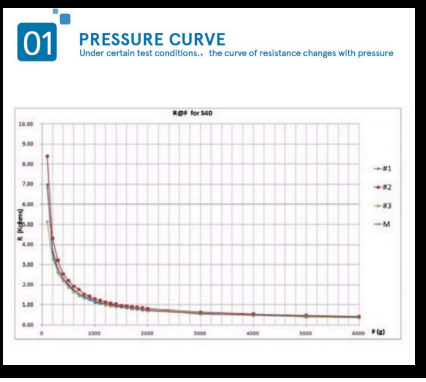
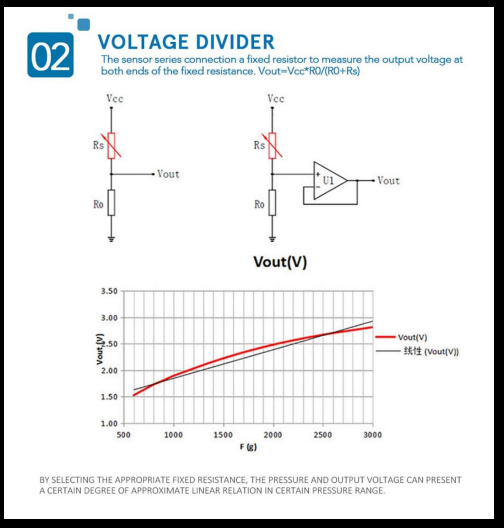
PPP ESP32 design documentation

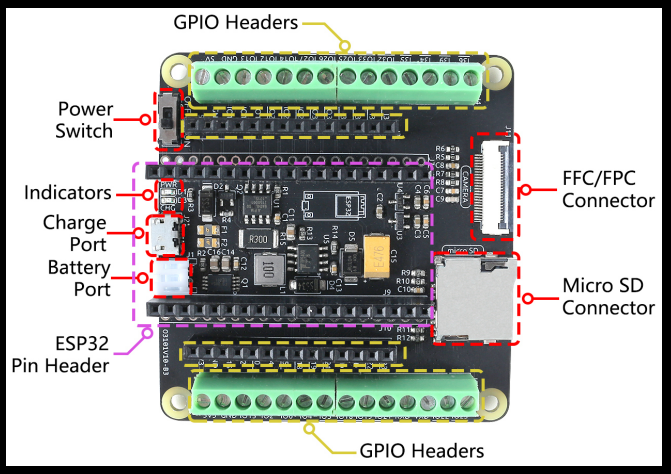
Components list:
- ESP32-WROOM-32E Kit
- ESP32-WROOM-32E Camera extension board
- 10k Ohm resistors (3x)
- lithium ion 18650 type battery (3.7v standard) @800mah, PH2.0, 2P connector
- Force sensing resistor film (Rp-C7.6-St)(3x)
- braided copper/silicon wires (3x2)

Force sensing resistor film force graphs





ESP32-WROOM-32E camera extension board layout



ESP32-WROOM-32E pinout GPIO feature chart

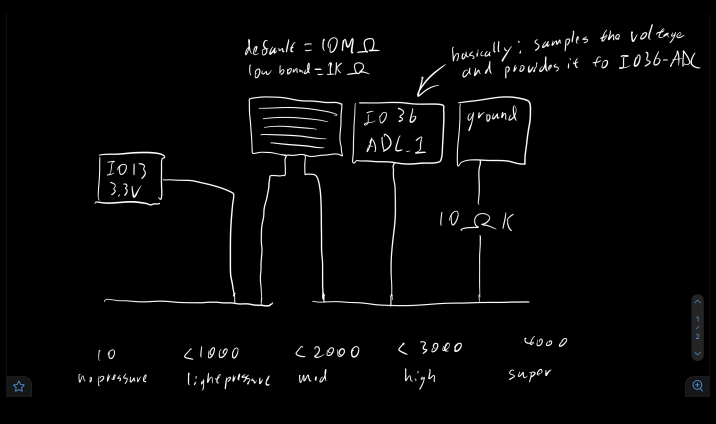
ESP32 WROOM 32E + Camera Extension Pinout

	IO13	IO12	IO14	IO27	IO26	IO25	IO33	IO32	I35	I34	I39	I36
PWM Output												
Input/Output												
Input Only												
Analog	ADC2_4	ADC2_5	ADC2_6	ADC2_7	ADC2_9	ADC2_8	ADC1_5	ADC1_4	ADC1_7	ADC1_6	ADC1_3	ADC1_0
Touch Sensor	TOUCH4	TOUCH5	TOUCH6	TOUCH7			TOUCH8	TOUCH9				
DAC					DAC_2	DAC_1						
I2C												
UART												
SPI	H_MOSI	H_MISO	H_CLK									
LED												
Strapping												
SD	DAT3	DAT2	CLK									
Camera												
Pull-up 47K Resistor												
Pull-up 4.7K resistor												
Pull-down 1K resistor												

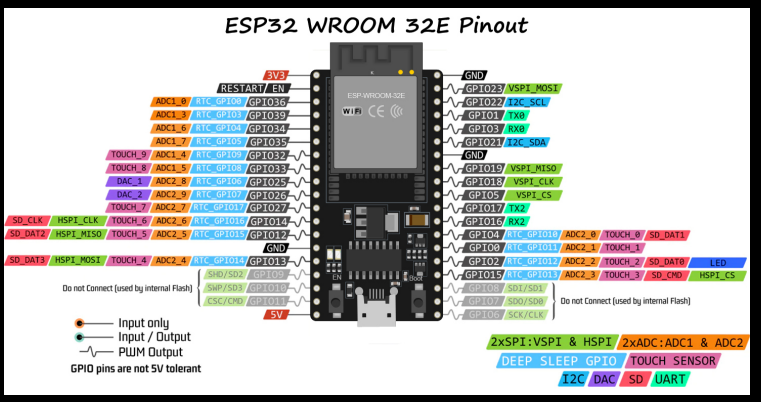
ESP32 WROOM 32E + Camera Extension Pinout

	IO15	IO2	IO0	IO4	IO5	IO18	IO19	IO21	RXD	TXD	IO22	IO23
PWM Output												
Input/Output												
Input Only												
Analog	ADC1_0	ADC2_3	ADC2_2	ADC2_1	ADC2_0							
Touch Sensor	TOUCH3	TOUCH2	TOUCH1	TOUCH0								
DAC												
I2C								SDA			SCL	
UART									RXD	TXD		
SPI	H_CS				V_CS	V_CLK	V_MISO					V_MOSI
LED		LED										
Strapping												
SD	CMD	DAT0		DAT1								
Camera												
Pull-up 47K Resistor												
Pull-up 4.7K resistor												
Pull-down 1K resistor												

Force sensing resistor film circuitry drawing



ESP32-WROOM-32E layout



Software configurations
- Build and Flashed (uploaded) via PlatformIO interface through VSCode IDE
- Force parsing and transcription code written in C++
- #include Arduino.h
- #include BleKeyboard.h
- Utilizing ESP32 BLE Keyboard library by T-vk

Miscellaneous troubleshoots
- Install CH340 if upload port is not detected as USB-SERIAL
- ADC2_XXX pins will not work during BLE/WIFI operations
  - use exclusively the ADC1_XXX ports
  - resort to I2C ADC extension board if needed
- calibrate and scale the ADC read in accordance to noise