That #&@^! Badge!

Kylie: Do you want to help with the badge?

Me: Okay what's the brief?

Kylie: I want WiFi.......

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WHAT WAS I THINKING!!!

Iggy :-)

- Electronics engineering

- Amateur "HAM" Radio

- Security & digital forensics (SANS junkie)

- Law enforcement & rescue

- ICT

- I like to make stuff!

Badge concept

"A cool badge that does everything and costs nothing"

So lets have WiFi and a full colour TFT display and buttons and SD card and 16 GPIO lines and eight 12 bit A/D lines and and and...

Design choices

- Common hardware
  - ESP8266 WiFi processor - NodeMCU
  - ST7735 SPI 1.8" TFT
- Common software
  - Arduino IDE
- Make it accessible to hobbyist & hackers

P of C

- SparkFun ESP8266 "thing"', then
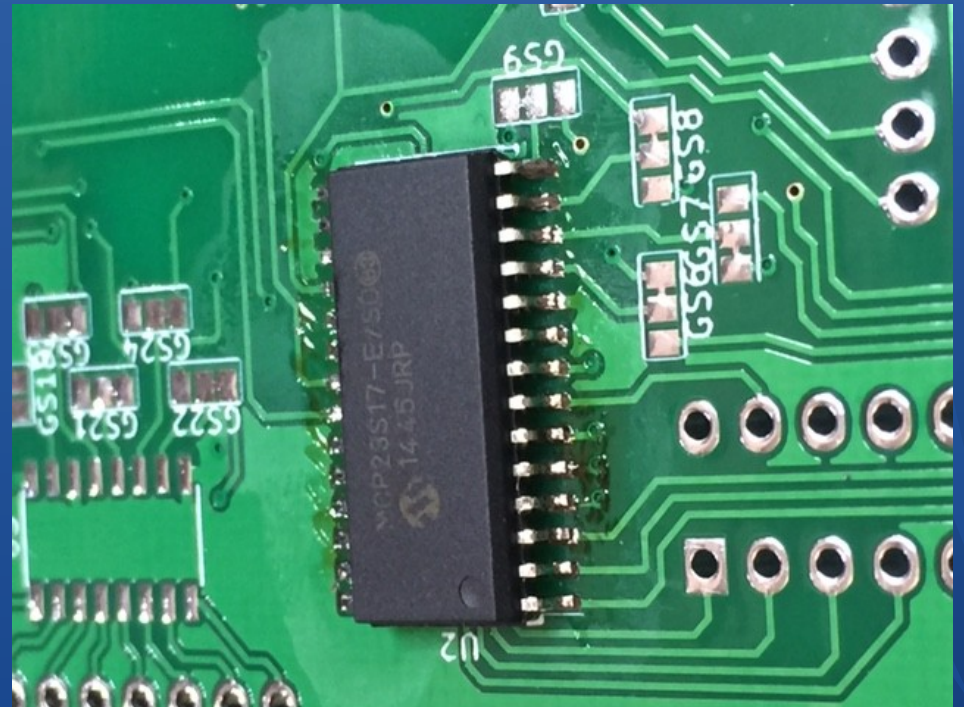- NodeMCU from TronixLabs
- Displays from eBay
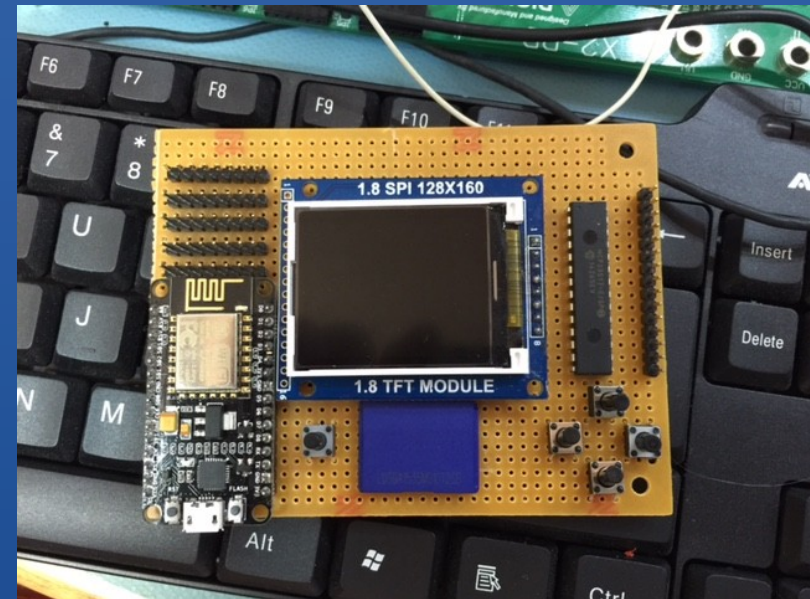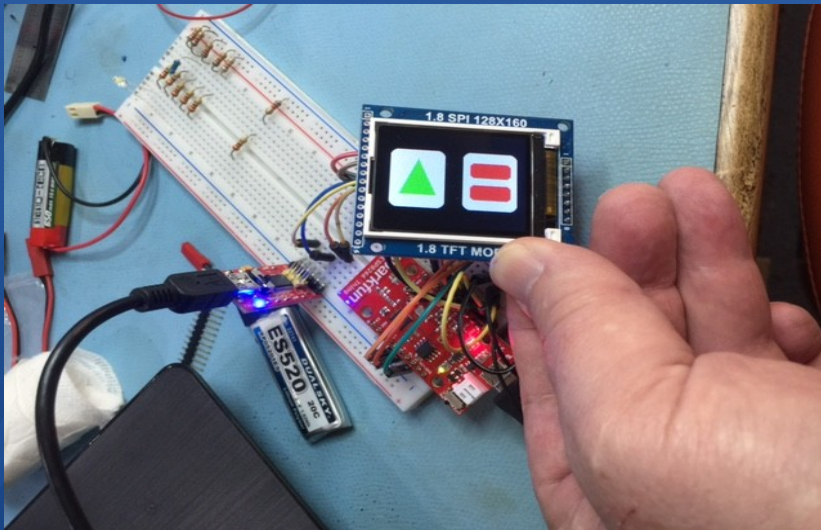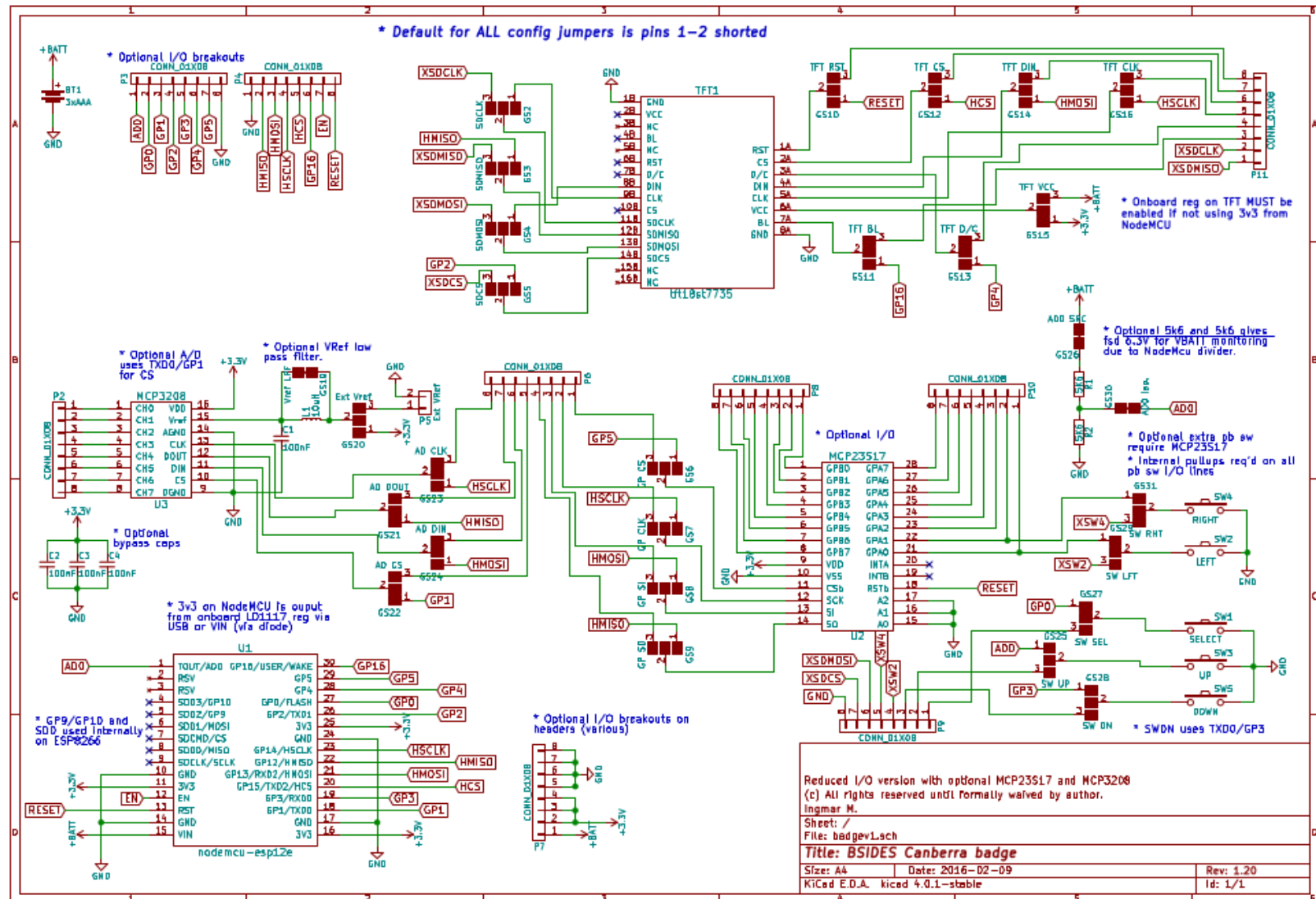
Squeeze the $$$

- "In the box"
  - NodeMCU Wifi, 1M code space
  - TFT & SD card I/O
  - Basic buttons
  - A/D on battery line
- Upgrades
  - Full button pad (5 buttons)
  - 16 GPIO with MCP23S17
  - 8 x 12 bit analogue inputs with MCP3208

Hackable!

- EVERY I/O can be customised
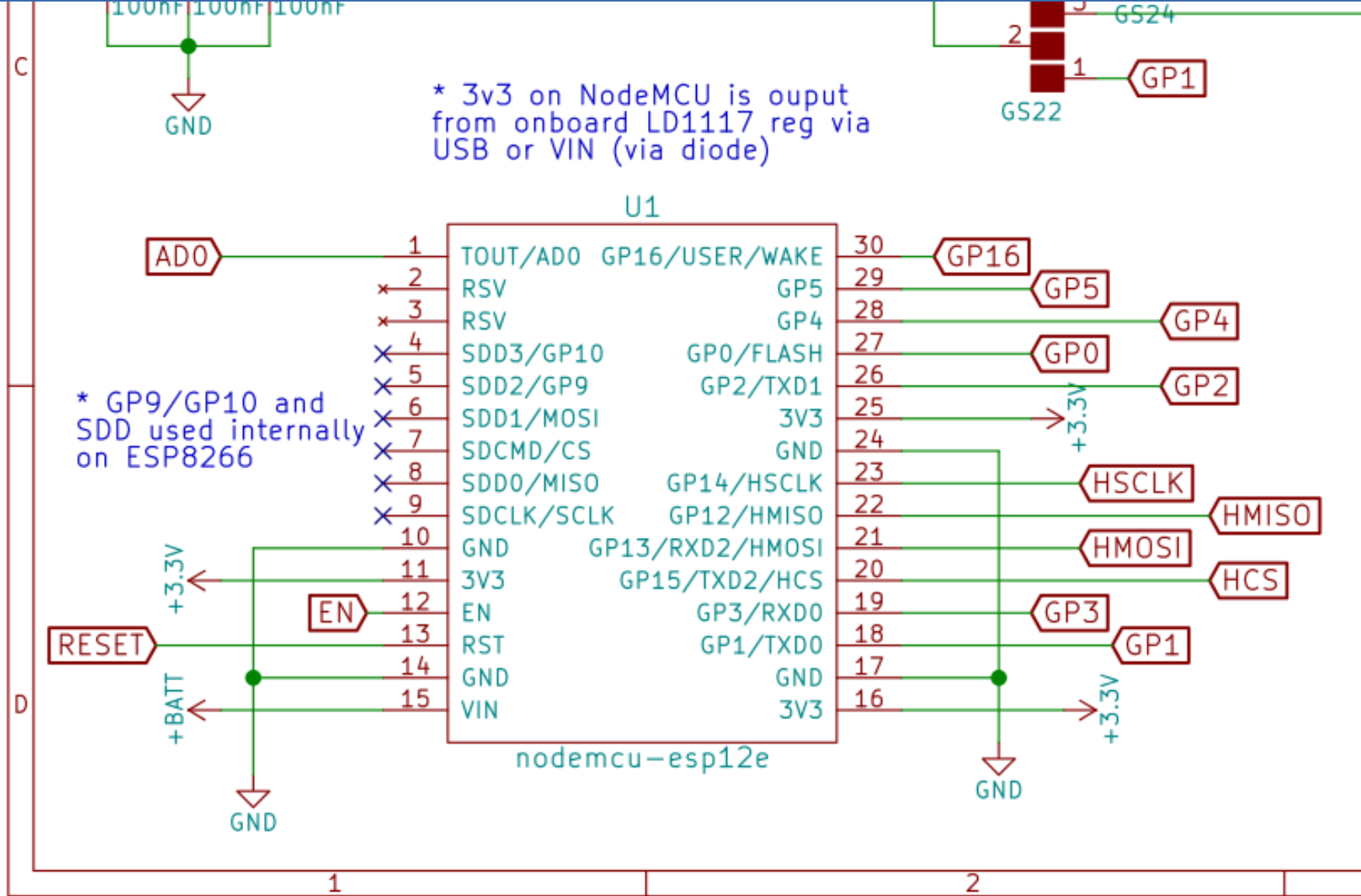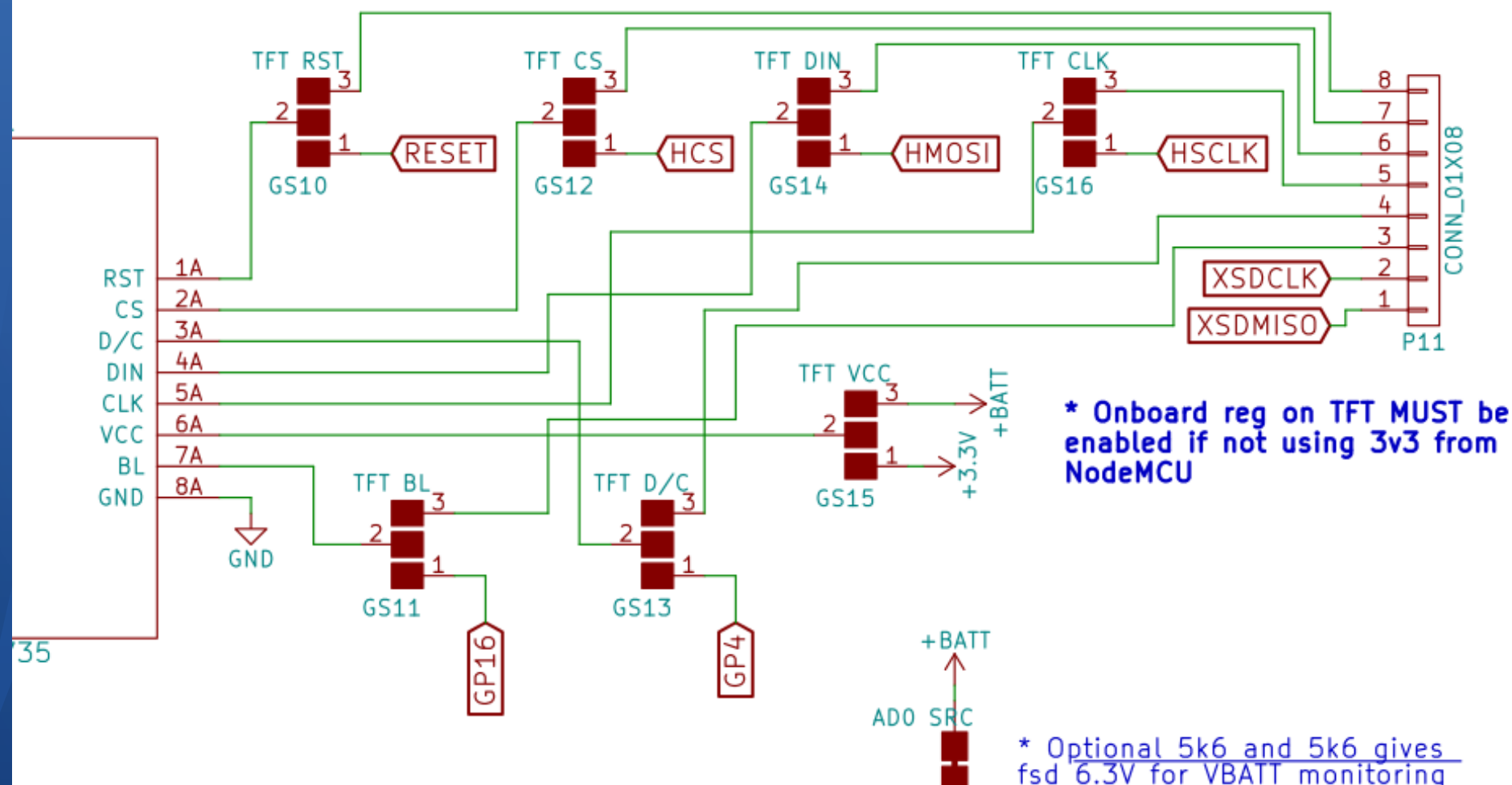 - Option jumpers
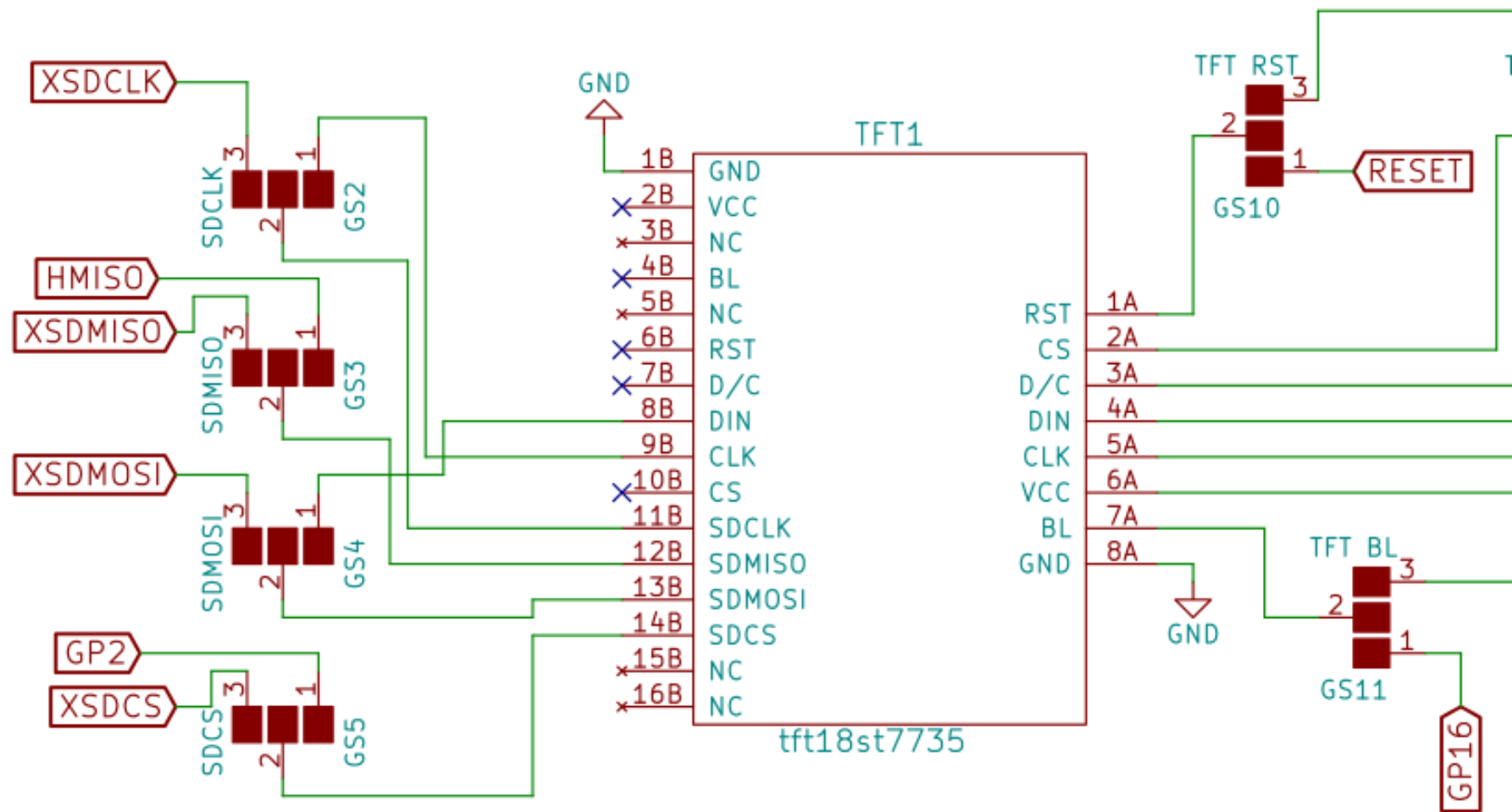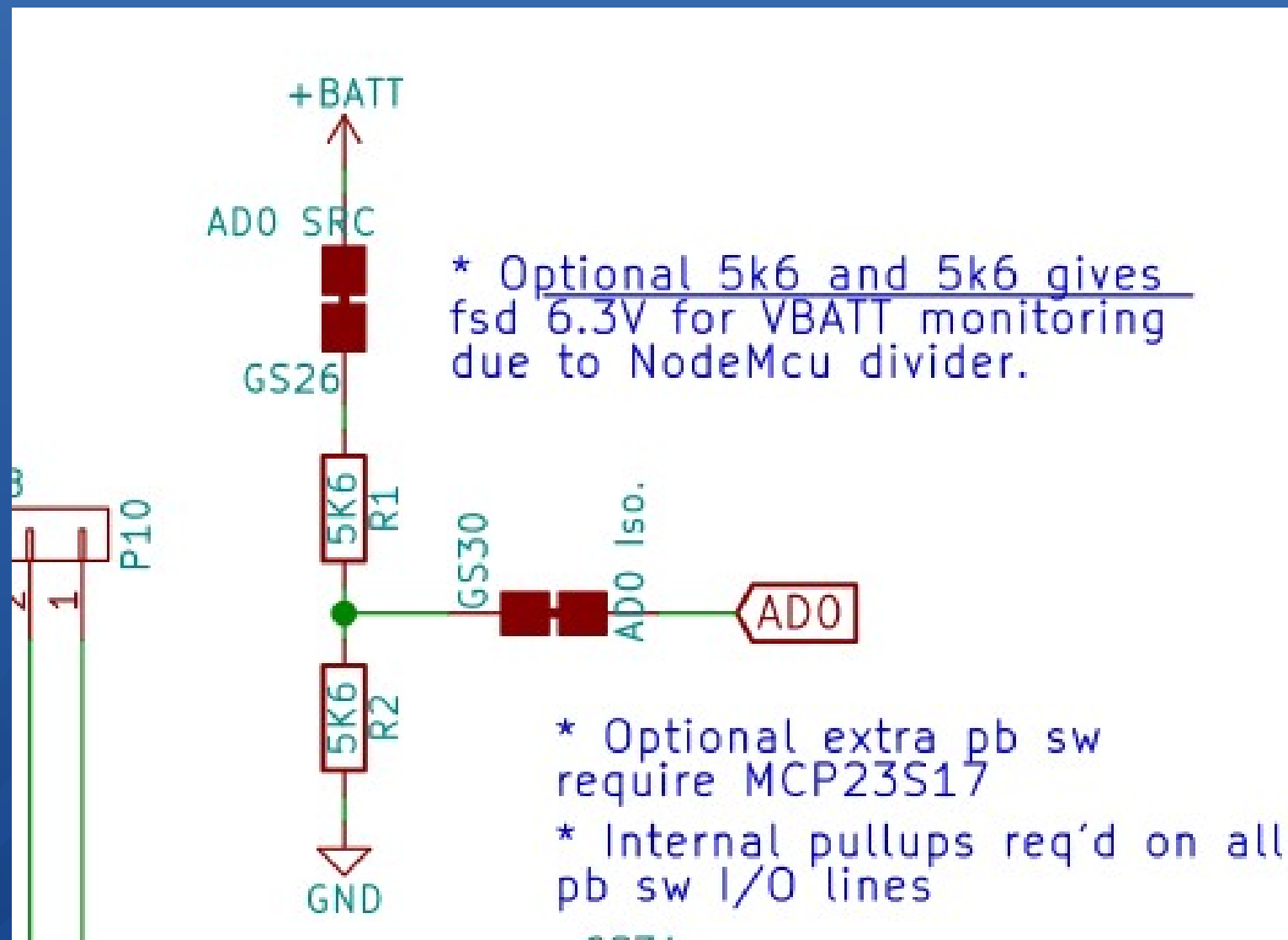 - Everything on headers

Overview

NodeMCU
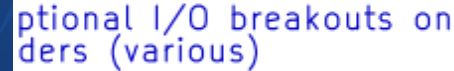
TFT

SD Card

Battery Volts
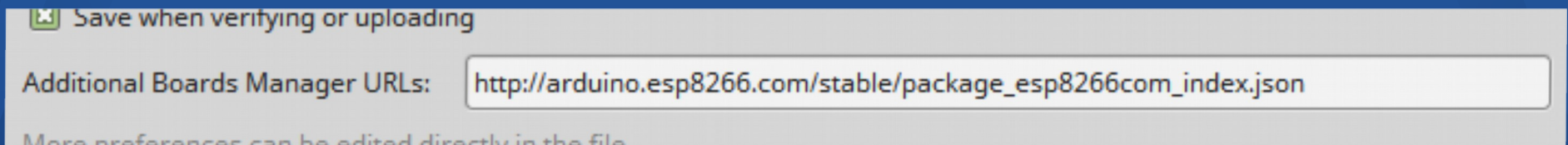
Buttons
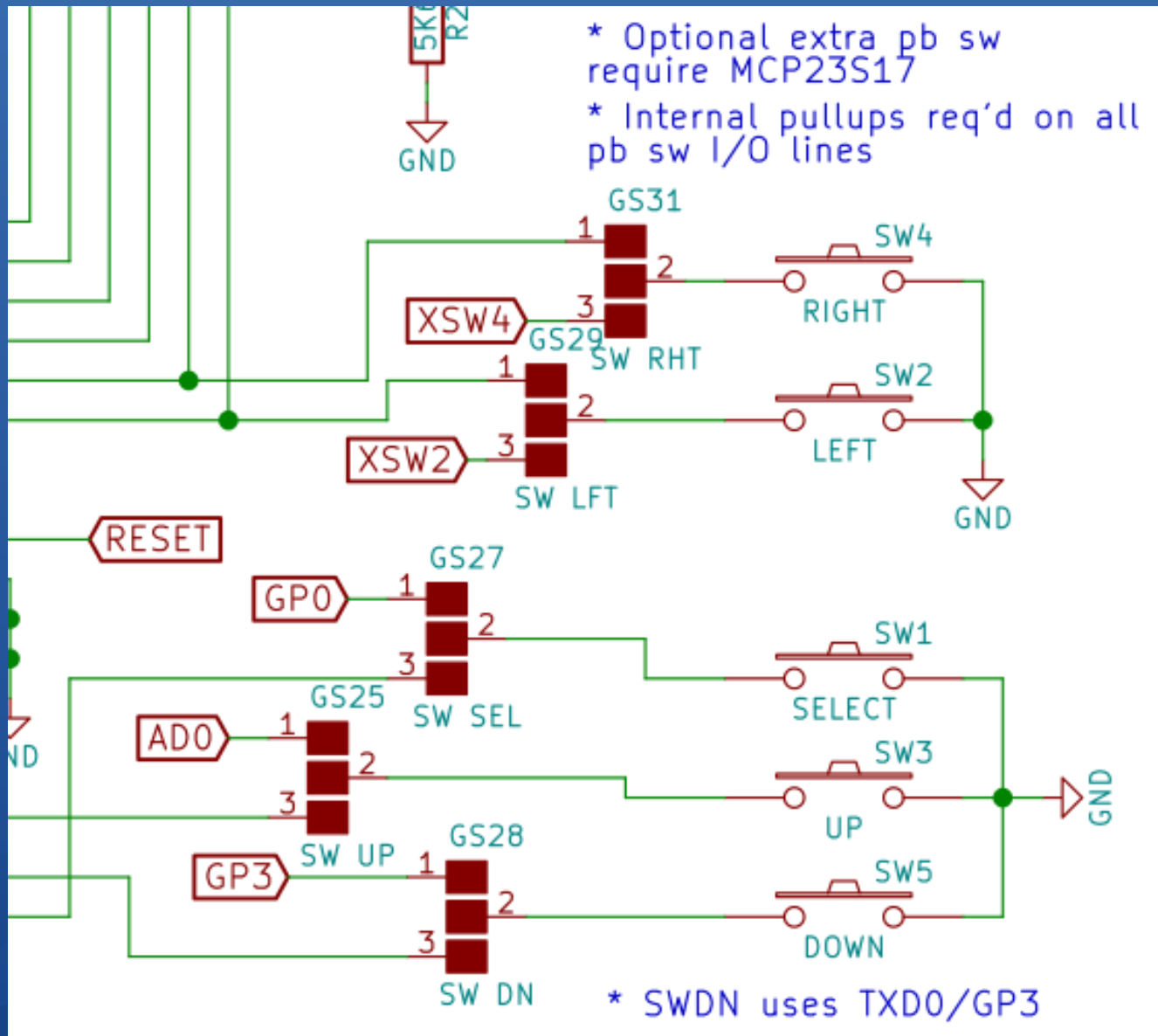
GPIO

A/D

Software

- Native C/C++ on ESP8266 SDK

- LUA on NodeMCU

- Arduino IDE extensions

  - GREAT for beginners

  - Had to modify some libraries

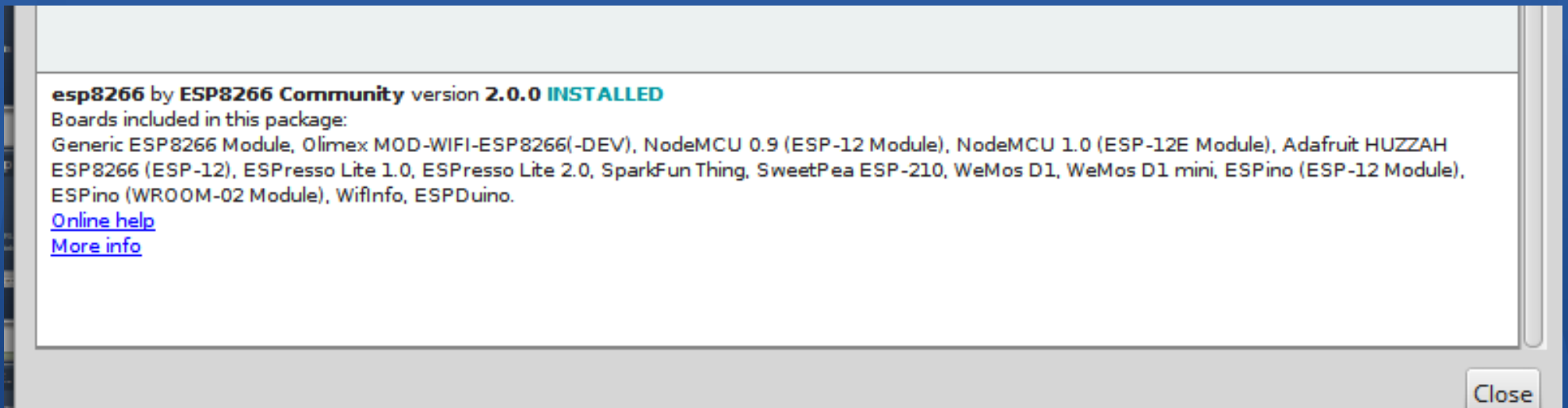- Silvio is the retro-king with his badge f/w!

IDE Setup

- Install Arduino 1.6.5
  - www.arduno.cc

- Preferences
  - Additional Boards Manager URLs
  - http://arduino.esp8266.com/stable/package_esp8266com_index.json

More IDE..

- Tools – Board – Boards Manager
  - ESP8266 tools
  - Install the tools...

esp8266 by ESP8266 Community version 2.0.0 INSTALLED
Boards included in this package:
Generic ESP8266 Module, Olimex MOD-WIFI-ESP8266(-DEV), NodeMCU 0.9 (ESP-12 Module), NodeMCU 1.0 (ESP-12E Module), Adafruit HUZZAH ESP8266 (ESP-12), ESPresso Lite 1.0, ESPresso Lite 2.0, SparkFun Thing, SweetPea ESP-210, WeMos D1, WeMos D1 mini, ESPino (ESP-12 Module), ESPino (WROOM-02 Module), WifInfo, ESPDuino.
Online help
More info

Close

Drivers

- NodeMCU USB/serial is CH340

- Linux no driver install

- Windows "may" need CH340 downloaded

- OSX

  – https://tzapu.com/making-ch340-ch341-serial-adapters-work-under-el-capitan-os-x/

Programming

- Select NodeMCU 1.0

Oops..