INOGENI

IP2USB User Guide

Version 1.2

May 11, 2026

VERSION HISTORY

	Date	Description
1.0	January 31, 2026	Preliminary user guide for device launch.
1.1	February 20, 2026	Adding audio configuration. Adding new web page layout.
1.2	May 11, 2026	Adding precisions on the IP2USB integration with CAMTRACK. Adding API commands for PTZ and preset controls. Adding NDI discovery server configuration. Adding missing information over the web interface section.

CONTENTS

OVERVIEW

The IP2USB supports **multiple AVoIP standards, including NDI®/NDI® HX and RTSP**, allowing for seamless transmission of video and audio across networks, while ensuring low latency and high quality. This enables users to eliminate DSP systems for simple rooms using Dante devices, reducing costs while maintaining high-performance audio and video integration.

High-performance IP connectivity and USB interface

- Convert IP to USB and HDMI multiple AVoIP standards, including NDI®, NDI® HX, RTSP and Dante devices.
- USB Host: 1x USB 2.0 Type-B for USB host PC connection.
- UVC 1080p30 MJPEG video output.
- UAC audio I/O support: Facilitates bi-directional audio via USB.

Connectivity and USB interface

- USB devices: 2x USB3.0/USB2.0 Type-A for connection to peripherals, such as an audio DSP.
- HDMI: HDMI 2.0 output up to 2160p60 with audio.
- Audio integration: Support for USB audio such as speakerphone/DSP to USB. NDI® and RTSP audio can be also sent over the HDMI output.

Seamless integration and flexible control

- Device can be controlled via IP, RS-232, or USB interfaces.
- Camera control: NDI or VISCA over IP protocols for PTZ and preset controls.
- LED indicators for power and RJ45 connection status.
- Power: +12V power input from an external source.

Versatile and reliable performance

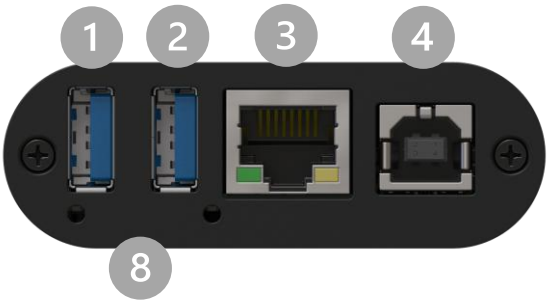
- Supports NDI® HX/HX2/HX3 (1080p60 in H.264/H.265), and RTSP streaming.
    - The NDI® HQ (1080p30 in I-frame, low latency) will be available with the next firmware update.
- Seamless switching between multiple AVoIP sources with low latency.
- Audio processing: Depending on your setup, you can choose the appropriate audio processing mode using internal configuration or API.

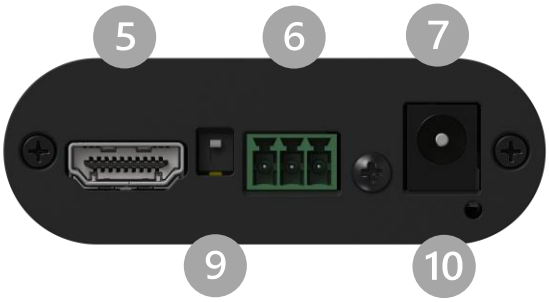
Reliable and efficient

- Direct connection using IP-based communication, reduce the number of hardware devices required by supporting USB to Dante audio.
- Flexible solution for both video and audio integration, with the ability to route audio to HDMI and USB.
- Supports a wide range of peripherals and devices for a complete PRO-AV solution.
- Backed by a 5-year warranty.
- Made in Canada and TAA-compliant.

DEVICE INTERFACES

Here are the devices interfaces.



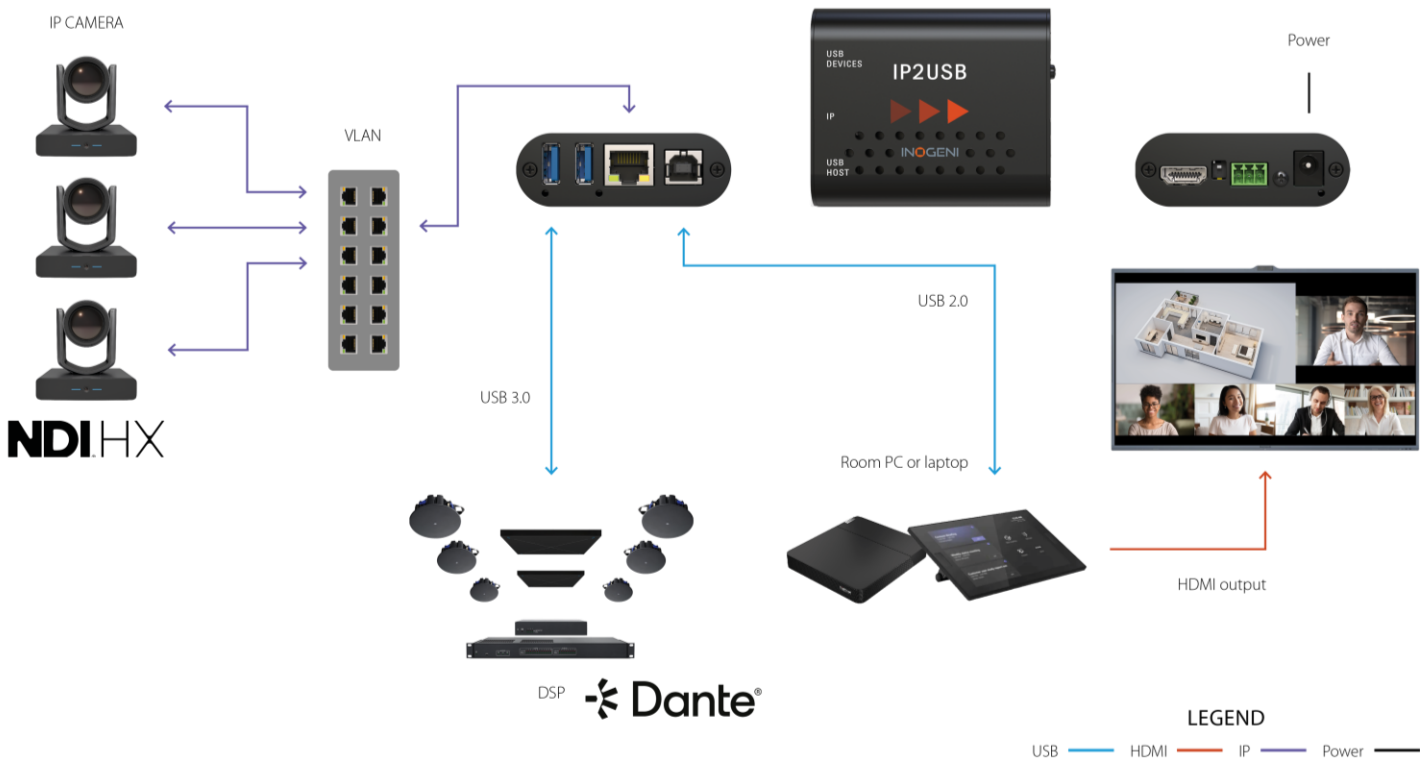


	Items
1	USB input #1 – For audio DSP or speakerphone interfaces
2	USB input #2 – For audio DSP or speakerphone interfaces
3	LAN port
4	USB 2.0 output
5	HDMI output
6	RS232 port
7	+12V power input
8	USB device detection leds
9	Reserved – Factory upgrade switch
10	Power led

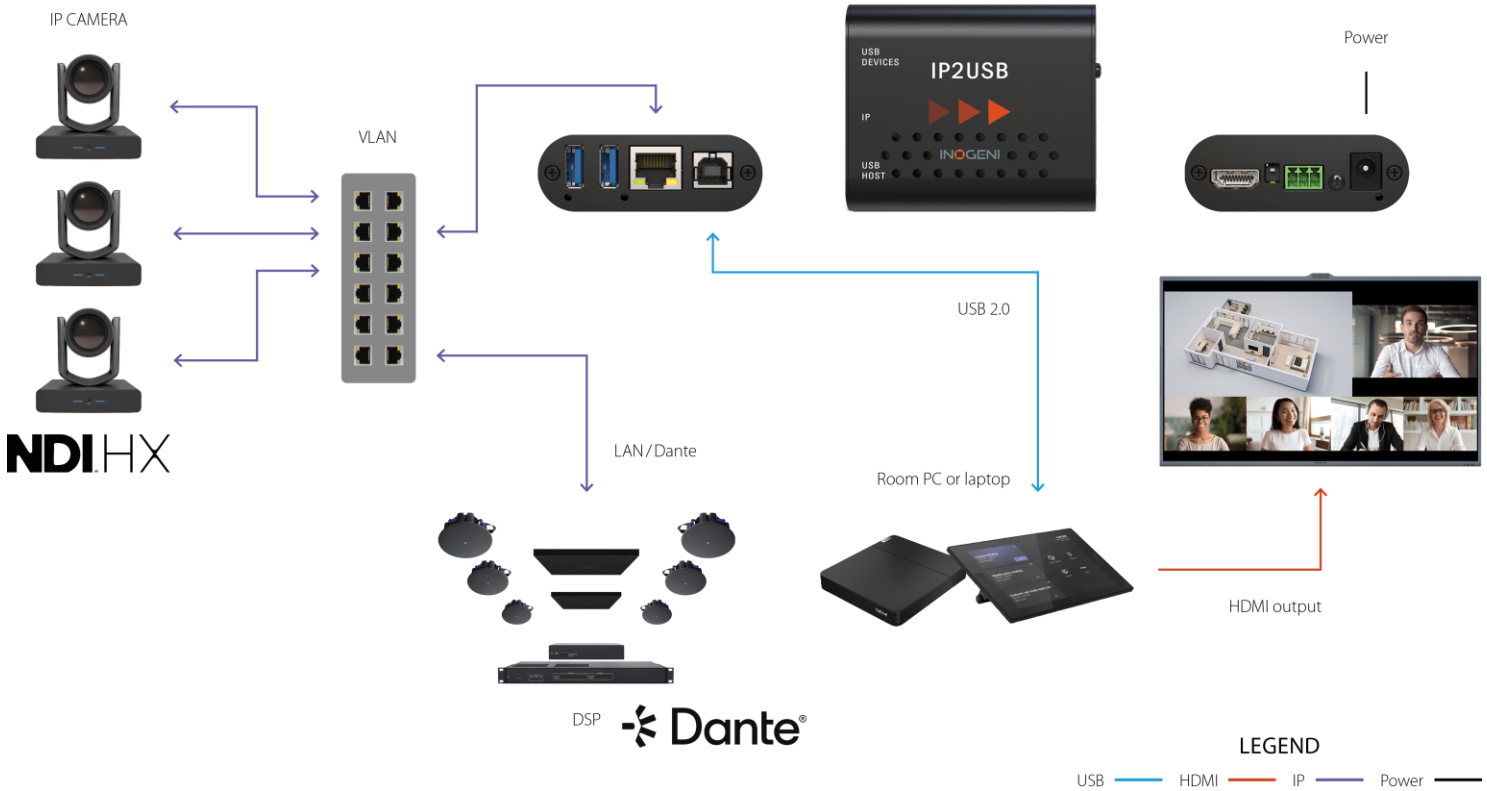
CONNECTION DIAGRAM

Here are common connectivity diagrams with the IP2USB product:

USAGE WITH A DSP OVER USB



USAGE WITH DANTE AUDIO



LEDS BEHAVIOR

Here are the LEDs behavior:

USB input	
OFF	USB device not detected
SOLID	USB device connected.
System activity led	
OFF	No power present on board.
SOLID	Power present on board.

SPECIFICATIONS

Here is the complete specification.

Main feature	
Description	The IP2USB device can connect to an IP camera (such as NDI®/NDI ® HX and RTSP) and convert it to USB. It also supports Dante to USB conversion with optional AEC interface.

Video input	
Connector	1 x RJ45 (10/100Mbps)
Supported standards	NDI® HX/HX2/HX3 (H.264/H.265) RTSP * NDI HQ will be available with the next Firmware update
Video resolutions	Up to 1920x1080p60

Audio	
Supported USB devices	DSP & speakerphones
Supported Dante devices	DSP, microphones and speakers Audio Channels: 2 in, 2 out Sample rate: 48kHz

USB host	
Connector	1x USB 2.0 Type-B UVC interface up to 1080p30 MJPEG UAC interface with audio I/O PTZ control supported in next firmware release.
Video scaler	Automatic hardware based
Color space conversion	Automatic hardware based
Sampling conversion	Automatic hardware based
Frame rate conversion	Automatic hardware based

USB devices	
Connectors	2x USB 3.0/2.0 Type-A For external USB peripherals such as DSP & speakerphones

HDMI output	
Connector	1x HDMI
Video resolutions	3840x2160p24/25/30/50/60 fps 1080p50/60 fps 720p50/60 fps
Color space	YUV422 and YUV420 to RGB conversion
Embedded audio	Device will capture embedded audio from IP and will output through HDMI.
Chroma subsampling	YUV/RGB 4:4:4, 4:2:2

Control	
IP interface	10/100 Mbps Supports DHCP or static IP addressing
RS-232 interface	3x positions – Terminal block Baud rate: 9600 (default) Data bits: 8 Stop bits: 1 Parity: None Flow control: None
PTZ and presets	Able to do PTZ and recall camera presets using NDI® or VISCA over IP protocols on supported cameras in next firmware release.

Compatibility	
Operating systems	NO driver installation necessary! Windows 10 and above (32/64-bit) macOS 10.10 and above Linux (kernel v2.6.38)
Consumed USB tiers	1 tier
Supported cameras	Any NDI® / NDI® | HX and RTSP camera source that support up to 1080p60 are supported.
Software compatibility	UVC-compliant. Runs with all software compatible to DirectShow, AVFoundation and V4L2 Compatible to: Teams, Zoom, Webex, Google Meet, etc.

Physical details	
Dimensions (W x L x H)	7.0 cm x 8.3 cm x 2.3 cm 2.76” x 3.76” x 0.9”
Power supply	12V (100-240 VAC 50/60Hz to 12V/1.2A DC)
Weight	140 g (0,31 lb)
Package content	1x IP2USB converter 1x 3ft USB 2.0 cable (Type-A to Type-B) 1x RS-232 terminal block adapter 1x Quick Start Guide 1x power supply 100-240 VAC 50/60Hz to 12V/1.2A DC • International adapters included in the box (AUS, EUR, UK and US)
Operating temperature	0° to 45° C 32° to 113° F
Storage temperature	-40° to 105° C -40° to 221° F
Relative humidity	0% to 90% non-condensing

Information	
UPC code	051497480424
Origin	Canada
Warranty	5 years

Certifications	
Certifications	FCC, CE, RoHS, IEC62368, SoV, RCM, NOM
TAA-Compliant	Yes

SERIAL COMMUNICATION PROTOCOL

Here is the specification of the serial connection. As written on the back of the device, here is the pinout of the terminal block.

Pin 1: Receive
Pin 2: GND
Pin 3: Transmit

NOTE: The user needs to put a **space character between the command name and argument**.

You need to add a carriage return **<LF>** character OR **<CR><LF>** characters at the end of the command string.

Typically, commands will return "ACK**<CR><LF>**" in case of success and "NACK**<CR><LF>**" in case of failure.

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

REST API

You can enable a bearer authentication in the HTTP header (Authorization: Bearer <token>) through our configuration page to increase security on the API.

There will be a return code to each call with the following commands:

```
200 => success
400 => error
401 => authorization error
```

The return body will usually be JSON formatted with a "message" field containing a JSON string explaining the cause of the error or “success” in case of success. Note that we are using self-signed certificates.

It is also possible to embed arguments to an API call inside the URL to ease configuration with some control systems with the following topology:

GET https://<IP>/api/v1/**<COMMAND>**?**<ARG1>=value**&**<ARG2>=value**

where **<COMMAND>**, **<ARG1>** and **<ARG2>** are command and associated arguments.

For example, using the **output** command, you can issue the following request:

GET https://<IP>/api/v1/**output**?**resolution=1**

This request will set the HDMI output resolution to the option 1, which is 1080p60.

RESTAPI call will return standard JSON format like shown below:

```
{
   "message": "success"
}
```

API COMMANDS

Here is the list of the RESTAPI and RS232 commands available for the device.

REST API
 	
Response format:
{
"message": "success"
}
 	
HTTP Status Codes:
200 OK – Request successful
400 Bad Request – Invalid request
401 Unauthorized – Authentication required
404 Not Found – Resource not found
500 Internal Server Error – Server error
 	
Argument between "[ ]" characters is optional.
	RS232
	
	Response format:
	- ACK<CR><LF> – Command acknowledged (success)
	- NACK<CR><LF> – Command not acknowledged (error)
	
	Note: Minimum line feed <LF> required; also works with <CR><LF>
	
	Argument between "[ ]" characters is optional.
		Description

/api/v1/accessToken	N/A	Supports the GET / POST / DELETE commands for the access token.
/api/v1/accessTokenEn?enable=X	N/A	Enables access token. X = 0 => Disable X = 1 => Enable
/api/v1/aecAudio?enable=X	AECAUDIO X	Sets the AEC audio state. X = 0 => Disable X = 1 => Enable
/api/v1/audioSwitchMode?mode=X	AUDIOSWITCHMODE X	Sets the USB output audio state. X = 0 => Automatic X = 1 => Dante X = 2 => Camera X = 3 => USB DSP X = 4 => OFF
/api/v1/baudrate?baudrate=X	BAUDRATE X	Sets RS232 baudrate X = 0 => 9600 X = 1 => 19200 X = 2 => 38400 X = 3 => 115200
/api/v1/cameraSelect?id=x	CAMERASELECT ID	Selects a camera from the camera list.
/api/v1/cdcNcm?enable=X	CDCNCM X	Sets the CDC-NCM state. X = 0 => Disable X = 1 => Enable
/api/v1/friendlyName?name=X	FRIENDLYNAME X	Sets the friendly name of the device reported over the USB output. RS232 example: X = USB device name must be in double quote " ", alphanumeric and "-" characters only. Invalid character will return a NACK. FRIENDLYNAME "IP2USB-name"<CR><LF>
/api/v1/hdmiResolution?resolution=X	HDMIRESOLUTION X	Sets the output resolution over HDMI. Resolution: X = 0 => 1080p60 X = 1 => 1080p50 X = 2 => 720p60 X = 3 => 720p50 X = 4 => 2160p24 X = 5 => 2160p25 X = 6 => 2160p30 X = 7 => 2160p50 X = 8 => 2160p60
/api/v1/help	HELP	Returns the command list.
/api/v1/httpEn?enable=X	N/A	Enables HTTP server. X = 0 => Disable X = 1 => Enable
/api/v1/logs	N/A	Retrieves system logs.
/api/v1/ndiCameras	N/A	Returns all cameras on the system.
/api/v1/ndiGroup?group=X	NDIGROUP <X>	Sets device NDI group X => Comma separated list of NDI group

/api/v1/ndiServer?ip=X	NDISERVER X	Sets the NDI server IP address.
/api/v1/network?mode=X&ip=Y&netmask=Z&gateway=W	NETWORK mode ip netmask gateway	Sets the network settings. RS232: Requires double quotes for network settings. Example: NETWORK 0 "192.168.0.80" "255.255.255.0" "192.168.0.1"
/api/v1/pan?pan=X&[speed=Y]	PAN X [Y]	Controls the camera pan. X = -1 => Pan left X = 0 => Stop pan X = 1 => Pan right Y = [OPTIONAL] Speed from 0 to 10
/api/v1/preset?preset=X	PRESETSET X	Stores the current position of the selected camera as a preset in the camera configuration. X = 1 to 100
/api/v1/reboot	REBOOT	Reboots the unit.
/api/v1/recallPreset?preset=X	PRESETRECALL X	Recalls the preset of the selected camera. X = 1 to 100
/api/v1/rstr	RSTR	Erases the current onboard configuration and returns to default values.
/api/v1/standByMode?enable=X	STANDBYMODE X	Sets the standby mode of the device. X = 0 => Device always captures video from IP cameras X = 1 => Device captures video from IP cameras only when USB output interface is requested
/api/v1/status	STATUS	Returns the firmware version, video input status, and device configuration.
/api/v1/tilt?tilt=X&[speed=Y]	TILT X [Y]	Controls the camera tilt. X = -1 => Tilt down X = 0 => Stop tilt X = 1 => Tilt up Y = [OPTIONAL] Speed from 0 to 10
/api/v1/usbInputAudio?enable=X	USBINPUTAUDIO X	Sets the USB input audio state. X = 0 => Disable X = 1 => Enable
/api/v1/usbOutputAudio?enable=X	USBOUTPUTAUDIO X	Sets the USB output audio state. X = 0 => Disable X = 1 => Enable
/api/v1/zoom?zoom=X&[speed=Y]	ZOOM X [Y]	Controls the camera zoom. X = -1 => Zoom out X = 0 => Stop zoom X = 1 => Zoom in Y = [OPTIONAL] Speed from 0 to 10
For network camera: /api/v1/camera?id=a&inputType=b&url=c&protocol=d&transport=e&preset=f&[ptzMode=g]&[panTiltSpeed=h]&[zoomSpeed=i]&[viscaIp=j]&[viscaPort=k]&[viscaAddress=l]&[viscaTransport=m]	For network camera: CAMERA id inputType url protocol transport preset [ptzMode] [panTiltSpeed] [zoomSpeed] [viscaIp] [viscaPort] [viscaAddress] [viscaTransport]	Supports GET / POST / DELETE / PATCH: GET: Gets the camera info. Only id is required. POST: Adds a new camera entry. id, protocol, and url are required. DELETE: Removes a camera entry. Only id is required. PATCH: Modifies an existing camera. Only id and body with the info to change are required. id: Number 1 to 10 inputType: NETWORK = 1 url: NDI camera name or URL If RTSP (example: rtsp://192.168.0.167:554) protocol: NDI = 1, RTSP = 2 transport: TCP = 1, UDP = 2, AUTO = 3 preset: Preset number from -1 to 100 ptzMode: [OPTIONAL] DISABLED = 0, NDI = 1, VISCA = 2 panTiltSpeed: [OPTIONAL] Number 1 to 10 zoomSpeed: [OPTIONAL] Number 1 to 10

```
viscaIp:         [OPTIONAL]
                 IP example: 192.168.0.186

viscaPort:       [OPTIONAL]
                 Number

viscaAddress:    [OPTIONAL]
                 Number

viscaTransport:  [OPTIONAL]
                 UDP = 0,
                 TCP = 1
```

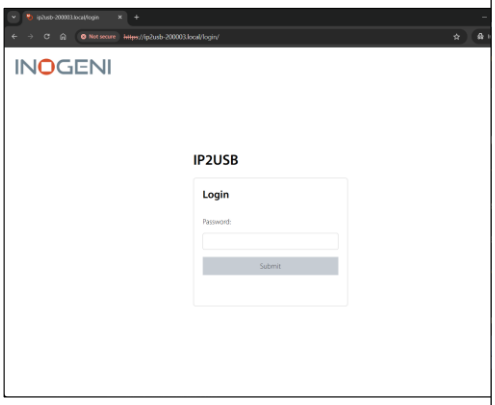
WEB INTERFACE ACCESS

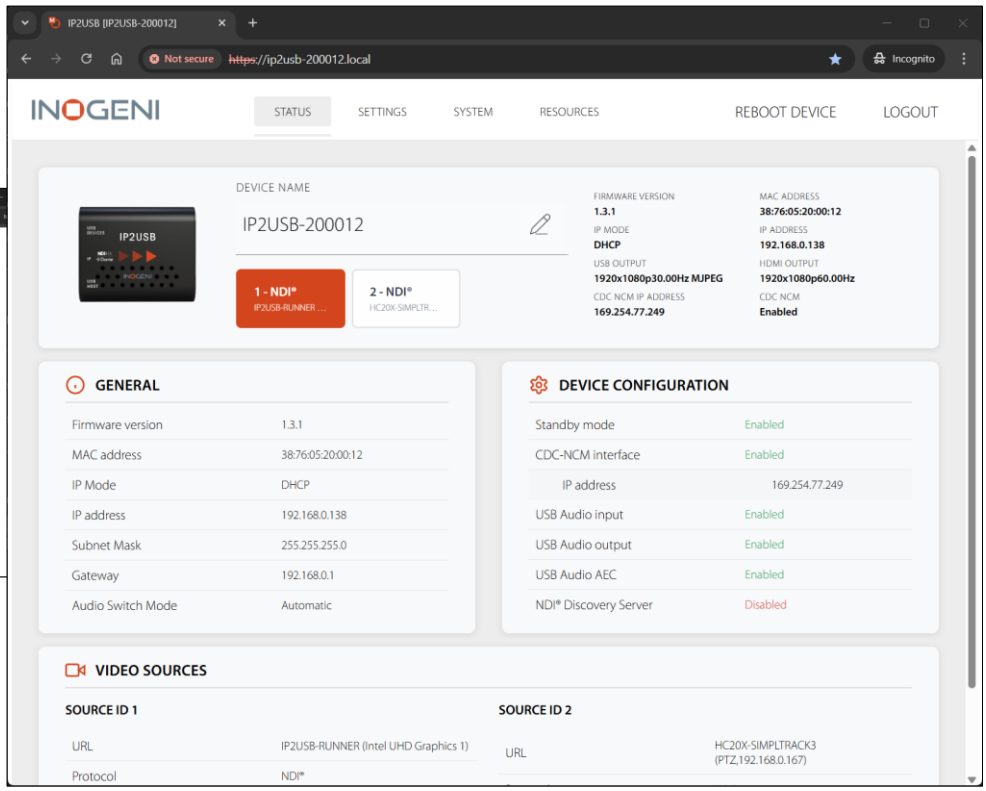
A web interface is available for the device. This one is accessible through your network.

Since the device supports the mDNS networking protocol, you can access the web interface of the device using a networking URL. This URL looks like the following example and includes the last 3 bytes of the MAC address and will end with the **.local** suffix:

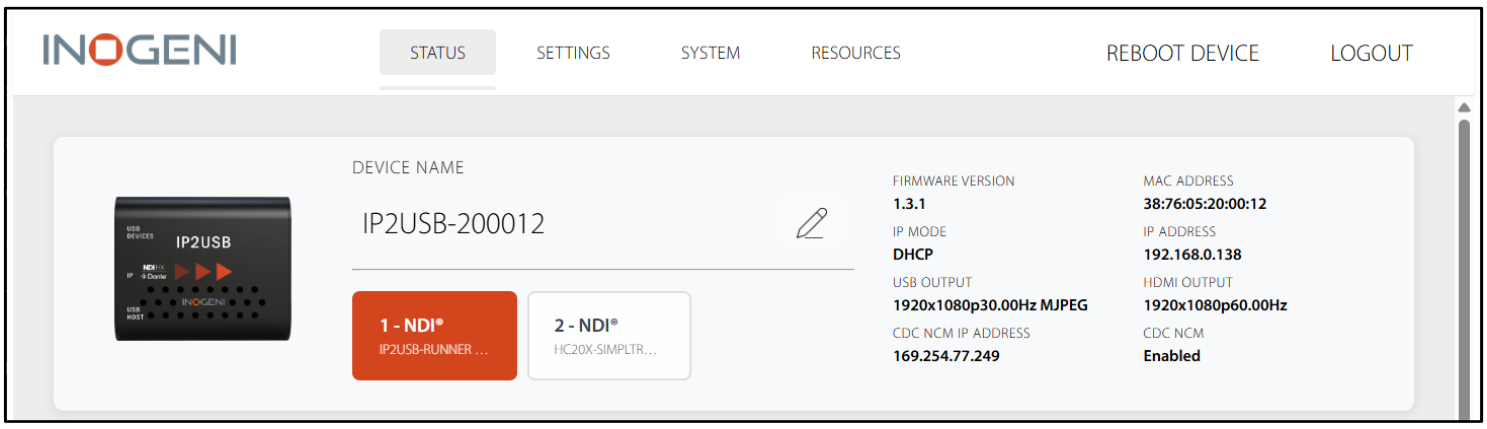
38:76:05:20:00:12
ip2usb-200012.local

You can access the device using any browser and enter the URL with the **.local** suffix or the IP address of the unit if you have this information. You will be prompted with a login dialog. At first connection, the device will ask you to configure a new password. **You must enter at least 8 characters with one uppercase and one special characters.**





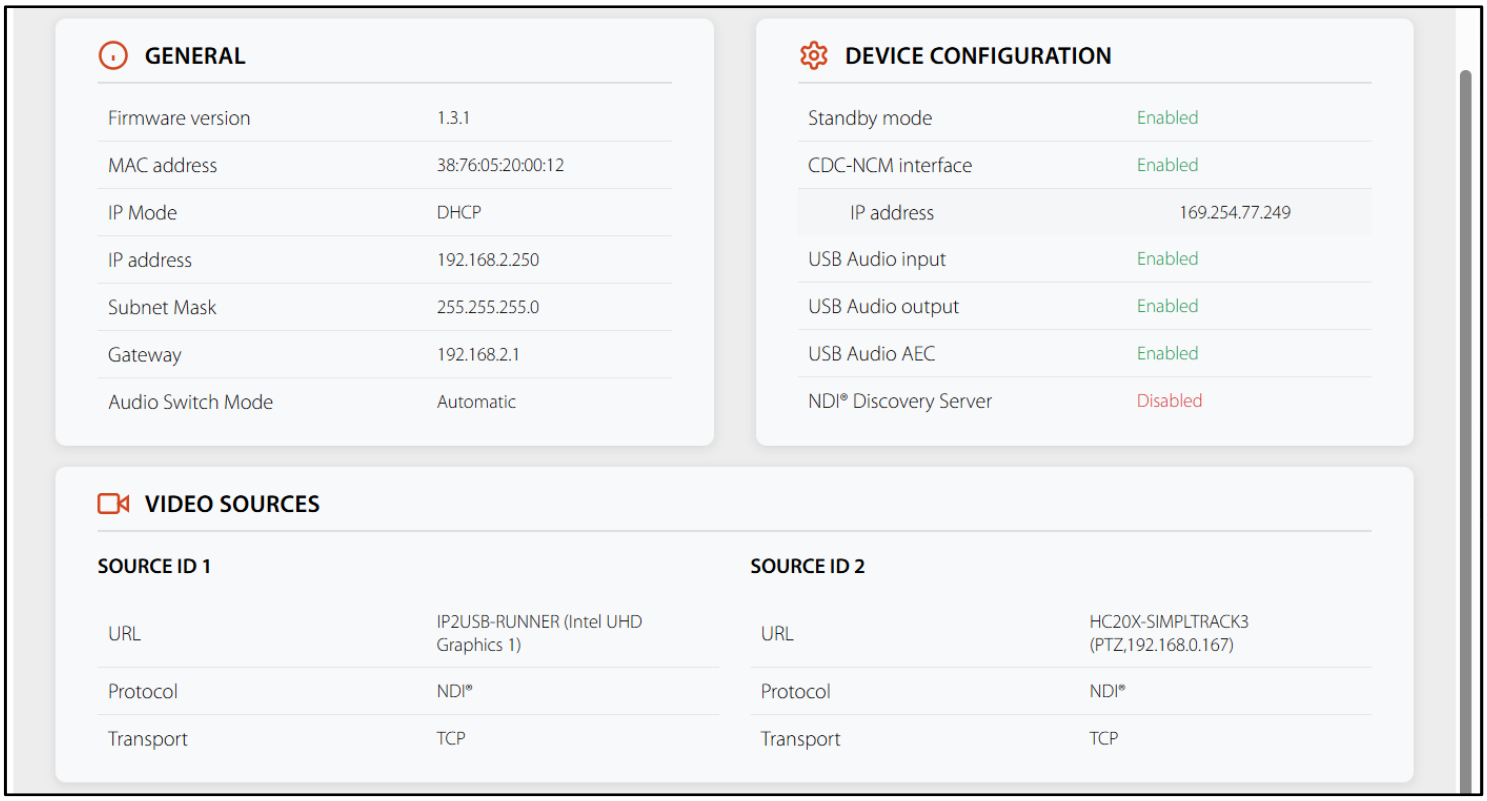
When you enter the web interface, you will get access to the general information of the device. This information is always available when you navigate through the tabs.



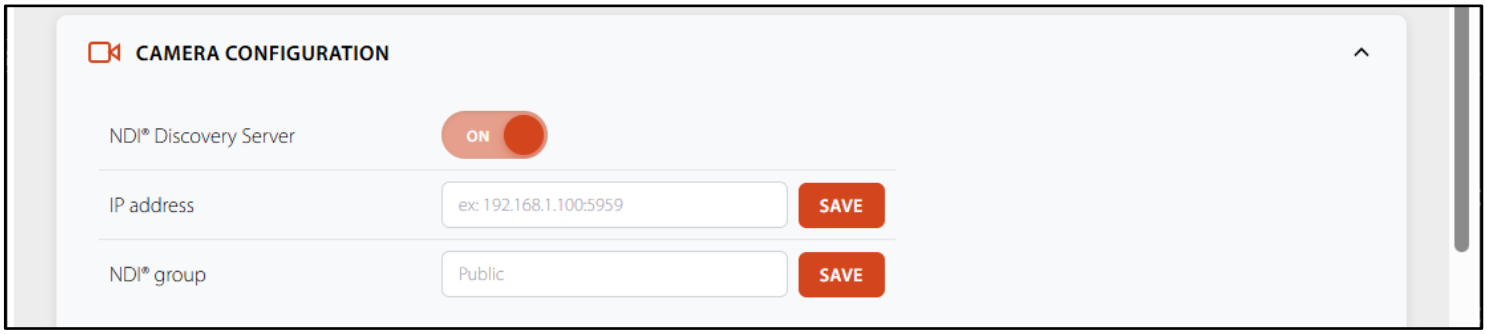
- General section with firmware version, MAC address, IP address and serial number of the unit.
- Status of the USB and HDMI outputs.
- Link to reboot the unit and the logout action.
- Easy buttons to select configured cameras.

STATUS TAB

This section contains all the firmware information, video sources information along with the actual configuration of the unit.

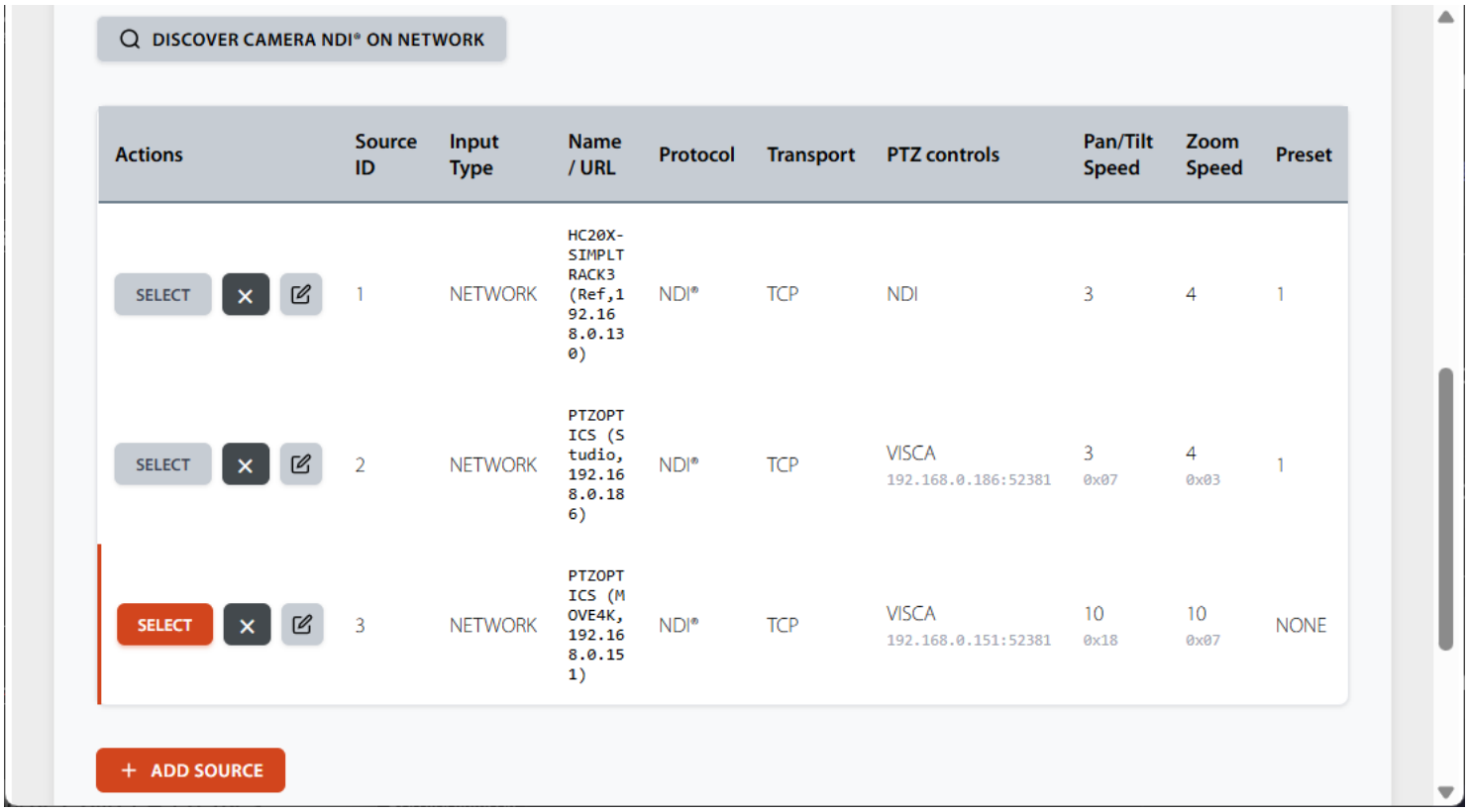


CAMERA CONFIGURATION

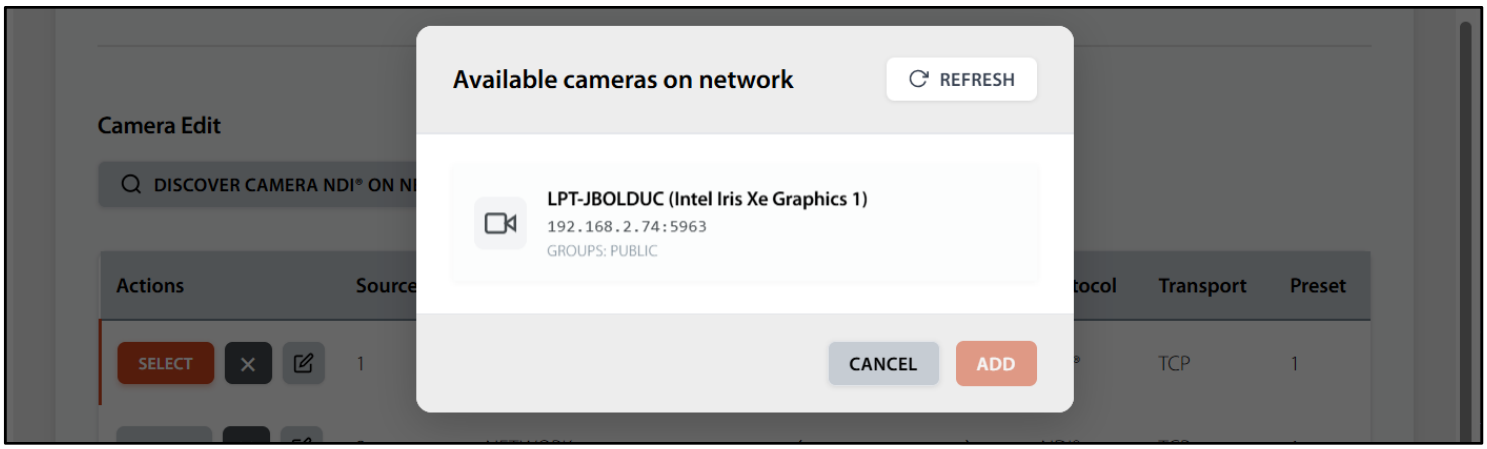


In this section, you can:

- Connect to an NDI server if needed.
  - The NDI Discovery Server option allows you to query a specific server that knows about the NDI sources available on your network instead of relying only on mDNS auto-discovery.
  - You can also enter an NDI group to sort those sources easily.

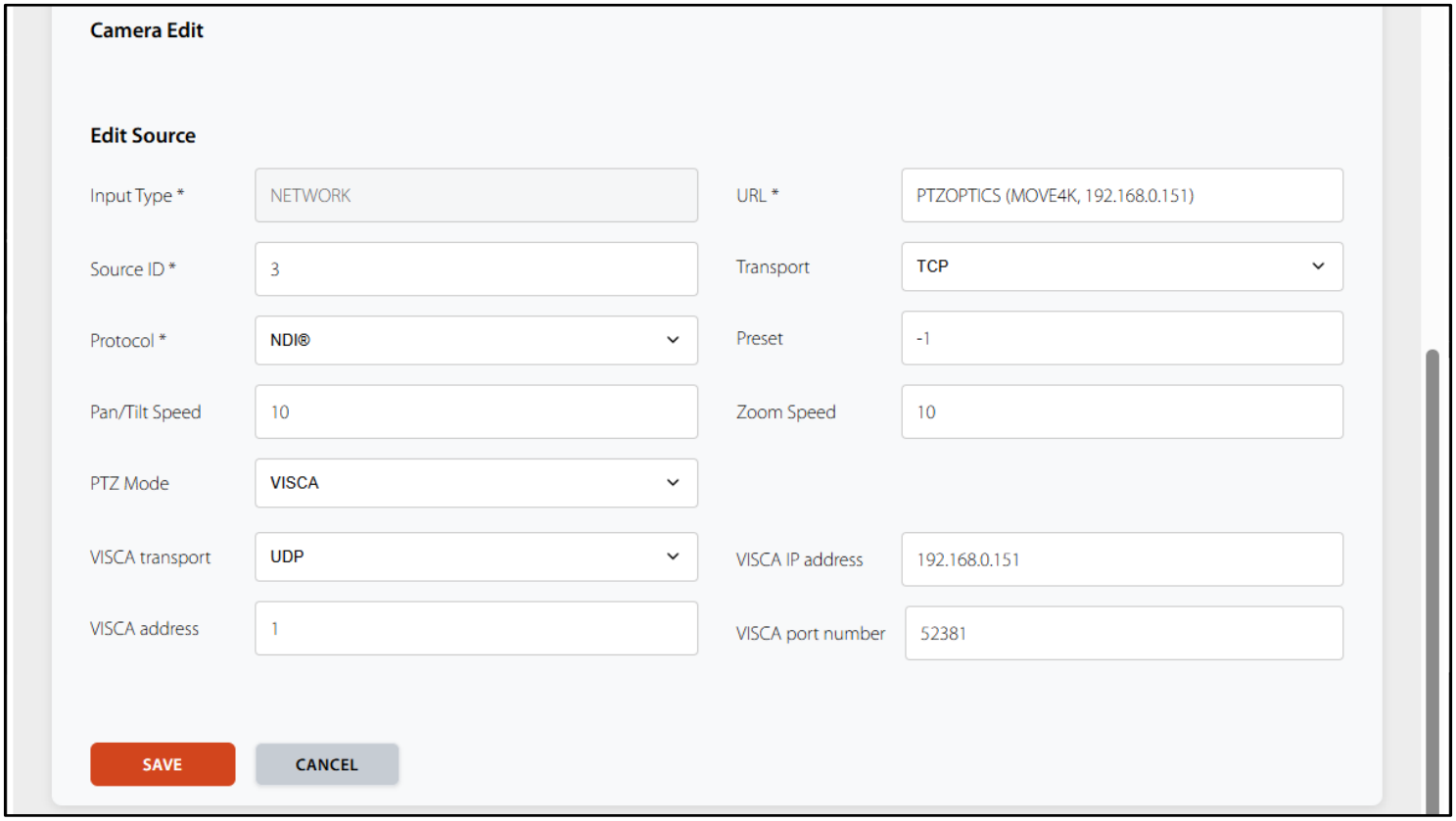


- Add, edit and delete your different video sources (NDI and RTSP) along with their configuration.
- Select the camera to be active on the USB and HDMI outputs.
- Discover NDI cameras on the connected network so you can add them to the list, as shown below.



You can edit the settings of a single source by clicking on the edit icon:

- You can add the URL of your camera
- Assign a source ID.
- Choose the video camera and transport protocols to use with your source.
- Set a specific preset for this camera.
    - Preset -1 or NONE means no preset are recalled upon camera source selection.
- You can set the pan/tilt and zoom speeds. Those can be set between 1 to 10.
- You can also choose which PTZ mode to use, such as the VISCA over IP and NDI protocols.
- For VISCA over IP protocol, you need to provide parameters to configure the connection:
    - VISCA transport (UDP or TCP)
    - VISCA IP address, which is the same IP address of the camera
    - VISCA address (default is 1)
    - VISCA port number (this depends on the camera manufacturer; we strongly recommend the users to check with the manufacturer documentation to provide the correct port number)



AUDIO CONFIGURATION

In this section, you can set the appropriate audio routing to be used for the UAC interface and HDMI output. See the “Audio routing” section of this user guide for more details.

USB OUTPUT

Here are the features of the USB output:

Allow standby mode: This will stop the video capture from the connected cameras only when they are requested from USB or HDMI.

Enable USB audio input: This will enable microphone interface on your computer.

Enable USB audio output: This will enable speaker interface on your computer.

Enable AEC interface: This will report an AEC interface on your computer. Especially useful if you have connected a USB or analog device which is already dealing with AEC.

Enable CDC-NCM interface: This will enable the USB network interface of the device. If you disable it, you cannot configure and access web interface of the device through USB. You will need to connect through the IP network to monitor and configure your device.

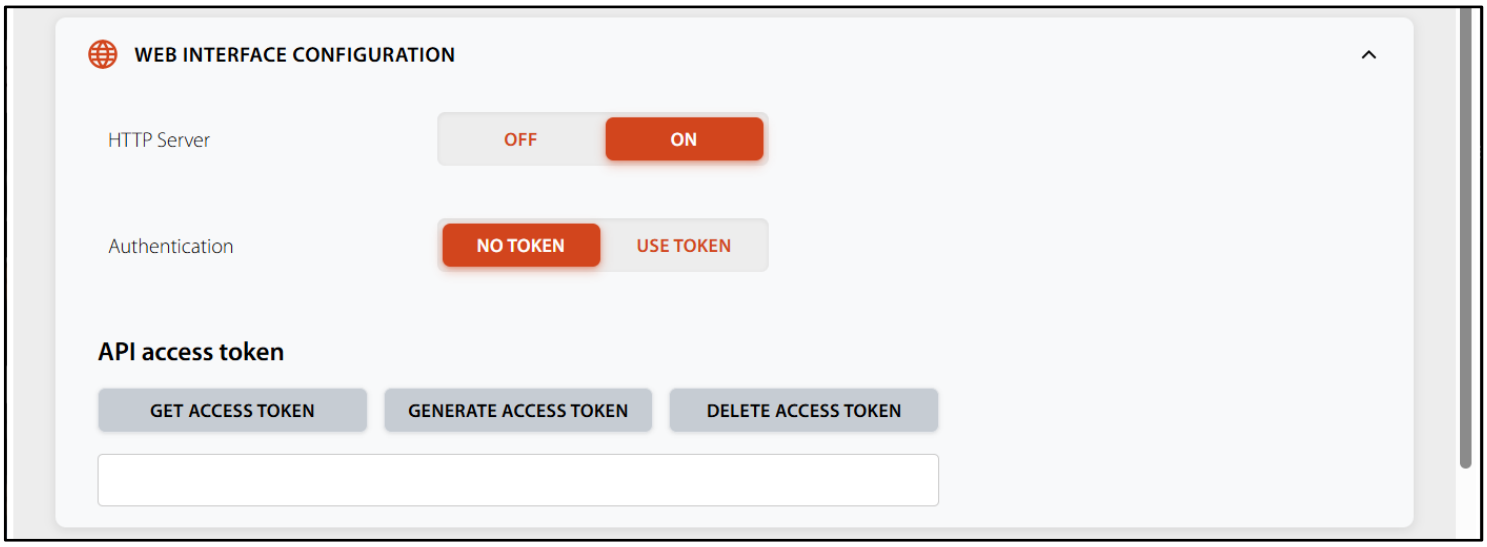
HDMI OUTPUT

You can set the resolution of the HDMI output.

SECURITY

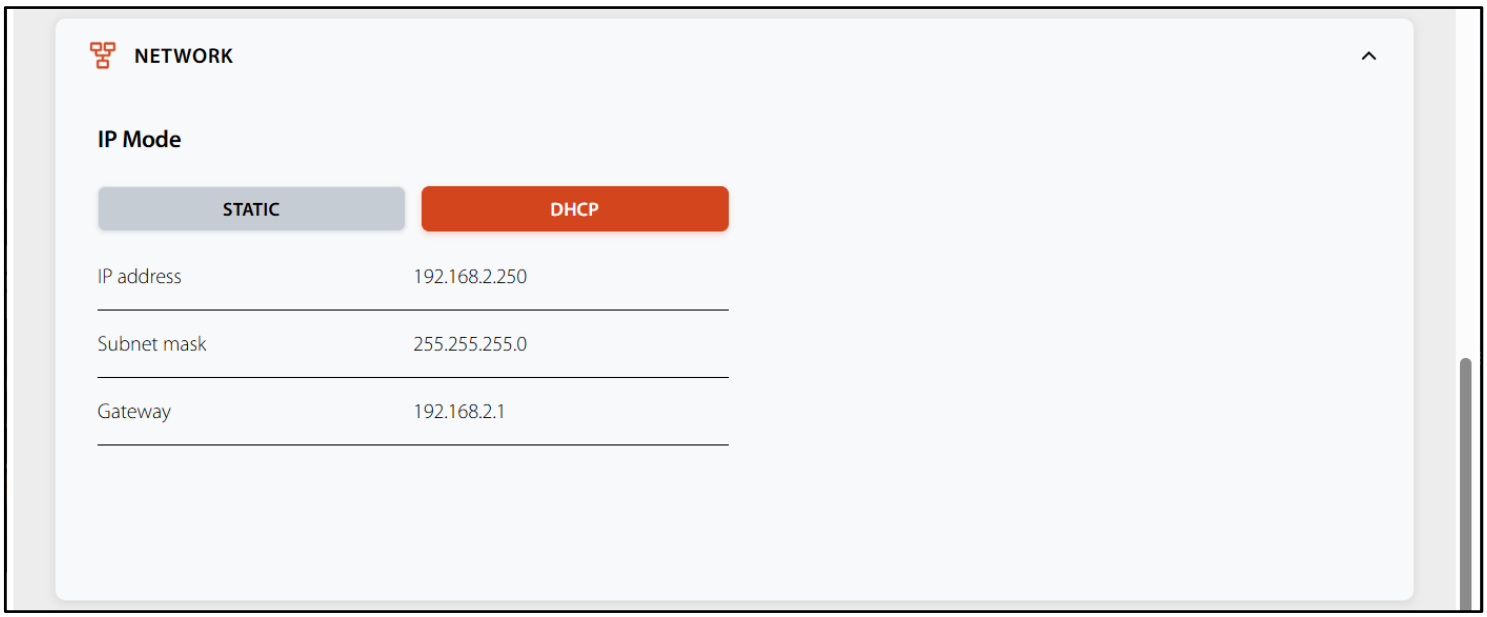
- Login info
  - Ability to change the current password of the device.

WEB INTERFACE CONFIGURATION



- Ability to turn on or off the HTTP server.
- Allow the authentication token.
- API access token can be accessed, generated or deleted using those buttons.

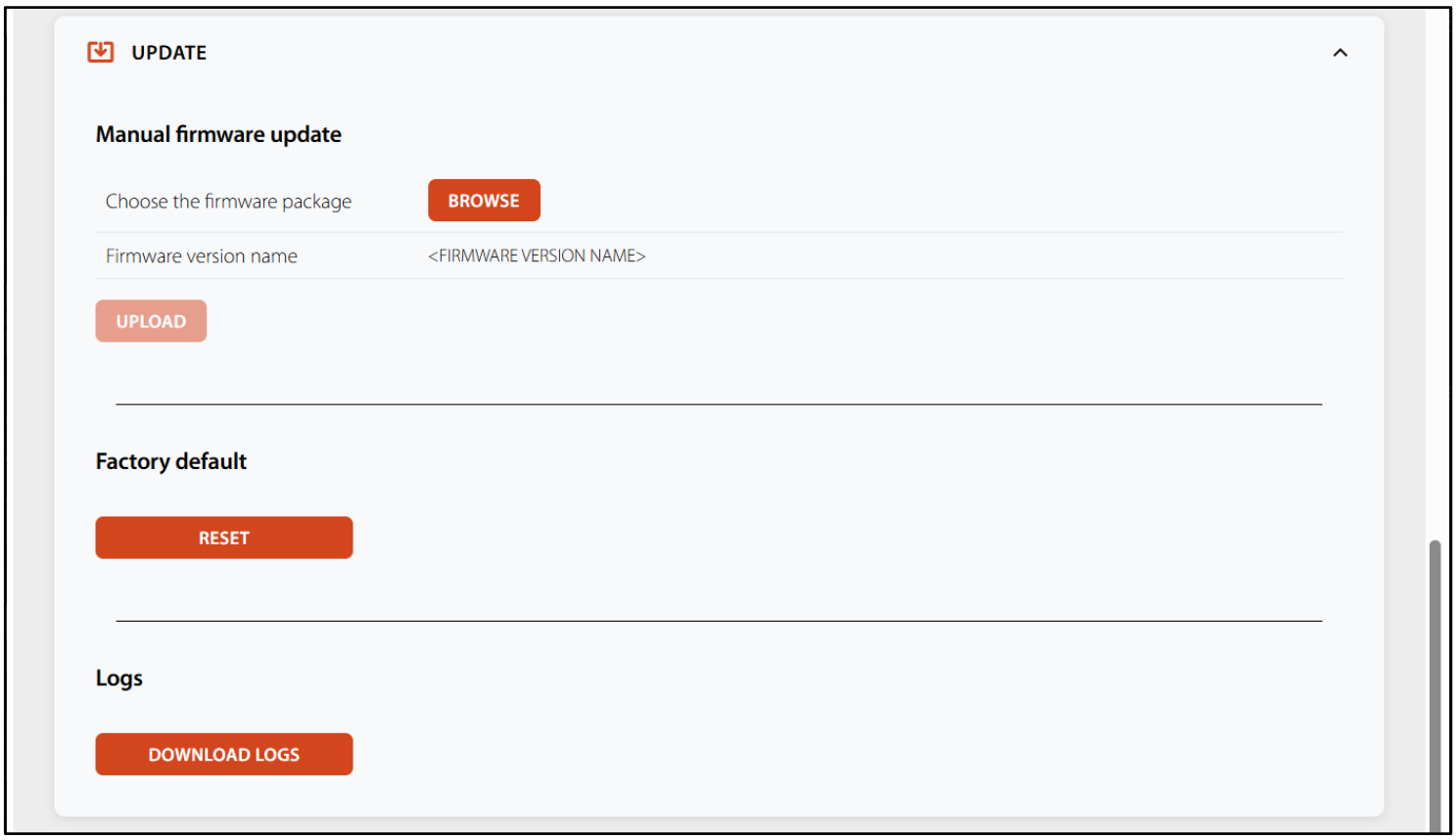
NETWORK



- IP mode
  - Device can be configured using DHCP or static IP address.
  - If static IP addressing is selected, you can set IP address, subnet mask and gateway.

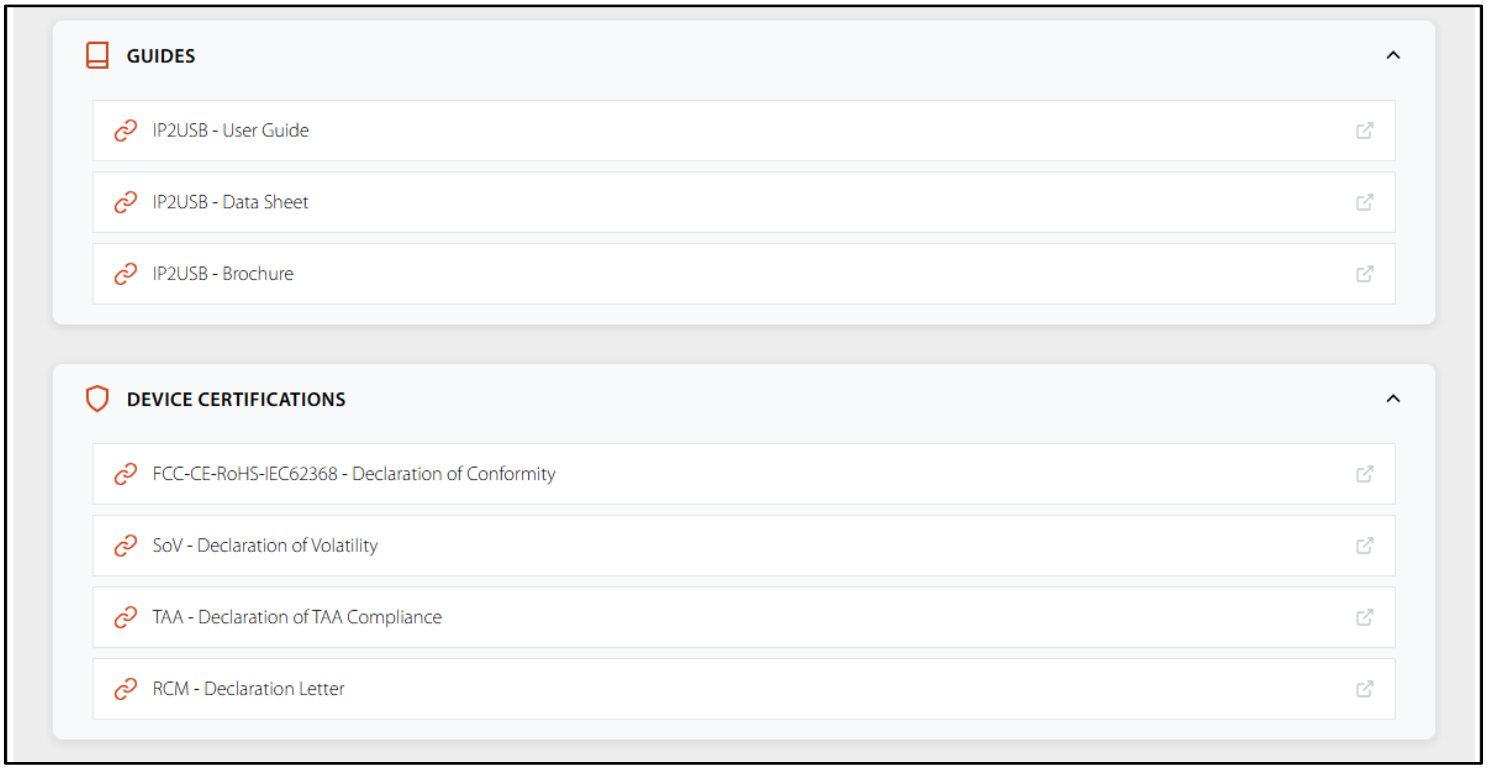
RS-232

Here you can set the baud rate of the RS232 port.



- You can force a specific firmware package (ZIP file) after clicking on the Browse button. Click on “Upload” button to proceed to the update.
- If you need to do a factory reset of the product, you can click on the “Reset” button.
- You can click on the “Download logs” button to share troubleshooting information with our technical support team.

RESOURCES TAB



In this section, you will have access to the latest documentation.

- User guide
- Datasheet
- Brochure
- Device certifications

INOGENI MAESTRO APPLICATION

You can use our INOGENI Maestro application to monitor firmware information and upgrade your unit. All settings explained in the web interface section apply to the Maestro application.

NOTE: Maestro application is not available now. Please use the USB CDC-NCM interface to connect to the local webpage for configuration and monitoring.

NOTE: You need to use the USB-B to USB-A cable provided with the box for the Maestro application to detect the unit.

AUDIO ROUTING

AUTOMATIC [DEFAULT]

If a DSP or speakerphone is connected to any of the USB ports, the device will automatically select it as an audio source. Otherwise, the default mode uses Dante audio.

DANTE AUDIO MODE

		OUTPUTS			
		HDMI out	Dante	DSP	UAC to PC
INPUTS	Network Camera				
	Dante				✓
	DSP				
	UAC from PC		✓		

NETWORK CAMERA MODE

		OUTPUTS			
		HDMI out	Dante	DSP	UAC to PC
INPUTS	Network Camera	✓			✓
	Dante				
	DSP				
	UAC from PC				

USB DSP MODE

		OUTPUTS			
		HDMI out	Dante	DSP	UAC to PC
INPUTS	Network Camera				
	Dante				
	DSP				✓
	UAC from PC			✓	

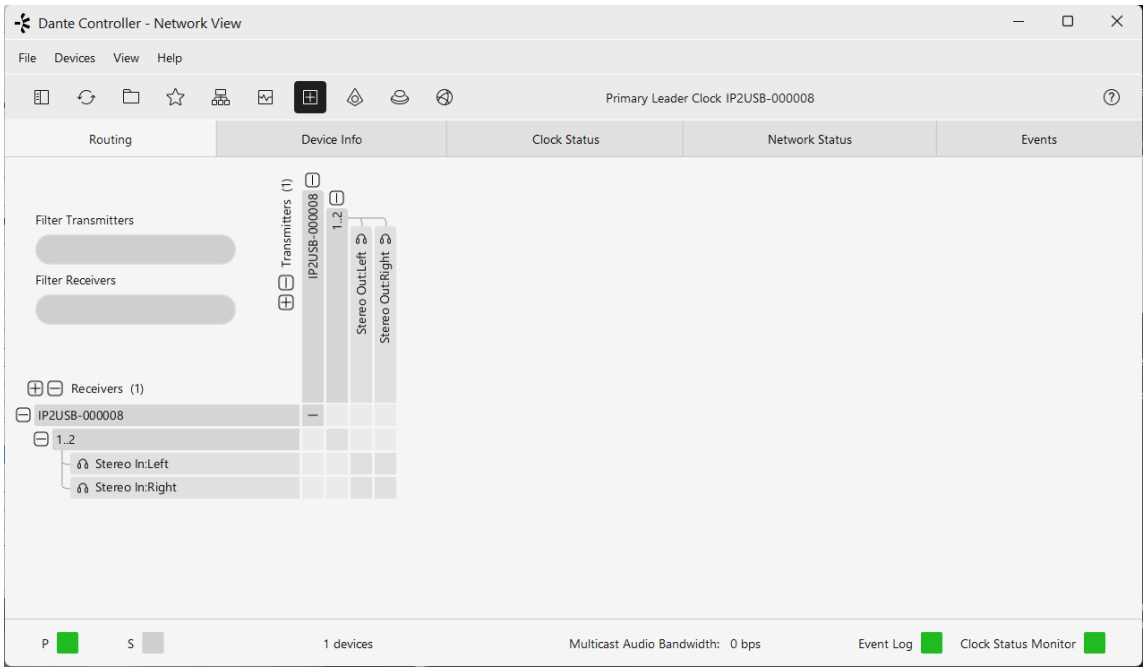
AUDIO OFF MODE

Audio functions are not activated.

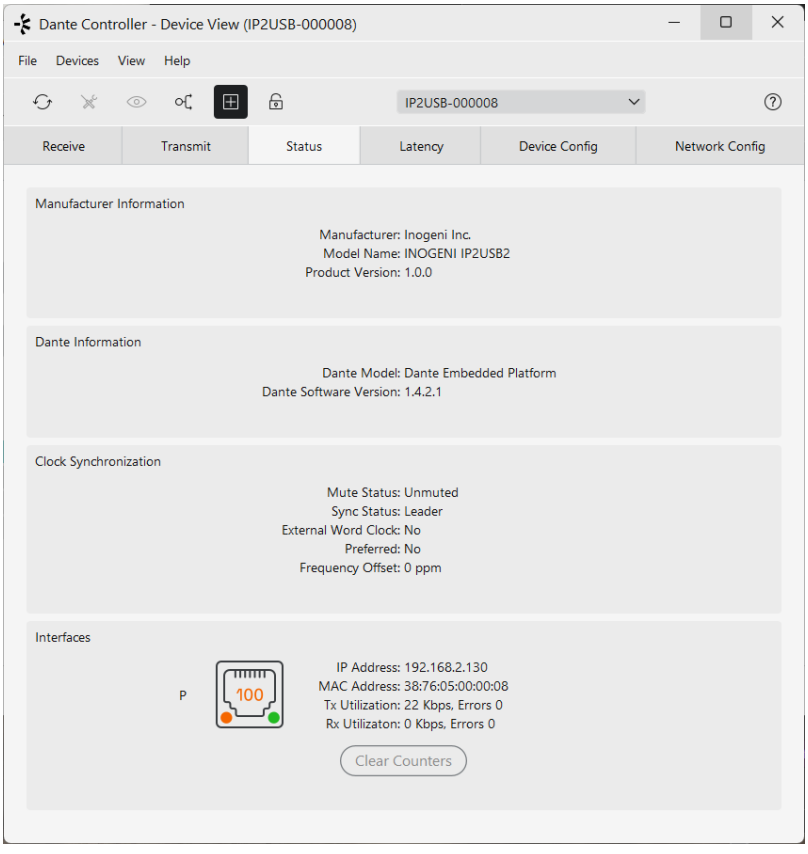
Here are some insights into configuring your installation with Dante devices.

We highly recommend you to follow the Dante Controller user guide.

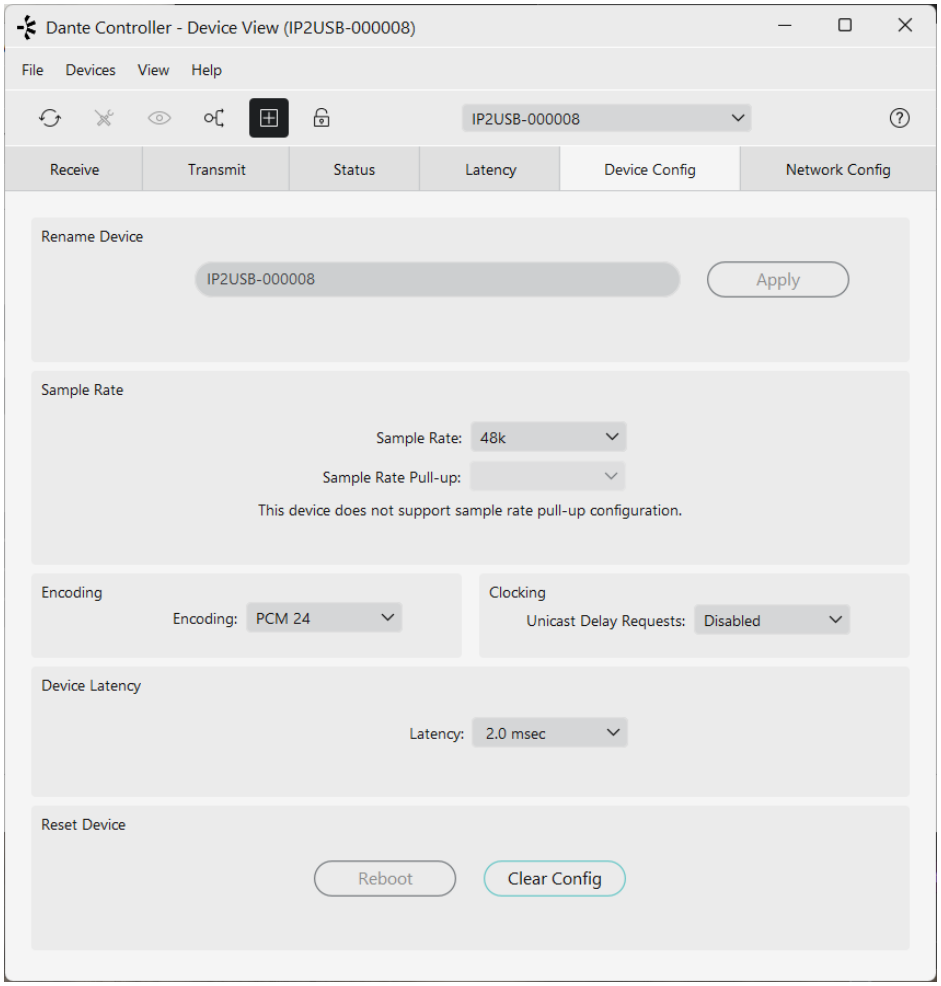
The device will be detected inside Dante Controller by its hostname. You can configure the routing of the Dante streams like any other Dante device.



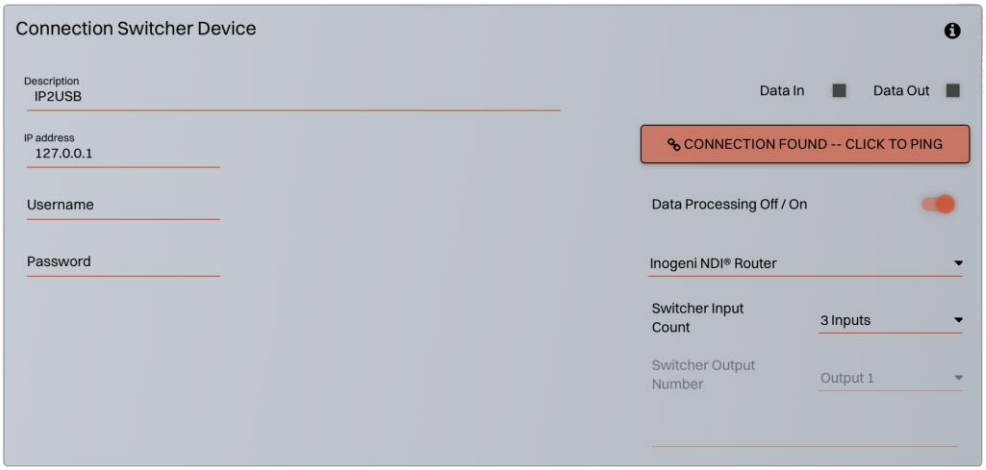
You can monitor the status of the device using the “Status” tab.



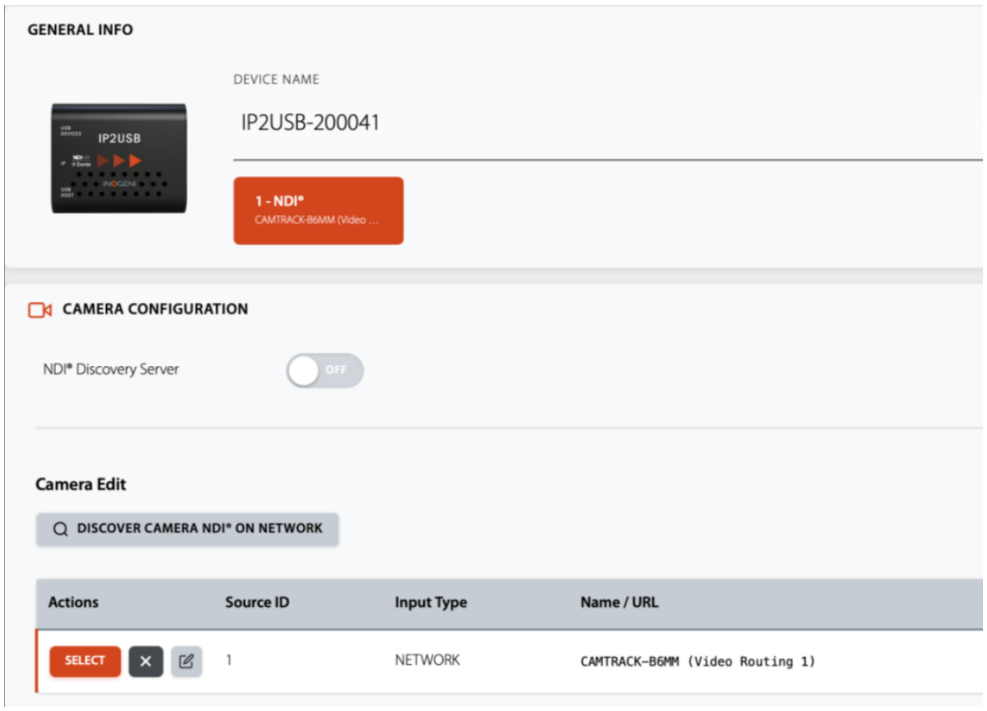
Under the “Device Config” tab, you can also see device capabilities.



The IP2USB integrates smoothly with the INOGENI CAMTRACK, a voice-activated camera switcher featuring an NDI router that creates a virtual NDI source linked to the selected camera. Configure the INOGENI NDI Router in the web interface of CAMTRACK to specify your input count.

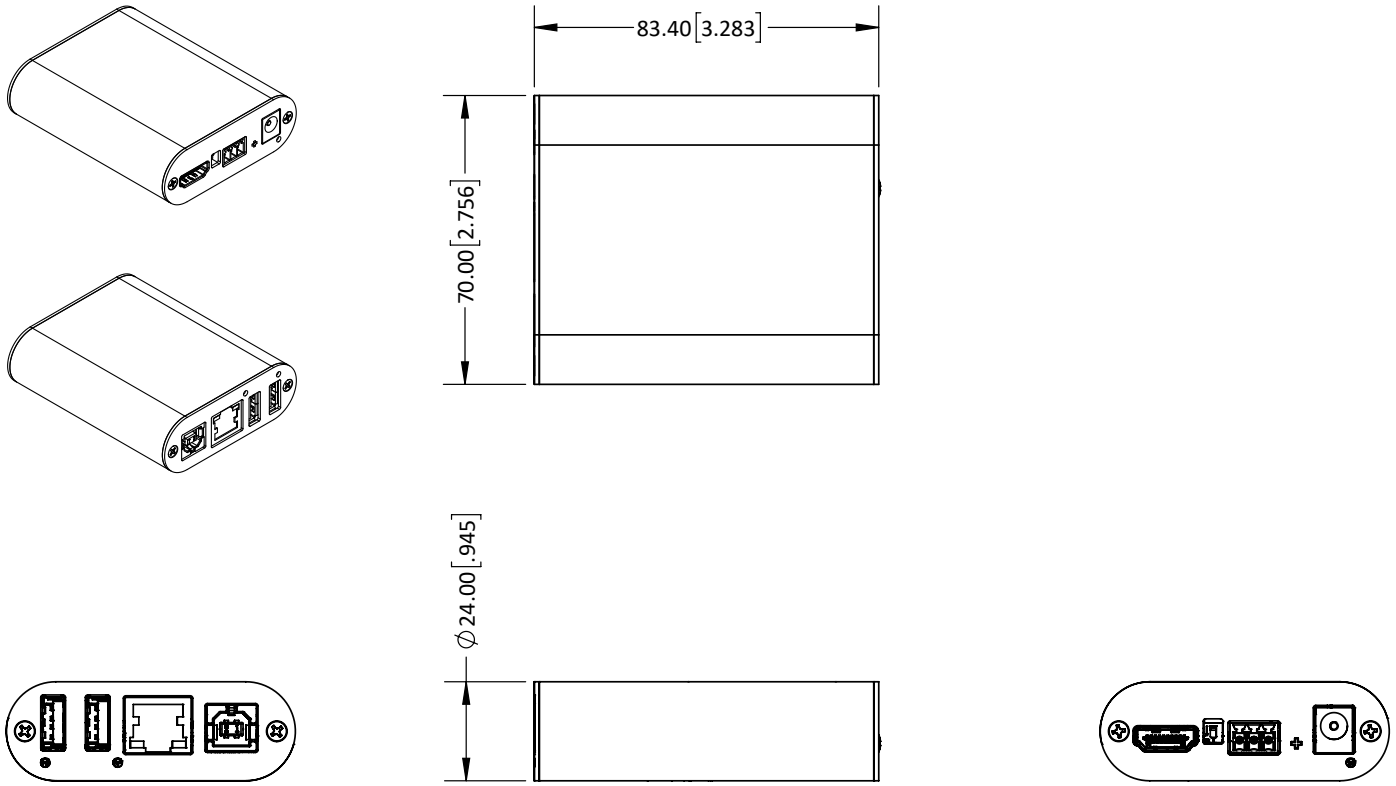


Connect IP2USB to this virtual NDI source in its web interface and let CAMTRACK handle camera switching.



MECHANICAL SPECIFICATION

You can find the mechanical specification of the device. All dimensions are in **mm [in]**.



SUPPORT

Engineered by video professionals, for video professionals, it is your most compatible USB 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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Québec, QC, Canada, G1W0C6
(418) 651-3383

CERTIFICATIONS

FCC Radio Frequency Interference Statement Warning
This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received including interference that may cause undesired operation.

IC Statement
This Class A digital apparatus complies with Canadian CAN ICES-3(A)/NMB-3(A).

CE Statement
We, INOGENI Inc., declare under our sole responsibility that this product, to which this declaration relates, is in conformity with European Standards EN 55032, EN 55035, and RoHS Directive 2011/65/EU + 2015/863/EU.

UKCA Statement
This device is compliant with the Electromagnetic Compatibility Regulations 2016 No. 1091 as part of the requirements leading to the UKCA marking.

WEEE Statement
The European Union has established regulations for the collection and recycling of all waste electrical and electronic equipment (WEEE). Implementation of WEEE regulations may vary slightly by individual EU member states. Please check with your local and state government guidelines for safe disposal and recycling or contact your national WEEE recycling agency for more information.

RCM Statement
This device is compliant with Regulator Compliance Mark (RCM) certification.

NOM Statement
This device is compliant with the NOM-019 standard.

Product specifications can change without notice, we suggest to use the latest user guide version on product website.