Radxa Dragon Q8B Product Brief

Flagship Edge AI SBC for Intelligent Connectivity

1.3

2026-10-08

Radxa Computer

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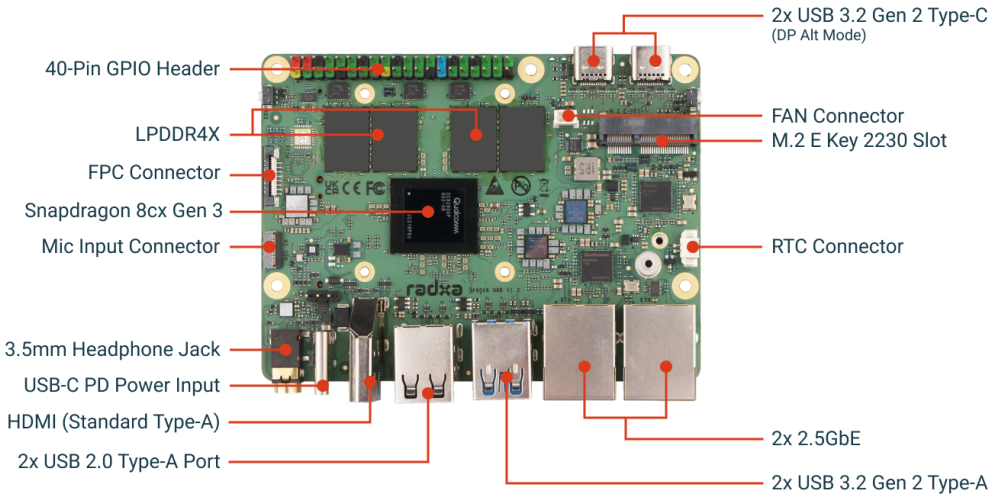
1 Revision Control Table

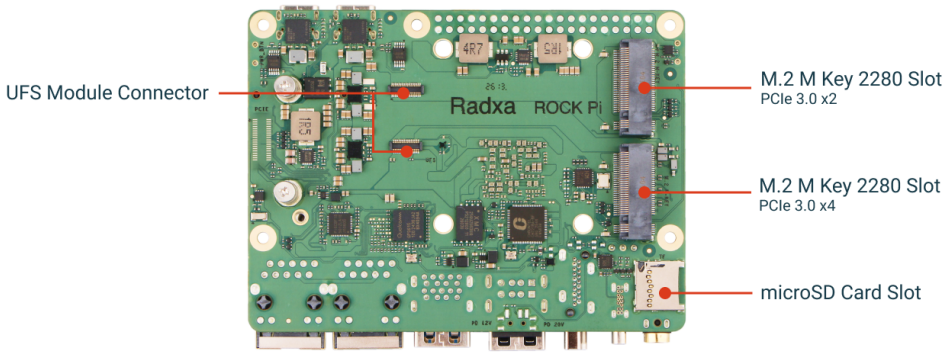
Version	Date	Changes from previous version
1.0	2026-06-01	First release
1.1	2026-06-15	Updated CPU specifications
1.2	2026-06-17	Updated memory specifications
1.3	2026-10-08	Added DirectML support to GPU specifications

2 Introduction

Radxa Dragon Q8B is a high-performance Motherboard based on the Qualcomm® Snapdragon® 8cx Gen 3 compute platform. Built on 5nm process technology with an 8-core CPU and Qualcomm AI Engine (29+ TOPS), Radxa Dragon Q8B delivers flagship-class computing power with exceptional energy efficiency.

Radxa Dragon Q8B supports dual 2.5GbE ports, triple 4K display output, ultra-fast storage expansion, and rich peripheral interfaces — designed for edge AI and smart terminals.





> **Note**: The actual board layout or component locations may change over time, but the main connector types and locations will remain the same. Always refer to the latest documentation before designing accessories or enclosures.

3 Hardware

- **SoC:** Qualcomm Snapdragon 8cx Gen 3 Compute Platform
- **CPU:** 8-core, 64-bit architecture
  - 4x Kryo Prime @3.0GHz
  - 4x Kryo Gold @2.4GHz
- **GPU:** Qualcomm® Adreno™ 690 GPU
  - Supports DirectX 12
  - Supports DirectML
- **NPU:** Qualcomm Hexagon
- **AI Engine**
  - Qualcomm AI Engine, up to 29+ TOPS
- **DSP / Sensing**
  - Qualcomm Hexagon Processor
  - Qualcomm Sensing Hub
- **Process Technology:** 5 nm
- **Memory:** LPDDR4x
  - Capacity: Up to 32GB
  - Memory bus width: 128-bit (8 channels, 16-bit per channel)
- Onboard SPI Flash for bootloader
- **Video Engine:** Adreno VPU (5th-generation UHD video processing unit)
  - Video decode: up to 4K120
  - Video encode: up to 4K60
  - Native decode formats: H.265 Main 10 / H.265 Main / H.264 High / VP9 Profile 2
  - Native encode formats: H.265 Main 10 / H.265 Main / H.264 High

4 Interfaces

4.1 Storage

Versatile storage expansion with UFS, microSD and PCIe SSD support.

- 1x microSD card slot
- 1x UFS module connector (UFS 3.1 Gear 4 x2)
- 1x M.2 M Key 2280 slot (PCIe 3.0 x4)
- 1x M.2 M Key 2280 slot (PCIe 3.0 x2)

4.2 Display

Powered by Qualcomm® Adreno 1199 DPU with multi-channel 4K120 output.

- 1x HDMI, up to 4K120
- 2x USB-C, support DP Alt Mode with MST, up to 4K120

4.3 Networking

Dual 2.5GbE ports for high-speed wired connectivity plus WiFi/Bluetooth expansion.

- 2x 2.5GbE RJ45 ports with AVB/TSN Support
  - Powered by QPS615 Ethernet-AVB/TSN bridge IC over PCIe Gen3
- 1x M.2 E Key slot for WiFi / Bluetooth module expansion
  - Supports the latest Wi-Fi 7 wireless module

Note: Wi-Fi 7 is supported only on V1.3 or later.

4.4 USB

Rich USB connectivity with USB 3.2 Gen 2 for high-speed peripherals.

- 2x USB 3.2 Gen 2 Type-C ports with DisplayPort Alt Mode
- 2x USB 3.2 Gen 2 Type-A ports
- 2x USB 2.0 Type-A ports
- 1x USB Type-C port for power input

4.5 Audio

Integrated audio codec with headphone output and microphone input.

- 1x 3.5 mm headphone jack
- 1x microphone input connector

4.6 Other

Debug, RTC, cooling and GPIO expansion interfaces for system integration.

- 1x EDL button
- 1x Power button
- 1x Power Header (VIN / GND / PWR), power input 12-20V, PWR supports external power button
- 1x RTC connector
- 1x FAN connector
- 1x FPC connector (PCIe 3.0 x1)
- 1x 40-Pin GPIO header
  - Supports UART / I2C / SPI / GPIO

4.7 GPIO

The Dragon Q8B offers a 40-Pin GPIO expansion header, similar to many popular Motherboards, ensuring compatibility with a wide range of accessories.

Pin#	FUNC1	FUNC2	FUNC3	FUNC4	FUNC5
1	3V3				
3	GPIO-41	I2C9-SDA	UART9-CTS	SPI9-MISO	
5	GPIO-42	I2C9-SCL	UART9-RFR	SPI9-MOSI	
7	GPIO-175	SPI4-CS-3			
9	GND				
11	GPIO-173	UART4-TX	SPI4-SCKL		
13	GPIO-66	I2C18-SDA	UART18-CTS	SPI18-MISO	HS-UART18-CTS
15	GPIO-67	I2C18-SCL	UART18-RFR	SPI18-MOSI	HS-UART18-RFR
17	3.3V				
19	GPIO-88	I2C20-SCL	UART20-RFR	SPI20-MOSI	
21	GPIO-87	I2C20-SDA	UART20-CTS	SPI20-MISO	
23	GPIO-89	UART20-TX	SPI20-SCKL		
25	GND				
27	GPIO-43	I2C8-SDA	UART9-TX	SPI9-SCKL	
29	GPIO-157	UART6-RX	SPI6-CS-0		
31	GPIO-155	I2C6-SCL	UART6-RFR	SPI6-MOSI	I3C6-SCL
33	GPIO-154	I2C6-SDA	UART6-CTS	SPI6-MISO	I3C6-SDA
35	GPIO-111	I2C5-SDA	SPI4-CS-1		
37	GPIO-69	UART18-RX	SPI18-CS-0	HS-UART18-RX	
39	GND				

Pin#	FUNC1	FUNC2	FUNC3	FUNC4	FUNC5
2	5V				
4	5V				
6	GND				
8	GPIO-63	UART17-TX			
10	GPIO-64	UART17-RX			
12	GPIO-172	I2C4-SCL	UART4-RFR	SPI4-MOSI	
14	GND				
16	GPIO-68	UART18-TX	SPI18-SCKL	HS-UART18-TX	
18	GPIO-100				
20	GND				
22	GPIO-92	SPI20-CS-2			
24	GPIO-90	UART20-RX	SPI20-CS-0		
26	GPIO-91	SPI20-CS-1			
28	GPIO-44	I2C8-SCL	UART9-RX	SPI9-CS-0	
30	GND				
32	GPIO-156	UART6-TX	SPI6-SCKL		
34	GND				
36	GPIO-174	UART4-RX	SPI4-CS-0		
38	GPIO-112	I2C5-SCL	SPI4-CS-2		
40	GPIO-171	I2C4-SDA	UART4-CTS	SPI4-MISO	

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

5 Software

- Supports Radxa OS / Windows / Ubuntu / Armbian / Arch Linux / Nix OS
- Supports standard UEFI boot with built-in default Device Tree and direct boot from unified ARM ISO images
- Includes hardware access libraries for Linux platforms

6 Electrical Specification

6.1 Power Requirements

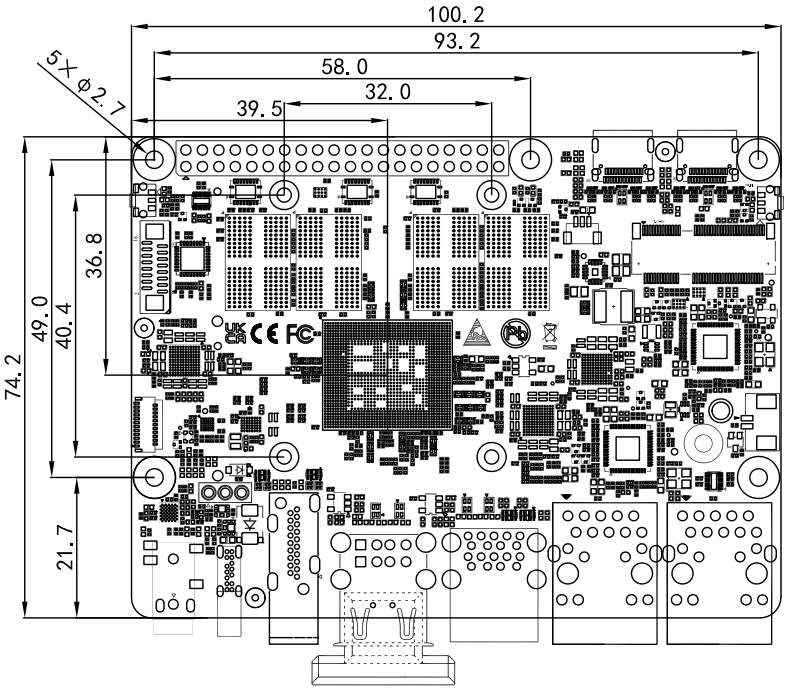
- 1x USB Type-C power input
  - Supports USB Power Delivery (PD) protocol, maximum input voltage 20V
  - Recommended: 60W (20V/3A) USB-C PD adapter for full performance and peripherals
- 1x Power Header (VIN / GND / PWR)
  - Power input, supports 12-20V
  - PWR pin supports external power button

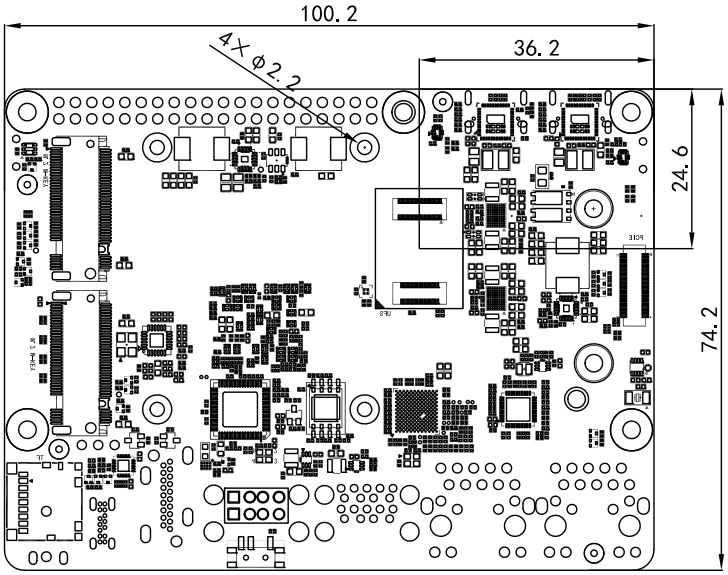
> **Note** Use a good quality adapter and cables to avoid voltage drop on long runs. For heavy I/O and active cooling, choose the higher supply capacity.

6.2 GPIO Voltage

GPIO	Voltage Level
All GPIO	3.3V

7 Mechanical Specification





8 Availability

Radxa guarantees availability of the **Radxa Dragon Q8B** until at least **June 2029**. However, certain component shortages or EOL announcements from third-party suppliers may affect lead times. Please check with Radxa for the latest updates.

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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