Internet of Espadrilles - PCB
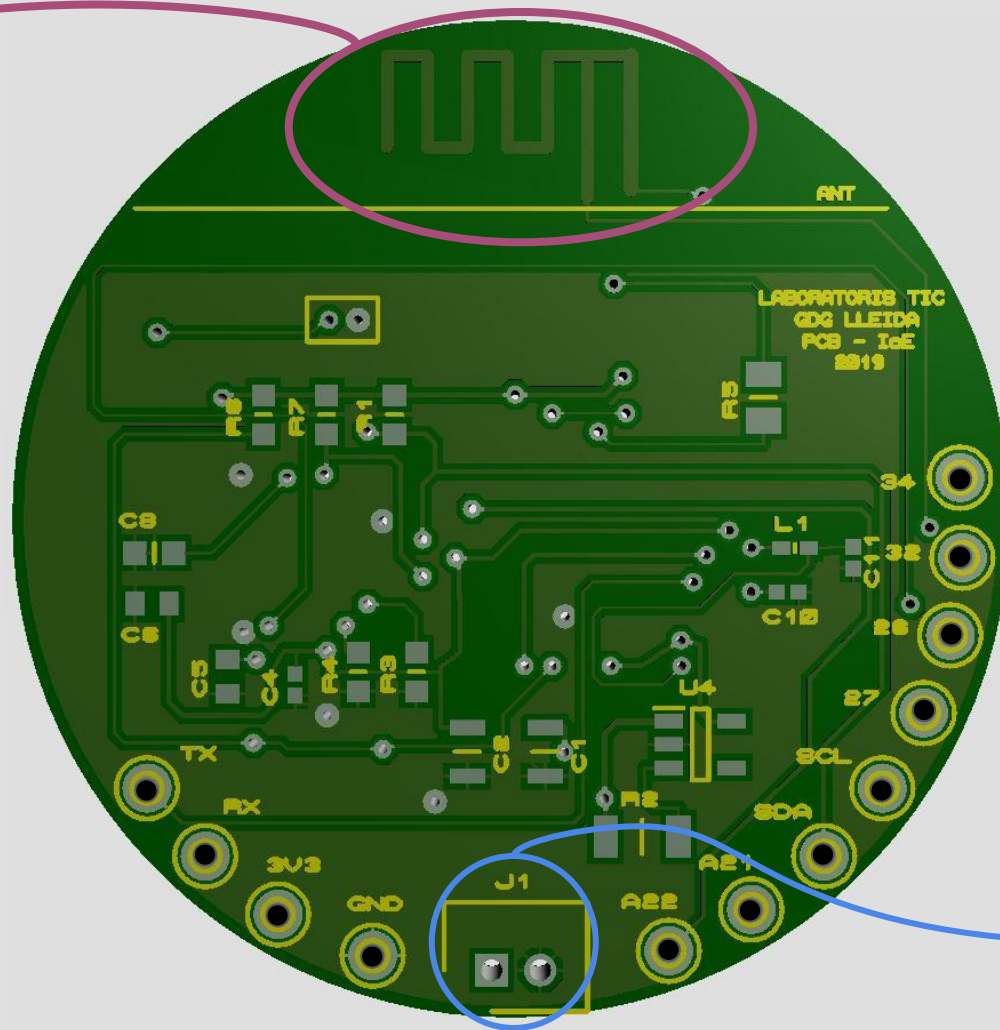
Introduction

- PCB
- Features
- Communication
- TABLE I/Os
- Schematic
- DataSheet

Bluetooth
Wi-fi

ANT

LABORATORIS TIC
GDG LLEIDA
PCB - IoE
2019

Communication

TX
RX
Output 3V3
Output GND

34 I/O RTC
32 I/O RTC
26 I/O
27 I/O
SCL I/O RTC
SDA I/O RTC } I2C
A21 ADC
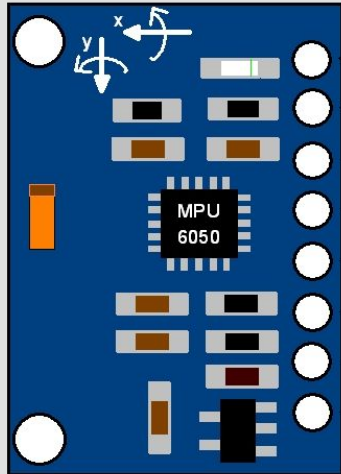A22 ADC

Power DC
(2.3 V ~ 3.6 V)

Features

- Temperature Sensor
- Gyroscope Sensor
- Accelerometer Sensor
- Wi-fi
- Bluetooth

Here we have a switch for connect antenna from the ground, if don't work the connection bluetooth or Wi-fi, make a jump here and test again.

Sensor onboard, I2C communication with Microcontroller (SDA and SCI)
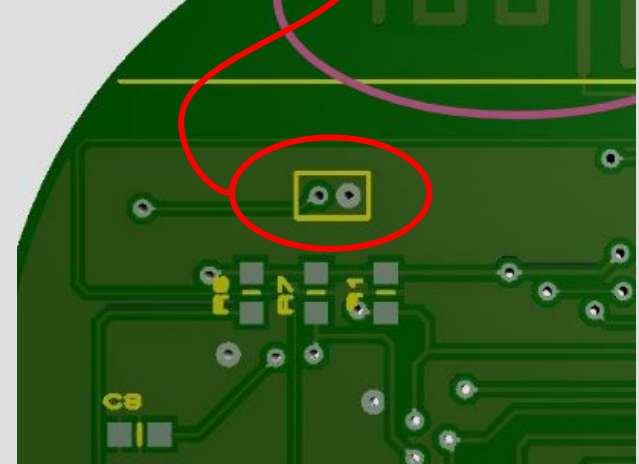
Communication

For send to program on the PCB, you need a
plate of FTDI and follow the draw bellow.

Connect to TX (FTDI) in RX (PCB)
Connect to RX (FTDI) in TX (PCB)
Connect to GND (FTDI) in GND (PCB)
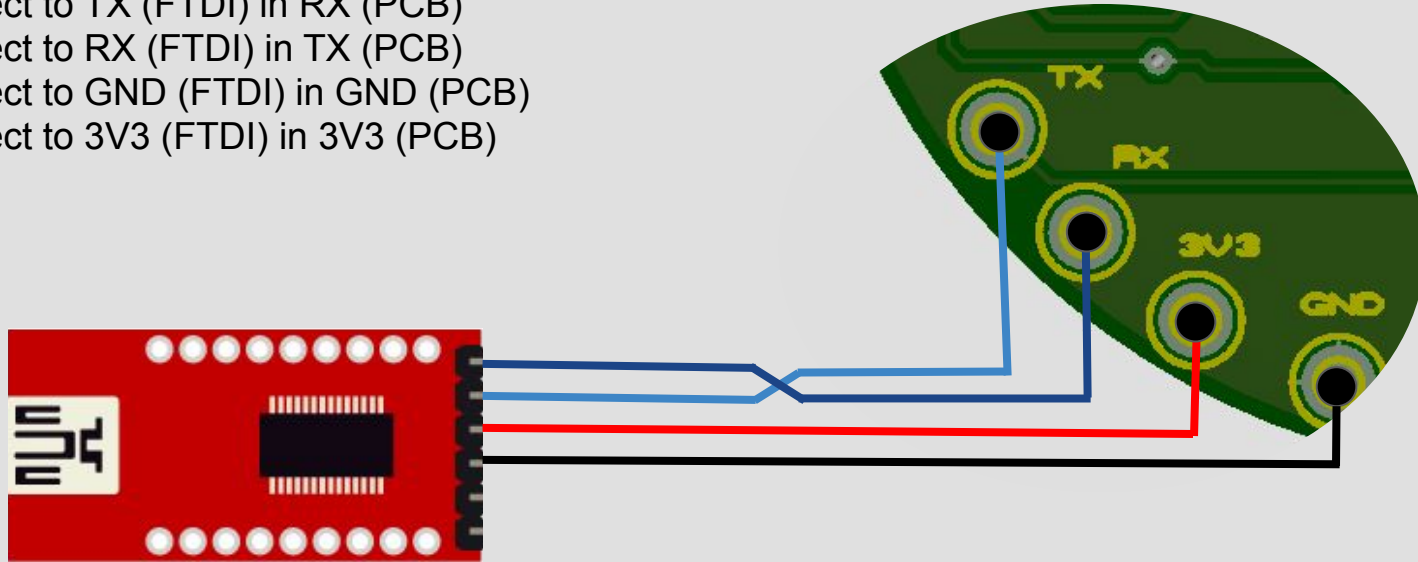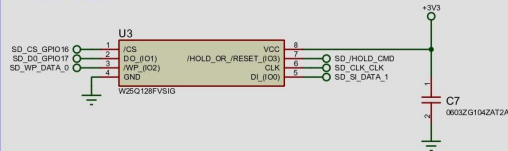Connect to 3V3 (FTDI) in 3V3 (PCB)

TABLE I/Os

Name	PCB	Type	Function
IO26	26	I/O	GPIO26, DAC_2, ADC2_CH9, RTC_GPIO7, EMAC_RXD1
IO27	27	I/O	GPIO27, ADC2_CH7, TOUCH7, RTC_GPIO17, EMAC_RX_DV
IO14	SCL	I/O	ADC2_CH6, TOUCH6, RTC_GPIO16, MTMS, HSPICLK, HS2_CLK,SD_CLK, EMAC_TXD2
IO13	SDA	I/O	ADC2_CH4, TOUCH4, RTC_GPIO14, MTCK, HSPID, HS2_DATA3, SD_DATA3, EMAC_RX_ER.
IO34	34	I	ADC1_CH6, RTC_GPIO4
IO32	32	I/O	32K_XP (32.768 kHz crystal oscillator input), ADC1_CH4, TOUCH9, RTC_GPIO9
IO15	A21	I/O	ADC2_CH3, TOUCH3, RTC_GPIO13, MTDO, HSPICS0, HS2_CMD,SD_CMD, EMAC_RXD3
IO2	A22	I/O	ADC2_CH2, TOUCH2, RTC_GPIO12, HSPIWP, HS2_DATA0, SD_DATA0

Schematic

FLASH

U3
/CS
D0_(IO1)
/WP_(IO2)
GND
/HOLD_OR_/RESET_(IO3)
CLK
DI_(IO0)
VCC
W25Q128FVSIG

SD_CS_GPIO16
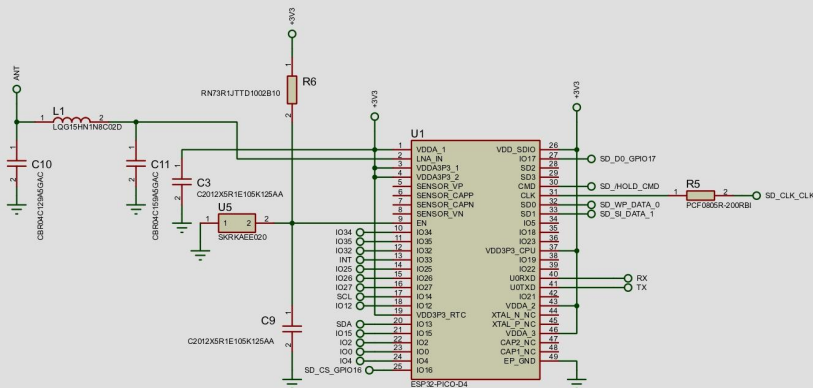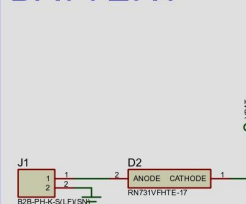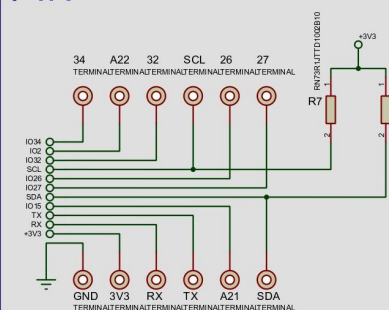SD_D0_GPIO17
SD_WP_DATA_0

SD_/HOLD_CMD
SD_CLK_CLK
SD_SI_DATA_1

+3V3

C7
0603ZG104ZAT2A

POWER

VBAT VIN

R2
RC1206JR-13100KL

U4
VIN
VSS
CE
NC
VOUT
ME6211C33M5G

+3V3

C1
C2012X5R1E105K125AA

C2
C2012X5R1E105K125AA

ESP32-PICO-D4 Core

ANT

L1
LQG15HN1N8C02D

R6
RN73R1JTTD1002B10

+3V3

C10
CBR04C129AG9AC

C11
CBR04C159AMG9AC

C3
C2012X5R1E105K125AA

U5
SKRKAEE020

U1
VDDA_1
LNA_IN
VDDA3P3_1
VDDA3P3_2
SENSOR_VP
SENSOR_CAPP
SENSOR_CAPN
SENSOR_VN
EN
IO34
IO35
IO32
IO33
IO25
IO26
IO27
IO14
IO12
VDD3P3_RTC
IO13
IO15
IO2
IO0
IO4
IO16

VDD_SDIO
IO17
SD2
SD3
CMD
CLK
SD0
SD1
IO5
IO18
IO23
IO19
IO22
U0RXD
U0TXD
IO21
VDDA_2
XTAL_N_NC
XTAL_P_NC
VDDA_3
CAP2_NC
CAP1_NC
EP_GND
ESP32-PICO-D4

SD_D0_GPIO17
SD_/HOLD_CMD
SD_WP_DATA_0
SD_SI_DATA_1

R5
PCF0805R-200RBI

SD_CLK_CLK

+3V3

RX
TX

C9
C2012X5R1E105K125AA

SD_CS_GPIO16

BATTERY

J1
B2B-PH-K-S(LF)(SN)

D2
ANODE CATHODE
RN731VFHTE-17

VBAT

PIN

34 A22 32 SCL 26 27
TERMINAL TERMINAL TERMINAL TERMINAL TERMINAL

RN73R1JTTD1002B10

+3V3

R7
RN73R1JTTD1002B10

R1
RN73R1JTTD1002B10

IO34
IO2
IO32
SCL
IO26
IO27
SDA
IO15
TX
RX
+3V3

GND 3V3 RX TX A21 SDA
TERMINAL TERMINAL TERMINAL TERMINAL TERMINAL TERMINAL

SENSOR

R3
RN73R1JTTD1002B10

R4
RN73R1JTTD1002B10

+3V3

AD0

INT

+3V3

C4
C0402C103K4RAC7411

C5
0603ZG104ZAT2A

U2
AUX_CL
VLOGIC
AD0
REGOUT
FSYNC
INT
AUX_DA
NC_4
NC_3
NC_2
NC_1
CLKIN
VDD
NC_5
NC_6
NC_7
NC_8
GND
THERMAL_PAD
SDA
SCL
RESV_3
RESV_2
CPOUT
RESV_1
MPU-6050

SDA
SCL

C8
2200pF

C6
0603ZG104ZAT2A
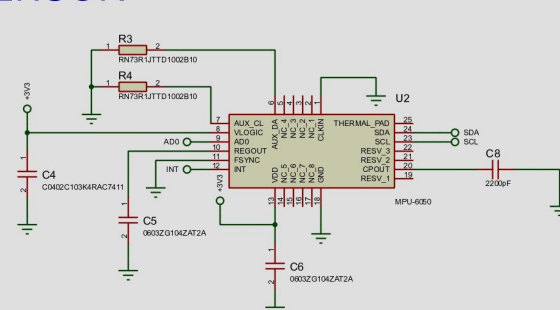
DataSheet

- https://www.espressif.com/sites/default/files/documentation/esp32-pico-d4_datasheet_en.pdf
- https://www.invensense.com/wp-content/uploads/2015/02/MPU-6000-Datasheet1.pdf
- https://www.winbond.com/resource-files/w25q128fv_revhh1_100913_website1.pdf

Communication

- https://www.prometec.net/esp8266-pluggin-arduino-ide/