

# INOGENI CAM

## INOGENI CAM Series HDMI and USB 2.0 Camera selectors User Guide v1.5

CAM300



**Thank you!**

You have just acquired the finest and easiest to use tool for simultaneous capture of two streams of uncompressed video with audio for your computer.

**Easy, No Drivers, No Setup !  
Versatile !  
Compatible with all Apps !**

## PRODUCTS HIGHLIGHTS

- EASY ! No drivers required
- Capture from MJPEG and H264 USB 2.0 cameras, which are UVC-compliant
- Capture HDMI and VGA feeds
- High efficiency source selectors
- Ideal for Video streaming and Videoconferencing
- Compatible to all motherboards and chipsets
- Powered via external power supply
- Scaler and Colorspace Conversion
- Supports Windows, OSX and Linux
- DirectShow, AVFoundation and V4L2 Compatible
- Professional grade full-metal enclosure

## OVERVIEW

The **INOGENI CAM Series** is the most easy and reliable tool for simultaneous capture of two webcam and HDMI feeds into one single USB stream with audio for your PC for recording, videoconferencing, lecture capture and streaming applications. No driver installation is necessary and it will work on all motherboards and USB 3.0 chipsets. Compact in size and rugged, the converter is a practical and an easy-to-use USB 3.0 capture solution. It is compatible with Windows, OSX and Linux operating systems, and is UVC-compliant, so it will work with all DirectShow/V4L2 and AVFoundation compatible software.

The converter supports 1080p resolutions up to 30 fps for USB and HDMI inputs. The line level stereo analog audio input and output are two-channel LPCM.

CAM Series devices come with a USB 3.0 cable and its power supply.

- Line level stereo audio support
- Digital Fluid technology - Internal frame buffers maximize frame rate with any PC
- Hardware-based color space and sampling conversion
- Automatic scaling and frame rate conversion
- Customizable video processing functions
- Image controls: Brightness, contrast, saturation and hue settings
- Supports multiple devices on the same PC.
- Compatible with Windows, Mac OSX and Linux.

# DEVICE CONNECTORS

## CAM100



## CAM200

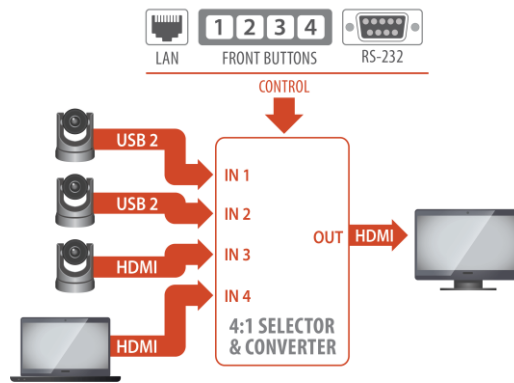


## CAM300

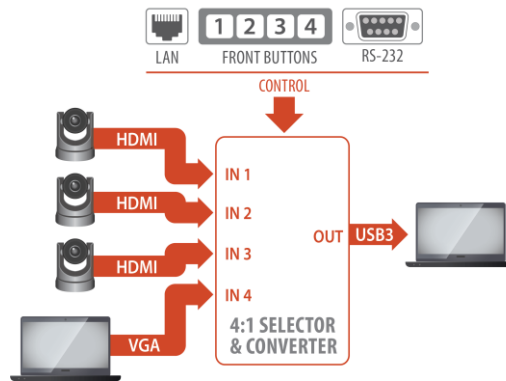


# CONNECTION DIAGRAM

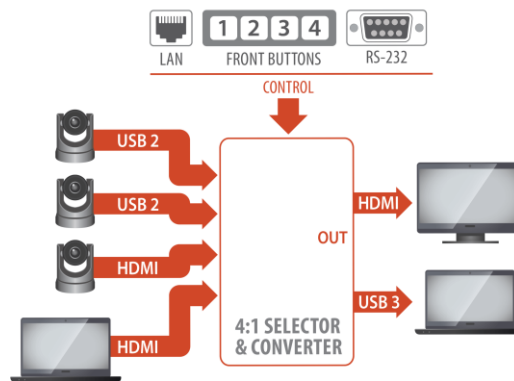
## CAM100



## CAM200



## CAM300



# SPECIFICATIONS

CAM100	CAM200	CAM300
		
<b>Feature summary</b>		
4:1 2x HDMI & 2x USB 2.0 Camera selector Smooth video switch HDMI 1080P60 output	4:1 3x HDMI & 1x VGA Camera selector Smooth video switch USB 3.0 output	4:1 2x HDMI & 2x USB 2.0 Camera selector Smooth video switch HDMI 1080P60 + USB3.0 output
<b>Video Inputs</b>		
#1- <b>1 x USB 2.0 camera MJPEG or H264 (*)</b> Depends on the camera specifications <a href="#">Supported USB 2.0 cameras</a>	#1-HDMI 1080p60	#1- <b>1 x USB 2.0 camera MJPEG or H264 (*)</b> Depends on the camera specifications <a href="#">Supported USB 2.0 cameras</a>
#2- <b>1 x USB 2.0 camera MJPEG or H264 (*)</b> Depends on the camera specifications <a href="#">Supported USB 2.0 cameras</a>	#2-HDMI 1080p60	#2- <b>1 x USB 2.0 camera MJPEG or H264 (*)</b> Depends on the camera specifications <a href="#">Supported USB 2.0 cameras</a>
#3-HDMI 1080p30	#3-HDMI 1080p60	#3-HDMI 1080p30
#4-HDMI 1080p30	#4-VGA 1920x1200	#4-HDMI 1080p30
<b>Video outputs</b>		
HDMI 1080p60	USB 3.0 uncompressed 1080p60	USB 3.0 uncompressed 1080p60 HDMI 1080p60
<b>Audio Inputs</b>		
HDMI embedded PCM USB camera audio	HDMI embedded PCM Line-in for VGA input	HDMI embedded PCM USB camera audio
<b>Audio Outputs</b>		
Through HDMI output	USB 3.0 PCM stereo, audio follow input.	USB 3.0 PCM stereo, audio follow input.
<b>Control Options</b>		
Front buttons RS-232 LAN	Front buttons RS-232 LAN USB	Front buttons RS-232 LAN USB

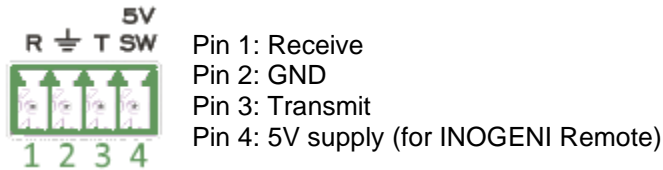
<b>Video Selection Response Time</b>		
<p>Less than 0.2 second for switching between USB inputs.  Less than 0.2 second for switching between HDMI inputs with same video resolution.  Less than 0.2 second for switching between USB input and “<b>active</b>” HDMI input and vice-versa.  Up to 2 seconds switching between HDMI inputs if video resolutions are different.</p> <p>*Active HDMI input is the last selected HDMI input.</p>		
<b>Power</b>		
12V, 1.2A. Power supply included		
<b>Motherboard &amp; Laptop</b>		
N/A	Compatible with all processors and chipsets. Intel, Renesas, ASMedia and Fresco Logic	
<b>Cameras Supported</b>		
Cameras and camcorders with an HDMI, DVI or USB 2.0 output	Cameras and camcorders with an HDMI, DVI or VGA output	Cameras and camcorders with an HDMI, DVI, VGA or CVBS output
<b>Software Compatibility</b>		
N/A	UVC-compliant. Runs with all software compatible to DirectShow, AVFoundation and V4L2.	
<b>Adapters/Cables included</b>		
Power supply, RS-232 terminal bock adapter.	Power supply, USB 3.0 Type-C cable, RS-232 terminal bock adapter.	Power supply, USB 3.0 cable, RS-232 terminal bock adapter.
<b>Weight/Dimensions</b>		
1.0 pounds (469 g) 7 1/4" x 4 1/2" x 1 1/4" (L x W x H)		
<b>Operating Temperature</b>		
0° to 45° C 32° to 113° F		
<b>Storage Temperature</b>		
-40° to 105° C -40° to 221° F		
<b>Relative Humidity</b>		
0% to 90% non-condensing		
<b>UPC Code</b>		
040232633850	040232633867	040232633836
<b>Harmonized Code</b>		
8517.62.00.0000		
<b>Origin</b>		
Canada		

# SERIAL COMMUNICATION PROTOCOL

The device baud rate is 9600. This setting is configured using the appropriate firmware.

## Terminal block pinout

As written on the back of the device, here is the pinout of the terminal block.



## Commands

If the commands are recognized, the “**ACK**” string will be sent.

If the commands are NOT recognized, the “**NACK**” string will be sent.

**Commands sent to the serial interface must have the ‘<’ character at the beginning and ‘>’ character at the end.**

COMMAND	Command description
<IN1>	Select input 1
<IN2>	Select input 2
<IN3>	Select input 3
<IN4>	Select input 4
<SAVE>	Save the current configuration onboard for future use
<RSTR>	Erase the current configuration onboard and return to default values
<BLK>	Black video
<SHW>	Show video
<RST>	Reset the device
<POLL>	Returns the selected input
<GET>	Return the firmware versions and video statistics.
<PAN X Y>	Moves PTZ camera horizontally. This is a relative control. <sup>1</sup> X = 1, for USB1 = 2, for USB2 Y = -1, counterclockwise = 0, stop = 1, clockwise
<TILT X Y>	Moves PTZ camera vertically. This is a relative control. <sup>1</sup> X = 1, for USB1 = 2, for USB2 Y = 1, camera goes up = 0, stop = -1, camera goes down
<ZOOM X Y>	Sets zoom of camera. This is a relative control. <sup>1</sup> X = 1, for USB1

<sup>1</sup> The function works for specific cameras like Logitech® Rally, MeetUp and PTZ Pro.

	= 2, for USB2 Y = 100 to 500
<PRESET X Y>	Tells PTZ camera to go to a saved preset position. <sup>1</sup> X = 1, for USB1 = 2, for USB2 Y = 1 to 3, for preset 1, 2 and 3
<SAVEPRESET X Y>	Saves current position to camera preset memory. <sup>1</sup> X = 1, for USB1 = 2, for USB2 Y = 1 to 3, for preset 1, 2 and 3
<INV X Y>	Video source flip. X = 1, for USB1 = 2, for USB2 = 3, for HDMI1 = 4, for HDMI2 Y = 0, no flip = 1, vertical flip = 2, horizontal flip

## INOGENI REMOTE



The INOGENI Remote needs to be connected to the terminal block port in order to operate. Apply wiring accordingly. This remote is sending serial commands to the CAM device. Make sure to set the DIP SW6 for CAM100 and CAM300 devices in order to apply power to the remote before going further. See “DIP SWITCHES” section of this document for more details. Check the user manual of the INOGENI REMOTE for more details.

**For SHARE2U and CAM series – You need to wire up a RJ45 cable to a terminal block plug.**



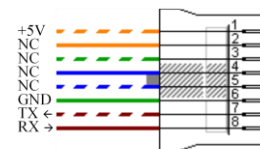
Do not plug a RJ45 cable between the INOGENI device and the REMOTE.

**INOGENI device side**



Pin 1: Receive  
 Pin 2: GND  
 Pin 3: Transmit  
 Pin 4: 5V supply

**REMOTE side**





# LAN INTERFACE

The default IP address of the device is **192.168.0.81**. Use our Control App in order to change it.



**Changing the IP address of the device is done through our USB 3.0 interface. Please connect the device to your computer using the provided USB cable and load our Control App.**

You can use any telnet application in order to communicate with the device using TCP. Make sure to use the right IP address and **port 50000**.



You can use the commands by sending HTTP or TCP requests. For example, you can send an HTTP request by sending it using any browser, for example, to `192.168.0.81:50000/COMMAND`. If the command is recognized, you will receive the ACK string.

**Commands sent to the serial interface must have the '\$' character at the beginning and '\$' character at the end.**

COMMAND	Command description
<b>\$IN1\$</b>	Select input 1
<b>\$IN2\$</b>	Select input 2
<b>\$IN3\$</b>	Select input 3
<b>\$IN4\$</b>	Select input 4
<b>\$SAVE\$</b>	Save the current configuration onboard for future use
<b>\$RSTR\$</b>	Erase the current configuration onboard and return to default values
<b>\$BLK\$</b>	Black video
<b>\$SHW\$</b>	Show video
<b>\$RST\$</b>	Reset the device
<b>\$POLL\$</b>	Returns the selected input
<b>\$GET\$</b>	Return the firmware versions and video statistics.
<b>\$PAN_X_Y\$</b>	Moves PTZ camera horizontally. This is a relative control. <sup>2</sup> X = 1, for USB1 = 2, for USB2 Y = -1, counterclockwise = 0, stop = 1, clockwise
<b>\$TILT_X_Y\$</b>	Moves PTZ camera vertically. This is a relative control. <sup>2</sup>

<sup>2</sup> The function works for specific cameras like Logitech® Rally, MeetUp and PTZ Pro.

	X = 1, for USB1 = 2, for USB2 Y = 1, camera goes up = 0, stop = -1, camera goes down
<b>\$ZOOM_X_Y\$</b>	Sets zoom of camera. This is a relative control. <sup>2</sup> X = 1, for USB1 = 2, for USB2 Y = 100 to 500
<b>\$PRESET_X_Y\$</b>	Tells PTZ camera to go to a saved preset position. <sup>2</sup> X = 1, for USB1 = 2, for USB2 Y = 1 to 3, for preset 1, 2 and 3
<b>\$SAVEPRESET_X_Y\$</b>	Saves current position to camera preset memory. <sup>2</sup> X = 1, for USB1 = 2, for USB2 Y = 1 to 3, for preset 1, 2 and 3
<b>\$INV_X_Y\$</b>	Video source flip. X = 1, for USB1 = 2, for USB2 = 3, for HDMI1 = 4, for HDMI2 Y = 0, no flip = 1, vertical flip = 2, horizontal flip

## DIP SWITCHES



This section is only applicable to the CAM100 and CAM300.

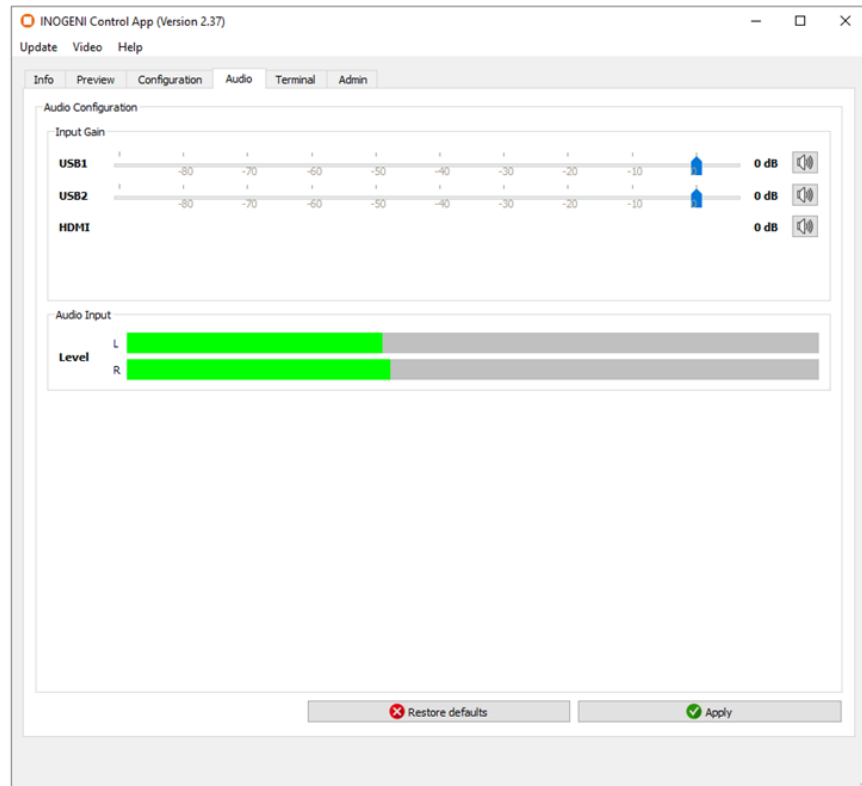
The device has DIP switches below the device in order to force settings. Here are the functions of the DIP switches.

<b>SW1</b>	<b>OFF</b>	USB resolution is 1080p only. This will force application to take high quality video.
	<b>ON</b>	Multiple USB resolutions available.
<b>SW2</b>		For future use
<b>SW3</b>	<b>OFF</b>	Frame buffer frequency is set to 60Hz. (default)
	<b>ON</b>	Frame buffer frequency is set to 50Hz.
<b>SW4</b>		Reserved
<b>SW5</b>		Reserved
<b>SW6</b>	<b>OFF</b>	Disable 5V on terminal block. (default)
	<b>ON</b>	Enable 5V on terminal block. This switch must be set in order to power up the connected remote.

# AUDIO CONTROL

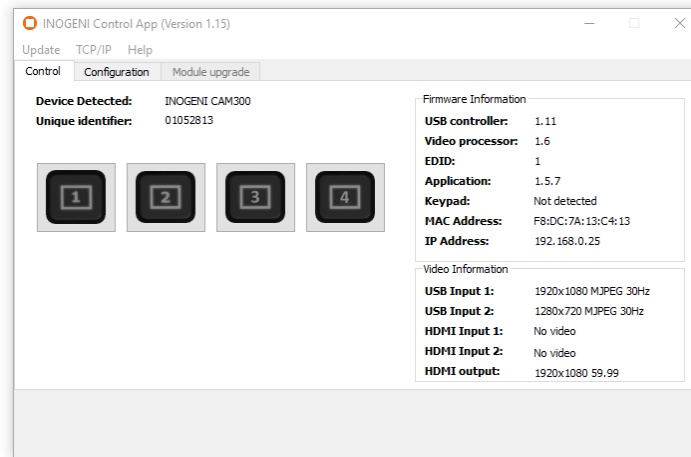
The device embeds an audio selector. You have complete control over USB 2.0 and HDMI inputs and output. You can also mute and adjust gain on I/Os. You can click “Apply” button in order to keep configuration at each bootup. You can also restore default configuration by clicking “Restore defaults” button.

HDMI input audio is always mixed with the USB 2.0 and/or analog inputs. You can mute HDMI audio by clicking on MUTE button.



# INOGENI CONTROL APP

The INOGENI Control App allows you to control and monitor video sources.



The device has its own application in order to control the Mixer configuration using the USB HID or the LAN interfaces.

You can also monitor the firmware versions installed on the device and the status of the USB and HDMI inputs.

You can update your device to the latest firmware using the Update menu. The C++ source code of this application is available on demand.

Visit the Software Update page under the INOGENI CAM300 section for more details.

# SUPPORT

Engineered by video professionals, for video professionals, it is your most compatible USB 3.0 device. INOGENI expertise at your fingertips:

- **Expert Technical Support team** at [support@inogeni.com](mailto:support@inogeni.com) for immediate help or if you have any technical question about our products.
- You can visit our list of compatible [USB 2.0 cameras](#) to see if this one fits the device.
- Extensive **Knowledge Base** to learn from other customers experiences.

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