BodyTeller PCB Notes

blair subbaraman

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ESP-12x

background

- ESP-12 is old and only has 16 pins (the adafruit esp breakout board uses an esp-12, which is is why that schematic only has 16 pins!)
- ESP-12E/ESP-12F are pretty interchangeable, F has improved antenna performance. 22 pins.
- all are modules for the ESP8266

implementation

the ESP-12F pins in order of pin # ,with special functionality noted, paired with info on what we'll need for BodyTeller's functionality:

- RESET: a button here is useful for uploading code.
- ADC: analog in $\in [0, 1]V$, so need a voltage divider where e.g. $R_1 = 220\Omega$, $R_2 = 100\Omega$. use high quality resistors.
- EN: ESP8266 enable pin; needs to be pulled high. pull low momentarily to reset.
- GPIO 16: can be used to wake up out of deep-sleep mode; don't need this
- GPIO 14: standard gpio pin. won't use.
- GPIO 12: standard gpio pin. won't use.
- GPIO 13: standard gpio pin. won't use.
- VCC: give the ESP 3.3V power from the voltage regulator.
- CS0: NC
- MISO: NC
- GPIO 9: NC
- GPIO 10: NC
- MOST: NC
- SCLK: NC
- GND: GND
- GPIO 15: also used to detect boot-mode. needs a pulldown resistor connected to it to make sure this pin isn't pulled high on startup. can also just use it as an output.
- GPIO 2: also used to detect boot-mode. needs a pull-up resistor in huzzah schematic, though i'm not sure why.

- GPIO 0: used by the ESP8266 to determine when to boot into the bootloader. if the pin is held low during power-up it will start bootloading. huzzah pulls this pin high, and with a button to bring it low (along with an LED so you know when you're pressing the button). we'll need this to upload sketches from Arduino IDE (led not necessary... but seems useful, and low power consumption since it's only on during button press).
- GPIO 4: used for I2C SDA (we won't use this)
- GPIO 5: used for I2C SCL (we won't use this)
- RX: recieve pin; we'll want to be able to upload sketches
- TX: transmit pin; we'll want to be able to upload sketches