

ESP32 MultiWii FPV Drone - Circuit Diagram

MH-ET LIVE MiniKit with ESP-NOW Wireless

1S LiPo Battery

Voltage: 3.7V nominal
Capacity: 150-250mAh
Max: 4.2V charged

Terminal	Color
+ Positive	Red
- Negative	Black

MPM3610 Regulator

Input: 3.5V - 21V
Output: 3.3V @ 1.2A
Type: Buck converter

Pin	Connect To
VIN	Battery +
GND	Battery -
VOUT	ESP32 3V3
EN	VIN (enable)

Voltage Divider (VBAT)

Purpose: Scale 4.2V to 2.1V
R1: 10kΩ (to Bat+)
R2: 10kΩ (to GND)
Output: GPIO 34

$$\text{Formula: } \text{Vout} = \text{Vin} \times \frac{\text{R2}}{\text{R1} + \text{R2}}$$

MPU6050 IMU

Type: 6-Axis Gyro+Accel
Interface: I2C
Address: 0x68

Pin	ESP32
VCC	3.3V
GND	GND
SDA	GPIO 21
SCL	GPIO 22

ESP32 MH-ET LIVE MiniKit

Dual-Row Header Pinout

LEFT HEADER (Outside Edge)

3V3	POWER IN	●
GND	GROUND	●
GPIO 36 (input only)		●
GPIO 39 (input only)		●
GPIO 34 VBAT ADC		●
GPIO 35 (input only)		●
GPIO 32 BUZZER		●
GPIO 33 LED		●
GPIO 25 MOTOR 2 (FR)		●
GPIO 26 (unused)		●
GPIO 27 MOTOR 4 (FL)		●

RIGHT HEADER (Outside Edge)

● ALT POWER	VIN
● GROUND	GND
● MOTOR 1 (RR) (strapping)	GPIO 13
● MOTOR 3 (RL) (strapping)	GPIO 12
● (unused)	GPIO 14
● (unused)	GPIO 15
● (unused)	GPIO 2
● I2C SDA	GPIO 4
● I2C SCL	GPIO 16
	GPIO 21
	GPIO 22

Built-in WiFi (ESP-NOW) - No external radio needed

Wire Color Legend

● Battery + / VIN ● Ground (GND) ● 3.3V Power ● Motor PWM ● Signal (ADC/GPIO) ● I2C (SDA/SCL) ● LED

Motor 1 - Rear Right

GPIO: 13
Rotation: CW (clockwise)
Driver: Si2302 MOSFET
Flyback: 1N5819 diode

Motor 2 - Front Right

GPIO: 25
Rotation: CCW (counter-CW)
Driver: Si2302 MOSFET
Flyback: 1N5819 diode

Motor 3 - Rear Left

GPIO: 14
Rotation: CCW (counter-CW)
Driver: Si2302 MOSFET
Flyback: 1N5819 diode

Motor 4 - Front Left

GPIO: 27
Rotation: CW (clockwise)
Driver: Si2302 MOSFET
Flyback: 1N5819 diode

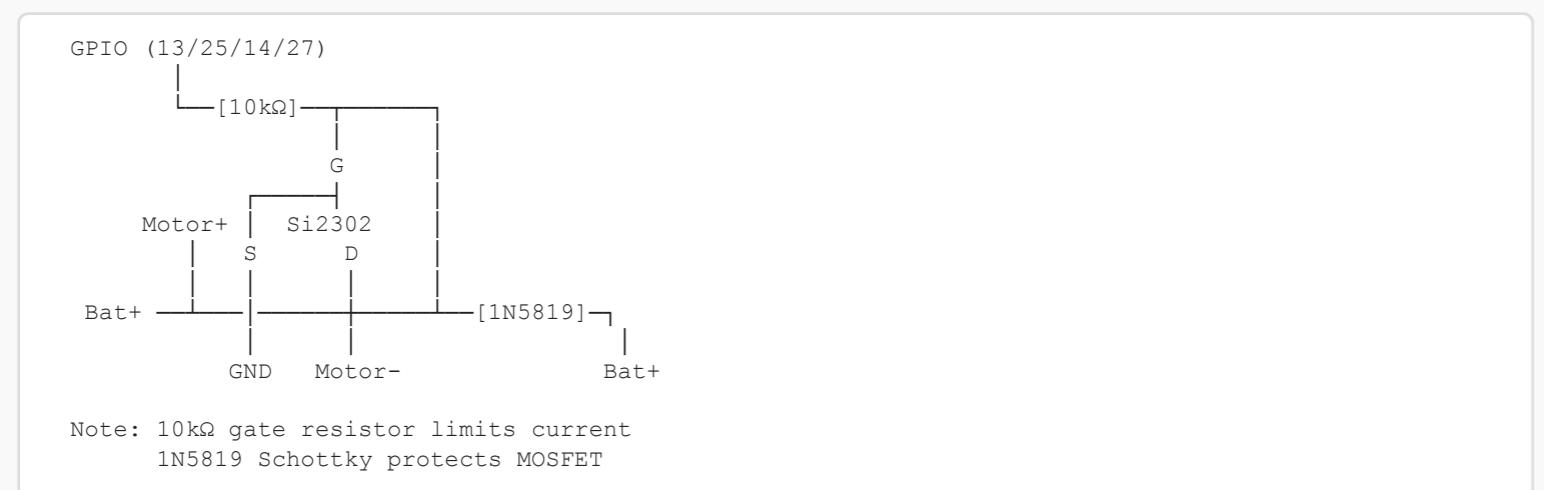
Buzzer (5V Passive)

GPIO: 32
Driver: 2N2222 NPN
Base R: 1kΩ
+: 3.3V or 5V

Status LED

GPIO: 33
Resistor: 220Ω
Color: Green/Blue

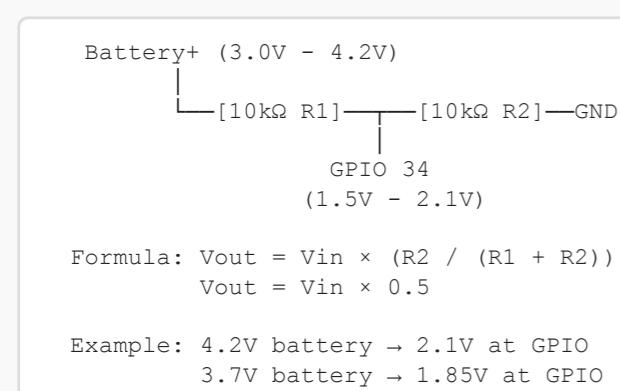
Motor Driver Circuit (x4)



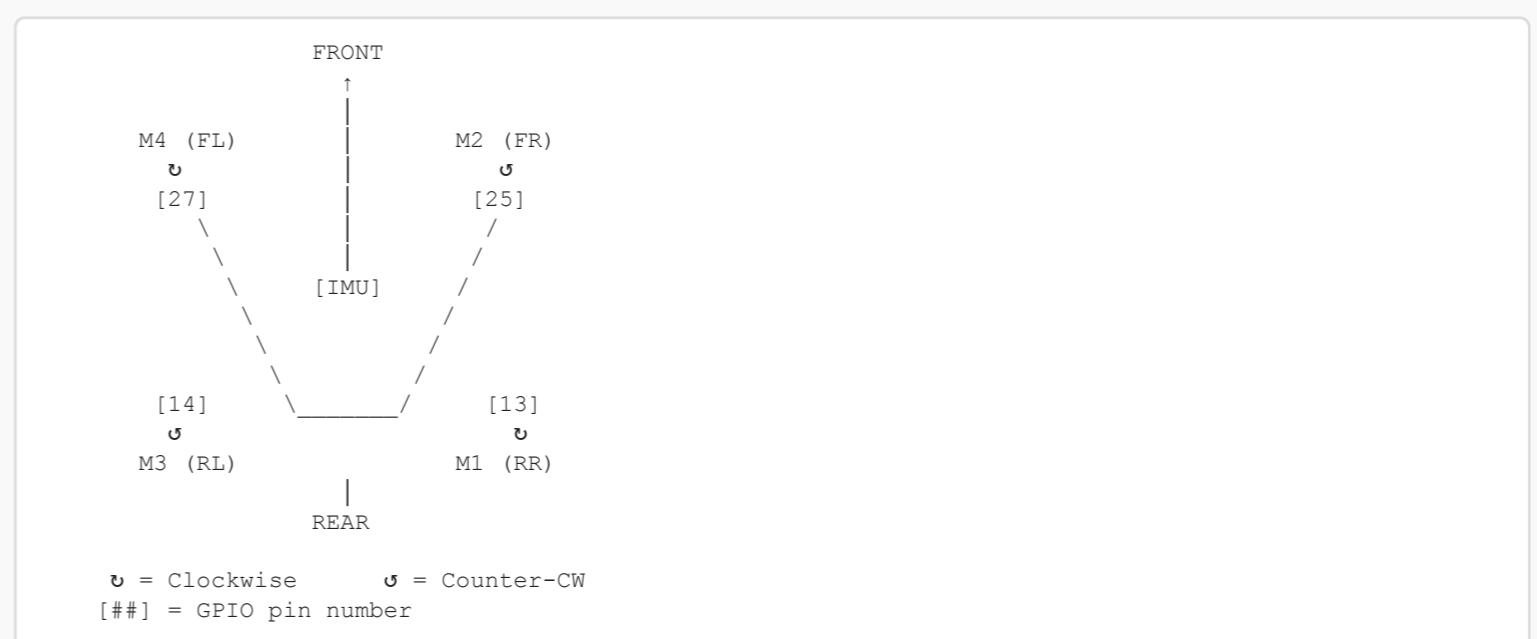
Buzzer Driver Circuit



Voltage Divider (Battery Monitor)



Motor Layout (Quad X - Top View)



Pin Assignment Summary

Function	GPIO Side
Motor 1 (RR)	Right
Motor 2 (FR)	Left
Motor 3 (RL)	Right
Motor 4 (FL)	Left
Buzzer	32
LED	33
Battery ADC	34
I2C SDA	21
I2C SCL	22

Bill of Materials

- 1x ESP32 MH-ET LIVE MiniKit
- 1x MPU6050 6-axis IMU module
- 1x MPM3610 3.3V regulator
- 4x 8.5mm brushed motors
- 4x Si2302 N-MOSFET (SOT-23)
- 4x 1N5819 Schottky diode
- 4x 10kΩ resistor (gate)
- 2x 10kΩ resistor (VBAT div)
- 1x 1kΩ resistor (buzzer)
- 1x 220Ω resistor (LED)
- 1x 2N2222 NPN transistor
- 1x 5V passive buzzer
- 1x LED (3mm or 5mm)
- 1x 1S LiPo 150-250mAh

Important Notes

- Strapping pins:** Avoid GPIO 0, 2, 12, 15 for outputs
- Input-only:** GPIO 34-39 cannot output
- ADC range:** 0-3.3V (12-bit, 0-4095)
- PWM freq:** 32kHz for motors
- I2C pullups:** Usually on MPU6050 module
- Flyback diodes:** Required for motor protection
- Power sequence:** MPM3610 enables on power
- VBAT cal:** Adjust in config.h if needed