# Radxa Cubie A7S Product Brief

Pocket-sized Power for AI

Revision 1.3

2026-05-27

Radxa Computer

# Contents

# 1 Revision Control Table

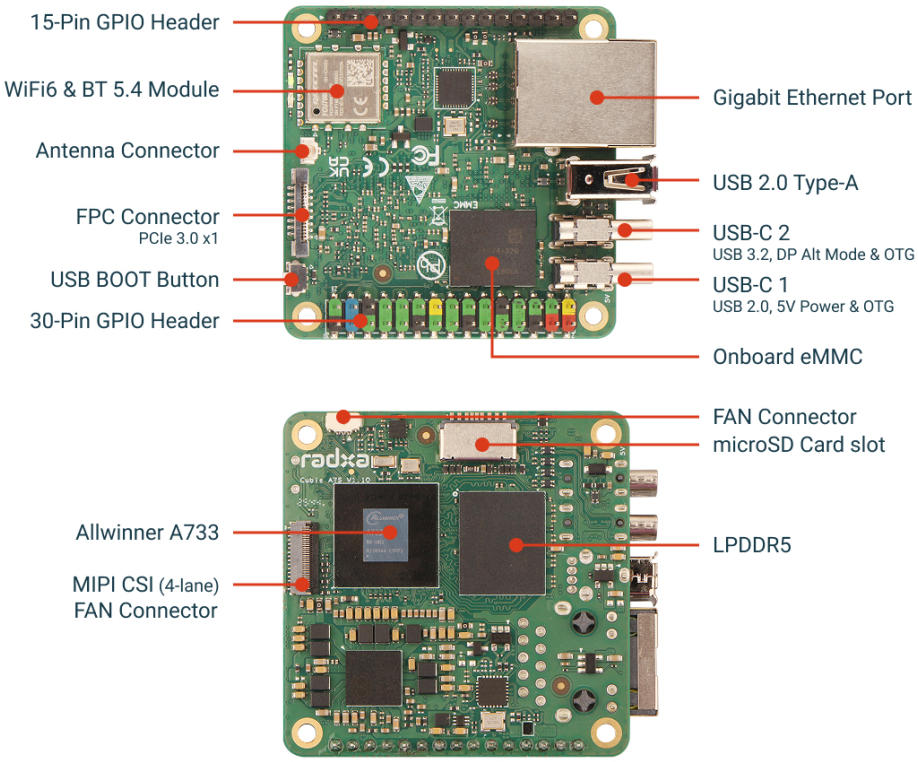
| Version | Date | Changes from previous version |
|---|---|---|
| 1.0 | 2025-12-29 | First version |
| 1.1 | 2026-02-04 | Updated hardware interface picture |
| 1.2 | 2026-02-04 | Updated hardware interface picture and USB-C port description |
| 1.3 | 2026-05-27 | Removed Android support from software list |

# 2 Introduction

Radxa Cubie A7S is a compact single-board computer based on the Allwinner A733 SoC, combining an integrated GPU and up to 3 TOPS NPU for AI and multimedia applications.

It supports up to 16GB LPDDR5 and optional onboard eMMC storage, with Gigabit Ethernet and Wi-Fi 6 / Bluetooth 5.4 connectivity.

For I/O and expansion, Cubie A7S provides USB, MIPI CSI, PCIe (via FPC), a fan header, and GPIO headers, with software support for Debian Linux.



# 3 Key Features

## 3.1 Hardware

- **Processor:** Allwinner A733 (Dual-core Cortex-A76 up to 2.0GHz + Hexa-core Cortex-A55 up to 1.8GHz)
- **GPU:** Imagination BXM-4-64 MC1 (supports OpenGL ES 3.2, OpenCL 3.0, Vulkan 1.3)
- **NPU:** Up to 3 TOPS AI acceleration
- **Memory:** Up to 16GB LPDDR5
- **Storage:** Optional onboard eMMC, up to 256GB
- **Wireless:** Wi-Fi 6 & Bluetooth 5.4 with external antenna
- **Display:** 4K output via USB Type-C with DisplayPort Alt Mode
- **Video Decode:** H.265 / VP9 / AVS2 (up to 8Kp24)
- **Video Encode:** H.264 / H.265 (up to 4Kp30)

## 3.2 Interfaces

- 1× microSD Card Slot
- 1× Gigabit Ethernet
- 1× Antenna connector for external antenna
- 1× MIPI CSI (4-lane) for camera
- 1× USB Type-C (USB 3.2, DisplayPort Alt Mode & OTG)
- 1× USB Type-C (USB 2.0, 5V Power & OTG)
- 1× USB Type-A (USB 2.0, Host)
- 1× FPC Connector (PCIe 3.0 x1)
- 1× FAN Connector
- 1× USB BOOT Button
- 1× 15-Pin GPIO Header
- 1× 30-Pin GPIO Header

## 3.3 Software

- **Debian Linux®** support
- Hardware access/control library for Linux

# 4 Electrical Specifications

## 4.1 Power Requirements

Radxa Cubie A7S supports DC +5V input:

- 5V / 1A power adapter via USB Type-C power port
- 5V power supplied through GPIO pins 2 & 4

## 4.2 GPIO Voltage

| GPIO | Voltage Level | Tolerance |
|---|---|---|
| All GPIO | 3.3V | 3.63V |

# 5 Peripherals

## 5.1 GPIO Interface

Radxa Cubie A7S provides 30-pin and 15-pin GPIO headers for expansion, compatible with a wide range of accessories.

### 5.1.1 GPIO Alternate Functions

> **Note:** Certain pin functions (SPI, I2C, UART, PWM, etc.) might be mutually exclusive depending on software Device Tree configurations. Users should verify the required pin multiplexer settings.

### 5.1.2 30-Pin Header Functions

| Pin# | FUNC1 | FUNC2 | FUNC3 | FUNC4 | FUNC5 | FUNC6 | FUNC7 |
|---|---|---|---|---|---|---|---|
| 1 | 3.3V | | | | | | |
| 3 | PJ23 | PWM1-5 | UART3-RX | UART2-CTS | TWI7-SDA | TWI3-SDA | TWI11-SDA |
| 5 | PJ22 | PWM1-4 | UART3-TX | UART2-RTS | TWI7-SCK | TWI3-SCK | TWI11-SCK |
| 7 | PB0 | UART2-TX | UART0-TX | DSI-TRIG-LCD-TE1 | LCD0-D0 | JTAG-MS | PB-EINT0 |
| 9 | GND | | | | | | |
| 11 | PB1 | UART2-RX | UART0-RX | LCD0-D1 | JTAG-CK | PB-EINT1 | |
| 13 | PL6 | S-JTAG-DO | S-UART0-TX | S-IR-RX | S-PWM0-4 | PL-EINT6 | |
| 15 | PL7 | S-JTAG-DI | S-UART0-RX | S-PWM0-5 | PL-EINT7 | | |
| 17 | 3.3V | | | | | | |
| 19 | PD12 | PD-EINT12 | PWM1-2 | SPI1-MOSI <DBI-SDO> | EINK-D12 | DSI1-D1P | LVDS1-D1P |
| 21 | PD13 | PD-EINT13 | PWM1-3 | SPI1-MISO <DBI-SDI/DBI-TE/DBI-DCX> | EINK-D13 | DSI1-D1N | LVDS1-D1N |
| 23 | PD11 | PD-EINT11 | PWM1-1 | SPI1-CLK <DBI-SCLK> | EINK-D11 | DSI1-D0N | LVDS1-D0N |
| 25 | GND | | | | | | |
| 27 | PD17 | PD-EINT17 | UART3-RX | TWI2-SDA | EINK-LEH | DSI1-D2N | LVDS1-CKN |
| 29 | PB2 | PB-EINT2 | TWI0-SCK | JTAG-DO | LCD0-D8 | HDMI-SCL | UART2-RTS |

| Pin# | FUNC1 | FUNC2 | FUNC3 | FUNC4 | FUNC5 | FUNC6 | FUNC7 | FUNC8 |
|---|---|---|---|---|---|---|---|---|
| 2 | +5.0V | | | | | | | |
| 4 | +5.0V | | | | | | | |
| 6 | GND | | | | | | | |
| 8 | PB9 | UART0-TX | PWM1-1 | WATCHDOG-SIG | LCD0-D16 | TWI8-SCK | TWI0-SCK | PB-EINT9 |
| 10 | PB10 | UART0-RX | PWM1-2 | PLL-LOCK-DBG | LCD0-D17 | TWI8-SDA | TWI0-SDA | PB-EINT10 |
| 12 | PB5 | PWM0-1 | LCD0-D17 | TRACE-DATA0 | PB-EINT5 | | | |
| 14 | GND | | | | | | | |
| 16 | PJ24 | PWM1-6 | UART4-TX | TWI4-SCK | PJ-EINT24 | | | |
| 18 | PJ25 | PWM1-7 | UART4-RX | TWI4-SDA | PJ-EINT25 | | | |
| 20 | GND | | | | | | | |
| 22 | PL5 | S-JTAG-CK | S-PWM0-3 | PL-EINT5 | | | | |
| 24 | PD10 | LCD0-D14 | LVDS1-D0P | DSI1-D0P | EINK-D10 | SPI1-CS0<DBI-CSX> | PWM1-0 | PD-EINT10 |
| 26 | PD14 | LCD0-D20 | EINK-D14 | SPI1-HOLD<DBI-DCX/DBI-WRX> | UART3-RTS | PD-EINT14 | | |
| 28 | PD16 | LCD0-D22 | LVDS1-CKP | DSI1-D2P | EINK-OEH | TWI2-SCK | UART3-TX | PD-EINT16 |
| 30 | GND | | | | | | | |

## 5.2 15-Pin GPIO Functions

| #PIN | Function1 | Function2 | Function3 | Function4 | Function5 | Function6 |
|---|---|---|---|---|---|---|
| 1 | PB3 | HDMI-SDA | LCD0-D9 | PB-EINT3 | | |
| 2 | PM3 | S-UART0-RX | S-UART1-RX | S-PWM0-5 | PM-EINT3 | |
| 3 | PM4 | S-UART0-TX | S-UART1-TX | S-PWM0-0 | S-IR-RX | PM-EINT4 |
| 4 | GND | | | | | |
| 5 | PB6 | CLK-FANOUT1 | PWM0-2 | PWM0-8 | TRACE-DATA1 | PB-EINT6 |
| 6 | PB4 | PWM0-0 | HDMI-CEC | LCD0-D16 | TRACE-CLK | PB-EINT4 |
| 7 | PB8 | CLK-FANOUT3 | PWM1-0 | OWA0-OUT | TRACE-DATA3 | PB-EINT8 |
| 8 | PB7 | CLK-FANOUT2 | PWM0-9 | OWA0-IN | TRACE-DATA2 | PB-EINT7 |
| 9 | GND | | | | | |
| 10 | PG0 | SDC1-CLK | LCD0-D0 | PWM1-1 | LPC-LAD0 | PG-EINT0 |
| 11 | PG1 | SDC1-CMD | LCD0-D1 | PWM1-2 | LPC-LPME | PG-EINT1 |
| 12 | PG2 | SDC1-D0 | LCD0-D8 | PWM1-3 | LPC-LPCPD | PG-EINT2 |
| 13 | PG3 | SDC1-D1 | LCD0-D9 | PWM1-4 | LPC-LFRAME | PG-EINT3 |
| 14 | PG4 | SDC1-D2 | LCD0-D16 | PWM1-5 | LPC-LSMI | PG-EINT4 |
| 15 | PG5 | SDC1-D3 | LCD0-D17 | PWM1-6 | LPC-LCLK | PG-EINT5 |

## 5.3 USB

The Cubie A7S features the following USB ports:

- **1× USB Type-C** (USB 3.2, DisplayPort Alt Mode & OTG)
- **1× USB Type-C** (USB 2.0, 5V Power & OTG)
- **1× USB Type-A** (USB 2.0, Host)

## 5.4 Display

The Cubie A7S supports **4K display output via USB Type-C** with **DisplayPort Alt Mode**.

## 5.5 Camera

The Cubie A7S includes one four-lane MIPI CSI camera connector, designed for Radxa camera accessories and compatible with many industrial cameras using Radxa adapter FPC cables.

## 5.6 FPC Connector

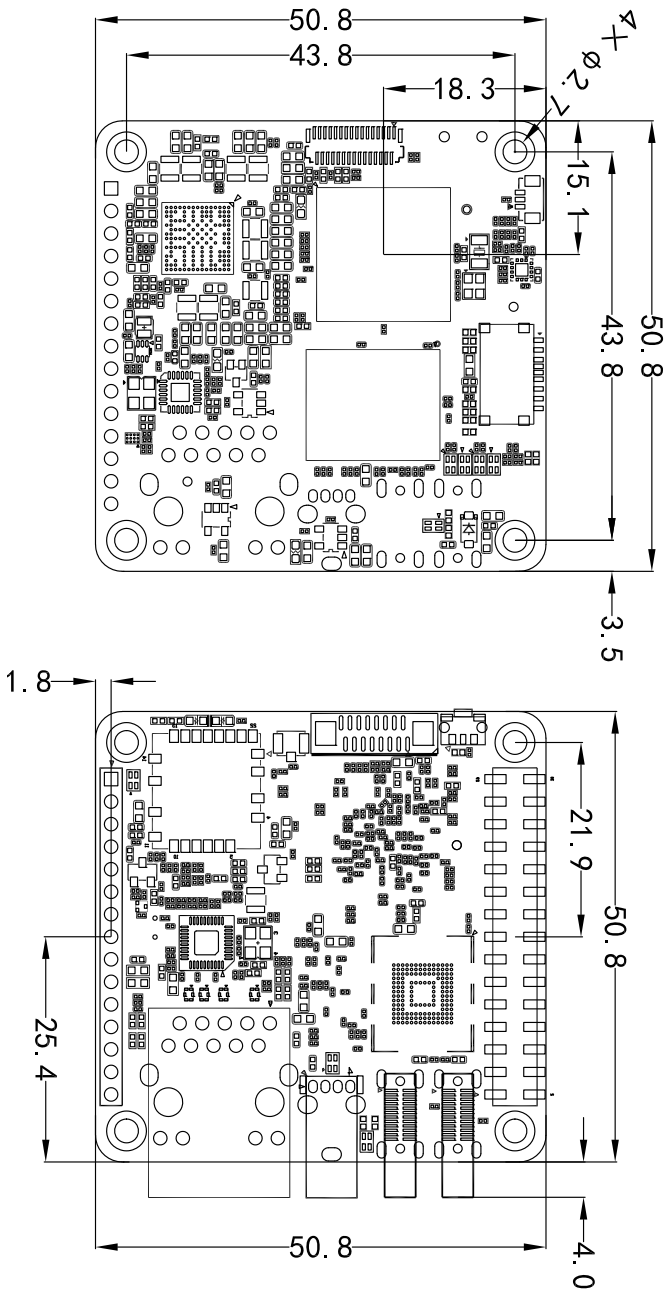
The Cubie A7S offers a FPC connector providing PCIe 3.0 one-lane signal, supporting expansion of NVMe SSD and other PCIe devices. This requires an additional expansion board / HAT.

## 5.7 FAN Connector

The Cubie A7S includes a FAN connector for cooling solutions, supporting 3-pin fans for thermal management under heavy workloads or high-temperature environments.

# 6 Mechanical Specification

- Unit: millimeters (mm)



# 7 Models and SKUs

Refer to the Radxa online store and distributor listings for the latest models and SKUs.

# 8 Availability

Radxa guarantees availability of the Radxa Cubie A7S until at least December 2030.

# 9 Support

For support, please refer to the hardware documentation section of the Radxa Documentation Center and post questions to the Radxa Forum.

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