



Qualcomm® Robotics RB3 Platform Development Kit

A comprehensive and customizable development kit that helps to streamline the process of developing consumer and industrial robots.

The Qualcomm Robotics RB3 Platform Development Kit is designed to include the building blocks for creating consumer and industrial robots, making it simpler for robotic manufacturers to start developing straight out of the box and help reduce the development time, effort and costs associated with designing and customizing robotic devices

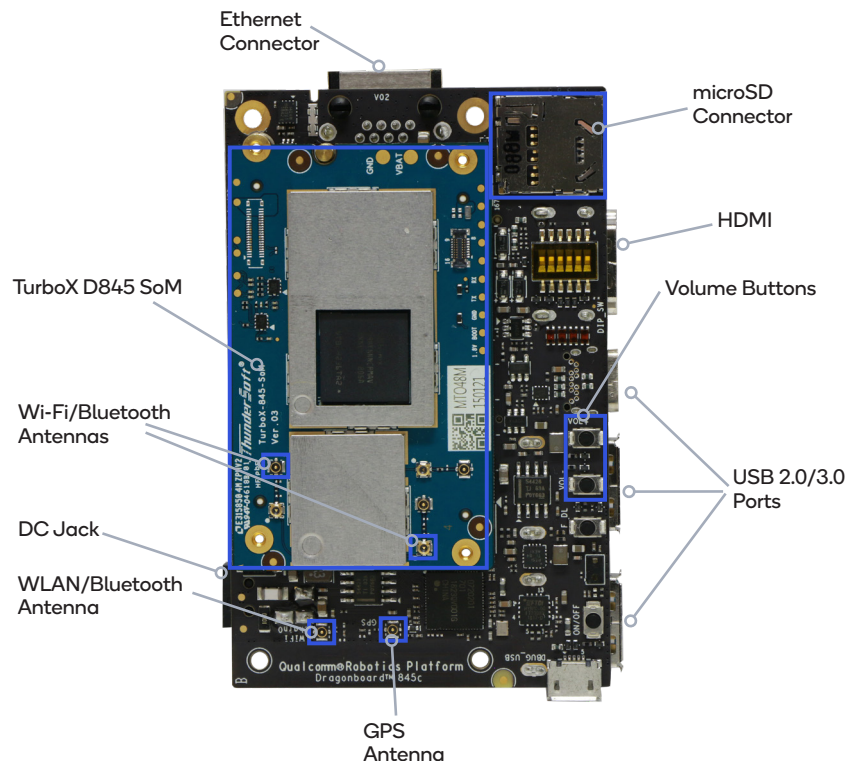
Based on the Qualcomm Robotics RB3 Platform, the development kit is designed to bring together a powerful combination of our processing, connectivity, multi-media, on-device machine learning, computer vision, and voice interface for a comprehensive set of hardware, software and tools.

The Qualcomm Robotics RB3 hardware development kit contains a robotics-focused DragonBoard™ 845c development board, based on the Qualcomm® SDA/SDM845 SoC and compliant with the 96Boards open hardware specification to support a broad range of mezzanine-board expansions. The platform supports Linux and includes support for FastCV, Qualcomm® Neural Processing software development kit (SDK) for advanced on-device AI, Qualcomm® Hexagon™ DSP SDK and Robot Operating System (ROS). Additional extensions are available that bring support for our advanced audio codecs and speaker amplifiers, such as Qualcomm® DDFA™ amplifier chipsets with premium Class D digital amplifier technology.

Development Kit Contents

- DragonBoard 845c development board featuring SDA/SDM845 processor and compliant with the 96Boards open hardware specification
- Qualcomm® Robotics navigation mezzanine featuring time of flight, tracking camera, stereo camera, and tracking and main camera
- Power supply
- Multi-Mic support
- Sensor support such as IMU and proximity
- Set-up guide

DragonBoard 845c Development Board



Qualcomm Robotics RB3 Platform Applications

- Deep Learning
- Face Detection and Recognition
- Gesture and Hand Tracking
- Path Planning and 3D Map Formation
- Object Depth and Avoidance

Features

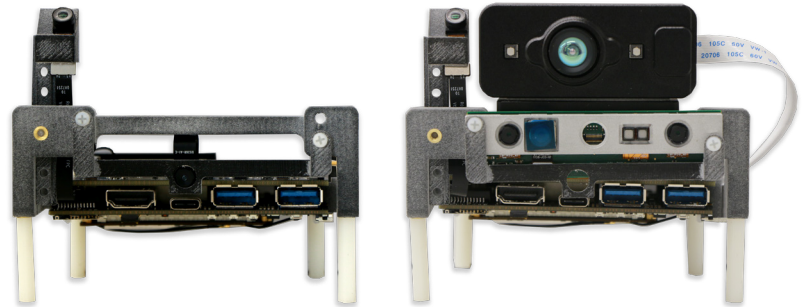
- High-Resolution Depth Sensing powered by Qualcomm Spectra™ 280 ISP for high-resolution and high accuracy depth sensing
- Tracking Camera with sensor module to do visual Simultaneous Localization and Mapping (vSLAM)
- Time-of-flight (ToF) camera for gestures & hand tracking use cases
- Advanced security with Qualcomm® Secure Processing Unit, hardware root of trust, trusted execution environment, secure boot and camera security
- Wi-Fi integrated 802.11ac 2x2 with MU-MIMO, Bluetooth 5.0 and support for cellular mezzanines for LTE and CBRS
- Accelerate on-device AI with advanced machine learning capabilities with the Qualcomm® Artificial Intelligence (AI) Engine
- Qualcomm® Snapdragon™ Sensor Core: Support for multiple sensors and 3rd party algorithms through Sensor Software Framework

Software

- **Software support for Linux and ROS**
- **Qualcomm Neural Processing SDK:** Optimizing deep learning processing performance across available resources to achieve superior edge computing experience.
- **Qualcomm® Computer Vision SDK:** Offers a mobile-optimized computer vision (CV) library which enables new user experiences like gesture recognition, face detection, tracking and recognition, augmented reality and more.
- **Hexagon DSP SDK:** Designed to optimize the features and performance of multimedia software. These optimizations help allow audio, imaging, embedded vision and heterogeneous computing acceleration on the Hexagon DSP to create compelling multimedia user experiences.

To learn more visit: www.qualcomm.com
or www.developer.qualcomm.com

Qualcomm Robotics RB3 Platform Development Kit



Basic Configuration

Full Configuration

DragonBoard 845c Specifications

CPU	SDA845: 8x Qualcomm® Kryo™ 385 CPU, up to 2.8 GHz
ISP	Qualcomm Spectra 280 Image Signal Processor with new architecture for 14-bit image signal processing
Camera	Single HFR 16 MPix camera @ 60fps ZSL, Dual 16 MPix cameras @ 30fps ZSL, Single 32 MPix camera at 30fps ZSL
Video	Ultra HD Premium video capture @ 4K (3840x2160) 60fps, 10-bit HDR, Rec 2020 color gamut; H.264 (AVC), H.265 (HEVC) and VP9 support; Slow motion HEVC video encoding of either HD (720p) video up to 480fps or FHD (1080p) up to 240fps
GPU	Qualcomm® Adreno™ 630 with support for Open GL ES 3.2/Open CL 2.0
DSP	Hexagon 685 DSP with 3rd Gen Vector Extensions
Memory & Storage	LPDDR4x, 4x16 bit; up to 1866MHz, 4GB RAM 64GB UFS 2.1 on-board storage, 1x MicroSD card slot
Wireless Connectivity	Wi-Fi integrated 802.11ac 2x2 with MU-MIMO; Tri-band Wi-Fi: 2.4/5GHz with Dual Band Simultaneous (DBS), Bluetooth 5.0
Audio	MP3; aacPlus, eAAC; WMA 9/Pro, Qualcomm TrueWireless™ Stereo
Location	GPS, Glonass, BeiDou, Galileo, QZSS, and SBAS
Ethernet	1x GbE Ethernet
USB	1x USB 2.0 Micro B (Debug only), 1x USB 3.0 Type C (OTG mode) 2x USB 3.0 Type A (Host mode only)
Display	Two 4-lane DSI, D-PHY 1.2 or C-PHY 1.0; VESA DSC 1.1 1x HDMI 1.4 (Type A - full) connector
Sensors	Accelerometer + Gyro Sensor/ Proximity sensor
Expansion Interfaces	2x 60 pin High-Speed connectors, 2x 40 pin Low-Speed connectors, 1x 20 pin Low-Speed connector
LED	7x LED indicators
Buttons	Power, Volume Up/Down, Force Usb Boot, DIP Switch
Power Source	12V@2.5A adapter with a DC plug
OS Support	LE
Size	85 mm x 54 mm

Qualcomm Computer Vision SDK, Qualcomm Spectra, Qualcomm Secure Processing Unit, Qualcomm AI Engine, Qualcomm Snapdragon, Qualcomm Kryo, Qualcomm Adreno and Qualcomm TrueWireless are products of Qualcomm Technologies, Inc. and/or its subsidiaries.