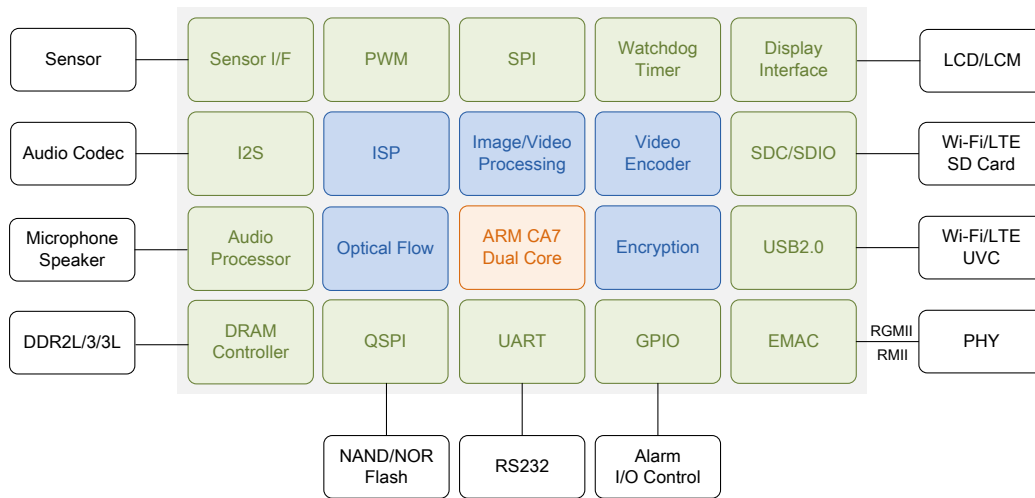


## Application Block Diagram



## Overview

The Augentix HC1783S is a high-performance Multimedia SoC solution. It supports all types of image sensor for up to 12 Mpixel resolution. It integrates high quality Image Signal Processing (ISP), smart image/video processing engine, high performance video encoder, hardware audio codec, hardware bit-stream encryption engine, ARM<sup>®</sup> Cortex A7 AMP dual core, display panel interface, and complete peripherals. It provides excellent image quality, rich smart video analysis, and high performance video coding. The BOM cost is highly reduced by customer-oriented design including small package size, low ball counts, and supporting serial NAND/NOR flash.

## Key Features

### Excellent Image Quality

- Up to 12 Mpixel resolution
- Optical-Flow Noise Reduction
- General 2D graphics overlay with arbitrary layers and shapes
- True wide dynamic range (WDR)
- Electronic Image Stabilizer (EIS)
- High quality polyphase up/down scaler

### Smart Video Analysis

- Optical-flow

- Foreground object detection and tracking
- Accurate scene detection and segmentation

### High Performance Video Coding

- Up to 6M @ 30 fps H.264/H.265 encoding
- Up to 12 Mpixel image/video resolution
- Realtime bandwidth adaptive rate control with variable GOP, frame size, ROI

### System Design Friendly

- 12×12 mm<sup>2</sup> TFBGA with 240 pins
- Support serial NAND/NOR flash
- Support RMI and RGMII

## General Specifications

### Sensor I/F

- Dual 16 bit CMOS sensor or One Digital Video Port (DVP) interface
- 2-/4-lane LVDS/HiSPi™/MIPI™
- 2-channel LVDS/HiSPi™/MIPI™

### Sensor Processing

- 12 MPixels maximum resolution
- Up to 180M pixel/s input data-rate
- Device color calibration/Digital black-level calibration/Fixed pattern noise reduction
- Gamma correction
- Automatic defect pixel detection/correction
- Automatic crosstalk detection/correction
- RGBIr/RGBW support

### Image Processing

- Optical-Flow Noise Reduction
- Hardware de-warping/stitching 180°/360° video
- Hardware 180°/360° fisheye de-warping
- Multi-frame, line-interleave, and pixel-interleave HDR
- 2D graphics for general OSD overlay with arbitrary layers and shapes
- Contrast, brightness, saturation adjustment
- Poly-phase scaler for ratio from  $\frac{1}{32} \times$  to  $32 \times$ , aspect ratio adjustment
- Digital PTZ and virtual cameras
- Flip, mirror, crop, 90°/270° rotate
- Lens shading correction
- Lens distortion correction
- WDR local tone-mapping
- Two-frame HDR
- 2D sharpness engine for edge/detail enhancement
- 2D noise reduction
- Hardware fisheye de-warping

### Smart Video Processing

- Advance object motion analysis
- Electronic Image Stabilization (EIS)
- Flexible 3A (AE, AWB, AF)
- Abnormal event detection

- Electronic fence
- Face detection acceleration
- Human detection acceleration
- Back-light compensation
- Robust scene segmentation

### Video Encoding

- Up to 6M @ 30 fps encoding performance
- Up to 12 MPixel maximum resolution
- H.265 main profile
- H.264 MP/HP Level 5.1 and MJPEG
- Up to 3 simultaneous encoding stream
- Bandwidth adaptive encoding
- Real-time rate-control with dynamic ROI, resolution, frame-rate, GOP
- Support VBR, CBR, smart CBR
- Embedded AES128/256 encryption engine

### System

- ARM® Cortex A7 AMP dual core 1 GHz with multiple DMA
- 32 KB/32 KB for I-cache/D-cache, 128 KB for L2 cache
- NEON and FPU
- Support external DDR2L/3/3L up to 4 Gb
- AES128/256 hardware acceleration
- 10/100/1000 MHz Ethernet MAC with RGMII/RMII
- Serial NAND/NOR flash with 400 Mbps
- Audio ADC/DAC and hardware G.711/G.726 codec
- Audio processor including AEC
- BT656/1120 video output interface
- MIPI DSI display panel interface
- USB 2.0 dual role with PHY
- Dual SDIO/SDC
- Multiple I2S, SPI, UART, PWM, ADC, DAC, Watchdog, multiple general purpose timer, JTAG

### Physical

- Typical 1W for 6M @ 30 fps, DDR included
- 0.9V core voltage, 1.8/3.3V I/O voltage
- Operating temperature  $-20^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$
- TFBGA with 240 pins,  $12 \times 12 \text{ mm}^2$ , 0.65 mm pitch

## Contact

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