4K UHD VIDEO DECODER

USER MANUAL

Changsha KILOVIEW Electronics CO.,LTD.

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1 Product introduction

Kiloview D300-4K UHD video decoder is a professional hardware decoding device that can decode multiple video streams without relying on a computer. It can decode multi-channel network video streams (from such as IP-Camera, RTSP/RTMP/RTP/SRT/NDI|HX unicast or multicast media stream etc.) to SDI signal and HDMI signal video output. It supports 4K UHD resolution, and supports multi-channel video stream split screen to the display wall and dynamic switching.

Model	D300
Input	2 *100/1000M RJ-45 adaptive Ethernet ports
Video Output	1 *SD/HD/3G-SDI, Up to 1080P 60Hz 1 *HDMI 2.0, Up to 3840x2160@60Hz
Output format support	SDI: up to 1080P60Hz; HDMI: up to 4k. Details as below: SDI: 1080P60/59.94/50, 1080P30/29.97/25/24/23.98 1080I60/59.94/50 720P60/59.94/50 570I/50 480I/60 HDMI: 4K 3840x2160p60/30, 1080p60/50, 1080p24/25/30, 1080i60/50, 720p60/50 Compatible with VESA standard format
Audio output	SDI/HDMI embedded or analog line-out output
Input Media protocol	RTMP/SRT/HLS/TS over UDP/RTP/RTSP/NDI|HX/ONVIF, etc.
SDI TRANSMISSION DISTANCE	Belden 1694A cable standard: SD SDI ≥ 350m; HD SDI ≥ 180m; 3D SDI ≥ 100m
Video decoding	H.264/H.265
Audio decoding	AAC/G.711
Decoding delay	<200ms(adjustable)
Decoding ability	4K 30Hz：up to 4 channels simultaneously 1080P 50Hz/60Hz：up to 8 channels simultaneously
Split screen display	Support 1/2/3/45//6/7/8/9 self-defined screen splitting
Management	Web
Power supply/ consumption	12V,1A / 6w
Dimension/weight	140*105*28mm/380g
Working temperature	-20°C~60°C

2 Operation guidance

● Installation and Connection of Device

Connect the power supply correctly and start the device. Connect the decoder HDMI/SDI interface to the display.

● Network Connection and Configuration

First, connect the decoder's Ethernet port 1 to the switch or PC by using the network cable. Then, set up your PC's IP address in the subnet of 192.168.1.0/24, and login the web page through http://192.168.1.168 (the default IP address of the Ethernet port 1 is 192.168.1.168), and the default login user name/password is admin/admin. After login, set parameters such as IP/DNS of the Ethernet port in the "Network" menu.

● Adding Video Sources

Login the web page, click Add on the "Media" menu, fill in the corresponding parameters (RTSP/RTMP/HLS and other video sources) according to the video source information, and then confirm, you can add a video source.

● Decoding output

The decoder has two output windows, select any output window and click the HDMI/SDI option to be green, which means that the window stream is output to the corresponding HDMI/SDI interface. Then drag the added video source to the output window and the decoder will start decoding it. If the decoding is normal, the video will be output.
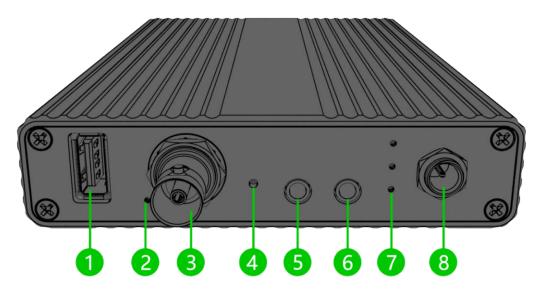
3 Packing list and interface description

3.1 Packing list

Please check the parts and accessories you received are exactly.

Name	Unit	Quantity
D300	set	1
DC12V/1A power adapter	pc	1
User manual	pc	1
Certification and warranty card	pc	1

3.2 Interface description

1.USB port   2. SDI indicator   3. SDI output   4. Reset
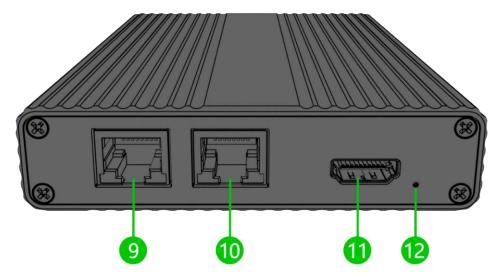5.Audio output   6. Audio input   7. Working indicator   8. Power

9.100/1000M Ethernet port 1   10. 100/1000M Ethernet port 2
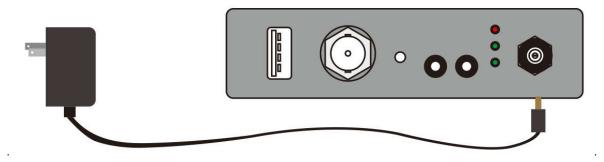11. HDMI output   12. HDMI indicator

3.3 Led indicators

Mark	Color	Status	Description
⚡	RED	ON	Power is on
		OFF	Power is off
🏃	GREEN	Light	Device/signal is normal
		Flash	The signal is not locked or the device is reset to factory settings (the 🔗 light will also flash)
		Off	Device/signal is abnormal
🔗	GREEN	Light	Network is connected
		Flash	Device factory reset indication (the 🏃 light will also flash)
		Off	Network is dis-connected

4 Installation and connection

4.1 Connect power and video signal

Use the standard power adaptor (DC12V/1A) connected to the device. The power light will be always on after the device is powered on. Connect the SDI or HDMI cable to the one end of the device (can be connected at the same time, the device supports simultaneous output of two signals), and connect the other end to a display device such as a monitor and an electronic screen.
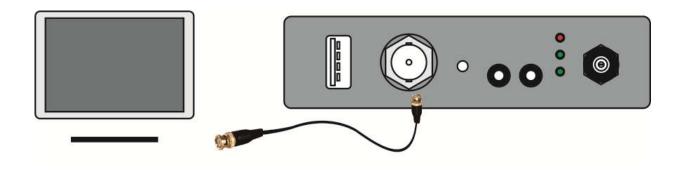
⚠ *Note: Please use the standard power adaptor provided. Using other unqualified power supplies may damage the device.*
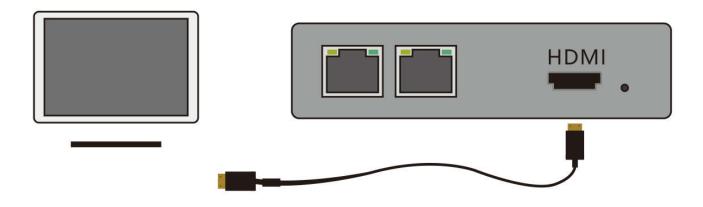
4.2 Connect displayer

Connect the SDI or HDMI cable to corresponding interface of the device (it can be connected at the same time, the decoder supports two signals output simultaneously), and the other end is connected to display, such as monitor or electronic screen, etc.

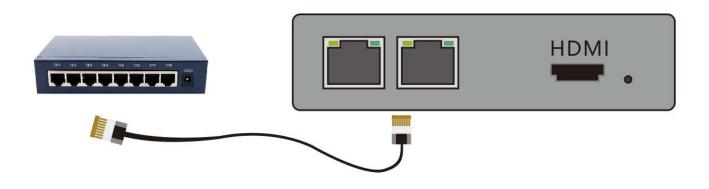Using SDI cable to connect SDI output interface with SDI display.

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

4.3 Connect network

Connect one end of the network cable to the decoder NET 1, the other end is connected to the network switch or the computer.

⚠ *Note: There are two Ethernet ports that you can connect to different networks. Normally, it is connected to NET 1.*

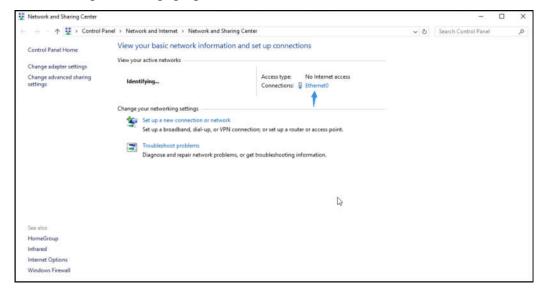## 5 Login and network configuration

5.1 Login to web page

First, you need to set the decoder and the computer to be on the same network segment so that the computer can login to the decoder's web page. The default IP of decoder network port 1 is 192.168.1.168. If the computer IP is not 192.168.1.* network segment, it is necessary to set the computer network port IP to 192.168.1.* network segment. The specific steps are as follows (Take Win10 as an example):

1) Roll your mouse and click the network icon in the lower right corner, click on "Network and Internet Settings" and then click on "Network and Sharing Center";
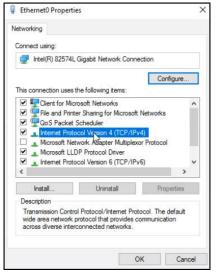
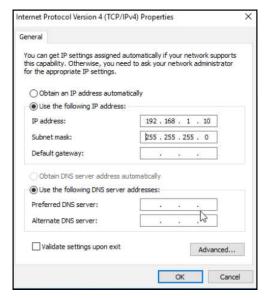2) A network connection panel will pop up and the left mouse button will click "Ethernet";

3) In the pop-up Ethernet status bar, click the "Property" button and left-click the "Internet Protocol Version 4" option;
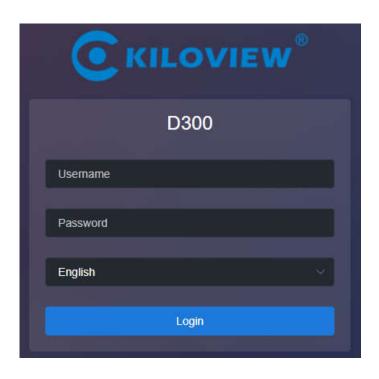

4) The computer defaults to "Obtain an IP address automatically", at which point you need to select "Use the following IP address", and manually enter the IP address 192.168.1.*and subnet mask, and click "OK".
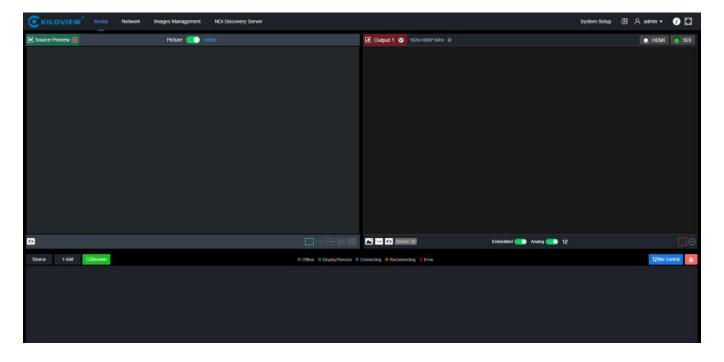
5) Open the WEB browser, enter the IP address of the decoder directly (default is 192.168.1.168) or the address http://192.168.1.168, click Enter to open the login interface of the decoder. When you open the page, an authentication dialog box pops up. You need to fill in the username and password. The default username and password of the decoder is admin/admin, and then click "Login".

⚠️ *Note: The device has 2 network ports, and the default IP addresses belong to different network segments. The network port 1 is 192.168.1.168; and the network port 2 is 192.168.2.168.*

6) After login, you can set decoding parameters and functional parameters on the Web page. The left window is for preview by default, the right one is the output 1/2 for decoding. Users can choose to close the preview window. The decoder page looks like this:
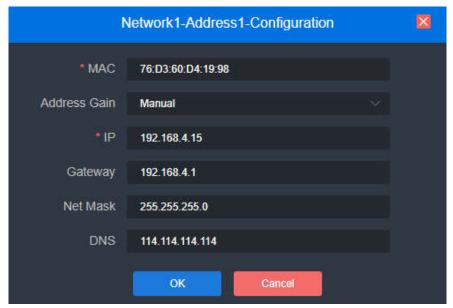
5.2 Network configuration

The decoder has two Ethernet ports. Generally, it only needs to configure the address 1 of network 1 to work properly. This IP can be used for network streaming and device management. The two ports can be used as service separation between LAN and Internet or data flow separation between service and management.

Click "Network" to enter the configuration page. The network interface icon is shown as green to indicate the normal working state of network, and the network interface icon is shown as orange to indicate the disconnected state of network.

Each network port can be configured with 2 IP addresses: "Address 1" is configured to be the working IP of the device; "Address 2" is used as the default management address and device management as well.

Click the "Set" of "Network 1- Address 1" to configure the IP address. You can get your IP address by "DHCP Dynamic" and "Manual Set". The IP address obtained by DHCP may change, while the IP address specified manually is fixed for the convenience of device management. IP address configuration is according to the actual situation of your local network configuration.

To choose manual configuration, you need to set the IP, Gateway, Mask, DNS parameters in turn. If the local network is in 192.168.4. */24 subnet, you can configure Address 1 to 192.168.4.15, 255.255.255.0, 192.168.4.1, and 8.8.8.8.

After the IP address is configured, you can test whether the IP address can ping through other computers in the local network, or access the web page of the device through http://192.168.4.15. Only when the IP address configuration is correct can the device work properly.

The configuration of network port 2 can be set as instructed for network port 1.

⚠ *NOTE*：*Because the device writes the configuration file to the system regularly for saving, the device cannot power off immediately after the IP address is manually configured or modified, otherwise the IP address may be lost. If you want to save the configuration immediately, you can restart the device once on the Web page.*

6 Function Configuration

6.1 Media（Video decoding）

Click the "Media" menu to make settings for decoding. There are three main functions: one is to add video sources and source list; the second is preview; the third is to set two output parameters of decoder, such as streaming, split-screen and etc..

6.2 Video source

6.2.1 Add RTSP source

Click "Add" to configure the parameters in the pop-up dialog box, and click "OK" to add a video source. Two URL addresses can be added under the same" Name", one main stream and one sub-stream. The main streaming address for decoding output. The sub-streaming address for preview the images. If there is only one main streaming address, it will be used for both preview and output.

⚠ **NOTE：First of all, please get the correct video source URL address from live platforms. The abnormal working source address will cause the device unable to work properly. (Video source can be tested by VLC player.)**

The above picture shows how to add a video source by adding an RTSP source as an example. The steps for adding other types of video sources are the same. The parameters please refer to the table below.
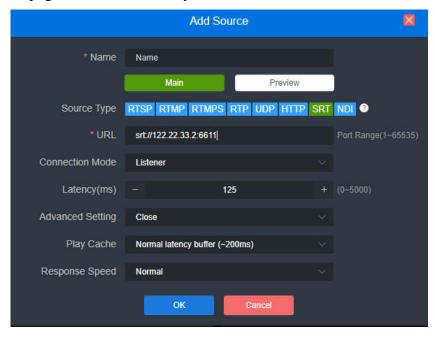
The parameters of the video source are defined as follows:

Name	Video source name, can be set at will, support mixed Chinese and English
URL Address	Support RTSP, RTMP, RTMPS, RTP, UDP, HTTP and other protocols, decoder can automatically identify the URL address. After entering the URL address, if some advanced parameters are configured, the dialog box will automatically pop up to configure the corresponding parameters. You can also click on the protocol options on the page to set the parameters directly.
Transmission Mode	Choose TCP or UDP
User/Password	Configuration is based on whether or not the video source is authenticated by the user. Normally, no configuration is required.
Decoding buffer and delay	For a variety of different application scenarios and networks, to balance of delay and fluency of the decoding, the device provides a variety of buffering strategies for users to choose. Zero buffer, 50ms, 120ms, 200ms, 500ms, 1s are optional. Users can choose on actual network conditions, good network with lower latency, and bad network with higher latency.
Video Receiving Port	RTP protocol usage, Range 1-65535
Audio Receiving Port	RTP protocol usage, Range 1-65535
Binding Network	RTP protocol usage, Default auto
Video Coder	RTP protocol usage, [PT,] CODER[/Timestamp-unit], i.e.96, H264/90000
Audio Coder	RTP protocol usage, [PT,] CODER[/Timestamp-unit/channels], i.e.96, MPEG4-GENERIC/48000/2

6.2.2 Add SRT source

Add a SRT source in the page of video decoder by "Media"–"Add Source"–"SRT".

The parameters are defined as follows:
Name: You can name it freely, supporting letters and numbers combination;
Connection Mode: Caller, Listener, Rendezvous;

URL address: When using the CALLER mode, the URL address format is: srt:// the peer public IP address: port; when using the LISTENER mode, the URL address is: srt://:port

Address: Set IP address of the receiving port;

Port: Configure a listening port which should be consistent with the sending port;

Latency: please set it according to the configuration of the video encode and the final delay will be the larger one between encoder and decoder. Default is 125ms;

Encryption Mode/AES KEY: AES-128, AES-192 and AES-256, it should be the same as the sender;

Key: encryption key, fill in 10-32 letters or numbers according to the encryption method;

Bandwidth Overhead: Percentage value that configured according to network link quality. Multiply this percentage value by the total video and audio bitrate encoded by the encoder to get the maximum bandwidth occupied by the overhead allowed by Bandwidth Overhead. The sum of this value and the video and audio bitrate is the current SRT transmission bandwidth threshold, which is also the maximum bandwidth available for SRT streams. From the perspective of "overhead", it is the extra "invalid" bandwidth to be used in addition to the media content required for transmission (it can be understood as a payload), but it is different from those common protocol overlay, TCP header overhead or UDP header overhead. The bandwidth overhead here is not a fixed 20~60 bytes TCP header overhead or 8 bytes UDP header overhead, but changes in real time according to the network conditions. The worse the network link conditions, the more the required transmission. The setting range is 5%~100%, and the default size is 25%;
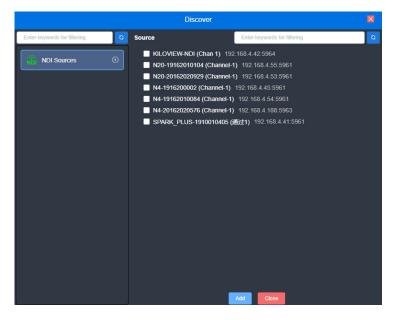
Payload size: The receiver should match the same size of the data pack sent.The default size is 1316, which is the optimal packet size for encoding and decoding.

2) Please drag the added SRT source to the output window, and the decoder starts to listen for SRT requests, it will establish the SRT connection while receiving the right SRT "Call". After connected, the status will show "Pull".

6.2.3 Add NDI|HX video source

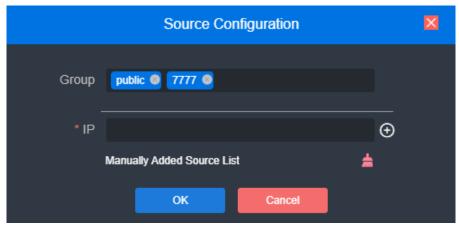1) Automatically add NDI|HX video source

Click "Discover" on "Media" of decoder page, you will discover NDI sources in the same network segment in the pop-up dialog of NDI sources. According to the device name and channel name of the NDI source, select the source to be added, click "Add", the video source will be added to the video source list.

2) Manually add NDI|HX video sources from non-public group or cross-segment IP

Click "Set" of "NDI Sources" and go for source configuration. If you want to search for devices with different group names in the same subnet, filling in the specified group name in "Group" box, then click the "Enter" button. At this time, two group names will be displayed in the "Group" box, and then click "OK" (no need to fill in the IP address), the device will search for the NDI sources of these two group names at the same time (You are allowed to add multiple group names to search).

When you need to search for NDI sources across network segments, and the group name is a non-public group, you need to fill in the specified group name firstly, and then fill in the specified IP address in the "IP" box, click the button ⊕, this IP address will be added to the "Manual Scan Address List". You can add multiple IP addresses to search at the same time, and then press "OK" to save.

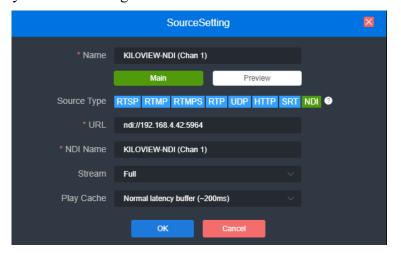3) Add NDI|HX source by filling in the URL address

Click "Add" of "Media" on the decoder page, select "NDI", and fill in the corresponding parameters to save;

Name: can be arbitrarily configured, English and numbers combinations;

URL address: ndi://source IP address: port (Default port is 5961);

NDI name: device name of the source (channel name);

Stream: Full (main stream) and Preview (sub stream) optional;

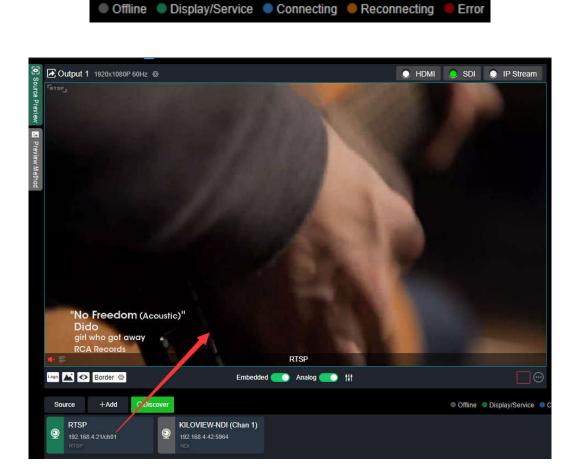Play cache: Select the play cache according to the actual scene.

⚠ **Note: D300 only decodes NDI|HX Version 2.0 video source. For FULL NDI source, please choose other NDI products such as N3/N30/N4/N40.**

6.2.4   Video sources list

This list shows all the video sources and source parameter information you added, not all of them are decoded. If decoding to output or for preview, you need to manually drag it to the upper preview or output window for decoding. When the video source is shown as green "Display/Service", the source is decoding or streaming; the gray "Offline" means it is not used as decoding source; the blue "Connecting" indicates that the source is establishing a connection and is ready to decode; and the Yellow "Reconnecting" indicates that the source is decoding abnormally and tries to connect and decode. The Red "wrong" indicates the source is wrong and can not be decoded.
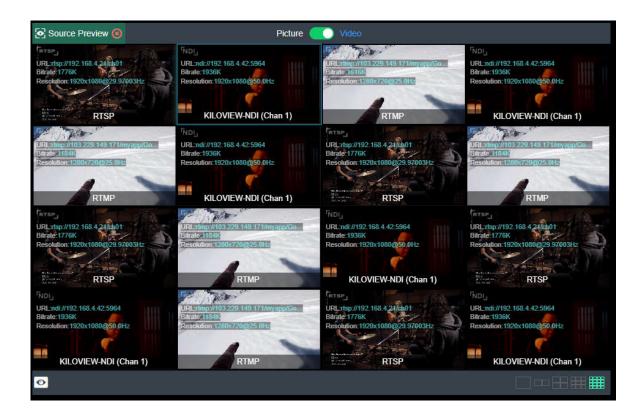

⚠️   *Note: It is non-decoding status after video sources being added You need to drag it into the above output window, then D300 starts to connect to the source URL and decode the source.*

6.3 Source preview

Support local preview of video source on WEB page, click on the upper left corner to close the preview function. Picture/video switch button can switch picture or video preview mode.

➢ Support picture/video preview. If you use pictures in the preview, you will see the picture stream, which is expressed as a picture change in about three seconds; when you use the video preview, the picture is a smooth video;

➢ The preview function mainly consumes the computer's CPU/GPU performance. If the multi-screen preview is stuck, it may be related to the computer performance;

➢ Supports 1/2/4/9/16 split screen, up to 16 split screen previews;

➢ Requires the latest version of Google and Edge browser to preview;

➢ Supports the local preview of the computer and device in the same LAN, and cannot preview across WAN;

➢ Supports the display of decoding status and source parameter information.

Note: The browser preview does not support video sources containing B-frame encoding and H.265 encoding.
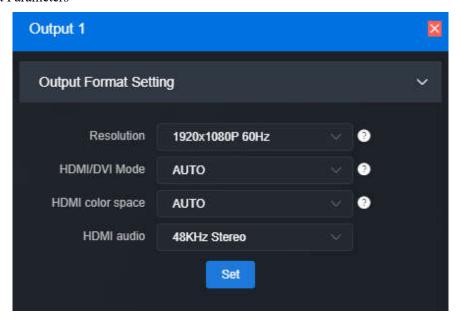
6.4 Video output setting

D300 supports H.265/H.264 decoding and simultaneously output of the same and different sources or split screens.

Take "Output 1" as an example for detailed description of the controls of the output window (shown as below):

① Configure Output Parameters

Resolution:

Support different resolutions configuration for HDMI (up to 3840x2160@60Hz) /SDI (up to 1920x1080@60Hz). And it supports up to 4 CH of 4k video, 8 CH of 1080P 50Hz/60Hz, or 9 CH of 1080P30 and below simultaneous decoding output. All resolutions marked with SDI only are valid on the SDI output interface only. On HDMI interface, the output resolution will be the one that is close to the resolution.

If output on multi-interface and one interface can't support appointed resolution, for example, if 4K

resolution is not supported on SDI, the system will choose a resolution that can be supported by multiple interfaces.

HDMI/DVI Mode:
Three modes can be selected: automatic mode, HDMI mode and DVI mode. If "Automation" is selected, the HDMI/DVI mode will be automatically selected according to the EDID description of the device connected.
If the display is a DVI interface, you can use a HDMI to DVI converter to output the decoded video directly to the DVI display. In DVI mode, the color space and audio parameters will not be set.

HDMI color space:
Optional "automatic", "RGB444", "YCBCR444", "YCBCR422", "YCBCR420". If "Automation" is selected, an appropriate color space will be automatically selected according to the EDID description of the HDMI device connected. If the output is not normal in this case, please choose the right HDMI color space by yourself.
HDMI audio:
32K/44.1K/48KHz dual channel is optional. Please choose according to actual needs, default 48KHz.

②Display current video source information
It can display the current output of the video source name, current bit rate and other parameters.
③Setting up the way of video output
There are 2 output modes: HDMI/SDI. If select HDMI, it means the current source will be output to HDMI interface; If SDI, the current source will be output to SDI interface.

HDMI/SDI can only be selected by one signal output window at the same time. If output 1 was originally selected as HDMI, and then click output 2 to select HDMI, HDMI selection box of output 1 will become gray and signal output will be closed. When a signal output window selects both HDMI and SDI, it represents that the current screen will be output to both HDMI and SDI interfaces.

Two output windows can choose the same signal source and screen splitting, or can be set to different signal sources and screen splitting.
④Audio on/off
Click ◀ to set the output audio on and off
⑤icon switch

Click Logo to turn on/off the overlay LOGO display; click ▲ to turn on and off the display of the

background overlay; click 👁 to turn on and off the source status and information display; click

边框 ⚙ to turn on and off the frame overlay, and click on the settings to set the frame color

⑥Audio gain setting
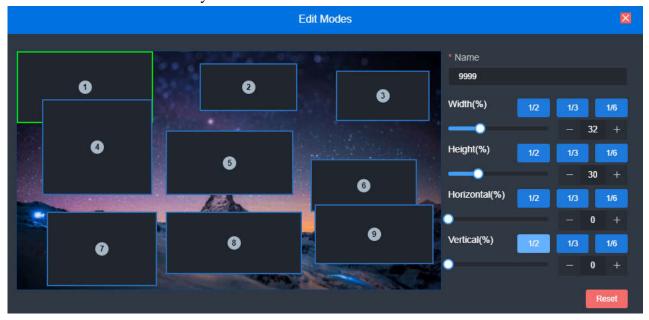You can set the gain of "embedded" and "analog" audio.
⑦Screen splitting settings
The decoder can display 4 split screen modes by default, and optional 1/2/3/4/5/6/7/8/9 split screens. By clicking the extension button on the right, you can set the split screen mode, 1-4 options. In the extended button, the selected split screen mode is bright, and the unselected is gray, and up to 4 split screen modes can be selected.
Click "Add Layout" to enter the layout editing page. Select the split screen layout, you can drag the size

and overlay picture-in-picture of the multi-screen in the layout at will, and the layout can also be modified in real time while the layout is in use.

⑧Video Source Settings

Click to modify the parameters of the video source directly, Click the "☒" button to delete the video source; click "Φ" to pop up the video source parameters and decoding status information.
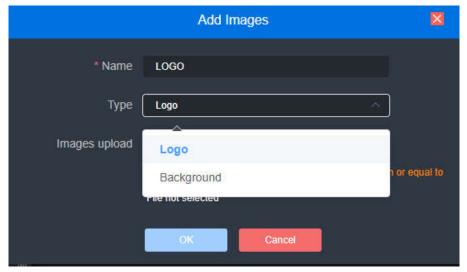

6.5 Output image and OSD overlay

Image overlay is divided into logo and background overlay. First, you need to upload the image that needs to be overlaid in the image management, and then go to the overlay settings for overlay settings.
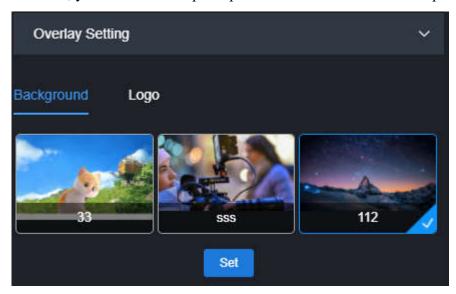
1) Picture management

On the page "Picture Management"-"Add Picture", in the pop-up add box, fill in the name, choose Logo/Background for the type, choose to upload a picture, and then save.
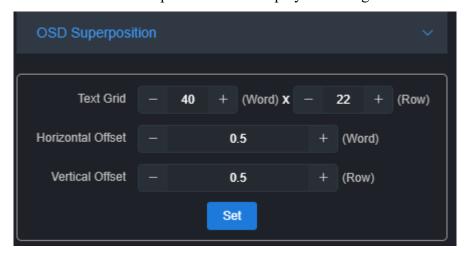
Click the output (1/2) box setting that needs to be superimposed, select the picture or logo that needs to be superimposed, and the position of the superimposition can be selected for the logo superimposition. After clicking "Set" to save, you can see the superimposed effect on the decoded output screen.

⚠ *Note: The overlay picture can't be larger than video resolutions,otherwise overlay picture will be invalid and not displayed. Picture format can only be JPEG and PNG.*
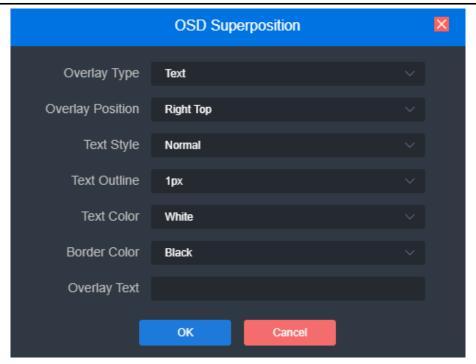
2) OSD overlay
First, you can configure the overlay globally and adjust the offset of the overlay position. This function can fine-tune the offset of the character's position in the display according to the actual situation.

➢ Screen grid: divide the screen into horizontal M grids and vertical N lines, each character occupies one grid;
➢ Horizontal offset: the offset position of the character in the horizontal direction of the screen can be adjusted, the unit is character.
➢ Vertical offset: the offset position of the character in the vertical direction of the screen can be adjusted, the unit is character.
Then set the overlay, select "Overlay Type", and perform the overlay function separately for the "Text" and "System Time" and the overlay items.

➢ Overlay type: "No superimposition, text, date, time and date/time" can be selected;

➢ Overlay position: 7 preset display positions and custom positions can be selected, and the display position of characters after superimposition can be selected according to actual needs;

➢ Horizontal position: when the overlay position is customized, adjust the character offset based on the global horizontal offset setting;

➢ Vertical position: When the overlay position is customized, adjust the character offset based on the global vertical offset setting;

➢ Text style: select "normal, bold";

➢ The outer border of the text: the adjustable range is 0-10px;

➢ Text color: text color can be selected;

➢ Border color: The color of the text border can be selected.
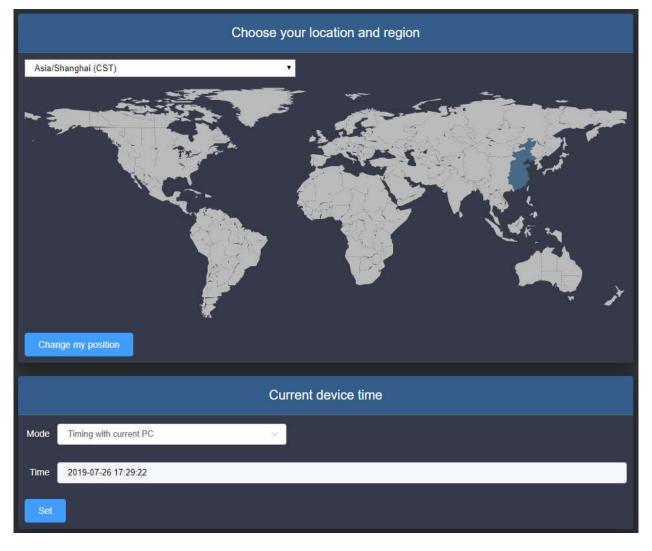
7 Function Configuration

7.1 User Management

Viewing User Lists, Adding and Deleting Users

7.2 System Time

Timing mode can be set: synchronization with current PC, manual timing and slave NTP server.Choose the right time zone to ensure the correct time from the NTP server.

7.3 Reset

Used to reset decoding services, usually used to make the modified parameters take effect immediately or decode abnormal situations. The current decoding services will be temporarily interrupted, requiring about 3S.

7.4 Reboot

Device software restart, it lasts about 3 minutes.

7.5 Restore

If users change parameters that lead decoder can't work (The typical situation is changed network address, so it can't login decoder), users could restore factory setting to default value.

There are two ways to restore the factory settings. Restoring the factory settings will lead to a hard restart of the device. The restart process will take about 3 minutes.
1) WEB page "Restore", click to take effect.
2) RESET button of device panel. At the RESET button position of the device, hold down the reset key and keep for more than 5 seconds. The device will be restored to the factory settings.

Below parameters will be restored after restoring factory setting:
● Login username and password will be turned to admin;
● The IP address of Ethernet port 1 will be restored to 192.168.1.168/24, and the IP address of Ethernet port 2 will be restored to 1.168.2.168/24;
● All the video/audio decoding settings will be restored;
● Streaming settings will be restored.

7.6 Firmware

Please check the device information and firmware before upgrading, download the firmware to the local computer in advance. Click "Select File", and then click "Upgrade", and the device will start upgrading.

After the firmware is uploaded successfully, the power cannot be cut off during the upgrade process. After the upgrade, the device will restart. The whole upgrade process will last about 3-5 minutes (depending on the size of firmware and network environment).

After the device is restarted, you can click on the upper right button to see if the software version is consistent with the planned upgrade.

Firmware update

Current firmware version: 5.1.0
Current software version: 4.00.1994

Note: After firmware upload successfully, the system will automatically restart to complete the upgrade!

[Select file] [Upgrade]
You can only upload bin files
File not selected

Thank you for reading

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