Application Block Diagram

Sensor	Sensor I/F	PWM	SPI	Watchdog Timer	Display Interface	LCD/LCM
Audio Codec	I2S	ISP	Image/Video Processing	Video Encoder	SDC/SDIO	Wi-Fi/LTE SD Card
Microphone Speaker	Audio Processor	Optical Flow	ARM CA7	Encryption	USB2.0	Wi-Fi/LTE UVC
	DDR	QSPI	UART	GPIO	EMAC	PHY (RMII)
		NAND/NOR Flash	RS232	Alarm I/O Control		

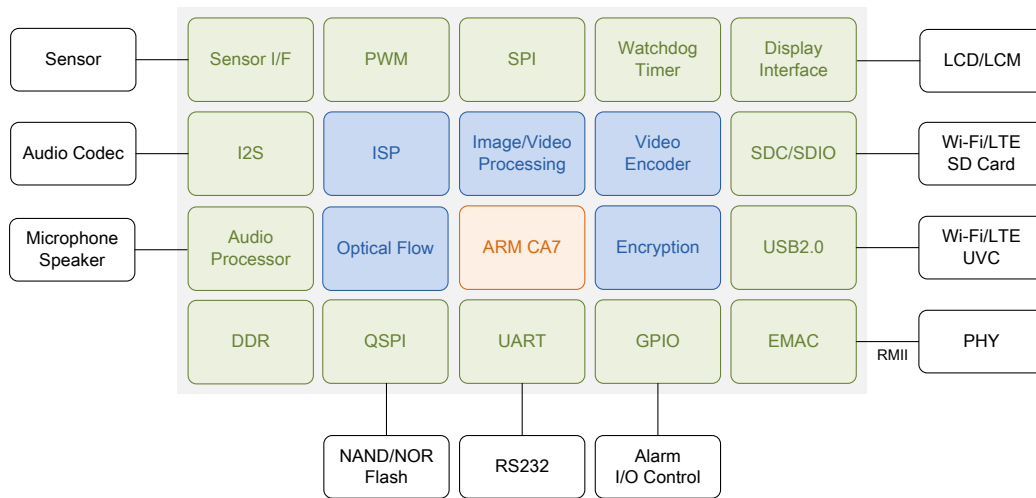## Overview

The Augentix HC1703 is a cost-effective Multimedia SoC solution. It supports all types of image sensor for up to 3 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® Cortex A7 single 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 3 Mpixel resolution
• Optical-Flow Noise Reduction
• General 2D graphics overlay with arbitrary layers and shapes
• True wide dynamic range (WDR)
• 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 3M @ 30 fps H.264/H.265 encoding
• Up to 3 Mpixel image/video resolution
• Realtime bandwidth adaptive rate control with variable GOP, frame size, ROI

System Design Friendly

• 9×9 mm^2 QFN with 88 pins
• SiP with DDR2L up to 512 Mb
• Support serial NAND/NOR flash
• Support RMII

General Specifications

Sensor I/F

- One 10 bit CMOS sensor
- 2-lane LVDS/HiSPi^{TM}/MIPI^{TM}
- 2-channel LVDS/HiSPi ^{TM}/MIPI^{TM}

Sensor Processing

- 3 MPixels maximum resolution
- Up to 90M 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

Image Processing

- Optical-Flow Noise Reduction
- 2D graphics for general OSD overlay with arbitrary layers and shapes
- Contrast, brightness, saturation adjustment
- Poly-phase scaler
- 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
- Scene detection and segmentation

Video Encoding

- Up to 3M @ 30 fps encoding performance
- Up to 3 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 single core 900MHz with multiple DMA
- 32 KB/32 KB for I-cache/D-cache, 128 KB for L2 cache
- NEON and FPU
- Built-in DDR2L up to 512 Mb
- AES128/256 hardware acceleration
- 10/100 Ethernet MAC with 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
- 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 550mW for 3M @ 30 fps, DDR included
- 0.9V core voltage, 1.8/3.3V I/O voltage
- Operating temperature $-20°C$ to $+60°C$
- QFN with 88 pins, 9×9 mm^2, 0.35 mm pitch

Contact