

Installation Instruction



Please note- The firmware only works with the ESP32S3 Lilygo t-displayS3 Touch.

Here are some links to related videos on YouTube.

<https://youtu.be/HgioXripPSk?feature=shared>

<https://youtu.be/gyk2eq8ZymM?feature=shared>

<https://www.youtube.com/watch?v=cFctgusRfhY>

Here is a link to the Espressif Flash Download Tools required for uploading the firmware:

<https://www.espressif.com/en/support/download/other-tools>

To upload the firmware please follow the following steps:

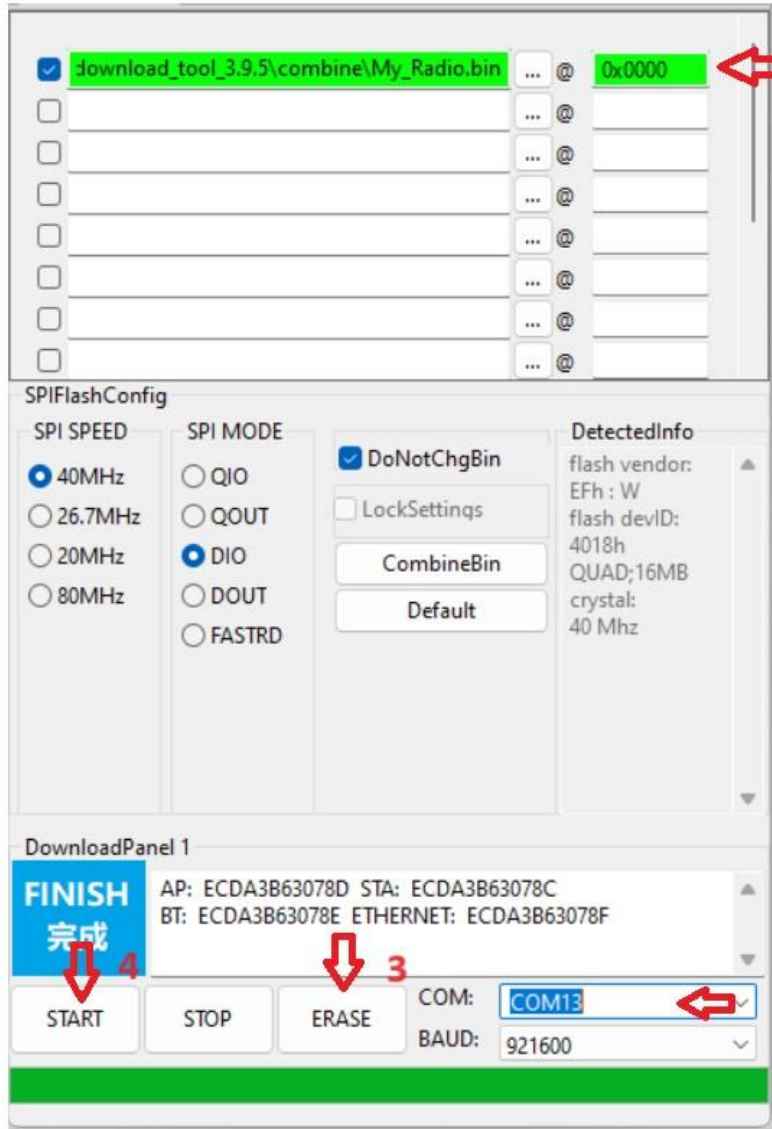
1. Download the Espressif Flash Tool or alternatively use the online tool
<https://espressif.github.io/esptool-is/>
2. Choose Chip Type: ESP32-S3, WorkMode Develop and LoadMode USB
3. Press the tree dots to select the files as follows:

My_Radio.bin 0x0000

Make sure that all the lines are marked green. If not green use the check mark on the left side.

Here is a screenshot of the flash tool:

Make sure to select the right com port (located at the right bottom side)



It is recommended to press first on Erase to clean the memory (not mandatory).

To upload the firmware, press the start button for uploading the firmware.

One time connecting process:

1. After successful upload press the reset button on the ESP32 or disconnect the USB cable and reconnect it.
2. Wait for around 3 min until network scanning is completed.
3. Open the Wi-Fi settings in your phone or computer browser and search for My_Radio network.
4. Go to the following address **192.168.4.1**.

http://192.168.4.1

My_Radio

AsyncWiFiManager

Configure WiFi



Configure WiFi (No Scan)

Info

Reset

5. Press "Configure Wi-Fi", Find your network and connect to that network using your internet password and press the "Save" button. This will connect the radio permanently to your home network.
6. Press the reset button of the ESP32 controller and wait until the Spiff file system formatting is completed (you will get a message on the LCD Screen).
 - a. When completed, looking at the RADIO LCD, you should be able to see the IP address that was assigned to your radio by your home router.
 - b. Open your computer web browser and type that IP address.
 - c. Upload a single station or list of stations using the following format:

(example file with various stations can be found in the documentation folder, for testing just copy and paste that list).

Station Name 1, Station Address 1

Station Name 2, Station Address 2

Radio Ibiza, <http://ibiza-smooth-jazz.vip-radios.fm:8033/stream-128kmp3-ibizaSmooth>

Roma Radio, <http://nr9.newradio.it:9371/stream>

You can find and copy station URL's in the following web site: <https://streamurl.link/> ,

<https://fmstream.org/> , <https://www.radio-browser.info/> , or alternatively search

YouTube for instruction video on how to get live radio streaming URLs. You can also

have a look at <https://radio.garden/> .

7. The last step - Open the web page. At the bottom left corner of the page, you will see the following.

Your Internet Radio ID:

153963357526764

License Key

Enter your key Here:

Please send me your RADIO ID to the following email themicromaker@yahoo.com

I will email you back the required License Key

Web Interface Radio Station Manager access VIA Mobile Phone or PC/MAC

Radio Station Manager

Play Station

Enter Station Number:

PLAY

Play Previous

Play Next

Current Station

Station Number: 114

Station Name: Exclusively Italy

Volume Control

Volume: 79

Audio Equalizer

Bass (dB): -1

Mid (dB): -1

Treble (dB): 6

Save

Audio Mode

Mono

Stereo

Apply

Screen Saver

Enable Screen Saver

Save

Total Stations Stored: 115

Enter Station Name:

Enter Station Address (URL):

Save

Enter Station Number to Erase:

Erase

Station 149

Station Name: Classical Music

Station Address: <https://stream.epic-classical.com/classical-n>

Station 150

Station Name: WFMT Classical

Station Address: <https://wfmt.streamguys1.com/main-mp3>

Station 151

Station Name: Radio Italy

Station Address: https://sphaera.fluidstream.eu/rpd_hita.mp3

Station 152

Station Name: Top Italia

Station Address: <http://streaming.cst98.com:8000/tir320.mp3>

Station 153

Station Name: Nostalgia Italia

Station Address: <https://scdn.nrjaudio.fm/adwz1/fr/30663/mj>

Enter Station List (one entry per line in the format 'Station N

Use the following format:

Station Name 1,Station Address 1

Station Name 2,Station Address 2

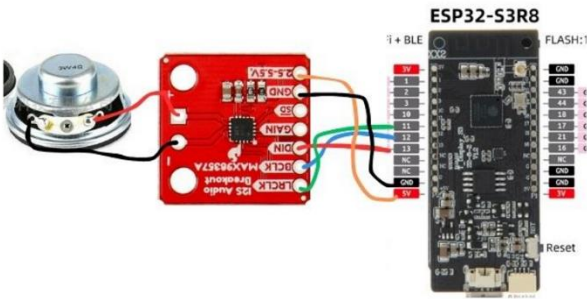
My Favorite Station,<http://123.456.789.0/stream>

Awesome Hits Radio,<http://stream.awesomehitsradio.com>

[Update Stations](#)

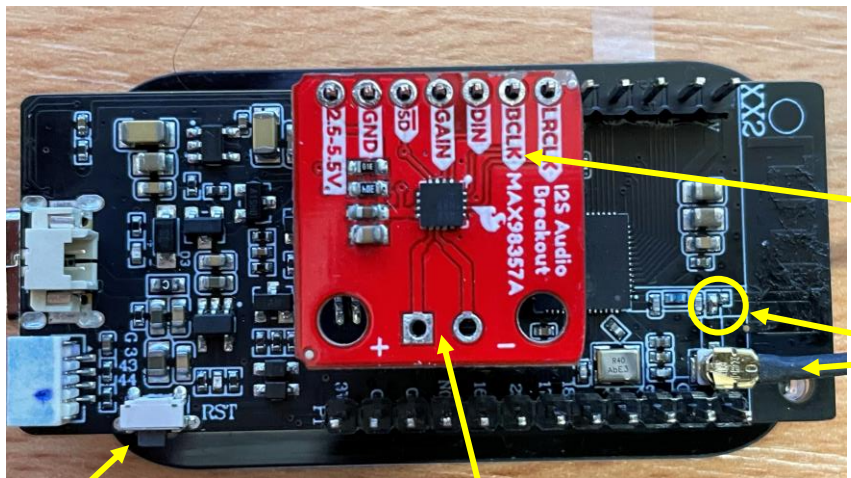
Connection Diagram

Following is the connection diagram for using the Max98357a chip (if you use pin header you don't need to connect wires as the pins are arranged correctly). Connect the I2S DAC to the following pins as shown in the picture: BCLK to pin 12, LRC to pin 11, DOUT to pin 13, VCC to 5V, GND to GND



Refer to the below photo: it is possible to solder the DAC directly to the ESP32 in the following way (the pins are already aligned)

After soldering the DAC to the pins you only need to connect a speaker to the + and - signs (speaker pins) on the DAC module.



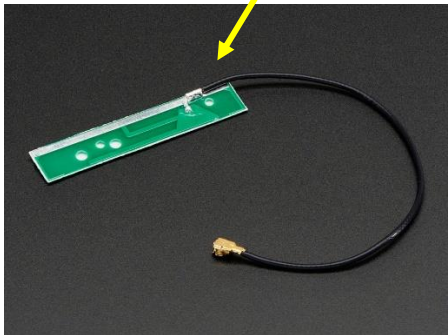
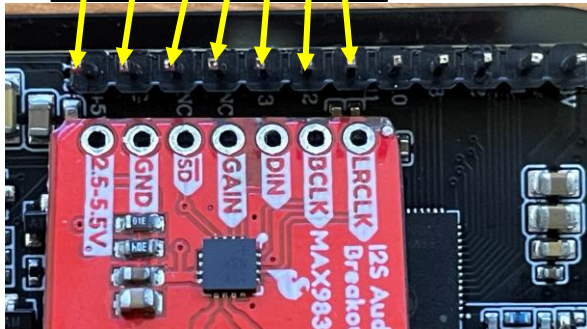
DAC+AMP Solder that way, no need for wires

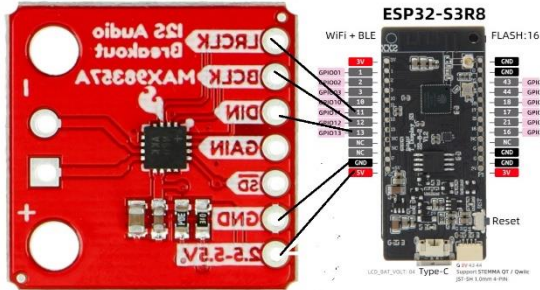
External Antenna - Optional requires switching jumper to external antenna

Reset Button

Speaker 5W Preferable

5V GND NC NC 13 12

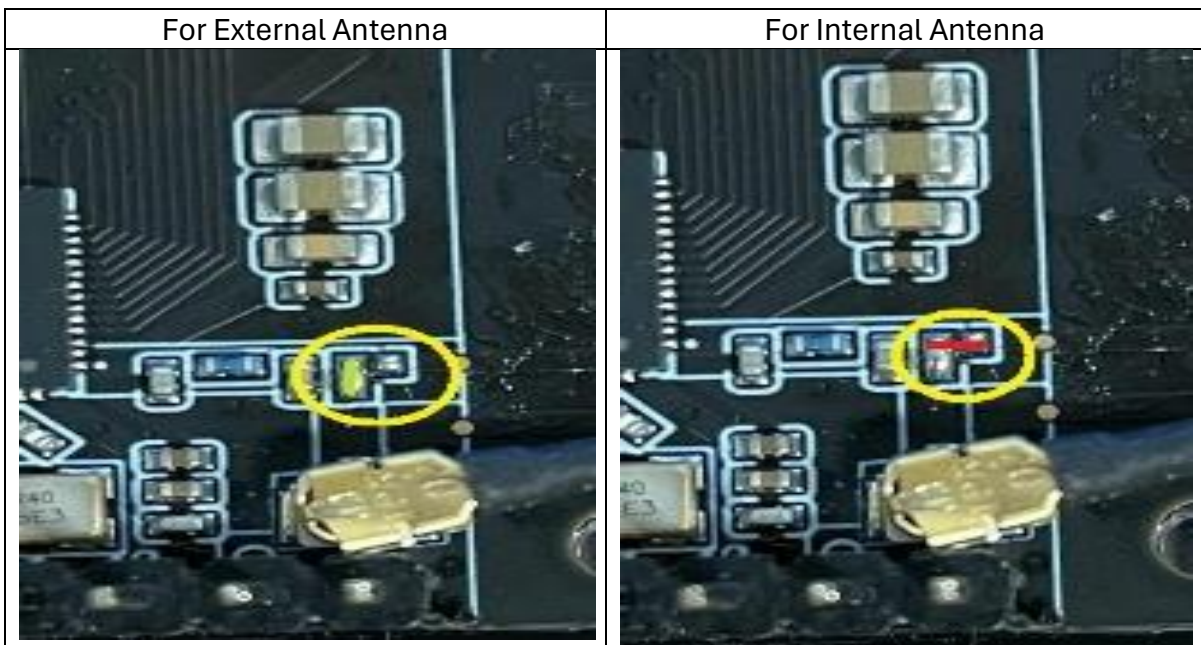




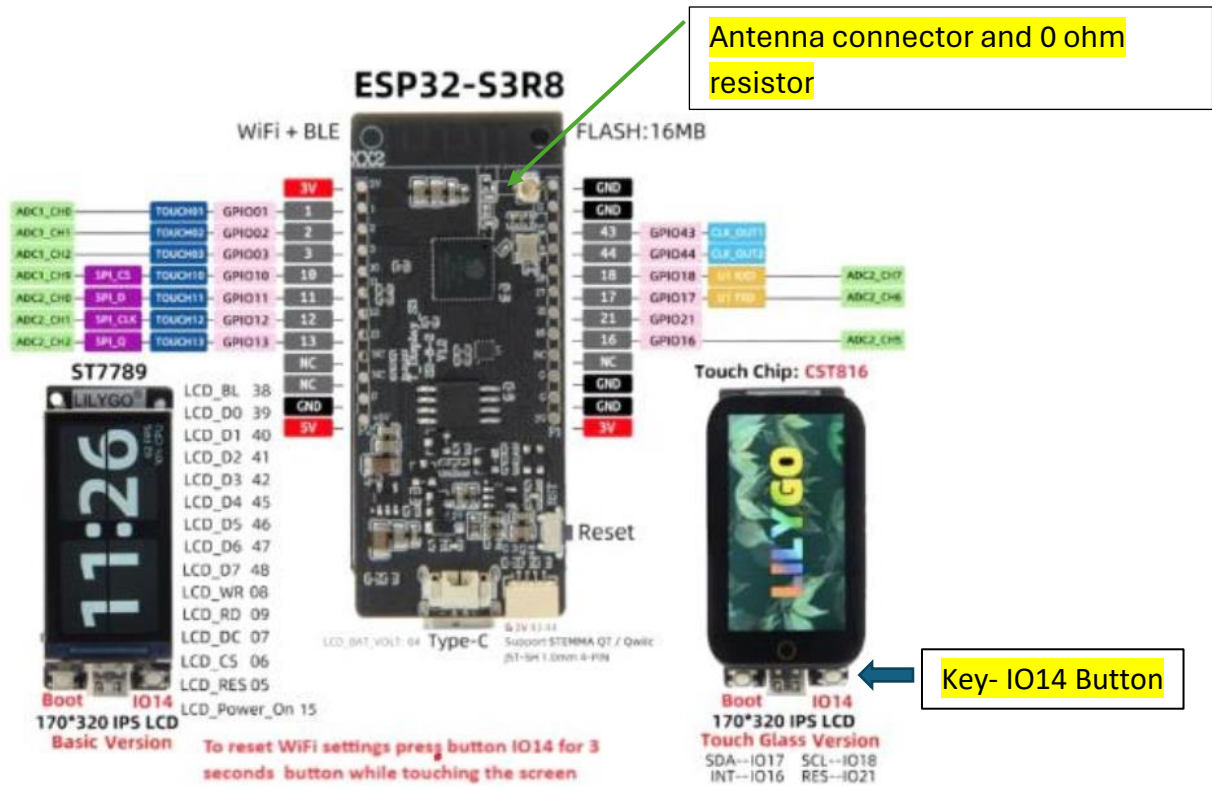
Note:

Notes:

1. The boot_app0.bin file is included with the Lilygo flash tool in the bin directory.
2. An I2S DAC is required for this project, Amplifier is optional. In general, all 16 bit DACs that have the DIN, BCLK and LRC pins. PCM5102A delivers good results.
3. For some stations that don't play, and their URL starts with <https://> try changing it to <http://> and check if it is working.
4. **Note: It is recommended to use antenna to enhance the Radio Reception range.** For the antenna to work you will need to move on the PCB the 0 ohm resistor (short) from external antenna to internal antenna. You can refer to this article for detailed explanation: <https://randomnerdtutorials.com/esp32-cam-connect-external-antenna/> Or YouTube video <https://www.youtube.com/watch?v=aBTZuv5sM8>



5. To reset Wi-Fi settings, press the reset button and IO14 button together. Release the reset button while keep pressing IO14 for at least 3 seconds until you get a message on the LCD that Wi-Fi setting has been erased (The Key - IO14 button is located on the left bottom side- see photo).



LILYGO T-Display ESP32-S3

1.9 inch ST7789 170*320 IPS LCD (Basic & Touch)