

PyFly Applications

These are character drawing of possible applications, not complete schematics.

3/9/2017: Notes added about the Raspberry Pi Zero W adding WiFi and Bluetooth.

3/26/2017: Added high altitude weather balloon

9/16/2017: Added new audio pinout to PiFly.

8/14/2018: Changed name to PyFly

Component Hole Count: 4
SMT pad Count: 3
Board width: &DimWidthmm mm
Board length: &DimLengthmm mm

Designer: Robert Rau
Parts Cost: &CostTotal
At a quantity of: 1000
Cost of Assembly: &CostTotalAsy
Operating temperature range: -40° C to 85°C &NoteTempWavr
Net List File Name: &FileNetList
Package count component side: 0
Package count solder side: 0
Error Count: 4
Warning Count: 8

Component side area used is &AreaCompUsedmm2 mm², or &AreaCompUsedPct% of &AreaCompmm2 mm²
Solder side area used is &AreaSoldUsedmm2 mm², or &AreaSoldUsedPct% of &AreaSoldmm2 mm²

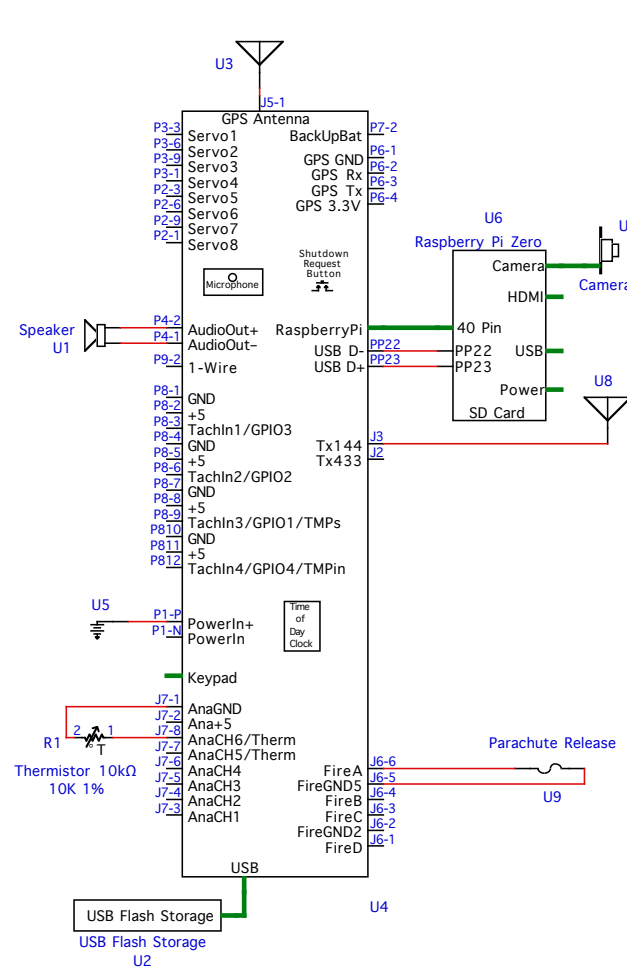
File: PyFly Applications.cct
Created: 8/14/2018 5:39 PM
Printed: 8/14/2018 5:39 PM

Design Revision: 1.0 Drawing Revision: A

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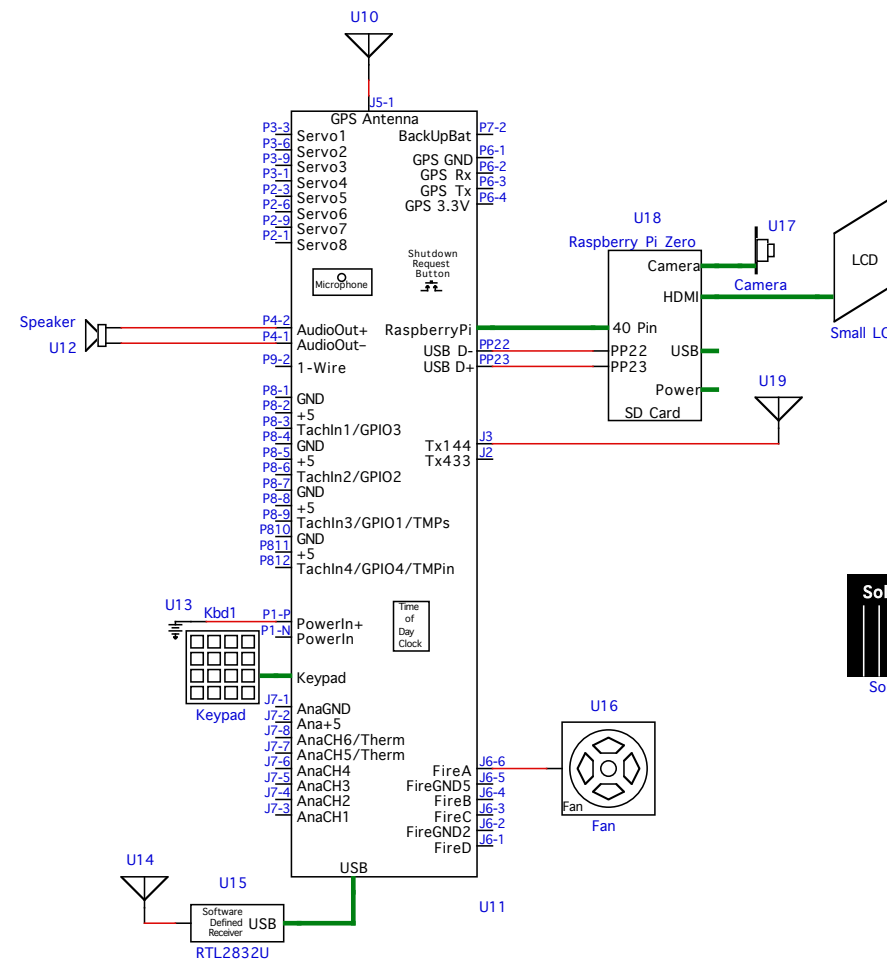
TITLE: PyFly Applications	
Document Number:	Rev: 1.0
Date: Modified: 8/14/2018 5:39 PM	Sheet: 1 of 4

Rocket Flight Data Collection and Recovery System



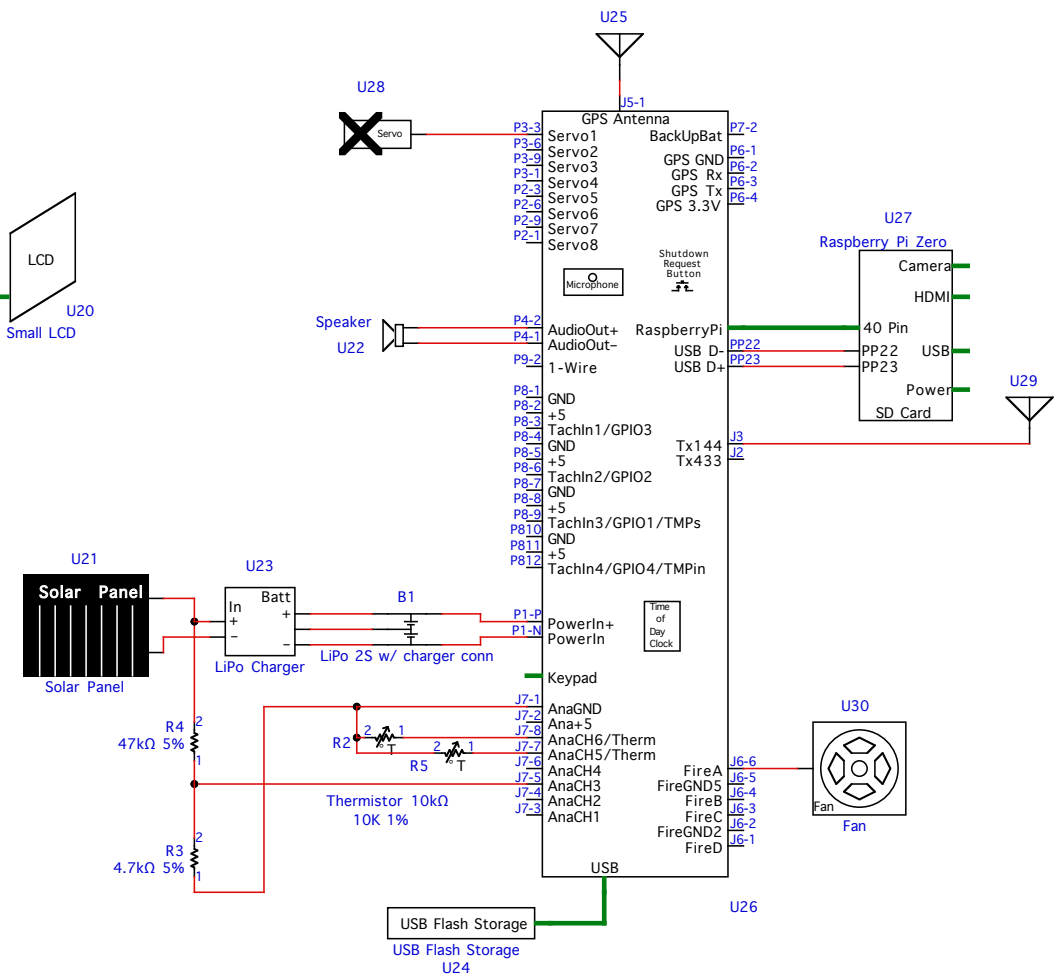
Features:
 1.0GHz 32 bit processing power
 Telemetry downlink transmitter
 Large data logging storage with USB Flash drive
 Data includes GPS, pressure, board and remote temperature, humidity, magnetometer, audio, & video
 Parachute release based on altitude and/or time
 Telemetry/Log can be date & time stamped
 Audio annunciator for on pad confirmation of readiness
 Uses on board super capacitor for GPS and time of day clock

HAM Radio Smart Transceiver



Features:
 1.0GHz 32 bit processing power
 Supports audio, video (SSTV), and APRS
 16 key keypad
 Optional Fan for cooling Raspberry Pi
 See http://rau-deaver.org/1-wire_keyboard.html for keyboard software

Remote Data Acquisition System for Packet Radio



Features:
 1.0GHz 32 bit processing power
 Telemetry transmitter
 Large data logging storage with USB Flash drive
 Data includes Solar voltage, GPS, pressure, board and remote temperature, humidity, magnetometer, audio, & video
 Telemetry/Log can be date & time stamped
 Can use either on board super capacitor for GPS and time of day clock or external backup battery
 Servo for solar panel pointing to maximize charging current.

The Raspberry Pi Zero W adds WiFi and Bluetooth.

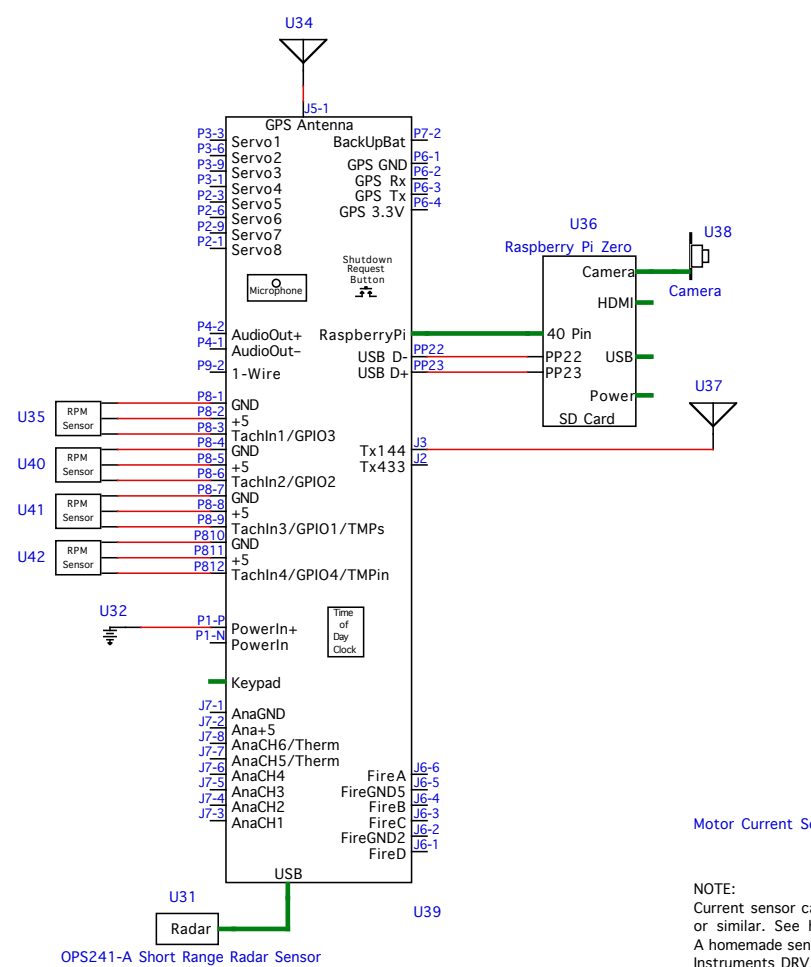
Design Revision: 1.0 Drawing Revision: A

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TITLE: PyFly Applications	
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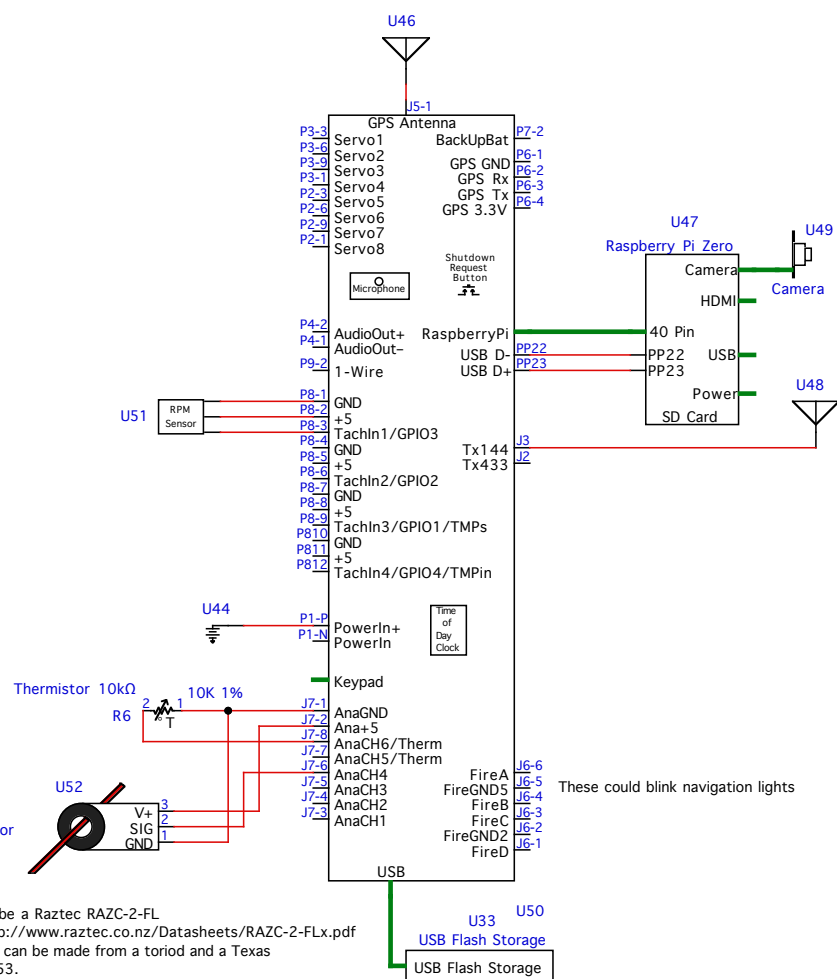
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Quadcopter Data Collection



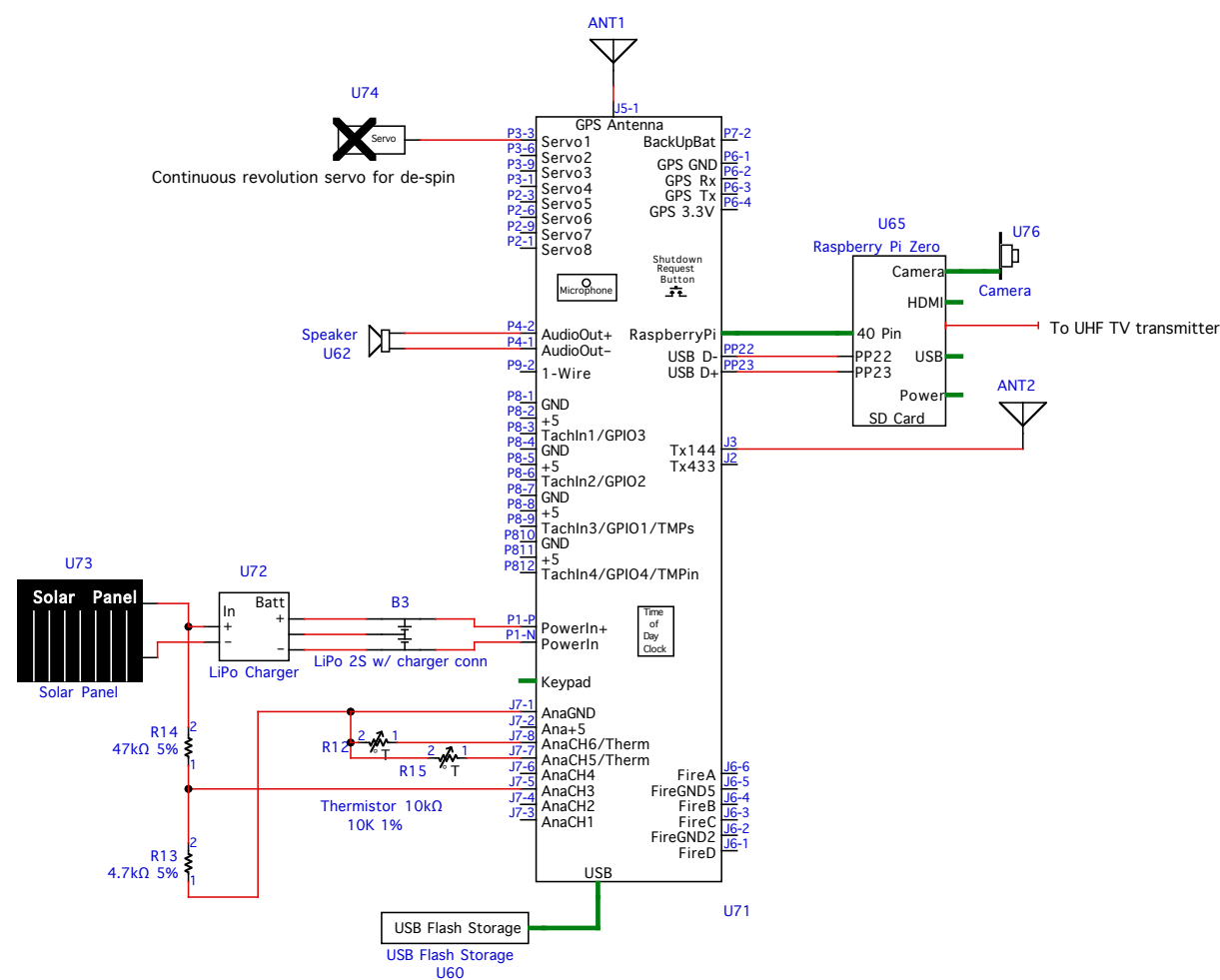
Features:
 1.0GHz 32 bit processing power
 Telemetry downlink transmitter
 Data logging on SD card
 Data includes RPM for each motor, GPS, radar targets, pressure, temperature, humidity, magnetometer, audio, & video
 Telemetry/Log can be date & time stamped
 Uses on board super capacitor for GPS and time of day clock

Electric RC Airplane Data Collection



Features:
 1.0GHz 32 bit processing power
 Telemetry downlink transmitter
 Large data logging storage with USB Flash drive
 Data includes motor current, motor temperature, RPM, GPS, pressure, temperature, humidity, magnetometer, audio, & video
 Telemetry/Log can be date & time stamped
 Uses on board super capacitor for GPS and time of day clock
 True airspeed with differential pressure sensor and Pitot tube

High altitude HAM weather balloon



Features:
 1.0GHz 32 bit processing power
 Telemetry transmitter
 Large data logging storage with USB Flash drive
 Data includes Solar voltage, GPS, pressure altitude, board and remote temperature, humidity, magnetometer, audio, & video
 144MHz telemetry and USB data log can be date & time stamped from precision GPS time
 Can use either on board super capacitor for GPS and time of day clock or external backup battery
 Servo for de-spin of payload so camera view can always have north pointing up.
 Raspberry Pi TV output for fast scan UHF transmitter. Video can include station ID, telemetry and live video.

The Raspberry Pi Zero W adds WiFi and Bluetooth.

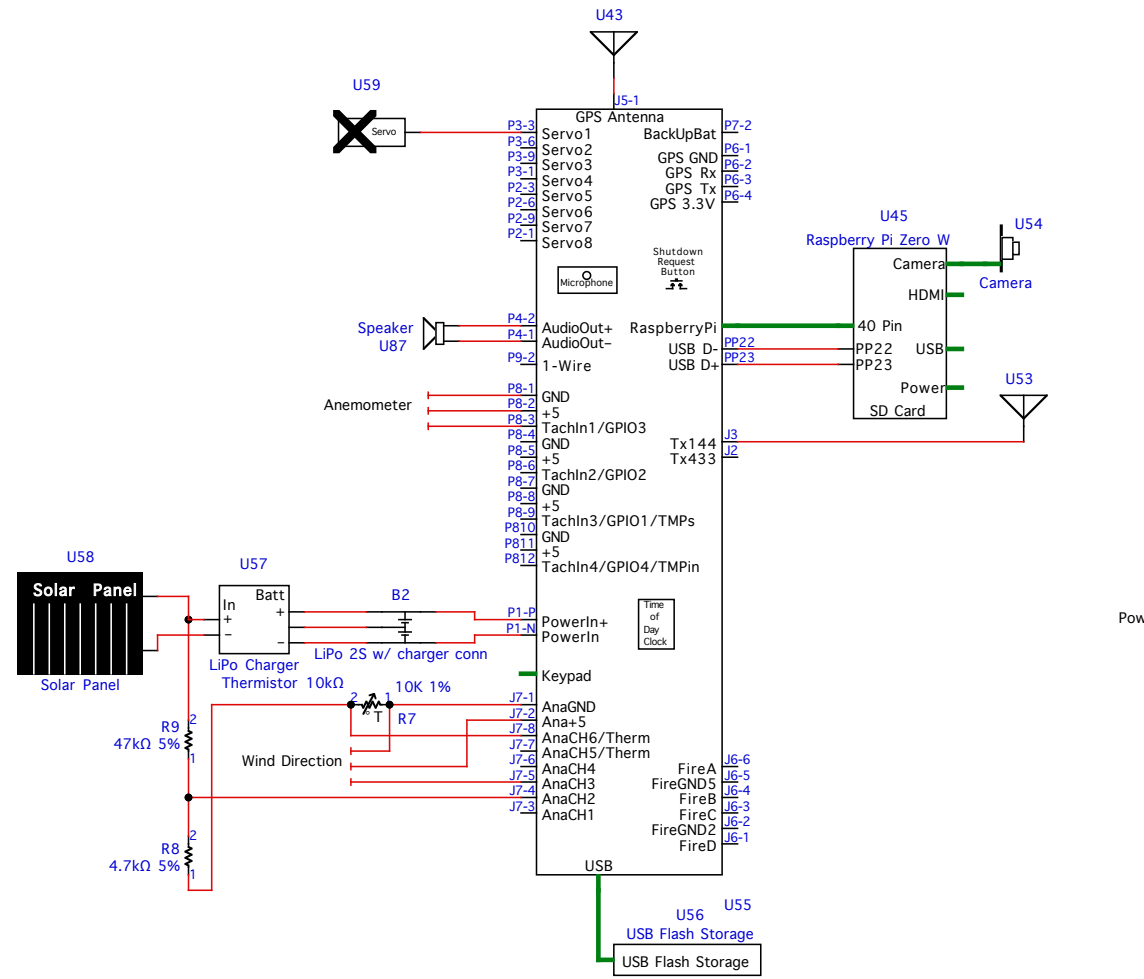
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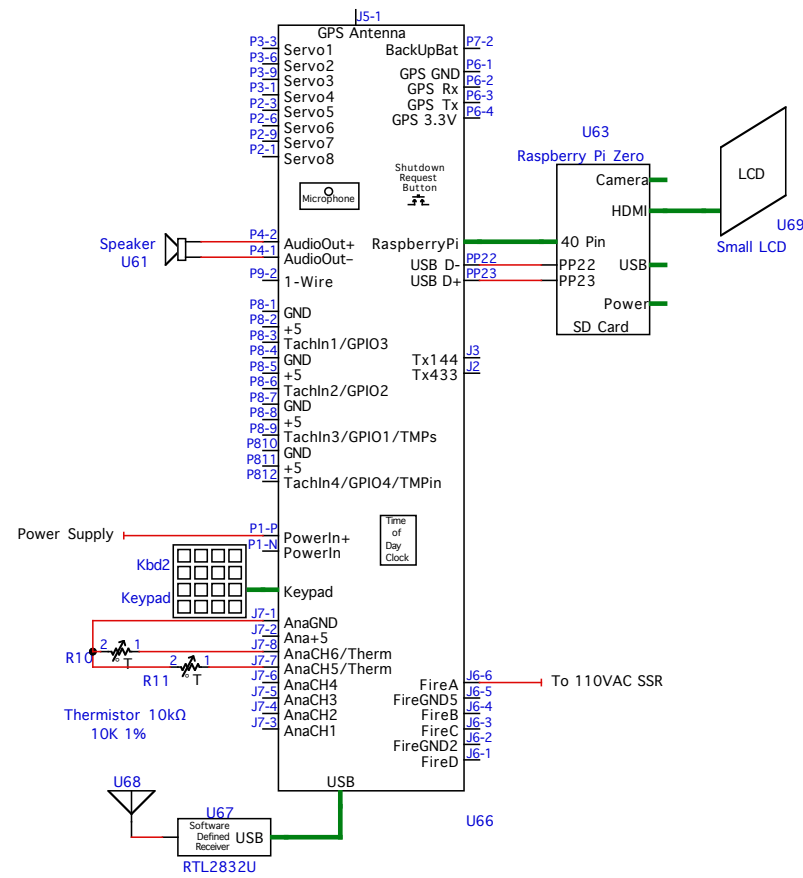
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Weather Station



- Features:
- 1.0GHz 32 bit processing power
 - Telemetry transmitter
 - Large data logging storage with USB Flash drive
 - Data GPS, pressure, temperature, humidity, magnetometer, wind direction, wind speed, & video
 - Telemetry/Log can be date & time stamped
 - Uses on board super capacitor for GPS and time of day clock
 - Solar power
 - Servo to optimize solar panel pointing.
 - A SDR could replace the USB stick to monitor weather channels for warnings and a horn connected to FireA.

Clock Radio



- Features:
- 1.0GHz 32 bit processing power
 - Microphone could monitor snoring for health report
 - SDR receiver for AM and FM radio
 - When not listening to AM or FM, SDR could tune into time standard (like WWV) to keep clock accurate.
 - Indoor and Outdoor Temperature, Humidity, and Pressure can add mini weather station
 - LCD for Time, weather, ad health report
 - Fire output could drive solid state relay to turn on bed side lamp as alarm.
 - 12 key keypad
 - See http://rau-deaver.org/1-wire_keyboard.html for keyboard software

The Raspberry Pi Zero W adds WiFi and Bluetooth.