

SCIENCE IMAGE®

make better

FULL NDI® Encoding / decoding
Up down conversion
Optical transceiver

NDI® Studio 4K • H/4K • S/4K • SH User Manual

The world's advanced NDI® converter
with broadcast quality.



SCIENCE IMAGE[®]

Reading before use

If you find that some functions are unavailable in future use, you need to check the following to find out whether it is caused by improper operation or settings:

1. This product is an audio and video codec conversion device, which only supports streaming and pushing in the local area network, but not on the Internet.
2. If the device does not start successfully, please check whether the power indicator and start indicator of the device are normal, whether the official power adapter is used; whether the power bank is connected to the DC port; whether the upgrade page is closed or the power is turned off during the device upgrade. Please use the officially designated adapter. If you use a power bank for power supply, please use the USB port for connection.
3. If you cannot log in to the WebUI, please check whether the device's IP is in the same network segment as the computer's IP address, and whether the device's IP address conflicts with the IP addresses of other devices in the network segment.
4. If the IP address of the device is found to be "192.168.8.8", please log in to the WebUI to set the IP address mode in the I network settings to manual and fill in the IP address, subnet mask and gateway you need.
5. If a blank screen appears in the decoding, please check the decoding settings in the WebUI, and whether the NDI source is selected, please try to click Refresh the list and select again.
6. If the login fails due to the upgrade, please clear the browser cache and refresh the page and log in again.
7. If the video freezes during use, please check whether the CPU temperature of the device is too high, generally should not exceed 70°C; check whether the device is connected to a Gigabit Ethernet port; or try to close the multicast mode in the WebUI.
8. If the video output from the device to the display device has abnormal colors, sounds, or images, please try to restart the device in the Web UI system, or manually power off and restart.
9. If you find that the video stream is not detected in NDI Studio Monitor, please check whether the encoder stream name conflicts within the network segment, whether the NDI group or discovery server settings have been set to the NDI Access Manager on the device or PC, and try to change the settings back. , Close NDI Studio Monitor and reopen the search.

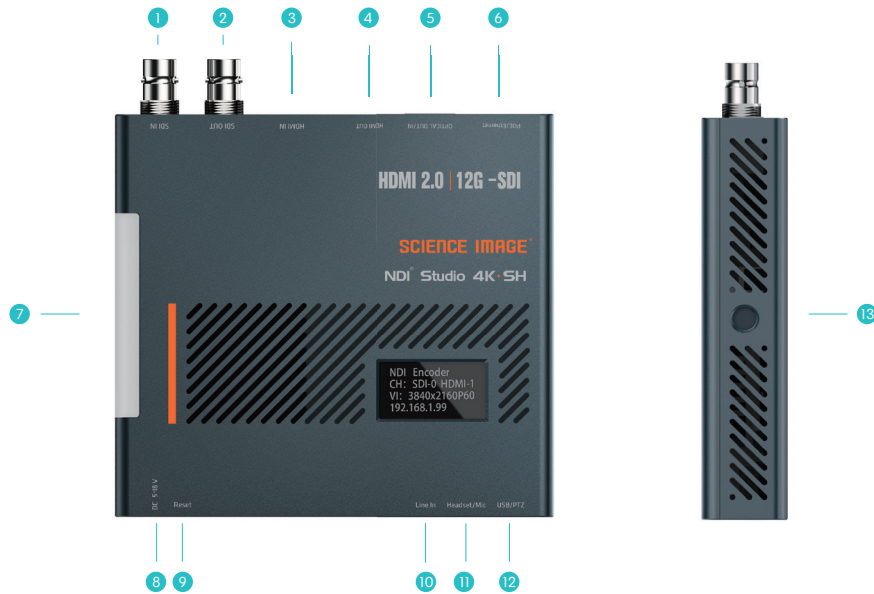
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1. NDI®Studio 4K interface and indicator introduction



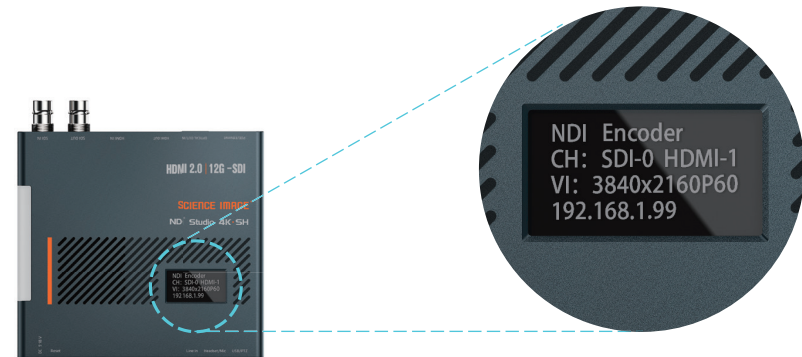
- ① SDI input-----SDI signal input interface (Studio 4K-H does not have this interface)
- ② SDI output-----Encoder is looped out picture, decoder is decoded output picture (Studio 4K-H does not have this interface)
- ③ HDMI input-----HDMI input signal (Studio 4K-S does not have this interface)
- ④ HDMI output-----The picture is looped out in the encoding state, and the output picture is decoded in the decoding state (Studio 4K-S does not have this interface)
- ⑤ Optical input/output----SMPTE optical fiber SFP socket, used to connect different types of Gigabit/10 Gigabit/12G-SDI optical fiber modules
- ⑥ Network port/POE-----Network connection / PoE (Power Over Ethernet) switch can be connected to the LAN and powered on at the same time
- ⑦ Tally indicator-----Real-time display of the three states of the current broadcast video: yellow/standby, green/pre-monitor, red/program
- ⑧ 12V DC-IN-----12V DC power input
- ⑨ Reset-----Long press for 5 seconds to restore factory settings
- ⑩ LINE IN-----3.5mm audio input port for external analog audio embedding
- ⑪ Headset or Mic-----Headphone jack, adopts American standard; at the same time can be used as Mic
- ⑫ USB/PTZ-----USB mode power supply/support all-round (up and down, left and right) movement of the pan/tilt, zoom lens, zoom control camera connection
- ⑬ 1 / 4 inch screw hole-----Fixed connection hole with imaging equipment

2. Three ways to power on and connect to LAN

- ① Use the standard DC-12V power supply of the product to power on, and insert the network cable to connect to the LAN;
- ② Power on using USB, and insert the network cable to connect to the LAN;
- ③ Connect to the LAN at the same time through the power of the network cable connected to the POE (Power Over Ethernet) switch.

3. OLED screen display instructions

After power on, the NDI® Studio 4K will display four lines of information on the front OLED screen. The specific information is listed as follows:



- The first line: Displays the current mode of the NDI® Studio 4K, there are two types: encoding and decoding. The encoding is: "NDI Encoder"; the decoding is: "NDI Decoder".
- The second line: Displays the name of the NDI stream currently being encoded or decoded by NDI® Studio 4K. Such as: "NDI:SCIM-2020" (encoding end) or "NDI:SCIENCEIMAGE" (decoding end).
- The third line: Cyclically display the resolution of the video stream currently being encoded or decoded and the type of the connected video source interface. In the encoding state, first display the resolution of the input video stream, for example: "VI: 1920x1080P60"; then switch to the connected video source interface type such as "CH: SDI-1 HDMI-0" (0 means no input, 1 It has input); the video source interface type connected in the decoding state is displayed as: "CH:NDI-1", which means it is in the state of decoding NDI video stream. When there is no input at the encoding end, it will display "VI:0x0/0" first and then "CH:SDI-0 HDMI-0".
- The fourth line: Cyclically display the current device's IP address, the real-time temperature of the main chip, and the frequency of the audio codec. For example: "192.168.1.24" and "CPU:56 AI:48khz" are displayed cyclically.

Note: If the NDI® Studio 4K has been set to the decoding mode, the screen will first display the default initialization encoding state each time it is first powered on, and it will resume displaying the currently set decoding state after waiting for about 30 seconds.

4. Login Web UI

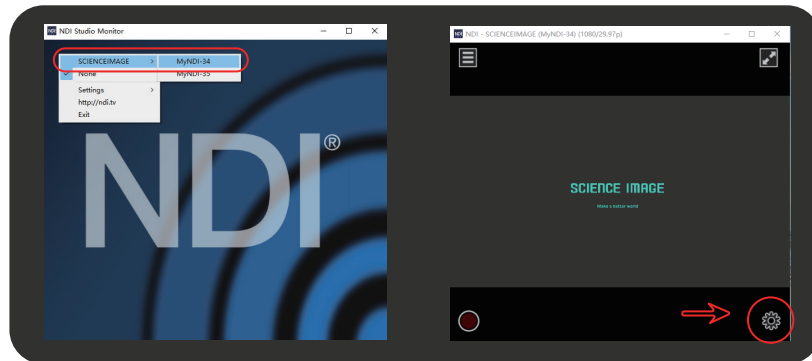
4.1 open the web login page

Method 1: Open the login page by entering the IP address of the device in the browser address bar. Open the computer or mobile browser, enter the IP address displayed on the fourth line of the OLED screen of the device in the address bar, and press Enter to enter the login page, as shown below:



Note: The PC or mobile phone must be in the same routing network as the NDI® Studio 4K device.

Method 2: Open the login page through NDI Studio Monitor



The first step: Download and install the free NDI® tool-NDI Studio Monitor on NewTek's official website. Download link: "https://ndi.tv/tools"

The second step: After the installation is complete, open the "NDI Studio Monitor" program.

The third step: Click the menu icon in the upper left corner or right-click anywhere, select "SCIENCEIMAGE"--click to find an item consistent with the NDI stream name of the device. As shown in the left picture above

The fourth step: On the opened Studio Monitor page, click the gear icon in the lower right corner. As shown in the above right picture

4.2 login in

Enter the initial login information of the device: Username: **admin** Password: **admin** Click the [Login] or [登录] button to enter the **English** or **Chinese** setting interface respectively. Click [Login] for the English interface, and click [登录] for the Chinese interface.



5. Device Information

This page is the NDI® Studio 4K device information page, which contains the following information:

- 1 Device running time (since power-on), device heartbeat monitoring (every 10s to monitor whether the system is operating normally), the video resolution and audio frequency of the HDMI source or SDI source of the current encoding input (or the format of the decoded NDI video stream Information), real-time temperature of the main chip and detailed device parameter information.



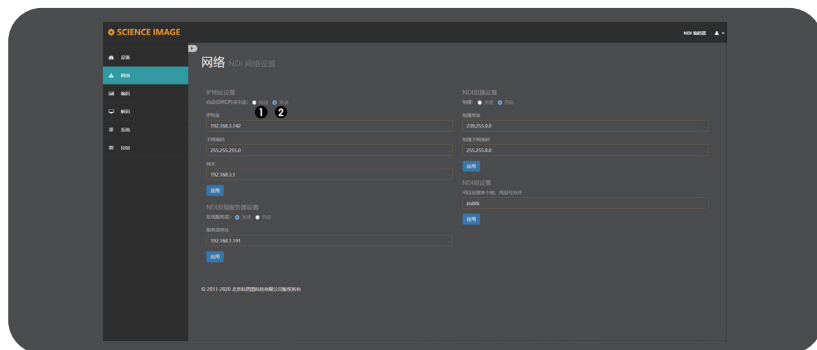
The device information includes:

- 2 Device name (can display the current codec mode of the device), device serial number, hardware version, firmware version (can be upgraded on the system page with the version update), MAC address (unique and unmodifiable), device IP address (can be Modify at any time on the web page), local IP address (the IP address of the local PC or mobile phone), and disk space (usage of hardware flash disk space).

6. Network settings

6.1 Modify IP

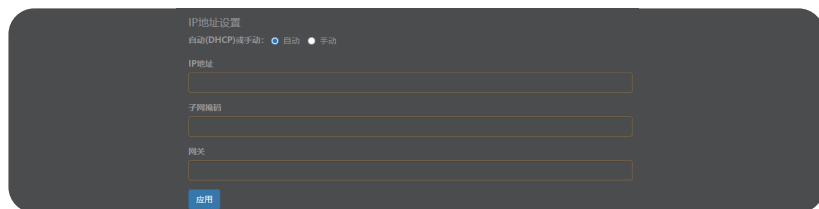
Click [Network] to enter the network setting page



There are two modes for device IP address setting: DHCP and manual.

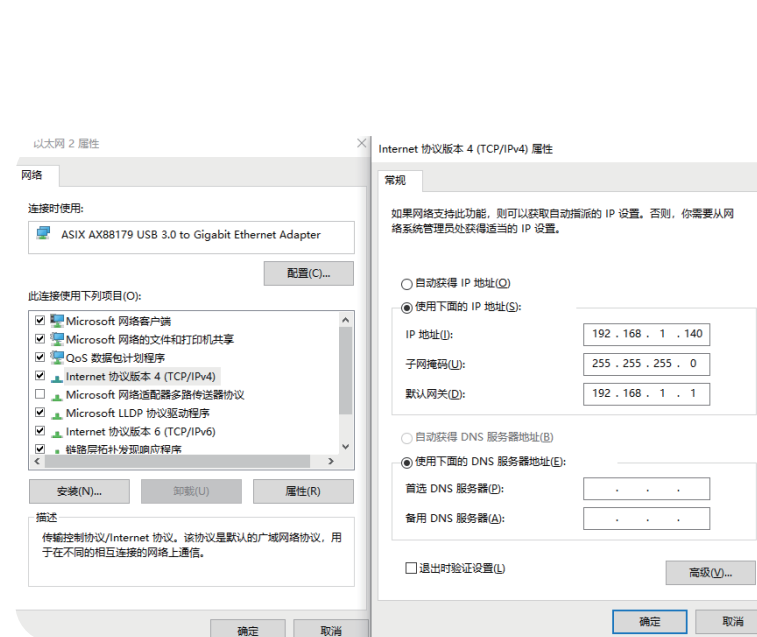
6.1.1 DHCP mode

- 1 **Auto(DHCP) mode needs to be used in the link connecting the router.** The router dynamically assigns an IP address to the device in real time. Each time the device is powered on, an IP address is randomly assigned to the device. You can log in to the web page to modify the corresponding information according to the IP address assigned by the router. After selecting this mode, there is no need to fill in the page IP address information, just click the [Apply] button below, and wait for 10 seconds to restart or power on the device to take effect.



6.1.2 Manual mode

- 2 If this mode is selected, the user needs to set the IP address information of the device to be in the same network segment as the IP address information of the local PC or mobile phone. For example: View the local computer's Ethernet IPv4 information as "IP address: 192.168.1.144 Subnet mask: 255.255.255.0 Default gateway: 192.168.1.1", then you can set the device IP address as: "IP address: 192.168.1.142 gateway : 192.168.1.1 Subnet mask: 255.255.255.0 "The gateway and subnet mask are the same as the local computer or mobile phone, and the IP address does not conflict with other addresses in this network segment



After filling in the IP address, click the [Apply] button below, and wait for 10 seconds to restart or power on the device to take effect.



6.2 NDI discovery server settings

NDI discovery server can transfer video stream across network segments. To use this function, you need to use the official website of newtek (https://www.ndi.tv/sdk/) Or Company website (http://www.science-image.com/ Download and install NDI SDK and NDI tools.)

Step 1: open NDI discovery service and record the IPv4 address of this computer (for example: 192.168.1.106).



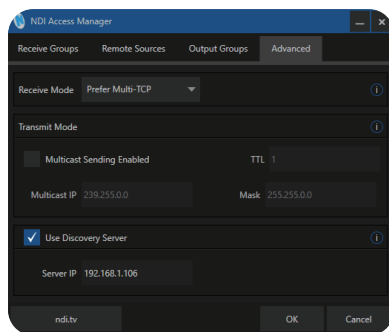
Sources represents the number of encoders connected to the server, and listeners represents the number of decoders connected to the server.

Step 2: log in to the Web UI and find the NDI discovery server settings under the network, click open, fill in the IPv4 address (192.168.1.106) recorded in the first step for the server address, and click apply.



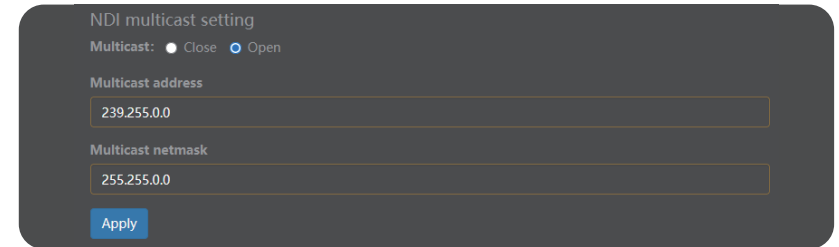
Step 3: NDI@ Studio 4K decoding mode also needs to open NDI discovery server settings and fill in the same server address in order to find the signal source of NDI@ Studio 4K in cross segment coding mode(for example: 192.168.1.191) click apply.

Step 4: computer software, such as vmix and Studio monitor, need to download and install NDI tools and open NDI access manager in order to find the signal source of Studio 4K with cross segment coding mode. Tick in front of use discovery server under advanced, and the server IP also fills in the IPv4 address (192.168.1.106) recorded in the first step. Click OK.



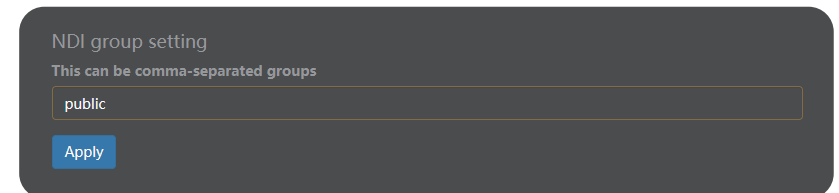
6.3 NDI multicast settings

Open multicast mode, that is, UDP (multicast) transmission mode. There will be default multicast address and subnet mask. You can also manually configure the address. Click apply to take effect. By default, the multicast mode is turned on and the TCP (multi connection) transmission mode is used when the multicast mode is turned off.



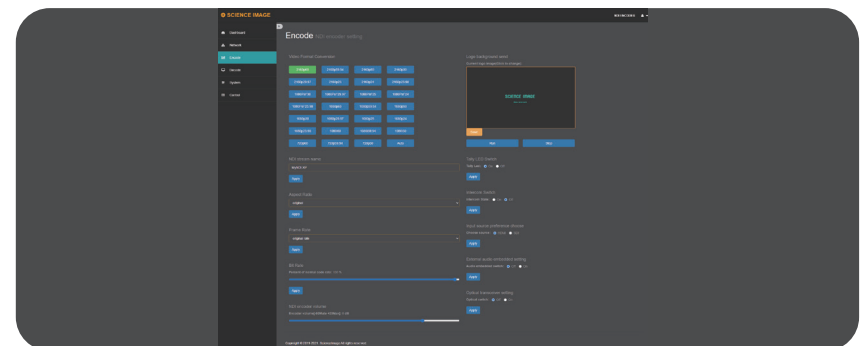
6.4 NDI group settings

NDI defaults to public group. If you want to add a new group, separate it with comma ",". You can also create a separate privacy group, such as science image, so that only the device that also fills in the science image can obtain the video information.



7. Encoding settings

The encoder setting page can set the stream name, aspect ratio, frame rate, bit rate, tally light switch, NDI encoder volume and optical transceiver of the video source.



Web UI based on coding mode

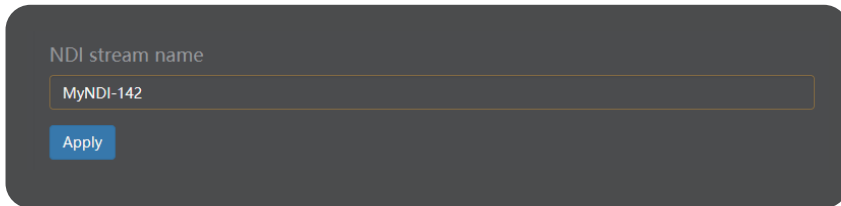
7.1 Video format conversion

Regardless of the format of the input, by clicking the format below, the output can be converted to the corresponding format. Such conversion will not change the image quality. After selection, it will be green and no conversion is required. The default is Auto.



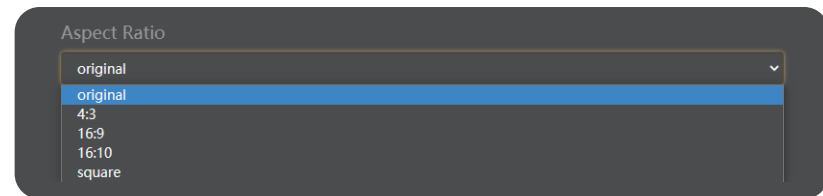
7.2 Modify the NDI stream name in the encoding state

If the device is used as an encoder, you need to modify the NDI stream name. The NDI stream name must be unique locally, otherwise software such as NDI Studio Monitor may not be recognized. After the modification, click the [Apply] button below to take effect in real time. You can see the modification result on the second line of the OLED screen of the device. The default is NDI-X, the upgrade will restore the default.



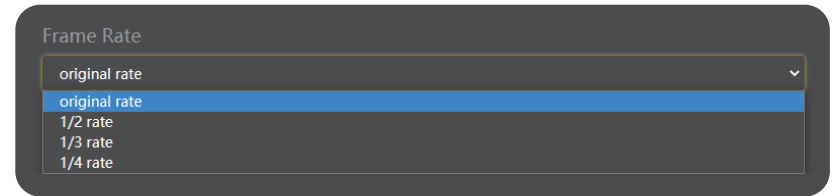
7.3 Set screen aspect ratio

Supports five screen aspect ratio settings: source aspect ratio, 4:3, 16:9, 16:10, square.



7.4 Set frame rate

Support 4 kinds of frame rate settings: source frame rate, 1/2 frame rate, 1/3 frame rate, 1/4 frame rate.



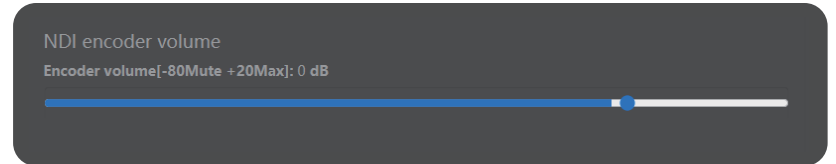
7.5 Set bitrate (Bandwidth)

The adjustment of bit rate can be reduced to save network bandwidth when the requirement of image quality is not very high.



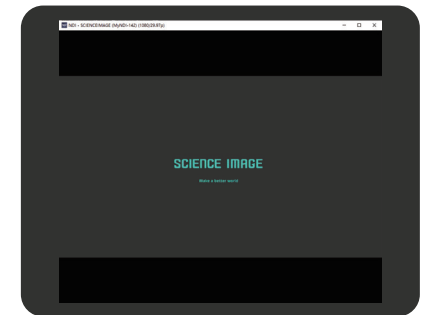
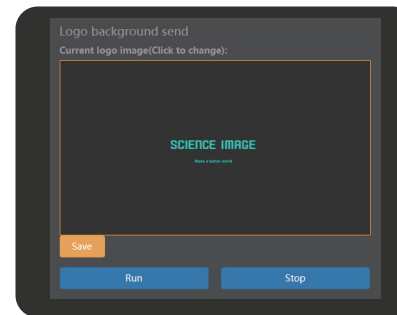
7.6 Set NDI encoder volume

"Encoder volume" regulates the volume of the video source encoded by the encoder, such as the volume of the screen in NDI Studio Monitor.



7.7 Logo background image upload streaming

If it is in the encoding state, users can choose to set the logo background image as the image stream according to the actual needs. Click the image to add a local file, and then click Save to start the stream pushing. If not, click end stream pushing.



Push stream background image displayed in NDI Studio monitor

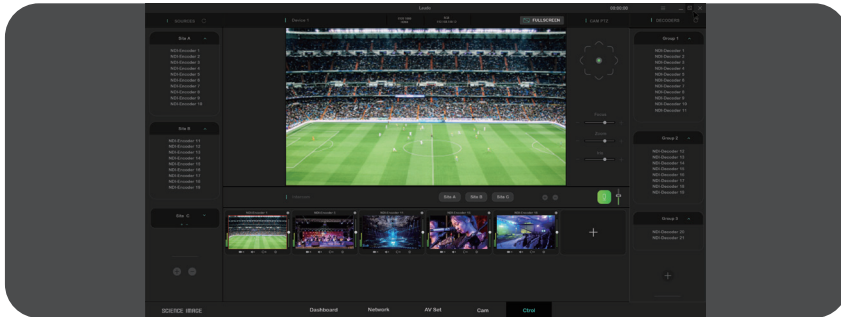
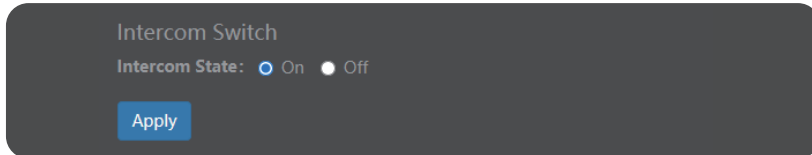
7.8 Set up Tally lights

Tally light can be turned on or off at any time (there are three display states: yellow/standby, green/pre-monitoring, red/program)



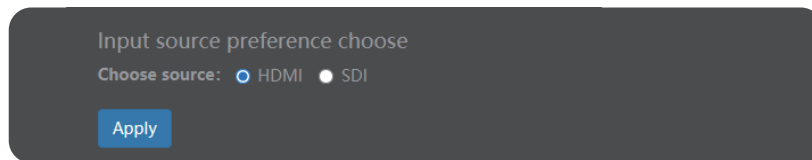
7.9 Call switch

Call switch, click on - Application to make a call with the supporting guide software Laudo, and click off - Application to turn off the call function.



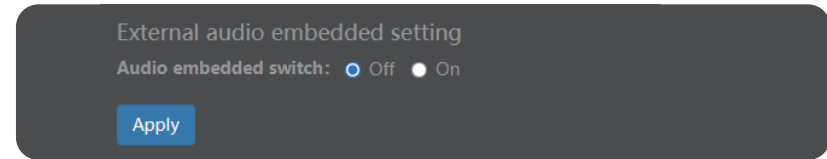
7.10 Input source priority selection

When both SDI and HDMI sources are input at the same time, the HDMI source is preferred by default. If you want to select the preferred SDI source, click SDI application. When there is only one source, it will be automatically recognized and will not be affected by this setting.



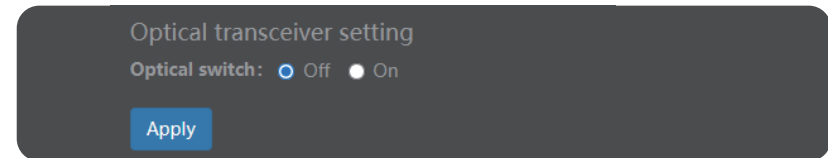
7.11 External audio embedding settings

De-embedding is to output the sound of the video source through the earphone jack. The default is the de-embedding mode. If you want to add new audio to the output video, then select the embedding mode and input through LIN IN.



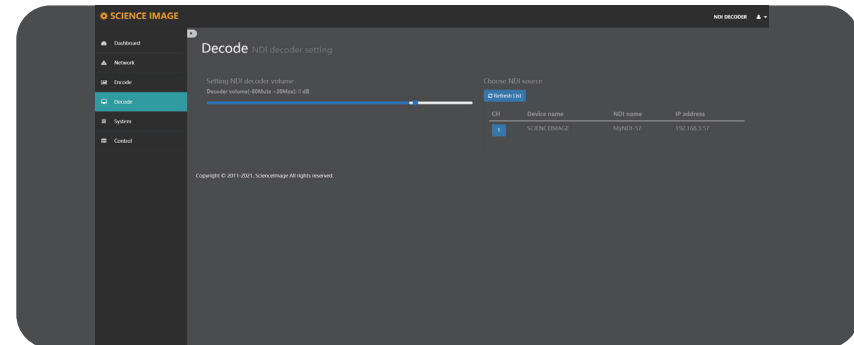
7.12 Optical transceiver settings

Use the optical fiber interface to transmit, click to open and apply.



8. Decoder settings

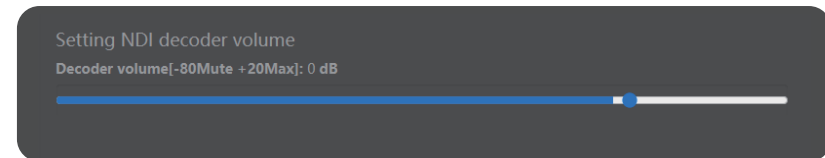
The decoder settings need to be changed in decoding mode. Please refer to page 12 for switching mode.



Web UI based on decoding mode

8.1 Set NDI decoder volume

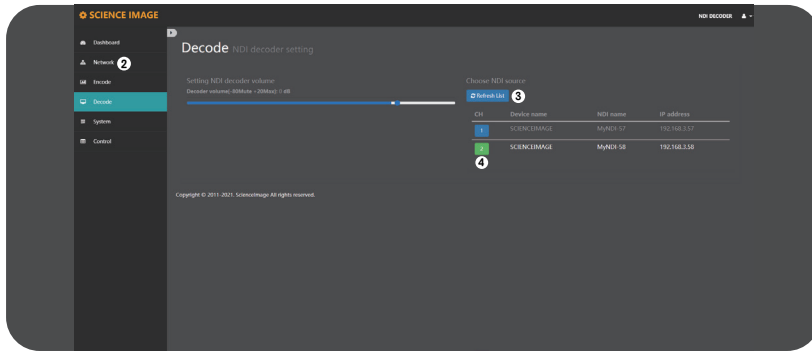
In decoding state, this page displays "set NDI decoder volume", and "decoder volume" adjusts the volume of decoding output to display device, such as output to TV, etc.



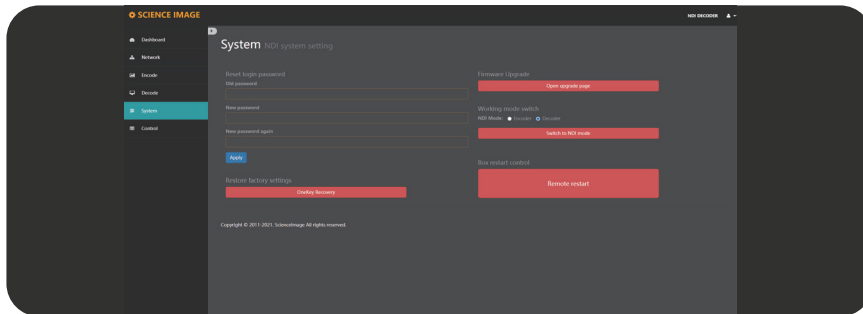
8.2 Select NDI source to decode in decoding state

If this device is used as a decoder, you need to select an NDI source to decode and output.
Setting steps:

- ① Log in to the webUI of the decoder
- ② Click [Network]
- ③ Click [Refresh List]
- ④ Click the number in front of the NDI source to be decoded (2 is the NDI source currently being decoded)

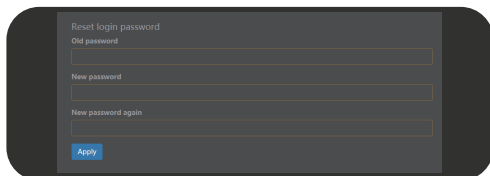


9. System settings



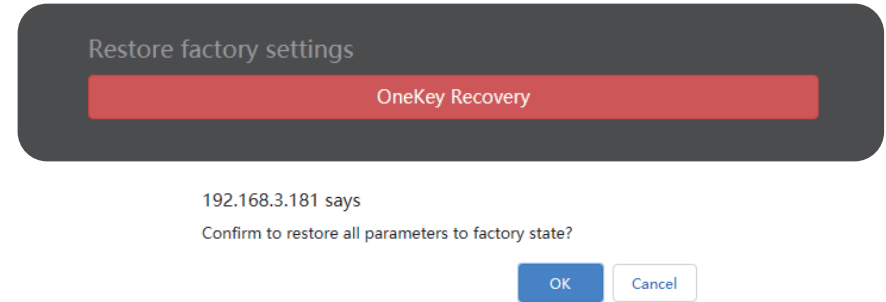
9.1 Reset login password

Modify the login password and click apply. After the password is modified, it will take effect at the next login.



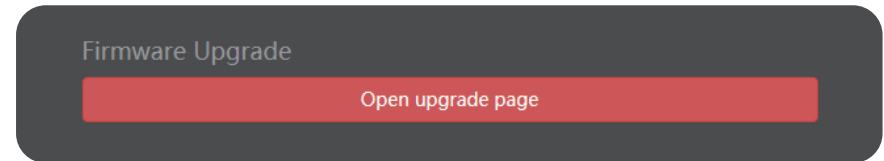
9.2 Restore factory settings

Restoring factory settings can restore the device to its initial state, but the firmware version will not be restored (the factory default IP address of the device is DHCP manual mode. If there is no router that automatically assigns IP addresses in the LAN, the device IP will change to 192.168.8.8).

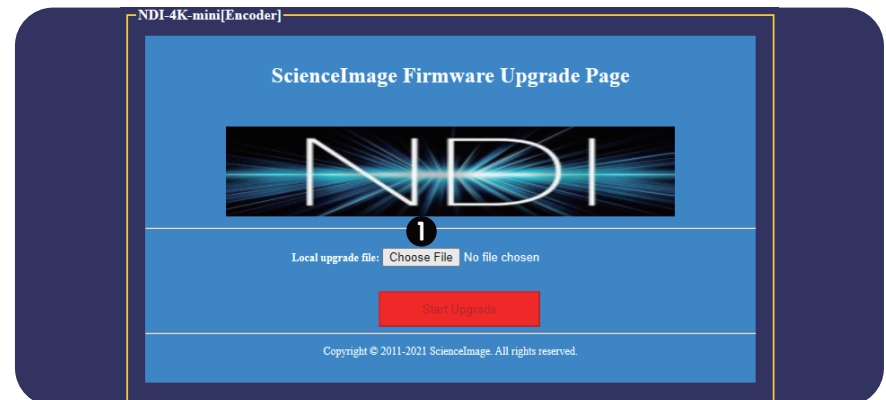


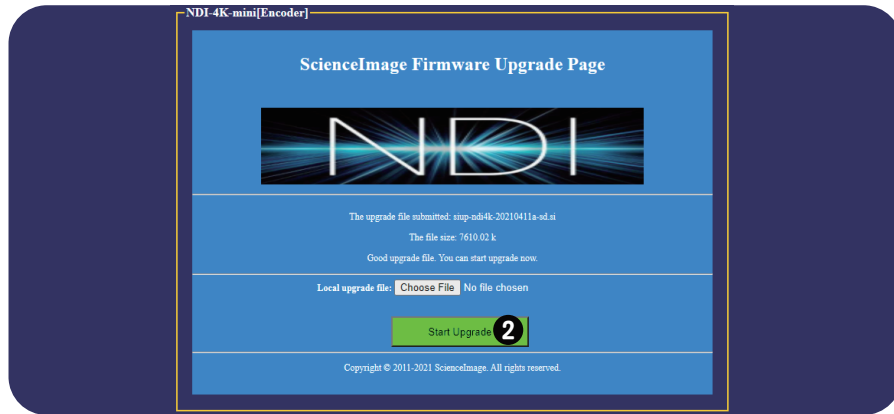
9.3 Firmware upgrade

New firmware upgrades will be released regularly on the company's official website. Users can download the latest firmware to upgrade as needed. Download address: "http://www.science-image.com/cn/file-123084-92200.html" After downloading, you can click the [open upgrade page] button on the [system] page to enter the upgrade page, or click the figure icon in the upper right corner, and then click the [firmware upgrade] button. Just push the button.



After entering the page, click the [select file] button at (1), select the firmware to be upgraded, such as siup-ndi-20201220b.si, and open it. At this time, there will be a progress prompt in the lower left corner of the browser. When the progress is completed, the uploaded file information will be displayed. The button at (2) will also change from red to green, and then click to start upgrading. As shown in the figure below:





Note:

When the progress bar reaches 10%, it will stop for a long time. Don't be surprised. Just wait patiently.



When the progress bar reaches 100%, click the pop-up [finish] button and close the upgrade page to complete the upgrade operation. Please power on and restart the device after the upgrade is confirmed.

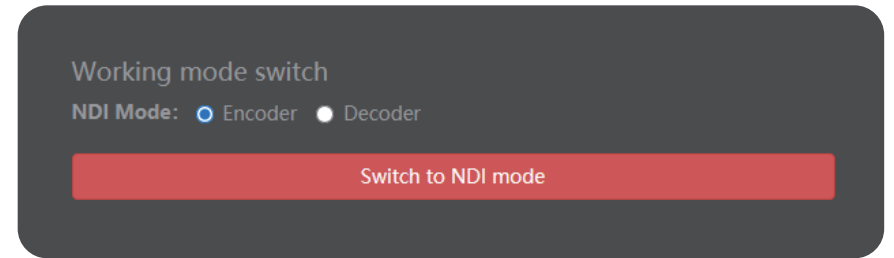
Note:



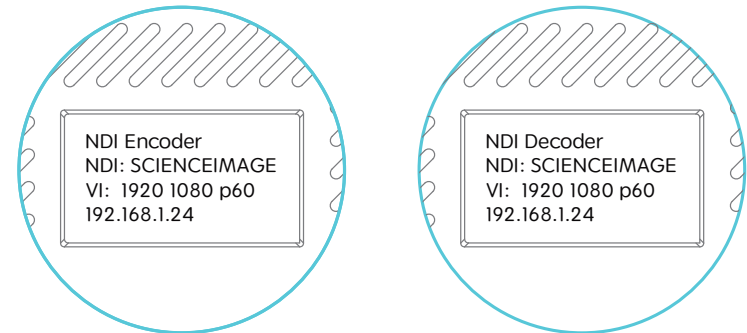
Do not cut off the power during the upgrade process, otherwise the system files may be damaged and the system will not start normally.

9.4 Working mode switch

Select "encoder" or "decoder" and click the [switch NDI mode] button to immediately switch to the corresponding mode, which is the default encoder mode.

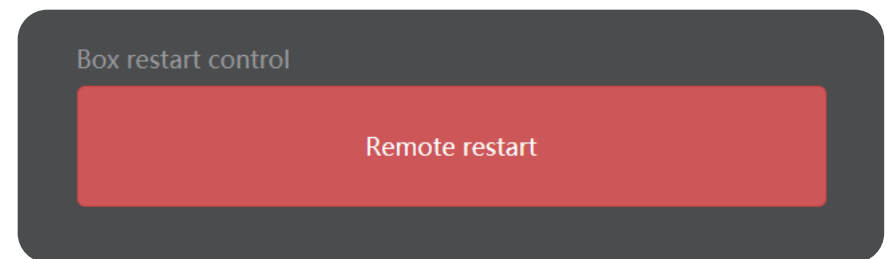


The first line of the OLED screen of the product will display the working mode, "NDI encoder" is the encoder, and "NDI decoder" is the decoder, as shown in the figure below.

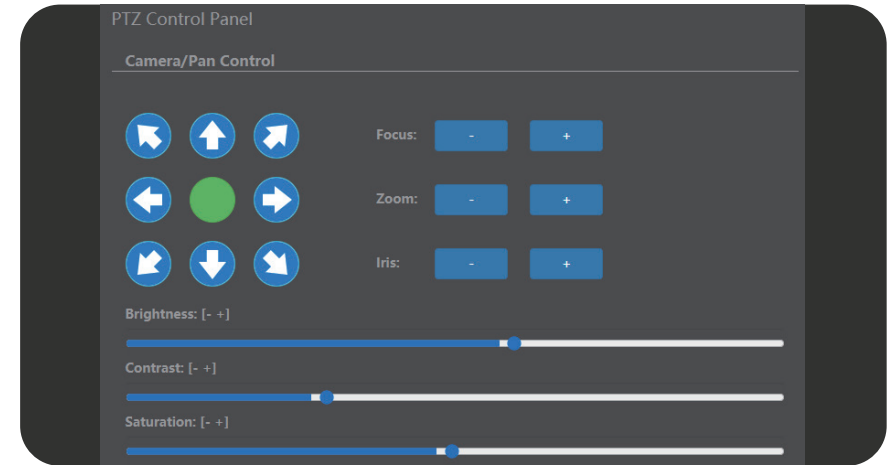
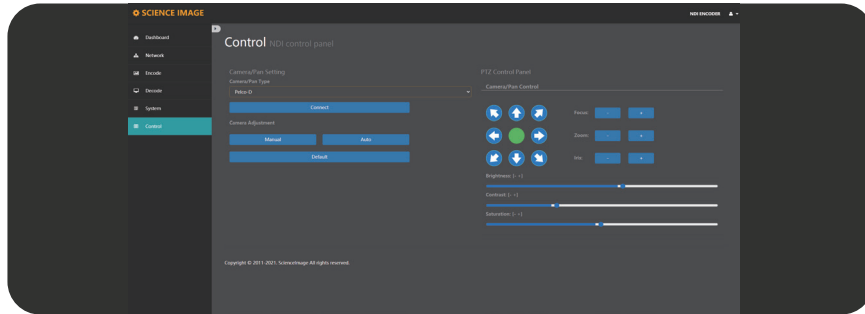


9.5 Device restart

Click the restart device button under the box restart control to restart the controlled device.

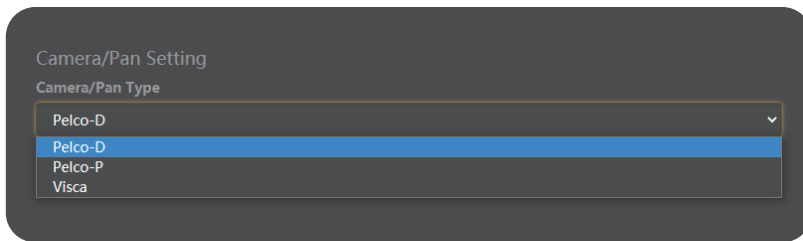


10. control

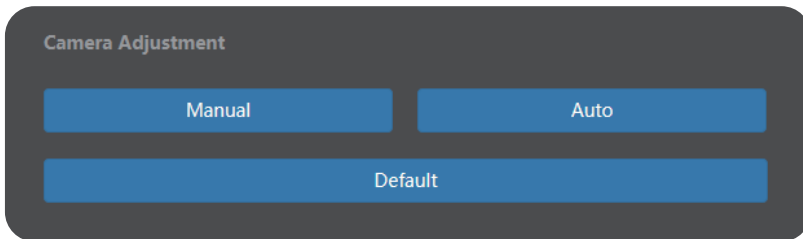


10.1 Camera settings

Camera type
Select the type of camera and click Connect.



Camera adjustment
Select Manual, automatic or default.



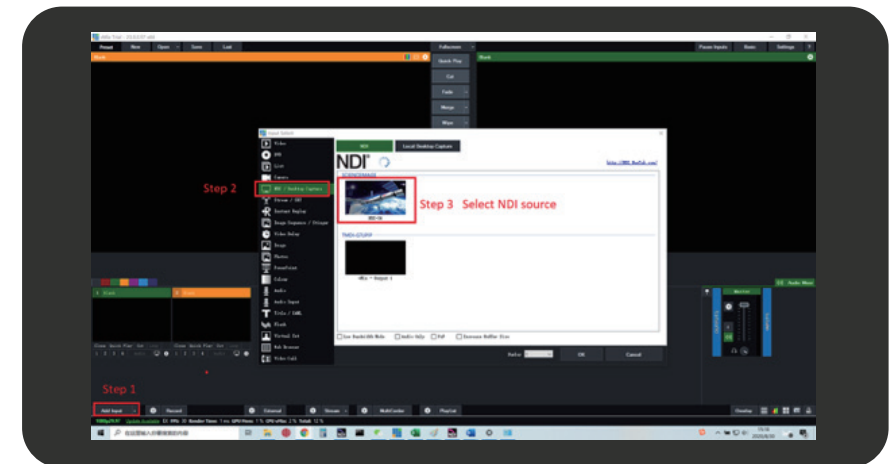
10.2 PTZ control

Control the zoom aperture of the camera.

11. Briefly introduce how to use vMix and Studio Monitor software to view NDI video stream

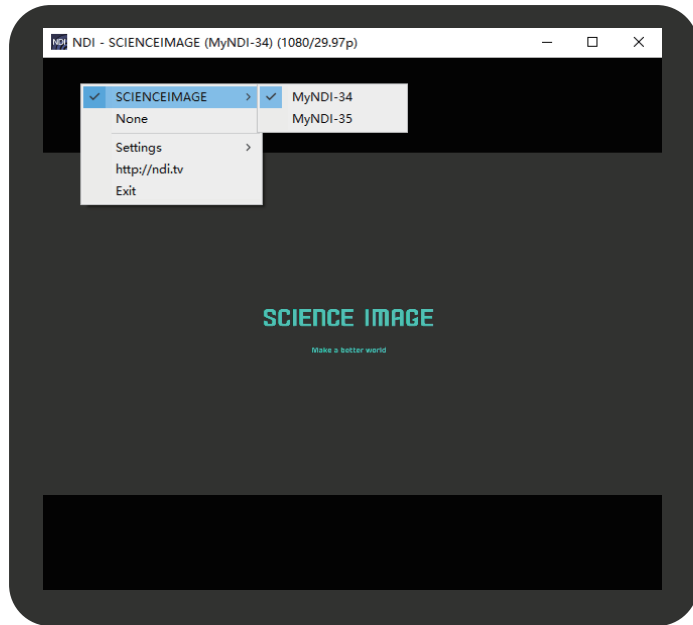
11.1 How to use vMix to add NDI video stream and view

vMix official download address: "<https://www.vmix.com/software/download.aspx>"
Open the vMix software, click [Add Input] in the lower left corner in turn-->[NDI/Desktop Capture]
----> double-click the video source you want to view



11.2 How to use Studio Monitor to view NDI video stream

Open the Studio Monitor software, click in the upper left corner or right-click anywhere ----> **【SCIENCEIMAGE】**
----> click the name of the NDI stream you want to view





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