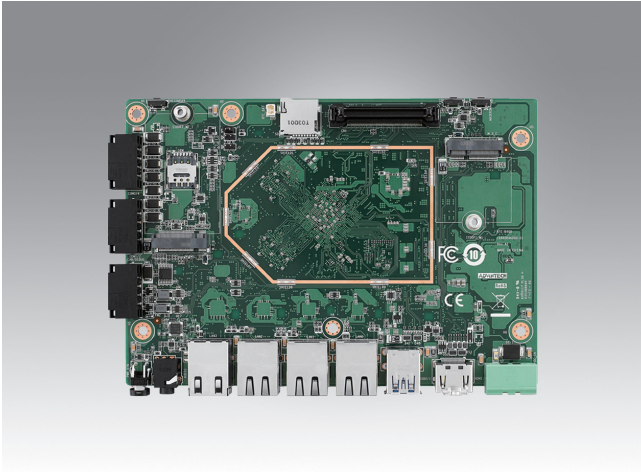


# ASR-A501

## Rockchip RK3588 Cortex®-A76 and A55 4" SBC



### Features

- Rockchip RK3588 Arm Quad Cortex-A76 2.4GHz and Quad Cortex-A55 1.8 GHz
- Built-in NPU with processing performance of up to 6 TOPS
- Onboard 8/16GB LPDDR4 memory and 64/128GB eMMC
- Supports 8K @ 60 fps H.265/VP9 video decoding and 8K @ 30 fps H.265/H.264 video encoding
- Supports 2 x PCIe 3.0 x1, 2 x MIPI-CSI, UART, 2 x I2C, 1 x SPI, and 1 x USB by 120-pin B2B connector
- Provides 1 x 2.5GbE, 3 x GbE, 2 x USB3.0, 2 x CAN FD, 2 x RS-232/485, 2 x RS-485, 1 x HDMI2.0, 1 x Line out/Mic in
- 12-24V DC In, contact: 8KV, air: 15KV, ESD protection
- Provides a M.2 E Key with PCIe 2.1, USB 2.0 signal and a M.2 B Key with PCIe 2.1/SATA, USB 3.0 signal
- Supports Linux Debian12, Android14

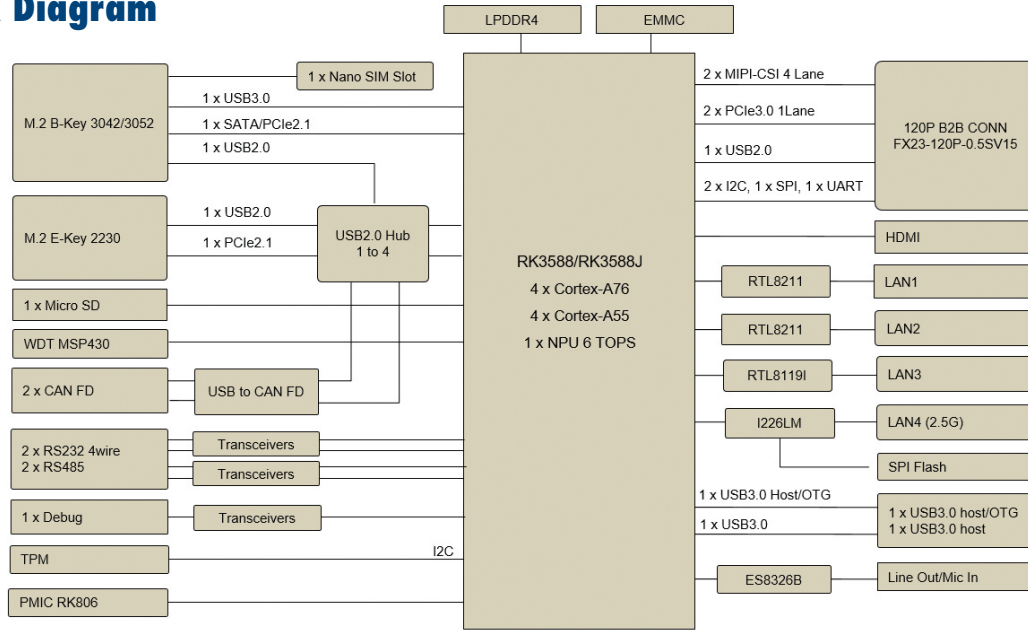


### Specifications

Form Factor		4" SBC	
Processor	CPU	Rockchip RK3588/RK3588J Arm Quad Cortex-A76 2.4/2.0 GHz and Quad Cortex-A55 1.8/1.3 GHz	
	NPU	Up to 6 Tops. Supports: TensorFlow, Caffe, Tflite, Pytorch, Onnx NN, Android NN, etc.	
Memory	Technology	LPDDR4 2112MHz	
	Capacity	Onboard 8 GB LPDDR4, maximum supported is 32 GB	
	Flash	64 GB eMMC NAND Flash for OS and boot loader	
Graphics	LVDS	-	
	HDMI	1 x HDMI 2.0, up to 3821 x 2160 @30Hz	
	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.	
	H/W Video Codec	Decoder: H.265/VP9 8K @ 60 fps, H.264 8K @ 30 fps, H.263, VC-1, VP8, MVC, AV1, MPEG-4/2/1 Encoder: H.265/H.264 8K @ 30 fps, parallel encoder for multi-channel, lower resolution	
Ethernet	Chipset	2 x RTL8211FSI, 1 x RTL8119I, 1 x Intel I226	
	Speed	1 x 2.5Gbps, 3 x 10/100/1000 Mbps	
WatchDog Timer		1-6553s, default 60s, power on/off 1s by MCU	
TPM		TPM2.0	
I/O	SATA	-	
	SATA Power	-	
	USB		1 x USB3.2 Gen1 by 1 TypeA 1 x USB3.2 Gen1 by 1 TypeA/OTG 1 x USB2.0, through 120-pin B2B connector
		Audio	1 x Line out/Mic in
		SPDIF	-
	SDIO	-	
	Serial Port		2 x RS-232/485 (Default RS-232, s/w configured) 2 x RS-485 1 x Debug via Terminal block
		SPI	1 x SPI, through 120-pin B2B connector
		CAN	2 x CAN FD (5M)
		GPIO	-
		I <sup>2</sup> C	2 x I2C, through 120-pin B2B connector
		System Bus	-
		Touch	-
		MIPI CSI	2 x MIPI-CSI x4, through 120-pin B2B connector
		Button	1 x Reset Button, 1 x Maskrom Button, 1 x Power Button with LED
Expansion		Mini PCIe	-
	SD Socket	1 x Micro SD slot	
	SIM Slot	1 x SIM slot	
	M.2 Socket		1 x E-Key 2230 (PCIe2.1, USB2.0) 1 x B-Key 3052 (SATA/PCIe*, USB3.0)
Power	Power Supply Voltage	12-24V±10%	
	Connector	2P Phoenix	
	Power Consumption	Typical (Idle mode) 5.65W@12V Max.(Full loading) 11.68W@12V	
Environment	Power Management	AT mode (Default), ATX mode	
	Operating Temperature	0 ~ 70°C/-40 ~ 85°C (-4 ~ 158°F/-40 ~ 185°F)	
	Operating Humidity	40°C, 95% relative humidity, non-condensing	
Mechanical	Dimensions (W x D)	165 x 115 mm (5.7 ~ 4.01 in)	
Operating System		Linux Debian12 and Android14	
Certifications		CE EMC/FCC Class B/UKCA/IC	

\*Note: Support by request.

## Block Diagram



## Ordering Information

Part Number	CPU	Memory	EMMC	HDMI	1G Ethernet	2.5G Ethernet	TPM	Serial Port	USB	SD	CAN Bus	Operating Temperature
ASR-A501-M0A1	Rockchip RK3588	8GB	64GB	1	3	1	Yes	4	3	1	2	0 ~ 70°C (-32 ~ 158°F)
ASR-A501-M1A1	Rockchip RK3588J	8GB	64GB	1	3	1	Yes	4	3	1	2	-40 ~ 85°C (-40 ~ 185°F)

## Packing List

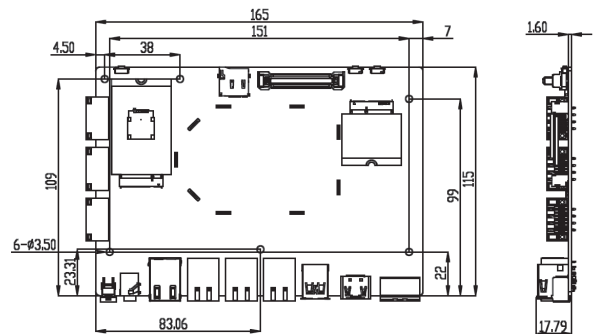
Part Number	Description
ASR-A501	ASR-A501 4" SBC
1970006065T001	Heatsink 15W 165x115x25mm
1652005203	Plug-In Block 2Pin
1652008031-01	Plug-In Block 2x4Pin

## Optional Accessories

Part Number	Description
96PSA-A60W24T2-3	AC to DC adapter, DC 24V 60W, 0 ~ 40°C
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 183cm
AFE-RM01-6PA1	Extension board, 6 AHD/4 USB2.0/4 DI/4DO/M.2 Key-M
AFE-RM02	Extension board, 4USB2.0/4DI/4DO/M.2 Key-M
AFE-RM02-4PA1	Extension board, 4 GMSL/4 USB2.0/4 DI/4DO/M.2 Key-M
AFE-RM02-6PA1	Extension board, 6 GMSL/4 USB2.0/4 DI/4 DO/M.2 Key-M
EWM-W179M201E	WiFi6/BT, RTL8852BE Wifi: PCIe BT: USB
1751000651-01	Dipole Ant. WiFi 6E SMA/M-R BLK L111.7mm IP54
1751000649-01	Cable Ant. SMA/F MHF4L/113 BLK L100mm
968DD0342*	5G Module, RM520NGLAA-M20-SGASA M.2 Key-B
1750009372-01	Ant.SMA/M 90/180 5G BLK 167mm RG178
1751000625-01	Cable Ant. SMA/F MHF4L/113 BLK L150mm
968DD00443*	4G Module, EM05CNFD-128-SGAS M.2 Key-B

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

## Dimensions



## Rear IO View

