ESPP4-A Module & ESP32-P4 DevKit

English technical summary | Reviewed 3 November 2026

Store-prepared reference based on supplier technical materials. This is not a manufacturer-issued datasheet, certification or bench-test report. Confirm the delivered PCB revision and selected option before wiring.

Module architecture

ESPP4-A integrates an ESP32-P4 application processor and a wireless companion connected internally by SDIO. Wi-Fi/BLE are provided by the companion, not by a radio inside the ESP32-P4 chip. The supplier software provides ESP-IDF Wi-Fi and NimBLE interfaces.

Module-only memory choices

Model	Flash	PSRAM
ESPP4-A-N8R16	8 MB	16 MB
ESPP4-A-N16R16	16 MB	16 MB
ESPP4-A-N8R32	8 MB	32 MB
ESPP4-A-N16R32	16 MB	32 MB

The memory choices above are module-only product options. Reference images show one example marking. DevKit programming settings must match the actual fitted module.

Reference hardware

Item	Supplier reference
Module package	72 pads; 25 x 25 x 3 mm reference dimensions
Module supply	Regulated 3.3 V; do not apply USB 5 V to VDD pads
Wireless modes	2.4 / 5 GHz Wi-Fi; STA or SoftAP; NimBLE BLE
DevKit programming	UART-DEBUG Type-C, CH340X, UART0 GPIO37/38
Separate USB interface	USB-OTG Type-C
Matching display	4.96-inch class, 480 x 854, ST7102, 2-lane MIPI-DSI
Display / camera kit	Development board, touch display and camera

Bring-up & Integration Reference

DevKit v1.1 signal assignments

GPIO / signal	Reference function
24 / 46	Display backlight enable / display reset
47 / 48 / 49 / 50	Touch reset / I2C SCL / I2C SDA / interrupt
35 / EN	BOOT / reset
37 / 38	UART0 TX / RX through CH340X
39-42 / 43 / 44 / 45	TF D0-D3 / clock / command / card detect
4	TF-card power switch, active low

First programming test

Start with ESP-IDF 5.5.3 and the complete matching project package. Connect UART-DEBUG with a USB data cable, identify the serial port, and build components/p4_wireless/examples/wifi_cmd for target esp32p4. The supplied examples default to 16 MB Flash: an 8 MB module needs matching Flash settings and a verified partition layout. Keep the supplied PSRAM and wireless-component settings.

After flashing, use the wifi> console to scan and connect to your router. Check for got ip: before testing traffic. For the matching display, use examples/lcd_lvgl with its board-manager files and LVGL 9 dependency set. Power off before connecting ribbons.

Reserved signals and software limits

GPIO14-19 are occupied by internal wireless SDIO; GPIO54 is wireless reset. Do not reuse them. The radio uses SDMMC Slot 1; the reference TF card uses Slot 0. GPIO34-38 include boot-strapping functions. Module pad numbers are not GPIO numbers. Use the manufacturer schematic and full pin table for carrier design.

p4_wireless is a proprietary, hardware-bound prebuilt component. Use it only under the included license for matching ESPP4-A hardware. Do not bypass authorization or overwrite the module authorization eFuse BLOCK_KEY5. The package preserves LICENSE and NOTICE, including third-party restrictions.

Documents and verification

Companion files: DevKit v1.1 manufacturer schematic PDF; local software/hardware ZIP; the ESP32S Wiki guide. Prepared from supplier revision 1e981d9f159a1afb30bd5e41b0137344ce3916a6. No physical hardware test or local ESP-IDF compilation is claimed.