Qualcomm® Robotics RB6 Platform

Delivering power-efficient, advanced edge-AI computing and video processing performance with 5G connectivity for autonomous robotics.

The Qualcomm Robotics RB6 Platform powers the next-generation robotics and intelligent machines including autonomous mobile robots (AMRs), delivery robots, highly automated manufacturing robots, urban air mobility (UAM) aircrafts, autonomous defense solutions, and beyond.

The Qualcomm Robotics RB6 platform sits at the premium tier of Qualcomm Technologies' robotics solutions, delivering expanded capabilities that take enterprise and industrial robotics innovation to the next level with enhanced AI and 5G. The new solution delivers state-of-the-art 5G connectivity with support for global sub-6GHz and mmWave bands in mainstream, enterprise, and private networks.

Qualcomm Technologies robotics platforms have flexible architecture with expansion cards to support evolving connectivity features allowing Qualcomm Robotics RB6 platform to deliver support for 3GPP Release 15, and Releases 16, 17 and 18 features as cards become available in the future. The elevated platform brings advanced, premium, edge AI and video processing capabilities through the enhanced Qualcomm® AI Engine, with support for 70-200 Trillion Operations Per Second (TOPS).

Highlights

All-in-one hardware solution

Your camera, computer vision, AI and 5G hardware development needs are integrated into one platform.

Easy-to-use, comprehensive, customizable premium AI SDK

The Qualcomm® Intelligent Multimedia SDK (IM SDK) brings together multimedia, AI and ML, computer vision (CV), and networking building blocks to support end to end deployment of robotic applications.

Enhanced Qualcomm AI Engine and power-efficient on-device AI computing and video processing

The enhanced Qualcomm AI Engine provides 70-200 TOPS (INT8) of performance at very low power and delivers maximum performance per watt. Also our powerful image signal processor (ISP) provides support for up to seven concurrent cameras, or up to 24 simultaneous video streaming cameras.

Latest 5G connectivity

Qualcomm Robotics RB6 platform provides 5G connectivity with support for global sub-6GHz and mmWave bands in mainstream, enterprise, and private networks. The platform's flexible architecture with expansion cards supports evolving connectivity features allowing Qualcomm Robotics RB6 platform to deliver support for 3GPP Release 15, and Releases 16, 17 and 18 features as cards become available in the future.

Qualcomm Robotics RB6 Platform

- Automated manufacturing robots
- Collaborative robots
- Urban air mobility (UAM) transportation
- First mile, last mile delivery robots
- Industrial autonomous mobile robots (AMRs)

Qualcomm robotics RB6 platform

Features

- Qualcomm Spectra™ 480 Image Signal Processor designed to deliver a premium camera experience that can process 2 Gigapixels per second with high-performance capture of 200-megapixel photos, 8K video recording and 4K HDR video capture.
- Qualcomm® Adreno™ 650 Visual Processing Subsystem deliver's quality graphics for larger than-life immersive experiences using the Adreno graphics processing unit (GPU) and video processing unit (VPU).
- Enhanced Qualcomm AI Engine with Qualcomm® Hexagon™ DSP for on-device AI processing at the edge and delivers premium computer vision (CV) experiences for high-performance use cases.
- Qualcomm® Kryo™ 585 CPU: Manufactured in 7nm process node, optimized across four high-performance Kryo Gold cores and four low power Kryo Silver cores.
- Qualcomm® Secure Processing Unit (SPU) offers vault-like security that is designed to help safeguard your facial data, iris scan and other biometric data. It supports hardware root of trust, Qualcomm® Trusted Execution Environment (TEE), Secure boot and camera security.

Software

- **Software support for :** Ubuntu 18.04, LInux distribution based off Yocto Dunfell, Kernel 4.19, ROS 2
- **Qualcomm® Intelligent Multimedia SDK (IM SDK):** Designed to bring together multimedia, AI and ML, computer vision (CV), and networking building blocks to support end to end deployment of robotic applications.
- **Qualcomm® Robot Vision SDK:** Offers multiple vision-based technologies: Visual Simultaneously Location and Mapping (VSLAM), Depth Visual Simultaneously Location and Mapping (DVSLAM), Voxel Mapping (VM) and Depth From Stereo (DFS).
- **Additional core SDKs** – Qualcomm® Computer Vision SDK and Hexagon DSP SDK

To learn more visit:

www.qualcomm.com/robotics

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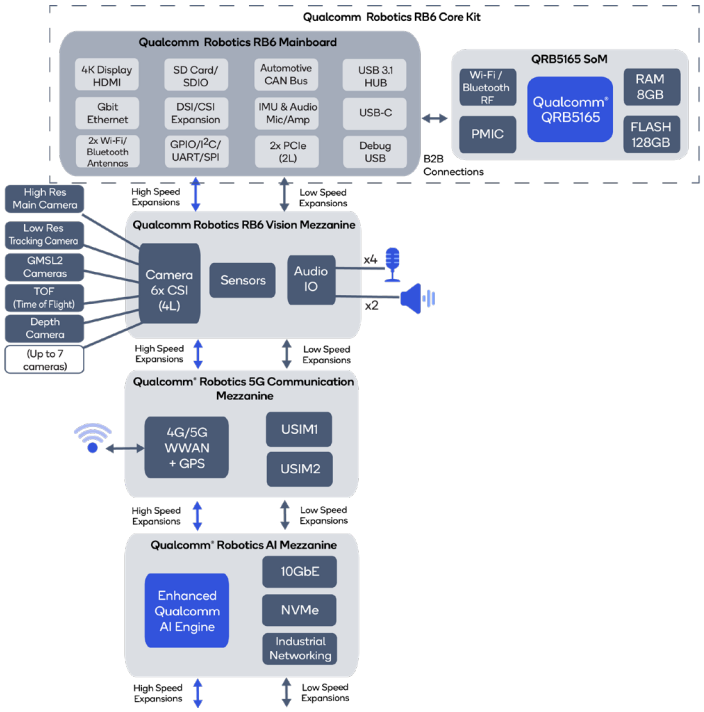
Platform Block Diagram



Platform Specifications

	Qualcomm Robotics RB6 Platform
CPU	Kryo 585 CPU, up to 2.84 GHz
ISP	Qualcomm Spectra 480 ISP with Dual 14-bit image signal processing
Camera	Up to 200 MP photo capture, Up to 25 MP dual camera @ 30 FPS with Zero Shutter Lag, Up to 64 MP single camera @ 30 FPS with Zero Shutter Lag. Support for 12 cameras by D-PHY and 18 cameras by C-PHY (7 concurrent)
Video	8K video capture @ 30 FPS, Up to 10-bit color depth video capture, 4K video capture + 64 MP Photo, 4K video capture @ 120 FPS, 4K HDR video capture
GPU	Adreno 650 GPU with support for Open GL ES and Open CL
DSP	Hexagon 698 DSP with Hexagon Vector eXtensions (HVX), Hexagon Tensor Accelerator & Hexagon Scalar Accelerator
Memory & Storage	LPDDR5 up to 2750 MHz, LPDDR4x up to 2133 MHz. Memory Density: up to 16 GB
Wireless	Advance connectivity using Qualcomm® FastConnect™ 6800 System with Wi-Fi 6, Wi-Fi 6-ready, 802.11ad, 802.11ay, 802.11ac Wave 2, 802.11a/b/g/n. Support for Dual-band simultaneous (DBS), WPA3-Enterprise, WPA3- Enhanced Open, WPA3 Easy Connect, WPA3-Personal, Bluetooth® 5.1
AI	70-100 TOPS (INT8); INT8, INT16, FP16, FP32
Security	Camera Security, Crypto Engine, Cryptographic Accelerator, Qualcomm TEE, Secure Boot. Qualcomm® Crypto Engine Core is FIPS 140-2 certified.

Qualcomm Spectra, Qualcomm Adreno, Qualcomm Kryo, Qualcomm Secure Processing Unit, Qualcomm TEE, Qualcomm Robot Vision SDK, Qualcomm Computer Vision SDK, Qualcomm Hexagon, Qualcomm FastConnect, Qualcomm QRB5165, Qualcomm Robotics 5G Communication Mezzanine, Qualcomm Robotics AI Mezzanine and Qualcomm Crypto Engine Core are products of Qualcomm Technologies, Inc. and/or its subsidiaries.

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