

# Rockchip RK3588

## 8K Ultra HD



### Processor

Processor	Rockchip RK3588 processor
Core	ARM Cortex-A76 2.4 GHz
GPU	ARM Mali-G610 MC4 OpenGL ES 1.1/2.0/3.1/3.2 Vulkan 1.1 1.2 OpenCL 1.1 1.2 2.0
NPU	6 TOPS (int4/int8/int16/FP16/BF16/TF32)
Cache	4x LPDDR4X (2x 32GB)
IO	802.11 ax/ac/a/b/g/n
USB	12 USB
Other	5.0

### Connectivity

Storage	1x C (12GB/2TB)
Expansion	1x TF
PCIE	1x PCIE
Network	1x Ethernet
UART	2x UART
RJ45	1x 10/100/1000 RJ45
USB	802.11 ax/ac/a/b/g/n
USB 3.0	1x USB3.0
USB 2.0	1x USB2.0
USB 2.0 (4 ports)	1x USB2.0 (4 ports)
LED	1x LED
MIPI	1x MIPI 32 lanes
EDP	1x EDP 30 lanes
HDMI	1x HDMI 2.1 8K 60Hz
DP	1x DP 4K 60Hz
MIPI-CSI	1x MIPI-CSI (4 lanes)
HD 2.0	1x HD 2.0 4K@60
L/R	1x L/R (3.5mm)
GPIO	7x GPIO 3.3V
I2C	4x I2C
Other	1x * 1, 2x * 2, 5x*1

### Other Features



# High-Performance AI Development Board

The RK3588 is a flagship AIoT chip built on 8nm LP process, featuring an octa-core CPU (up to 2.4GHz), ARM Mali-G610 MP4 GPU, and a 6TOPs NPU for AI acceleration. It also integrates a 48MP ISP with HDR & 3DNR, supporting major deep learning frameworks for enhanced AI performance.



**RK3588**  
Octa-core CPU



**Mali-G610**  
MC4 1GHz GPU



**6Tops**  
NPU



**8K Codec**  
H.265 HEVC



**4~32GB RAM**  
**8~128GB ROM**



**WiFi6**  
**1000M LAN**



**BT5.x**



**Android/Linux**

# RK3588---Next-Generation Flagship AIoT CPU

Powered by the RK3588 octa-core 64-bit chipset, with ARM Mali-G610 MP4 GPU and 6TOPs AI NPU for superior AI performance and expanded possibilities.



# 6 TOPS Powerful Computing Boosts AI Applications

Powerful NPU with 6TOPS performance, supporting INT4/INT8/INT16 operations. Compatible with TensorFlow, MXNet, PyTorch, Caffe, and more. Efficiently accelerates convolution and traditional image processing operations like Gaussian filter, median filter, Laplacian, and Sobel, ideal for edge computing and vision control applications.



## 8K Video Encoding & Decoding

Supports 8K@60fps H.265/VP9 decoding and 8K@30fps H.265/H.264 encoding, with up to 32x 1080P@30fps decoding and 16x 1080P@30fps encoding. Delivers stunning 8K video quality.



## 32GB Large RAM & 128GB EMMC

Up to 32GB RAM and 128GB eMMC storage, surpassing previous memory limits for faster response and meeting the demands of high-memory, high-storage applications.



32GB  
128GB

# Rich Expansion Interfaces

Multiple video output and input interfaces support simultaneous 8K@60fps video output and 4K@60fps video input. It also supports quad-screen display for high-definition interactive scenarios. The board offers rich expansion interfaces for diverse industry applications.



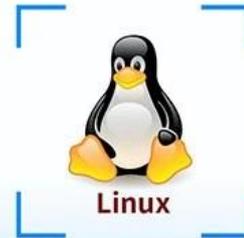
# Powerful Network

Onboard Gigabit Ethernet, dual-band WiFi 6 (2.4GHz/5GHz), and Bluetooth 5.3 ensure seamless network connectivity and flexible support for various application needs.



# Open System Architecture

Multi-system compatibility supporting Android 12 and Debian 11, with deep customization of the Linux kernel for remote upgrades and management, enhancing operational efficiency and ease.



Rockchip RK3588

Rockchip RK3588 processor ARM (Cortex-A76 Cortex-A55) Mali-G610 NPU 6 TOPs LP.

\*LCD: MIPI EDP I2C.

\*TF PCIE UART GPIO

UART GPIO

12

Rockchip RK3588

Rockchip RK3588 processor, Mali-G610 MP4 8-core GPU, Cortex-A76 and Cortex-A55 CPUs, and 8K video recording capabilities.

### Rockchip RK3588 Processor

The Rockchip RK3588 processor is a high-performance SoC featuring a dual-core Cortex-A76 and a quad-core Cortex-A55. It also includes an 8-core Mali-G610 MP4 GPU and supports 8K video recording.

### 8K Video Recording

The device supports 8K video recording at 30fps, providing ultra-high resolution and detail. It also features HDR10 support for enhanced color and contrast.

### Connectivity and Expansion

The device offers extensive connectivity options, including USB-C, PCIe, and various expansion ports. The Rockchip RK3588 SoC provides a rich set of interfaces for external components.

### Software and OS Support

The device is compatible with Android OS and Google Play. It offers a user-friendly interface and access to a wide range of applications.

### Ports and Interfaces

The device features several ports and interfaces, including 5.0mm audio jacks, 6-pin power connectors, HDMI 2.1, USB-C, and PCIe.

### Performance and Benchmarks

The device is designed for high performance and efficiency. Key performance metrics include:

- Processor: Rockchip RK3588, featuring Cortex-A76 and Cortex-A55 cores.
- GPU: Mali-G610 MP4, 8-core, supporting 8K video recording.
- Memory: Up to 16GB LPDDR5, supporting high-speed data transfer.
- Storage: Up to 512GB UFS 3.1, providing fast storage access.
- Camera: Up to 8K resolution, capturing ultra-high detail.
- Connectivity: Supports USB-C, PCIe, and various expansion options.

### System and Software

The device runs on a custom Android-based OS, offering a smooth and responsive user experience. It includes various system features and optimizations.

### Conclusion

The device is a powerful and versatile SoC, ideal for high-performance applications. It offers excellent performance, connectivity, and expansion options.

