OtonGeekN8 8CH Touch Screen NDI Switcher With Built-inCamera Control User Manual

Contents

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Introduction

Thank you very much for using our portable broadcast platform products!please read the manual carefully before using this product. This manual describes in detail the functions, installation and operation of the portable broadcast station general principles or methods. This series of portable broadcast station is a high-performance, multi-function product of live broadcast switching station. This manual is applicable to portable broadcast station series products.

Warnings and Precautions

1. Read all of these warnings and save them for later reference.
2. Follow all warnings and instructions marked on this unit.
3. Unplug this unit from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use this unit in or near water.
5. Do not place this unit on an unstable cart, stand, or table. The unit may fall, causing serious damage.
6. Slots and openings on the cabinet top, back, and bottom are provided for ventilation. To ensure safe and reliable operation of this unit, and to protect it from overheating, do not block or cover these openings. Do not place this unit on a bed, sofa, rug, or similar surface, as the ventilation openings on the bottom of the cabinet will be blocked. This unit should never be placed near or over a heat register or radiator. This unit should not be placed in a built-in installation unless proper ventilation is provided.
7. This product should only be operated from the type of power source indicated on the marking label of the AC adapter. If you are not sure of the type of power available, consult our local dealer or your local power company.
8. Do not allow anything to rest on the power cord. Do not locate this unit where the power cord will be walked on, rolled over, or otherwise stressed.
9. If an extension cord must be used with this unit, make sure that the total of the ampere ratings on the products plugged into the extension cord do not exceed the extension cord rating.
10. Make sure that the total amperes of all the units that are plugged into a single wall outlet do not exceed 15 amperes.

11. Never push objects of any kind into this unit through the cabinet ventilation slots, as they may touch dangerous voltage points or short out parts that could result in risk of fire or electric shock. Never spill liquid of any kind onto or into this unit.
12. Except as specifically explained elsewhere in this manual, do not attempt to service this product yourself. Opening or removing covers that are marked “Do Not Remove” may expose you to dangerous voltage points or other risks, and will void your warranty. Refer all service issues to qualified service personnel.
13. Unplug this product from the wall outlet and refer to qualified service personnel under the following conditions:
14. When the power cord is damaged or frayed;
15. When liquid has spilled into the unit;
16. When the product has been exposed to rain or water;d. When the product does not operate normally under normal operating conditions. Adjust only those controls that are covered by the operating instructions in this manual; improper adjustment of other controls may result in damage to the unit and may often require extensive work by a qualified technician to restore the unit to normal operation;
17. When the product has been dropped or the cabinet has been damaged;
18. When the product exhibits a distinct change in performance, indicating a need for service.

Warranty Terms For products purchased through resellers and distributors, please refer to the return policy of the merchant from whom it was initially purchased; any products eligible for return or replacement through the original merchant should be submitted through them. We will only accept direct return of a product for replacement, under the stated warranty service after the original return time frame of place of purchase has expired.

Standard Warranty

- Oton equipment is guaranteed against any manufacturing defects for one year for limited parts and labor from the date of purchase.
- Oton equipment is guaranteed against any manufacturing defects for one year for limited parts and labor from the date of purchase.
- The original purchase invoice or other documentary evidence should be supplied at the time of any request for repair under warranty.
- The product warranty period beings on the purchase date. If the purchase date is unknown, the product warranty period begins on the thirtieth day after shipment from Oton office.
- Warranty only valid in the country or region of purchase.
- Shipping expenses are at Oton for any delivery claim – you get a defective piece at box just opened.

What Is Not Covered

It is important to note that our warranty is not an unconditional guarantee for the duration of the Program. Any replaced parts become the property of manufacturer. The Program does not apply to the software component of a product or a product which has been damaged due to accident, misuse, abuse, improper installation, usage not in accordance with product specifications and instructions, natural or personal disaster, or unauthorized alterations, repairs or modifications.
The Program Does Not Cover Any Events Such As:

- Any damages unrelated to manufacturing defects
- Any unsuitable environment or use of the product, as determined by the manufacturer
- Any product which has been modified without official permission from manufacturer, or on whichthe serial

number or warranty sticker has been defaced, modified, or removed Damage, deterioration or malfunction resulting from:

- Accident, abuse, misuse, neglect, fire, water, lightning, or other acts of god, commercial or industrial use, unauthorized product modification or failure to follow instructions included with the product
- Third party products using manufacturer components will not be covered by warranty.
- Any shipment damages (claims MUST be made with the carrier)
- Unauthorized repairs to the product will void the warranty

Register for 2-year Warranty

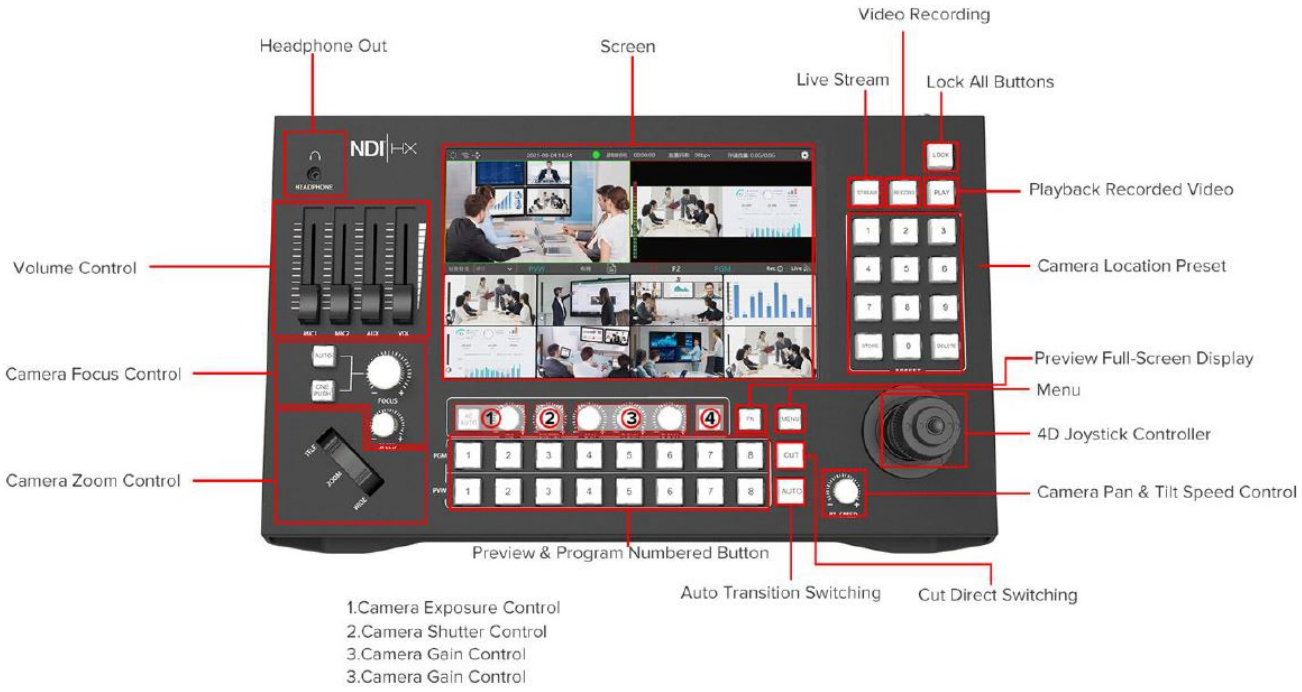
Visit https://otontechnology.com/warranty/ or scan below QR code to register 2-year warranty for your Oton switcher.

Overview

The Geek N8 combines a live switcher, H.264 video encoder, PTZ camera controller, video recorder and audio mixer in one unit. Live production for live musical performances, lectures, presentations and church service can now be done easily by one operator, instead of the multiple operators that are usually required. It is also compliant with the NDI|HX standards, enabling connection and control of the remote camera to be performed through the same LAN cable with power provided* for smooth remote shooting. RTMP (Real-Time Messaging Protocol) is also supported. Footage can be directly uploaded to various streaming services such as YouTube Live.

Control Surface

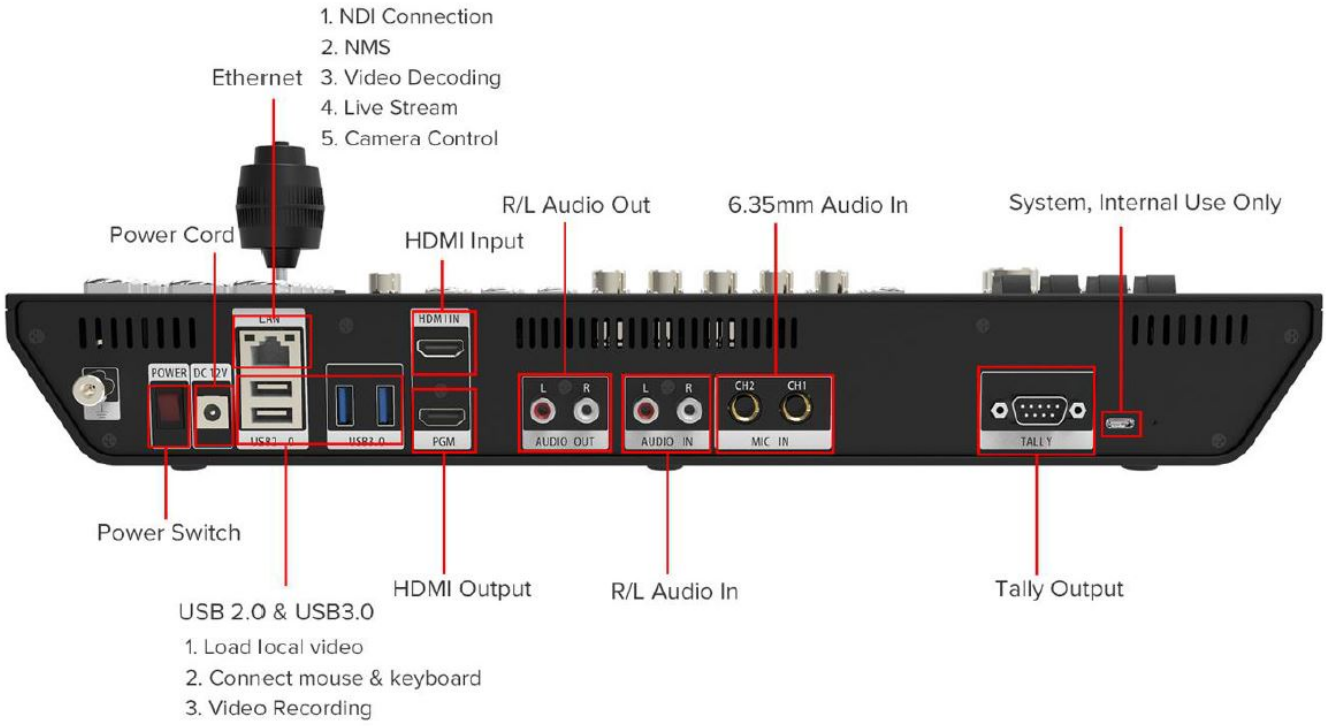
Geek N8's control surface features a traditional video mixer's program and preview row configuration, with CUT and AUTO buttons. It also features audio volume control and camera control including 4D Joystick PTZ control, focus, exposure, iris, gain and white balance control for up to 8 cameras. Plus, it support recording, live streaming control as well.



Rear Panel

The rear panel provides connections to a wide range of A/V equipment. Connecting NDI|HX equipment using the LAN port. Keyboard, mouse and external USB disk can be connected to the USB2.0/3.0 connectors at left, while

HDMI camera or computers and a monitor for viewing Program video are supported by HDMI port. Connect audio sources like microphones or audio mixers to the 6.35mm or R/L audio inputs. The tally allows to view camera status while sys port is for internal usage only.



Key Features

- 8 channel inputs from NDI|HX, HDMI , USB local video or online decoding video
- Built-in 10.1 inch multiview screen
- Touch screen or mouse & keyboard control for configuration
- HDMI out for viewing program video on big screen
- Exciting transition effects including wipe, mix, fade,PinP etc
- Support add logo overlay
- Built-in title templates for smooth stream workflow
- 1 pair 6.35mm audio + 1 pair R/L audio in
- 1 pair R/L audio + 1×3.5mm audio out for audio monitoring
- Individual audio channel control on volume, audio mixing (on/off/AFV),including analog audio
- Support audio delay for program video between 0-500ms
- Multi-stream to 2 service platforms at the same time via RTMP protocol
- Record program video to USB drive directly
- Support live playback of recorded videos
- Support digital clock for time Synchronization
- Support Tally indication for camera status
- Built-in camera control for pan, tilt, zoom, location preset, focus, exposure, gain, white balance etc

Technical Specification

Video Source	NDI®|HX, HDMI V1.4 Type-A, USB local video, RTSP online video

Video Output	HDMI V1.4 Type-A
Audio Source	1 pair 6.35mm audio + 1 pair R/L audio
Audio Output	1 pair R/L audio + 1×3.5mm audio
Screen	10.1 inch
USB 2.0 Port	Mouse & Keyboard, load local video, video recording
USB 3.0 Port	Mouse & Keyboard, load local video, video recording
Ethernet	10/100/1000Mb/s, NDI Connection, live stream, video decoding, NMS, camera control
Tally	DB-9 pin
Video Standard	
HD Video Resolution	720p30, 1080p 25/30/50/60
Built-in Screen Res.	1920×1080
Multiview Video Format	16:10
Program Out	1080p 60
HD Video Sampling	4:2:2 YUV
Color Accuracy	10 bit
Color Space	Rec 709
Computer HDMI In	1280x720p 50/59.94/60, 1920x1080p 25/29.97/30/50/59.94/60
USB Video Format	MP4
USB Still Format	PNG,JPG
Online Video Protocol	RTSP, NDI®|HX, Onvif HLS,FLV
Online Video Address Preset	8
Audio Standard	
Audio Mixing	8 Channel in total
Analog Audio In	Unbalanced stereo audio
Audio Control	Volume, audio on/off/AFV/gain
PGM Audio Delay	0-500ms adjustable
Audio Sampling	48kHz
Audio Format	AAC
Switching	
Switching	Cut direct switching and Auto transition switching
Effects	Wipe, Fade, Mix etc
PinP Layout	5

Transition Rate	0.2-1s
Logo & Title	
Logo Format	PNG,JPG
Logo Size	Less than 1MB
Logo Preset	4
Title Modes	Fixed/rolling title
Title Templates	4 default + 1
Title Preset	4
Live Streaming	
Encoding	H.264

Protocol	RTMP
Bit Rate	High Bit Rate – 512/768kbps, 1/1.5/2 Mbps Low Bit Rate – 3/5/8/12/16 Mbps
Resolution	High Bit Rate – 960×540, 1280×720,1920×1080 Low Bit Rate – 640×360, 736×416, 960×540
Frame Rate	High Bit Rate – 30/60 Fps Low Bit Rate – 25/30 Fps
Stream Address Preset	12
Multistream	2 platforms at the same time
Audio Sampling	48kHz
Audio Bit Rate	80/96/128 Kbps
Video Recording	
Recording Format	MP4
Resolution	1920×1080, 1280×960, 960×540, 736×416, 640×360
Recording Bit Rate	512KB, 768KB, 1MB, 2MB, 3MB, 5MB, 8MB, 12MB, 16MB, 20MB
USB Drive Format	FAT32, NTFS, exFAT
Camera Control	
Controlling Camera	8 Max
Port	Ethernet
Protocol	NDI®|HX, VISCA
Pan & Tilt	4D Joystick- up, down, left, right

Zoom	Tele-Wide
Focus	Auto/Manual
Exposure	Auto/Manual
Iris	Manual
White Balance	Auto/Manual/Gain/Red Gain/Blue Gain
White Balance	Manual
Camera Location Preset	9
Power Requirement	
Voltage	12V
Current	3A
Power Consumption	36W Max
Environment	
Working Temperature	-20℃~40℃ (-4°F – 104°F)
Storage Temperature	-20℃~40℃ (-4°F – 104°F)
Working Humidity	0%-90% no condensing
Storage Humidity	0%-90% no condensing
Dimension	
Product Dimension	42×25.8x12cm / 16.54×10.16.4.72 inch
Package Dimension	47.5x32x14.5cm / 18.7×12.6×5.7 inch
Product N.W.	1.25kgs / 2.75lbs
Product G.W.	2.04kgs / 4.5lbs
System	
Language	Simplified Chinese, Traditional Chinese, English

Upgrade	USB Drive
Warranty	1 year standard warranty for limited labor and parts Register for 2-year warranty
Package Content	
Package Content	Main Unit x1 HDMI Cable x1 Power Adapter x1 User Manual x1 Warranty Card x1

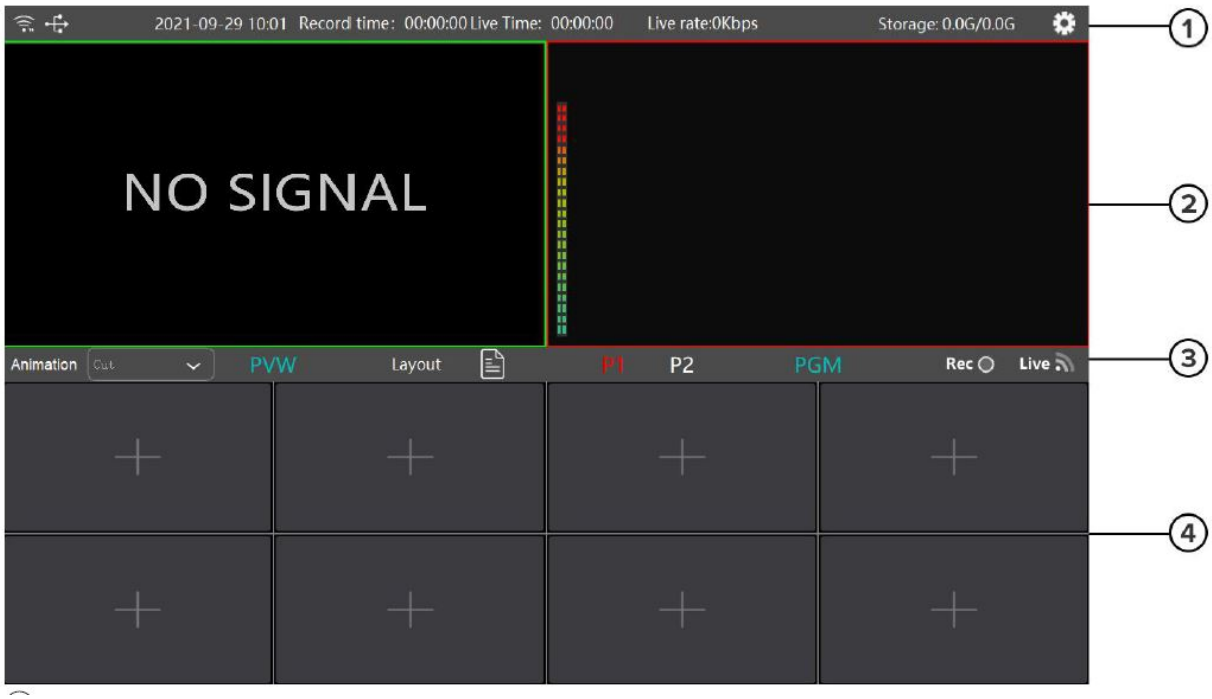
Getting Started

The switcher might seem intimidating with all the connectors and buttons, however the unit is actually very easy to set up and use. Each feature serves a specific function and it won't take long to get familiar with it and know exactly what each feature does.This section of the manual will show you how to get started with your switcher.

- Plug in power using the supplied power adapter.
- Connect your video sources to the inputs of video switcher – see tips below
- Connect your monitor to the HDMI outputs of N8 via HDMI Cable for viewing program video
- Connect your microphone/audio mixer to the 6.35mm or R/L audio inputs.
- Connect amplifier to the R/L audio out or headphone to the 3.5mm port on the left upper corner of Panel for audio monitoring
- Connect mouse and keyboard to USB2.0/3.0 port of N8 if you want to use mouse and keyboard control.
- Turn on the power rocker switch at the rear of N8. At this point, the LED display will illuminate. (If this does not happen, check your connections and retry)

Using Multi-view

The multiview is a powerful feature that lets you monitor the 8 inputs, together with the program and preview outputs as a group of views on one screen. The multi-view also displays the media player, streaming status, disk recording status, audio levels, logo, subtitle and other dynamics indicators.This feature provides a comprehensive overview so you will always know exactly what is happening with your broadcast!
Initially, as you have not yet configured inputs or added content, the Multi-view screen looks a bit barren. Take a quick look around, but then let's continue to configure your devices.



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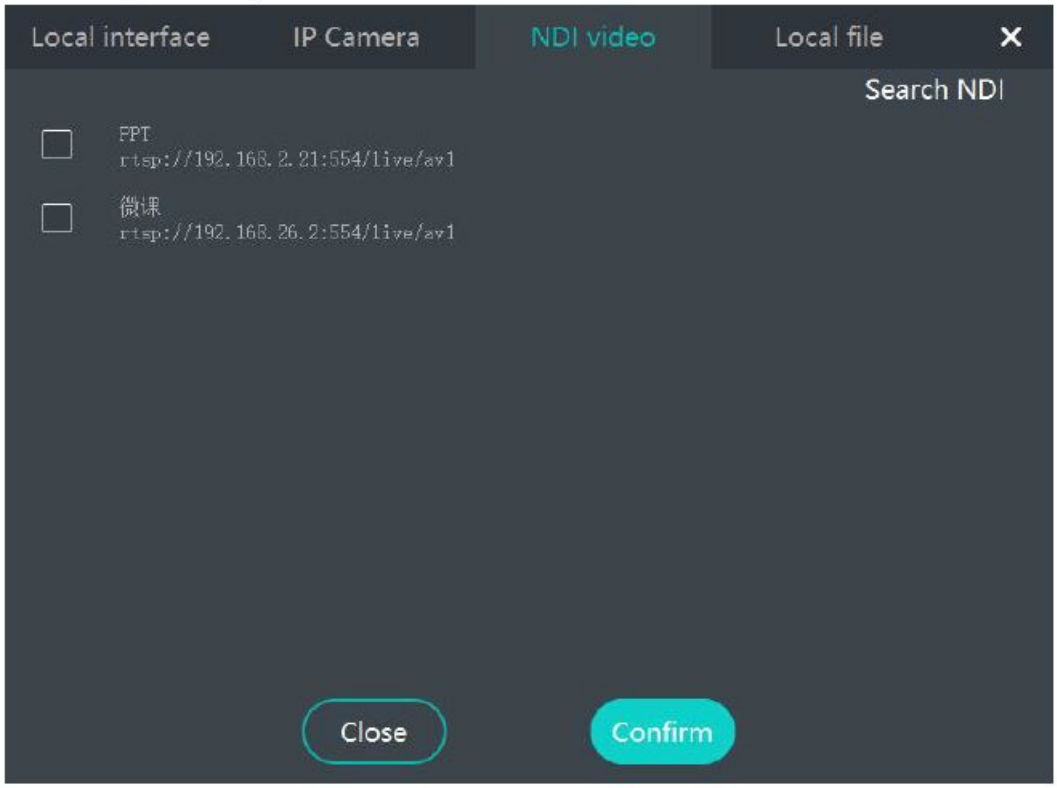
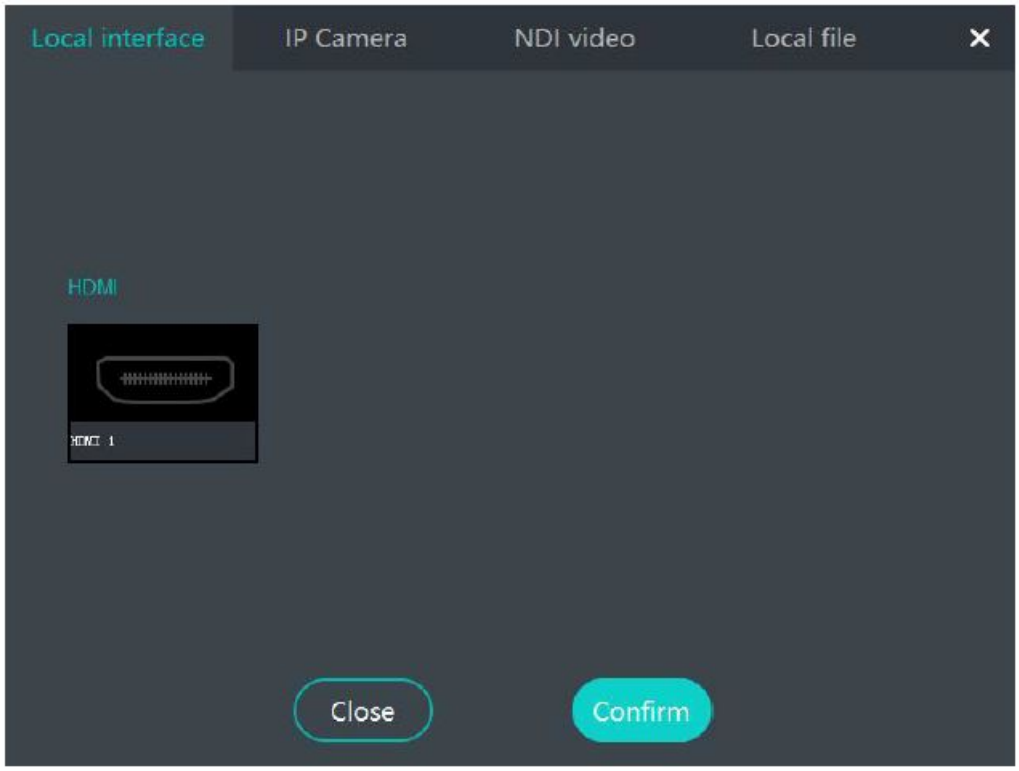
2. Initially, as you have not yet configured inputs or added content, the Multi-view screen looks a bit barren. Take a quick look around, but then let's continue to configure your devices.

Connecting NDI|HX Sources



- Connect all your NDI|HX sources to the LAN port of network switch using Ethernet cable
- Connect the network switch to LAN port at the rear of Geek N8 using Ethernet cable
- Press or click the [+] of input channel section on multi-view to see a list of available sources. If N8 doesn't detect NDI sources automatically you can click search [NDI Video] on the upper right corner. NDI|HX sources are grouped under [NDI Video]heading, click the check box to assign NDI signal.

Connecting HDMI Sources

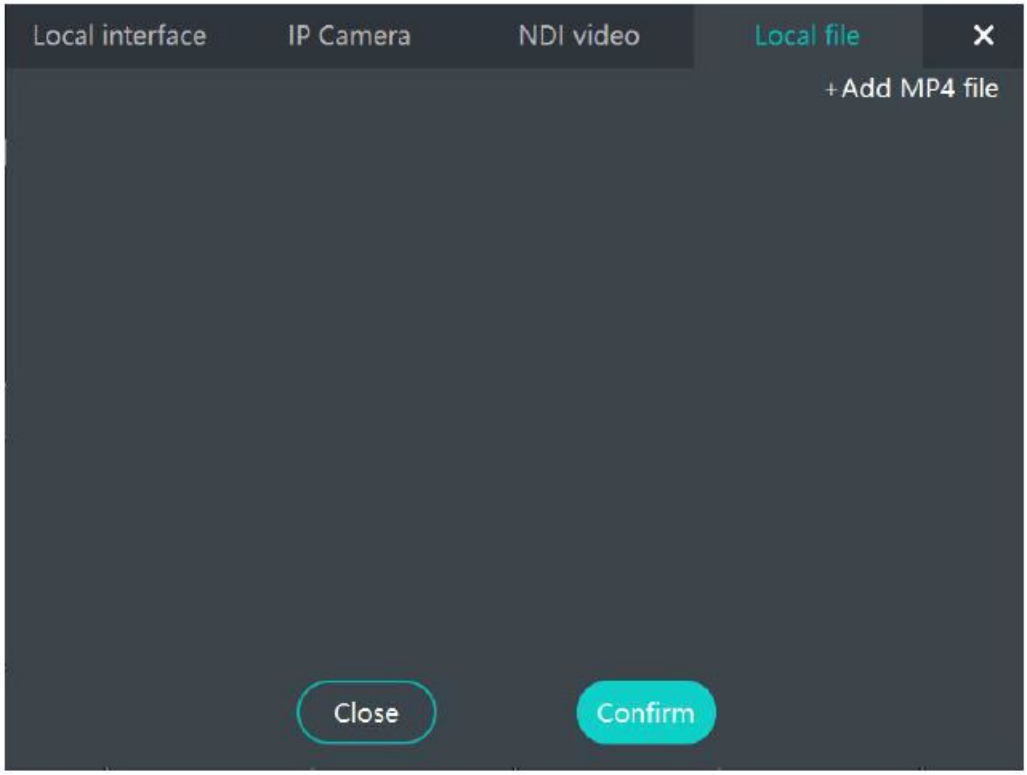


- Connect your HDMI Sources including camera, computer or drone to the HDMI input via HDMI Cable.

- Press or click the [+] of input channel section on multi-view to assign channel for HDMI. HDMI Video is grouped under [Local Interface] heading.

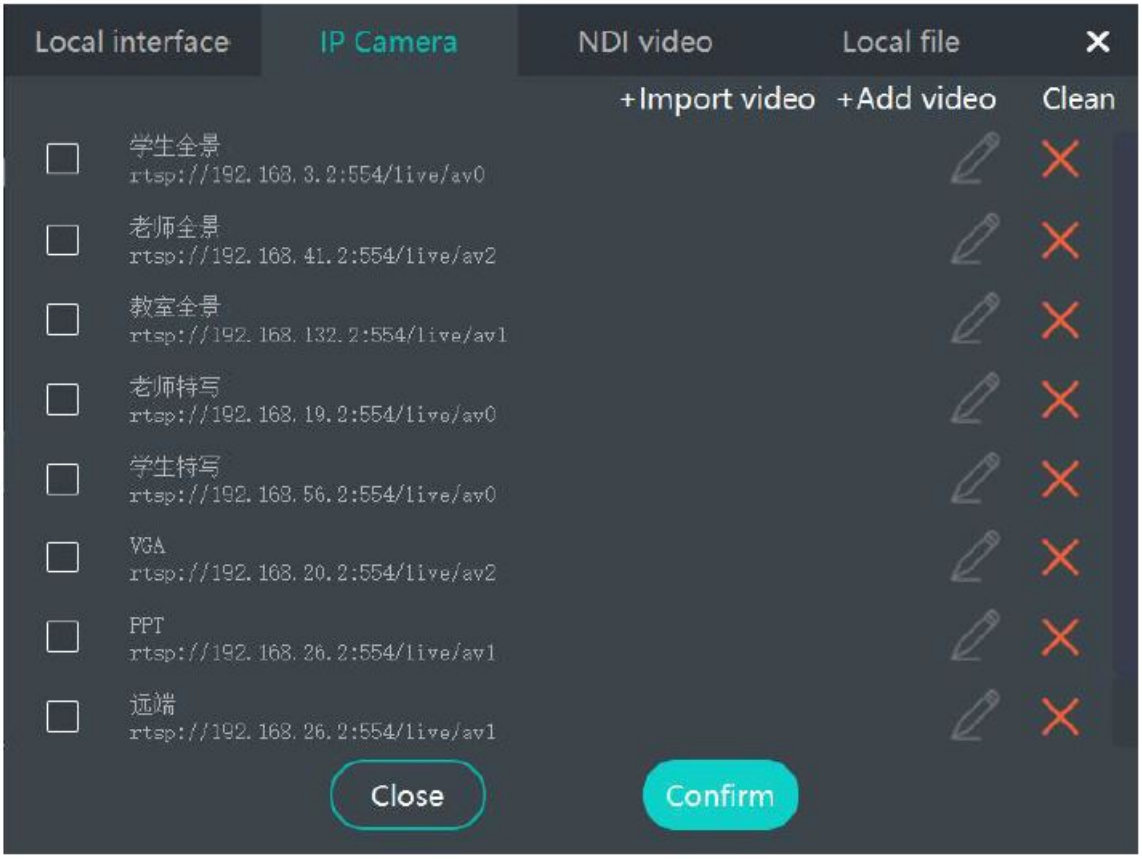
Importing Local Media

- Save the local videos or graphics in your USB drive
- Plug in USB drive to the USB2.0/3.0 port at the rear of N8
- Press or click the [+] of input channel section on multi-view to select videos. USB local media are grouped under [Local File] heading, click [Add MP4 file] to see available MP4 videos in your USB Drive

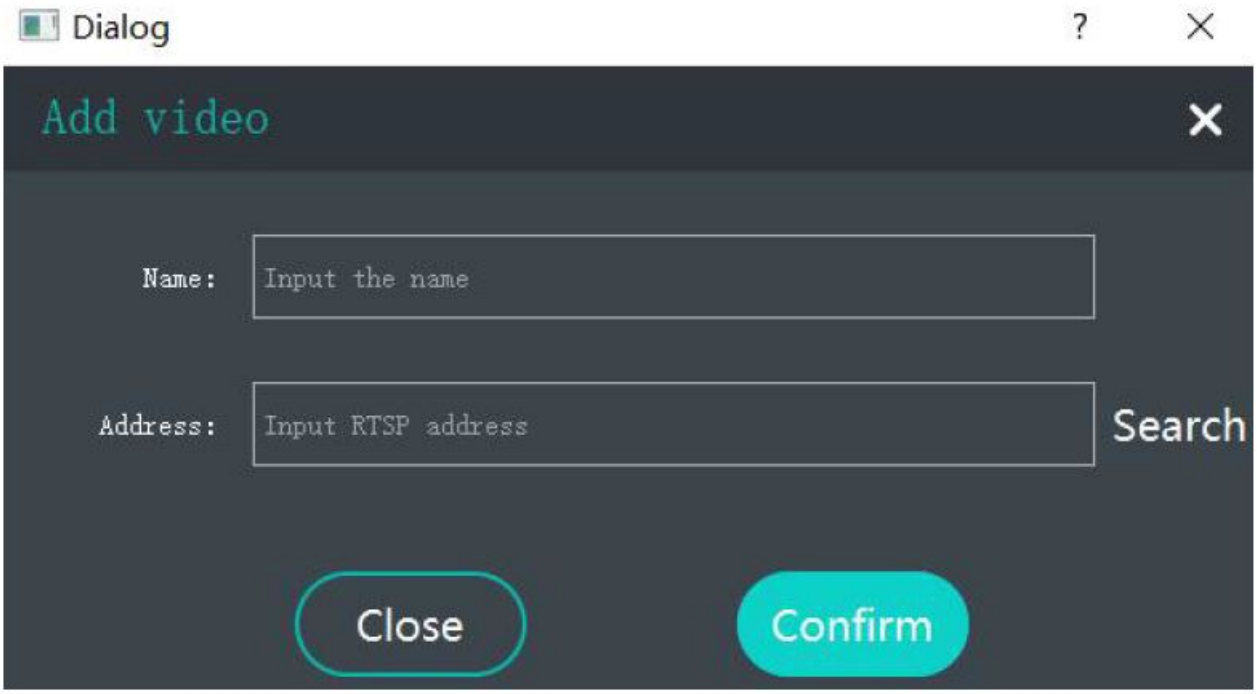


Importing RTSP/RTMP Video

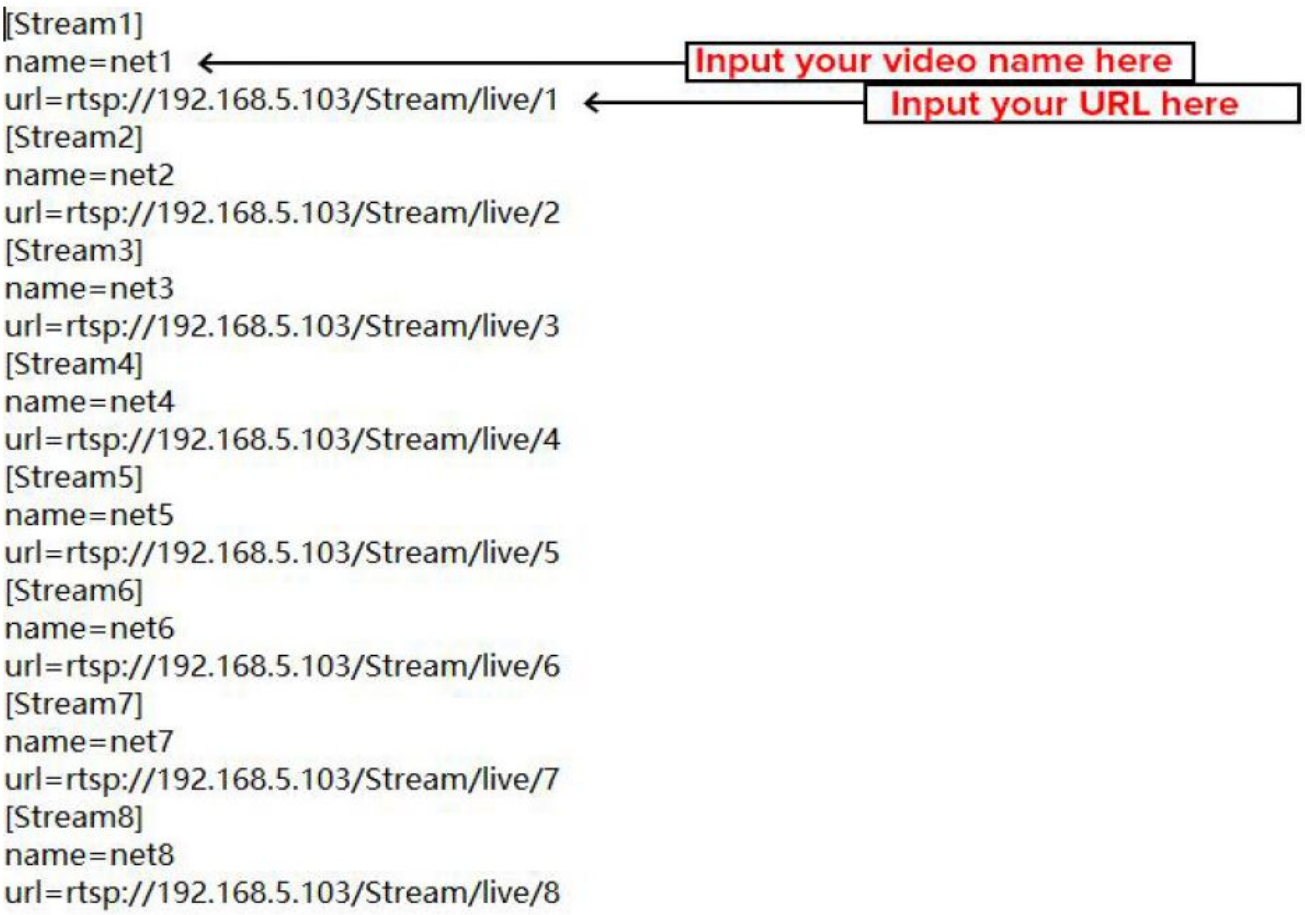
Press or click the [+] of input channel section on multi-view to add video or import video from USB



- Add Video – Single address configuration



- Click [Add Video], input name and URL address for RTSP/RTMP video, then click [Confirm]
- Import Video – Bulk address configuration
- Open NetStream.ini configuration file in notebook
- Copy your RTMP or RTSP video address to the notebook and save it. You are allowed to save 8 sets3 Save NetStream.ini to your USB drive and plug in the USB to USB2.0/3.0 port of N8
- Click [Import Video], you will see a popup message(as below image), click [Confirm] to import address from USB drive

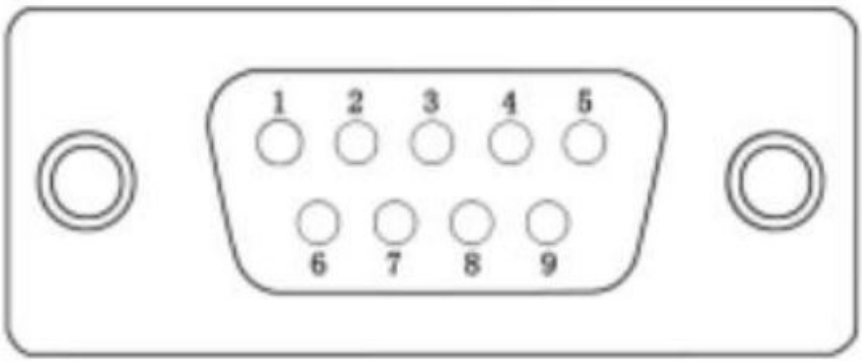


Removing Channel Video

When you add video signal to each channel, there will be a [X] on the upper right corner, simply press or click [X] to remove video.

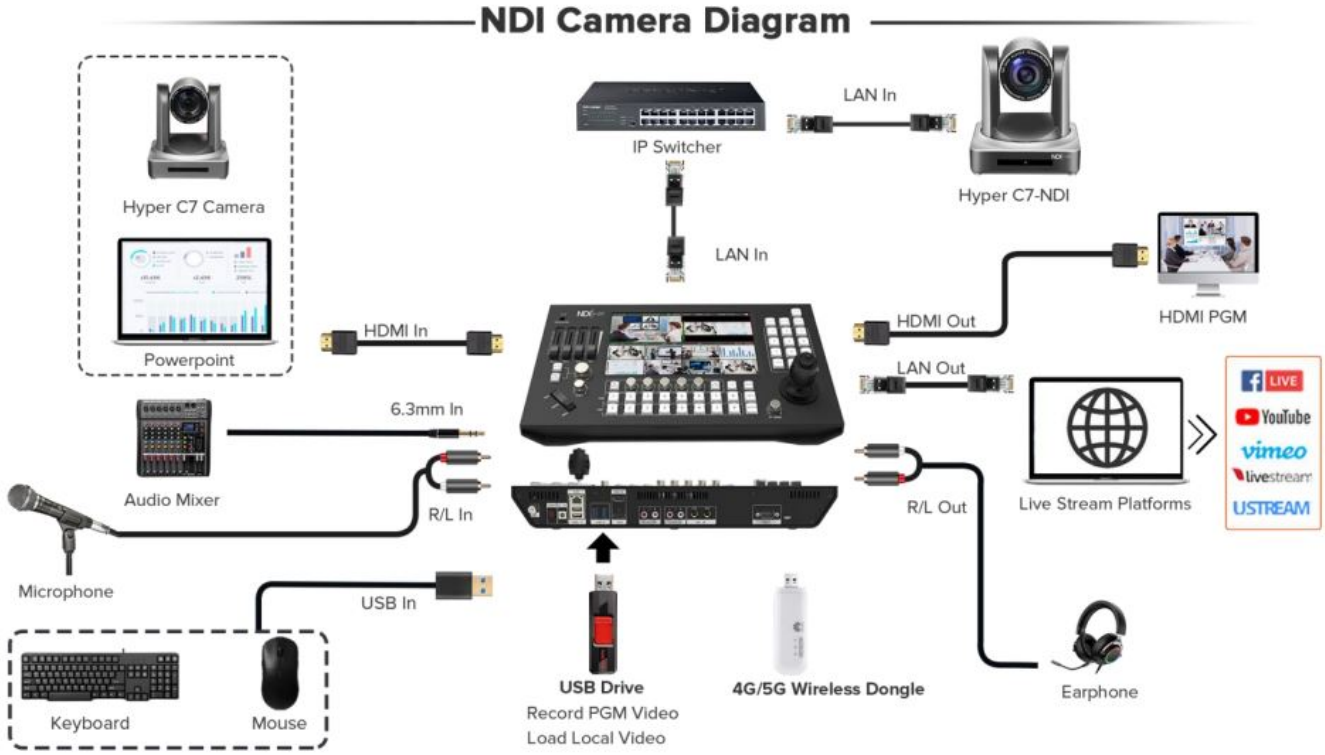
Tally Indication

Tally light support allows you to connect external tally light and similar devices. These typically provides a red LED for the video input that is currently selected on Geek N8's Program row. (NDI|HX outputs also natively support tally over the network, without a separate connection)



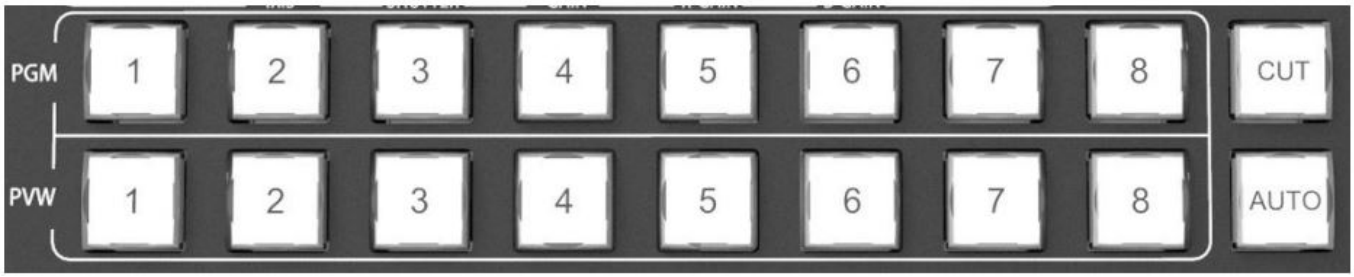
Pin	Name	Input/Output	Pin Out Listing
1	Program 1	Open Circuit Output	LED 1
2	Program 2	Open Circuit Output	LED 2
3	Program 3	Open Circuit Output	LED 3
4	Program 4	Open Circuit Output	LED 4
5	Program 5	Open Circuit Output	LED 5
6	Program 6	Open Circuit Output	LED 6
7	Program 7	Open Circuit Output	LED 7
8	Program 8	Open Circuit Output	LED 8
9	GND	Ground	Ground

Connection Diagram



Switching Your Production

Now that you have your everything connected, the switcher is ready to start switching your production. This happens when you switch from one video source in your broadcast to another. With Geek N8, you can switch cleanly using professional cuts or transitions. For example, a cut will instantly change from one source to another and a transition will change sources over a defined duration often using an effect. a mix transition gradually fades the current source into the next until the original source is no longer visible. A wipe transition will move a line across the original source revealing another effectively wiping across the image.

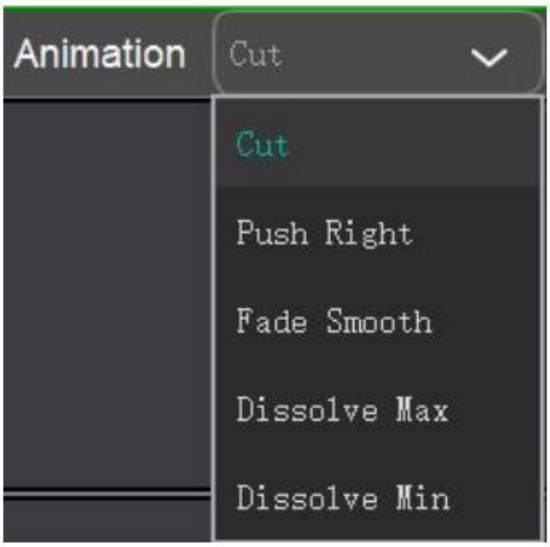


[PGM 1-8] These select the video source (background) for program output. The button of the selected video signal lights in red.
[PVW 1-8] These select the video source for preview The button of the selected video signal lights in green.[CUT] This executes a straight cut for all selected video layers (title, PinP, and video source)
[AUTO] This executes the transition assigned to the selected video layer. Pressing the [AUTO] button during transition execution allows you to stop operation. Press it once again to complete the operation.

To perform a switching:

- Simply press [PGM 1-8] button for direct switching or
- Press [PVW1-8] button along with [CUT] for direct switching or
- Press [PVW1-8] button along with [AUTO] for transitional switching

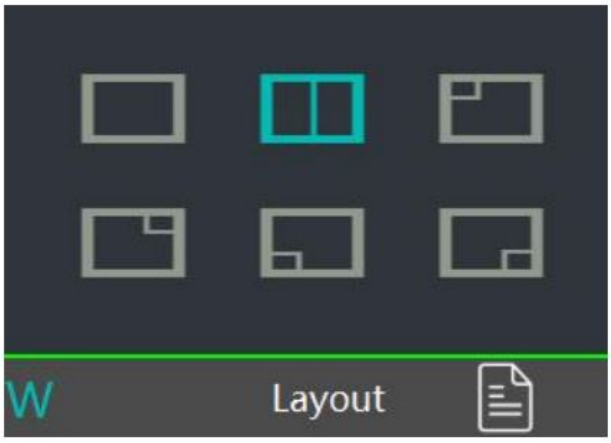
Using Transition Effects



Transitions let you smoothly switch from one source to another over a defined duration. For example, a mix transition gradually fades the current source into the next until the original source is no longer visible. A wipe transition will move a line across the original source revealing another effectively wiping across the image.
To select transition effects:
Click the effects drop-down menu on the status display bar in the middle of multi-view screen to see a list of transition effects and select needed effect.

Using PinP

Picture in picture(PinP) superimposes a second source over your broadcast video source in a small box you can position and customize.



To Configure PinP

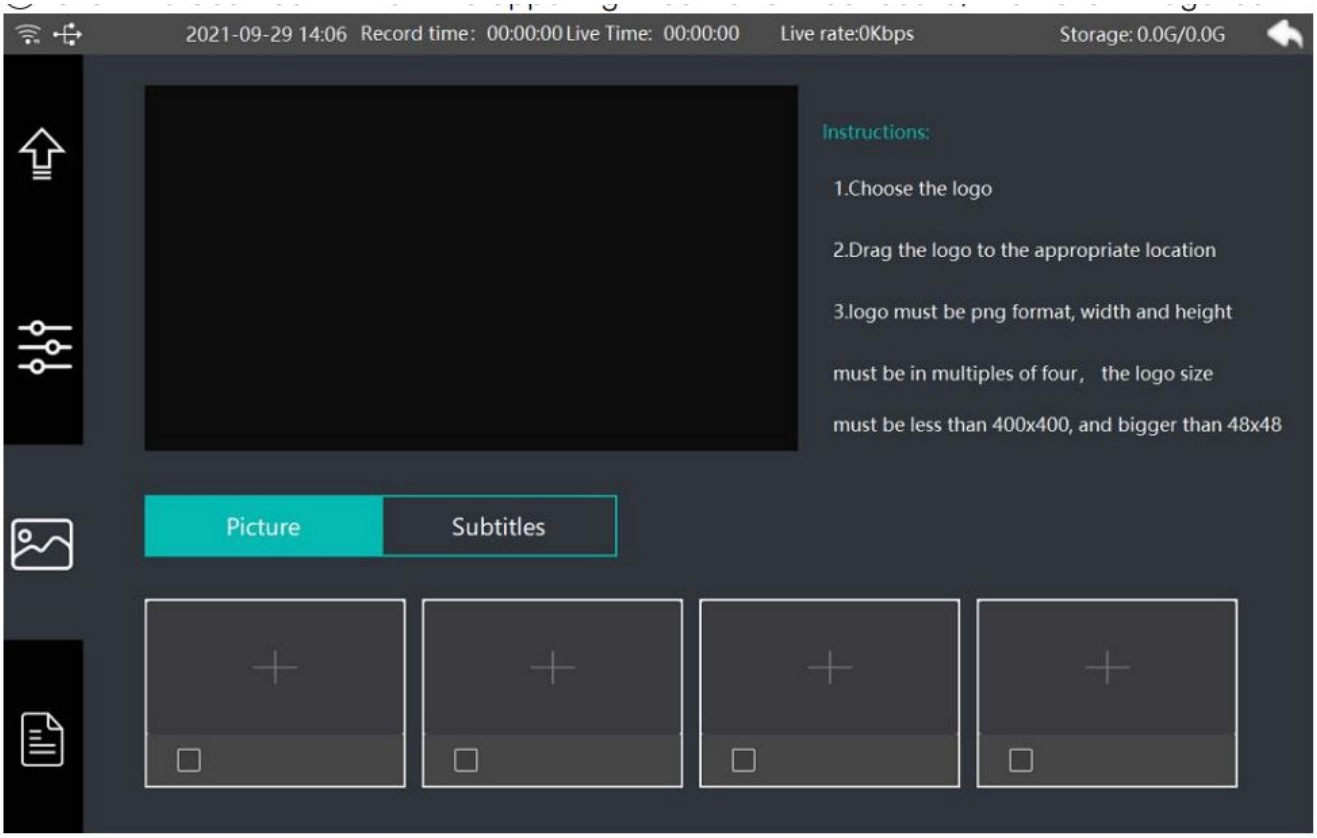
1. Click [Layout] on the status display bar in the middle of multi-view screen to select PinP layout
2. If you want to change video channel for main window please press/click [P1], then click the corresponding video channel or press number button on PVW
3. If you want to change video channel for sub window please press/click [P2], then click the corresponding video channel or press number button on PVW
4. Press [CUT] or [AUTO] button to load PIP on air.

Adding Logo

Geek N8 allows you to preset 4 brand logos from USB drive and be up-and-running in seconds! Dragging the logo

for re-position. You can also use the logo as a trick for lower thirds titles!
To add logo:

1. Add your logo in USB drive and plug in the USB drive to USB2.0/3.0 port of N8
2. Click the Gear icon on the upper right corner of Dashboard, then click image icon

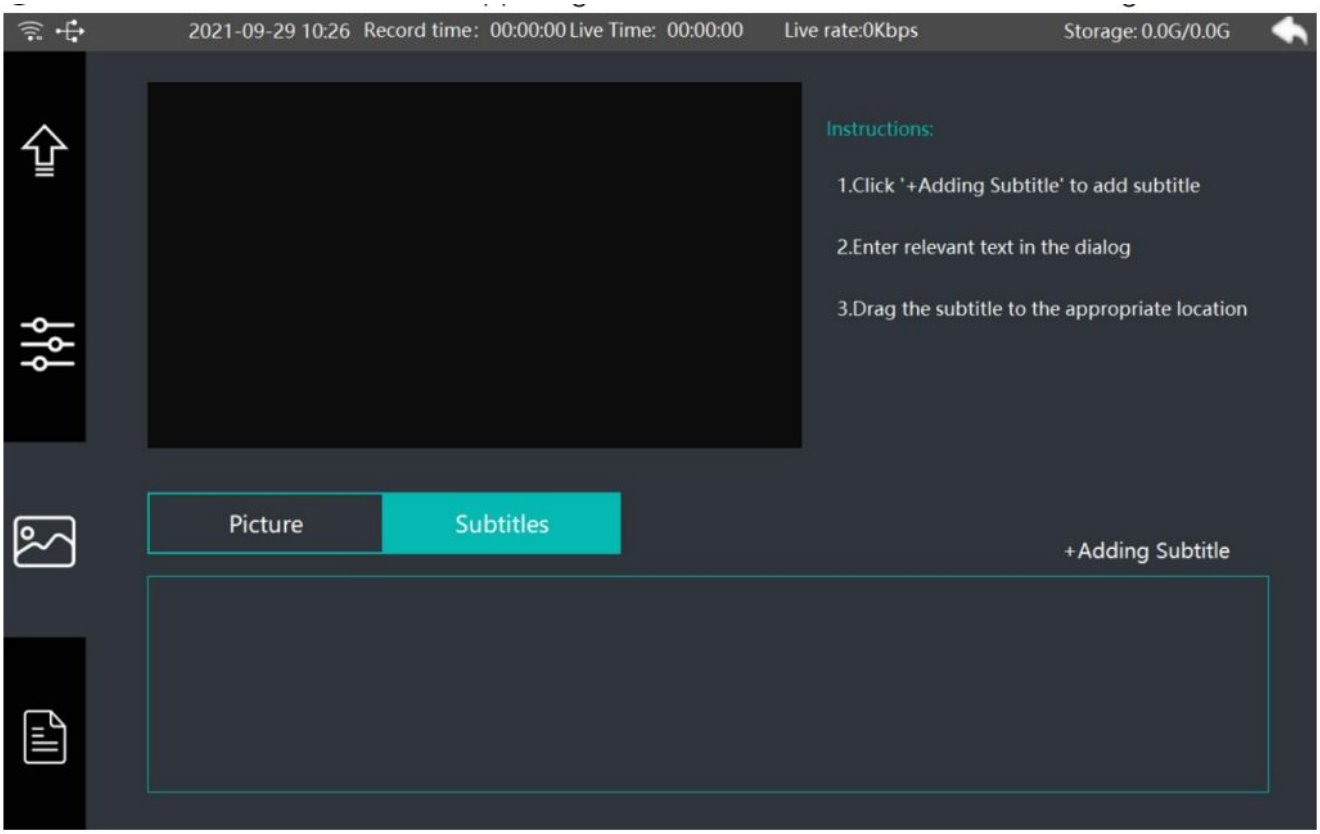


3. Click [+] to see available logos from your USB drive and follow the steps to select your logo

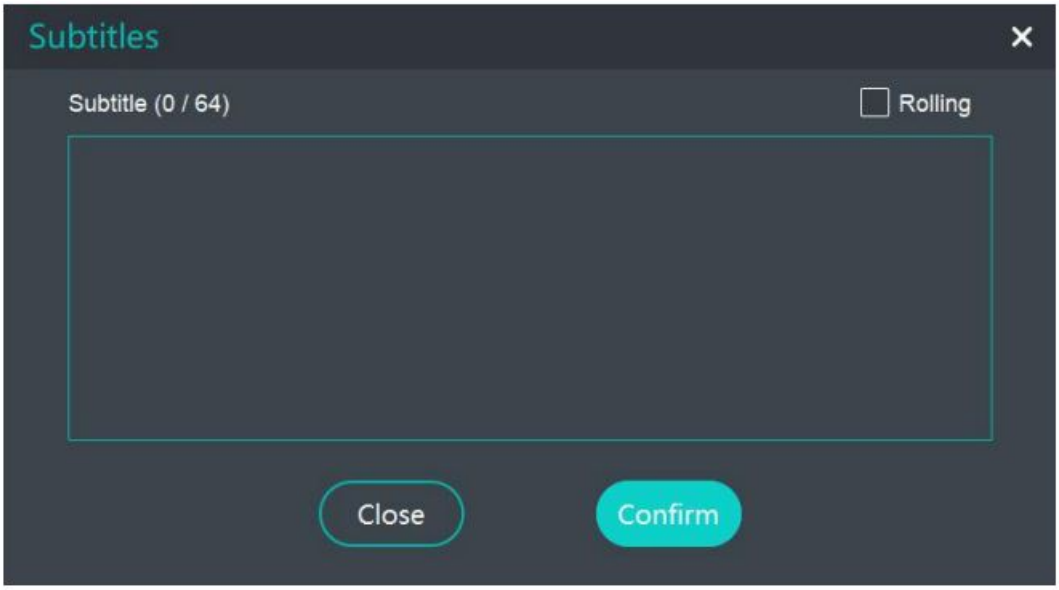
Adding Titles

Geek N8 integrates 4 title template contributing to the ultimate program output. To add titles:

1. Click the Gear icon on the upper right corner of Dashboard, then click image icon



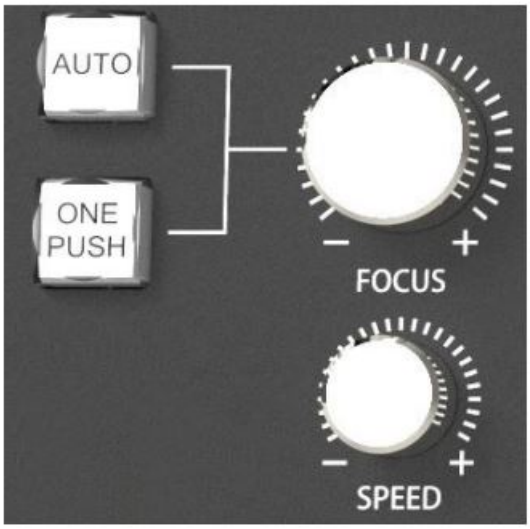
2. Click [+add subtitle] and edit your subtitles with the built-in keyboard or external keyboard.If you want rolling subtitles, then click the rolling check box on the upper right corner.



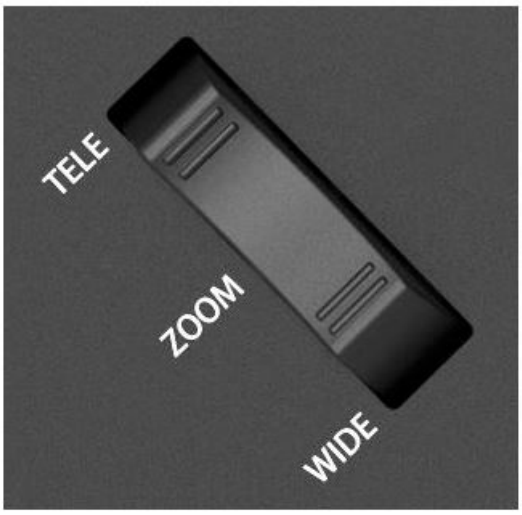
3. Click [Confirm] after your edition. Drag the titles for re-position.

On-Board PTZ Camera Control

Geek N8 features with an additional camera control function. Once your camera is connected to your LAN (Local Area Network), the built-in camera controller can be set up to quickly access up to 8 cameras with a single button press. Providing novice users with a pre-configured PTZ joystick controller is perhaps the best way to get new producers up and running. It is ideal for audiovisual and IT professionals who need to remotely manage multiple PTZ cameras on their network.



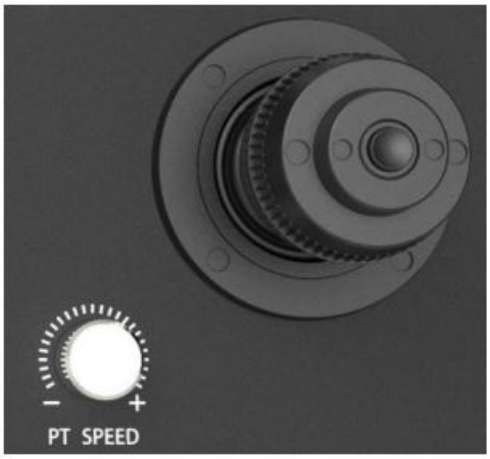
[AUTO] Button This lights in red when automatic adjustment of the focus is enabled
[**One Push] Button** This lights in red when one push focus of the camera lens is enabled
[Focus] Dial This manually adjusts the focus of the camera lens. Turn the dial clockwise to move the focus farther away, and counterclockwise to move it nearer.
[Speed] Dial This manually adjusts the speed of focus of the camera lens. Turn the dial clockwise to focus quickly, and counterclockwise to focus smoothly.



[Zoom] Button This a justs the zoom of a camera connected to the network. Press the [Tele] button to enlarge (zoom in), and the [Wide] button to reduce (zoom out)

[AE Auto] Button iris is enabled. Check the iris setting (auto manual) on the camera.
[Iris] Dial This manually adjusts the iris of the camera lens. Turn the dial clockwise to operate the iris in the open direction, and counterclockwise to operate it in the close direction
[Shutter] Dial This manually adjusts the exposure time of camera lens, or the length of time during which light is admitted. Turn the dial clockwise to operate the exposure time longer, and counterclockwise to operate it shorter.
[Gain] Dial This manually adjusts the saturation of camera lens. Turn the dial clockwise to increase saturation, and counterclockwise to decrease saturation.
[R Gain] Dial This manual ly adjusts the intensity of red color. Turn the dial clockwise to add intensity, and counterclockwise to reduce intensity.
[B Gain] Dial This manually adjusts the intensity of blue color. Turn the dial clockwise to add intensity, and

counterclockwise to reduce.
[WB Mode] Button This lights in orange when automatic white balance is enabled.



[4D Joystick] This controls the function of PTZ of each camera. Turn left or right for Pan control, turn up and down for tilt control. Turn the joystick clockwise to enlarge (zoom in), and counterclockwise to reduce(zoom out). Press the round button on top to for default setting of camera lens.
[PT Speed] Dial This manually adjusts the pan and tilt speed of each camera. Turn the dial clockwise to pan/tilt quickly, and counterclockwise to pan/tilt smoothly.

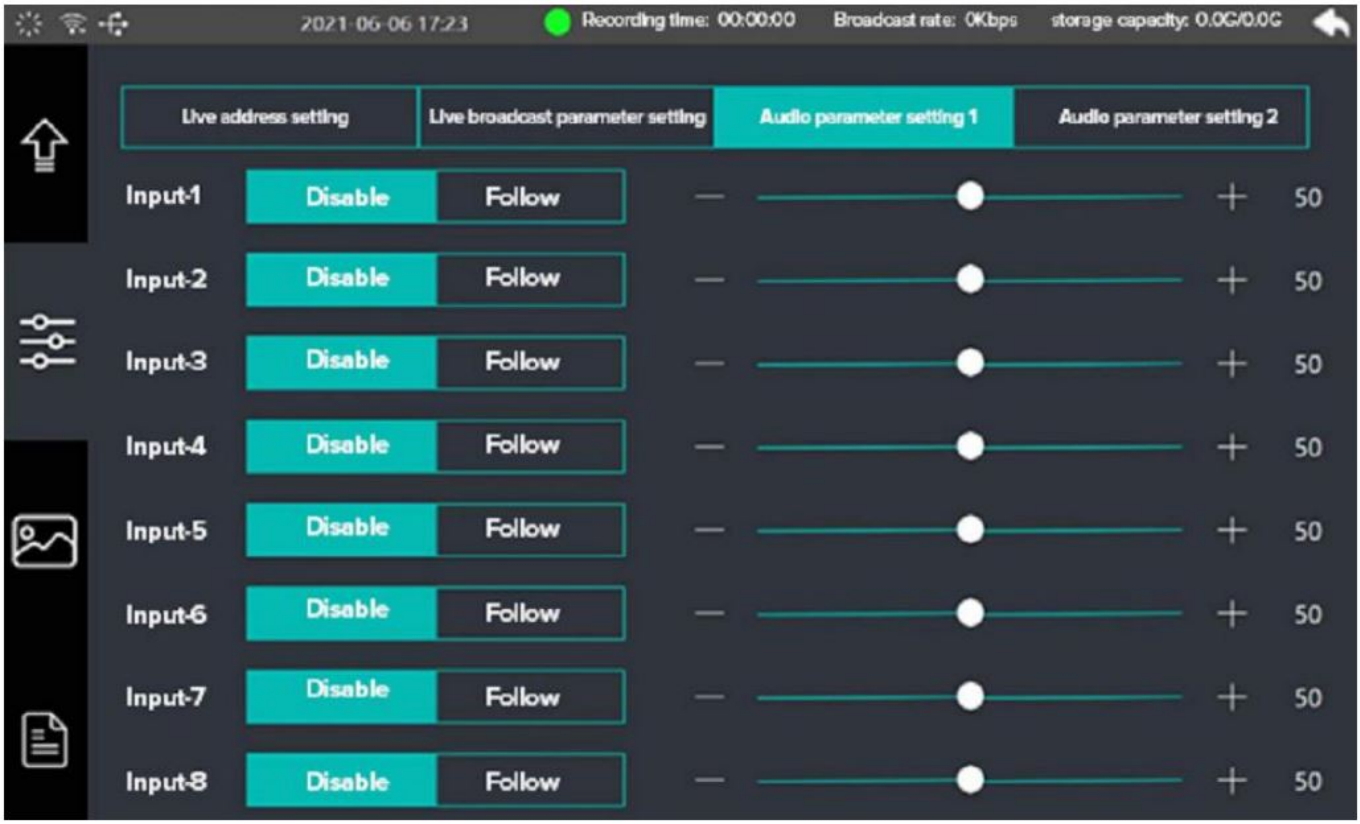
[Number 0-8] Button These are the preset camera locations. Each camera can preset 9 locations.[STORE] Button This saves your camera location preset settings.
[DELETE] Button This deletes your camera location preset settings.

Important Notice:
To control cameras, you have to make sure all units share same sub-net mask and gateway settings so that they can communicate. In addition, the first three fields of numbers in the panel's IP address also need to match, but have their own identifying number in the last field so they won't conflict with each other. This is generally the most important principle to know when working via Ethernet.
Focus, exposure, gain and white balance control doesn't work for NDI protocol, this is due to NDI protocol limitation. You can still use PTZ control with NDI though. If you'd like to use all these controls, please connect your cameras with N8 with RTSP protocol.

Controlling Audio

When setting up your production or during your broadcast, you will likely want to control audio levels if the sound is too quiet or too loud. Push up and down the audio controller will increase or decrease the audio level for the

respective source. Or you may likely to have one of the channel audio never be heard or follow channel video.



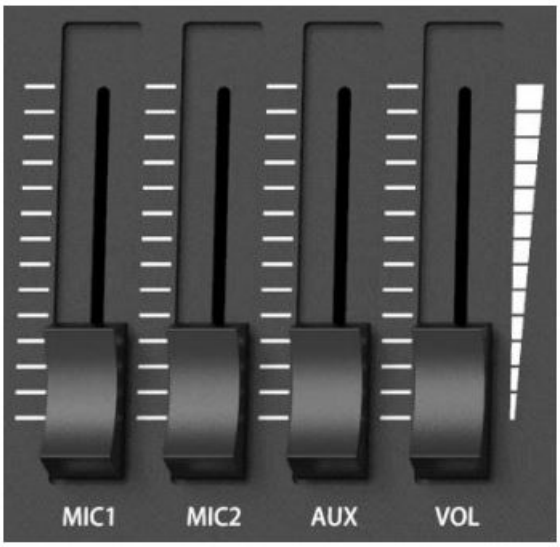
Audio Mixing

There are 2 ways to switch between audio off and AFV mode.

1. Press [MENU] button on panel, click on the left > click audio parameter setting 1. Each of local connections can be assigned to Disable or Audio Follow Video.
2. 2 Press the Audio icon to switch between audio off or audio follow

Adjust Volume

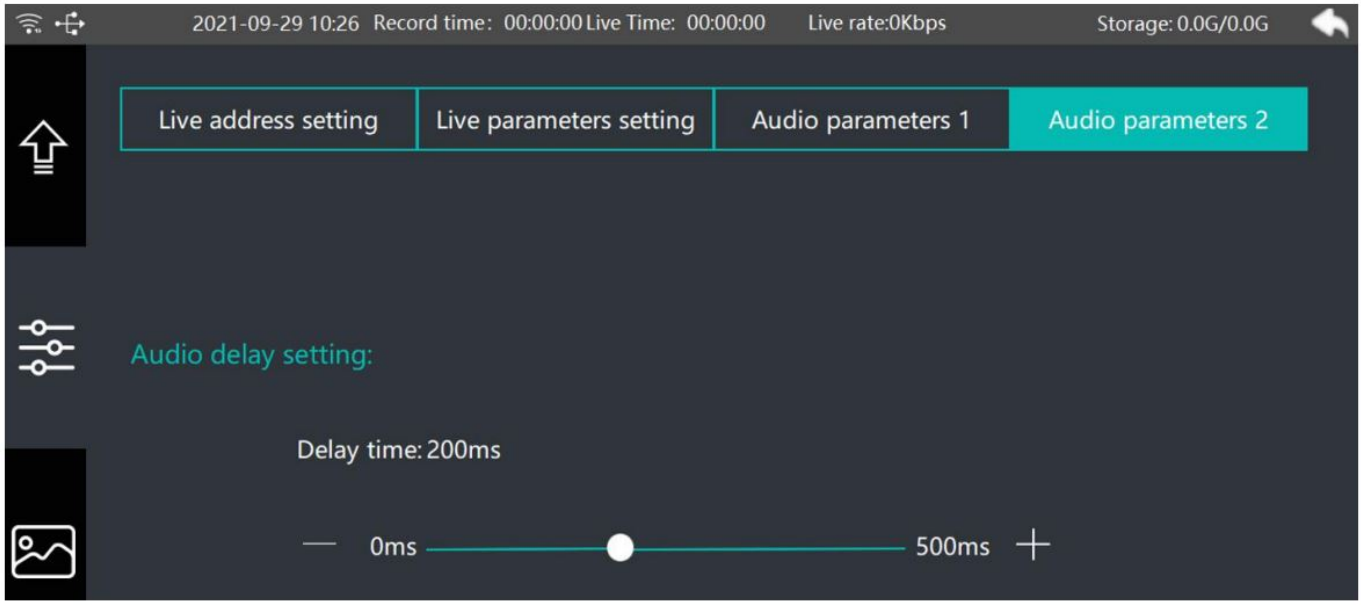
When an audio level is too loud it will clip. Clip means the audio has increased beyond the maximum accepted level and when this happens it can distort and sound unpleasant. There are 2 ways to adjust volume to make sure your audio level is safe.



1. Press [MENU] button on panel, click on the left > click audio parameter setting 1. Drag the volume slider to increase or decrease volume.
2. Move the volume fader to increase or decrease volume.[MIC1] Volume Slider
   This adjusts the volume of external audio from R/L port
   [MIC2] Volume Slider This adjusts the volume of external audio from 6.35mm port [AUX] Volume Slider This adjusts the volume of local video
   [VOL] Volume Slider This adjusts the volume of Program audio

Audio Sync

When video and audio sync is critical, and the two sources are not aligned, a production can go to shambles quickly. Even a few milliseconds off can distract a viewer. Oton Geek N8 unlocked adjustable audio delay for program audio. Simply move the round slider to adjust delay between 0-500ms for the best audio and video sync.



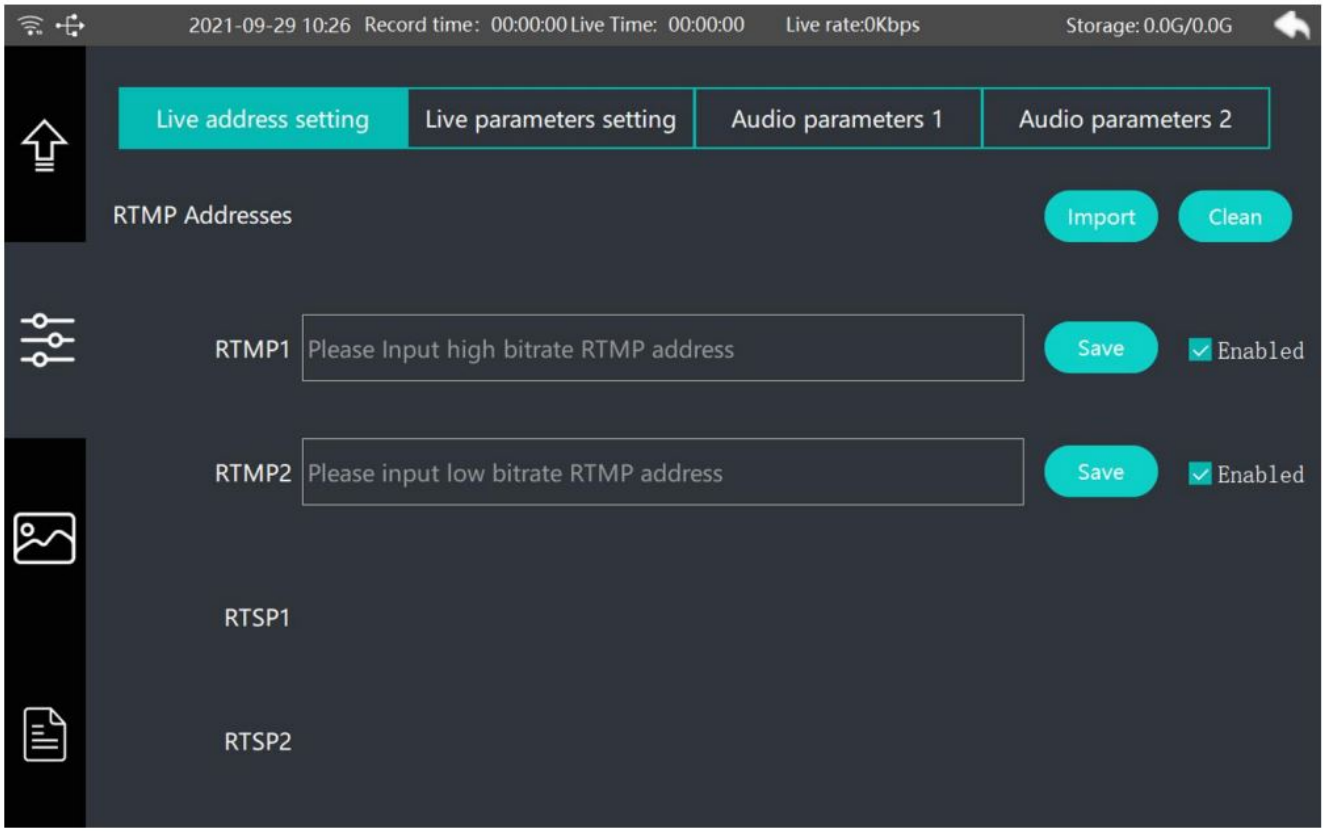
Live Streaming via Ethernet

The switcher has a built in hardware streaming engine for live streaming via its built in Ethernet connection.

That means you can live stream to YouTube, Facebook and Twitch in better quality, without dropped frames and with much simpler settings.

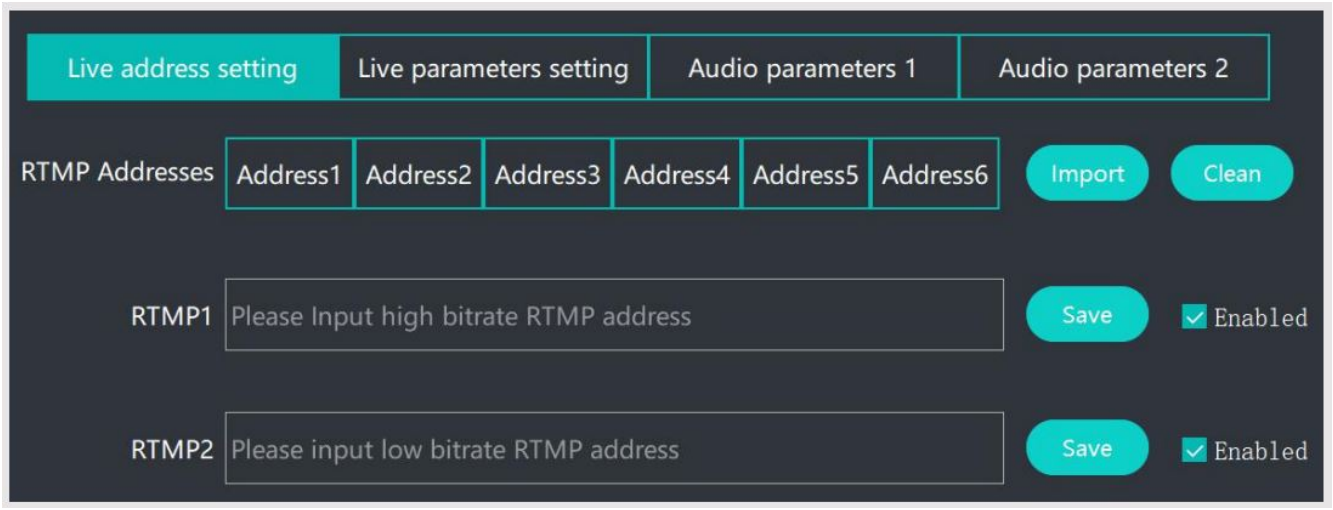
To enable live streaming on N8:

1. Press [MENU] button or click gear icon on the dashboard and click [Live Address Setting]
2. Use the built-in keyboard to input your stream URL for RTMP1 and RTMP2 and click [Save]



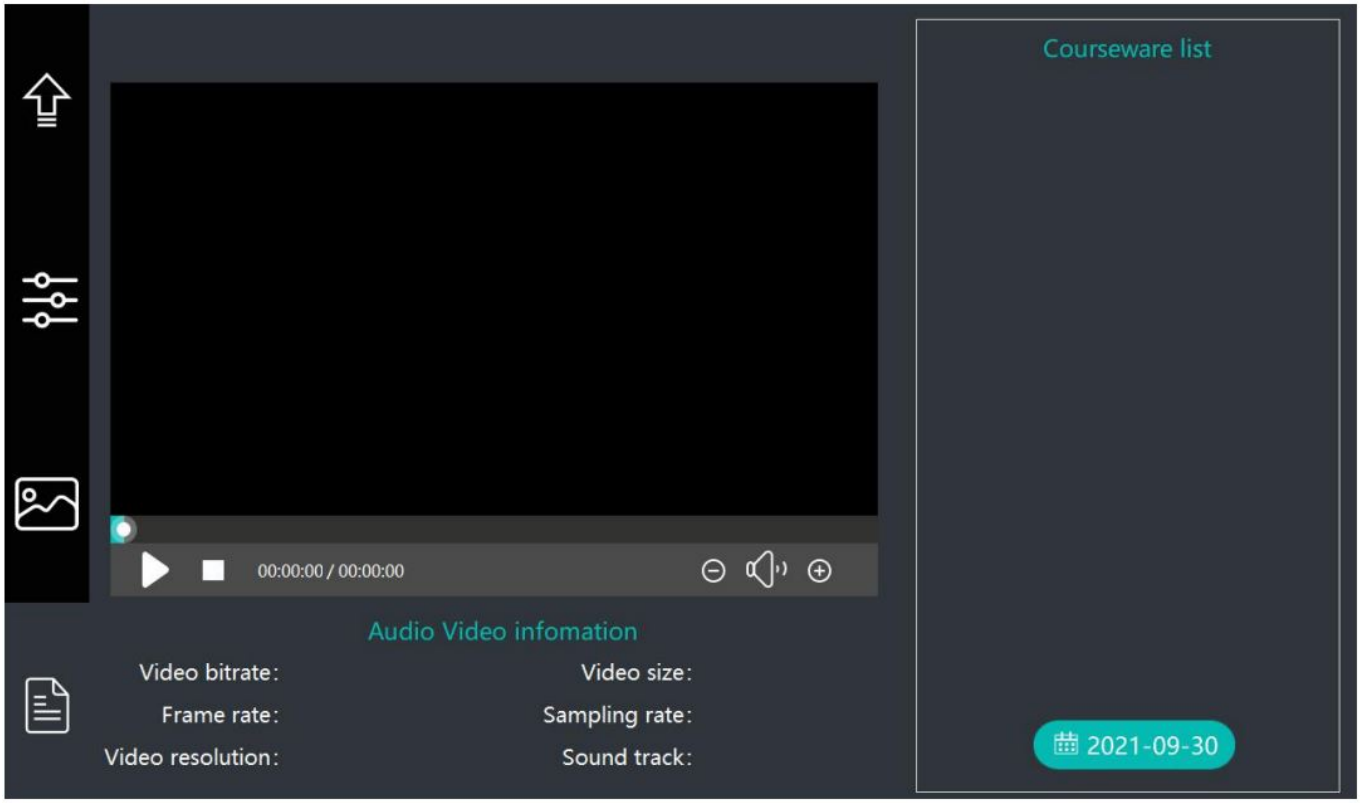
3. Click [Enable check box] if you'd like to activate either address.
4. If you'd like to configure the streaming parameters like resolution, bit rate, please click [Live Parameters Setting] for configuration

5. Press [STREAM] button on panel to enable live streaming, press it again to stop live streaming.



Video Recording and Playback

Geek N8 lets you record your live stream video to USB drive via USB2.0/3.0 port. Simply plug in an USB disk or hard drive to the USB port and press [RECORD] button and you are now recording your broadcast, to stop recording, simply press [RECORD] button again. You can start or stop recording anytime and the clips will be saved in your USB drive in time sequence. Plus, You can live broadcast the playbacks to share again the exciting moments with your audiences.



System Settings

Documents / Resources

	OTON OtonGeekN8 8CH Touch Screen NDI Switcher With Built-inCamera Control [pdf] User Manual OtonGeekN8, 8CH Touch Screen NDI Switcher With Built-inCamera Control

References

- Warranty - Oton Technology