Firefly AI Boards with Rockchip Comparison

AI Boards	AIO-3399ProC	AIO-3399C(AI)	ROC-RK3588S-PC	EC-A3399ProC	ITX-3588J 8K AI
SoC	**Rockchip RK3399Pro**	**Rockchip RK3399**	**RockChip RK3588S**	**Rockchip RK3399Pro**	**RockChip RK3588**
CPU	Dual-core Cortex-A72+ Quad-core Cortex-A53 big.LITTLE core CPU architecture, -Frequency up to 1.8G Hz	-Dual-core Cortex-A72+ Quad-core Cortex-A53 - Frequency up to 2.0 G Hz	8-core 64-bit (4×Cortex-A76+4×Cortex-A55), 8nm lithography process, frequency up to 2.4GHz	Dual-core Cortex-A72+ Quad-core Cortex-A53 big.LITTLE core CPU architecture, frequency up to 1.8G Hz	8-core 64-bit (4×Cortex-A76+4×Cortex-A55) , 8nm lithography process, frequency up to 2.4GHz
GPU	-ARM" Mali-TSGO M P4 Quad-core GPU -GPU support OpenGL ESl.l/2.0/3.0/3.1, OpenVGl.l, OpenCL, DX11 -SupportAFBC (frame buffer compression)	-Quad-core -ARM" Mali-T860 - GPU support OpenGL ESl.l/2.0/3.0/3.1, OpenVGl.l, OpenCL, DX11	-ARM Mali-G610 MP4 quad-core GPU -Support OpenGL ES3.2 / OpenCL 2.2 / Vulkan1.1, 450 GFLOPS	ARM® Mali-T860 MP4 Quad-core GPU -Support OpenGL ES1.1/2.0/3.0/3.1, OpenVG1.1, OpenCL, DX11 -Support AFBC (frame buffer compression)	-ARM Mali-G610 MP4 quad-core GPU -Supports OpenGL ES3.2 / OpenCL 2.2 / Vulkan1.1, 450 GFLOPS
NPU	- Support 8bit/16bit operation, computing performance up to 3.0TOPS - Power consumption of NPU is merely 1% of traditional GPU. - Load Caffe/ Mxnet / TensorFlow models directly	-SPR2801S, Adopt MPE and APiM unique AI architecture -Computing performance up to 2.8 TOPS and 9.3 Tops/W energy efficiency	-NPU computing power up to 6 TOPS -Support INT4/INT8/INT16 mixed operation, -Support framework switching of TensorFlow / MXNet / PyTorch / Caffe	- Support 8bit/16bit operation, computing performance up to 3.0TOPS. - Power consumption of NPU is merely 1% of traditional GPU. - Load Caffe / Mxnet / TensorFlow models directly. - Provide AI development tools: Support model fast conversion, support end-to-side API, support TensorFlow / TF Lite / Caffe / ONNX / Darknet models. - Provide AI application development interface: Support Android NN API, provide RKNN cross-platform API, -Linux support for TensorFlow development.	-NPU computing power is up to 6 TOPS, Supports INT4/INT8/INT16 mixed operation, -Supports framework switching of TensorFlow / MXNet / PyTorch / Caffe / etc.
Storage	High-speed eMMC 5.1 (16GB/32GB/64GB/128GB)	-High-speed eMMC 8GB-128GB	16GB/32GB/64GB/128GB eMMC	High-speed eMMC 5.1 (16GB/32GB/64GB/128GB)	16GB/32GB/64GB/128GB eMMC
VPU	-Support 4K VPQ and 4K 10bits I126S/l-1264 video decoding, up to GDfps - Video post processor, de-interlacing, de-noising, edge/detail/color optimization	-- supports H.265 HEVC and VP9, H.264 encoding and 4K encoding and 4K HDR, and with a powerful hard decoding capability as high as 4K	**Video decoding:** -8K@60fps H.265/VP9/AVS2 -8K@30fps H.264 AVC/MVC -4K@60fps AV1 -1080P@60fps MPEG-2/-1/VC-1/VP8 -**Video encoding:** -8K@30fps encoding, support H.265 / H.264 *Achieve up to 32-channel 1080P@30fps decoding and 16-channel 1080P@30fps encoding	-Support 4K VP9 and 4K 10bits H265/H264 video decoding, up to 60fps -1080P multi-format video decoding (VC-1, MPEG-1/2/4, VP8) -1080P video coding, support H.264, VP8 format -Video post processor, de-interlacing, de-noising, edge/detail/color optimization	**Video decoding:** -8K@60fps H.265/VP9/AVS2 -8K@30fps H.264 AVC/MVC -4K@60fps AV1 -1080P@60fps MPEG-2/-1/VC-1/VP8 -**Video encoding:** -8K@30fps encoding, Supports H.265 / H.264 * Achieves up to 32-channel 1080P@30fps decoding and 16-channel 1080P@30fps encoding
RAM	-LPDDR3 3GB (NPU 1GB + CPU 2GB) ,LPDDR3 6GB (NPU 2GB + CPU 4GB)	-- DDR: 2GB/4GB dual-channel LP DDR4	4GB/8GB/16GB 64bit LPDDR4/LPDDR4x/LPDDR5 (Up to 32GB optional)	LPDDR3 3GB (NPU 1GB + CPU 2GB), LPDDR3 6GB (NPU 2GB + CPU 4GB)	4GB/8GB/16GB 64bit LPDDR4/LPDDR4x/LPDDR5 (Up to 32GB optional)
Camera	-2x MIPI-CSI camera interface	-2x MIPI-CSI camera interface	2 × 2 lane MIPI-CSI input or 1×4 lane MIPI-CSI -Integrated 48MP ISP with HDR&3DNR		The integrated 48MP ISP with HDR&3DNR supports dual MIPI-CSI camera input.
OS	Android, Linux+QT, Ubuntu	Android, Linux+QT, Ubuntu	-Android： Android 12.0 -Linux： Ubuntu Desktop, Ubuntu Server, Debian11, Buildroot, RTLinux -Kylin Linux, UOS, etc. *Supports UEFI Boot	Android, Linux+QT, Ubuntu	-Android: Android 12.0 -Linux: Ubuntu Desktop, Ubuntu Server, Debian11, Buildroot, RTLinux, Kylin Linux, UOS * Supports UEFI Boot
Wireless		-2.4GHz/5GHzdual-bandWiFi, 802.11a/b/g/n/ac protocol -Support Bluetooth 4.1(Support BLE)	-Support 2.4GHz, 5GHz dual-band WiFi, 802.11 a/b/g/n/ac protocol -Support Bluetooth 4.2 (BLE)	-Support 2.4GHz / 5GHz dual-band WiFi, 802.11a/b/g/n/ac protocol -Support Bluetooth 4.1	-2.4GHz/5GHz dual-band WiFi6, -Bluetooth 5.0, supports 5G/4G LTE expansion
Power Consumption	Power consumption of NPU is merely 1% of traditional GPU.	maintaining extremely low power consumption	-Idle: ≈0.42W (12V/35mA) -Typical: ≈2.25W (12V/190mA) -Max: ≈12W (12V/1000mA)	Power consumption of NPU is merely 1% of traditional GPU.	Idle: ≈1.35W (12V/110mA) Typical: ≈4.8W (12V/400mA) Max: ≈20W (12V/1700mA
Price	$279 / -1279 RMB (3GB + 16GB) - 1679 RMB(6GB + 16GB)	-1189 RMB (Without NPU 4GB + 32GB) (Taobao Price)	-4GB+32GB, $219 / 1279 RMB - 8G+64GB, $299 / 1779 RMB -16G+128GB $ 409 / 2479 RMB (Taobao Price)	245$ (3GB+ 16GB) 1647 RMB	-4GB+32GB: 2779 RMB on taobao - 6GB + 64GB: 3279 RMB - 16GB + 128GB: 3979 RMB). They have 4G & 5G module and antenna