HD-NDI-200

Full-HD NDI®|HX2 POV Camera

Version 2.0

AIDA

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*NDI® is a registered trademark of Newtek Inc.**

*The information within this manual is subject to change at any time without prior notice***

Safety Guide:

1. Before operation, please read all the instructions in the manual carefully. For your convenience, please keep this manual.

2. Ensure the power supply input is within the recommended rate before powering on.

3. Camera power voltage = 12VDC, with a rated currency to 2A.

4. Please keep the power cable, video cable, and control cable safe and out of obstructions.

5. Operational temperature of the camera is between 0-50C / 32F-122F. To avoid damage, do not pour anything inside the camera. Avoid direct sunlight or outdoor environments.

6. Do not remove the camera housing or cover. For service, please contact our support line.

7. Use a dry, soft cloth to clean the camera housing with a neutral cleaning agent when needed.

Packing List:

Check for the items below when opening the package:

1 EA

-AIDA HD-NDI-200

-Power Adapter

-Power adapter sockets

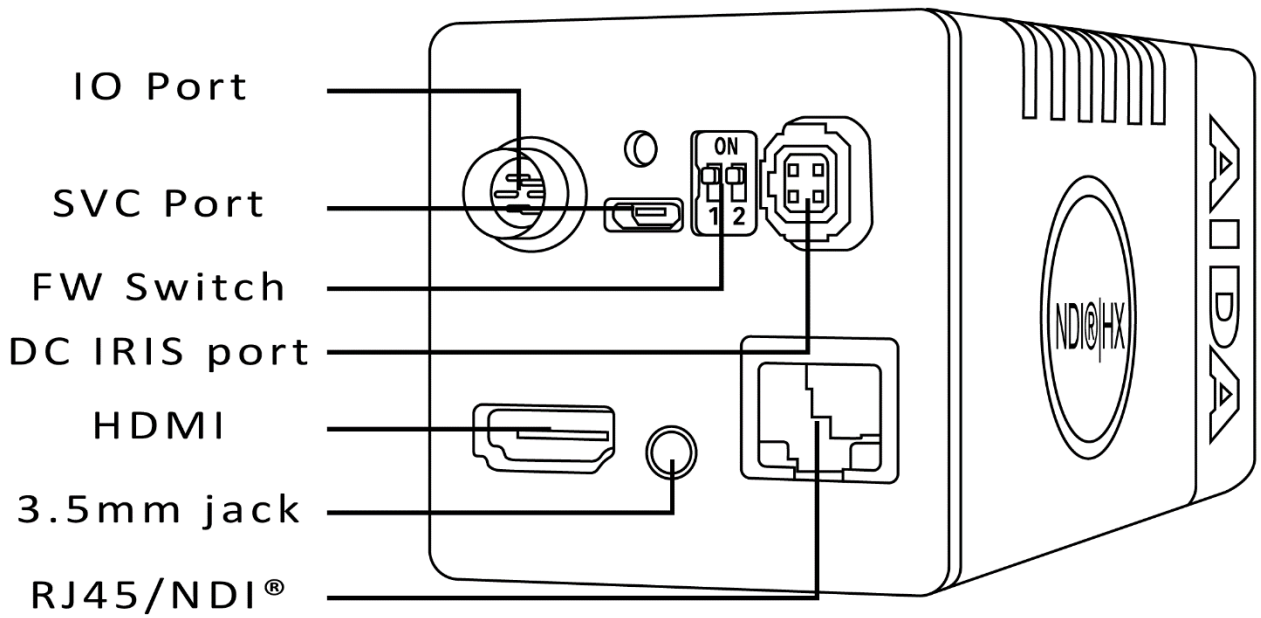
-Micro USB Cable

-C/CS Mount Adapter

-Thank you card

Quick Start:

1. Ensure that all cable connections are secure before powering on the camera.



2. Test the video either through HDMI or NDI. The camera will be default resolution of 1080 30p.

Product Highlights:

- Contains a Sony CMOS ISP (1/2.8” progressive CMOS sensor) providing up to 1920x1080 full HD resolution.
- Utilizes the newest NDI®|HX2 for the lowest latency, quality and compression video over a single network.
- Autodiscover enabled for fast installation over any network.
- Standard 4mm lens for a standard 80 degree HFOV shot.
- Full HD video over HDMI, RTSP, RTMP, and NDI.
- Fully adjustable camera settings, from White balance, exposure settings, and image parameters.
- Supports PoE: get power and video over one ethernet cord.
- Controllable over RS485 or online web UI.
- Menu based image parameters controllable over breakout cable or web UI.
- Free firmware updates when needed.
- Mountable tripod holes on the top and bottom.
- Audio input in rear portion of the camera for multi-channel TRS stereo audio via NDI®|HX2 or RJ45 streaming.
- Functional tally light for program, preview, and standby modes. (NDI transmission)

Camera Specs:

Video Interface	HDMI (V1.4) | RJ-45 | NDI®|HX2
Sensor	1/2.8” Sony Progressive CMOS Sensor
Lens	4mm Default lens (80 degree HFOV)
Lens Mount	CS Mount (C mount adapter included)
Control Port	RS485, RJ-45 (VISCA over IP), NDI
Network Speed	1000M
Video Encode	H.264/H.265
Bit-Rate Control	Variable Bit Rate, Constant Bit Rate
Video Bit Rate	1024 kbps (min) ~ 20480 kbps (max)
IP Protocol	IP, RTSP, RTMP, VISCA over IP, NDI®|HX2
POE	Supported (IEEE802.3af)
Minimum Lux	0.01 Lux
White Balance	Auto/Indoor/Outdoor/One Push/ATW/Manual
Exposure	Auto/Manual
Gamma	Supported
WDR	Supported
BLC	Supported
2D/3D NDR	Supported
Audio	TRS Stereo Line In (3.5mm Jack)
Dimensions	LWH 2.13” x 5” x 2.13” (54mm x 127mm x 54mm)

Camera Specs: (CONTD.)

Video Format	HDMI	1920 x 1080 60p/59.94p/50/30p/29.97p/25p/24p/23.98p 1920x1080 60i/59.94i/50i 1280x720 60p/59.94p/50p/30p/29.97p/25p
	IP / NDI|HX (frames)	1920x1080 3~60 1280x720 3~60 1024x576 3~60 620x360 3~60

OSD Menu: (CONTD.)

1. To access the OSD menu, please use the OSD controller on the breakout cable.
2. Enter the menu by pressing the OSD control button once.
3. Navigate through the menu by tilting the joystick up, down, left or right to manipulate the menu.
4. To exit, go back to the main menu and press the OSD control button once.

SYSTEM	Language	Select Language (English only)	Default: English
	Protocol	VISCA: Serial and IP default	Default: VISCA
	Address	Select VISCA address ID	Default: 1
	Baudrate	Select the VISCA baudrate	Default: 9600
	Return	Return to previous menu	
EXPOSURE	EXP. Mode	Choose between auto and manual exposure settings	Default: AUTO
	Shutter	Change shutter speed under manual settings only	Default: AUTO Manual: 1/100
	Gain	Change gain under manual settings only	Default: AUTO Manual: 0
	DC IRIS	Allow for DC IRIS Lens compatibility	Default: On
	Flick	Allows for adjustment of flickerless option	Default: 50hz
	Backlight	Allows for enabling of backlight to compensate for low light	Default: OFF
	Gamma	Allows for changing gamma settings	Default: 0
	Return	Return to the previous menu	

OSD Menu: (CONTD.)

IMAGE	WB Mode	Auto/Indoor/Outdoor/Onepush/ ATW/Manual/Sodium/Flourescent	Default: AUTO
	R_Gain	Adjust red gain under manual settings	Default:52
	B_Gain	Adjust blue gain under manual settings	Default:58
	Defog	Allows adjustment against hazy objects	Default: OFF
	Return	Return to previous menu	
QUALITY	2D NR	When enabled, image noises and sharpness are reduced	Default: OFF
	3D NR	When enabled, less image reduction happens	Default: AUTO
	Sharpness	Set the level for sharpness	Default: 3
	Contrast	Set the level for contrast	Default: 8
	Saturation	Set the level for Saturation	Default: 8
	Bright	Set level for brightness	Default: 8
	D_WDR	Enables control of WDR	Default: OFF
	Return	Return to previous menu	
CTRL	Mirror	Mirrors the image across the Y plane	Default: OFF
	Flip	Mirrors the image across the X plane	Default: OFF
	D/N Mode	Enables the night shutter mode for low light situations	Default: DAY
	Gain Limit	Allows to set limit on amount of light that enters the camera	Default: 128
FORMAT	Resolutions	Allows for the changing of resolutions. Scroll down for more options.	Default: 1080 30p
	Return	Return to previous menu	

OSD Menu: (CONTD.)

NETWORK	DHCP	Enable or disable DHCP	Default: OFF
	Address	Set the IP address of the camera	Default: 192.168.1.188
	Netmask	Set the netmask of the camera	255.255.255.0
	Gateway	Set the gateway of the camera	192.168.1.001
	Return	Return to the previous message	
RESET	Cam Reset	Reset all Image parameters	Default: RESET
	All Reset	Factory reset the camera (please give the camera a moment to reboot)	Default: RESET
	Return	Return to the previous menu	
INFO	FW Ver	Use this when referring to support	
	Info	Use this to quickly glance over the cameras IP settings, as well as resolution and visca settings.	
	Return	Return to previous menu	

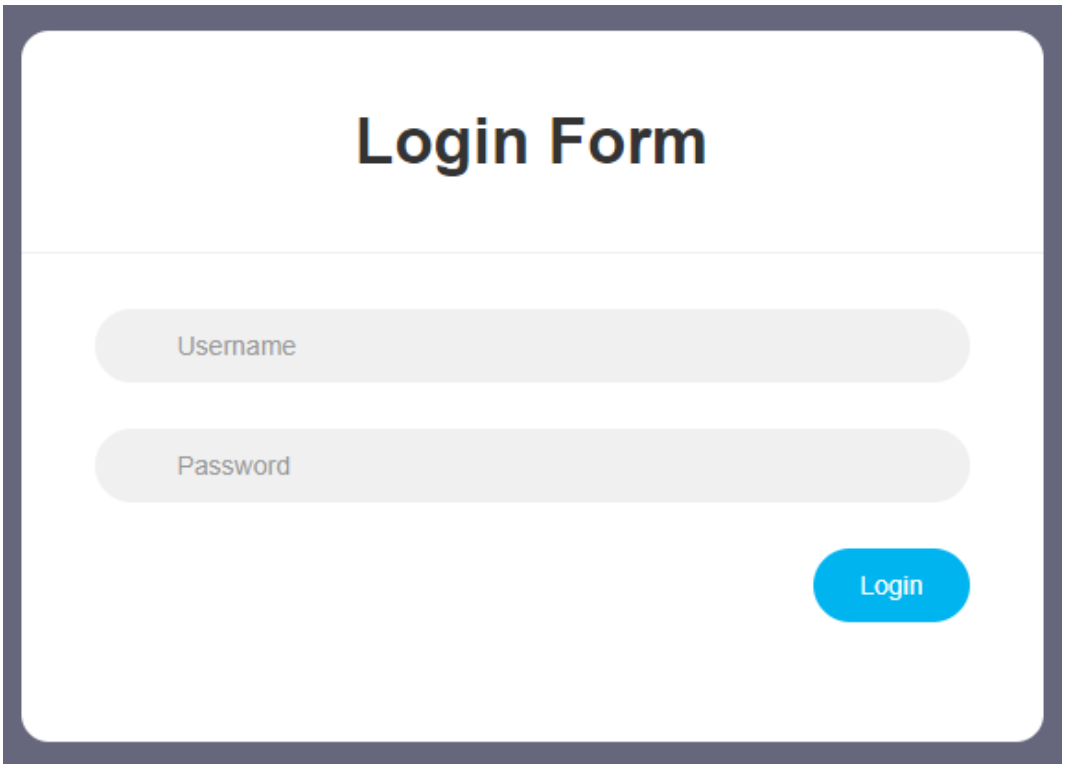
Web Settings:

The camera web interface supports most major browsers such as Chrome, Firefox, IE, Safari, Opera, etc.

1. Login

Open your desired browser and in the address bar, please type the camera's default IP address: 192.168.1.188. (If you are unable to connect, please locate the IP address under the INFO menu, and make sure your device is connected to the same network as it)

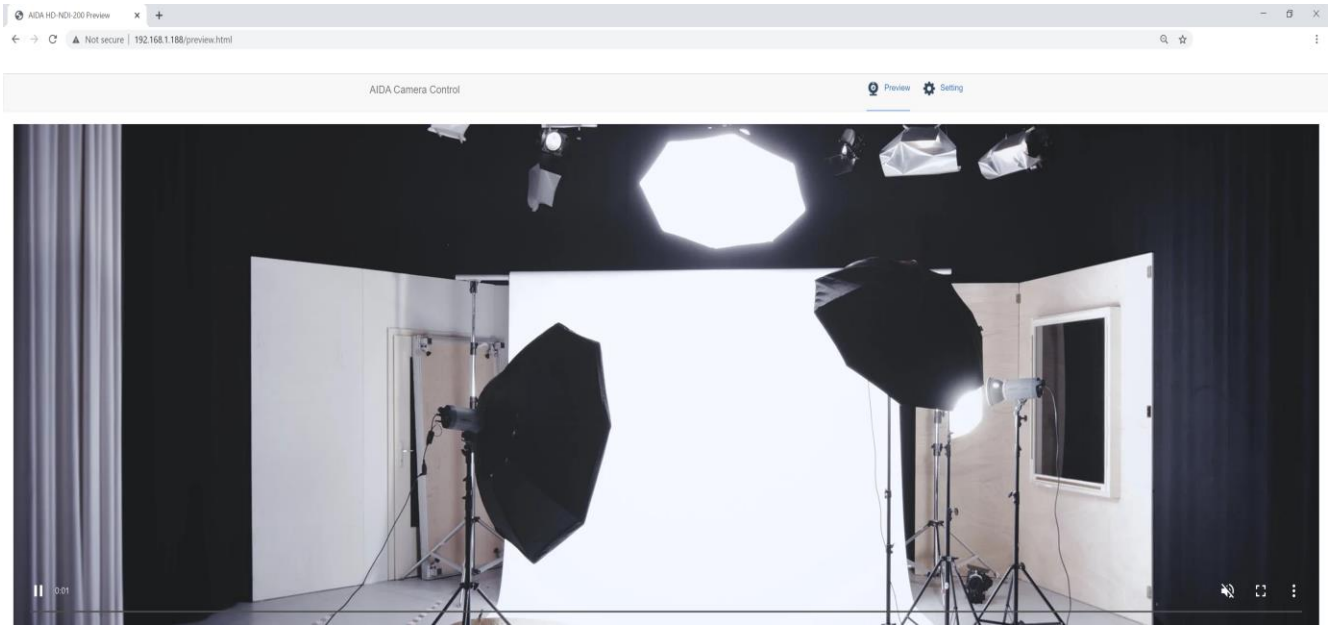
You will be prompted with the following screen. The default username and password for the camera is both admin.



Web Settings: (CONTD.)

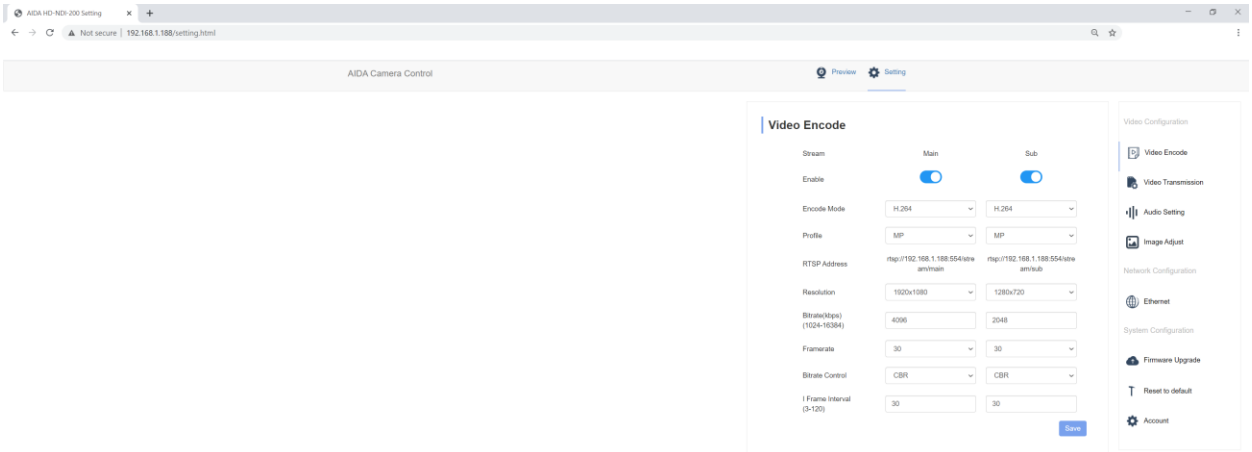
2. Realtime Preview

When logging in the first time, you will see the real-time preview:



Note that the preview is trailing around 1-2 seconds in real-time. This should only be used as a preview screen to see what the camera is seeing, perfect for determining if changes need to be done.

Clicking the settings tab will lead you to the settings menu of the camera as seen below:

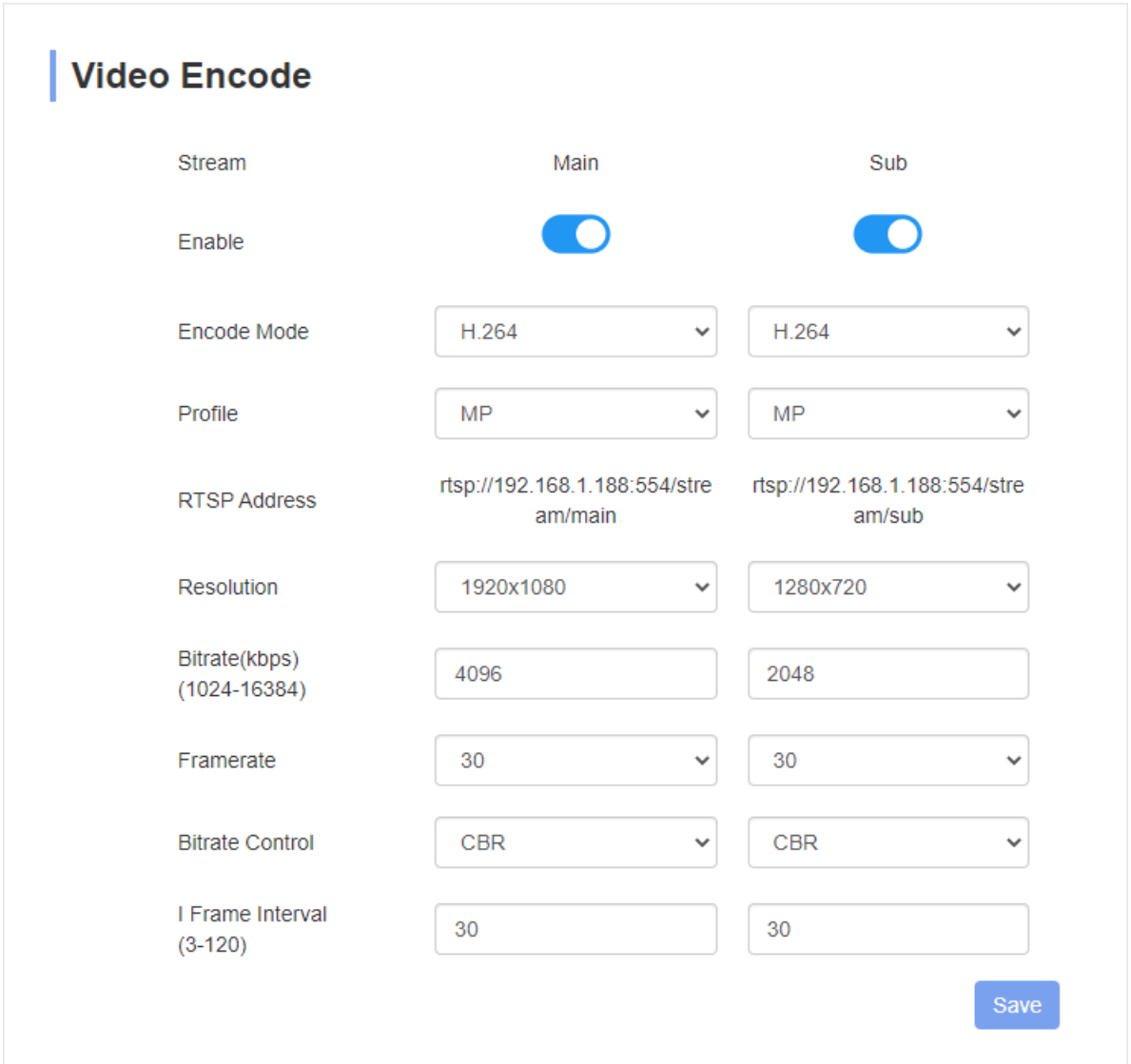


Web Settings: (CONTD.)

3. Camera Parameters

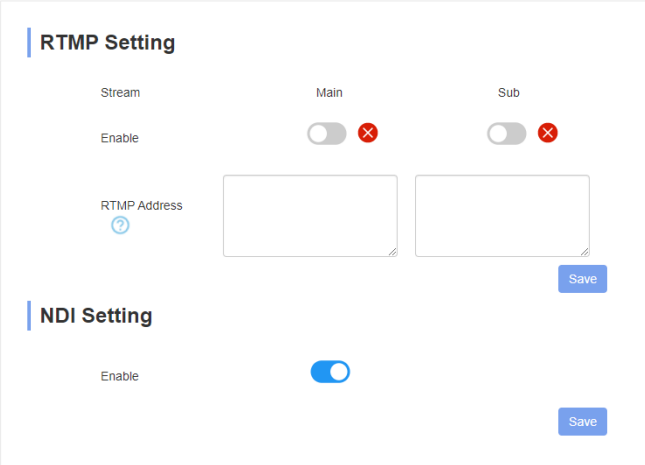
Clicking on the settings tab on the top right allows you to enter the network and image settings of the camera.

The first tab you will encounter is the **video encode**. Under video encode, you can change the encode mode, resolution, bitrate, framerate, bitrate control, and I-frame interval. You may also enable or disable the streams.



Web Settings: (CONTD.)

The **Video Transmission** tab is responsible for the direct streaming protocol: RTMP. Under this tab, you can change the RTMP settings for direct streaming to social media platforms, as well as enable or disable NDI®.



How to stream directly to any RTMP service (Youtube, Facebook, etc)

Streaming directly to these sites are easy with the HD-NDI-200's built in encoder! Here's how to stream directly with using your camera to any website that utilizes RTMP for streaming:

Step 1: Find the RTMP URL for the website. For ex: Youtube's is rtmp://a.rtmp.youtube.com/live2 Place it in the Main box and check it on.

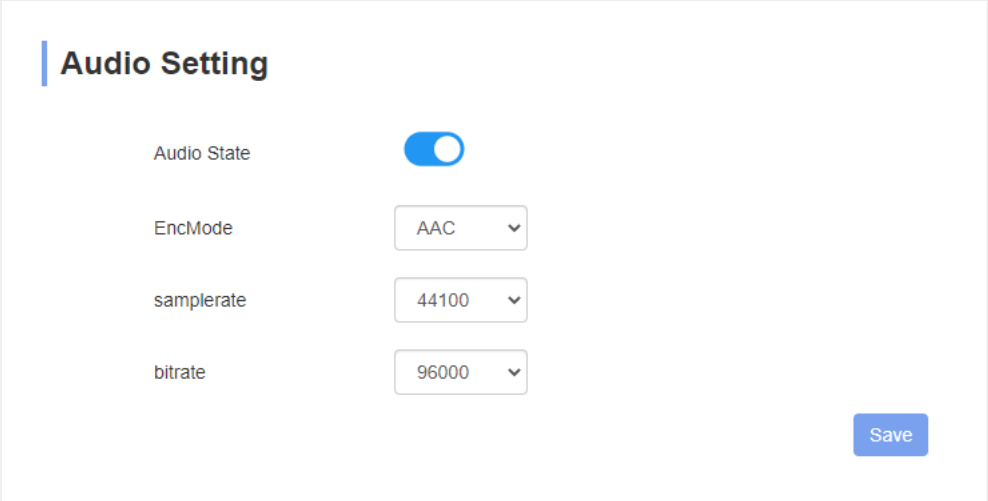
Step 2:Next, add a forward slash (/) after the URL if it doesn't have it, and then paste your stream key right after. Remember to never give your stream key to anyone!!

Step 3: Click the save on the bottom right.

Step 4: Complete! If you are embedding audio, audio will also be sent to the stream. Note that the camera will keep sending data to the stream destination until you turn off the stream. Rule of thumb is that if the indicator next to enable is blue, then it is still streaming. If it is a red X, then it is not.

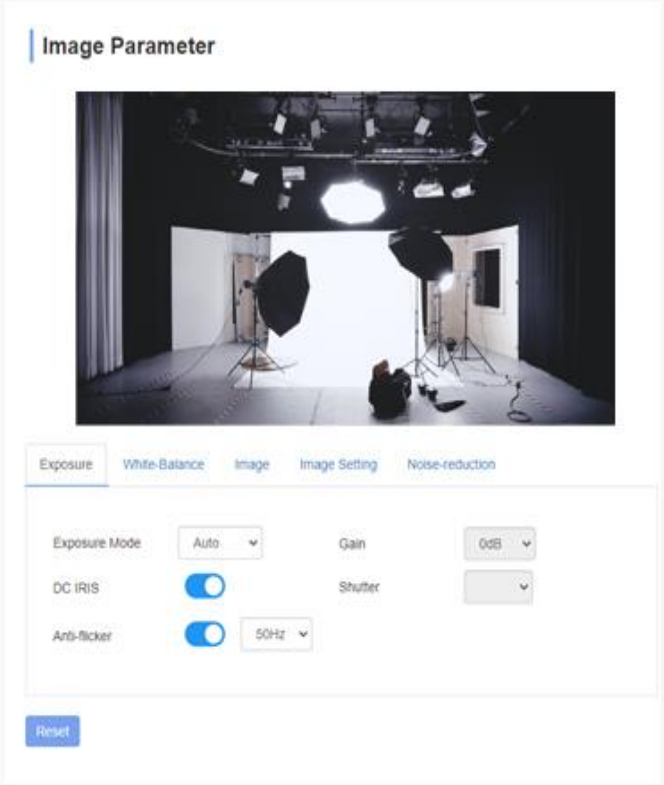
Web Settings: (CONTD.)

The **Audio Settings** tab is responsible for the audio embedment settings. Here you can turn on or off the audio. You are also able to change the encode mode, as well as the sample and bitrate.



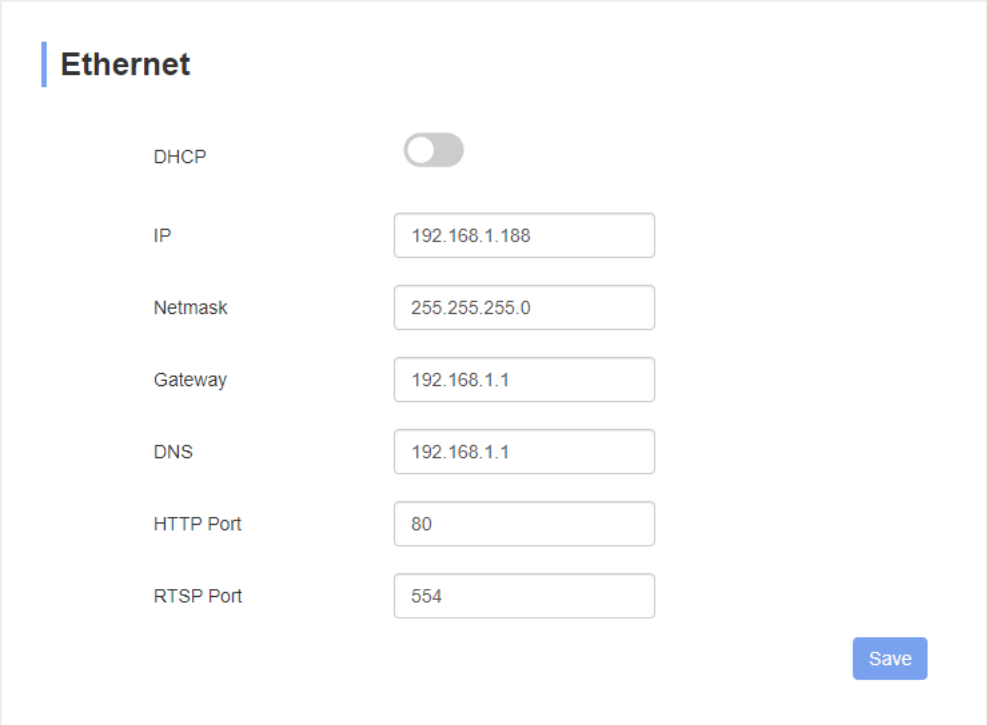
The **Image Parameter** tab allows you to access the camera settings.

Here you are able to change your image settings via the web interface instead of the OSD menu. You have access to all the settings you can normally find on the OSD menu.

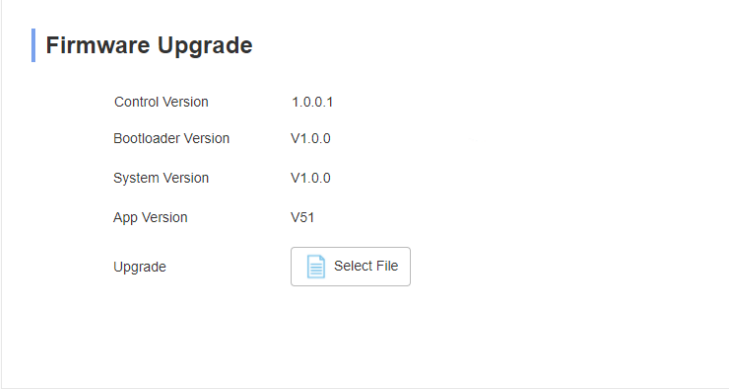


Web Settings: (CONTD.)

The Ethernet tab allows you to change the IP settings of the camera, as well as other settings. We highly recommend not changing anything you don't know, as it can cause irreversible damage not covered by warranty.

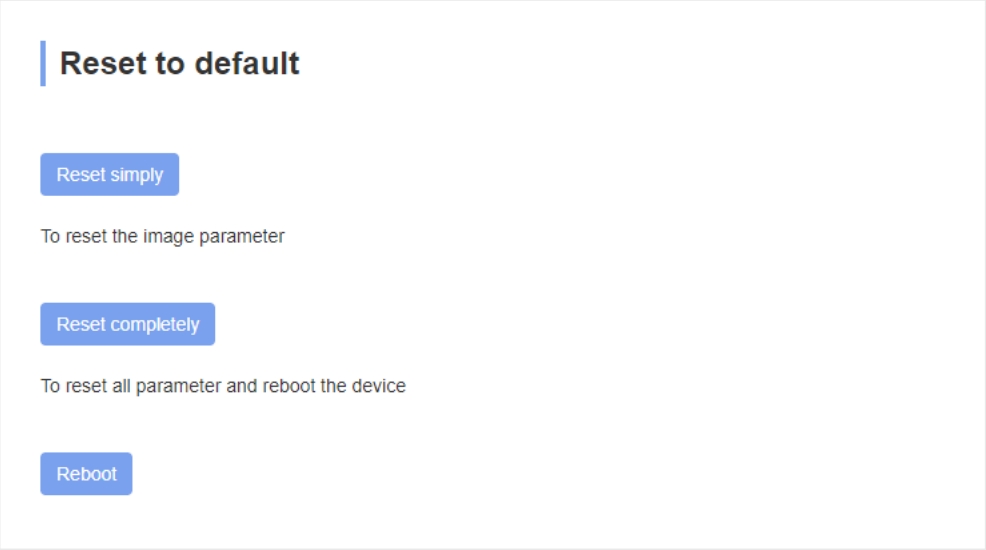


The **Firmware Upgrade** tab allows you to update the firmware of the camera. Stay up to date by signing up for our newsletter, as well as visit our website at aidaimaging.com/download for the latest and greatest firmwares!

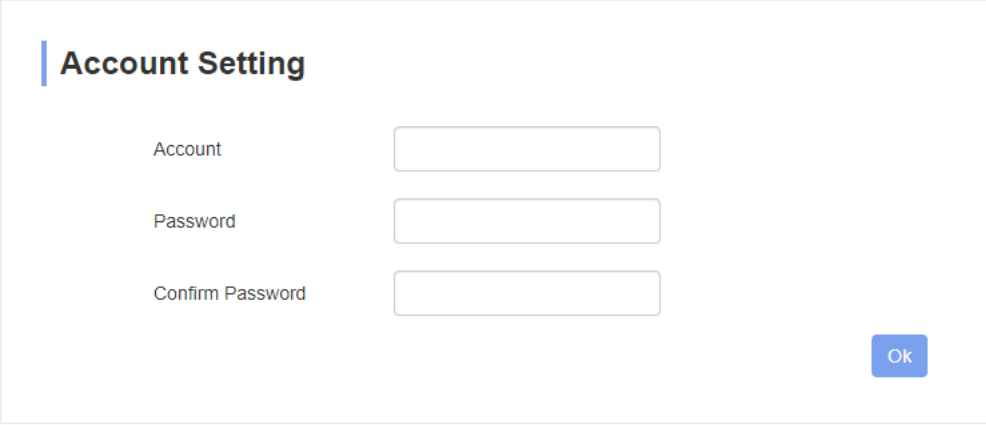


Web Settings: (CONTD.)

The **Reset to Default** tab allows you to reset the image parameter, or factory reset the camera. It also allows for you to remotely reboot the camera.



The **Account** tab allows you to change the username and password of the camera IP address. If you happen to forget the username or password, please factory reset the camera via the OSD menu to reset the password.



VISCA Control:

The HD-NDI-200 is able to be controlled via RS485 VISCA or VISCA over IP.

To setup RS485, please locate the RS485 terminal block on the breakout cable.

To setup VISCA over IP, please use the RJ45 port and connect it to your software or hardware that helps control camera parameters. Here are some specs on controlling the camera over IP:

Control Port: RJ-45 Gigabit LAN

IP Protocol: IPv4

Transmission Protocol: TCP/UDP

IP Address: Default (192.168.1.188) Check OSD menu for more info

Port Address: 52381

Confirm send/transmission control: Depends on software

What is VISCA over IP?

VISCA commands are the communication between the controller and the camera equipment. These commands are sent via UDP on the network. Since UDP transmission isn't that stable, a couple of steps must happen before a setting is executed. The controller first sends out a VISCA command. The camera equipment then receives the VISCA command and returns that message aback to the controller. Once that command is executed, the action will follow suit and the message will be complete. Each VISCA command controls its own setting, so there are no overlaps in existing commands.

VISCA Protocol:

For our VISCA protocol, please head to our download page at aidaimaging.com/download to find the full command packet.

NDI®|HX2 Protocol:

What is NDI®?

NDI® is NewTek's innovative Network Device Interface technology, is a royalty free standard enabling IP video workflows across Ethernet networks. NDI®|HX2 is a bi-directional standard that allows video systems to identify and communicate with one another over IP, and to encode, transmit, and receive multiple streams of broadcast-quality, low latency, frame-accurate video and audio in real time. The NDI®|HX2 encoding algorithm is resolution and frame rate independent, supporting up to 4K and beyond, as well as multi-channel, floating-point audio up to 16 channels and beyond. NDI®|HX2 also includes tools to implement video access and grouping, bi-directional metadata, tally, and more

What about NDI®|HX2?

NDI®|HX2 is the next generation for efficient NDI protocol. It uses H.264, but is also capable of using H.265 (HEVC) for even more efficient compression. There are a couple of differences between NDI®|HX2 and its predecessor, NDI®|HX.

Some differences is that NDI®|HX2 is a true native NDI® stream from the camera source. It is considered a better implementation than the previous generation, allowing for a more reliable, lower latency video. It shares very similar features to true NDI®, such as discovery options, ability to carry metadata, and control of low level network transmission. (TCP)

You will also not need any drivers for NDI®|HX2, as NDI 4 will be used to decode it. This makes it a lot easier on previous versions of equipment. For more info on the differences between the three different types of NDI®, please view the next page.

NDI® | HX2 Protocol: (CONTD.)

Parameter	NDI®	NDI®|HX	NDI®|HX2
Transport	TCP/UDP/Multi-TCP	UDP (TCP)	TCP/UDP/Multi-TCP
Image Format	Size / Aspect Independent	Size / Aspect Independent	Size / Aspect Independent
Tally Feedback	Yes	Yes	Yes
Bidirectional Device Control	Yes	Yes	Yes
Integrated Alpha Channel	Yes	No	No
Compression	NDI® Codec	HX (H.264)	H.264/H.265
Connection	Socket, Unicast / Multicast and FEC	Unicast/MultiCast	Socket, Unicast / Multicast and FEC
HD (1080i) Data Rate	~ 100 Mbit/s	8-20 Mbit/s	1-50 Mbit/s
Essence Packing	Discrete Audio, Metadata and Video Frame packets, single connection	Delivered as Discrete Audio, Metadata and Video Frame packets, single connection	Discrete Audio, Metadata and Video Frame packets, single connection
Infrastructure	Gigabit / Load Balanced Multi NIC / 10GBit	Gigabit / Wireless	Gigabit / Wireless
Service Discovery	Bonjour (mDNS), NDI® Access (manual), Server (NDI®4)	automatic via HX Driver	Bonjour (mDNS), NDI® Access (manual), Server (NDI®4)
API	free license, SDK Libraries for Win(x86), Mac, Linux(x86 & ARM), iOS, FPGA reference	hardware encode, Decode with NDI® Libraries	Send with NDI® Embedded SDK, Receive with Free NDI® Libraries

So how does the HD-NDI-200 play into all this?

Being one of the first Full-HD POV NDI® on the market, we aim to give everyone a chance at fulfilling their streaming or video capturing needs. Using NDI® to setup studios in seconds is easier to do than setting up old BNC cabling, or running out of HDMI repeaters to finish a job. With more reliability and efficient data transfer, we picture future studios running off NDI®, and moving more towards an IP infrastructure. The HD-NDI-200 is also extremely cost-effective, making it possible for studios to capture multiple angles one camera simply can't.

Warranty and Support:

Warranty:

AIDA Imaging warrants its cameras and items to be free from defects under normal use. With that in mind, we fulfill 2 years of warranty from the date of purchase unless otherwise noted. Please refer to our website for more information at: aidaimaging.com/support

Support:

If you would like additional support or explanation on anything on this manual, please feel free to go to our FAQ page on our website at aidaimaging.com/support. If you are in need of additional help, or have any general questions, please feel free to contact us in these various ways:

Telephone: 909.333.7421

Email: Support@aidaimaging.com

Website: aidaimaging.com/support

We are open yearly, Mon-Fri 8A.M. to 5P.M. PST, excluding major holidays and events.

Also, keep up to date with firmwares and new releases from AIDA Imaging by signing up for our newsletter, found on our website.

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