

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

High performance cores on the QCS6490 SOC include an 8-core Kryo™ 670 CPU, Adreno 643 GPU, Hexagon DSP and 6th gen AI Engine (13 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's 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.

Camera Inputs		Display Outputs		Audio Inputs & Outputs	
CSI-0	CSI-1..3	MiniDP	MIPI-DSI	Digital	Analog
2-lane	4-lane	Up to.. 4K 60fps	Up to.. 1200x2520 @60fps	SAI audio BT audio 2x PDM mics	DA7212 Codec Stereo HP jack + mic/line in

Integrated TPM and Wi-Fi/BT modules are offered as a SMARC assembly option. 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.

The development kit ships with a Yocto-based Linux BSP, plus example AI and multi-camera open-source applications. Additional OS options are also available, (Windows 11 IoT Enterprise in late 2H24). Support of Android and Ubuntu Linux also enabled by Qualcomm, but for this platform will depend on demand.

## QCS6490 Vision-AI Development Kit includes

- AES-SM2S-QCS6490-DK-G (Vision-AI Carrier IO Board fitted with SM2S-QCS6490 SMARC compute module)
- 1x MIPI CSI IMX477 12MP camera
- USB-C PD power supply (5.1V/5A)

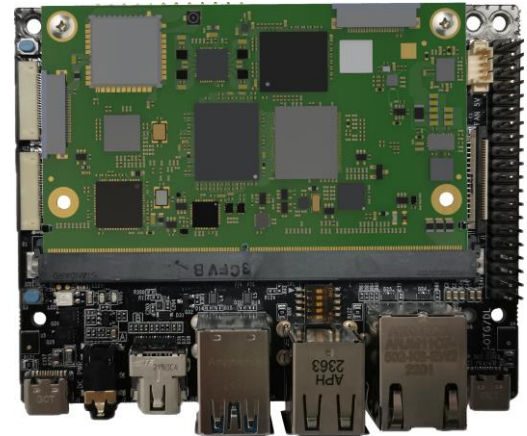
## Accessory options

- 801.11ax Wi-Fi 6E / Bluetooth 5.4 (M.2 Key-E, 2230 wireless module)
- NVME SSD storage (M.2 Key M, 2280 memory module)
- MIPI DSI 7-inch touchscreen LCD display
- Additional MIPI CSI IMX477 12MP cameras

## 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

For more information, visit: [avnet.me/qcs6490-vision-dk](https://avnet.me/qcs6490-vision-dk)  
 To purchase this kit, visit: [avnet.me/qcs6490-vision-dk-pdp](https://avnet.me/qcs6490-vision-dk-pdp)



## Features

### SM2S-QCS6490 SMARC Compute Module

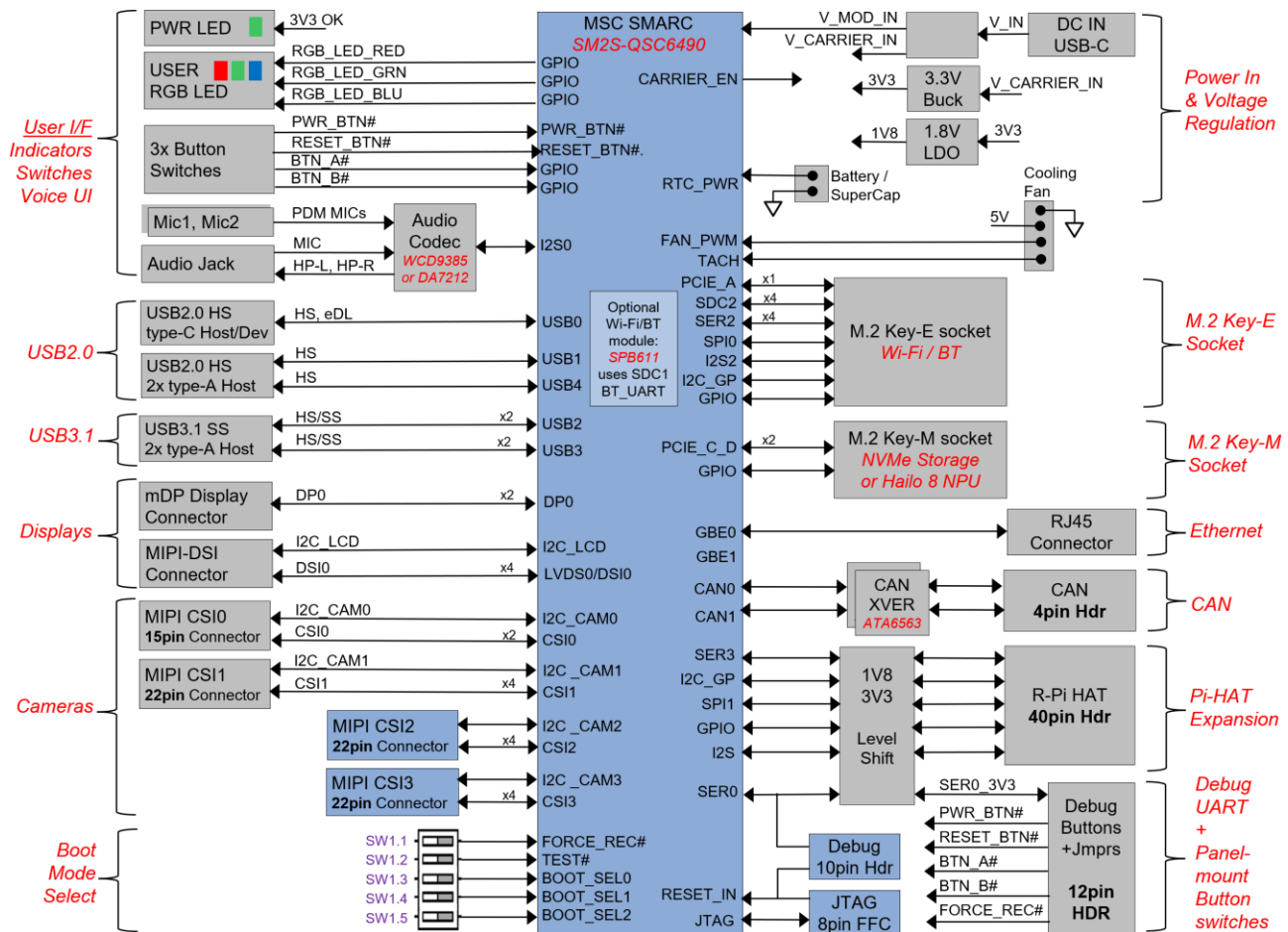
- 4x Arm Cortex-A78 (@ up to 2.7 GHz)
- 4x Arm Cortex-A55 (@ 1.9 GHz)
- GPU: Adreno 643 (@ 812 MHz)
- DSP/NPU: 6th gen Qualcomm AI Engine (13 TOPS)
- ISP: Spectra 570L (up to 5 concurrent cameras)
- VPU: Adreno 633, video enc/dec to 4k30 / 4K60
- 8GB LPDDR5 SDRAM, 64GB UFS Flash Memory
- 2x USB 3.1 (2L), 3x USB 2.0 interfaces
- 2x PCIe Gen3 (1L), 1x PCIe Gen3 (2L) interface
- 1x DisplayPort 1.4 (2L) interface
- 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 5 / 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 Gbps 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 (5.1V 3A .. 12V 2A)
  - Operating Temperature: -40C~+85°C
  - Dimensions: 100mm x 79mm

# QCS6490 VISION-AI

## Block Diagram



## Featured Manufacturers

Qualcomm

## Parts

Part number	Description	Price and availability
AES-SM2S-QSC6490-DK-G	QCS6490 Vision-AI Development Kit	avnet.me/qcs6490-vision-dk-pdp

## Related Parts

Part number	Description	Price and availability
AES-ACC-MAAX-PWRUL	UL Certified 5V/3A USB Type-C Power Supply	avnet.me/maax-pwrul-buy
AES-ACC-MAAX-DISP2	MIPI-DSI LCD Touch Display (720 x 1280)	avnet.me/maax-disp2-buy
TBD part#	MIPI-CSI Camera (12 MP IMX477 image sensor)	call for availability
453-00165	Laird Sona NX611 Wi-Fi 6E/BT5.4 M.2 module	call for availability

Countries available for purchase: Americas, EMEA

## Contact information

North America  
2211 S 47<sup>th</sup> Street  
Phoenix, Arizona 85034  
United States of America  
1-800-585-1602

Europe (Silica)  
Gruber Str. 60c  
85586 Poing  
Germany  
+49-8121-77702

Europe (EBV)  
Im Technologiepark 2-8  
85586 Poing  
Germany  
http://ebv.com/contact

Asia  
151 Lorong Chuan  
#06-03 New Tech Park  
Singapore 556741  
+65-6580-6000



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