SDK Differences Between Hi3516C V500 and Hi3519A V100

Issue 01

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About This Document

Purpose

Hi3516C V500 and Hi3519A V100 are IP camera system-on-chips (SoCs) launched by HiSilicon. The SDK of Hi3516C V500 is similar to that of Hi3519A V100 developed by HiSilicon, but some specifications and APIs are modified. This document describes the differences between Hi3516C V500 and Hi3519A V100 in specifications, and the changes in the SDK components and MPIs.

Related Version

The following table lists the product version related to this document.

Product Name	Version
Hi3516C	V500

Intended Audience

This document is intended for:

- Technical support engineers
- Software development engineers

Change History

Changes between document issues are cumulative. The latest document issue contains all changes made in previous issues.

Issue 01 (2019-09-15)

This issue is the first official release, which incorporates the following changes:

Table 1-1 is modified.

Issue 00B03 (2019-01-15)

This issue is the third draft release, which incorporates the following changes:

Table 1-1 and Table 3-1 are modified.

Issue 00B02 (2018-10-12)

This issue is the second draft release, which incorporates the following changes:

Chapter 2, Table 2-1 is modified.

Issue 00B01 (2018-07-15)

This issue is the first draft release.

Contents

Tables

1 Differences in Specifications

Table 1-1 lists the specification differences between Hi3516C V500 and Hi3519A V100. For details about the specifications of Hi3516C V500, see the *Hi3516C V500 Professional Smart IP Camera SoC User Guide*.

Table 1-1 Differences in the specifications

Major Specifications	Hi3516C V500	Hi3519A V100
Processor	2 x ARM Cortex-A7@ 900 MHz, 32 KB I-cache, 32 KB D-cache, and 256 KB L2 cache	2 x ARM Cortex A53@1.2 GHz, 32 KB I-cache, 32 KB D-cache, and 256 KB L2-cache
DSP	Not supported	1 x DSP, supporting the 32 KB I-Cache, 32 KB I-RAM, and 512 KB data RAM
DPU	Not supported	Supported
AVS	Not supported	Supported
GDC	• LMF not supported • Normal correction for fisheye cameras fixed on the wall	• LMF • Three fisheye correction modes: 360° panoramic mode, 180° panoramic mode, and normal mode
VPSS	Three physical channels	• Four physical channels
VGS	-	-
VENC	• H.265 Main Profile • H.264 Baseline Profile, Main Profile, and High Profile, level 5.1 • I-slices and P-slices supported by H.265 and H.264 encoding • JPEG Baseline Profile • Frame memory saving mode. • OSD in 2BPP format. • Default quantization/non-quantization table for H.265	• H.265 Main Profile • H.264 Baseline Profile, Main Profile, and High Profile, level 5.1 • I-slices, P-slices, and B-slices supported by H.265 and H.264 encoding • JPEG Baseline Profile • User-defined quantization table and default quantization/non-quantization table for H.265

Major Specifications	Hi3516C V500	Hi3519A V100
Video encoding performance	• Up to 2304-pixel wide and 2304 x 1296 resolution for H.265 and H.264 encoding • H.265 and H.264 encoding performance: 1920 x 1080@30 fps + 720 x 480@30 fps + 360 x 240@30 fps 2304 x 1296@20 fps + 720 x 480@20 fps + 360 x 240@20 fps • Maximum resolution of JPEG encoding:8192 x 8192 • Maximum performance of JPEG encoding: 16M(4608 x 3456)@10 fps • Maximum bit rate of H.265 and H.264 encoding outputs: 50 Mbit/s • Encoding of eight ROIs	• Maximum resolution of H.265 and H.264 encoding: 8192 x 8192 • H.265 and H.264 encoding performance: 3840 x 2160@60 fps + 720p@30 fps • Maximum resolution of JPEG encoding: 8192 x 8192 • Maximum performance of JPEG encoding: 16 MP (4608 x 3456)@30 fps • Maximum bit rates of H.265 and H.264 encoding outputs respectively: 120 Mbit/s and 200 Mbit/s • Encoding of eight ROIs
VDEC	Not supported	• H.265 Main Profile, level 5.1 • H.264 Baseline Profile, Main Profile, and High Profile, level 5.1 • JPEG Baseline Profile • Maximum resolution of H.265 and H.264 decoding: 8192 x 8192 • Maximum performance of H.265 and H.264 decoding: 3840 x 2160@60 fps • Maximum resolution of JPEG decoding: 8192 x 8192 • Maximum performance of JPEG decoding: 16 MP (4608 x 3456)@30 fps
IVE	1 x NNIE, total performance of 0.5 Tops	1 x NNIE, total performance of 1.7 Tops
IVE	MatchBgModel, UpdataBgModel, ANN, SVM, and CNN not supported	MatchBgModel, UpdataBgModel, ANN, SVM, and CNN supported
Security module	• Standard AES-CBC, ECB, CFB, OFB, and CTR modes • The AES supports the encryption and decryption of the 128-bit, 192-bit, and 256-bit hardware keys from the keyladder. • 1024-width, 2048-width, and 4096-width RSA keys	• Standard AES-CBC, ECB, CFB, OFB, CTR, CCM, and GCM modes • The AES supports the encryption and decryption only of the 128-bit hardware key from key ladder. • 1024-width, 2048-width, 3072-width, and 4096-width RSA keys
ISP	• Detail enhancement supported. • Radial shading not supported	• Detail enhancement not supported • Radial shading supported

Major Specifications	Hi3516C V500	Hi3519A V100
	• FPN frame mode supported	• FPN frame and line modes supported
Audio	HDMI output not supported	HDMI 2.0 output
VI	• Up to 4-lane image sensor serial input • One sensor serial input • One YUV input through MIPI • One channel • SLVS-EC interface not supported	• Up to 12-lane image sensor serial input • 5-lane sensor serial input • 1–lane to 4-lane YUV inputs through the MIPI virtual channel • Two channels • SLVS-EC interface
VO	• One video layer • One graphics layer • One output device • WBC not supported • HDMI output not supported	• Three video layers • Two graphics layers • Two output devices • WBC supported • HDMI 2.0 output
Memory interface	• 16-bit DDR3 (L) and DDR4 SDRAM interfaces • SPI NOR flash interface • SPI NAND flash interface • NAND flash interface not supported • eMMC 4.5 interface	• 32-bit DDR4, LPDDR4, and LPDDR3 SDRAM interfaces • SPI NOR flash interface • SPI NAND flash interface • NAND flash interface • eMMC 5.1 interface
Peripheral interface	• Two SDIO 3.0 interfaces • One USB 2.0 interface (without the PCIe interface) • 2-channel LSADC • Three PWM interfaces	• Two SDIO 3.0 interfaces • One interface multiplexed as the USB 3.0 or PCIe 2.0 interface and one USB 2.0 interface, host and device configurable • 4-channel LSADC • Eight PWM interfaces

2 SDK Differences

Table 2-1 describes the differences in the SDK components between Hi3516C V500 and Hi3519A V100.

Table 2-1 SDK differences

Component	Hi3516C V500	Hi3519A V100
Lib	-	-
Tool chain	-	-
Linux Kernel	linux-4.9.37, supporting Cortex-A7	linux-4.9.37, supporting Cortex-A53
File system	-	-

3 Differences in MPIs

Table 3-1 describes the differences between Hi3516C V500 and Hi3519A V100 in the MPIs. For details, see the *Hi3516C V500 and Hi3519A V100 MPI Interface Differences*, *ISP Interface Differences between Hi3516C V500 and Hi3519A V100*, and *HiMPP V4.0 Media Processing Software Development Reference*.

Table 3-1 Differences in the MPIs

Module Name	Difference Extent of Hi3516C V500 Compared with Hi3519A V100	Description
System control/VB	Same	-
ISP	Partially modified	Some parameters of DRC, WDR, and CA are not supported. Some parameters are added to DE interfaces
MIPI	Partially modified	Some specifications are deleted. For example, SLVS is not supported. Some specifications are modified. For example, the MIPI supports up to 4 lanes.
VI	Partially modified	• The Bayer field scaling function is not supported. • The interfaces related to interrupt reporting in advance are not supported. • The numbers of supported devices and channels change.
Video pre-processing	Partially modified	• 3DNR parameters are added. • The 3DNR function for the snapshot mode is added. • The sharpening interface is not supported.
VENC	Partially modified	• The B-frame encoding is not supported. • The frame saving mode is added.
VDEC	VDEC is not supported	-
VO	Partially modified	The interfaces related to WBC and playback control are not supported. The interfaces related to HDMI are not supported.

Module Name	Difference Extent of Hi3516C V500 Compared with Hi3519A V100	Description
Fisheye	Partially modified	Only normal correction for fisheye cameras fixed on the wall is supported.
Region	Partially modified	The OSD in 2BPP format is supported.
VGS	Partially modified	The input format of VIDEO_FORMAT_TILE_64x16 is not supported.
Audio	Same	-
IVE	Partially modified	The interfaces related to ANN, SVM, and CNN are not supported.

