t=0x82784a0 [0,0]
Contents: [Dobrica PavlinuÅ¡iÄ 's random unstructured stuff]

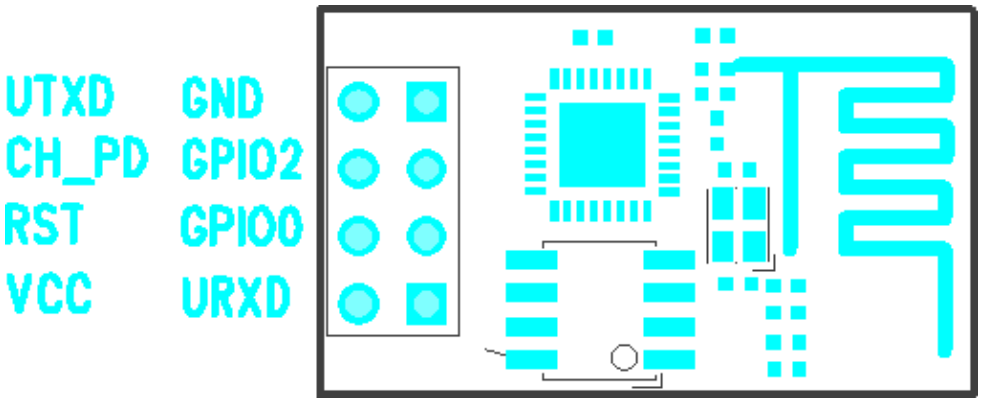
links

- http://www.esp8266.com/
- https://github.com/esp8266/esp8266-wiki/wiki
- http://www.electrodragon.com/w/Wi07c
- https://nurdspace.nl/ESP8266

- Documentation, tools, firmwares https://onedrive.live.com/?cid=C4DDF72E6EEA3826&id=C4DDF72E6EEA3826%21631

- https://github.com/esp8266/arduino
- https://github.com/igrr/esptool-ck (with reset support)

- http://tim.jagenberg.info/2015/01/18/low-power-esp8266/



- all IO is 3.3V (3.6V max)
- CH_PD i chip-enable and has to be connected to VCC (3.3V)
- RST, GPIO0, GPIO2 should be pulled up to VCC for normal operation (GPIO0 at minumum!)
- GPIO0 pull to ground for firmware update
- make sure that 3.3V VCC power supply can support 300-400mA or there **WILL** be problems!

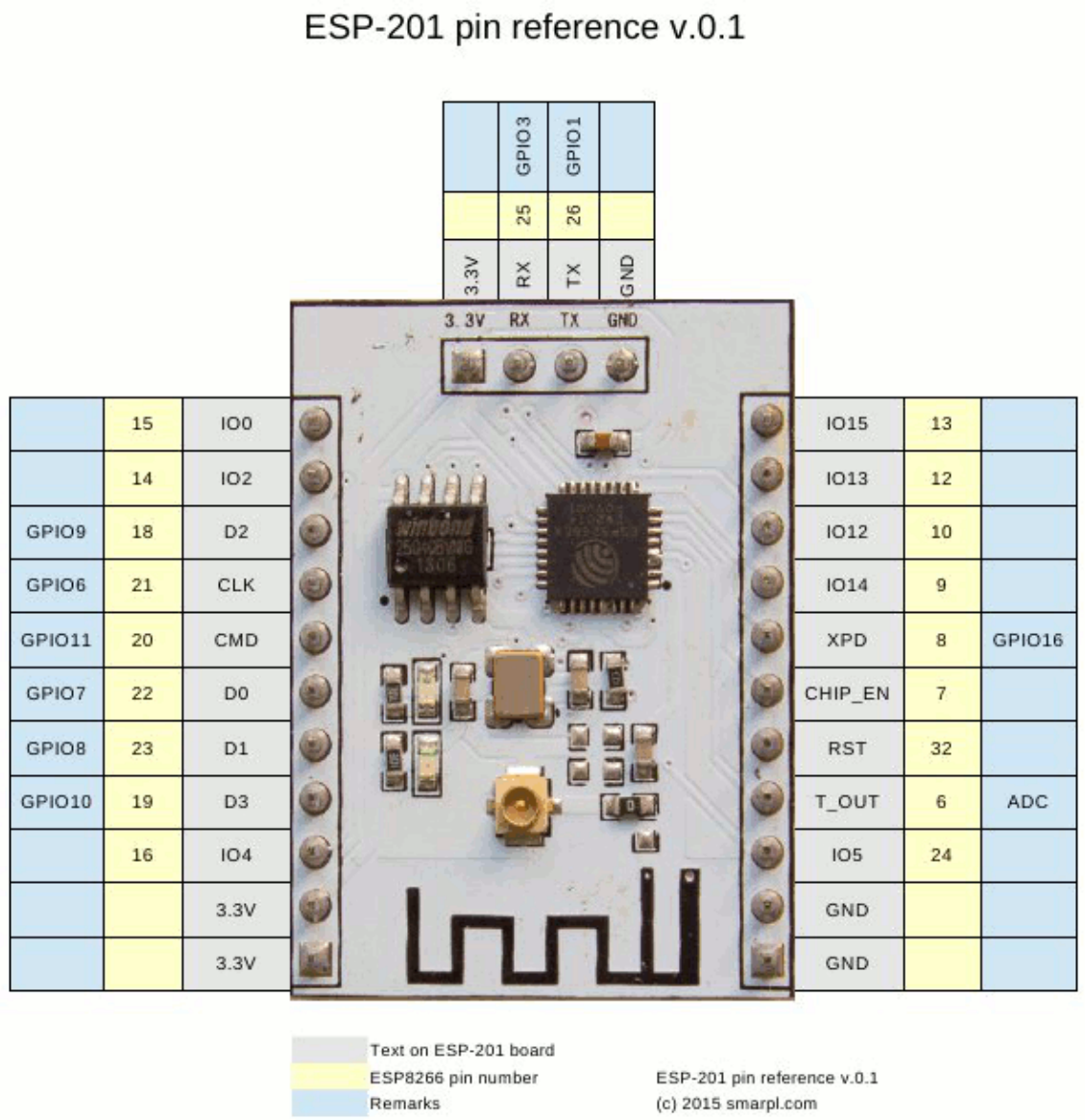
serial port

baud rate 115200

```
AT+GMR
00160901

OK

AT+RST

OK

 ets Jan  8 2013,rst cause:4, boot mode:(3,7)

wdt reset
load 0x40100000, len 24444, room 16
tail 12
chksum 0xe0
ho 0 tail 12 room 4
load 0x3ffe8000, len 3168, room 12
tail 4
chksum 0x93
load 0x3ffe8c60, len 4956, room 4
tail 8
chksum 0xbd
csum 0xbd

ready
```

ESP-201

http://www.banggood.com/ESP8266-ESP-201-Remote-Serial-Port-WIFI-Transceiver-Wireless-Module-p-964



from http://smarpl.com/content/esp8266-esp-201-module-first-impressions

- http://jas-hacks.blogspot.com/2015/04/iot-esp8266-esp-201-cc1110-xrf.html

  One quirk with the ESP-201 is that is IO15 has to be grounded for the device to function. To flash the device IO00 has to be grounded.

```
AT+RST

OK

 ets Jan  8 2013,rst cause:4, boot mode:(3,7)

wdt reset
load 0x40100000, len 212, room 16
tail 4
chksum 0x5e
load 0x3ffe8000, len 788, room 4
tail 0
```

```
chksum 0x1c
load 0x3ffe8314, len 72, room 8
tail 0
chksum 0x55
csum 0x55
jump to user1
```

modify flash for dio instead of qio:
http://smarpl.com/content/esp8266-esp-201-module-freeing-gpio9-and-gpio10

nodemcu

- https://github.com/nodemcu/nodemcu-firmware
- https://github.com/nodemcu/nodemcu-firmware/wiki/nodemcu_api_en

esptool.py

```
dpavlin@x200:/rest/cvs/esptool$ git remote -v
origin  https://github.com/themadinventor/esptool (fetch)
origin  https://github.com/themadinventor/esptool (push)

dpavlin@x200:/rest/cvs/esptool$ ./esptool.py --port /dev/ttyUSB2 read_mac
Connecting...
MAC: 18:fe:34:a0:38:72
```

flash firmware

```
dpavlin@blue:/opt/Espressif/esptool$ ./esptool.py read_mac
Connecting...
MAC: 18:fe:34:a0:38:72
dpavlin@blue:/opt/Espressif/esptool$ ./esptool.py --port /dev/ttyUSB0 write_flash 0x00000 ../node
Connecting...
Erasing flash...
Writing at 0x00010800... (17 %)
```

Get latest build from https://github.com/nodemcu/nodemcu-firmware/releases

```
dpavlin@x200:/rest/cvs/esptool$ ./esptool.py --port /dev/ttyUSB2 write_flash 0x00000 ./nodemcu_fl

dpavlin@x200:/rest/cvs/esptool$ microcom -p /dev/ttyUSB2 -s 9600
connected to /dev/ttyUSB2
Escape character: Ctrl-\
Type the escape character followed by c to get to the menu or q to quit

> node.restart()

NodeMCU 0.9.6 build 20150406  powered by Lua 5.1.4
lua: cannot open init.lua
>
```

build from source

For latest features, you might want to rebuild software from github source

```
dpavlin@x200:/rest/cvs$ git clone https://github.com/pfalcon/esp-open-sdk.git

dpavlin@x200:/rest/cvs/esp-open-sdk$ export PATH=/rest/cvs/esp-open-sdk/xtensa-lx106-elf/bin:$PAT
```

```
git clone https://github.com/nodemcu/nodemcu-firmware.git
cd nodemcu-firmware

dpavlin@x200:/rest/cvs/nodemcu-firmware$ git checkout -b dev origin/dev
Branch dev set up to track remote branch dev from origin.
Switched to a new branch 'dev'


make

# check that device is in boot loader mode

dpavlin@x200:/rest/cvs/nodemcu-firmware$ ../esptool/esptool.py --port /dev/ttyUSB1 read_mac
Connecting...
MAC: 18:fe:34:99:f2:83

# flash new firmware

dpavlin@x200:/rest/cvs/nodemcu-firmware$ make flash ESPPORT=/dev/ttyUSB1
make -C ./app flash
make[1]: Entering directory '/rest/cvs/nodemcu-firmware/app'
../tools/esptool.py --port /dev/ttyUSB1 write_flash 0x00000 ../bin/0x00000.bin 0x10000 ../bin/0x1
Connecting...
Erasing flash...
Writing at 0x0000c500... (100 %)
Erasing flash...
Writing at 0x00068c00... (100 %)

Leaving...
make[1]: Leaving directory '/rest/cvs/nodemcu-firmware/app'
```

A library for the Microchip MCP3021 A/D converter for use with the ESP8266.

https://github.com/AllAboutEE/ESP8266-MCP3021-Library

nodemcu-uploader

```
dpavlin@x200:/rest/cvs$ git clone https://github.com/kmpm/nodemcu-uploader
dpavlin@x200:/rest/cvs/nodemcu-uploader$ ./nodemcu-uploader.py --port /dev/ttyUSB2 --baud 9600 fi
Listing files
for key,value in pairs(file.list()) do print(key,value) end
>
```

OpenOCD JTAG

https://github.com/projectgus/openocd

http://www.esp8266.com/viewtopic.php?f=9&t=1871#p11157

t=0x828cc88 cell=0x828cdd0 [0,0] cell=0x828cf00 [0,1] cell=0x828d080 [0,2]

JTAG Signal	ESP8266 GPIO Pin	JTAG Pin (standard 20 pin connector)
TMS	14	7
TDI	12	5
TCK	13	9
TDO	15	13
RST	RST	15

verified on https://visualgdb.com/tutorials/esp8266/nodemcu/jtag/

ESP8266 as wireless JTAG Programmer

https://github.com/emard/wifi_jtag

WIFI

- https://github.com/kripthor/WiFiBeaconJam

software serial

- C library https://github.com/plieningerweb/esp8266-software-uart
- Arduino https://github.com/plerup/espsoftwareserial

Sonoff

https://www.itead.cc/sonoff-wifi-wireless-switch.html
http://wiki.iteadstudio.com/Sonoff
https://github.com/arendst/Sonoff-MQTT-OTA

pinout

My sonoff is early model, with just 4 pins (instead of 5)

1 - VCC
2 - RX
3 - TX
4 - GND

Programming

- https://tech.scargill.net/a-flashing-esp-chips-surprise/

use **dio** not **qio** to fix checksum errors

CH340 USB to ESP8266 ESP-01 Wifi Module Adapter

It doesn't have GPIO0 connected to ground, so flashing doesn't work!

http://www.esp8266.com/wiki/doku.php?id=all-in-one-esp-usb-converter

ESP-01S DHT11 board

- https://github.com/IOT-MCU/ESP-01S-DHT11-v1.0

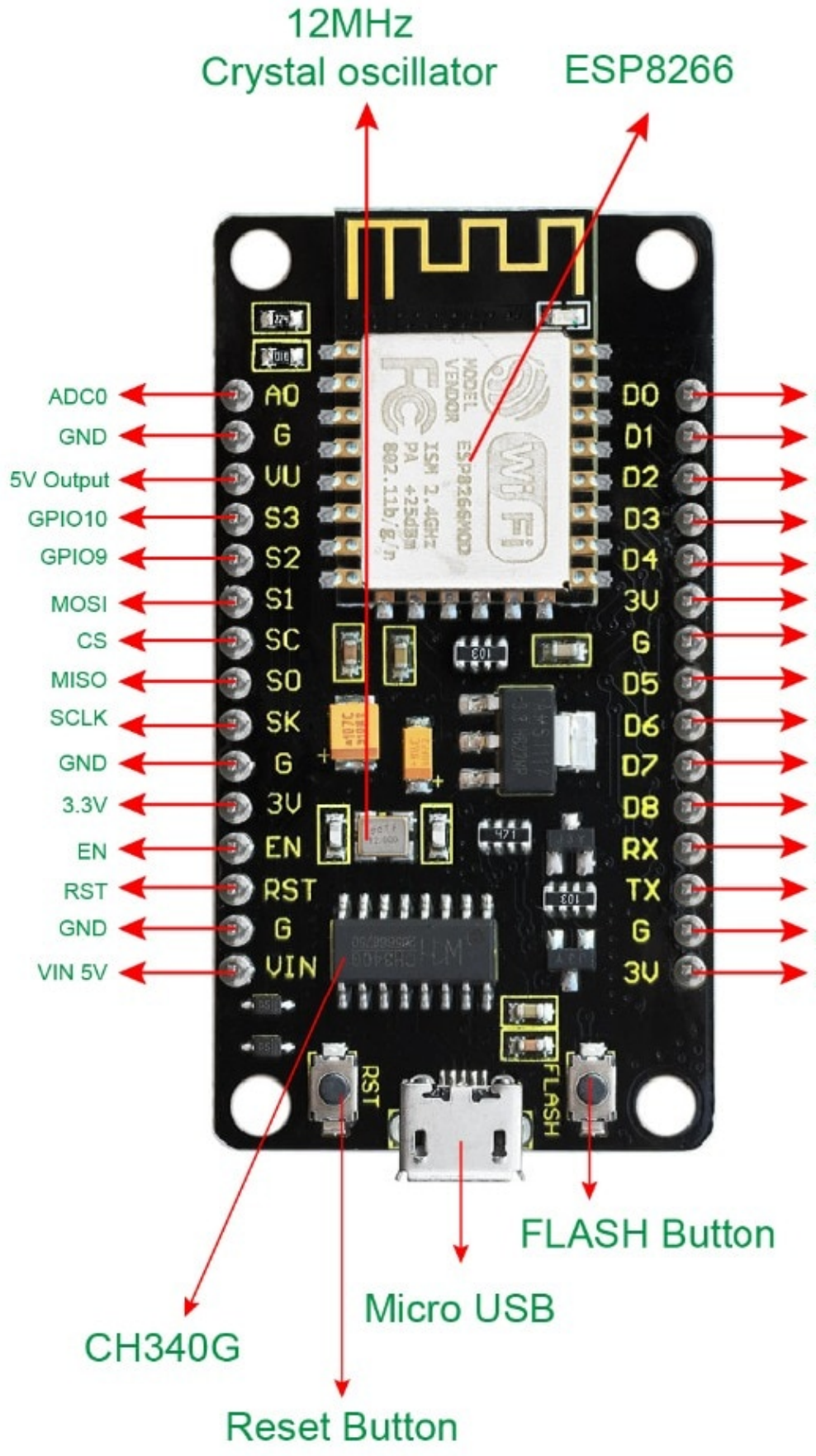
```
#define DHTTYPE DHT11
#define DHTPIN  2
DHT dht(DHTPIN, DHTTYPE, 11);
```

adding IR led

Button is connected to RST, and if you want to add IR led (with transistor and resistor) it seems that only
way to make it work is to connect it to RX pin (gpio3). For more info see my blog post:
https://blog.rot13.org/2019/08/emulate-ir-remote-for-tv-or-hvac-from-command-line-using-tasmota.html

KEYESTUDIO ESP8266 ESP-12F CH340G WiFi Module Board for Arduino NodeMcu

https://www.keyestudio.com/products/new-keyeastudio-nodemcu-lua-esp8266-esp-12f-wifi-module-1m-usb-


12MHz
Crystal oscillator
ESP8266
ADC0
GND
5V Output
GPIO10
GPIO9
MOSI
CS
MISO
SCLK
GND
3.3V
EN
RST
GND
VIN 5V
A0
G
VU
S3
S2
S1
SC
S0
SK
G
3V
EN
RST
G
VIN
D0
D1
D2
D3
D4
3V
G
D5
D6
D7
D8
RX
TX
G
3V
RST
FLASH
FLASH Button
Micro USB
CH340G
Reset Button