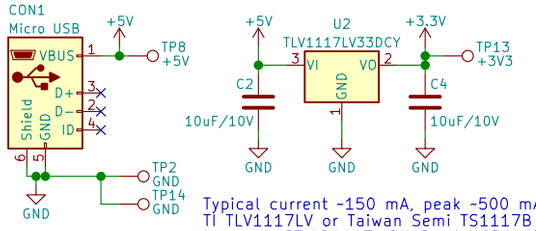
Power supply

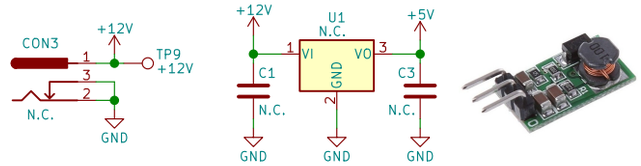
Default power supply input – micro USB charger.
500mA minimum.

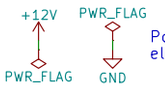


Typical current ~150 mA, peak ~500 mA.
TI TLV1117LV or Taiwan Semi TS1117B can be used. ST LD1117, ON Semi NCP1117 can be unstable with ceramic capacitor!

Optional power supply input

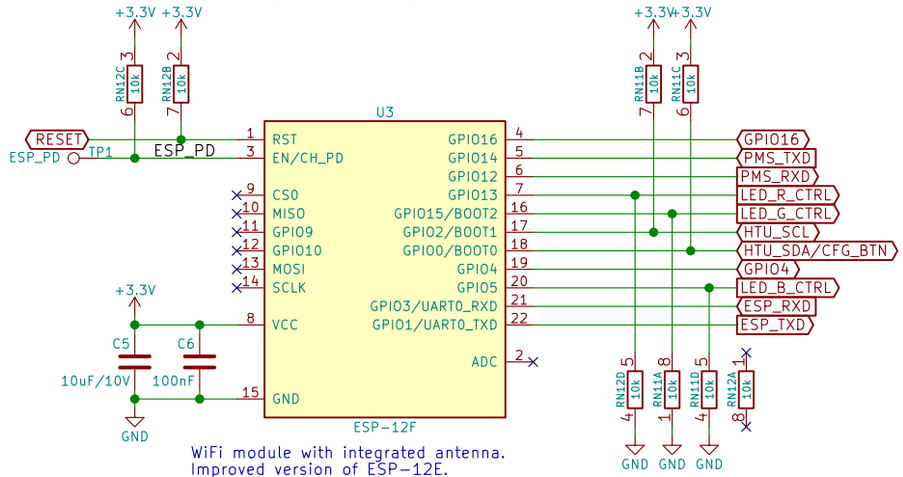
Optional power supply input – 2.1x5.5 DC barrel jack.
5V DC/DC converter can be used with it (LM2596 module).
7805 should not be used – it will be too hot.
Jack and DC/DC are not installed by default.





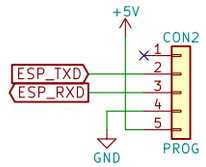
Power flags for KiCad electrical rule check

WiFi/processing module



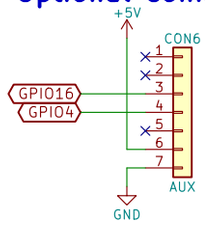
WiFi module with integrated antenna.
Improved version of ESP-12E.
Typical current ~50mA, peak >400mA

Programming connector



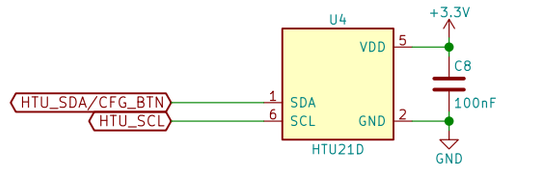
Programming connector – UART to USB adapter.
To enter programming mode, hold CFG button and press RESET buton.

Optional connector

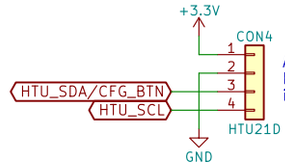


Optional connector – two free ESP pins connected.
LoRa module can be tested here.

Humidity and temperature sensor

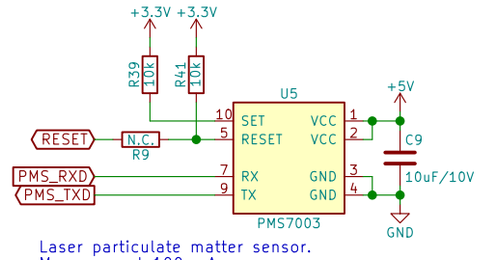


HTU21D, HDC1080, Si7020 can be used.
According to datasheet , central pad should be left floating.
Current consumption negligible.

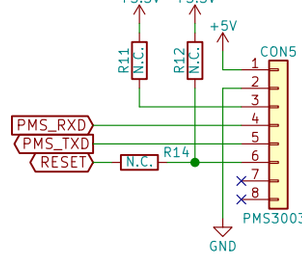


Alternative connector for HTU21D module, can be used if assembling board by hand.

Particulate matter sensor

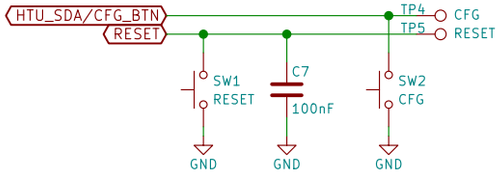


Laser particulate matter sensor.
Max. current 100 mA.

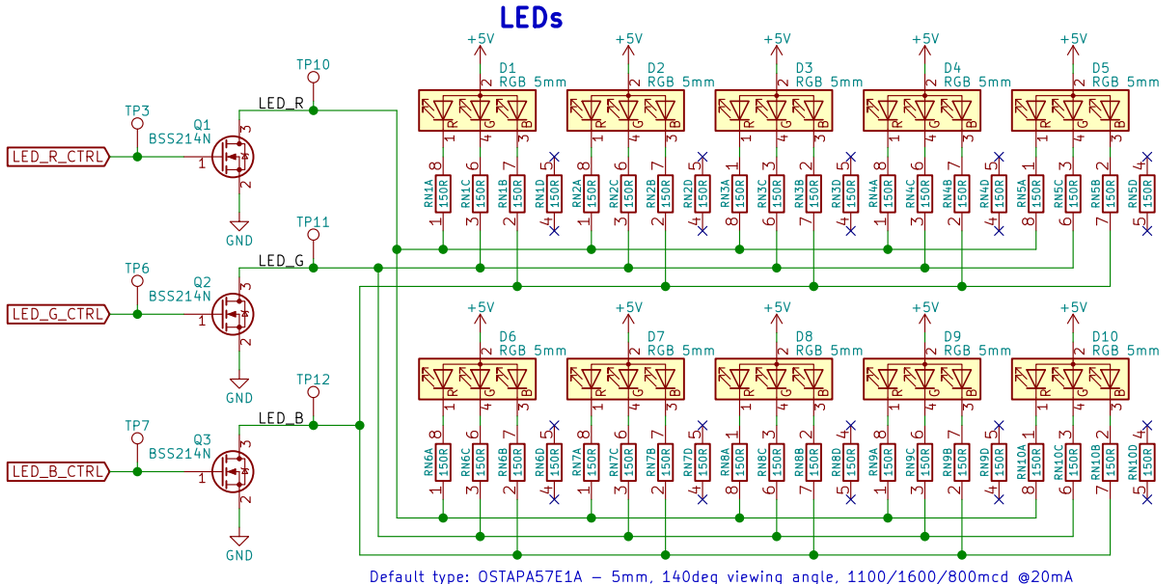


Connector for alternative PMS5003 sensor. Molex 1.25mm PicoBlade 530480810 or 530470810

Buttons



LEDs



Default type: OSTAPA57E1A – 5mm, 140deg viewing angle, 1100/1600/800mcd @20mA
Cheap 5mm RGB common anode transparent lens LEDs from Aliexpress can be also used, but they have narrower viewing angle – 25..30deg.
LED current for selected resistors: typ. 20mA for red, 13mA for blue/green.
Max 24mA worst case per single LED. Max. total current 240mA for one color, 600mA for all total on. Software limited to 200mA.
Cut LEDs legs close to PCB to avoid shorts by PMS module!

Less-Smog

Sheet: /
File: sensor.sch

Title: ESP8266 Air Quality Sensor

Size: User	Date:	**Rev:**
KiCad E.D.A. kicad 4.0.7		Id: 1/1