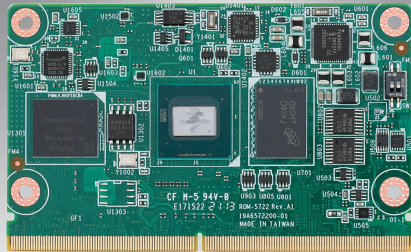# AOM-3511

NXP i.MX95 Cortex®-A55 AI-on-Module Nano

Preliminary

Features

- NXP Arm® Cortex®-A55 i.MX95 Six Cores up to 2.0 GHz
- 1 x Arm Cortex-M7 core & 1 x Cortex-M33 core
- Onboard LPDDR5 8 GB, 6400MT/s memory
- 1 x 10 Gigabit Ethernet, 2 x Gigabit LAN
- 1 x 4 lane MIPI-DSI,1 x Dual channel LVDS
- 1 x USB3.2 Gen1By1, 4 x USB2.0, 1 x USB 2.0 OTG, 4 x UART, 5 x I2C, 14 x GPIO, 2 x PCIe3.0, 2 x CAN-FD
- Neural network accelerator built-in
- Supports Yocto Linux

Introduction

The Advantech AOM-3511 stands as a state-of-the-art AI-on-Module, incorporating the robust NXP i.MX95 System-on-Chip (SOC). This SOC features an impressive configuration, with up to six Arm Cortex-A55 cores, accompanied by a dedicated Cortex-M7 and M33 real-time processor, and an added Neural Network accelerator. The AOM-3511 provides extensive connectivity options, including USB 2.0, USB 3.2 Gen1By1, 10 Gigabit Ethernet, MIPI-CSI, PCI Express, as well as both a dual-channel LVDS and a 4-lane MIPI-DSI Display interface. These remarkable features position the AOM-3511 as an exceptional choice for a wide variety of embedded applications.

AOM-3511 is paired with Advantech SOM-DB2510 carrier board for faster end product peripheral integration and time-to-market. The reference schematics and layout checklists documentations for carrier board development will be provided along with the open-sourced Linux BSP, test utilities, hardware design utilities and reference drivers.

Specifications

Form Factor		AOM Nano
Processor System	CPU	NXP i.MX95 Cortex-A55 Six core (up to 2.0GHz)
	MCU	1 x Arm Cortex-M7 core & 1 x Cortex-M33 core
Memory	Technology	LPDDR5 6400MT/s
	Capacity	On-board 8GB LPDDR5
	Flash	16 GB eMMC NAND Flash for O.S. and 8 MB QSPI NOR Flash for board information
NPU	NPU	Neural Network accelerator
Graphics	LVDS/MIPI DSI	1 x 4 lane MIPI-DSI (Optional) 1 x Dual channel LVDS
	HDMI	1 x HDMI (Optional)
	Parallel RGB	-
	VGA	-
	Graphics Engine	2D/3D Graphic Acceleration supporting 1G Pixel/s, OpenVG 1.1, Open GL ES3.1, Vulkan, and Open CL 1.2 FP.
	H/W Video Codec	Decoder: H.265, H.264, 4Kp30 Encoder: H.265, H.264, 4Kp30
Ethernet	Chipset	1 x NXP i.MX95 integrated USXGMII, 2 x NXP i.MX95 integrated RGMII
	Speed	1 x 10 GbE, 2 x 10/100/1000 Mbps
RTC	RTC	Yes
Debug port		JTAG
WatchDog Timer		Yes (1~6553s, power on/off 4s)
Security		TPM 2.0
I/O	PCIe	2 x PCIe 3.0
	SATA	-
	USB	1 USB3.2 Gen1By1 4 USB 2.0 1 USB 2.0 OTG
	Audio	2 x I²S
	SPDIF	-
	SDIO	1
	Serial Port	2 x 4-wire UART and 2 x 2-wire UART
	SPI	2
	CAN	2 x CAN-FD
	GPIO	14
	I²C	5
	Camera Input	1 x 4-lane MIPI CSI
	System Bus	-
	Touch	-
	Keypad	-
Power	Power Supply Voltage	Fixed 5V DC source
	Power Consumption	TBD
Environment	Operating Temperature	0 ~ 60 °C/ -40 ~ 85 °C
	Operating Humidity	95% relative humidity, non-condensing
Mechanical	Dimensions (W x D)	82 x 50 mm
Operation System		Yocto Linux
Certifications		CE/FCC Class B

Block Diagram
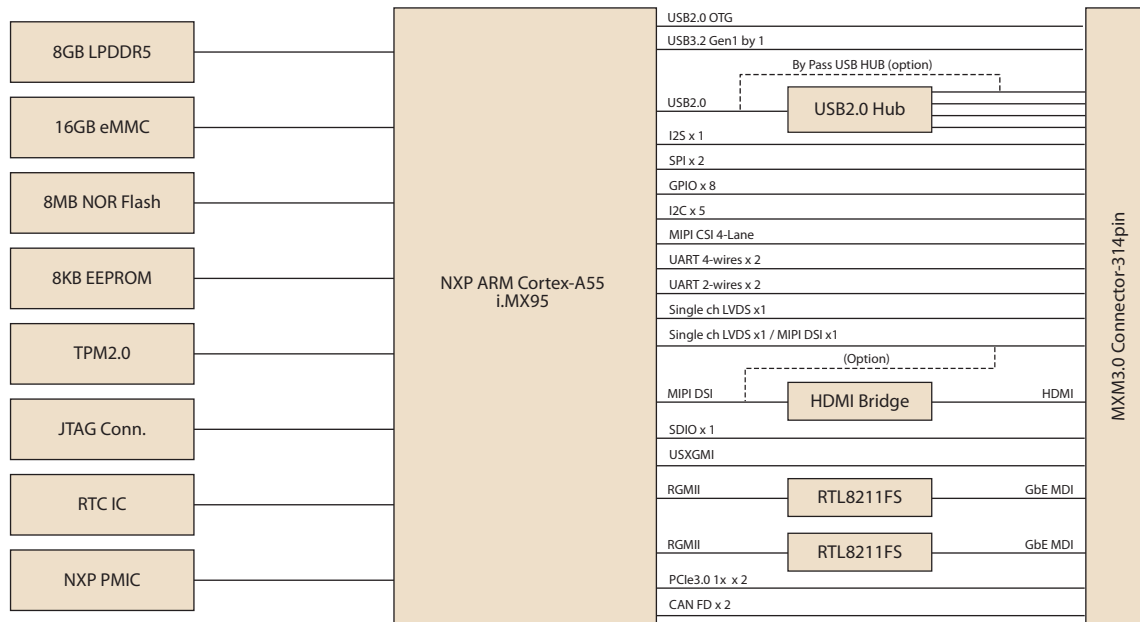
Ordering Information

Part No.	CPU	Memory	Flash Memory	UART	10 GbE	GbE	USB3.2 Gen1By1	USB 2.0	Display	I2S	I2C	SPI	Operating Temperature
AOM-3511WTXX-XXXX	i.MX95 Hexa-cores	8GB	16GB	4	1	2	1	5	1 x MIPI DSI (Opt.)	2	5	3	-40 ~ 85 °C
AOM-3511CTXX-XXXX	i.MX95 Hexa-cores	8GB	16GB	4	1	2	1	5	1 x Dual ch LVDS	2	5	3	0 ~ 60 °C

* DRAM and eMMC of other capacity are available through project-based support. Please contact sales for details.

Development Board

Part No.	Description
SOM-DB2510-R0A1	Carrier Board

Optional Accessories

Part No.	Description
1701200220	Debug port cable
1700019474	D-SUB 9P(F)/D-SUB 9P(F) RS232/RS485 100c
TBD	Heat Spreader
TBD	Semi Heat Sink (0 ~ 60 °C)
TBD	Semi Heat Sink (-40 ~ 85 °C)
96PSA-A36W12R1-3	ADAPTER 100-240V 36W 12V 3A
1700001524	Power Cord 3P UL 10A 125V 180cm
170203183C	Power Cord 3P Europe (WS-010+WS-083) 183cm
1700019146	Power Cord CCC 3P 10A 250V 183cm
170203180A	Power Cord 3P UK 2.5A/3A 250V 1.83M
1700008921	Power Cord 3P PSE 183cm
SQF-ISDM1-16G-21C	SQF SD Card I-SD UHS-I MLC 16G (0~70°C)
SQF-ISDM1-16G-21E	SQF I-SD UHS-I MLC 16G (-40~85°C)
EWM-W163M201E	802.11 a/b/g/n/ac,QCA6174A,2T2R,w/BT4.1,M.2 2230
1750008717-01	Dipole Ant. D.B 2.4/5G WIFI 3dBi SMA/M-R BLK
1750007965-01	Antenna Cable R/P SMA (M) to MHF4, 300mm
EWM-C117FL06E*	LTE 4G,3G WCDMA/DC-HSPA+, 2G module, MPCI-L280H
1750008303-01	Antenna AN0727-64SP6BSM
1750006009	Antenna Cable SMA (F) to MHF 1.32 25cm

Dimensions

Unit: mm
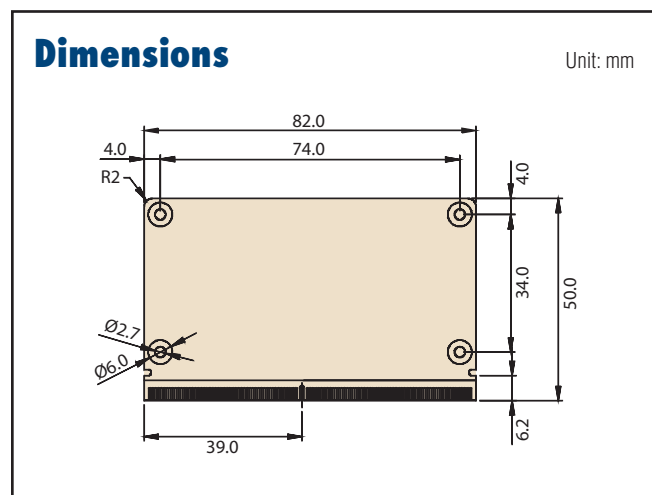
*Please contact us for suggesting suitable cellular module for your region.

Embedded Linux Support and Design-in Services

Hardware Certified Ubuntu and Yocto with Eco Partner Services

Linux is the most popular embedded OS for transportation, outdoor services, factory automation, and mission critical applications. Its open source and kernel reliability features ease security updates, and make it particularly adaptable to new AI and Edge computing technology. Advantech has cooperated with Canonical and other software partners to provide hardware certified Ubuntu image and Yocto BSP as Linux offerings. The Advantech, Embedded Linux, and Android Alliance (ELAA) delivers local software services and consultation.

Features

Certified OS and BSP

- Platform compatibility tests
- Preloaded functional driver and software stacks

Licensed Services

- License authorized Canonical delivers 10-years of bug fixes and security updates
- In-house bundled service

Numerous AI and Edge Resources

- Containerized technology for service provision and deployment
- AI resources from Caffe, TensorFlow, and mxnet

Local Partner Alliance

- Embedded Linux and Android Alliance (ELAA)

WISE-DeviceOn

Massive IoT Device Management Utility

IoT deployment and management typically involves numerous disparate devices installed on multiple sites. These devices require effective monitoring, managing, and tracking. Advantech's easy-to-use WISE-DeviceOn interface enables users to remotely monitor device health, troubleshoot problems, and send software/firmware updates over-the-air (OTA). In sum, DeviceOn empowers quick real-time responsiveness to emerging problems.

WISE-DeviceOn

Features

Comprehensive Management	Remote Access	Efficient Operations
• Devices status	• Real-time monitoring	• Zero-touch on-boarding
• Peripherals/firmware	• Remote controls	• OTA updates
• Open for extension	• Troubleshooting	• Batch control

Product Highlights

SOM-6883

High-performance 11th Gen Intel® COMe Type 6 Module

MIO-5375

Compact 11th Gen Intel® Outdoor Focused 3.5" SBC

EPC-B5587

10th Gen Intel® Xeon® based Edge server

EPC-R3220

Arm based IoT Edge Gateway