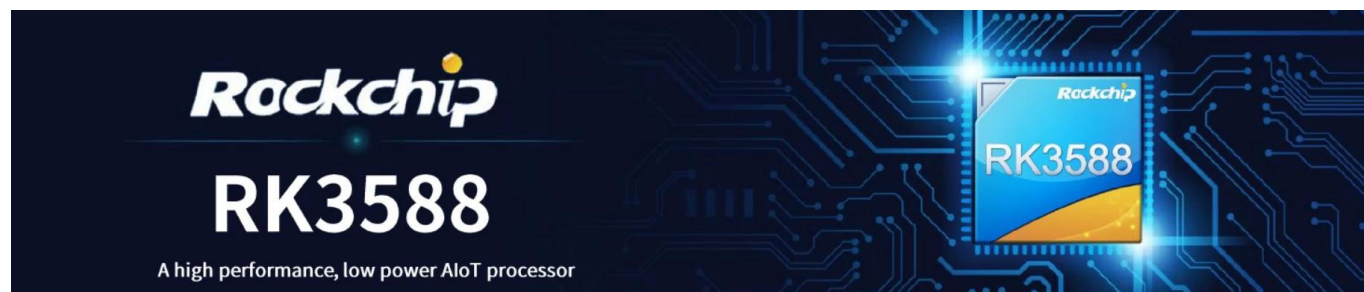


Rockchip RK3588 Octa Core Android 12 LCD Controller Board 4K 8K Ultra HD AI Artificial Intelligence



Specifications

Model No.	Rockchip RK3588 Android Control Board
CPU	Rockchip RK3588 Octa-Core ARM, Quad-Core Cortex-A76 @2.4GHz and Quad-Core 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

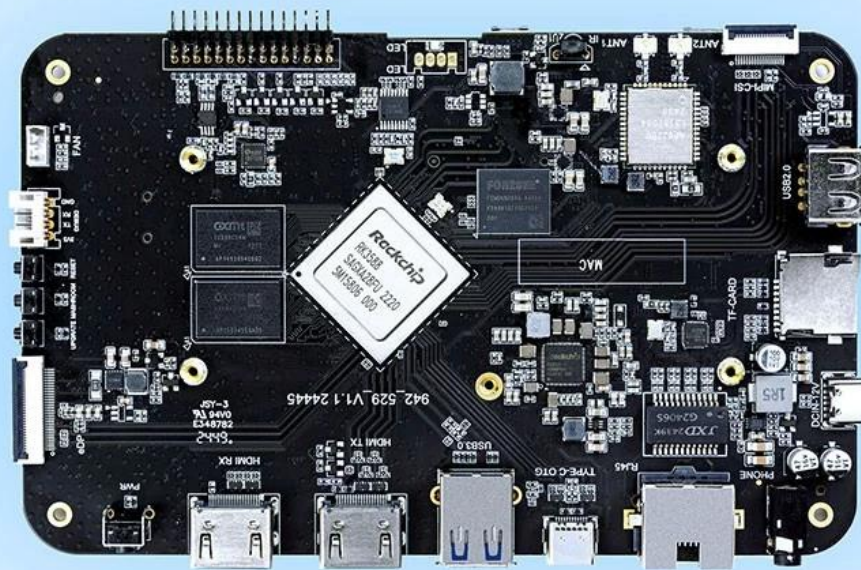
Power input	Type-C Port (12V/2A)
Storage Extension	1*TF Card Slot 1*PCIE Hard Disk Data Port
Remote Control	1* Infrared Remote Control Receiver
RTC Battery	CR1220 Button Battery Onboard
Serial Port	2*UART Serial Port
Ethernet	1* 10/100/1000 Mbps RJ45 Port
WiFi	Built-in WiFi Module, 802.11 ax/ac/a/b/g/n
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-channel 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: 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; Multi-channel parallel decoding, supporting lower resolutions; H.264 AVC/MVC Main10 L6.0: support 8K@30fps(7680*4320); VP9 Profile0/2 L6.1: Support 8K@60fps(7680*4320)); H. 265 HEVC/MVC Main10 L6.1: support 8K@60fps(7680*4320); AVS2 Profile 0/2 L10.2.6: Support 8K@60fps(7680*4320); AV1 main configuration file 8/10bit L5.3: Support 4K@60fps(3840*2160); The MPEG-2 supports up to MP: 1080p@60fps(1920*1088); The MPEG-1 supports up to MP: 1080p@60fps(1920*1088); VC-1 supports up to AP level3: 1080p@60fps(1920*1088); VP8 version2 1080p@60fps(1920*1088) Multi-Channel Audio Decoding: MP3,AAC,FLAC,WAV and other mainstream audio formats. Module: RTL8111HS</p>
Ethernet	<p>Performance: Support 10/100/1000 Mbps, providing stable and fast wired connection performance. Function: Support auto-negotiation function to automatically identify and configure network speed and duplex mode. Module: AP6275P WiFi specifications: Support 802.11ax/ac/a/b/g/n for high-speed wireless network connectivity of up to 2.4 Gbps. Support 2.4GHz and 5GHz dual frequency bands, optimize signal intensity and interference minimize.</p>
WiFi & BT	<p>Support MU-MIMO technology to improve the data transmission efficiency during multi-user connection. BT specifications: BT 5.0, support all traditional BT features and high-speed transmission. Support BLE (bluetooth low energy) technology. Support multiple BT devices to connect simultaneously, ensuring stable connections and efficient communication..</p>
Display Output	<p>HDMI_TX supports up to 8K@60fps(7680x4320). EDP supports up to 4K@60fps(3840x2160). MIPI_CSI supports up to 4K@60fps(3840x2160). DP(type-c) supports up to 4K@ 60fps(3840x2160). Can be applied scene multi-screen display, different screen multi-display.</p>
Input source	<p>HDMI_RX supports up to 4K@60fps(3840*2160). MIPI_DSI(for camera) Suitable for PIP (picture-in-picture),conference machines and embedded external input source applications.</p>
RTC	<p>Chipset: HYM8563 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

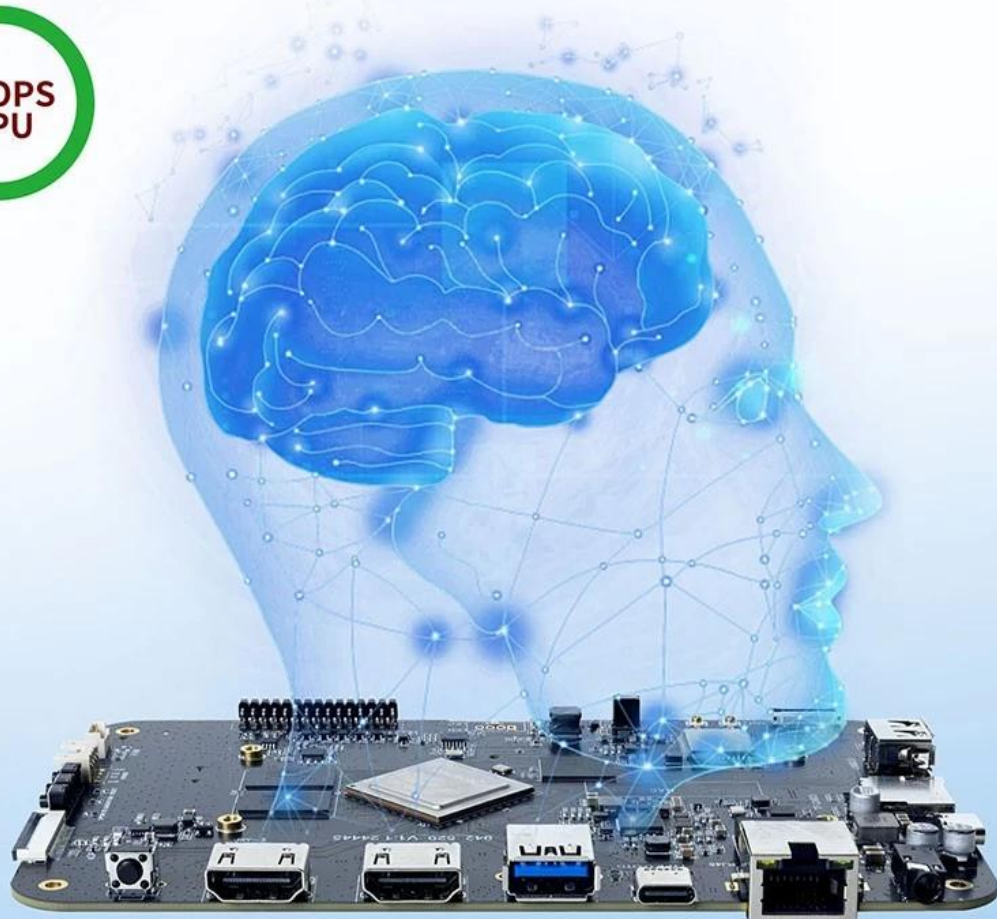
RK3588---Next-Generation Flagship AIoT CPU

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

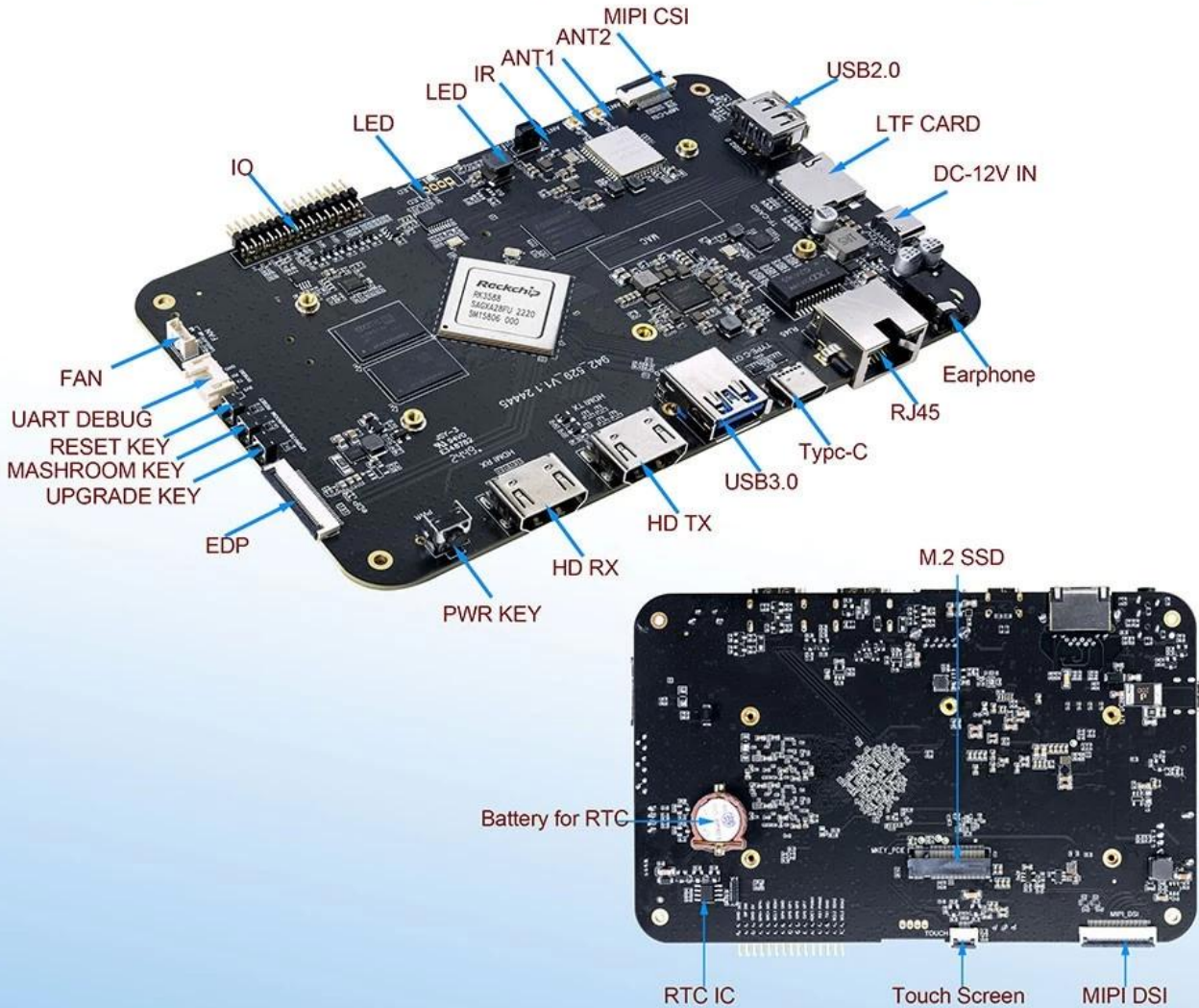
Up to 32GB RAM and 128GB eMMC storage, surpassing previous memory limits for faster response and meeting the demands of high-memory, high-storage applications.



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 **Rockchip RK3588 Octa-Core Android 12 LCD Controller Board** is a high-performance

solution tailored for modern digital signage, smart displays, and embedded systems. Packed with advanced features, including 4K/8K Ultra HD support and AI capabilities, this board sets a new benchmark for innovation in visual and intelligent applications.

Powerful Octa-Core Processor

At the heart of this controller board is the **Rockchip RK3588 Octa-Core CPU**, which combines efficiency and speed to handle demanding tasks. With four Cortex-A76 cores and four Cortex-A55 cores, it ensures seamless multitasking, robust processing power, and exceptional energy efficiency. The integrated GPU supports high-resolution graphics, making it ideal for applications requiring stunning visual performance.

4K/8K Ultra HD Support

The RK3588 board redefines clarity and precision with **4K and 8K Ultra HD** support. Whether used for digital signage, video walls, or interactive displays, it delivers breathtaking visuals with vivid colors, sharp details, and smooth motion. Its compatibility with HDR technology ensures enhanced contrast and richer tones, elevating the viewing experience.

Android 12 OS for Enhanced Functionality

Running on **Android 12**, this board offers a user-friendly interface, seamless app integration, and access to a vast library of applications. The latest Android version provides enhanced security features, improved performance, and a streamlined user experience. Developers can easily customize the platform for specific needs, making it versatile for various industries.

AI Integration for Smart Applications

The inclusion of **AI capabilities** allows for intelligent applications, such as facial recognition, object detection, and predictive analytics. This feature is particularly beneficial for retail, healthcare, and industrial automation, where real-time data processing and decision-making are crucial.

Versatile Connectivity Options

The board boasts extensive connectivity options, including HDMI, USB, PCIe, Ethernet, and more. These features enable seamless integration with a wide range of devices, from touchscreens and cameras to external storage and network systems. Its support for WiFi 6 ensures fast and stable wireless communication, perfect for modern IoT applications.

Applications Across Industries

The Rockchip RK3588 LCD Controller Board is designed for a variety of applications, including:

- **Digital Signage:** Create dynamic advertisements and real-time information displays with high-resolution graphics.
- **Smart Displays:** Enhance user engagement with interactive features and intelligent responses.
- **Industrial Automation:** Enable precise control and monitoring of processes with AI-driven insights.
- **Healthcare:** Power medical devices with accurate imaging and real-time data processing.
- **Retail:** Develop personalized shopping experiences through advanced analytics and AI applications.

Compact and Durable Design

Despite its advanced capabilities, the board features a compact form factor, making it easy to integrate into various devices. Its durable design ensures reliable performance even in demanding environments, providing a long-lasting solution for businesses.

Ease of Development and Customization

The Android 12 platform, combined with the Rockchip RK3588's robust SDK, simplifies the development process. Developers can leverage pre-built libraries, tools, and frameworks to accelerate time-to-market while maintaining flexibility for customization.

Energy Efficiency and Sustainability

The board's energy-efficient design reduces power consumption, contributing to lower operational costs and a smaller environmental footprint. This makes it an ideal choice for sustainable technology solutions.

Conclusion

The **Rockchip RK3588 Octa-Core Android 12 LCD Controller Board** is a groundbreaking solution for businesses and developers seeking top-tier performance, unparalleled visual quality, and advanced AI integration. Its versatility, combined with powerful hardware and extensive connectivity, ensures it meets the demands of diverse industries, from retail and healthcare to automation and beyond.

Invest in this controller board to elevate your digital and smart display applications, and experience the future of technology today.