



AX8910 is a machine vision SoC featuring advanced AI and vision processing capabilities. It integrates four ARM Cortex-A55 processors, a high-efficiency NPU, an excellent ISP and computer vision (CV) engine that delivers superior image quality and low latency, along with an ARM Cortex-R5F core.

All these components are packaged in a low-power design optimized for industrial vision applications. A complete solution—including the chip, SDK, AI toolchain, reference algorithms, and EVK—is available upon request.



# AX8910

## Key Specifications

### Neutron™ NPU

- Supports mainstream CNN models with abundant operator sets
- Supports low-bit mixed precision computing of INT4, INT8, and INT16
- Complete toolchain, high-precision PTQ

### Multi-Core Architecture

- Quad-core Arm® Cortex®-A55, 1.4 GHz
- Independent IVE engine
- Supports abundant CV operators

### MCU

- Single core R5F, 1.0 GHz
- Supports HSM

### Proton™ ISP

- Excellent, leading ISP
- Supports NR, HDR, Demosaic
- Image enhancement features including reducing the purple fringes and dehazing
- Supports RGGB, RCCB, RGB-IR



### Rich Interfaces (GPIO total 151 pin)

- 2 × 4-lane MIPI Rx
- 2 × 4-lane Sub-LVDS
- 1 × MIPI-CSI Tx
- Supports 2 x 1G Ethernet MAC
- Supports 1 x USB 2.0
- Supports 7 x CAN-FD
- Supports 3\*8-ch PWM
- Supports 1\*16-ch ADC

## Application Scenario

### Industrial Code Reader and Smart Camera

- Native support for high-precision synchronization between image sensor and flash
- High-performance, mixed-precision NPU
- Ultra-low power consumption, typical power: 1.7 W

### Mid-range robotic vacuum cleaners

- Supports multi-camera video input and delivers outstanding ISP performance
- The NPU runs binocular depth algorithm at 15fps with only 65% load
- Equipped with powerful CV acceleration engine and abundant operators
- Built-in high-performance MCU to lower system BOM cost

### 3D Camera

- Native support high-precision binocular 3D depth sensing
- Ultra-low power consumption, typical power:1.7 W

### Smart Robotic Lawn Mower

- Supports multi-camera video input with superior ISP image performance
- The NPU runs binocular depth algorithm at 15fps with only 65% load
- Equipped with powerful CV acceleration engine and abundant operators
- Built-in high-performance MCU to lower system BOM cost

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- Rich peripheral interfaces available, compatible with 2WD/4WD drive systems

## Product Description

### CPU

- Quad-core Arm® Cortex®-A55, 1.4 GHz
- Supports 32KB I-Cache/D-Cache
- Supports advanced SIMD and floating-point extension instruction set (Arm® Neon™)

### NPU

- 12Tops@INT8
- Supports mainstream deep learning frameworks
- Supports batch acceleration
- Supports mixed precision
- Mature toolchain, high-precision PTQ, and a rich set of operators

### ISP

- Supports performance up to 8M@30 fps
- Supports RAW8/10/12/14/16 and YUV8 formats
- Supports CFA patterns: Bayer, RGB-IR 4x4; optimized for RCCB/RCCG
- HDR and multi-frame HDR
- RTLM with multi-contrast enhancement
- Multi-scale noise reduction
- Demosaic
- Supports 3A (AF, AWB, and AE)

### IVE

- Supports a wide range of CV operators, such as rotation, scaling, distortion correction, cropping, LK optical flow

### Video Codec

- H.264 JPEG encoding
- Max. encoding capability: 4k@30fps

## Hardware Interface

### Video Interface

#### Video Input

- Supports 2 × 4-lane MIPI-CSI/ Rx, 5-ch camera input, up to 2.5 Gbps/Lane
- Supports 2 × 4-lane Sub-LVDS

#### Video Output

- Supports 1 × 4-lane MIPI-CSI Tx, up to 2.5 Gbps/Lane

### I2S

- Support 1x Slave and 1 x Master

### MCU

- Single-core R5F@1.0GHz
- 12 × LPWM, 1 × ETH, 1 × QSPI, 1 × 16-ch ADC, 40 × GPIOs
- HSM
  - Supports secure boot
  - Memory access protection
  - Hardware acceleration for cryptographic algorithms
  - Supports hardened modules for Chinese national cryptographic algorithms: SM2/SM3/SM4
  - Supports TRNG (true random number generator)

### Storage Interface

#### DDR

- 32-bit LPDDR4/LPDDR4x
- Supports up to 3733Mbps

#### eMMC

- Supports eMMC v5.1

#### SDcard

- Supports SD3.0

#### OSPI

- Supports 1 /2 /4 /8-wire SPI NOR and SPI NAND

### Peripheral Interface

#### Ethernet

- 2xRGMII/RMII

#### Other Modules

- PWM, I2C, SPI, UART, CAN



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## Physical Specifications

### Working Temperature

- -40 to 85 °C (ambient)

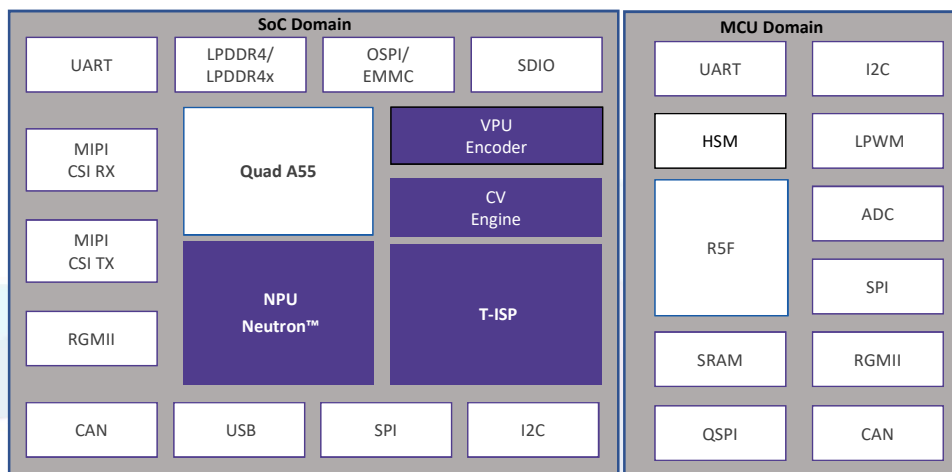
### Packaging

- FC CSP 15 × 15 mm, 0.65 mm pitch



AXera  
Official  
Website

## AX8910 Product Diagram



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