

TRICOM HDMI/VGA/CVBS 4K Video Decoder



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1. Overview

1.1 HDMI/VGA/CVBS 4K Video Decoder (DH931)

DH931 is a professional 4K&HD audio and video hardware decoding products. It can decode multi-channel network video streams (from such as IP-Camera, RTSP/RTMP/RTMPS/SRT/HTTP unicast or multicast media stream, etc.) to HDMI/VGA/CVBS signal video output. DH931 supports a maximum of 4K@30hz UHD resolution and supports multi-channel video stream split screen to the display wall and dynamic switching. With the built-in LCD screen, users can easily check transmission status in real-time.

Embedded RTMP server, it can be used as a small streaming media server and can be widely used in various multimedia publishing systems, digital billboards, signal publishing platforms, and other high-definition video systems.



▲ZY-DH931

1.2 HDMI/VGA 4K Video Decoder with Bi-directional Audio (DH921)

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DH921 is a professional 4K&HD audio and video hardware decoding products. **Supports bi-directional audio transmission.** It can decode multi-channel network video streams (from such as IP-Camera, RTSP/RTMP/RTMPS/SRT/HTTP unicast or multicast media stream, etc.) to HDMI/VGA signal video output. DH921 supports a maximum of 4K@30hz UHD resolution and supports multi-channel video stream split screen to the display wall and dynamic switching. With the built-in LCD screen, users can easily check transmission status in real-time.

Embedded RTMP server, it can be used as a small streaming media server and can be widely used in various multimedia publishing systems, digital billboards, signal publishing platforms, and other high-definition video systems.



▲ZY-DH921

1.3 SDI Video Decoder (DS931/DS951)

DS931&DS951 are professional HD audio and video hardware decoding products. Support H. 265/H. 264

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decoding, and support up to HD/1080P@60hz resolution output. **DS951 additionally support specific frame rate 59.94/29.97 and non-standard definition 480I@60hz resolution.** They can decode multi-channel network video streams (from such as IP-Camera, RTSP/RTMP/RTMPS/SRT/HTTP unicast or multicast media stream, etc.) to SDI signal video output. They supports multi-channel video stream split screen to the display wall and dynamic switching. With the built-in LCD screen, users can easily check transmission status in real-time.

Embedded RTMP server, it can be used as a small streaming media server and can be widely used in various multimedia publishing systems, digital billboards, signal publishing platforms, and other high-definition video systems.



▲ZY-DS931/ZY-DS951

1.4 1RU/3RU Rackmount

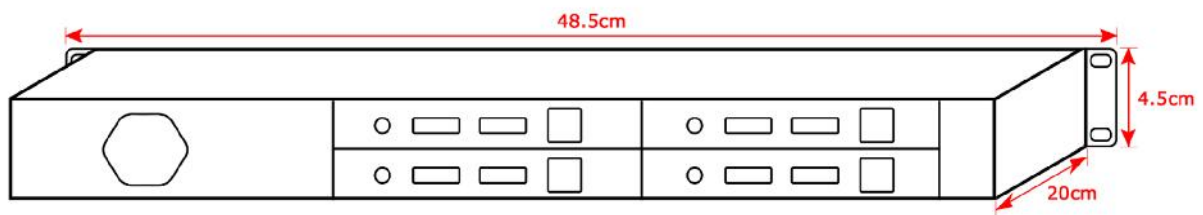
The rackmount series include 1RU or 3RU rack-mounted frame, freely mixed with 4 channels (1RU), 16 channels channels (3RU) HDMI/SDI/VGA/CVBS decoder modules. It comes with redundant power modules,

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centralized heat dissipation, ensuring longtime stable operation, and benefits your IP video deployments of any size and complexity.



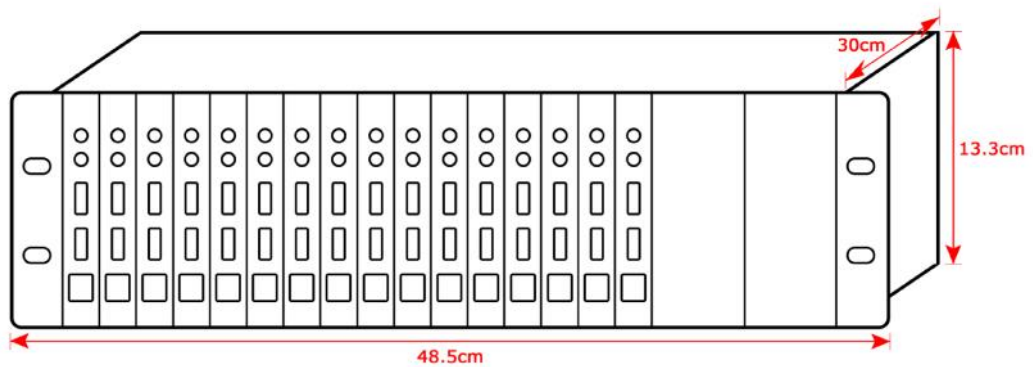
▲1U Rackmount



▲1U Rackmount-Size



▲3U Rackmount



[its](#)

▲3U Rackmount-Size

1.5 Product' s Parameter

Model	DH931
Input	1*1000M RJ-45 Ethernet ports
Video Output	1*HDMI1.4 (support up to 4K@30Hz) 1*VGA 1*CVBS (PAL/NTSC format)
Resolution	3840*2160@30hz; 1600*1200P60;1080P60;1080P50;1080P30;1080P25;720P60;720P50;576P50,480P60 1280*1024P60;1280*800P60;1024*768P60;800*600P60;1080I60;1080I50
Audio Output	Line out (Volume Adjustable)
Streaming Protocols	SRT/RTMP/RTMPS/HTTP/HTTPS/HLS/TS/UDP/RTP/RTSP
Forwarding Protocol	Maximum 9 channels protocol forwarding: RTSP/HTTP/UDP/HTTPS/SRT to RTMP/RTMPS/DUP/RTP
RTMP Supported	Maximum concurrent 1Gbps/s
Video Decoding Format	H.264(AVC)/H.265(HEVC)
Audio Decoding Format	AAC/MP3/G711/MP2/AC3
Video Decoding Capability	Up to 9 channels in 720P60, 4 channels in 1080P60, 1 Channels in 4KP30
LCD Display	IP address, resolution
POE Supply	Support
Management	WEB operation interface
Power Supply	DC 12V/1A
Power Dissipation	<5W/1 channel
Temperature	0~60°C(work) , -20~80°C(storage)
Dimension (W*L*H)	163*111*32mm
Weight	0.35kg

Model	DH921
Input	1*1000M RJ-45 Ethernet ports
Video Output	1*HDMI1.4 (support up to 4K@30Hz) 1*VGA
Resolution	3840*2160@30hz; 1600*1200P60;1080P60;1080P50;1080P30;1080P25;720P60;720P50;576P50,480P60 1280*1024P60;1280*800P60;1024*768P60;800*600P60;1080I60;1080I50
Audio Input	1 channel 3.5 unbalanced audio
Audio Output	Line out (Volume Adjustable)
Streaming Protocols	SRT/RTMP/RTMPS/HTTP/HTTPS/HLS/TS/UDP/RTP/RTSP
Forwarding Protocol	Maximum 9 channels protocol forwarding: RTSP/HTTP/UDP/HTTPS/SRT to RTMP/RTMPS/DUP/RTP
RTMP Supported	Maximum concurrent 1Gbps/s
Video Decoding Format	H.264(AVC)/H.265(HEVC)
Audio Decoding Format	AAC/MP3/G711
Video Decoding Capability	Up to 9 channels in 720P60, 4 channels in 1080P60, 1 Channels in 4KP30
LCD Display	IP address, resolution
POE Supply	Support
Management	WEB operation interface
Power Supply	DC 12V/1A
Power Dissipation	<5W/1 channel
Temperature	0~60°C(work) , -20~80°C(storage)
Dimension (W*L*H)	163*111*32mm
Weight	0.35kg

Model	DH931& DS951
Input	1*1000M RJ-45 Ethernet ports
Video Output	2*SD/HD/3G-SDI

Resolution (DS931)	1080P@60hz, 1080P50, 1080P30, 1080P25, 720P60, 720P50, 1080I60, 1080I50
Resolution (DS951)	1080P60, 1080P50, 1080P30, 1080P25, 1080P59.94, 1080P29.97, 1080I60, 1080I50, 1080I59.94; 720P60, 720P59.94, 720P50, 576I50, 480I60,
Audio Output	Line out (Volume Adjustable)
Streaming Protocols	SRT/RTMP/RTMPS/HTTP/HTTPS/HLS/TS/UDP/RTP/RTSP
Forwarding Protocol	Maximum 9 channels protocol forwarding: RTSP/HTTP/UDP/HTTPS/SRT to RTMP/RTMPS/DUP/RTP
RTMP Supported	Maximum concurrent 1Gbps/s
Video Decoding Format	H.264(AVC)/H.265(HEVC)
Audio Decoding Format	AAC/MP3
Video Decoding Capability	Up to 9 channels in 720P60, 1/4 channels in 1080P60
LCD Display	IP address, resolution
POE Supply	Support
Management	WEB operation interface
Power Supply	DC 12V/1A
Power Dissipation	<5W/1 channel
Temperature	0~60°C(work) , -20~80°C(storage)
Dimension (W*L*H)	163*111*32mm
Weight	0.35kg

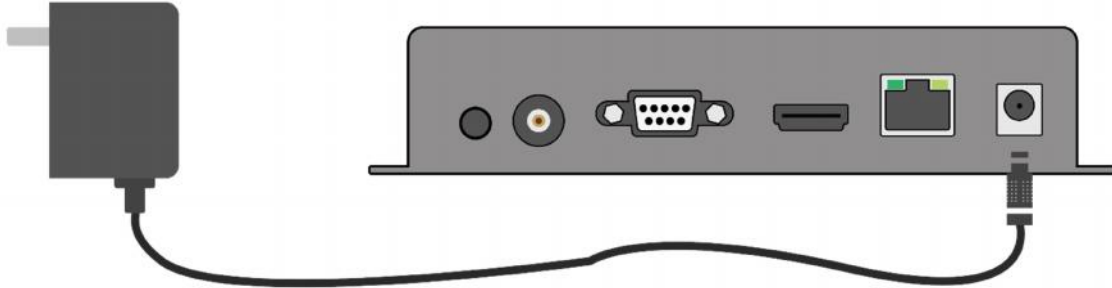
2. Initial installation connection

2.1 Connect power

Use the standard power adaptor (DC12V/1A) connected to the device. The power light will be always on after the device is powered on.

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If the user chooses the POE powered device, the device will be powered on when plug into the network cable.



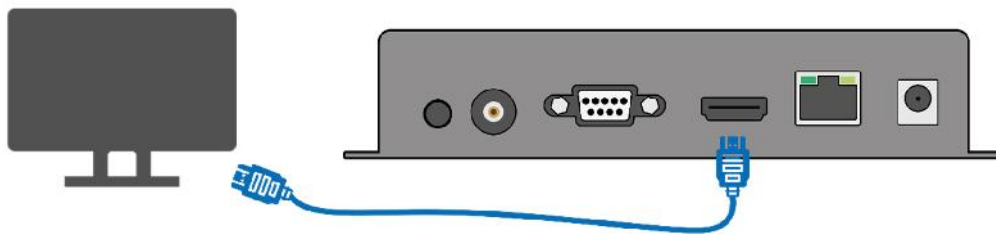
Note

Please use the standard power adaptor provided. Using other unqualified power supplies may damage the device.

2.2 Connect displayer

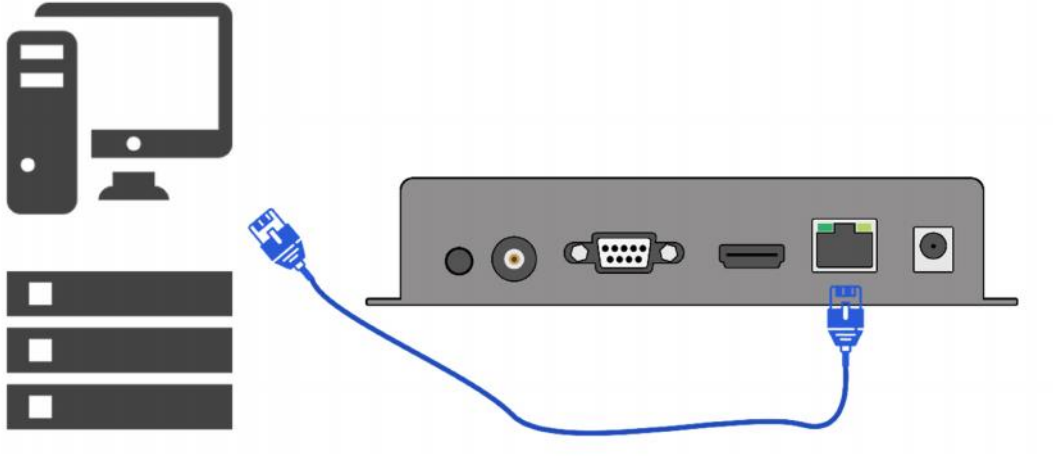
Connect the HDMI/VGA/CVBS or SDI cable to one end of the display device such as a monitor and an electronic screen (DH931&DH921 doesn't support simultaneous output of HDMI, VGA or CVBS, the user can choose one of them to output).

▼Using HDMI cable to connect HDMI output interface with HDMI display.



2.3 Connect the decoder to user's computer

Connect the decoder and the computer directly through the network cable.



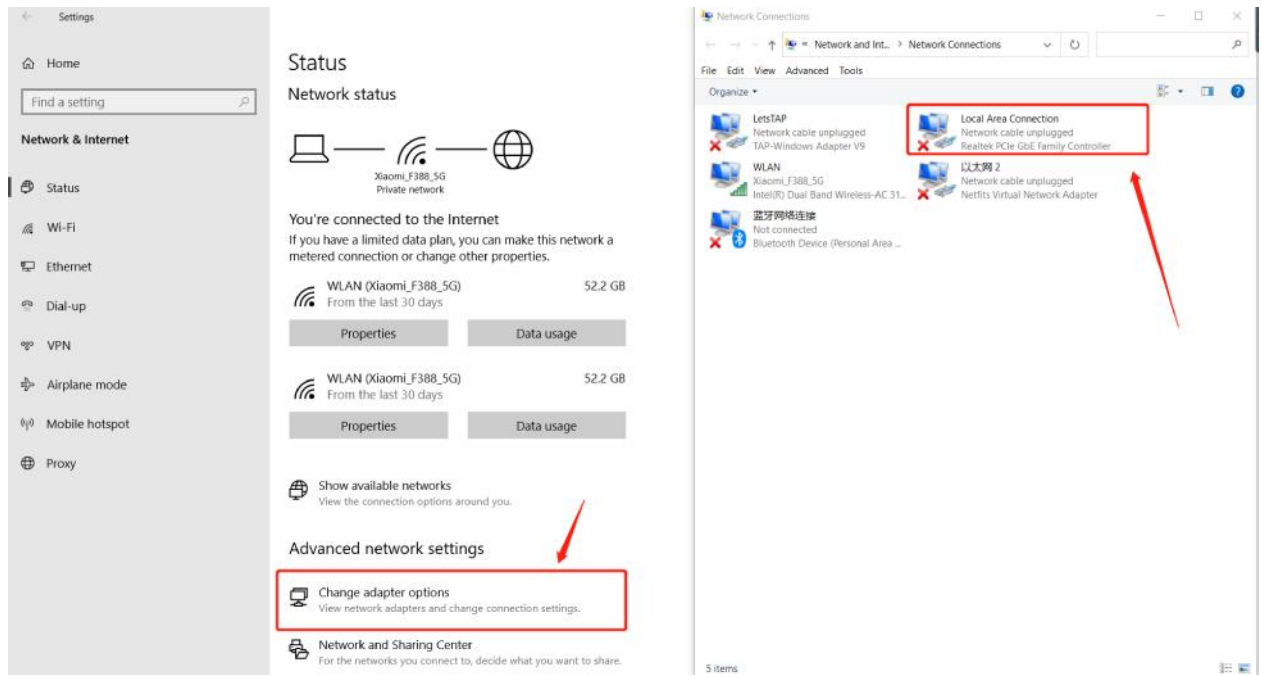
2.4 Log in the control web with 192.168.0.35

According to the above steps, after connecting the decoder to the computer with a network cable.

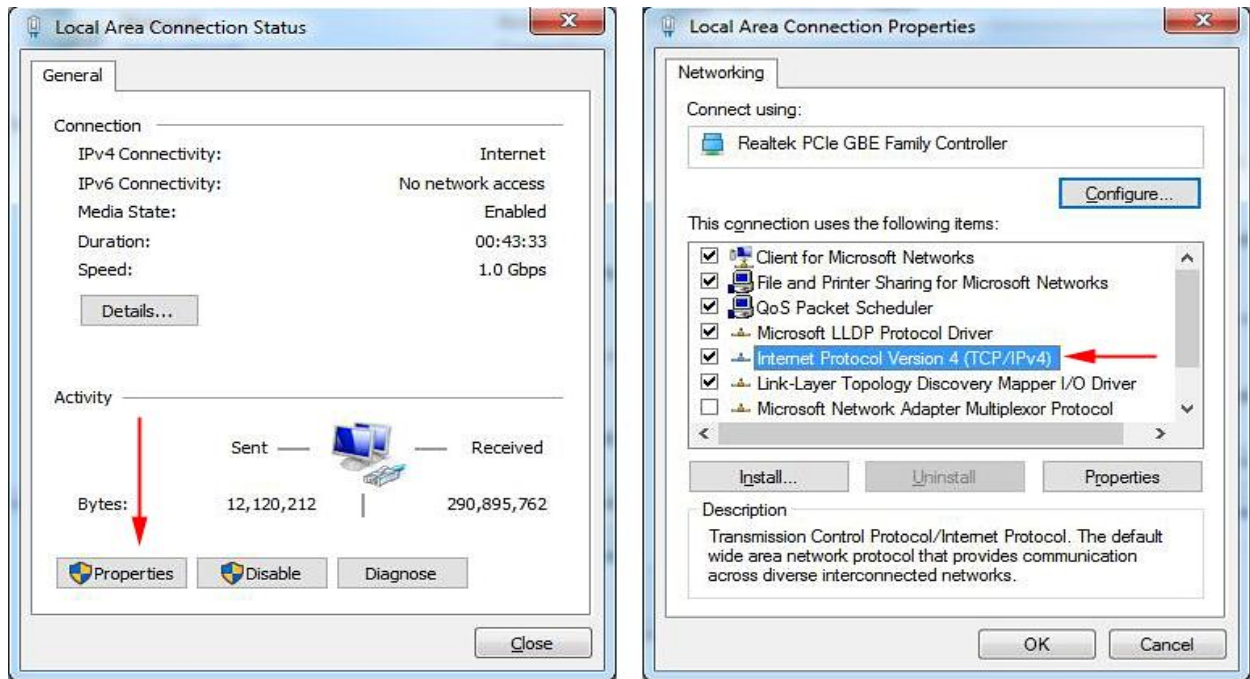
▼ Step1: find the "Network & Internet Settings"



▼ Step2: "change adapter options"——"Local Area Connection"

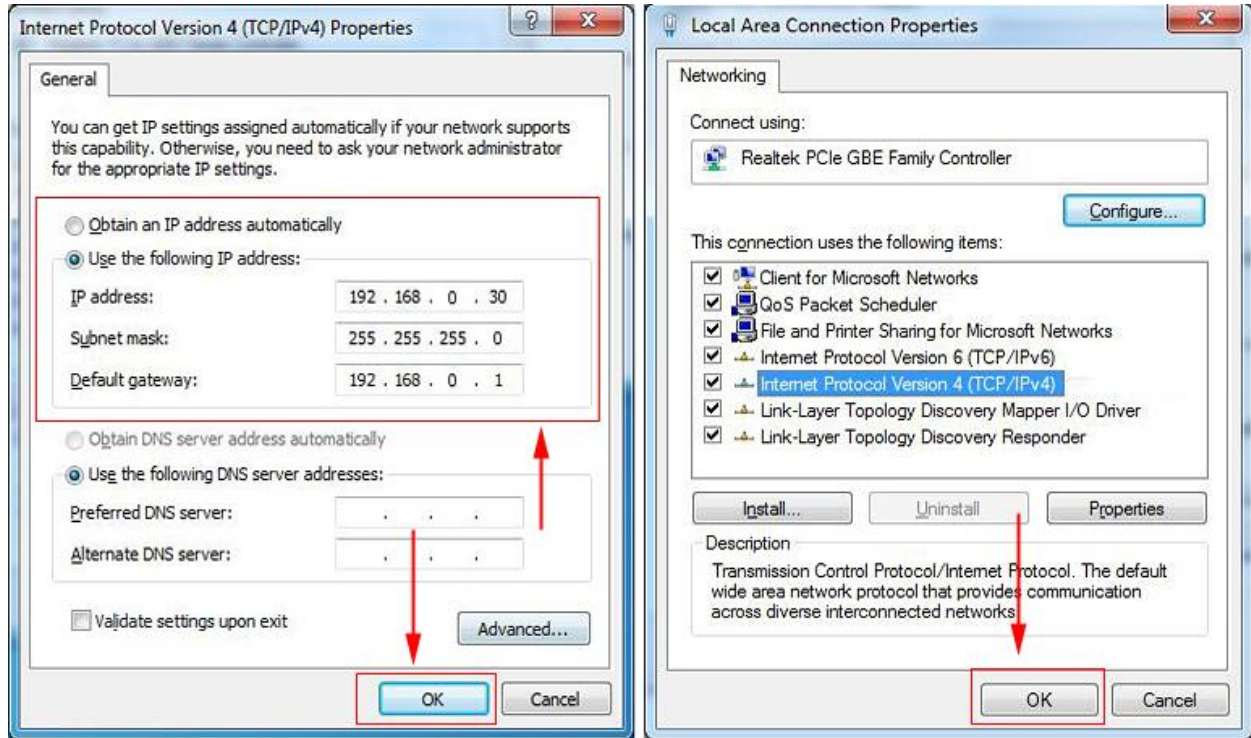


▼ Step3: “Properties” —— “Internet Protocol Version (TCP/IPv4)”

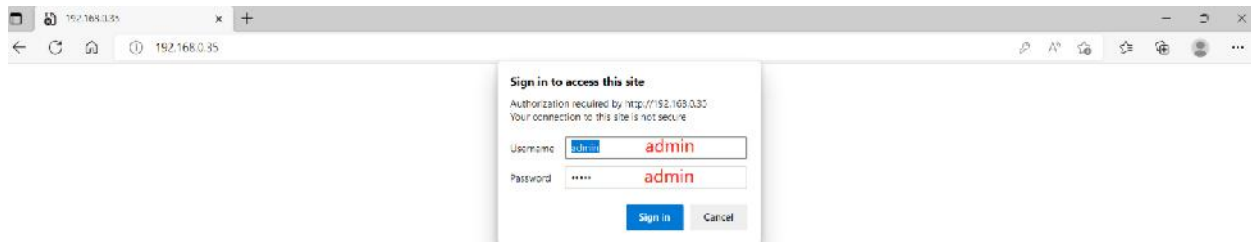


▼ Step4: change the IP to 192.168.0.XXX —— “OK”

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▼ Step5: Open the WEB browser, and enter the IP address of the decoder directly (the default is 192.168.0.35) to open the login interface of the decoder. The default username and password of the decoder is admin/admin and then click "Login".



3. Control Web of the Decoder

3.1 Status

▼ Status: Showing the status information of input and output, RTMP and relay.

The screenshot displays the web interface for the H.265&H.264 DECODER. At the top left, the logo 'H.265&H.264 DECODER' is shown, with 'HD Decoder System Platform' below it. To the right, there is a 'Service and Support' link and a language dropdown menu set to 'English'. The main content area is divided into four sections, each with a blue header and a light gray body:

- Input status:** Media chnl: rtsp://192.168.0.31:554/chn1 offline
- Output status:** Interface: HDMI
Resolution: 1080P@60
- Rtmp status:** RTMP path: rtmp://192.168.0.35/live Status
- Relay status:** Url: 1:

At the bottom, there is a navigation bar with five tabs: Status, Network, Decoder setting, System, and an unlabeled tab on the far right.

3.2 Network

▼ Network: Users can modify the network IP and DNS here

H.265&H.264 DECODER HD Decoder System Platform Service and English

Network Settings

Network settings

Net type:

DHCP:

IP:

Netmask:

Gateway:

DNS0:

DNS1:

MAC:

Status Network Decoder setting System

HD DECODER CONFIGURATION PLATFORM



Note

After modification, pls "reboot" the decoder from the system page

3.3 Decoding Setting

▼ Decoder setting: including input, output, relay and OSD sets

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Decoding settings

Input settings

Media url:
Backup url:
Settings:

Set up

Output settings

Output type:
Audio source:
Audio out:
Out Size:
Output window:
Audio volume: [0 - 100]
Luma: [0 - 100]
Contrast: [0 - 100]
Hue: [0 - 100]
Saturation: [0 - 100]

Set up

Relay

Local output:
Relay chnl:
Url e.g:
udp://#232.0.0.1:1234
rtp://#232.0.0.1:1234

Set up

OSD

Upload LOGO: 未选 .何文件 (only support 1280x720 jpg image)

Status

Network

Decoder setting

System

HD DECODER CONFIGURATION PLATFORM

Output settings:

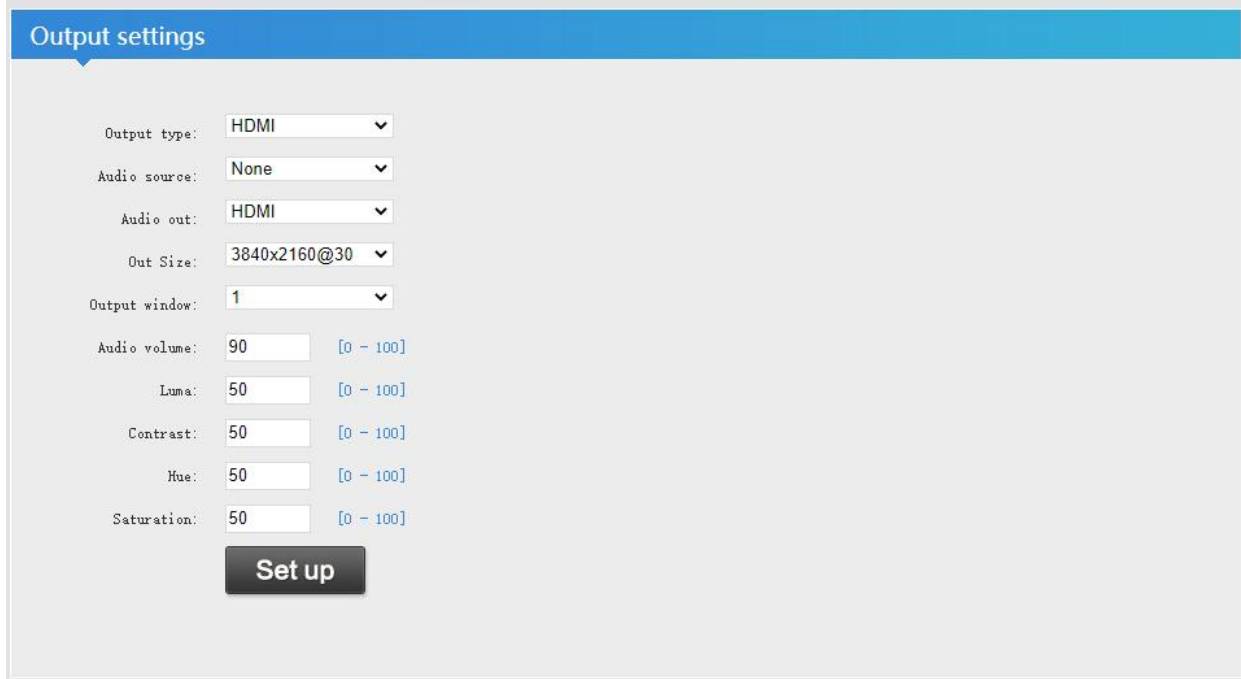
First select the output interface:

DH931&DH921 support HDMI/CVBS/VGA output;

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DS931 supports SDI output.

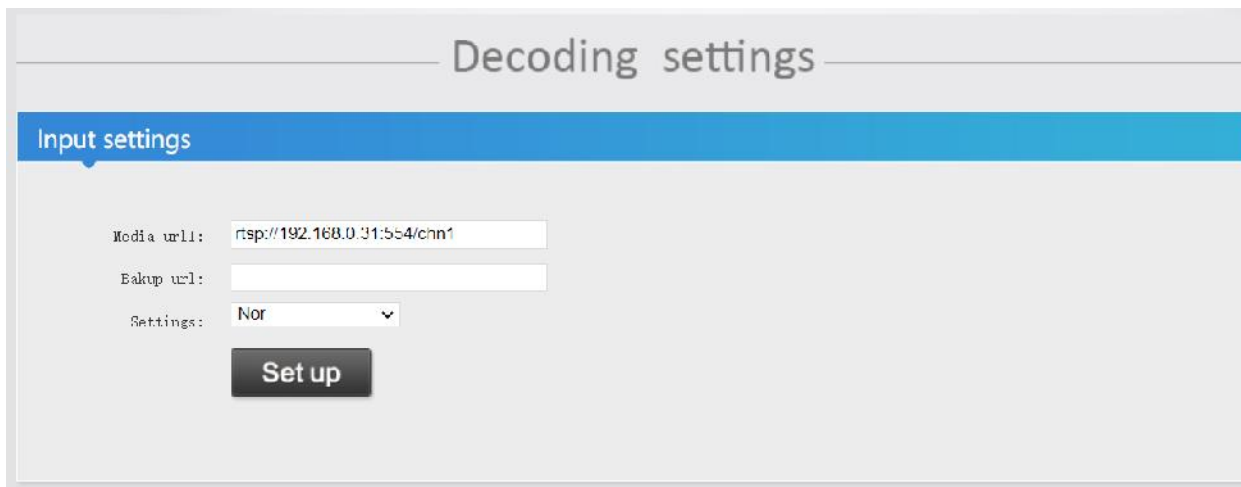
When “output window” is 1, Input settings box shows 1 input address bar:



The screenshot shows the 'Output settings' panel with the following configuration:

- Output type: HDMI
- Audio source: None
- Audio out: HDMI
- Out Size: 3840x2160@30
- Output window: 1
- Audio volume: 90 [0 - 100]
- Luma: 50 [0 - 100]
- Contrast: 50 [0 - 100]
- Hue: 50 [0 - 100]
- Saturation: 50 [0 - 100]

A 'Set up' button is located at the bottom of the panel.



The screenshot shows the 'Decoding settings' panel with the 'Input settings' sub-panel active. The configuration is as follows:

- Media url: rtsp://192.168.0.31:554/chn1
- Backup url: (empty)
- Settings: Nor

A 'Set up' button is located at the bottom of the sub-panel.

▲ “output window” : 1

When “output window” is 2*2, Input settings box shows 4 channels input address bar:

Output settings

Output type:

Audio source:

Audio out:

Out. Size:

Output window:

Audio volume: [0 - 100]

Tune: [0 - 100]

Contrast: [0 - 100]

Brightness: [0 - 100]

Saturation: [0 - 100]

Set up

Decoding settings

Input settings

Media url1:

Media url2:

Media url3:

Media url4:

Settings:

Set up

▲ “output window” : 2*2

When “output window” is 3*3 , Input settings box shows 9 channels input address bar:

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Output settings

Output type:

Audio source:

Audio out:

Out size:

Output window:

Audio volume: [0 - 100]

Luma: [0 - 100]

Contrast: [0 - 100]

Hue: [0 - 100]

Saturation: [0 - 100]

Input settings

Media url1:

Media url2:

Media url3:

Media url4:

Media url5:

Media url6:

Media url7:

Media url8:

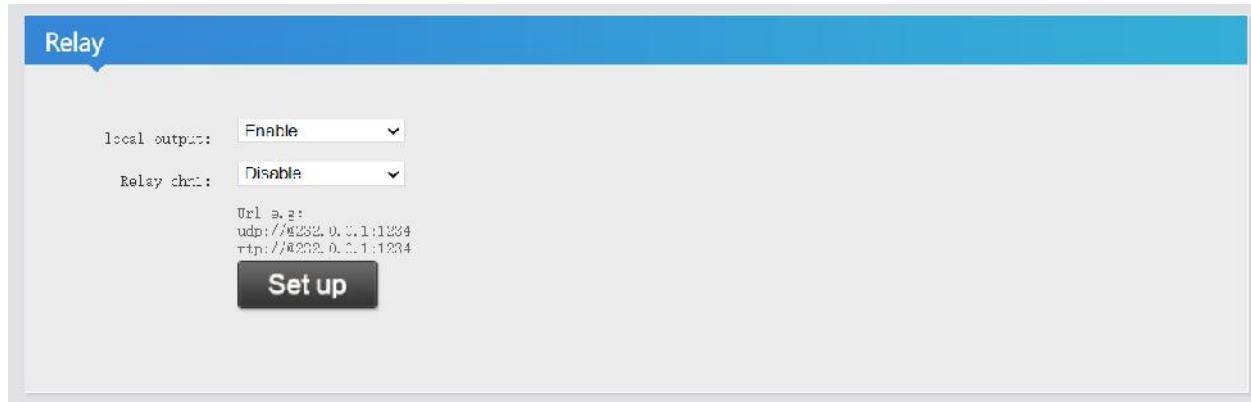
Media url9:

Settings:

▲ “output window” : 3*3

3.4 Relay

- ▼ Forward the streaming decoded by the decoder to RTMP/RTMPS or UPD/RTP protocols.



Relay

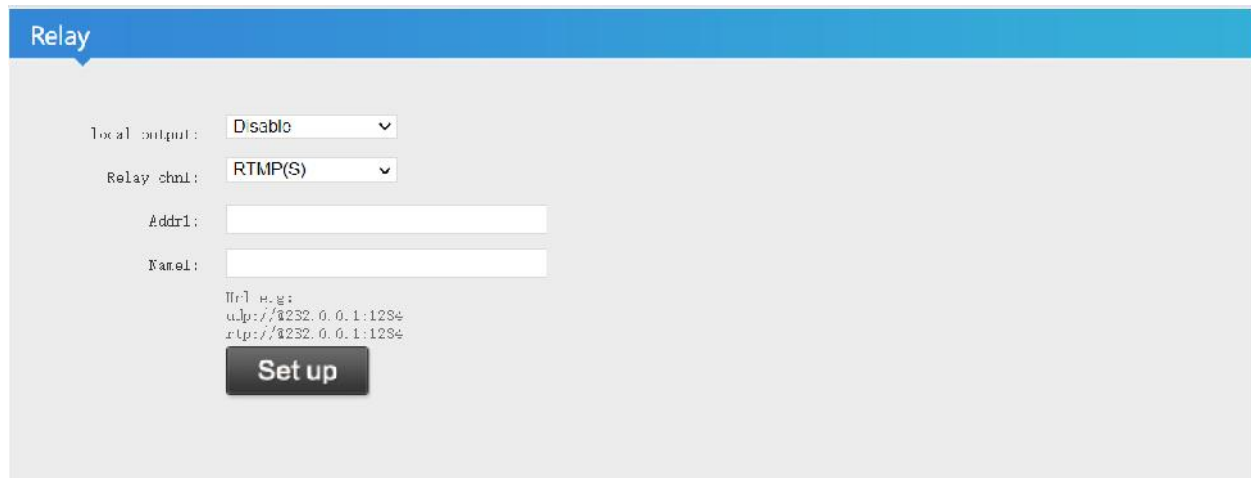
local output:

Relay chnl:

Url e.g:
udp://1232.0.0.1:1234
rtmp://1232.0.0.1:1234

When the Local output is enabled, the HDMI/CVBS/VGA/SDI output of the decoder is normal
When the Local output is disabled, the HDMI/CVBS/VGA/SDI output of the decoder doesn't work;
The user needs to disable this function when the stream decoded by the decoder exceeds 4 channels of 1080P, otherwise the streaming address will not be able to decode.

When the user needs to forward the stream to the other RTMP server or platform, pls choose the "RTMP(S)" model. At this point, the user only needs to enter the RTMP server and key/stream name in the "Addr1" and "name" input boxes.



Relay

local output:

Relay chnl:

Addr1:

Name:

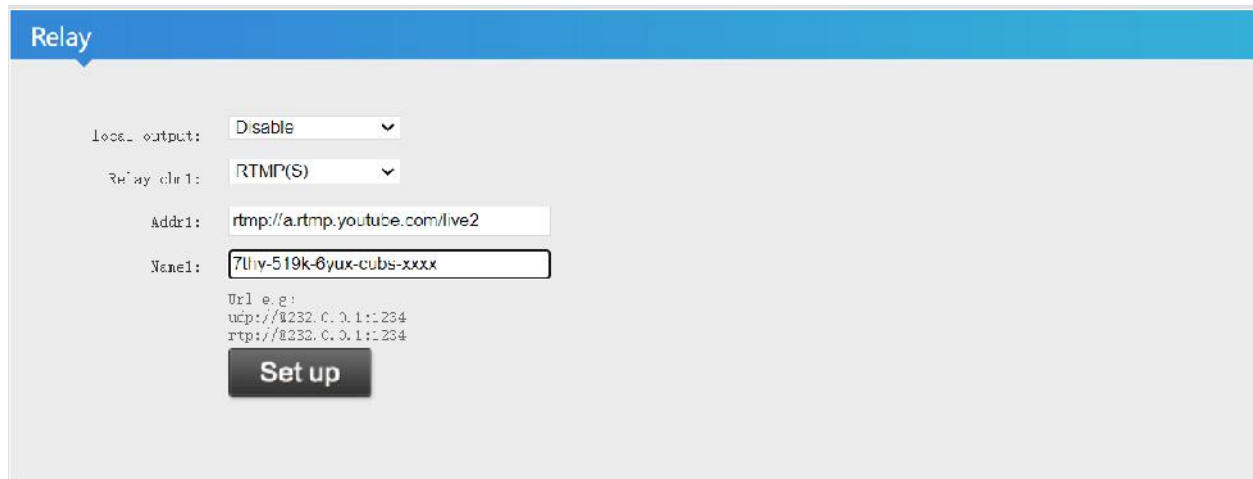
Url e.g:
udp://1232.0.0.1:1234
rtmp://1232.0.0.1:1234

E. g.

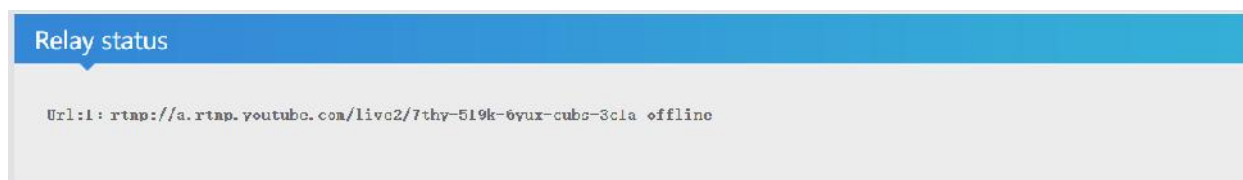
The user's RTMP server address is `rtmp://a.rtmp.youtube.com/live2`

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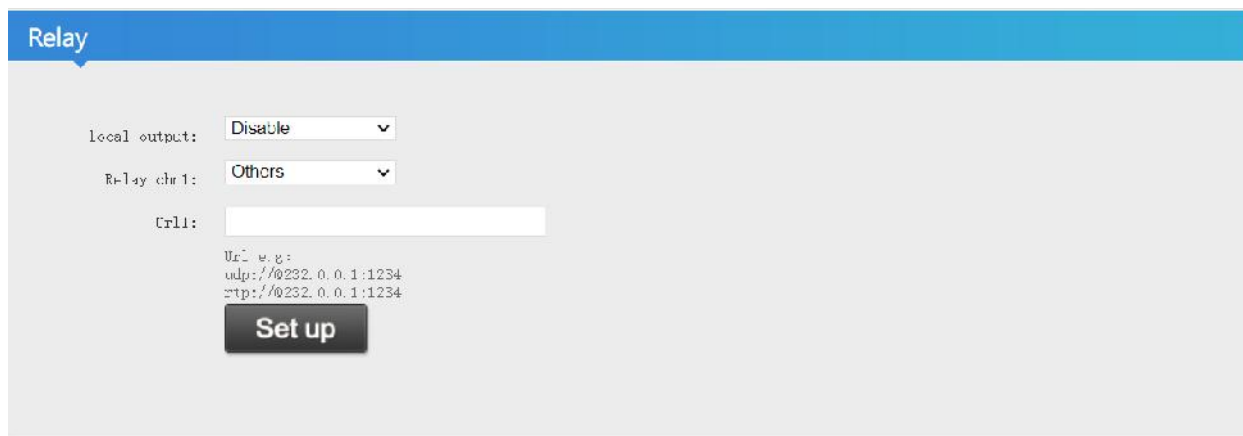
The stream Key is 7thy-519k-6yux-cubs-xxxx



At the same time, you can get a forwarded RTMP address on the status page (As shown below)



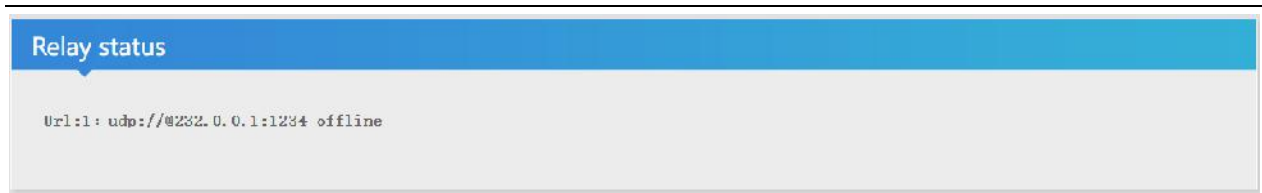
When the user wants to forward the streaming to UDP or RTP protocol, pls choose the " others" model. At this point, The user fills in the UDP or RTP address in the input box of Url1



E. g:

udp://@232.0.0.1:1234
rtp://@232.0.0.1:1234

▼At the same time, you can get a forwarded UDP or RTP address on the status page (As shown below)



3.5 Built-in RTMP server

▼ The user can find the RTMP server address (rtmp://192.168.0.35/live) on the status display page;



E. g. rtmp://IP/name

IP is the actual address of the decoder

Name can be customized, such as live, main and so on.

Application function:

1. The video stream can be pushed to the decoder through OBS or the encoder in LAN
2. Play the stream through another decoding device

3.6 OSD

▼ OSD: When the user does not input the stream address into the decoder, and he hopes to display the specified output picture. User can choose to upload the picture by the OSD set.

Note: only support 1280*720 jpg. Format.



3.7 System Setting

▼ Change password: It's used for modifying the login password of WEB

System Settings

Change password

New user name:

New password:

Confirm new password:

Modification

▼ System information: used to check the serial number of device, software version number, and hardware version number;

System information

Device SN:

Firmware ver:

Hardware ver:

▼ Auto reboot: It can be set to restart after a few hours, if you don't need it, you can choose to disable it.

Auto reboot

Auto reboot:

Reboot target: Hours

Left hours:

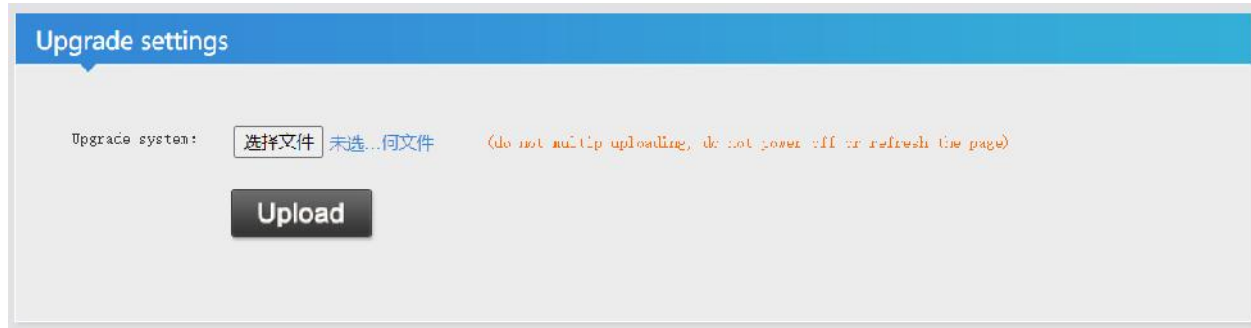
Set up

▼ Upgrading settings

Contact us (support@orivision.com) to get the newest firmware. After getting the file, pls don't

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decompress it, upload it directly. Reboot the decoder after uploaded successfully.



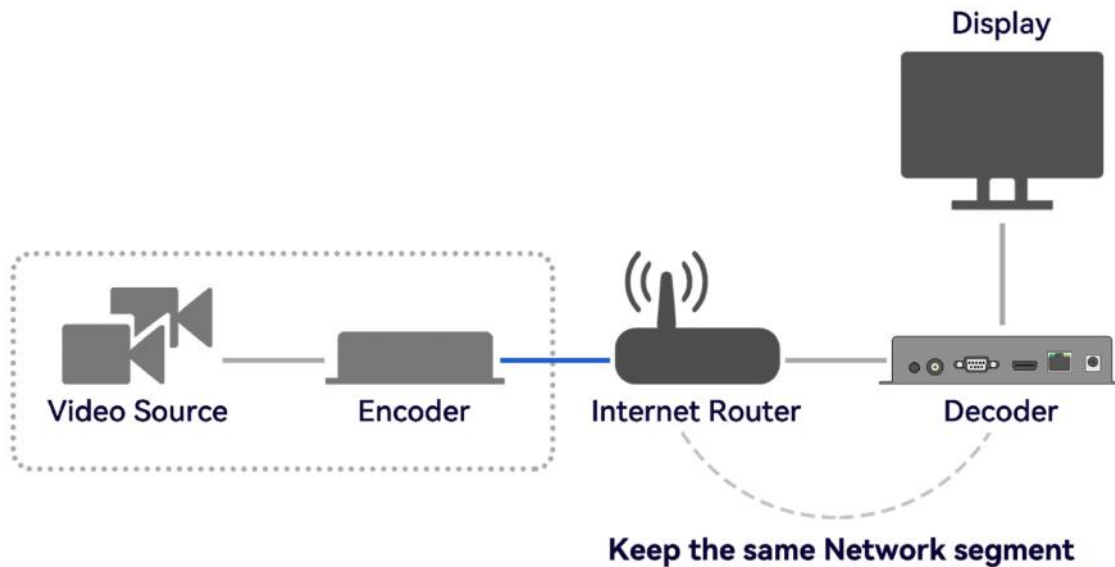
▼ System settings:

Reset button is used for initialization operation of the system.

Reboot button is used for remote restarting of the decoder.



4. How to connect the decoder to the internet



Step1: Check the IP of the signal source connected to the Network or router. For example: the router's network IP is 192.168.10.128

Step2: Change the default IP of the decoder 192.168.0.35 to 192.168.10.XXX; The user needs to confirm that the decoder and encoder or network signal source (Such as IP camera) are in the same network segment.

Step3: Connect the decoder with the user's PC with cable directly. And log in to the control page through the default IP 192.168.0.35. Please refer to 3.4 for operation steps

Step4: Find the Network set and change the IP to 192.168.10.XXX and the gateway to 192.168.10.1, then press the "Setup" button and reboot the encoder.

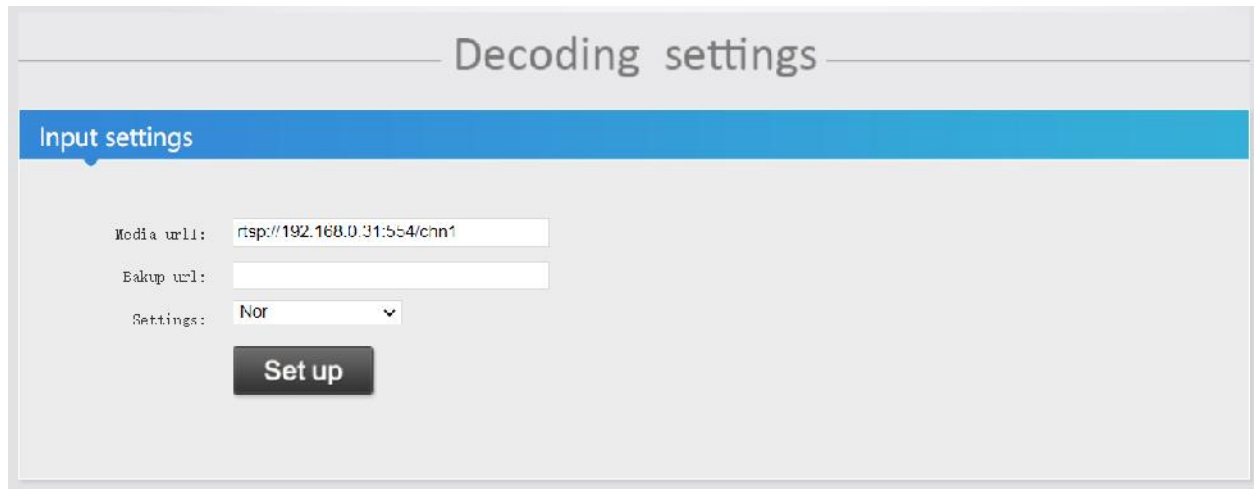
Step5: wait for a minute, and you can check the LCD display, When it shows the new IP, then you can refresh the web and login with the new IP.



Note:

If user can't log in by new IP, Pls check the DNS of the router. Then reset the decoder Re-login to the web according to the above steps, modify the IP, gateway, and DNS.

5. How to fill in stream address in decoder



The screenshot shows a web interface titled "Decoding settings". Under the "Input settings" tab, there are three input fields: "Media url:" with the value "rtsp://192.168.0.31:554/chn1", "Backup url:" which is empty, and "Settings:" with a dropdown menu set to "Nor". Below these fields is a "Set up" button.

The decoder support HTTP, RTSP, RTMP, UTP, UDP/RTP, SRT protocols.

The following is an example of each protocol format

```
http://192.168.0.31:8000/main
rtsp://192.168.0.31:554/main
rtmp://192.168.0.35/live/live
udp:// @232.255.42.41:1234
rtp:// @232.255.42.41:1234
```

SRT server mode (no password)

```
srt://@:7120?mode=listene
srt://192.168.0.31:7120
```

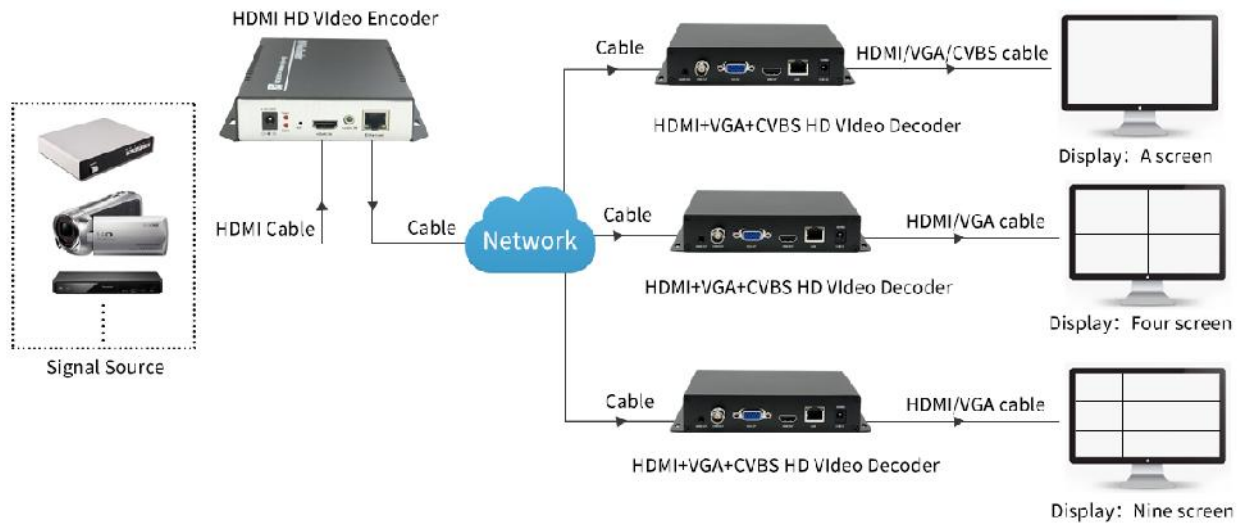
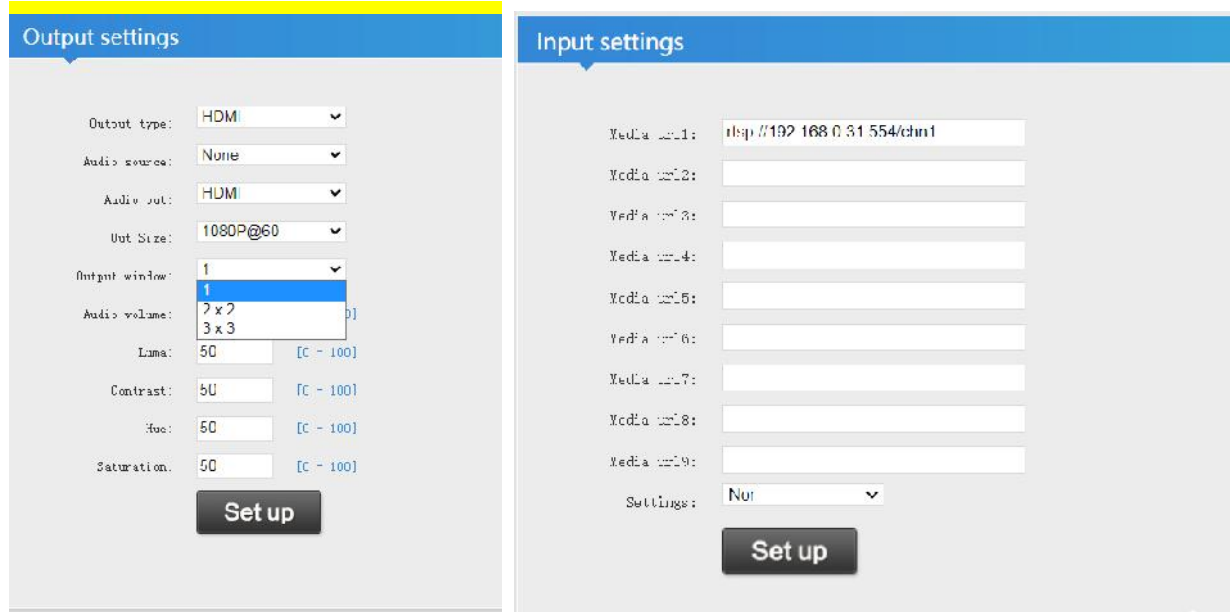
Example of encrypted stream:

```
rtsp://username:password@192.168.0.31:554/main
Listener mode: srt://192.168.0.31:7120?passphrase=password
Call mode: srt://@:7120?mode=listener&passphrase=password
```

Fill the above stream address directly into Media Url1 box, then click the “Set up” and Reboot the decoder.

▼ If you want to output multiplexed stream address, pls choose 2*2 channels output, and 3.3 channels output.

There will be a 4-way or 9-way address input box displayed in the input setting bar



Note

1. When the input stream resolution is 4K, only 1 channel decoding is supported, and the output resolution supports up to 4K@30hz. (DH931&D921)
2. When the input stream resolution is 1080P, 4 channels decoding output can be supported. (DH931&DH921, DS931)
3. When the input stream resolution is 720P, 9 channels decoding output can be supported. (DH931&DH921 DS931)
4. CVBS interface only supports 1 channel decoding output and does not support 4 channels and 9 channels decoding output (DH931)

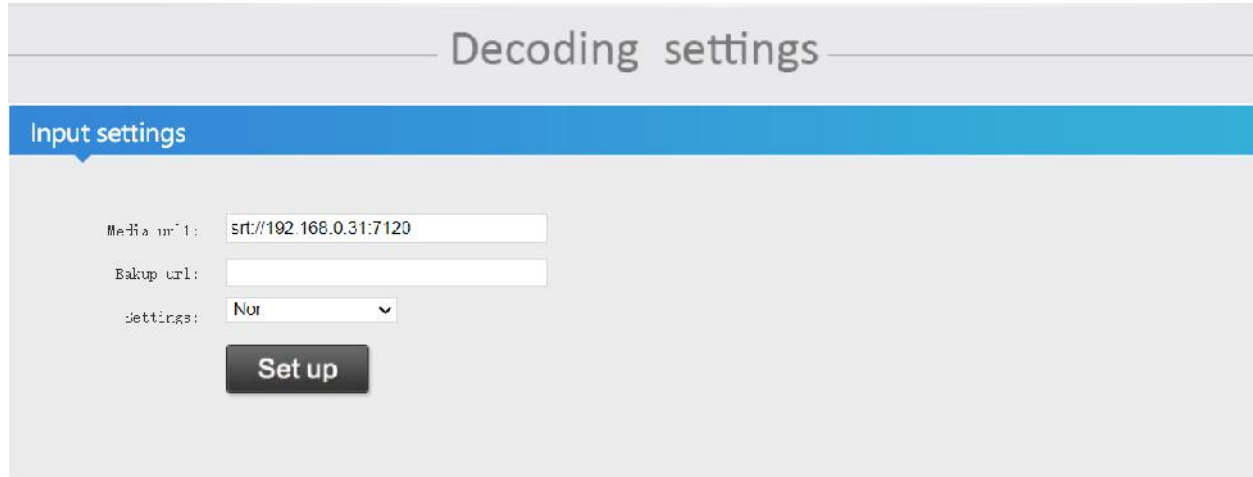
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6. How to set the SRT in the decoder

Decoder stream address definition:

When the encoder is set as SRT's Listener mode, the SRT format filled into the decoder is **srt://ip:port (non-encrypted)** or **srt://ip:port?passphrase=password (encrypted)**

User can copy the address (E.g: srt://192.168.0.31:7120) and paste into the decoder. Then click the "Set up" button and reboot the decoder



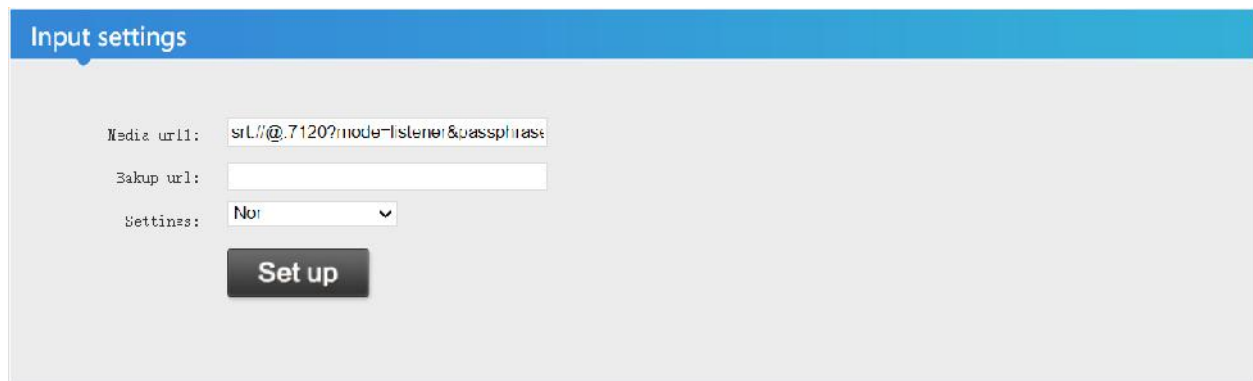
The screenshot shows a web interface titled "Decoding settings". Under the "Input settings" section, there are three input fields: "Media url:" containing "srt://192.168.0.31:7120", "Backup url:" which is empty, and "Settings:" with a dropdown menu set to "Nor". A "Set up" button is located below these fields.

When the encoder is set as SRT's Caller model:

non-encrypted: **srt://@:port?mode=listener**

encryption: **srt://@:port?mode=listener&passphrase=password**

User can copy the address (E.g: srt://@:7120?mode=listener&passphrase=1234567890123) and paste into the decoder. Then click the "Set up" button and reboot the decoder)



The screenshot shows a web interface titled "Input settings". Under the "Input settings" section, there are three input fields: "Media url:" containing "srt://@:7120?mode=listener&passphrase=", "Backup url:" which is empty, and "Settings:" with a dropdown menu set to "Nor". A "Set up" button is located below these fields.