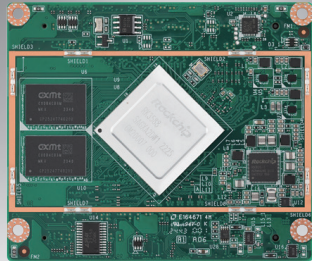


# AOM-3821

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

NEW



### 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
- 4 x PCIe 3.0, 2 x GMAC, Type C, 2 x USB 3.0 signal, 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

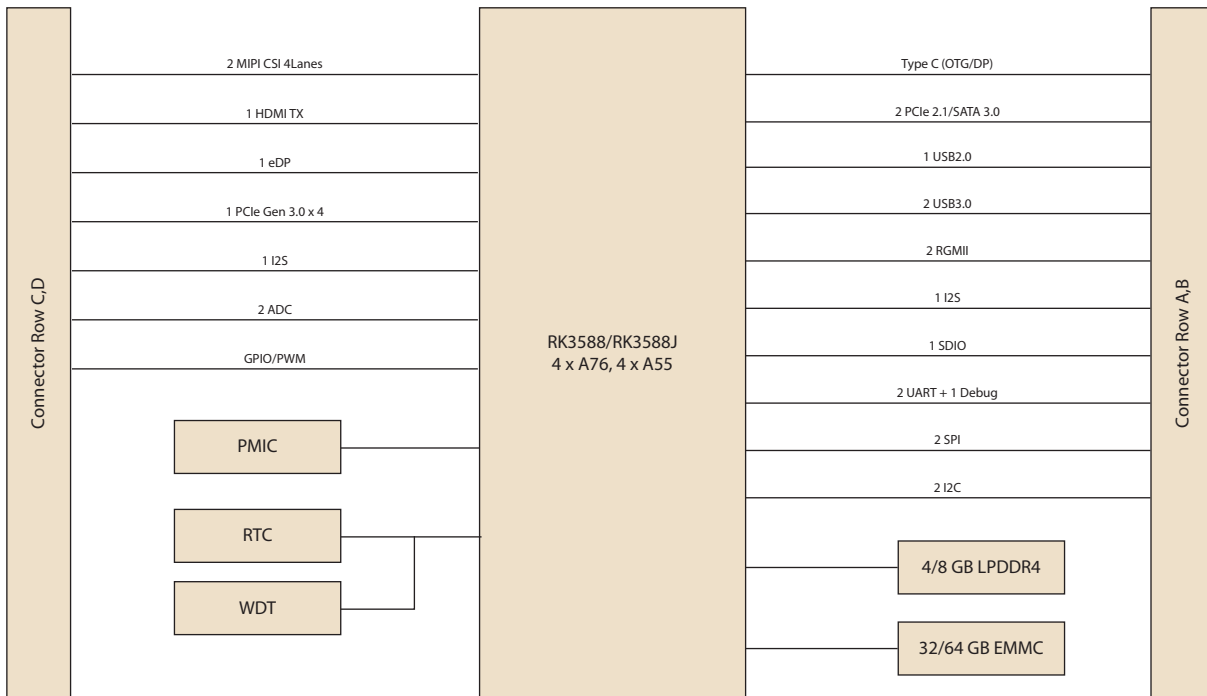
The Advantech AOM-3821 RTXe AI-on-Module is powered by a Rockchip RK3588 SoC which includes Quad Arm Cortex-A76 and Quad Cortex-A55 processors, 6Tops NPU and a high-performance Arm Mali-G610 3D graphics engine. It also provides a rich display interface supported with HDMI, DP, eDP to meet different display 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		RTXe
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	Chipset	-
	GMAC	2 x RGMII, 10/100/1000 Mbps
RTC	RTC	Yes
WatchDog		HW watchdog by MCU, 0-65535s
I/O	PCIe/SATA	1 x PCIe 3.0 x 4, 2 x PCIe 2.1/SATA 3.0 (default PCIe, by SW Configuration)
	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	1 x GPIO/PWM
	I <sup>2</sup> C	2
	Camera Input	2 x MIPI CSI (4 lane)
Power	ADC	2
	Power Supply Voltage	4.75 V ~ 5.25 V DC source
	Power Consumption	7.61W @ 5V (Max)1.40W @ 5V (Idle)0.07W @ 5V (Sleep)
Environment	Operating Temperature	0°C ~ 70°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

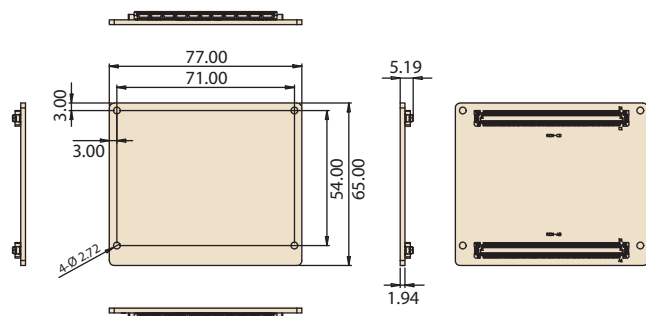
Part No.	CPU	Memory	Flash Memory	UART	GMAC	USB3.0/2.0	Display	PCIe 3.0	SD	PCIe 2.1 / SATA 3.0	SPI	Operating Temperature
AOM-3821C8-3588AA1	RK3588	4 GB	32 GB	1 x Debug 2 x UART (1 x 2-wire, 1 x 4-wire)	2	2 x USB 3.0 signal 3 x USB 2.0 1 x USB 3.0 OTG	1 x HDMI 1 x DP 1 x eDP	4	1	2	2	0°C ~ 70°C
AOM-3821W8-3588BA1	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

DDR and eMMC of other capacity is available through project-based support. Please contact us for details.

## Development Board

Part No.	Description
AOM-DB3500-SWNA1	Development board for AOM-3821

## Dimensions



## Optional Accessories

Part No.	Description
1970006105N001	Heat spreader
1970006106T001	Semi-heat-sink
96PSA-A60W24T2-3	Adapter 100-240V 60W 24V
1702002605	Power cord 3P EU 10A 250V 183cm
1702031801	Power cord 3P UK 10A 250V 183cm
1702002600	Power cord 3P UL 10A 125V 180cm
1700000237	Power cord 3P PSE 183 cm
1700009652	Power cord CCC 3P 10A 250V 183c
AIW-162BS-G11	WiFi6/BT Broadcom AP6275P, PCIe+UART M.2 Key-E
EWM-W179M201E	WiFi6/BT RTL852BE, PCIe+USB M.2
1751000651-01	Dipole Ant. WiFi 6E SMA/M-R BLK
1751000649-01	Cable Ant. SMA/F MHF4L/113
968DD00342	5G Module, RM520NGLAA M.2 Key-B USB
968DD00443	4G Module, EM05CNFD-128-SGAS M.2
1751000625-01	Cable Ant. SMA/F MHF4L/113 BLK
1750009372-01	Ant.SMA/M 90/180 5G BLK 167mm

\*Please contact us for a suitable cellular module for your region.