

# ASME 2020 Schematic V4

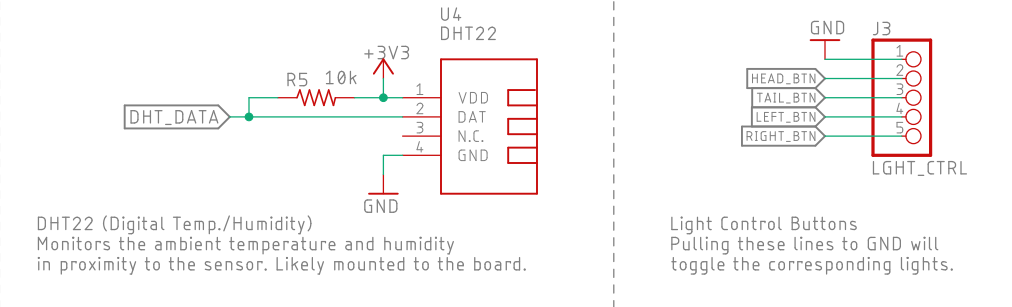
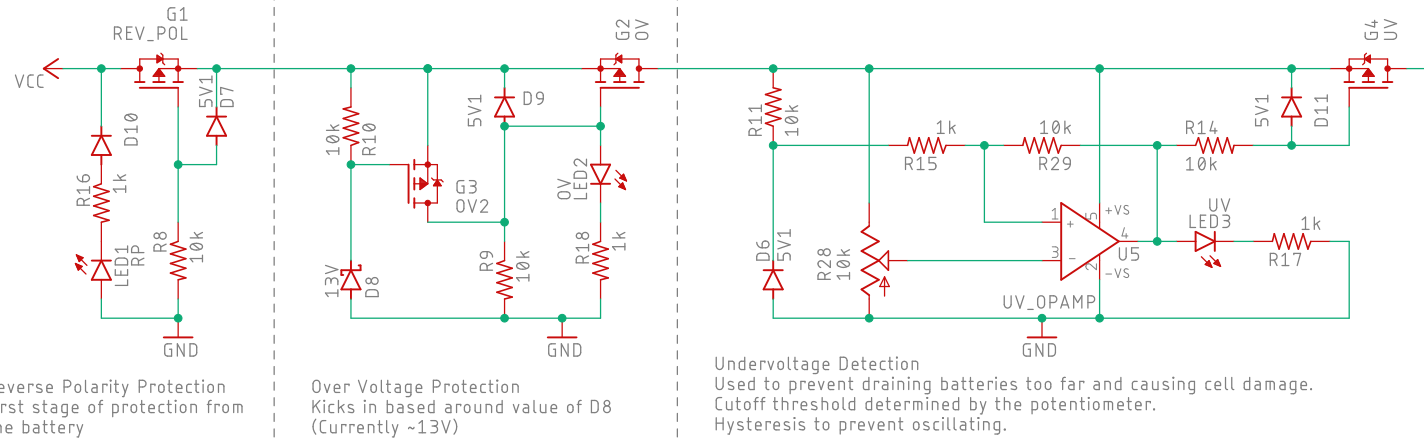
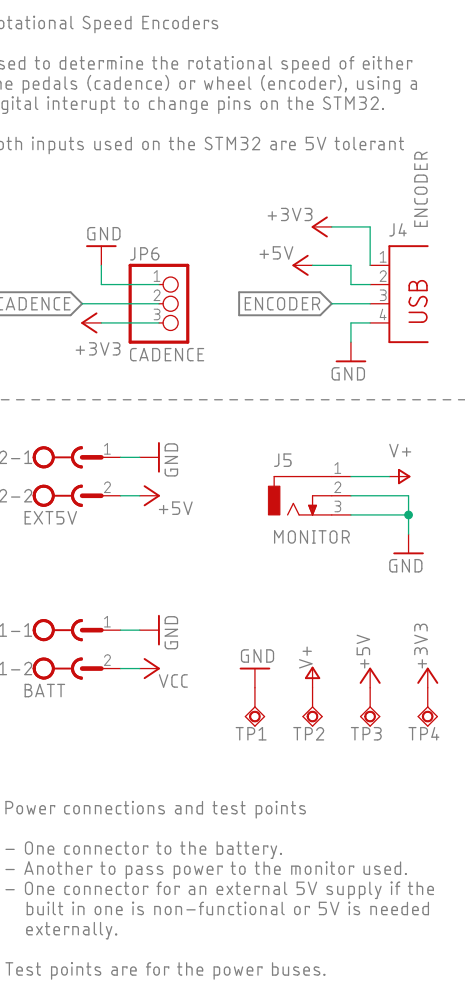
## Blue Shift – HPVDT UofT

Circuit Design / PCB Layout:  
Catherine Kucaba / Savo Bajic

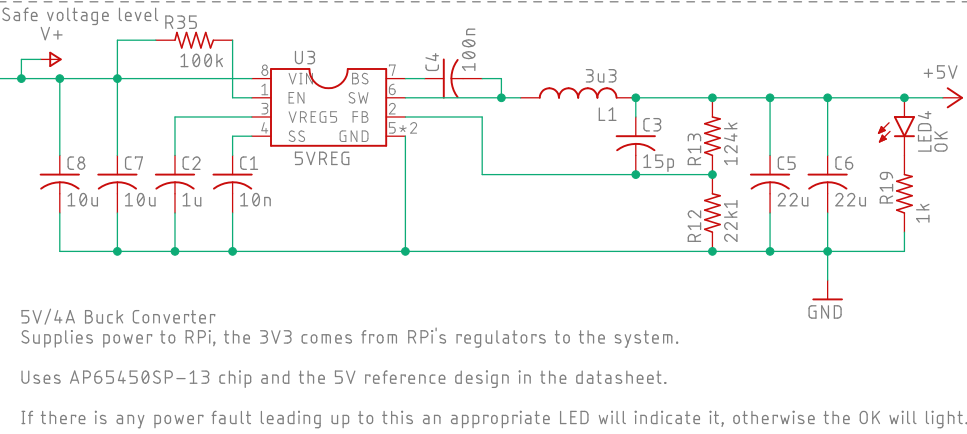
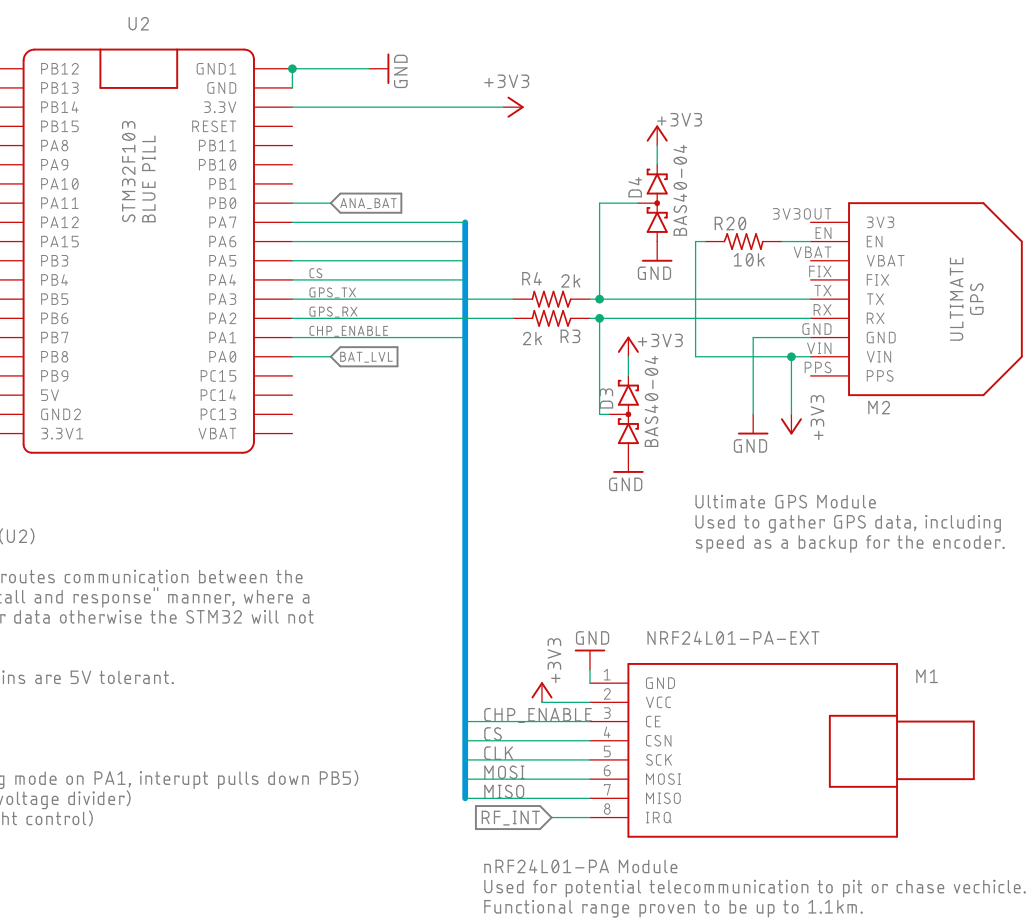
Programming:  
Ethan Baron / Yvonne Yang / Savo Bajic

Raspberry Pi (RPI)  
Connected to the digital camera and display to provide a view out of the vehicle. This view is overlaid with the datas from the sensors.

Communicates with the system over USART (serial), with protection. SHDN button pulls down a pin to signal the RPI to shutdown properly.

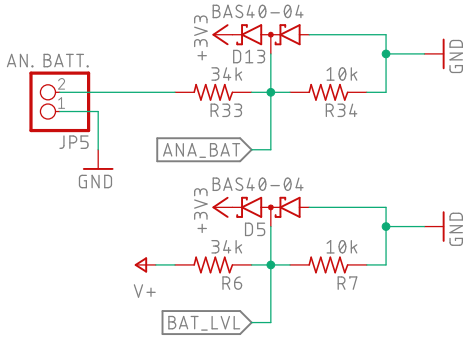


Data Connections  
A slight mess.  
STM32 sits in the middle to connect everything, collect data, and handle real-time events.  
Protection diodes installed to shield subsystems systems in the event of any over/underloads on data lines.



Battery Level Monitoring (main and analog sys. batt.)

Uses resistor voltage dividers to bring the battery voltage (nominally 10V) down to the 3V3 level the STM32 is tolerant to. There are protection diodes for the main battery.



Lighting Lines  
Constant current boost converters. Take in the battery voltage and boost it to generate a desired current through the LEDs.

Current set by resistors downstream of LEDs,  $I = 0.2/R$ . The 0.2 can be tweaked using the potentiometer and solder the jumper. Solder to ground to decrease the 0.2, +V to raise the 0.2.

Dimming is achieved though software by applying an approximately 1kHz PWM signal to the control pin.

