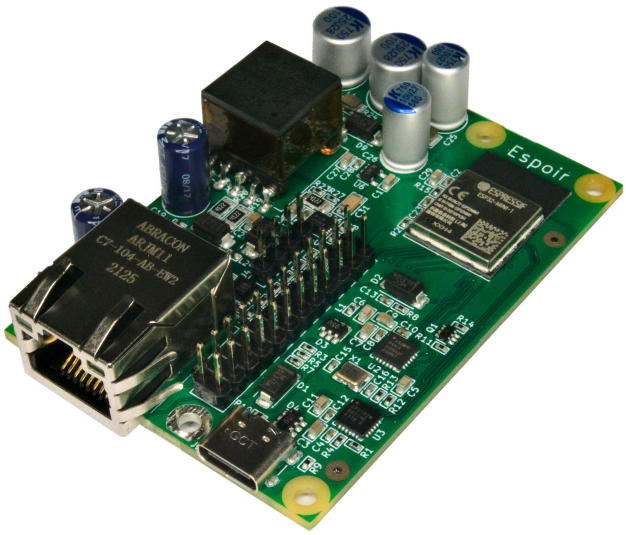
Espoir Devboard



Espoir is a Power over Ethernet (PoE+ 802.3af/at) development board based on the ESP32 microcontroller, and the first circuit produced by Connaxio.

It provides up to 18 Watts of power to small pumps, valves, motors, servomotors and sensors at 12 V, 5.6 V and 3.3 V. The Ethernet jack provides 10/100 mbps communication and 2,250 V of isolation. Its USB-C connector allows for programming and debugging without an external programmer. Finally, the ESP32-MINI-1 microcontroller enables wireless communication with external devices via 2.4 GHz Wi-Fi and Bluetooth 4.2 BLE.

Espoir is certified open source by the Open Source Hardware Association (OSHWA), so you can review the schematics, modify them and contribute back to the community.

The board's form factor easily accomodates HAT-style addons to provide additional functionality, such as connectors, sensors and drivers.

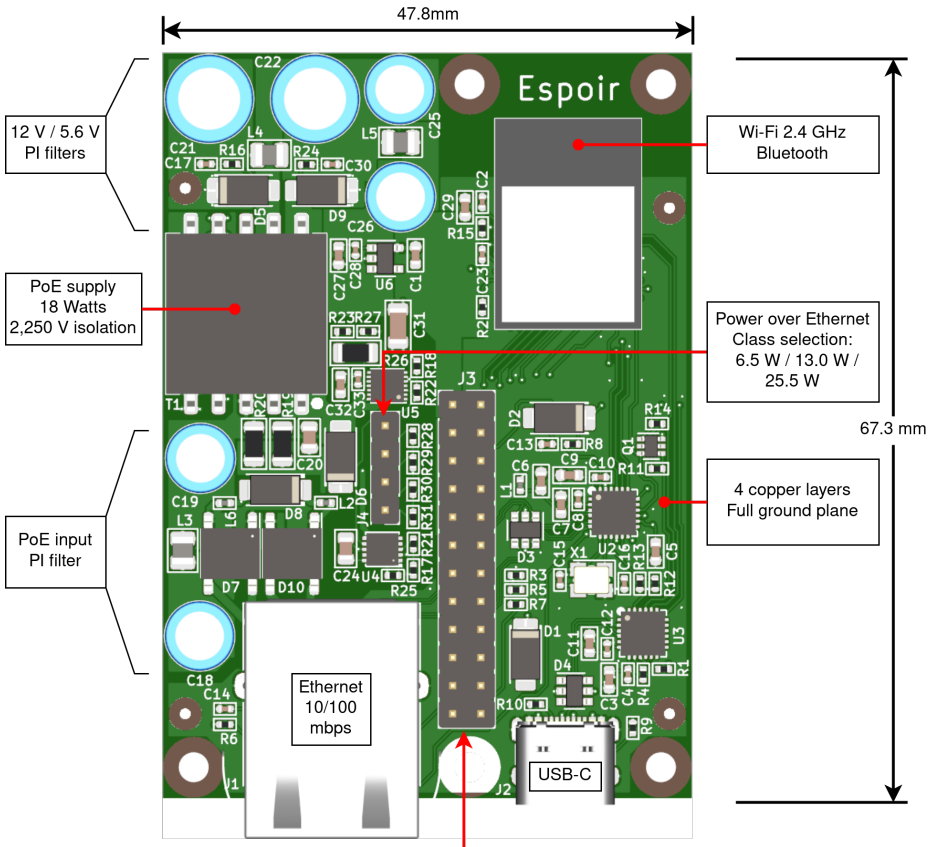
Specifications

- Processing
  - ESP32-MINI-1: Single core 160 MHz (upgraded to dual core 240 MHz in future versions)
  - 520 KB SRAM
  - 4 MB flash
  - Full specifications in the ESP32-MINI-1 datasheet and the ESP32 datasheet.
- Power
  - Input: 37 V - 57 V PoE through the Ethernet connector with 2,250 V isolation
  - Input: 5 V through the USB-C connector[1]
  - Output: 12 V at 1.5 A (18 W) from PoE input
  - Output: 5.6 V at 3 A (16.8 W) from PoE input[2]
  - Output: 3.3 V at 0.7 A (2.3 W) from 5.6 V output
- Connectivity
  - Ethernet 10/100-BaseT (80+ mbps throughput)
  - Wifi 2.4 GHz 802.11b/g/n & integrated antenna
  - Bluetooth 4.2 BLE
  - USB 1.0 via USB-C connector
  - 5 analog / digital inputs
  - 11 digital inputs / outputs
  - The GPIO header exposes 12 V, 5.6 V, 3.3 V and the RESET signal
- Form factor
  - Weight: 33 g
  - Size: 47.8 x 67.3 mm^2
  - Mouting holes: 5x M2.5 / 4-40. The bottom-center hole is plated and connected to local ground.
  - Header: 2x12 pins 2.54 mm (100 mils) header with room for 22.9 x 67.3 mm^2 add-ons.
- Operating temperature range: -40°C to +85°C

[1] USB VBUS (5 V) is connected to the 5.6 V rail through a schottky diode. When only USB power is connector, the voltage on the 5.6 V rail is 4.6 V.

[2] The maximum cumulative PoE power output is 18 Watts.

Pinout



ADC	I/O	PWR
		3.3 V
		GND
		EN
ADC1/CH0	I36	
		GND
ADC1/CH1	I37	
ADC1/CH2	I38	
		GND
ADC1/CH3	I39	
ADC1/CH6	I34	
		GND
	IO23	

PWR	I/O	ADC	SD/MMC	QSPI	JTAG
12 V					
5.6 V					
	IO14	ADC2/CH6	CLK	CLK	MTMS
	IO12	ADC2/CH5	DATA2	Q	MTDI
	IO13	ADC2/CH4	DATA3	D	MTCK
	IO15	ADC2/CH3	CMD	CS0	MTDO
	IO2	ADC2/CH2	DATA0	WP	
	IO4	ADC2/CH0	DATA1	HD	
	IO9				
	IO10				
	IO5				
	IO18				

UART / I2C / SPI / PWM / I2S / RMT / TWAI (CAN 2.0): Any I/O. Note I34 - I39 are input-only.

For more information, contact, schematics, and other projects, visit connaxio.com.