



S4 GUIDE

Supplement v.1
03.18.14

[http:// s4.sonoma.edu/guide.html](http://s4.sonoma.edu/guide.html)

5 Building and Testing the S4 Payload

Introduction:

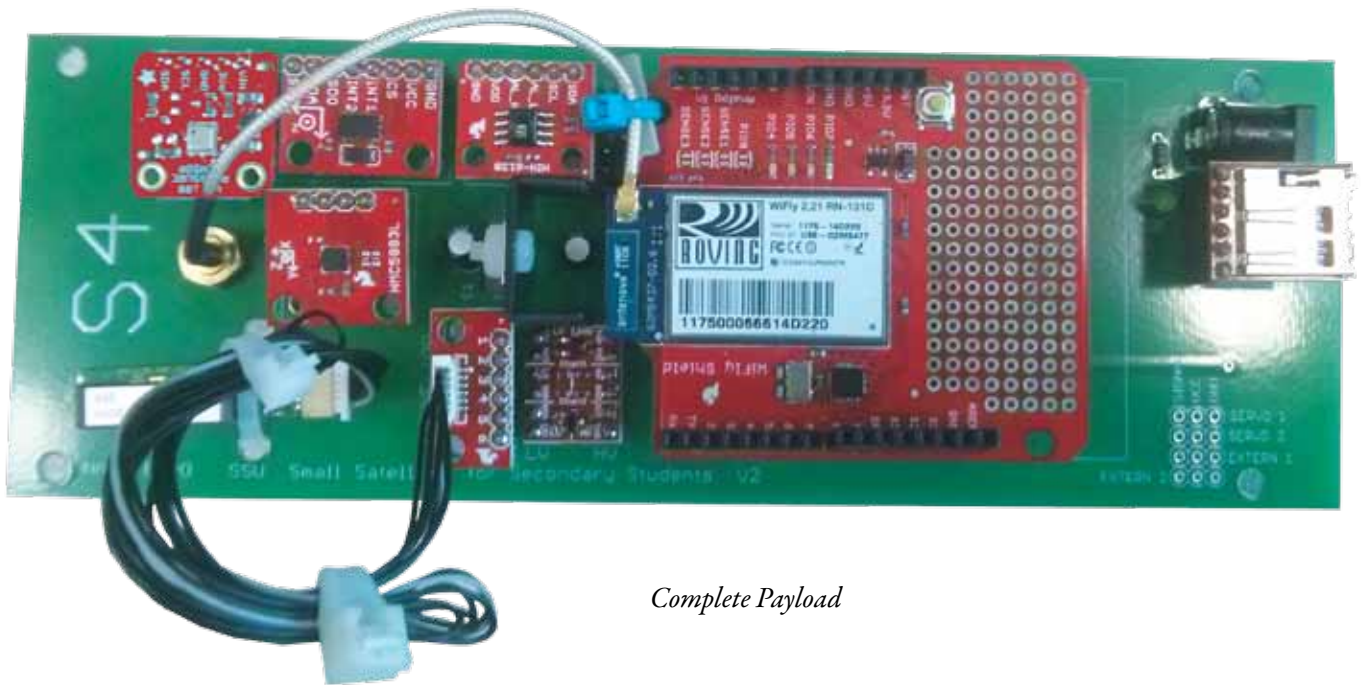
We've made a few changes to the S4 Flight Board this semester. Two of the sensors had to be changed to address sensors being discontinued by their manufacturers, the GPS and Barometric Pressure and temperature chip. We also found a new supplier for purchasing 4-pin and 5-pin female header pins, which lets us avoid having to score and snap them from 8-pin headers. The GPS no longer has an indicator LED or LED resistor. The following are updated instructions for the assembly of the board to reflect these changes.



New GPS



New barometric pressure sensor



Complete Payload

5.1 Assembling the Flight Board

5.1.1 LEDs

The green LED is indicated by the arrow in Figure 5.4. As shown in the Figure it goes in the spot labeled power on the board. *Remember to be sure to line up the flat side of the LED with the flat side on the drawing as you did with the red LED.* After soldering this part onto the board, **cut the leads.** When the board is completed, this LED will shine green when there is power to the Open Log chip.

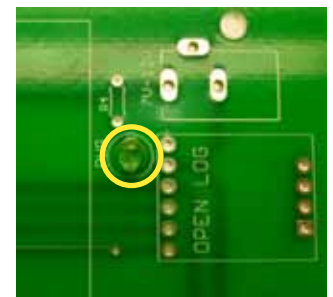


Figure 5.4: Green LED secured into flight board

5.1.4 Resistors

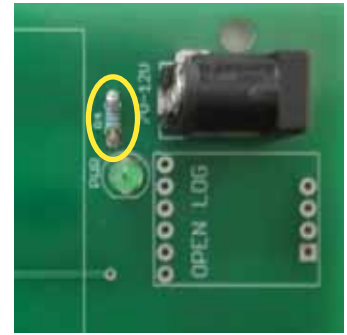
a) The “R4” resistor has resistance equal to 402Ω . It will be placed in the holes labeled “R4” right next to the power jack as shown in Figure 5.8. The resistor’s direction does not matter. However, be sure you are placing it as flat as possible and tape it down before soldering. After soldering this part onto the board, **cut the leads**.

Figure 5.8: Power resistor close-up

b) The next resistor, which has a resistance equal to $2.2k\Omega$, will be placed into holes labeled R3. After soldering this part to the board, **cut the leads**.

c) The last resistor, which has a resistance equal to $2.2k\Omega$, will be placed into holes labeled R2. After soldering this part to the board, **cut the leads**.

Figure 5.9: Magnetometer resistors close-up



5.1.8 Female Header Pins

a) Barometric Pressure/Temperature Pins:

Place one of the 6-pin female header pins in the box marked “BAROMETRIC TEMPERATURE” as shown in the image below. Solder this part onto the board and then **cut the leads**.

Figure 5.19: Barometric header pins attached

b) Accelerometer Pins:

Place one of the 8-pin female header pins in the box marked “ACCELEROMETER” as shown in the image below. Solder this part onto the board and then **cut the leads**.

Figure 5.20: Accelerometer header pins attached

c) Humidity/Temperature Pins:

Place one of the 6-pin female header pins in the box marked “HUMIDITY” as shown in the image below. Solder this part onto the board and then **cut the leads**.

Figure 5.21 Humidity header pins attached

d) Open Log Pins:

Place both a 4-pin connector and 6-pin header in the appropriate holes in the box marked “OPEN LOG.” Solder the parts onto the board and then **cut the leads**.

Figure 5.22: Open Log header pins attached



e) Magnetometer pins:

Place the remaining 4-pin female header in the appropriate holes in the box marked “MAGNETOMETER.” Solder this part onto the board and then **cut the leads**.

Figure 5.23: Magnetometer header pins attached



f) GPS Pins:

Place the 5-pin header in the appropriate holes in the box marked “GPS CONNECTOR.” Solder this part onto the board and then **cut the leads**.

Figure 5.24: GPS header pins attached



Complete Flight Board



New GPS Assembly