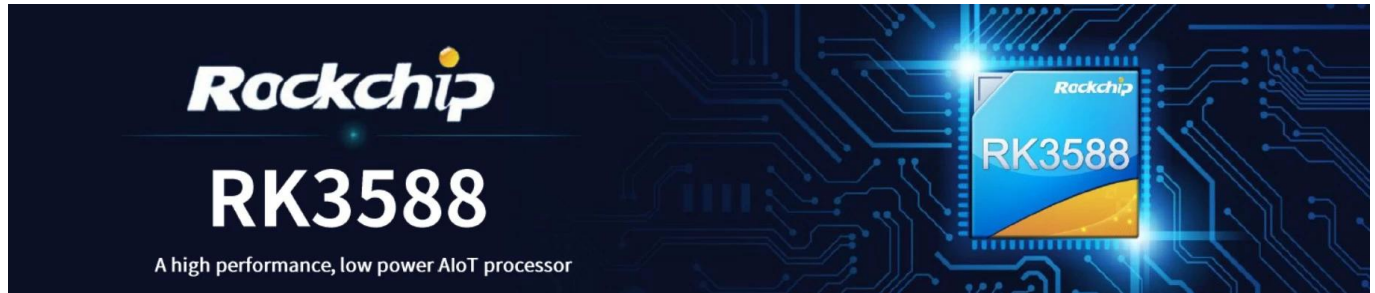


# AI-Powered TV Box with Rockchip RK3588 and Android 12 OS



## Specifications

Model No.	Rockchip RK3588 TV Box
CPU	Rockchip RK3588 Octa-Core ARM, Quad-Core Cortex-A76 @2.4GHz and Quad-Ccore Cortex-A55@1.8GHz
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 Embedded high performance 2D image acceleration module
NPU	6 TOPS (Supports int4/int8/int16/FP16/BF16/TF32 Acceleration)
RAM	4GB LPDDR4X (2GB*2, Supports up to 32GB)
ROM	32G
WiFi	Built-in WiFi Module, 802.11 ax/ac/a/b/g/n
OS	Android 12
Bluetooth	Bluetooth 5.0

## Hardware Interface

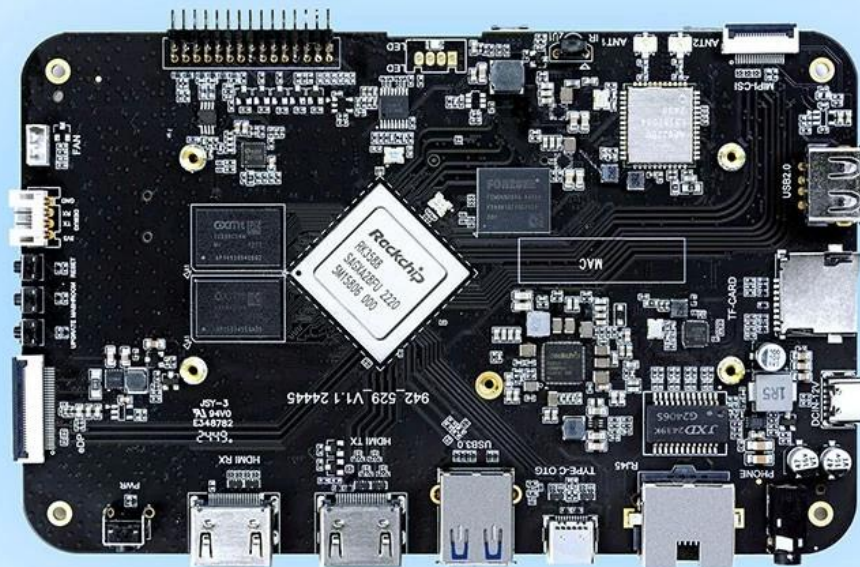
Power input	Type-C Port (12V/2A)
Storage Extension	1*TF Card Slot 1*PCIE Hard Disk Data Port
Remote Control	1* Infrared Remote Control Receiver
RTC Battery	CR1220 Button Battery Onboard
Serial Port	2*UART Serial Port
Ethernet	1* 10/100/1000 Mbps RJ45 Port
WiFi	Built-in WiFi Module, 802.11 ax/ac/a/b/g/n
USB Port	1*USB3.0 Port 1*USB2.0 Port 1* USB2.0 Port Reserved 4-Pin socket
LED Indicator	1*Three-Color LED Indicator
LCD Interface	1*Four-Channel 32-Pin Sequential MIPI interface 1*Dual-cChannel 30-Pin Sequential EDP interface
Video Output Interface	1*HD Output Port, Support HD 2.1 up to 8K@60Hz output 1*DP Output Port, Support DP1.4 up to 4K@60Hz output
Video input	1*MIPI-CSI (dual-channel) 1*HD input Port, Supports up to HD 2.0 4K@60Hz input
Audio interface	1*MIC 1*L/R, Left and Right Sound Channel Output (3.5mm Headset Port) 1*SPK 7*GPIO, 3.3V Voltage 4*I2C, 3V Voltage, Support Touch Screen
Other interfaces	1*ADC 2*PWM 1*5V Cooling Fan

## Software Performance

Video&Audio CODEC	<p>Decoding Performance:</p> <p>Supports MPEG-1, MPEG-2, MPEG-4, H.263, H.264, H.265, VC-1, VP9, VP8, MVC and AV1@MMU embedded real-time video decoding;</p> <p>Multi-channel parallel decoding, supporting lower resolutions;</p> <p>H.264 AVC/MVC Main10 L6.0: support 8K@30fps(7680*4320);</p> <p>VP9 Profile0/2 L6.1: Support 8K@60fps(7680*4320));</p> <p>H. 265 HEVC/MVC Main10 L6.1: support 8K@60fps(7680*4320);</p> <p>AVS2 Profile 0/2 L10.2.6: Support 8K@60fps(7680*4320);</p> <p>AV1 main configuration file 8/10bit L5.3: Support 4K@60fps(3840*2160);</p> <p>The MPEG-2 supports up to MP: 1080p@60fps(1920*1088);</p> <p>The MPEG-1 supports up to MP: 1080p@60fps(1920*1088);</p> <p>VC-1 supports up to AP level3: 1080p@60fps(1920*1088);</p> <p>VP8 version2 1080p@60fps(1920*1088)</p> <p>Multi-Channel Audio Decoding: MP3,AAC,FLAC,WAV and other mainstream audio formats.</p>
Ethernet	<p>Module: RTL8111HS</p> <p>Performance: Support 10/100/1000 Mbps, providing stable and fast wired connection performance.</p> <p>Function: Support auto-negotiation function to automatically identify and configure network speed and duplex mode.</p>
WiFi & BT	<p>Module: AP6275P</p> <p>WiFi specifications:</p> <p>Support 802.11ax/ac/a/b/g/n for high-speed wireless network connectivity of up to 2.4 Gbps.</p> <p>Support 2.4GHz and 5GHz dual frequency bands, optimize signal intensity and interference minimize.</p> <p>Support MU-MIMO technology to improve the data transmission efficiency during multi-user connection.</p> <p>BT specifications:</p> <ul style="list-style-type: none"> <li>BT 5.0, support all traditional BT features and high-speed transmission.</li> <li>Support BLE (bluetooth low energy) technology.</li> <li>Support multiple BT devices to connect simultaneously, ensuring stable connections and efficient communication..</li> </ul>
Display Output	<p>HDMI_TX supports up to 8K@60fps(7680x4320).</p> <p>EDP supports up to 4K@60fps(3840x2160).</p> <p>MIPI_CSI supports up to 4K@60fps(3840x2160).</p> <p>DP(type-c) supports up to 4K@ 60fps(3840x2160).</p> <p>Can be applied scene multi-screen display, different screen multi-display.</p>
Input source	<p>HDMI_RX supports up to 4K@60fps(3840*2160).</p> <p>MIPI_DSI(for camera)</p> <p>Suitable for PIP (picture-in-picture),conference machines and embedded external input source applications.</p>
RTC	<p>Chipset: HYM8563</p> <p>This chip can maintain time operation through an external battery when the system is powered off, making it suitable for any application scenario that requires continuous tracking of time after power failure. It has basic alarm and timer functions, allowing you to set wake-up commands, which can be applied to timed on/off operations.</p>

## 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

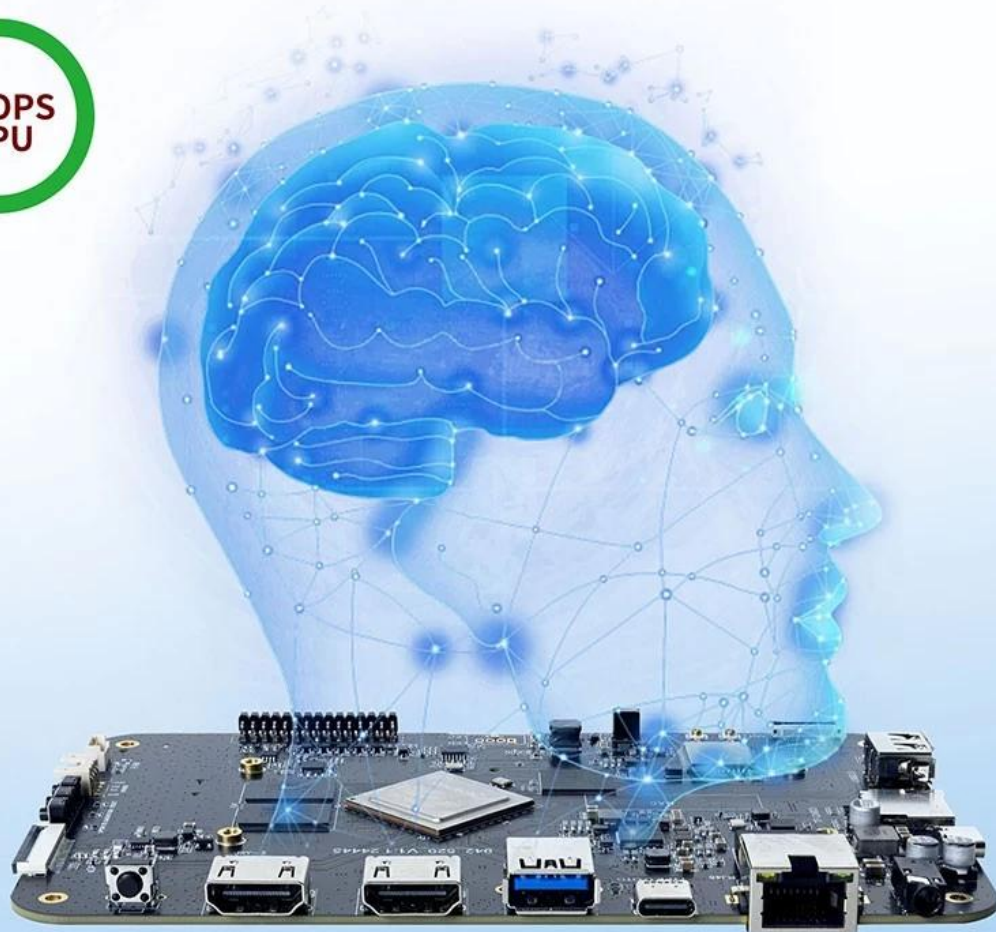
Powered by the RK3588 octa-core 64-bit chipset, with ARM Mali-G610 MP4 GPU and 6TOPs AI NPU for superior AI performance and expanded possibilities.





# 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.

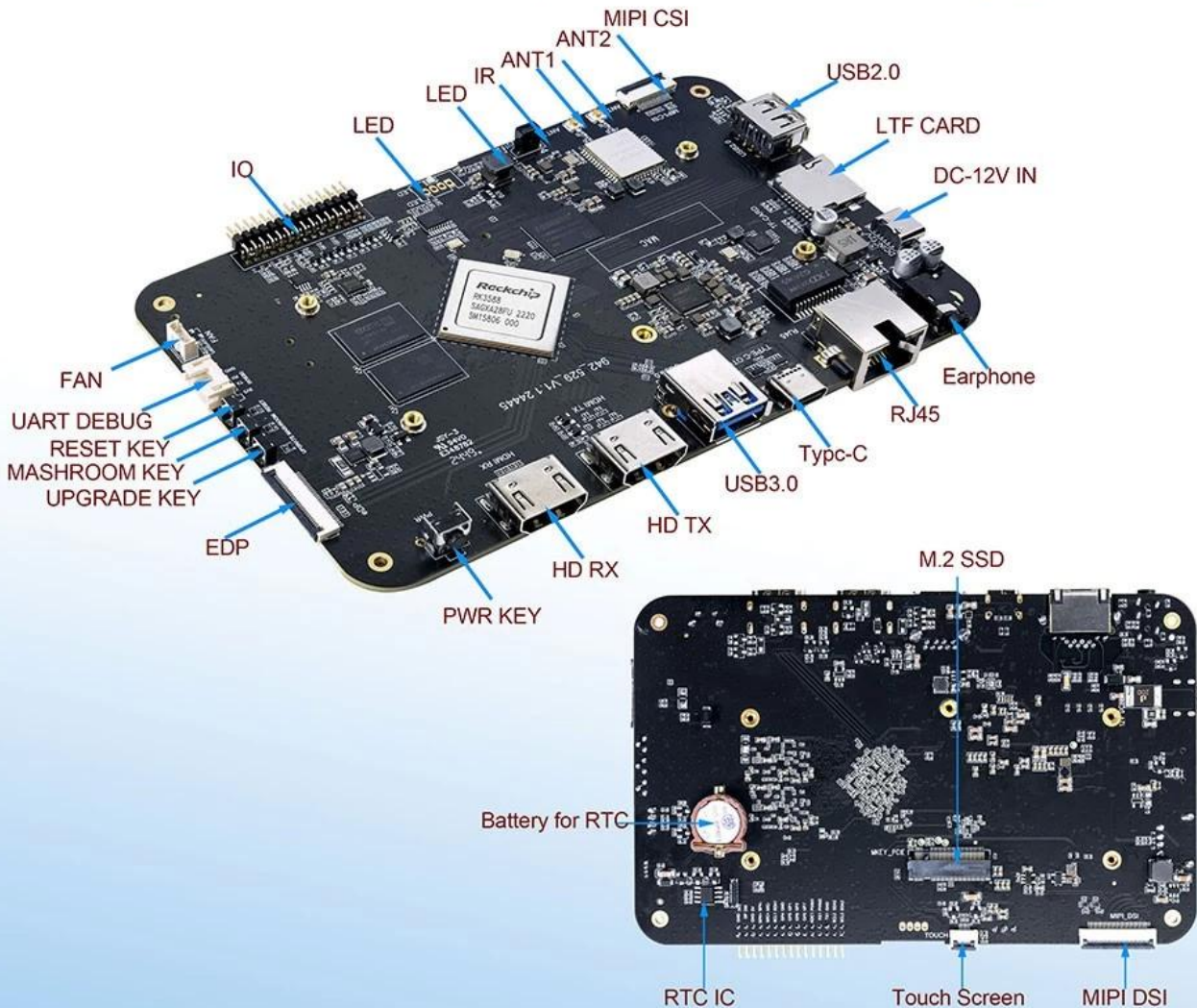


32GB  
128GB



## 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.



## Main Features

- \*The CPU is RK3588 Octa-core ARM processor (Quad Core Cortex-A76 and Quad Core Cortex-A55), with a maximum main frequency up to 2.4 GHz. It features with quad core Mali-G610 GPU, NPU computing power reaches 6TOPs with powerful performance.
- \*Manufacturing process: 8nm LP.
- \*With various LCD screen interfaces: four-channel MIPI, dual-channel EDP.
- \*Touch screen supporting the I2C interface.
- \*Support for TF card or PCIE drives as an additional storage extension.
- \*With multiple input and output extension, dual-channel UART serial port and seven-channel GPIO for input and output.
- \*With Android 12 OS

The **AI-Powered TV Box with Rockchip RK3588 and Android 12 OS** combines state-of-the-art

technology with versatile functionality, making it an ideal choice for users seeking high-performance devices for entertainment, AI applications, and professional displays.

### **Powerful Rockchip RK3588 Processor**

At its core, this TV box features the advanced **Rockchip RK3588 Octa-Core processor**, delivering unmatched performance for multitasking, streaming, and AI-driven operations. The processor includes four Cortex-A76 cores for intensive tasks and four Cortex-A55 cores for energy-efficient processes. Its integrated **Mali-G610 MP4 GPU** provides exceptional graphical performance, ensuring smooth 8K Ultra HD playback.

### **8K Ultra HD Visuals**

Enjoy the ultimate viewing experience with **8K Ultra HD resolution**, delivering stunning clarity, vivid colors, and dynamic contrast. The device is equipped with **HDR10+ support**, enhancing every frame with true-to-life visuals and optimal brightness. Whether for movies, games, or professional content displays, it sets a new standard for digital media.

### **AI-Powered Applications**

The TV box integrates advanced AI capabilities, enabling facial recognition, voice control, and real-time analytics. It's an excellent choice for smart home setups, retail analytics, and interactive applications where AI plays a pivotal role. The powerful AI engine enhances the functionality of applications while improving efficiency and user experience.

### **Android 12 OS for Versatility**

The device runs on **Android 12**, providing a modern, user-friendly interface and access to a vast array of apps via the Google Play Store. Android 12 also supports advanced security features, system updates, and a customizable platform for developers and tech enthusiasts.

### **Advanced Connectivity Options**

Equipped with **WiFi 6**, **Bluetooth 5.0**, and **Gigabit Ethernet**, this TV box ensures high-speed internet connectivity and reliable performance. Multiple ports, including **HDMI 2.1**, **USB-C**, and **PCIe**, enable seamless integration with external devices, such as monitors, storage devices, and cameras, making it ideal for diverse use cases.

### **Energy Efficiency**

Despite its robust capabilities, the TV box is designed to consume minimal energy, making it an eco-friendly option for businesses and households. This energy-efficient design reduces operational costs, particularly for continuous-use applications like digital signage.

### **Wide Range of Applications**

This TV box is versatile enough to cater to a variety of use cases:

- **Home Entertainment:** Enjoy high-resolution streaming, gaming, and smart home integration.
- **Digital Signage:** Create dynamic advertising and informational displays for retail, hospitality, or public spaces.
- **AI Development:** Leverage its AI processing power for machine learning, data analysis, and software testing.
- **Education:** Deliver interactive and engaging educational content with stunning visuals.
- **Business Solutions:** Use it for video conferencing, presentations, and operational analytics.

### **Compact and Durable Design**

Its slim, lightweight design makes it easy to install in any environment. The durable construction ensures long-term reliability, making it a smart investment for personal and professional



applications.

### **Why Choose This TV Box?**

The **AI-Powered TV Box with Rockchip RK3588** is perfect for anyone looking to combine the latest technology with user-friendly features. It excels in performance, versatility, and connectivity, making it suitable for various industries and personal use.

### **Conclusion**

Whether you're setting up a smart entertainment hub, creating professional digital displays, or exploring AI-powered applications, this [TV box](#) delivers the ultimate experience. Backed by Rockchip RK3588 and Android 12 OS, it ensures top-tier performance, reliability, and innovation for all your digital needs.