

# Intelligent Professional IP Camera SoC

## Processor Core

- Single-core Cortex-A7@1.2GHz
- Neon acceleration, integrated FPU

## Video Encoding Performance

- H.264 BP/MP/HP, H.265 Main Profile encoding
- MJPEG/JPEG baseline encoding
- Real-time multi-stream H.264/H.265 encoding capability:
  - 2688x1520@30fps+1280x720@30fps encoding
  - 2592x1936@30fps+720x576@30fps encoding
- Supports JPEG encoding
- Rate control modes: CBR and VBR
- Encoding of 16 ROIs
- On-screen display (OSD) overlay pre-processing for 64 regions

## Video Input

- Supports two video input channels
- The first channel supports 8/10/12-bit DC timing input, and supports BT.601/BT.656/BT.1120 input interfaces
- The second channel supports 4lane MIPI CSI2 interface
- The maximum input width is 2688

## Video Output

- Supports 3 layers (2 video layers, 1 UI layers) overlay, video and UI layer up to 1080p
- One MIPI DSI up to 1080p@60fps
- One RGB888/666/565 display output
- One BT.656/BT.1120 video output

## Audio Interface

- Integrated audio CODEC supporting 20-bit audio inputs and outputs
- Mono MIC/Linein input and mono Lineout output
- I2S interface for connecting to an external audio CODEC

## Audio Encoding/Decoding

- Voice encoding/decoding complying with multiple protocols by using software
- Compliance with the G.711, G.726 and ADPCM protocols
- Audio 3A functions (AEC, ANR, and ALC)

## Intelligent Video Analysis

- Integrated neural network accelerate engine, maximum 0.4Tops process performance
- Supports various intelligent analysis applications such as human detection, face detection, and face recognition, etc

## ISP

- Adjustable 3A functions (AE, AWB, and AF), and 3A parameters is adjustable
- Supports 2F WDR and Local Tone mapping, supporting highlight suppression and backlight compensation
- Supports bad pixel correction, Lens shading correction
- Supports multi-level noise reduction (spatial-domain noise reduction and time-domain multi-frame noise reduction), remove motion smear and color noise
- Supports color adjustment, color enhancement
- Supports image dynamic contrast enhance and sharpness enhance
- Supports 4 channels of scaling output from 1/256x to 1x
- Supports image mirroring and flipping
- Provides ISP tuning tools for the PC

## Graphics Processing

- Supports Lens distortion correction, fisheye (wall mounting/top mounting/bottom mounting) and PTZ calibration
- Supports 90°, 180°, 270° picture rotation
- 1/256 to 32x picture scaling
- Supports Electronic Image Stabilization Engine (EISE)

## Security Engine

- AES, DES, and 3DES encryption and decryption algorithms
- RSA1024/2048/4096 signature verification algorithm
- Hash-SHA1/256 and HMAC\_SHA1/256 tamper proofing
- Integrated 1 Kbits OTP storage space and hardware random number generator

## Peripheral Interfaces

- External reset input
- Internal RTC
- Integrated multichannel ADC
- UART, CIR, TWI, PWM, GPIO interfaces
- Three SD3.0/SDIO3.0 interfaces, supporting SDXC
- One USB2.0 OTG
- RGMII/RMII in 10/100 Mbit/s full/half-duplex mode and 1000Mbit/s full-duplex mode

## Boot

- Booting from SPI NOR flash, SPI NAND flash, or eMMC
- Supports programming firmware by SD Card, USB device

## SDK

- Linux-4.9 SDK

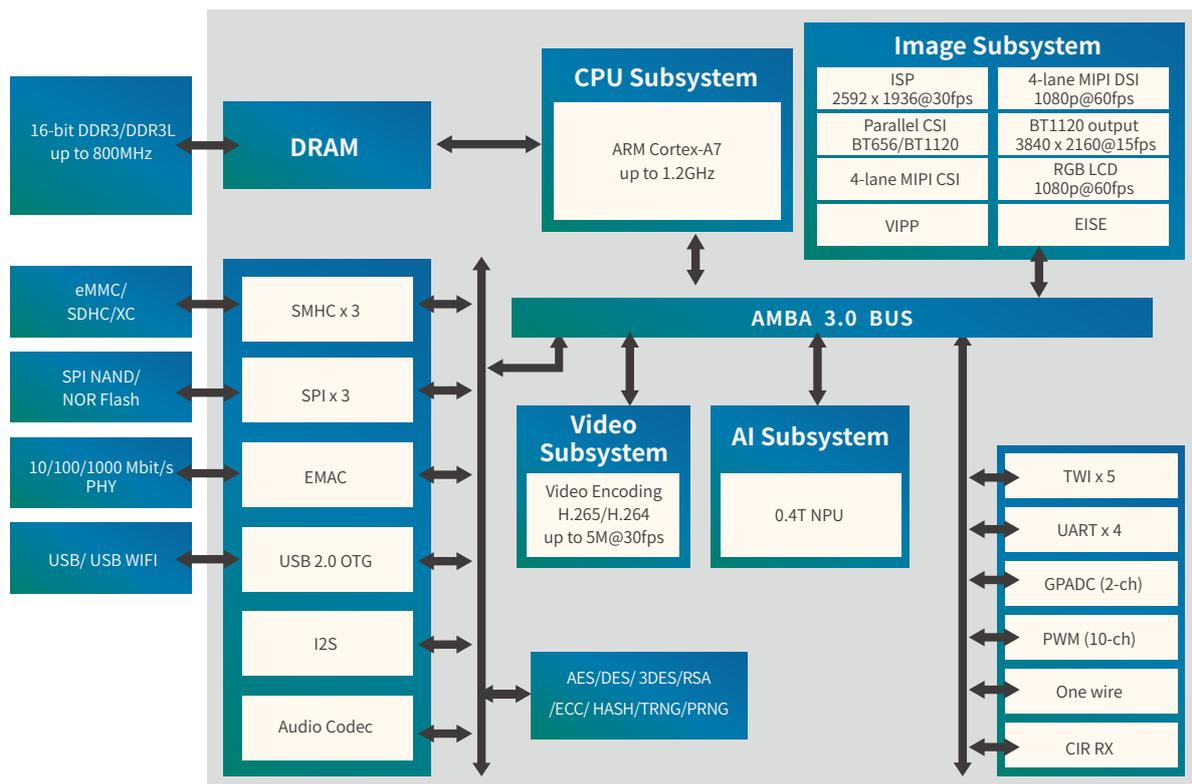
## External Memory Interfaces

- SDRAM interface
  - 16-bit DDR3/DDR3L interface, maximum frequency of 800 MHz
  - Maximum memory up to 4 Gbits for single 16-bit DDR
- SPI NOR flash interface
  - 1-/2-/4-wire mode
  - Maximum capacity of 32 MB
- SPI NAND flash interface, maximum capacity of 512 MB
- eMMC 5.0 interface

## Physical Specifications

- Power consumption
  - Typical 5M30 encoding, power consumption: 800 mW
- Operating voltage
  - 0.9 V core voltage
  - 3.3 V IO voltage
- Package
  - 12mm x 12mm, 273pin, 0.65mm ball pitch, LFBGA RoHS

## Block Diagram



## ABOUT ALLWINNER

Allwinner Technology is a leading fabless design company dedicated to smart application processor SoCs and smart analog ICs. Its product line includes multi-core application processors for smart devices and smart power management ICs used by brands worldwide.

With its focus on cutting edge UHD video processing, high performance multi-core CPU/GPU integration, and ultra-low power consumption, Allwinner Technology is a mainstream solution provider for the global tablet, internet TV, smart home device, automotive in-dash device, smart power management, and mobile connected device markets. Allwinner Technology is headquartered in Zhuhai, China.

## CONTACT US

For more product info, please contact [service@allwinnertech.com](mailto:service@allwinnertech.com), or scan the QR code to follow us on Wechat.

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