



NDS3228A 8 in 1 MPEG2/H.264 SD Encoder

User's Manual



SW Version: 2.14

HW version: 0.3

Chengdu Dexin Digital Technology Co., Ltd.

DIRECTORY

Chapter 1 Product Introduction.....	1
1.1 Outline	1
1.2 Main Features	1
1.3 Specifications	1
1.4 Principle Chart	2
1.5 Appearance and Illustration	3
Chapter 2 Installation Guide	5
2.1 Acquisition Check.....	5
2.2 Installation Preparation	5
2.3 Wire's Connection.....	7
2.4 Signal Cable Connection.....	7
Chapter 3 Operation.....	11
3.1 Initializing	11
3.2 General Setting	11
Chapter 4 NMS Operation (Optional).....	24
4.1 Installation	24
4.2 Software Operation	24
4.3 NDS3228A 8 in 1 MPEG-2 H.264 SD Encoder Operation	30
4.4 Other Settings	42
Chapter 5 WEB NMS Operation (Optional).....	46
5.1 login	46
5.2 Operation	47
Chapter 6 Troubleshooting.....	54
Chapter 7 Packing list	55

Chapter 1 Product Introduction

1.1 Outline

The DEXIN NDS3228A series 8-in-1 MPEG-2/H.264 SD Encoders are our professional SD audio & video encoding and multiplexing device with powerful functionality. It has 8 independent channels of unbalanced audio & CVBS video input interfaces or SD-SDI input interfaces. It supports MPEG-2 and H.264 video encoding and MPEG-1 Audio layer 2, LC-AAC and HE-AAC audio encoding. Its each channel can reach an ultra low bit-rate.

Moreover, it has an ASI input and can multiplex the input TS with the 8 encoded SPTS to generate a MPTS output.

1.2 Main Features

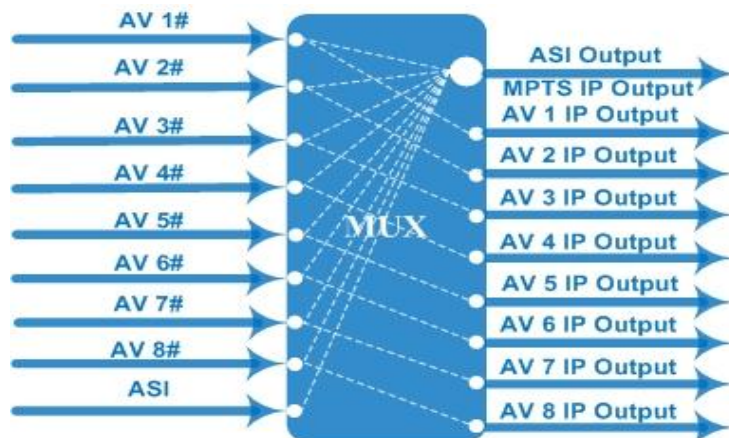
- Support 8 AV (CVBS or SDI optional),1 ASI Input
- H.264 and Mpeg2 video encoding
- MPEG1 Audio Layer 2, LC-AAC and HE-AAC (V2) audio encoding
- Support PSI/SI editing and inserting
- Supports VBR/CBR video encoding
- Supports ultra low bit rate encoding
- Applicable for one Seg/ISDB-T utilization
- Supports MPTS or 8 SPTS UDP IP Output
- Supports IP null packet filter
- Real-time output bit-rate monitoring
- LCD / keyboard and NMS operation
- Update device through NMS port (Web or SNMP)

1.3 Specifications

Input	8 CVBS, BNC interface	NDS3228A
	8 pairs of unbalanced stereo audio, BNC interface	
	V/A: 8xSD-SDI input with embedded audio	NDS3228A-D

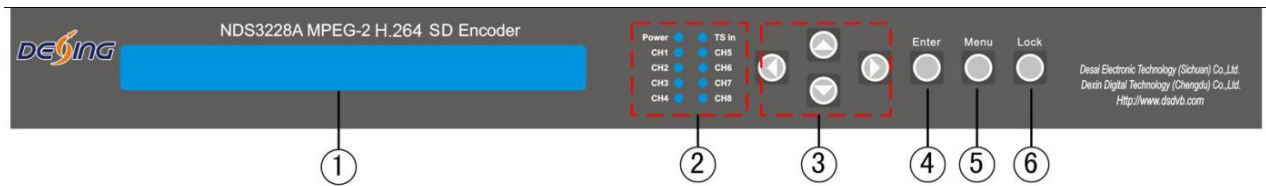
	1 ASI input, BNC interface	
Video	Resolution	PAL:720*576/352*288/320*240/320*180/176*144/ 160*120/160*90@50Hz
		NTSC: 720*480/352*288/320*240/320*180/176*144/ 160*120/160*90@59.94Hz
	Encoding	MPEG-2 / H.264
	Bit-rate	0.25~15Mbps for H.264 encoding 0.5~15Mbps for MPEG-2 encoding
	Rate Control	CBR/VBR
	Advanced Pretreatment	De-interlacing, Noise Reduction, Sharpening
Audio	Encoding	MPEG1 Audio Layer 2, LC-AAC, HE-AAC V2
	Sampling rate	48KHz
	Bit-rate	32Kb/s~384Kb/s (each channel)
Multiplexing		1 ASI input multiplexed with local 8 channels of TS
Stream output		2*ASI output, BNC interface
		MPTS / 8 SPTS over UDP, 10/100Base-T Ethernet interface (UDP unicast / multicast)
System function		LCD/keyboard operating, NMS supporting
		Chinese-English control interface
		Ethernet software & hardware upgrade
Miscellaneous	Dimension (W× L× H)	482mm×455mm×44mm
	Approx weight	4kg
	Temperature	0~45℃(work), -20~80℃ (Storage)
	Power	AC 100V-220V±10%, 50/60Hz
	Consumption	25W

1.4 Principle Chart



1.5 Appearance and Illustration

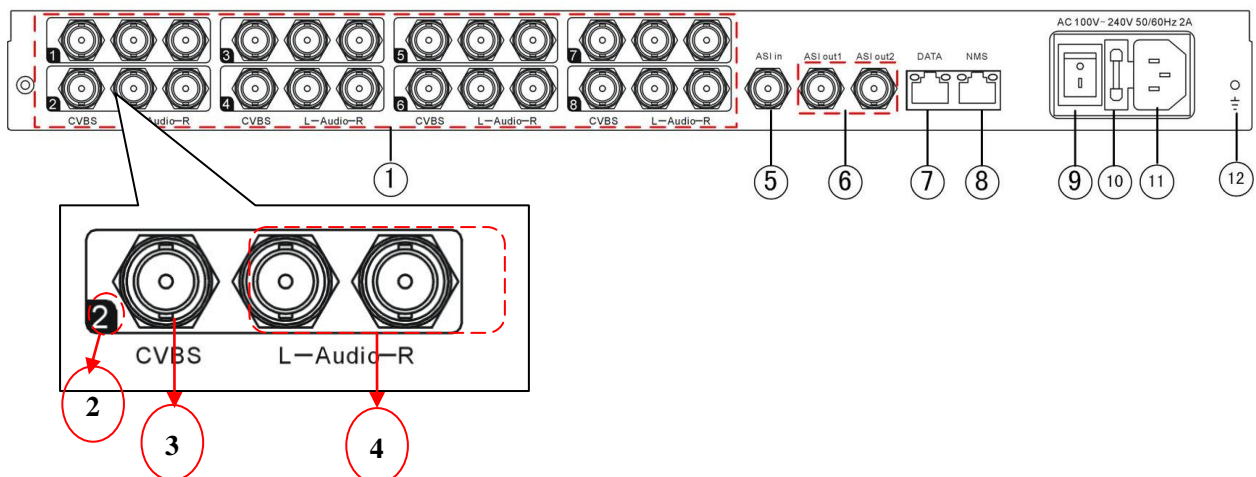
Front Panel Illustration:



Indicate area: All indicators will light on when the device is on the current working state.

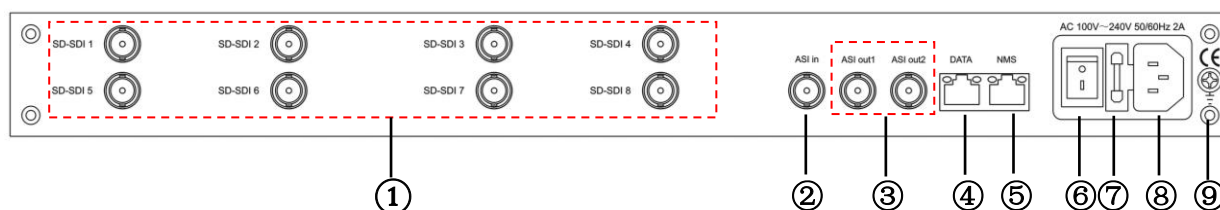
1	LCD Screen	
2	Indicators	Power Indicator
		TS In: Input Lock Indicator
		CH1-CH8: When the program has been multiplexed, the indicator will be on.
3	UP/ DOWN, LEFT/RIGHT Keys	
4	Enter Key	
5	Menu Key	
6	Lock Key	

Rear Panel Illustration (CVBS input)



1	8 * CVBS Input Ports
2	CVBS Input Serial Number from 1 to 8
3	Video Input Port
4	Audio Input Port (Left & Right Channels)
5	ASI Input Port
6	2 * ASI Output Ports
7	Data Port (for IP Signal Output)
8	NMS (Network Management Port)
9	Power Switch
10	Fuse
11	Power Socket
12	Grounding Pole

Rear Panel Illustration (SDI input)



1	8 * SDI Input Ports
2	ASI Input Port
3	2 * ASI Output Ports
4	Data Port (for IP Signal Output)
5	NMS (Network Management Port)
6	Power Switch
7	Fuse
8	Power Socket
9	Grounding Pole

Chapter 2 Installation Guide

2.1 Acquisition Check

When users open the package of the device, it is necessary to check items according to packing list. Normally it should include the following items:

- NDS3228A 8 in 1 MPEG-2/H.264 SD Encoder
- User's Manual
- CVBS/SDI Cable
- ASI Cable
- Power Cord

If any item is missing or mismatching with the list above, please contact local dealer.

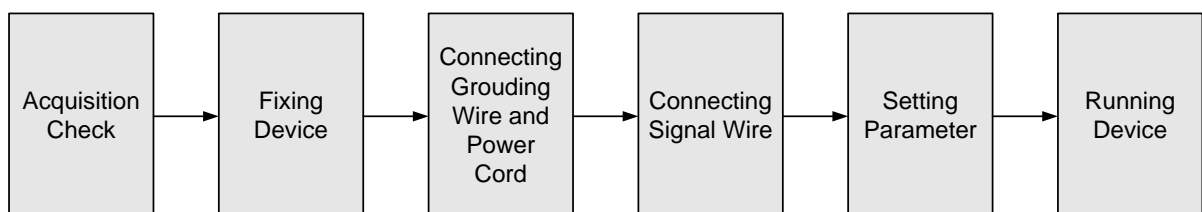
2.2 Installation Preparation

When users install device, please follow the below steps. The details of installation will be described at the rest part of this chapter. Users can also refer rear panel chart during the installation.

The main content of this chapter including:

- Checking the possible device missing or damage during the transportation
- Preparing relevant environment for installation
- Installing Encoder
- Connecting signal cables
- Connecting communication port (if it is necessary)

2.2.1 Device's Installation Flow Chart is Illustrated as following:



2.2.2 Environment Requirement

Item	Requirement
Machine Hall Space	When user installs machine frame array in one machine hall, the distance between 2 rows of machine frames should be 1.2~1.5m and the distance against wall should be no less than 0.8m.
Machine Hall Floor	Electric Isolation, Dust Free Volume resistivity of ground anti-static material: $1 \times 10^7 \sim 1 \times 10^{10} \Omega$, Grounding current limiting resistance: 1M (Floor bearing should be greater than 450Kg/m ²)
Environment Temperature	5~40°C(sustainable), 0~45°C(short time), installing air-conditioning is recommended
Relative Temperature	20%~80% sustainable 10%~90% short time
Pressure	86~105KPa
Door & Window	Installing rubber strip for sealing door-gaps and dual level glasses for window
Wall	It can be covered with wallpaper, or brightness less paint.
Fire Protection	Fire alarm system and extinguisher
Power	Requiring device power, air-conditioning power and lighting power are independent to each other. Device power requires AC power 220V 50Hz. Please carefully check before running.

2.2.3 Grounding Requirement

- All function modules' good grounding designs are the basis of reliability and stability of devices. Also, they are the most important guarantee of lightning arresting and interference rejection. Therefore, the system must follow this rule.
- Coaxial cable's outer conductor and isolation layer should keep proper electric conducting with the metal housing of device.
- Grounding conductor must adopt copper conductor in order to reduce high frequency impedance, and the grounding wire must be as thick and short as possible.
- Users should make sure the 2 ends of grounding wire well electric conducted and be antirust.
- It is prohibited to use any other device as part of grounding electric circuit
- The area of the conduction between grounding wire and device's frame should be no less than 25mm².

2.2.4 Frame Grounding

All the machine frames should be connected with protective copper strip. The grounding wire should be as short as possible and avoid circling. The area of the conduction between grounding wire and grounding strip should be no less than 25mm².

2.2.5 Device Grounding

Connecting the device's grounding rod to frame's grounding pole with copper wire.

2.3 Wire's Connection

The grounding wire conductive screw is located at the right end of rear panel, and the power switch, fuse, power supply socket is just beside ,whose order goes like this, power switch is on the left ,power supply socket is on the right and the fuse is just between them.

- Connecting Power Cord

User can insert one end into power supply socket, while insert the other end to AC power.

- Connecting Grounding Wire

When the device solely connects to protective ground, it should adopt independent way, say, share the same ground with other devices. When the device adopts united way, the grounding resistance should be smaller than 1Ω.

⚠ **Caution:**

Before connecting power cord to NDS3228A 8 in 1 MPEG-2 H.264 SD Encoder, user should set the power switch to “OFF”.

2.4 Signal Cable Connection

The signal connections include the connection of input signal cable and the connection of output signal cable. The details are as follows:

2.4.1 Unbalanced audio and CVBS video input cable illustration:



2.4.2 ASI output cable illustration:



2.4.3 Network Cable illustration (CAT5):



2.4.4 Unbalanced audio and CVBS video input connection

User can firstly find the CVBS input connector on the device according to the connector mark described on the rear panel illustration, and then connect the analog CVBS video and unbalanced audio cables (in the accessories). One end is connected to the signal source equipment while the other end to the encoder's CVBS input port. The encoder's Analog Composite Video input port and its connection are illustrated as follows:



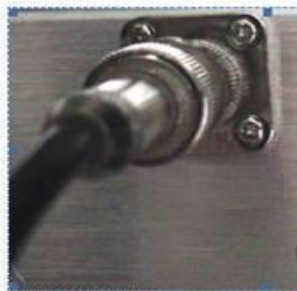
2.4.5 SDI video input connection

User can find the SDI input connector on the device according to the connector mark described on the rear panel illustration, and then connect the analog SDI video. One end is connected to the signal source equipment while the other end to the encoder's SDI input port. The encoder's Analog Composite Video input port and its connection are illustrated as follows:



2.4.6 ASI output interface connection

User can firstly find the ASI output interface on the device according to the connector mark described on the rear panel illustration, and then connect the ASI cable (in the accessories). One end is connected to the encoder's ASI out connector (ASI1, ASI2) while the other end to the TS stream multiplexer or modulator's ASI input port. The encoder's ASI output interface and its connection are illustrated as follow:



2.4.7 IP Output Interface connection

Users can firstly find the DATA interface on the device according to the connector mark described on the rear panel illustration, and then connect the network (CAT5). One end of the network cable is connected to the encoder's DATA output connector, while the other end to the TS stream multiplexer IP input port or other device which can input IP signal. The encoder's DATA connection is illustrated as follows:



2.4.8 NMS Connection

Users can firstly find the NMS interface on the device according to the connector mark described on the rear panel illustration, and then connect the network (CAT5). One end of the network cable is connected to the encoder's NMS connector, while the other end to the computer or the PC. The encoder's NMS connection is illustrated as follows:



Chapter 3 Operation

NDS3228A 8 in 1 MPEG-2/H.264 SD Encoder's front panel is user operating interface. Before operating, user can decide whether directly use the default setting or customize the input and output parameters setting. The detail operations go as follows:

Keyboard Function Description:

ENTER: Activating the parameters which need modifications, or confirming the change after modification.

MENU: To cancel presently entered value, resume previous setting and return to previous menu.

LEFT/RIGHT: To move the “►” to choose or set the parameters.

UP/DOWN: To modify activated parameter or page up/down when parameter is inactivated.

LOCK: To Lock the screen / cancel the lock state. After pressing lock key, the system will question the users to save present setting or not. If not, the LCD will display the current configuration state.

At the “Factory Configuration” page, user can press “**ENTER**” key to restore the factory default configuration.

3.1 Initializing

After powering on the device, it will take a few seconds to initialize the system, and then the LCD will show the device name and output real-time bit-rate in the first row, while the 8 channels' respective serial number and input real-time encoding bit-rate in the second row in turn. It shows as below:

8 in 1 Encoder			9.720 Mbps
1P 02.94M	2P 02.73M	3P 02.92M	4P 02.90M

3.2 General Setting

By pressing LOCK key, users can enter in the main menu and set the input and output

parameters in the following editing interfaces, the LCD will display the following pages:

▶ 1 Input Setting 3 Output Setting	2 ASI Setting 4 Network Setting
▶ 5 Saving Config 7 Version (SNMP/Web)	6 Loading Config 8 Language

The option with “▶” is the current selection, users can press the ENTER key to enter the specified submenu to modify the device parameter.

3.2.1 Input Setting

Under this menu, users can enter the corresponding encoding channel to set the relevant audio and video input parameters, and select programs to multiplex. The LCD will display 8 submenus which from Encoding Channel 1 to Encoding Channel 8. The setting principle is the same for Encoding Channel 1-8, so here this manual just takes one channel as the example to explain. After pressing the enter key, the LCD will display the following pages:

▶ 1.1 Encoder 1 1.3 Encoder 3	1.2 Encoder 2 1.4 Encoder 4
▶ 1.5 Encoder 5 1.7 Encoder 7	1.6 Encoder 6 1.8 Encoder 8

After users enter the submenu, the interface will turn into the following pages, and then users can enter the corresponding interface to modify the parameters.

▶ 1.1.1 Video 1.1.3 System	1.1.2 Audio 1.1.4 PG Muxer
▶ 1.1.1 Video 1.1.3 System	1.1.2 Audio 1.1.4 PG Muxer

3.2.1.1 Video Setting

- | | |
|--|---|
| ▶ 1.1.1.1 Input
1.1.1.3 Contrast | 1.1.1.2 Brightness
1.1.1.4 Saturation |
| ▶ 1.1.1.5 Hue
1.1.1.7 Coding Type | 1.1.1.6 Aspect Rati
1.1.1.8 Resolution |
| ▶ 1.1.1.9 Bitrate Mode
1.1.1.B Max Bit Rate | 1.1.1.A Bit Rate
1.1.1.C Min Bit Rate |
| ▶ 1.1.1.D GOP Struct | |

➤ Input

This is for user to check the input port type and it is read-only. It will identify the input port type automatically.

1.1.1.1 Input	CVBS/SDI
---------------	----------

At this interface, by pressing ENTER again, users can select the input format, which includes 8 options. Pressing 1.1.1.1, the operation interface will turn up as following page:

NOTE: Below explanations are applied in this entire manual.

- 1) When user enter 1.1.1.1, the LCD displays only one option which is the device's current option which is marked with square bracket when user presses ENTER **again** to enter the operation interface.
- 2) "01/04" in the up-right corner indicates there are all together 4 pages and the LCD is displaying the 1st page currently.

1.1.1.1 Input Format [PAL-B/G/H/I/D]	01/04 PAL-CN
---	-----------------

There are entire 4 options as: PAL-B/G/H/I/D, PAL-CN, PAL-M and PAL-60.

➤ Brightness/Contrast/Saturation and Hue Setting(Settable for CVBS interface)

User can adjust the relevant parameters of input video in submenus of Brightness, Contrast,

Saturation and Hue when the input interface is CVBS. The adjustable range is 0~255, while the adjustable range of Hue is -128~127. The figure outside the parentheses is decimal while the inside is hexadecimal.

NOTE: Below explanations are applied in this entire manual.

- 1) To press ENTER to start editing.
- 2) To move the underline through LEFT/RIGHT keys.
- 3) To modify the value of underlined character through UP/DOWN keys.

► 1.1.1.2 Brightness
128 (0*80)

► 1.1.1.3 Contrast
128 (0*80)

► 1.1.1.4 Saturation
128 (0*80)

► 1.1.1.5 Hue
± 000 (0*00)

➤ Aspect Ratio Setting

In this interface, users can set the video aspect ratio, which includes 2 options. Pressing 1.1.1.6, the operation interface will turn up as following page:

1.1.1.6 Aspect Ratio 01/01
[4:3] 16:9

➤ Coding Type

This device supports both MPEG2 and H.264 encoding. Users can select between them in this interface.

1.1.1.7 Coding Type 01/01
[MPEG 2] H.264

➤ Resolution

Under this interface, users can set the video resolution (Refer to 1.3 Specifications in Chapter 1 for details). Pressing 1.1.1.8, the operation interface will turn up as following page:

1.1.1.8 Resolution	01/07
[720*576_50I]	720*480*5994I

➤ Rate Mode

User can choose CBR & VBR at this menu. CBR (Constant Bit-rate) means that the bit-rate will be a constant value. VBR (Variable Bit-rate) means that the bit-rate will always change along with the video scene changing.

1.1.1.9 Rate Mode	01/01
[CBR]	VBR

➤ Bit Rate/Max Bit Rate/Min Bit Rate

User can modify the video encoding bit rate, maximal and minimum bit rate under menu 1.1.1.A-1.1.1.B.

1.1.1.A Bit Rate
<u>0</u> 01.000 Mbps

1.1.1.B Max Bit Rate
<u>0</u> 03.000 Mbps

1.1.1. C Min Bit Rate
<u>0</u> 00.500 Mbps

➤ GOP Structure

Select GOP structure mode from the options listed.

1.1.1. GOP Structure	[01/01]
[IPPP] IBPBP IBBPB IBBBP	

3.2.1.2 Audio Setting

1.1.2.1 Bit Rate

1.1.2.2 Sample

1.1.2.3 Format

1.1.2.4 Gain

➤ Audio Bit Rate Setting

User can set the input audio bit-rate by pressing the enter key to enter the main editing interface. And there are : 32Kbps, 48Kbps, 56Kbps, 64 Kbps, 80Kbps, 96 Kbps, 112 Kbps, 128 Kbps, 160 Kbps, 192 Kbps, 224 Kbps, 256 Kbps, 320 Kbps, 384 Kbps. After the modification, users can press enter key again to take the modification into effect. The LCD will display the following pages:

1.1.2.1 Bit-rate

01/04

32 Kbps

48Kbps

56Kbps

[64Kbps]

➤ Audio Sample Rate

Under this interface, users can set the input audio sample rate. Users can set relevant audio sample rate by moving UP/DOWN keys. After the setting, users can press enter key again to take the modification into effect. And the LCD will display the following page:

1.1.2.2 Sample

01/01

[48 KHz]

44.1 KHz

32 KHz

➤ Audio Format Setting

AAC: Advanced Audio Coding

AC3: Audio Coding

Users can set the input audio format in this interface, and the 5 options are MPEG1 Layer II, DD-CE (AC3-CE, inapplicable for 3228A), DD-PE (AC3-PE, inapplicable for 3228A), LC-AAC, and HE-AAC. When users enter the main editing menu, the LCD will display the following page:

1.1.2.3 Format

01/03

[MPEG1-Layer II]

DD-CE (AC3-CE)

➤ Gain

Users can modify the Gain value in this interface.

1.1.2.4 Gain
±00 dB

3.2.1.3 System Settings

▶ 1.1.3.1 Prog Number 1.1.3.2 Video PID
1.1.3.3 Audio PID 1.1.3.4 PMT PID

▶ 1.1.3.5 PCR PID 1.1.3.6 IP Enable
1.1.3.7 Out Address 1.1.3.8 Out Port

▶ 1.1.3.9 Null PKT 1.1.3.A Broadcast

Under this interface, users can set the corresponding system parameters, after the modification, users can press enter key to take the modification into effect.

➤ Program Number Setting

Users can set the program number by pressing ENTER to enter this submenu. The LCD will display as below:

1.1.3.1 Program Number
0*0101

➤ Video/Audio/PMT/PCR PID Settings

Users can set these parameters by pressing ENTER to enter these submenus. The LCD will display the following pages, and the maximum PID number cannot exceed 0x1fff.

1.1.3.2 Video PID
0*0102

1.1.3.3 Audio PID
0*0103

1.1.3.4 PMT PID
0*0103

1.1.3.5 PCR PID
0*0101

➤ IP Enable

1.1.3.6 IP Enable
YES [NO]

➤ Out Address/Out Port Setting

User can modify the out address and out port in below interfaces.

1.1.3.6 Out Address
224.002.002.002

1.1.3.8 Out Port
1002

➤ Null Packet

1.1.3.9 Null Packet
YES [NO]

Users can choose YES (filter the null packet) or NO (don't filter null packet) to decide whether to filter the null packet or not.

➤ Broadcast

1.1.3. A Broadcast
YES [NO]

Yes: to pass the audio only, then no video will be output.

No: to pass both audio and video simultaneously.

3.2.1.4 Program Mux Setting

Users can decide whether to open the multiplexing function of the device.

➤ Channel Mux

Under this interface, users can decide whether to multiplexer the channel encoding stream. **YES** means that the device multiplexes the encoding stream into the MPTS, while **NO** means that the output program is SPTS. The LCD will display the following pages after pressing enter key.

1.1.4.1 Channel Mux [YES]	01/01 NO
-------------------------------	-------------

3.2.2 ASI Setting

Users can check the ASI input program amount in this interface, and the LCD will display the following page. Prog: 006 represents the input program is 6 and Out:003 represents 3 of the 6 programs have been multiplexed.

▶ 2.1 Parse ASI Prog

2.1 Parse ASI Prog	Prog: 006 Out: 003
▶ 001 HK1 <u>√</u>	002 HK2 <u>X</u>

3.2.3 Output Setting

By press the enter key in the main editing interface, use can set the device output parameter.

The device will display the following page after users pressing the enter key.

▶ 3.1 IP Out Enable	3.2 IP Out Address
3.3 IP Out Port	3.4 Trans Stream ID

▶ 3.5 Output Stream	3.6 Output Mode
3.7 ASI Output	3.8 UTC Time Config

▶ 3.9 Null PKT

3.2.3.1 IP Out Enable

This is the new function of this encoder, user can decide whether to open the IP output function by press the ENTER key in this menu, and the operating interface will show the following page:

▶ 3.1 IP out Enable
[YES] NO

3.2.3.2 IP Out Address

If users enable the IP output function, then users can set the device IP output address in this interface. After users press the ENTER key, the operating interface will display the following page:

▶ 3.2 IP Out Address
224.002.002.002

3.2.3.3 IP Out Port

In this menu, users can set the encoder IP output port number by press the ENTER key to enter the main editing interface.

▶ 3.3 IP Out Port
01001

3.2.3.4 Trans Stream ID

Users can set the device TS ID in this interface after pressing the ENTER key to enter the main editing page.

▶ 3.4 Trans Stream ID
00000

3.2.3.5 Output Stream

Users can modify the bit rate of output stream in this interface after pressing the ENTER key to enter the main editing page.

3.5 Output Stream
040.000 Mbps

3.2.3.6 Output Mode

Users can set the output mode in this interface after pressing the ENTER key to enter the main editing page.

3.6 Output Mode 01/01
[1IP] 8IP

3.2.3.7 ASI Output

Users can set the ASI output in this interface under this menu, and there are 9 options: MPTS, Channel 1-8.

3.7 ASI Output 01/03
[MPTS] Channel 1 Channel 2 Channel 3

3.2.3.8 UTC Time

UTC refers to Universal Time Coordinated. User can enter this menu to set the time as needed and it will then generate the TDT table and show in the user's STB.

3.8 UTC Time Configuration
2012-01-29 15:45:03

3.2.3.9 Null Packet

3.9 Null Packet
YES [NO]

3.2.4 Network Setting

Users can set the network parameters by pressing the enter key, and the LCD will display the following interfaces.

4.1 IP Address
192.168.002.136

4.2 Subnet Mask
255.255.255.000

4.3 Gateway
192.168.002.001

4.4 Console Address
192.168.002.211

The MAC address is read-only in the keyboard operation interface, so users can just check the physical address under this interface, and the modification must be done in the network updating tools.

4.5 MAC Address
201012345679

NOTE: The MAC address is unique, and cannot be modified. When the MAC address is ffffffff, users must modify the address through special software, otherwise, the IP output data will be filter out when the IP stream passes through the router.

3.2.5 Saving Configuration

Users can save the modification by pressing the enter key, and it will display the following interface when user press the enter key.

5 Saving Config 01/01
YES [NO]

3.2.6 Loading Configuration

In this interface, users can select the modified configuration and the factory defaulted configuration. Users can enter the corresponding menu to select the configuration. The LCD will display the following interfaces:

▶ 6.1 Load Saved

6.2 Load Default

3.2.7 Version

Users can check the device software version and hardware version, and the LCD will display the following interface when users press the ENTER key.

8 in 1 Encoder
SW 2.14F

HW 03

3.2.8 Language

User can select the needed language under this submenu:

8 Language
中文

[ENGLISH]

Chapter 4 NMS Operation (Optional)

Network Management System Profile

Network management system is applied to digital TV equipment operation, control and management and parameters setting, etc. It centralizes digital TV equipment through network.

4.1 Installation

The software doesn't need special installation. User can just copy "Network Management Software X.XXY.exe" to the specified directory (X.XX is version number, Y represents language. For example: the version number of network management software 4.12E.exe is 4.12 English version) or place different versions of network management software to the same directory. When the network management software is running, it will generate two documents as follows:

- Network management software X.XXY.log (It preserves the log file.)
- Info. Bin (It's the user configuration data.)

4.2 Software Operation

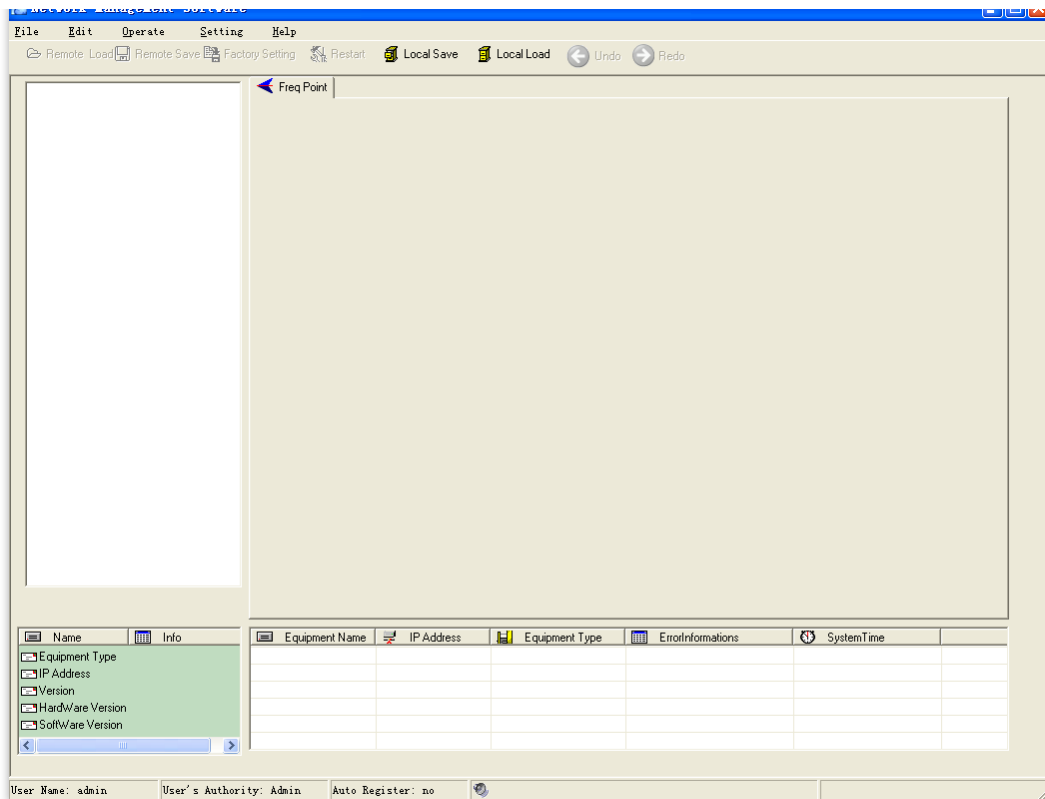
4.2.1 Login Interface

A login interface will pop up firstly when the software is running and give user prompts to input user name and password (The default user name is **admin** and no password. User can add users and passwords as needed. Details please refer to 4.4.3 in 4.4 Other Settings.). The menu shows as follows:



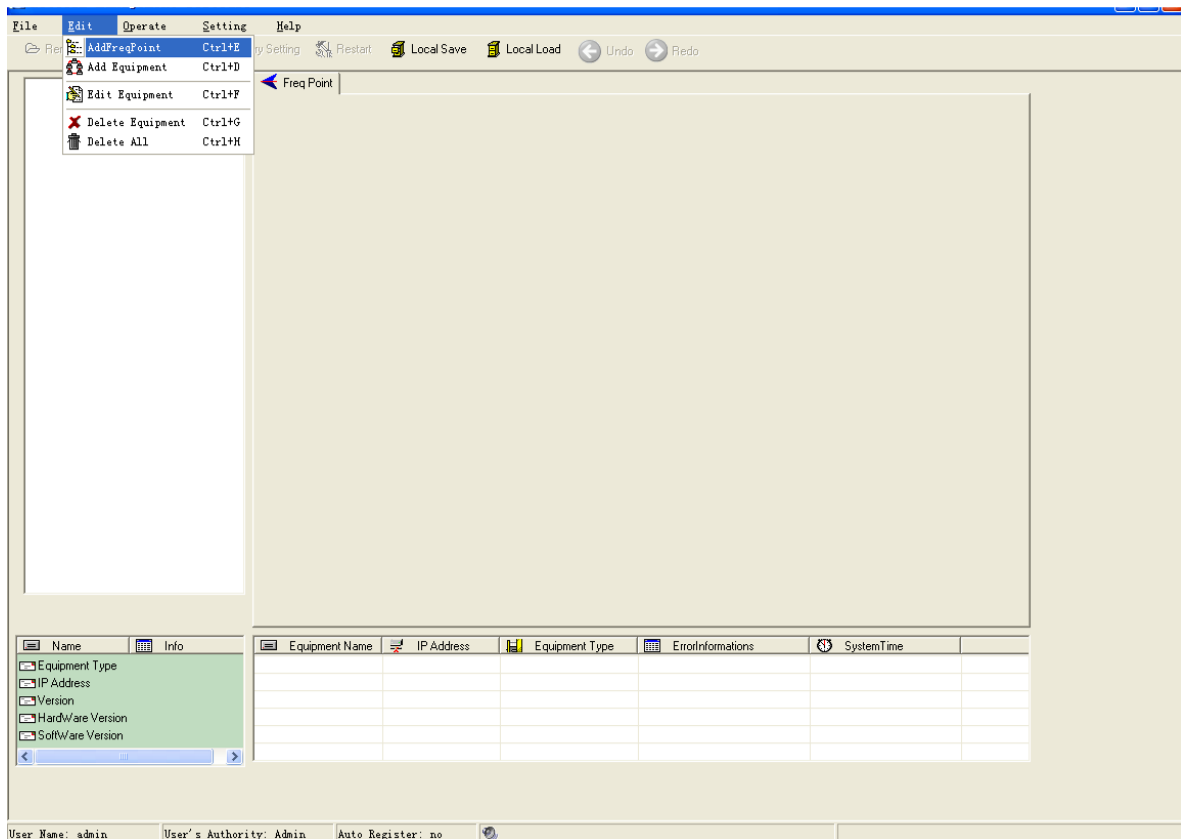
User can login the NMS by pressing **OK** key after inputting user name. Upon the inputs, the software will verify them with database record automatically and the main interface will appear.

4.2.2 Main Interface



User can create a device node tree in the left column by adding, modifying and deleting the device node. This software provides a powerful node operation function, and the user can edit various parameters in the device tree for management and classification.

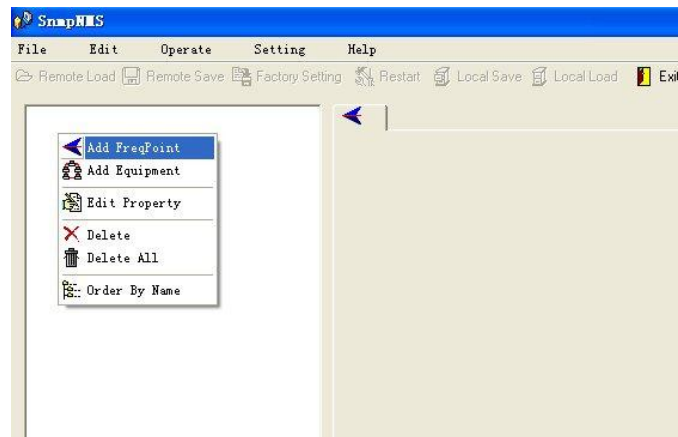
4.2.3 Adding Frequency Point



The Add Freq Point dialog box pops up when the user clicks the Add Freq Point item in the Edit pull down menu on the menu row. The device will confirm the given frequency while user clicks **OK**.

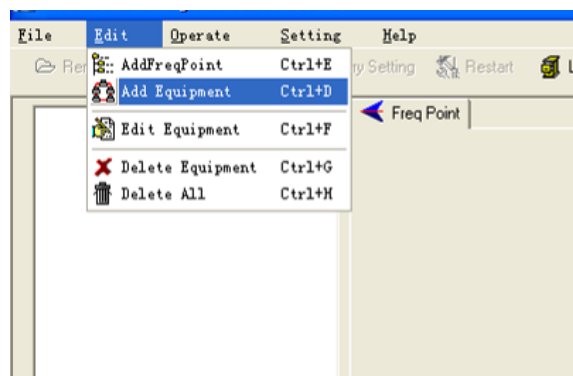


User can also click right mouse key to pop up the short-cut menu in device tree or in the left blank column, then the corresponding dialog box will pop up by choosing **Add Main Freq Point**. The device will confirm the given frequency while user clicks **OK**.

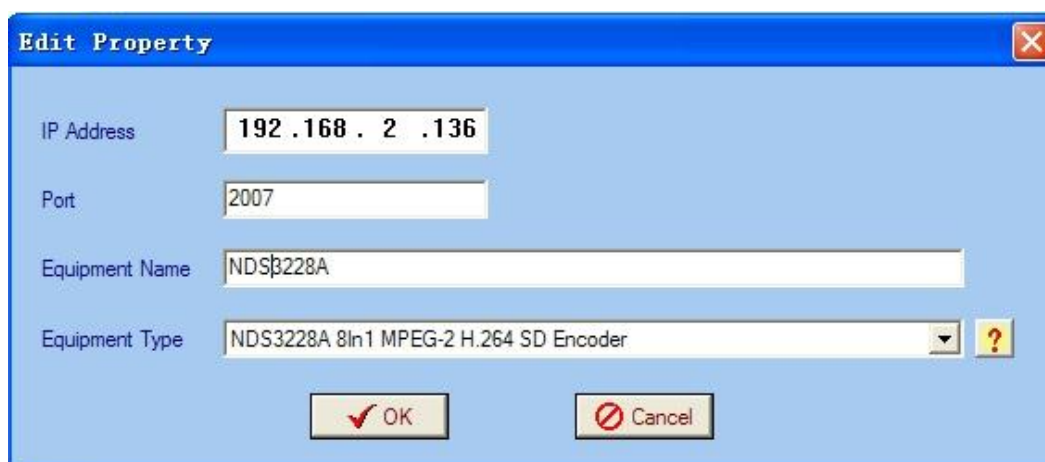


4.2.4 Adding Equipment under Given Frequency Point

User should choose the frequency point in advance, and then the dialog box of Add Equipment will pop up when user clicks “Add Equipment” item in the Edit pull down menu on the menu row.



4.2.5 Edit Equipment Interface



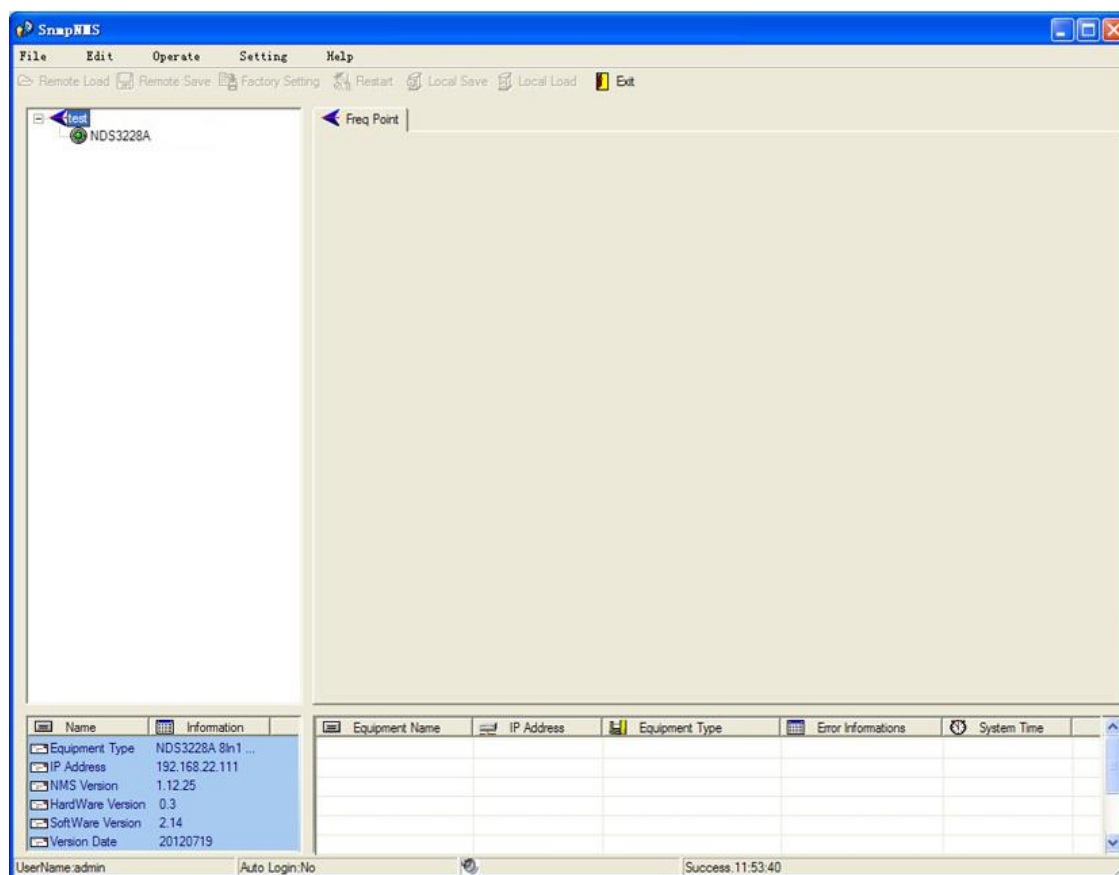
User should follow the steps as below:

- Inputting the device IP Address
- Inputting the port
- Inputting the Equipment Name
- Choosing the connected equipment type in drop down list of “Equipment Type” by clicking the “▼” Or Click “?” to auto search the type of device.

NOTE:

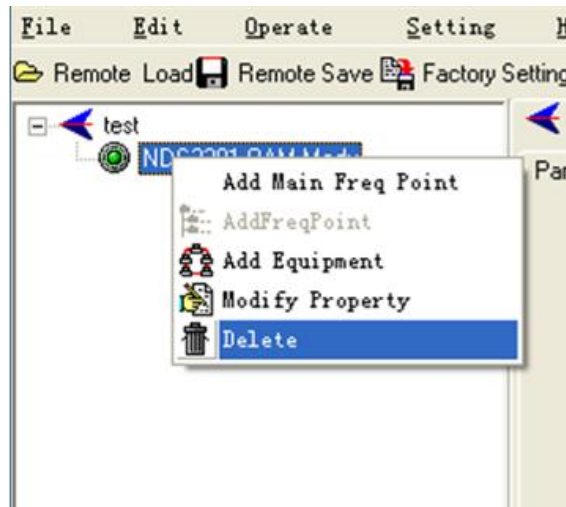
1. The default IP of NDS3228A Encoder is 192.168.2.136, also you can check its IP address in the front panel of device in case the IP changed unexpected.
2. The PC IP address and device IP address should be in the same network. For example the Device IP is 192.168.2.136, sub mask is 255.255.255.0. So the PC IP address should be 192.168.2.X (1<X<255), sub mask is 255.255.255.0. User can use ping command to confirm these two are in same network or not.

Click OK, it will appear as below:

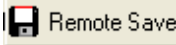
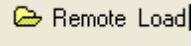


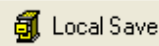
4.2.6 Delete Equipment

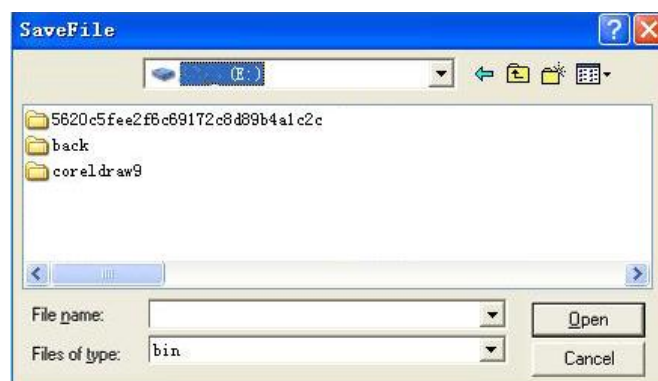
User can choose the equipment to be deleted in the left column, and then click the “delete” item in the pull down menu which appears by clicking the right mouse key.

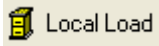


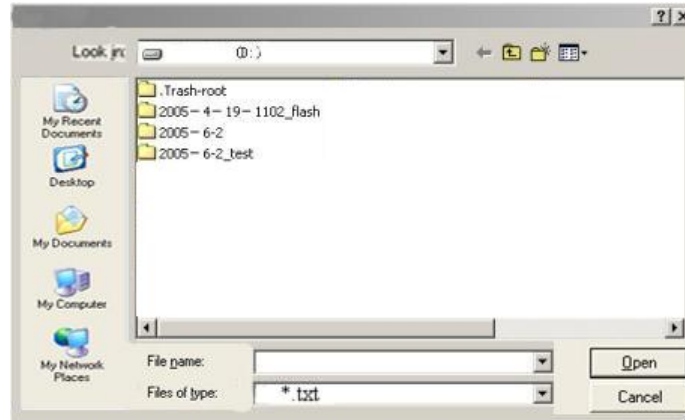
4.2.7 Save Configuration

After finishing all the parameters setting, user can click  Remote Save button on the toolbar to save the modifications to the device’s flash, while user can also reload the saved parameters from device’s flash and refresh the device’s parameters setting according to the loaded values by clicking .

Alternatively, user can also click the  Local Save button on the toolbar to popup the “save file” dialog box, which gives prompts to save all the device’s parameters as binary files in the computer’s hard disk.






Similarly, user can choose to click the  Local Load button on the toolbar to popup the read file dialog box, to read the stored binary file and set the device’s parameters according to the loaded binary files.



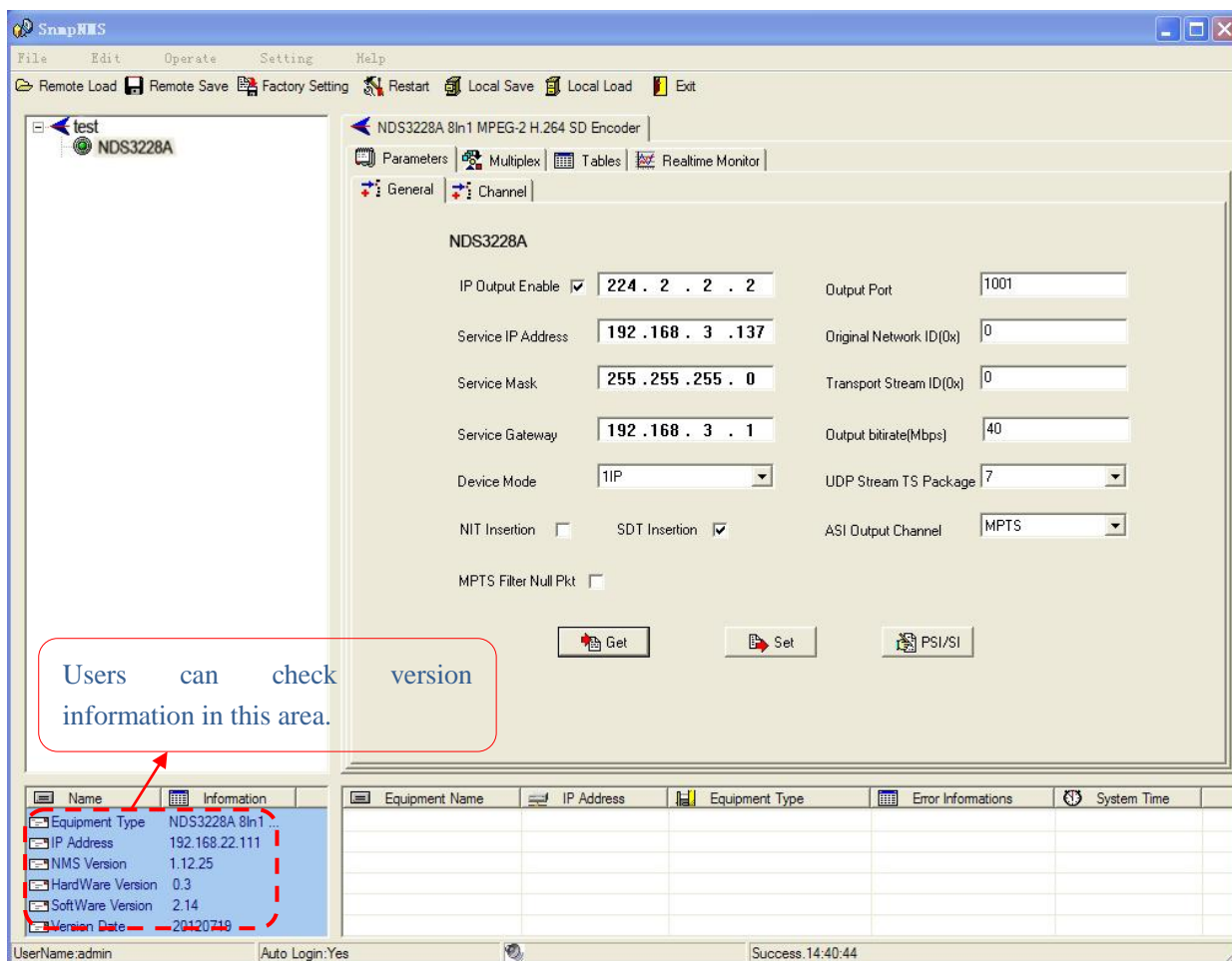
4.3 NDS3228A 8 in 1 MPEG-2 H.264 SD Encoder Operation

User can choose the encoder in the device tree; the procedure will display the encoder interface in operating area. The interface is mainly composed of encoding video parameters, audio parameters and the encoding system parameters, output parameters and etc.

4.3.1 Parameters Setting

Users can click Equipment Name on the node tree and enter in the Parameter interface by clicking  Parameters and  General or  Channel to configure the parameters.

4.3.1.1 General Parameters



Set: to make the current parameters, which shows in the NMS software, activate.

Get: to read the current device's activating parameters and show them on NMS software.

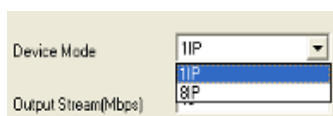
➤ IP Out Enable


Check the checkbox with “√”, then the IP output is enabled, otherwise it is not. Users can decide whether to open the IP output function or not. Users can modify the IP address here as well.

➤ IP Out Address/Service IP Address/Service Mask/Service Gateway

Users can set the address by modifying the value in these four fields.

➤ Device Mode



User can click  to trigger a pull-down list to select the device mode.

1IP: This mode refers to MPTS and outputs the programs which have been multiplexed. Users need to enable the IP Output by checking the checkbox **IP Output Enable** ☒ in interface 4.3.1.1 General Parameters. (The device will automatically enable IP Outout founction if users set

device mode as 1IP)

8IP: This mode refers to the 8 SPTS and outputs every single program with separate IP address.

Users need to enable the IP Output **IP Output Enable** ☒ in every channel interface (refer to 4.3.1.3 System Parameters). (The device will automatically enable IP Outout founction mentioned here if users change the device mode to 8IP)

When 1IP is set as the Device Mode, then the 8IP mode is non-effective.

➤ Output Port

Users can set the output port by modifying the value in this field.

➤ Original Network ID

This 16-bit field gives the label identifying the network ID of the originating delivery system.

The value ranges from 0 to 0xFFFF.

➤ Transport Stream ID

This is a 16-bit field which serves as a label for identification of this TS from any other multiplex within the delivery system. The value ranges from 0 to 0xFFFF.

➤ Output Bit Rate (Mbps)

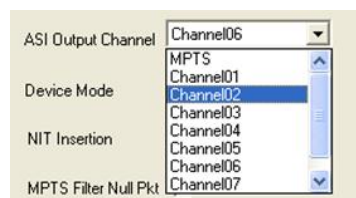
This includes the effective bit-rate of encoding channel 1-8, the effective bit-rate from ASI input and the bit-rate of stuffed null packets.


➤ UDP Stream TS Package



Users can set the amount of TS packages here.

➤ ASI Output Channel



This device supports 1 MPTS (Multiple Programs Transport Stream) and 8 SPTS (Single Programs Transport Stream) output. User can click  to triger a pull-down list to select the output type

➤ NIT Insertion

In this field, users can decide whether to effect the NIT (Network Information Table) insertion function.

➤ SDT Insertion

In this field, users can decide whether to effect the SDT insertion function.

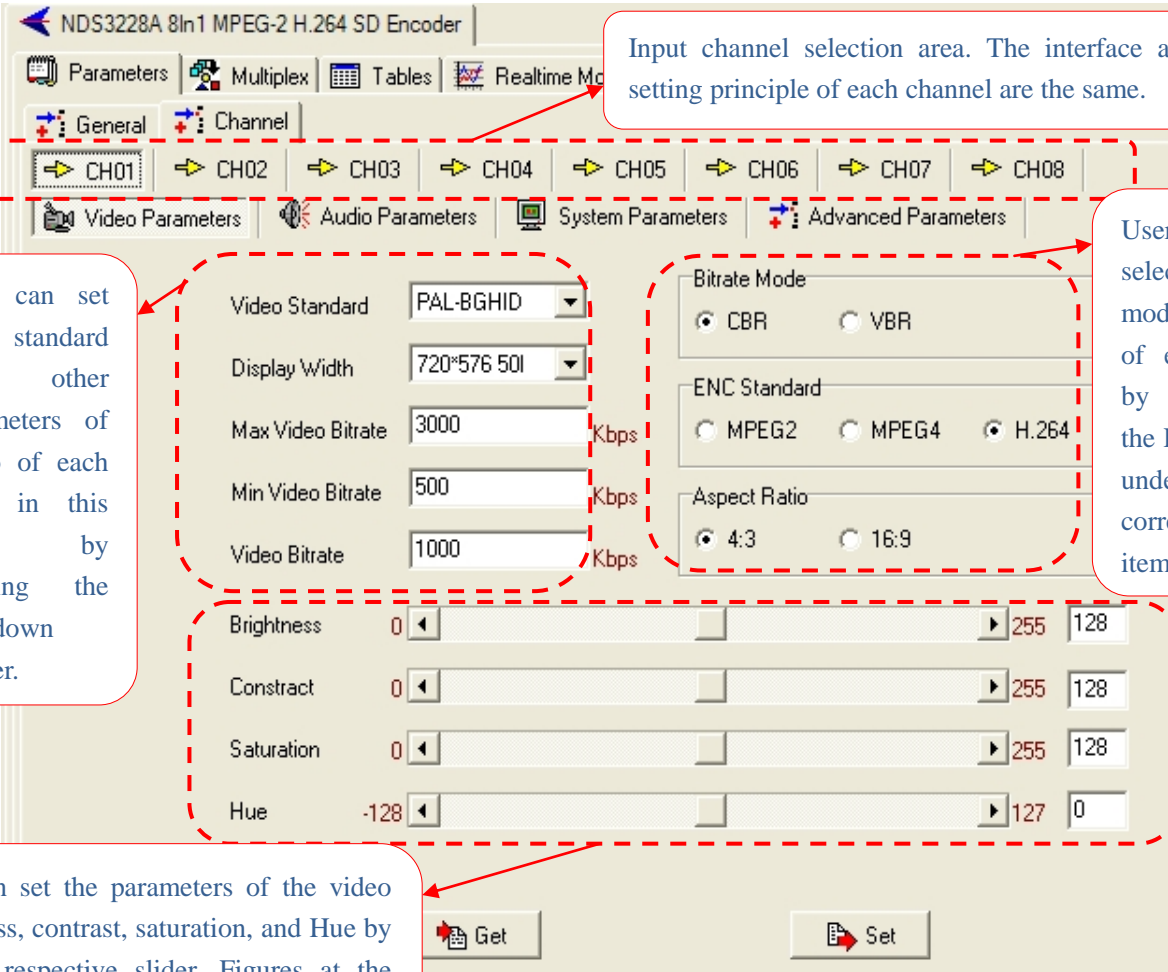
➤ MPTS Filter Null Packet

If this function is effected, then the null packets in IP output stream will be filtered.

➤ PSI/SI Editor

This button will trigger the PSI/SI Editor for some users' advanced usage. For more detail, please refer to the manual of PSI/SI.

4.3.1.1 Video Parameters



Input channel selection area. The interface and setting principle of each channel are the same.

User can set the standard and other parameters of video of each item in this area by clicking the pull-down trigger.

User can select the mode or type of each item by clicking the Radio Box under the corresponding item.



User can set the parameters of the video brightness, contrast, saturation, and Hue by moving respective slider. Figures at the beginning and end indicate the adjustment range.

NOTE:

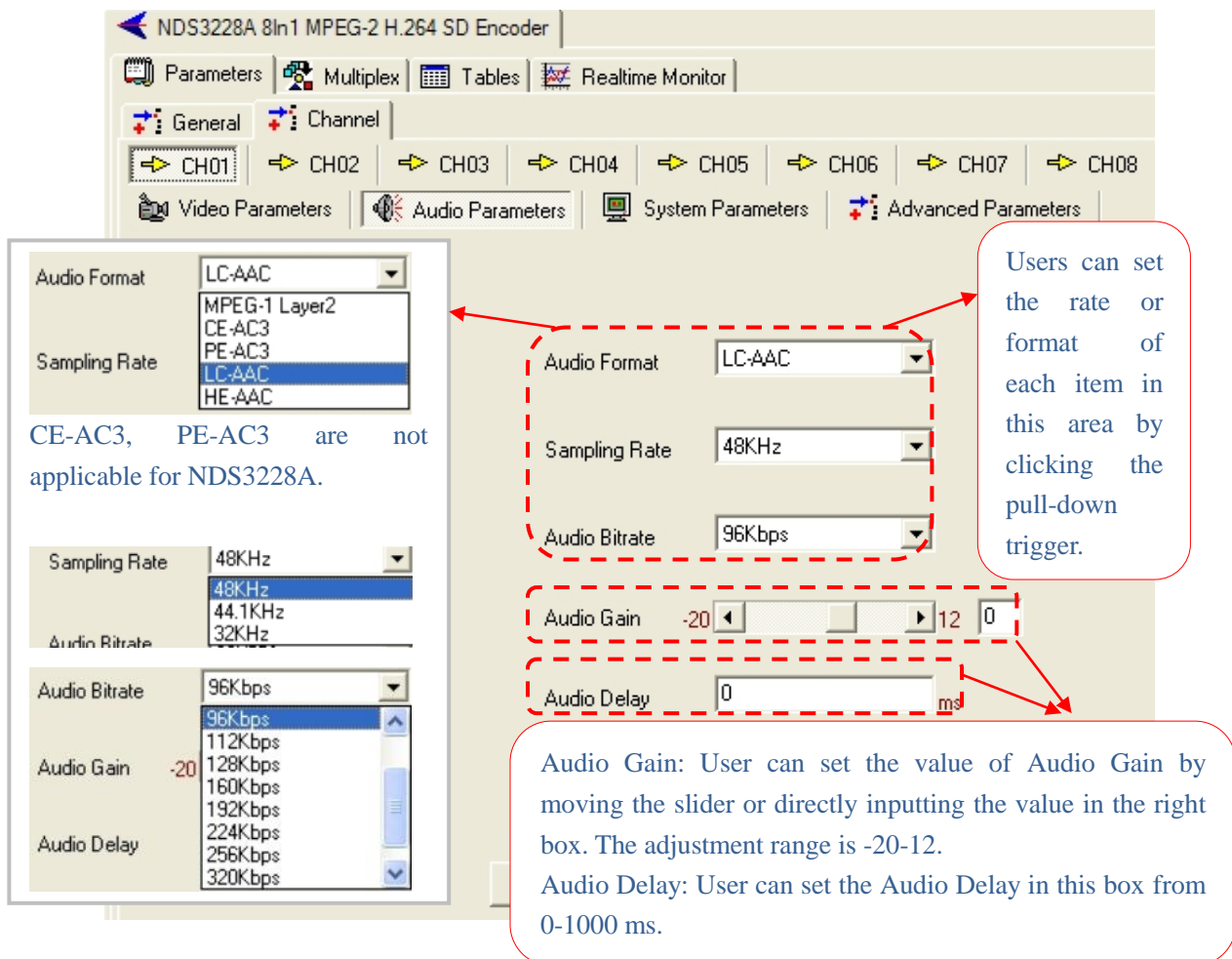
1. Bit Rate Mode & Max Video Bit-rate

Users can only modify the Max Video Bit Rate when the Bit-rate mode is VBR, while CBR mode is selected, Max Video Bit Rate box turns gray and users can just check it.



2. If any parameter is modified, it is supposed to click **Set**  to make the modified parameters activate and click **Get**  to read and effect the current device's activating parameters.

4.3.1.2 Audio Parameters



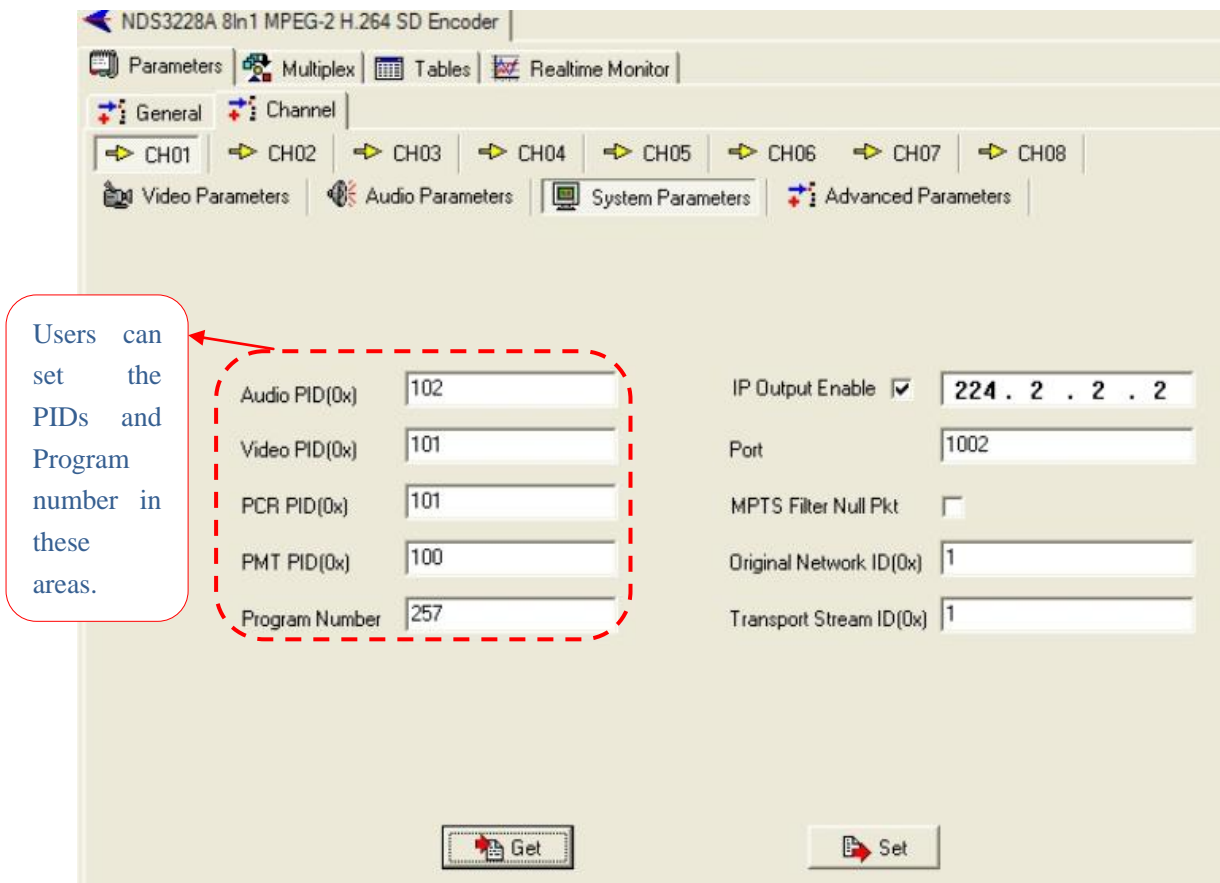
CE-AC3, PE-AC3 are not applicable for NDS3228A.

Users can set the rate or format of each item in this area by clicking the pull-down trigger.

Audio Gain: User can set the value of Audio Gain by moving the slider or directly inputting the value in the right box. The adjustment range is -20-12.

Audio Delay: User can set the Audio Delay in this box from 0-1000 ms.

4.3.1.3 System Parameters



➤ IP Output Enable

Check the checkbox with “√”, then the IP output is enabled, otherwise it is not. Users can decide whether to open the IP output function or not. Users can modify the IP address here as well.

➤ IP Out Address/Output Port

Users can set the service IP and the TS output address by modifying the value in these two fields.

➤ Original Network ID

This 16-bit field gives the label identifying the network ID of the originating delivery system. The value ranges from 0 to 0xFFFF.

➤ Transport Stream ID

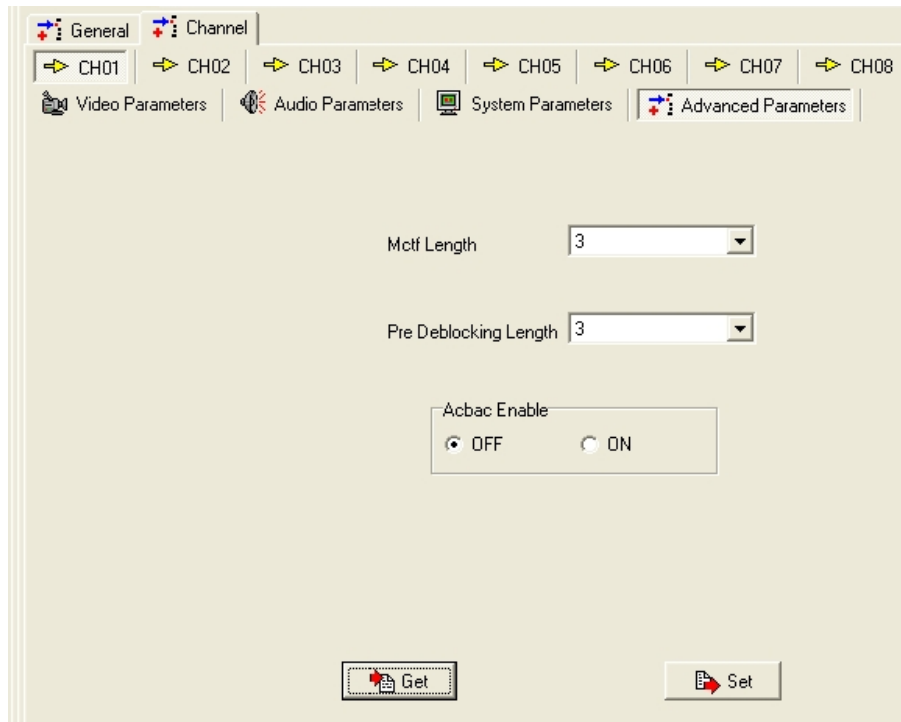
This is a 16-bit field which serves as a label for identification of this TS from any other multiplex within the delivery system. The value ranges from 0 to 0xFFFF.

➤ MPTS Filter Null Packet

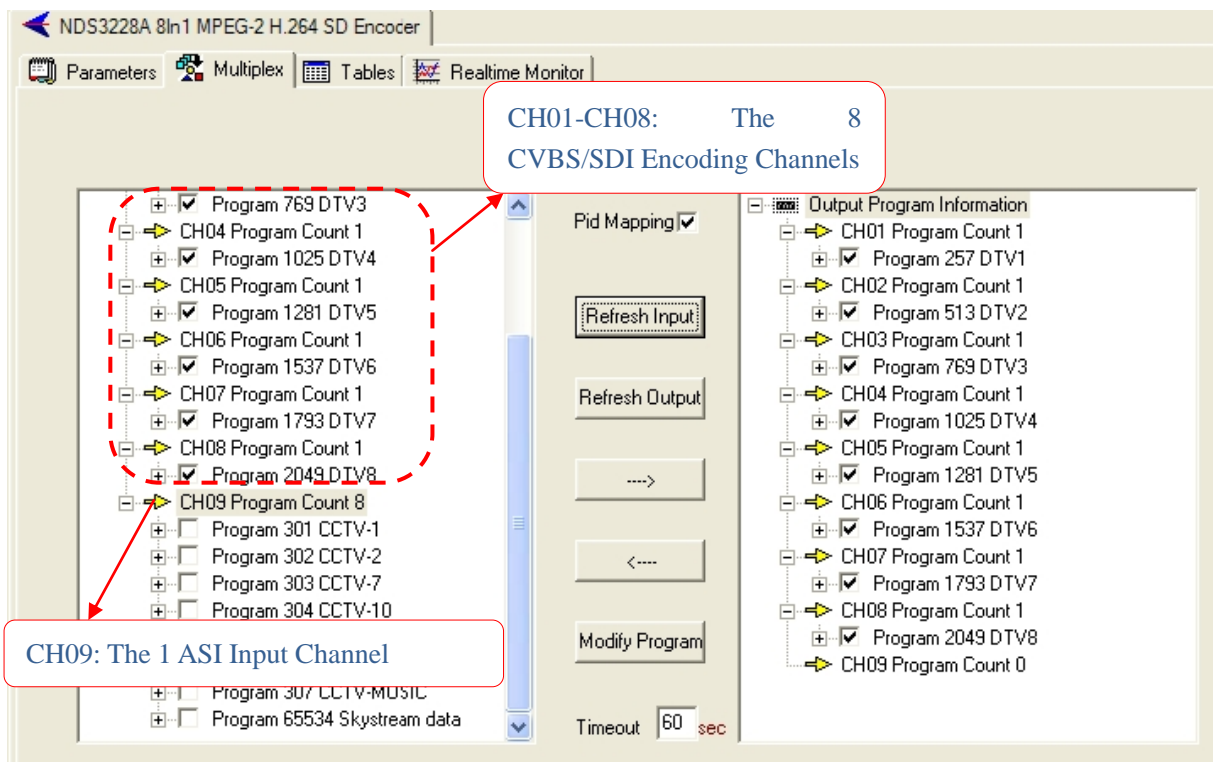
If this function is effected, then the null packets in IP output stream will be filtered.

4.3.1.4 Advanced Parameters

Similarly, users can set the MCTF (Motion Compensation Temporal Filtering) Length, Pre Deblocking Length and ACBAC function in this interface.




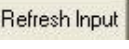
4.3.2 Multiplexing




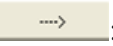

The programs in the left column represent all input programs and which port they come from,

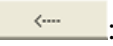
while the programs in the right column represent the output programs and from which port they are from. User can parse the programs of each channel and multiplex those programs to the output. Moreover, user can modify the output programs' Program Name, PMT, PCR, video, audio PID.


Pid Mapping : Check this box the set the PID Mapping

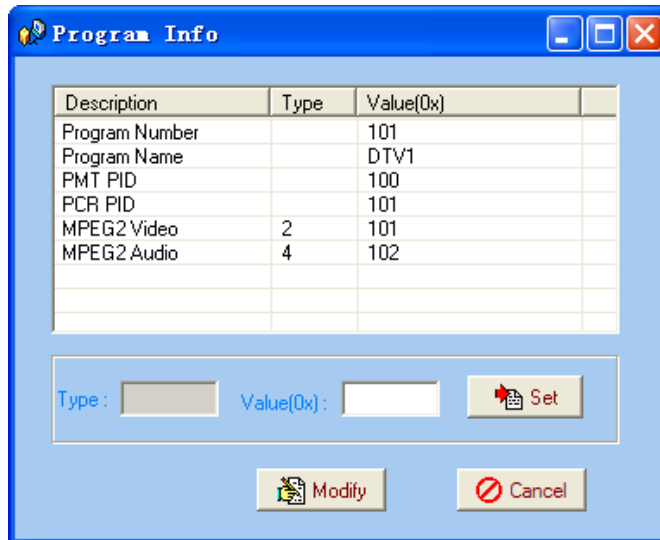
Refresh Input : To refresh the inputting terminal and get the inputting information

Refresh Out : To refresh the outputting terminal and get the outputting information


----> : Multiplex the input programs to the output channels after selecting the target program with . The system will automatically allot the program to the relevant output channel.



<---- : Cancel the multiplexed programs.



Modify Program : To modify the output programs' Program Name, PMT, PCR, video, or audio PID as needed. To modify program information, user can select the target program in output part first and click this button to pop up a dialog box as below:




Description	Type	Value(0x)
Program Number		101
Program Name		DTV1
PMT PID		100
PCR PID		101
MPEG2 Video	2	101
MPEG2 Audio	4	102

Type: Value(0x): 

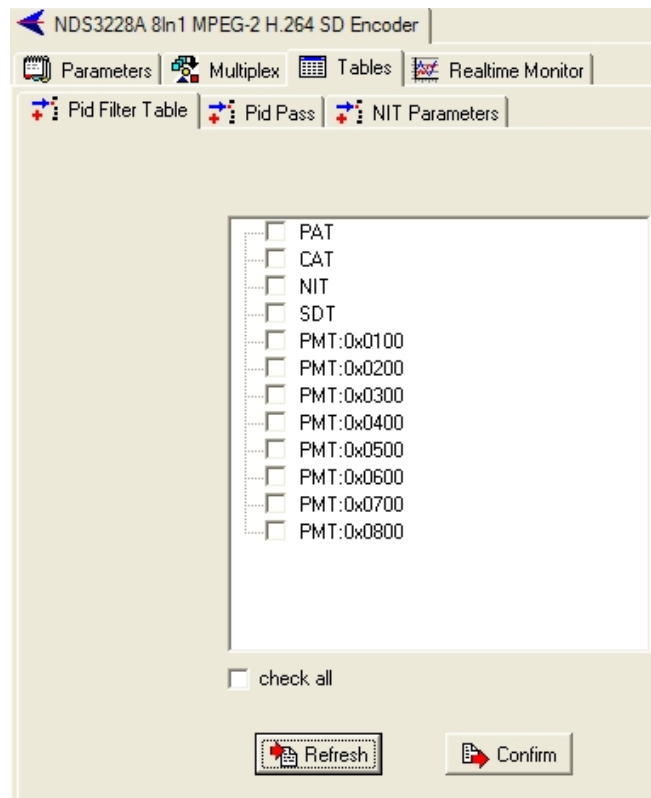
 

Select the target item and input the new value in the box below, then click  and  to effect the modification.

Timeout **sec** : The parsing overtime value

4.3.3 Tables

4.3.3.1 PID Filter Table



Users can operate PID filter in this table by checking the check boxes of corresponding items and click CONFIRM to effect.

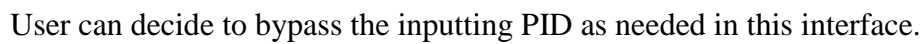
Refresh: getting PID filter table from the device

Setting: submitting the PID filter table to the device

Check All: selecting all the selections of the list

After user selects one PID in the table, then the corresponding output PSI/SI table will not be sent to the output stream.

4.3.3.2 PID Pass



The display will show as below when user clicks “Add” button.



Modify the data as needed and click OK to confirm. The PID then will be bypassed and listed in the table as below.

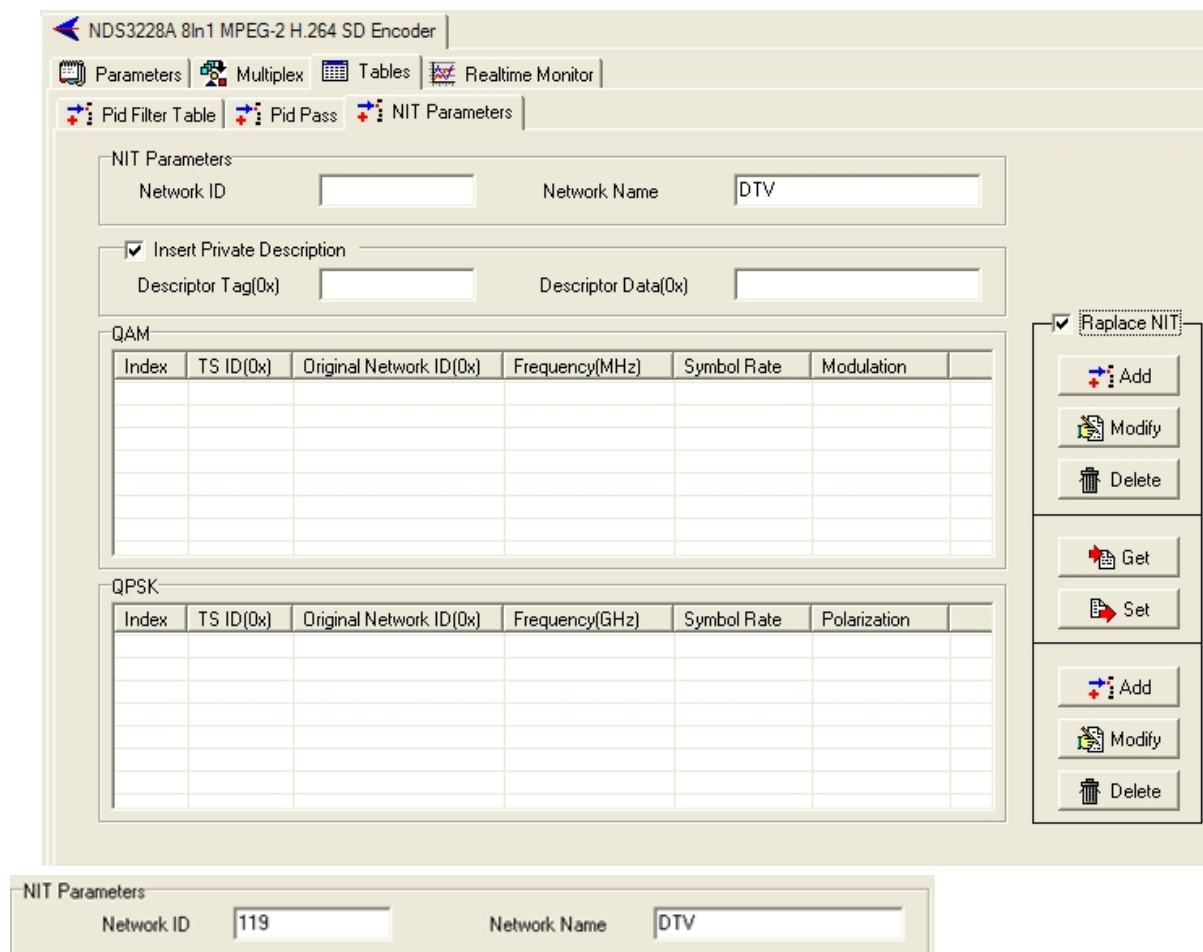
Index	Input Channel	Input PID(0x)	Output PID(0x)
1	9	101	101

User can also modify or delete the added PID through the corresponding buttons at right.

4.3.3.3 NIT Parameters

NIT: Network Information Table.

NIT table is a very important table for describing the network and TS. Users can set the parameters of the output NIT table.



NDS3228A 8in1 MPEG-2 H.264 SD Encoder

Parameters Multiplex Tables Realtime Monitor

Pid Filter Table Pid Pass NIT Parameters

NIT Parameters

Network ID Network Name

☒ Insert Private Description

Descriptor Tag(0x) Descriptor Data(0x)

QAM

Index	TS ID(0x)	Original Network ID(0x)	Frequency(MHz)	Symbol Rate	Modulation

QPSK

Index	TS ID(0x)	Original Network ID(0x)	Frequency(GHz)	Symbol Rate	Polarization

☒ Replace NIT

Add Modify Delete

Get Set

Add Modify Delete

NIT Parameters

Network ID Network Name

Network ID : The parameter describes the output TS's network ID

Network Name : The parameter describes the output TS's network name.

Insertion private description

☐ Insert Private Description

Descriptor Tag(0x) Descriptor Data(0x)

☐ Insert Private Description : This checkbox will allow user to insert the private descriptor into the

output TS. The private descriptor includes two parts. One is descriptor tag, and the other is descriptor information.


Descriptor Tag(0x) : The Descriptor Tag is an 8-bit field which identifies each descriptor.

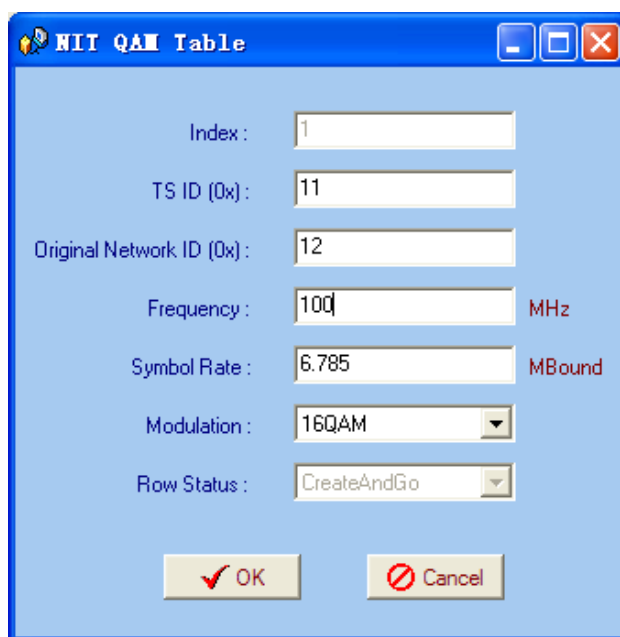
Descriptor Data(0x) : The Descriptor Data is the detailed information of the private description.

Replace NIT Table

After checking the checkbox, the NIT editing menu is active. And also the device will insert the EIT table into the output TS.

☒ **Replace NIT** : It means to replace the NIT table when users select it, and then users can edit the NIT table and output it.

 **Add** : Users can add the cable transmission descriptor in this Add button, and it will pop up the following dialogue box, say, the added descriptor is apply for the DVB-C network.

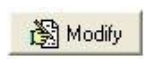



The dialog box titled "NIT QAM Table" contains the following fields and controls:

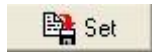
- Index : 1
- TS ID (0x) : 11
- Original Network ID (0x) : 12
- Frequency : 100 MHz
- Symbol Rate : 6.785 MBound
- Modulation : 16QAM (dropdown menu)
- Row Status : CreateAndGo (dropdown menu)
- Buttons: OK, Cancel

The interface will show as below after the NIT parameters being added:

QAM					
Index	TS ID(0x)	Original Network ID(0x)	Frequency(MHz)	Symbol Rate	Modulation
1	11	12	100	6.785	16QAM

 **Modify** : The “Modify” button will trigger a modify window and allow user to modify the selected items in the NIT.

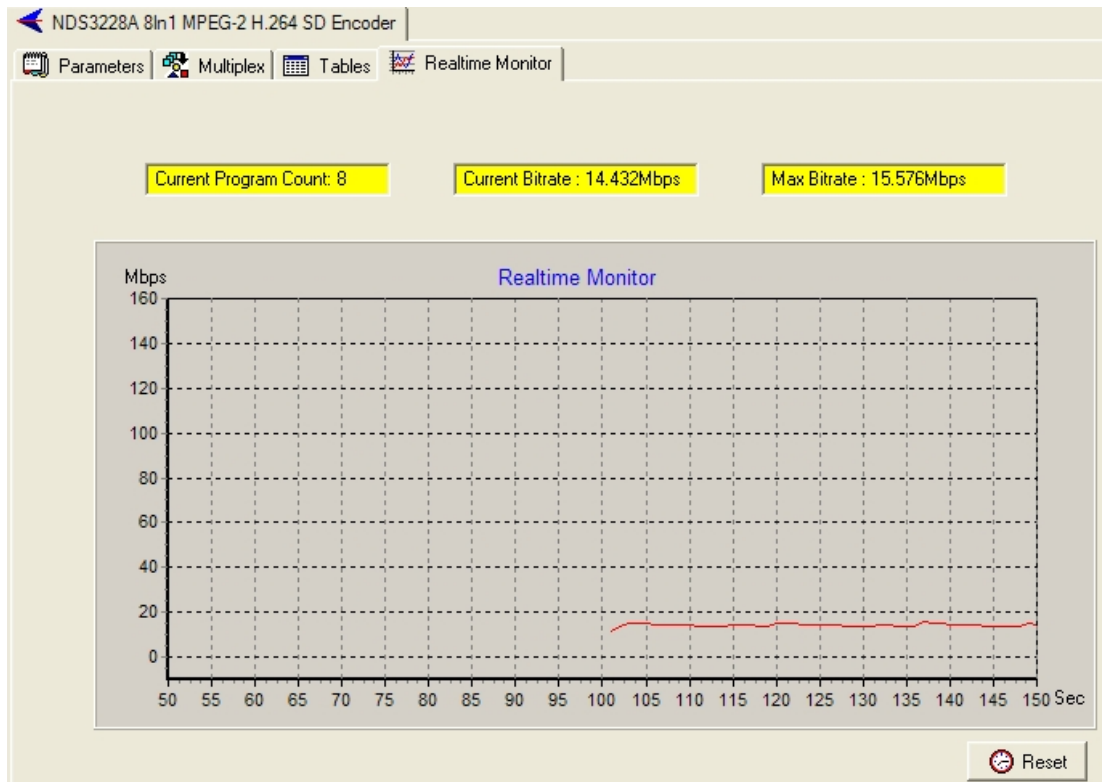
 **Delete** : The “Delete” button will remove the selected items in the NIT.



: The set “Button” will send the NIT to the chosen output Port.

4.3.4 Real-time Monitor

There will be a real-time bit rate chart generating in the monitor for users to check the bit rate information.

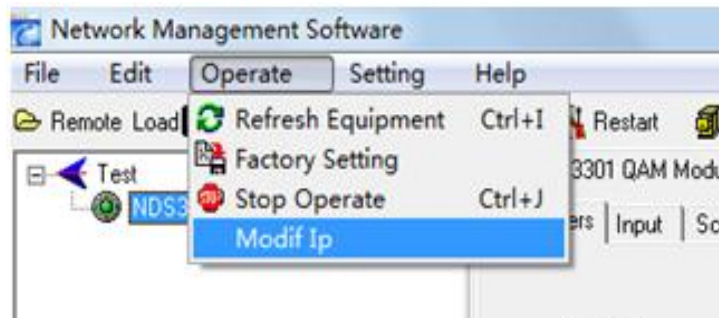


4.4 Other Settings

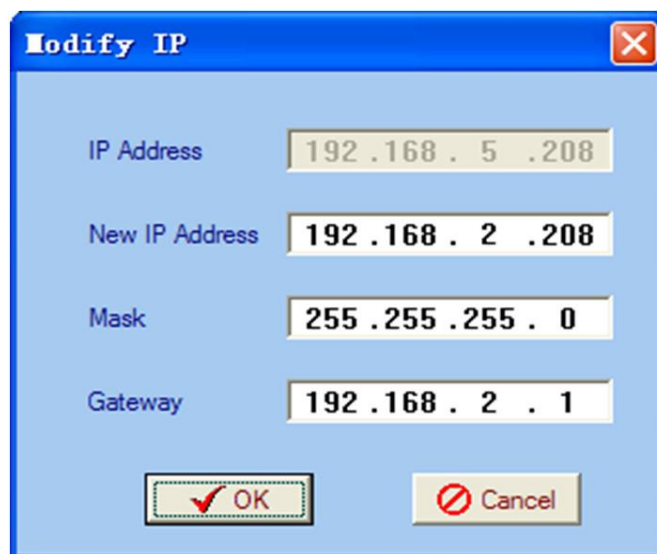
4.4.1 Difference between Set and Remote Save

In many cases during the configuration of parameters in NMS, users save the modified configuration by clicking “Set”, in which way the configuration can only be saved temporarily and will restore the last saved configuration if the device reboots. To save the configuration permanently, it is required to operate through “Remote Save” on the toolbar explained in 4.2.7. This is the difference between “Set” and “Remote Save”.

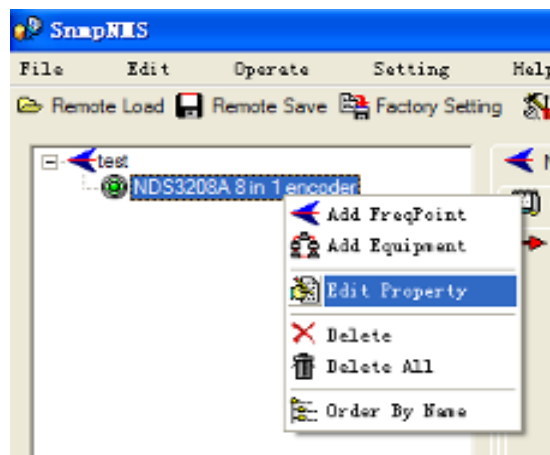
4.4.2 IP Modification



Users can click **Operate** and select **Modify IP** in the drop-down list, and a dialog box presents itself as shown below. Users input the new NMS IP Address for the device and click OK button to confirm.

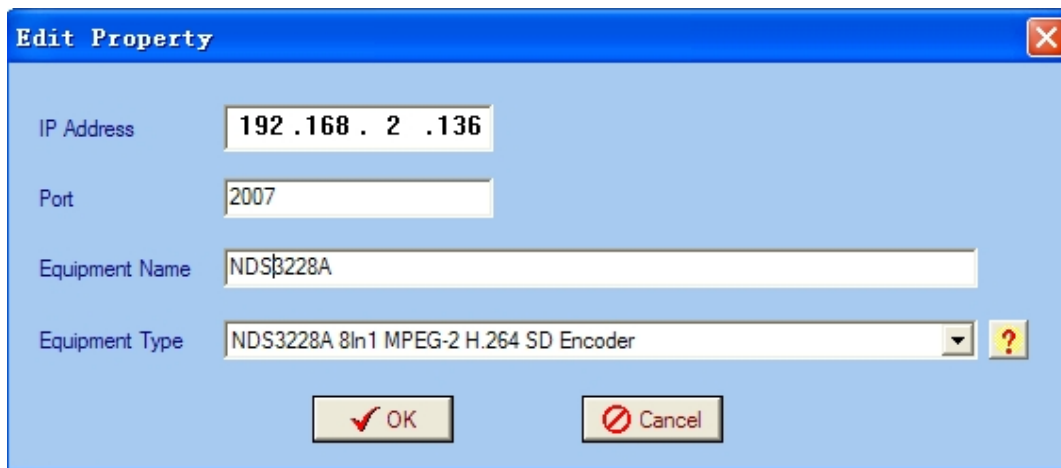


Users can then note the indicator light turns red, which signifies the equipment has disconnected. Users then can refer to below prompts to edit the property by inputting the new IP to re-connect the equipment.



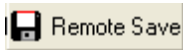
Input the new IP Address in the box and click OK button, then the device will be connected

again.



The 'Edit Property' dialog box contains the following fields and controls:



- IP Address:** 192 . 168 . 2 . 136
- Port:** 2007
- Equipment Name:** NDS3228A
- Equipment Type:** NDS3228A 8in1 MPEG-2 H.264 SD Encoder (with a dropdown arrow and a help icon)
- Buttons:** OK (with a checkmark icon) and Cancel (with a red X icon)

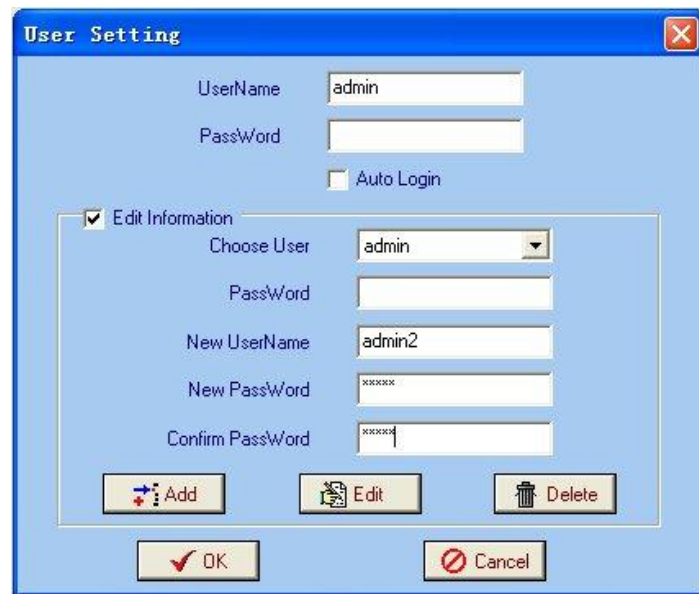
After finishing all the parameters setting, user should click  button on the toolbar to save the modifications to the device's flash.

4.4.3 User Add

When logging in, user will note that the default user name is **admin** and no password. User can add users and passwords as needed.



User clicking “Setting” in the menu bar and selecting “User Setting” in the pull-down list, the below dialog box will pop out as shown below. Select the “Edit Information” by marking the check box with “√”, user can input the new username and new password as prompts below. It is required to click  to add the new user and then click  to save the new setting.



The image shows a 'User Setting' dialog box with a blue title bar and a close button (X) in the top right corner. The dialog contains the following fields and controls:

- UserName:** A text field containing 'admin'.
- PassWord:** An empty text field.
- Auto Login:** A checkbox that is currently unchecked.
- Edit Information:** A section with a checked checkbox. It contains:
 - Choose User:** A dropdown menu showing 'admin'.
 - PassWord:** An empty text field.
 - New UserName:** A text field containing 'admin2'.
 - New PassWord:** A text field containing 'xxxxxx'.
 - Confirm PassWord:** A text field containing 'xxxxxx'.
- Buttons:** At the bottom, there are three buttons: 'Add' (with a plus icon), 'Edit' (with a pencil icon), and 'Delete' (with a trash can icon). Below these are 'OK' (with a checkmark icon) and 'Cancel' (with a red X icon) buttons.

Chapter 5 WEB NMS Operation (Optional)

User not only can use front buttons to set configuration, but also can control and set the configuration in computer by connecting the device to web NMS Port. User should ensure that the computer's IP address is different from the encoder's IP address; otherwise, it would cause IP conflict.

5.1 login

The default IP address of this device is 192.168.2.136. (We can modify the IP through the front panel.)

Connect the PC (Personal Computer) and the device with net cable, and use ping command to confirm they are on the same network segment.

I.G. the PC IP address is 192.168.99.252, we then change the device IP to 192.168.99.xxx (xxx can be 1 to 254 except 252 to avoid IP conflict).

Use web browser to connect the device with PC by inputting the Encoder & Modulator's IP address in the browser's address bar and press Enter.

It will display the Login interface as Figure-1. Input the Username and Password (Both the default Username and Password are "admin".) and then click "LOGIN" to start the device setting.

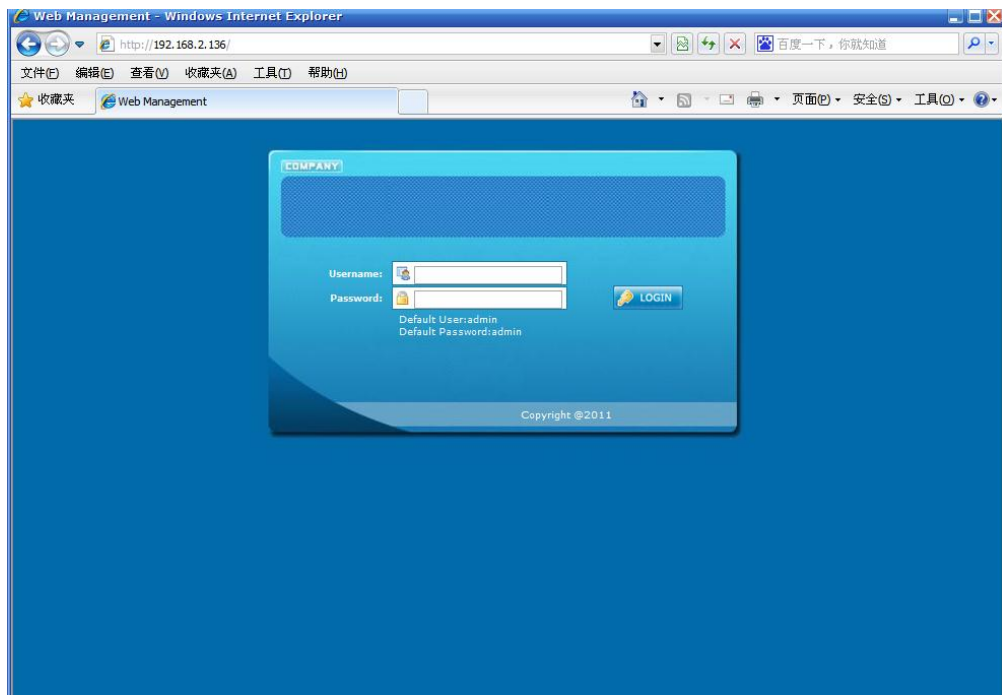


Figure-1

5.2 Operation

Welcome

When we confirm the login, it displays the WELCOME interface as Figure-2.

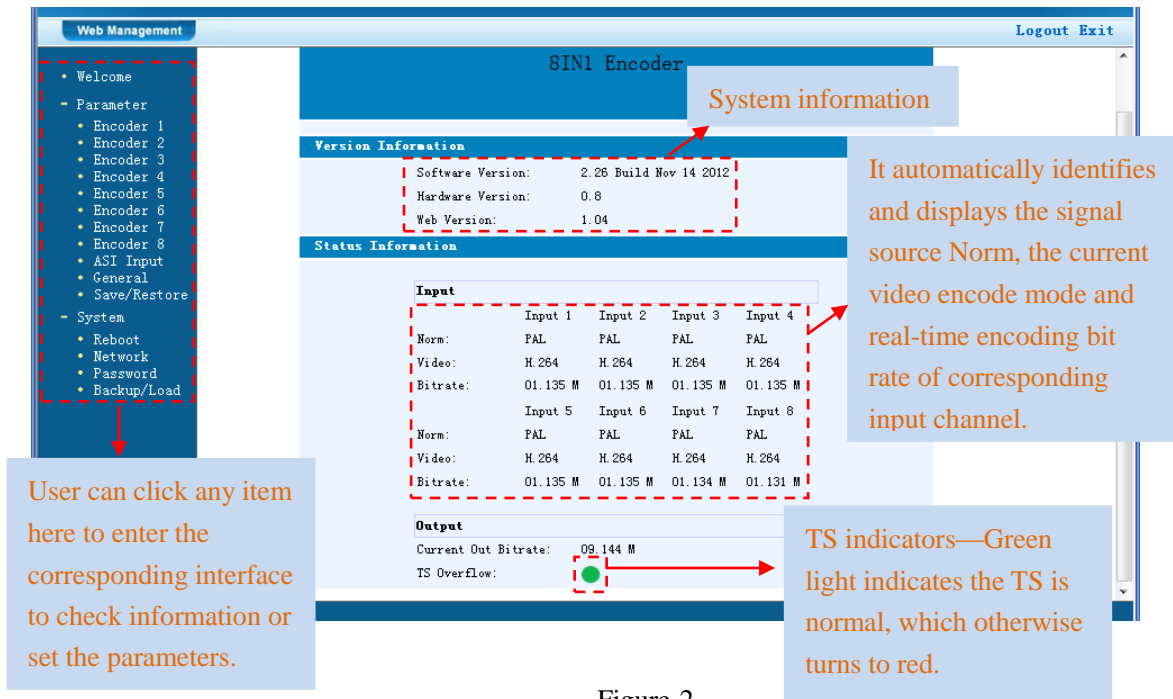
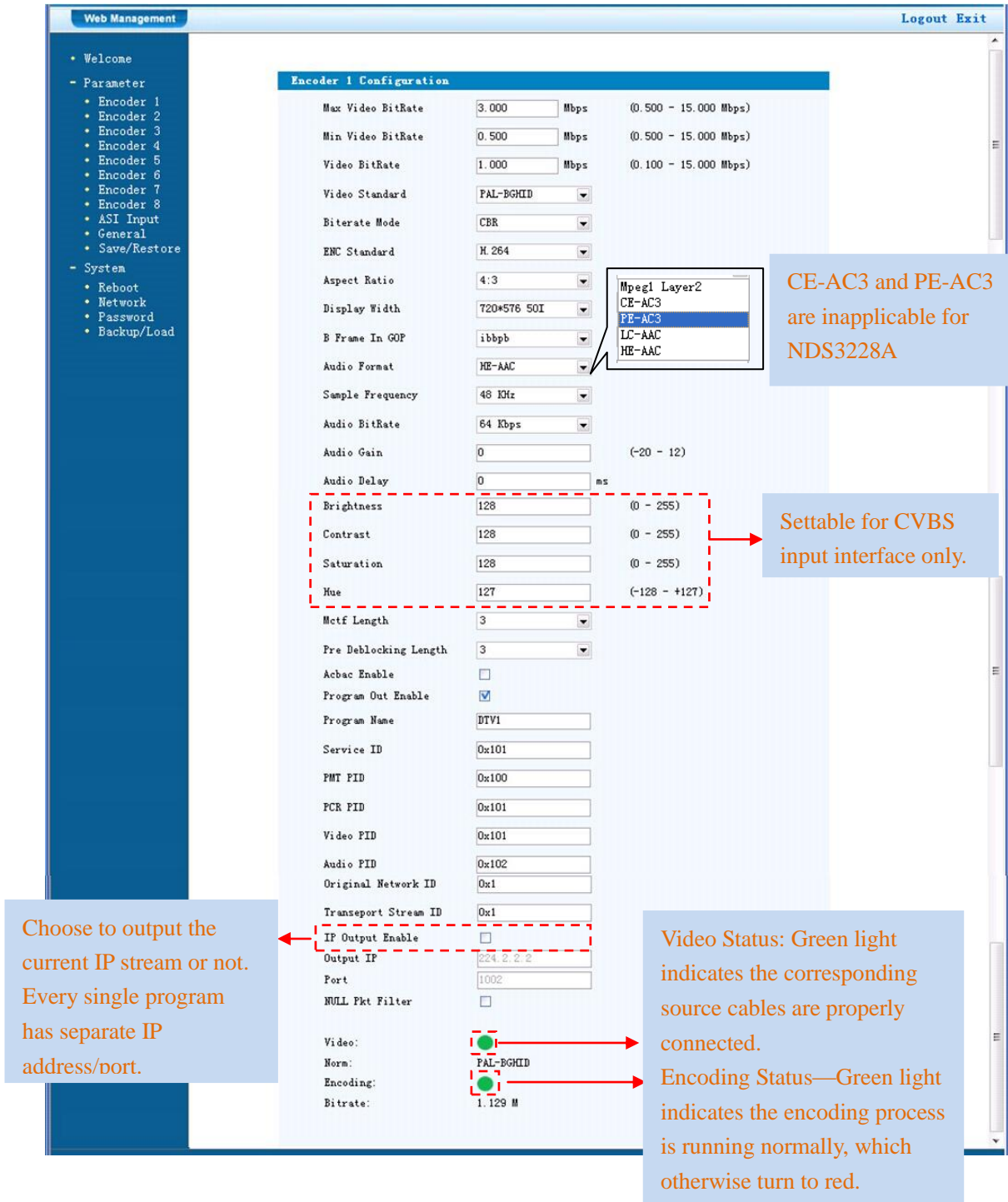


Figure-2

Encode Setting

From the menu on left side of the webpage, clicking “Encoder 1”, it displays the information of the programs from the 1st CVBS/SDI encoding channel as Figure-3. The interface and setting principle of each channel are the same from “Encoder 1” to “Encoder 8”. Here just take Encoder 1 as example.



Encoder 1 Configuration

Max Video BitRate: 3.000 Mbps (0.500 - 15.000 Mbps)

Min Video BitRate: 0.500 Mbps (0.500 - 15.000 Mbps)

Video BitRate: 1.000 Mbps (0.100 - 15.000 Mbps)

Video Standard: PAL-BGHD

Bitrate Mode: CBR

ENC Standard: H.264

Aspect Ratio: 4:3

Display Width: 720*576 50I

B Frame In GOP: ibbbp

Audio Format: HE-AAC

Sample Frequency: 48 KHz

Audio BitRate: 64 Kbps

Audio Gain: 0 (-20 - 12)

Audio Delay: 0 ms

Brightness: 128 (0 - 255)

Contrast: 128 (0 - 255)

Saturation: 128 (0 - 255)

Hue: 127 (-128 - +127)

Metf Length: 3

Pre Deblocking Length: 3

Acba Enable: ☐

Program Out Enable: ☒

Program Name: DTV1

Service ID: 0x101

PMT PID: 0x100

PCR PID: 0x101

Video PID: 0x101

Audio PID: 0x102

Original Network ID: 0x1

Transport Stream ID: 0x1

IP Output Enable: ☐

Output IP: 224.2.2.2

Port: 1002

NULL Pkt Filter: ☐

Video: ☒

Norm: PAL-BGHD

Encoding: ☒

Bitrate: 1.129 M

Annotations:

- CE-AC3 and PE-AC3 are inapplicable for NDS3228A
- Settable for CVBS input interface only.
- Choose to output the current IP stream or not. Every single program has separate IP address/port.
- Video Status: Green light indicates the corresponding source cables are properly connected.
- Encoding Status—Green light indicates the encoding process is running normally, which otherwise turn to red.

Figure-3

ASI Input

Click “ASI Input”, it will display ASI input program information as Figure-4. User can parse and multiplex ASI IN programs in this interface.

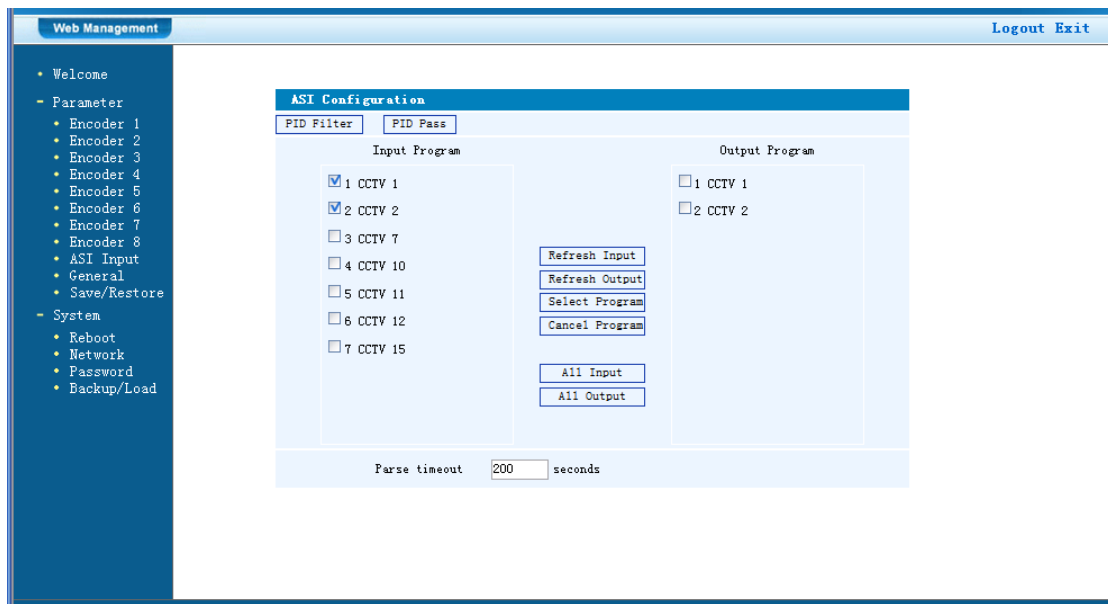


Figure-4

Refresh Input

Click “Refresh Input” to refresh the input program list.

Refresh Output

Click “Refresh Output” to refresh the output program list.

Select Program

When user checks one input program with “√”, one can transfer the checked program to the right box to output.

Here user can select the programs which we want to output or we can output all the programs.

Cancel Program

Similarly, user can cancel the multiplexed programs from the right box.

All Input

All Output

& to select all the input/output programs with one-time clicking.

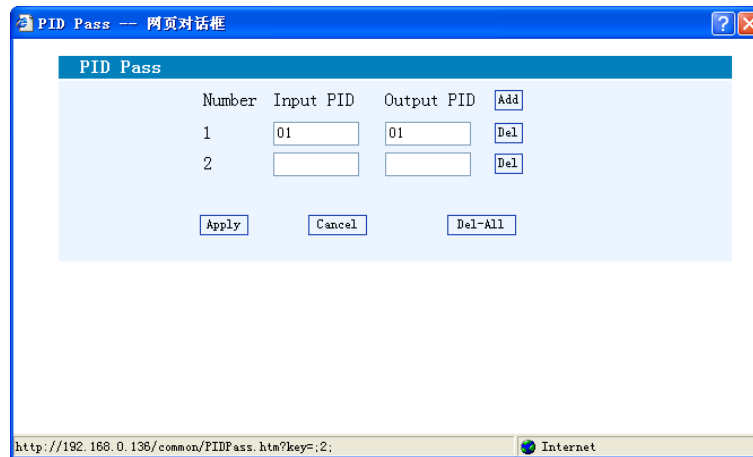
Parse timeout 200 seconds


Time limitation to parse the input programs

PID Pass

Click this button to trigger a dialog box as below, where to add the PIDs which need pass through.

In some occasions, there are some PIDs which won't belong to any program, such as EPG, NIT tables and so on which user just wants to pass them through the multiplexing module without changing anything. This is the main purpose of this function.



Click “Add”  to add more boxes for filling the Input & Output PIDs, then click “Apply” to confirm.

General

Clicking “General” from the menu, it will display the interface as Figure-5 where to set the network info for the output TS.

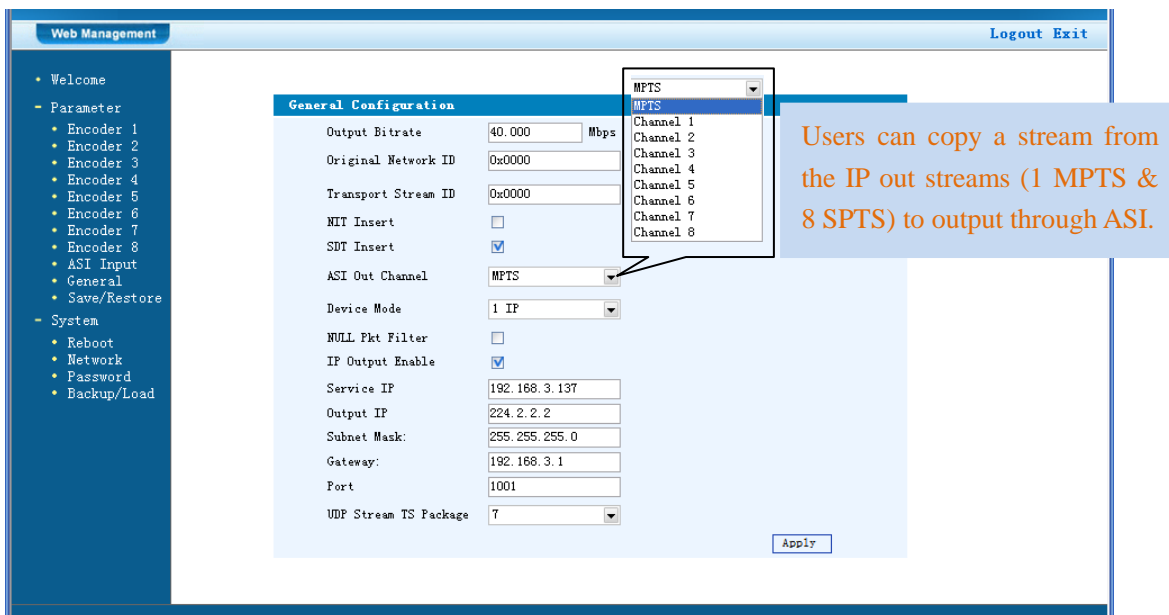
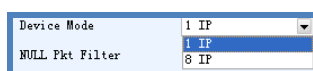




Figure-5

➤ Device Mode



User can click  to trigger a pull-down list to select the device mode.

1IP: This mode refers to MPTS and outputs the programs which have been multiplexed. Users need to enable the IP Output by checking the checkbox  in interface General Configuration. (The device will automatically enable IP Outout founction if users set

device mode as 1IP)

8IP: This mode refers to the 8 SPTS and outputs every single program with separate IP address.

Users need to enable the IP Output ☐ IP Output Enable ☒ in every channel interface (refer to Encoder 1 to encoder 8). (The device will automatically enable IP Outout founction mentioned here if users change the device mode to 8IP)

When 1IP is set as the Device Mode, then the 8IP mode is non-effective.

Save/Restore

From the menu on left side of the webpage, clicking “Save/Restore”, it will display the screen as Figure-6 where to save or restore your configurations.

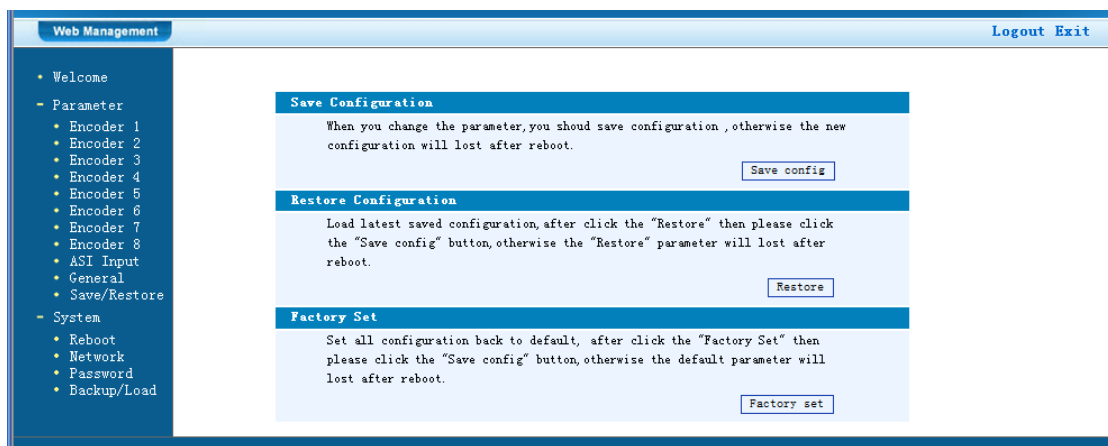


Figure-6

Restart the Device

Click “Reboot” from the menu, the screen will display as Figure-7. Here when clicking “Reboot” box, it will restart the device automatically.

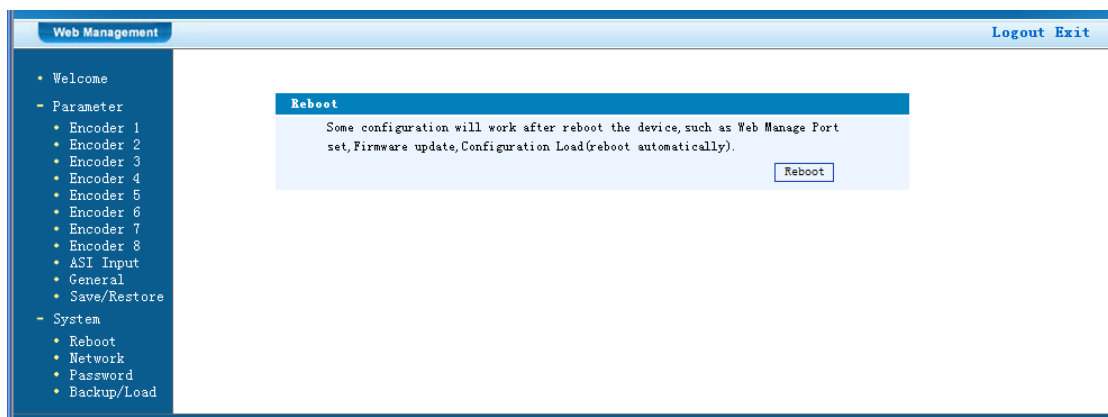
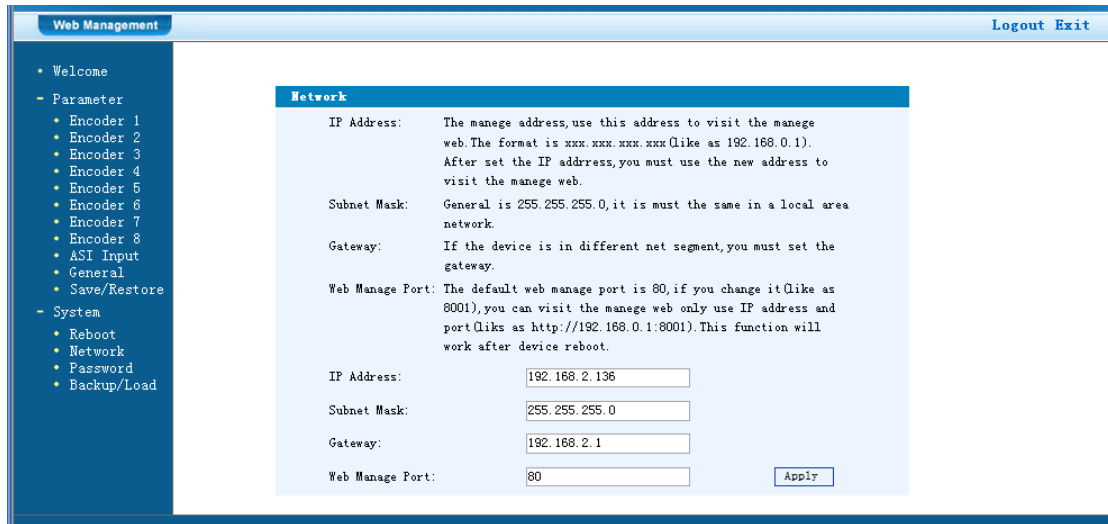


Figure-7

Network

When user clicks “Network”, it will display the screen as Figure-8. It displays the network information of the device. Here user can change the device network configuration as needed.



Web Management Logout Exit

- Welcome
- Parameter
 - Encoder 1
 - Encoder 2
 - Encoder 3
 - Encoder 4
 - Encoder 5
 - Encoder 6
 - Encoder 7
 - Encoder 8
 - ASI Input
 - General
 - Save/Restore
- System
 - Reboot
 - Network
 - Password
 - Backup/Load

Network

IP Address: The manage address, use this address to visit the manage web. The format is xxx.xxx.xxx.xxx (like as 192.168.0.1). After set the IP address, you must use the new address to visit the manage web.

Subnet Mask: General is 255.255.255.0, it is must the same in a local area network.

Gateway: If the device is in different net segment, you must set the gateway.

Web Manage Port: The default web manage port is 80, if you change it (like as 8001), you can visit the manage web only use IP address and port (like as http://192.168.0.1:8001). This function will work after device reboot.

IP Address:

Subnet Mask:

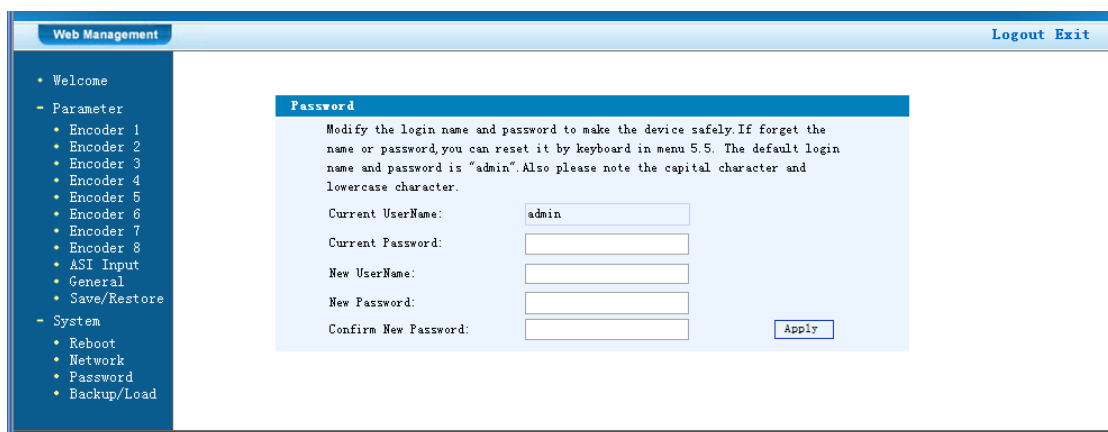
Gateway:

Web Manage Port:

Figure-8

Password

When user clicks “Password”, it will display the password screen as Figure-9. Here user can change the Username and Password for login to the device.



Web Management Logout Exit

- Welcome
- Parameter
 - Encoder 1
 - Encoder 2
 - Encoder 3
 - Encoder 4
 - Encoder 5
 - Encoder 6
 - Encoder 7
 - Encoder 8
 - ASI Input
 - General
 - Save/Restore
- System
 - Reboot
 - Network
 - Password
 - Backup/Load

Password

Modify the login name and password to make the device safely. If forget the name or password, you can reset it by keyboard in menu 5.5. The default login name and password is “admin”. Also please note the capital character and lowercase character.

Current UserName:

Current Password:

New UserName:

New Password:

Confirm New Password:

Figure-9

Backup/Load

Click “Backup/Load” from the menu, it will display the screen as Figure-10.

Backup Configuration – To back up the device configuration file to a folder

Load Configuration – If user needs to load the old configuration to the device, click “Browse”

and find the backup configuration file path. After selecting the file, click “Load File” to load the backup file to the device.

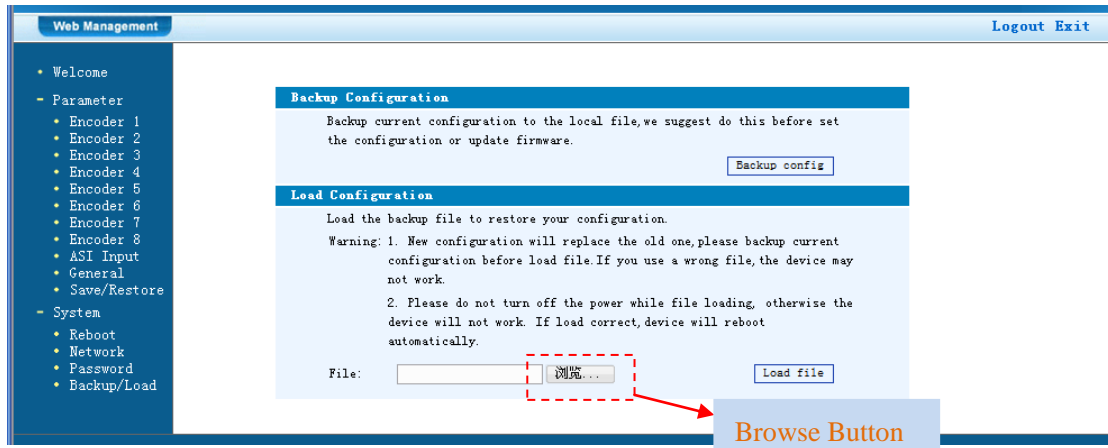


Figure-10

Chapter 6 Troubleshooting

DEXIN's ISO9001 quality assurance system has been approved by CQC organization. For guarantee the products' quality, reliability and stability. All DEXIN products have been passed the testing and inspection before ship out factory. The testing and inspection scheme already covers all the Optical, Electronic and Mechanical criteria which have been published by DEXIN. To prevent potential hazard, please strictly follow the operation conditions.

Prevention Measure

- Installing the device at the place in which environment temperature between 0 to 45 °C
- Making sure good ventilation for the heat-sink on the rear panel and other heat-sink bores if necessary
- Checking the input AC within the power supply working range and the connection is correct before switching on device
- Checking the RF output level varies within tolerant range if it is necessary
- Checking all signal cables have been properly connected
- Frequently switching on/off device is prohibited; the interval between every switching on/off must greater than 10 seconds.

Conditions need to unplug power cord

- Power cord or socket damaged.
- Any liquid flowed into device.
- Any stuff causes circuit short
- Device in damp environment
- Device was suffered from physical damage
- Longtime idle.
- After switching on and restoring to factory setting, device still cannot work properly.
- Maintenance needed

Chapter 7 Packing list

● NDS3228A 8 in 1 MPEG-2 H.264 SD Encoder	1pcs
● User's manual	1pcs
● CVBS/SDI Cable	8 pcs
● ASI cable	1pcs
● Power cord	1pcs