Flight Computer Bill of Material

3 pages

Part	Description	
Arduino Mega Pro 5.0 volts	B1	
Radio	RADIO, DNT900	
Antenna	See Notes.	
Falcom GPS	GPS, Falcom GPS	
Temperature Sensor	U1 and U2, DS18B20+	
Logic Converter	B2, Bi-Directional Level Converter	Flight Computer/GPS, available from Sparkfun
Logic Converter	B3, Bi-Directional Level Converter	Flight Computer/Selfie Module, available from Sparkfun
LED	LED1 (see Notes)	
Resistor	R1, 33k	Radio battery supply check
Resistor	R2, 47k	Radio battery supply check
Resistor	R3, 4.7k	Temperature sensor pull up
Resistor	R4, 110 ohms	
Resistor	R5, 200 ohms	
Resistor	R6, R8, R10, R12, 13.3k (see Notes)	Radio TX, Radio RX, CTS, Reset
Resistor	R7, R9, R11, R13, 6.8k	Radio TX, Radio RX, CTS, Reset
Resistor	R14, 7.5k	LED
Resistor	R15, 75k	Flight Computer battery supply monitor
Resistor	R16, 100k	Flight Computer battery supply monitor

Battery	G1 and G2, 3.7 volts, 850 mAh	Powers the Flight Computer
Capacitor	C1 - C4, 47 uF, tantalum	
Battery	G3, 7.4 volts, 3300 mAh	Powers the radio
Switch	S1 and S2, SPST	

Flight Computer Notes

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Radio

The radio was identified and selected in 2014. Since then, the product became part of Murata where it has been discontinued.

The radio is a 900 MHz frequency hopping spread spectrum transceiver. Two are required (see the Base Unit documentation). It was selected for its range (up to 40 miles line of sight) and power (up to 1 Watt).

While no longer available from Murata, the information on its set up and operation through the Arduino may be useful.

Be mindful of the current to support the radio. The specifications said up to 1.2 amps could be drawn when transmitting at full power.

Antenna

The antenna was purchased from Kent Electronics (http://wa5vjb.com/). The 900 MHz Wheel antenna was selected.

GPS

The Falcom GPS was selected for its sensitivity. It was possible to develop with it indoors. While the GPS is no longer available, the information on its operation through the Arduino may be useful. Note that with the use of the Radio described above, it was possible to receive GPS updates every second.

LED

The LED was useful during development and testing. It should be bright enough to show activity (approximately 10 mA). The LED and its resistor, R14, were not necessary to be on the payload.

Resistor

Resistors R6, R8, R10, R12 were each two resistors in series: 10k and 3.3k.

Battery

The batteries G1 to G2 are available at Sparkfun: https://www.sparkfun.com/products/13854. There are connectors not shown on the schematic and not listed in the BOM which were used to connect the batteries in series. These connectors are available at Sparkfun.

The battery G3 is a Turnigy 7.4 volt, 3300 mAh high discharge LiPo battery.