LCT DCH 4400EC

4 in 1 MPEG-2 H.264 SD Encoder

User's Manual

DIRECTORY

Chapter 1 Product Outline

1.1 Outline

The DEXIN DCH4400EC 4 in 1 MPEG-2 H.264 SD Encoder is our newest professional SD audio & video encoding and multiplexing device with powerful functionality. It has 4 independent channels of unbalanced audio &video input interfaces, supporting MPEG-2 and H.264 encoder type. Furthermore, it can support the MPEG-1 Audio layer 2, LC-ACC, HE-AAC V2, and each channel can support ultra low bit-rate (0.25~15Mbps for H.264 encoding, and 0.5~15Mbps for MPEG-2 encoding). This device can simultaneously encode 4 channel SD audio & video; moreover, it has an ASI input and can multiplex the input TS with the 4 encoded SPTS to generate a MPTS output, and users can select the MPTS and 4SPTS through the front panel operation. Also, the PSI/SI information can be inserted into MPTS output. In conclusion, its high integrated and cost effective design makes the device widely used in varieties of digital distribution systems such as CATV digital head-end, satellite and terrestrial digital TV, etc.

1.2 Features

- 4 independent channels of video/audio input ports and 1 ASI input multiplexing
- Supports multiple resolutions:
  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
- H.264 and MPEG-2 video encoding, advanced video pretreatment algorithm
- MPEG1 Audio Layer 2 , LC-AAC, HE-AAC V2
- Supports VBR/CBR video encoding
- Supports ultra low bit rate encodings: 0.25~15Mbps(H.264)/ 0.5~15Mbps(MPEG-2)
- Applicable for one Seg/ISDB-T utilization
- System encoding output bit rate range: 2~40Mbps

- Supports multiplexed MPTS ASI output

- Supports MPTS and 4SPTS selection through the LCD operation

- Supports multiplexed MPTS or 4 SPTS over UDP unicast/multicast output

- Two isolated ports separately for data transfer and Ethernet

- Real-time effective output bit-rate monitoring

- LCD / keyboard and NMS operation

1.3 Specifications

|		
Input	4×CVBS inputs , BNC interface	
	4 pairs unbalanced stereo audio inputs, BNC interface	
	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, and 0.5~15Mbps for MPEG-2 encoding
	Rate Control	CBR/VBR
	GOP Structure	IBBP
	Advanced Pretreatment	De-interlacing, noise reduction, sharpening
Audio	Encoding	MPEG1 Audio Layer 2 , LC-AAC,HE-AAC V2
	Sampling rate	48KHz,
	Resolution	24 bit
	Bit-rate	64Kb/s~384Kb/s (each channel)
Multiplexing	1 ASI input multiplexed with local 4 channels TS	
Stream output	2 × ASI outputs, BNC interface	
	MPTS over UDP,10/100Base-T Ethernet interface (UDP unicast / multicast), 4 SPTS(optional)	
System function	LCD/keyboard operating, NMS support,	

|		
		Chinese-English control interface
		Ethernet software upgrade
General	Dimensions (WxDxH)	482mm×455mm×44.5mm
	Approx weight	4Kg
	Temperature range	0~45℃(Operation), -20~80℃(Storage)
	Power requirements	AC 110V±10%,50/60Hz or AC 220V±10%,50/60Hz
	Power consumption	17.6W

1.4 Principle Chart
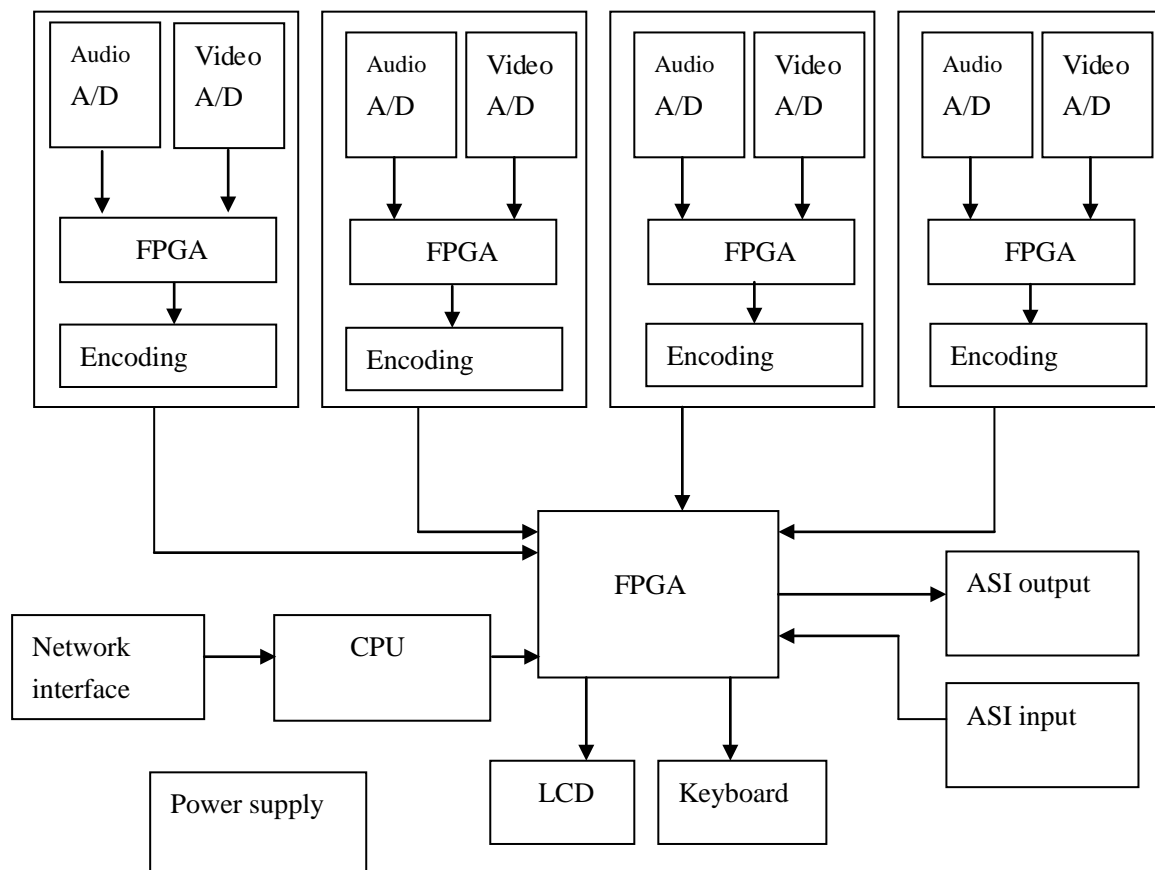
1.5 Appearance and Description

Front Panel Illustration:
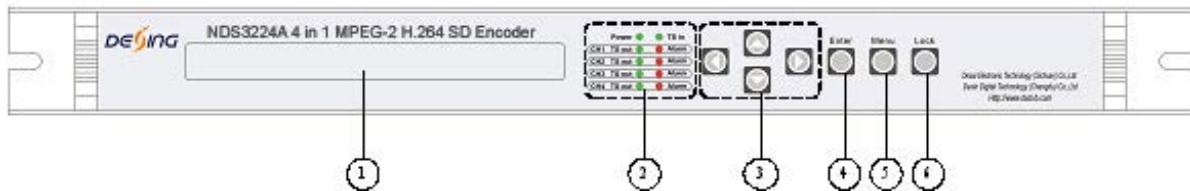
1	LCD Display Interface
2	Power Indicator
	TS Output Indicator
	TS Input Indicator
	Alarm Indicator
3	Left /Right, Up /Down Arrow
4	Enter key
5	Menu Key
6	Lock key

Rear Panel Illustration
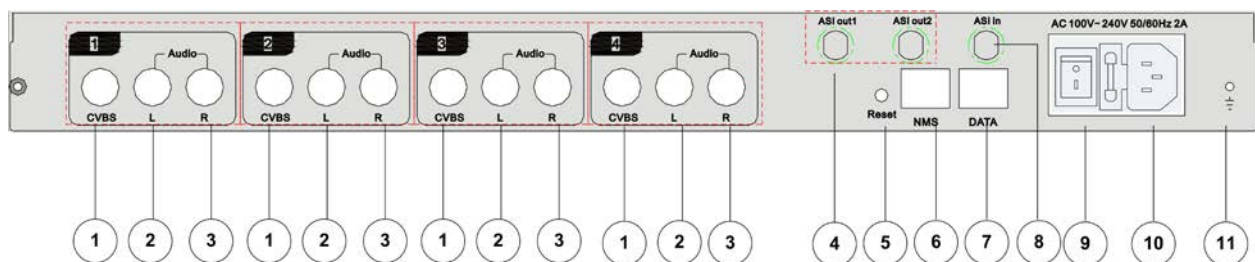
1	4* CVBS input interface
2	4×audio inputs (Left)
3	4×audio inputs (Right)
4	2 ASI output interface

5	Reset button
6	NMS (Network management port)
7	IP output port
8	One ASI input interface
9	Power Switch
10	Power socket
11	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:

● DCH4400EC 4 in 1 MPEG-2 H.264 SD Encoder

● User's Manual

● Analog Audio/Video Composite Input Cable

● ASI Cable

● Power Cord

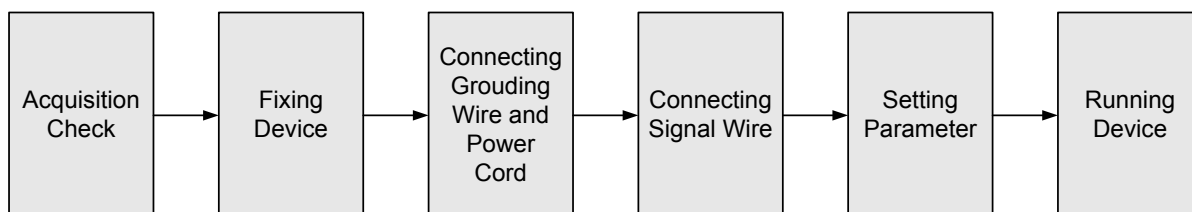If any item is missing or mismatching with the list above, please contact local dealer.

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 Illustrated as following：

```
┌─────────────┐   ┌─────────────┐   ┌─────────────┐   ┌─────────────┐   ┌─────────────┐   ┌─────────────┐
│             │   │             │   │ Connecting  │   │             │   │             │   │             │
│ Acquisition │ → │   Fixing    │ → │ Grouding    │ → │ Connecting  │ → │  Setting    │ → │  Running    │
│   Check     │   │   Device    │   │ Wire and    │   │ Signal Wire │   │ Parameter   │   │  Device     │
│             │   │             │   │ Power       │   │             │   │             │   │             │
│             │   │             │   │ Cord        │   │             │   │             │   │             │
└─────────────┘   └─────────────┘   └─────────────┘   └─────────────┘   └─────────────┘   └─────────────┘
```

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: $1\text{X}10^7$~$1\text{X}10^{10\Omega}$, Grounding current limiting resistance: 1M (Floor bearing should be greater than 450Kg/㎡)
Environment Temperature	5~40℃(sustainable)， 0~45℃(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 25mm^2.

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 25mm^2.

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 DCH4400EC 4 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 input and 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 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:

2.4.6 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 connecter, 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:

2.4.7 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 DATA connecter, while the other end to the computer or the PC. The encoder's NMS connection is illustrated as follows:
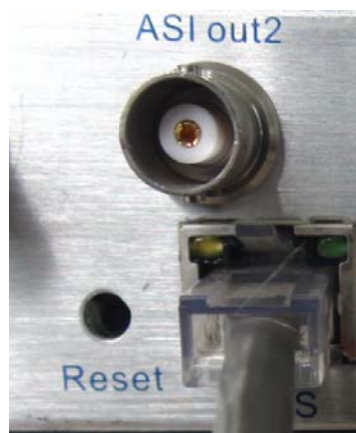
Chapter 3 Operation

DCH4400EC 4 in 1MPEG-2 H.264 SD Encoder's front panel is user operation 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:

MENU: Canceling presently entered value, resuming previous setting; Return to previous menu.

ENTER: Activating the parameters which needs modify, or confirming the change after modification.

LEFT/RIGHT: To choose and set the parameters.

UP/DOWN: Modifying activated parameter or paging up/down when parameter is inactivated.

LOCK: 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 "Resume Factory Setting" page, user can firstly press "ENTER" key, consequently system resumes factory parameter setting.

3.1 Initializing

After powering on the system, device will firstly test whether the input signal source is available. If the 4 channel's signal sources are connected, the device will start encoding in sequence. The LCD will sequentially display the following page:

> Setting,wait...   Encoder 1

After switching on the encoder, the LCD will display the, device name and the real-time bit-rate in the first row while the 4 channels' real-time bit-rate streams in the second row as below: the first alphabet "P" means input CVBS format is PAL while "N" means "NTSC"

> MPEG-2 H.264 Encoder   04.500 Mbps
> P   00.000M   P   00.000M   P 02.190M   P 02.192M

3.2 General Setting

By pressing UP/DOWN key to enter the main menu, the LCD will display the following pages: Users can set the input and output parameters in the following editing interfaces, the LCD will display the following pages after users pressing the enter key.

> ►1 Input Setting   2 ASI Setting
>   3 Output Setting   4 Network Setting

> ►5 Saving Config   6 Loading Config
>   7 Version

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

Users can enter the corresponding encoding channel to set the relevant audio and video input parameters, and the interface will display four submenus which from Encoding channel One to Encoding channel 4, the modification is the same from encoding channel one to encoding channel four, so here just take one channel as the example. After pressing the enter key, the LCD will display the following pages:

```
►1.1 Encoder 1            1.2 Encoder 2
 1.3 Encoder 3            1.4 Encoder 4
```

3.2.1.1 Video Setting

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             1.1.2 Audio
 1.1.3 System            1.1.4 PG Muxer
```

3.2.1.1.1 Video input Setting

Users can set the equipment video format in this interface, and the LCD will display the following interfaces after users pressing the enter key. The option 01/04 means that the current page is 1, and the total page is 4.

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

```
Input Format              01/04
[ PAL-M]                  PAL-60
```

```
Input Format              01/04
[ NTSC-J]                 NTSC-M
```

```
Input Format                        01/04
[ NTSC-4.43]                        SECAM
```

3.2.1.1.2 Video Brightness/Contrast/Saturation/Hue Setting

User can adjust the relevant parameters of input video with the submenus of Brightness, Contrast, Saturation and Hue, and the adjustable range is 0~249, but the adjustable range of hue information is -128~127. The figure outside the parentheses is decimal while the inside is hexadecimal.

```
►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)
```

3.2.1.1.3 Aspect Ratio Setting

In this interface, users can set the corresponding ratio according to their own needs, and there are two options which are 16:9 and 4:3. After users press the enter key in the sub-mean, the LCD will show the following interface.

```
►1.1.1.6 AspectRatio                    01/01
    4:3           [16:9]
```

3.2.1.1.4 CodingType Setting

This low-bit rate can support various kinds of encoding type, and the LCD will display the

following pages:

```
1.1.1.7  CodingType                              01/01
    [MPEG2]            MPEG4          H.264
```

3.2.1.1.5 Resolution Setting

Users can set the equipment resolution according to their needs. And the LCD will display the following interfaces after pressing the enter key.

```
1.1.1.8   Resolution                         01/07
    [720*576*50I]              720*480*5994I
```

```
1.1.1.8   Resolution                         02/07
    [352*288*50I]              352*288*5994I
```

```
1.1.1.8   Resolution                         03/07
    [320*240*50I]              320*240*5994I
```

```
1.1.1.8   Resolution                         04/07
    [320*180*50I]              320*180*5994I
```

```
1.1.1.8   Resolution                         05/07
    [176*144*50I]              176*144*5994I
```

```
1.1.1.8   Resolution                         06/07
    [160*120*50I]              160*120*5994I
```

```
1.1.1.8   Resolution                         07/07
    [160*90*50I]              160*90*5994I
```

3.2.1.1.6 Video Rate-mode Setting

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  RateMode                    01/01
    [ CBR ]                      VBR
```

3.2.1.1.7 Bit-rate Setting

Users can set the corresponding encoding channel effective video bit-rate in this interface, and the adjustable range is from 0~19Mbps. The LCD will display the following interface after pressing the enter key.

```
1.1.1.A  Bit-rate
      019.000Mbps
```

3.2.1.1.8 Maximum and Minimum Bit-rate Setting

These two items are just used under the VBR rate mode. Under the VBR mode, the video bit-rate will always change, so users can set the bit-rate change range by setting the MAX and MIN bit-rate.

```
1.1.1.B    MaxBitrate
      019.000Mbps
```

```
1.1.1.B    MaxBitrate
      000.500Mbps
```

3.2.1.2 Audio Setting

In this sub-menu, users can set the relevant audio parameter, and the LCD will display the following interface after pressing the enter key.

```
1.1.2.1 Bitrate                         1.1.2.2 Sample
1.1.2.3 CodingType                      1.1.2.4 Delay
```

3.2.1.2.1 Audio Bit-rate Setting

In this interface, users can set the encoding audio bit-rate, and the LCD will display the following interface. And the option 01/03 means that the current page is 1, and the total page is 3. After the modification, users can press enter key again to take the modification into effect.

```
1.1.2.1  Bit-rate                         01/03
 64 Kbps        96 Kbps        112 Kbps        [128 Kbps]
```

```
1.1.2.1  Bit-rate                         02/03
 160 Kbps       192 Kbps       224 Kbps        [256 Kbps]
```

```
1.1.2.1  Bit-rate                         03/03
 320 Kbps       [384 Kbps]
```

3.2.1.2.2 Sample Frequency Setting

Under this interface, users can set the input audio sample frequency; users can set relevant audio sample frequency by moving UP/DOWN key, 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  Bit-rate                         01/01
 [48 KHz]       44.1KHz        32KHz
```

3.2.1.2.3 Coding Type Setting

This low bit-rate encoder can support a various kinds of audio encoding formats, and the

LCD will display the following interface after users pressing the enter key. After the modification, users can also press the enter key the take the modification into effect.

```
1.1.2.3  Coding Type                    01/03
    [MPEG1-Layer II]              DD-CE(AC3-CE）
```

```
1.1.2.3  Coding Type                    01/03
    [DD-PE (AC3-PE)]               HE-AAC
```

```
1.1.2.3  Coding Type                    01/03
    [ LC-AAC]
```

3.2.1.2.4 Delay Setting

This item is to make sure that the audio and video can work sync. And the parameter is 0000ms if they work synchronously.

```
1.1.2.4   Delay
 0000ms
```

3.2.1.3 System Setting

In this interface, users can set the system parameter by entering the corresponding menu. And the LCD will display the following interface.

```
►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 addres         1.1.3.8 Out Port
```

3.2.1.3.1 Program Number Setting

In this interface, users can set the program number, and the LCD will display the following interface.

```
►1.1.3.1  Prog Number
     0*0101
```

3.2.1.3.2 Video/Audio/PMT/PCR PID Setting

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
```

3.2.1.3.3 IP Enable

In this interface, users can set the corresponding encoding channel IP address in this interface, and this IP Enable item is only useful when the IP output mode is 4IP, which mean the IP output stream is 4SPTS. YES means that the IP output mode is 4SPTS, and then users can set the output address and port number in 3.2.1.3.4 and 3.2.1.3.5. NO means that the output stream is 1MPTS, then the 3.2.1.3.4 and 3.2.1.3.5 setting will not work.

```
1.1.3.6  IP Enable                    01/01
   YES              [        NO          ]
```

3.2.1.3.4 Out address Setting

In this sub-menu, users can set the output address, and the LCD will display the following interface after pressing the enter key.

```
1.1.3.7         Out Address
     224.002.002.002
```

3.2.1.3.5 Output Port Number Setting

Users can set the output port number in this interface, and the LCD will display the following interface after pressing the enter key.

```
1.1.3.8         Out Port
     01002
```

3.2.1.4 Program Mux Setting

In this menu, users can decide whether to multiplex the program, and the LCD will display the following page after pressing the enter key.

```
1.1.4.1   Channel  Mux
    YES          [          NO           ]
```

3.2.2 ASI Setting

Users can check the ASI input program number in this interface, and the LCD will display the following page. The number after the character means that the ASI input program is zero.

```
► 2.1  Parse  ASI  Prog
```

After entering it, the LCD will display the following page.

```
2.1  Parse  ASI  Prog            Prog:000  Out: 000
```

3.2.3 Output Setting

Users can set the encoder output parameter in this field, and the LCD will display the following pictures.

```
►3.1 Ip Out Enable              3.2 Ip Out Address
  3.3 IP Out Port               3.4 TransStream ID
```

```
►3.5 Output  Stream             3.6.  Output Mode
```

3.2.3.1 IP output Enable Setting

Users can decide whether to open the device IP output function or not, this item is totally different from the former IP Output Enable item, the former one is just for four encoding channels, and this is for the encoder itself. And there are also two options, YES means that users open the IP output function, while NO means users do not need to IP out.

```
3.1  Ip Out Enable                   01/01
   [        YES        ]             NO
```

3.2.3.2 IP Out Address Setting

When users select the IP output mode is 1IP, then users can set the IP output address in this interface. If the output mode is 4IP, then the configuration in this field does not work.

> 3.2 Ip Out Address
>   2̲24.002.002.002

3.2.3.3 IP output Port Number Setting

When users select the IP output mode is 1IP,(please check 3.2.3.6) then users can set the IP output port number in this interface. If the output mode is 4IP, then the configuration in this field does not work.

> 3.3 Ip Out Port
>   0̲1001

3.2.3.4 Trans Stream ID Setting

Users can set the trans stream ID in this interface, and the LCD will display the following interface after pressing the enter key.

> 3.4 Trans Stream ID
>   0̲0000

3.2.3.5 Output Stream

Users can set the output stream bit-rate in this field, and the LCD will display the following interface.

> 3.5 Output Stream
>   0̲40.000Mbps

3.2.3.6 Output Mode Setting

In this interface, users can select the MPTS and 4SPTS, and it shows as follows:

```
3.6  Output  Mode          01/01
     [    1IP    ]      4 IP
```

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
```

3.2.4.1 MAC Address Setting

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  Console    Address
     ffffffffffff
```

Note: when the MAC address is ffffffffffff, users must modify the address, otherwise, the IP output database will be filter out when the IP stream passes through the router.

3.2.5 Saving Config

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. And 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.

```
              MPEG-2 H.264 Encoder
      SW  0.14F            HW  0A
```

Chapter 4 NMS Setting

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 4.14E.exe is 4.14 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 menu shows as follows:

User can login the NMS by pressing **Confirm** key after inputting user name and password. Upon the inputs, the software will verify them with database record automatically. If both of them are correct, the main interface will appear. Both of the default user name and password are **admin**.

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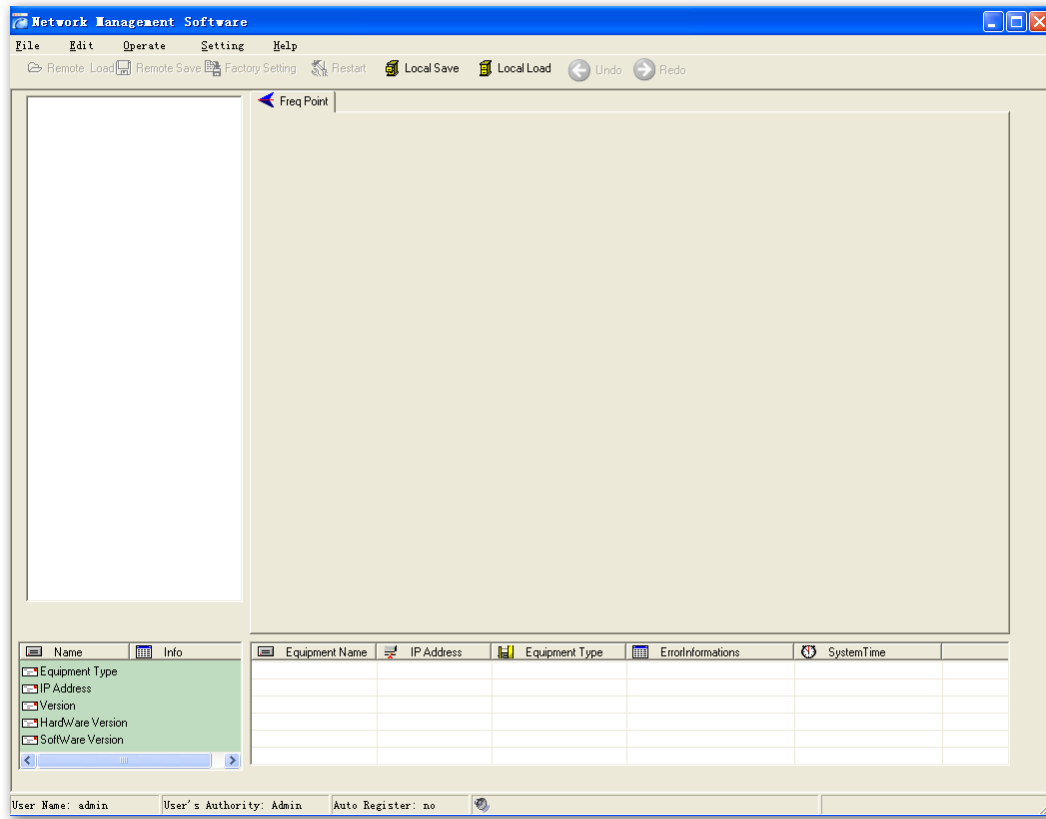
User can create a device node tree in the left column by adding, modifying and deleting the device node. This software provides a powerful node operation function, and the user can edit various parameters in the device tree for management and classification.

4.2.3 Adding Frequency Point
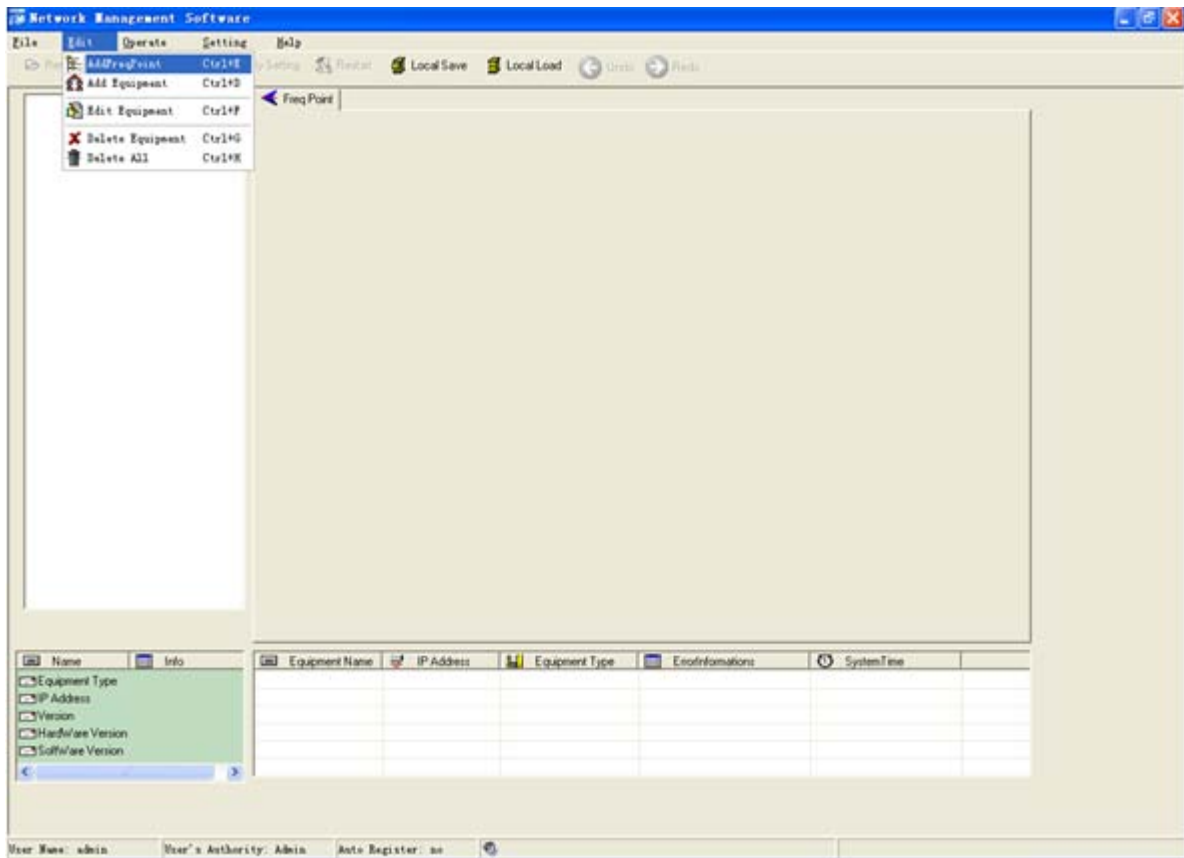
The Add Freq Point dialog box popes up when the user clicks the Add Freq Point item in the Edit pull down menu on the menu row. The device will confirm the given frequency while user clicks **OK**.
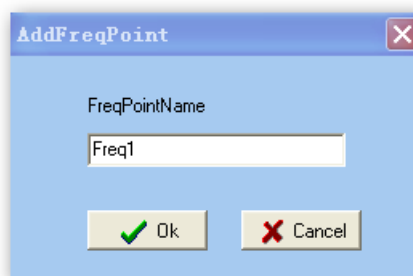
User can also click right mouse key to pop up the short-cut menu in device tree or in the left blank column, then the corresponding dialog box will pop up by choosing **Add Main Freq Point.** The device will confirm the given frequency while user clicks **OK.**
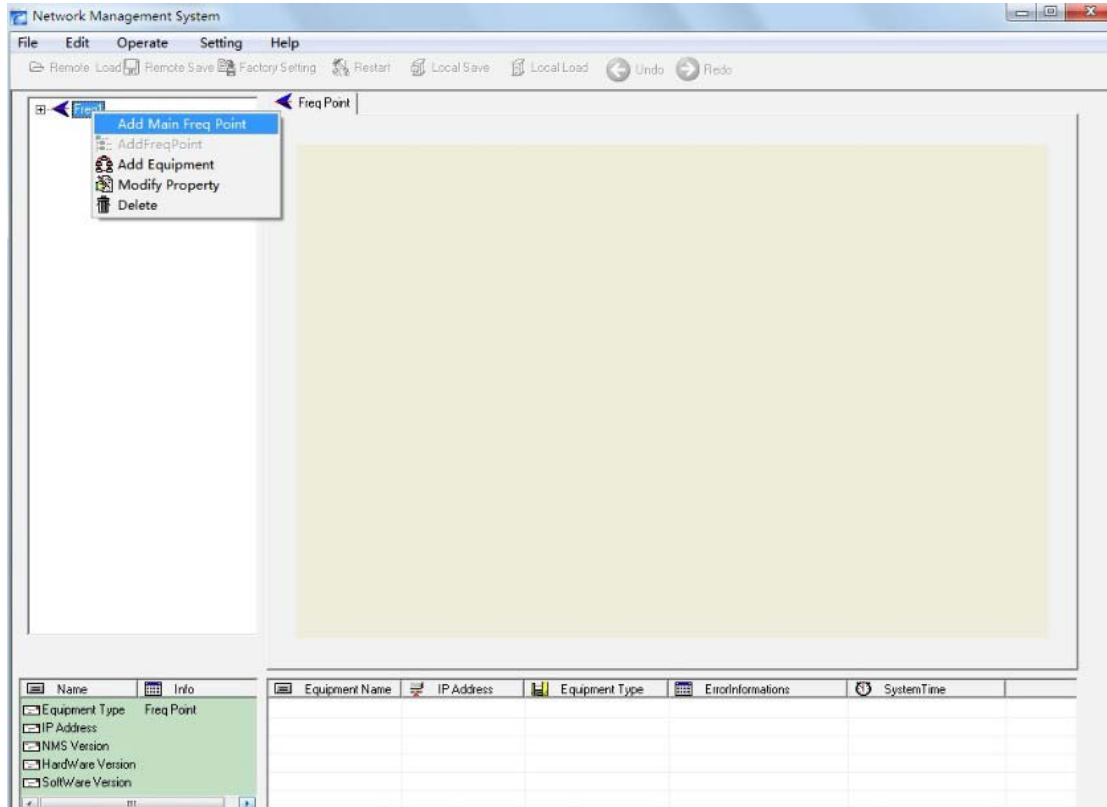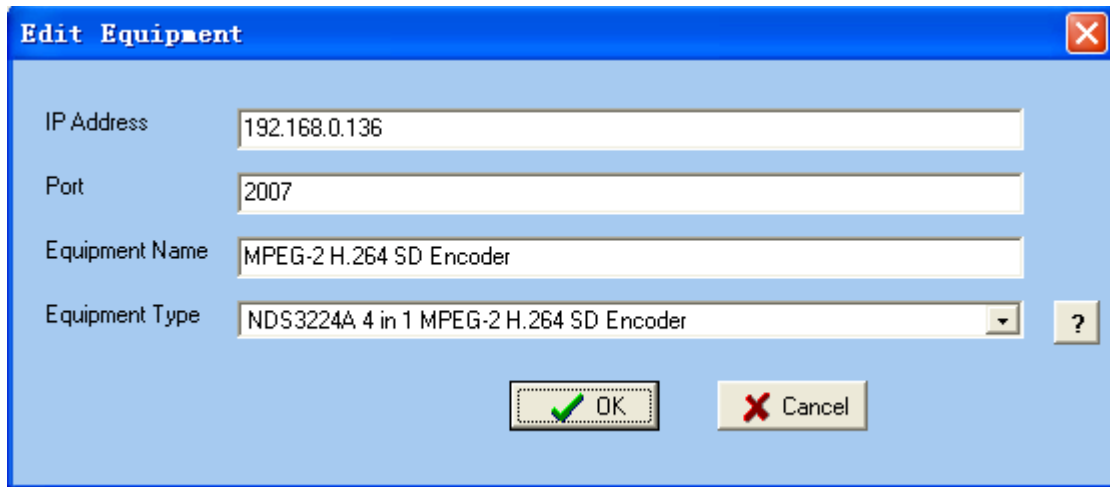
4.2.4 Adding Equipment under Given Frequency Point

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.
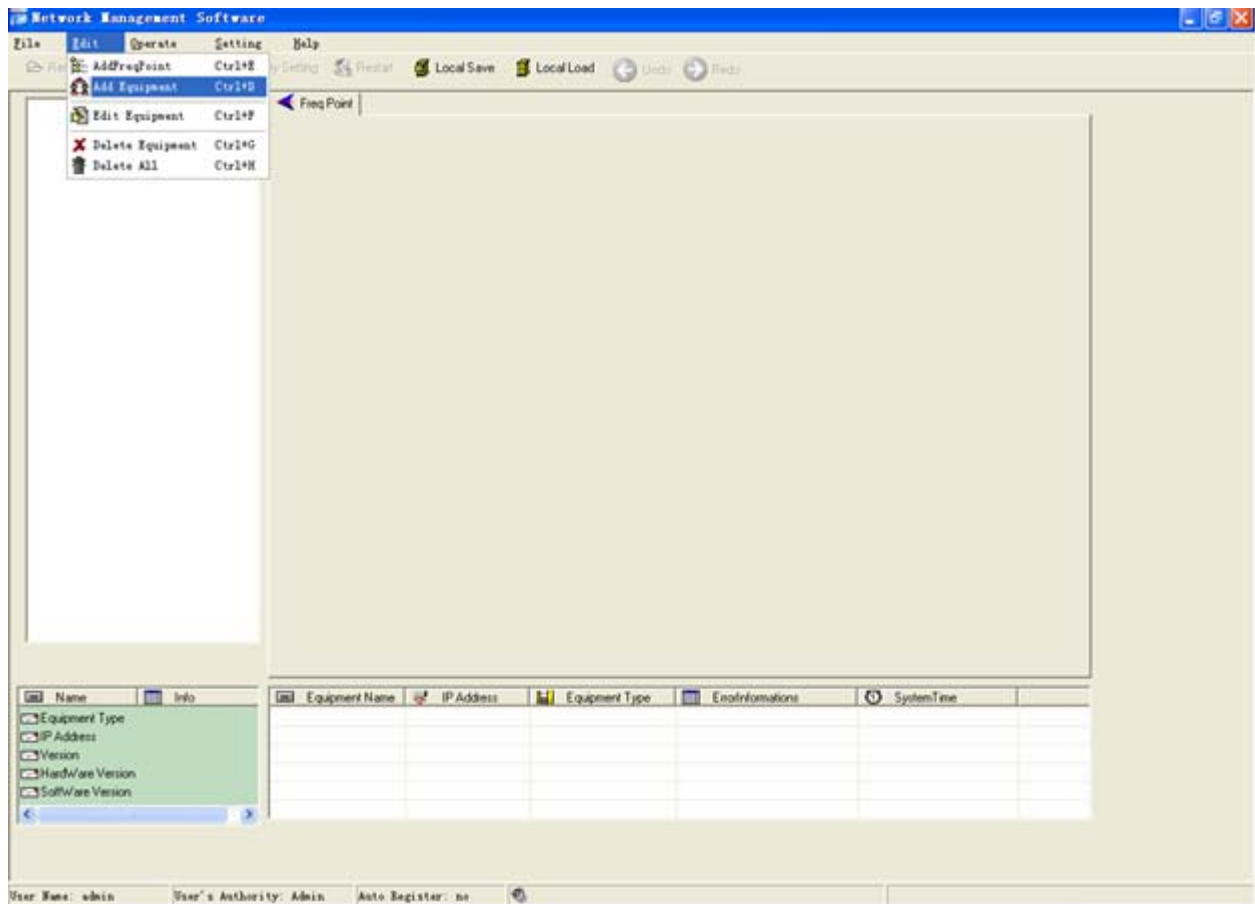
4.2.5 Edit Equipment Interface

User should follow the steps as below:

● Choosing the connected equipment type in drop down list of "Equipment Type" by clicking the "▼".

● Inputting the Equipment Name

● Inputting the device IP Address

● Inputting the device Port Number

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.
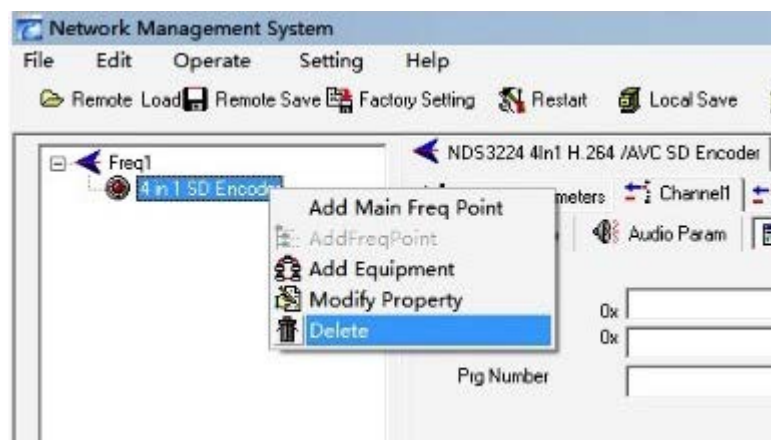
4.2.7 Save Configuration

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 [Remote Load]

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.
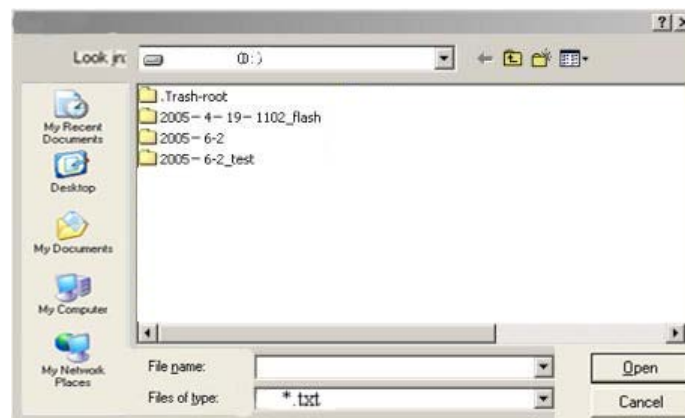
4.3 DCH4400EC 4 in 1 MPEG-2 H.264 SD Encoder Operation

User can choose the SD 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, etc.

Set: making sure the current parameters, which show in the NMS software, activate.

(Please Note: if the Remote Save button is not clicked, the device will lose this currently parameter after reboot the device)

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

4.3.1 Encoding Part Setting
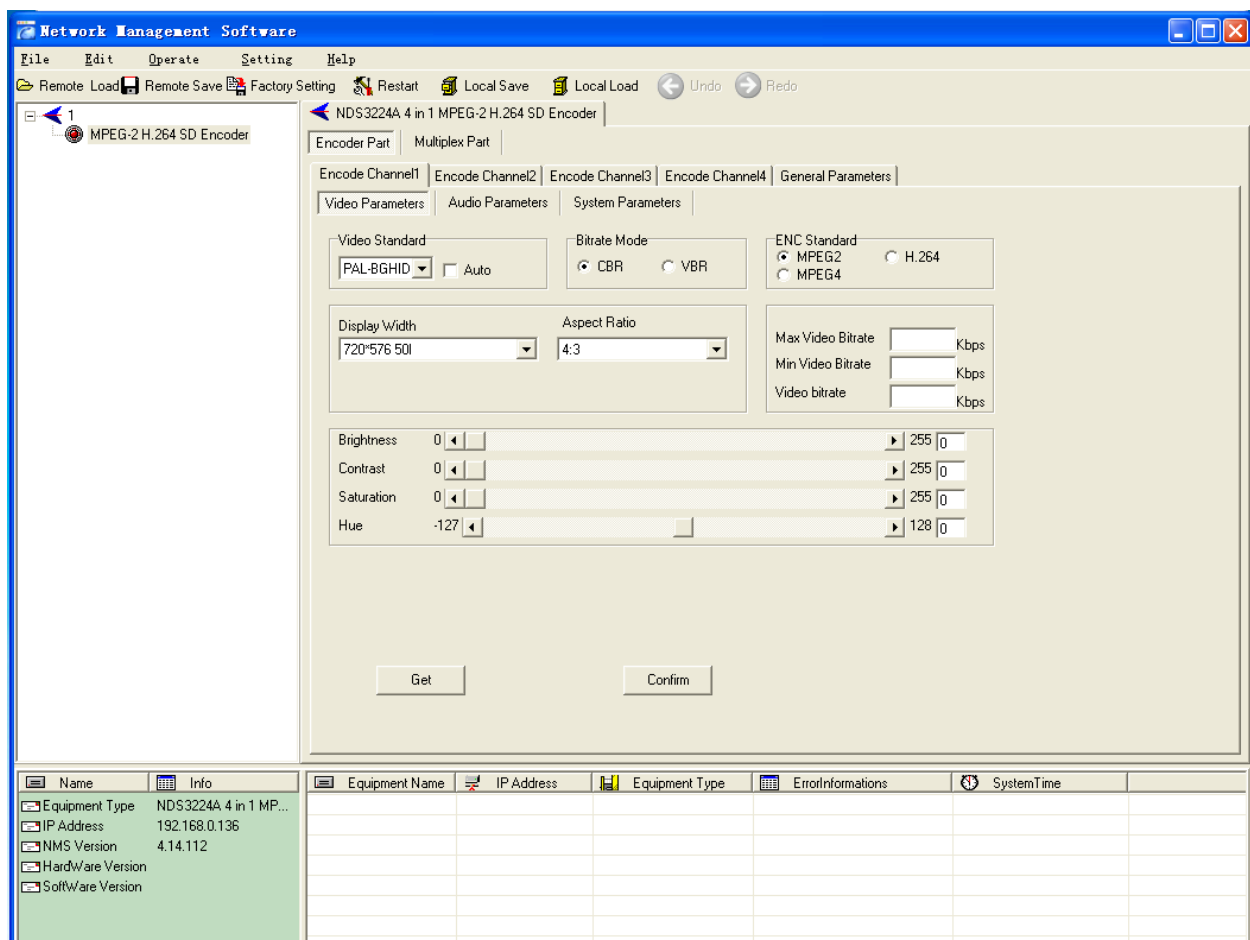
4.3.1.1 Video Standard Setting

In this interface, users can set the video standard. And there are three options; there are NTSC, PAL and Auto. And users can select different video format through the pull-down list, If users select the Auto check box, the device will automatically select the encoding video standard.

4.3.1.2 Bit-rate Mode

Users can set the bit-rate mode in this interface, and there are two options, VBR and CBR. And users can also refer chapter 3 for reference.

4.3.1.3 Encoding Standard Setting

There are three encoding formats which users can select according to their needs. Say, MPEG-2, MPEG-4 and H.264.

4.3.1.4 Display Width

This low bit-rate encoder can support a various kinds of resolution, and users can select the corresponding bit-rate through the pull-down list.

4.3.1.5 Aspect Ratio

Users can select the aspect ratio in this filed, and there are two options in the pull-down list, one is 16:9 and the other one is 4:3.

4.3.1.6 Max/Min Video Bit-rate

When the encoder bit-rate is VBR, then the bit-rate will always change according to the video complexity, so users can set a bit-rate changeable range through setting the MAX and MIN bit-rate value. If the bit-rate mode is CBR, then there is no need to set the MAX and MIN value.

4.3.1.7 Video Bit-rate Setting

In this filed, users can set the video bit-rate by filling the corresponding value.

4.3.1.8 Video Brightness/Contrast/Saturation and Hue Setting

User can adjust the relevant parameters of input video with the submenus of Brightness, Contrast, Saturation and Hue, and the adjustable range is 0~249, but the adjustable range of hue information is -128～127. The figure outside the parentheses is decimal while the inside is hexadecimal.

4.3.2 Audio Parameter Setting

In this field, users can set the corresponding input audio parameters, such as the audio format, the sample frequency and audio bit-rate and audio delay time.
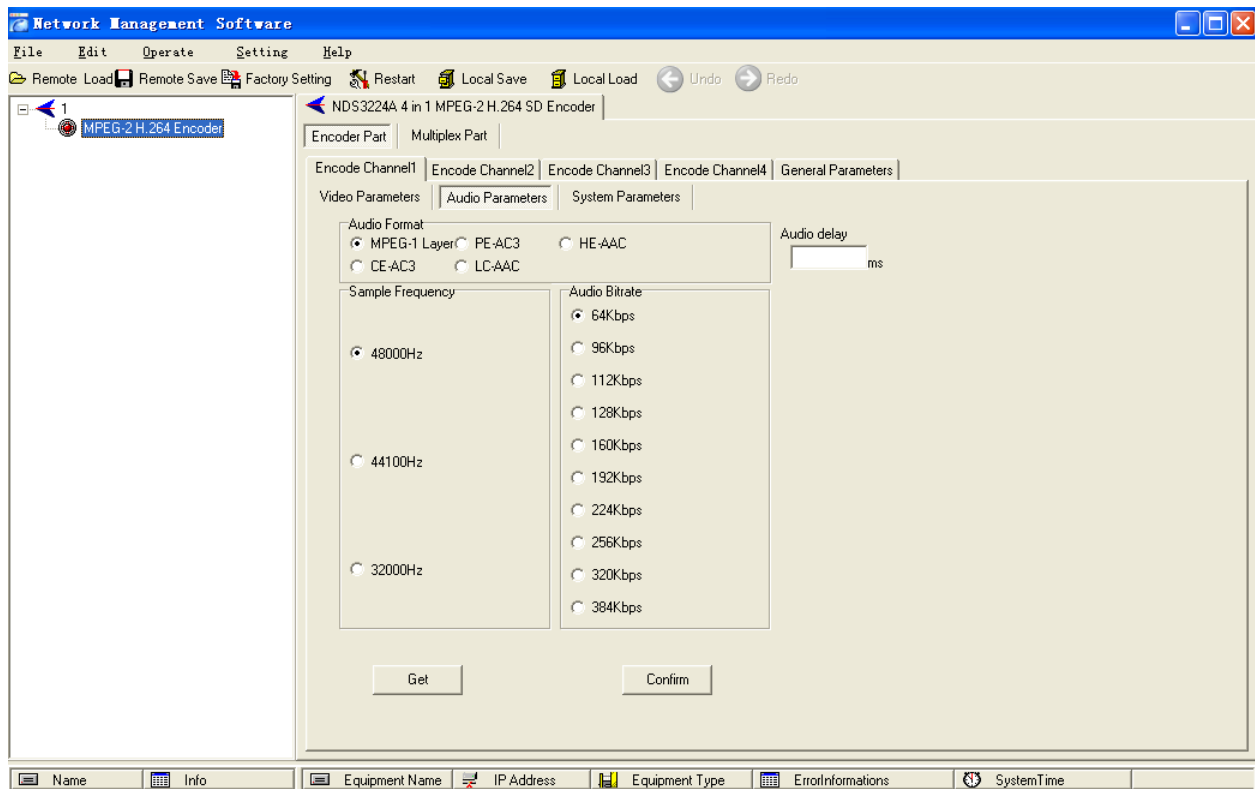
4.3.2.1 Audio Format Setting

In this field, and users can select audio format setting in this field, and the selected checkbox means that the current audio format.

4.3.2.2 Sample Frequency Setting

Users can set the sample frequency in this field, and there are three options, 8000Hz, 44100Hz and 32000Hz.

4.3.2.3 Audio Bit-rate

Users can set the audio bit-rate in this field, and the selected checkbox is the current selection.

4.3.2.4 Audio Delay

This field indicates the audio delay time, and this is just useful when the audio does not work synchronously with the video.

4.3.3 System Parameters

In this field, users can set the corresponding channel parameters, such as the output IP address, output IP port number.
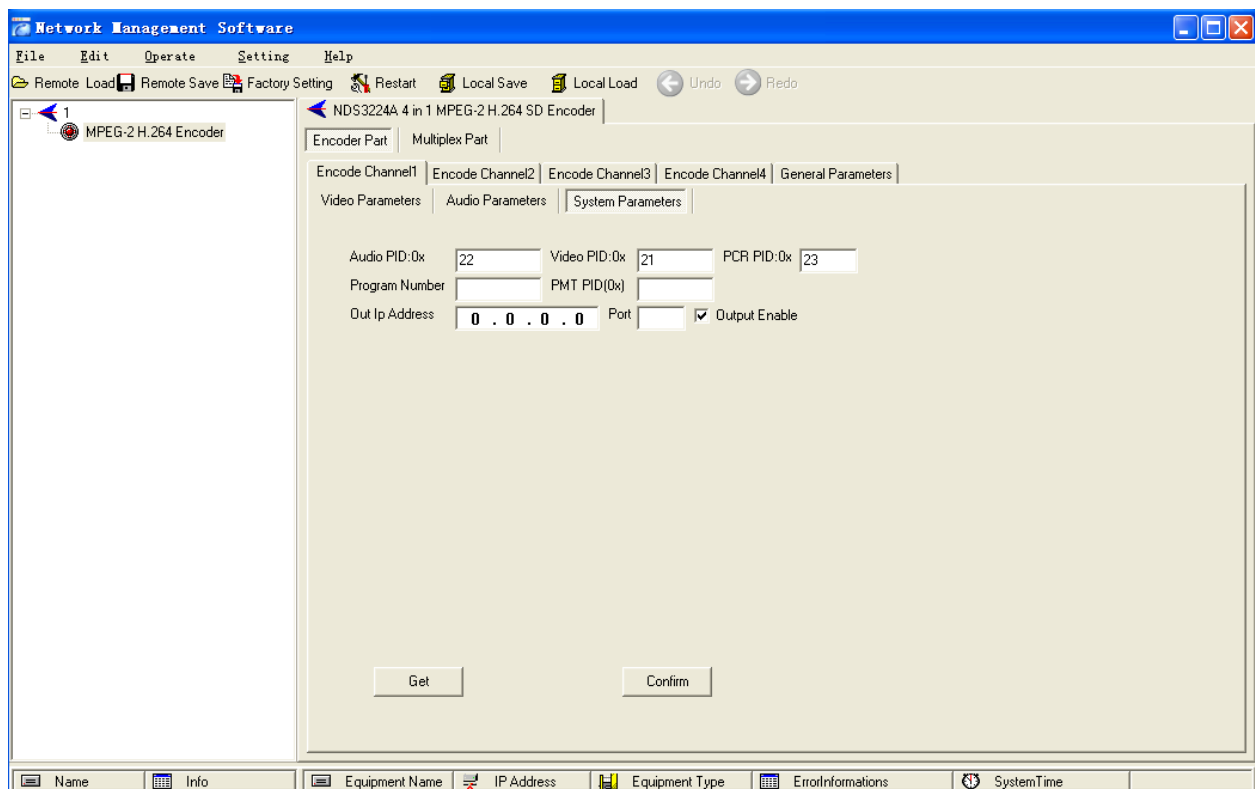
4.3.3.1 PMT PID

This field sets PMT PID. The value ranges from 0 to 0x1FFF.

4.3.3.2 Video PID

This field sets Video PID. The value ranges from 0 to 0 x1FFF.

4.3.3.3 Audio PID

This field sets Audio PID. The value ranges from 0 to 0 x1FFF.

4.3.3.4 PCR PID

This field sets PCR PID. The value ranges from 0 to 0 x1FFF.

4.3.3.5 Program Number

This field sets the number of the programs.

4.3.3.6 Out IP Address/Port Setting

In this interface, users can set the corresponding encoding channel output IP address and the port number

4.3.3.7 Output Enable

Users can decide whether to open the IP output function of the corresponding encoding

channels, and means that users open the IP output function.

4.3.4 General Parameters Setting

4.3.4.1 Output Bit-rate

Users can set the encoder output bit-rate in this filed by filling the corresponding value in the checkbox.

4.3.4.2 TS 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.

4.3.4.3 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.

4.3.4.4 Service ID

Users can set the encoder service ID in this field.

4.3.4.5 Output Address and Port Number

Users can set the encoder output address and port number in this filed.

4.3.4.6 Device Mode

Users can set the IP output Mode in this field by selecting 1IP and 4IP through the pull-down list.

4.3.4.7 ASI Output Channel
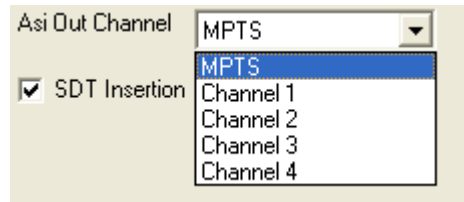
Users can set the ASI output channel in this interface, if users select the MPTS, it means that the ASI output channel is 4 encoder channels and ASI output together; if users select any channel from one to four, it means that the ASI output channel is the one of the encoding channel.

4.3.4.8 NIT Insertion
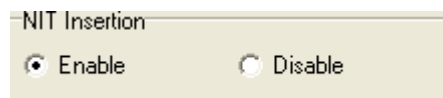
Users can decide whether to open the NIT insertion function in this filed.

4.3.4.9 SDT Insertion

 This check box indicates that users can open the SDT insertion function.

4.3.4.10 Output Enable

Users can decide whether to open the IP output function by selecting the checkbox.

4.3.4.11 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.

4.3.5 ASI Input Multiplexing Setting
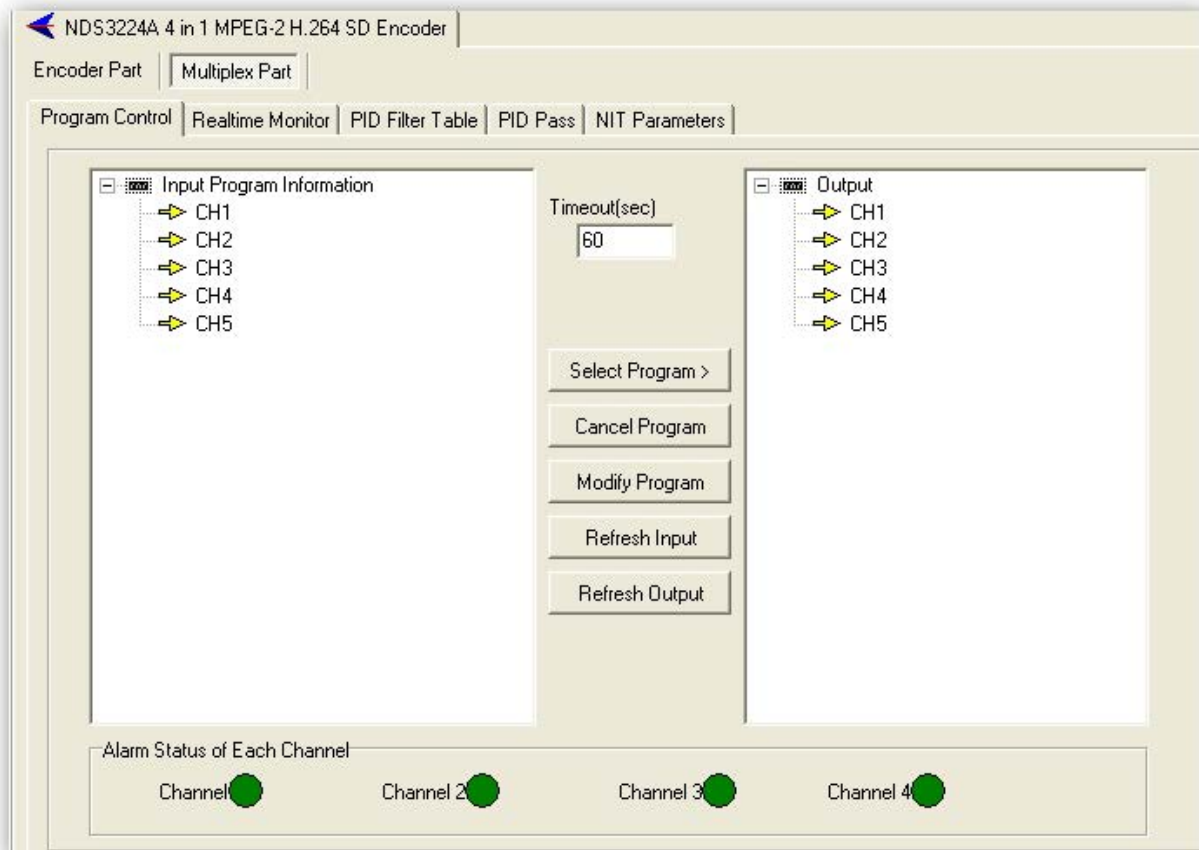
The programs in the left column represent all input programs and which port they come from, while the programs in the right column represent the output programs and from which port they are from. The CH1, CH2, CH3 and CH4 represent the 4 encoding Channels of this 4in1 encoder and the CH5 represents the ASI input. 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.

4.3.5.1 Select Program

User can select the program from input port and click this button to send it to output including ASI and IP.

4.3.5.2 Cancel Program

User can delete the selected program from output TS.

4.3.5.3 Modify Program

User can trigger a window to modify the program's properties and attributes. Such as the program name, program PID.

4.3.5.4 Refresh Input

User can select one of the input ports and then click this button to get the program list of this input port.

4.3.5.5 Refresh Output

User can get the output program list and from which they came.
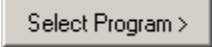
4.3.5.6 Alarm Status of Each Channel

This field indicates the signal states of encoding channel, if there is no signal input, then the indicator will turn into red, while if the encoder work normally, then the indicator will be green.

4.3.5.7 Multiplexing Operation

Initially, system would not show any programs at any port. CH1, CH2, CH3, and CH4 are single program transport stream from the 4 encoding channel. User can select given channel, say, ⇨ CH1 and then click ⎡ Refresh Input ⎤ button, the device will show the program list of the channel of "CH1". (CH2, CH3, CH4 are similar) Because the program in CH1 is the program from encoding channel, it is multiplexed to output by default. The **"√"** symbol means the program has been multiplexed to Output.
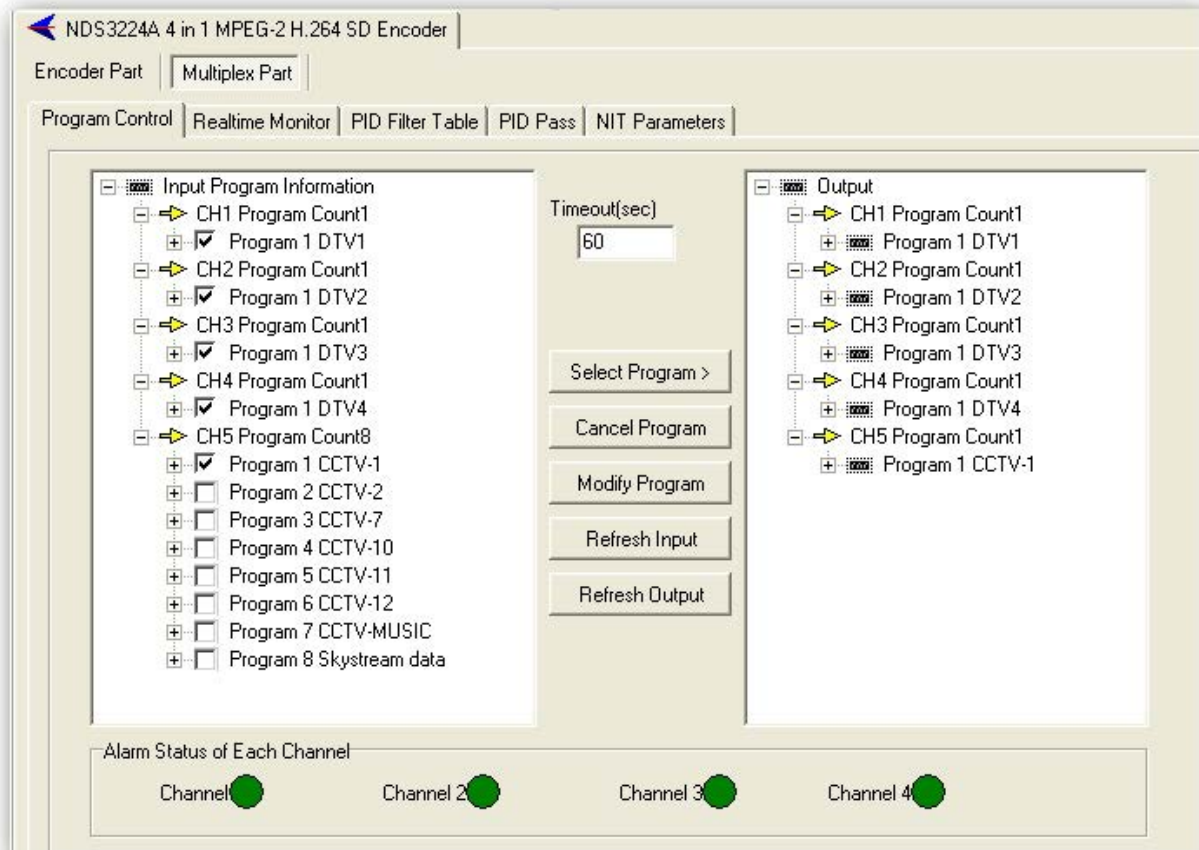
CH5 is ASI input channel. By default, all programs will not be multiplexed. User can multiplex those programs by clicking the specified program, say, ⊞ ☐ Program 1 digital 1 , and then clicking Select Program > button. The selected program will be multiplexed to the output TS, and the CH5 will automatically refresh and display the program.
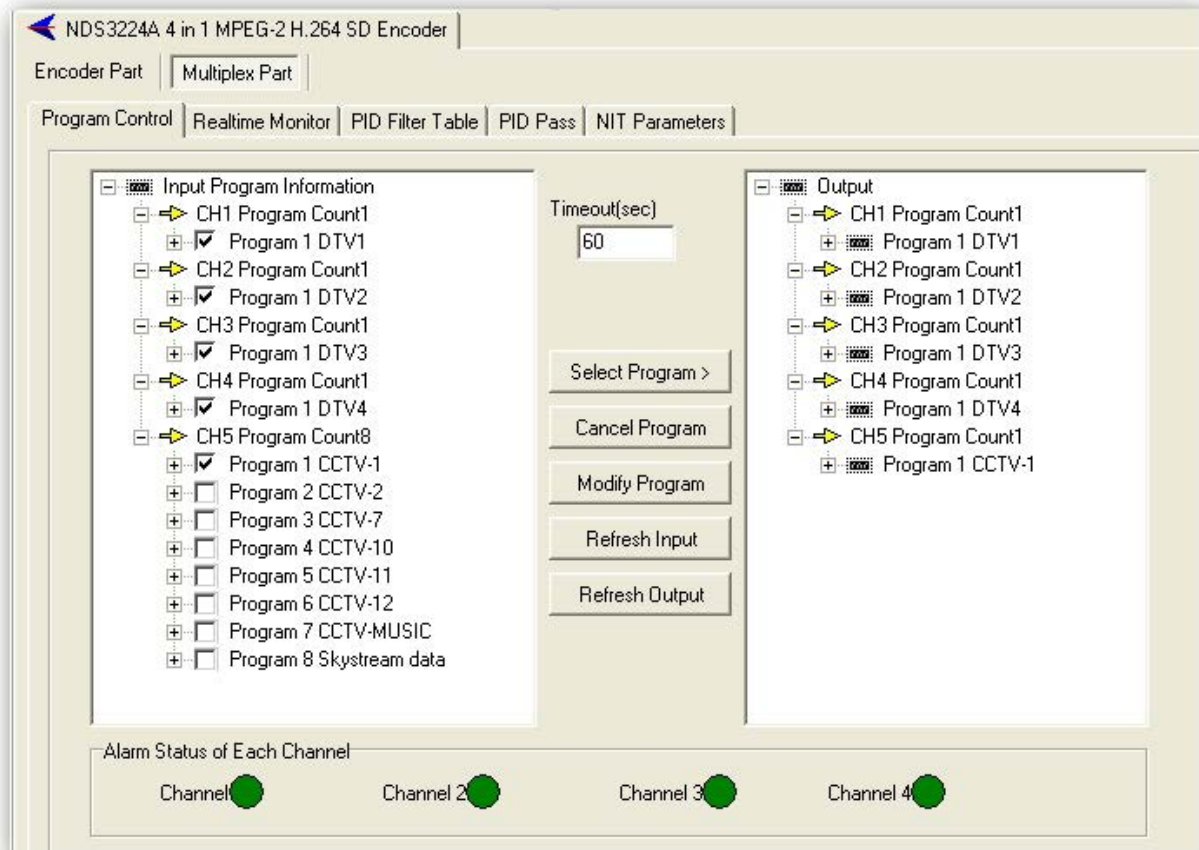
User can choose any program of the output channels, and then click [Modify Program]

button to pop up the program modify interface. After modification, user can click

[Modify] to confirm. System will automatically refresh new output program.

4.3.5.8 Real-time Monitoring of Output Stream

The current total output stream and the number of output programs will be displayed on this table, and user can also clearly observe the changing output stream on it.
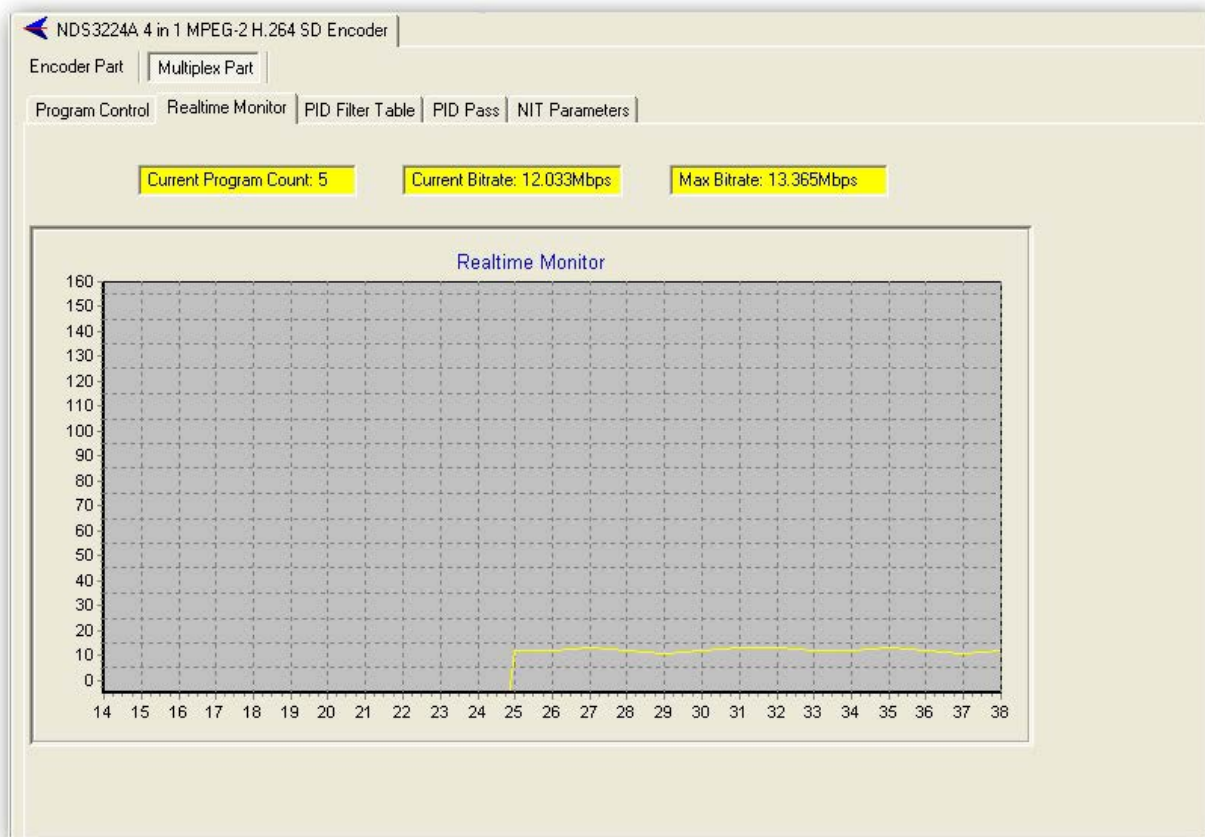
4.3.5.8.1 Current Program Number

This field indicates the number of the programs in the output TS.

4.3.5.8.2 Current Bit-rate

This field indicates the output TS's real-time effective bit-rate.

4.3.5.8.3 Maximum Bit-rate

This field indicates the maximum bit-rate which output TS's real-time effective bit-rate ever reached.

4.3.5.9 PID Filter Table
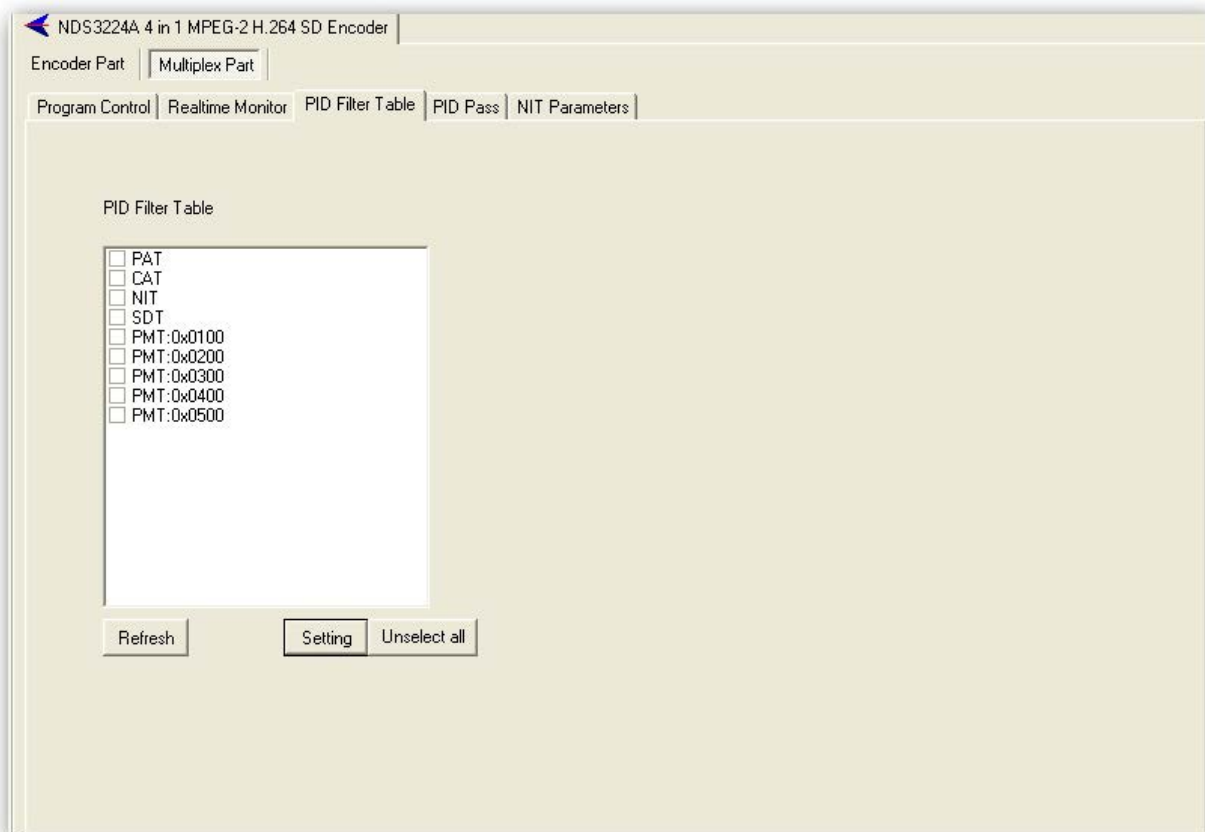
Refresh: getting PID filter table from the device

Setting: submitting the PID filter table to the device

Unselect All: clearing 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.

4.3.5.10 PID Pass

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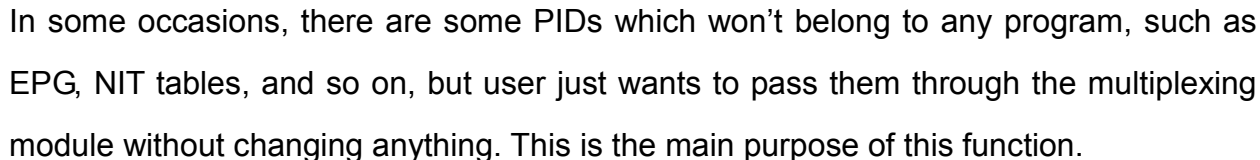
4.3.5.10.1 Channel Number

Users can check the corresponding PID channel number in this field.

4.3.5.10.2 Input PID and Output PID

The Old (Input) PID is the PID number in the TS from given Port. The correspondent New (output) PID number could be same as input PID number while it could be different if a PID remapping is needed.

4.3.5.10.3 Add

Users can add the transparent pass PID into the "PID Pass" by clicking this button.

4.3.5.10.4 Delete

User can click the selected PID and then click "delete" button to delete a transparent pass PID from the "PID Pass".

4.3.5.10.5 Modify

User can click the selected PID and then click "modify" button to modify a transparent pass PID's information in the "PID Pass".
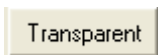
4.3.5.10.6 Clear
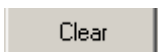
Users can empty the the "PID Pass".

4.3.5.10.7 Get

Users can read the "PID Pass" from device.

4.3.5.10.9 Transparent

Users can transparent the corresponding PID information in the output TS stream.

4.3.5.11 NIT Table

NIT: Network Information Table.

NIT table is a very important table for describing the network and TS.

4.3.5.11.1 NIT Parameters

User can set the network ID and network name in the field.

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

This is a 16-bit field which serves as a label to identify the delivery system, about which the NIT informs, from any other delivery system.

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

Private Descriptor: 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: The descriptor tag is an 8-bit field which identifies each descriptor.

4.3.5.11.2 Editing 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.
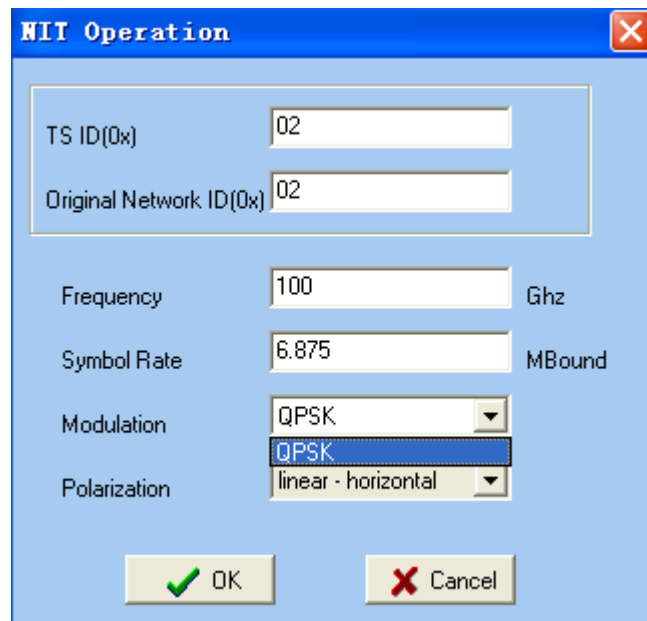
4.3.5.11.3 Read and Save

Those two buttons can trigger a window to load/save the saved NIT table file from/to a file on local computer hard-disk.

4.3.5.11.4 Add

There are 2 "Add" buttons on the editing toolbar. The upper one is for DVB-C network by pressing the "Add" button, it will trigger an editing window, and users can set the corresponding parameters in the trigged checkbox, it shows as follows:
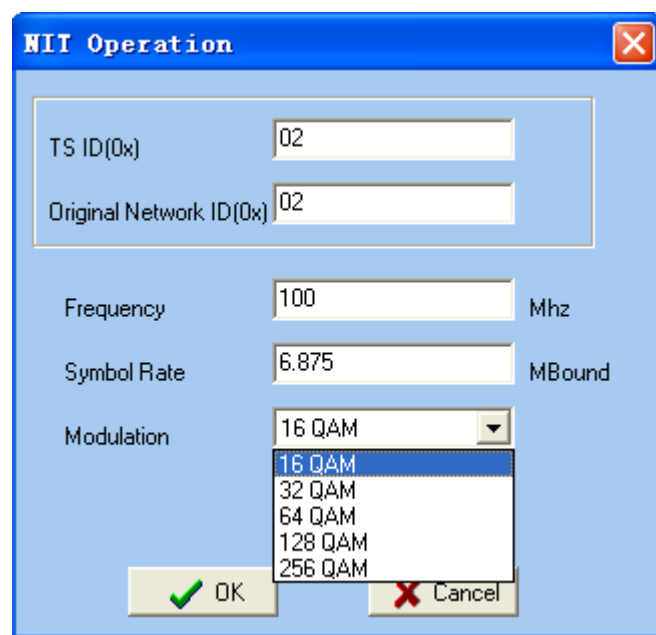
While the next one is for DVB-S network, and it will also trigger an editing window after clicking the second Add Button, it shows as follows:

4.3.5.11.5 Modify

The modify button will trigger a modify window and allow user to modify the selected items in the NIT table.

4.3.5.11.6 Delete

The "Delete" button will remove the selected items in the NIT table.

4.3.5.11.7 Clear

The Clear button will remove all the items in the NIT table.

4.3.5.11.8 Set the NIT table effect

Users can click the Set button to take the NIT table setting into effect.

Chapter 5 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 6 Packing list

- DCH4400EC 4 in 1 MPEG-2 H.264 SD Encoder   1pcs
- User's manual   1pcs
- Audio and video   4pcs
- ASI cable   1pcs
- Power cord   1pcs