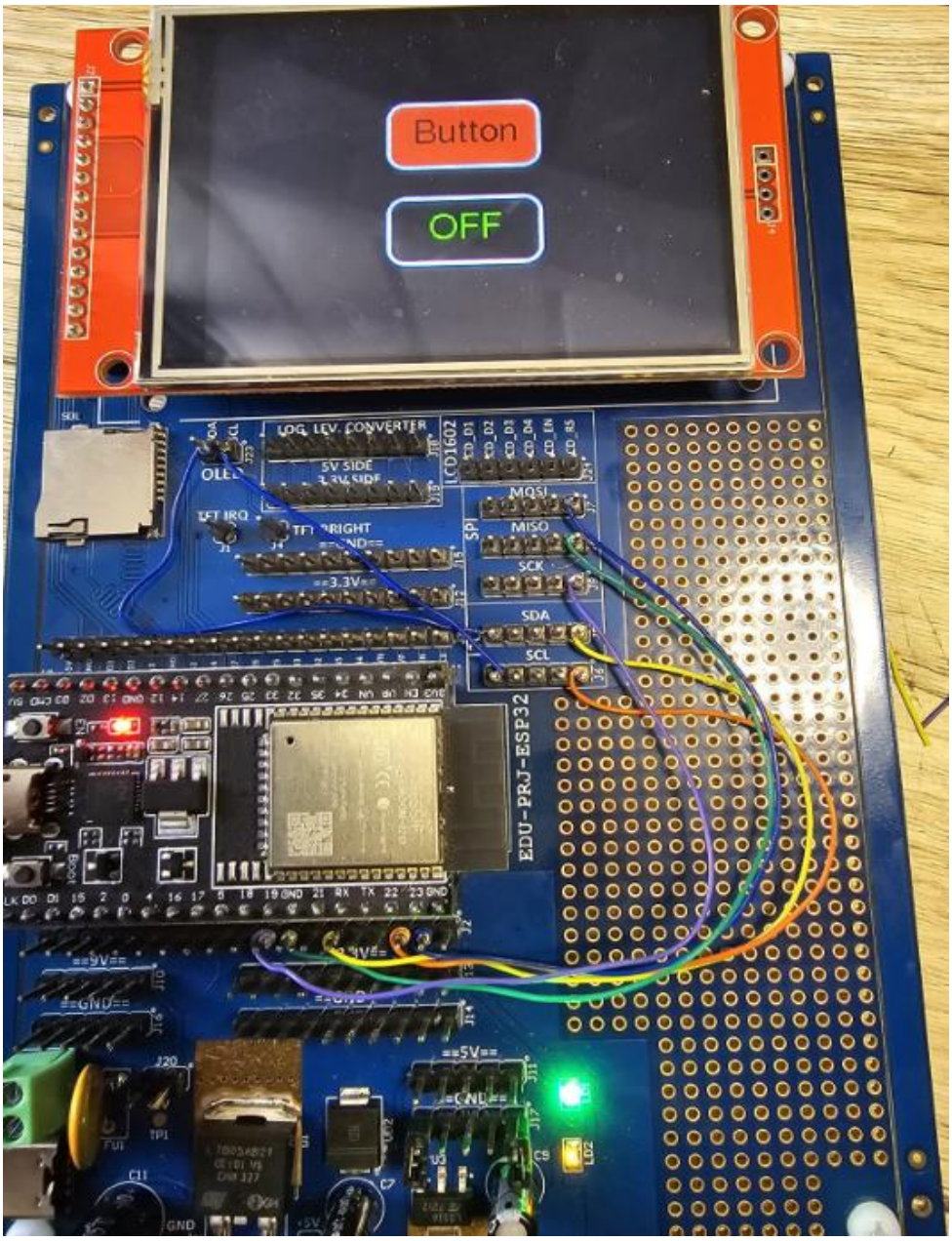
Instruction Manual for ESP32-Proj

Development Kit

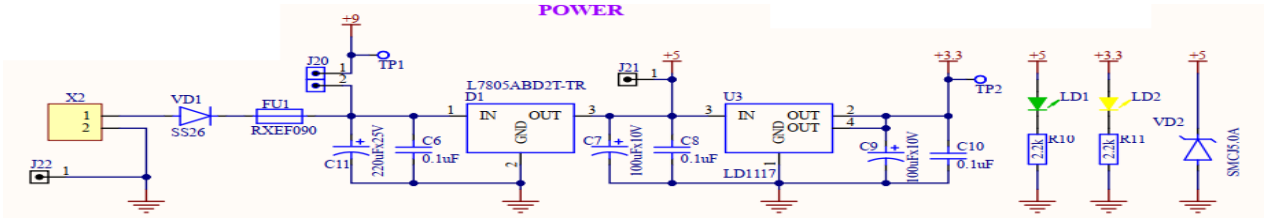


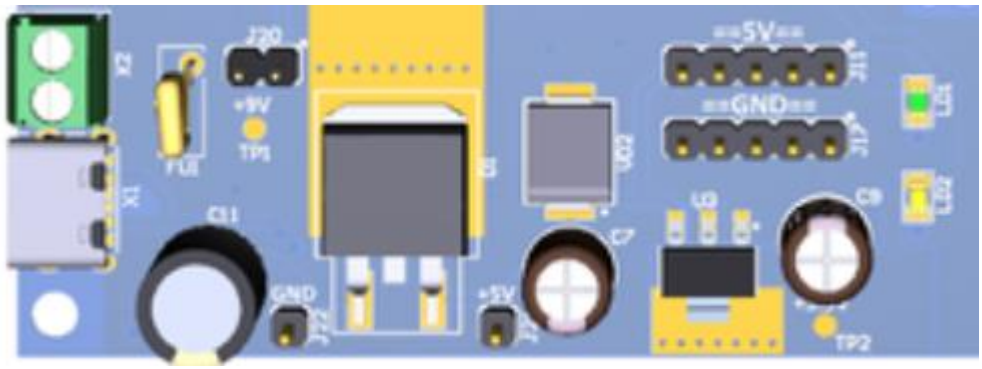
Kit Features:

Power supply – External power up to V12

Type C on the development board

Type C on the ESP32 microcontroller





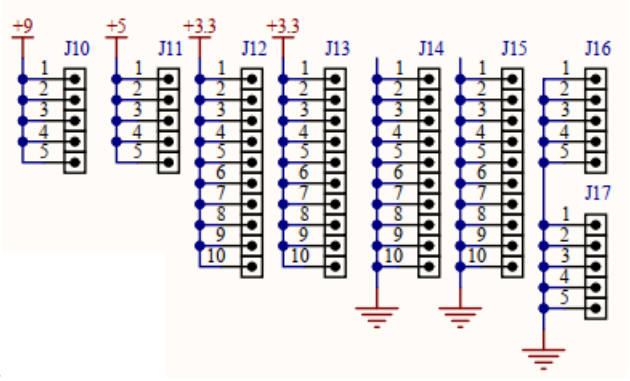
Power supply to external components:

20 pins V3.3

5pins V5

5 pins V9

30 pins GND



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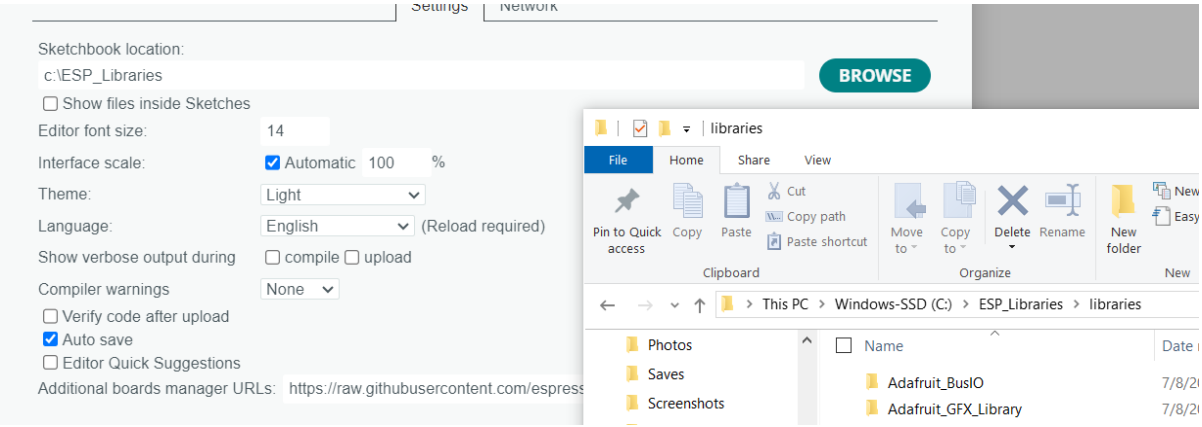
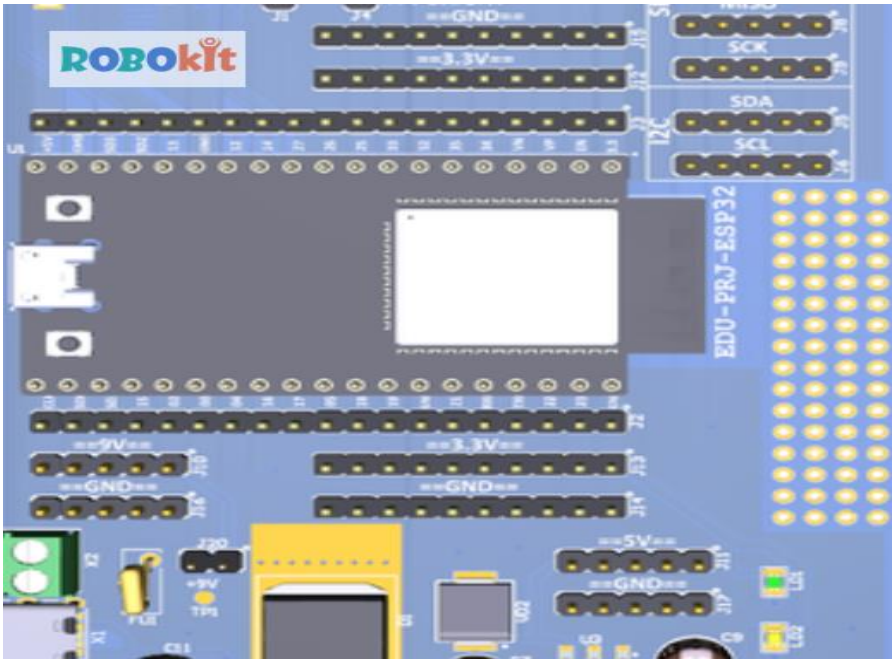
All relevant libraries are located in the Drive:

[Libraries]

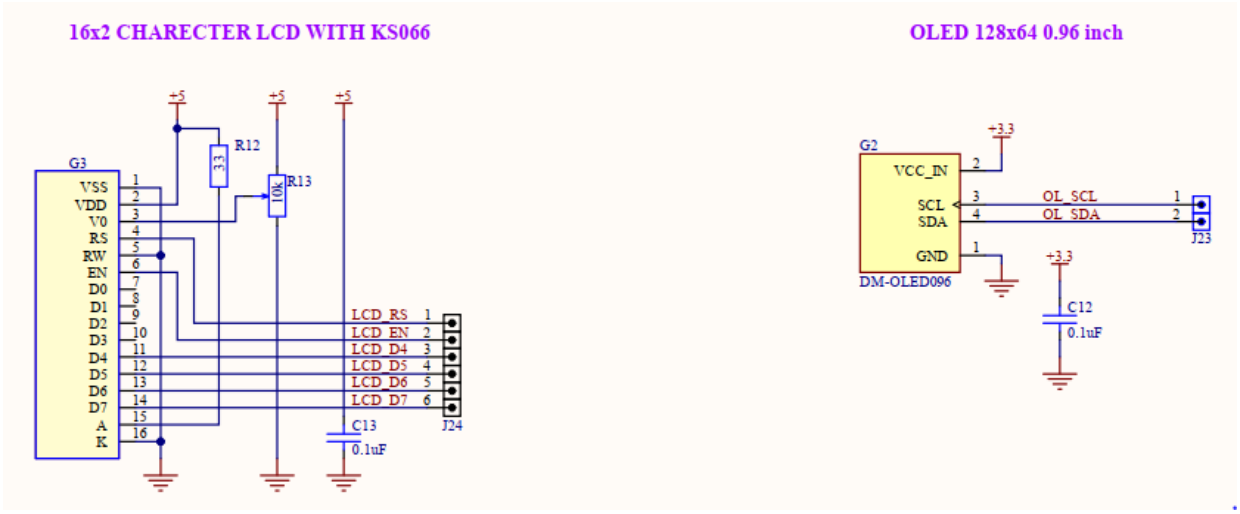
Copy them to your Arduino directory (it is recommended to make a directory on a local disk). For example:

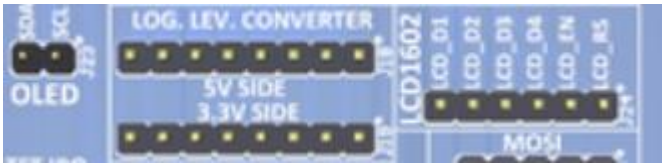


Arduino will detect them automatically.



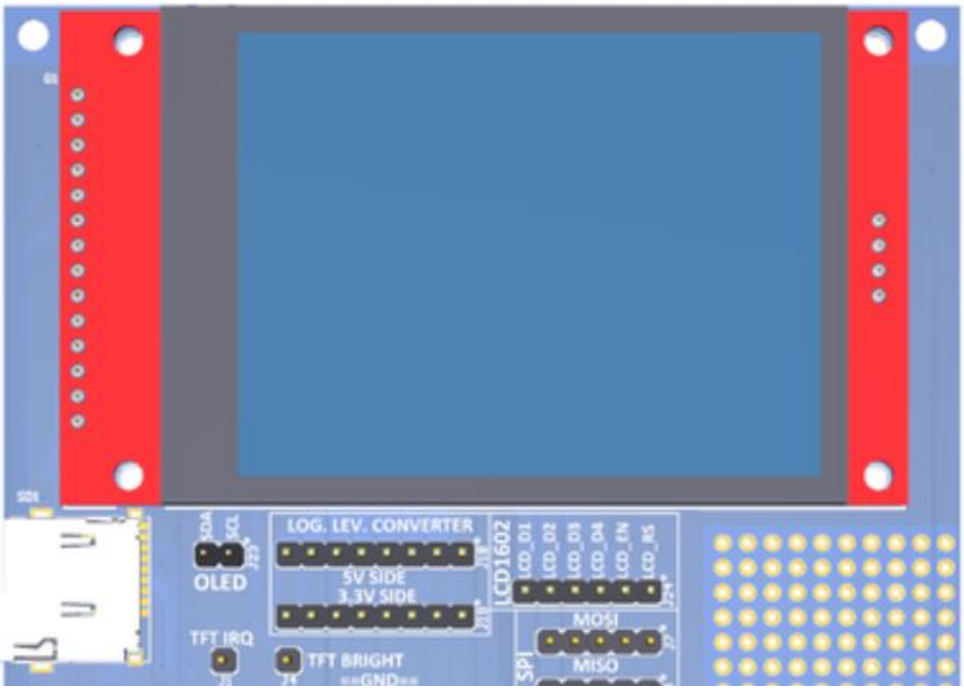
Separate interfaces for OLED screen, 2x16 LCD 4-bit screen

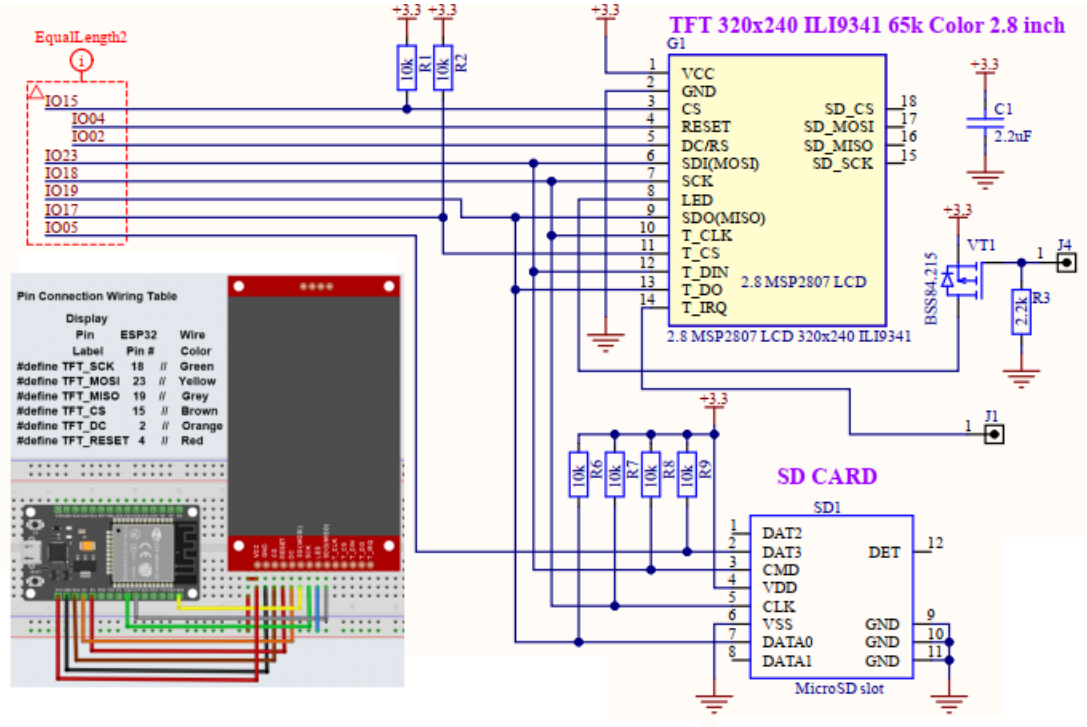




TFT-touch screen, side SD card slot, TFT_IRQ interrupt pin for touch detection,

Option to control screen brightness via TFT_Bright pin.





All screen files are available at the following link:

[TFT display codes and data]

Explanations for the links are found in the following file:

[Tutorial for TFT dispaly connection]

To activate and test the screen (without touch), go to the following link:

[Demo of TFT activity]

To activate the touch mechanism, go to the following link and perform synchronization and 'calibration'.

[TFT display Calibration]

After completing the process, open and run the last file in the folder.

[Final TFT Setup]

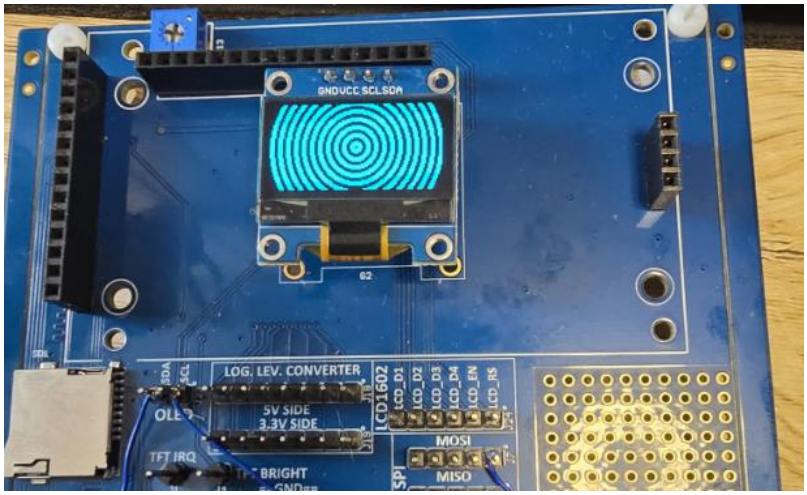
OLED screen.

Connect standard I2C OLED pins (21,22).

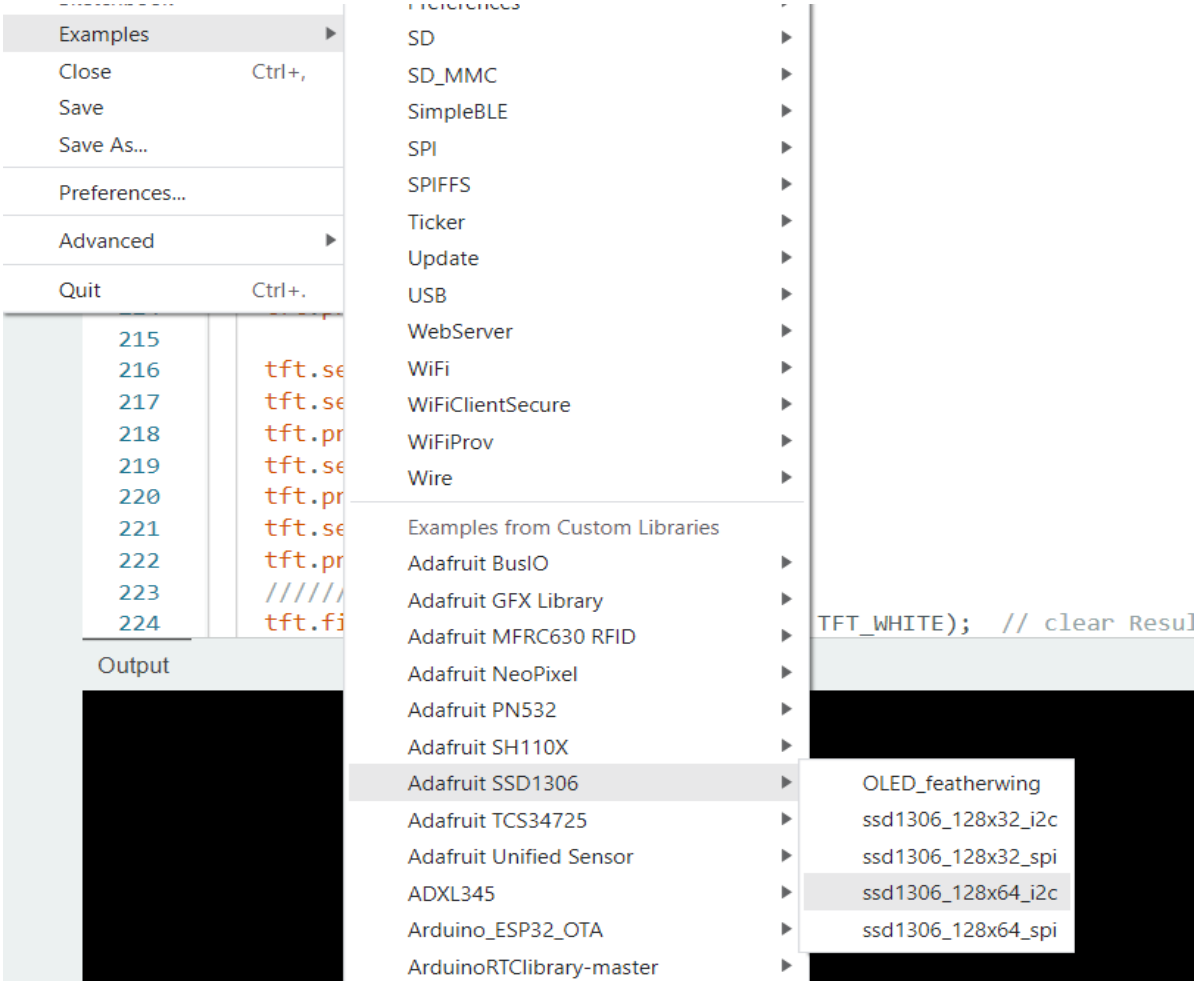
5 ports for connecting I2C components.

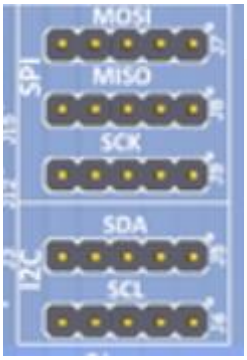
5 ports for connecting SPI components.

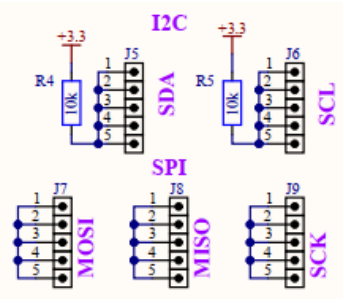
SPI and **I2C** pins are not connected directly to standard microcontroller pins – the goal is to give the user the option to connect pins of their choice. For example: we will use a standard connection (21,22) and make an I2C connection in software and connect to other pins (say 26, 27) and connect the component gate to them.

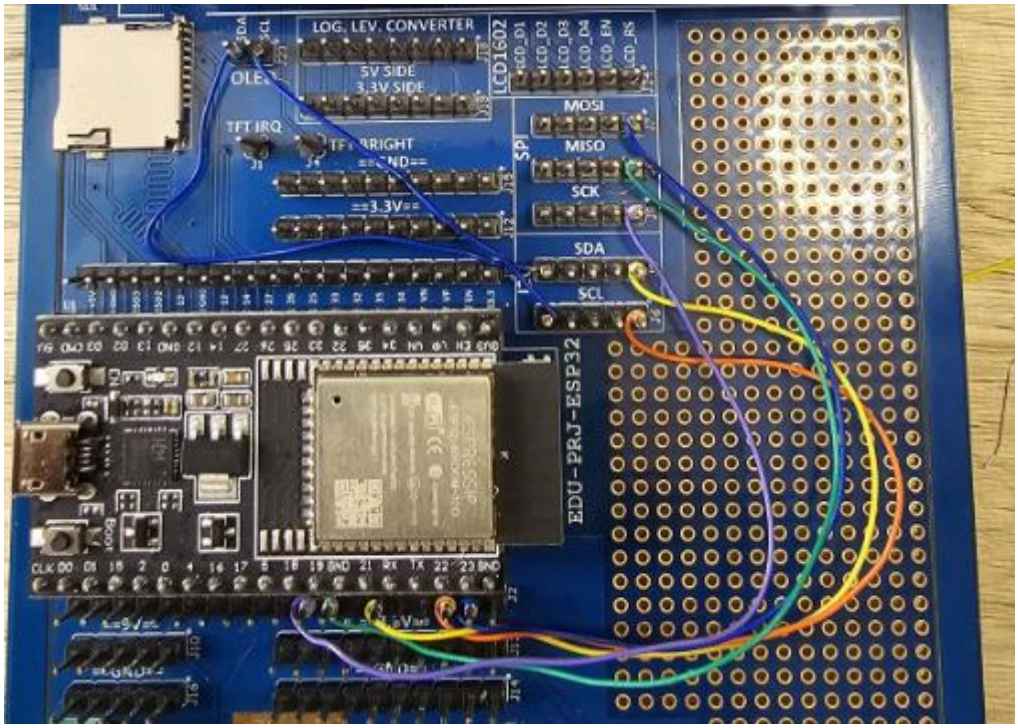


Go to the Adafruit SSD1306 library and run a sample from the list.

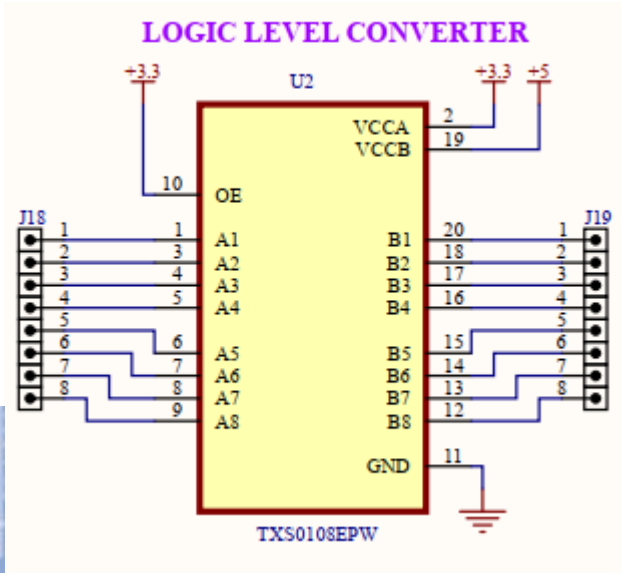




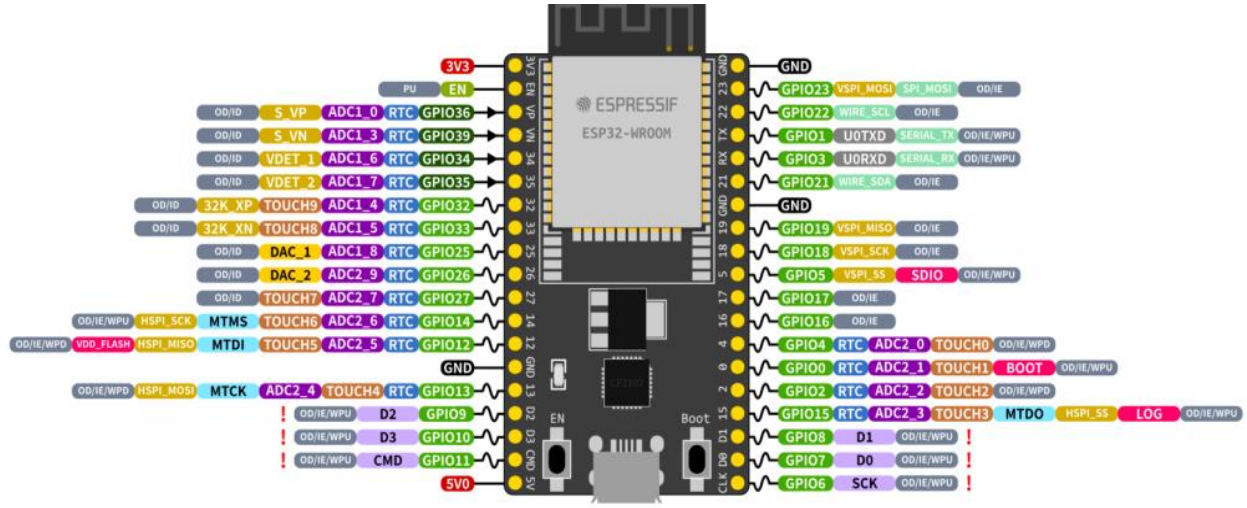




Signal level conversion from V3.3 to V5 and from V5 to V3.3 (to ease integration with relays, servo motors, PIR sensors).



Microcontroller pin list.



ESP32 Specs

32-bit Xtensa® dual-core @240MHz
Wi-Fi IEEE 802.11 b/g/n 2.4GHz
BLuetooth 4.2 BR/EDR and BLE
520 KB SRAM (16 KB for cache)
448 KB ROM
34 GPIOs, 4x SPI, 3x UART, 2x I2C,
2x I2S, RMT, LED PWM, 1 host SD/eMMC/SDIO,
1 slave SDIO/SPI, TWAI®, 12-bit ADC, Ethernet

PWM Capable Pin
GPIOX GPIO Input Only
GPIOX GPIO Input and Output
DAC_X Digital-to-Analog Converter
DEBUG JTAG for Debugging
FLASH External Flash Memory (SPI)
ADCX_CH Analog-to-Digital Converter
TOUCHX Touch Sensor Input Channel
OTHER Other Related Functions
SERIAL Serial for Debug/Programming
ARDUINO Arduino Related Functions
STRAP Strapping Pin Functions

RTC RTC Power Domain (VDD3P3_RTC)
GND Ground
PWD Power Rails (3V3 and 5V)
! Pin Shared with the Flash Memory
Can't be used as regular GPIO

GPIO STATE

WPU: *Weak Pull-up (Internal)*
WPD: *Weak Pull-down (Internal)*
PU: *Pull-up (External)*
IE: *Input Enable (After Reset)*
ID: *Input Disabled (After Reset)*
OE: *Output Enable (After Reset)*
OD: *Output Disabled (After Reset)*