

VISION AI-KIT 6490

Qualcomm Dragonwing™ Q-6490 Development Kit



The Vision AI-KIT 6490 features an energy-efficient, multi-camera, SMARC 2.1.1 compute module, based on the Qualcomm QCS6490 SOC device.

High performance cores on the Vision AI-KIT 6490 (Qualcomm Dragonwing™ QCS6490 Development Kit) include an 8-core Kryo™ 670 CPU, Adreno 643 GPU, Hexagon DSP and 6th gen AI Engine (12 TOPS), Spectra 570L ISP (64MP/30fps capability) and Adreno 633 VPU (4K30/4K60 enc/dec rates), ensure that exceptional concurrent video I/O processing performance is delivered.

A useful subset of the SMARC interfaces are pinned-out on the carrier board, to support four cameras, two displays, five USB interfaces, CAN-FD, Gigabit Ethernet and optional high-speed Wi-Fi networking. The audio subsystem includes two PDM microphones, stereo audio Codec, digital audio interface and analog audio jack I/O.

Integrated TPM and Wi-Fi/BT modules are offered as assembly options of the QCS6490 SMARC compute module.

The carrier board has M.2 slots for NVME storage and advanced wireless options. Compact 100 mm x 79 mm carrier board dimensions and mounting hole alignment with similar AI developer boards, enable a drop-in capability with many enclosures.

Qualcomm Linux BSP (Yocto, 6.6 kernel), plus a range of AI/ML and multimedia open-source example applications are provided. Windows 11 IoT Enterprise and Android support will release in 1H25. (Ubuntu Linux for QCS6490 may at later date be supported.)

Kit includes

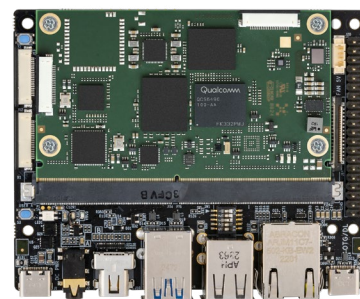
- AES-SM2S-QCS6490-DK-G (Vision-AI Carrier IO Board fitted with SM2S-QCS6490 SMARC compute module)
- 1x MIPI CSI IMX577 12MP camera
- USB-C PD power supply (9V)

Accessory options

- 801.11ax Wi-Fi 6E / Bluetooth 5.4 (M.2 Key-E wireless module)
- NVME SSD storage (M.2 Key M 2280 memory module)
- MIPI DSI 7-inch touchscreen LCD display
- MIPI CSI IMX577 12MP camera

Target apps

- Ruggedized Handheld Industrial Scanners and Tablets
- Drone/UAV/other mobile Vision-AI Edge Compute Applications
- Info kiosks, Vending Machines and Interactive HMI Systems
- Multi-camera Security Systems with Recognition
- Inventory and Asset Monitoring
- Smart City, Smart Camera Systems
- Food Services POS Equipment
- Service & Industrial Robots



Features

SMARC Compute Module (SM2S-QCS6490)

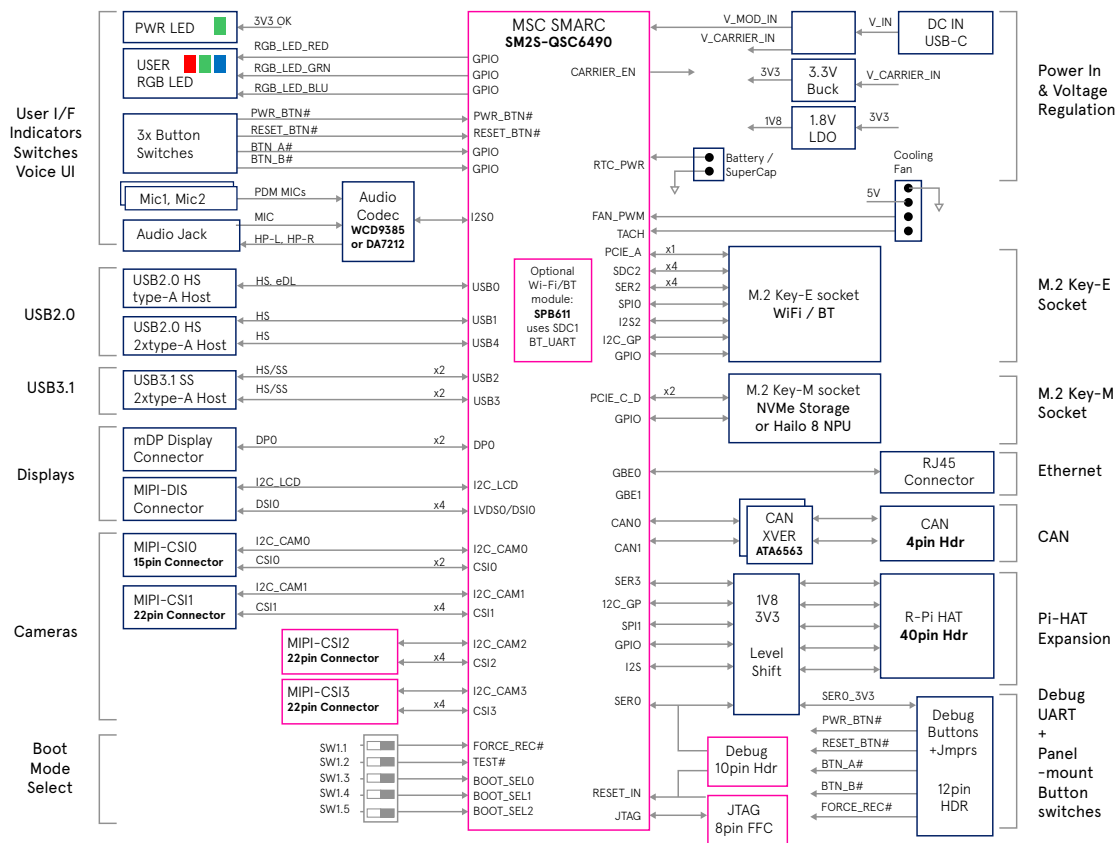
- 4x Arm Cortex-A78 (@ up to 2.7 GHz)
- 4x Arm Cortex-A55 (@ 1.9 GHz)
- GPU: Adreno 643 (@ 812 MHz)
- DSP/NPU: 6th gen Qualcomm AI Engine (12 TOPS)
- ISP: Spectra 570L (up to 5 concurrent cameras)
- VPU: Adreno 633, video enc/dec to 4k30 / 4K60
- 8GB LPDDR5 SDRAM, 64GB UFS Flash Memory
- 2x USB 3.1 (2L), 3x USB 2.0 interfaces
- 2x PCIe Gen3 (1L), 1x PCIe Gen3 (2L) interface
- 1x DisplayPort 1.4 (4K30)
- 1x MIPI-DSI (4L), 1x eDP (4L) display interfaces
- 2x MIPI-CSI (4L) camera 22-pin connectors
- 2x MIPI-CSI (4L, 2L) via SMARC edge connector
- 2x 1 Gigabit Ethernet interfaces
- Wi-Fi 6 / BT 5 (SMARC module assembly option)
- TPM module (SMARC module assembly option)
- UART, SPI, I2C, I2S, GPIO interfaces
- HW Key manager, ECC, Secure boot, Crypto

Vision-AI IO Board

[Supported subset of the SMARC interfaces]

- SMARC 2.1.1 edge connector (314 pin)
- M.2 key-M slot (NVME storage accessory option)
- M.2 key-E slot (Wi-Fi 6E/BT 5.4 accessory option)
- 1x 1 Gigabit Ethernet RJ45 connector
- 2x USB 3.1, 2x USB 2.0, 1x USB-C OTG
- 1x miniDP and 1x MIPI-DSI display connectors
- 1x 4L and 1x 2L MIPI-CSI 22pin connectors
- 2x PDM Mics, Audio Codec, Stereo HP jack
- 2x button switches and RGB User LED
- 40-Pin Pi-HAT header
- 4-pin CAN header, 10-pin Test IO header
- 2-pin RTC battery header
- DC Power supply: USB-C PD (9V / 3A)
- Operating Temperature: -40C~+85°C
- Dimensions: 100mm x 79mm

Block Diagram



Featured manufacturers



Parts

Part number	Description	For more information
MSC SM2-SK-QCS6490-EP6-KIT001 BRDFTX	Vision AI-KIT 6490 (Qualcomm Dragonwing™ Q-6490 Development Kit)	call for availability

Related parts

Part number	Description	For more information
TBD part#	MIPI-CSI Camera (12 MP IMX577 image sensor)	call for availability
M2-JODY-W377-00C	u-blox JODY-W377 Wi-Fi 6/BT5.3 M.2 module	call for availability

Regions available for purchase: Americas, EMEA, Japan

Global Headquarters

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Worldwide Distributor: **Avnet**

Online sales: **Farnell**