**Wake-up/sleep:**

LDR trigger pin uses a rising edge interrupt to signal wake-up, and a falling edge interrupt to signal dusk.

**Light level:**

For periodic sampling will be calibrated to output 3.3 V in bright sunlight, and about 1 V (ish) at dawn/dusk.

**Thermocouple addressing:**

Provision is made for 4 daughter boards. 4 bit address bits 0 & 1 address the individual thermocouples attached to each daughter board. Bits 2 & 3 address the 4 enable pins on the board multiplexers. All 16 thermocouples share a single analogue pin.

**Power monitor:**

The batt trigger pin uses a falling edge to signal 10 % remaining charge. Not sure how we use this information, maybe save data more frequently, and stop periodic sound sampling?

The charge monitor pin can be sampled periodically and the charge level sent to the app. Calibrated to output 0 V at full charge and 3.3 V at 50 % charge which is the power cut off point.

**Maintenance:**

The maintenance switch triggers a rising edge interrupt, take this as a signal to finish current operations, flush the buffers, and stop all sampling (this switch should also be used before disconnecting battery). Once all data saved set LED pin high. When the STM and Pi have both turned on their respective LEDs the 3.3 V analogue power is cut. When the switch is reset use the falling edge interrupt to set LED pin low which will restore analogue power rail, and restart normal operation.

I am not sure how this circuit will behave on initial power up so we may need to cycle the led on boot up to ensure that the power comes on.

**Microphone inputs:**

The main front mic input has an AA filter with fc 800 Hz, and is used for hornet identification, and periodic sampling of the bee activity noise so we can build up a picture of normal healthy noise, and identify a drop-off in activity and flag.

The secondary front input feeds from the 6.11 kHz bandpass filter which has a 1.43 kHz bandwidth, it’s there to pick up the alleged distress call.

The rear mic is there for ambient noise if we want it (if its not there Paul will complain) it has a 10 kHz AA filter.

Anything else let me know