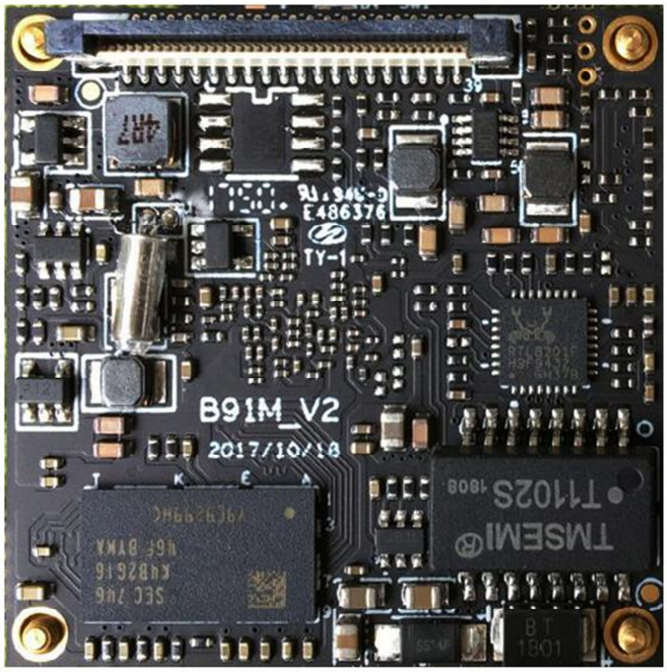
HIVIEW

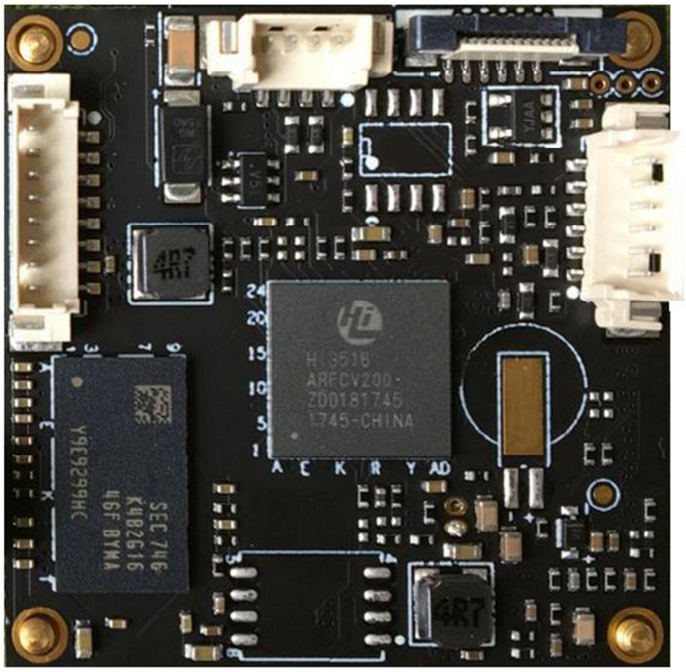
HW16AV2MB

Introduction

HIVIEW offers a video network encoding board designed with Huawei Hisilicon chip HI3516AV200.

You can use this board to develop HD network cameras. We will provide software services and hardware services.



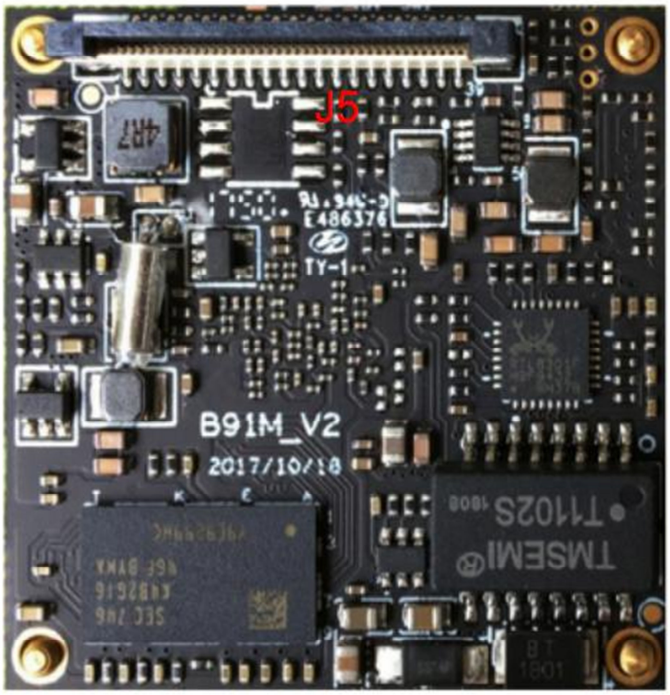


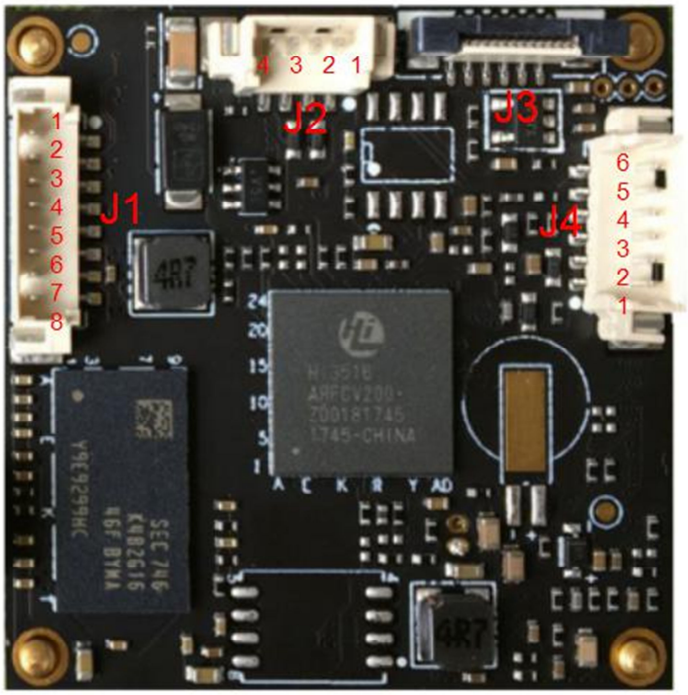
General specifications

- Secondary development customization (PCBA structure, SDK development kit, software platform docking)
- Adopting industry-leading low-power process and internal low-power architecture design, the module continues to lead the industry in low bit rate, high image quality and low power consumption;
- Full-featured interface: Audio, Alarm, USB (wireless WIFI), TF card local storage, RTC time synchronization, hardware reset, etc.
- The maximum resolution is 3840*2160 (4K) 1~15FPS, H.265 video compression technology, low bit rate.
- Support sensor board with AR0230, IMX291, IMX290, IMX385, IMX123, IMX335, OV4689, OS05A10, IMX274, IMX178, and OS08A10。
- The size of the board is 38*38

Interface description

J2 (USB interface)			J3
No.	Name		To Extended board for the FPC , SD card, Alarm
1	+3.3V		
2	USB-DM		
3	USB-DP		
4	GND		





J1(Ethernet interface and power)		J4		J5
No.	Name	NO	Name	TO Sensor Board
1	TX+	1	AUDIO-IN	
2	TX-	2	AUDIO-OUT	
3	RX+	3	GND	
4	RX-	4	RESET	
5	LED-LINK	5	485-DP	
6	LED-ACT	6	485-DN	
7	GND			
8	DC12V			

HIVIEW

Hi3516A V200

Hi3516A V200 Professional HD IP Camera SoC

Key Specifications

Processor Core

- 800 MHz A7 core, supporting 32 KB I-cache, 32 KB D-cache, and 128 KB L2 cache
- 1.25G GHz A17 core, supporting 32 KB I-cache, 32 KB D-cache, and 256 KB L2 cache
- Neon acceleration, integrated FPU
- ARM@big-LITTLE architecture

Video Encoding

- H.264 BP/MP/HP
- H.265 Main Profile
- I/P/B frame, dual-P-frame reference
- MJPEG/JPEG baseline encoding

Video Encoding Performance

- Maximum 16-megapixel (4608 x 3456) resolution for H.264/H.265 encoding
- Real-time multi-stream H.264/H.265 encoding capability:
  - 5M@30 fps + 720P@30 fps
  - 6M@30 fps +VGA@30 fps
- Maximum JPEG snapshot performance of 3840 x 2160@30 fps
- CBR, VBR, FIXQP, AVBR, and QPMAP modes
- Maximum100 Mbit/s output bit rate
- Encoding of eight ROIs

Intelligent Video Analysis

- Integrated IVE, supporting various intelligent analysis applications such as motion detection, perimeter defense, and video diagnosis

Video and Graphics Processing

- 3D denoising, image enhancement, and dynamic contrast improvement
- Anti-flicker for output videos and graphics
- 1/30x to 16x video scaling
- Seamless splicing of 2-channel videos
- 1/2x to 2x graphics scaling
- OSD overlaying of eight regions before encoding
- Video graphics overlaying of two layers (video layer and graphics layer)

ISP

- 2-channel independent ISP processing
- Adjustable 3A functions (AE, AWB, and AF)
- FPN removal
- Highlight compensation, backlight compensation, gamma correction, and color enhancement
- Defect pixel correction, denoising, and digital image stabilization
- Anti-fog
- Lens distortion correction and fisheye correction
- Picture rotation by 90° or 270°
- Picture mirroring and flipping
- Sensor built-in WDR, 4F/3F/2F frame-based/line-based WDR, and local tone mapping. The second channel of ISP processing supports only sensor built-in WDR, 2F frame-based/line-based WDR, and local tone mapping.
- ISP tuning tools for the PC

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)

Security Engine

- AES, DES, and 3DES encryption and decryption algorithms implemented by using hardware
- RSA1024/2048/4096 signature verification algorithm implemented by using hardware
- Hash-SHA1/256 and HMAC_SHA1/256 tamper proofing algorithms implemented by using hardware
- Integrated 512-bit OTP storage space and hardware random number generator

Video Interfaces

- VI Interfaces
  - Two sensor inputs. The maximum resolution for the main channel is 16 megapixels (4608 x 3456), and the maximum resolution for the second input is 8 megapixels (4096 x 2160) or 9 megapixels (3000 x 3000)
  - 8-/10-/12-/14-bit RGB Bayer DC timing VI, at most 150 MHz clock frequency
  - BT.601, BT.656, or BT.1120 VI interface
  - Maximum 12-lane MIPI/LVDS/sub-LVDS/HiSPi interface for the main channel
  - Maximum 4-lane MIPI/LVDS/sub-LVDS/HiSPi interface for the second sensor interface
  - Compatibility with mainstream HD CMOS sensors provided by Sony, Aptina, OmniVision, and Panasonic
  - Compatibility with the electrical specifications of parallel and differential interfaces of various sensors
  - Programmable sensor clock output
- VO interfaces
  - One PAL/NTSC output for automatic load detection
  - One BT.1120/BT.656 VO interface for connecting to an external HDMI or SDI, supporting at most 1080p@60 fps output
  - LCD output

Audio Interfaces

- Integrated audio CODEC supporting 16-bit audio inputs and outputs
- I^2S interface for connecting to an external audio CODEC
- Dual-channel differential MIC inputs for reducing background noises

Peripheral Interfaces

- POR
- External reset input
- Internal RTC
- Integrated 3-channel LSADC

Hi3516A V200 Professional HD IP Camera SoC

- Five UART interfaces
- IR interface, I²C interface, SSP master interface, and GPIO interface
- Eight PWM interfaces (four independent interfaces and four ones multiplexed with other pins)
- Two SD 3.0/SDIO 3.0 interfaces, supporting SDXC
- One USB 3.0/USB 2.0 host/device port
- One PCIe 2.0 interface in master/slave mode
- RGMII/RMII in 10/100 Mbit/s full-/half-duplex mode and 1000 Mbit/s full-duplex mode, and TSO network acceleration

External Memory Interfaces

- DDR4/DDR3/DDR3L/LPDDR3 interface
  - 32-bit LPDDR3 interface with the maximum frequency of 800 MHz (1.6 Gbit/s)
  - 32-bit DDR4/3/3L interface with the maximum frequency of 933 MHz (1.866 Gbit/s)
  - Maximum capacity of 1024 MB for a 16-bit DDR SDRAM
  - Maximum total capacity of 2048 MB for two 16-bit DDR SDRAMs
- SPI NOR flash interface
  - 1-/2-/4-wire mode
  - 3-byte or 4-byte address mode
  - Maximum capacity of 32 MB
- SPI NAND flash interface, supporting the maximum capacity of 512 MB
- eMMC 5.0 interface, supporting the maximum capacity of 2 TB
- NAND flash interface
  - 8-bit data width
  - SLC or MLC
  - 4-/8-/24-/40-/64-bit ECC
  - Components with 8 GB or larger capacity
- Booting from the SPI NOR flash, SPI NAND flash, or NAND flash
- Booting from an eMMC or over PCIe

SDK

- Linux-3.18-based SDK
- High-performanceH.265 PC/iOS/Android decoding library
- High-performance H.264 PC decoding library

Physical Specifications

- Power consumption
  - 1.35 W typical power consumption
  - Multi-level power saving mode
- Operating voltages
  - 0.9 V core voltage
  - 3.3 V I/O voltage and 3.8 V margin voltage
  - 1.2 V, 1.5 V, 1.35 V, or 1.2 V DDR4/3/3L/LPDDR3 SDRAM interface voltage
- Package
  - RoHS, FC-CSP
  - Body size of 10 mm x 10 mm (0.39 in. x 0.39 in.)
  - Lead pitch of 0.4 mm (0.02 in.)

Hi3516A V200 HD IP Camera Solution