NEXIS

BS-NDI01

User Manual



TABLE OF CONTENTS

1. PRODUCT INTRODUCTION 4
1.1. PRODUCT BRIEF 4
1.2. SPECIFICATION 5
2. HARDWARE INSTALLATION 7
2.1. PACKAGE CONTENTS 7
2.2. DEVICE SIZE 7
3. IP FINDER 8
4. WEB UI 9
4.1. LANGUAGE / FIRMWARE 9
4.2. SOURCE 9
4.2.1. Video Source (HDMI2.0) *10*
4.2.2. Video Source (NDI) *10*
4.2.3. Video Source (IP Stream) *10*
4.2.4. Internal File (Video, Picture) *11*
4.2.5. Audio Source *12*
4.2.6. Input Signal Status *12*
4.3. ENCODER 13
4.3.1. Main Encoder/Sub Encoder *14*
4.4. RECORD 18
4.4.1. Main Record/Sub Record *18*
4.4.3. Upload-NFS *20*
4.4.4. Upload-FTP *20*
4.4.5. Upload-Other Settings *21*
4.5. STREAMING 22
4.5.1. RTSP Streaming *22*
4.5.2. NDI Streaming (30 min) *25*
4.5.3. SRT Streaming *26*
4.5.4. TS Streaming *30*
4.5.5. RTMP Streaming *31*
4.5.6. YouTube Streaming *32*
4.5.7. WebRTC Streaming *34*
4.6. SNAPSHOT 36
4.6.1. Snapshot *36*
4.7. MONITOR 37
4.8. NETWORK 38
4.9. SYSTEM 39
4.9.1. Device name setting *39*
4.9.2. Disk Format *39*
4.9.3. Device Config Setting *39*
4.9.4. Firmware Update *40*
4.9.5. System Control *40*
4.9.6. Debug Mode *40*
4.10. STATUS 41
5. VERSION 42

5.1. VERSION 1.0 42
5.2. VERSION 1.1 42
5.3. VERSION 1.2 42
5.4. VERSION 1.3 42
5.5. VERSION 1.4 42
5.6. VERSION 1.41 42
5.7. VERSION 1.5 42
5.8. VERSION 1.51 42
5.9. VERSION 1.6 42

1. PRODUCT INTRODUCTION

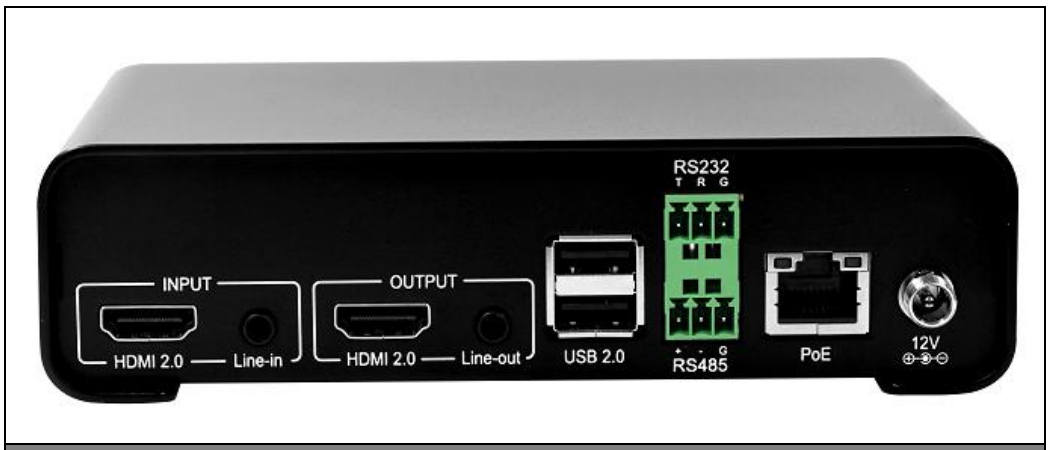
1.1. Product Brief

BS-NDI01 provides HDMI 2.0 and HDMI 2.0 loop through in one device.



Front panel

In front panel, BS-NDI01 provides USB3.0 interface for user to record input in various formats. It also provides record, stream…etc. selection button in front panel.



Back panel

In back panel, BS-NDI01 provides RJ45 for internet, RS232/485 connectivity; BS-NDI01 also provides PoE for user to power the device.

User can void local UI interface by USB mouse right click, and control BS-NDI01 by USB keyboard/mouse.

1.2. Specification

Model	BS-NDI01
Max. FPS	3840×2160p@60/50fps
Recording Mode	Hardware Compression
Product Photo	
Input Interfaces	Video 1×HDMI2.0 Audio 1×3.5mm stereo analog audio
Output Interface	Video 1×HDMI2.0 Audio 1×3.5mm stereo analog audio
Video Feature	● H.265(HEVC)/H.264/AVC, Baseline/Main/High Profile ● Configurable Bit Rate Up to 64Mbps ● Support input / output resolutions ➢ 3840×2160p@60/50fps ➢ 3840×2160p@30/25/24fps ➢ 1920×1080p@60/50fps ➢ 1920×1080p@30/25/24fps ➢ 1280×720p@60/50fps ➢ 1280×1024p@60fps ➢ 1280×960p@60fps ➢ 1024×768p@60fps ➢ 800×600p@60fps ➢ 640×480p@60fps ➢ 720×480p@60fps ➢ 720×576p@50fps
Audio Feature	● AAC-LC ● Configurable bit rate range from 32Kbps to 384Kbps ● Sample rate : 48KHz, 16bit, Stereo

Network Feature	● 1×RJ45 for 10/100/1000Mbps Ethernet ● DHCP client
Support Streaming protocol	● NDI Support ● RTSP over UDP/TCP/Multicast/HTTP ● RTMP public (web portal) ● **TS over IP ● **HLS ● ** optional by customer request
Misc. Features	● Web UI for system configuration ● Firmware upgradable ● LED indicator ● Status with Power Recycle ● 1×USB3.0 (For Keyboard and mouse usage) ● 2×USB2.0 (For USB HID device usage) ● 1×RS232 + 1×RS485
Record Format	MP4 / TS / MOV

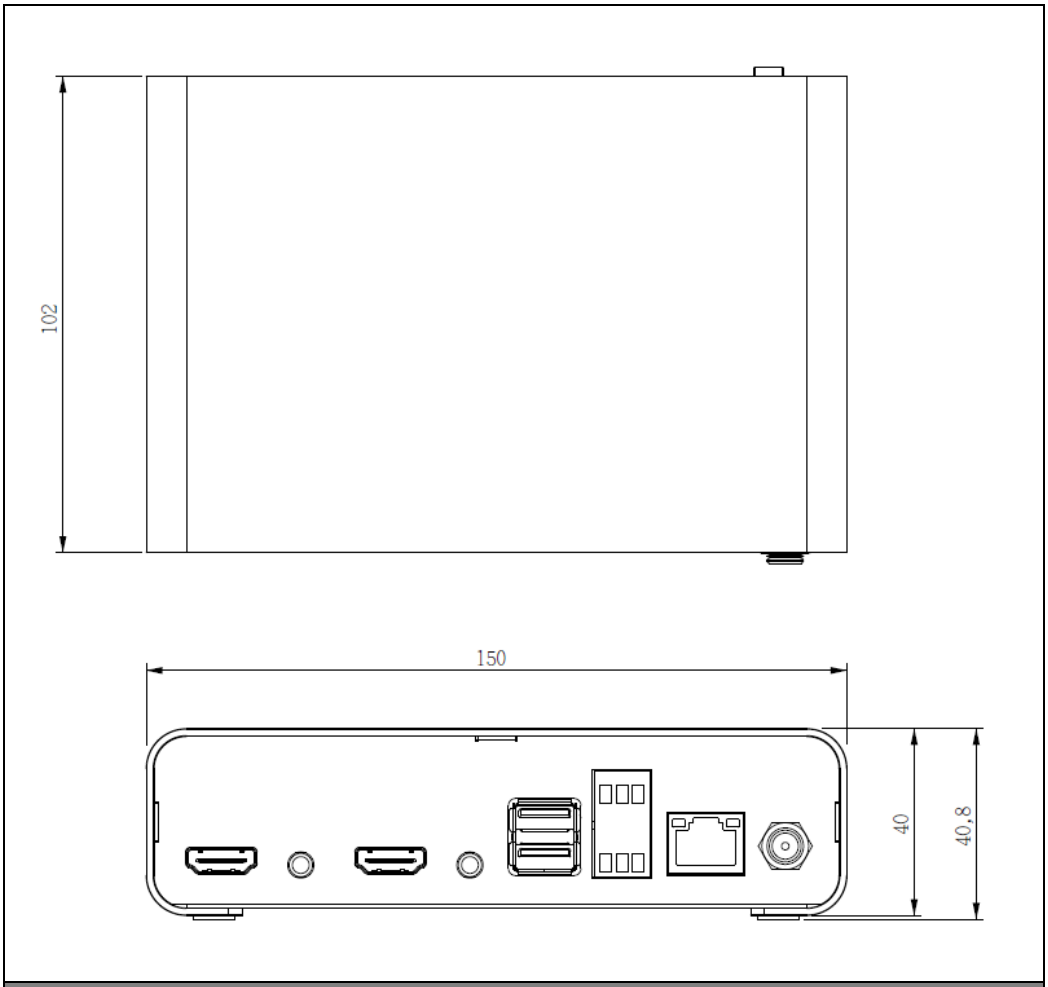
2. HARDWARE INSTALLATION

2.1. Package Contents

Item	Amount
BS-NDI01	1
Adapter	1

2.2. Device Size

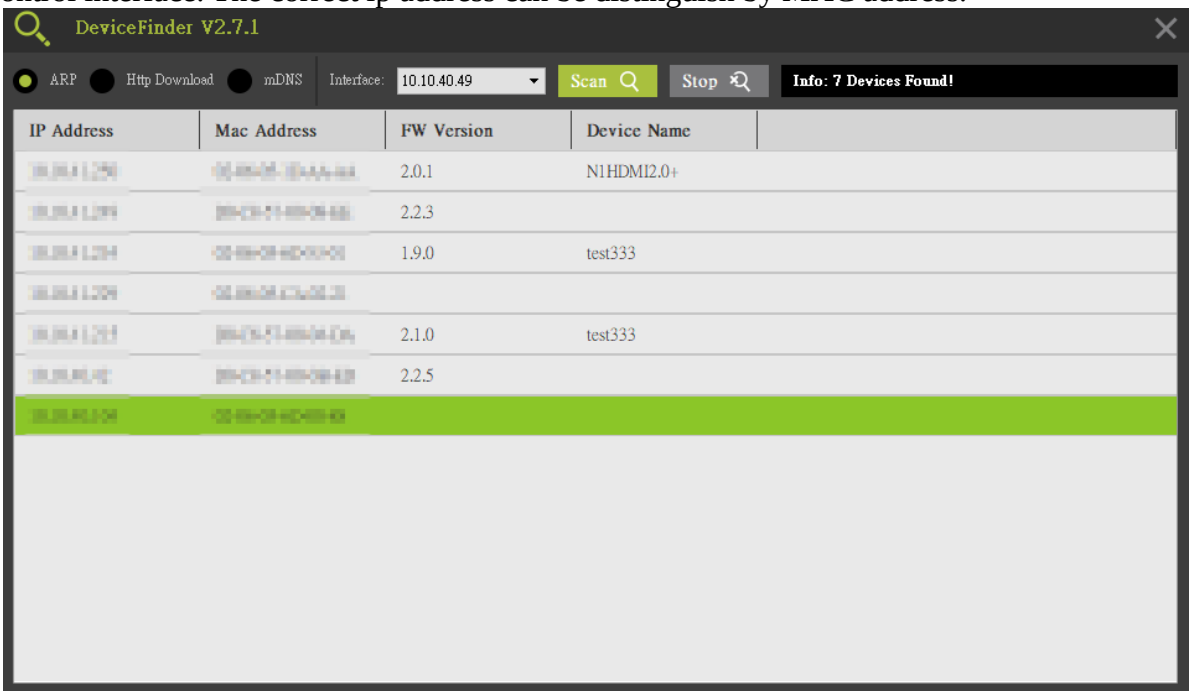
Figure below is the device size of BS-NDI01.



Device Size Diagram

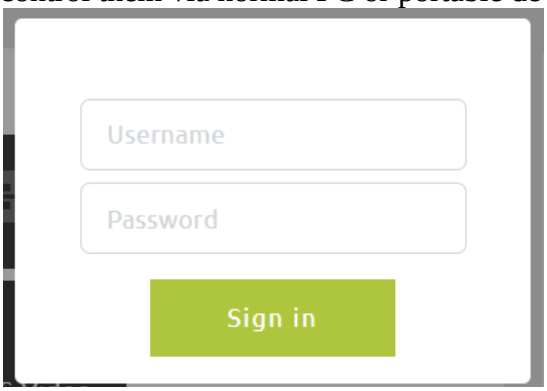
3. IP Finder

For using BS-NDI01 Web UI, please open IP finder and search for the ip address to open control interface. The correct ip address can be distinguish by MAC address.



4. WEB UI

Web UI is the internet interface for user to control BS-NDI01 more convenient, users can control them via normal PC or portable devices (EX: Android, iPhone, iPad…etc.)



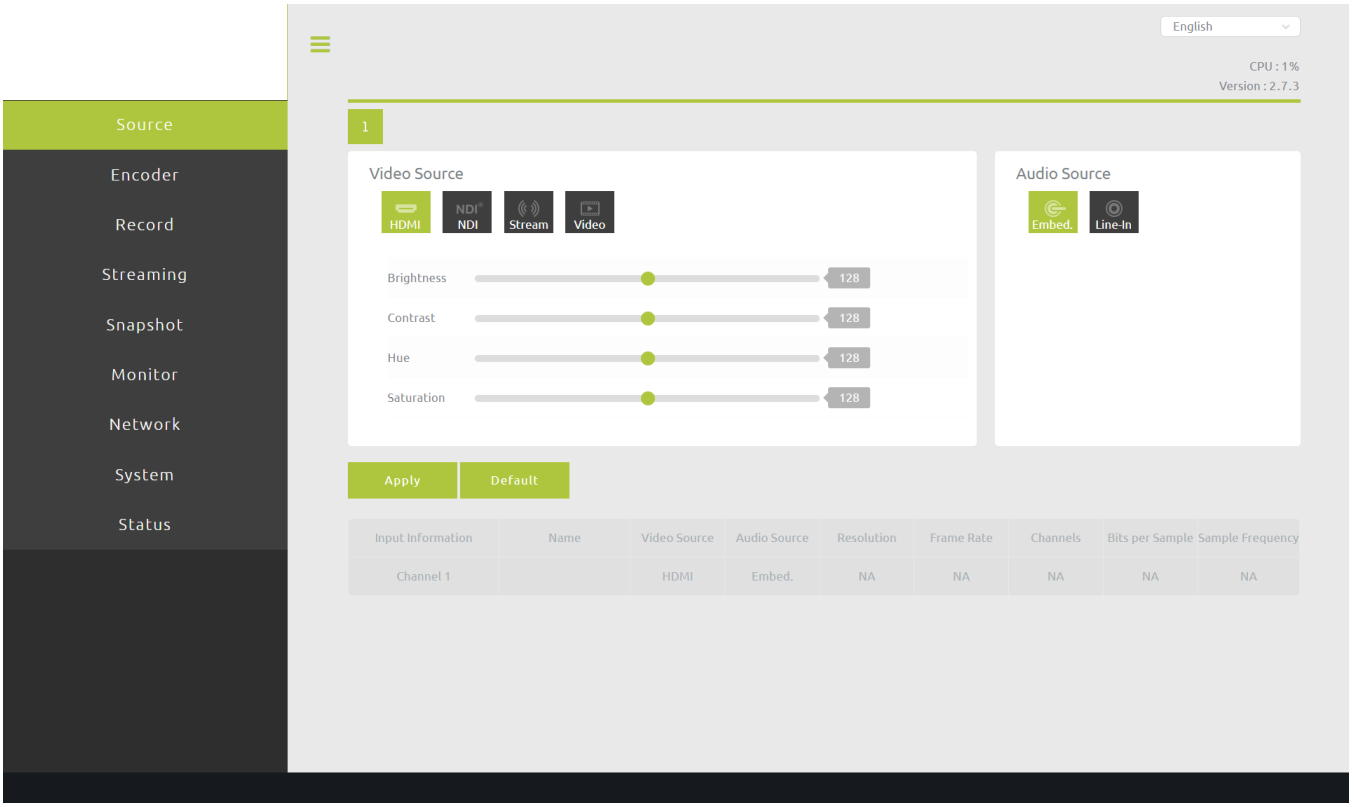
Username: admin
Password: 0000

4.1. Language / Firmware



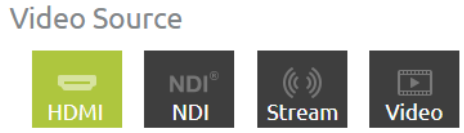
On the top, here are web UI language selection and Firmware version / MCU version. User can change Web UI language here.

4.2. Source



This page contains **input signal status**, input **Video Source** and **Audio Source** selection. Users can change input video property, source and check input video information here.

4.2.1. Video Source (HDMI2.0)



Here displayed usable video input interfaces.

Video quality adjust can support on HDMI input interfaces.



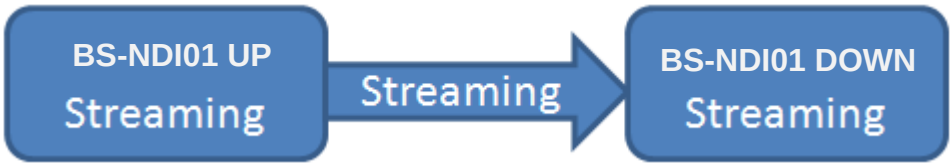
4.2.2. Video Source (NDI)



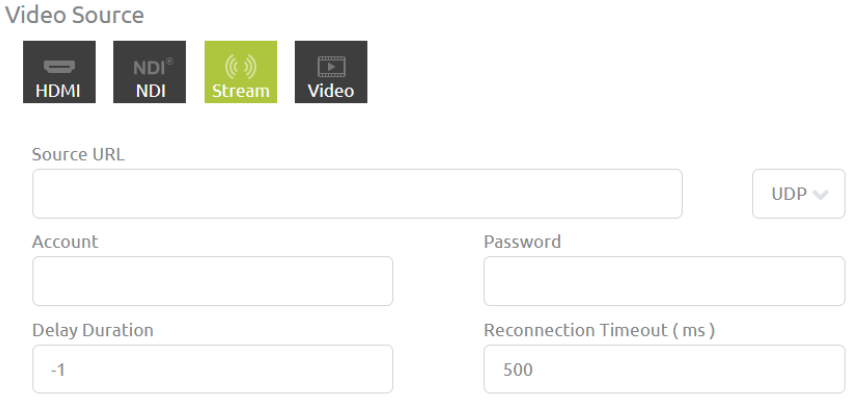


When enter NDI feature, BS-NDI01 will automatically scan the same domain, NDI stream will automatically appears here.

4.2.3. Video Source (IP Stream)



For BS-NDI01 up streaming, please enter the **Streaming** page and follow the following information (The IP address will vary by environment, please check IP finder to make sure the IP address.).



Here are different stream receiving setting. All supported formats are listed as below.

1.RTSP
rtsp://[account]:[passwd]@[ip]:[port]/[session name].mpg
Example: rtsp://root:root@10.10.41.228:556/session0.mpg

2.RTMP
rtmp://[ip]/[session name]
Example: rtmp://10.10.41.189/live

3.HLS
http://[ip]/hls/[CH]/[Session name].m3u8
Example: http://10.10.41.228/hls/3/session0.m3u8

4.TS Unicast
udp://[localhost]:[port]
Example: udp://10.10.41.189:556

5.TS Multicast
udp://234.0.0.1:[port]
Example: udp://234.0.0.1:556

6.NDI
NDI Name

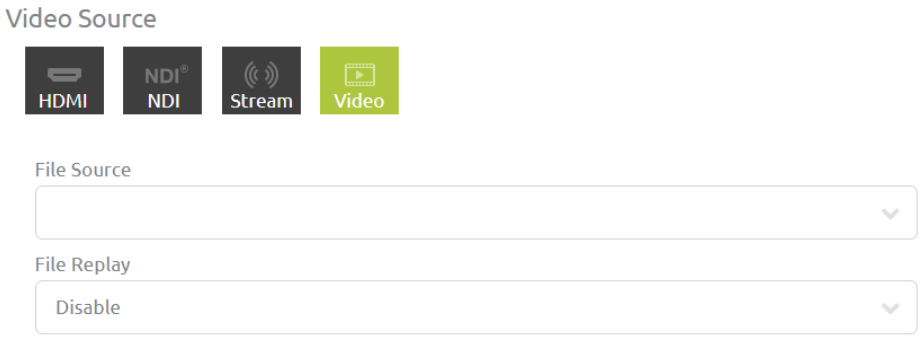
7.SRT Listener
srt://[ip]:[port]
Example: srt://10.10.41.228:1202

Delay Duration: Select delay latency for reception.
-1ms: Ultra low latency (RTSP only)
0ms: Low latency
1~1000ms: Latency

Reconnection Timeout (ms): Select time duration for timeout reconnection.
Please set the value more than 500ms

※For Streaming example, please check **chapter 4.5** for further information.

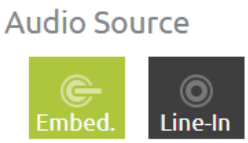
4.2.4. Internal File (Video, Picture)



BS-NDI01 can also play files inside flash disk, please attach the flash disk and select the file to

play it.
Support format: H264, H265
File type: mp4, mov, ts
Audio format: AAC

4.2.5. Audio Source



In audio source block, user can select audio input source from **Embedded** HDMI audio or 3.5mm audio source (Embedded audio is the same as selected video interface).

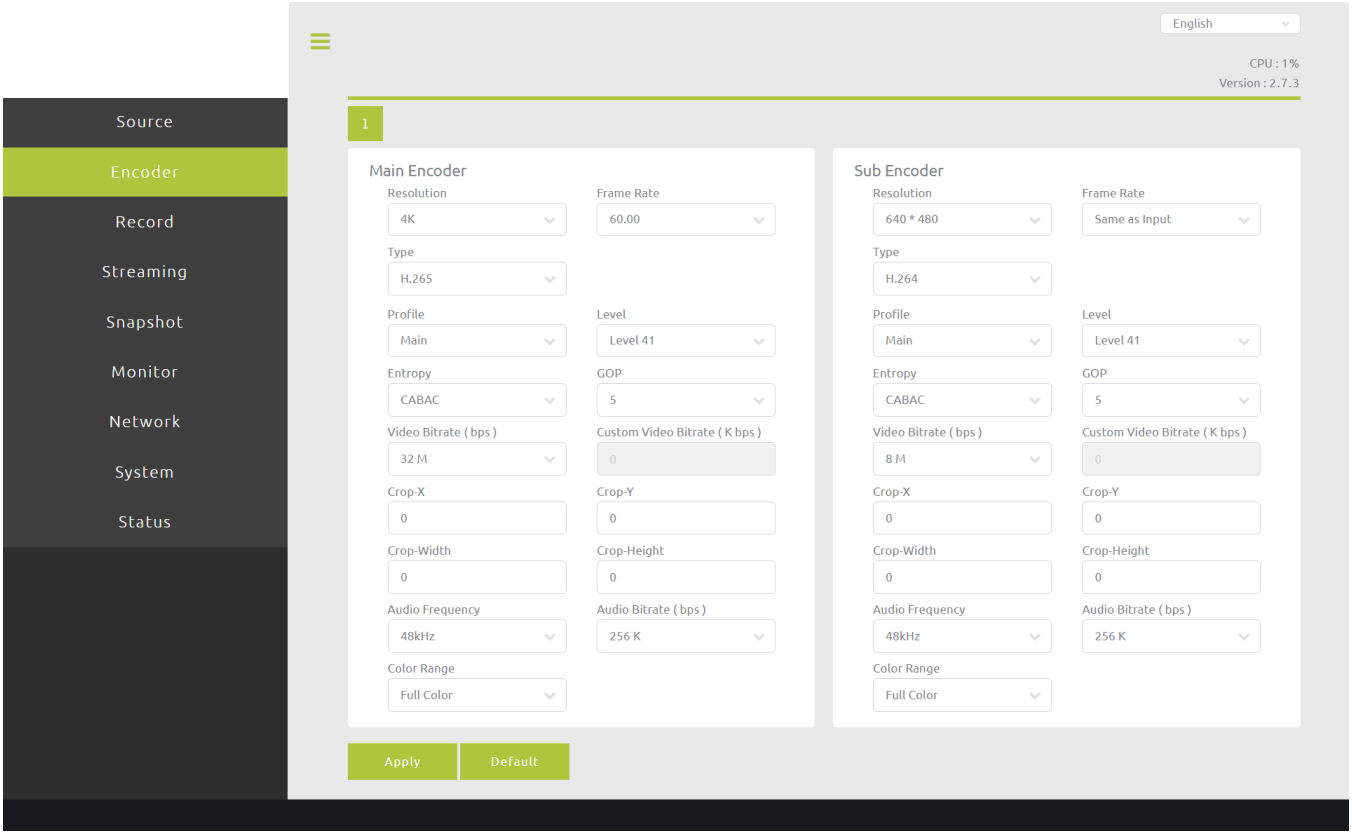
4.2.6. Input Signal Status



Input Information	Name	Video Source	Audio Source	Resolution	Frame Rate	Channels	Bits per Sample	Sample Frequency
Channel 1		HDMI	Embed.	3840x2160p	60.00	0	0	0

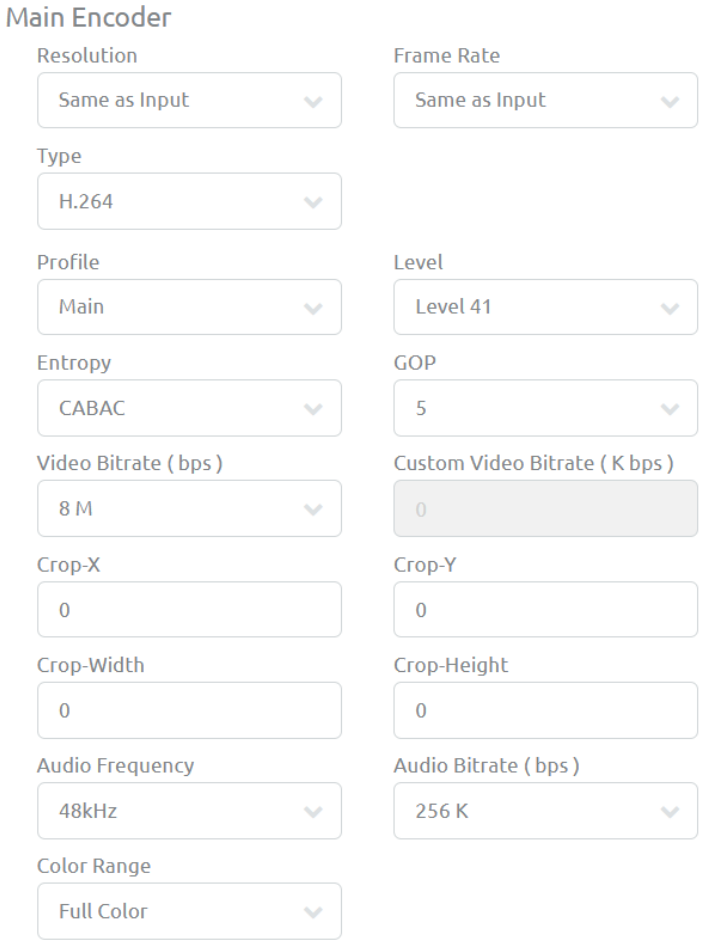
In input information block, user can check signal status and signal format.

4.3. Encoder

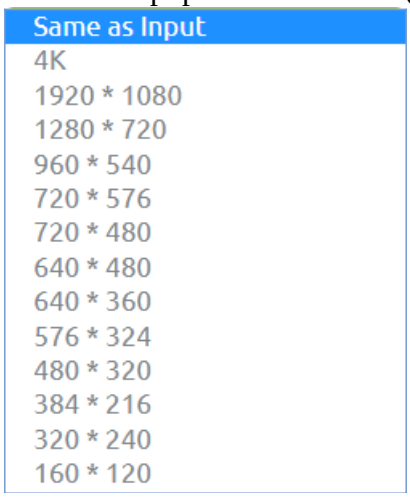


Encoder page contains **Main Encoder** and **Sub Encoder**, which allows user to change video and audio encode.

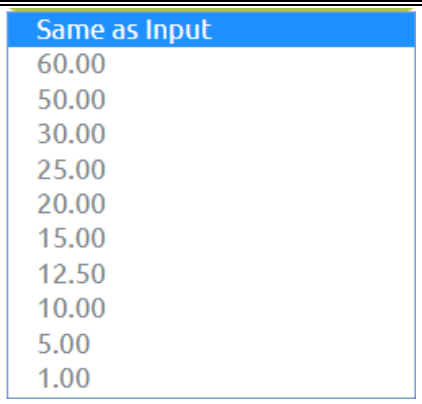
4.3.1. Main Encoder/Sub Encoder



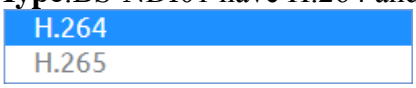
Resolution: For encoders here, we provide Same as input, 4K, 1920*1080, 1280*720 and some other popular resolutions (4K Encode only available on Main Encoder)



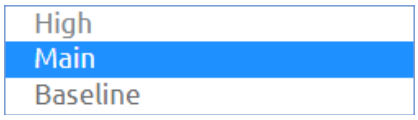
Framerate: BS-NDI01 have same as input, 60, 50, 30, 25, 20, 15, 12.5, 10, 5, and 1 framerates for user to select



Type:BS-NDI01 have H.264 and H.265 encoder types.



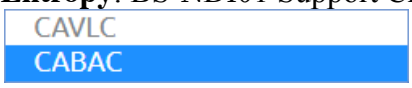
Profile: User can adjuse here for H.264 profile selection, it supports high, main and baseline.



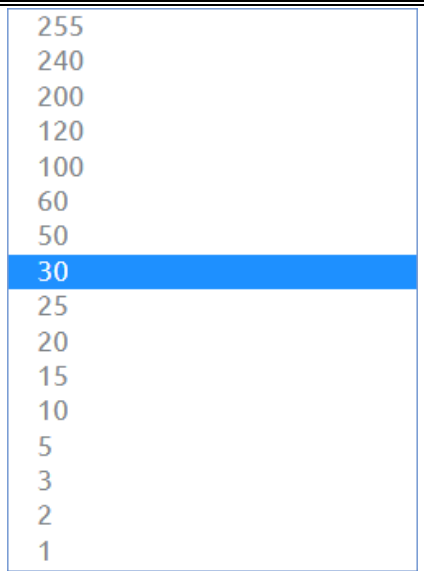
Level: H264 level support, BS-NDI01 provides 41, 40, 32, 31, 30, 22, 21, 20, 13, 12, 11, 10, and 1b.



Entropy: BS-NDI01 Support CAVLC and CABAC encoding.



GOP: H264 group of pictures setting (from 255~1).

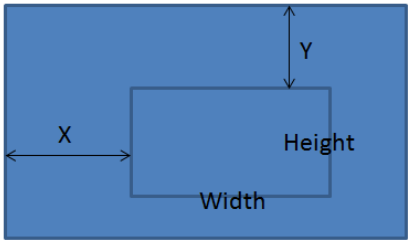


Video Bitrate (bps): Video bitrate select (from 44K~64M)

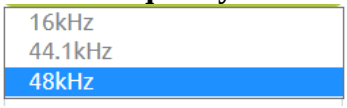


Customize Video Bitrate：User select bitrate.

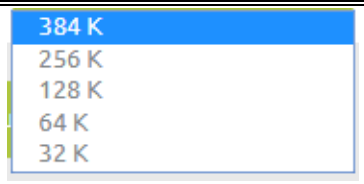
Crop-X/Y/Width/Height: Crop the needed video and display.



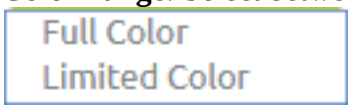
Audio Frequency: Audio frequency select



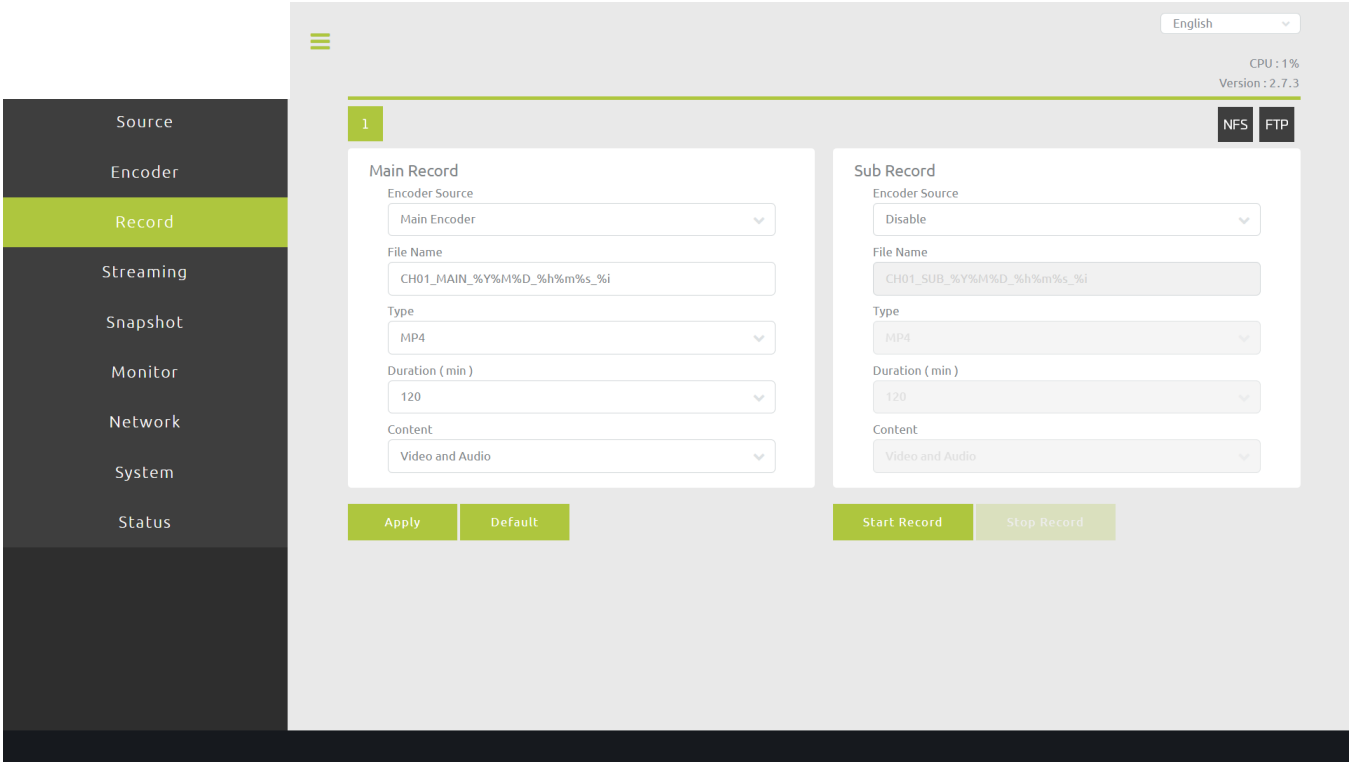
Audio Bitrate (bps): Audio bitrate select



ColorRange: Select between Full Color or Limited Color.



4.4. Record



Record page allows user to change the video format that recorded to USB3.0 disk drive, the 2 block in the middle is the main record format.



BS-NDI01 also provide upload feature, on the right hand side, user can check 2 icons for upload usage.

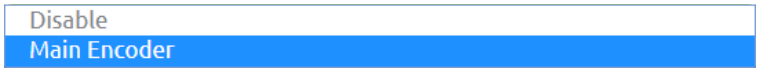
4.4.1. Main Record/Sub Record



Here are the parameters that allow user to adjust their record format.

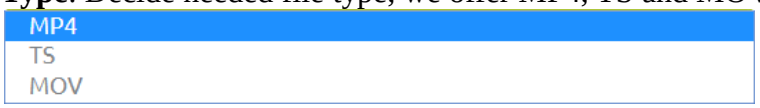
Encoder source: Select the encoder that willing to record, here are Main Encoder and

disable selections.

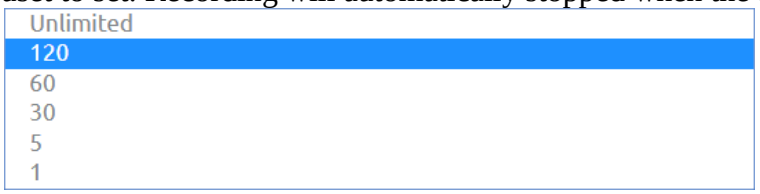


File name: The file name setting, this would be the file name recorded.

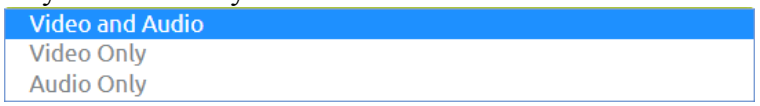
Type: Decide needed file type, we offer MP4, TS and MOV at present time



Duration: Setting recording time, here are Unlimitation, 120, 60, 30, 5, and 1 minutes for uset to set. Recording will automatically stopped when the time is up.

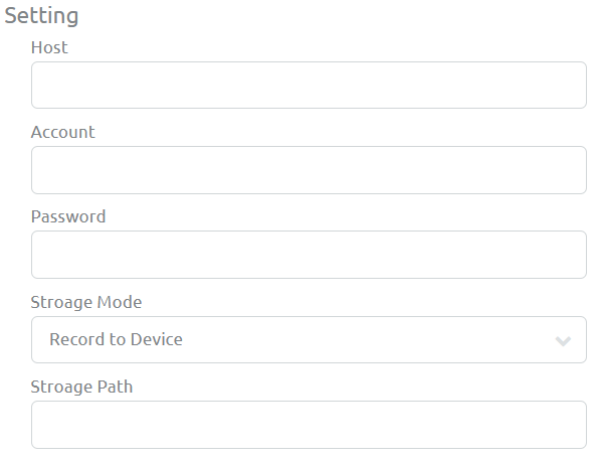


Content: Recorded part, user can select BS-NDI01 to record Video and Audio, Video only or Audio only.

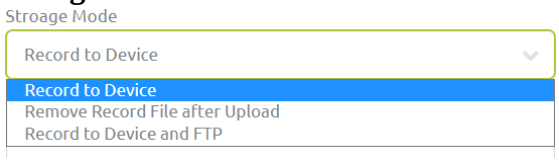


4.4.3. Upload-NFS

NFS is a distributed file system protocol, for user to access files via network.

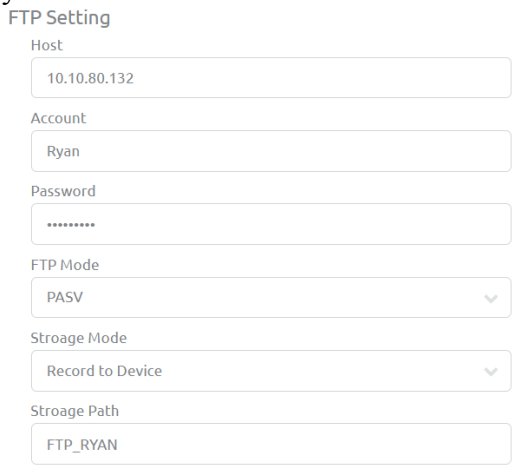


Storage Mode: User can select save mode here.

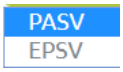


4.4.4. Upload-FTP

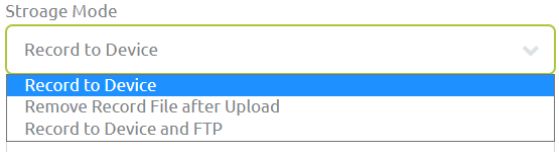
BS-NDI01 can save files to FTP, please setup FTP site, password and accounts then select your save method.



FTP mode: PASV or EPSV

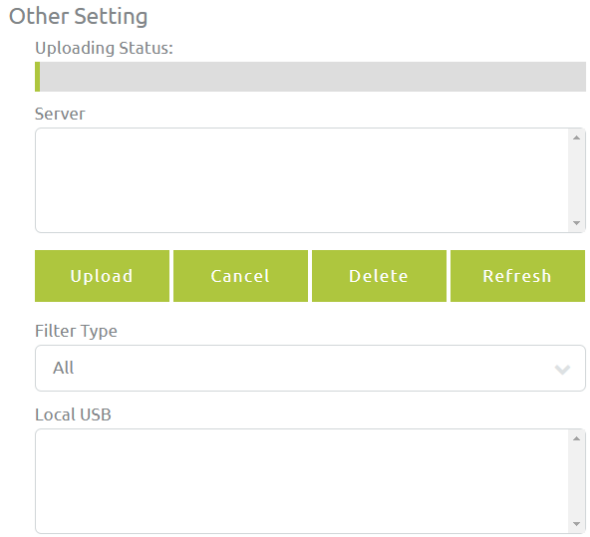


Storage Mode: User can select save mode here.

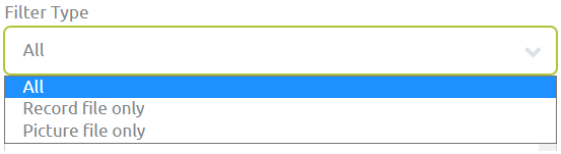


4.4.5. Upload-Other Settings

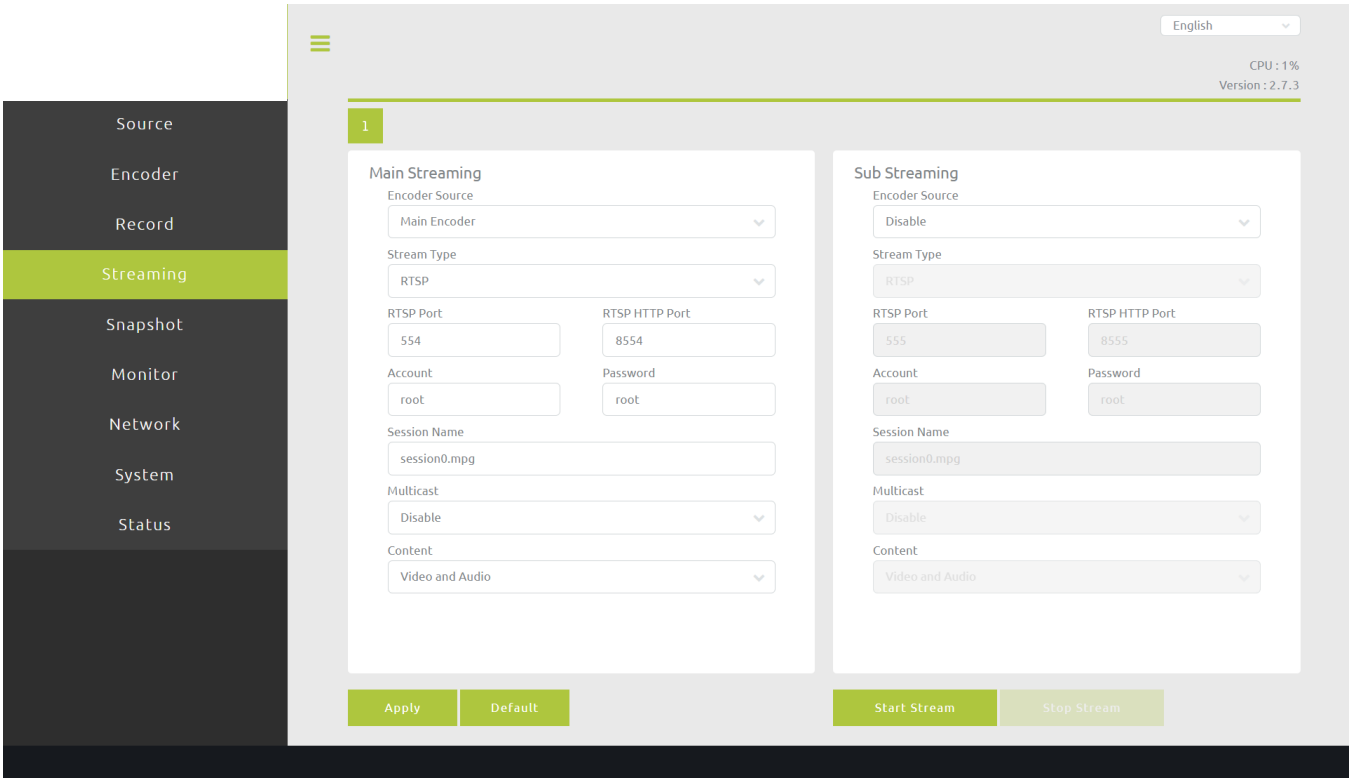
On other setting block, user can check upload status and select server, check local USB disk content and filter for the file browser.



Filter Type: Filter record files or picture only.

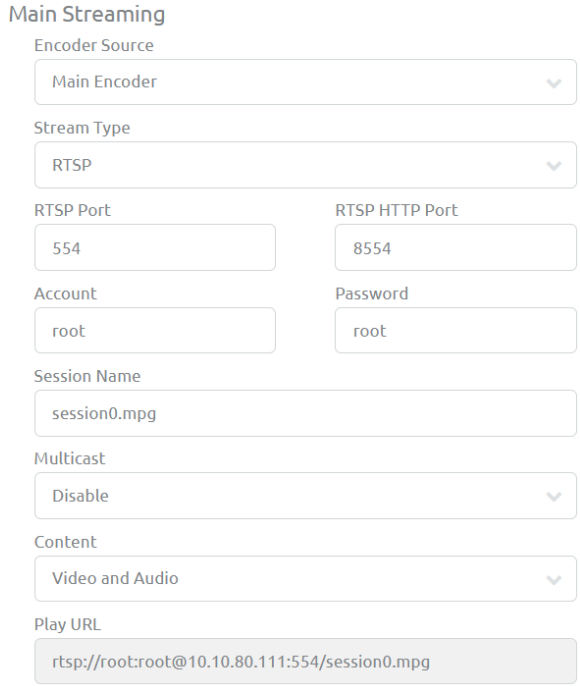


4.5. Streaming



This page contains BS-NDI01 streaming settings; user can decide which encoder's stream will send out and select streaming type here, the 2 block in the middle is the main streaming format.
Both Main and Sub streaming having same streaming feature.

4.5.1. RTSP Streaming

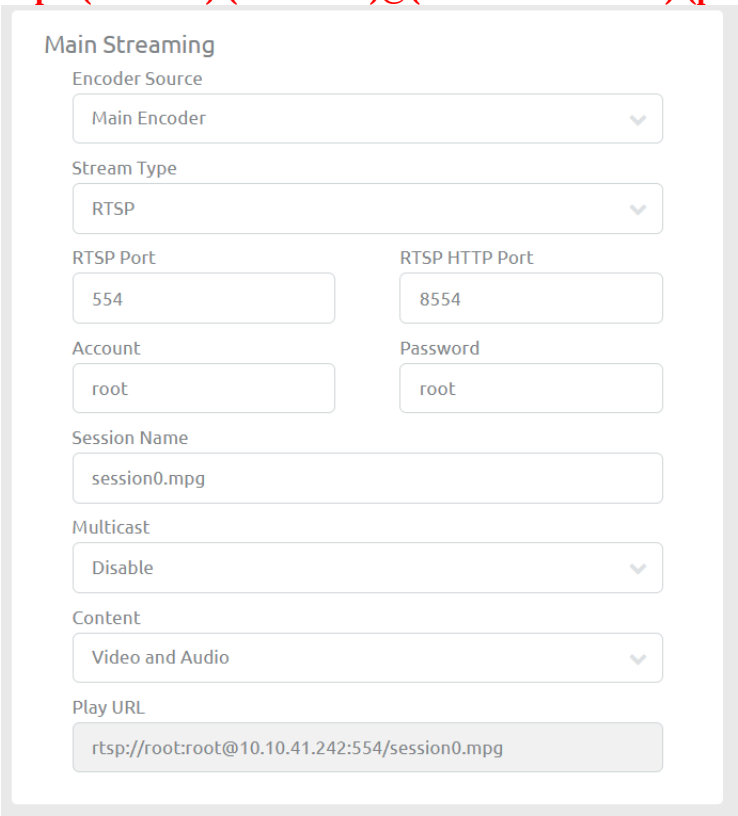


Encoder Source: User can select between main encoder and sub encoder.
Streaming Type: Here are RTSP, RTMP, TS, HLS, NDI, SRT and Youtube streaming type BS-NDI01 available.

RTSP port: RTSP server port
RTSP HTTP Port: RTSP HTTP server port
Account: RTSP account, setting this for other users to link with RTSP mode.
Password: RTSP password, setting this for other users to link with RTSP mode.
Session Name: RTSP Session name.
Multicast: Enable or disable multicast.
Enable: Enable multicast, using broadcast to transfer package. When multiple clients are receving package, this setting can reduce CPU usage.
Disable: Disable multicast, using unicast to transfer package. When multiple clients are receving package, this setting will increase CPU usage.

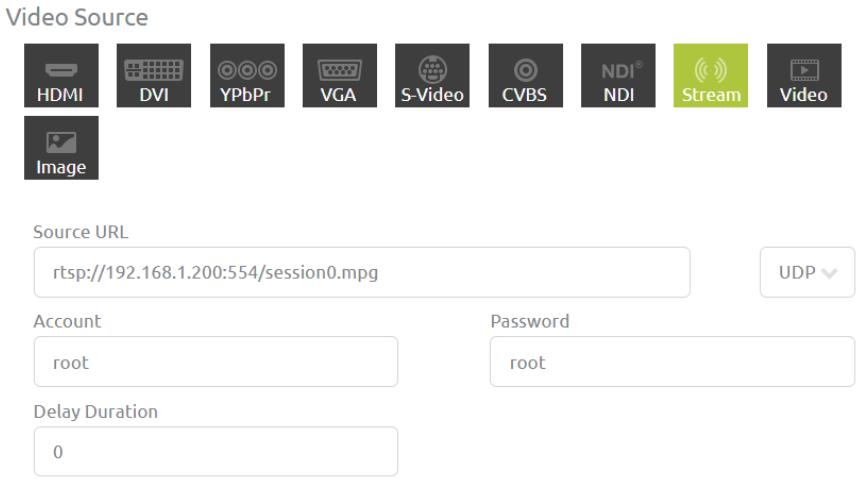
Content: Select the willing streaming data content.
Play URL: Streaming address for other devices to receving.

RTSP format listed as below.
rtsp://(Account):(Password)@(Source IP address):(port)/(Session name)



After the setting as above, the streaming address will be
rtsp://root:root@10.10.41.242:554/session0.mpg
(IP may different by environment)

For **down streaming** side, please enter **source->video source->IP Stream**



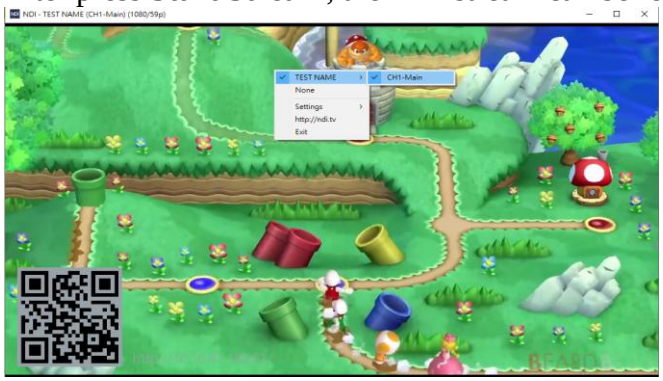
After enter the Web UI, please setting as below (The IP address will vary by environment, please check IP finder to make sure the IP address.).
Source URL : rtsp://root:root@10.10.41.242:554/session0.mpg
Account : root
Password : root
User can key in Account and Password info into Source URL or key in Account and Password information on the below block.

Decode video format: H264, H265
Decode audio format: AAC

4.5.2. NDI Streaming (30 min)



NDI Group: Device name
NDI Name: NDI streaming name
After press **Start Stream**, the NDI stream can be received by NDI Tools

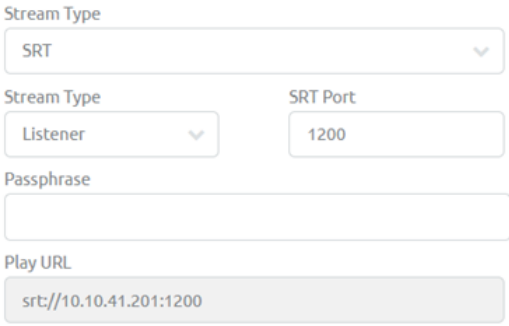


BS-NDI01 had build-in trial version of NDI streaming, which can provide user to transfer NDI streaming for 30 minutes.

4.5.3. SRT Streaming

Here are 2 modes available on SRT streaming, Caller and Listener.

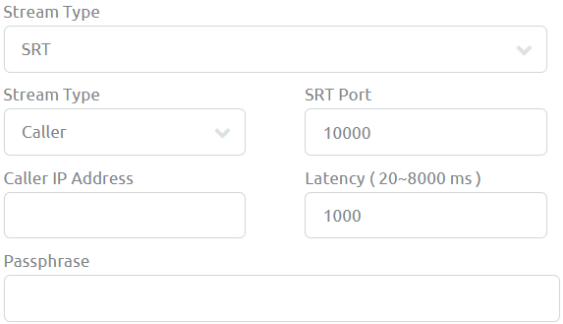
SRT Listener mode turn BS-NDI01 into a sender, send SRT stream directly to other receivers. **SRT Format: srt://10.10.41.201:[port]**



Stream Type: User can select caller or listener (Listener here)
SRT Port: Setting port for streaming out.
Passphrase : Setting the password for this stream.

Press to get a URL for receives; enter the URL at access point to receive the streaming
Example: srt://10.10.41.201:1200

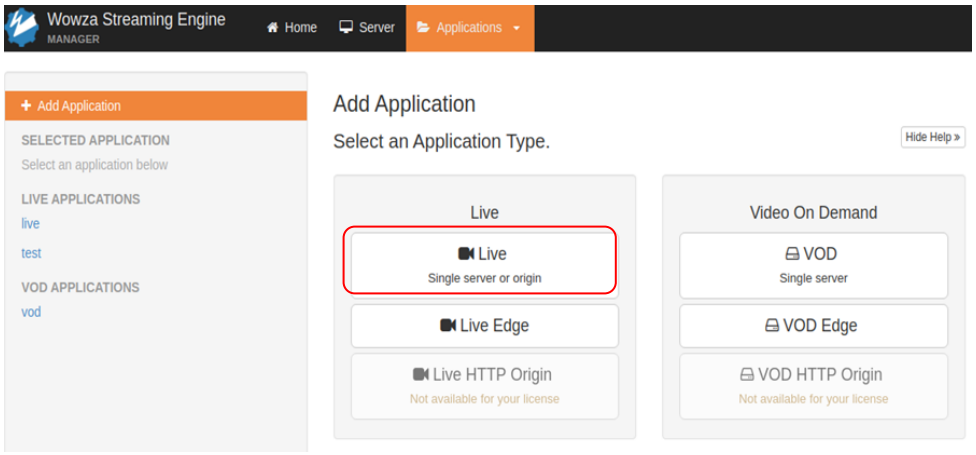
SRT Caller mode turn target device as a portal, BS-NDI01 send SRT stream to target then the target will send device to other receivers.
SRT Format: srt://[ip]:[port]



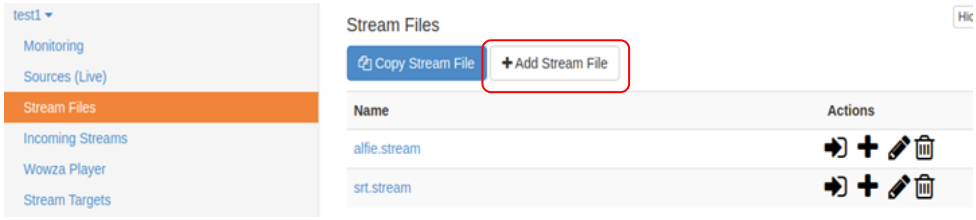
Stream Type: User can select caller or listener (Caller here)
SRT Port: Setting port for streaming out.
Caller IP Address: Setting streaming out IP address.
Latency: Video latency time (20~8000ms)
Stream ID: Setting server ID
Passphrase: Setting the password for this stream.

We’ve take Wowza as an example for demonstration on SRT Caller

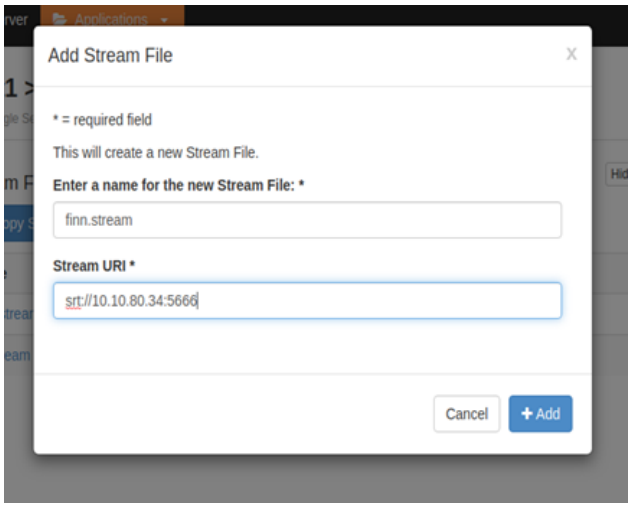
1. Select Live



2. Add Stream File

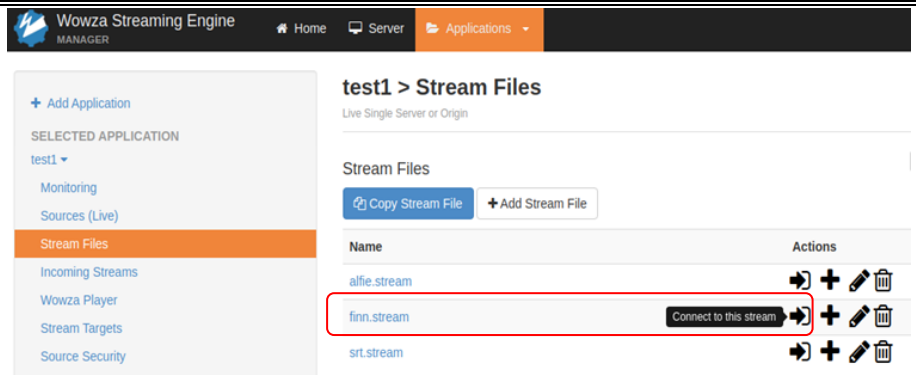


3. Set Stream File and Stream URL

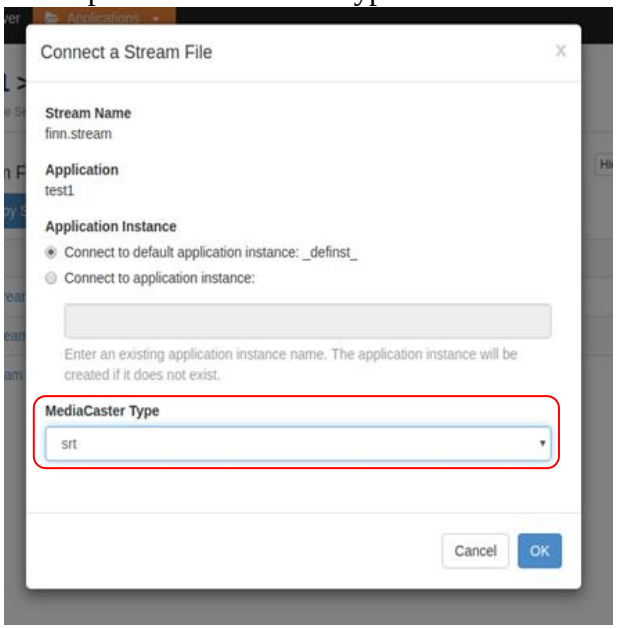


※Stream URL is the current platform IP address.

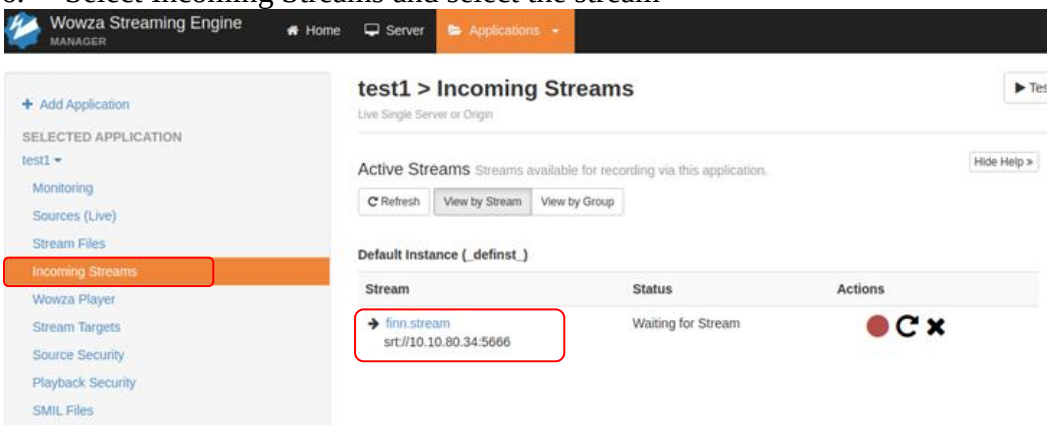
4. Select Stream and Connect



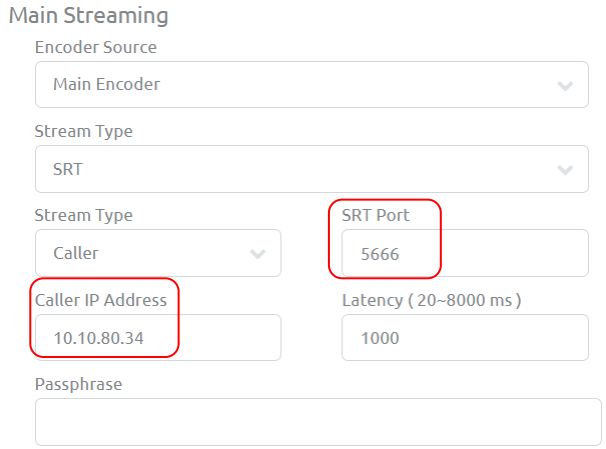
5. Update MediaCaster Type to SRT



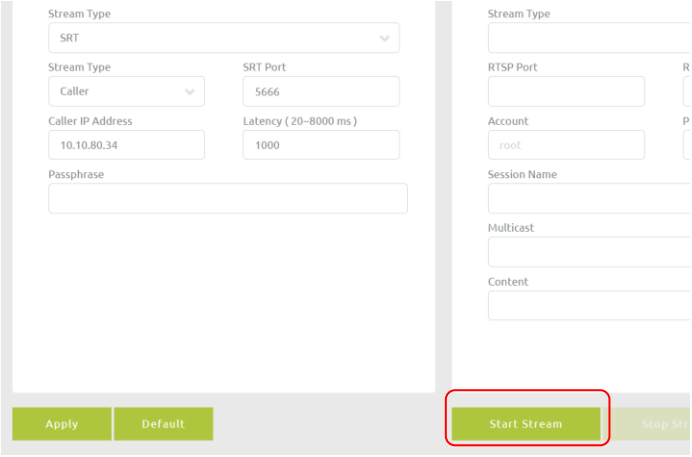
6. Select Incoming Streams and select the stream



7. Set Caller IP Address and SRT Port to BS-NDI01



8. Press Start Stream and BS-NDI01 will start to stream the video to Wowza Server.



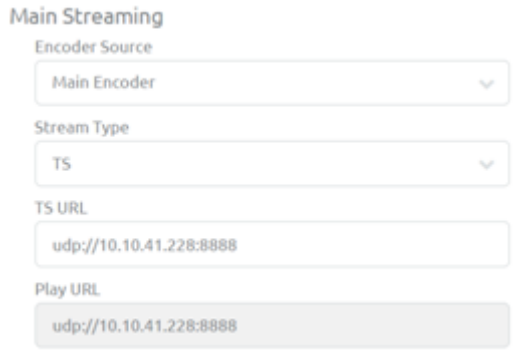
4.5.4. TS Streaming

Here are two formats TS streaming support, unicast and multicast.

For unicast, user need to provide “Client Side” IP address for TS URL, and setting a port for it.

TS unicast Format: udp://[localhost][port]

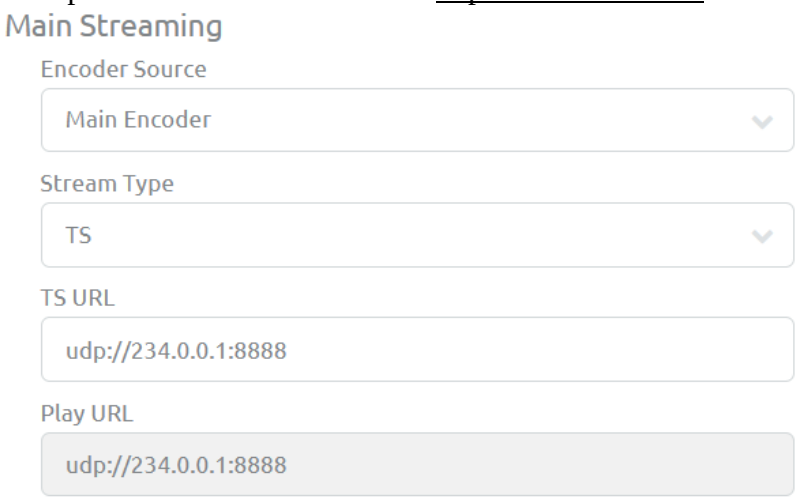
Example: Streaming TS to device 10.10.41.288, user need to add TS URL as below. (user can change port to willing value)



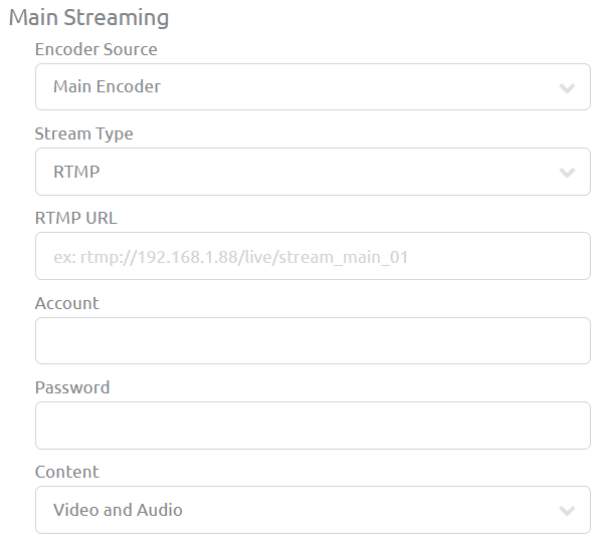
For multi cast, user needs to fill ipaddress for TS URL and giving it a port value.(The IP address range can be 224.XX.XX.XX~239.XX.XX.XX), Here is a example with 234.0.0.1.

TS multicast Format: udp://234.0.0.1:[port]

Example: User can set TS URL to udp://234.0.0.1:8888 for multicast.

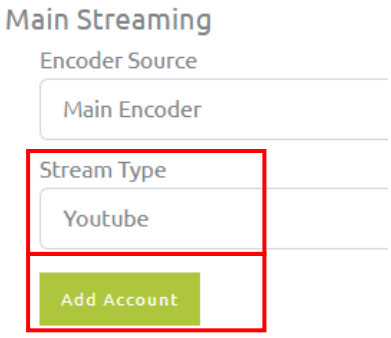


4.5.5. RTMP Streaming

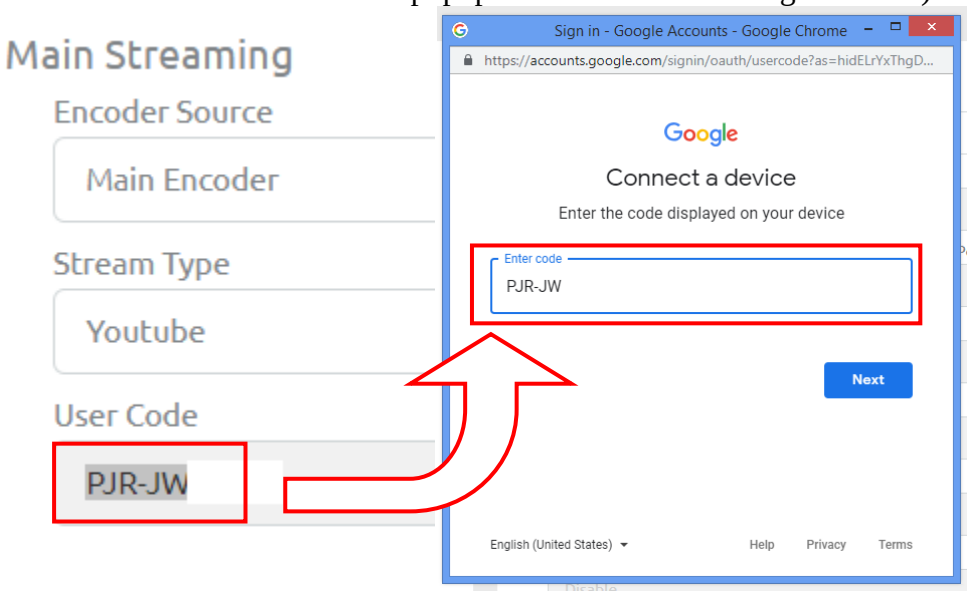


RTMP URL: For RTMP server address usage.
Account/Password: Setting account and password for RTMP Server, if the account and password is set, audience should have the account and password to watch the streaming content on the RTMP Server.
Content: Setting streaming out data content.

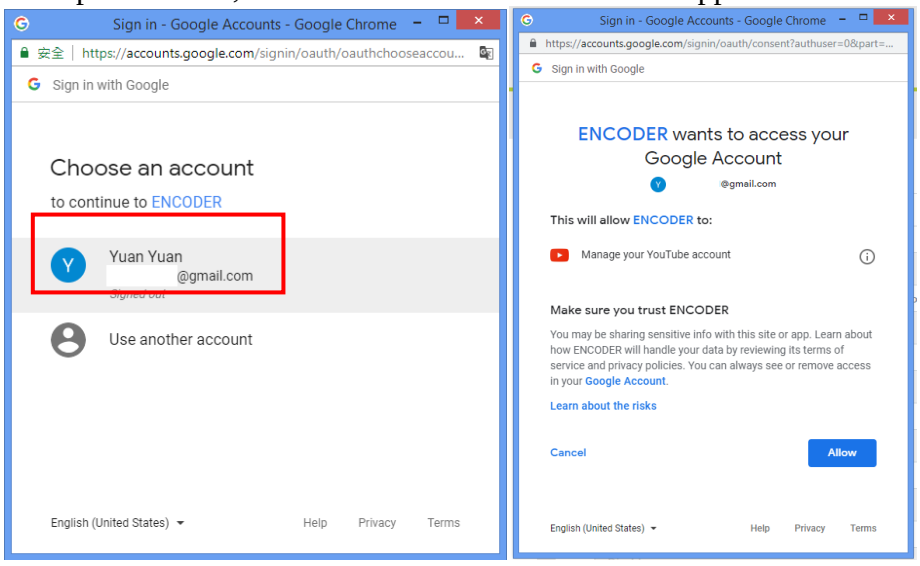
4.5.6. YouTube Streaming

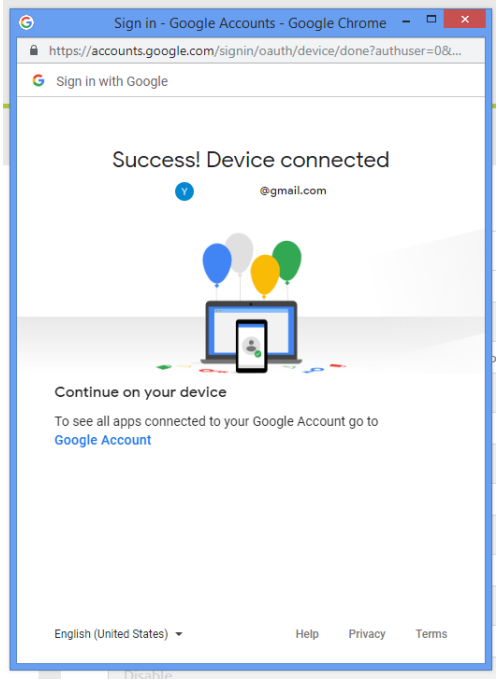


After select **Streaming Type** to **YouTube** and press start streaming, BS-NDI01 will automatically generate USER CODE for user to connect with YouTube account. (Remember to allow the browser popup window for connecting YouTube)

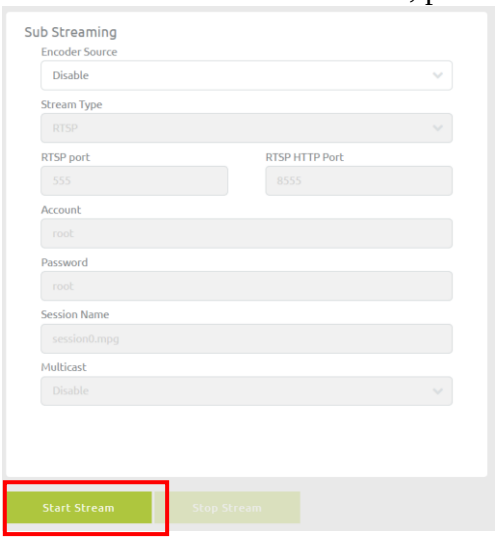


After press NEXT, the connectable user account will appear for user to select.

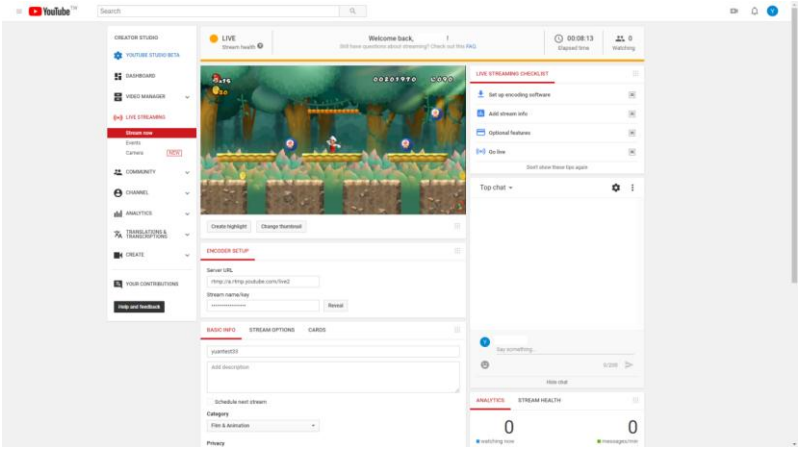




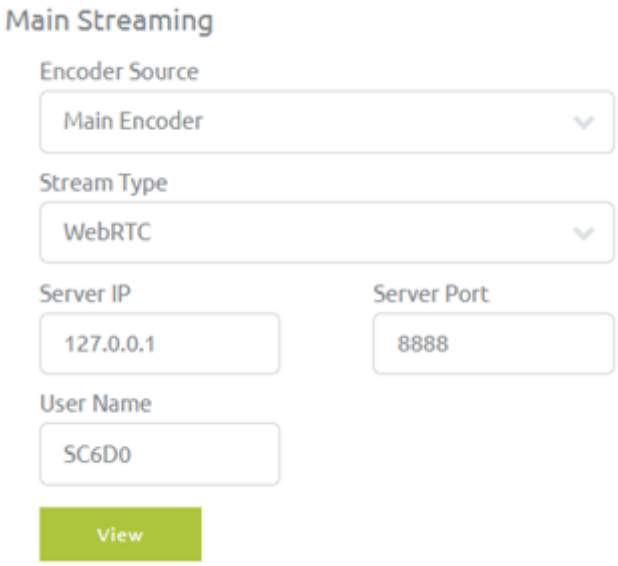
When the connection is succeed, please start streaming.



YouTube live video streaming will automatically generates after the setting is completed.
YouTube streaming website https://www.youtube.com/live_dashboard

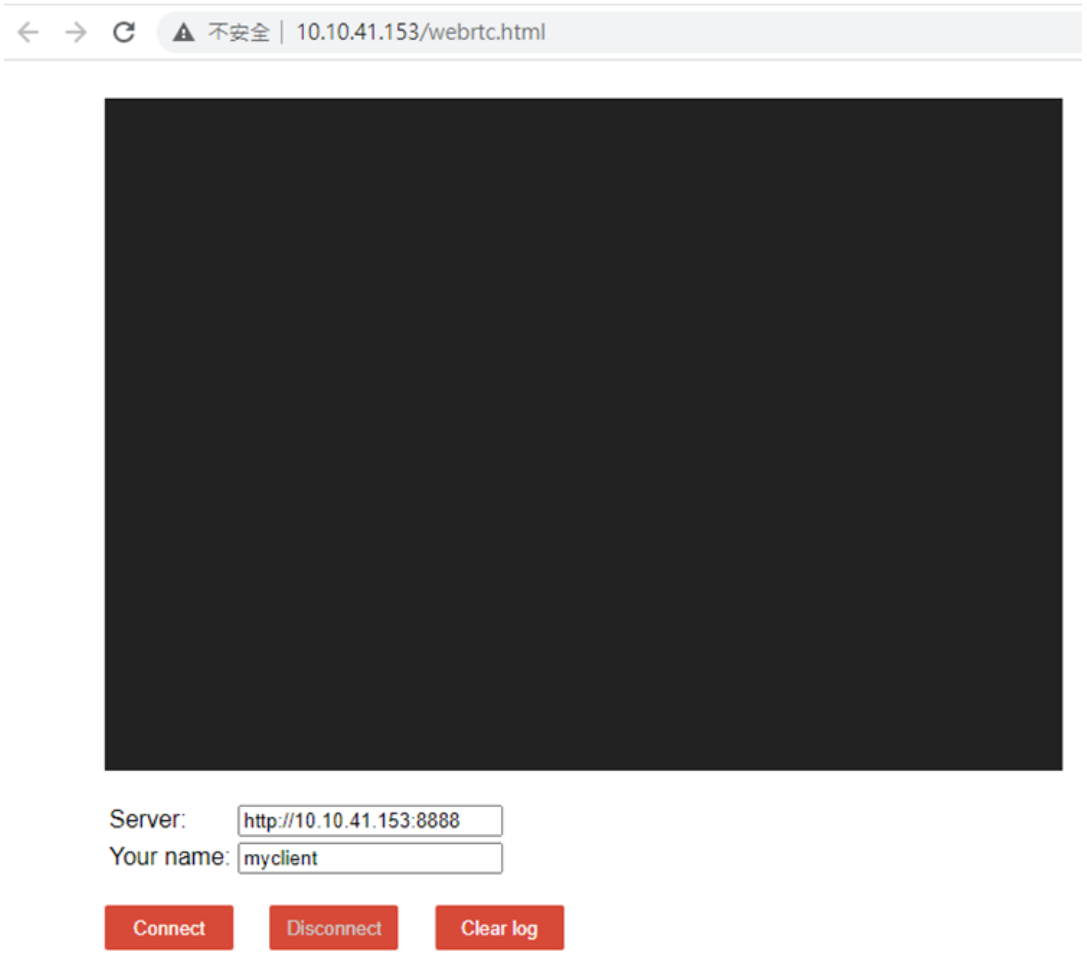


4.5.7. WebRTC Streaming



Server IP& Server Port: Setting WebRTC server IP, For BS-NDI01 internal server, please setting Server IP to 127.0.0.1 and Server Port to 8888; For external server, please setting Server IP and Server Port value to the external server value.
User Name: Setting user name.
View: After the Server IP, Server Port and User Name are filled, please press View to open WebRTC demo page.

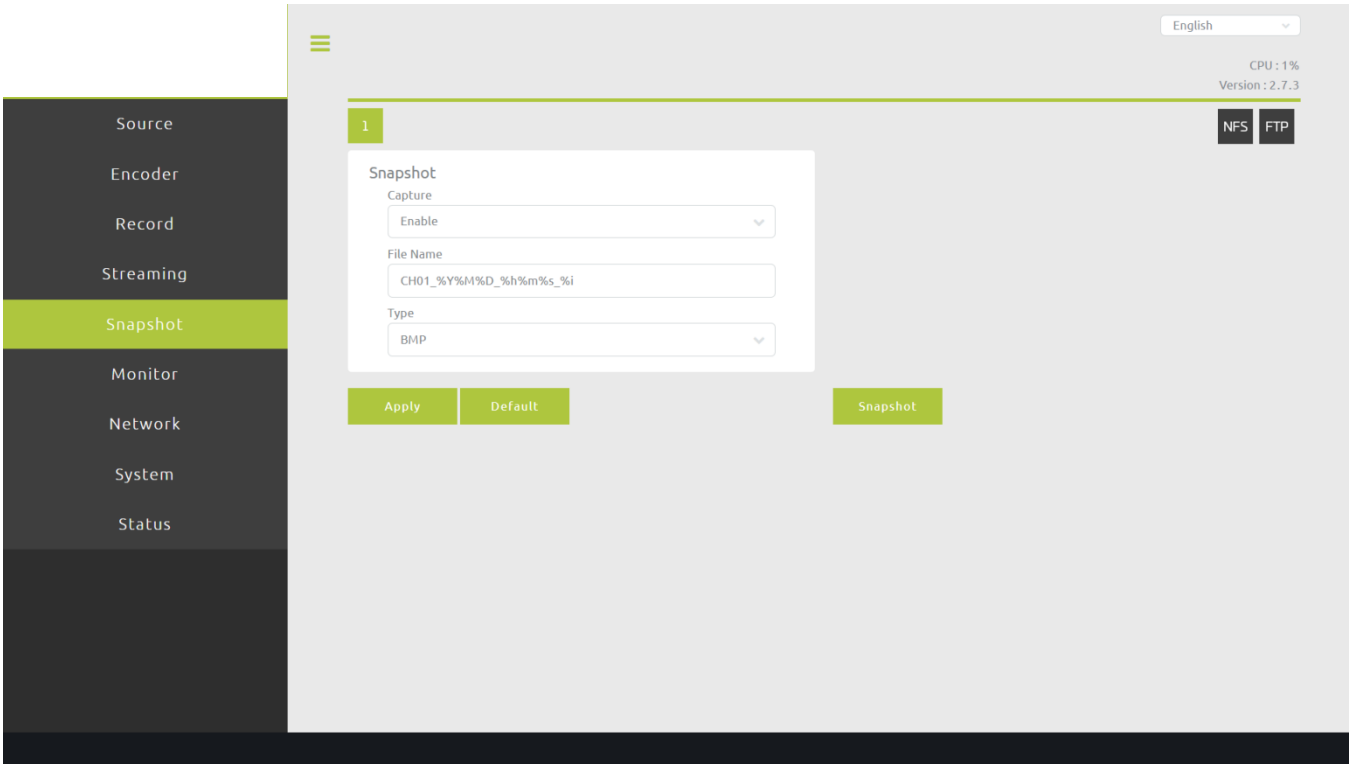
WebRTC demo page



Server: WebRTC server address. If user decides to use BS-NDI01 as a server, please enter actual IP& Port value here. If user select external server, please enter external server IP& Port value here
Your Name: WebRTC server name.

After Server and Your Name are setting, please press Connect here, the WebRTC stream will start streaming to the server, and the video will display on web browser here.

4.6. Snapshot

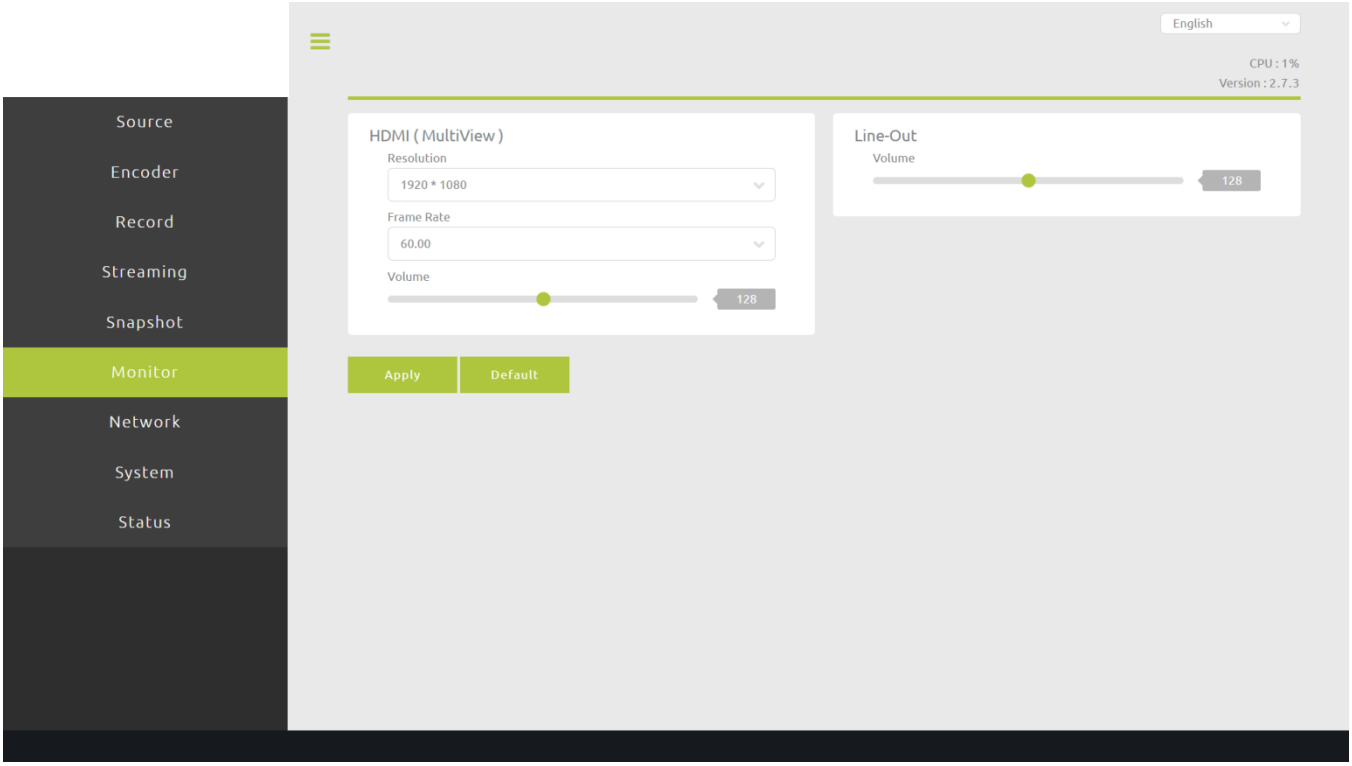


4.6.1. Snapshot

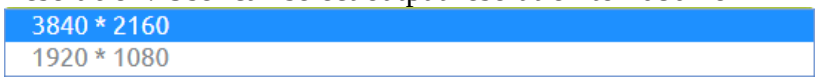


Capture: Select Enable or Disable capture feature.
File Name: User may decide willing capture file name.
Type: Select snapshot file format, BS-NDI01 provides BMP and JPEG for user to select

4.7. Monitor



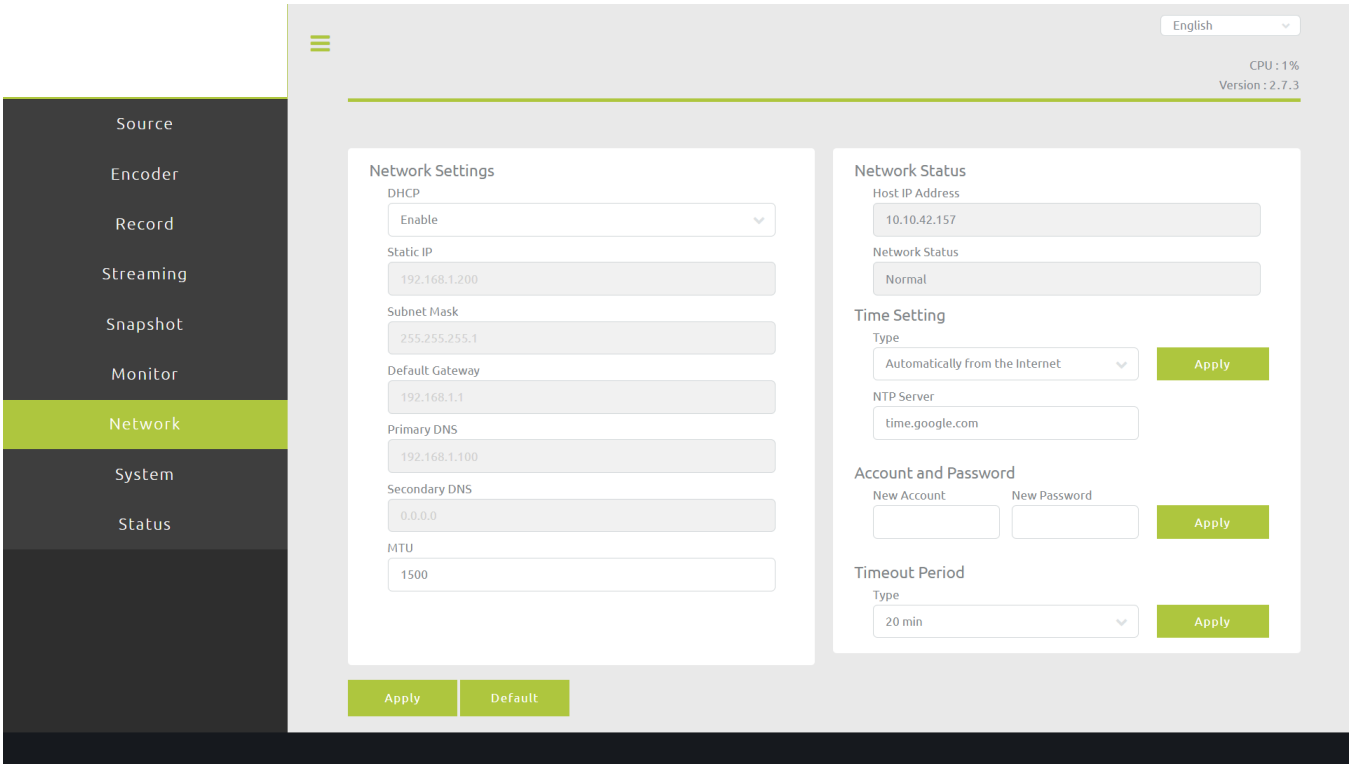
Resolution: User can select output resolution to 1080P or 4K



Fram erate: User can select output framerate to 30, and 60.



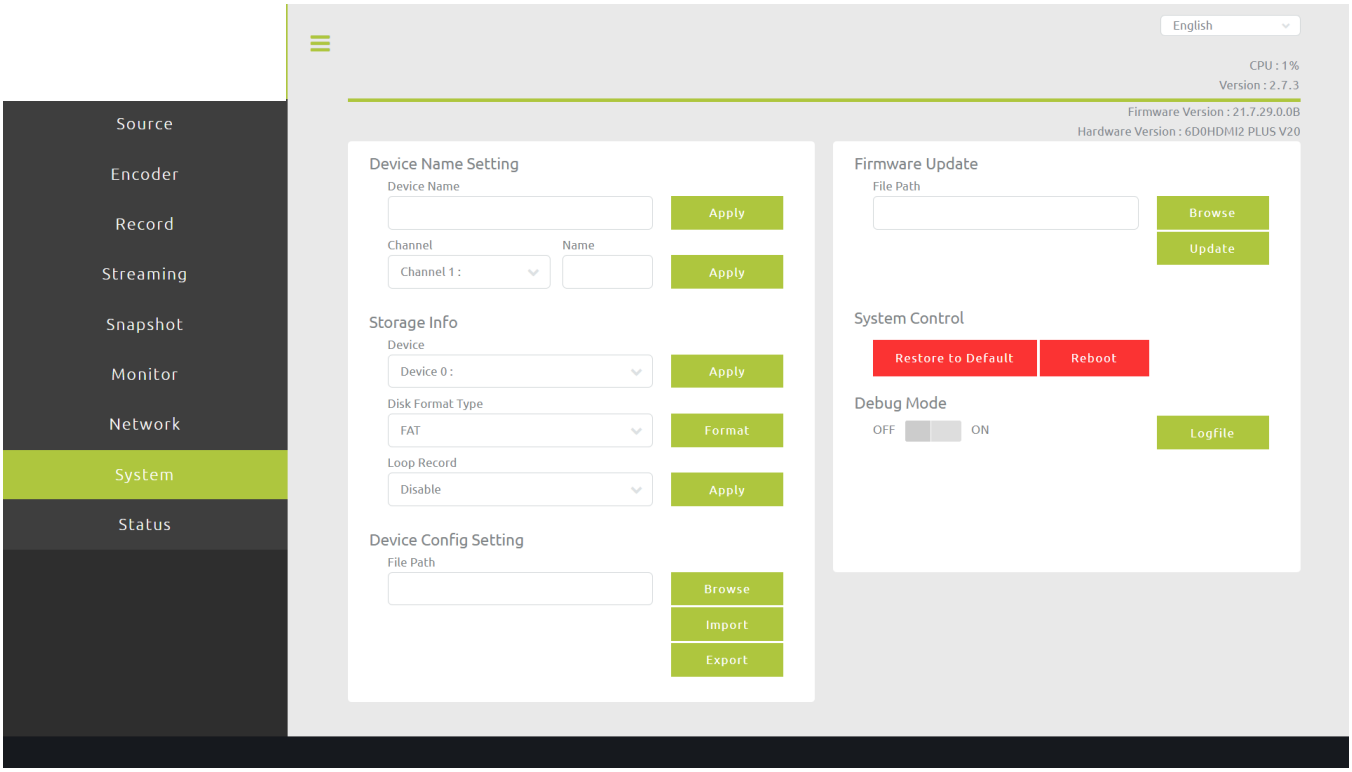
4.8. Network



DHCP: Enable/disable DHCP feature.When disable DHCP, please provide necessary internet parameters forBS-NDI01
Static IP: Setting BS-NDI01 static IP
Subnet Mask: Setting BS-NDI01 subnet mask
Default Gateway: Setting BS-NDI01 default gateway
Primary DNS: Setting BS-NDI01 primary DNS
Secondary DNS: SettingBS-NDI01 secondary DNS

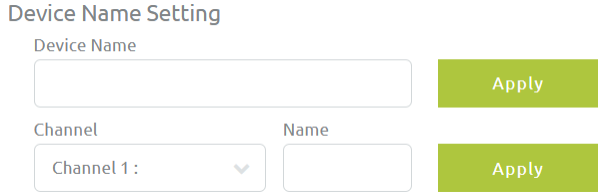
Network Status: Here presents IP address and network status
Time Setting: Set time server and sync type.
Account and Password: User can assign new account and password here.
Timeout Periods: Set user using time after log in, when the time is up, the user will be logout.

4.9. System



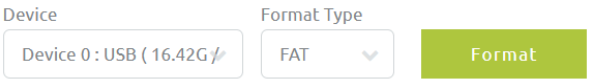
In system page, user can set device name, disk format system recovery and firmware update.

4.9.1. Device name setting

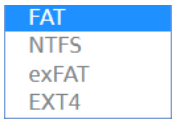


User can set device and channel name here.

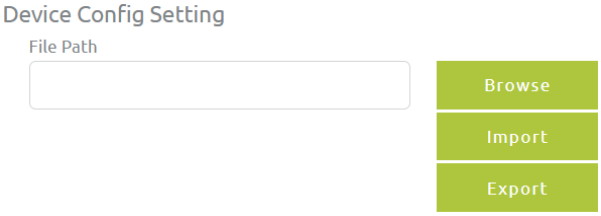
4.9.2. Disk Format



User can format attached USB disk drive here, supported formats are listed as below.

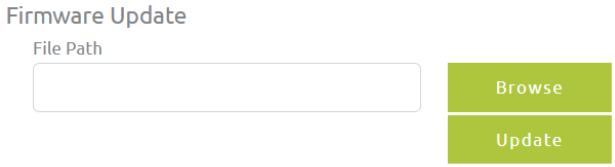


4.9.3. Device Config Setting



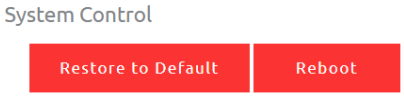
User can save the setting or load previous settings here.

4.9.4. Firmware Update



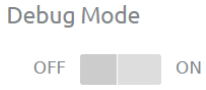
Please press **Browse** button to select firmware and **Update** button to update it, **during update firmware, please don't turn off power and wait until upgrade progress complete.**

4.9.5. System Control

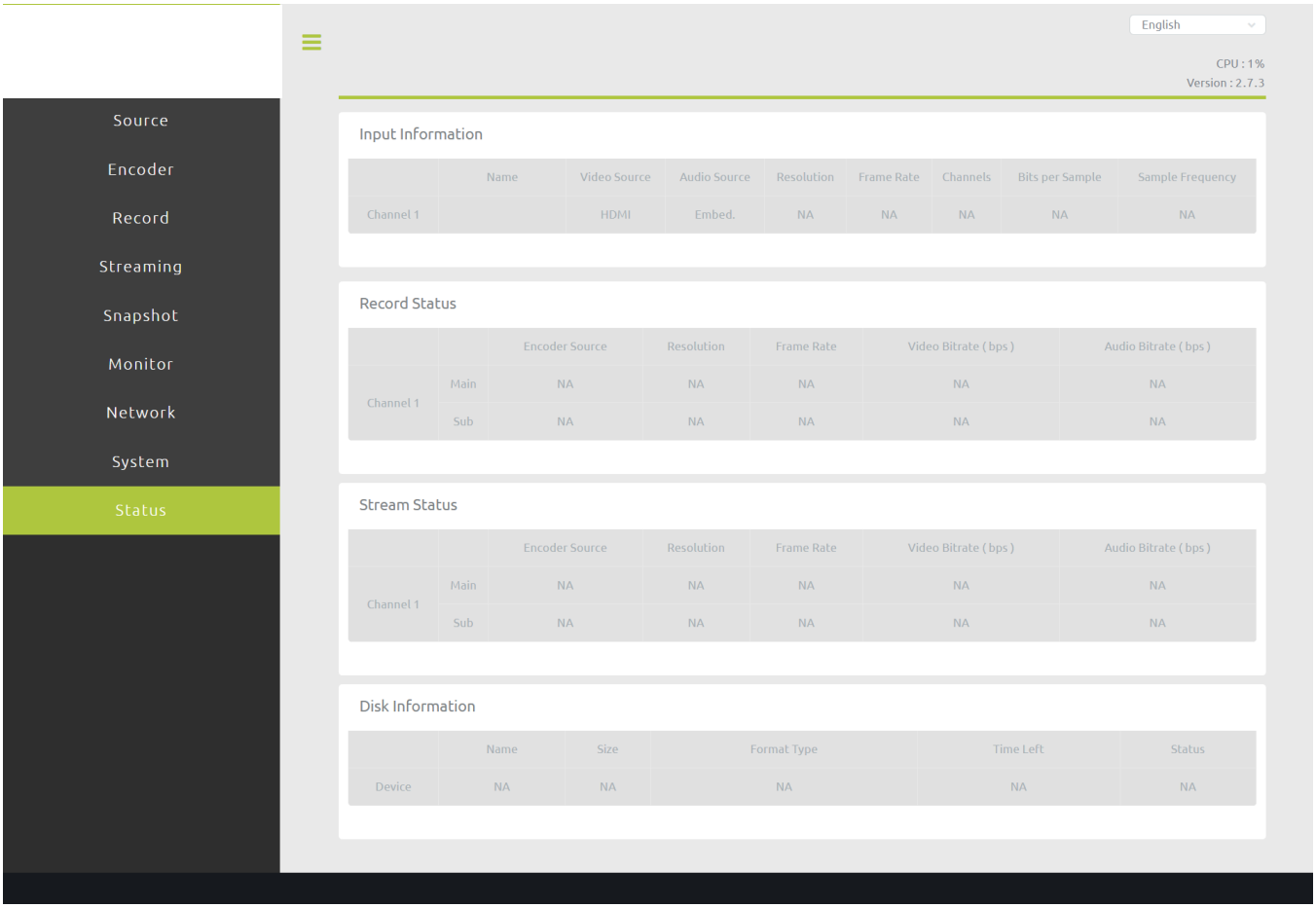


Restore to default will erase all settings and back to original, and Reboot button will restart the BS-NDI01

4.9.6. Debug Mode



4.10. Status



User can check BS-NDI01 status here (Including input signal, streaming status, etc.)

5. VERSION

5.1. Version 1.0

- Initial version.

5.2. Version 1.1

- Update spec.
- Update stream type.

5.3. Version 1.2

- Update support video format.

5.4. Version 1.3

- Add Stream info.

5.5. Version 1.4

- Update spec to V2.5.5

5.6. Version 1.41

- Update USB2.0 description

5.7. Version 1.5

- Add WebRTC description.

5.8. Version 1.51

- Update photo.

5.9. Version 1.6

- Update spec to V2.7.3