MPI Differences Between Hi3516C V500 and Hi3519A V100

Issue 01

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About This Document

Purpose

This document describes the differences between the media processing platform programming interfaces (MPIs) of Hi3516C V500 and Hi3519A V100, including the modified MPIs and new MPIs. With this document, engineers that develop products based on Hi3519A V100 can quickly understand the major differences between Hi3516C V500 and Hi3519A V100, and therefore quickly develop products based on Hi3516C V500.

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:

Sections 2.4, 2.5, 2.11, and 2.22 are modified.

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Issue 00B04 (2019-01-15)

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

Sections 2.4, 2.6, 2.8, and 2.22 are modified.

Issue 00B03 (2018-11-20)

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

Section 2.5 is modified.

Issue 00B02 (2018-10-15)

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

Sections 2.4 and 2.5 are modified.

Issue 00B01 (2018-07-15)

This issue is the first draft release.

Contents

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1 Introduction

This document describes the differences between the MPIs of Hi3516C V500 and Hi3519A V100.

The differences are classified into the following types: MPI function difference (adding, deletion, and modification), public data structure difference (adding, deletion, and modification), and public data structure parameter range difference. The corresponding differences include but are not limited to the following: MPI functions and public data structures (such as structure, enumeration, and union). This document briefly describes the differences between various subjects and the causes of the differences. For details about the MPIs and scenes, see the *HiMPP V4.0 Media Processing Software Development Reference*.

The differences are classified into the following types: MPI function name difference (addition, deletion, and modification), public data structure name difference (addition, deletion, and modification), MPI function behavior difference, and public data structure parameter range difference. The corresponding differences include but are not limited to the following: MPI functions and public data structures (such as structure, enumeration, and union). This document briefly describes the differences between various subjects and the causes of the differences. For details about the MPIs and scenes, see the *HiMPP V4.0 Media Processing Software Development Reference*.

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2 Module

2.1 SYS

None

2.2 VB

None

2.3 MIPI

Public Data Structure	Differences in Parameter Range
combo_dev_attr_t	• Value range of **devno**: [0, 1] for Hi3516C V500 and [0, 4] for Hi3519A V100 • input_mode: Hi3516C V500 does not support scalable low-voltage signaling (SLVS), but Hi3519A V100 supports it. • data_rate: Hi3516C V500 does not support two pixels per cycle, but Hi3519A V100 supports it.
lane_divide_mode_t	• lane_divide_mode_t: Hi3516C V500 supports only two modes, whereas Hi3519A V100 supports seven modes.
mipi_dev_attr_t	MIPI_LANE_NUM: • Hi3516C V500: 4 • Hi3519A V100: 8
lvds_dev_attr_t	LVDS_LANE_NUM: • Hi3516C V500: 4 • Hi3519A V100: 12
SNS_MAX_CLK_SOURCE_NUM	SNS_MAX_CLK_SOURCE_NUM: • Hi3516C V500: 2

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Public Data Structure	Differences in Parameter Range
	• Hi3519A V100: 3
SNS_MAX_RST_SOURCE_NUM	SNS_MAX_RST_SOURCE_NUM: • Hi3516C V500: 2 • Hi3519A V100: 3

Interface Function	Difference Description
HI_MIPI_RESET_SLVS	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MIPI_UNRESET_SLVS	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MIPI_ENABLE_SLVS_CLOCK	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MIPI_DISABLE_SLVS_CLOCK	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.

2.4 VI

Public Data Structure	Differences in Parameter Range
VI_DEV_ATTR_S	• stBasAttr: Hi3516C V500 does not support bayer scaling (BAS), but Hi3519A V100 supports it. • enInputMode: Hi3516C V500 does not support SLVS, but Hi3519A V100 supports it. • enDataRate: Hi3516C V500 does not support two pixels per cycle, whereas Hi3519A V100 supports it.
ViDev	ViDev: Hi3516C V500 supports up to two VI devices, but only one device can be used at a time, whereas Hi3519A V100 supports up to five VI devices.
VI_PIPE_ATTR_S	• bNrEn: Hi3516C V500 supports NR configuration (switch of level 0 of 3DNR), whereas Hi3519A V100 does not. • enCompressMode: In offline WDR mode, Hi3516C V500 supports frame compression, whereas Hi3519A V100 does not.
ViPipe	Hi3516C V500 supports up to three VIPipe devices whereas Hi3519A V100 supports up to six

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Public Data Structure	Differences in Parameter Range
	VIPipe devices.
ViChn	Hi3516C V500 supports only one ViChn device whereas Hi3519A V100 supports up to two ViChn devices.
VI_PIPE_FRAME_SOURCE_E	VI_PIPE_FRAME_SOURCE_E: Hi3516C V500 supports the import of raw data only from the BE, whereas Hi3519A V100 supports the import of raw data from the BE and FE.

Interface Function	Difference Description
HI_MPI_VI_SetPipeNRXParam	This interface function is supported by Hi3516C V500 instead of Hi3519A V100.
HI_MPI_VI_GetPipeNRXParam	This interface function is supported by Hi3516C V500 instead of Hi3519A V100.
HI_MPI_VI_SetPipeVCNumber	Hi3516C V500 supports **VCNumber** only in RAW data format. Hi3519A V100 supports **VCNumber** in RAW and YUV data formats.
HI_MPI_VI_GetPipeVCNumber	Hi3516C V500 supports obtaining of **VCNumber** in RAW and YUV data formats. Hi3519A V100 supports obtaining of **VCNumber** only in RAW data format.
HI_MPI_VI_SetChnEarlyInterrupt	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VI_GetChnEarlyInterrupt	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VI_SetStitchGrpAttr	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VI_GetStitchGrpAttr	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VI_SetPipeFisheyeConfig	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VI_GetPipeFisheyeConfig	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VI_SetPipeBNRRawDumpAttr	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VI_GetPipeBNRRawDumpAttr	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VI_GetPipeBNRRaw	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VI_ReleasePipeBNRRaw	This interface function is supported by

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Interface Function	Difference Description
	Hi3519A V100 instead of Hi3516C V500.

2.5 VPSS

New Data Structure	Difference Description
VPSS_NRX_PARAM_V2_S	This structure is supported by Hi3516C V500 instead of Hi3519A V100.

Public Data Structure	Differences in Parameter Range
VPSS_GRP_NRX_PARAM_S	VPSS_NRX_PARAM_V2_S: This structure is supported by Hi3516C V500 instead of Hi3519A V100.
VPSS_CHN_MODE_E	VPSS_CHN_MODE_AUTO: This structure is supported by Hi3519A V100 instead of Hi3516C V500.

Interface Function	Difference Description
• HI_MPI_VPSS_SetGrpFisheyeConfig • HI_MPI_VPSS_GetGrpFisheyeConfig	These interface functions are supported by Hi3519A V100 instead of Hi3516C V500.
• HI_MPI_VPSS_EnableBackupFrame • HI_MPI_VPSS_DisableBackupFrame	These interface functions are supported by Hi3519A V100 instead of Hi3516C V500.
• HI_MPI_VPSS_SetGrpDelay • HI_MPI_VPSS_GetGrpDelay	These interface functions are supported by Hi3519A V100 instead of Hi3516C V500.
• HI_MPI_VPSS_EnableUserFrameRateCtrl • HI_MPI_VPSS_DisableUserFrameRateCtrl	These interface functions are supported by Hi3519A V100 instead of Hi3516C V500.
• HI_MPI_VPSS_SetGrpSharpen • HI_MPI_VPSS_GetGrpSharpen	These interface functions are supported by Hi3519A V100 instead of Hi3516C V500.
• HI_MPI_VPSS_SetChnAlign • HI_MPI_VPSS_GetChnAlign	These interface functions are supported by Hi3519A V100 instead of Hi3516C V500.
• HI_MPI_VPSS_AttachVbPool • HI_MPI_VPSS_DetachVbPool	These interface functions are supported by Hi3519A V100 instead of Hi3516C V500.

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2.6 VO

Public Data Structure	Differences in Parameter Range
VO_INTF_SYNC_E	The maximum timing supported by Hi3516C V500 is **VO_OUTPUT_1920x1080_60**. The maximum timing supported by Hi3519A V100 is **VO_OUTPUT_4096x2160_60**.

Interface Function	Difference Description
HI_MPI_VO_SetWBCAttr HI_MPI_VO_GetWBCAttr	WBC is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VO_SetWBCSource HI_MPI_VO_GetWBCSource	WBC is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VO_EnableWBC HI_MPI_VO_DisableWBC	WBC is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VO_SetWBCMode HI_MPI_VO_GetWBCMode	WBC is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VO_SetWBCDepth HI_MPI_VO_GetWBCDepth	WBC is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VO_GetWBCFrame HI_MPI_VO_SetWBCFrame	WBC is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VO_BindGraphicLayer HI_MPI_VO_UnBindGraphicLayer	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VO_SetVideoLayerPriority HI_MPI_VO_GetVideoLayerPriority	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VO_SetVideoLayerPartitionMode HI_MPI_VO_GetVideoLayerPartitionMode	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VO_BatchBegin HI_MPI_VO_BatchEnd	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VO_SetVideoLayerBoundary HI_MPI_VO_GetVideoLayerBoundary	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VO_BindVideoLayer HI_MPI_VO_UnBindVideoLayer	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VO_SetChnDisplayPosition HI_MPI_VO_GetChnDisplayPosition	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_VO_SetChnBoundary	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.

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Interface Function	Difference Description
HI_MPI_VO_GetChnBoundary	
HI_MPI_VO_PauseChn HI_MPI_VO_ResumeChn HI_MPI_VO_StepChn HI_MPI_VO_RefreshChn	Hi3516C V500 does not support playback control and its related interfaces.
HI_MPI_VO_SetVideoLayerDecompress HI_MPI_VO_GetVideoLayerDecompress	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.

2.7 VGS

Interface Function	Difference Description
HI_MPI_VGS_AddRotationTask	The input parameter **enVideoFormat** can be set to **VIDEO_FORMAT_TILE_64x16** for Hi3519A V100, instead of for Hi3516C V500.

2.8 VENC

Public Data Structure	Differences in Parameter Range
VENC_GOP_BIPREDB_S	Defines the GOP attribute for B-frames. Hi3516C V500 does not support configuration of this data structure.
VENC_H265_TRANS_S	Defines the transformation and quantization attributes of an H.265 VENC channel. For Hi3516C V500, **InterScalingList8X8, IntraScalingList8X8, InterScalingList16X16, IntraScalingList16X16, InterScalingList32X32,** and **IntraScalingList32X32** support only no quantization table or the default quantization table.
VENC_ATTR_H264_S	bRcnRefShareBuf: Indicates whether to enable the frame saving mode. This parameter is supported by Hi3516C V500 instead of Hi3519A V100.
VENC_ATTR_H265_S	bRcnRefShareBuf: Indicates whether to enable the frame saving mode. This parameter is supported by Hi3516C V500 instead of Hi3519A V100.

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2.9 REGION

Public Data Structure	Differences in Parameter Range
PIXEL_FORMAT_E	PIXEL_FORMAT_ARGB_2BPP: Defines a 2BPP type for the Overlay. This parameter is supported by Hi3516C V500 instead of Hi3519A V100.

2.10 ACODEC

None

2.11 AI

Public Data Structure	Differences in Parameter Range
AI_DEV_MAX_NUM	The value is **1** for Hi3516C V500 and **2** for Hi3519A V100.
AIO_MAX_CHN_NUM	The value is **3** for Hi3516C V500 and **16** for Hi3519A V100.
AI_MAX_CHN_NUM	The value is **2** for Hi3516C V500 and **16** for Hi3519A V100.

2.12 AENC

None

2.13 ADEC

None

2.14 AO

None

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2.15 FB

None

2.16 TDE

None

2.17 IVS

None

2.18 IVE

Interface Function	Difference Description
HI_MPI_IVE_Resize	Hi3516C V500 supports only the IVE_RESIZE_MODE_LINEAR mode.
HI_MPI_IVE_CNN_LoadModel	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_IVE_CNN_UnloadModel	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_IVE_CNN_Predict	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_IVE_CNN_GetResult	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_IVE_GMM	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_IVE_ANN_MLP_LoadModel	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_IVE_ANN_MLP_UnloadModel	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_IVE_ANN_MLP_Predict	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_IVE_SVM_LoadModel	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_IVE_SVM_UnloadModel	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_IVE_SVM_Predict	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.

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Interface Function	Difference Description
HI_MPI_IVE_GradFg	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_IVE_MatchBgModel	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_IVE_UpdateBgModel	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.

2.19 NNIE

None

2.20 HDMI

The Hi3516C V500 does not support HDMI interface.

2.21 DIS

Public Data Structure	Differences in Parameter Range
DIS_CONFIG_S	• EnMotionLevel: **DIS_MOTION_LEVEL_LOW** is supported by Hi3519A V100 instead of Hi3516C V500. • u32FrameRate: The maximum value is **60** for Hi3516C V500 and **120** for Hi3519A V100.

2.22 GDC

Interface Function	Difference Description
HI_MPI_GDC_SetConfig	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.
HI_MPI_GDC_AddCorrectionTask HI_MPI_GDC_AddCorrectionExTask	This interface function is supported by Hi3519A V100 instead of Hi3516C V500.

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2.23 CIPHER

Public Enumeration Type	Differences in Parameter Range
HI_UNF_CIPHER_WORK_MODE_E	• HI_UNF_CIPHER_WORK_MODE_CCM: This operating mode is supported by Hi3519A V100 instead of Hi3516C V500. • HI_UNF_CIPHER_WORK_MODE_GCM: This operating mode is supported by Hi3519A V100 instead of Hi3516C V500.

Public Data Structure	Differences in Parameter Range
HI_UNF_CIPHER_CTRL_AES_S	enKeyLen: The AES hardware key of Hi3516C V500 supports three types of lengths: HI_UNF_CIPHER_KEY_AES_128BIT, HI_UNF_CIPHER_KEY_AES_192BIT, and HI_UNF_CIPHER_KEY_AES_256BIT. The AES hardware key of Hi3519A V100 supports HI_UNF_CIPHER_KEY_AES_128BIT.
HI_UNF_CIPHER_RSA_PUB_KEY_S	• u16NLen: Hi3516C V500 does not support the key length of 3072 bits, but Hi3519A V100 supports it. • u16ELen: Hi3516C V500 does not support the key length of 3072 bits, but Hi3519A V100 supports it.
HI_UNF_CIPHER_RSA_PRI_KEY_S	• u16NLen: Hi3516C V500 does not support the key length of 3072 bits, but Hi3519A V100 supports it. • u16ELen: Hi3516C V500 does not support the key length of 3072 bits, but Hi3519A V100 supports it. • u16DLen: Hi3516C V500 does not support the key length of 3072 bits, but Hi3519A V100 supports it.

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