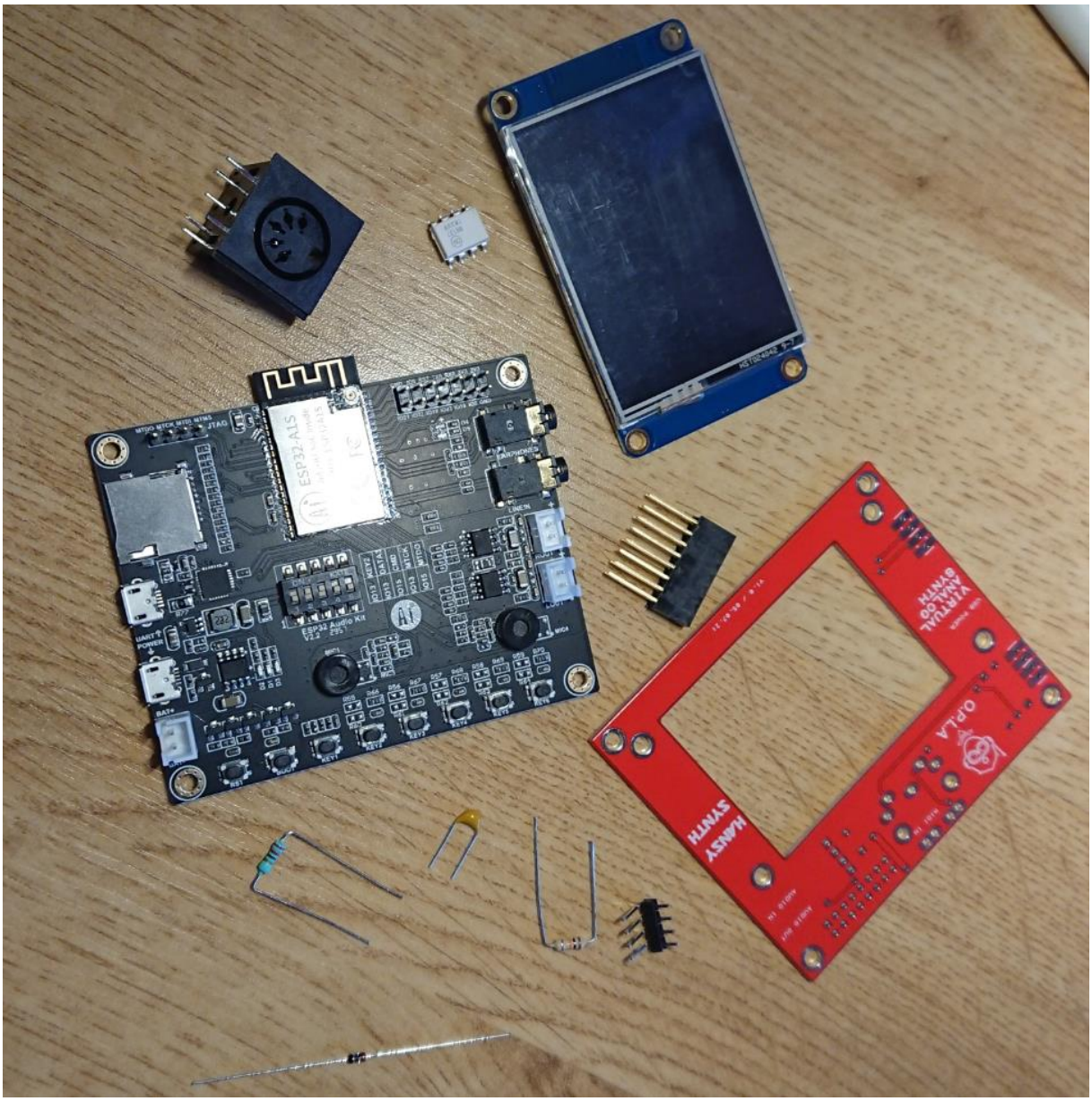
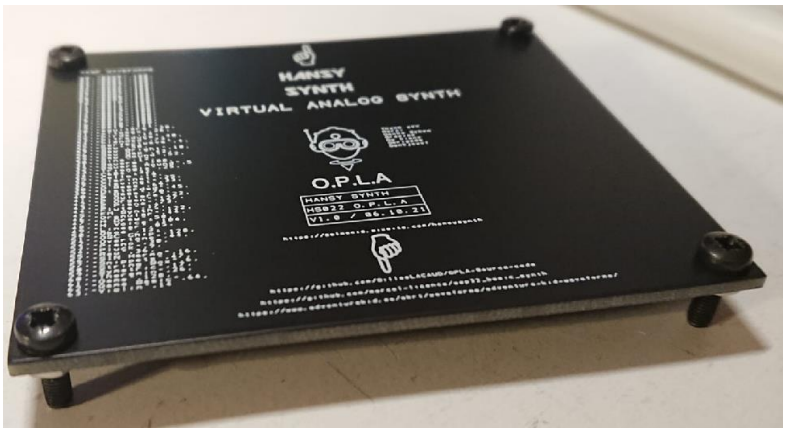

O.P.L.A
USB POWER
VIRTUAL
ANALOG
SYNTH
HANSY
O.P.L.A
Virtual Analog Synth
HANSY
SYNTH
V1.0 / 05.07.21

Contents



And Backplane board

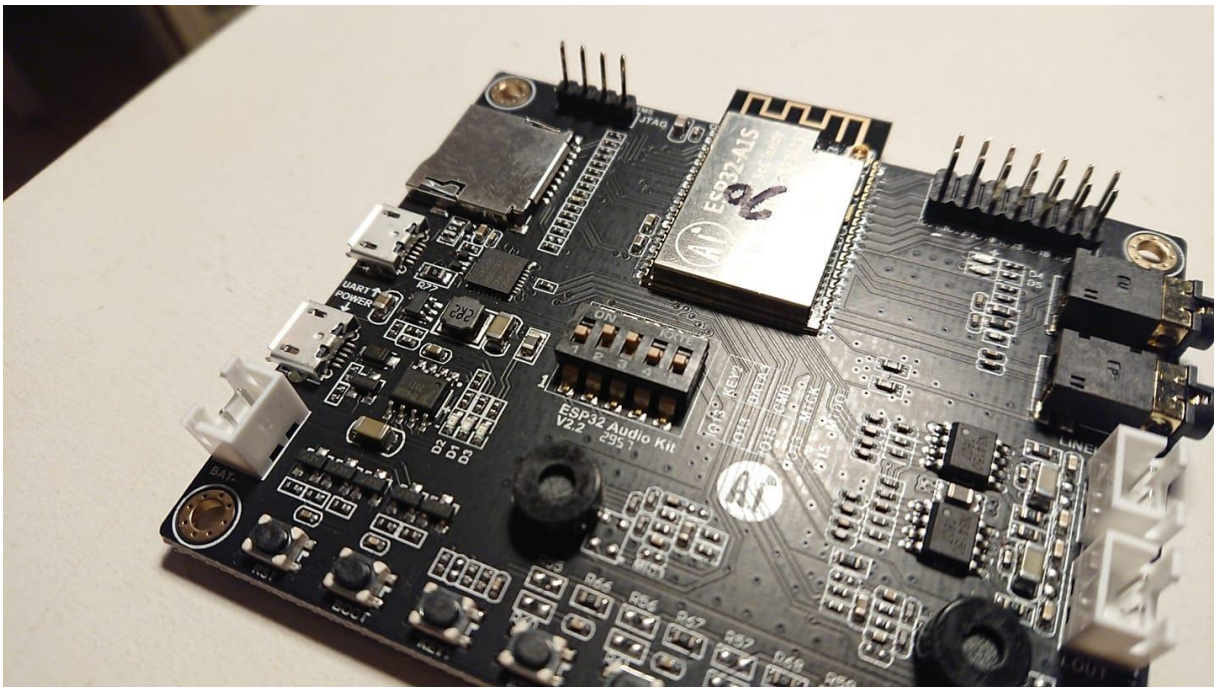


BOM

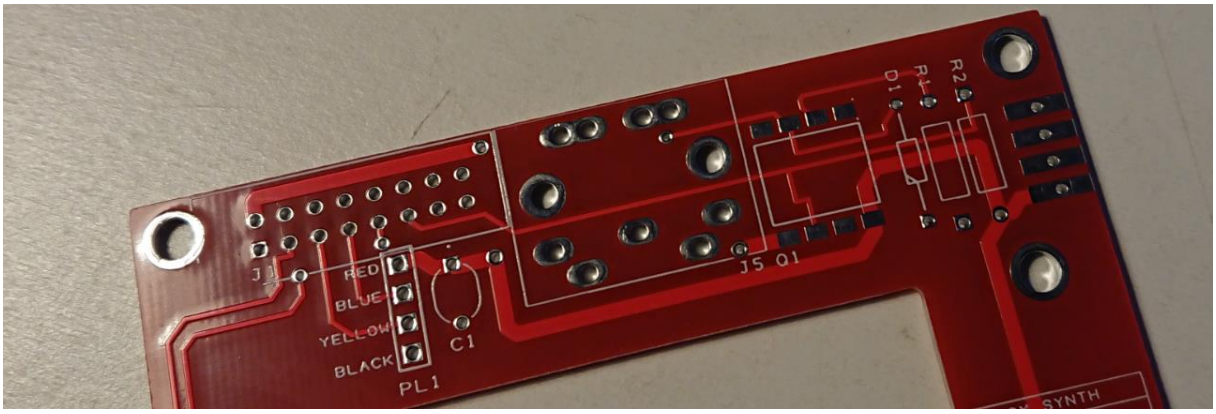
DESIGNATION	QT
Screw M3*16	12
Nuts M3	20
Spacer M3*20	4

	DESIGNATION	QT
R1	200Ohm Resistor 1/4W	1
R2	10KOhm Resistor 1/4W	1
D1	1N4148 Diode	1
C1	100nf Capacitor	1
Q1	6N137 Optocoupleur	1
PL1	Four pin right angle connector	1
	Midi 5 pin connector	1
J1	2*8 pins PC104 Connector	1
	Nextion screen	1
	Hansy Synth HS021 Board	1
	Hansy Synth HS022 Board (backplane)	1
	ESP32 Audio Kit	1
	Micro SD card < 64Go + SD support	1
	Pen for the screen	1
	USB cable	1

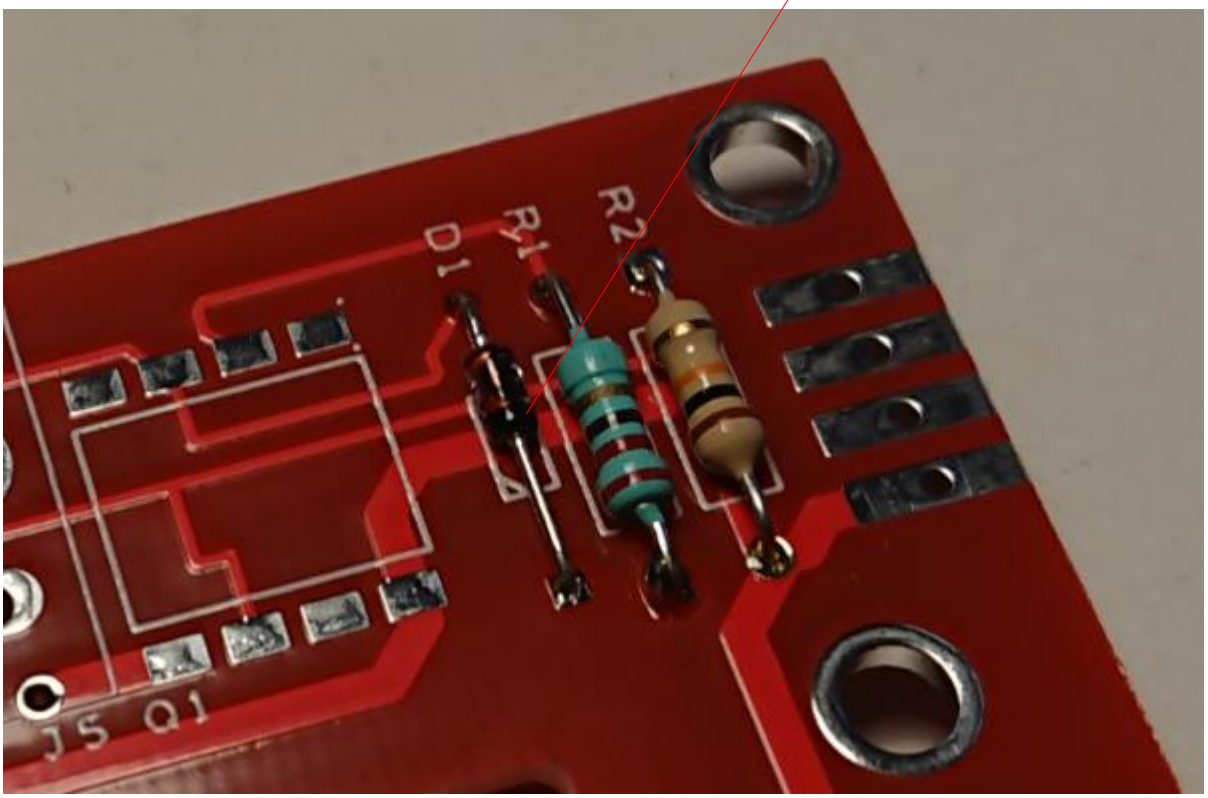
CONFIG ESP32 AUDIO KIT SWITCH



RESISTOR & DIODES

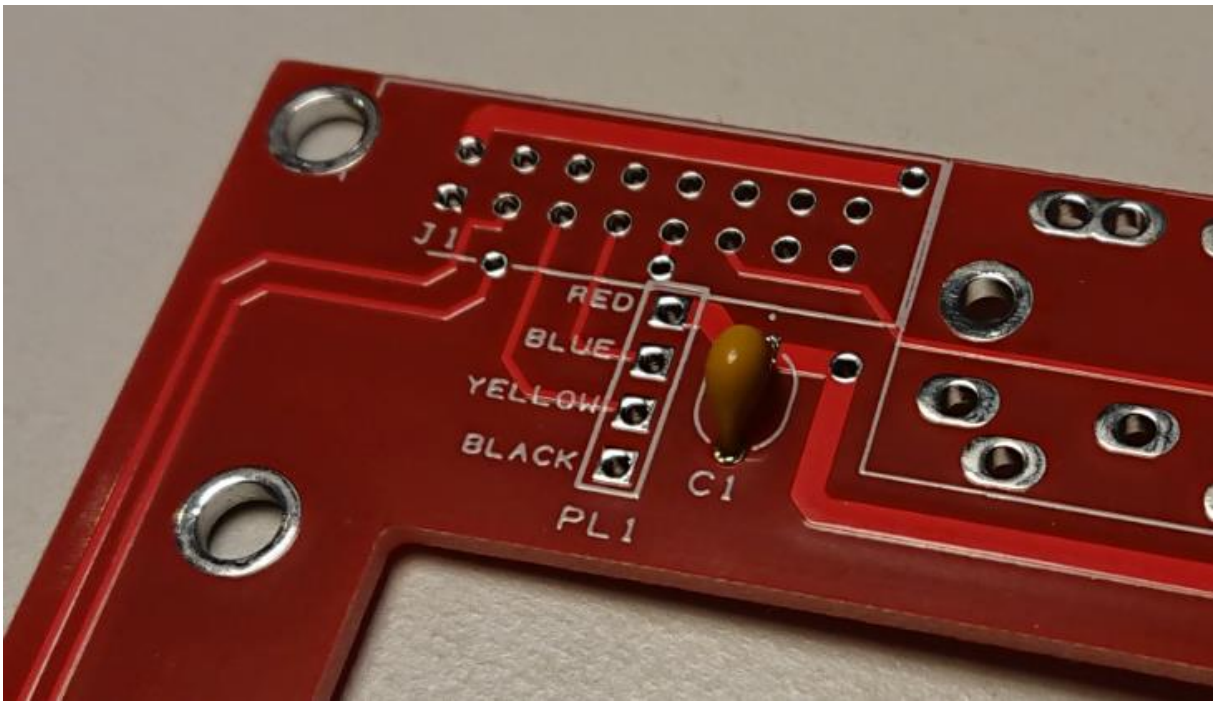


200 Ohm	R1
10 KOhm	R2
1N4148	D1



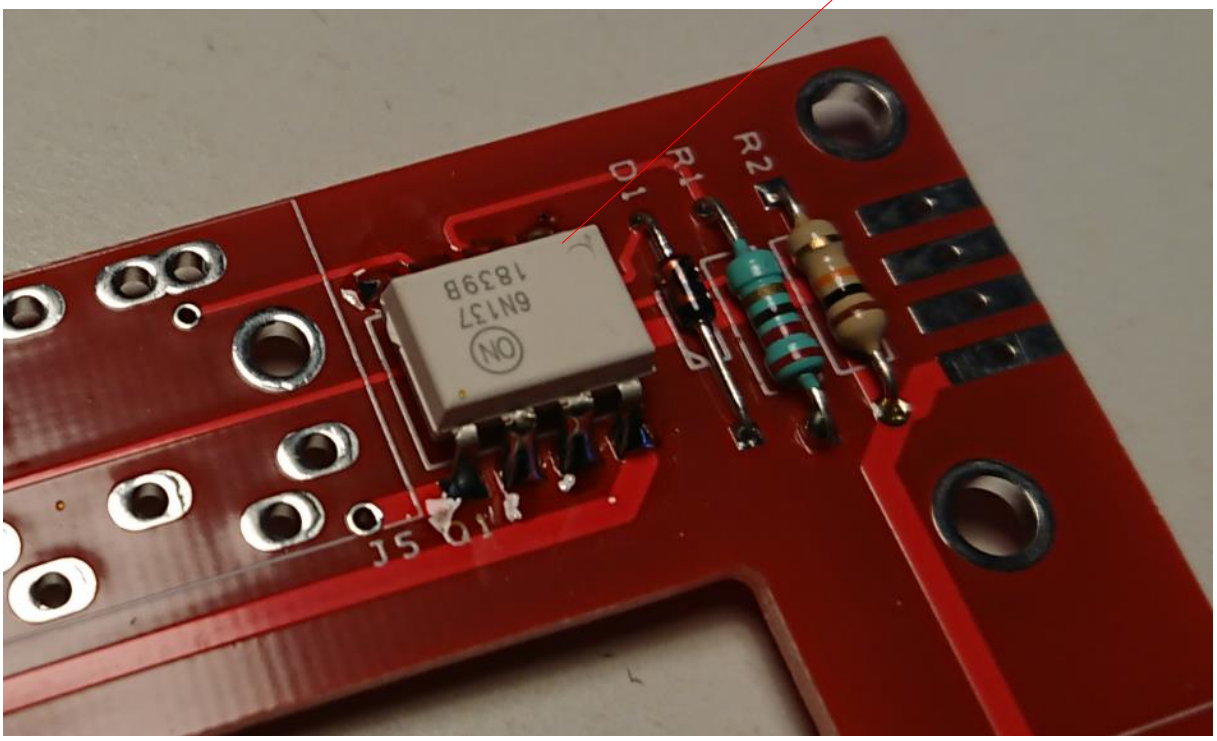
CAPACITOR

100nF C1



IC

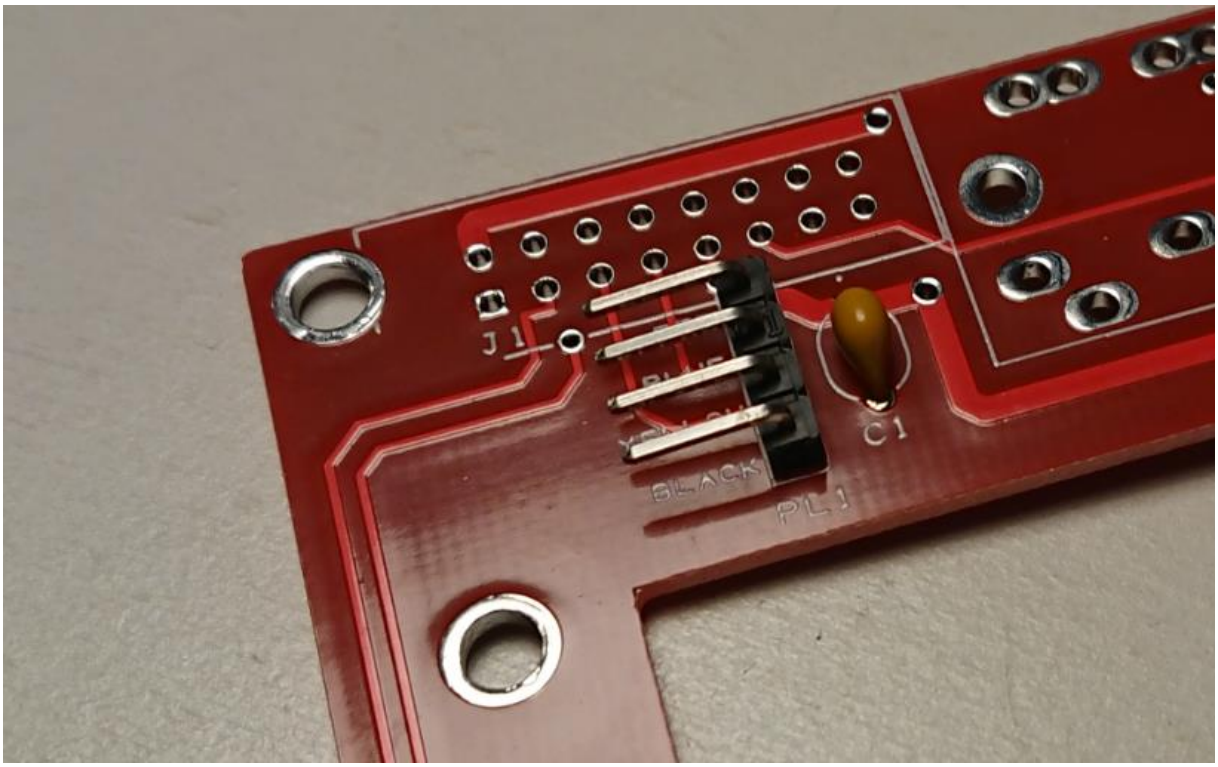
6N137 Q1

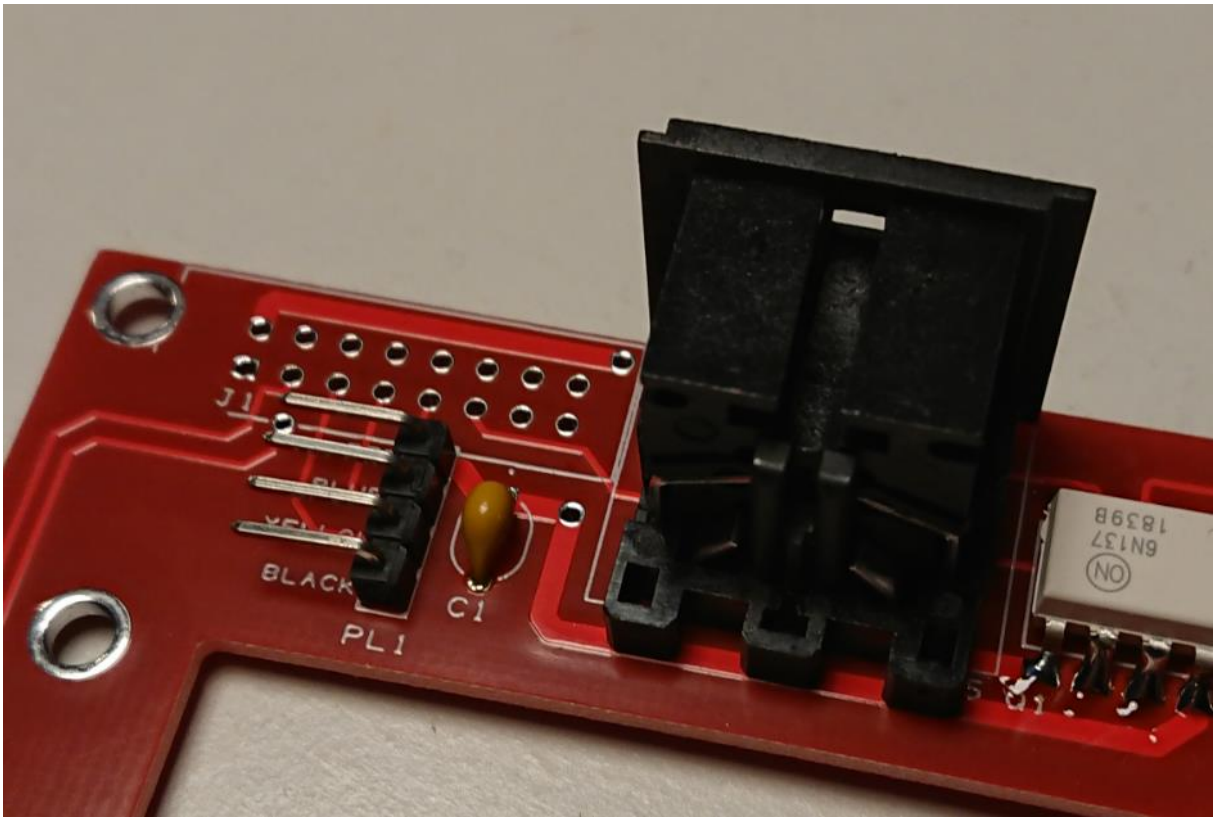


CONNECTORS

4 pins PL1

Din 5 pins J5

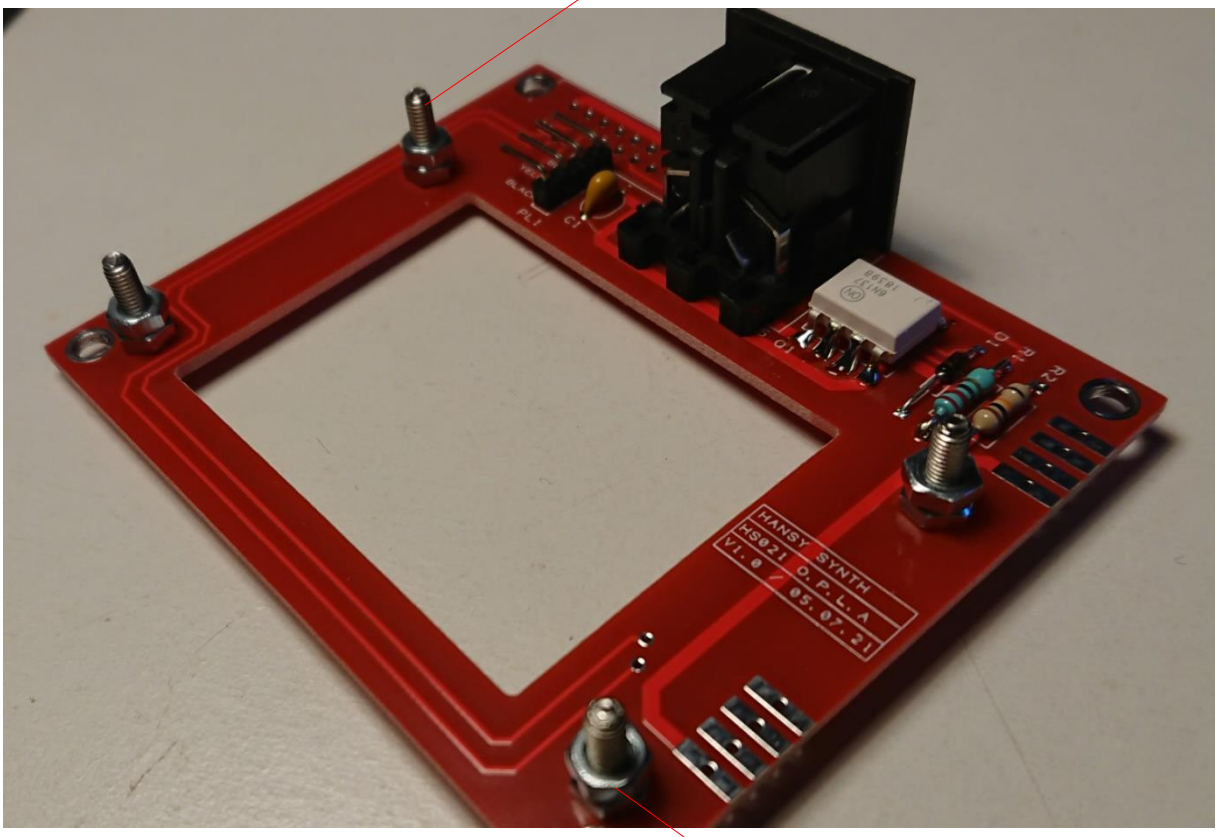


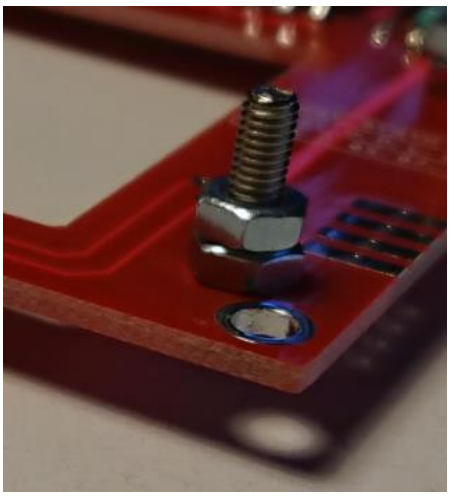


NEXTION SCREEN

Screws M3*16 4

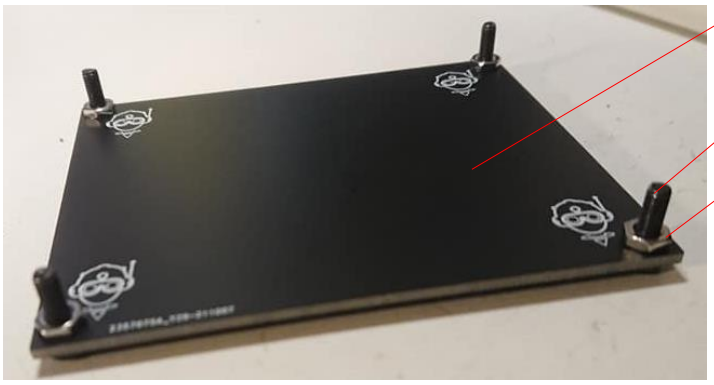
Nuts M3 8





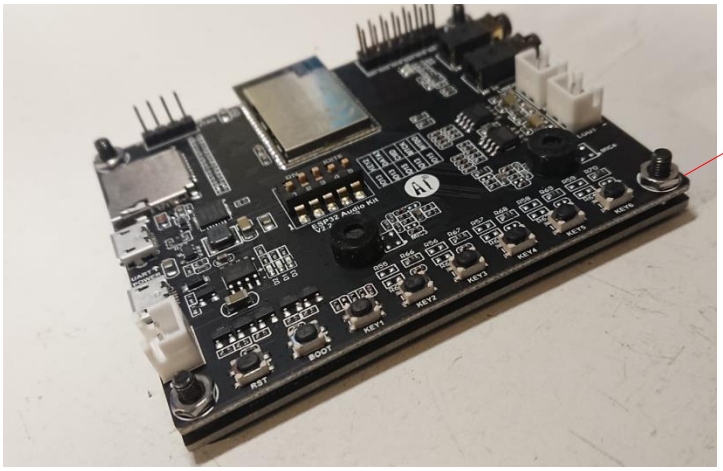
2 NUTS

PREPARE THE BACKPLANE BOARD

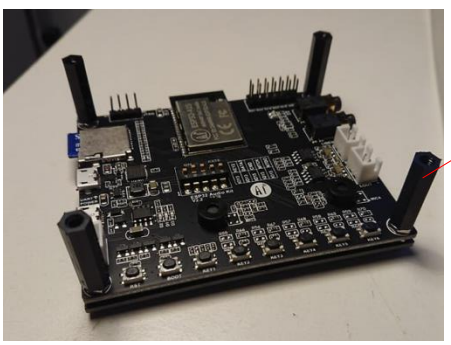


Bottom view

Insert the mother board and add four nuts



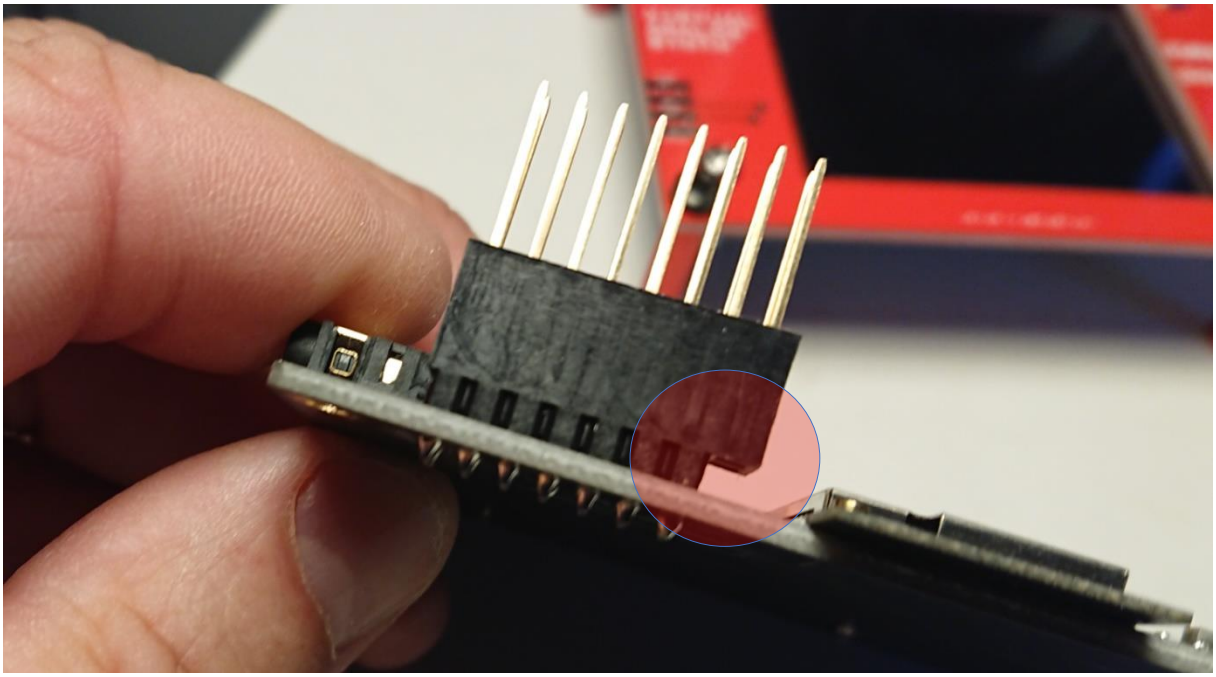
Add the four spacers



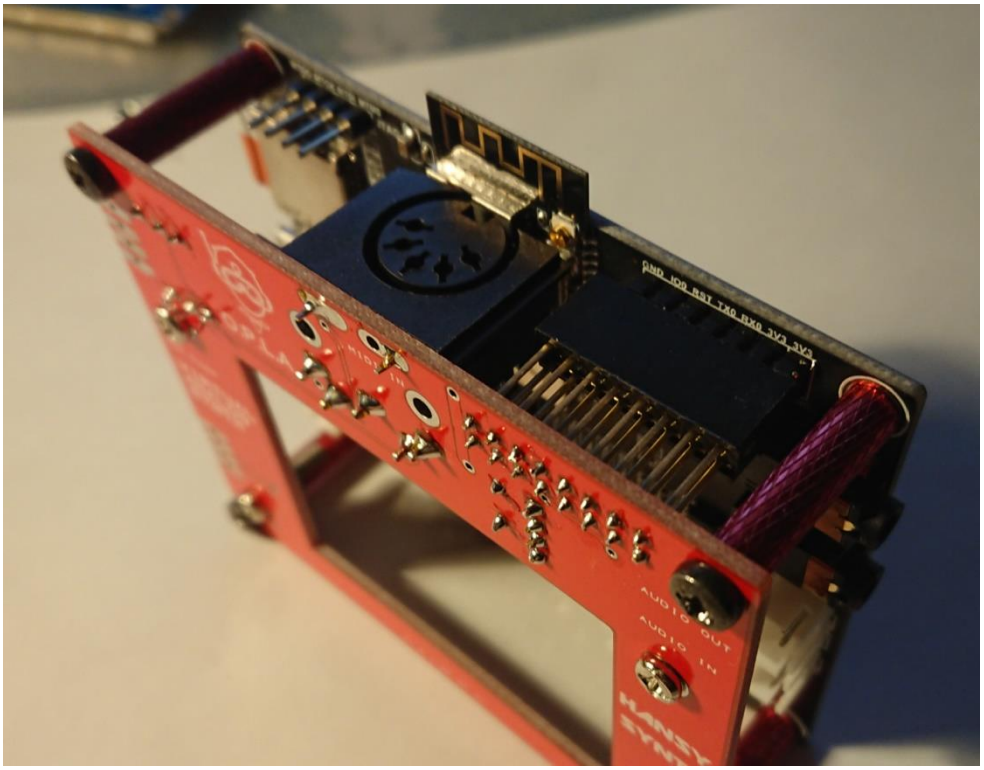
J1 CONNECTOR

Plug the PC104 connector to the ESP32 Audio kit board

The last row on the right is unconnected



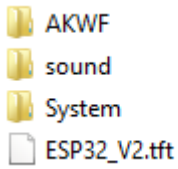
Plug the two boards together and sold the connector, then unplug the 2 boards



PROGRAM THE SD CARD

In the SD card you must have these files

You can find all these files in the github repository CLICK HERE

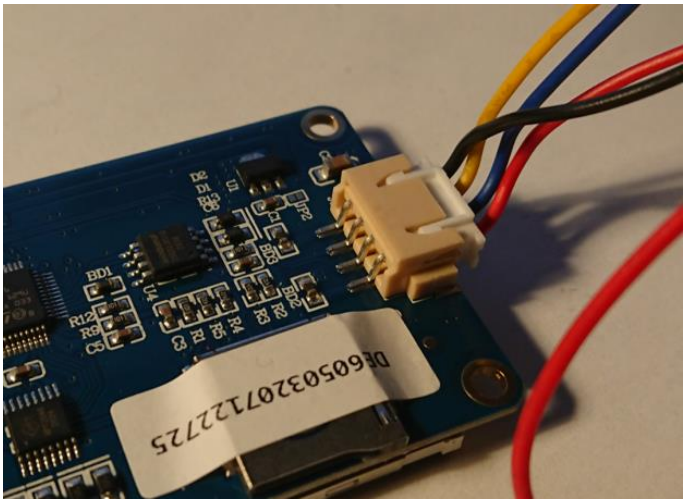


PROGRAM THE NEXTION SCREEN

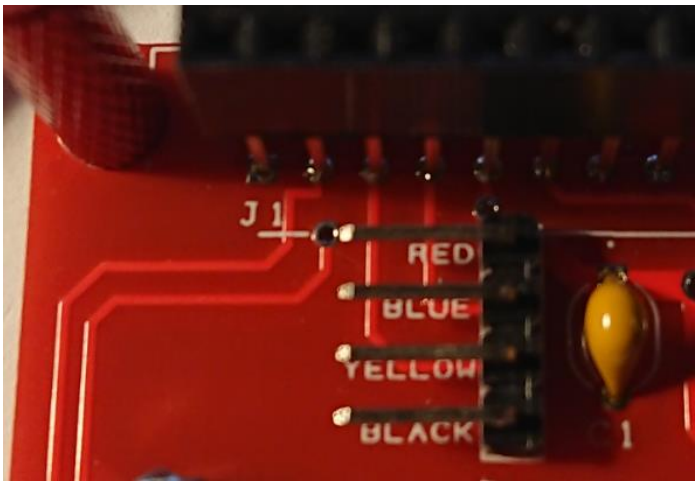
The Nextion screen is normally already programmed.

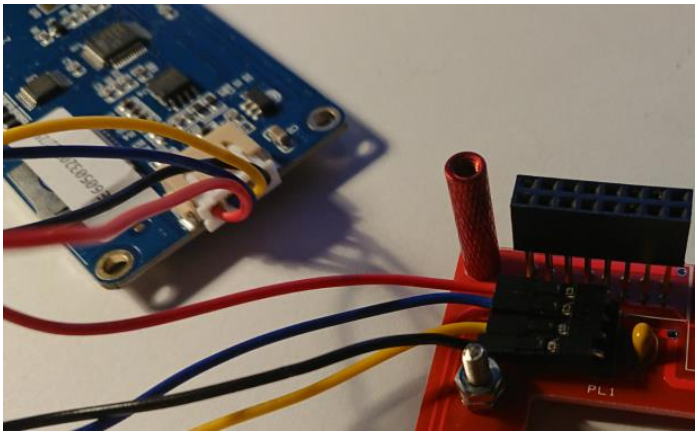
Go to the next chapter INSERT THE NEXTION SCREEN

Insert the connector in the Nextion screen

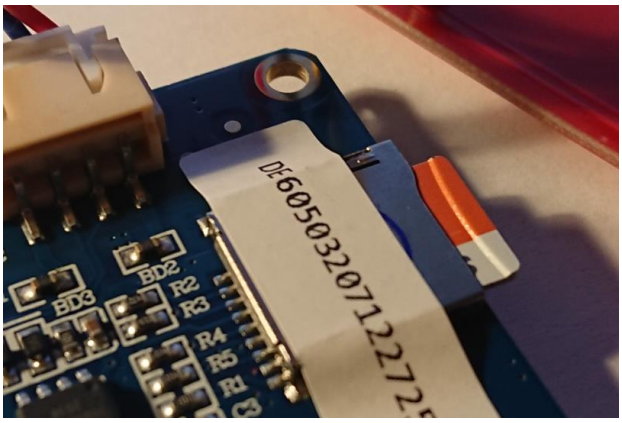


Connect the PL1. The colors of the wires are writing in the board

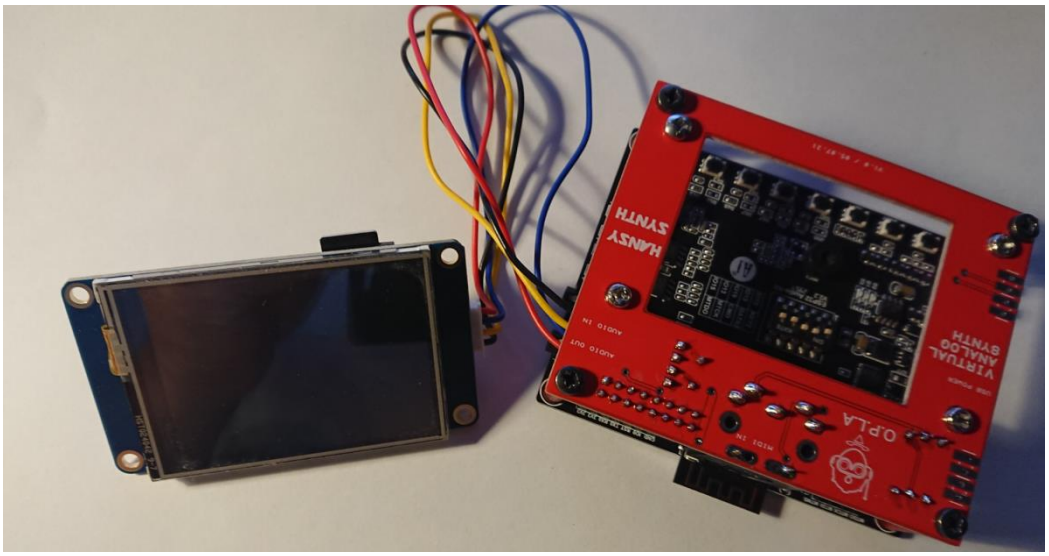




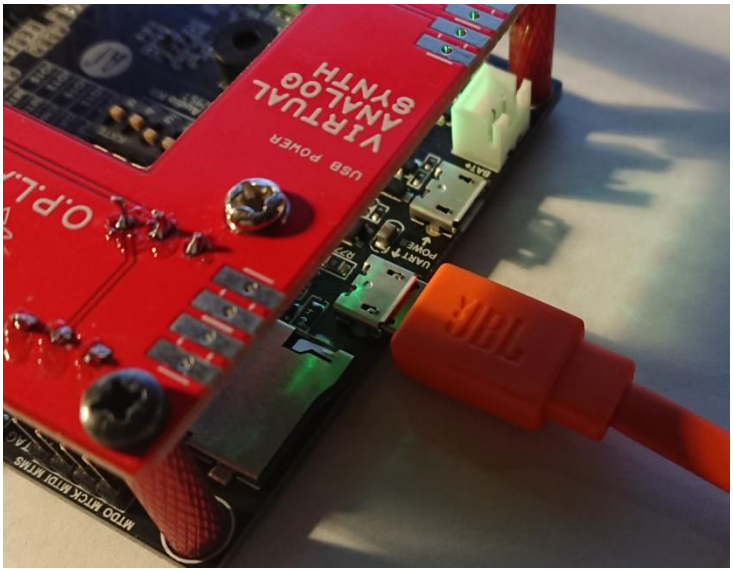
Insert the SD card in the Nextion screen



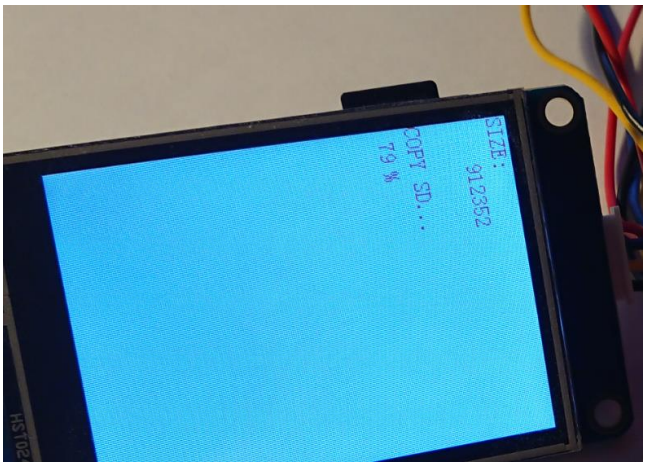
Plug again the 2 boards



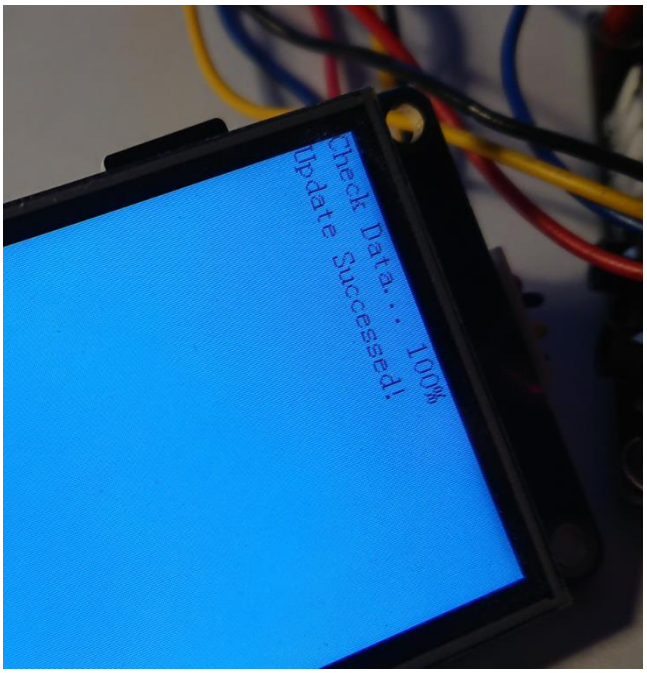
Power on the OPLA



After some seconds you must see something like that



Then

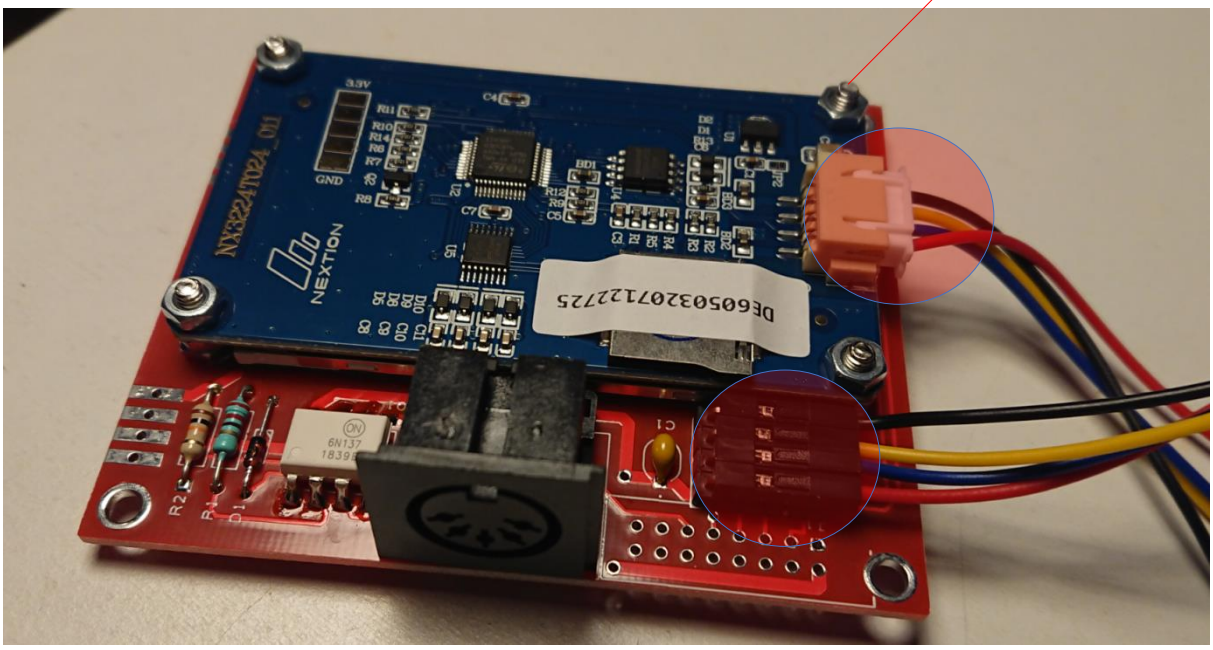


Unplug the SD Card / Power off and on the OPLA. The screen must start with the OPLA main screen

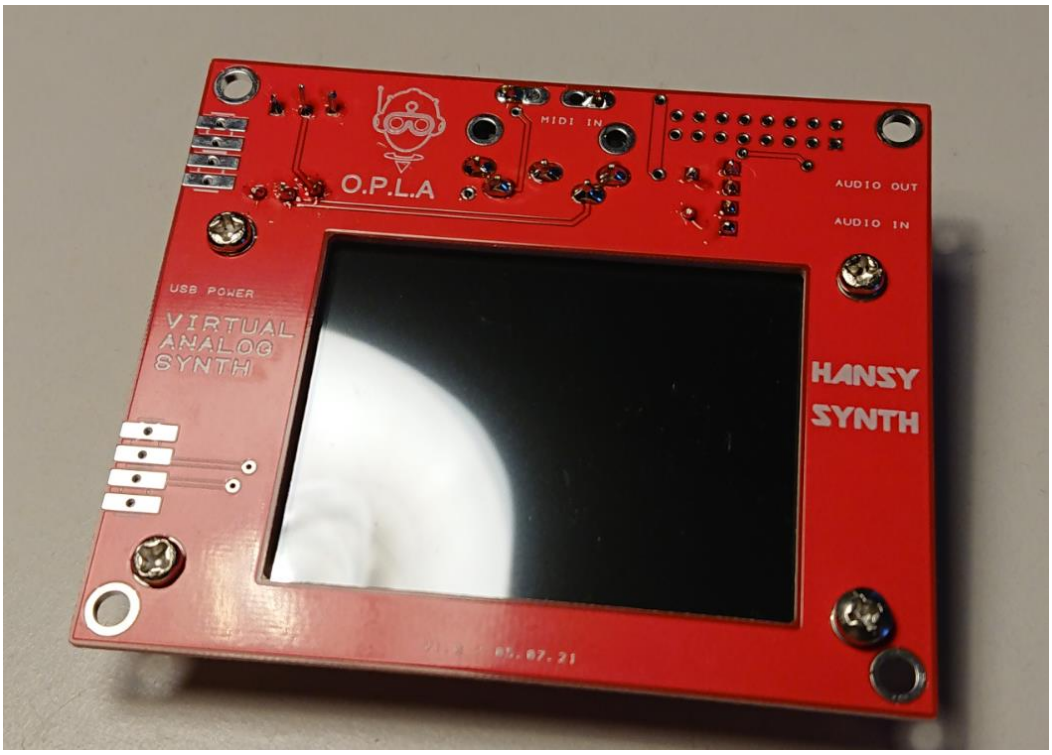
INSERT THE NEXTION SCREEN

Connect the PL1. The colors of the wires are writing in the board.

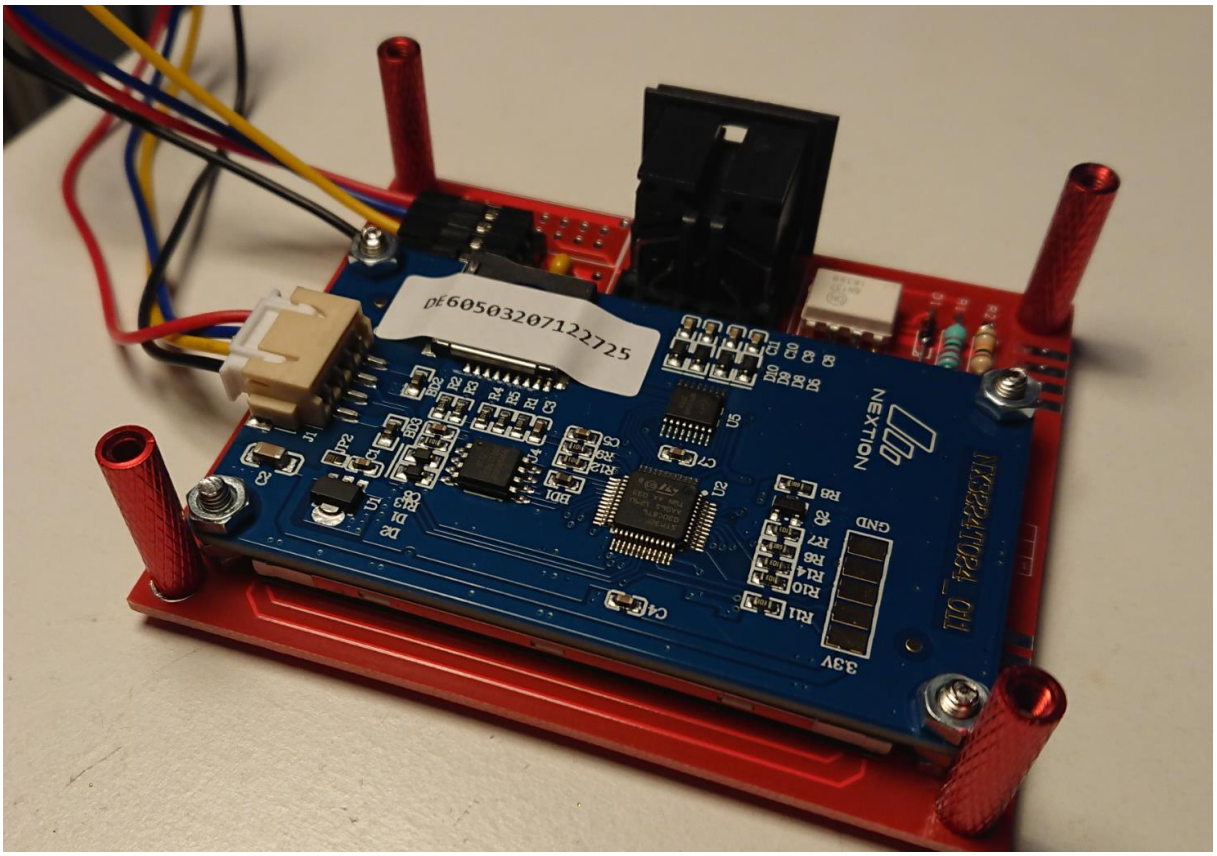
Insert the nextion screen and set the 4 nuts



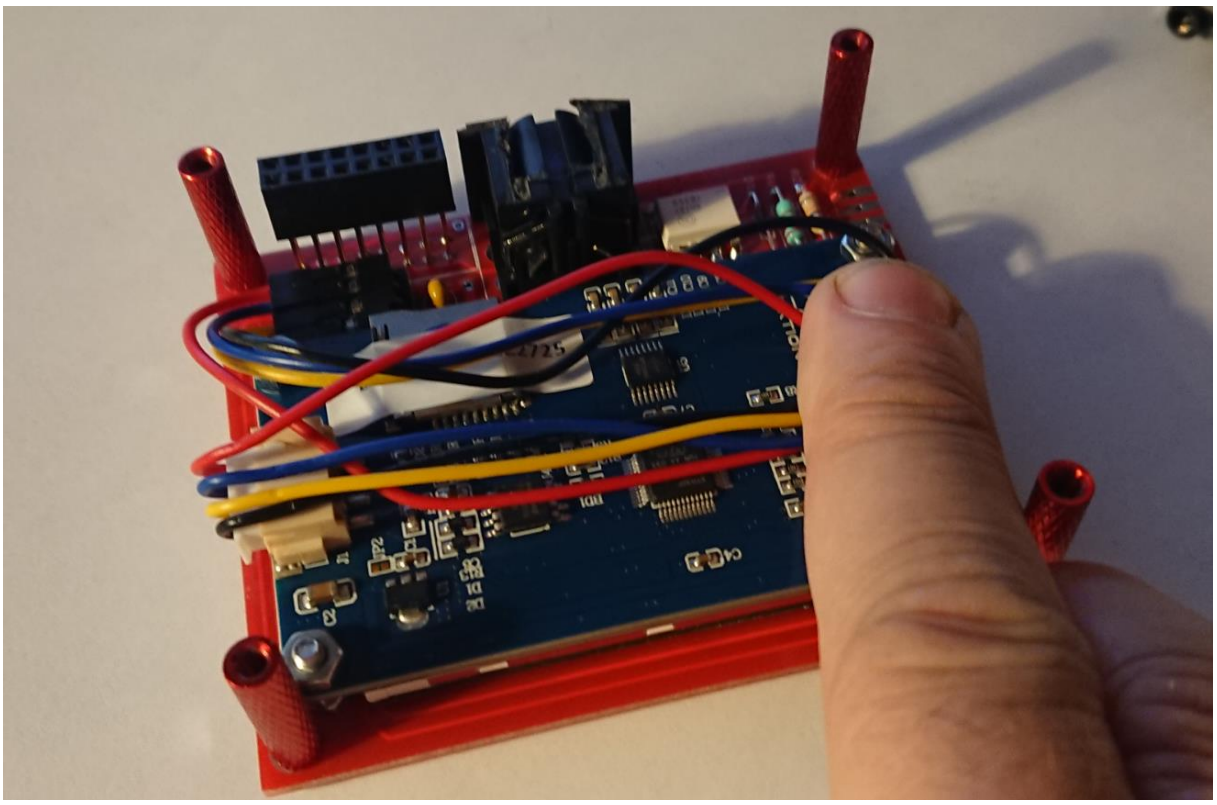
View of the other side



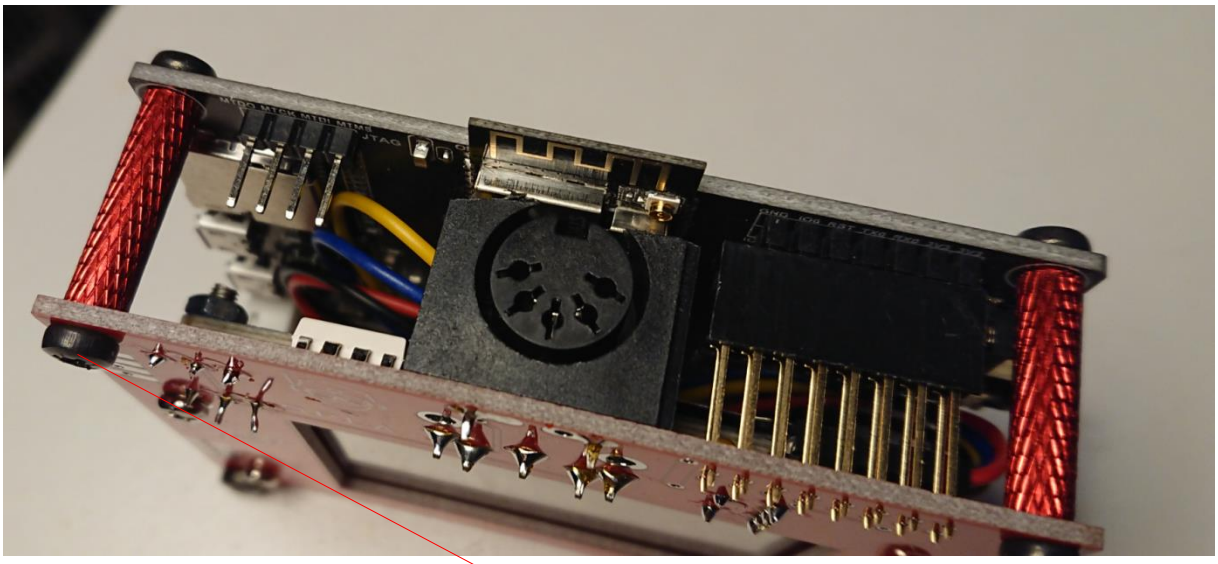
Add the 4 spacers + 4 M3 screws



Set the wire as follow



Then plug the other card and add the last 4 screws



PROGRAM THE OPLA MULTI FILE VERSION

The Mother Board is normally already programmed.

Go to the next chapter INSERT THE NEXTION SCREEN

In the OPLA Mother Board there is an USB to UART converter.

If you have any issue to update your OPLA please check if the windows driver is well installed on your PC

If not you can find it here:

https://www.silabs.com/developers/usb-to-uart-bridge-vcp-drivers
(CP210x Universal Windows Driver)

Please use the “Program OPLA with one file Version” for a better and easier way.

The different firmware can be finding here:

https://github.com/GillesLACAUD/OPLA-Source-code/tree/master/Firmware_Bin

The last version 23.03.2022 is the targetV15.bin

Plug the SD card in the ESP32 Audio Kit board (not mandatory)
Download the **ESP32 Flash download tool** here.

Flash Download Tools

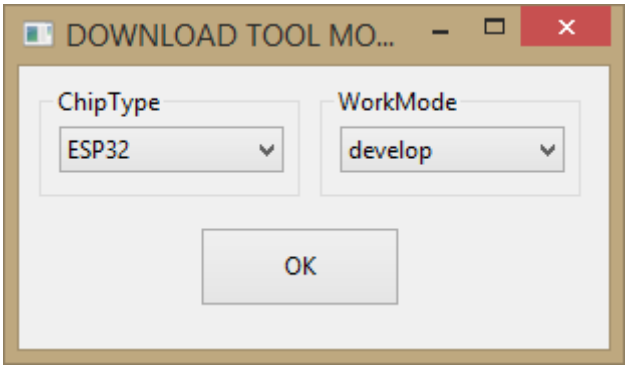
Title	Platform	Version	Release Date	Download
+ Flash Download Tools	Windows PC	V3.8.8	2021.06.02	

Unzip the file

Click on the file **flash_download_tool_3.8.8.exe**

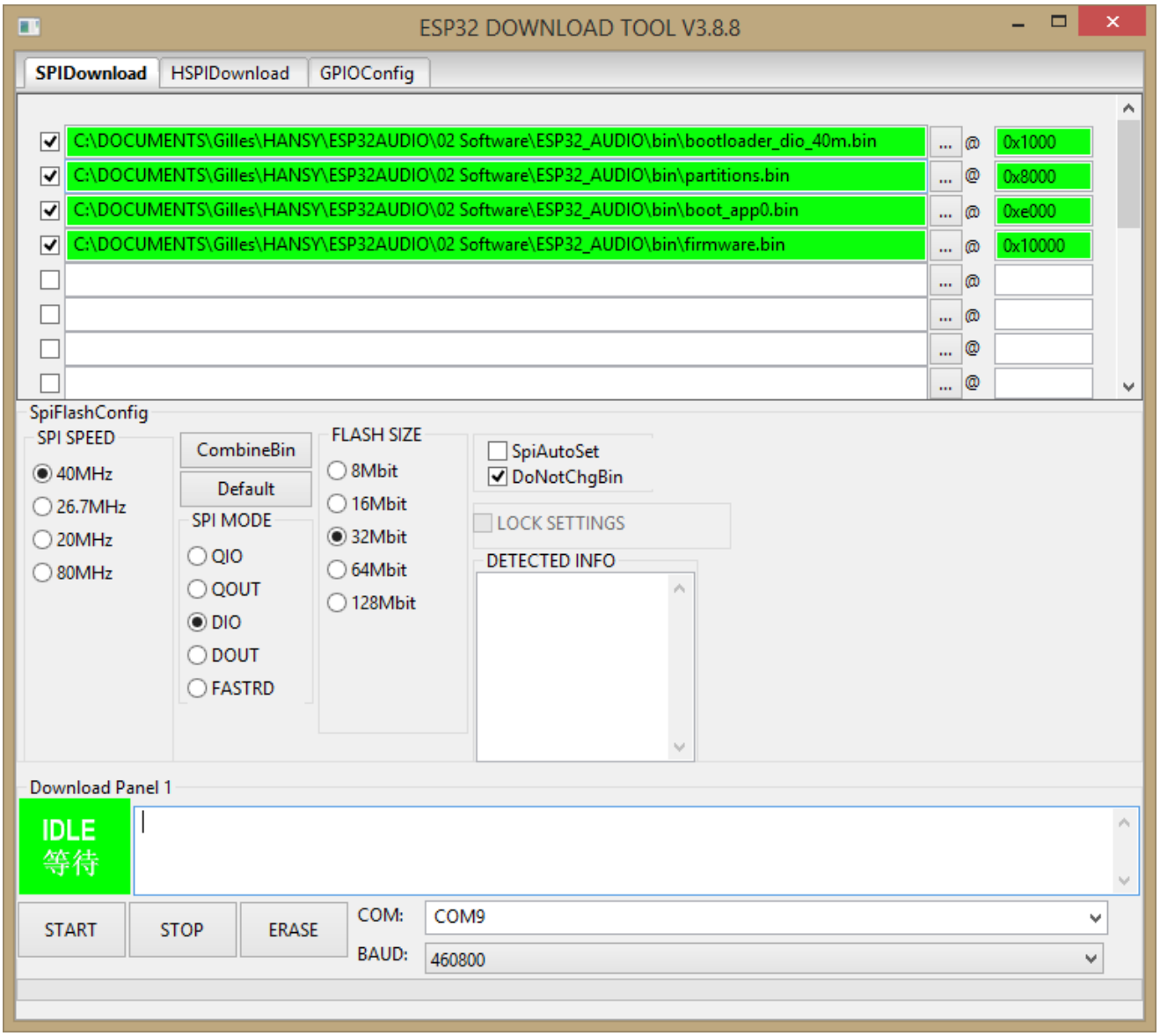
bin	29/04/2021 04:44	Dossier de fichiers	
configure	30/08/2021 22:05	Dossier de fichiers	
dl_temp	31/08/2021 20:49	Dossier de fichiers	
doc	29/04/2021 04:46	Dossier de fichiers	
logs	31/08/2021 20:50	Dossier de fichiers	
RESOURCE	02/06/2021 11:07	Dossier de fichiers	
flash_download_tool_3.8.8.exe	02/06/2021 10:58	Application	16 048 Ko

Select ESP32 for the chip type

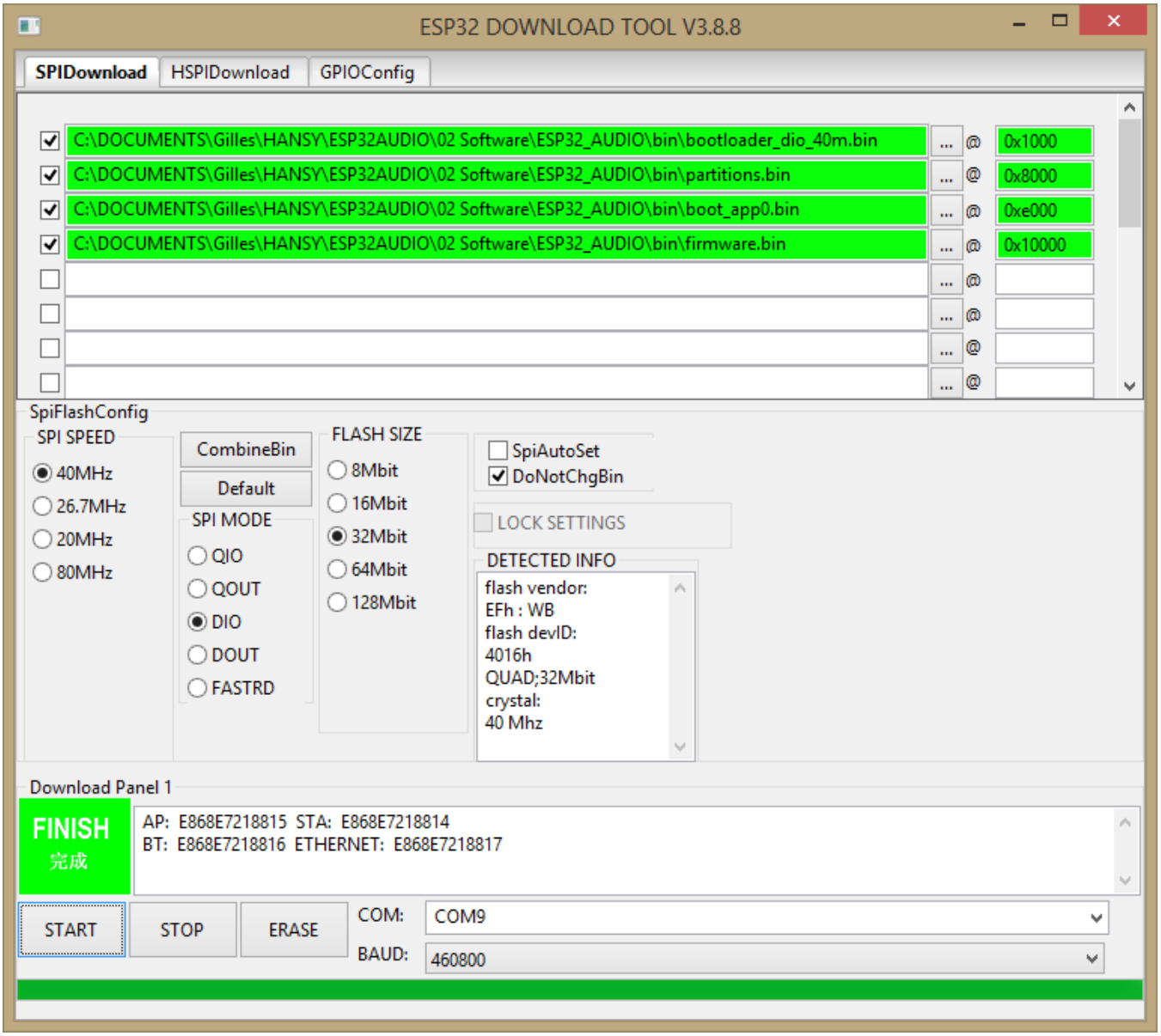


Bootloaderfile address	0x1000	bootloader_dio_40m.bin
Partition file address	0x8000	partitions.bin
Partition boot address	0xe000	boot_app0.bin
Firmware address	0x10000	firmware.bin

Chrystal 40M
Baud rate 460800
Flash size 4MB
Load the different .bin files and set the address.
Check the box on the left for the four files
Set the com port. It can be different from COM9
Set the Baud rate at 460800


ESP32 DOWNLOAD TOOL V3.8.8
SPIDownload
HSPIDownload
GPIOConfig
C:\DOCUMENTS\Gilles\HANSY\ESP32AUDIO\02 Software\ESP32_AUDIO\bin\bootloader_dio_40m.bin
@ 0x1000
C:\DOCUMENTS\Gilles\HANSY\ESP32AUDIO\02 Software\ESP32_AUDIO\bin\partitions.bin
@ 0x8000
C:\DOCUMENTS\Gilles\HANSY\ESP32AUDIO\02 Software\ESP32_AUDIO\bin\boot_app0.bin
@ 0xe000
C:\DOCUMENTS\Gilles\HANSY\ESP32AUDIO\02 Software\ESP32_AUDIO\bin\firmware.bin
@ 0x10000
SpiFlashConfig
SPI SPEED
40MHz
26.7MHz
20MHz
80MHz
CombineBin
Default
SPI MODE
QIO
QOUT
DIO
DOUT
FASTRD
FLASH SIZE
8Mbit
16Mbit
32Mbit
64Mbit
128Mbit
SpiAutoSet
DoNotChgBin
LOCK SETTINGS
DETECTED INFO
Download Panel 1
IDLE
等待
START
STOP
ERASE
COM:
COM9
BAUD:
460800

Click on start after 10 seconds you must see this screen



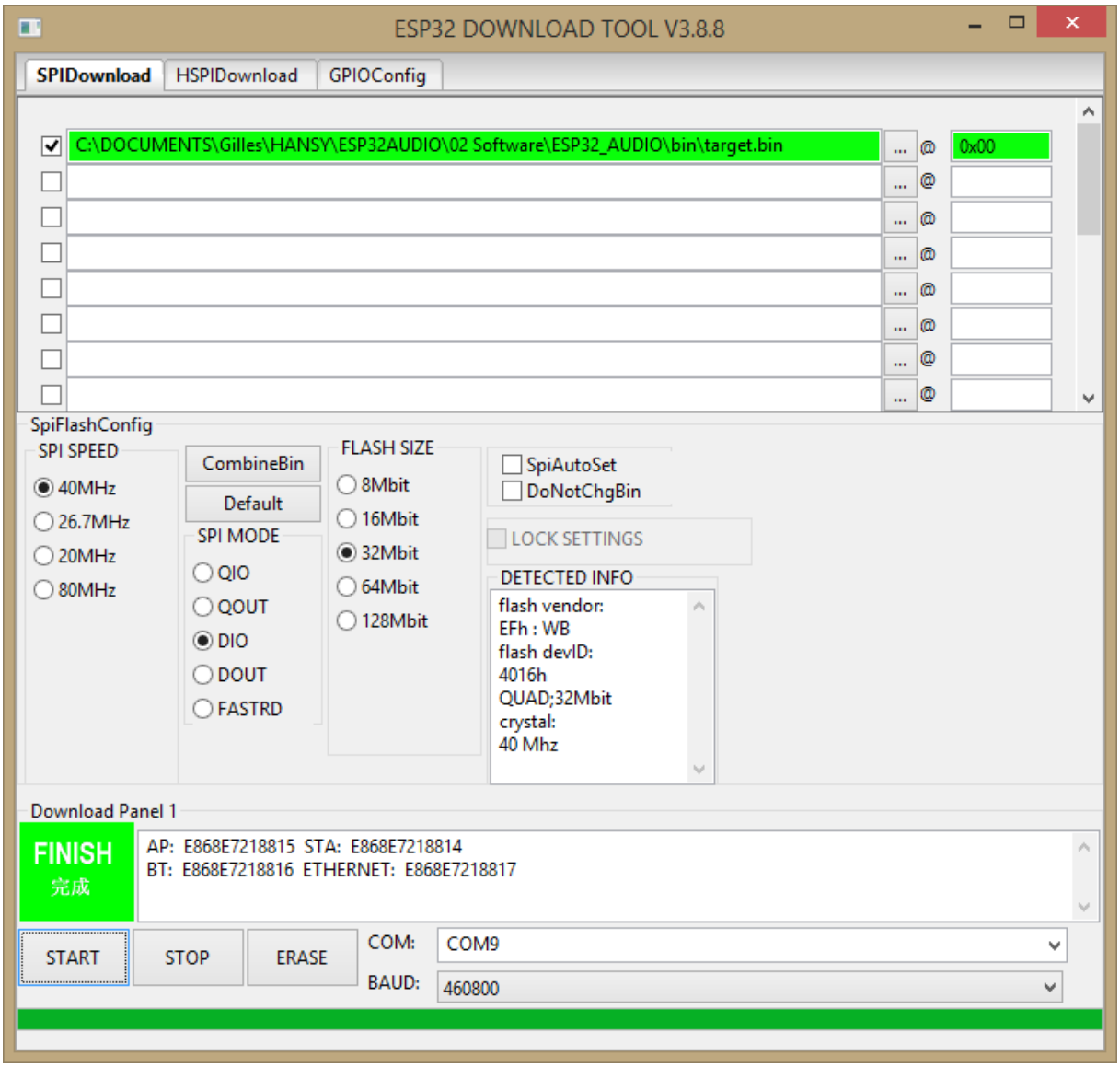
PROGRAM THE OPLA WITH ONE FILE VERSION

The four file can be combine to just one file with the **Combinebin** button

The result is a target.bin file

Load this file, set the address to 0x00 and uncheck the **DoNotChgBin** button

Click on start



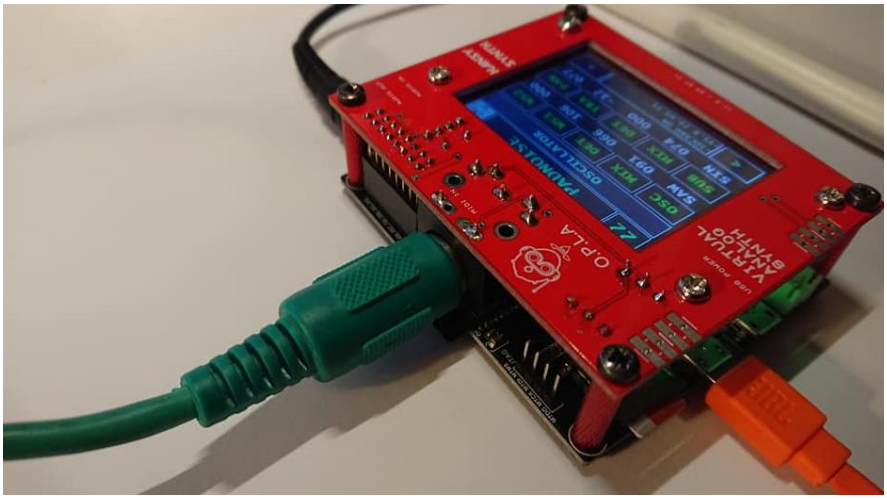
TEST AND CALIBRATION

Plug the Midi Din connector

Plug a Headphone on the Audio out jack

Plug the Mini USB connector

Check if the SD card is inserted



- The OPLA Must start

Connect a Midi Keyboard with a **Midi Channel 1**
Hit some Key and test if you see the number of key in the bottom lines of the screen

Test if you have some sound on your headphone.

To Calibrate the Nextion screen go to the FX section or MIDI-MISC for the firmware version above V15, select CAL then set the cursor to yes and follow the instructions