| Version 5.3 | | | | | | [: | State Based Curr | rent(mA) | | | Time in State(hr | s/day) | | | | | | | |
|---------------------------------|---------------------------------|--|-----------------|---|---|--|--------------------------------|--|--------------|--------------|------------------|--------|-----------------------------------|---------------------------------|---|--------------------|---|--|---|
| Name | Description | Quantity | Nominal Voltage | Input V Regulation(VIH) | Output V Variation(VC | | | | Low Expected | Low Measured | High | Low | Total Consumption/Cycle(mA*hrs) | Total Energy/Cycle (mW*hrs) | Power% | Datasheet link | | Versioning | Power |
| LiPo Battery Charger | Charger | 1 | 11.1 | 100-240V AC (From out | et) | | 1-10A adjustable | | | | | | | 100000 (when using AC input) | | https://www.maxi | With current battery, should take 61 minutes to fully charge from 83% depleted while auto-balancing cel 100W charging power max | -Same as V5.2, but with the origin motors included instead of the replacements | Microcontroller, Microprocesor, and Oscillators |
| LIPO 11.1V 3S 11000mAh | Battery | 1 | 11.1 | | 9.6-12.6V | v | | | | | | | -9166.66 | -101750 | -28.109 | | 83% of 11000mAh discharge for max current 40C discharge rating, 440A max discharge current 5C charge rating, 48.5A max charge current 3.2 per cell cutoff voltage(9.6V total) 4.2 per cell max voltage(12.6V total) | | Sensors |
| uC32 | Microcontroller | 1 | 5 | (VDD) 2.3-3.6V (Cannot go lower than 1: unless it will lose RAM of (I/O) 2.64-3.6V VIH 066V VIL | 75V, ata) 2.4 - 3.6V V 04V VOI | | 75 | 60 | 0 | 0 | 1 | 0 | 60 | 300 | 0.089 | https://drive.goog | 60mA current tested running servo code | | Actuators |
| Raspberry Pi 3B+ | Microprocessor (VBAT) | 1 | 5 | 2.5-5.25V | N/A | | 1200 | 500 | 0 | 0 | 1 | 0 | 500 | 2500 | 0.699 | https://drive.goog | Using 5V 1.2A maximum current draw specification datasheet | s | |
| AKK KC03 | Camera/Transm itter | 1 | 11.1 | 7-20V | Supplies 5V Vout for | or Camera | 340 | 305 | 0 | 0 | 1 | 0 | 305 | 3385.5 | 0.939 | https://www.am/ | Supply current for transmitter too | | |
| FS-iA6B Receive | | 1 | 5 | 4-6.5V | N/A | | 20 | 34 | 0 | 0 | 1 | 0 | 34 | 170 | 0.059 | | Tested receiving 30mA current constant for receiving | g | |
| Serial Telemetry Transmitter | Data Transmitter | 1 | 5 | 5V | N/A | | 100 | 100 | 0 | 0 | 1 | 0 | 100 | 500 | 0.149 | https://www.spark | 100mA current needed for transmitting at 20dBm | | |
| | | | | (VDD)1.95-3.6V (VDDIO)1.62-3.6V | | | | | | | | | | | | | | | |
| MPL3115A2 | Pressure/Temp erature Sensor | 1 | 3.3 | (I/O) 2.475-3.3V VII- 099V VIL | 2.97-3.3V V 033V VO | | 0.265 | 0.16 | 0 | 0 | 1 | 0 | 0.16 | 0.528 | 0.009 | https://drive.goog | Typical current needed during Acquisition/Conversion of data in high resolution mode | 0 | |
| | | | | (VDD) 5V | 1.557.75 | | | | | | | | | | 2.007 | | Current needed for each 4 sensors running for who | 6 | |
| HC-SR04 | Ultrasonic | 4 | 5 | (Trigger)2-5V | 2-5V | | 15 | 2 | 0 | 0 | 1 | 0 | 8 | 40.844 | 0.019 | https://drive.goog | cycle, added power for PWM usage by sensors to r data at 16hz (.844mW) | | |
| MTK 3339 | GPS Module | 1 | 3.3 | (VDD)3-4.3V (VDDBackup)2-4.3V (I/O) 2-3.3V VIH 08V VIL | 2.4-2.8V VOH 04V VOL | | 25 | 25 | 20 | 22 | 0.01 | 0.99 | 22.03 | 72.7099 | 0.029 | https://drive.goog | 25mA(Tested) Acquisition of GPS Signal takes 30s 20mA supply current for Tracking, adds 1.09mW for continuous UART power usage | r | |
| | | | | (VDD)1.71-3.6V (VDDIO) 1.71-1.95V | | | | | | | | | | | | | · · · · · · · · · · · · · · · · · · · | | |
| ICM-20948 | IMU 9DoF IC | 1 | 3.3 | (I/O) 1.35-2.3V VIH 054V VIL (VDD)1.8-3.6V | 1.62-1.8V VO 018V VO | OH OL | 3 | 3 | 0 | 0 | 1 | 0 | 3 | 9.9 | 0.009 | https://drive.goog | Typical current during data acquisition in 9-axis more | d | |
| MPRLS0001 PG00001C | Pressure sensor | 1 | 3.3 | (I/O) 066V VIL 2.64-3.3V VIH | 066V VO 2.64-3.3V V | OH OH | 4 | 4 | 0 | 0 | 1 | | 4 | 13.2 | 0.009 | https://sansing.bs | Tested to receive 3mA max while on | | |
| 1275kV | Motor | 4 | 11.1 | 6.4-12.6V | N/A | | | 7840 | 1900 | 6550 | 1 | 0 | 31360 | 348096 | 96.149 | runner-motor.htm | Depends on how much time drone is rising, 2x how at full throttle, .125g of thrust per motor to hover Also took into account 85% motor efficiency(Brushli See motor Power section | e e | |
| RC Sail Winch Servo | | | _ | | | | | | | | | | | | | | Depends on how much time drone is turning, Current ranges from 3-350mA, depending on how r the drone is turning | п | |
| | Servo | 4 | 11.1 | 4.8-6V | N/A | | 350 Total Difference | 350 -3190.895 | 3 | 1 1 | 1 | 0 | 1400 33796.19 | 7000 362088.6819 | 1.939 | https://www.ebay | | | |
| | | | Max Voltage | | | | | 3044 | | 1144 | 4 | | Total mAh | Total mWh | | | | | |
| Power Rails | Items | Voltage(V) | Average | Max Current(mA) Max R | Due t | Max hissipation(mV to Regulators | Max Heat Dissipation(mW) | | Comments | | | | Insert Flight Time Here(Hours) | | *alculation | Results | | | |
| Rail 1 | 3 | 11.1 Nominal (Ranges from 12.6-9.6V) | 0 | 12906 | N/A | 471 | Heat comes from 4 | | 4ft wires to | | | | 1 | Total Energy N | Final Battery Calculation Total Energy Needed(mWh) | | 26.38 | | |
| | | | | | | | | 5V switching regulator for servos, | | | | | Insert Percentage of time at high | | | | | | |
| Rail 2 | 1 | 5 | 6.1 | 1400 | 5000 | 1235 | | 85% minimum eff 3.3V Regulator us | | | | | throttle here(0-1) | | Battery 83% discharge limit(mWh) | | 750 | | |
| Rail 3 | 5 | 3.3 | 1.7 | 41 | 800 | 70 | 70 | nicrocontroller Same 5V Switching Regulator | | | | | Insert Turning | Battery Condit | ion | Out of E | Battery | | |
| Rail 6 | 5 | 5 | 6.1 | 750 | 5000 | 662 | | used for every oth 85% efficient | ner 5V part | | | | time percentage here(0-1) | | y Motors(mWh) | 348, | | | |
| | | | | | | 2438 ximum Total Po | | | | | | | 1 | Power Used b Power Used b | y Servos(mWh) y Everything | 7,01 | | | |
| | | | | | lost | t to Heat(mWh |) | | | | | | | Else(mWh) Power Lost to | Heat | 699 | | | |
| | | | | | | | | | | | | | | Else(mWh) | | 2,4 | 38 0.67% | | |