

Efficient Intelligent Video Encoder Guide – For EIVE Series

Date: March 4, 2024 Version:1.1

Index

1. Introduction	2
2. Equipment Installation	3
3. EIVE E4 encoder system operation instructions	3

1. Introduction

EIVE E4 - Efficient Intelligent Video Encoder

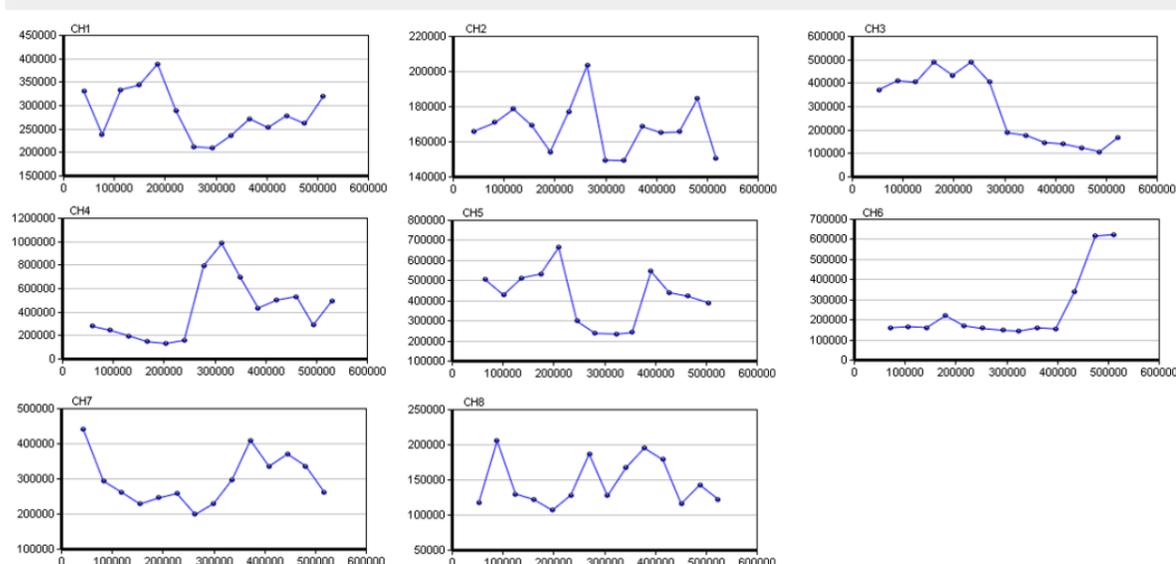
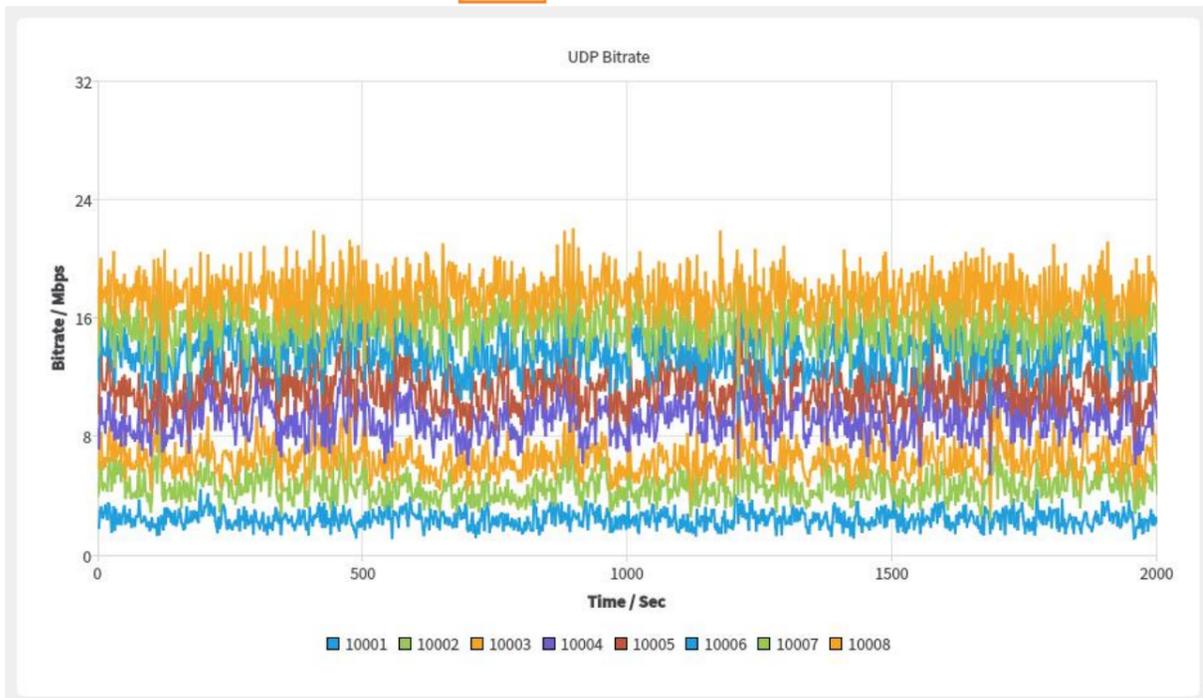
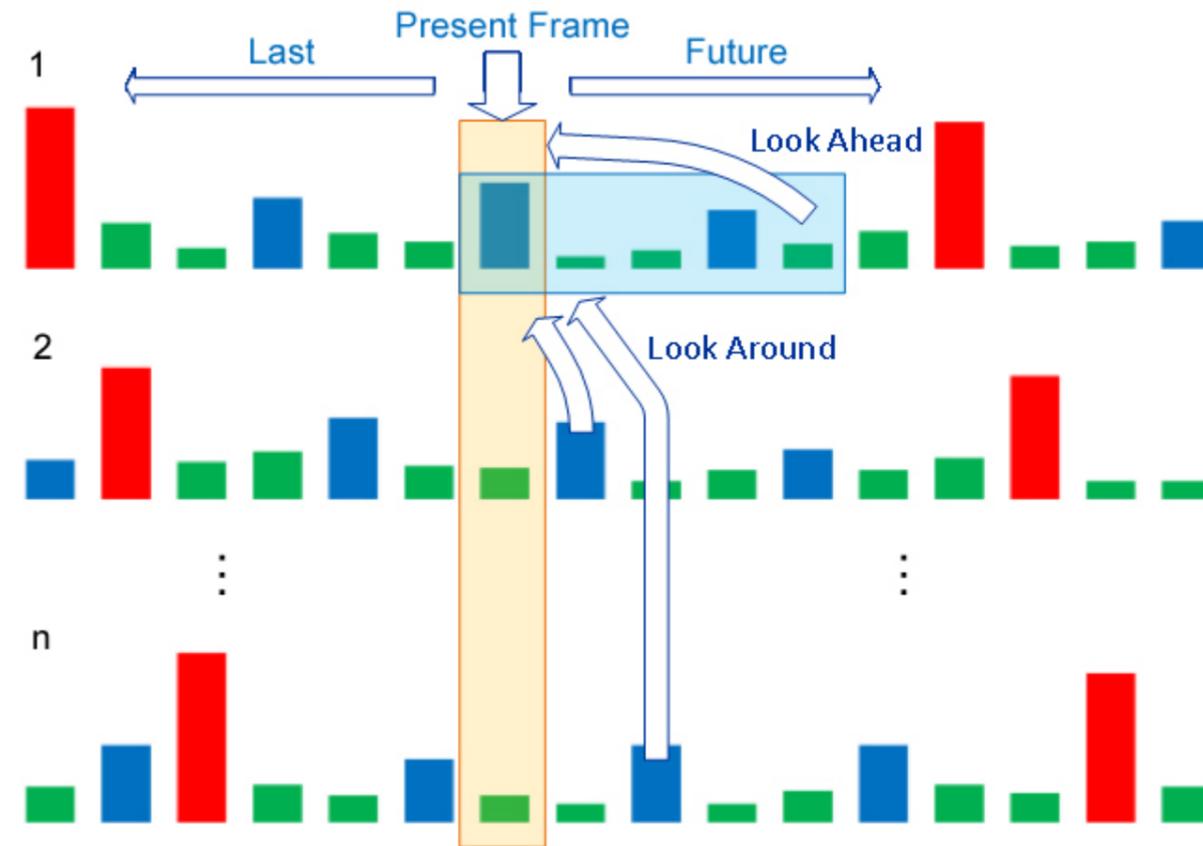
The EIVE E4 is a cutting-edge device that uses spatio-temporal domain statistical multiplexing encoding technology to deliver more TV programs with less bandwidth. By using the non-correlation between programs, each program in the channel shares the bandwidth of a channel, and the bitstream is dynamically allocated among programs, as shown in the figure, which enhances the coding efficiency by 2-3 times. This device can handle network UDP unicast input and output network UDP multicast or ASI streams. You can easily combine multiple encoders according to the number of programs. It also supports remote connection and simple operation and maintenance.

The core of this technology is the Spatio-Temporal Statistical Multiplexing Encoding technique, which exploits the non-correlation of multiple programs. It analyzes the current and future bitrate requirements of all programs frame by frame, and dynamically determines the encoding quality of each frame. All programs share the total physical bitstream, which is dynamically allocated among them. This technique enables us to use limited spectrum resources more efficiently, meeting the growing demand for high-definition video transmission.

The strategy of spatio-temporal domain statistical multiplexing has two aspects: time and space.

In terms of time, it uses a 'Look Ahead' approach, which pre-encodes the video in advance to obtain the necessary information.

In terms of space, it uses a 'Look Around' approach, which monitors the pre-encoding situation of each video path in real time, and adjusts and controls the encoding of each video path.



Main features

It uses real-time AI face detection algorithm to ensure the clarity of human faces in the picture.

It supports IP input, and output IP or ASI streams.

The encoding software interface is easy to operate and intuitive to use.

It supports real-time monitoring of multiple input signals.

It supports modifying parameters such as program name, volume, etc. of all output programs on the software interface, which is convenient and fast.

It supports adding subtitles, icons, and animations to any combination of programs.

It can flexibly choose multiple encoders to combine as one encoding system.

Input	Ethernet	10/100/1000Mbps
	Protocol	UDP SPTS
	Programs	8 SPTS
Output	ASI	5.0~ 50.0Mbps
	Video Codec	H264
	Video Resolution	1080P/720P/576P/480P
	Audio Codec	AAC
	Programs	4 HD programs or 8 SD programs
General	Dimension (W*D*H)	43cm*25cm*4.5cm
	Weight	3.87kg
	Power	AC 100V~240V 50/60Hz
	Power Consumption	100W
	Temperature	0~45°C(Operation) ; -20~80°C(Storage)
	Relative Humidity	5% to 90% non-condensing

2. Equipment Installation

Packing List

The standard EIVE system contains the following equipment:

Encoder host (model - E1) - 1 set (including HDMI cable X1)

Encoder slave (model - E2) - 3 sets (including HDMI Dummy Plug X3)

1. Connect all 4 encoders network to the gigabit switch with gigabit network cable
2. Connect the encoder host's HDMI interface to the monitor, connect all the encoder slaves, backup and small host's HDMI interface to the dummy load;
3. Connect the keyboard and mouse to the encoder host;
4. Connect the encoder host's ASI output port to the backend device's ASI input port (only connect when ASI output is required)
5. Power on all devices.

Device	IP address	Subnet mask	Receive UDP unicast port number	Receive UDP multicast address and port number
Encoder host	192.168.5.100	255.255.0.0	60001-60008	224.2.2.1:2001-224.2.2.8:2008
Encoder slave 1	192.168.5.101	255.255.0.0	60011-60018	224.2.2.11:2011-224.2.2.18:2018
Encoder slave 2	192.168.5.102	255.255.0.0	60021-60028	224.2.2.21:2021-224.2.2.28:2028
Encoder slave 3	192.168.5.103	255.255.0.0	60031-60038	224.2.2.31:2031-224.2.2.38:2038

3. EIVE E4 encoder system operation instructions

The statistical multiplexing encoder system automatically runs the encoding program after booting up, showing the following interface:



When there with sources input, it shows the following screen:



This encoding program mainly provides the following three basic functions:

1. Encoder input signal preview function

This interface can preview and monitor 32 input programs of 4 encoders, and timely judge whether the source program is correctly sent to the correct port of the corresponding encoder.



The numbers 1-8 in the picture above show the real-time status of 8 programs input to the current encoder;

In area A, check each checkbox to observe the real-time preview of the input program of the corresponding encoder;

Button B can realize the loop playback of the input program preview of each encoder, light up to enable;

Button C can realize the display/hide function of the preview screen.

2. Display the main parameters of the encoder source input and output after encoding:



Area 1 - shows the current program information, I.E,

CH:4 - Current program channel

576P - Encoding Resolution

801Kbps - Encoding output real-time bit rate

25 fps - Encoding output frame rate

L:2 - Input signal left channel volume value

R:1 - Input signal right channel volume value

Area 2

Channel: 1 (CCTV1) - Current channel program name

Input: 1920X1080 (H264 MP2) - Program input resolution (video/audio format)

Output: 720X576 (H264 AAC) - Program output resolution (video/audio format)

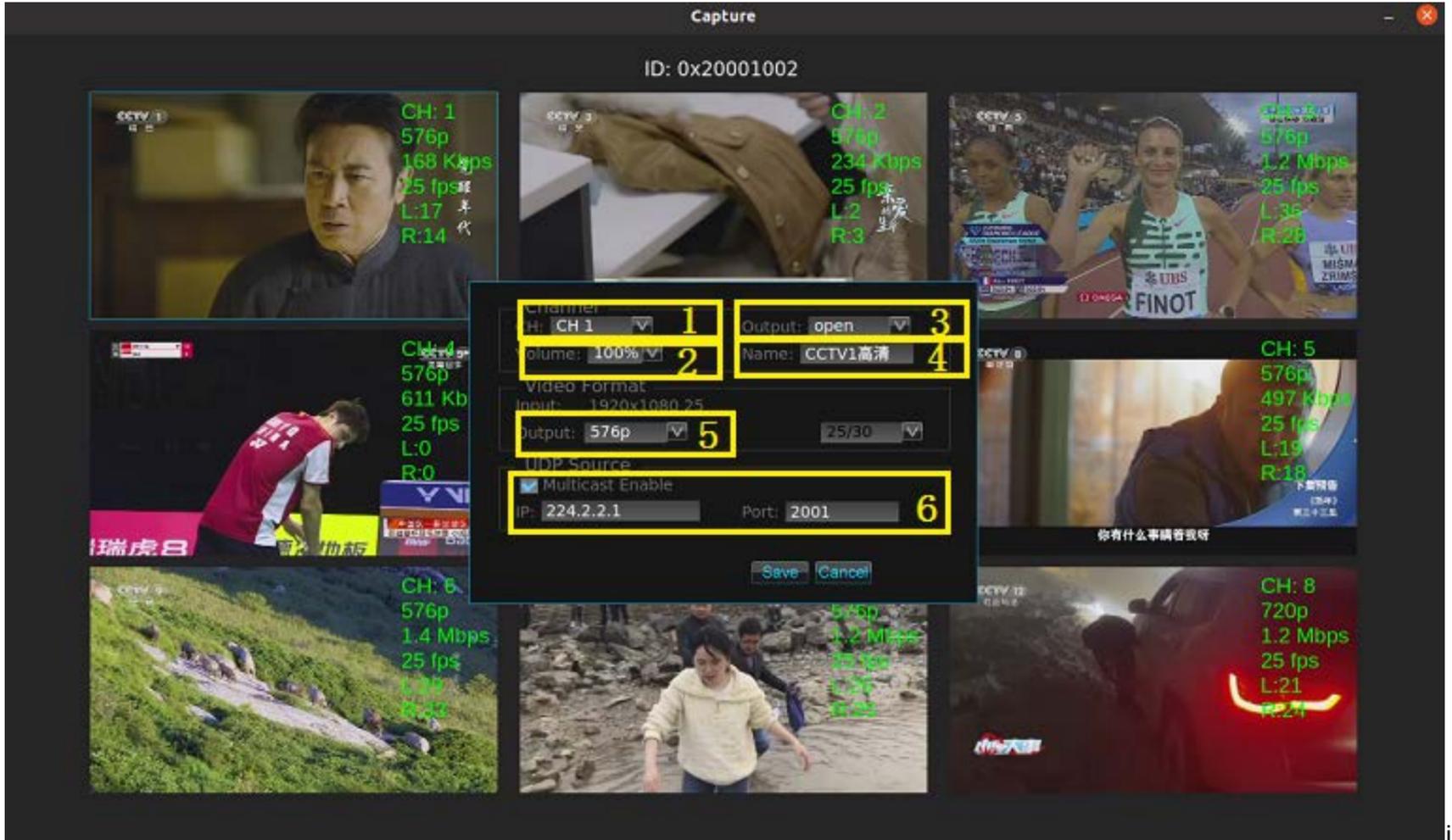
Area 3

Bitrate: 37/38.0Mbps - Real-time output bit rate/output bit rate threshold of the statistical multiplexing encoding system.

3. Encoder input and output parameter modification

a. Program input and output parameter modification

Right-click the preview program to edit the current program input and output parameters, as shown in the following figure:



Right-clicking on the preview screen CH1 will display the program information in the middle part of the screen:

Area 1: You can select CH1-CH8 to edit 8 programs of the current encoder separately, or you can right-click on the preview screen part of the program you want to modify to edit the corresponding program;

Area 2: You can adjust the output volume of the program, ranging from 20%-200%, default 100%, need to be edited according to the actual situation of the source;

Area 3: You can turn on or off the encoding output of the current program;

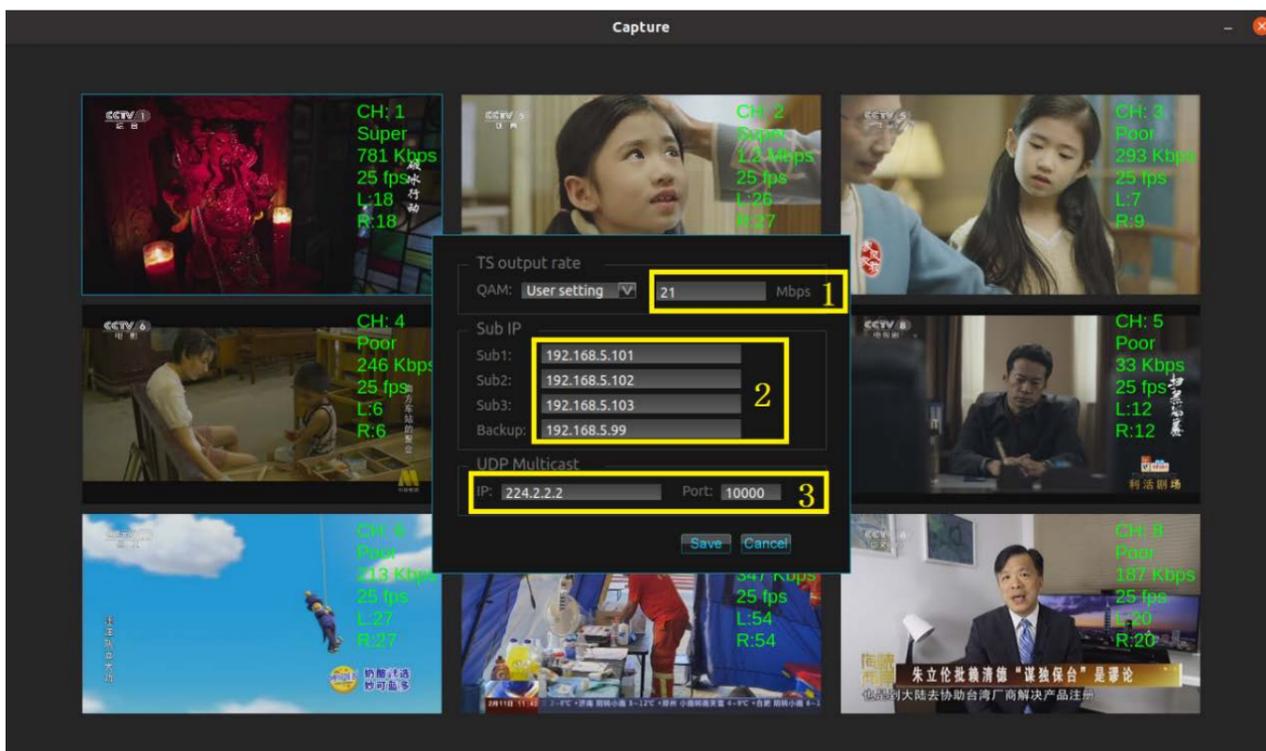
Area 4: Edit the output program name, change according to customer needs;

Area 5: Change the current program encoding method, modify according to the source and customer needs.

Area 6: Check the 'Multicast Enable' option to turn on UDP multicast mode, fill in the corresponding multicast address and port below, and you can receive UDP multicast stream; if you do not check this option, the encoder defaults to work in UDP unicast mode, unicast IP address is default, port number Please change back to UDP unicast receiving port number.

b. Network settings

Click the  button in the upper right corner of the program interface to open the network settings interface as shown in the following figure:



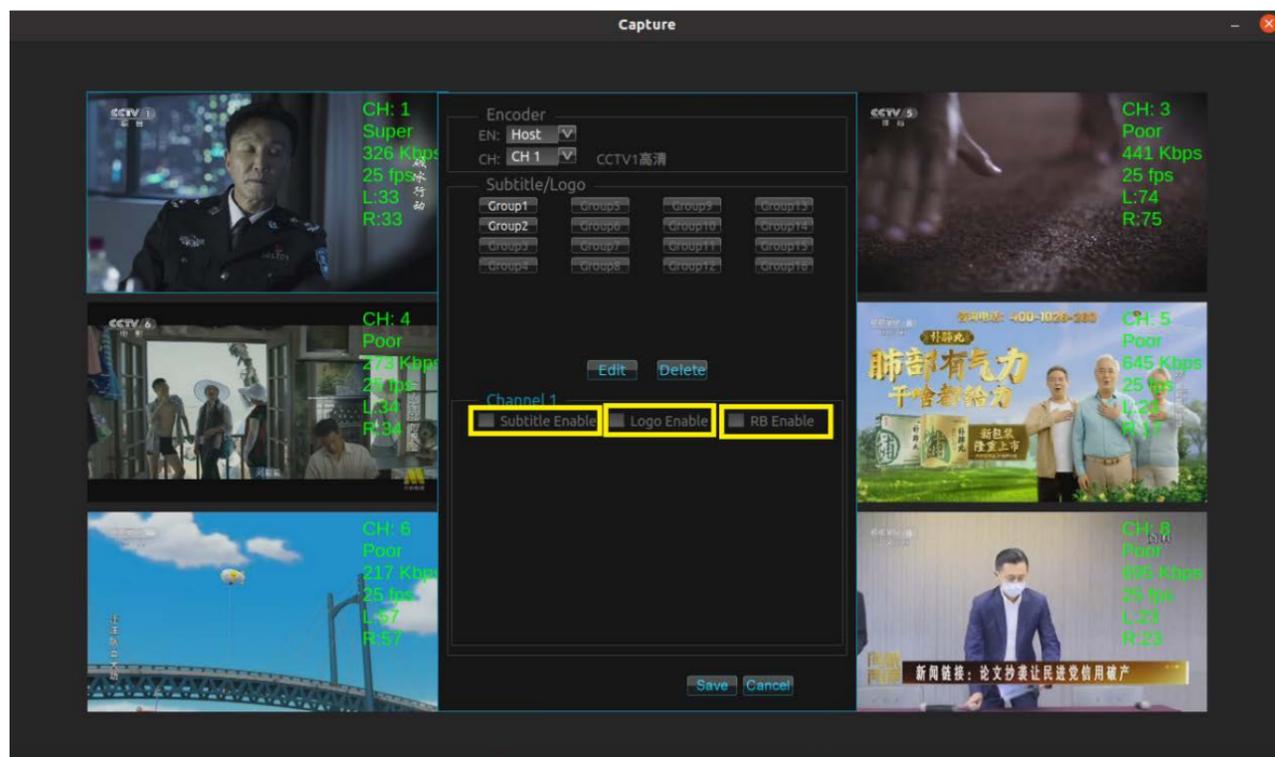
Area 1: You can set the bit rate threshold for the output stream of the statistical multiplexing encoding system, which should be set according to the parameters of the user's backend exciter device. Password confirmation (1234) is required for modification;

Area 2: You can observe the IP address of the encoder slave and backup machine, which cannot be modified here;

Area 3: The UDP multicast address and port number output by the statistical multiplexing encoding system, which should be set according to the parameters of the user's backend exciter device.

c. Subtitle and icon adding function

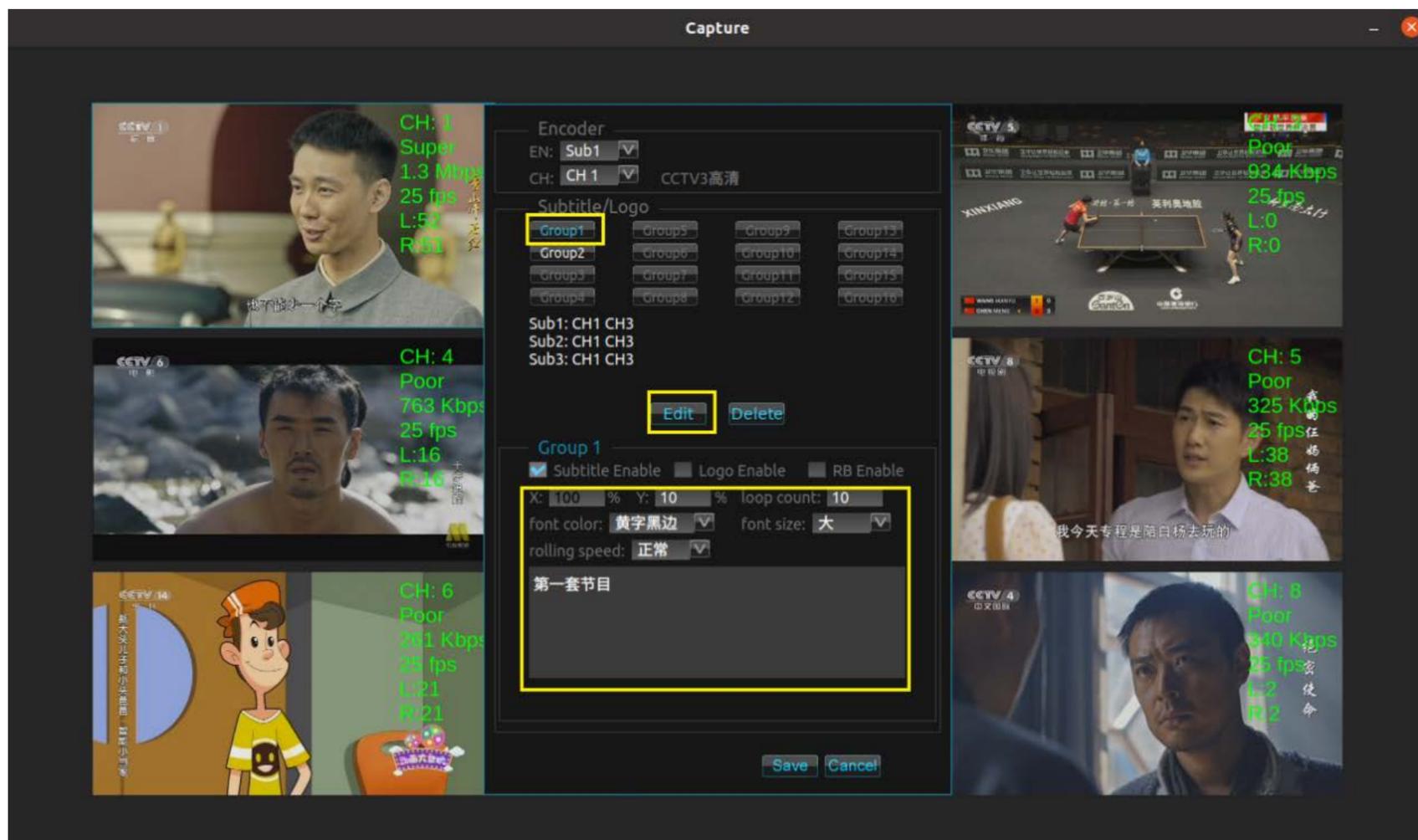
Click the 'Subtitle' button in the upper right corner of the program interface to open the subtitle and icon editing interface as shown in the following figure:



Check 'Subtitle Enable' 'Logo Enable' 'RB Enable' to open subtitle, icon and relay prompt editing options respectively.

Subtitle editing

After selected the 'Subtitle Enable' option, enter the subtitle editing interface as shown in the following figure:

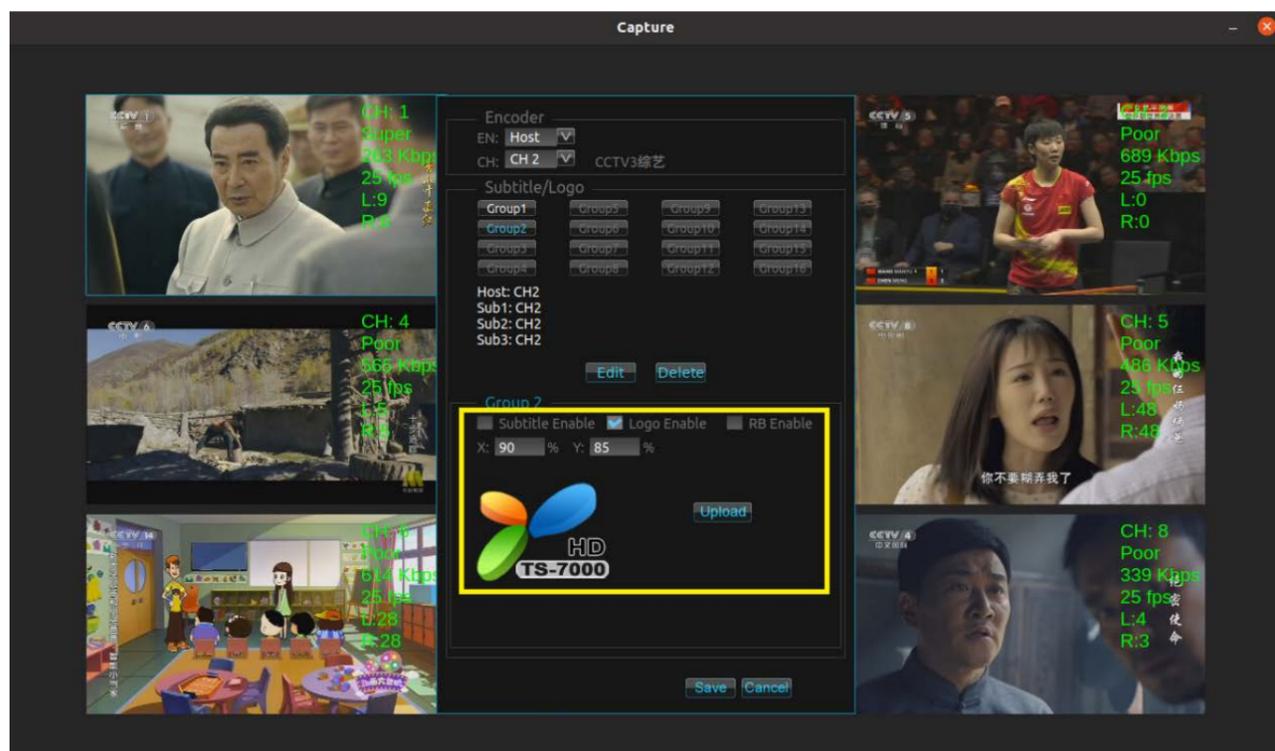


Click 'Group' to select a group, and then click 'Edit' to edit a group. You can select all 32 programs of 4 encoders. You can set multiple groups to meet different needs.

you can edit subtitles - subtitle position, loop times, font color, font size, subtitle moving speed and subtitle content.

Icon editing

After checking the 'Logo Enable' option, enter the icon editing interface as shown in the following figure:



Click 'Group' to edit a group. The method is similar to subtitle setting;

click 'Upload' to select a picture, and modify X and Y values to edit icon position.