

AX620QE is a UHD intelligent IPC SoC developed by Axera for industrial market. Integrated with the cutting-edge AXProton 4.0 AI-ISP, this chip supports real-time night vision of 4k @ 25 fps. Its high-performance AXNeutron 4.0 NPU optimized for diverse scenarios makes AX620QE to take a leading role in high-quality image processing and intelligent analysis.

AX620QE provides reliable and easy-to-use SDK, empowering you to mass produce

# AX620QE



## Product Overview

### CPU

- Dual core Cortex A53 1.2 GHz
- 32KB I-Cache
- 32KB D-Cache
- 256KB L2 Cache
- Supports NEON acceleration

### NPU Integrated with FPU

- Supports up to 12.8 TOPs @ INT4 or 3.2 TOPs @ INT8
- Supports mixed precision
- Supports various mainstream deep learning frameworks

### ISP

- Supports AI ISP up to 4K @ 25 fps
- Supports 3A (AF, AWB, and AE)
- Supports image information statistics
- Supports AI-3DNR and 3DNR
- Supports AI-RLTM
- Supports 2-frame HDR
- Supports fixed pattern noise reduction
- Supports automatic detection and elimination of dynamic bad pixels and elimination
- Supports vignetting compensation
- Supports image enhancement
- Supports dehaze
- Supports fisheye correction
- Supports DIS and EIS

### Video Encoding

- H.264 HP/MP/BP Level 5.1 encoding
- H.265 MP Level 5.0 encoding
- Supports I/P frames for H.264/H.265 format
- Real-time multi-stream H.264/H.265 encoding capability: 4K @ 25 fps + 1080p @ 25 fps + 720p @ 25 fps
- Supports bitrate control modes of CBR, VBR, AVBR, CVBR, FIXQP, and QPMAP
- Supports encoding up to 8 ROIs
- ROI Encoding
- JPEG capture performance: 4K @ 30 fps

### Video Decoding

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

### Video and Image Processing

- Supports customizing the position and number of OSD overlays
- Supports mosaic
- Supports bitmap
- Supports video and image cropping

## Hardware Interface

### Video Interface

#### Input

- Supports 1 × 4 lane or 2 × 2 lane MIPI
- Supports up to 2.5 Gbps per lane
- Supports Sub\_LVDS

#### Output

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

### Storage Interface

#### DDR interface

- SiP 4Gb LPDDR4
- Supports up to 3200 Mbps

#### SPI Flash

- Supports SPI Nor Flash
- Supports SPI Nand Flash

#### eMMC Interface

- Supports eMMC 5.1
- Up to 2 TB

### Peripheral Interface

#### Ethernet

- Supports 1-ch Ethernet
- Supports RMIII mode
- Supports TSO, UFO, and COE
- SiP RMIII ePHY

#### USB

- Supports 1-ch USB 2.0
- Supports Host/Device mode

#### Other Interfaces

- Built-in audio codec that supports I2S expansion
- Supports multiple I2C, SPI, and UART interfaces



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## Security

### Built-in Security Module

- Supports secure boot
- Supports memory security isolation
- Hardware implementation of AES, DES, and 3DES encryption algorithms
- Hardware implementation of SHA-1, SHA-224, and SHA-256

## Start-up

- Supports booting from eMMC
- Supports booting from SPI Nor Flash
- Supports booting from SPI Nand Flash

## Physical Specs.

### Operating voltage:

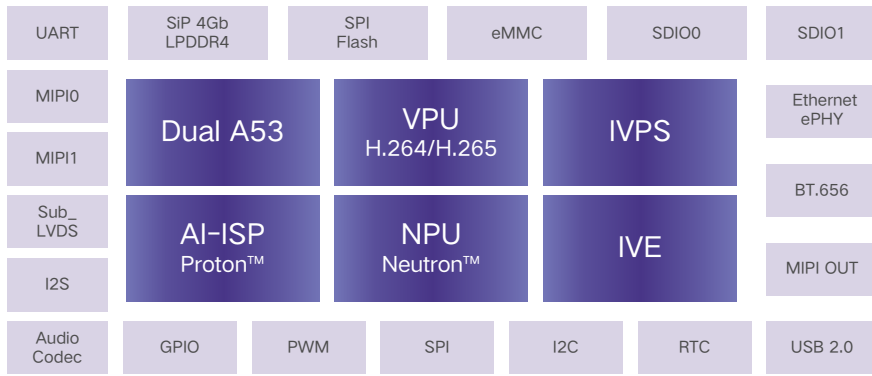
- Core voltage: 0.8 V
- LPDDR4 voltage: 1.1 V
- IO voltage: 1.8V, 3.3V

### Packaging

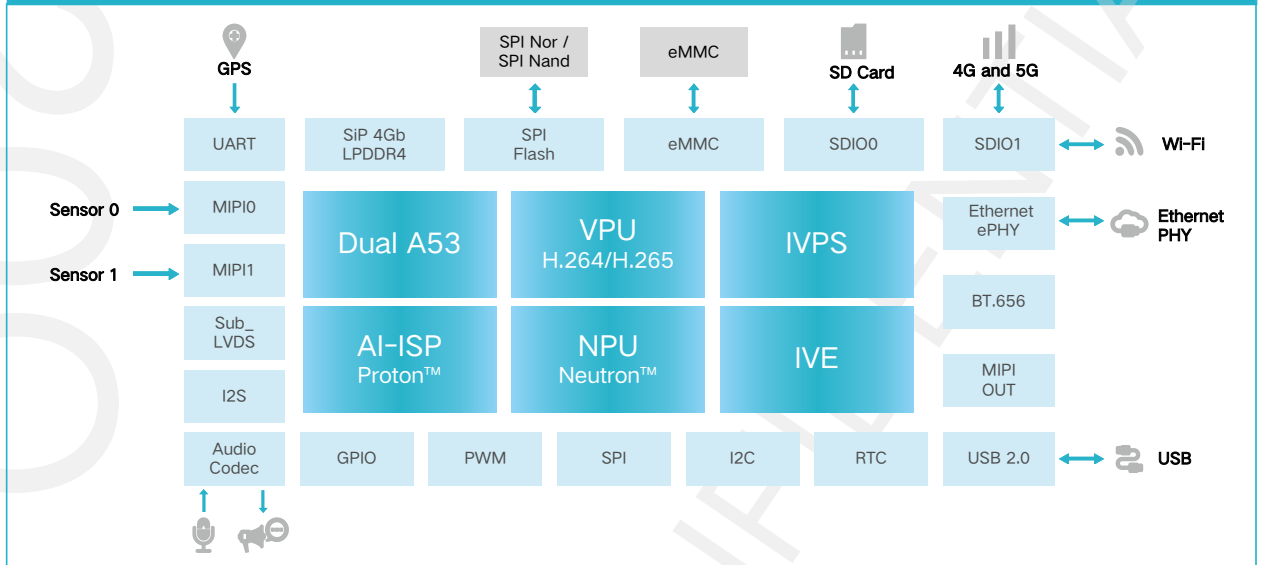
- 10 mm × 10 mm LFBGA

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# AX620QE Product Diagram



## Camera Solution for Industrial Applications



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