



ESP32-P4-DevKit

User Manual

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What is ESP32-P4-DevKit

ESP32-P4-DevKit is a development board with ESP32-P4 Dual Core RISC-V processor from Espressif.

The features of ESP32-P4-DevKit board are:

- ESP32-P4 Dual core 400Mhz RISC-V processor, 768KB internal RAM
- USB JTAG for programming and debugging
- Ethernet PHY and connector with POE option
- Camera CSI interface
- Display DSI interface
- microSD card
- Boot and Reset buttons
- SPI Flash 16MB
- UEXT connector
- All GPIOs available on two 0.1" 2.54 mm 20 pin DIL headers
- four mounting holes 3.3mm diameter
- Dimension 72x30 mm

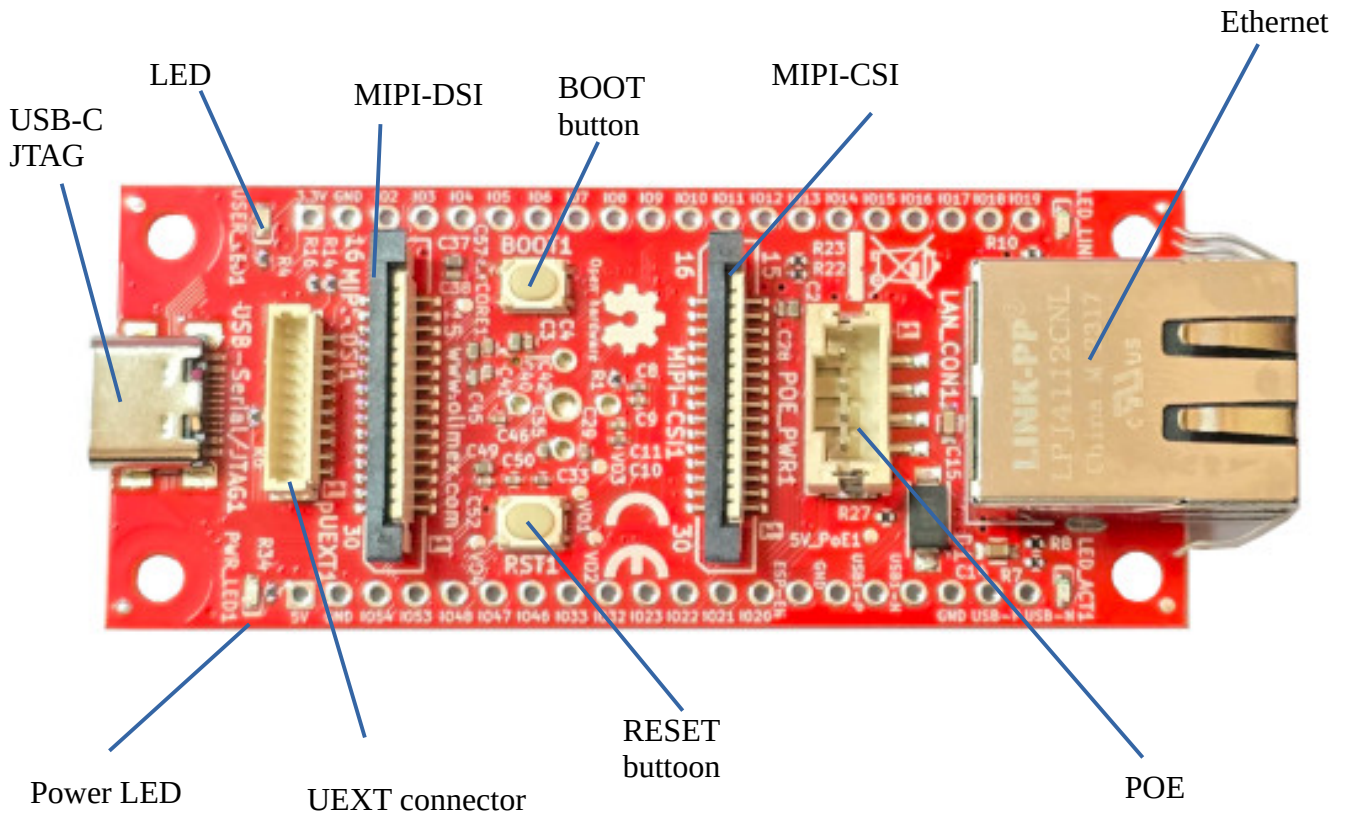
ESP32-P4-DevK is an Open Source Hardware, all CAD files and firmware are available for download even without a purchase, so people are free to use, study, and modify the design.

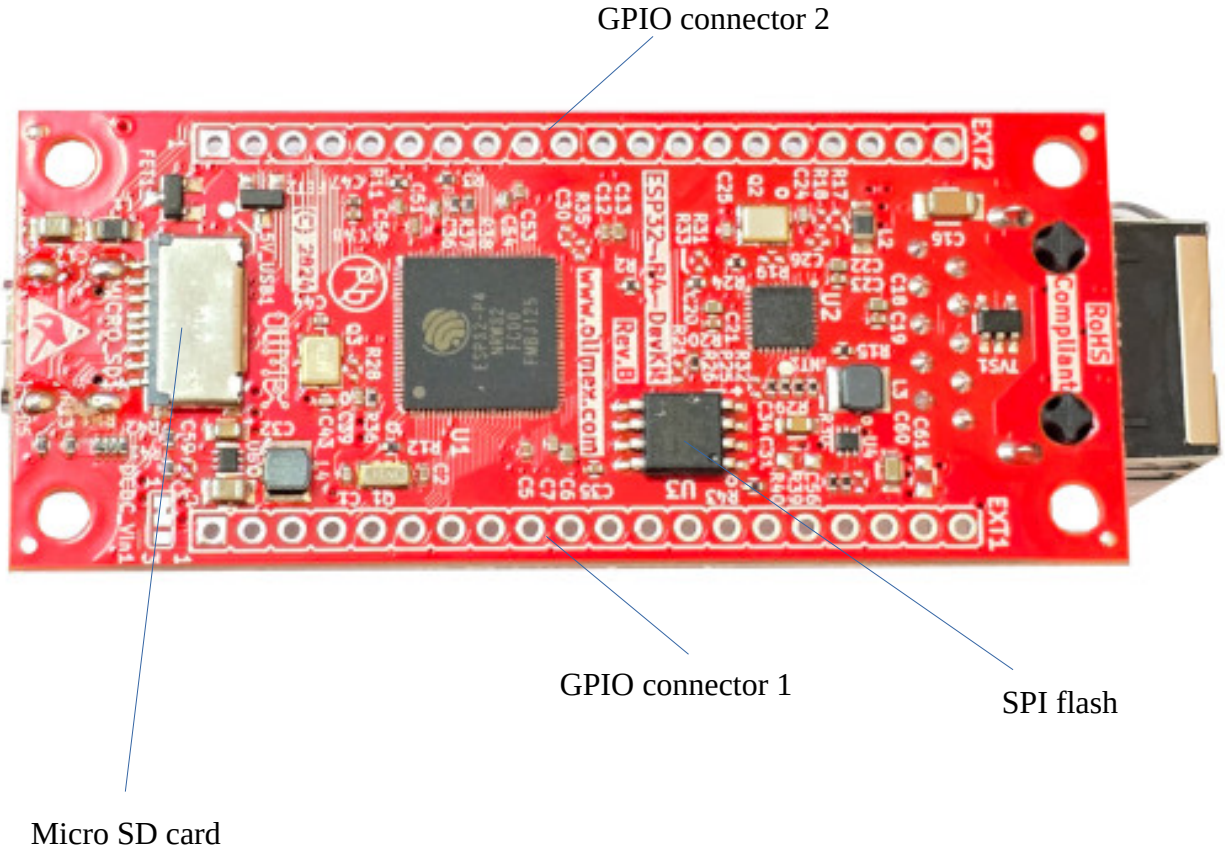
Order codes for ESP32-P4-DevKit and accessories:

<u>ESP32-P4-DevKit</u>	ESP32-P4 development board with Ethernet
<u>UEXT-PQ</u>	pUEXT to UEXT adapter
<u>pUEXT-CABLE</u>	1mm step pUEXT cable with 50, 100 and 200mm length
<u>POEv3</u>	PoE add-on board allowing board to be powered by Ethernet POE
<u>UEXT modules</u>	Many UEXT modules which can connect to Neo6502 UEXT connector
<u>USB-CABLE-AM-USB3-C</u>	High speed, high current cable for power supply and programming

HARDWARE

ESP32-P4-DevKit layout:





GPIO connector 2

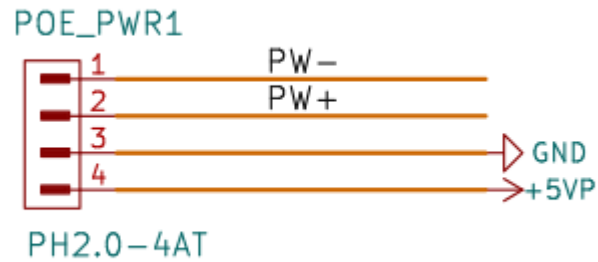
GPIO connector 1

SPI flash

Micro SD card

ESP32-P4-DevKit POE connector:

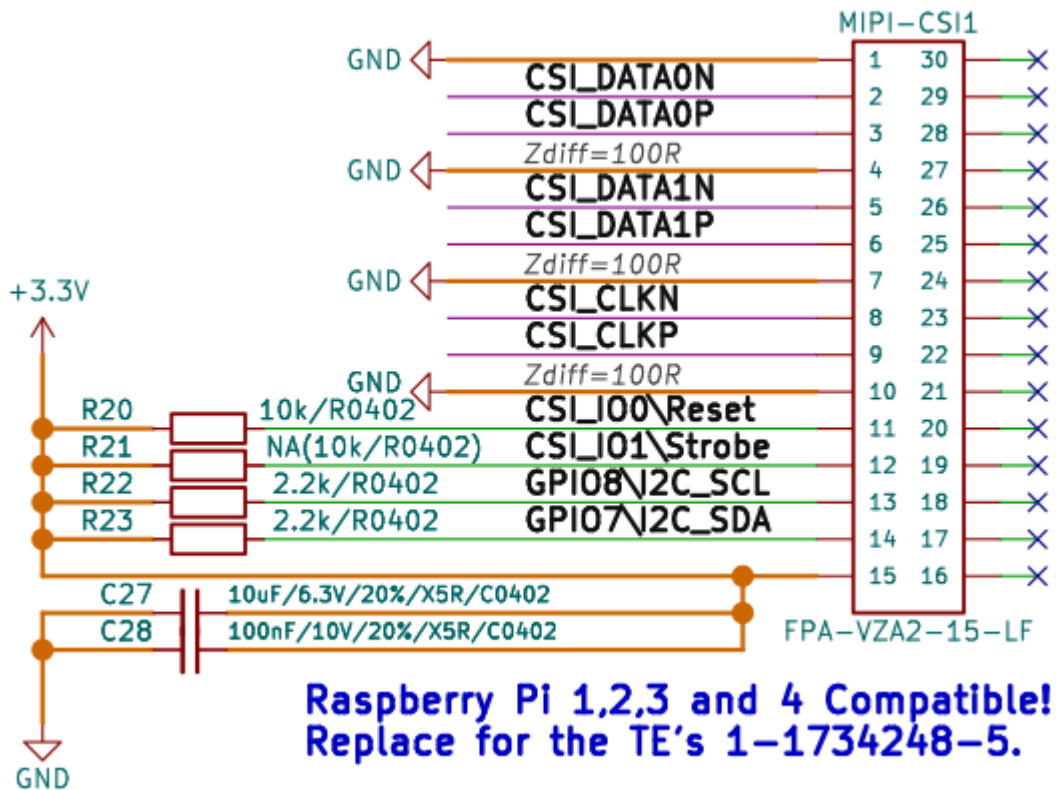
PW+ and PW- come from the LAN transformer. POE v3 external board have POE negotiator and DCDC step down circuit which produce 5V/3A which is feed back to the ESP32-P4-DevKit.



If you don't use POE powering, nor POE v3, then header POE_PWR1 can also be used as power input, where pin #4 (+5VP) and pin GND can be used to power the board!

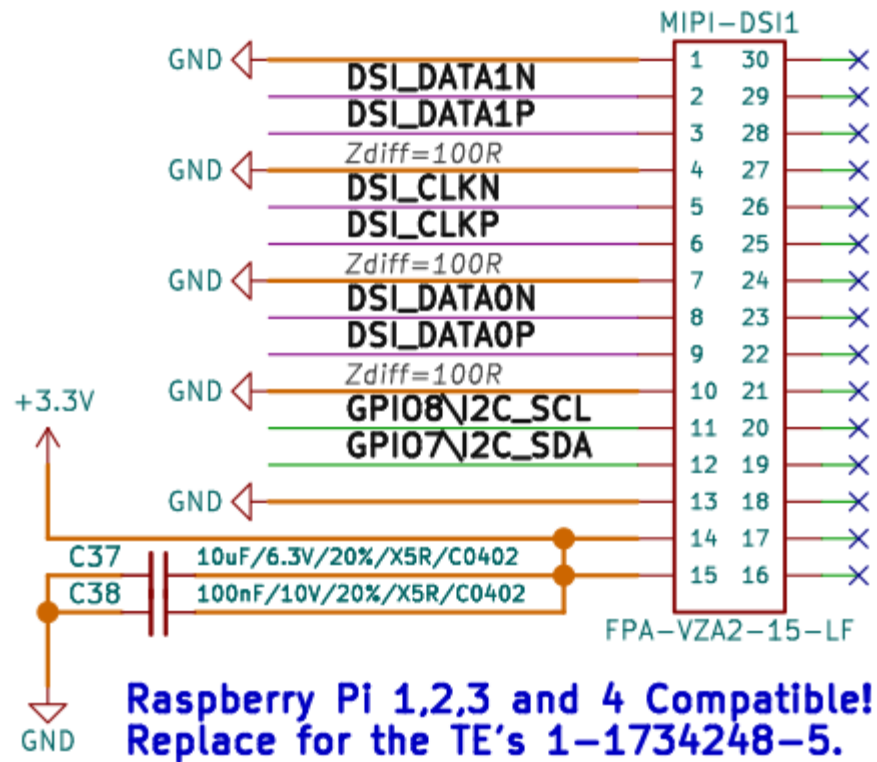
ESP32-P4-DevKit CSI connector:

MIPI-CSI connector follows the standard Raspberry Pi 1, 2, 3, and 4 camera FPC layout. So you can connect standard RPi camera to it.



ESP32-P4-DevKit MIPI connector:

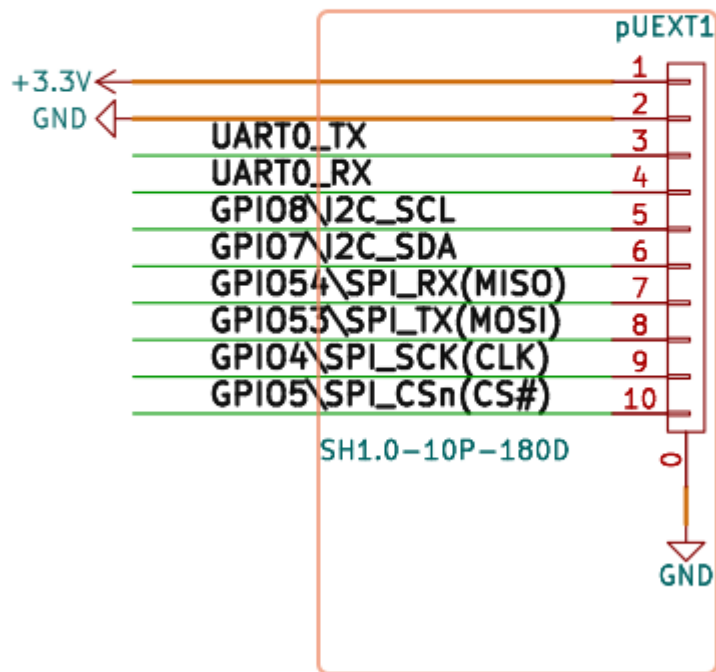
MIPI-DSI is Raspberry Pi DSI connector layout:



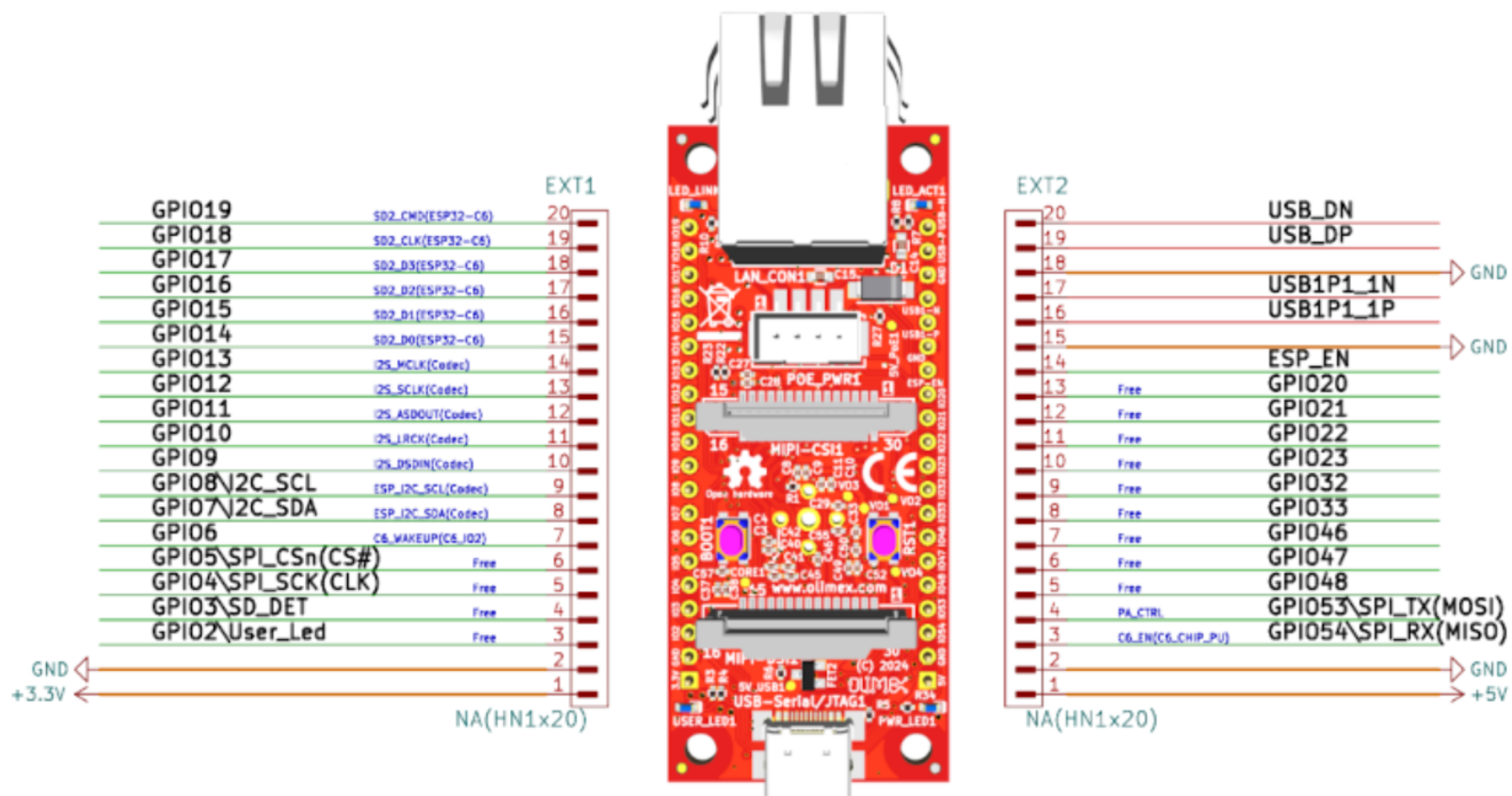
ESP32-P4-DevKit UEXT connector:

ESP32-P4-DevKit is very compact board so standard UEXT connector was impossible to be used, this is why we used pUEXT connector. pUEXT is 1.0 mm step connector but you can use [UEXT-PQ](#) adapter for bigger 2.54mm step. All signals are at 3.3V levels.

UEXT



ESP32-P4-DevKit EXT1 and EXT2 connectors:



ESP32-P4-DevKit schematics:

ESP32-P4-DevKit latest design file are available at [GitHub](#)

It is open source hardware design made with KiCAD.

SOFTWARE:

ESP32-P4-DevKit can be programmed with ESP-IDF version 5.4 or later.

You can learn how to install it here:

<https://docs.espressif.com/projects/esp-idf/en/stable/esp32p4/get-started/index.html>

ESP32-P4 is also supported in the official Espressif Arduino IDE package here:

<https://github.com/espressif/arduino-esp32>

Revision History

Revision 2.0 October 2025

- removed 2.54mm UEXT connector since it was incorrect.

Revision 1.0 December 2024