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# CP-3588BX0 Product Brief

## ARM Cortex<sup>®</sup>-A76 MiniPC-board (RK3588)

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# Model CP-3588BX0

## Rockchip ARM RK3588 MiniPC Board



### Features

- RK3588 ARM Quad Cortex-A76 and Quad Cortex-A55 2.4 GHz
- Onboard 8GB/16GB/32GB LPDDR4 memory and 32/64/128GB eMMC
- ARM Mali G610 MP4
- 6T NPU support
- 2 x HDMI upto 8K@60fps
- USB3.0, USB2.0, 2 x GbE, PCIE x 4
- WIFI/BT support; 5G Module option;
- RTC support
- Debian11 support
- Android12 support
- Ubuntu22 support
- Yocto support

## 1、 Overview

CP-3588BX0 is adopted the new generation flagship of Rockchip RK3588 with octa-core 64-bit processor, integrated ARM Mali-G610 MP4 quad-core GPU, and with built-in AI accelerator NPU, which can provide 6Tops computing power, mainstream deep learning framework supported, and meet the computing power requirements of most artificial intelligence models. Besides, RK3588 also introduces a new generation of hardware based maximum 48 million pixel ISP (image signal processor), and implements many algorithm accelerators, such as HDR, 3A, LSC, 3DNR, 2DNR, sharpening, dehaze, fisheye correction, gamma correction etc, which has a wide range of applications in graph post-processing.

The SOM of RK3588 (CM5) takes the form of core board and bottom board. The core board is connected to the bottom board through the standard interface of SODIMM 314P MXM3.0, which can form a complete industrial motherboard. With abundant expansion interfaces, it supports the expansion of multiple types of peripheral devices, greatly showing the high performance advantages of RK3588-ultra-low power consumption and super performance. It can be directly used in a variety of intelligent product development, accelerating the product landing.

CP-3588BX0 is adopted LPDDR4/4X, which can be loaded with DRAM of 4GB, 8GB, 16GB and 32GB. At the same time, in terms of storage, it can carry the system and application through eMMC of 32GB, 64GB and 128GB. The external device can be connected to a SATA3.0 hard disk for data storage or an NVME SSD through the M.2 port. Support 5G module or double gigabit network port for network communication, WIFI6 connection, and support BT5.0 protocol; Software support for a variety of operating systems. It can be applied to MINI PC, ARM PC, edge computing, cloud server, intelligent NVR and other fields as well.

## **2、 Features**

### **2.1 High-performance octa-core processor**

RK3588 is integrated with quad-core Cortex™-A76 and quad-core Cortex™-A55 CPU with G610 MP4 Graphics processor, and the separate NEON co-processor, and the main frequency is up to 2.4GHz, which delivers superior general-purpose computing performance. Integrated octa-core high-performance CPU, with more bandwidth compression technology. There is strong overall extreme performance on RK3588.

### **2.2 With strong AI computing performance, Built-in neural network processor NPU**

Support 6.0 Tops computing power and INT4, INT8, INT16, and FP16 operations. AI development tools are provided: support for fast model transformation, development board side to side transformation API, and support for TensorFlow™/TFLite/Caffe/ONNX/Darknet and other models. Provide AI application development interface: support Android NN API, RKNN cross-platform API, Linux support TensorFlow™ development.

### **2.3 Excellent hard decoding capability**

Support 8K VP9 and 4K 10bits H265/H264 video decoding, up to 60fps support 1080P multi-format video decoding (VC-1, MPEG-1/2/4, VP8); Support 1080P video encoding, with H.264, VP8 format; Support 8K 60Hz display and HDCP 1.4/2.2.

### **2.4 Powerful display interface performance**

Support double LVDS, EDP, HDMI multiple display output interfaces, and support same DualView or different DualView.

### **2.5 Various Network Connection Modes**

Support Gigabit Ethernet (RJ45), and onboard WIFI/BT module, dual-band WIFI 2.4GHz/5GHz, and 802.11b/g/n protocol; Onboard MINI PCIE(4G/5G) interface seat and SIM seat, which can expand 4G/5G mobile communication function; Support WCDMA, EVDO, 4G/5G full netcom.

## **2.6 Convenient industrial equipment communication connection**

Support RS232(with hardware flow control) and RS485 interface simultaneously, and it can be convenient to connect various industrial equipment.

## **2.7 Rich extension interface**

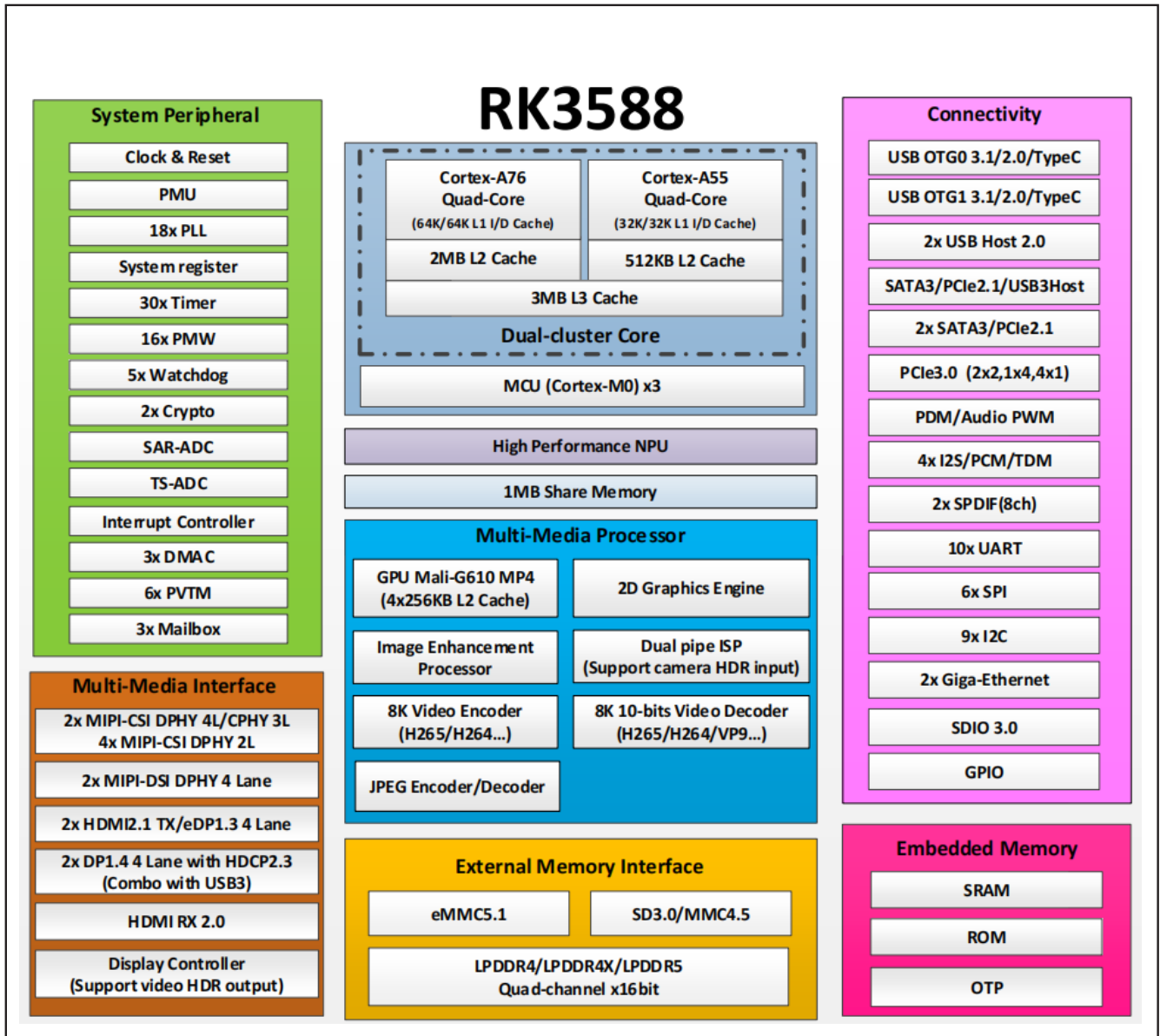
Support USB2.0/USB3.0、Gigabit Ethernet 、RS485、RS232、ADC、HDMI、WIFI、Ethernet and power interface

## **2.8 Operating System Support**

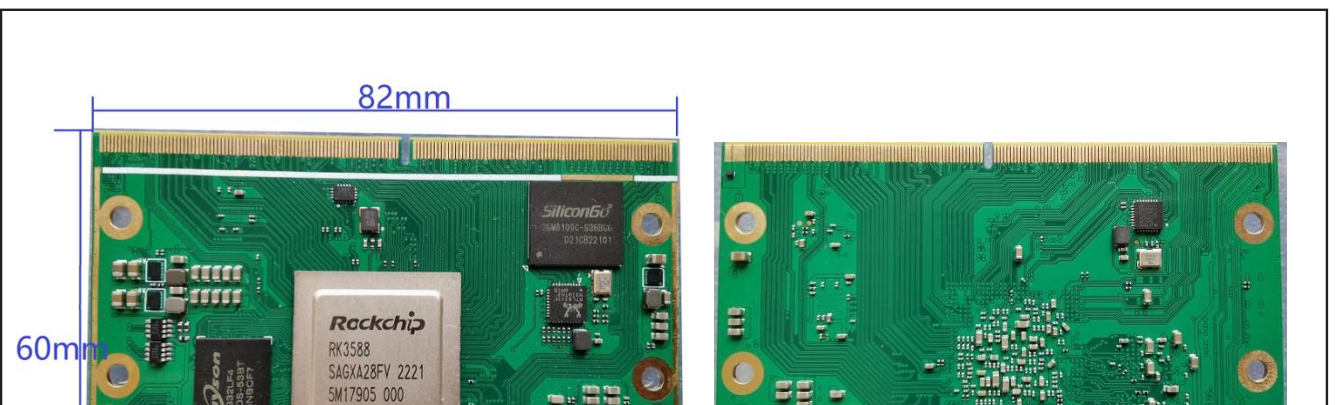
Debian11、Ubuntu22.04、Ubuntu20.04 、Android12



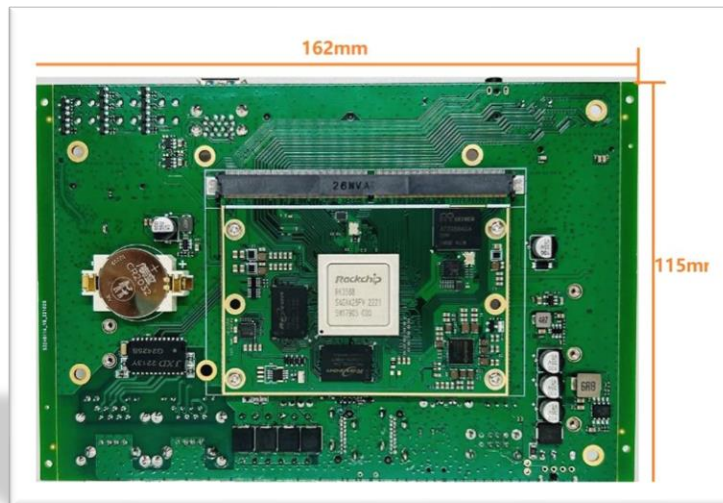
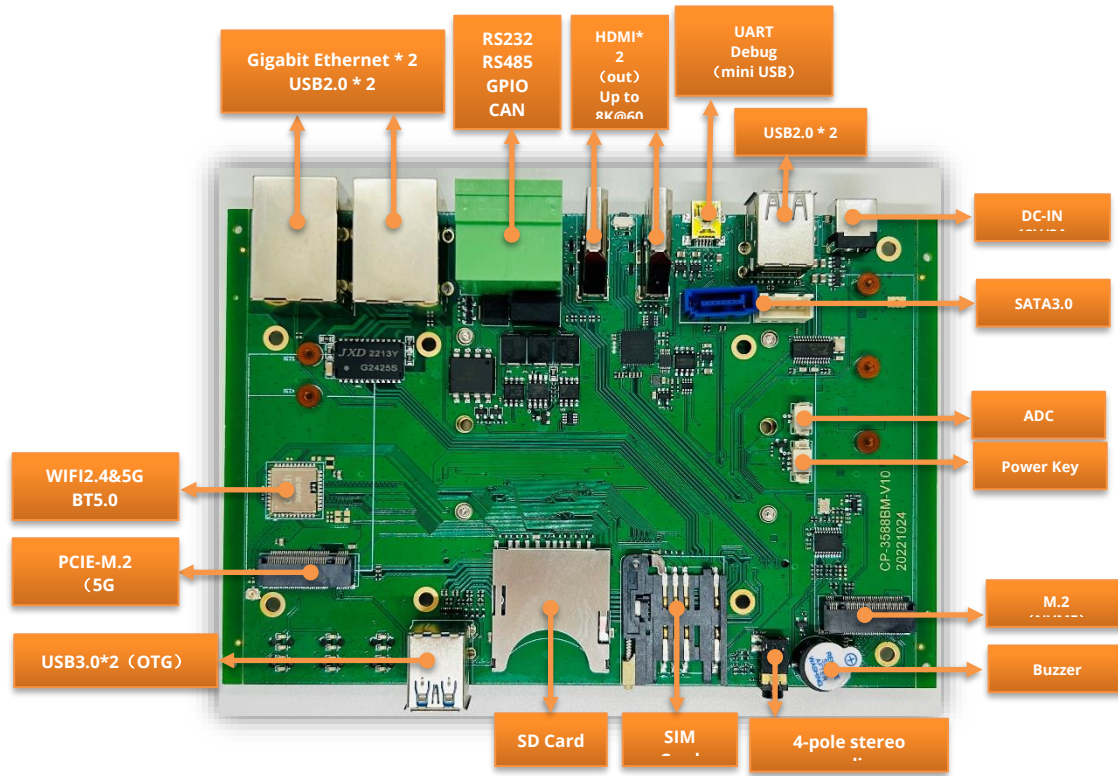
### 3、RK3588 Block Diagram



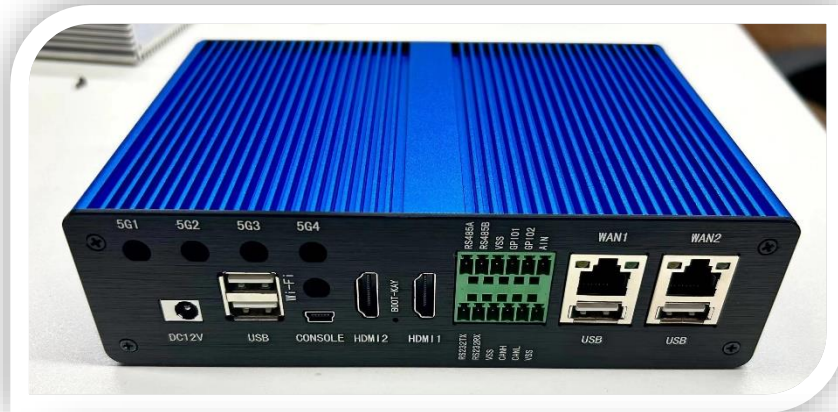
### 4、Core Board (Model CM5)



## 5. Mother Board (Model CP-3588BM)



## 6、 Overall Unit





## 7、Applications

Smart Cockpit



智能座舱



AR/VR

Edge Computing



边缘计算



高端IPC



高端平板



ARM PC

High-end IPC

High-end