



UNIVISO

Spark II Technical Manual

V2.2.3

September 4, 2025

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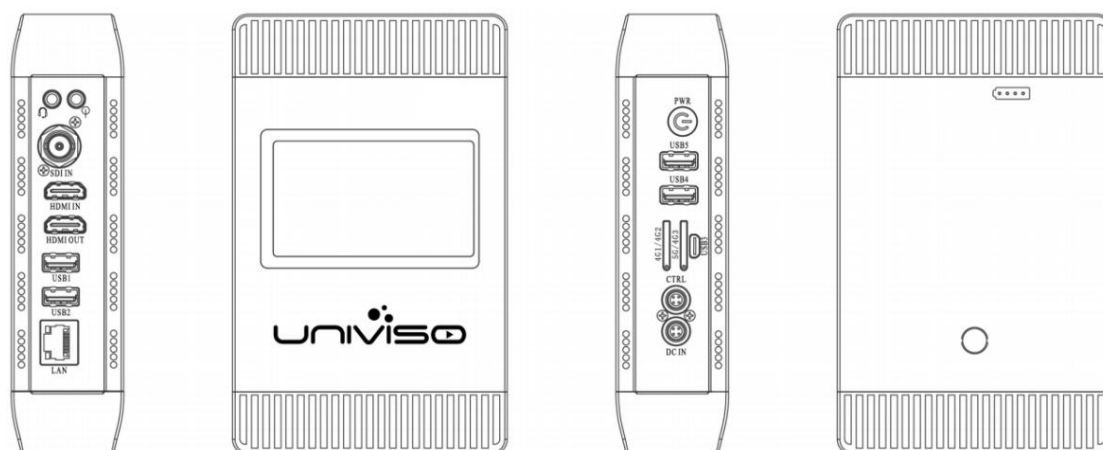
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1. Overview

1.1 Physical Interface

Univiso Spark II terminal interface diagram form:



-
- : Microphone in
- : Line in
- SDI: 3G SDI in
- HDMI IN: HDMI 1.4 in
- HDMI OUT: Loop out
- USB1/2/4/5: For USB dongle
- LAN: Ethernet
- PWR: Power button
- 4G1/4G2/5G/4G3: Nano SIM slots, 3*4G or 2*4G+1*5G
- USB3: Reserved
- CTRL: Reserved
- DC IN: Power supply

1.2 Preparation before Power On

- SIM card installation
- There are 4 Nano SIM slots in Spark II terminal, 4G and 5G version will use each 3 of them as right chart shows.
-
- A/V connection
- A/V signals are input through HDMI and SDI, and SDI will in priority when you connect both HDMI and SDI.

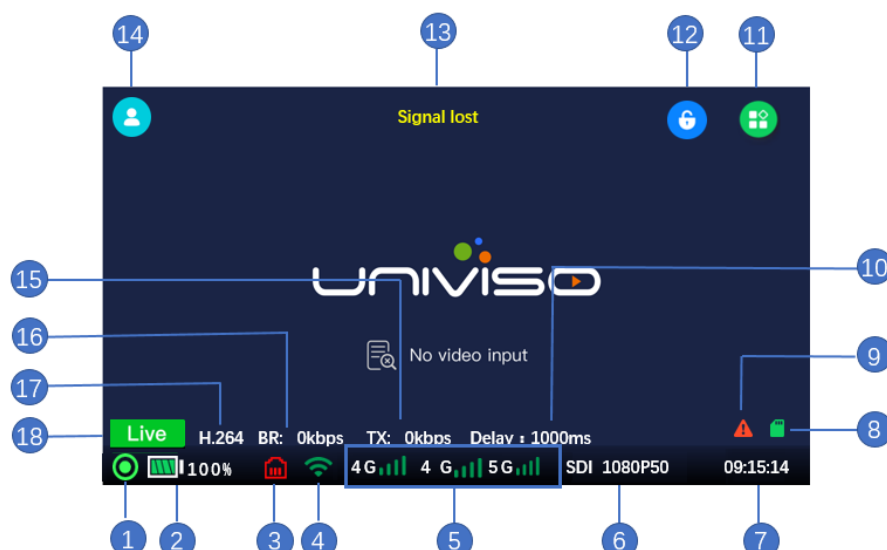


1.3 Terminal Startup & Shutdown

- Startup
- Hold the “PWR” for 5 seconds when the terminal was shut down, you will hear “zhi” from the buzzer in terminal, then release the button, the indicator light will turn to green, then the terminal will boot up after around 20 seconds.
- Power Supply
- The terminal was built-in with high efficiency lithium battery, which can run for 2 hours, meanwhile can be charged by external power supply within 9-17V.
- Shutdown
- Hold the “PWR” for 5 seconds when the terminal is running, you will hear “zhi” from the buzzer in terminal, then release the button, the indicator light and display will turn off.
- Battery Charge
- The power supply adapter or external battery will charge for the internal battery no matter if the terminal is running or shutdown, the max consumption is around 30w, it takes 2 and half hours to charge from 0 to full electricity.

1.4 Main Page of Display Screen

- Diagram when no video input:



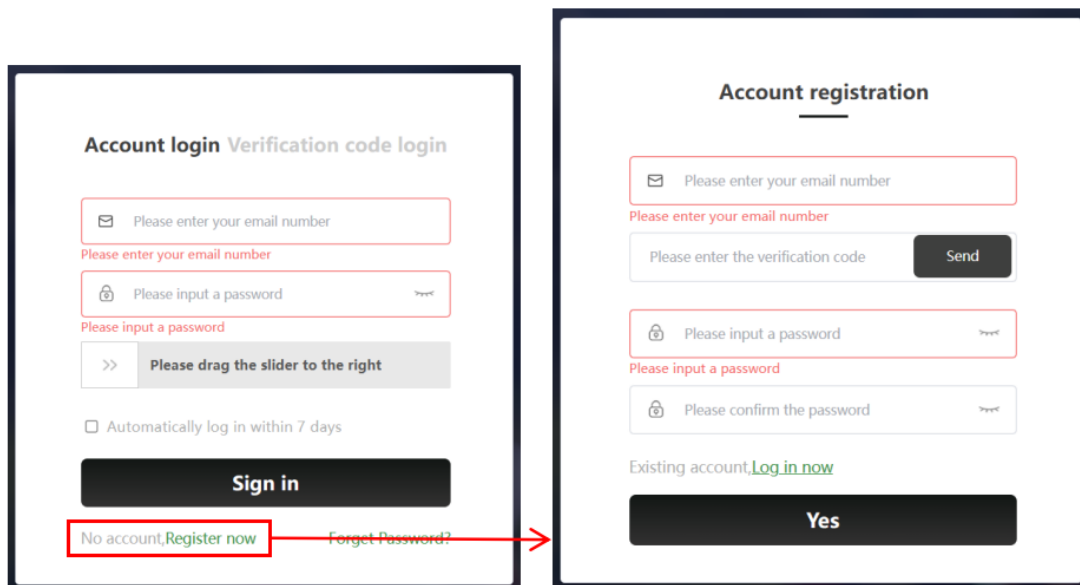
Explanation of each icon on the display:

- ① Server connection status: when the terminal is connected to server, it will display green icon, otherwise, red icon
- ② Battery status: display the different status with different icon and percentage
 :Percentage of the rest quantity of electric charge
 :Charge by power supply or external battery
 :Quantity of electric charge less than 25%, the icon will turn to Red
- ③ Ethernet port status: if the wire is identified, it will display green icon , otherwise, display red icon 
- ④ Wi-Fi status: If the Wi-Fi is connected success, the icon will display green icon , and the arc numbers identify the Signal quality, if the Wi-Fi is disconnected, the icon will turn to red 
- ⑤ 3G/4G/5G status: if the SIM card was not inserted or not available, it will display , if the SIM card was detected, and signal standard is unidentifiable, it will display , if the SIM card was detected, and signal standard is identifiable, It will display corresponding signal standard and quality   
- ⑥ Video input type and standard: it will display the video input by HDMI or SDI, and the video resolution like 1080P60, 1080I60... Etc.
- ⑦ Time: it will display the local time with standard HH:MM:SS
- ⑧ Build-in SD card status: if the SD card was detected in normal status, it will display as green , otherwise display in red 
- ⑨ Warning button: Click to display the warning message of account
- ⑩ Latency time: Display the latency time that user set in system
- ⑪ Menu: Click to display or hidden menu
- ⑫ Lock: Click to lock the screen to avoid any wrong operation, unlock by input password "0000"
- ⑬ Work mode and status display area:
Signal lost:No video input from HDMI or SDI to terminal
Account not login:User have not login to the system
00:30:05:Live or record duration
REC/LIVE: Currently working mode
- ⑭ Spark Account information, click to popup the login-box, after login success, it will display your username
- ⑮ Transfer bitrate, display the real time bitrate in transmitting
- ⑯ Encoding bitrate, display the real time encoding bitrate in the system, this value may fluctuate between the System minimum value and the value set by user
- ⑰ Encoding algorithm, same as the user set in the menu
- ⑱ Word mode:
Live:In live mode, the terminal will transfer the encoded data to server directly, terminal only record when user select "auto record" option, and user need manually upload the recorded file to server when the terminal in idle condition
Record:In record mode, the terminal will record the encode data to the terminal and then transmit the recorded file to server and then broadcast the uploaded file in the same time, which can make sure the quality and user can adjust the latency freely according to the network status.

2. Register and Login

2.1 User register

- Visit the link <https://ind.univiso.tv/userlogin> (Asian server) or <https://eu.univiso.tv/UserLogin> (European server) via mobile phone or PC.
- Click “Register Now” input the email or mobile to get the verification code.
- After receiving verification code in your email, input password and confirm.
- Click “Yes” to finish registration.



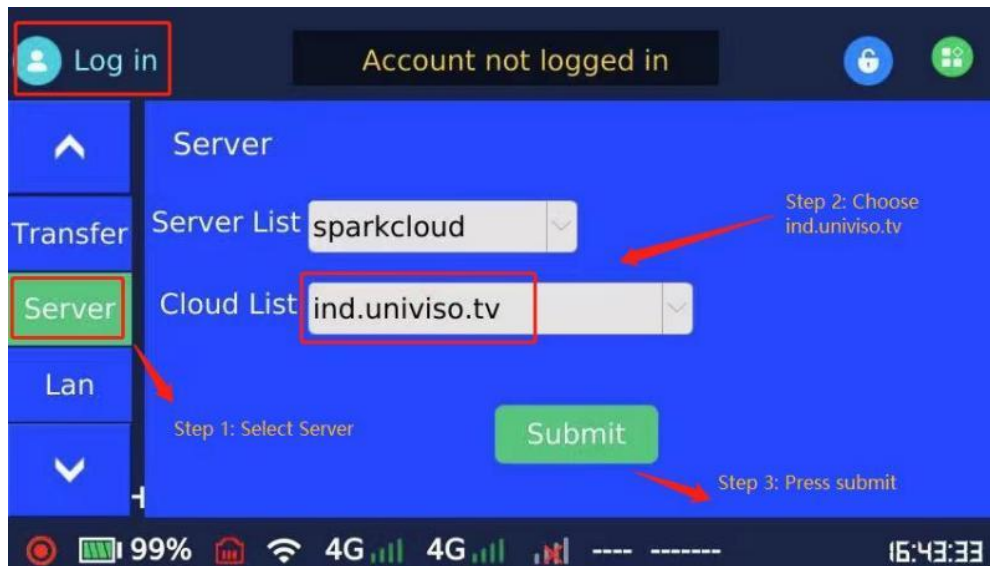
The image displays two side-by-side screenshots of the Univiso user interface. The left screenshot is titled 'Account login' and features a 'Verification code login' section. It includes input fields for 'Please enter your email number' and 'Please input a password', a slider control labeled 'Please drag the slider to the right', and a checkbox for 'Automatically log in within 7 days'. A prominent 'Sign in' button is at the bottom, and a link 'No account, Register now' is highlighted with a red box. The right screenshot is titled 'Account registration'. It contains input fields for 'Please enter your email number', 'Please enter the verification code' (with a 'Send' button), 'Please input a password', and 'Please confirm the password'. A link 'Existing account, Log in now' is present, and a large 'Yes' button is at the bottom. A red arrow points from the 'Register now' link in the left screenshot to the 'Yes' button in the right screenshot.

- Note: The password supports 6-16 characters of letters, numbers, and symbols and must contain letters and numbers.

2.2 Terminal Login

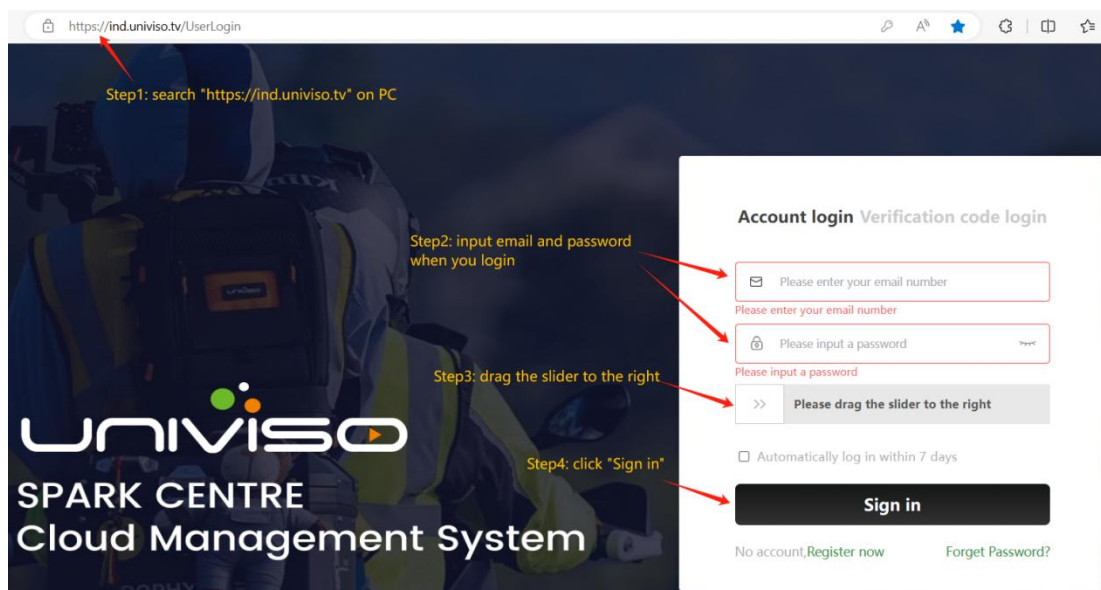
- Select Server
- Choose sparkcloud in “Server List”
- Choose eu.univiso.tv or ind.univiso.tv (Please ensure choose correct address in Cloud List)
- Click “Submit”

Note: Accounts can not be used across different servers.



2.3 Web Login

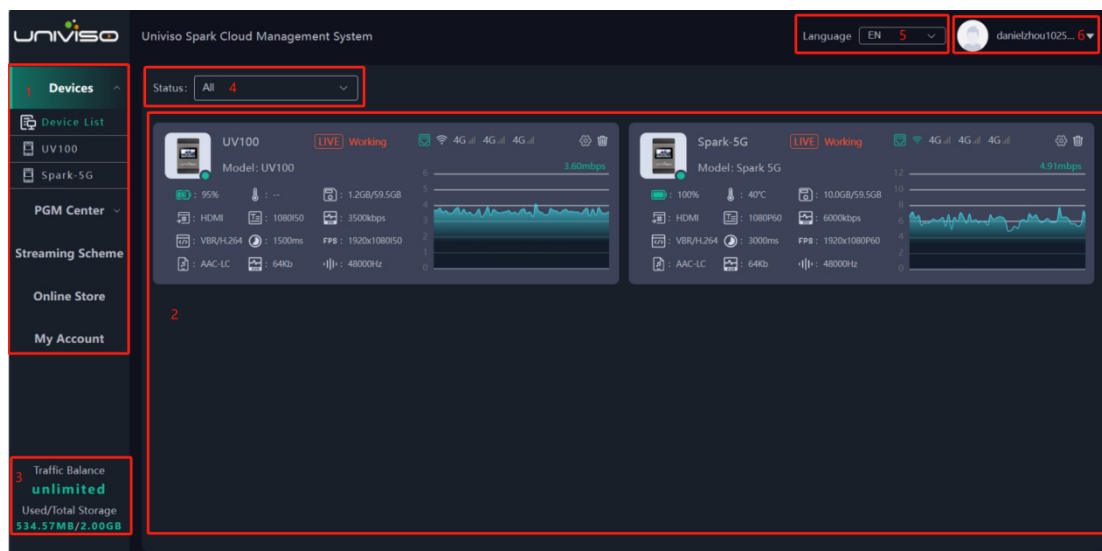
- Users can login via browser in PC or mobile phone after registration to manage the terminal remotely.



3. Terminal Settings and Management

- Univiso Spark series support manages the terminal through display screen and web browser, all basic system settings (include encode parameters, streaming URL, latency etc) and network link monitor and other high frequency used function can be managed in those ways.

3.1 Home Page of Web Page



1. Left sidebar:

Devices: click to display or hide device list

PGM Center: click to manage footage and record mode streaming

Streaming Scheme: users can set streaming groups or usually used streaming URLs

Online Store: click to check and buy traffic package, not for use now

My Account: click to check or edit user information

2. Device list display area, click device icon or setting button to set single unit

3. Traffic balance and storage usage

Note: Traffic balance refers to account data. For device data, please check the login page of the terminal screen or the "My account" → "My packages" page of the Spark Cloud Platform.

4. Device filter: support to filter by conditions of all, online and offline devices

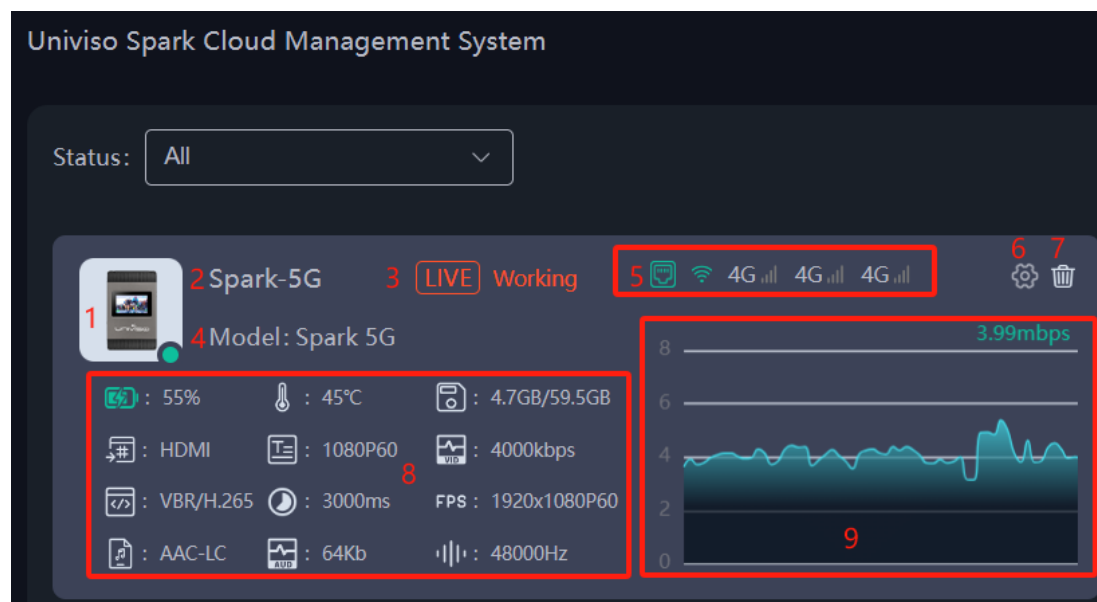
5. Language: support Simplified Chinese, English and Traditional Chinese

6. Click to change password or logout.

3.2 Single Device Settings

3.2.1 Brief Info

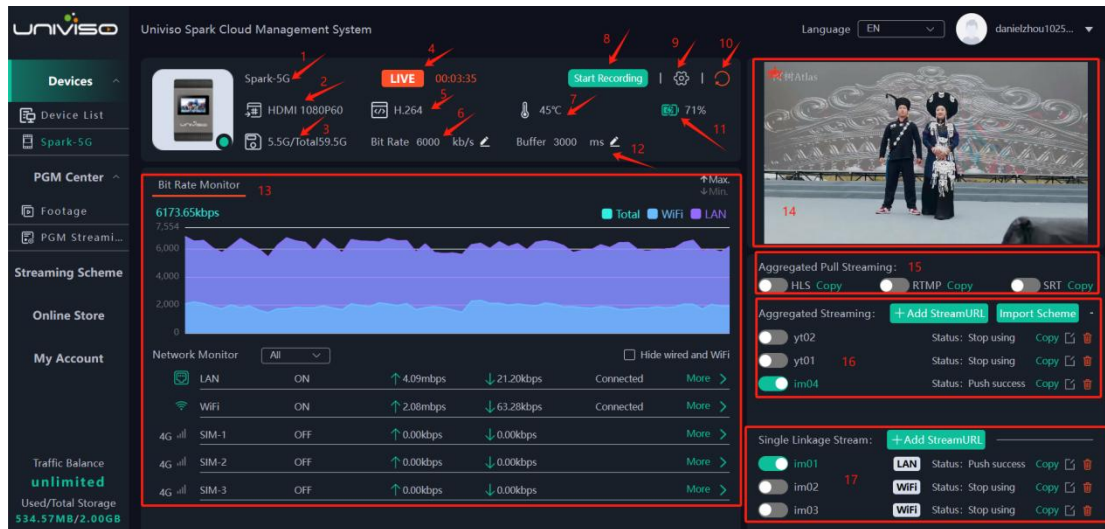
From the home page, all devices with brief information will be displayed on the panel.



1. Encoder icon, click to enter detail page
2. Encoder name
3. Working status, indicated with different colors, click to start/stop LIVE or REC activity,
 - Gray: device is offline
 - Green: device online but not on LIVE/REC activity
 - Red: device is online and on LIVE/REC activity
4. Model name
5. Connection status
6. Setting button, click to set parameters
7. Delete button, click to delete pushing addresses
8. Device status: basic information of encoder
9. Total traffic monitoring of all connections

3.2.2 Full Device Settings

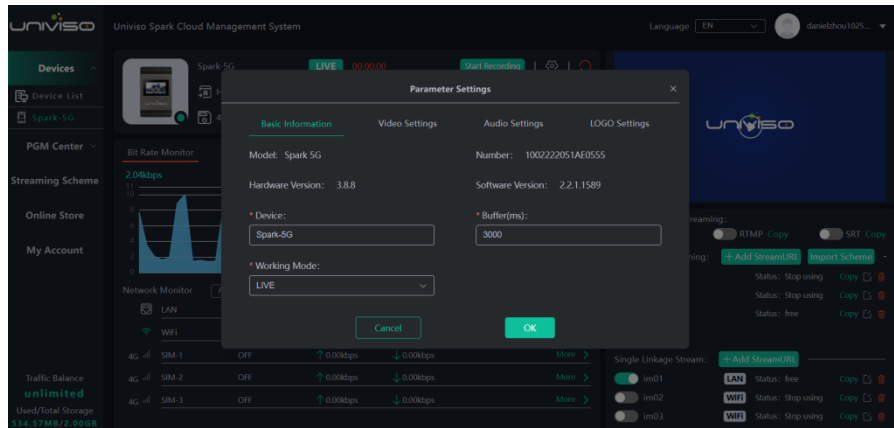
Click on the "Devices" option, it will display the basic information and status of all online/offline units.



1. Model name
2. Encoder input connector type, HDMI or SDI
3. Encoder storage status, used/total
4. Click to start or stop live activity, red: on live, green: not on live
5. Encoding algorithm, H264 and H265 supported
6. Encoding bit rate setting, range: 100k~40Mbps
7. CPU temperature
8. Click to start or stop recording
9. Click to setting page
10. Click to reboot the encoder remotely
11. Encoder real time battery condition
12. Buffer time for the live activity, range:500~30000ms
13. Bit rate monitoring, user can monitor single and all connections on this panel
14. Preview, support H.264 only
15. Pull streaming: enable the protocol then copy the streaming URL
16. Aggregated streaming with multiple connections
17. Single linkage streaming, push streaming directly from Spark to 3rd party platform without going through Univiso Spark cloud server, it supports streaming transmitting with one connection only.

3.2.3 Encoding Parameters Setting

3.2.3.1 Basic Information



Model: Display current model name, e.g: Spark 5G

Number: Display the series number (SN) of device

Hardware Version: Display the firmware version

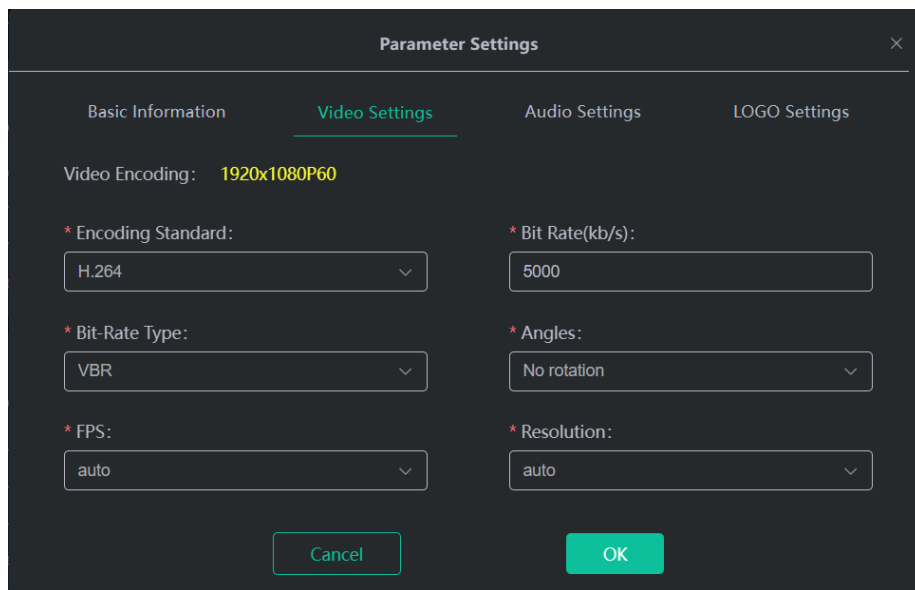
Software Version: Display current software version

Device: Device name, user can edit it to assign a specific name for it

Buffer(ms): The latency for transmission, user can input in the field, 0~30000ms

Working Mode: Support LIVE and REC

3.2.3.2 Video Settings



Video Encoding: Display input video format

Encoding Standard: Encoding algorithm, support H.264 and H.265

Bit-Rate Type: Support VBR and CBR

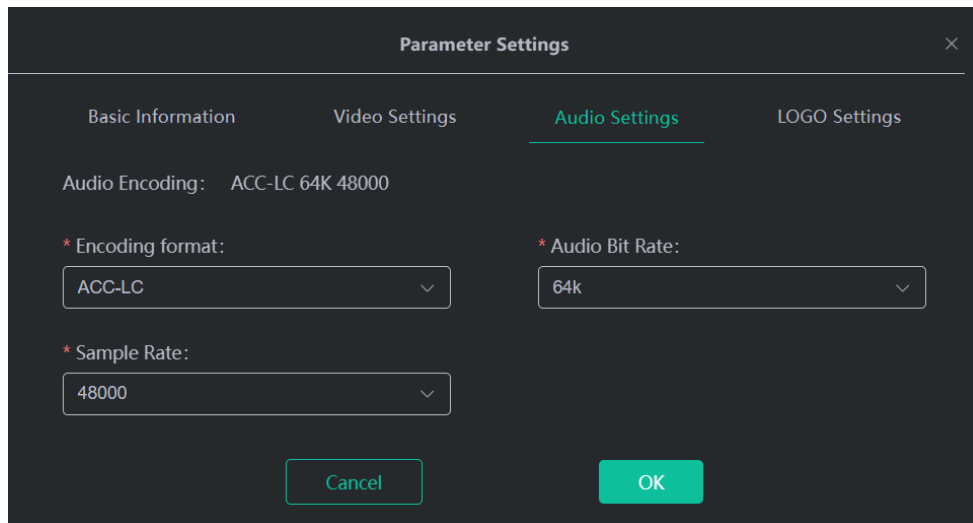
FPS: Encoding frames

Bit Rate(kb/s): 100~40000kb/s

Angles: Encoding rotation angels

Resolution: Encoding resolution, support Auto, 1920*1080, 1280*720, 720*576, 720*480

3.2.3.3 Audio Settings



The screenshot shows the 'Parameter Settings' dialog box with the 'Audio Settings' tab selected. The 'Audio Encoding' is set to 'ACC-LC 64K 48000'. Below this, there are three dropdown menus: '* Encoding format:' set to 'ACC-LC', '* Audio Bit Rate:' set to '64k', and '* Sample Rate:' set to '48000'. At the bottom, there are 'Cancel' and 'OK' buttons.

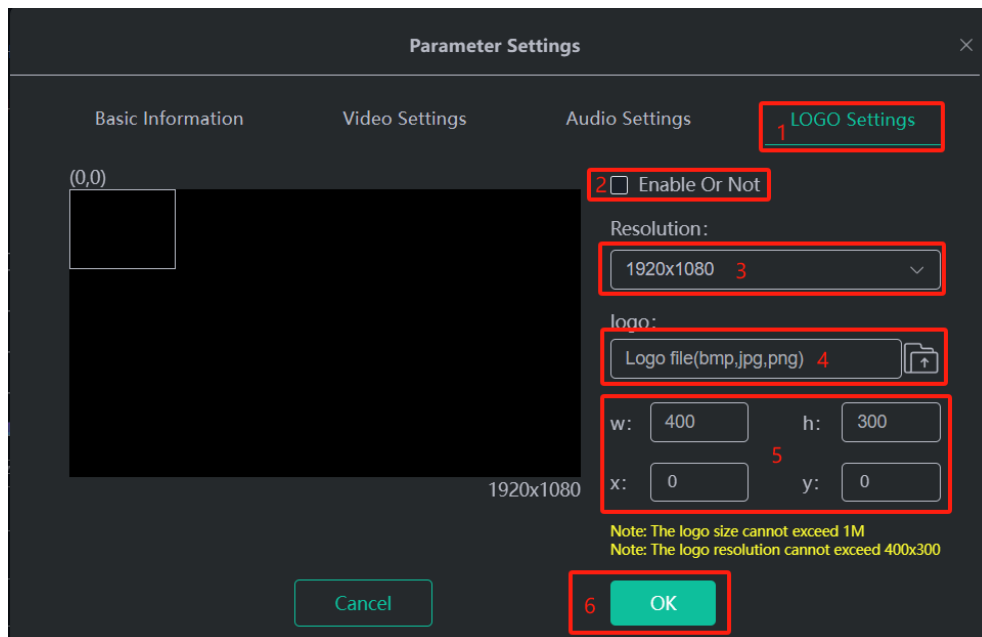
Audio Encoding: Display current audio encoding parameters

Encoding format: Support ACC-LC, ACC-HC

Audio Bit Rate: Encoding audio bit rate, support 64K, 128K, 192K, 256K, 320K

Sample Rate: Audio sampling rate, support 44.1KHZ/48KHZ

3.2.3.4 Logo Settings



The screenshot shows the 'Parameter Settings' dialog box with the 'LOGO Settings' tab selected. The 'Enable Or Not' checkbox is checked. The 'Resolution' dropdown is set to '1920x1080'. The 'Logo' section shows a file upload button and a preview area. The 'w' (width) is set to 400, 'h' (height) is set to 300, 'x' (x-offset) is set to 0, and 'y' (y-offset) is set to 0. At the bottom, there are 'Cancel' and 'OK' buttons. Red boxes and numbers 1 through 6 highlight the following elements: 1. LOGO Settings tab, 2. Enable Or Not checkbox, 3. Resolution dropdown, 4. Logo file upload button, 5. Logo dimensions and offset fields, 6. OK button.

Step 1: Choose Logo Settings

Step 2: Click Enable or Not to enable or disable the logo settings

Step 3: Select canvas resolution

Step 4: Upload image

Step 5: Set the logo width/height, x/y offset to the video

Step 6: Click OK to submit

Note: logo format only support bmp, png, jpg for now.

4. Streaming

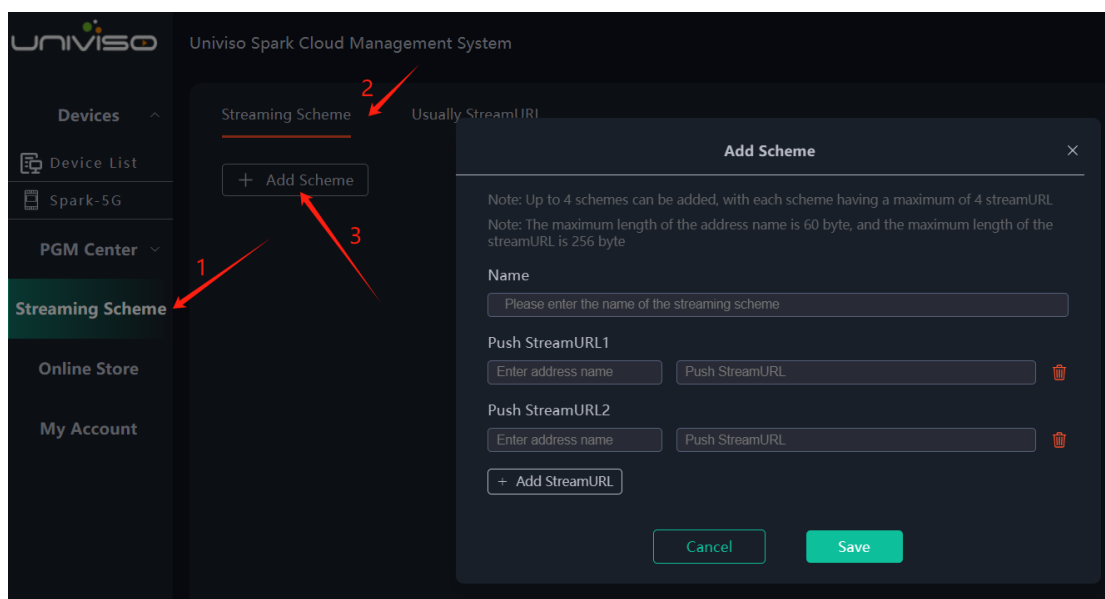
4.1 Streaming URL Setting

In order to facilitate users importing streaming addresses without having to re-enter the streaming addresses every time, they can create a new streaming task, users can set multiple groups of push addresses or a single common streaming addresses in advance in system.

4.1.1 Streaming Scheme

Go to the location: Streaming Scheme -> Streaming Scheme

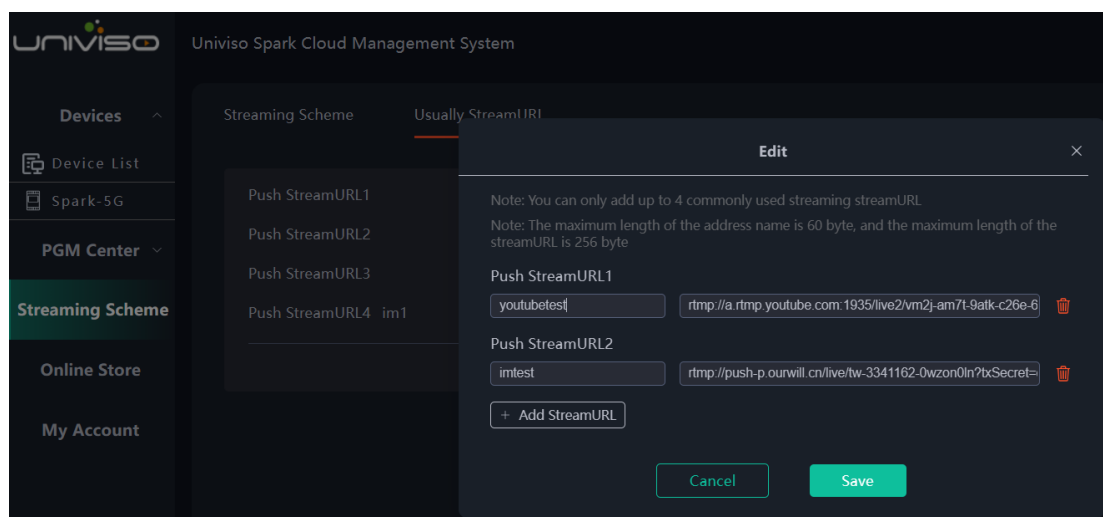
User can add up to 4 streaming schemes, each of which can contain a user-friendly scheme name and up to 4 streaming URLs.



4.1.2 Frequently Streaming URL Management

Go to the location: Streaming Scheme → Usually Stream URL

Users can add up to 4 commonly used streaming addresses and define a user-friendly name for each address to facilitate management.



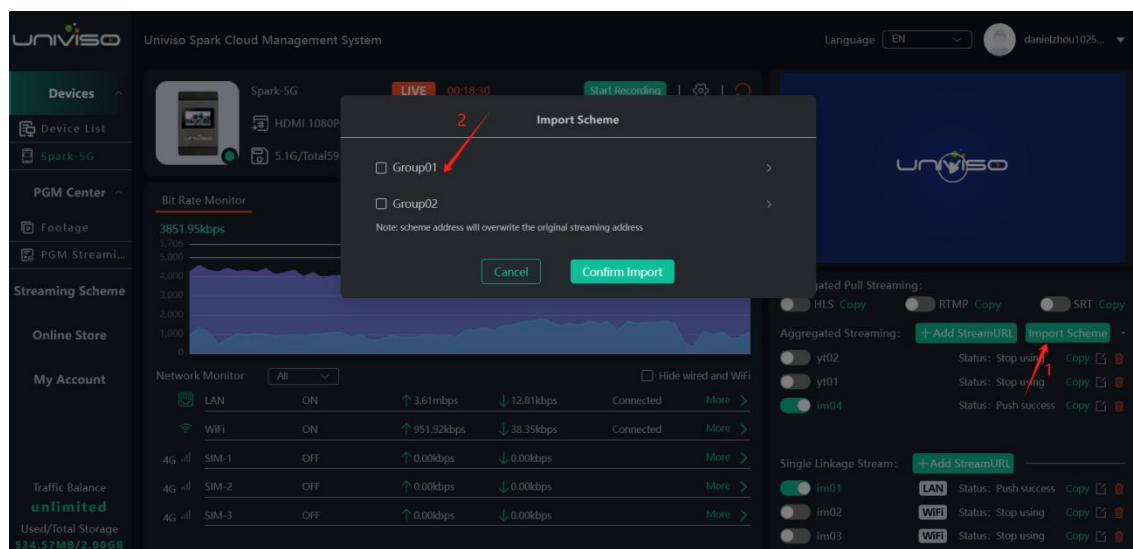
4.2 Streaming URL Import

4.2.1 Add single URL

Click on the left bottom + marked with red, then a prompt will show, click the upper right +, the frequently used prompt will show, select the URL need to be used for streaming.

4.2.2 Import from URL Scheme

Click Import mode on this page marked with red, select the URL predefined group.



4.3 Push streaming Status

After importing URLs for push streaming, push status will be displayed as following:

Push success: streaming pushed with success

Init failed/Push failed: streaming pushed with failure or streaming URL is not correct

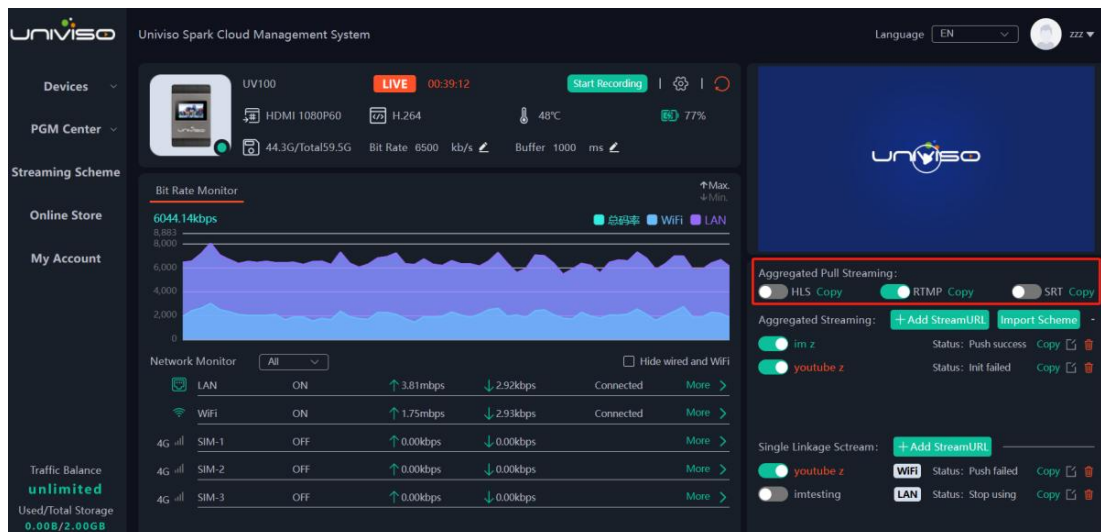
Stop using: when streaming is disabled

☒ im1	Status: Push success	Copy		
☒ youtube1	Status: Init failed	Copy		
☐ youtube2	Status: Stop using	Copy		
☒ im2	Status: Push failed	Copy		

Note: The maximum length of a push stream URL is 1000 characters.

4.4 Pull Streaming

- Go to unit -> Aggregated Pull Streaming.
- Enable the protocol user would like to use, click "Copy" to copy paste the pull streaming URL



Note: For Vmix SRT pull streaming from Spark cloud, please set streamid with the string between "streamid=" and "&univiso_stream=1&proto=s".

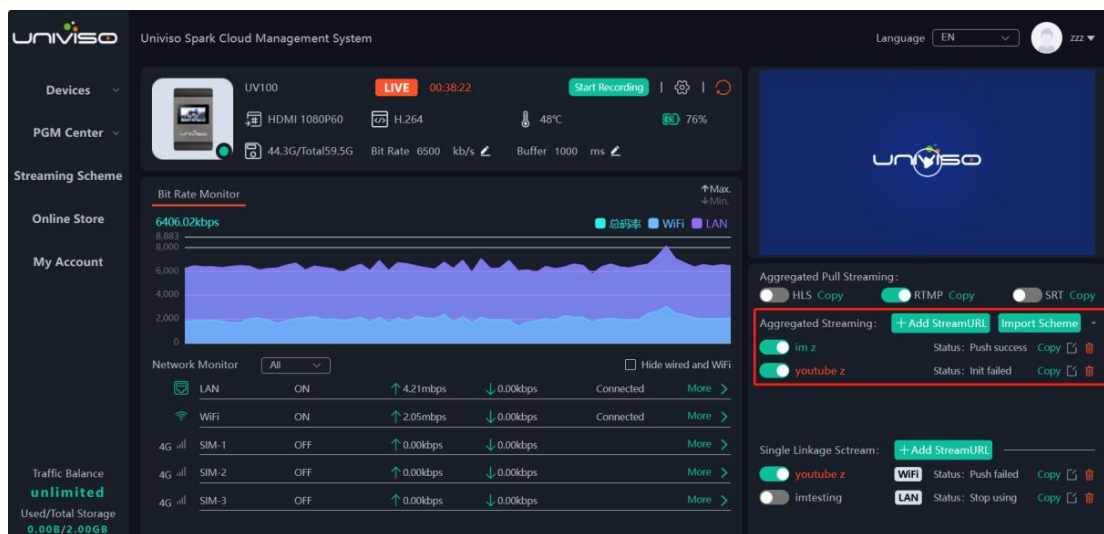
4.5 Aggregation Streaming

- In order to facilitate users streaming with high quality and more bandwidth, users can enable bonding connection streaming, by this way, the streaming will be pushed out

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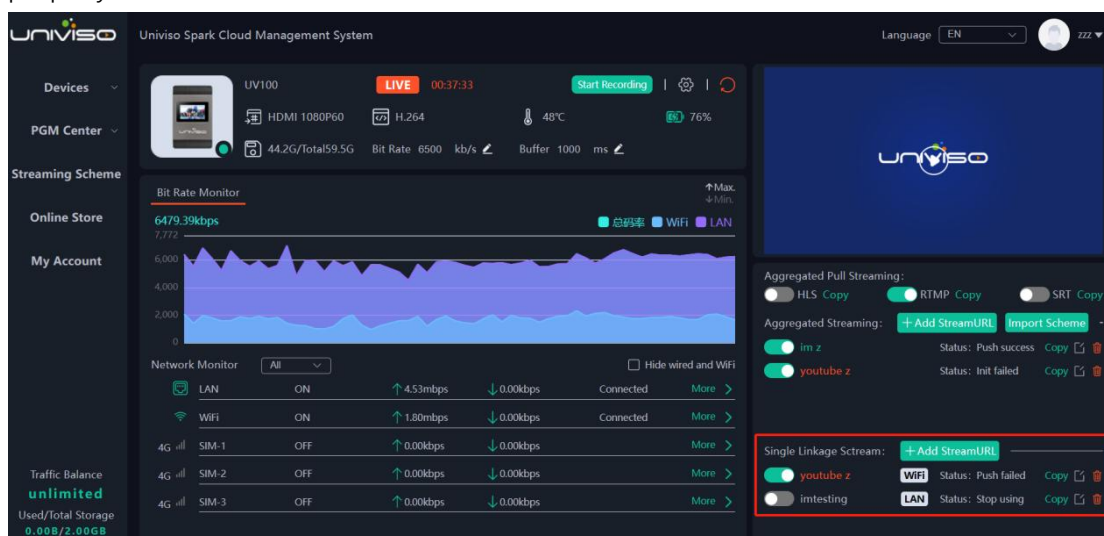
Room 608, Yuanzheng Building B, Nanshan District, Shenzhen, Guangdong Province PR China

to destination through Univiso Spark Cloud.



4.6 Single Link Streaming

- In order to facilitate users push streaming to destinations directly, without the need to transmit to Univiso Spark Cloud, then distributing to 3rd party social media platform or decoders, it can be used as a backup solution when aggregation not working properly.

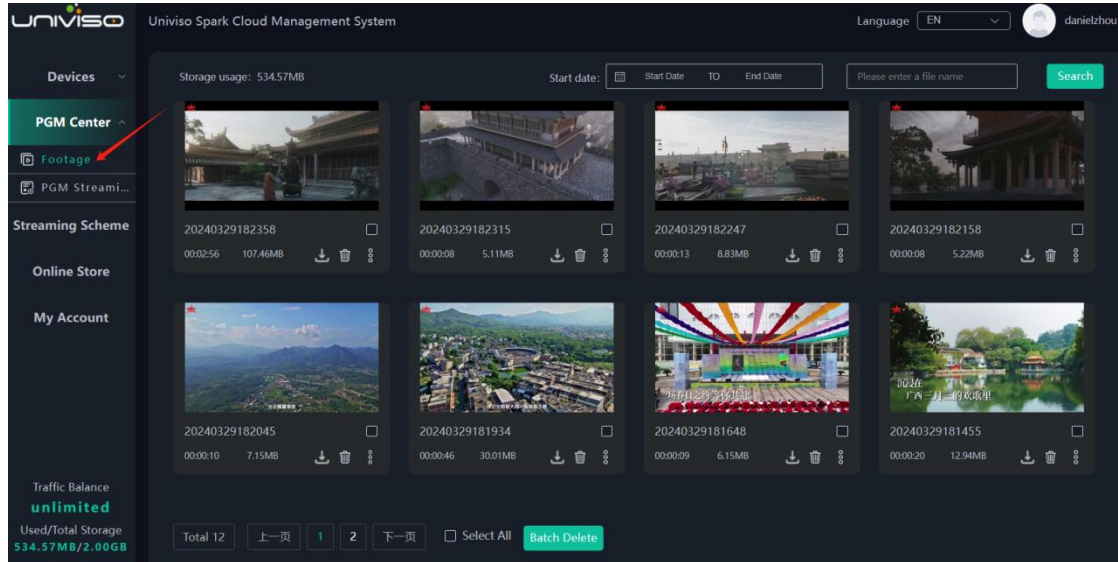


5. PGM Center

In order to manage the recording, features of footage and record mode streaming have been integrated into PGM center.

5.1 Footage

Footage under PGM Center will list all records related to this account, and sort by the time period or file name.



Video cover: The first frame of the video

File name: Save as the name customer set when the live or rec start, the default name is live or rec time with format YYMMDDHHMMSS

: Click to download the video resource

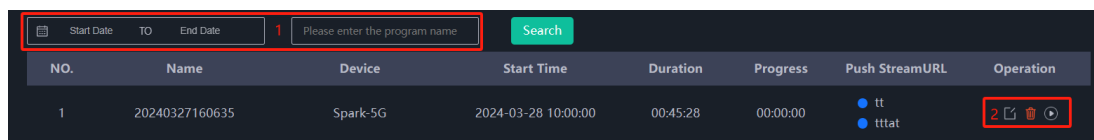
: Click to delete the video

: Click to display more video detail info or modify file name

5.2 PGM Streaming

PGM streaming is the push streaming management center under recording mode.

Users can set the streaming start time and push streaming URL, streaming status are indicated by colored small dot, **green** means pushing with **success**, while **red** indicates it's pushing with **failure**.

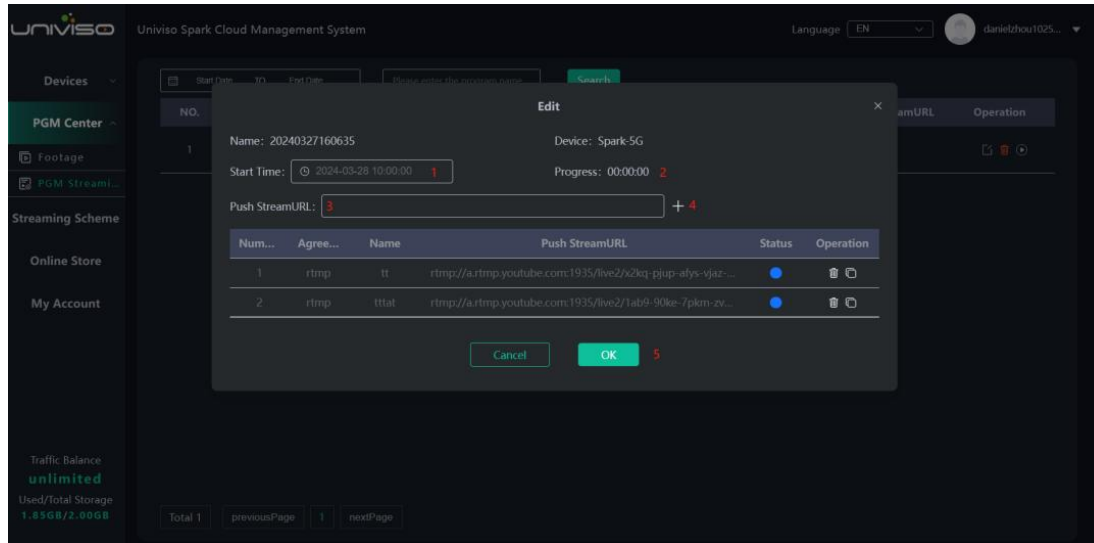


1. User can search the program available

2. : click to edit streaming conditions like streaming time, streaming URL

: click to delete streaming

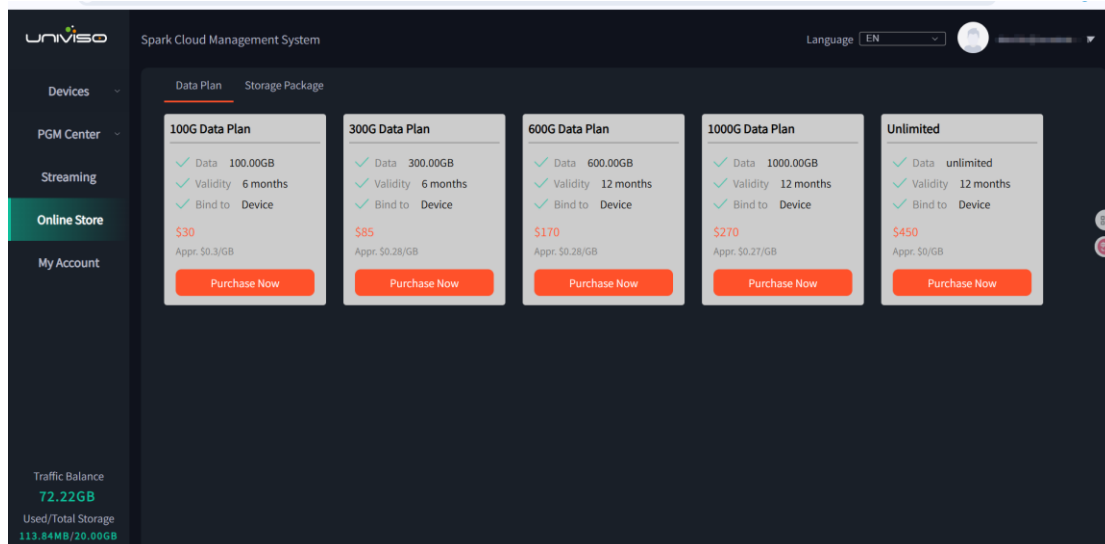
: click to start streaming immediately

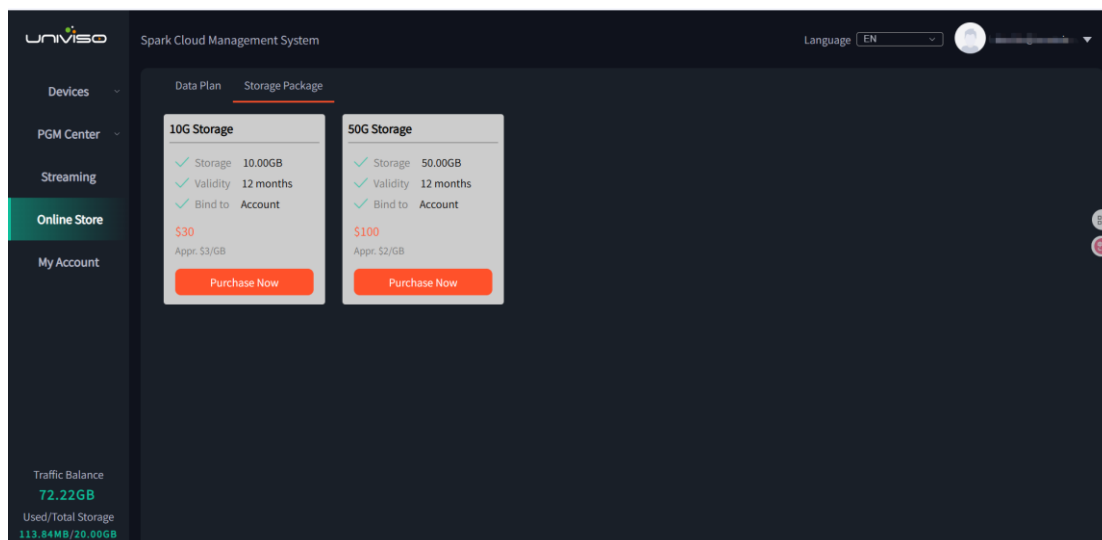


1. User can set the streaming start time
2. Streaming progress
3. Add or edit streaming address
4. Click “+” to add the streaming address
5. Click to cancel or submit the modification

6. Online Store

Click on the [Online Store] - [Data/Storage Package] page, users can view the available device data and account cloud storage packages, and display all package contents in a picture list. Users can purchase packages according to their needs.

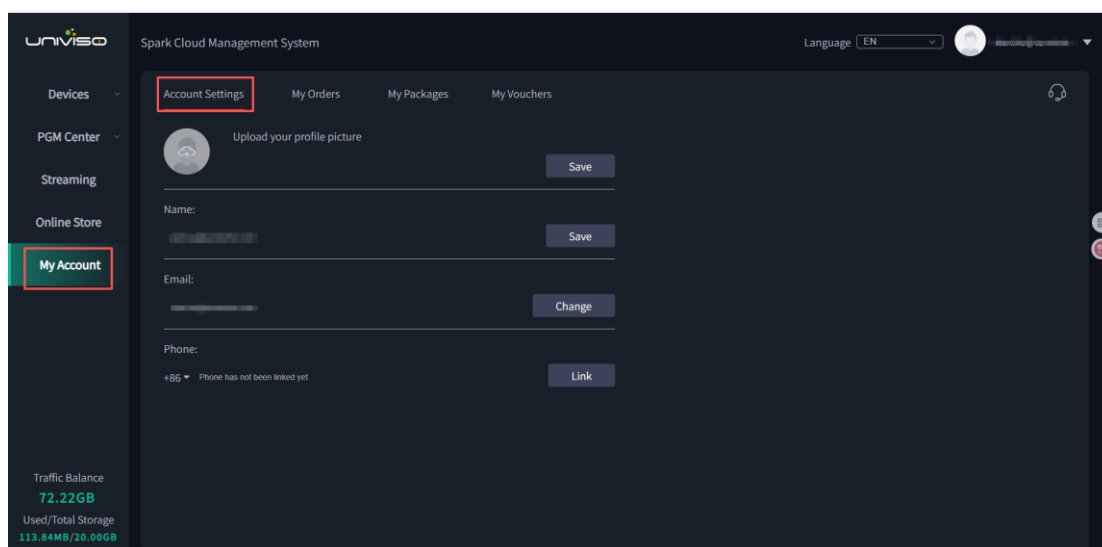




7. My Account

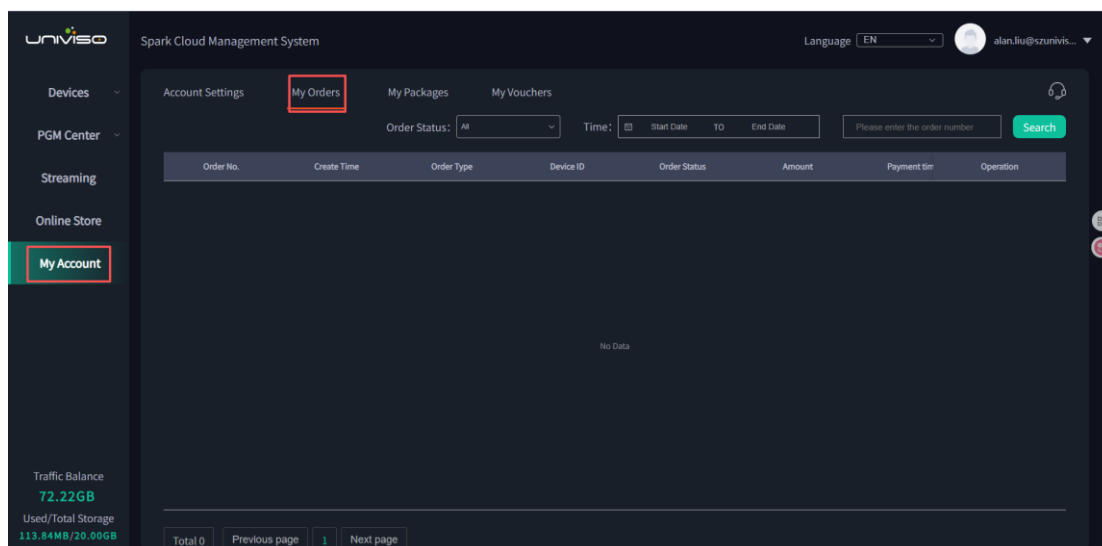
7.1 Account Settings

Click [My Account] - [Account Settings] page to support binding and unbinding operations of user profile picture, nickname, email address, and mobile phone number, as shown below:



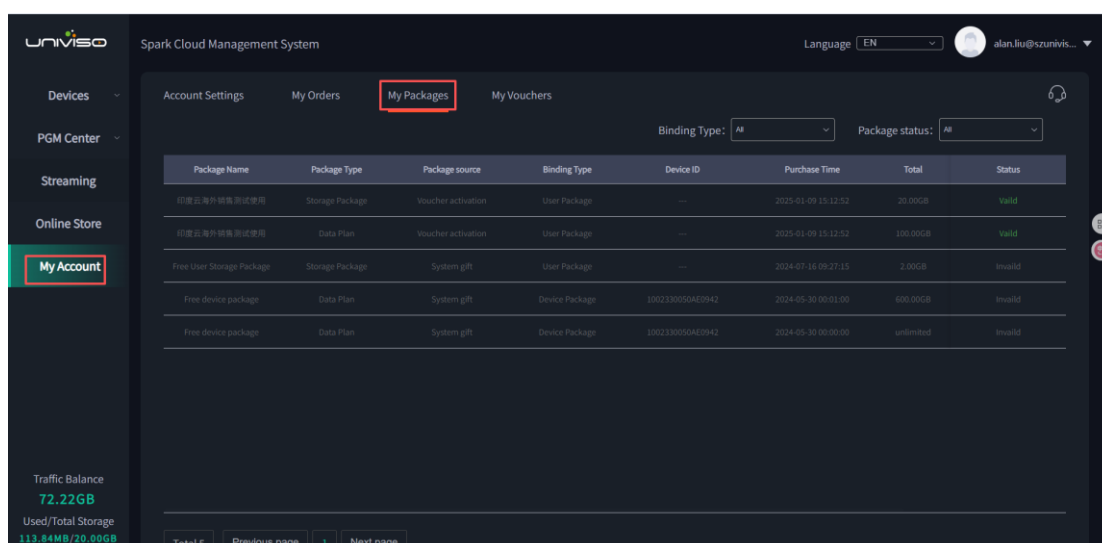
7.2 My orders

Click [My account] - [My Orders] page. This list page will display the order status of the traffic or cloud storage packages purchased by the user in the Online Store. It supports operations such as order payment, deletion, cancellation, and order status search, as shown below:



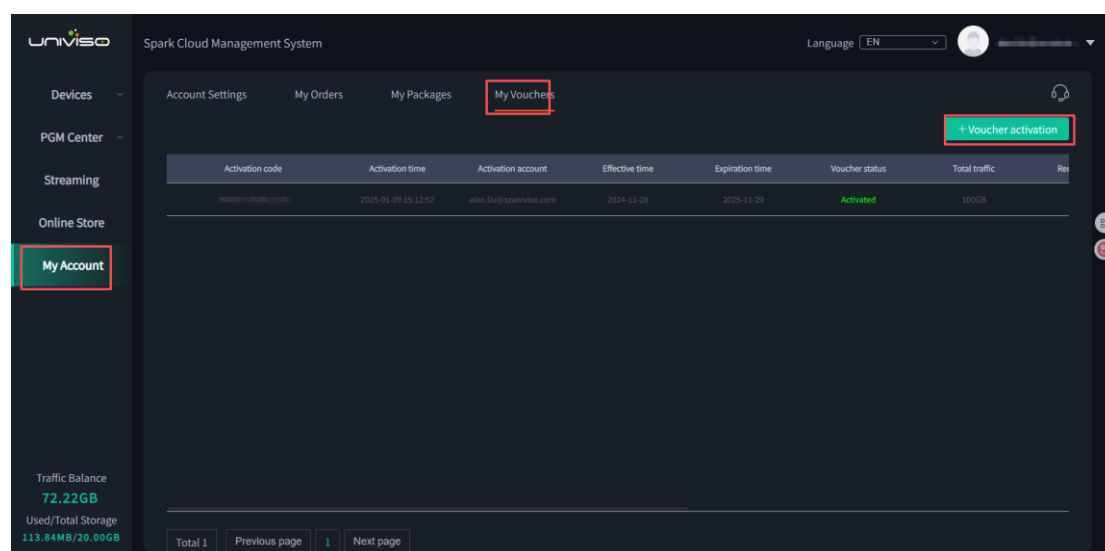
7.3 My packages

Click [My account] - [My packages] page. The list page will display all the device/account data details and cloud storage details under the log in user, as shown below:



7.4 My Vouchers

Click [My account] - [My Vouchers] page. This page will display the details of all activated vouchers. Click the "Voucher Activation" button in the upper right corner and enter the voucher ID to activate the voucher.



8. Technical Information

8.1 Frequency Bands

UNIVISO Spark II uses the following modems that support the Frequency Bands as indicated below:

For 4G uses SIM7600-H Series SIMCom LTE Cat 4 modules.

These modules support the following bands:

- LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28/B66*
- LTE-TDD: B34*/B38/B39/B40/B41
- UMTS/HSDPA/HSPA+: B1/B2/B4/B5/B6/B8/B19
- GSM/GPRS/EDGE: 850/900/1800/1900MHz



For 5G uses SIM8200EA-M2 Multi-Band 5G NR/LTE-FDD/LTETDD/HSPA+ modules.

These modules support the following bands:

- 5G NR: n1,n2,n3,n5,n7,n8,n12,n20,n25,n28,n40,n41,n66,n71,n77,n78,n79
- LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/B29/B30/B32/B66/B71
- LTE-TDD: B34/B38/B39/B40/B41/B42/B43/B48
- WCDMA: B1/B2/B3/B4/B5/B8

See more detailed Modems information on specific Modem Technical Documentation.

8.2 Transmission Power

According to Modem's Manufacturer these are the Transmitting Power levels associated to 4G and 5G modems:

Feature	Implementation
Power supply	Single supply voltage 3.4~4.2V, Recommend supply voltage 3.8V
Power saving	Current in sleep mode : <5mA
Radio frequency bands	Please refer to the table 1
Transmitting power	GSM/GPRS power class: --GSM850: 4 (33dBm) --EGSM900: 4 (33dBm) --DCS1800: 1 (30dBm) --PCS1900: 1 (30dBm) EDGE power class: --GSM850: E2 (27dBm) --EGSM900: E2 (27dBm) --DCS1800: E1 (26dBm) --PCS1900: E1 (26dBm) UMTS power class: --WCDMA :3 (24dBm) LTE power class: 3 (24dBm)

5.5 射频输出功率 RF output power

射频输出功率如下表所示。

表 58: 输出功率

	Max	Min
频段	最大	最小
WCDMA 频段	23dBm + 1/-3dB	< -50dBm
LTE-FDD 频段	23dBm + 2/-2dB	< -40dBm
LTE-TDD 频段	23dBm + 2/-2dB	< -40dBm
5G Sub-6 频段	26dBm + 2/-3dB	< -40dBm

8.3 Antennas

Internal Antennas typical characteristics:

- Direction Omnidirectional Gain > -3dBi (Avg)
- Input impedance 50 ohm
- Efficiency >50%
- VSWR <2

8.4 Type of Modulations

Spark II supports the following modulation schemes:

- 16QAM
- 64QAM
- GMSK
- QPSK
- 8PSK

8.5 Frequency Stability

Typical Values for 4G Modems

- Frequency stability: ± 2.5 ppm to ± 5 ppm

Typical 5G Modem Frequency Stability Considerations

- Frequency Range 1 (FR1): Includes sub-6 GHz frequency bands, which require frequency stability of around ± 1 -2 ppm

- Frequency Range 2 (FR2): Includes millimeter wave (mmWave) frequency bands, which require even higher frequency stability due to the higher frequencies involved (up to 52.6 GHz)

8.6 Standards

Meets with ETSI EN 301 489-24 Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 24: Specific conditions for IMT-2000 CDMA Direct Spread (UTRA) for Mobile and portable (UE) radio and ancillary equipment

8.7 Operation Temperature

Internal Modems temperature -40°C to $+85^{\circ}\text{C}$

Environmental temperature -20°C to $+50^{\circ}\text{C}$

8.8 Internal Battery

Rechargeable Battery Li-ion 7.4Vdc, 3600mAh, 26.64Wh



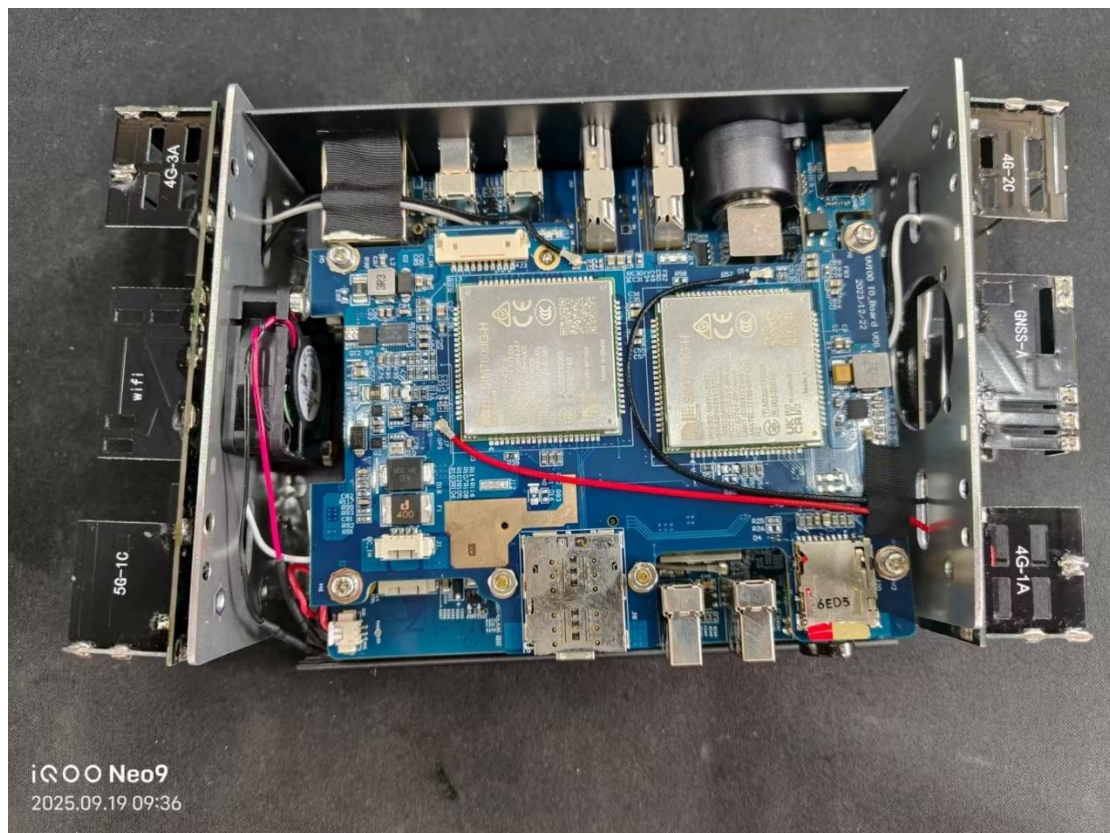
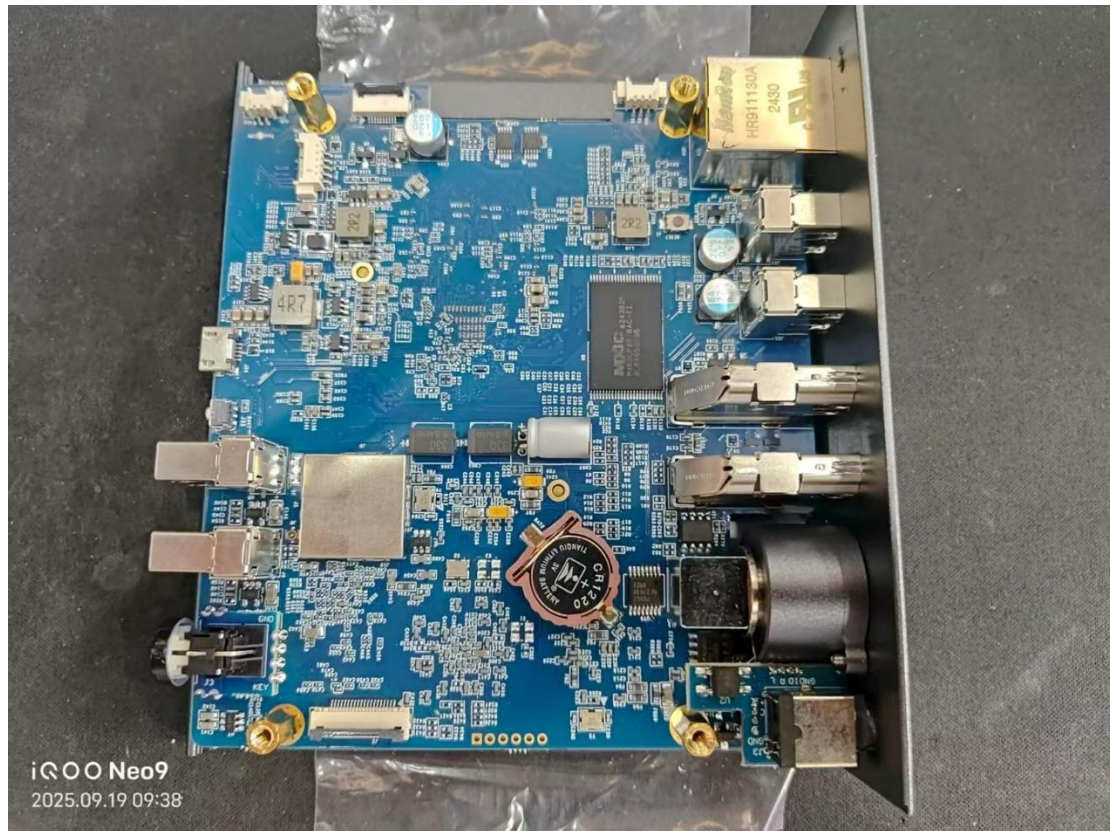
9. Internal Layout

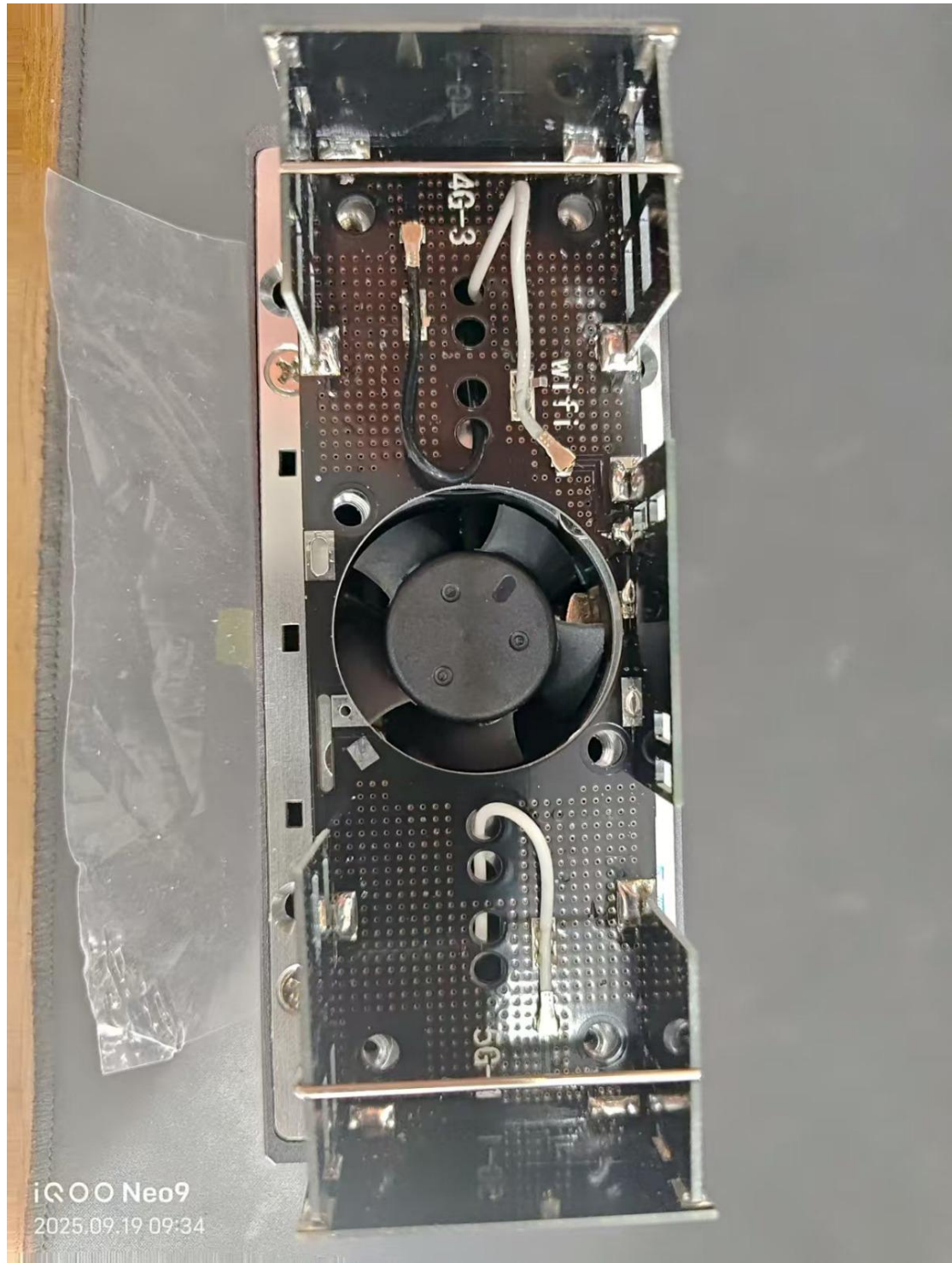
9.1 Side Panels & PCBs

Basically Spark II is composed by following panels and PCBs

- Side Panels
- Video/Audio Processing Card
- MODEMs Card
- Fan Card
- Front Panel









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Main function :



Up to 10 network connections



4 build-in mobile cellular network support



Build-in Wi-Fi Gigabyte Ethernet port



3-inch touch screen LCD



Easy remote control (Touch screen, Web access)



SDI+HDMI inputs



Low-latency streaming protocols (SRT, RTMP, HLS, UDP)



i-Mux smart multilink aggregations



2-hour built-in battery with support for external batteries



Smart cloud server for streaming



One-touch live streaming



Operation modes (Live, Rec & Live)

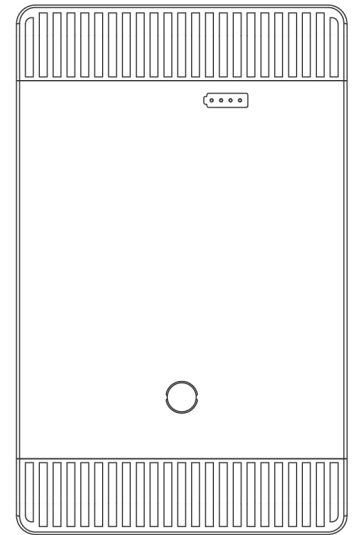
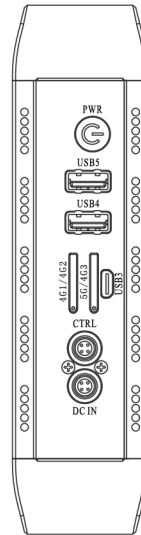
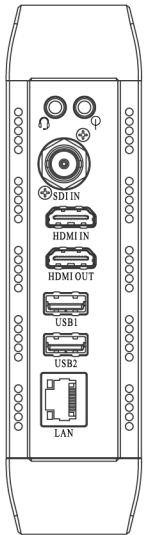
Univiso Technologies and Develop Limited

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+86-755 86706025 www.univiso.tv

Spark Series

Portable HD mobile encoder & bonding encoder

Technical Specifications:



Product Model	Spark II 5G	Spark II 4G
Network Connections	Up to 10 network links: Internal (1*5G+3*3G/4G) modems+ External 4*3G/4G/5G modems+WiFi+LAN	Up to 10 network links: Internal 4*3G/4G modems+ External 4*3G/4G/5G modems+WiFi+LAN
Management	3-inch touchscreen, and Web access	
Server	Cloud server: https://ind.univiso.tv/	
Bit Rate	CBR/VBR, up to 15Mbps	
Aggregation	Proprietary i-Mux™ intelligent bonding and i-VBR technologies	
AV Connectors	Input: 1*3G-SDI, 1*HDMI v1.4 Loop out: 1*HDMI v1.4	
Formats	1080p60/50/30/25/24, 1080i60/50, 720p60/50/30/25, NTSC/PAL	
Audio Input	HDMI or SDI	
Video Encoding	HEVC(H.265)、AVC(H.264)	
Color Space & Bit Depth	8bit 4:2:0, BT.709	
Audio Encoding	Up to 4Channels 48KHz/16bit code, AAC	
Storage Capacity	64G SD storage capable of up to 20 hours of HD recording	
Working Mode	Live mode, Rec & Live	
Streaming Out	HLS, RTMP/RTMPS, UDP-TS, SRT, RTSP	
Size	105*168*44mm	
Power	Battery: 2 hours, DC: 9~17V	
Power Consumption	Less than 16W	
Operating Temperature	-20°C~50°C	