

Table of Content

1.Overview	1
1.1 Range	1
1.2 Interface	1
2.Quick Guide	3
3.SIM Card Installation	3
3.1 SIM Card Type	3
3.2 SIM Installation and Remove	3
4.Terminal Settings	4
4.1 Home Page	4
4.2 Network Setting	5
4.2.1 Local network setting	5
4.2.2 Server Access Setting	6
4.2.3 WiFi Setting	7
4.2.4 DNAT Setting	8
4.2.5 Network Monitor	10
4.3 Work Mode	10
4.3.1 Live	10
4.3.2 Record	12
4.3.3 File Transfer	12
4.4 Encode-Video	13
4.5 Encode-Audio	14
4.6 Latency	14
4.7 Video Return	15
4.8 IP Input(RTMP only)	15
4.9 Streaming	17
4.9.1 Live Mode Aggregated Streaming Setting	17
4.9.2 Local Push	17
4.9.3 Record Mode Streaming Setting	18
4.10 File Transfer	19
4.10.1 Recorded Files in Storage Transfer	19
4.10.2 USB File Transfer	20
4.11 Headset	21
4.11.1 Talk	21
4.11.2 Monitor	21
4.11.3 Video Return	21
4.12 System	22
4.13 Info	23
5.Trouble Shooting	23

1. Overview

UV600-L is a compact mobile cellular transmitter that encodes high-quality video and transmits over multiple network connections, which integrates broadcast level HEVC/AVC video compression algorithm and intelligent multi-link aggregation technology, can be widely used in remote news gathering, sports coverage, live event broadcasting, visual telemedicine, emergency command, mobile monitoring and other fields.

By cooperating with Univiso server, UV600 can make full use of the 3G/4G/5G cellular network, WiFi, Ethernet, satellite and other communication networks, to provide users with cost-effective audio and video transmission solutions.

Key features:

- Built-in 3*4G and 3*5G modems(up to Built-in 6*5G modem), all-band antenna matrix, automatically access to the mobile network.
- Support 1920*1080, 1280*720, NTSC, PAL video source input, plug & play.
- Up to 8 audio channels.
- Smart multi-links aggregation solution, up to 10 links.
- Multi work mode: Live, lossless record and file transfer mode.
- Provide HDMI loop out and video return with HD simultaneously.
- Support lossless audio 8-channel input capture and SDI output.
- Support RTMP, UDP-TS, SRT streaming protocol distribute from the Univiso server.
- Support IFB and Tally for remote teamwork.
- Support HEVC(H.265) and AVC(H.264) broadcast level encoding algorithm.
- One-button boot up, remote configuration, built-in battery and support extend backup.

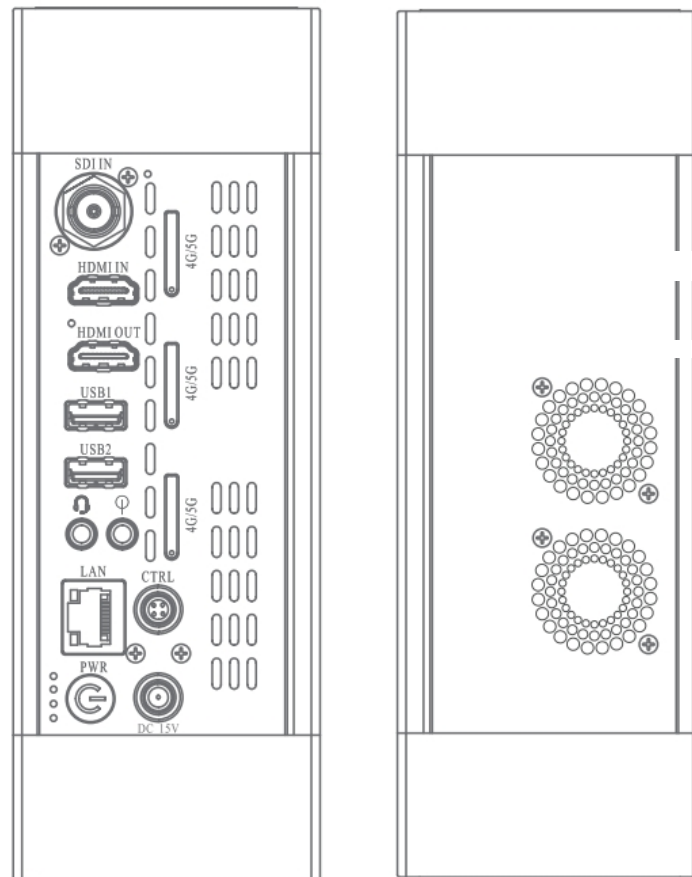
1.1 Range

This user manual is a Univiso technical document intended for technical maintenance personnel, testers, and customers.

This document provides readers with a quick start and basic management guide, including basic terminal functions, quick configuration guide, and trouble shooting.

1.2 Interface

Univiso UV600 interface:



- **PWR:** Hold for 3 seconds to turn on or off the terminal
- **USB:** 2*USB 3.0 interfaces, extend for USB NIC or USB flash disk, support Standard UVC protocol.
- **4G/5G:** SIM card slot position
- **CTRL:** Extend for tally control and debugging
- **DC IN:** Support 15V/4A DC in, the terminal supports power supply through built-in battery (4 hours battery life), external adapter, external D-type interface camera battery
- : 3.5mm earphone, support IFB microphone and earphone(Supports 16Ω–32Ω headphones with automatic detection of CTIA/AHJ standards.)
- : 3.5mm line in/mic in input interface, support external audio input
- **SDI IN:** 3G SDI input, support HD video resource input
- **HDMI IN:** HDMI input, support up Full HD video source, compatible with HD and SD
- **HDMI OUT:** HDMI loop out for monitor or video return output for HD
- **LAN:** Gigabyte Ethernet port(data bridge will supported)

Note:

1.3*5G card slot is compatible with 5G and 4G network; 3*4G card slots are compatible with 4G and 3G network.

2.When inputting external audio source mic in, the UV600 hardware version must be 1.1.2

or above, and the software version must be V2.2.1 or above to support it.

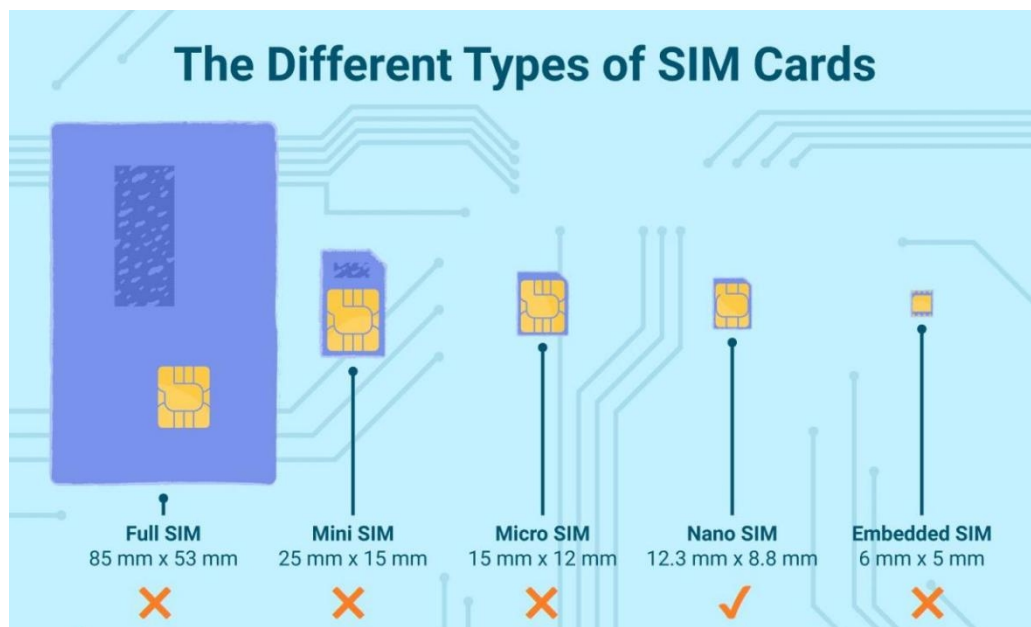
2 .Quick Guide

1. Check if all accessories are included: HDMI cable*1,SDI cable*1, power supply adapter*1, power supply cable*1, satchel*1.
2. Install the SIM card according to chapter 3.
3. Input video source through HDMI or SDI.
4. Hold "PWR" for 3 seconds, and the system will boot up within 30 seconds.
5. Make sure the video and audio input source is normal, and network is connected.
6. For the first time, please connect to the server according chapter 4.2.2.
7. The terminal will auto lock signal, dial-up and connect to server.
8. For power supply, user must align the sign on the connector and terminal socket before insert.

3 .SIM Card Installation

3.1 SIM Card Type

The terminal support Nano SIM card type, see as below:



3.2 SIM Installation and Remove

When installing and removing an SIM card, strictly follow the procedures. Otherwise, the

SIM card or the interface of the module may be damaged beyond repair.

1. Make sure the terminal was turn off before operation and without power supply adapter connected.
2. Place the screen down on the table.
3. Put the needle  into the hole beside the card holder and push it, then the card holder will popup.
4. Put all sim cards in the holder with correct direction, and then push it into terminal together, the holder edge and terminal should be on the same plane.
5. Holder the “PWR” button for 3 seconds to turn on the terminal.
6. Make sure all cards are read normally, UI will display the standard and signal quality of each sim card, see as below:

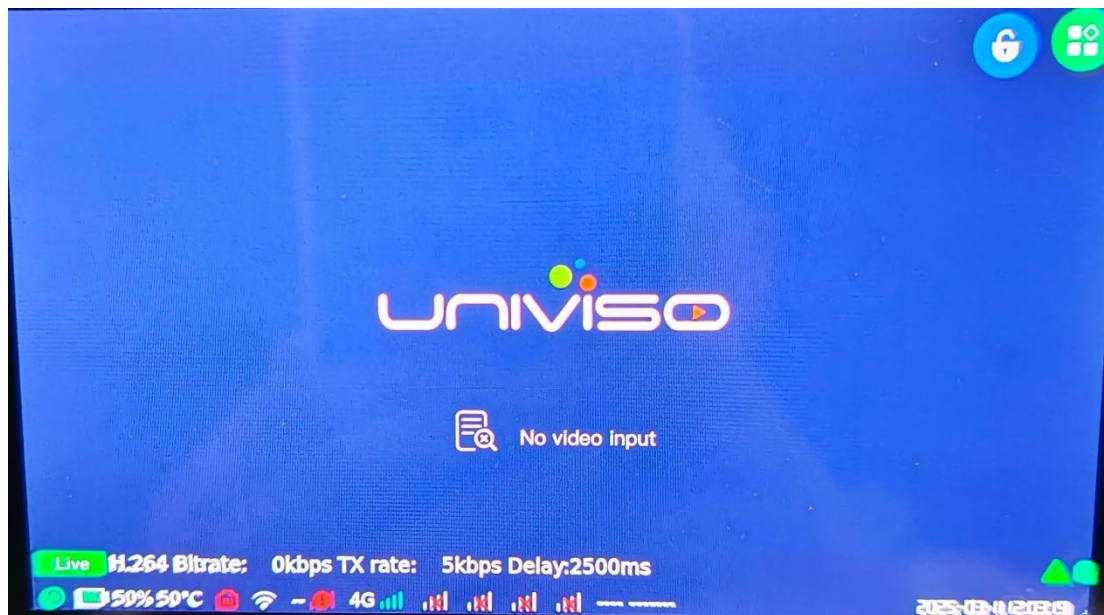


Note: The UV600-L now supports SIM card hot-plugging.

4 .Terminal Settings

4.1 Home Page

Press and hold the “PWR” for 3 seconds and the terminal will boot up within 30 seconds, then user will see below page popup:



: Connection status indicator between server and terminal, green means connecting with success, red means connecting with failure.

: Display the remaining battery percentage or charging status, the icon will turn to red

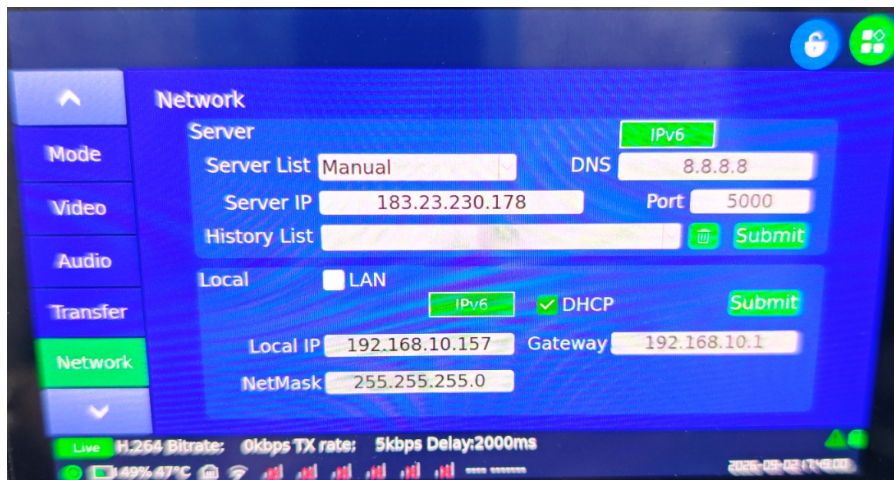
- : When remaining battery level is less than 25%.
- : LAN port status
- : WiFi status
- : Cellular signal type and strength
- : SIM card error or no signal
- : Video input type(HDMI or SDI) and resolution, “----” means no input
- : Date and time
- : Work mode(Live, Rec&Live or File transfer)
- : Encode algorithm type, support H264 and H265
- : Encode bit rate, range: 0-35Mb/s
- : Transfer bit rate
- : Latency of output
- Volume bar: Input audio status indicator
- : System warning information button
- : SD card status icon display, the green icon means the SD card is recognized normally, and the red icon [] means the SD card is not recognized
- : Wired controller connection status display
- : The terminal has enabled data encryption transmission
- : Frame sync function status display, the green icon indicates frame sync success, the yellow icon indicates frame sync failed
- : Indicates that the terminal does not enable aggregate transmission
- : IFB status indicator
- : Click to display menu of system
- : System lock, unlocked with password 0000

4.2 Network Setting

User set Ethernet or WiFi setting

4.2.1 Local network setting

Click “->Network” to display the setting page, user can set DHCP or static IP for the terminal in”Local”, click “Submit” to apply, see as below:

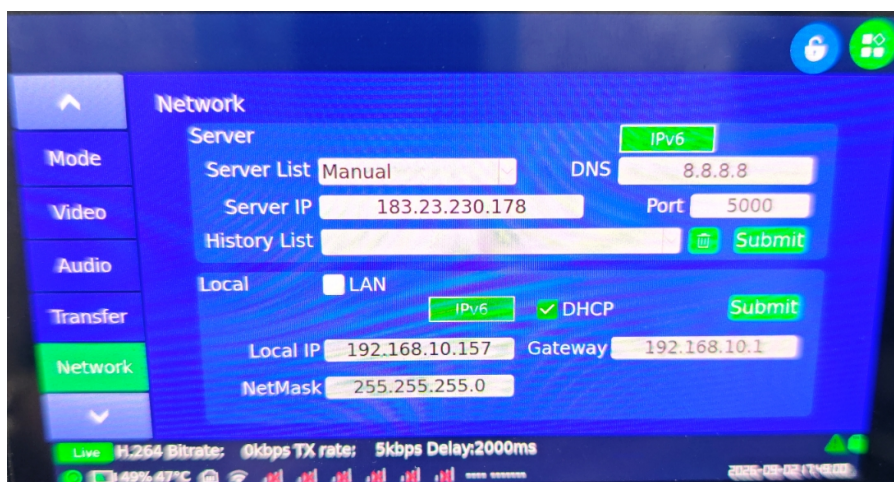


Note:

1. IPv6 setting is not available yet.
2. LAN mode is available now . It can provide a usable single-link wired network to other devices. When this “Network sharing” feature is enabled, The system will automatically select from wired, Wi-Fi, or any available a SIM card network, prioritizing a link with the best network quality.

4.2.2 Server Access Setting

User should configure the server access IP for the first time connecting, after authorized by the server, the terminal will be able to work, and once the server IP changed, user need to re-configure the access IP, click “Submit” to apply, see as below:



Server List: Manual(default), sparkcloud modes

DNS: 8.8.8.8(default)

Server IP: Intranet IP or public IP (recommended)

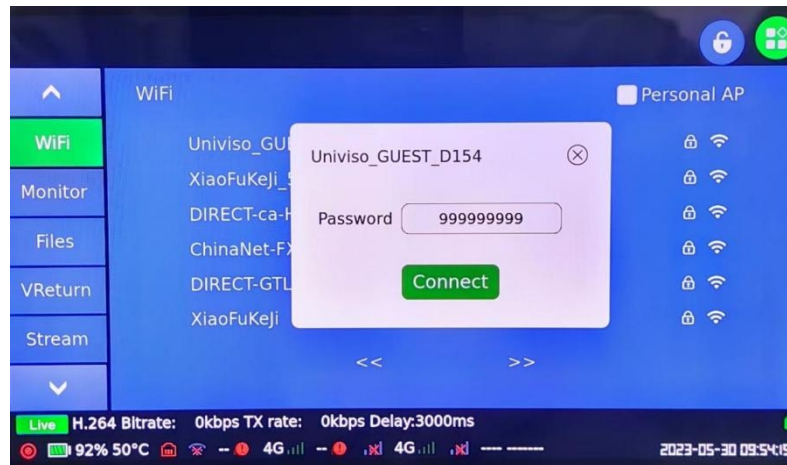
Port: 5000(default)

History List:List of server IP that the terminal has connected to in history.

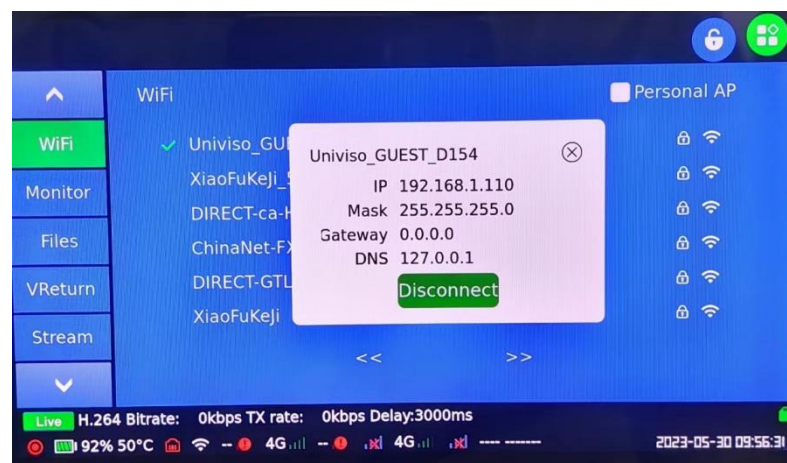
:Delete the server IP that has been connected to in the past

4.2.3 WiFi Setting

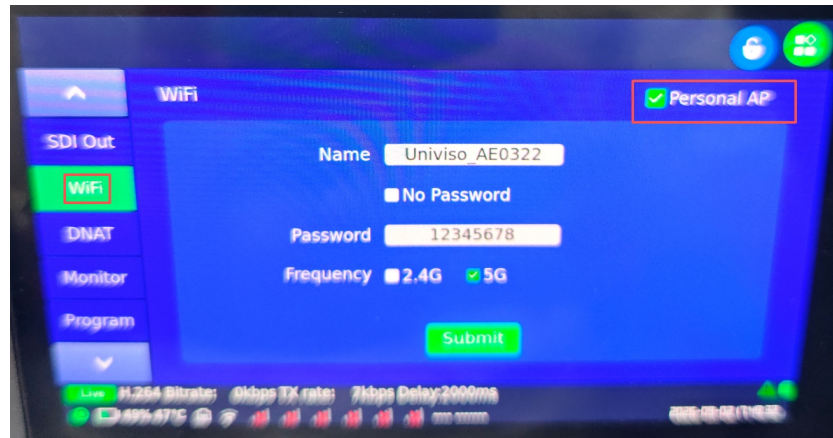
The page will list all available WiFi hotspots, user can click and input password to connect.



Once the Wi-Fi connected success, user can click the wifi hotspot name to display the details of network, or disconnect from the Wi-Fi.



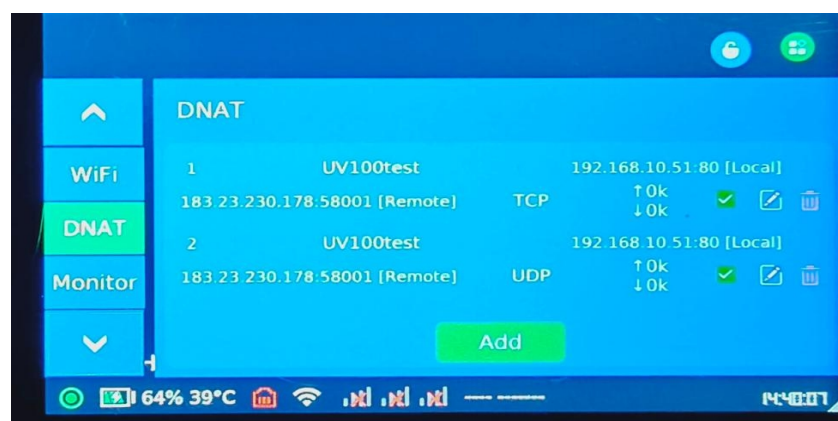
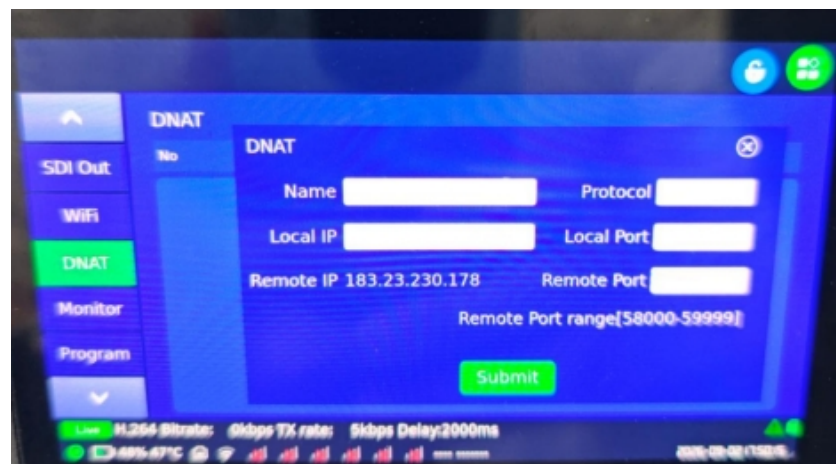
The AP WiFi feature can now be manually enabled, allowing the UV600-L to provide a usable WiFi network for other devices. When this “Network sharing” feature is enabled, the system will automatically select from wired, Wi-Fi, or any available a SIM card network, prioritizing a link with the best network quality. It defaults to 5G WiFi, with 2.4G WiFi also available as an option, as shown below:



4.2.4 DNAT Setting

The DNAT feature is based on the port mapping service of frps/frpc. The server has built-in frps, and the terminal has built-in frpc. It works by modifying the destination IP and port of data packets to achieve public-to-private network mapping and forwarding. The main use cases for this feature include remote control of PTZ cameras and remote downloading of partial logs from the terminal/server.

Note: For instructions on remotely downloading partial logs from the terminal/server, please contact Univiso Technical Support.



Name:Refers to the name of the DNAT rule

Protocol:Refers to the network protocol used by the DNAT rule

Local ip:Refers to the local IP of the PTZ camera

Local port:Refers to the local port of the PTZ camera

Remote ip:Refers to the public IP of the server

Remote port:Refers to the external available port of the DNAT rule (the default available range is 58000-59999, customizable)

Regarding the use case of remote control of PTZ cameras, the following notes apply:

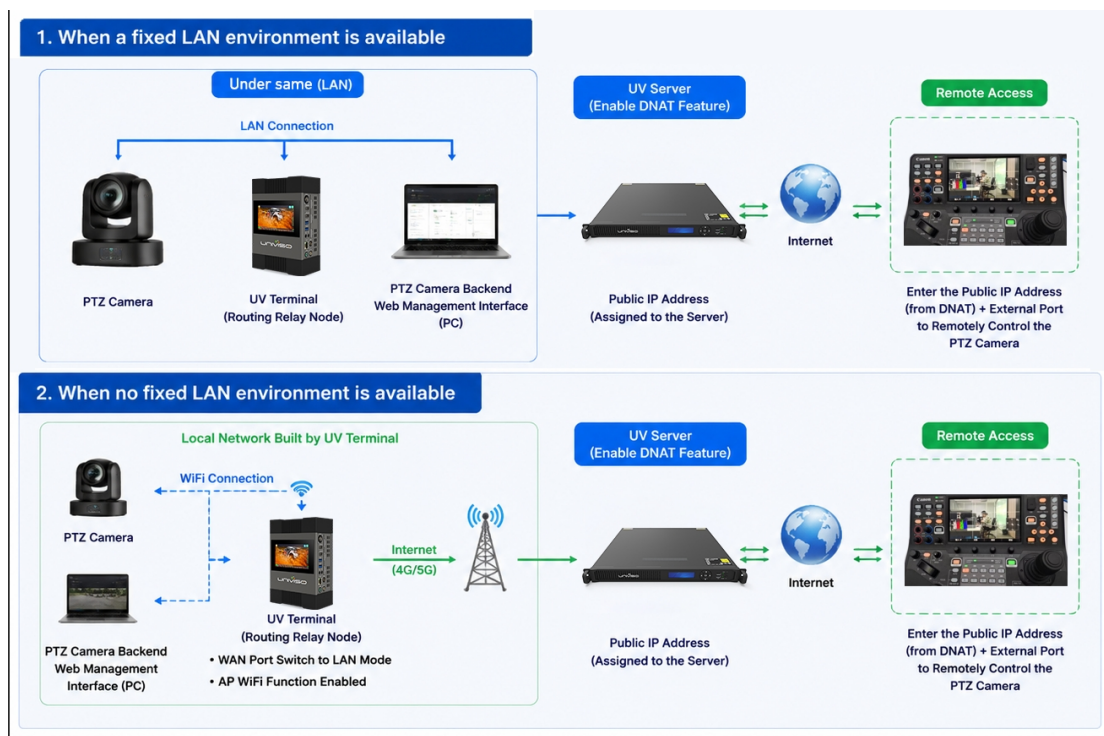
1. When a fixed LAN environment is available:

When the PTZ camera, the UV terminal, and the PTZ camera's backend web management interface (PC) are all connected within the same local network, the UV server can use the DNAT feature to set the UV terminal as a routing relay node. On the PTZ camera side, simply enter the public IP address from the DNAT rule configured on the UV server (i.e., the public IP address assigned to the server) along with the external port number to enable remote control of the PTZ camera.

2. When no fixed LAN environment is available:

In this case, the UV terminal (Only available for UV600, UV600L, and UV820.) can provide wired/WiFi network connectivity to the PTZ camera and the PTZ camera's backend web management interface (PC). The WAN port of the UV terminal can be switched to LAN mode, and the AP WiFi function can be enabled. Once all three devices form a local network, the UV server can use the DNAT feature to set the UV terminal as a routing relay node. On the PTZ camera side, simply enter the public IP address from the DNAT rule configured on the UV server (i.e., the public IP address assigned to the server) along with the external port number to enable remote control of the PTZ camera.

The screenshot below shows application scenarios for PTZ camera remote control.

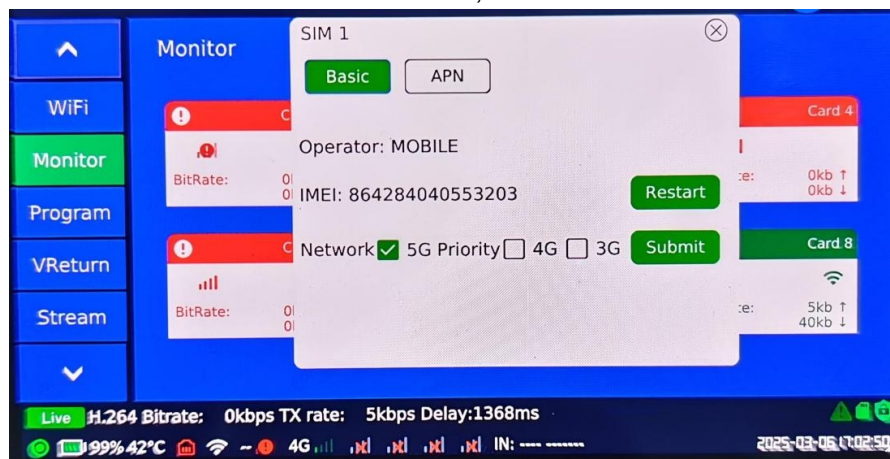


Note: DNAT rules can also be added and edited in the DNAT option of the WinApp.



4.2.5 Network Monitor

Click “->Monitor” when the screen is unlocked, the popup page will display the network status for all sim cards, which includes network type, operator name, signal strength, transmission speed, if the color turn red means the connection is not available, please double check SIM card or Ethernet installation, see as below:

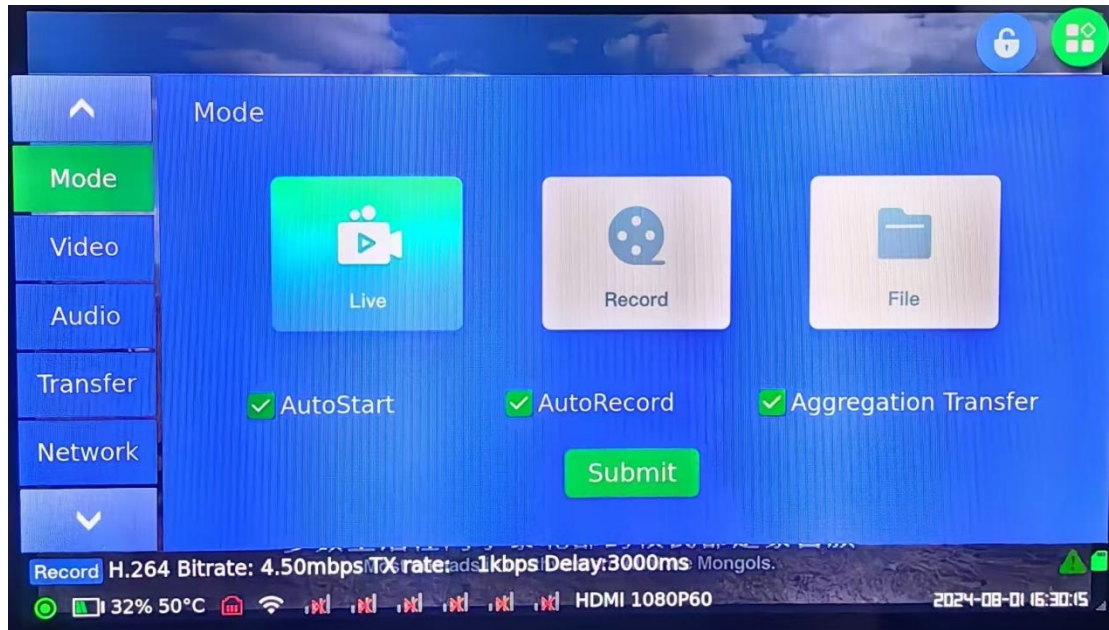


4.3 Work Mode

4.3.1 Live

Auto Start

Click “->Mode->Live” when the screen is unlocked, User can select different live mode, when user select “AutoStart”, the terminal will start to live automatically after boot up every time. it will change to manual mode after manually intervention, unless apply again. If it's not enabled, user have to manually start or stop live.



Auto Record

When user select “AutoRecord”, terminal will record file during live, the recorded file can be uploaded to server manually when the terminal is free(No video source), once user start live, the uploading will be interrupted and continue next time, user can download, preview, play or output the recorded file from server.

Note: If user doesn't select auto record, the terminal will not record file in file transfer list.

Aggregation Transfer

When user enable “Aggregation Transfer”, terminal will transfer video data with bonding connections. If it's not enabled, it can't transfer with most use of all bonding network connections.

Camera trigger live

Click " --> System --- Trigger" to enable the Camera trigger global setting

Note:

1. User can choose if they need bonding transmit or not by enable or disable the “Aggregation Transfer”.
2. This version is only supported by UV100/UV100PRO/UV600 models, and only supports SDI interface Camera trigger start and stop operations.

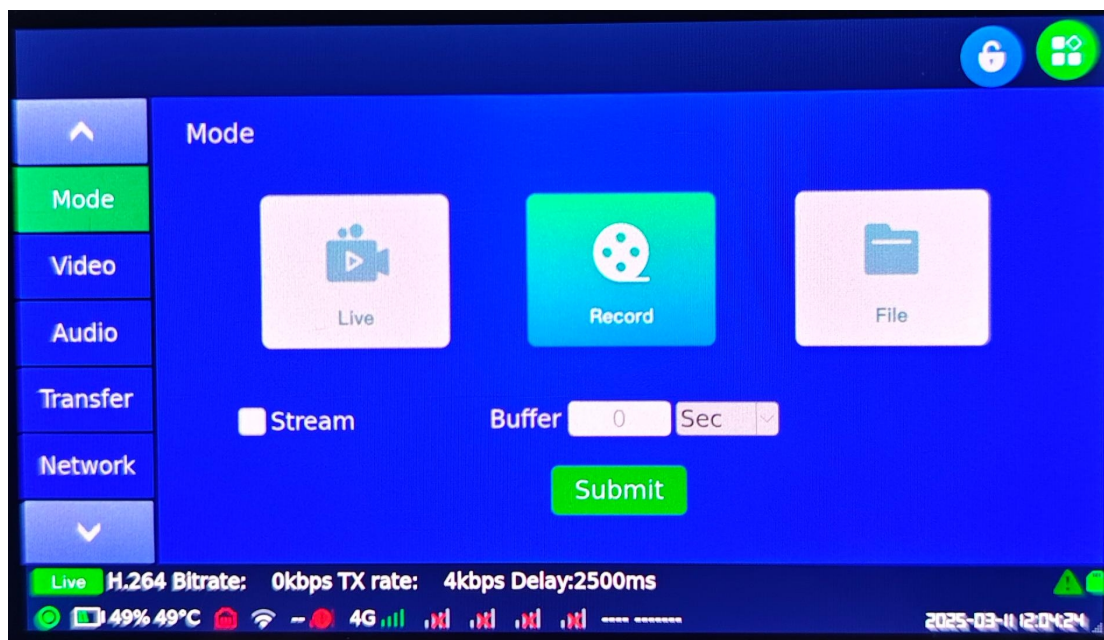
Live with wire controller

The currently produced UV600 does not support the live remote control, and needs to wait for the subsequent new production batches to support it.

4.3.2 Record

Click “->Mode->Record” when the screen is unlocked, user need manually start recording in this mode, and support resume upload from break, user also and adjust the progress bar from server side to control play progress to guarantee a smooth broadcasting, user also can adjust buffer time for streaming.

In order to meet the actual needs of the reporters and cameramen in the frontline, when starting to record the program anytime, anywhere, the high-quality recording and broadcasting files can be sent back to the TV station's program production center in real time through the 4G/5G backpack for post-production program production. Realize multi-level recording start and stop linkage operation. That is, in the recording mode, the user can enable the camera trigger setting item on the Univiso WinApp, the terminal, and the camera. When the camera trigger and record is turned on, the 4G/5G backpack will automatically start recording and broadcasting, and the recording and broadcasting files will be sent back in real time. Users can also flexibly record and play close operations at any end. Camera trigger settings shown as below:



Stream:Record streaming option

Buffer:Buffer time setting

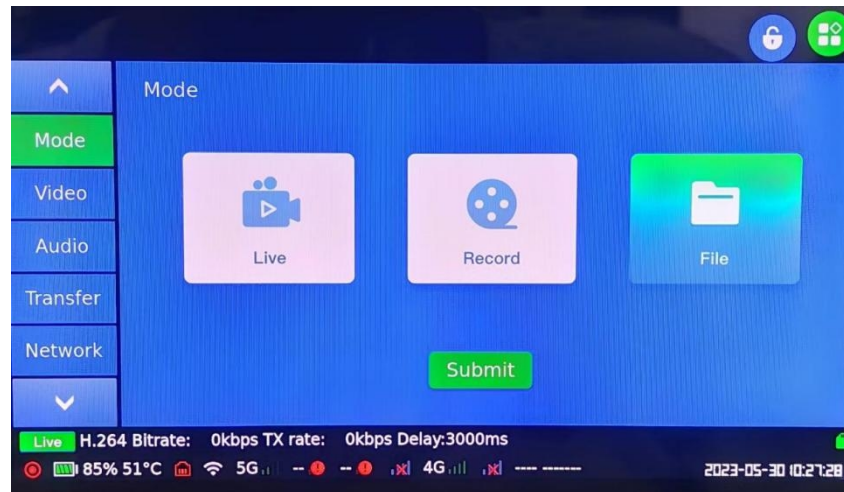
Note: This feature is only available on UV100/UV100Pro/UV600 with SDI interface to start or stop the operation.

4.3.3 File Transfer

To facilitate the large file transfer from field staff to studio via network, the system provides

USB flash disk file transfer, which can support upload USB file to server and download, meanwhile support MP4/TS play and SDI output from server.

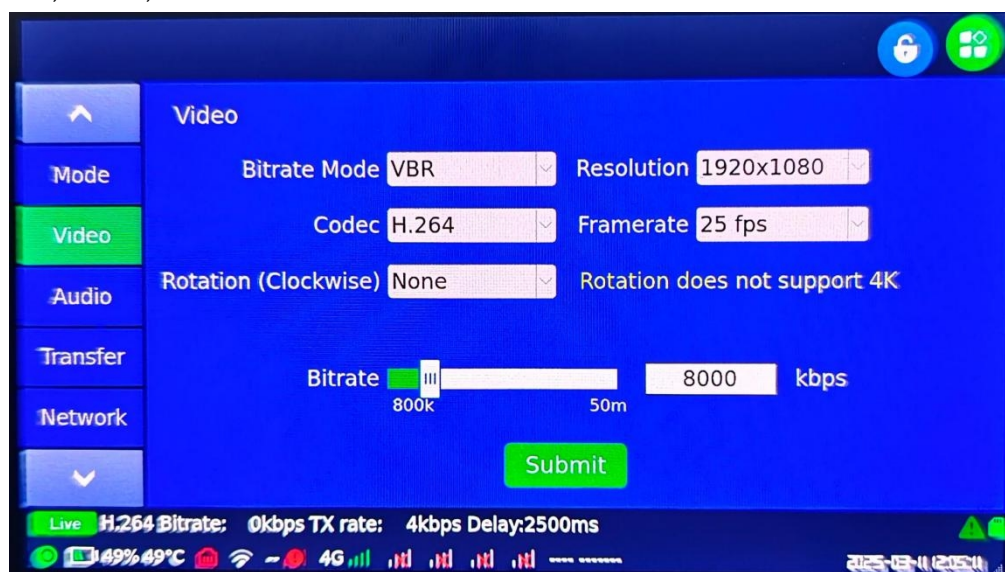
Click “->Mode->File” when the screen is unlocked, insert USB to the terminal, and choose the file need to be transferred and submit, the system will copy the file to terminal and then upload to server, see as below:



Note: If user remove the USB when copy the file from USB to terminal, the transfer will be canceled, and the uploading will be pause if user switch work mode to live or record mode, then resume from the break point when user switch to file transfer mode next time.

4.4 Encode-Video

Click “->Video” when the screen is unlocked, user can adjust framerate and encoding algorithm, bitrate, see as below:



Bitrate Mode: Support VBR and CBR

Resolution: Support progressive standard input transcode

Codec: Support H.264 and H.265

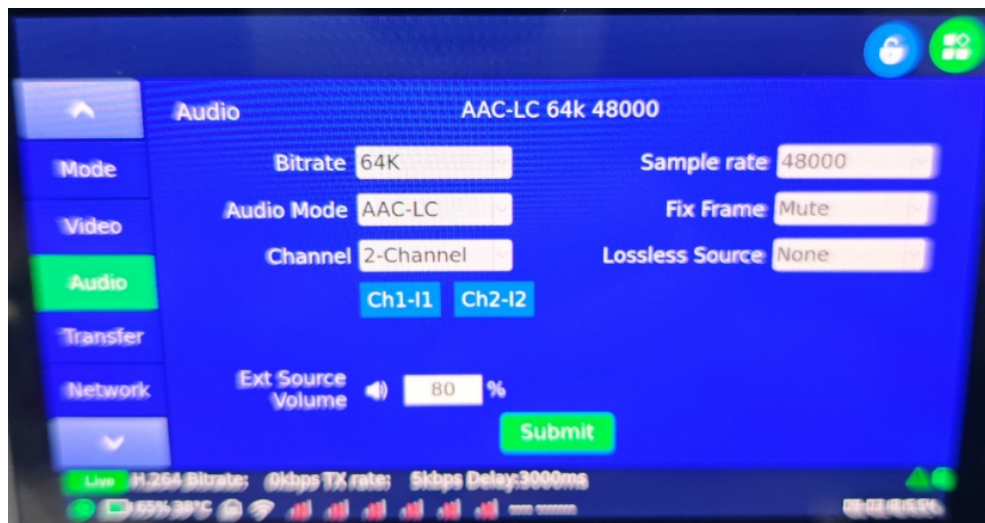
Framerate: Support half frame or full frame for server output or streaming

Rotation: Rotate the input source to match up portrait screen mode

Bitrate: Terminal encode bitrate, value range: 800k-50Mbps

4.5 Encode-Audio

Click “->Audio” when the screen is unlocked, user can adjust bitrate, sample rate, audio mode and channels, see as below:



Bitrate: Audio encoding bit rate, different audio encoding mode algorithms support different bit rate: AAC-LC: 64K/128K/192K/256K/320K, AAC-HE: 64K/128K.

Audio Mode: Support audio encoding algorithm AAC-LC/AAC-HE

Lossless Audio: Enable or disable lossless audio recording.

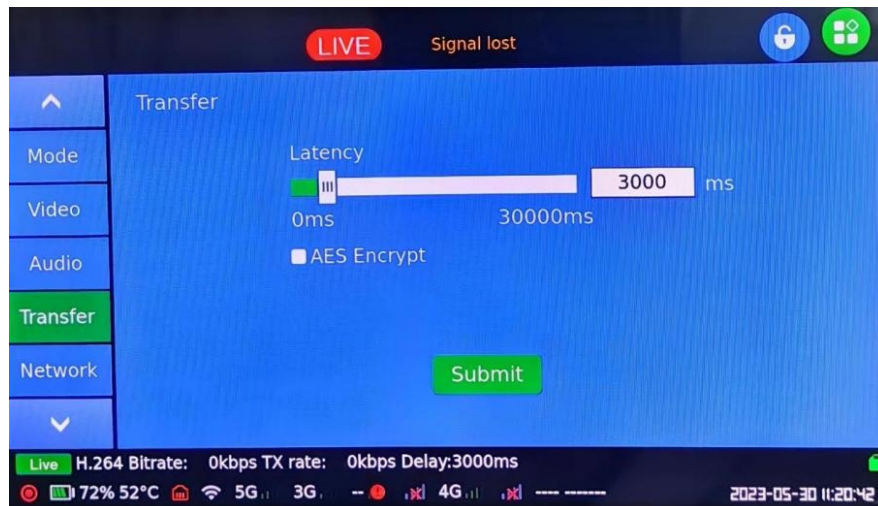
Sample rate: Support 44100hz/48000hz sample rate.

Channel: Support up to 8 audio channels setting. Different channels can be flexibly mapped to each lines according to specific needs.

Ext Source Volume: Adjust external audio volume.

4.6 Latency

Click “->Transfer” when the screen is unlocked, user can adjust latency of the transfer according to network status, see as below:



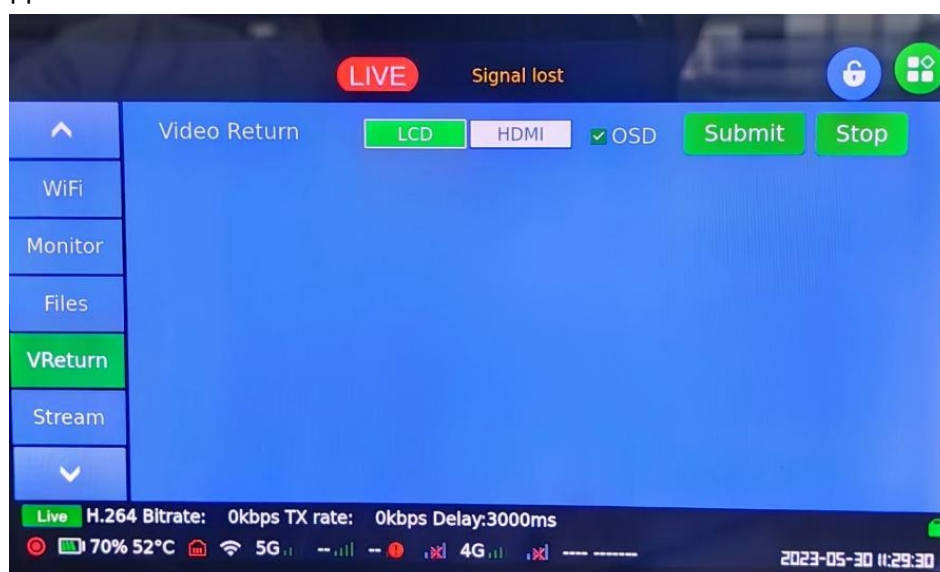
Latency: Output latency setting, value range: 0-30000ms

AES Encrypt : Enable or disable AES encryption transmission setting operation on the terminal

4.7 Video Return

Univiso Video Return support the terminal receive the return stream from others terminal or 3rd party, then output through internet in local area network ,to be distinguished from others decoder, Univiso video return use the multi-link aggregation downlink technology, which can guarantee the transfer quality.

Click “->VReturn” when the screen is unlocked, the screen will display the play URL of video return, user can user computer or decoder to play in the local area network, which can support 8 channels streams in the max.



LCD: Video return preview in the small window in the upper left corner of the LCD.

HDMI: Output to a large screen or other terminal types via the HDMI OUT interface.

OSD: Enable or disable to display logo name in the upper left of the return video source.

Submit: Submit the operation of video return.

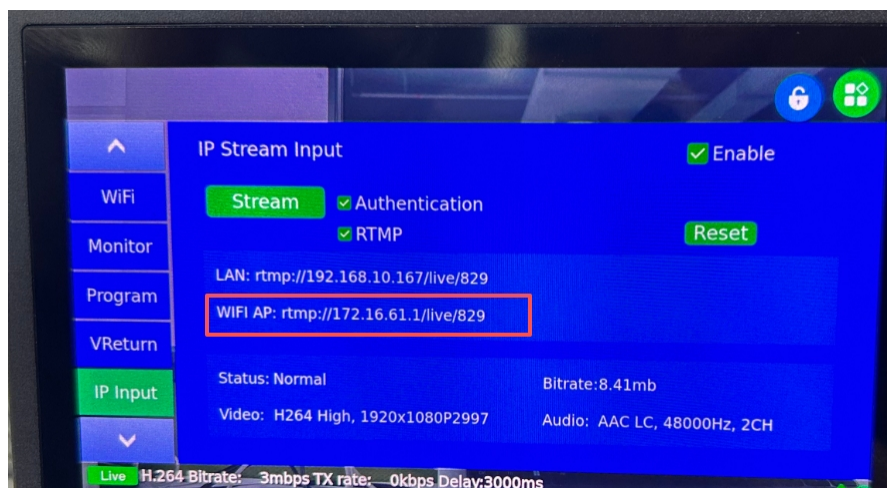
Stop: Stop the operation of video return.

Note: The UV600 terminal supports high-definition video return output via two different interfaces, HDMI/SDI, and the resolution and format of the decoded return video stream are only related to the input source format of the decoding terminal.

4.8 IP Input (RTMP only)

The IP Input (RTMP only) feature means that the UV600-L supports providing an AP Wi-Fi network for IP cameras while also supplying an RTMP push URL. Once the IP camera is configured with this URL and starts live streaming, the UV600-L will capture the RTMP stream and can further distribute the rtmp stream.

Note: It is recommended to enable and connect to the 5G AP Wi-Fi first.



Note: The RTMP push URL under the LAN option is only applicable when the IP camera and the UV600-L are on the same local network.

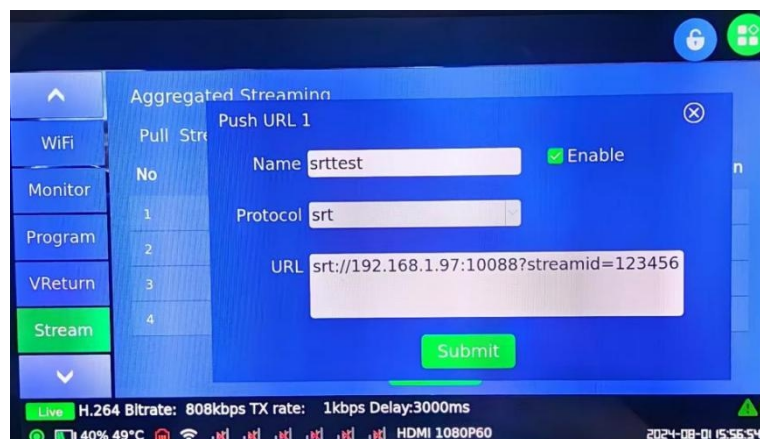
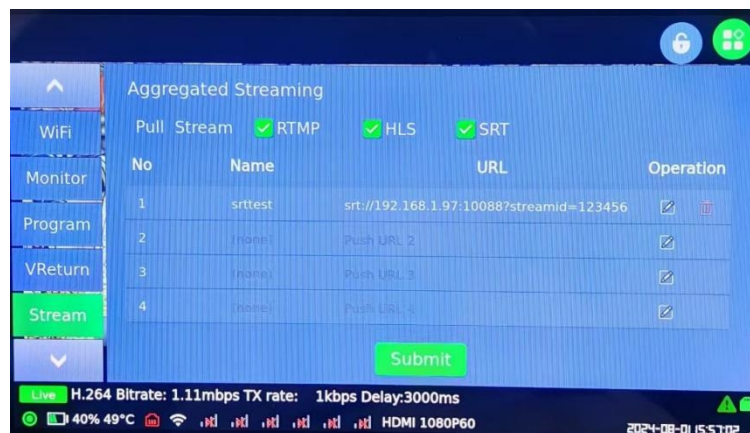


The screenshot above shows the DJI Pocket 3 push rtmp streaming to the UV600-L(With wifi AP URL).

4.9 Streaming

4.9.1 Live Mode Aggregated Streaming Setting

Click “->Stream” when the screen is unlocked, user can select pull or push streaming, the parameters are synchronized with server side, and user can monitor the streaming status from the color of the URL, green means success, gray means failure, push stream url can also be edited or deleted, see as below:



Name: A name to define the streaming.

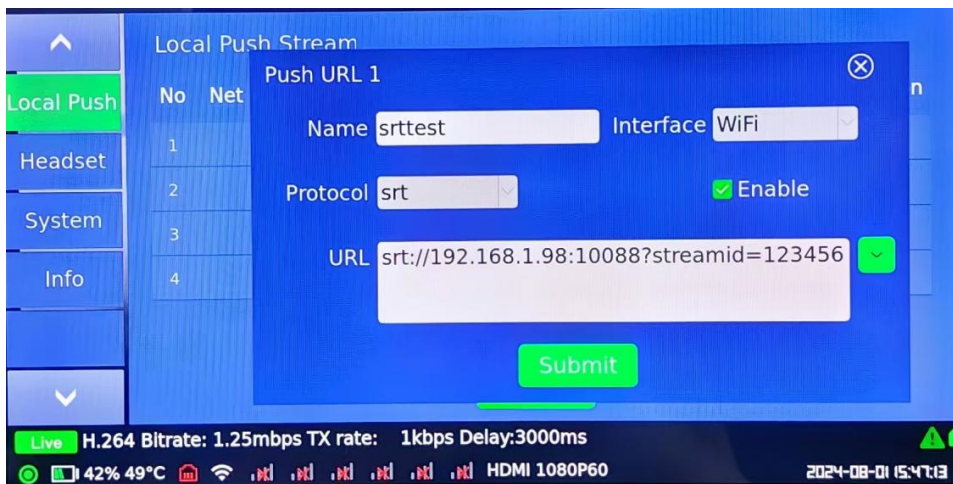
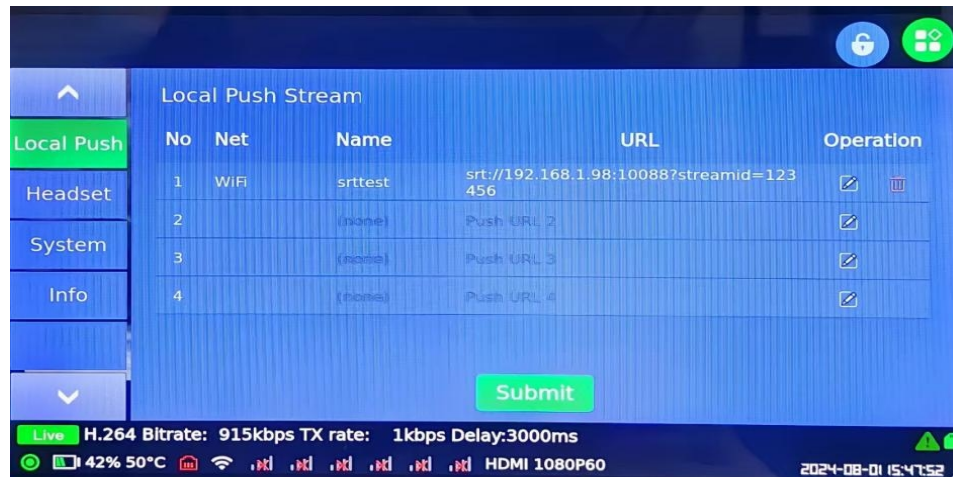
Enable: To start or stop push streaming.

Protocol: Support rtmp, rtmps, udp, srt, rtsp.

URL: The streaming destination to be pushed.

4.9.2 Local Push

To facilitate tough network scenario that aggregation not able to be used or server failed to push streaming, system support push streaming to destination platform directly with one local connection on terminal, without transmitting to Univiso server, see below picture:



Name: A name to describe the streaming.

Interface: Select a connection for transmitting data.

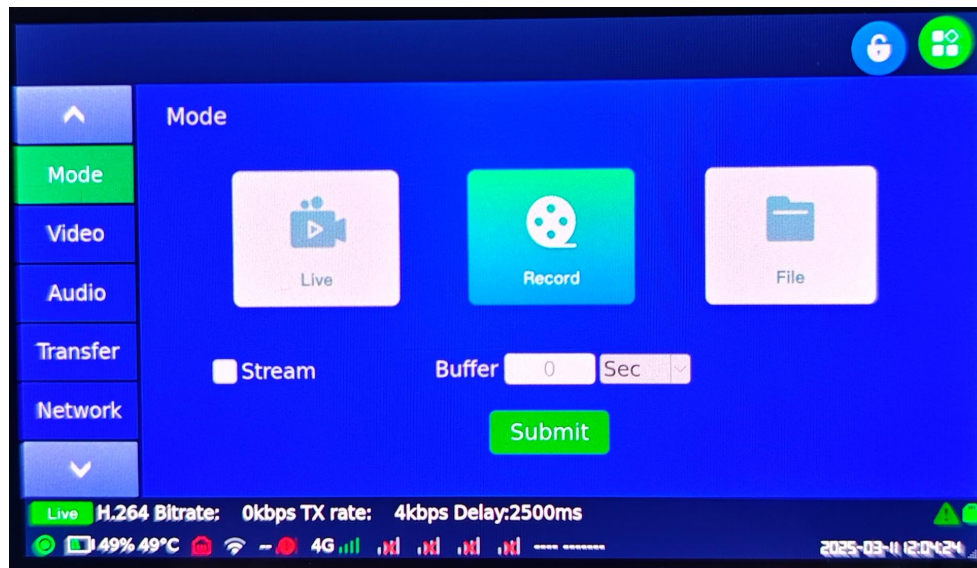
Protocol: Support rtmp, rtmps, srt, rtsp.

URL: The streaming destination to be pushed.

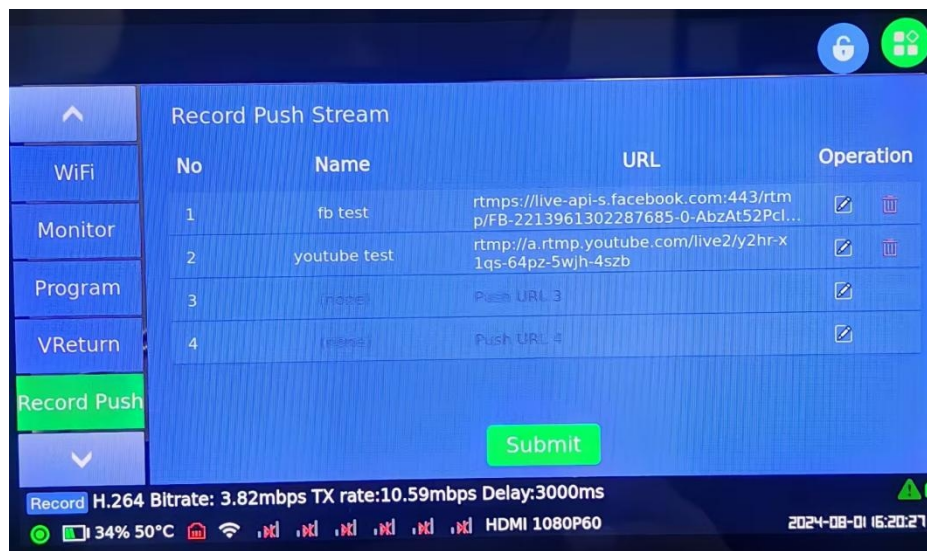
Note: System support work with aggregation live broadcast simultaneously.

4.9.3 Record Mode Streaming Setting

To prevent picture frozen or Mosaic during live broadcast which is caused by packet loss in transmission under bad network environment, the system provide the buffer time for streaming in record mode, user need select streaming and input buffer time according to network status, the streaming will be pushed with latency, see as below:



Buffer: Set the buffer time for push streaming, range: 0-120 minutes

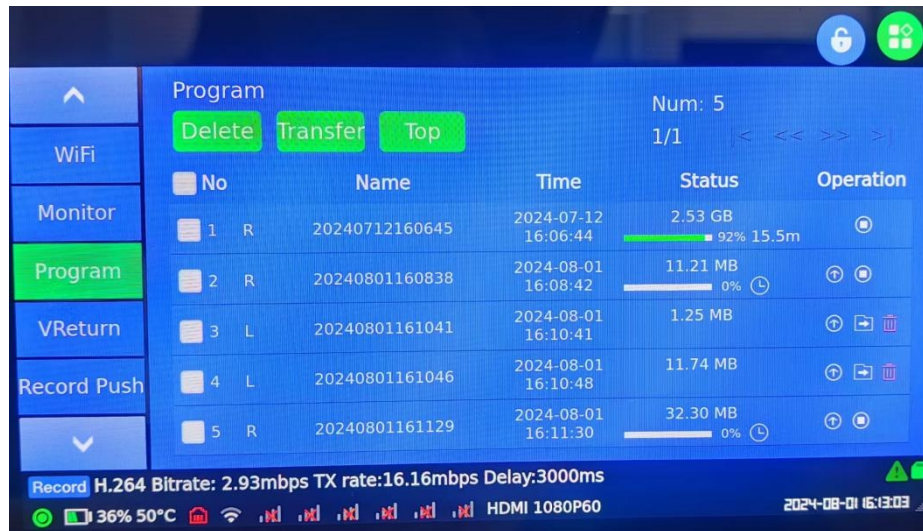


Note: Each terminal can support up to 4 channels live broadcast simultaneously

4.10 File Transfer

4.10.1 Recorded Files in Storage Transfer

Click “->Program”, the system will display all the file recorded in live and record mode. Which include file name, mode, size, transfer progress status, user can manually choose file to upload or delete, and adjust the priority of transfer, see as below:



Top:Specify a file to display at the top position

Num:Indicates the number of files stored

Delete:delete file button

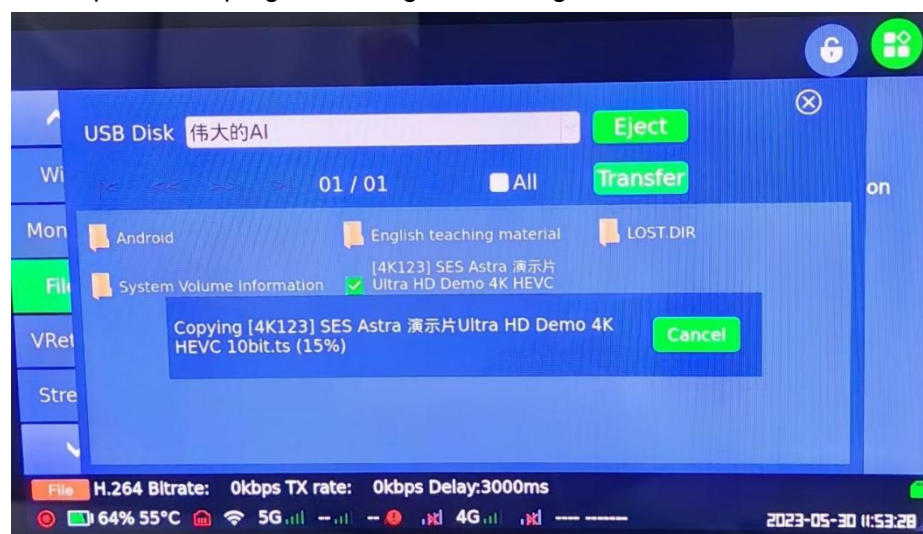
Transfer:Transfer files to the server button

:Start file transfer confirmation button

:Delete current file button

4.10.2 USB File Transfer

Click "->Mode->File" when the screen is unlocked to enable USB file transfer mode, click "USB Disk" in file transfer menu to popup the USB file list, then user can pick up the file to transfer to server, the progress bar will display the percentage of uploading, user can cancel or pause the progress during transferring.



Note: The USB file transfer include 2 steps. First it will copy the file from USB to internal storage, then transfer from internal storage to server, so user must make sure the space is enough to save the file, and user cannot remove the USB in first step.

4.11 Headset

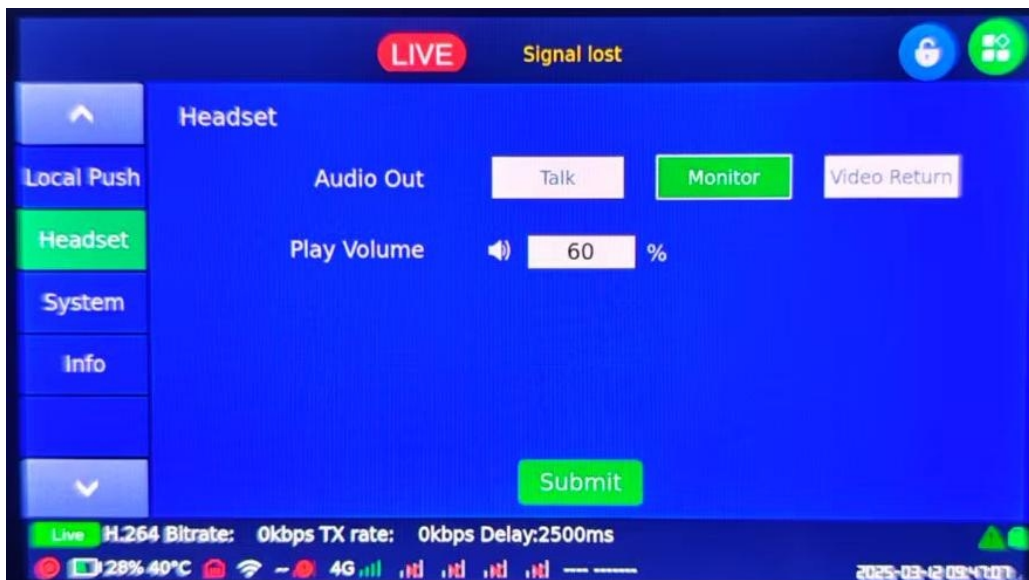
4.11.1 Talk

Click “->Headset->Talk” when the screen is unlocked, adjust the “Play Volume”, “Mic Volume” and “Submit”.



4.11.2 Monitor

Click “->Headset->Monitor” when the screen is unlocked, fill in the play volume and click “Submit” for embedded audio monitor.



4.11.3 Video Return

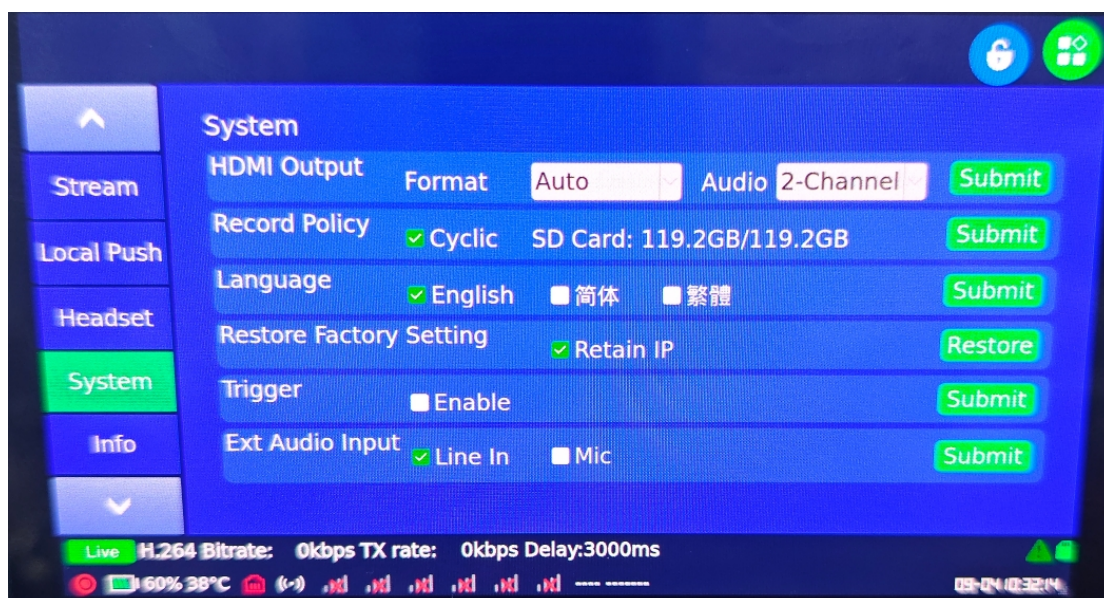
Click “->Headset->Video Return” when the screen is unlocked, Audio monitoring of the

return video source, and 1 channel audio can also be output through the 3.5mm interface (the play volume can be adjusted)



4.12 System

Click “->System” when the screen is unlocked, user can make factory setting, set screen brightness and change the language, see as below:



HDMI Output: Convert loop out video format, support 1080P25, 1080i50, 1080P50. Supports HDMI 2/8-channel audio output, with 2 audio channel output as the default.

Cyclic: If enabled, system automatically delete the earliest recorded video when SD card storage usage reached 90%. if disabled, system will stop recording when the SD card

usage reached 98%.

Language: Support language of Simplified Chinese, Traditional Chinese, English.

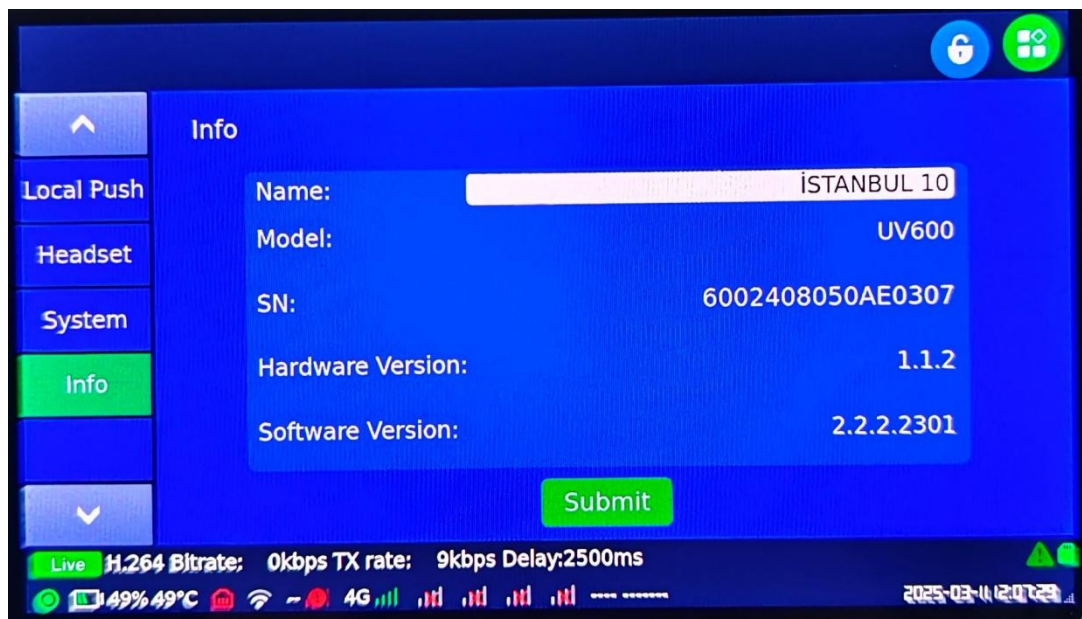
Retain IP: Select Retain IP to keep network when user make factory setting.

Trigger: Indicates whether the terminal enable or disable the Trigger mode in the global mode.

External Audio Input: User external audio source collection options: Enable Line in when inserting linear analog audio, and enable Mic when inserting a wireless microphone.

4.13 Info

Click “ ->Info” when the screen is unlocked, the page will display the device name(editable), model(OEM custom models are available upon request), serial number, hardware version and software version, upgrade tips will also be displayed when new version is launched from server.



Note: It is not able to upgrade when the power is less than 20%.

5. Trouble Shooting

1. Terminal failed to connect server

1) Network problem

- a) Check if all sim cards are read from the network monitor menu
- b) Check if WiFi status is normal if user connected
- c) Check if IP is correct when user use Ethernet port

- d) Adjust the position to check if the signal quality and strength is better
 - e) Check if the server IP and port is correct, if the server is behind the firewall, please mapping the related port of server.
- 2) Authorization problem: to avoid illegal terminal connect to server, user should authorize from Win App for the first time establish connection, the terminal can only connect to server after authorized
- 3) Software version match: if all settings are correct, please make sure the server version and terminal version is same for matching
2. No video in server output or preview window
- 1) Check if the encode bit rate is normal, work mode should be in live or record mode
 - 2) Check if the video input to terminal is normal, user can reconnect or reboot terminal to check again
 - 3) Contact with technical support from dealer