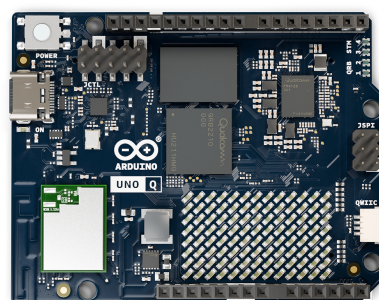




Description

Arduino® UNO Q (hereafter UNO Q) is a single-board computer that combines the Qualcomm® Dragonwing™ QRB2210 Microprocessor (MPU), a quad-core Arm® Cortex®-A53 running Debian Linux OS, with the STMicroelectronics STM32U585 Microcontroller (MCU), an Arm® Cortex®-M33 running Arduino Core on Zephyr OS. The Linux system and the microcontroller communicate through Bridge, Arduino's RPC (Remote Procedure Call) library. This allows Arduino sketches on the microcontroller to access Linux services for high-level tasks, while Linux applications can interact with microcontroller peripherals to handle real-time operations within the same project.

UNO Q comes with embedded eMMC storage (options 16 GB, 32 GB) and LPDDR4X SDRAM (options 2 GB, 4 GB) to run Linux and your projects smoothly. It features dual-band Wi-Fi® 5 and Bluetooth® 5.1 for wireless connectivity, a USB-C® connector with power delivery input and video output, and Arduino-compatible headers for easy expansion with shields, carriers, and accessories.

UNO Q integrates seamlessly with Arduino App Lab, enabling developers to combine Arduino sketches, Linux applications, and AI models in one environment. App Lab can run directly on the board or from a connected PC, offering ready-to-use examples, and the flexibility to create custom apps tailored to your projects.



Target Areas

Edge AI & ML, Robotics, Machine Vision, Smart Devices, Gaming, Home and Building Automation, Prototyping, Education



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1 Application Examples

UNO Q combines an AI-capable Linux processor with a real-time microcontroller, delivering the best of high-level computing and deterministic control. Alongside this dual architecture, it supports a broad ecosystem of Arduino shields, carriers, Modulino® nodes, and third-party accessories, making it a flexible platform for diverse applications.

- **Smart Consumer Devices:** DIY smart cameras, interactive displays, or AR projects powered by dual cameras and GPU acceleration.
- **Gaming:** Retro console emulation, custom arcade cabinets, or enhanced gameplay with gesture-based controls, face tracking, and real-time feedback.
- **Home & Building Automation:** Smart doorbells with facial recognition, voice-controlled systems, and personalized climate hubs.
- **Robotics:** Autonomous delivery robots, gesture-following companions, and robotic arms with visual feedback, combining Linux vision with MCU-driven motor control.
- **Prototyping:** Rapid proof-of-concepts such as vision-based inspection tools, smart kiosks, or compact edge computers with built-in connectivity.
- **Education:** Teaching Linux, real-time programming, AI, and computer vision through project-based learning, from science experiments to interactive educational robots.

2 Features

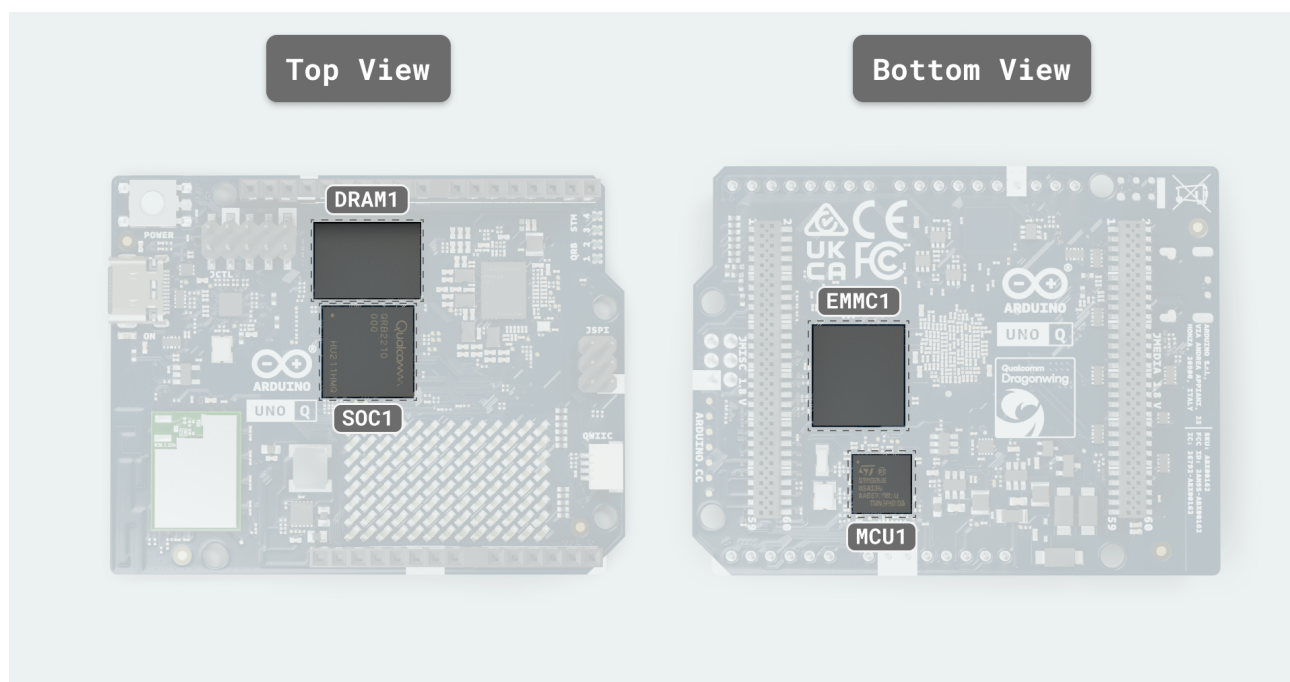
2.1 UNO Q Variants

UNO Q is available in two variants:

- **ABX00162:** 2 GB RAM, 16 GB on-board storage
- **ABX00173:** 4 GB RAM, 32 GB on-board storage

2.2 General Specifications Overview

2.2.1 Processing & Memory

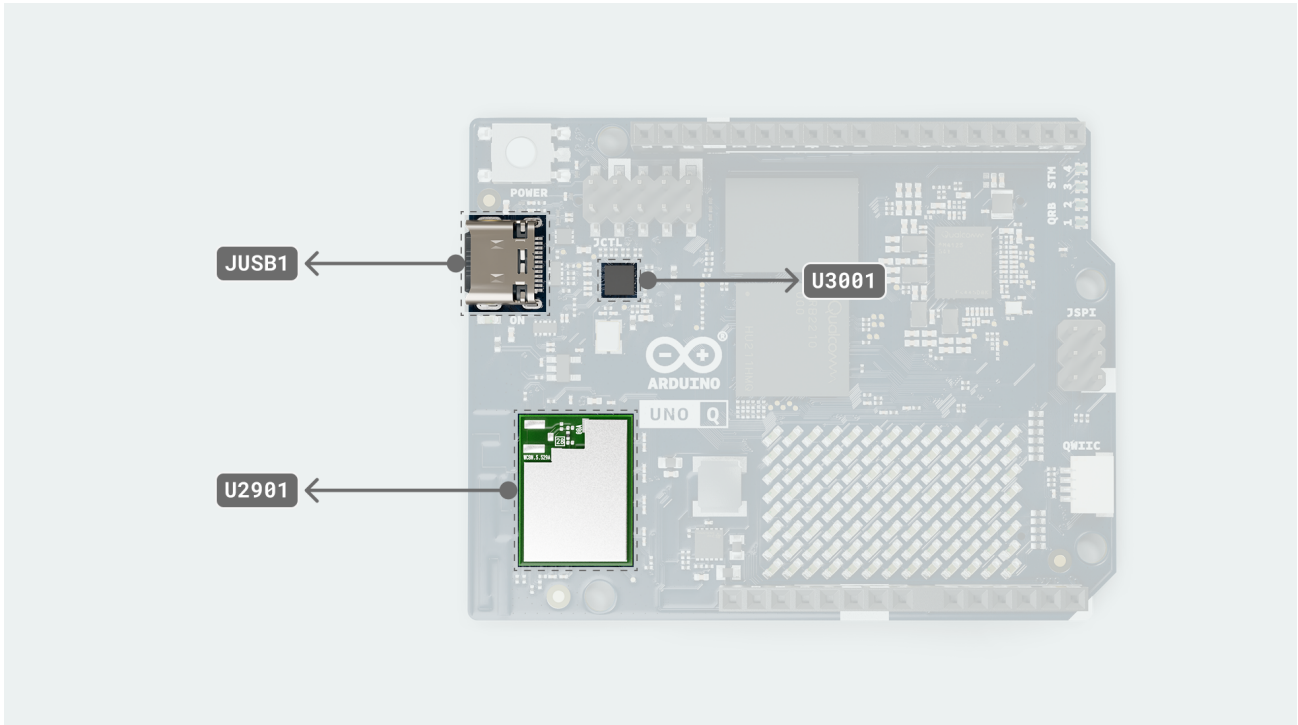


Subsystem	Details
Main MPU	- Qualcomm Dragonwing™ QRB2210 - System-on-Chip (SoC) (MPU) (SOC1): 4 × Arm Cortex-A53 @ 2.0 GHz, 64-bit - Adreno 702 GPU @ 845 MHz (3D graphics) - Dual ISPs: 13 MP + 13 MP or 25 MP @ 30 fps - Debian OS (upstream support) - I/O: USB 3.1 with Role-Switching Capabilities over USB Connector, SDIO 3.0, 4-lane MIPI-CSI-2 & 4-lane MIPI-DSI
Real-time MCU	- ST STM32U585 (MCU) (MCU1), Arm Cortex-M33 up to 160 MHz - Arduino Core on Zephyr OS - 2 MB Flash, 786 kB SRAM
System Memory	- eMMC 16 or 32 GB options (EMMC1) for OS/data - LPDDR4X 2GB or 4 GB options (single-rank, 32-bit) (DRAM1)

The Qualcomm Dragonwing™ QRB2210 I/O operates at 1.8 V. The MPU drives the MIPI-CSI-2 camera and MIPI-DSI display interfaces on JMEDIA, and the 1.8 V MPU (SoC) GPIO and audio endpoints exposed on JMISC. JMISC is a mixed-voltage header that also carries 3.3 V MCU signals and analog audio alongside the 1.8 V MPU lines. DisplayPort

video is provided by the on-board ANX7625, which converts the MPU's MIPI-DSI to DisplayPort Alt-Mode on USB-C. The STM32U585 manages ADC, PWM, CAN, the LED matrix, and the 3.3 V headers (JDIGITAL, JANALOG, JSPI, and Qwiic).

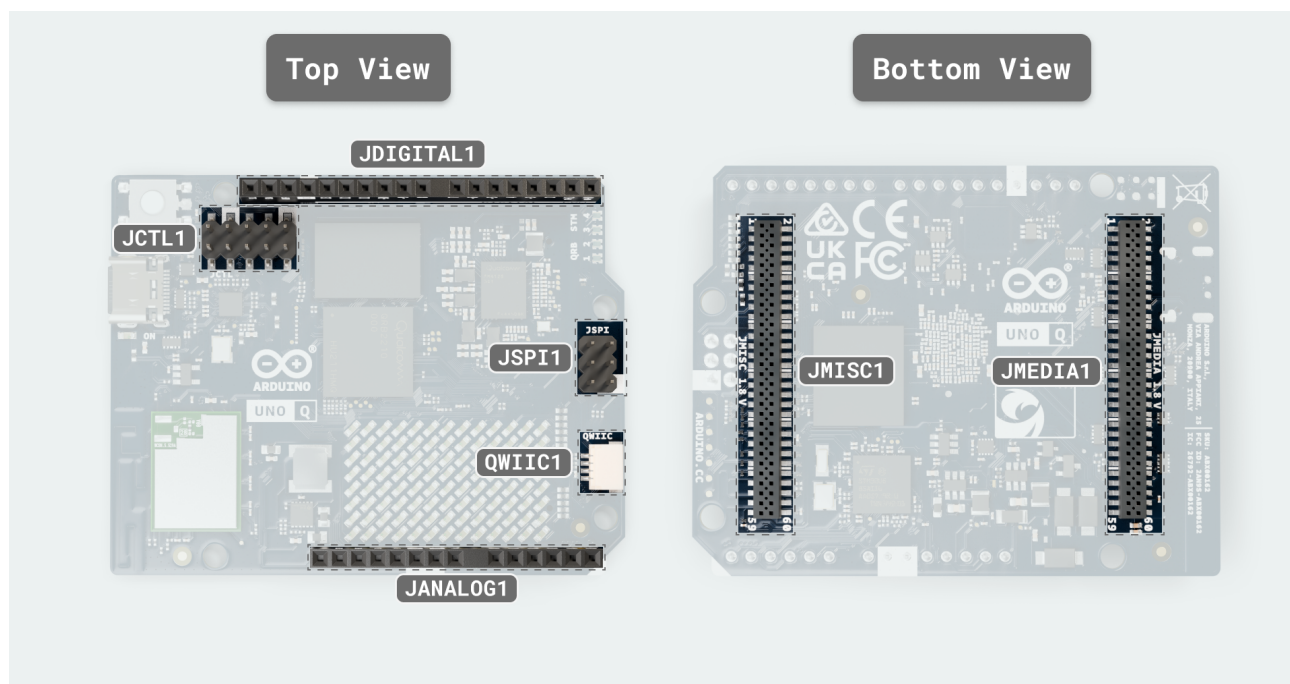
2.2.2 Connectivity & Media



Subsystem	Details
Wireless Module	- WCBN3536A (Qualcomm WCN3980) (U2901) - Wi-Fi® 5 802.11a/b/g/n/ac (dual-band) + Bluetooth® 5.1
USB-C Port (JUSB1)	- USB 3.1 with Role-Switching Capabilities - DisplayPort Alt-Mode via the ANX7625 DSI-to-DP bridge (U3001) (SuperSpeed differential pairs on the Type-C are routed for DP Alt Mode) - USB Power Delivery negotiation requests a 5 V / 3 A contract only (no higher-voltage profiles) - VBUS load-switch/back-drive protection (Q2801)

The wireless module uses SDIO for Wi-Fi® data and a UART for Bluetooth® control, with a shared PCB antenna.

2.2.3 Expansion & Headers



Interface (Connector)	Voltage & Pin Count	Details
JMEDIA (JMEDIA1)	1.8 V signals, 60-pin	- High-speed camera/display lanes (MIPI DSI, CSI) - Camera control bus (CCI I²C) - dedicated, not general-purpose GPIO - Camera clocks (SOC_CAM_MCLK0/1) - Also carries power rails (+3V3 OUT, VIN IN) and GND
JMISC (JMISC1)	Mixed 1.8 V / 3.3 V, 60-pin	- Mixed GPIO and SDIO - MCU peripherals: SDMMC1, TRACE, PSSI (parallel camera), I²C4, MCO/CRS_SYNC, OPAMP1 pins - Audio endpoints: Mic2 INP/INM/BIAS, Headphone L/R + REF, LineOut P/M, Earpiece P/R, HS_DET - MPU (SoC) GPIO banks (SE0) at 1.8 V - Also carries power rails (+5V USB OUT, +3V3 OUT, +1V8 OUT, VBAT IN, VCOIN IN) and GND
JCTL (JCTL1)	1.8 V, 10-pin	- SE4 UART console - Forced USB boot input - PMIC reset input - VBUS power-switch disable - 1.8 V rail and GND
JDIGITAL (JDIGITAL1)	3.3 V, 18-pin	- Digital I/O for SPI, I²C, UART, PWM, CAN
JANALOG (JANALOG1)	3.3 V, 14-pin	- Analog I/O - ADC channels and references
JSPI (JSPI1)	3.3 V logic, 6-pin + 5 V VBUS	- Dedicated SPI: MOSI, MISO, SCLK - MCU reset (NRST) - Ground - 5 V VBUS (USB power)
Qwiic (QWIIC1)	3.3 V, 4-pin	- I²C (Qwiic ecosystem)



2.3 Related Products

- Arduino UNO shields via JDIGITAL and JANALOG
- UNO Q compatible carrier boards
- Full 24-pin USB-C cable
- USB-C multiport dongle