INOGENI

INOGENI U-CAM

User guide

Version 1.2

7/12/22

VERSION HISTORY

Version	Date	Description
1.0	April 19, 2022	First release.
1.1	May 27, 2022	Second release. Adding RS232 API. Adding REST API.
1.2	July 12, 2022	Update image to support new hardware revision. Change REST API functions to have same name as RS232 API. Add http to https redirection for webpage.

CONTENTS

Here is a typical connection diagram used for the U-CAM device in a videoconferencing setup.

INOGENI U-CAM

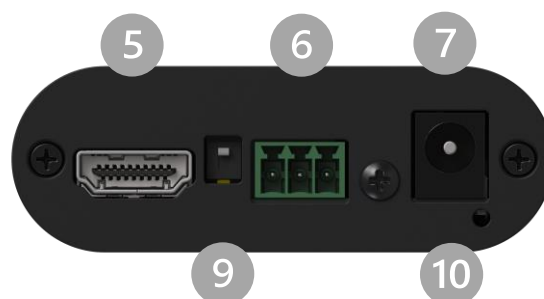USB Camera + USB Micro to HDMI 4K

Here are the devices interfaces.
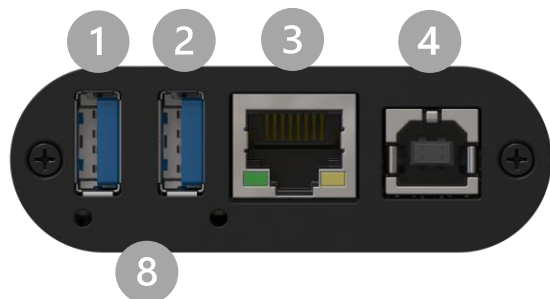
① USB input #1
② USB input #2
③ LAN port
④ USB 2.0 output
⑤ HDMI output
⑥ RS232 port
⑦ +12V power input
⑧ USB device detection leds
⑨ Factory upgrade switch
⑩ System activity led

LEDS BEHAVIOR

Here are the leds behavior:

USB input	
OFF	No USB camera/device connected.
SOLID	USB camera/device connected.
System activity led	
OFF	No power present on board.
BLINK	System firmware running correctly.

SPECIFICATIONS

Here is the complete specification.

Physical details	
Dimensions (W x L x H)	70 x 83 x 23 mm
Power supply	12V
Power consumption	Up to 1.2A
Weight	136 g
Package content	1 x USB 2.0 Type-B to Type-A cable. 1 x terminal block connection. 1 x 12V power supply.
Operating temperature	0° to 45° C (32° to 113° F)
Storage temperature	-40° to 105° C (-40° to 221° F)
Origin	Canada
Warranty	2 years

USB inputs	
2x USB 3.0 inputs	Capture video and audio from USB 3.0 and 2.0 cameras Capture is done from a single camera at a time
Video capabilities	MJPEG: Up to 1080p30 using USB 2.0/3.0 YUYV: Up to 1080p60 using USB 3.0, 1080p10 using USB 2.0
Audio capabilities	Device will capture embedded audio from USB camera or external USB device and will output through HDMI.

HDMI output	
Resolution	3840x2160p23.98/24/25/29.97/30 fps, 1080p50/60 fps, 720p50/60 fps
Connector	HDMI

USB output	
USB-B connector	Device will expose a UVC interface over USB 2.0 up to 720p30 MJPEG

Compatibility	
Operating system	NO driver installation necessary Windows 7 and above (32/64-bit) macOS 10.10 and above,
Cameras Supported	Cameras (or video Source) with an USB output
Software Compatibility	UVC-compliant. Runs with all software compatible to DirectShow/MediaFoundation, V4L2, QuickTime and AVFoundation.

SERIAL COMMUNICATION PROTOCOL

Here is the complete list of commands provided through the serial connection. Pinout is indicated on the enclosure.

Typically, commands will return ACK in case of success and NACK in case of failure.

Note that if serial interface was disabled using REST API, commands will not be parsed, and no response will be provided.

Baud rate: 9600 // **Data bits**: 8 // **Stop bits:** 1 // **Parity:** None // **Flow control:** None

Command	Argument(s)	Description
HELP	None	Return command list with description
RSTR	None	Restore default settings
IP	None	Return IP address
VERSION	None	Return firmware version
QUIT	None	Restart application
STATUS	None	Return device, video/audio inputs and HDMI output status
PAN	1 argument (integer) The sign specifies the direction. We multiply the argument by the camera smallest step, and if the speed is too fast, we go as fast as the camera allow. We recommend using values between -10 and 10.	Relative pan
TILT	1 argument (integer) The sign specifies the direction. We multiply the argument by the camera smallest step, and if the speed is too fast, we go as fast as the camera allow. We recommend using values between -10 and 10.	Relative tilt
ZOOM	1 argument (integer) The sign specifies the direction. We multiply the argument by the camera smallest step, and if the speed is too fast, we go as fast as the camera allow. We recommend using values between -10 and 10.	Relative zoom
SETHDMI	1 argument (integer) 0 => 1080P60 1 => 1080P50 2 => 720P60 3 => 720P50 4 => 4K24 5 => 4K25 6 => 4K30	Set HDMI output mode
SETVIDEOFORMAT	1 argument (integer) 0 => 1st preferred format 1 => 2nd preferred format 2 => 3rd preferred format 3 => 4th preferred format	Set USB video input format

LAN COMMUNICATION PROTOCOL

You can access the device settings through its LAN interface. The LAN interface use DHCP. You can obtain the IP from the Inogeni Control App or from the serial port IP command.

CDC-NCM COMMUNICATION PROTOCOL

The device can also be controlled through CDC-NCM interface exposed on the USB2.0 device port.

This interface has the same functions as the LAN interface, except the requests are done through USB in order to ease configuration.

CDC-NCM IP address: 169.254.10.10

WEBPAGE

Here is the webpage that can be used to configure and upgrade the device.

The username is "**admin**" and the default password is "**admin**".
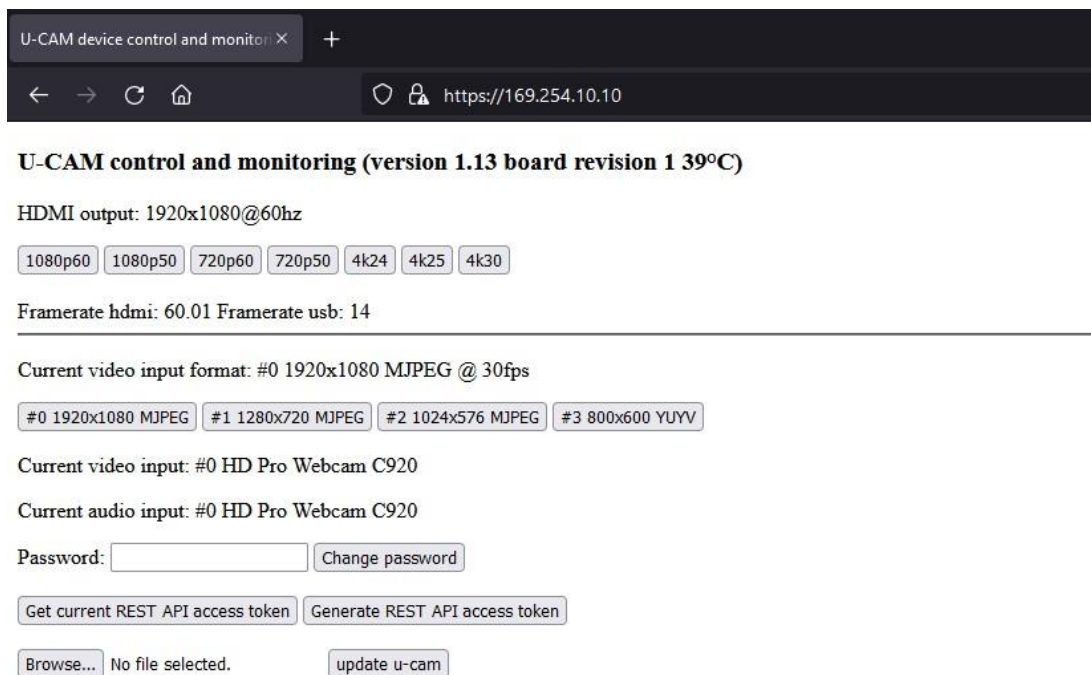
The first time you access the webpage, your web browser is likely to complain that the connection is insecure. The reason for this is because we are using self-signed HTTPS certificate, because certificate providers will not provide certificates for address that are not globally accessible.

The webpage can set HDMI resolution, USB video input format, webpage password, or the REST API access token. Please note that in the case of the REST API token, we can only ask for the device to generate a new randomly generated token. It can also be used to upgrade the device firmware.

The REST API need to have Autorization: Bearer <REST API access token> in the HTTP header. The response will be JSON formatted with a "message" field containing a JSON string explaining the cause of the error if any. Note that we are using self-signed certificate.

Here is the complete list of commands supported through the REST API

Command URL	Body arguments	Return code	Return body
GET **https://\<IP>/api/v1/status**		200 => success 401 => authorization error	JSON object with multiple fields
POST **https://\<IP>/api/v1/setHdmi**	mode=< hdmiModeIndex > 0 => 1080P60 1 => 1080P50 2 => 720P60 3 => 720P50 4 => 4K24 5 => 4K25 6 => 4K30	200 => success 400 => error 401 => authorization error	JSON object with message field explaining error if any
POST **https://\<IP>/api/v1/setVideoFormat**	format=<formatIndex> 0 => 1st preferred format 1 => 2nd preferred format 2 => 3rd preferred format 3 => 4th preferred format	200 => success 400 => error 401 => authorization error	JSON object with message field explaining error if any
POST **https://\<IP>/api/v1/ disableSerialInterface**	<Integer> If integer is 0, will disable serial interface, otherwise will enable it.	200 => success 400 => error 401 => authorization error	JSON object with message field explaining error if any
GET **https://\<IP>/api/v1/serialRead**		200 => success 400 => error 401 => authorization error	JSON object with message field containing characters read from serial port
POST **https://\<IP>/api/v1/serialWrite**	<Content to write >	200 => success 400 => error 401 => authorization error	JSON object with message field explaining error if any
POST **https://\<IP>/api/v1/pan**	<Integer> The sign specifies the direction. We multiply the argument by the camera smallest step, and if the speed is too fast, we go as fast as the camera allow. We recommend using values between -10 and 10.	200 => success 400 => error 401 => authorization error	JSON object with message field explaining error if any
POST **https://\<IP>/api/v1/tilt**	<Integer> The sign specifies the direction. We multiply the argument by the camera smallest step, and if the speed is too fast,	200 => success 400 => error 401 => authorization error	JSON object with message field explaining error if any

	we go as fast as the camera allow. We recommend using values between -10 and 10.		
POST **https://<IP>/api/v1/zoom**	<Integer> The sign specifies the direction. We multiply the argument by the camera smallest step, and if the speed is too fast, we go as fast as the camera allow. We recommend using values between -10 and 10.	200 => success 400 => error 401 => authorization error	JSON object with message field explaining error if any

You can use our Control App to monitor firmware information, upgrade and configure your unit.

> ⚠️ **NOTE:** You need to use the USB-B to USB-A cable provided with the box for the Control App to detect the unit.

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 for immediate help or if you have any technical question about our products.
- Extensive **Knowledge Base** to learn from other customers experiences.

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