | 26.5mA |  | 3.3V | 0.8745W |  |
| Total 5V |  |  | 481mA |  | 5V | 2.405W |  |
| Total |  |  |  |  |  | 2.495W | 3.3V + 5V |
|  |  |  |  |  |  |  |  |
| Total 14.8V + 20% |  |  |  |  |  | 50.12W |  |
|  |  |  |  |  |  |  |  |
| Total 3.3V + 20% |  |  | 31.8mA |  |  | 0.104W |  |
| Total 5V + 20% |  |  | 557.2mA |  |  | 3.32W |  |
| Total |  |  |  |  |  | 3.42W |  |