NVE 9100

H.264 HD Network Encoder

User Manual

Contents

1 Introduction

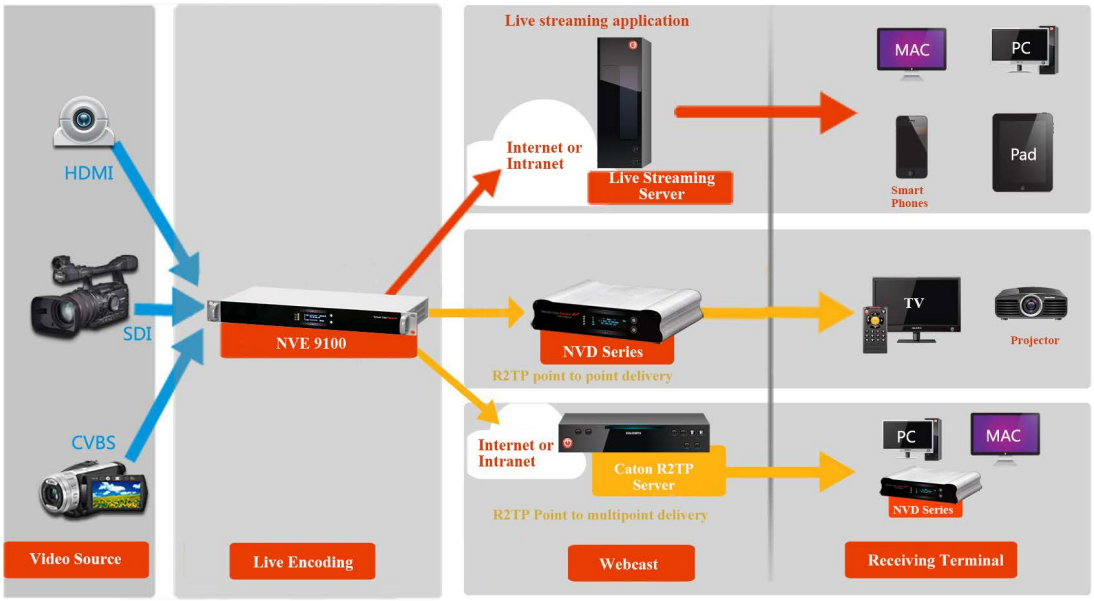
1.1 Abstract

Caton NVE9100 HD Network Encoder is a portable network multimedia encoder, for high definition video real-time streaming applications. It provides flexible streaming for low-bandwidth transmission applications using H.264 video and AAC audio encoding, supporting FLV over RTMP streaming output, thus seamlessly connecting to Streaming Media Server for FLASH video applications, such as Wowza, Adobe Flash Media Server, RED5 Media Server and so on.

The NVE9100 also supports TS streaming output and can achieve low latency HD video transmission over the Internet by combining with Caton NVD series products. NVE9100 supports R2TP (Reliable Real time Transport Protocol), which is Caton proprietary transport protocol especially designed to solve the QoS problems for live video transmission over Internet.

The NVE9100 is perfectly suitable for E-learning, distance education, video conferencing, marketing and other multimedia streaming applications.

1.2 Applications



1.3 Main Features

- HD/SD-SDI, HDMI and CVBS HD and SD video input;
- IP output, support FLV Over RTMP, R2TP(Reliable Real time Transport Protocol), TS Over UDP, TS Over HTTP,FLV Over HTTP;
- H.264 High profile video encoding and AAC audio encoding with low bit rate;
- Seamlessly connecting to Streaming Media Server for FLASH video applications;
- Using DSP encoding chip and Linux operating system;
- OLED screen and touch slide button, support web browser control;

1.4 Panel design

1.4.1 Front Panel

(1) Indicator Light: Indicate the current device status. The 4 lights represent (from top to bottom):

i. Power Light: Green represent right power status, Red represent abnormal power status.

ii. Encoding Light: Green represent right encoding status, Red represent abnormal encoding status.

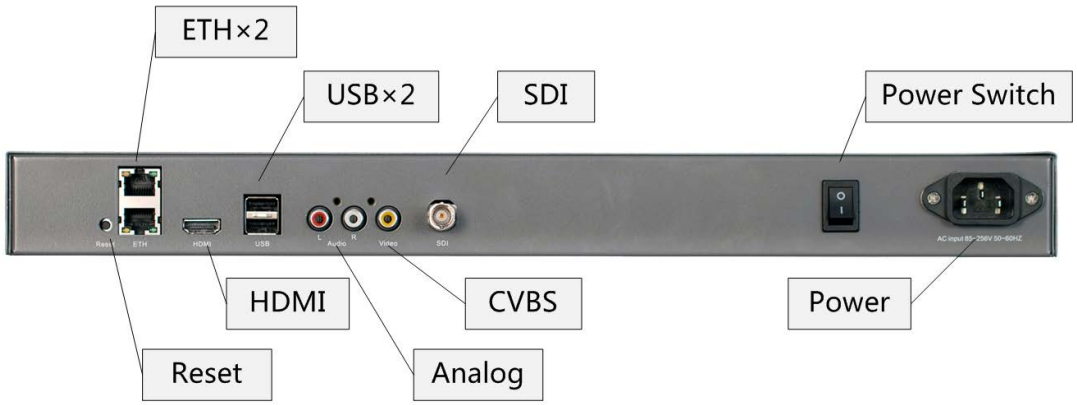
iii. Video Input Light: Green represent right video input status, Red represent abnormal video input status.

iv. Audio Input Light: Green represent right audio input status, Red represent abnormal audio input status.

(2) OLED Screen: Display the basic configuration & parameters of the device.

(3) Control Buttons: Include “Select”, “Adjust”, “Enter” and “Esc”.

1.4.2 Rear Panel



(1) SDI: Input HD/SD-SDI HD/SD Video & Audio Signals.

(2) HDMI: Input HDMI HD Video & Audio Signals.

(3) CVBS & Analog: Input Analog SD Video & Audio Signals.

(4) ETH(x2): Network interface to control the device through Internet，also for IP output of encoded streaming.

(5) USB(x2): Mount USB flash disk to save or apply the configuration file.

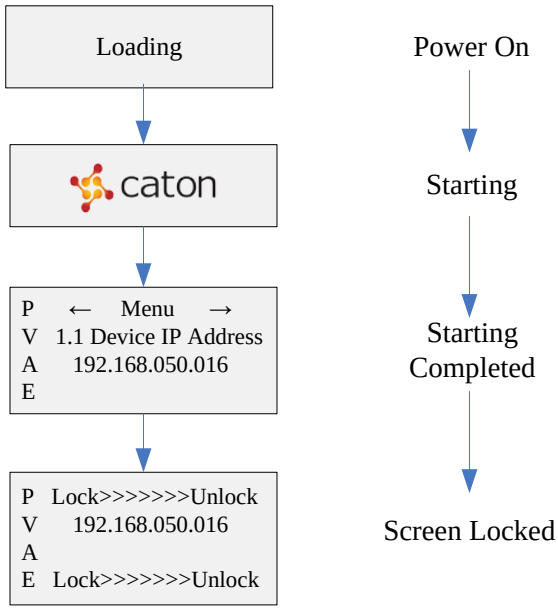
(6) Reset: Press over 15 seconds to recover to the default settings.

(7) Power: Connect the power adapter to power up the device.

2 Front Panel Control

2.1 Power up

Power up NVE9100, OLED screen will display as follows:



2.2 Control Method

2.2.1 Basic Operations

Through the NVE9100 front panel, user can do the following operations:

(1) Unlock: Slide the “Select” button or “Adjust” button from left to right to unlock the OLED screen. The screen will be locked if there is no operation over 1 minute.

(2) Enter: Press the “Enter” button to enter the submenu or save the modifications.

(3) Esc: Press the “Esc” button to return to the upper menu or cancel the modifications.

(4) Select: Press the “Select” button to select the menu or select the position of parameters.

(5) Adjust: Press the “Adjust” button to select the option or modify the parameter value.

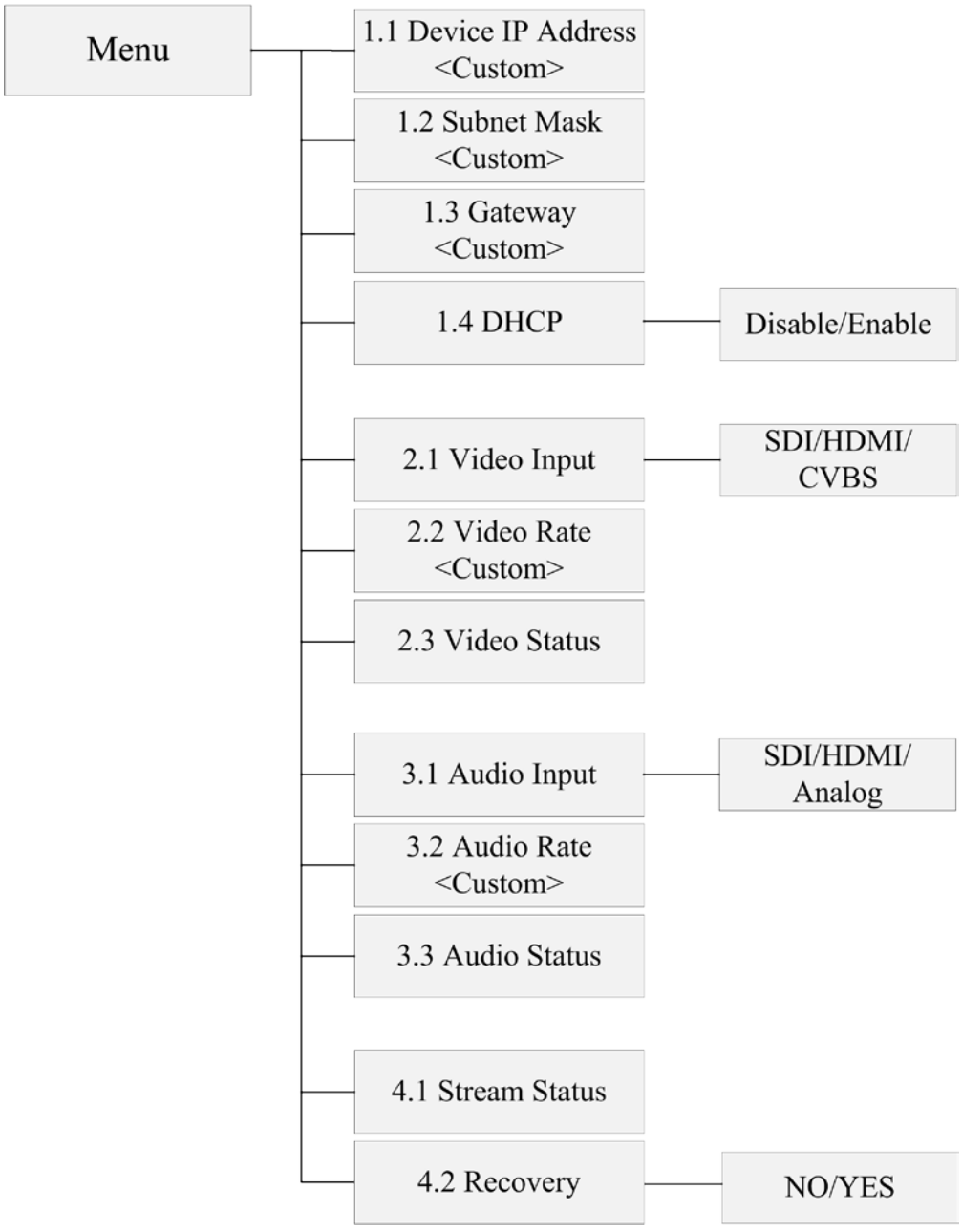
Steps to configure parameters through front panel:

Slide the “Select” button to select the menu, press the “Enter” button to enter the edit mode:

To modify the value of parameters, slide the “Select” button to select the position of parameters. After the cursor moved to the right position, slide the “Adjust” button to adjust the value of parameters (Slide the “Adjust” button towards the left to decrease the value, Slide towards the right to increase the value). Press the “Enter” button to save the modifications, press the “Esc” button to cancel the modifications.

To change the option of parameters, slide the “Adjust” button to select the option. Press the “Enter” button to save the modifications, press the “Esc” button to cancel the modifications.

2.2.2 Menu Overview



- **Device IP Address:** To view or set the IP address of device.

User can set custom IP address of device. The default IP address of device is 192.168.1.12.

- **Subnet Mask:** To view or set the subnet mask of device.

User can set custom subnet mask of device. The default subnet mask of device is 255.255.255.0.

- **Gateway:** To view or set the gateway of device.

User can set custom gateway of device. The default gateway of device is 192.168.1.1.

- **DHCP:** To view or select open DHCP or not.

Disable: Close DHCP; Enable: Open DHCP。

- **Video Input:** To view or select the video input.

SDI: SDI video input; HDMI: HDMI video input; CVBS: CVBS signal input;

- **Video Rate:** To view or set the video bit rate.

User can set custom video bit rate.

- **Video Status:** To view the status of video input.

- **Audio Input:** To view or select the audio input.

SDI: SDI audio embedded input; HDMI: HDMI audio embedded input; Analog: Analog audio input;

- **Audio Rate:** To view or set the audio bit rate.

User can set custom audio bit rate.

- **Audio Status:** To view the status of audio input.

- **Stream Status:** To view the status of video/audio encoding.

- **Recovery:** To recover to the default setting.

NO: Not to recover; YES: Recover to the default setting.

3 Web Control

3.1 Log In

User can configure the device via Internet. Take the follow steps to log in before using web UI control:

(1) Prepare a PC with web browser.

> **Tips: IE 8.0 or Firefox6.0 or higher version is recommended.**

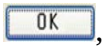
(2) Connect PC and the device through network interface.

(3) Make sure that the IP address of the device and PC are in the same network segment:

☞ Click 

, then click 

, and input “CMD” in the textbox.

☞ Click 

, it will display the following window:

☞ Input “ipconfig”, and press the “Enter” Key:

> **Tips: 202.0.0.100 is the local IP address of PC.**

☞ Confirm the IP address of the device through the front panel:

Tips: 192.168.50.16 is the local IP address of the device.

As the IP address of the device and PC are not in the same network segment, user needs to modify the device local IP address to make sure that the IP address of the device and PC are in the same network segment (eg. Set the device IP address to be 202.0.0.16). And make sure the IP address is not occupied by other devices, which might cause IP address conflict.

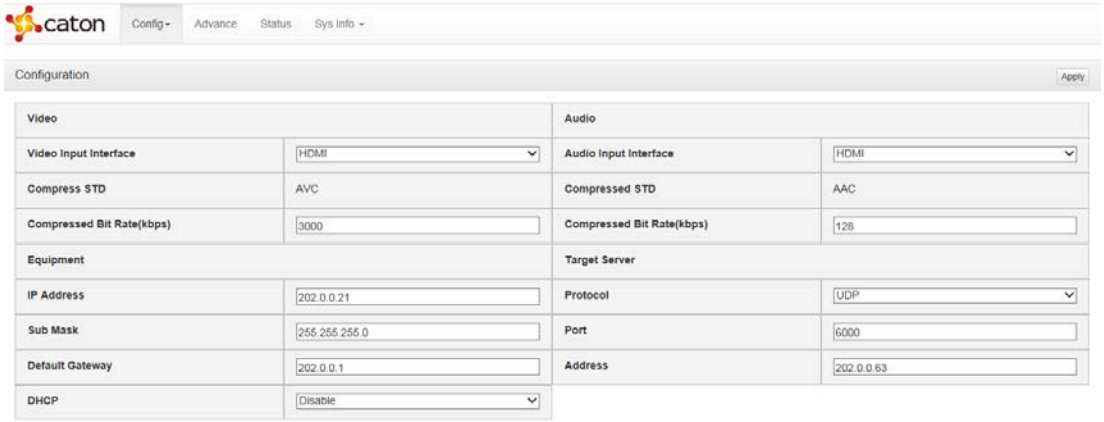
(4) Open the web browser of PC, input the IP address of the device, and it will display the following window:

(5) Input the account name and the password to log in. The default account name and password are both “admin”.

3.2 Basic Setting

3.2.1 Basic Configuration

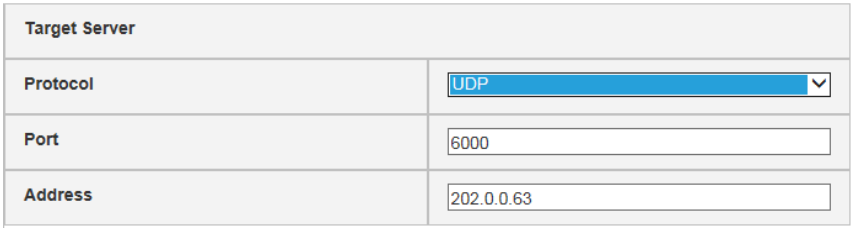
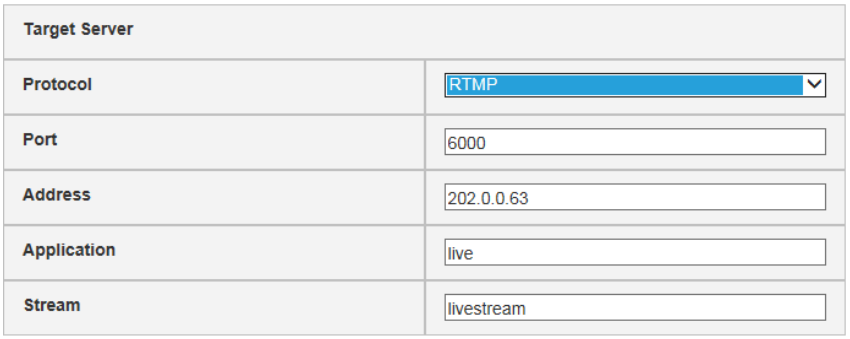
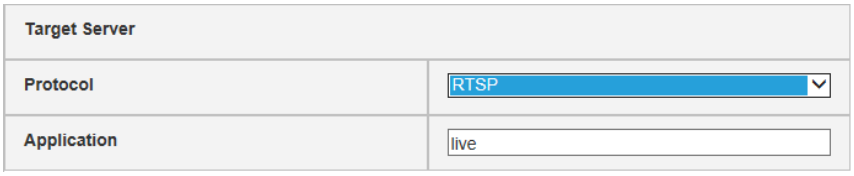
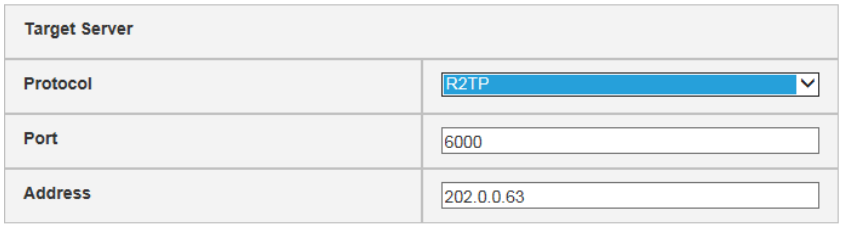
Select **Config** in the main menu, pull downward and click **Config**:

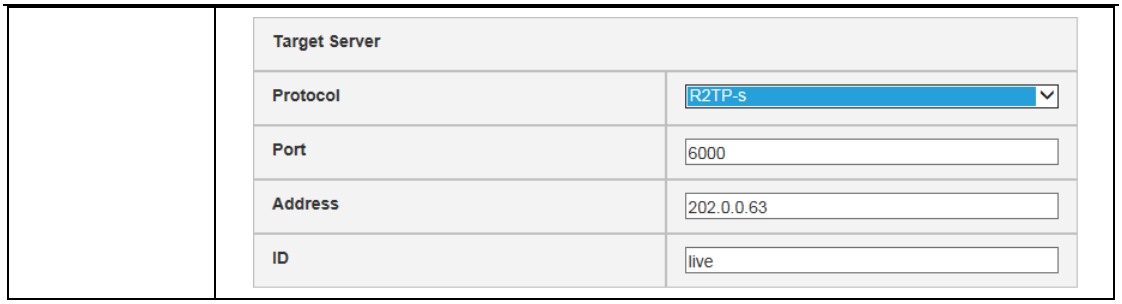


User can configure the basic settings of device. Click Apply to save the modifications.

Video	
Video Input Interface	SDI/HDMI/CVBS
Compress STD	AVC
Compressed Bit Rate(kbps)	<Custom>
Audio	
Video Input Interface	SDI/HDMI/CVBS
Compress STD	AAC
Compressed Bit Rate(kbps)	<Custom>
Equipment	
IP Address	<Custom>
Sub Mask	<Custom>
Default Gateway	<Custom>
DHCP	Disable/Enable
Target Server	
Protocol	UDP/RTMP/TSHTTP/RTSP/R2TP/R2TP-s
Port	<Custom>
Address	<Custom>

The configuration of different transport protocol:

Protocol	Configuration
UDP	udp://Address:port 
RTMP	rtmp://Address:port/Application/password  *The default port of RTMP is 1935
TSHTTP	http://Address:8089 
RTSP	rtsp://Address/Application 
R2TP	r2tp://Address:port 
R2TPS	r2tps://Address:port/ID



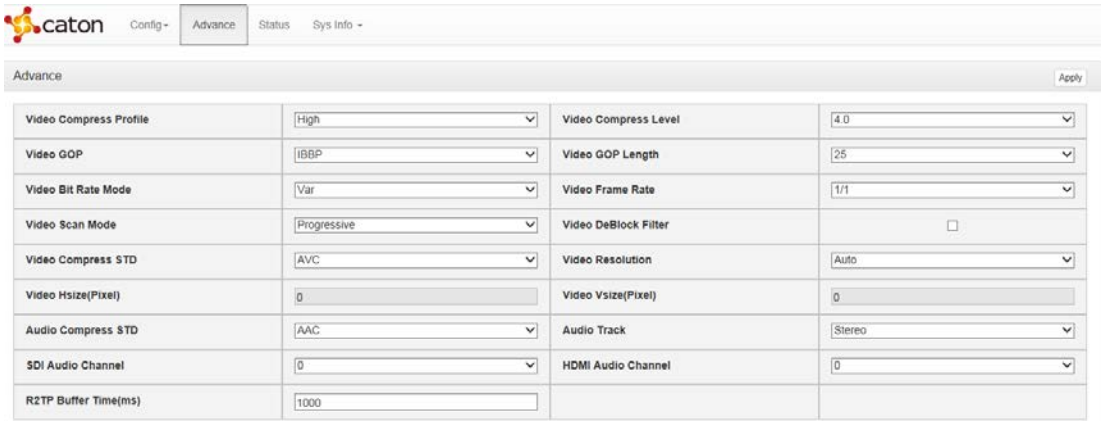
3.2.2 Preview

Select **Config** in the main menu, pull downward and click **Preview**:

After select **Preview** in the protocol options, user can click Preview to preview the video after encoded.

3.3 Advanced Configuration

Select **Advance** in the main menu:



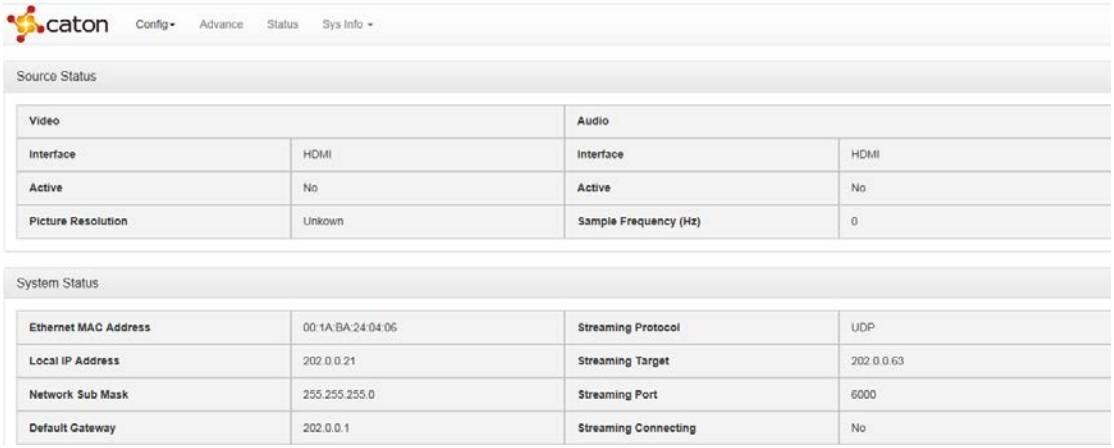
User can configure the advanced settings of device. Click Apply to save the modifications.

Video Compress Profile	High/Main/Basic
Video Compress Level	4.1/4.0/3.2/3.1/3.0/2.2/2.1/2.0/1.3/1.2/1.1/1.0
Video GOP	I/IP/IBP/IBBP/IBBBP
Video GOP Length	13/25/37/49/61/73/85

Video Bit Rate Mode	Var/Fix
Video Frame Rate	1/1，1/2，1/3，1/4，1/5，dynamic
Video Scan Mode	Progressive/Auto
Video Frame Filter	ON/OFF
Video Compress STD	AVC
Video Resolution	Auto/Custom
Video Hsize(Pixel)	<Custom>
Video Vsize(Pixel)	<Custom>
Audio Compress STD	AAC/MP2
Audio Track	Stereo/Mono-L/Mono-R
SDI Audio Channel	0/1/2/3
HDMI Audio Channel	0/1/2/3
R2TP Buffer Time(ms)	<Custom>（200~2000）

3.4 Status Display

Select **Status** in the main menu:



User can view the status of device.

3.5 System Information

3.5.1 System Info

Select **Sys Info** in the main menu, pull downward and click **System Info**:

User can check the system information of device.

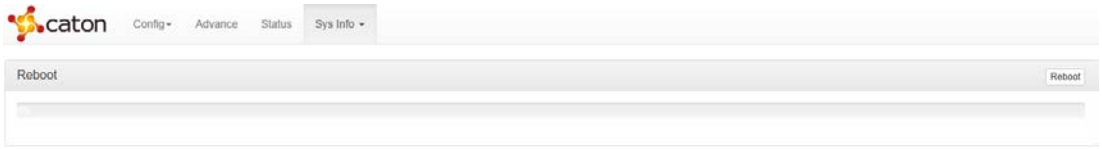
3.5.2 Load Default

Select **Sys Info** in the main menu, pull downward and click **Load Default**:

User can click  to recover to the default settings.

3.5.3 Reboot

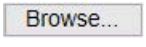
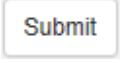
Select **Sys Info** in the main menu, pull downward and click **Reboot**:



User can click  to reboot the device.

3.5.4 Upgrade

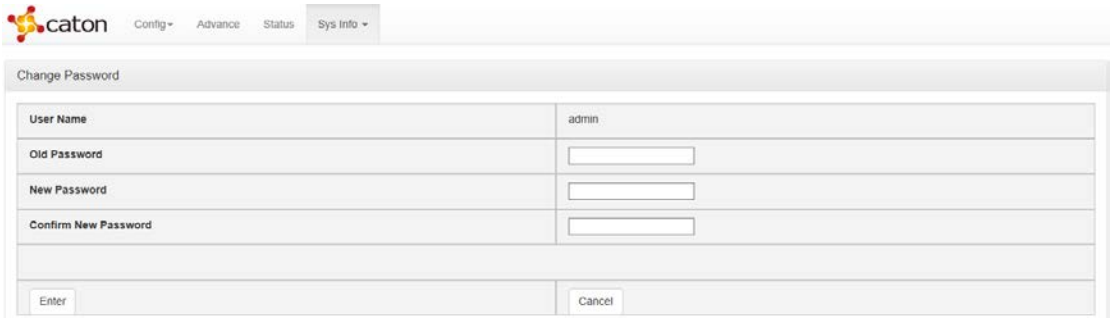
Select **Sys Info** in the main menu, pull downward and click **SW Upgrade**:

User can upgrade the software version of device. Click  to select the upgrade file, and click  to upgrade the device. The upgrade process will

last about half a minute. The device will restart automatically after upgraded, and recover to the default settings.

3.5.5 Password

Select **Sys Info** in the main menu, pull downward and click **Password**:



Click Enter to save the new password, click Cancel to cancel the modifications.

4 Technical Parameters

4.1 Video Encoding Index

Video Coding	H.264(MPEG-4 Part 10/MPEG-4 AVC)
Profile & Level	Baseline/Main/High Profile, 2.0/3.0/3.1/4.0/4.1 level
Input Format	1080p: 1080p@30/25/24; 1080i: 1080I@60/50; 720p: 720p@60/50; SD: 576p@50/480p@60/576i@50/480i@60;
Pattern	PAL, NTSC
Bit Rate	100kbps~20Mbps
Output Resolution	Auto, Custom(support video resolution rescaling)
Video Coding	H.264(MPEG-4 Part 10/MPEG-4 AVC)

4.2 Audio Encoding Index

Audio Coding	AAC-LC, MPEG1-Layer2(MP2)
Sampling Rate	24 bit
Bit Rate	30Kb/s~384Kb/s

4.3 Interface Index

Input Interface	1 x HD/SD-SDI(1xBNC, 75Ω) 1 x HDMI (v1.1) 1 x CVBS Input(3xRCA)
Output Interface	2 x RJ45 , 10/100 Base-T
Other	2 x USB 2.0, support USB storage
Output Protocol	UDP, RTMP, RTSP, HTTP(TS Over HTTP), R2TP(Reliable RTP, Caton Proprietary Transport Protocol), Preview(FLV Over HTTP)

4.4 Environment Index

Room Temperature	10°C~40°C
Working Temperature	0°C~50°C
Storing Temperature	-20°C~70°C
Power	AC85~265V
Power Consumption	≤40W

4.5 Physical Index

Height	42.5mm
Width	430.0mm
Depth	230.0mm
Weight	6kg