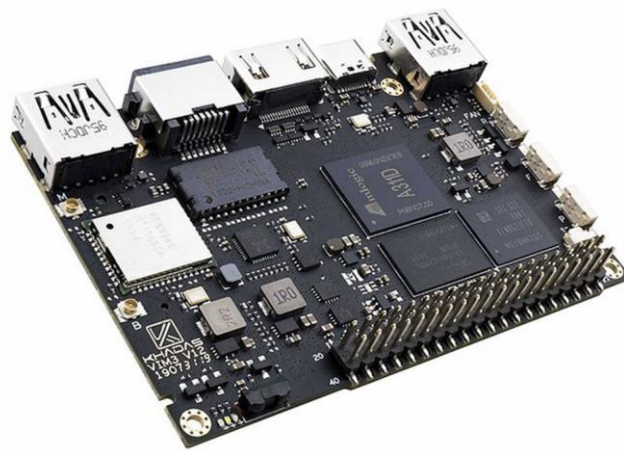


SEEED-102110481

Khadas VIM3 Basic SBC - A311D SoC with 5 TOPS NPU, 2GB RAM, 16GB eMMC, Dual Display, Dual Camera, SSD via m.2, Wi-Fi/ Bluetooth 5.0



PRODUCT DETAILS

Features

- Powerful Amlogic A311D hexa-core SoC with a 12nm process to maximize performance, thermals, and electrical efficiency
- Next-generation, NPU at 5.0 TOPS for advanced AI applications with support for deep learning models such as TensorFlow, Caffe and Darknet
- Switchable PCIe and USB 3.0 interface via software
- SSDs and extension boards connectivity via the M.2 interface
- Wide-range of power inputs via USB-C, from 5-20V for power-hungry applications

- HDMI at 4K and MIPI-DSI at 1080P for adding dual independent displays, with TP connector for multi-touch inputs
- 3-axis digital accelerometer for display rotation detection
- Dual camera support via the 4 lane MIPI-CSI, up to 8MP ISP, with 30-pin 0.5mm pitch FPC connector

Description

The VIM3 SBC is a compact size SBC that has a powerful Amlogic A311D SoC: x4 Cortex A73 performance-cores (2.2Ghz), and x2 Cortex A53 efficiency-cores (1.8Ghz) are merged into a hexa-core configuration and fabricated with a 12nm process to maximize performance, thermal and electrical efficiency.

It has an onboard 5.0 TOPS NPU for advanced neural network applications with support for popular deep learning models such as TensorFlow, Caffe and Darknet. Also, it has an M.2 slot for NVMe SSDs that can switch between PCIe and USB 3.0 via Khadas KBI commands, and a USB-C port with 5-20volt USB power-delivery input.

The VIM3 supports dual independent displays via HDMI at 4K output and MIPI-DSI at 1080P output and also has a 3-axis digital accelerometer for display rotation detection. There is also a TP connector for multi-touch inputs. Furthermore, it supports dual cameras via the 4 lane MIPI-CSI, up to 8MP ISP, with a 30-pin 0.5mm pitch FPC connector.

Specifications

Specification	Details
SoC	Amlogic A311D 2.2GHz Quad core ARM Cortex-A73 and 1.8GHz dual core Cortex-A53 CPU, ARM G52 MP4 GPU up to 800MHz
NPU	5 TOPS Performance NPU INT8 inference up to 1536 MAC. Supports all major deep learning frameworks including TensorFlow, Caffe and Darknet
MCU	STM8S003, Programmable EEPROM

Specification	Details
SPI Flash	16MB
LPDDR4/4X	2GB
EMMC 5.1	16GB
Wi-Fi	AP6398S Module 802.11a/b/g/n/ac, 2X2 MIMO RSDB
Bluetooth	5.0
LAN	10/100 / 1000M
WOL	Wake on Lan
TF Card	Molex Slot, Spec Version 2.x/3.x/4.x(SDSC/SDHC/SDXC)
USB Host	x2 (900mA & 500mA Load)
USB Type-C	USB2.0 OTG & USB PD
VIN Connector	System Power Input
Power Supply	5-20V
HDMI	Type-A Female HDMI2.1 transmitter with 3D, Dynamic HDR, CEC and HDCP 2.2 support
MIPI-DSI	4 lanes Interface, resolution up to 1920*1080 30 Pin 0.5mm Pitch FPC Connector
Touch Panel	10 Pin 0.5mm Pitch FPC Connector

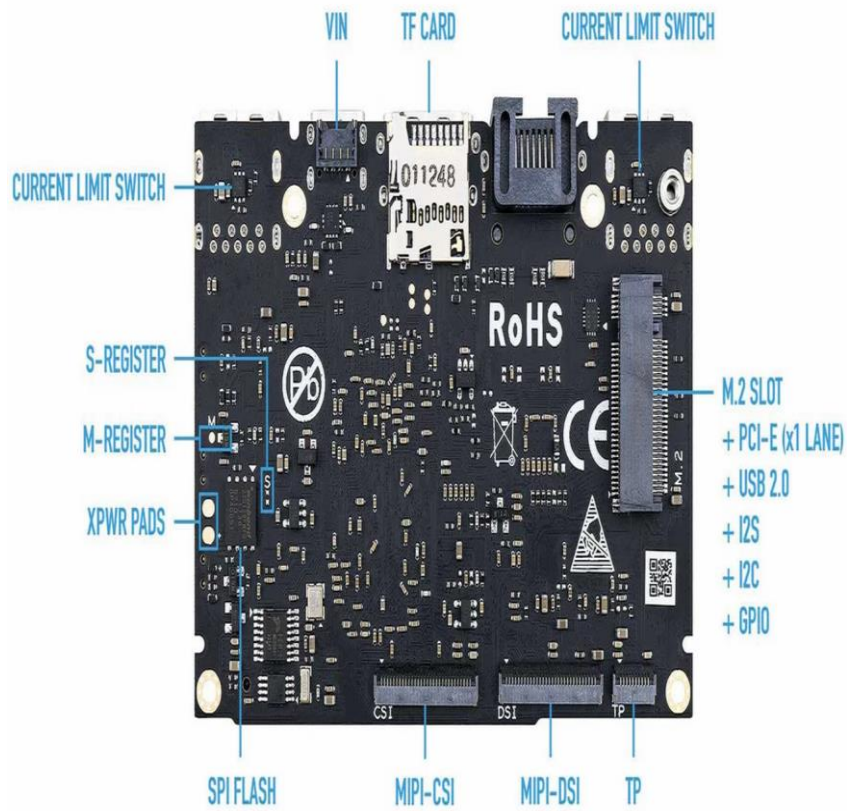
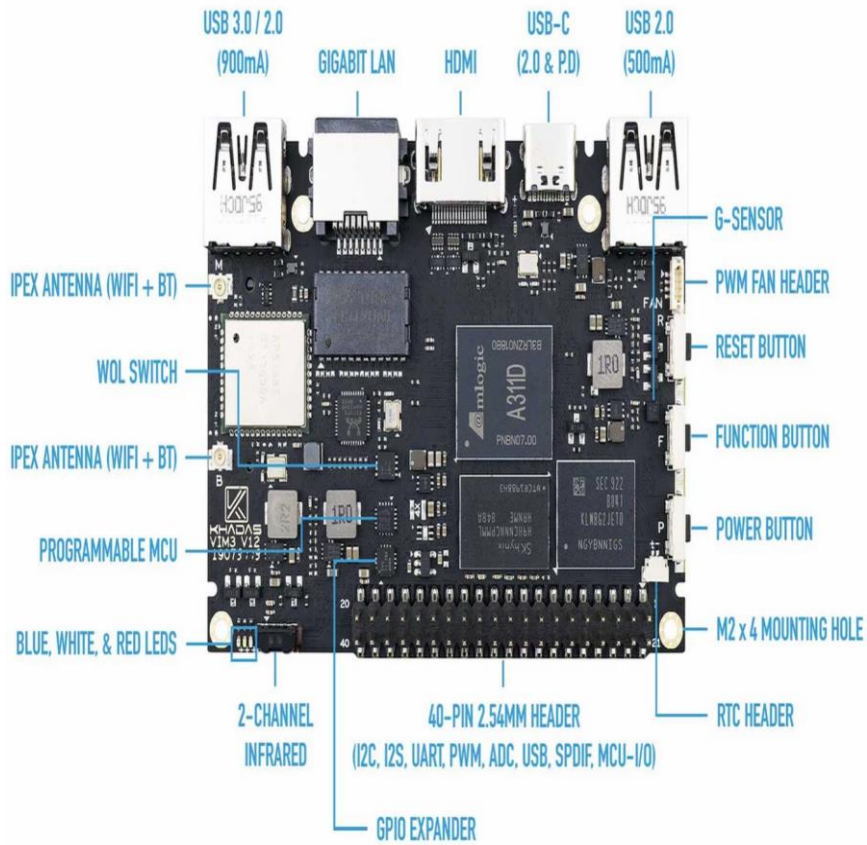
Specification	Details
Video Decoder	UHD 4K H.265 75fps 10-bit Multi-video decoder up to 4Kx2K@60fps+1x1080P@60fps Dolby Vision and HDR10, HDR10+, HLG and PRIME HDR video processing
Video Encoder	Low latency 1080p H.265/H.264 60fps
DRM Video Streaming	Built-in Cortex-M4 core for always on processing TrustZone based security for DRM Video Streaming
Camera	Interface: 4 lanes MIPI-CSI Supports Dual Cameras Up to 8 MP ISP 30 Pin 0.5mm Pitch FPC Connector
Accelerometer	KXTJ3-1057 Tri-axis Digital Accelerometer
M.2 Socket	PCIe 2.0 (one lane) M.2 2280 NVMe SSD Supported USB 2.0, I2S, I2C, ADC, 100M Ethernet PHY interface, GPIO
IR Receiver	2 Channels
RTC & Battery Header	0.8mm Pitch Header
Cooling Fan Header	4-Pins 0.8mm Pitch Header, with PWM Speed Control
LEDs	Blue LED x1, White LED x1, Red LED x1
40-Pin Header(2.54mm)	CPU: USB, I2C, I2S, SPDIF, UART, PWM, ADC MCU: SWIM, NRST, PA1
Buttons	x3 (Power / Func / Reset)

Specification	Details
XPWR Pads	For External Power Button
Mounting Holes	M2 x 4
Dimensions	82.0 x 58.0 x 11.5 mm
Weight	28.5g
Linux	Mainline U-Boot
Linux Distros	Ubuntu 18.04+ / Armbian
O/S for HTPC	LibreELEC
Android	Android Pie (9.0)
Khadas Only	Khadas TST [5], Khadas KBI [6], Fenix Script [7]
Certifications	CE, RoHS, FCC

Applications

- Mini computer
- Nano Server
- AI and Robotics
- Crypto Mining Cluster
- Digital Signage

Hardware Overview



Part List

- 1 x VIM3 Basic
- 2 x Wi-Fi Antenna