

AX630C is an ultra-high definition intelligent IPC SoC developed by Axera for the industrial market. Integrated with the cutting edge AXProton 4.0 AI-ISP, this chip supports 4k@30 fps real-time video under black light. Equipped with AXNeutron 4.0 high-performance optimized NPU engine, AX630C takes a leading role in the high-quality image processing and analysis. This chip also provides reliable and easy-to-use SDK, empowering users to mass produce effectively.

# AX630C



## Features

### CPU

- Dual Cortex A53 1.2 GHz
- 32KB I-Cache
- 32KB D-Cache
- 256KB L2 Cache
- Neon acceleration
- Integrated FPU

### NPU

- Max. 12.8 TOPs @INT4, and 3.2 TOPs @INT8
- Supports multiple mainstream deep learning framework
- Supports IVE

### ISP

- Max. 4K@30fps AI ISP
- Supports 3A (AF, AWB, AE)
- Supports AI-3DNR, 3DNR
- Supports AI-RLTM
- Supports 2f HDR
- Supports FPN removal and DPC
- Supports fisheye correction
- Supports DIS and EIS
- Supports defogging
- Supports lens shading

### Video Encoding

- H.264 HP/MP/BP Level 5.1
- H.265 MP Level 5.0
- I-/P-frames
- Real-time multi-stream
- H.264/H.265 encoding: 4K@30 fps + 1080p@30 fps + 720p@30 fps
- CBR/VBR/FIXQP bit rate control mode
- 8 ROI encoding
- JPEG snapping performance: 3840 × 2160@40 fps

### Video Decoding

- H.264 HP/MP/BP: Level 4.2
- Max. decoding performance: 1080p@60 fps
- I-/P-/B-frames
- JPEG decoding: 1080p@60fps

### Video and Image Processing

- Customizable position and number of OSD overlays
- Supports mosaic
- Supports bitmap

## Peripherals

### Video Interfaces

- VI
- 1 × 4 Lane or 2 × 2 Lane MIPI
  - Up to 2.5 Gbps per lane
  - Supports Sub-LVDS

### VO

- 1-ch MIPI DSI
- Up to 1080p@60 fps output

### Memory Interfaces

- SDRAM Interface
- 32-bit DDR4/LPDDR4(x), with a max. capacity of 4 GB
  - Up to 2666 Mbps

### SPI Flash Interface

- Supports SPI Nor Flash
- Supports SPI Nand Flash

### eMMC v5.1 Interface

- Max. capacity of 2 TB

### Ethernet

- One Gigabit Ethernet ports
- RGMII, and RMII modes
- Internal PHY supports RMII

### USB

- One USB 2.0
- Supports Host or Device

### Other Interfaces

- I2S codec interface
- I2C, SPIs, and UART



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## Security

- Secure boot
- Hardware-based encryption and decryption algorithms (including AES, DES, and 3DES)
- Hardware-based HASH algorithms (SHA-1, SHA-224, and SHA-256)

## Startup

- Boot from eMMC, SPI Nor Flash, SPI Nand Flash

## Physical Spec.

### Operating Voltage

- 0.8V core voltage
- 1.2V DDR4 interface voltage
- 1.1V LPDDR4(x) interface voltage
- 1.8V/3.3V I/O voltage

### Package

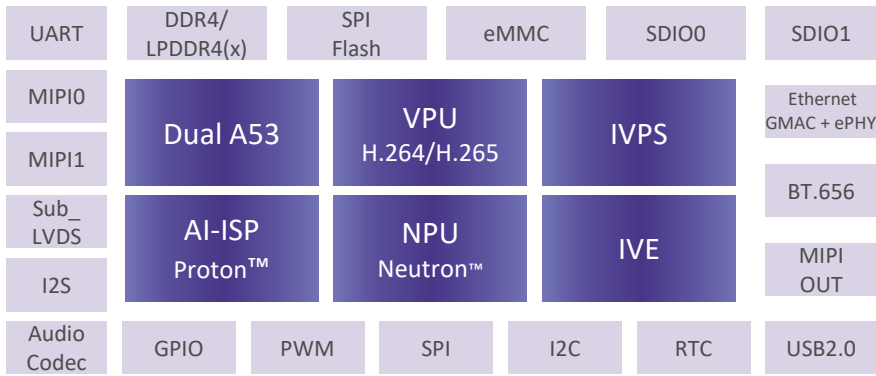
- 14 mm × 14 mm FC-CSP



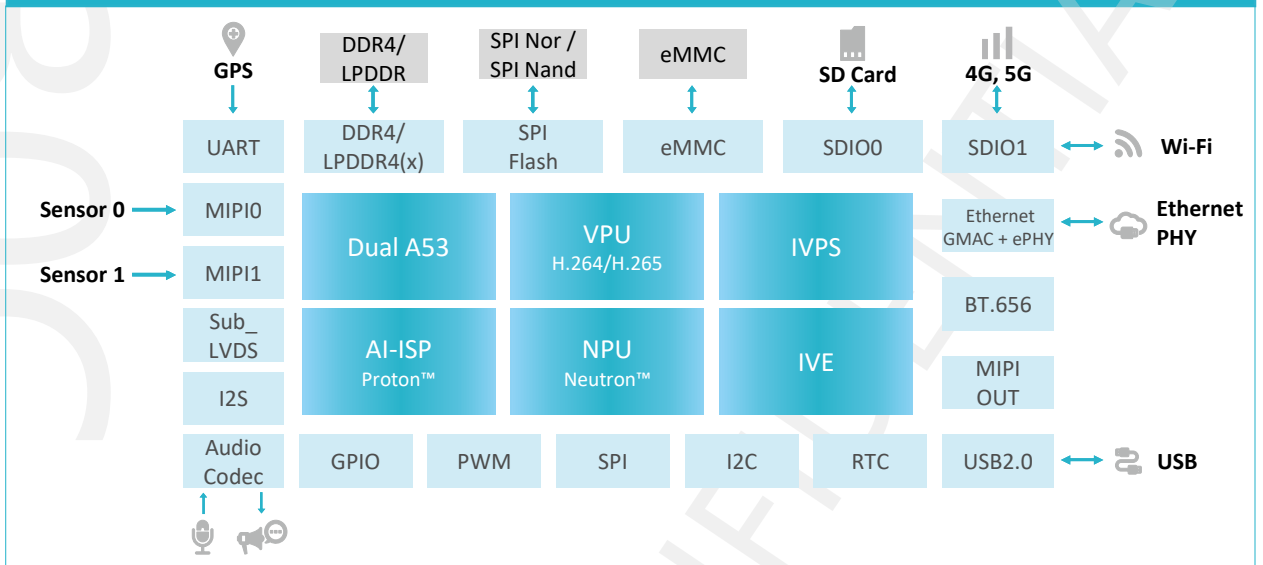
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## AX630C Block Diagram



## AI IP Camera Solution



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