

XS9936: 4-Channel HD/SD Analog Video Decoder

XS9936 is a 4-channel analog composite video decoding chip that supports both HDcctv and CVBS protocols up to 4K@15fps. Also, XS9936 supports digital coaxial protocol up to 4K@30fps video stream transmission. XS9936 converts the received high-definition analog composite video signal through analog-to-digital conversion, video decoding, and 2D image processing into YUV format, which is then transmitted to the master chip via the MIPI CSI interface, enabling real-time preview and recording.

XS9936 supports bidirectional coaxial audio over video for voice intercom with remote cameras. It also supports bidirectional data communication with camera for remote camera control and firmware upgrades. By integrating video, audio, and control data transmission into a single cable, it simplifies wiring requirements and enhances the ease of installation and debugging.

XS9936 features an embedded audio codec with 5-channel Line-In and 1-channel Line-Out interfaces, enabling 5-channel analog audio capture and 1-channel analog audio output. This facilitates voice recording and intercom applications, simplifying product design.

Features

- 4-channel analog composite video decoding
- Support 1M/2M/3M/4M/5M RT, 6M/8M NRT video format and CVBS format
- Support multi-ch analog video format
- Supports digital coaxial protocol, up to 4K@30fps video stream transmission
- Support manually extended video format
- Embedded Equalizer (EQ) amplifier for best extended reach performance
- High speed 10-bit Analog-to-Digital (ADC) for video signal sampling
- Programmable clamp control

VI

- Enhanced automatic format recognition for video signal identification
- Support AGC, ACC, White Peak
- Brightness, Saturation, Contrast, Hue, and Sharpness adjustment
- Advanced sync processor for best signal performance
- Automatic frequency deviation compensation to accurate color demodulation
- Integrated programmable high quality filter for Y/C separation

Video Decoder

- 5-channel analog audio Line-In with PGA and digital processing
- 1-channel analog audio Line-Out with gain control
- Support 8 or 16KHz sampling rate with a max resolution of 16-bit
- Support bidirectional coaxial audio over video for voice intercom with remote cameras
- Cascade-able up to 4 chips

Audio

Features

	<ul style="list-style-type: none"> ● Support 1-channel I2S for audio record and 1-channel I2S for audio playback ● I2S support multiple channel output
VO	<ul style="list-style-type: none"> ● MIPI DPHY v1.2 compliant transmitter up to 4Lane*2 ● Support MIPI CSI-2 YUV422 data format ● Up to 2.5Gbps/Lane ● Support 1Lane/2Lane/4Lane mode ● Support P/N swap ● Support CVBS video output with field or frame mode
Bidirectional Communication	<ul style="list-style-type: none"> ● Programmable up-stream data sending over cable ● Programmable down-stream data decoding ● Support firmware upgrades for remote cameras

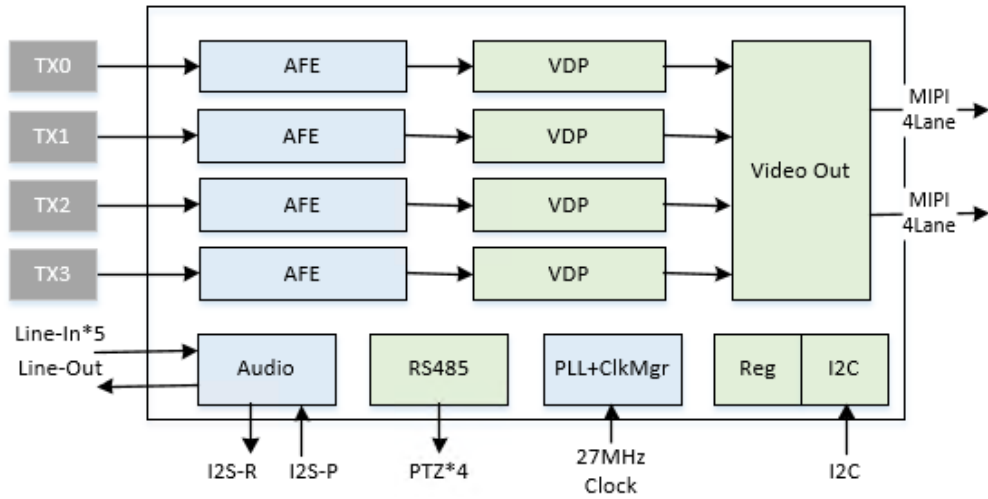
Peripherals

Video Interfaces	VI	● 4-channel analog video input
	VO	● 2-channel MIPI CSI 4Lane
Audio Interfaces	Line-In	● 5-channel
	Line-Out	● 1-channel
	Cascade	● 1-channel
	I2S	<ul style="list-style-type: none"> ● 1-channel for audio record ● 1-channel for audio playback
PTZ		● 4-channel
Other Interfaces		● Interrupt interface for video loss
		● I2C
		● 27MHz crystal or clock input

Physical Specs

Operating Voltage	<ul style="list-style-type: none"> ● 1.1V core voltage ● 3.3V I/O voltage ● 3.3V and 1.1V analog voltage
Package	● 10 mm × 10 mm QFN88

Block Diagram



Application Solution

