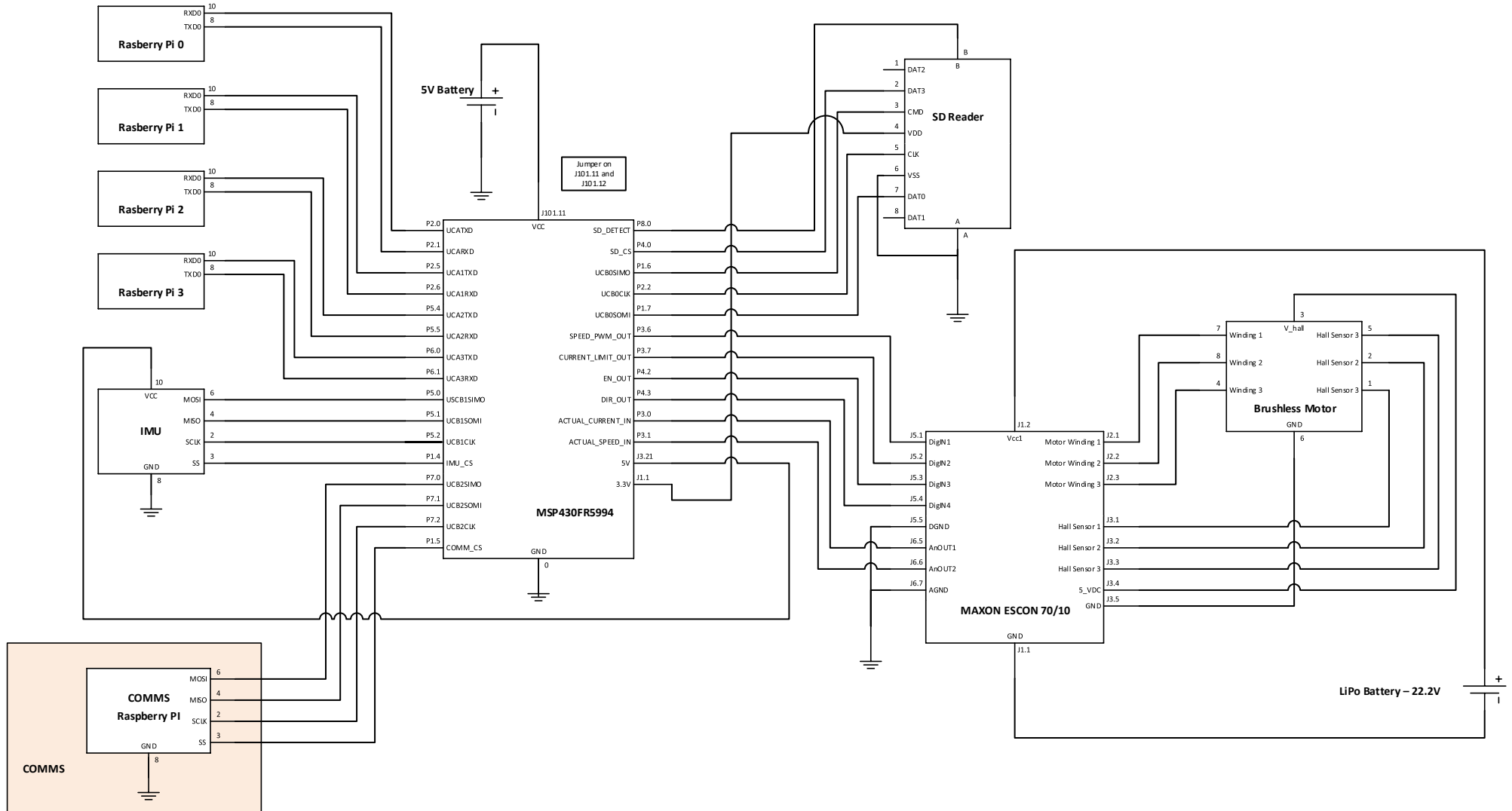
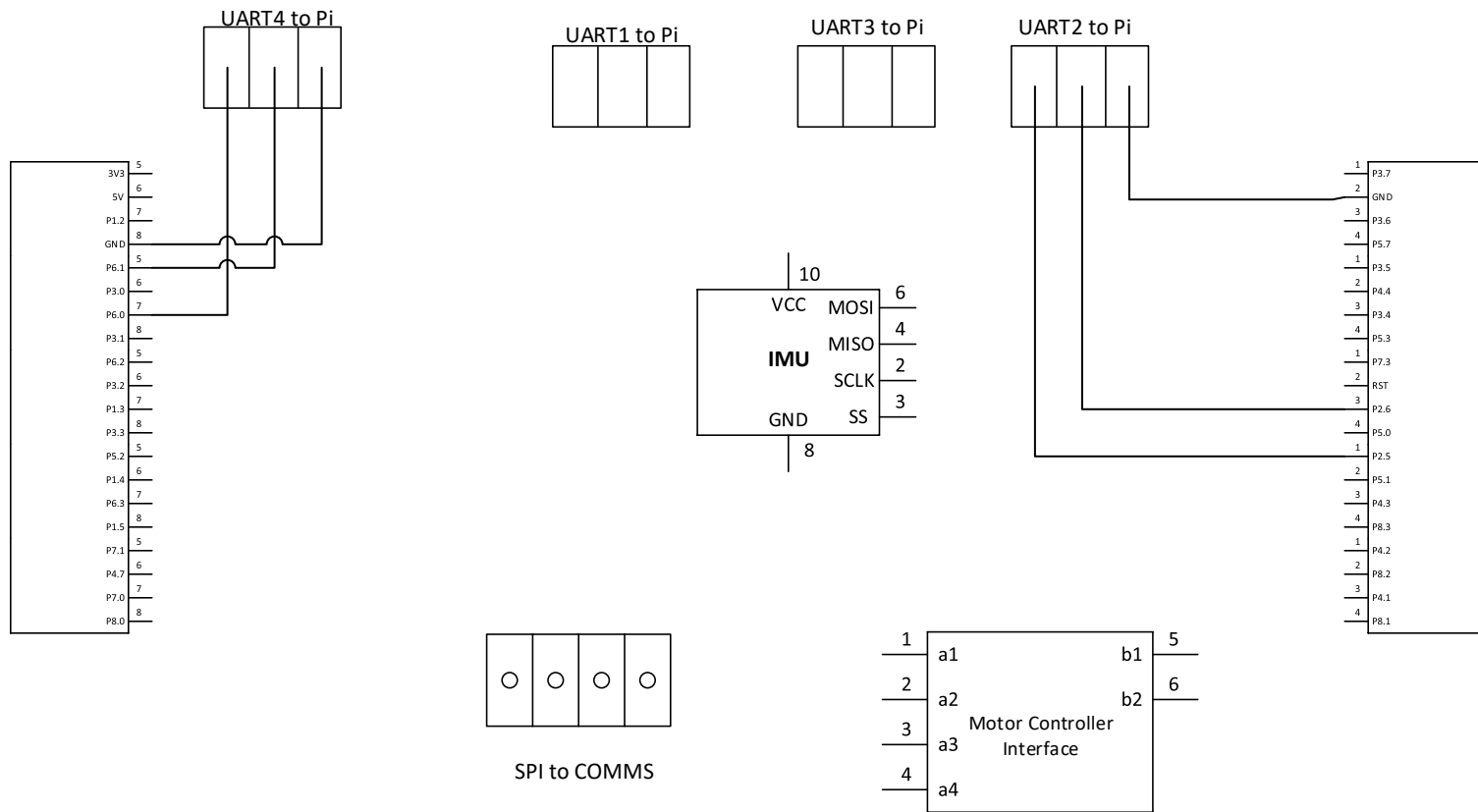
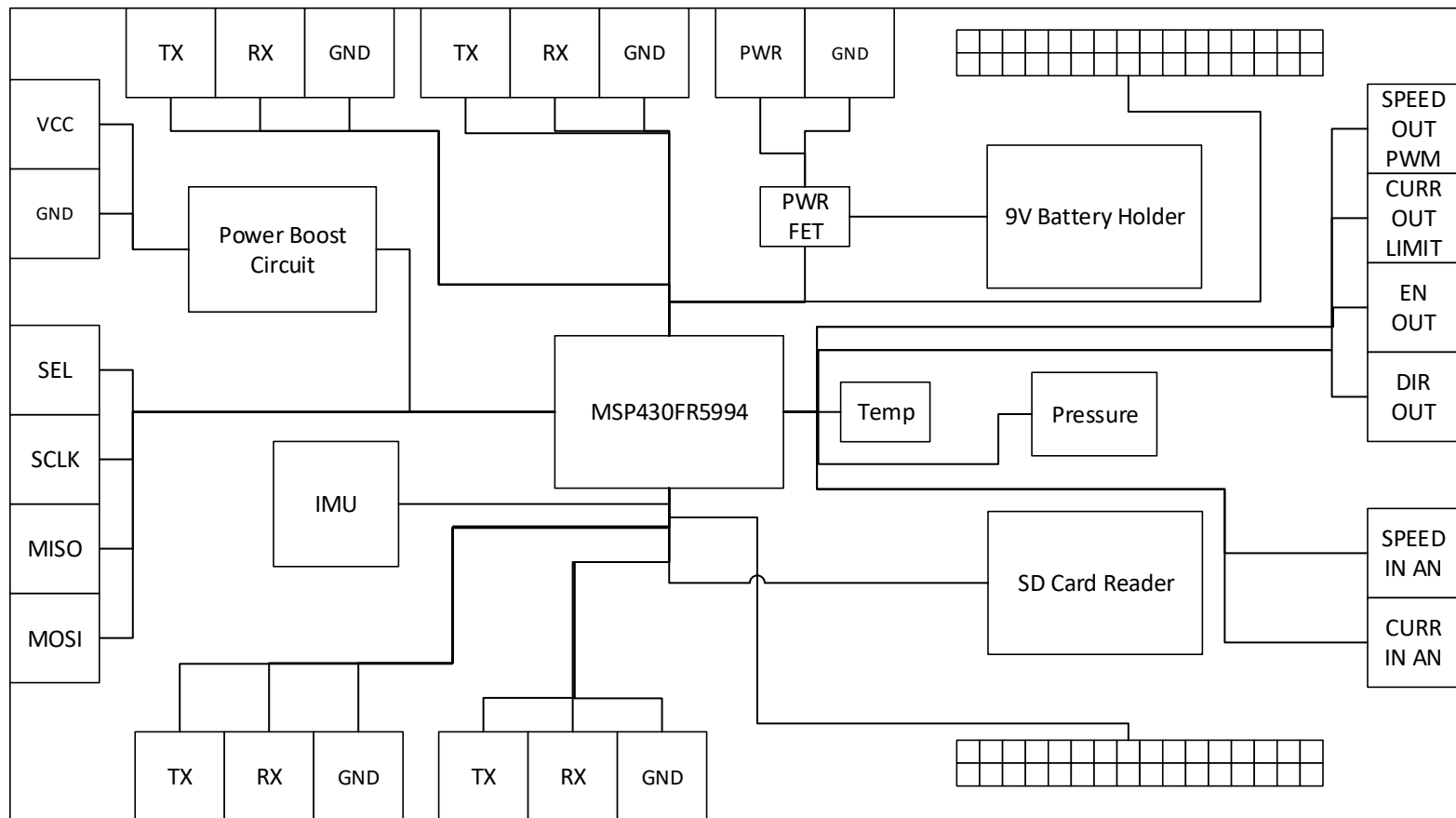


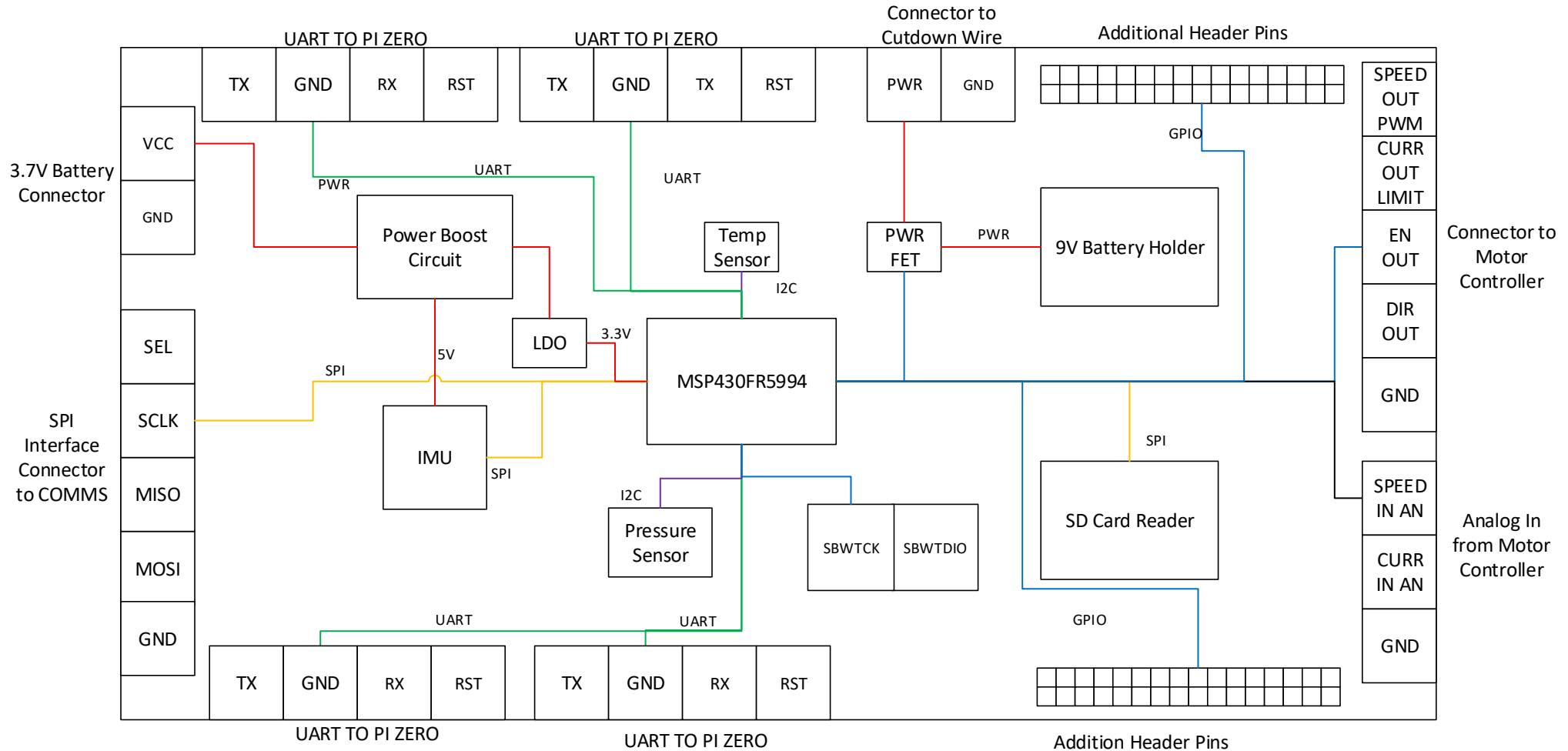
DAQCS – HOST CONTROLLER INTERFACE SCHEMATIC







DAQCS - MSP430 Host Controller Board



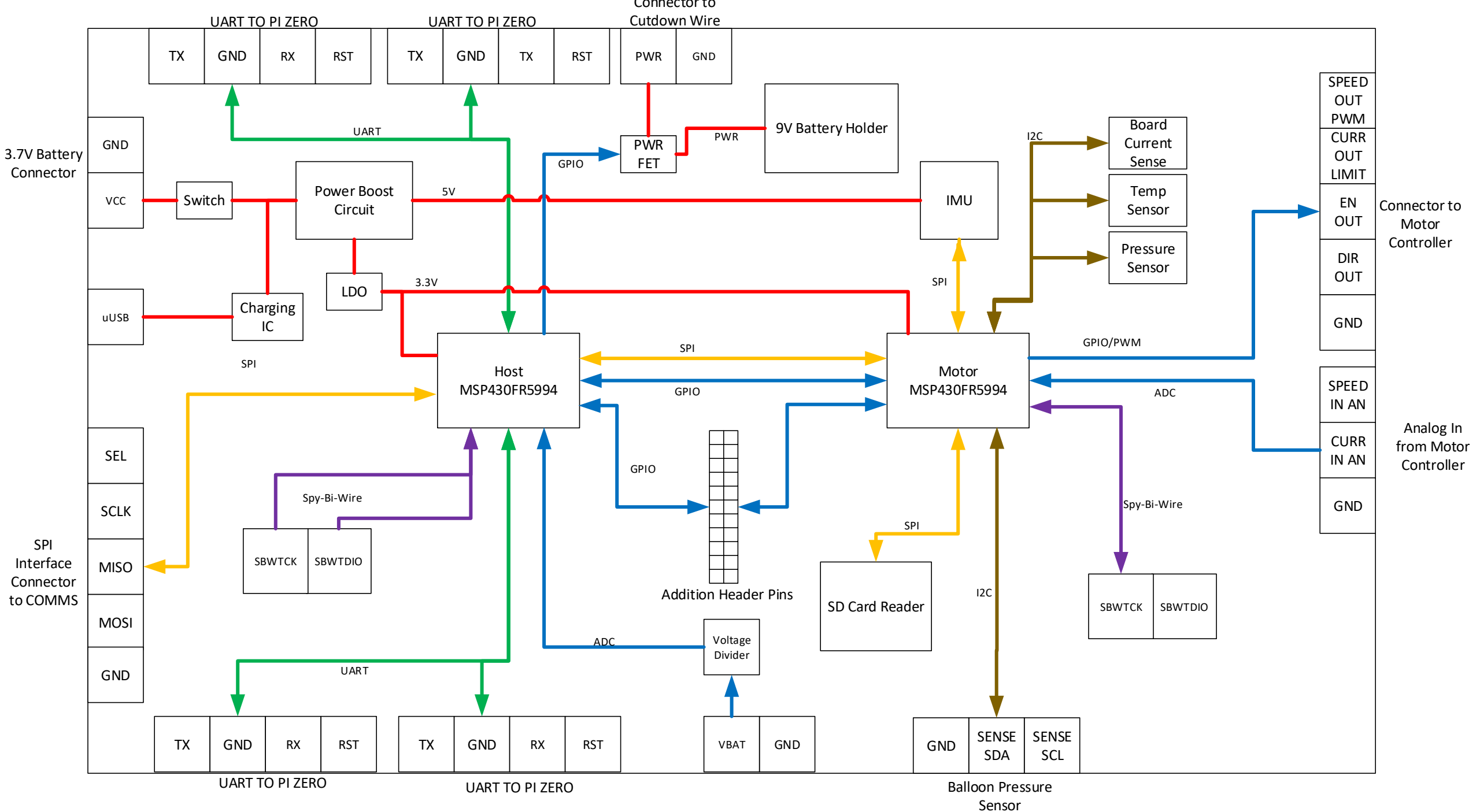
The diagram illustrates a custom PCB layout for a motor control system. The board is populated with two MSP430FR5994 microcontrollers (Host and Motor), a 9V battery holder, a power boost circuit, a charging IC, an IMU, a board current sense module, temperature and pressure sensors, an SD card reader, and a voltage divider. The layout includes multiple connectors: a 3.7V battery connector, a SPI interface connector to COMMS, a connector to a motor controller, and a balloon pressure sensor connector. The diagram shows the routing of power (red), ground (green), and data (blue, yellow, purple) lines between components and connectors.

Connectors and Pin Headers:

- 3.7V Battery Connector:** GND, VCC, uUSB.
- SPI Interface Connector to COMMS:** SEL, SCLK, MISO, MOSI, GND.
- Connector to Motor Controller:** SPEED OUT PWM, CURR OUT LIMIT, EN OUT, DIR OUT, GND, SPEED IN AN, CURR IN AN, GND.
- UART TO PI ZERO (Top):** TX, GND, RX, RST, TX, GND, TX, RST, PWR, GND.
- UART TO PI ZERO (Bottom):** TX, GND, RX, RST, TX, GND, RX, RST.
- Connector to Cutdown Wire:** PWR, GND.
- Ballon Pressure Sensor:** GND, SENSE SDA, SENSE SCL.
- Additional Headers:** SBWTCK, SBWTDIO (two locations), Addition Header Pins, VBAT, GND.

Components and Interconnections:

- Power Management:** A 9V battery holder provides power to a PWR FET, which then powers the IMU and the Motor MSP430FR5994. A power boost circuit converts the 9V to 5V, which powers the Host MSP430FR5994 and the IMU. A charging IC is connected to the uUSB pin and the Host MSP430FR5994.
- Microcontrollers:** The Host and Motor MSP430FR5994 are connected via SPI, GPIO, and ADC. The Host MSP430FR5994 is also connected to the SPI Interface Connector to COMMS.
- Sensors:** The IMU is connected to the Host MSP430FR5994 via SPI and GPIO. The Board Current Sense, Temp Sensor, and Pressure Sensor are connected to the Motor MSP430FR5994 via I2C. The SD Card Reader is connected to the Motor MSP430FR5994 via SPI. The Voltage Divider is connected to the Host MSP430FR5994 via ADC.
- Other Components:** A Spy-Bi-Wire module is connected to the Host MSP430FR5994 via SBWTCK and SBWTDIO. A Voltage Divider is connected to the Host MSP430FR5994 via ADC.



DAQCS - MSP430 Host Controller Board

