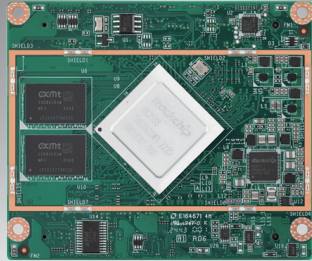


# AOM-3821

## Rockchip RK3588 Cortex-A76 and A55 AI-on-Module RTXe



### Features

- Rockchip RK3588 Arm Quad Cortex-A76 2.4GHz and Quad Cortex-A55 1.8 GHz
- Onboard 4/8 GB LPDDR4 memory and 32/64 GB eMMC
- Supports HDMI, DP, eDP and HDMI IN
- 4 x PCIe 3.0, 2 x GMAC, Type C, 2 x USB 3.0, 3 x USB 2.0, 2 x PCIe 2.1/SATA 3.0, SDIO, 2 x MIPI-CSI, 2 x UART
- Supports Linux Debian12 and Android14



### Introduction

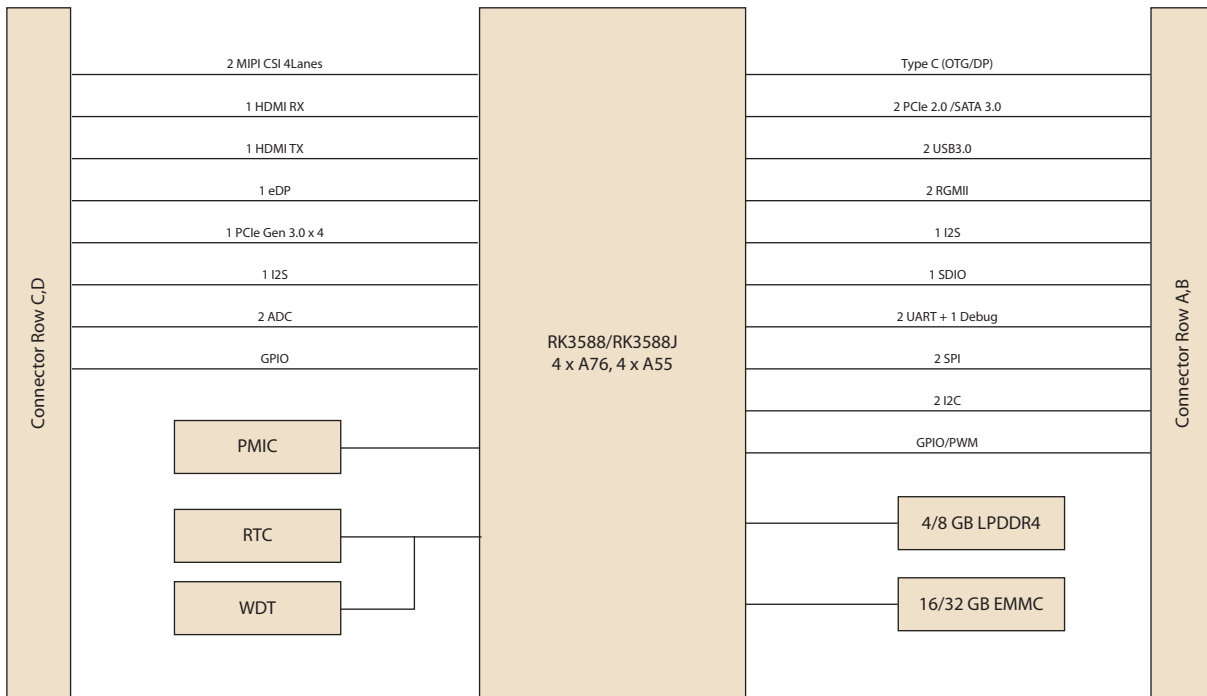
The Advantech AOM-3821 RTXe AI-on-Module is powered by a Rockchip RK3588 SoC which includes Quad Arm Cortex-A76 and Quad Cortex-A55 processors, 6Tops NPU and a high-performance Arm Mali-G610 3D graphics engine. It also provides a rich display interface supported with HDMI, DP, eDP to meet different display requirements. AOM-3821 offers various high-speed interfaces, including 2 x USB 3.0, 4 x PCIe 3.0, 2 x PCIe 2.1/SATA 3.0, 2 x GMAC, and MIPI-CSI. These interfaces can meet a variety of high-rate transmission applications, Wi-Fi 6, and wireless 5G connectivity targeted at big data and other industrial applications.

The AOM-3821 is paired with the Advantech AOM-DB3500 RTXe development board for faster end-product peripheral integration and time-to-market. The reference schematics and layout checklist documentation 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-Rugged
Processor System	CPU	Rockchip RK3588 Arm Quad Cortex-A76 2.4 GHz and Quad Cortex-A55 1.8 GHz
	MCU	3 x Cortex-M0
	NPU	Up to 6.0 Tops. Support: TensorFlow, Caffe, Tflite, Pytorch, Onnx NN, Android NN, etc.
Memory	Technology	LPDDR4
	Capacity	Onboard 4/8 GB LPDDR4, maximum supported is 32 GB
	Flash	32/64 GB eMMC NAND Flash for OS and boot loader
Graphics	HDMI	1 x HDMI 2.0
	DP	1 x DP1.4(USB3.0 OTG/DP1.4 Alt of TYPEC)
	eDP	1 x eDP
	Graphics Engine	Arm Mali-G610 MP4 GPU, high-performance OpenGL ES 1.1, 2.0 and 3.2, OpenCL 2.2, Vulkan 1.2, etc.
Ethernet	Chipsset	-
	GMAC	2 x RGMII, 10/100/1000 Mbps
RTC	RTC	Yes
WatchDog		HW watchdog by MCU
I/O	PCIe	4 x PCIe 3.0, 2 x PCIe 2.1 (default)
	SATA	2 x SATA 3.0 (shared with PCIe 2.1, by BOM option)
	USB	2 x USB 3.0 signal, 3 x USB 2.0, 1 x USB3.0 OTG (USB3.0 OTG/DP1.4 Alt of TYPEC)
	Audio	2 x I <sup>2</sup> S
	SPDIF	-
	SDIO	1
	Serial Port	1 x 2-wire UART for debug 1 x 2-wire UART 1 x 4-wire UART
	SPI	2
	CAN	-
	GPIO	3
	I <sup>2</sup> C	2
	Camera Input	2 x MIPI CSI (2 x 4 lane)
	PWM	2
	ADC	2
Keypad	-	
Power	Power Supply Voltage	4.75 V ~ 5.25 V DC source
	Power Consumption	TBD
Environment	Operating Temperature	0°C ~ 60°C / -40°C ~ 85°C
	Operating Humidity	40°C @ 95% relative humidity, non-condensing
Mechanical	Dimensions (W x D)	77 mm x 65 mm
Operating System		Linux Debian12 and Android14
Certifications		CE/FCC Class B

## Block Diagram



## Ordering Information

Part No.	CPU	Memory	Flash Memory	UART	GMAC	USB3.0/2.0	Display	PCIe 3.0	SD	I <sup>2</sup> C	SPI	Operating Temperature
TBD	RK3588	4 GB	32 GB	1 x Debug 2 x UART (1 x 2-wire, 1 x 4-wire)	2	2 x USB 3.0 signal 3 x USB 2.0 1 x USB 3.0 OTG	1 x HDMI 1 x DP 1 x eDP	4	1	2	2	0°C ~ 60°C
TBD	RK3588J	8 GB	64 GB	1 x Debug 2 x UART (1 x 2-wire, 1 x 4-wire)	2	2 x USB 3.0 signal 3 x USB 2.0 1 x USB 3.0 OTG	1 x HDMI 1 x DP 1 x eDP	4	1	2	2	-40°C ~ 85°C

## Development Board

Part No.	Description
AOM-DB3500	Development board for AOM-Rugged Module series

## Optional Accessories

Part No.	Description
TBD	Heat spreader
TBD	Semi-heat-sink for 0°C ~ 60°C
TBD	Semi-heat-sink for -40°C ~ 85°C

## Dimensions