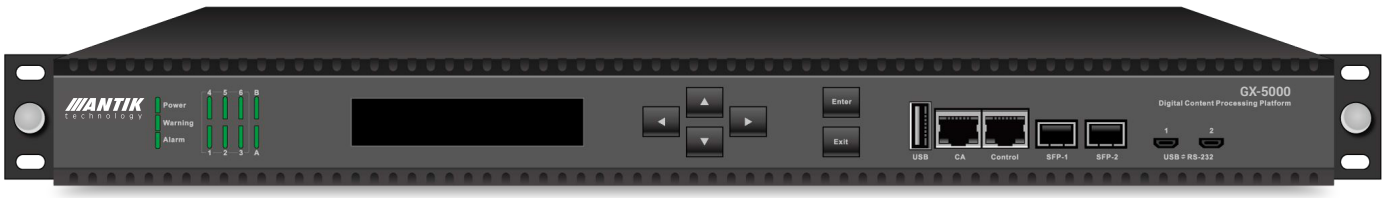
ANTIK technology

Digital Headend System

Your digital world.

GX-5000

Digital Contents Processing Platform



Operation Guide

Version 1.1

www.antiktech.com

About this Guide

Thank you for purchasing the digital TV headend equipment from ANTIK. This operation guide is intended for technical personnel who use Digital Contents Processing Platform, GX-5000, It describes the operation of the equipment. In the following table, we provide the document release history.

Revision History

Version	Date	Document Change
1.0	2017.05	Initial Version, based on main ver.1xxx FW
1.1	2018.04	Add new modules and improve other functions, based on main ver.30xx FW

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Support functions provided by ANTIK's Customer Service include complete factory repair for both in-warranty and out-of-warranty equipment. You can contact your local **ANTIK** product distributor or reseller. Or you can call us or write to us for Customer Support.

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- Customer name, address, telephone number
- Model number
- Serial number
- Detailed description of problem

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1. SAFETY PROTECTION

This User Guide is written for operators/users of the GX-5000 to assist in installation and operation. Please read this User Guide carefully before installation and use of the device.

This equipment is provided with a protective earth grounding incorporated in the power cord. The main plug shall only be inserted in a socket outlet provided with a protective earth contact. Any interruption of the protective conductor, inside or outside the device, is likely to make the device dangerous. Do not remove the covers of this equipment. Hazardous voltages are present within this equipment and may be exposed if the covers are removed. Only trained and approved service engineers are permitted to service this equipment.

The supplied AC power cable must be used to power the device. If the power cord becomes damaged, it must be replaced. No operator serviceable parts inside. For the correct and safe use of the device, it is essential that both operating and servicing personnel follow generally accepted safety procedures in addition to the safety precautions specified in this manual. Whenever it is likely that safety protection is impaired, the device must be made in-operative and secured against unintended operation. The appropriate servicing authority must be informed. For example, safety is likely to be impaired if the device fails to perform the intended measurements or shows visible damage.

WARNINGS

- The mounting environment should be relatively dust free, free of excessive vibration and the ambient temperature between 10C° to 30C°. Relative humidity of 20% to 80% (non-condensed) is recommended.
- Avoid direct contact with water.
- Never place the equipment in direct sunlight.
- The outside of the equipment may be cleaned using a lightly dampened cloth. Do not use any cleaning liquids containing alcohol, methylated spirit or ammonia etc.
- For continued protection against fire hazard, replace line fused only with same type.
- Air intake for cooling is achieved via holes at the side of the device and the fans inside. The air flow should not be obstructed. Therefore, the device has to be placed on a flat surface, leaving some space at the sides of the device.
- When in operation, the ambient temperature should not exceed the limit of 45C°.

2. INTRODUCTION

2.1. Appearance

GX-5000 appearance is shown as Fig.2-1 GX-5000 Appearance.

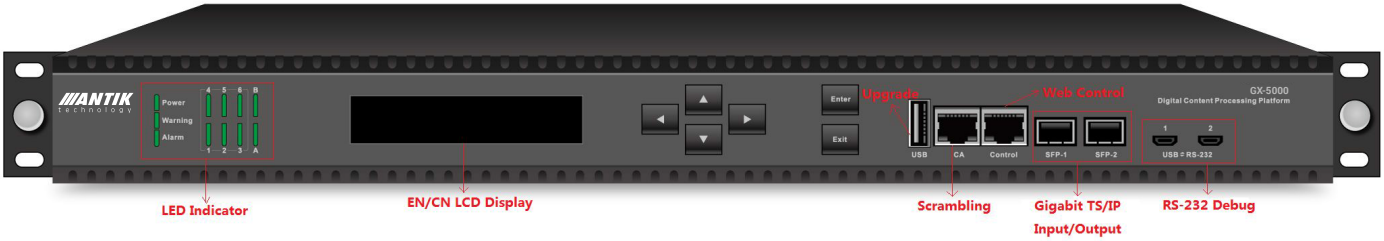


Fig.2-1 GX-5000 Appearance

2.1.1. LED Indicators

There are 11 LED indicators on GX-5000 front panel which refer to Fig.2-2, including,

1. Power
2. Warning
3. Alarm
4. Module 1-6 Status
5. User-defined A/B (not available in this version, and LED A is defined for P01MS)

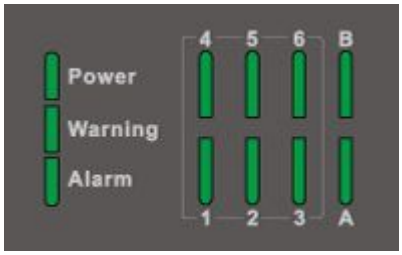


Fig.2-2 LED Indicators

Connect to the power supply, the LED indicator of Power keep lighting. The LED indicator of Waring and Alarm will not be lighted when the device starts and operators normally. These two indicators will turn orange or red when the device operators abnormally, which prompts the user that an error has occurred.Operating indicators of Module 1-6 are used to indicate the operating status of slot 1 to 6 respectively, and the indicator of Warning and Alarm is used to indicate the device status.

2.1.2. LCD

LCD is mainly for showing unit's IP address for management. There are also some simple menus for main frame configurations. And user can make the daughter board reboot via LCD menu. For more details, please refer LCD menu.

2.1.3. Key pad

There are six keys on front panel, UP, Down, Left, Right, Enter and Exit. User can check and setup LCD Menu with them.

2.1.4. USB

USB is just for firmware update. USB is one of GX-5000 three (USB, Telnet and Web) different types of firmware update methods. User needs to put firmware into USB key root folder, update it through upgrade menu of LCD.

2.1.5. RJ45

There are two RJ45 ports, CA and Control. CA is for scrambler connecting CA server. Control is the management port of GX-5000.

2.1.6. SFP

There are two SFP ports for TS over IP. They can work as backup or independent.

2.1.7. Mini USB

Mini USB is for debugging problem. They are USB to RS232 port actually. Before using this function, user needs to install a RS232, for example Putty.exe, to enable this function.

2.2. Function Cards Introduction

2.2.1. P01MS（reMUX & Scrambler Extension Subboard）

- 32 independent DVB-TS re-Multiplex and Scramblers
- Compliant with ISO13818 & EN300 468
- Support 4 different local or remote CAS Simulcrypt processing
- Support DVB CAS & BISS 1/E
- Support error alarm of TS level
- Support PID filtering, pass through and remapping
- Support PSI/SI tables insertion or re-generation
- Support PCR re-stamp & calibrate
- Self temperature monitoring

2.2.2. D01S2（4 x DVB-S/S2 Demodulator Module）

- 4 x F type Female, 75Ω
- Input Frequency Range: 950 ~ 2150 MHz
- Input RF level: -65dBm ~ -25dBm
- Symbol Rate: 2 ~ 45MSps
- Roll Off factor: 0.35(DVB-S QPSK), 0.35/0.25/0.2(DVB-S2 8PSK)
- FEC Puncture Rate: 2/3, 3/4, 3/5, 5/6, 8/9, 9/10(DVB-S2 8PSK), 1/2, 2/3, 3/4, 5/6, 6/7, 7/8(DVB-S QPSK)
- Support BISS-1/E de-encryption(up to 40 PIDs de-encryption per tuner input)
- Support T2-MI(up to 8 PLP IDs demodulation per tuner input)

2.2.3. D02S2（4 x DVB-S/S2 Demodulator Module, Support Input Stream Indentifier）

- 4 x F type Female, 75Ω
- Input Frequency Range: 950 ~ 2150 MHz
- Input RF level: -65dBm ~ -25dBm
- Symbol Rate: 2 ~ 45MSps
- Roll Off factor: 0.35(DVB-S QPSK), 0.35/0.25/0.2(DVB-S2 8PSK)

- FEC Puncture Rate: 2/3, 3/4, 3/5, 5/6, 8/9, 9/10(DVB-S2 8PSK), 1/2, 2/3, 3/4, 5/6, 6/7, 7/8(DVB-S QPSK)
- Support BISS-1/E de-encryption(up to 40 PIDs de-encryption per tuner input)
- Support T2-MI(up to 8 PLP IDs demodulation per tuner input)
- Support PLS (0 ~ 262141)
- ISI ID: 1 ~ 255 user configurable

2.2.4. D01T2（4 x DVB-C/T/T2 Demodulator Module）

- 4 x F type Female, 75Ω
- Full compliant for DVB-T2 v1.3
- Input Frequency, 48 ~ 860 MHz(DVB-C), 104 ~ 862 MHz(DVB-T/T2)
- Input Level, -15~ 15dBm(DVB-C), -70 ~ -20dBm(QEF, DVB-T/T2)
- Symbol Rate, 1 ~ 7MSps（ITU J.83 Annex A DVB-C）
- Constellation, 16/32/64/128/256 QAM(DVB-C), QPSK/16QAM/64QAM(DVB-T), QPSK/ 16QAM/64QAM/256QAM(DVB-T2)
- Bandwidth, 6/7/8 MHz
- FFT Mode, 2K/8K(DVB-T), 1K/2K/4K/8K/16K/32K(DVB-T2)
- Guard Interval, 1/4, 1/8, 1/16, 1/32(DVB-T)　1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128(DVB-T2)
- FEC Code Rate, 1/2, 2/3, 3/4, 5/6, 7/8(DVB-T)　1/2, 3/5, 2/3, 3/4, 4/5, 5/6(DVB-T2)

2.2.5. P01CI（4 x CI De-encryption Module）

- 4 x Independent Common Interface(DVB-CI)slots
- Multiple programs CAS or BISS-1/E De-encryption
- CAM watchdog
- Compatible with most of popular CA systems

2.2.6. C01MOD（8 x QAM/2 x COFDM Modulator Module）

- 2 x F type Female, 75Ω（1 x main output，1 x -20dB monitor output）
- Support QAM/COFDM Modulation Mode(cannot work at the same time)
- 2 groups of 4 adjacent channel carriers QAM RF output, 2 x Un-adjacent channel carries COFDM RF output

- RF output range: 48 ~ 996MHz, step by 1KHz
- Symbol rate: 2.5 ~ 6.99MBauds
- RF total output level: 94 ~ 118dBuV(110dBuV each carrier)
- FFT Mode, 2K/4K/8K
- Spurious rejection > 55dB
- Output return loss -10dB
- QAM Modulation, support ITU-T J.83 Annex A, C
- Modulation Mode, 16QAM, 32QAM, 64QAM，128QAM，256QAM
- MER > 36dB, BER < 10E-9

2.2.7. C01TM（4 x COFDM Modulator Module）

- 2 x F type Female, 75Ω（1 x main output，1 x -20dB monitor output）
- 4 x Un-adjacent channel carries COFDM RF output
- RF output range: 100 ~ 862MHz, step by 10KHz
- RF total output level: 84 ~ 114dBuV
- Modulation Mode, QPSK/16QAM/64QAM
- FFT Mode, 2K/4K/8K
- Spurious rejection > 55dB
- Output return loss -10dB
- MER > 36dB, BER < 10E-5

2.2.8. C01ASI（5 x ASI Input/Output Module）

- 5 x BNC Female, 75Ω
- Standard: DVB-ASI, EN50083-9
- Up to 5 x ASI Input
- Up to 5 x ASI Output
- Maximum bit rate(each ASI): 213Mbps
- Minimum accepting sensitivity: 200mV
- Maximum input Voltage: 880mV
- ASI Input or Output can be switched

- Support T2-MI (In the T2-MI mode, ASI-5 is configured to input which can process 4 PLP ID, ASI-1 to ASI-4 are configured to output which can select PLP ID TS to output via Web)

2.2.9. P01DA（2 x DS3 Input/2 x DS3 Output/1 x ASI Adaptor Module）

- 5 x BNC Female, 75Ω
- Standard: DVB-ASI, EN50083-9 / ITU-T G.703
- Frame Structure: ITU-T G.752 / ITU-T G.804
- ASI Input or Output can be switched
- Bit rate: 44.736Mbps

2.2.10. D01PA（2 x Channels Multi-format Signal SD/HD Decoder Module）

- 2 x HDMI 1.3(up to 1080i), 1 x D-sub 15 female(can be translated 2 x CVBS via cable)
- Video Format: MPEG-2(MP@ML for SD, MP@HL for HD), MPEG-4/H.264 AVC Part 10(MP@L3 for SD,HP@L4.1 for HD), AVS+
- Audio Format: MPEG-1 Layer II, AAC-LC, HE AAC V1/V2, AC3, AC3+
- Aspect Ratio: 16:9, 4:3 Self-adaptation
- Resolution and Frame Rate: 1080ix30, 1080ix29.97, 1080ix25, 720px60, 720px59.94, 720px50, 576ix25, 480ix29.97
- Video PID Bit Rate: < = 50Mbps

2.2.11. D02PA（2 x Channels Multi-format Signal SD/HD Decoder Module）

- 3 x BNC Female 75Ω for 2 x ASI/SDI , 1 x Genlock input
- BNC for SDI Output or ASI Input/Output can be switched
- 1 x D-sub 15 female(can be translated 2 x CVBS via cable)
- Video Format: MPEG-2(MP@ML for SD, MP@HL for HD), MPEG-4/H.264 AVC Part 10(MP@L3 for SD,HP@L4.1 for HD), AVS+
- Audio Format: MPEG-1 Layer II, AAC-LC, HE AAC V1/V2, AC3, AC3+
- Aspect Ratio: 16:9, 4:3 Self-adaptation
- Resolution and Frame Rate: 1080ix30, 1080ix29.97, 1080ix25, 720px60, 720px59.94, 720px50, 576ix25, 480ix29.97

- Video PID Bit Rate: < = 50Mbps

2.2.12. P01EC（4 x HDMI MPEG-2/H.264 Transcoder/Encoder Module）

- 4 x HDMI Input interface
- Compliant with H.264/AVC Baseline, Main & High Profile @ L4.0 or less & MPEG-2 MP@ML
- Independent Transcoding/Encoding mode control
- Video Input Resolution: 1080i, 720p, 576i, 480i.
- Support video resoultion downscaling(vertical & horizontal adjustable respectively).
- Audio Coding: MPEG-1 Layer II, MPEG-2/4, AAC-LC/HE-AAC
- Support VBR & CBR mode
- Support GOP settings
- Sampling Format: 4:2:0, 10-bit, YCbCr
- Compression Bit Rate: 300K ~ 20Mbps
- Aspect Ratio: 4:3, 16:9

2.2.13. P02EC（4 x SDI MPEG-2/H.264 Transcoder/Encoder Module）

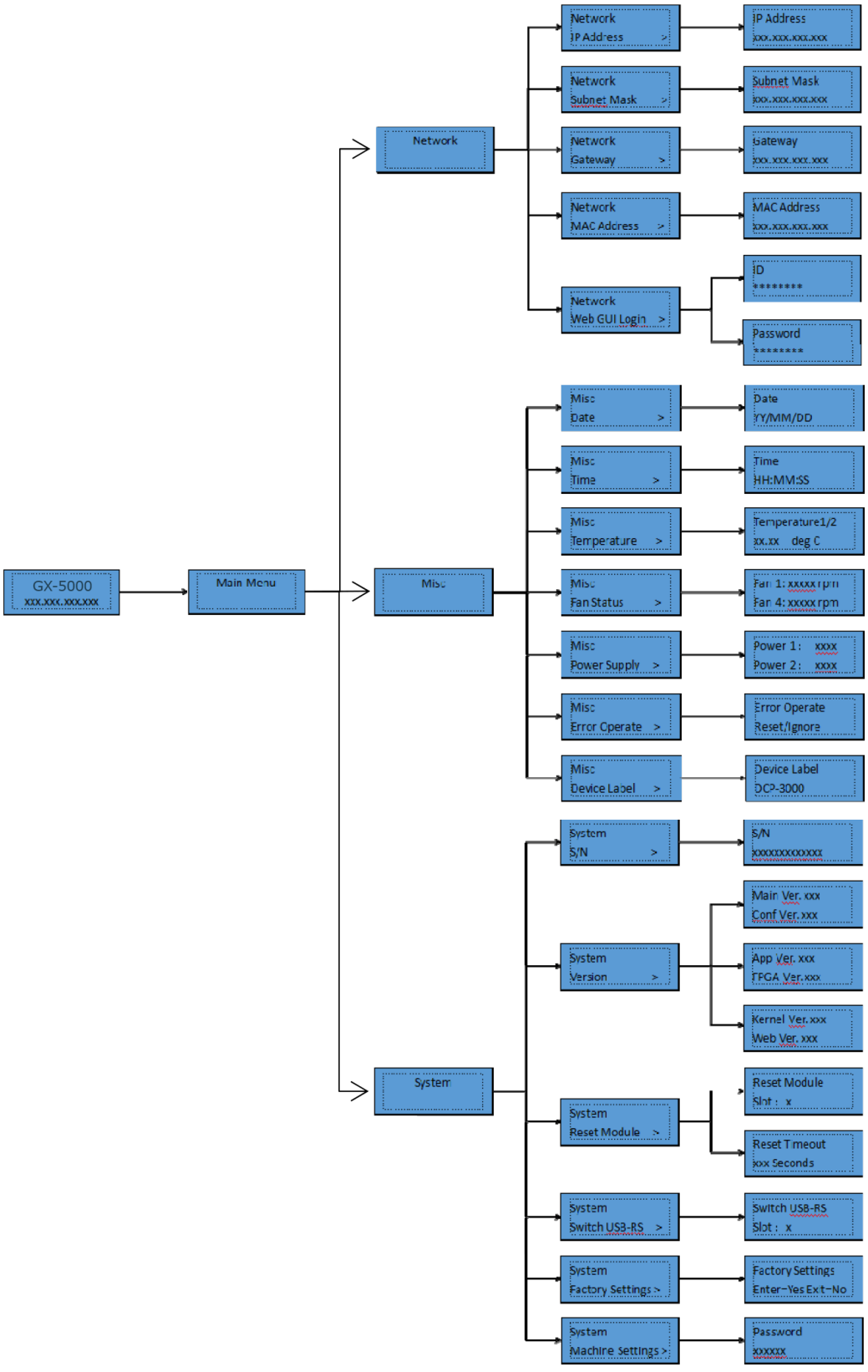
- 4 x SDI Input, BNC Female 75Ω
- Compliant with H.264/AVC Baseline, Main & High Profile @ L4.0 or less & MPEG-2 MP@ML
- Independent Transcoding/Encoding mode control
- Video Input Resolution: 1080i, 720p, 576i, 480i.
- Support video resoultion downscaling(vertical & horizontal adjustable respectively).
- Audio Coding: MPEG-1 Layer II, MPEG-2/4, AAC-LC/HE-AAC
- Support VBR & CBR mode
- Support GOP settings
- Sampling Format: 4:2:0, 10-bit, YCbCr
- Compression Bit Rate: 300K ~ 20Mbps
- Aspect Ratio: 4:3, 16:9
- Support second audio encoding with the extension card (only P02EC-PLUS)
- Up to 8 x transcoder with the extension card (only P02EC-PLUS)

2.2.14. P01AT（4 x H.265/AVS+/MPEG-2/H.264 HD/SD Transcoder Module）

- Support H.265/AVS+ HD/SD transcode to H.264 HD/SD or MPEG2 SD, and MEPG2 HD/SD transcode to H.264 HD/SD, and H.264 HD/SD transcode to MPEG2 SD
- Support AC/AC3+ transcode to MPEG/AAC, or passthrough(cannot work in the same time)
- Compliant with H.264/AVC Baseline, Main & High Profile @ L4.0 or less & MPEG-2 MP@ML
- Support video resoultion downscaling(vertical & horizontal adjustable respectively).
- Audio Format: MPEG-1 Layer II, MPEG-2/4, AAC-LC/HE-AAC
- Support VBR & CBR mode
- Support GOP settings
- Sampling Format: 4:2:0, 10-bit, YCbCr
- Compression Bit Rate: 300K ~ 20Mbps
- Aspect Ratio: 4:3, 16:9

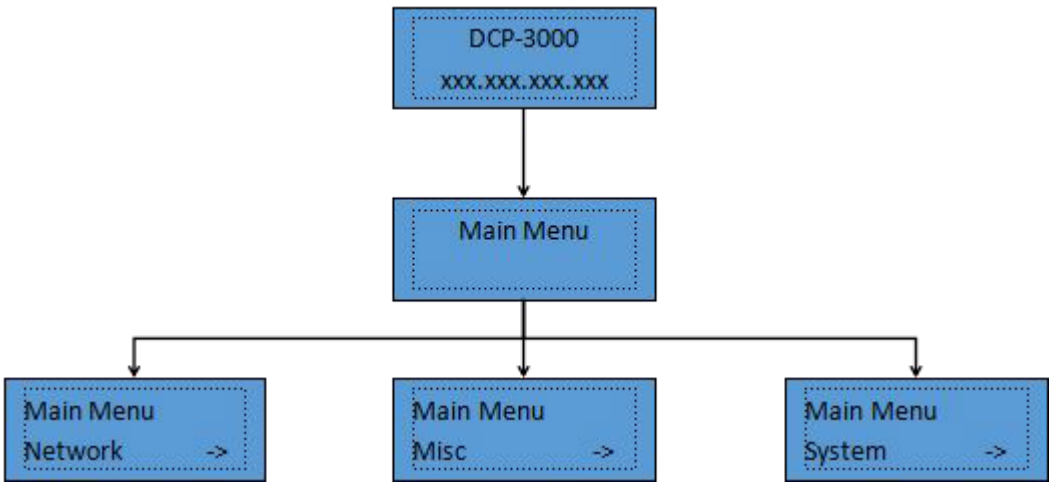
3. LCD MENU

There is a LCD Menu for users to configure main frame and front interfaces. User can press enter key to start to setup the unit. The LCD menu overview showed as below:


GX-5000
xxx.xxx.xxx.xxx
Main Menu
Network
Network
IP Address >
IP Address
xxx.xxx.xxx.xxx
Network
Subnet Mask >
Subnet Mask
xxx.xxx.xxx.xxx
Network
Gateway >
Gateway
xxx.xxx.xxx.xxx
Network
MAC Address >
MAC Address
xxx.xxx.xxx.xxx
Network
Web GUI Login >
ID
****
Password
****
Misc
Misc
Date >
Date
YY/MM/DD
Misc
Time >
Time
HH:MM:SS
Misc
Temperature >
Temperature1/2
xx.xx deg C
Misc
Fan Status >
Fan 1: xxxxx rpm
Fan 4: xxxxx rpm
Misc
Power Supply >
Power 1: xxxx
Power 2: xxxx
Misc
Error Operate >
Error Operate
Reset/Ignore
Misc
Device Label >
Device Label
DCP-3000
System
System
S/N >
S/N
xxxxxxxxxxxx
System
Version >
Main Ver. xxx
Conf Ver. xxx
App Ver. xxx
FPGA Ver. xxx
Kernel Ver. xxx
Web Ver. xxx
System
Reset Module >
Reset Module
Slot : x
Reset Timeout
xxx Seconds
System
Switch USB-RS >
Switch USB-RS
Slot : x
System
Factory Settings >
Factory Settings
Enter-Yes Ext-No
System
Machine Settings >
Password
xxxxxx

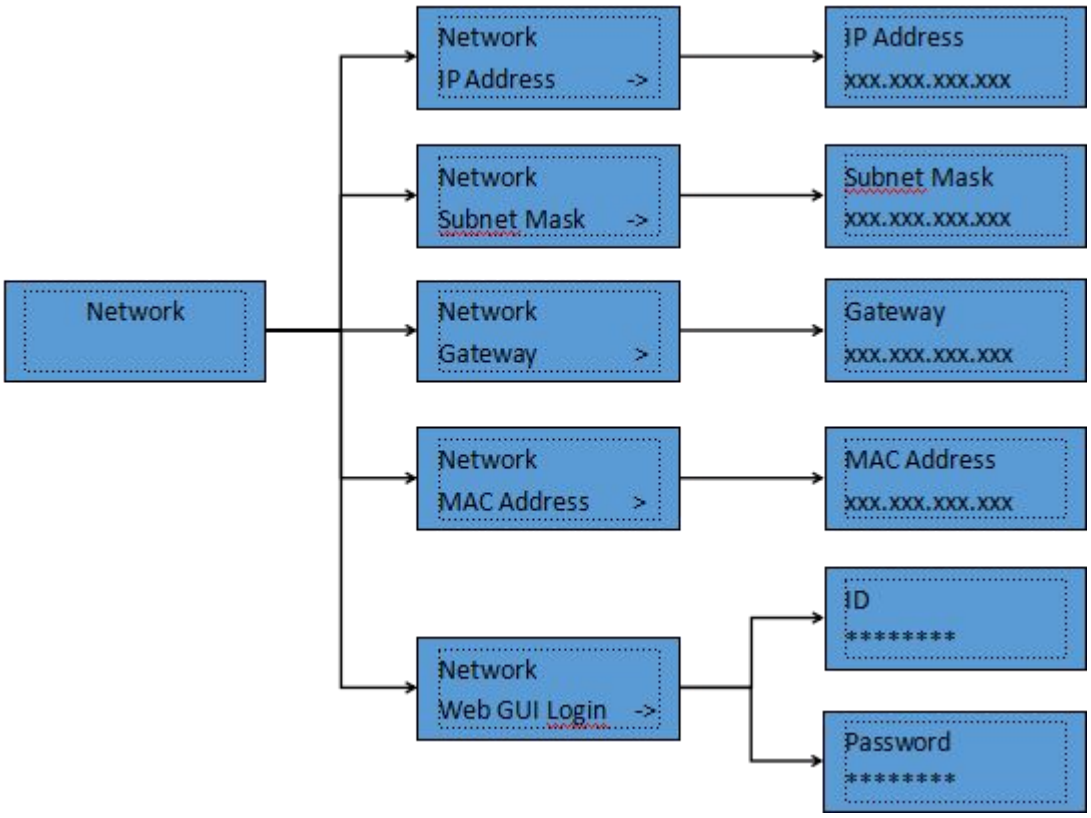
3.1. Main Menu

The LCD will show GX-5000 and management IP address when it boot up. User can press any key of front panel to enter Main menu. Main menu includes 3 submenus, Network, Misc and System.



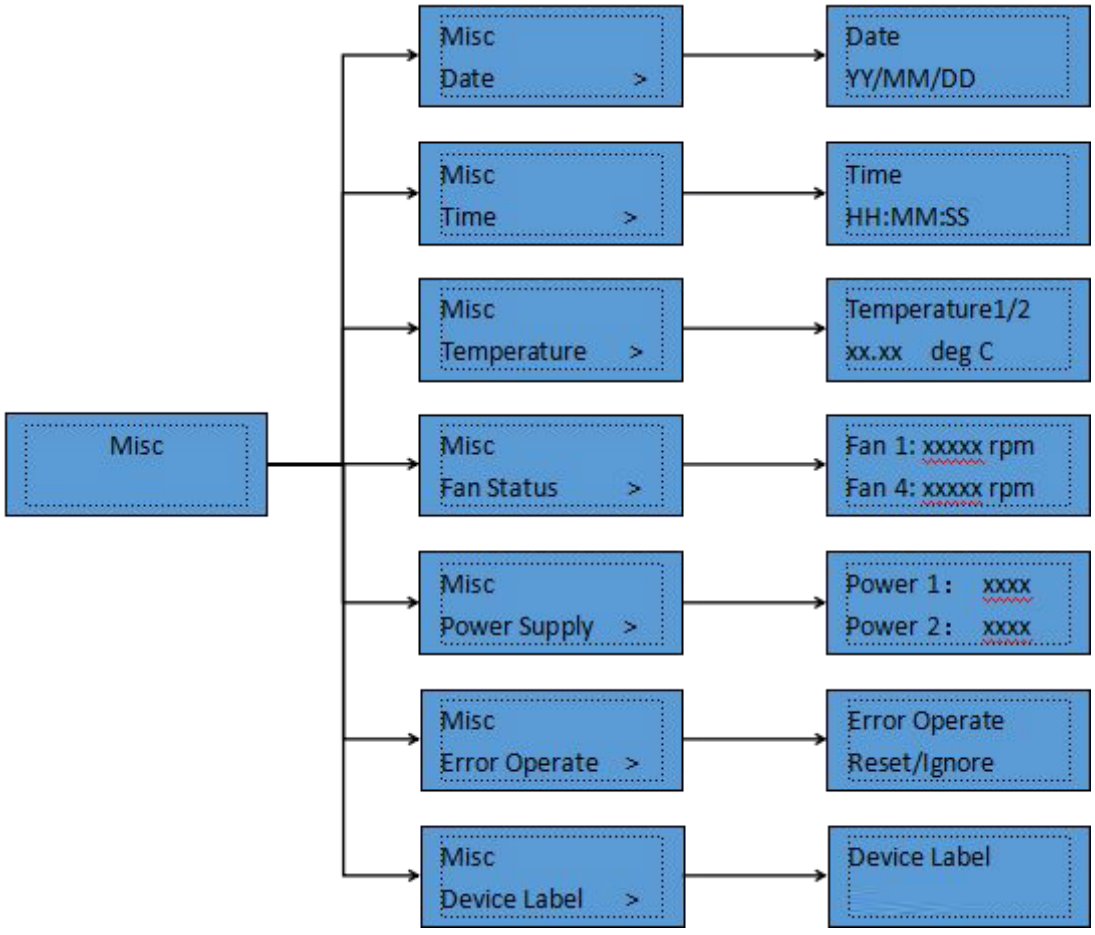
3.2. Network

Network menu includes IP address, Subnet Mask, Gateway, MAC Address and Web GUI Login for management RJ45 port. User can see the below graph as reference. MAC address is read only. Web GUI Login is for setup or reset web browser login ID and password, especially users forgot the ID or password.



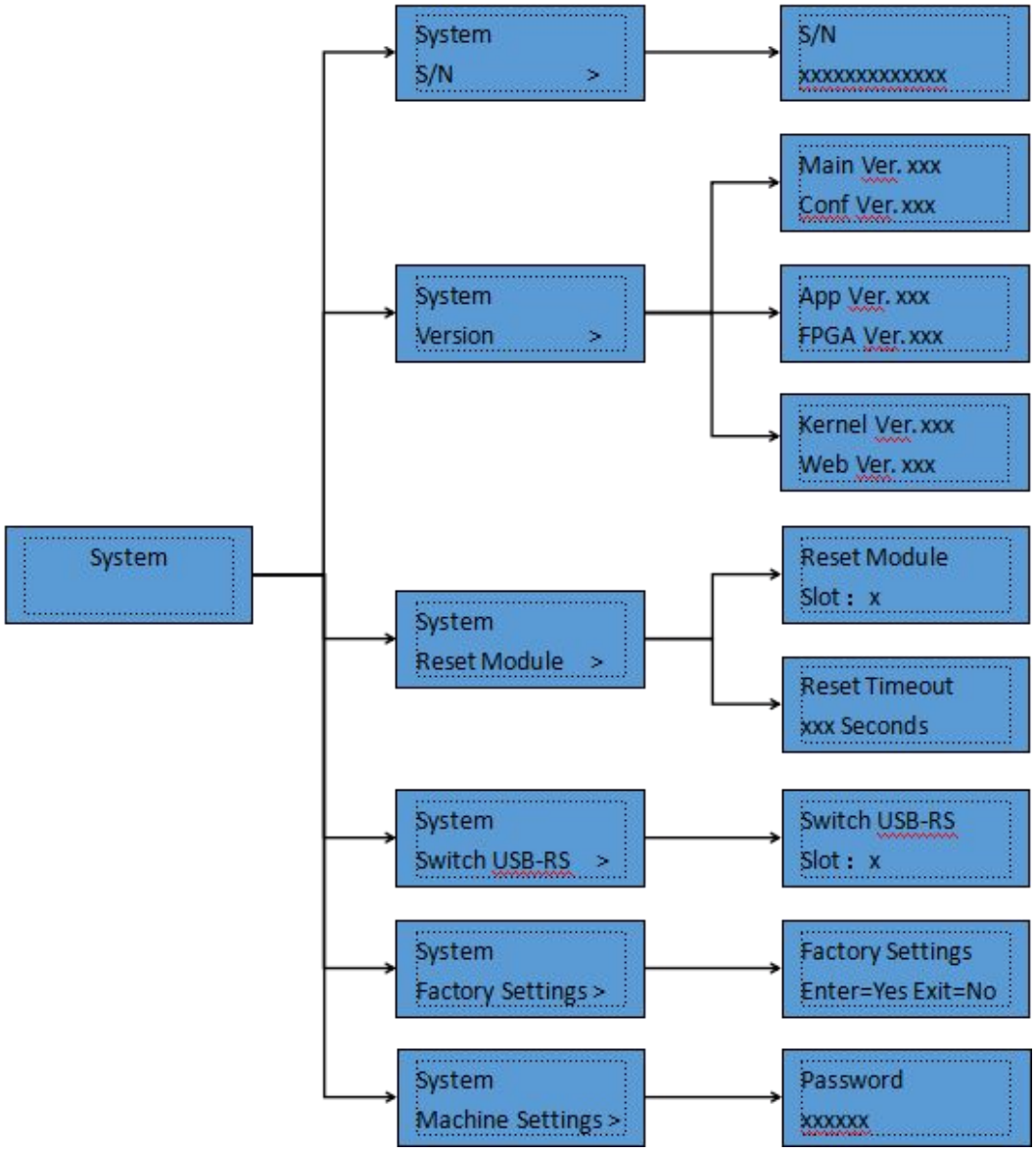
3.3. Misc

This menu includes several unit's status, Date, Time, Temperature, Fan status, Power supply, Error Operate and Device label. User can setup Date and Time to display via front panel. Temperature is unit inside temperature. Fan status will show error if any fan does not work. Power supply is the dual power supply's status. It will show error information when the power supply doesn't work. Error Operate is to reset warned errors. Device label is for setting up unit names which will show on LED and Web browser.



3.4. System

System menu includes these sub-menus, S/N, Version, Reset Module, Switch USB-RS, Factory Settings and Machine Settings. S/N is the identification of the unit and it is an unique series number for each unit. It helps to verify if the unit comes original or not. Version is the information of firmware of the main frame. Reset Module is the function for reset daughter cards. Switches USB-RS is for setting up debug information output port. Factory Settings is for reset all settings to factory default. Machine Settings is limited for users.



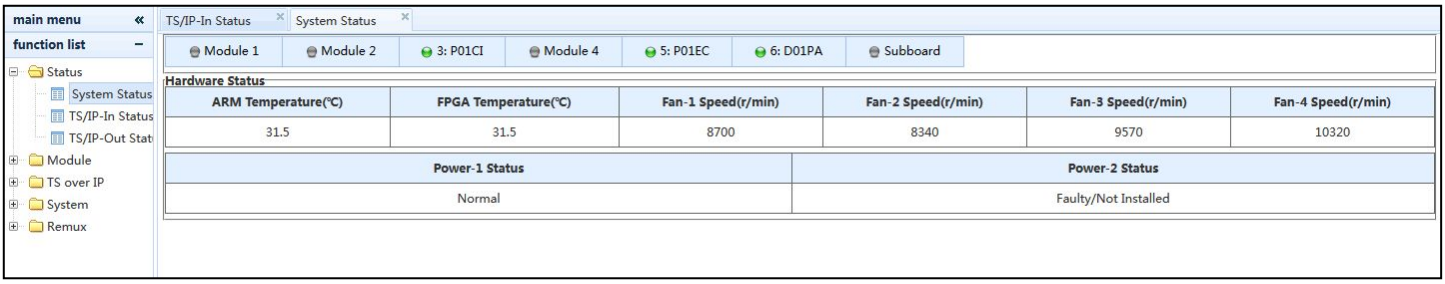
4. WEB INTERFACE

Web browser is the main management interface of GX-5000. User can check the unit working status, setup and reset it etc. The suggestion browsers are Firefox and Chrome.

4.1. Status

4.1.1. System Status

This is the page for main frame working status. It includes hardware working temperature, fans speed, power supply status. If power status shows faulty, it means that the power is crashed or not installed.



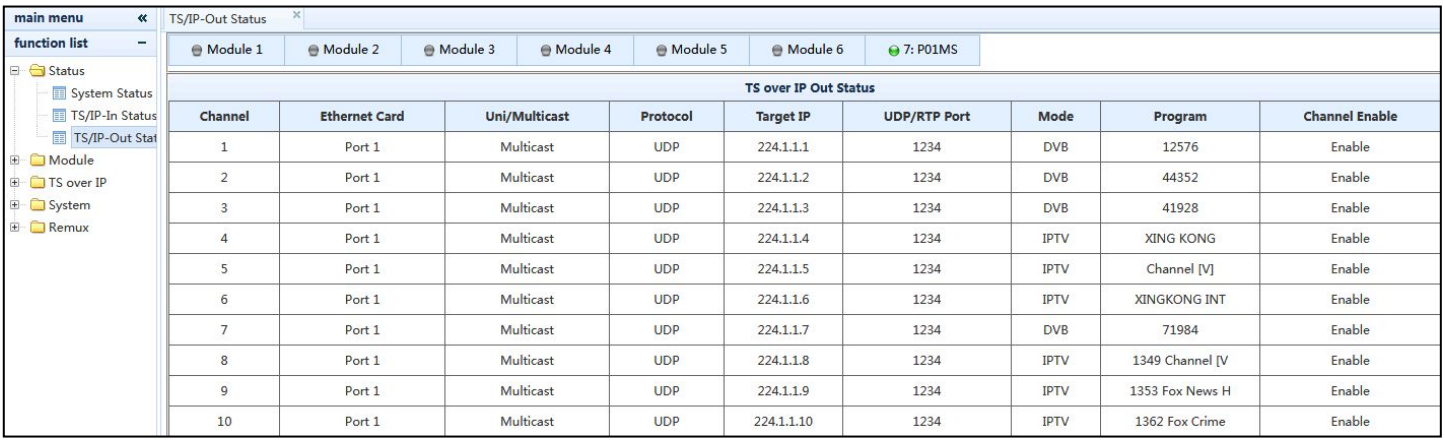
4.1.2. TS/IP-In Status

This is the page of TS over IP Input status. It includes port, source IP, protocol, target IP, port number, lock status, bit rate, packet length, IP frame and enable status.

Channel	Ethernet Card	Source IP	Protocol	Target IP	UDP/RTP Port	Channel Lock	Bitrate(kbps)	TS Packet Length	TS Packets/IP Frame	Channel Enable
1	Port 1	192.168.0.10	UDP	224.1.1.1	1234	lock	13064	188	7	Enable
2	Port 1	192.168.0.10	UDP	224.1.1.2	1234	lock	48109	188	7	Enable
3	Port 1	192.168.0.10	UDP	224.1.1.3	1234	lock	45404	188	7	Enable
4	Port 1	192.168.0.10	UDP	224.1.1.4	1234	lock	12178	188	7	Enable
5	Port 1	192.168.0.10	UDP	224.1.1.5	1234	lock	77625	188	7	Enable
6	Port 1	192.168.0.10	UDP	224.1.1.6	1234	lock	7634	188	7	Enable
7	Port 1	192.168.0.10	UDP	224.1.1.7	1234	lock	26399	188	7	Enable
8	Port 1	192.168.0.10	UDP	224.1.1.8	1234	unlock	0	188	7	Disable
9	Port 1	192.168.0.10	UDP	224.1.1.9	1234	lock	37783	188	7	Enable
10	Port 1	192.168.0.10	UDP	224.1.1.10	1234	lock	22286	188	7	Enable
11	Port 1	192.168.0.10	UDP	224.1.1.11	1234	lock	43392	188	7	Enable
12	Port 1	192.168.0.10	UDP	224.1.1.12	1234	lock	41967	188	7	Enable
13	Port 1	192.168.0.10	UDP	224.1.1.13	1234	lock	42227	188	7	Enable
14	Port 1	192.168.0.10	UDP	224.1.1.14	1234	lock	40942	188	7	Enable
15	Port 1	192.168.0.10	UDP	224.1.1.15	1234	lock	41069	188	7	Enable
16	Port 1	192.168.0.10	UDP	224.1.1.16	1234	lock	39769	188	7	Enable
17	Port 1	192.168.0.10	UDP	224.1.1.17	1234	lock	23828	188	7	Enable

4.1.3. TS/IP-Out Status

This is the page of TS over IP Output status. It includes port, protocol, target IP, port number, mode, program and enable status. The “Program” item will display the bit rate(Kbps) in the “DVB” mode.



TS over IP Out Status

Channel	Ethernet Card	Uni/Multicast	Protocol	Target IP	UDP/RTP Port	Mode	Program	Channel Enable
1	Port 1	Multicast	UDP	224.1.1.1	1234	DVB	12576	Enable
2	Port 1	Multicast	UDP	224.1.1.2	1234	DVB	44352	Enable
3	Port 1	Multicast	UDP	224.1.1.3	1234	DVB	41928	Enable
4	Port 1	Multicast	UDP	224.1.1.4	1234	IPTV	XING KONG	Enable
5	Port 1	Multicast	UDP	224.1.1.5	1234	IPTV	Channel [V]	Enable
6	Port 1	Multicast	UDP	224.1.1.6	1234	IPTV	XINGKONG INT	Enable
7	Port 1	Multicast	UDP	224.1.1.7	1234	DVB	71984	Enable
8	Port 1	Multicast	UDP	224.1.1.8	1234	IPTV	1349 Channel [V	Enable
9	Port 1	Multicast	UDP	224.1.1.9	1234	IPTV	1353 Fox News H	Enable
10	Port 1	Multicast	UDP	224.1.1.10	1234	IPTV	1362 Fox Crime	Enable

4.2. Modules

4.2.1. P01MS（reMUX & Scrambler Extenson Subboard）

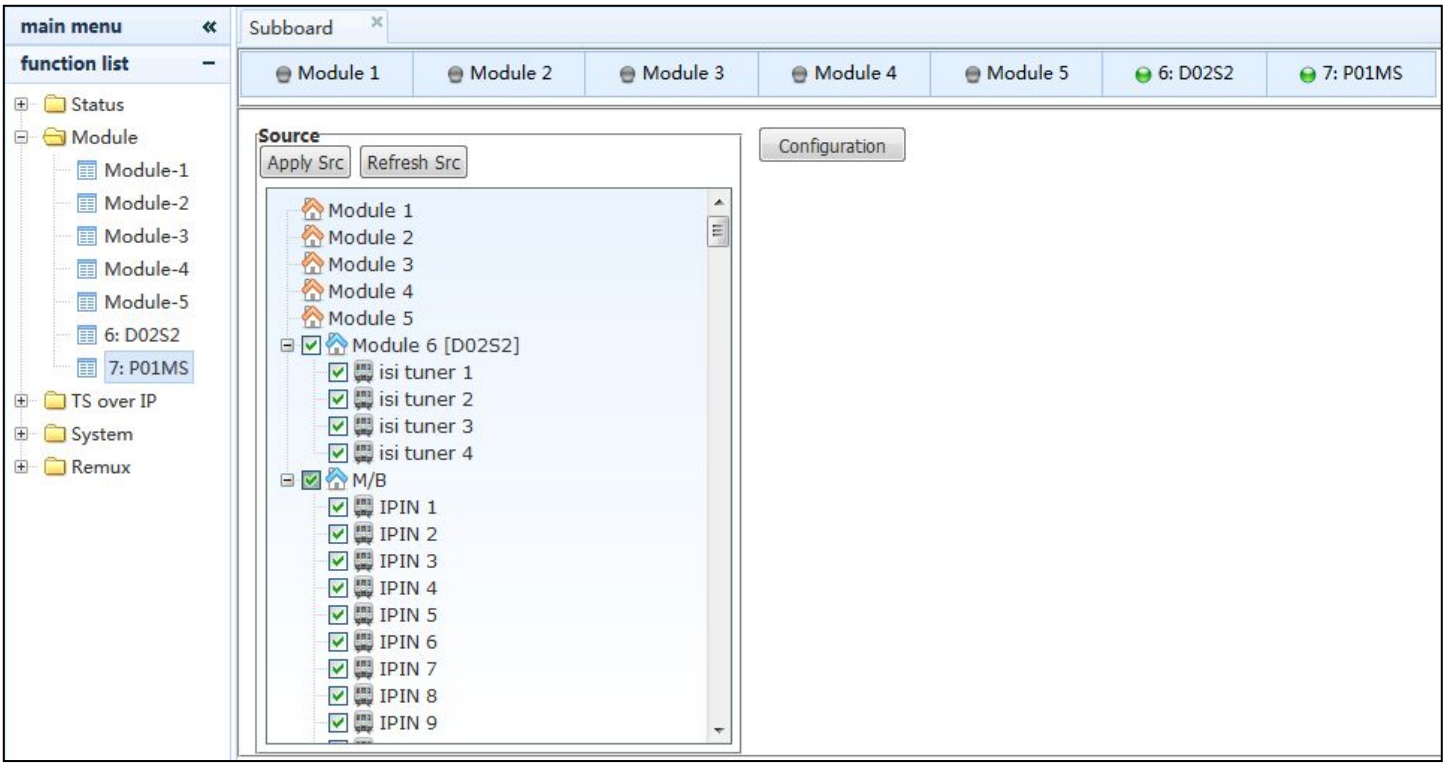
The P01MS is a 32 independent channels DVB-TS re-multiplex and Scrambler subboard which can support 32 scrambling transport streams to the TS/IP or other modules to output. There is no hardware input/output interface. It only can be installed on the main board in the chassis. It can support up to four different Simulcrypt scramble or BISS 1/E scramble by using the DVB common scrambling algorithm and built-in CW generator.

4.2.1.1. Source and Services Settings

P01MS needs to be installed in the 'Module-7' to receive the TS from the TS/IP or other modules, operation steps of input source and services are as follows.

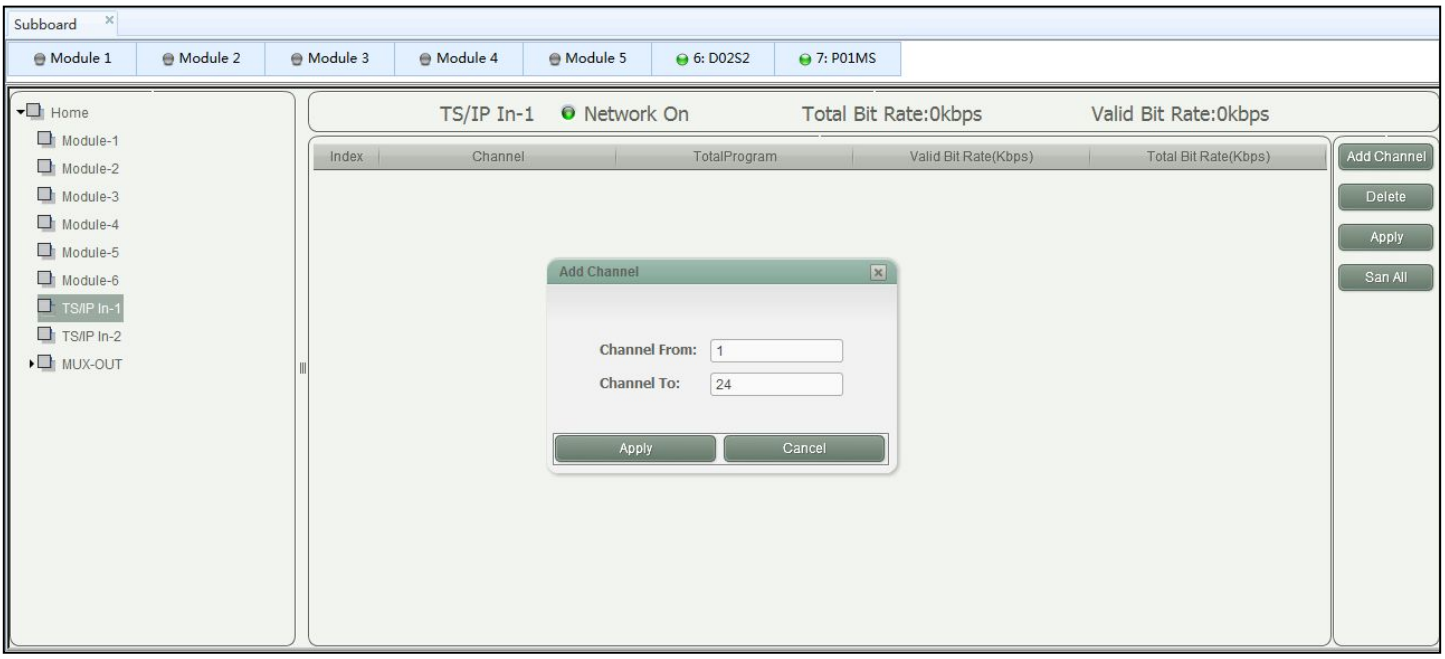
Step 1:

User needs to select the channels from TS/IP or other modules to send TS to P01MS firstly, and then click 'Apply Src' to get into the configuration page of P01MS, as it shown in figure below.

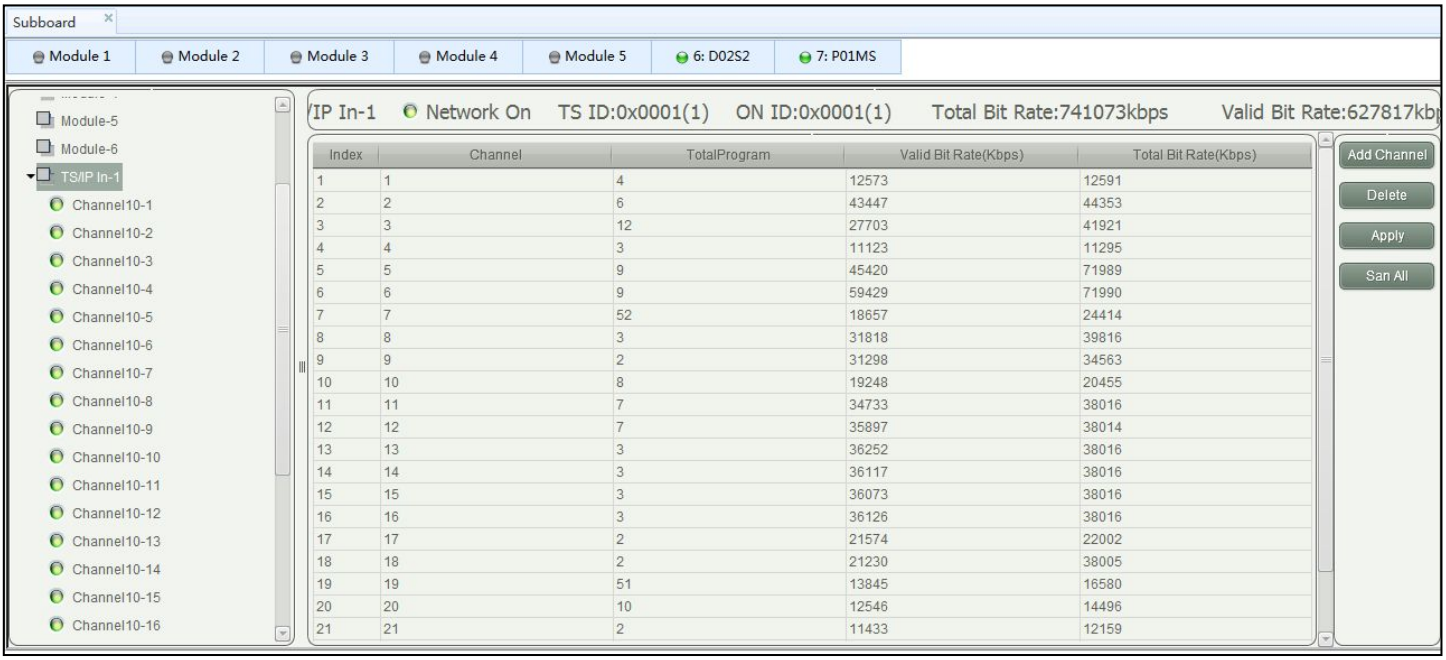


Step 2:

User needs to add the channels in the P01MS to receive the TS from the TS/IP or other modules. Such as, select the 'TS/IP In-1' of the left list, and then click the 'Add Channel' to input 1 and 24. User will build 24 TS channels between the TS/IP-1 and P01MS, as it shown in figure below.

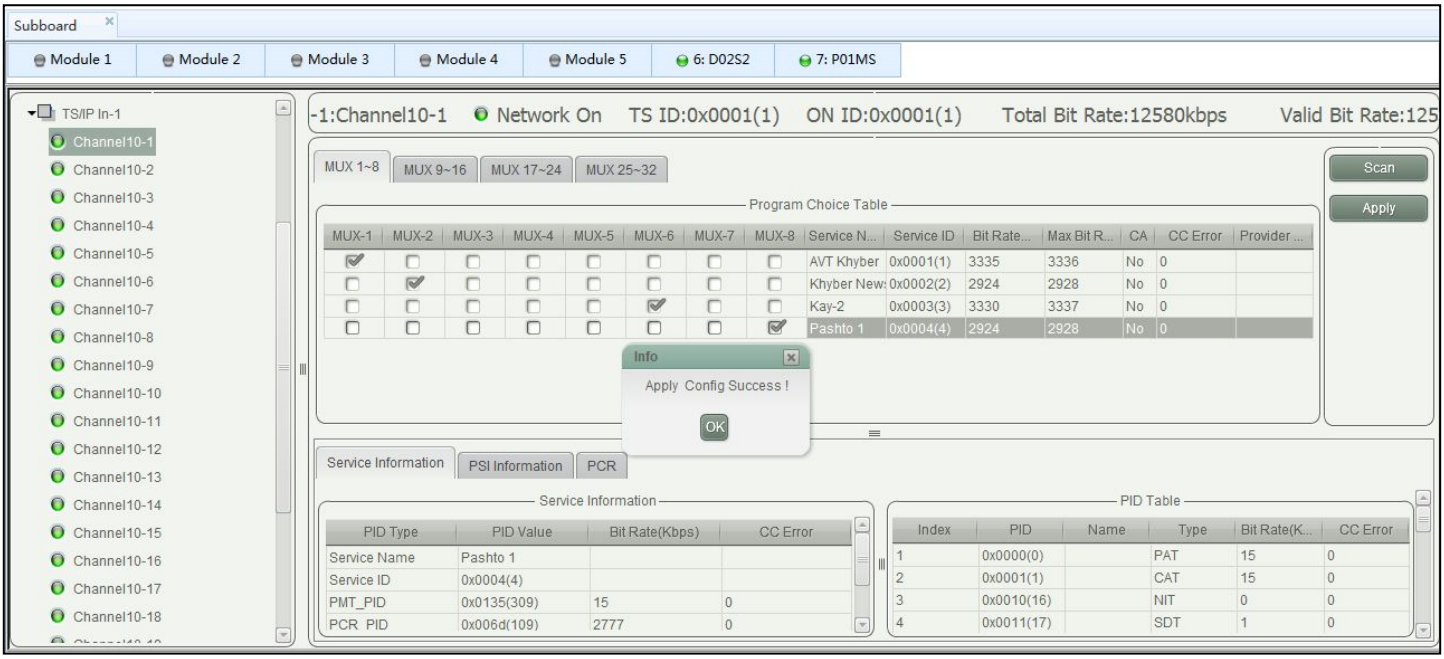


After that, user can click the 'Scan All' to check the programs and bit rate of each channel, as it shown in figure below.



Step 3:

User can click ‘Channel10-1’ to ‘Channel10-24’ to get into the configuration page. As it shown in figure below, the programs can be selected to MUX-1 to MUX-32. And also, user can check the service and PSI information.



***Attention:** The selection of MUX programs only be saved after the configuration of Step 4.

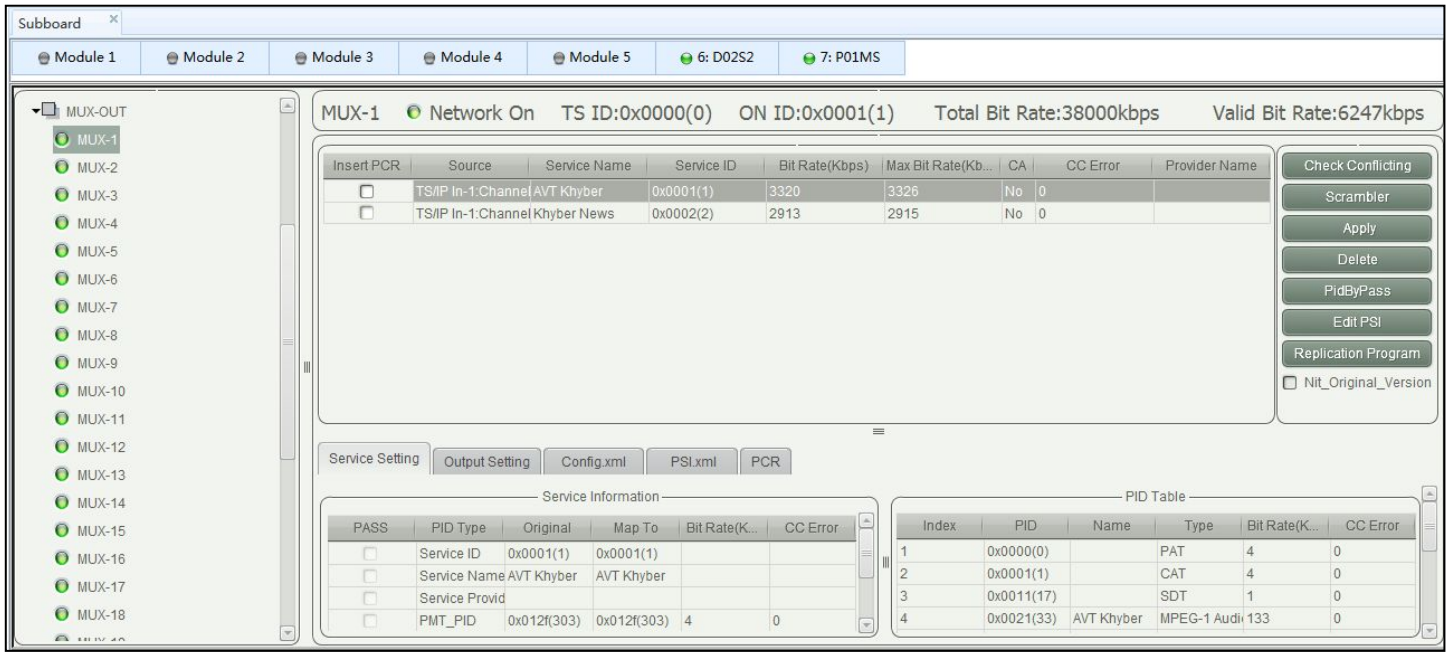
4.2.1.2. Services Re-Multiplex

P01MS has 32 independent multiplexed TS to the GX-5000 chassis for output of TS/IP ports or other modules,, operation steps of services re-multiplex are as follows.

Step 1:

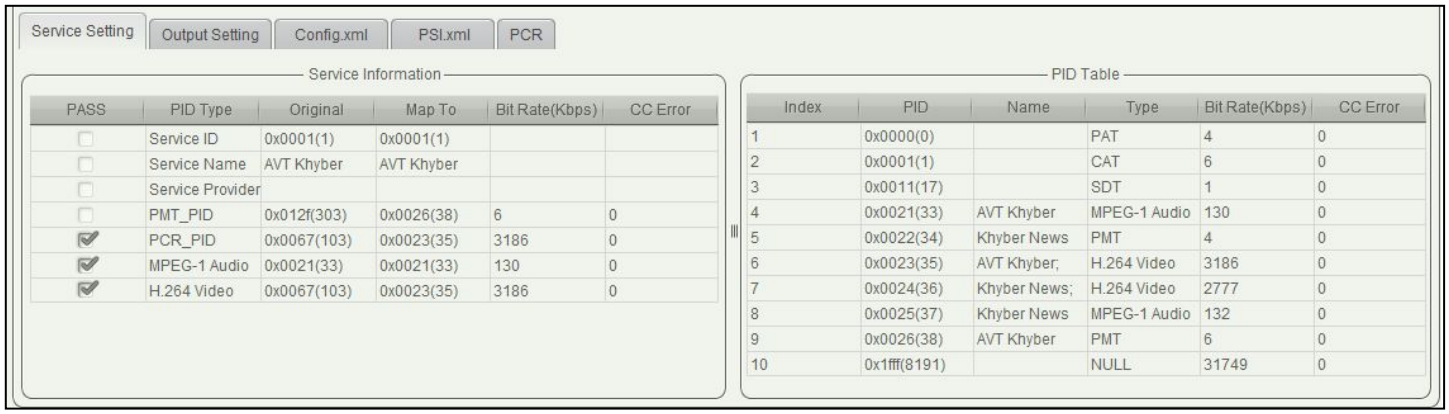
User can click ‘MUX-1’ to ‘MUX-32’ of ‘MUX-OUT’ to get into the configuration page. As it shown in figure below, all selected programs from other modules or TS/IP are listed here, user can also check some information of each program. The button ‘Check Conflicting’ is used to rearrange service ID for all programs to avoid ID confliction. User also can bypass some PID and configure PSI/SI data here. User can insert PCR for every program by hooking in the small box.

***Attention:** User has to click the ‘Apply’ to save all the settings after the configuration.

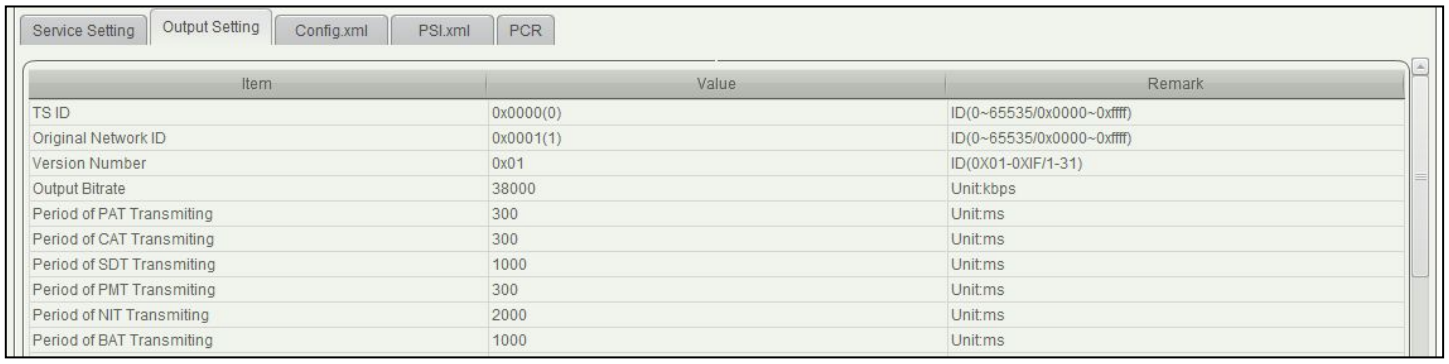


Step 2:

a. User can check and configure the service information of each program by clicking the sheet 'Service Setting', as it shown in figure below.



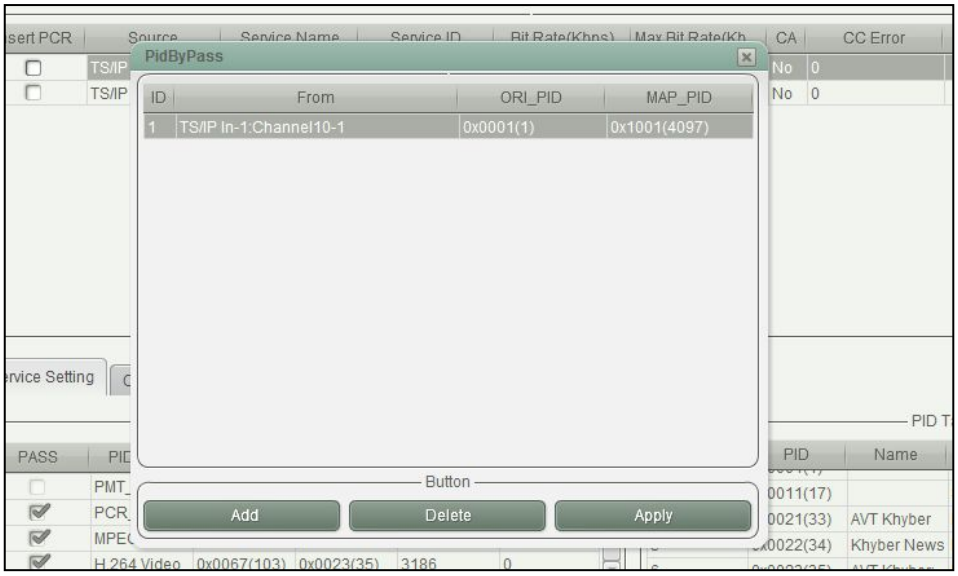
b. User can also check and configure output parameters of each program by clicking the sheet 'Output Setting', as it shown in figure below.



Step 3:

User can bypass some PID by clicking the button 'PidByPass', then a submenu will come up, click the button 'Add' to create a new row of PID setting, as it shown in figure below, user can select a PID from other modules or TS/IP ports, and then set the value of 'map_pid' for output. After selecting PID which will be bypassed, user can click the button 'Apply' to submit.

***Attention:** User can jump this step if there is no need to bypass PID.

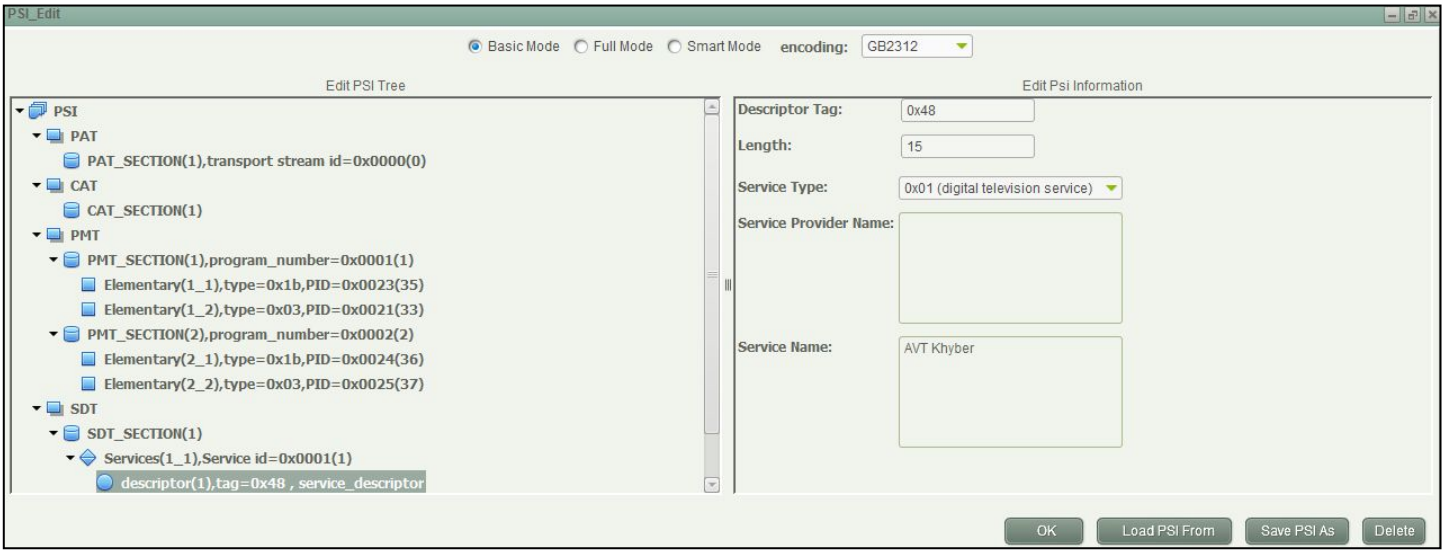


Step 4:

User can edit PSI information here, operation procedures are below.

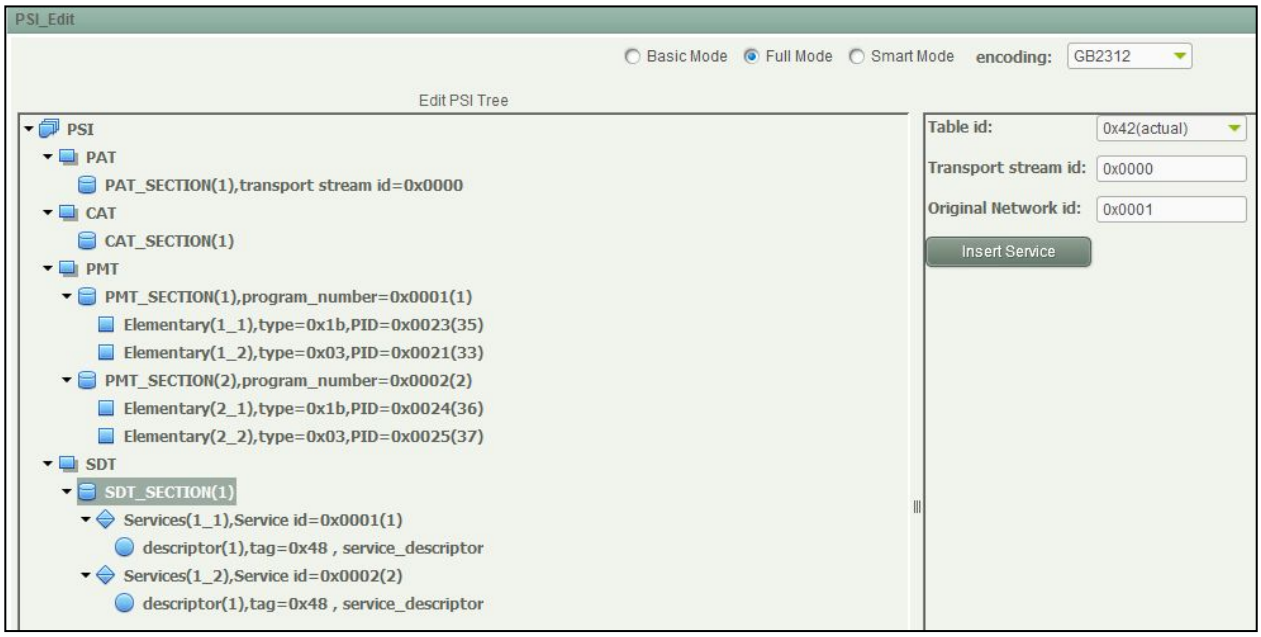
***Attention:** User can jump this step if there is no need to edit PSI information.

a. Click the button 'Edit PSI', then a submenu will come up, as it shown in figure below, here you can edit the PSI information including PAT, CAT, PMT, and SDT.



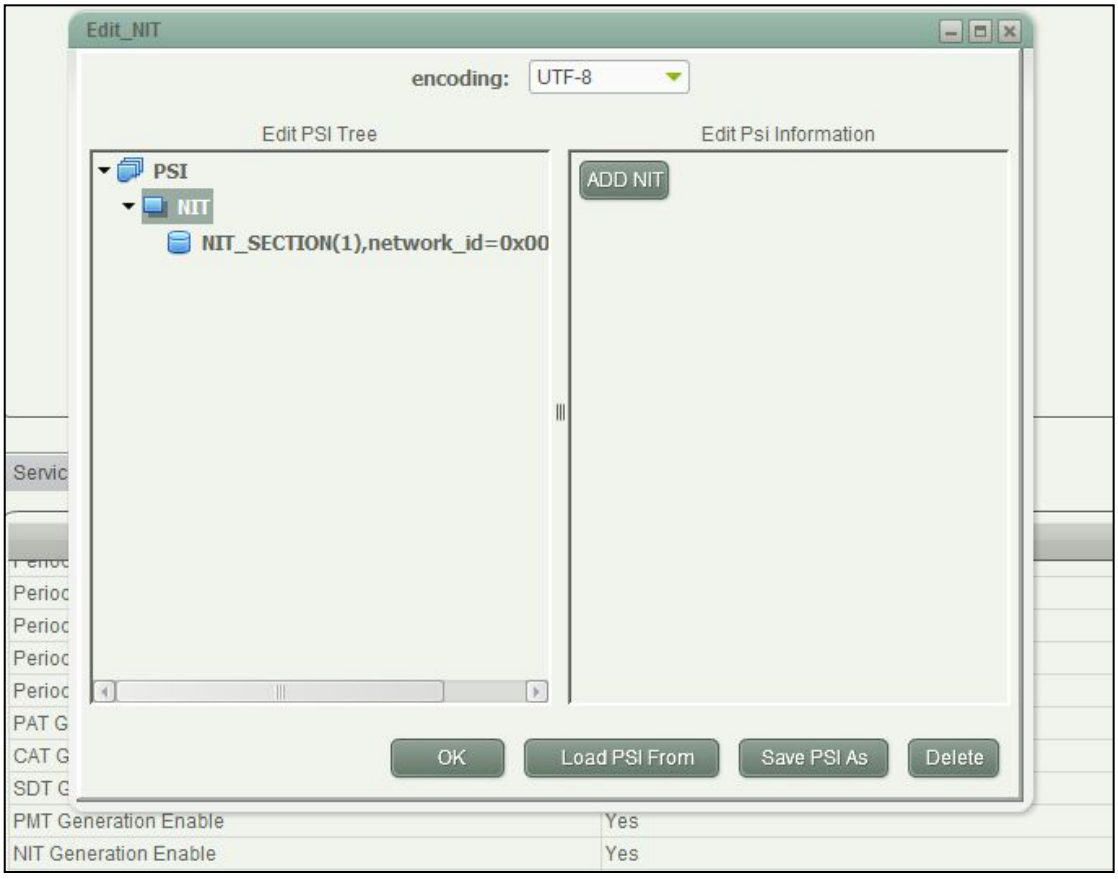
b. For example, if the user wants to add a new piece of SDT information, click “SDT” on the left column, then click the button “ADD SDT” on the right column, after that, an option like “SDT_SECTION(1)……” will come up on the left column, click it, then user can insert service information or TS information.

c. If the user wants to insert service information, click the button“Insert Service”, then a table will come up, in this table, user can select descriptor information which he/she wants to insert, as it shown in below.



d. If the user wants to generate a new piece of NIT or BAT information, select the ‘Yes’ of ‘NIT/BAT Generation Enable’ in the ‘Output Setting’. Firstly, select the NIT source. If the user wants to generate a new

NIT, need to select the 'Current', then click the button 'OK'. Secondly, then click the button "ADD NIT" on the right column, after that, an option like "NIT_SECTION(1)……" will come up on the left column, click it, then user can insert service information or TS information, as it shown in below.

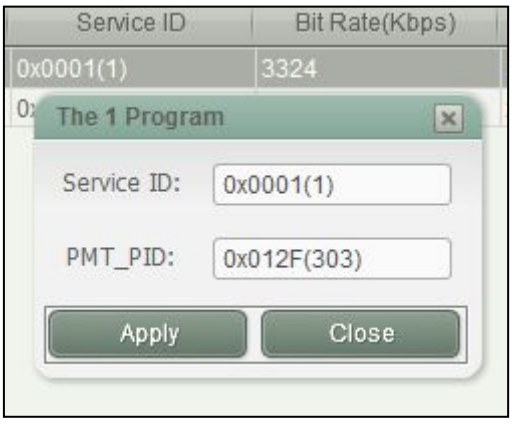


Step 5:

After these settings, User can click the button 'Check Conflicting' to input the Service ID and PID to confirm whether there are the same ID, as it shown in figure below.

Step 6:

If the user wants to recover the new settings of service ID and other PID from the original values, click the button 'Replication Program'. Input the service ID and PMT PID to confirm which service need to re recovered, as it shown in figure below.



Step 7:

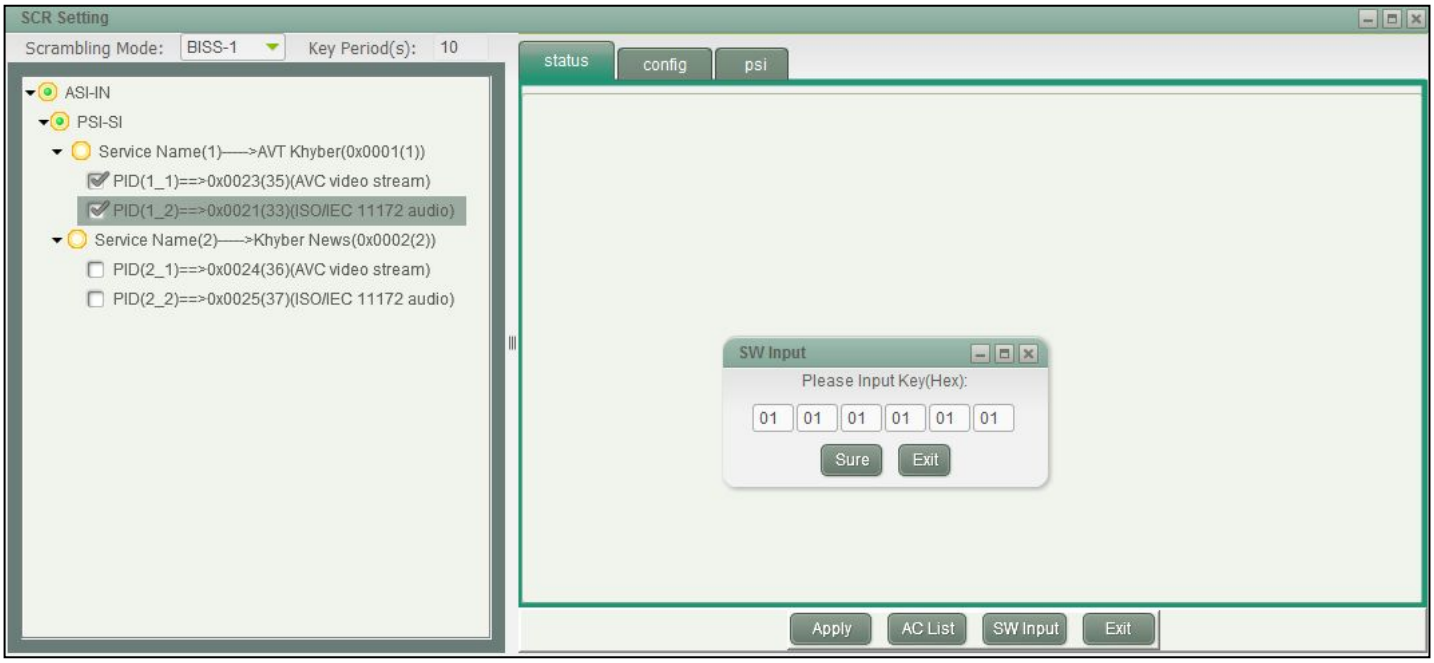
After all parameters are ready, click the button "Apply" to submit your configuration, if it's working well, the grey light will turn to green, it means there is no error of the re-multiplexed transport stream. If the light is yellow, it means there are some errors in the output transport stream, user has to review all related parameters.

4.2.1.3. Services Scramble

P01MS supports TS scrambling including BISS-1, BISS-E and 4 different Simulcrypt modes. User can scramble the re-multiplexed TS by following the operations below.

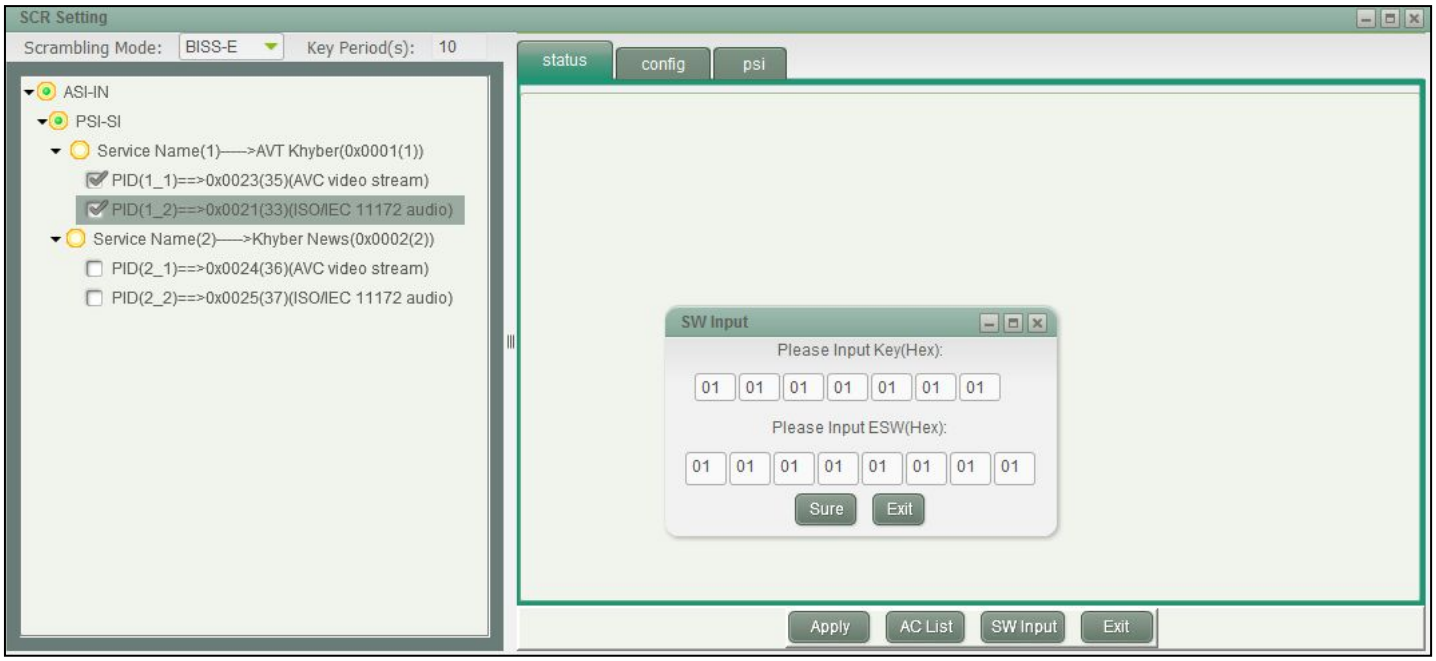
A. BISS-1

On MUX page, click the button 'Scrambler' to open a submenu, user can set the option 'Scrambling Mode' to 'BISS-1' on the top of the submenu, click the button 'SW Input' to configure the Hex key, then selecting programs by hooking in the small box, as it shown in figure below. These selected programs will be scrambled, user can also choose only to scramble audio signal or video signal. After all parameters get ready, click the button 'Apply' to submit the configuration.



B. BISS-E

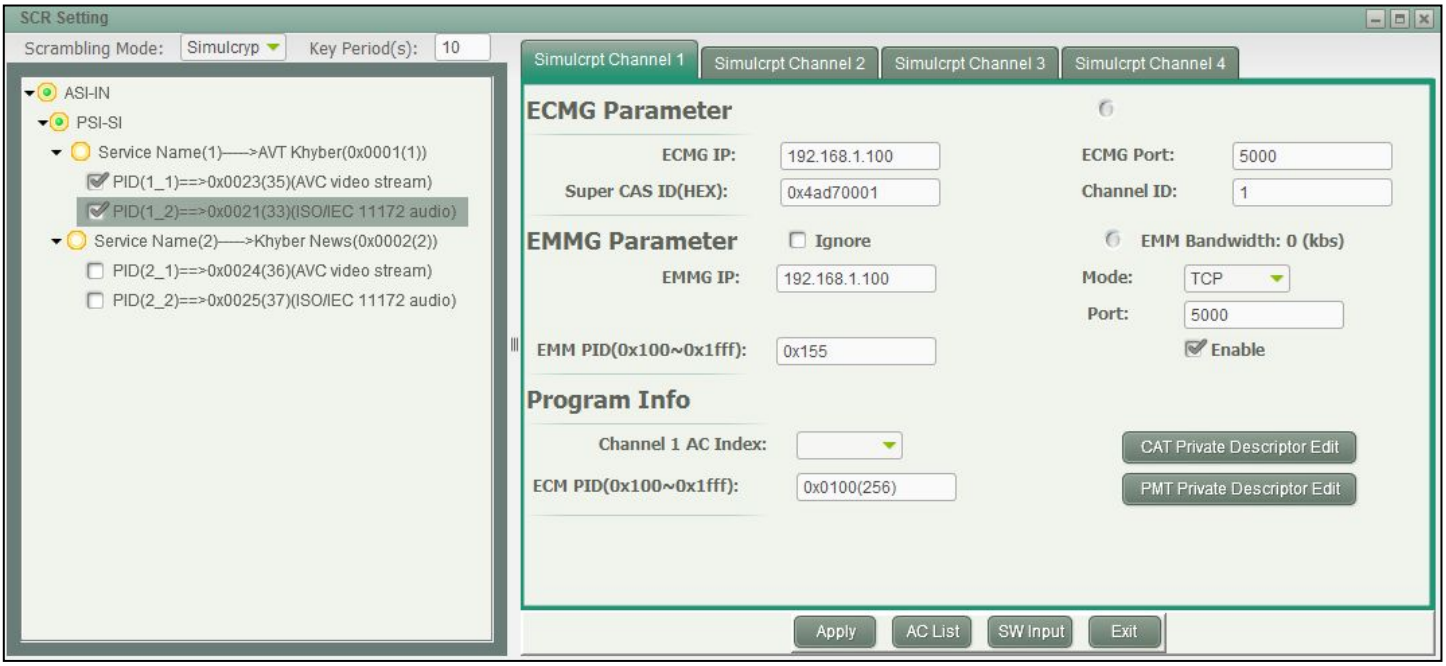
On MUX page, click the button ‘Scrambler’ to open a submenu, user can set the option ‘Scrambling Mode’ to ‘BISS-E’ on the top of the submenu, click the button ‘SW Input’ to configure the Hex key and Hex ESW, then selecting programs by hooking in the small box, as it shown in figure below. These selected programs will be scrambled, user can also choose only to scramble audio signal or video signal. After all parameters get ready, click the button ‘Apply’ to submit the configuration.



C. Simulcrypt

Step 1:

On MUX page, click the button ‘Scrambler’ to open a submenu, user can set the option ‘Scrambling Mode’ to ‘Simulcrypt’ on the top of the submenu. User can choose 4 different simulcrypt system by click sheets ‘Simulcrypt Channel 1/2/3/4’. hook the box ‘Enable’ to enable simulcrypt function, then user can configure parameters of ECM and EMM, as it shown in figure below. User has to configure these parameters according to different simulcrypt systems.

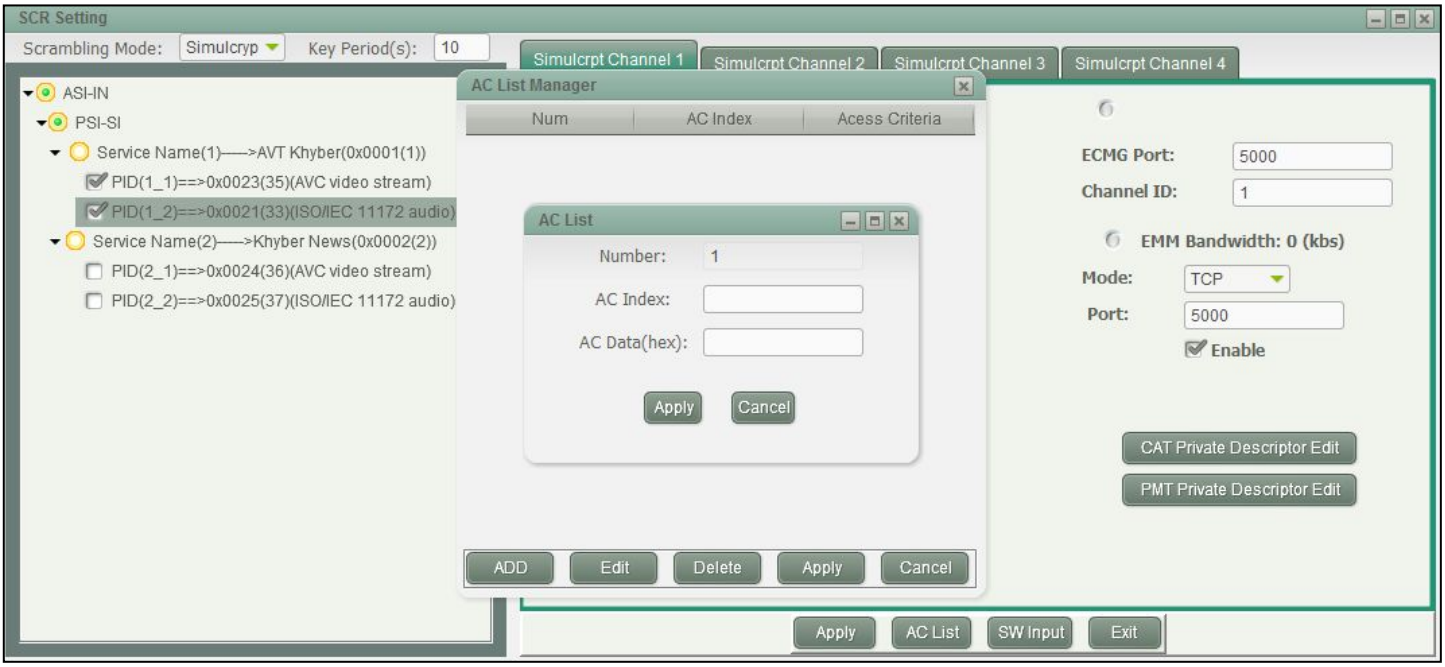


Menu Name	Description
ECMG IP	The IP address of simulcrypt server for receiving ECM information.
ECMG PORT	The port number of simulcrypt sever for receiving ECM information.
Super CAS ID(HEX)	A examination key for exchanging ECM information between the module and the sever.
Channel ID	The sequence number of simulcrypt channel.
Ignore	Some simulcrypt system doesn’ t need EMMG function, user can close EMMG by hooking in the small box.
EMMG IP	The IP address of simulcrypt server for receiving EMM information.
Mode	The EMM package mode, user can select between TCP and UDP.
Port	The port number of TCP/UDP package.

EMM PID(0x100~0x1fff)	The PID number of EMM.

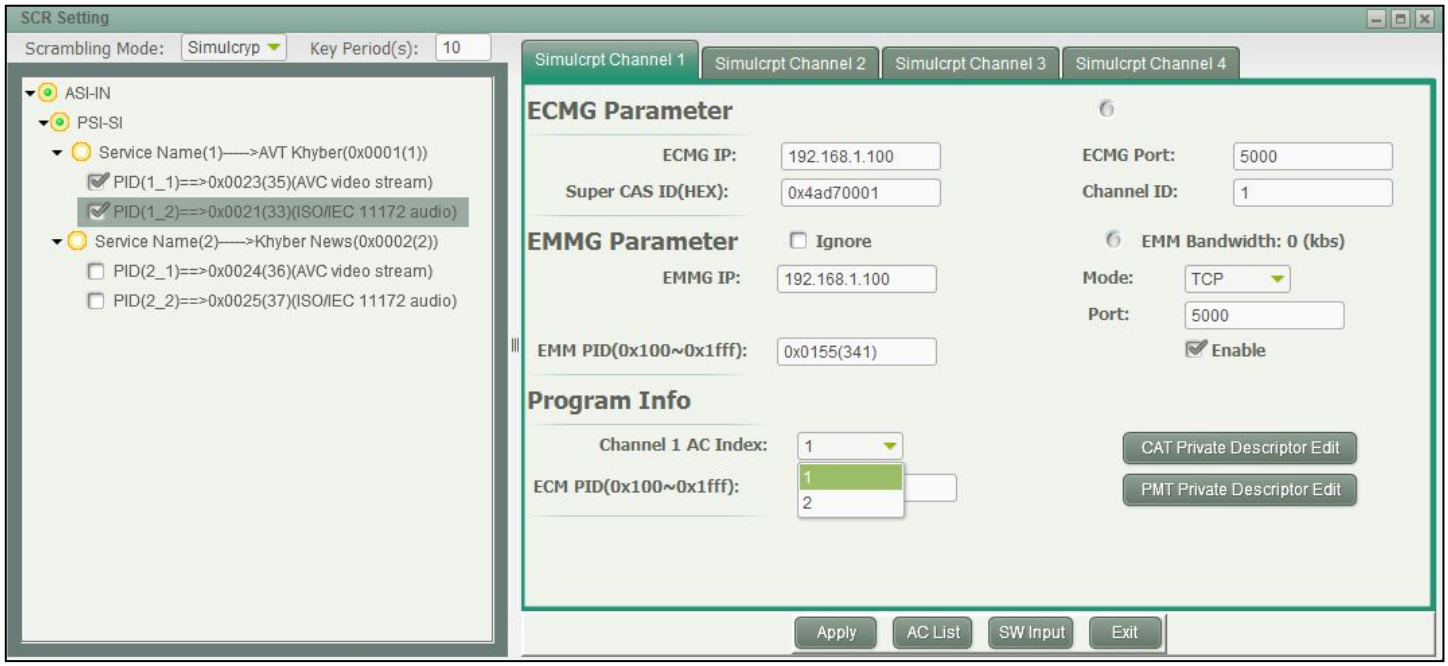
Step 2:

Following step 1, user has to click the button 'AC List' to configure AC data for each program, as it shown in figure below. 'AC Index' is the program sequence, 'AC Data(hex)' is the hex key of each program. The total quantity of AC list is based on the total quantity of programs which user wants to be scrambled. Click the button 'Apply' to submit your configuration.



Step 3:

After setup2, on left column, user can click program's service name, and assign AC index number for each program. Then user can hook in the small box to select video PID and audio PID, as it shown in figure below, these hooked audio and video signals will be scrambled. User also can edit the CAT/PMT private descriptor data for ECM/EMM.



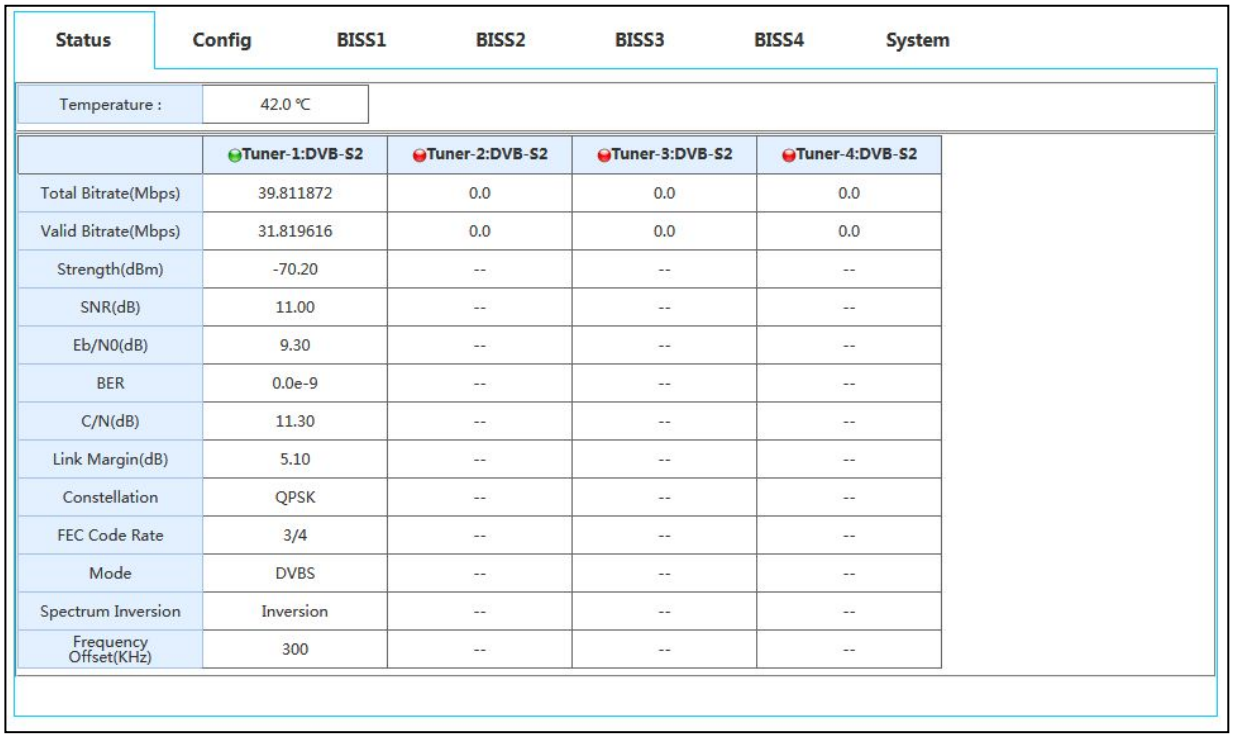
Step 4:

After setting all configuration ready, click ‘Apply’ to submit. Wait for a while, the two gray lights on this page will turn to green if scrambling successful.

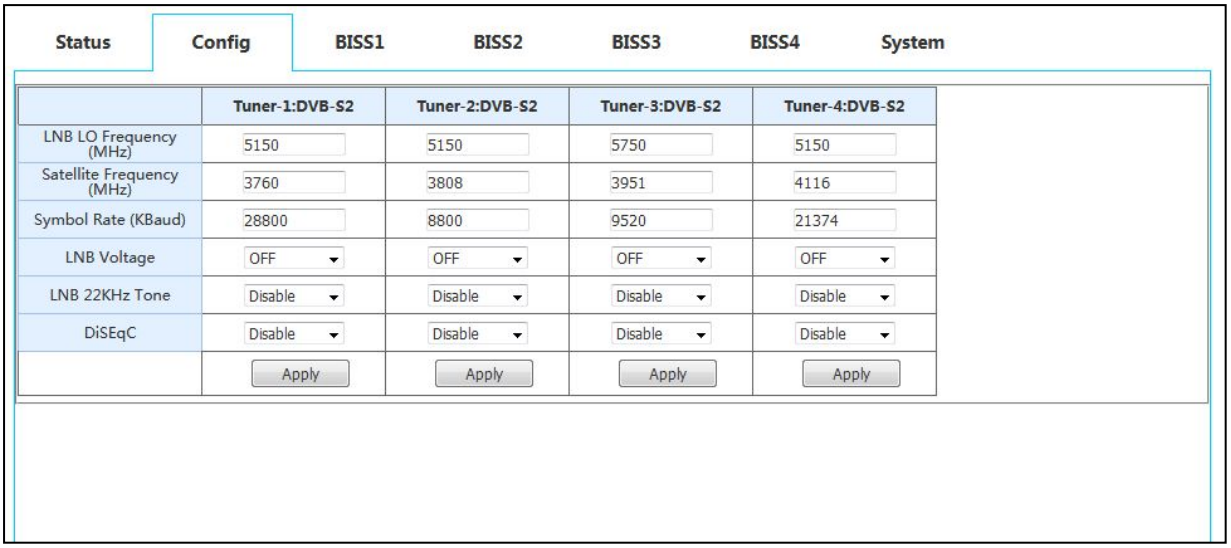
4.2.2. D01S2（4 x DVB-S/S2 Demodulator Module）

The D01S2 is a 4 independent channels DVB-S/S2 demodulator module, users can setup them separately. And this module supports both BISS-1 and BISS-E decryption function too. There are 8 preset BISS keys for each transport stream. This module includes T2-MI demultiplex, up to supports 32 PLP ID. It means this module can transfer 32 TS to chassis from 4 tuners.

4.2.2.1. Status



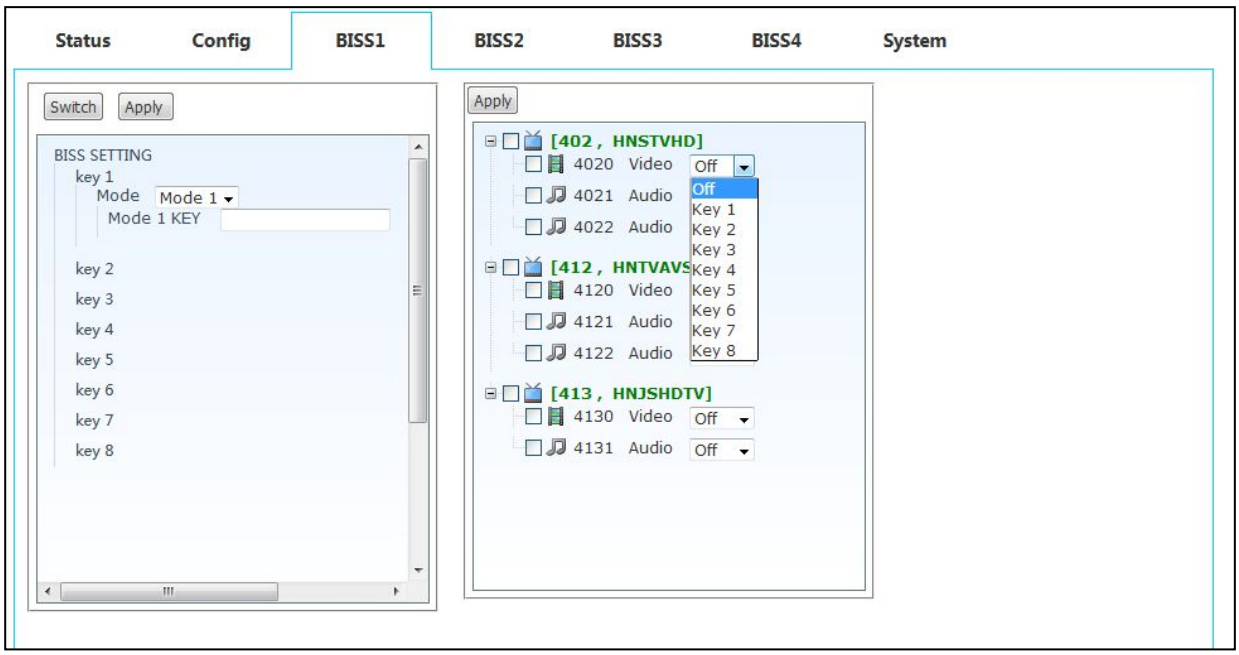
4.2.2.2. Config



Menu Name	Description
LNB LO Frequency	To configure the local oscillator frequency according to the right satellite, its range is from 1000 to 26,500MHz.
Satellite Frequency	To configure the satellite down link frequency according to the right

	satellite, its range is from 1000 to 26,500MHz.
Symbol Rate	To configure the symbol rate of QPSK signal, its range is from 1000 to 45,000KBaud.
LNB Voltage	To select the correct LNB voltage output from the F-connector, user can choose between Off, 13V and 18V.
LNB 22KHz	To activate the LNB 22KHz control signal to the LNB, user can select between On and Off.
DiSEqC	To configure the DiSEqC control, user can select Port A, Port B, Port C, Port D or DiSEqC OFF.

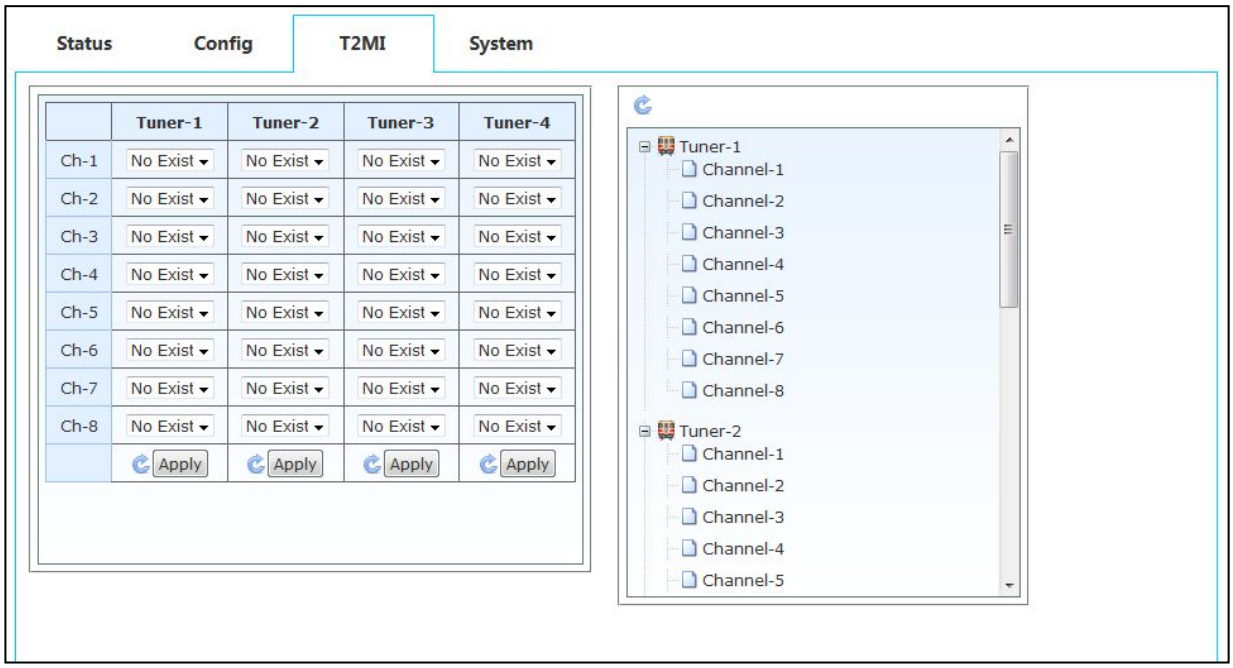
4.2.2.3. BISS



Menu Name	Description
BISS1-4	1 to 1 (BISS1 to Tuner1) BISS setup menu
BISS Mode	To setup the BISS mode, user can choose between Mode-1 and Mode-E.
ID and Key	Input Key in BISS-1 mode and input ID and Key in BISS-E mode.
Program List	To configure the programs should be decrypted.

***Attention:** Up to 5 PID can be decrypted by one key.

4.2.2.4. T2-MI

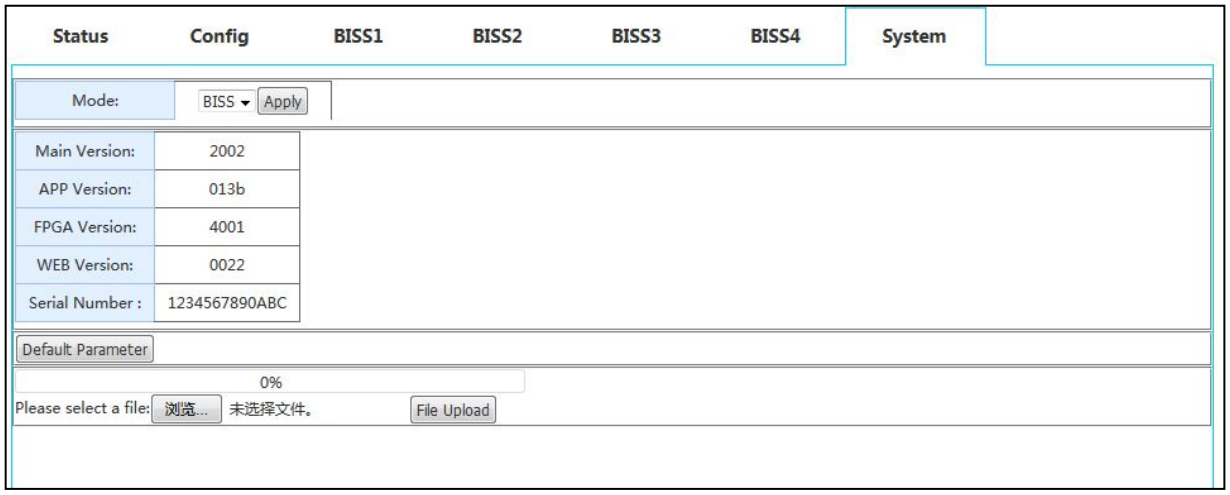


Menu Name	Description
Left part	There will be a PLP ID list in every channel if the tuner signal locked. User can select one PLP ID to demultiplex to make one TS.
Right part	Display the programs list in one channel after the PLP ID Selection.

***Attention:** There will be up to 32 channels sources supply to other modules to use in the T2-MI mode.

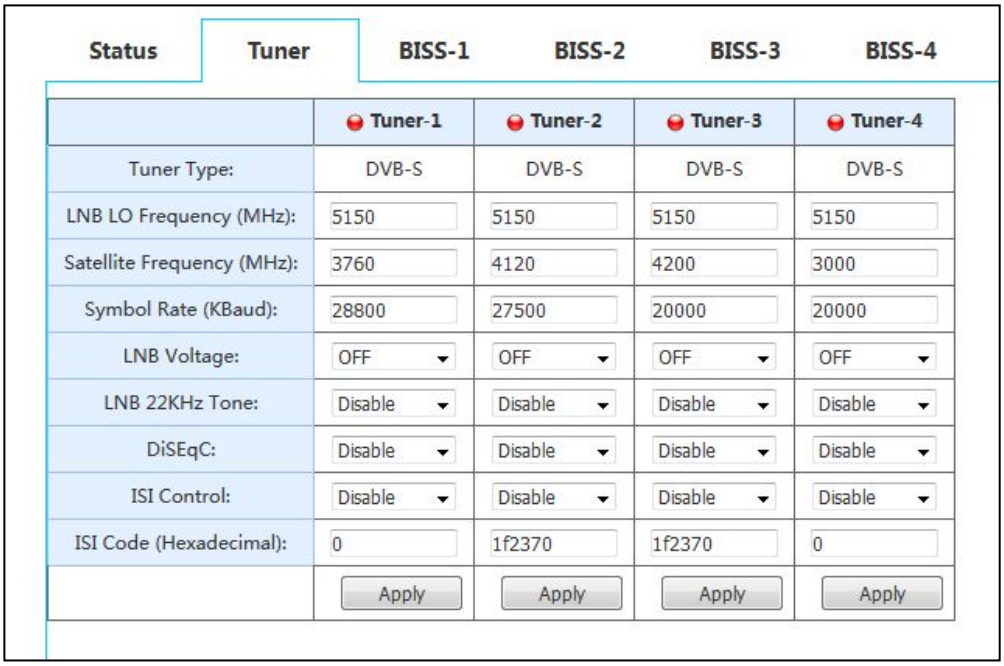
4.2.2.5. System

Menu Name	Description
Mode	Select the working mode of module, includes BISS and T2-MI
Version	The version number of different firmware part
Serial Number	The S/N of the module
Default Parameter	Default factory settings
Upgrade	Upgrade the new firmware after uploading the 'target.tgz' file.



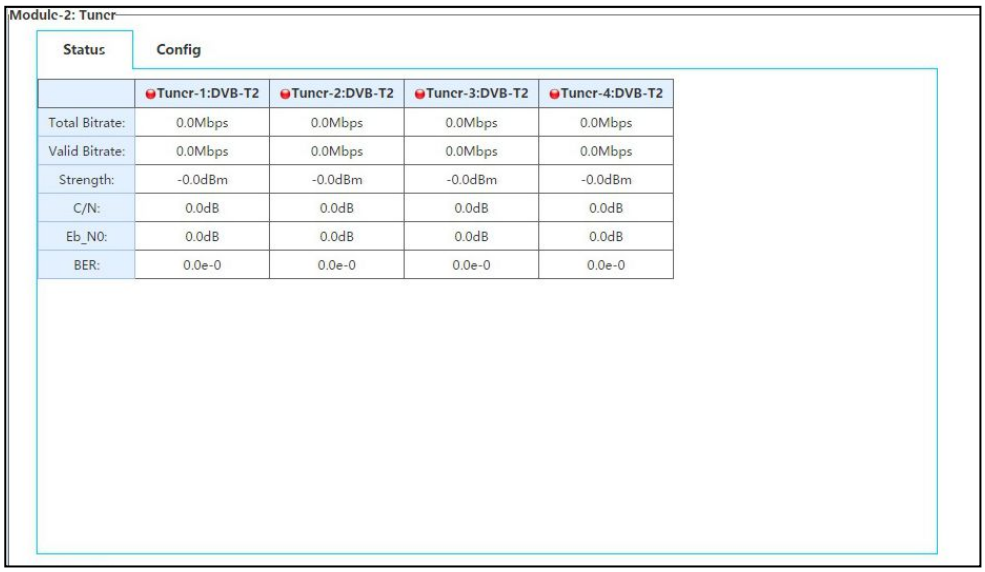
4.2.3. D02S2（4 x DVB-S/S2 Demodulator Module, Support Input Stream Indentifier）

It is similar as D01S2 in the status, configuration of tuner and BISS. There is only one additional function of tuner which is ISI code, as it shown in figure below. But this module do not support T2-MI.



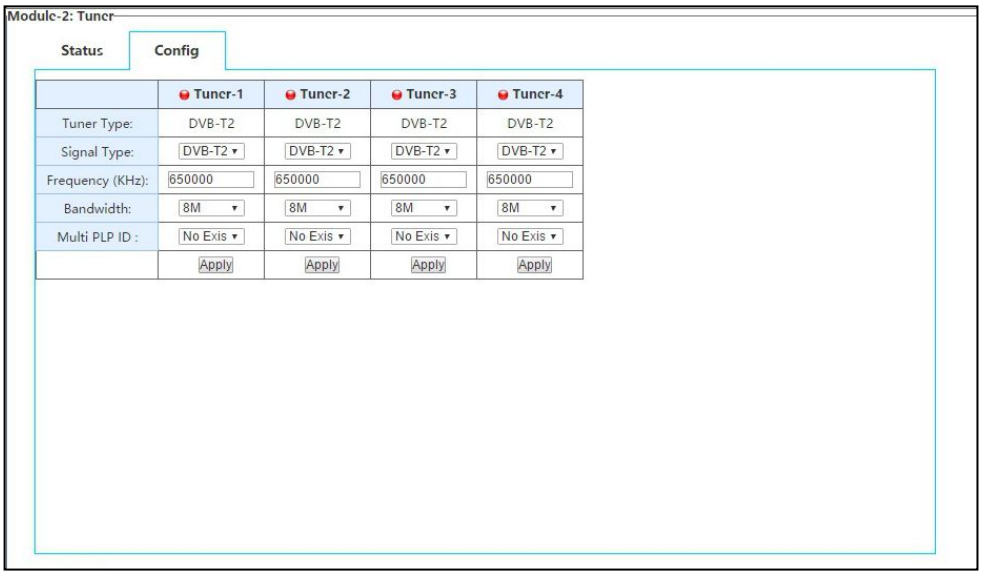
4.2.4. D01T2（4 x DVB-C/T/T2 Demodulator Module）

The D01T2 is a 4 independent channels DVB-T2/T/C demodulator module, it supports 3 different demodulation modes, DVB-T2, DVB-T and DVB-C. User can select the requirement modes. For setup as below:

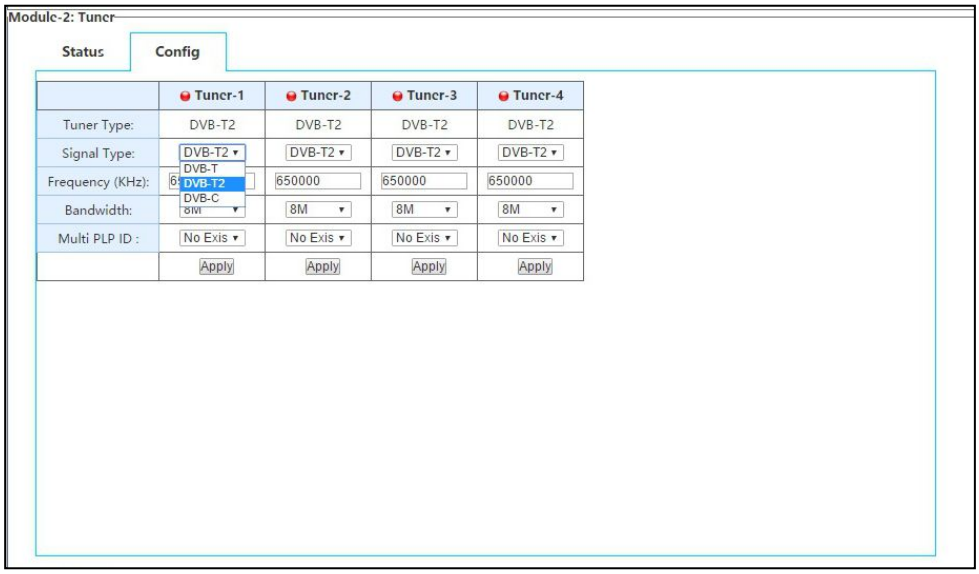


Status

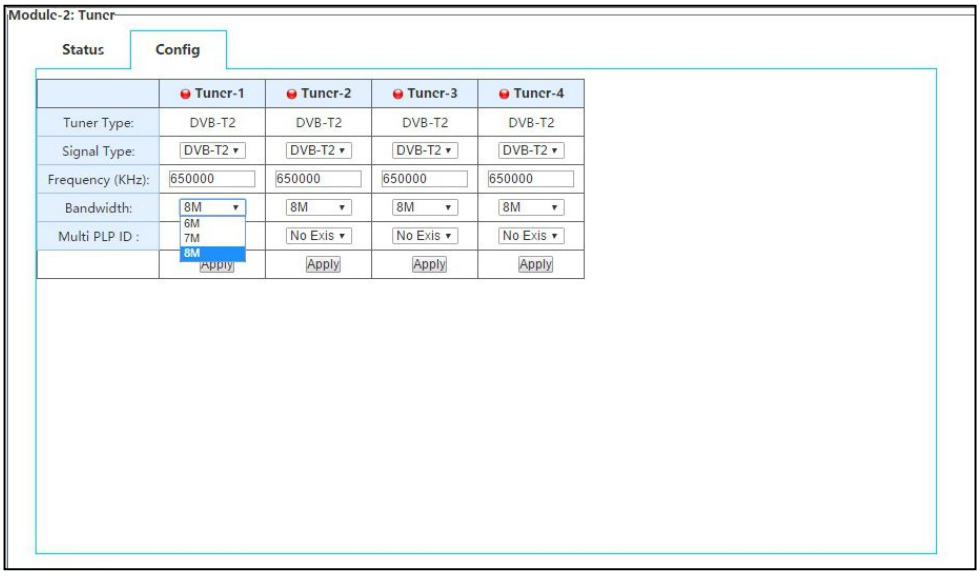
The default demodulation mode is DVB-T2, as below figure.



Default demodulation mode



Demodulation mode

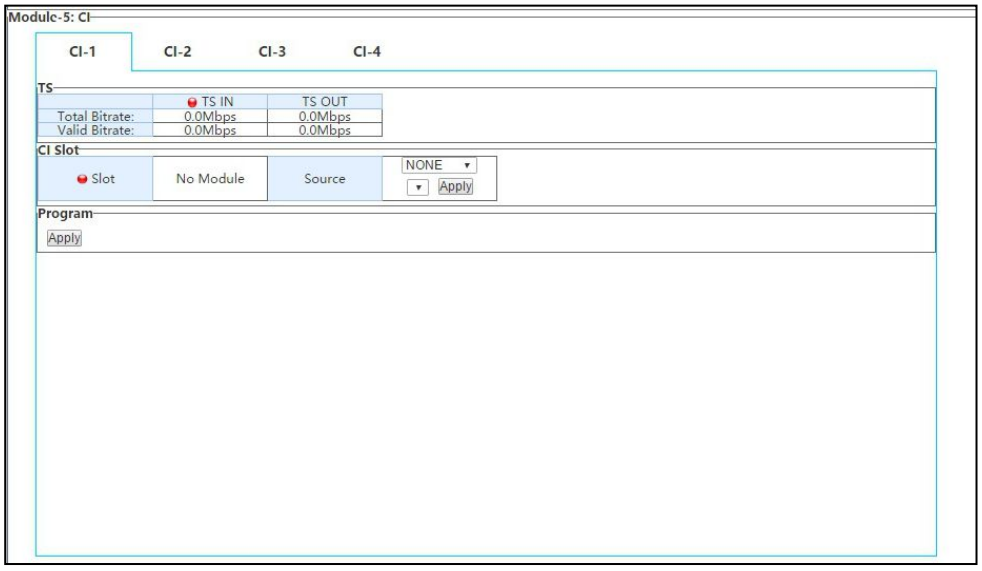


Default demodulation bandwidth

Menu Name	Description
Signal Type	Demodulation mode option
Frequency	Receiving signal frequency option
Bandwidth	Bandwidth option
Multi PLP ID	PLP option (Just for stream which includes PLP ID)

4.2.5. P01CI（4 x CI De-encryption Module）

The P01CI is a card for installing CAMs to decrypt scrambled services. It supports up to 4 CAM slots(2 inside, 2 outside). On the configure page, user will see total bitrate and valid bitrate which the slot using, CAM name which installed, transport stream source option and program list etc.

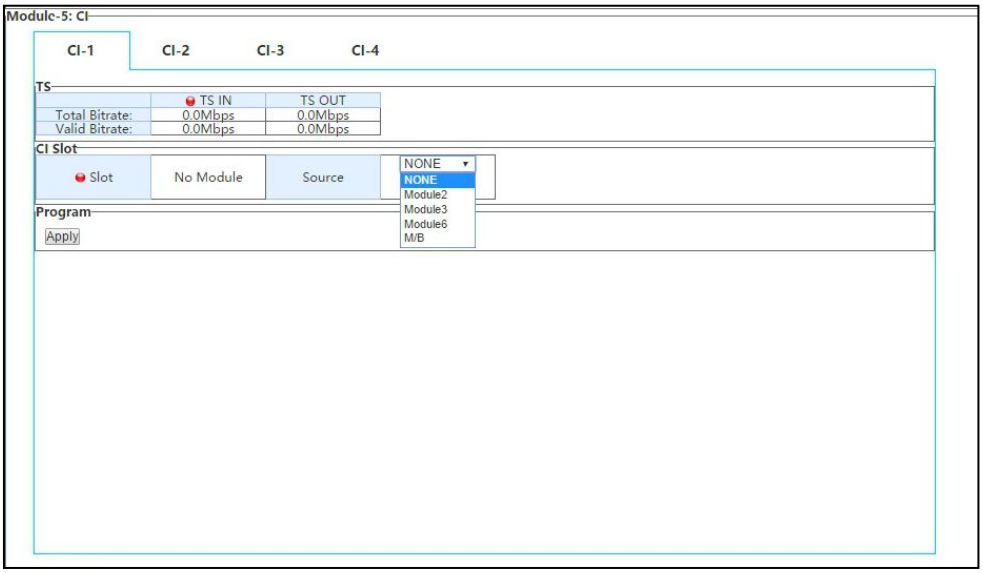


Default status

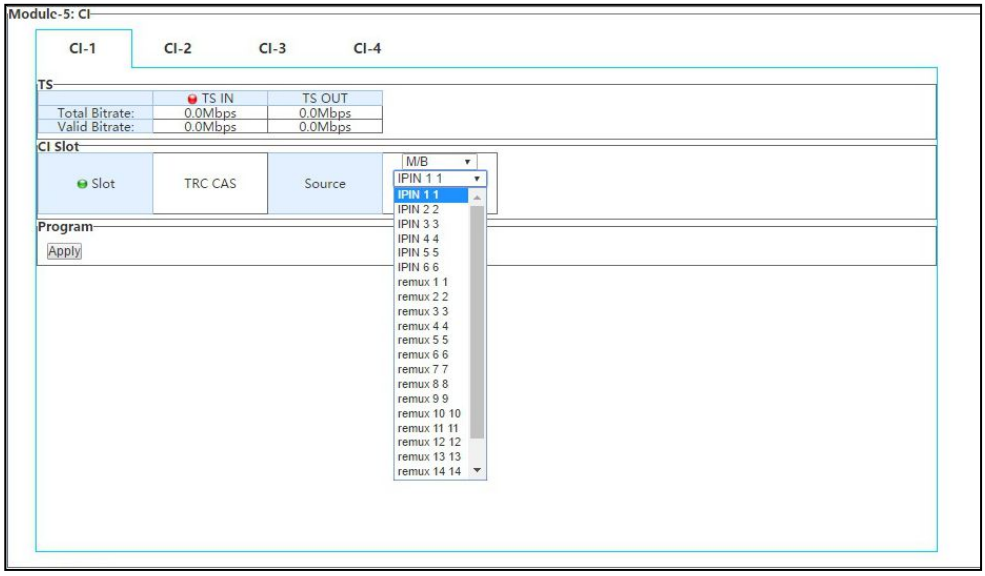
Menu Name	Description
TS IN/TS OUT	Transport stream which input and output the CI slot
Slot	CAM name or No Module which mean CAM not installed or recognized
Source	Transport stream used for CI slot, it will show which module and source are available
Program	Program list from the selected transport stream

Below is an example for CI setup:

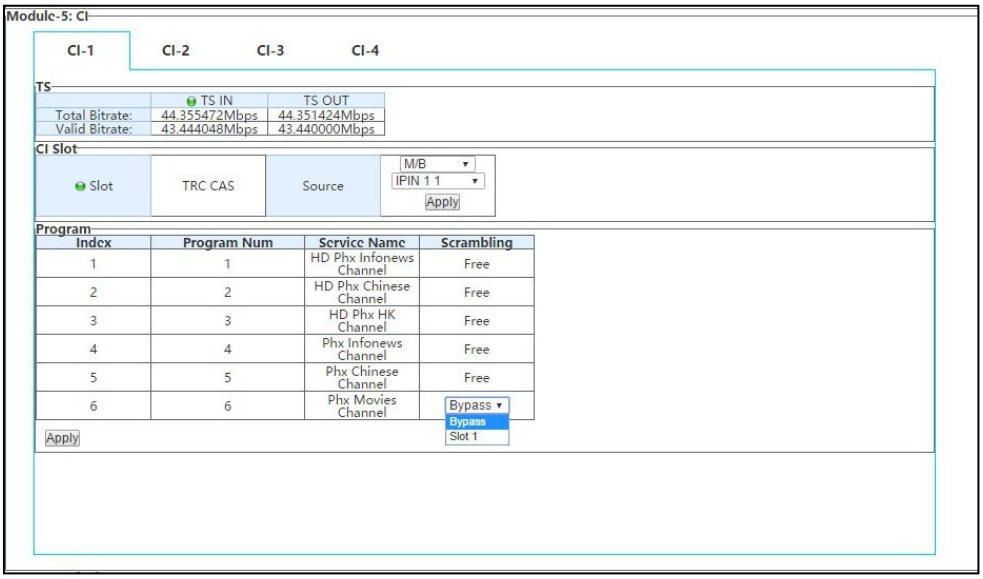
Step1: select one available module or M/B (Main board)



Step2: select the transport stream which will be used for CI slot;

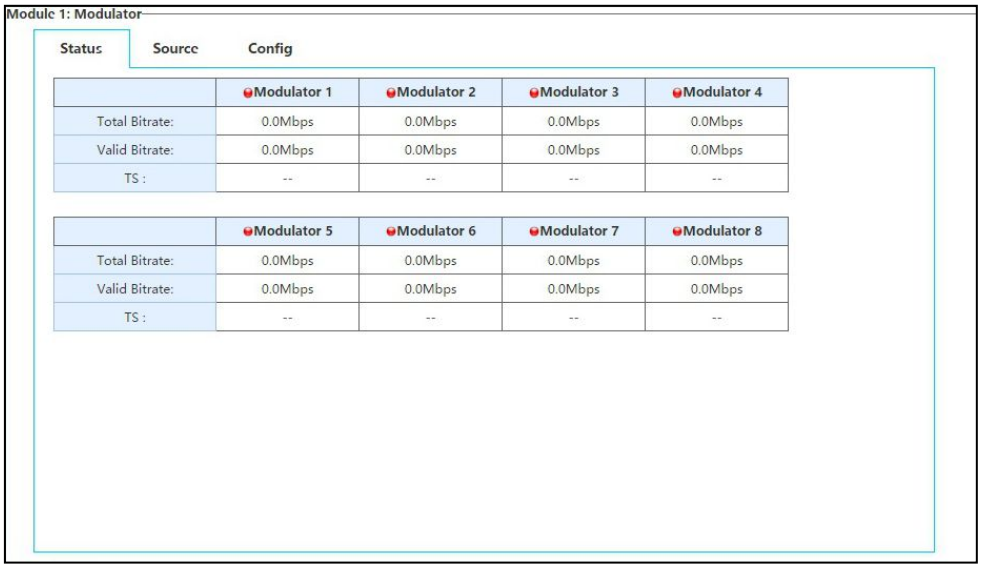


Step3: Select services which need to decrypting and click apply.

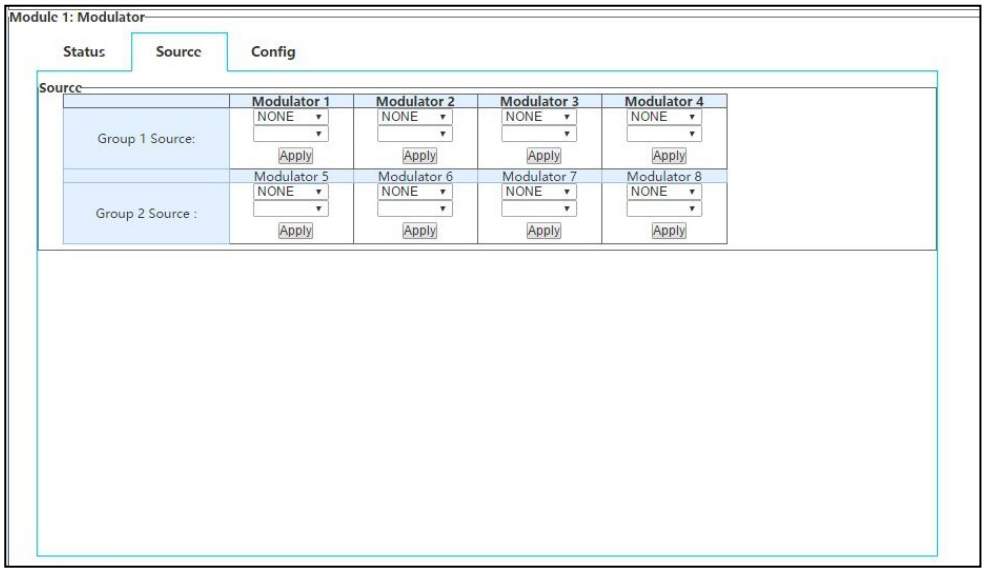


4.2.6. C01MOD（8 x QAM/2 x COFDM Modulator Module）

The C01MOD is a 8 channels, 2 groups 4 adjacent frequencies, QAM modulator. Each channel has switch for enable or disable the RF output. And each channel also can be configured with independent transport stream. Status page will show each channels working status. The spot red means channel is off or not working, green means working fine.



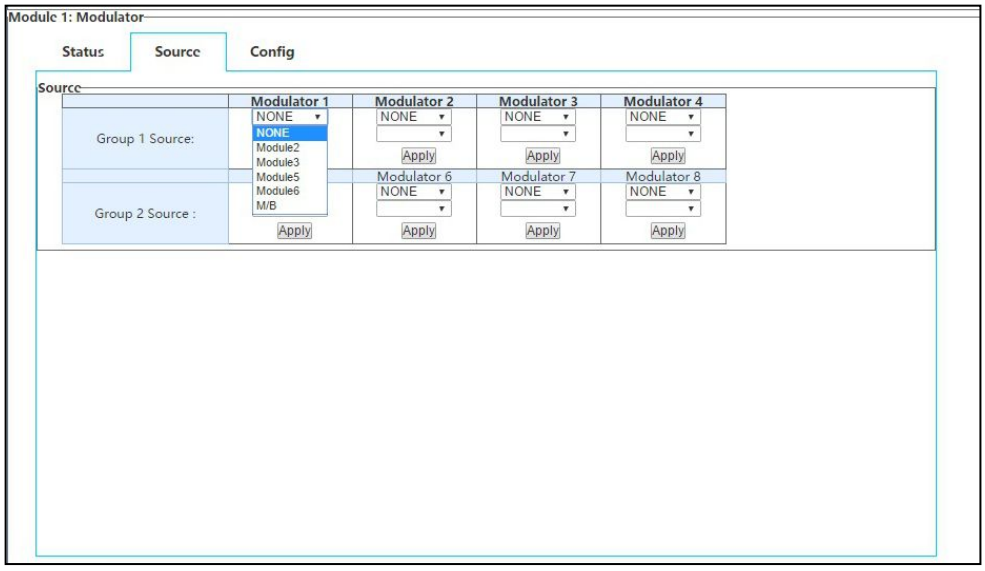
Modulators Status



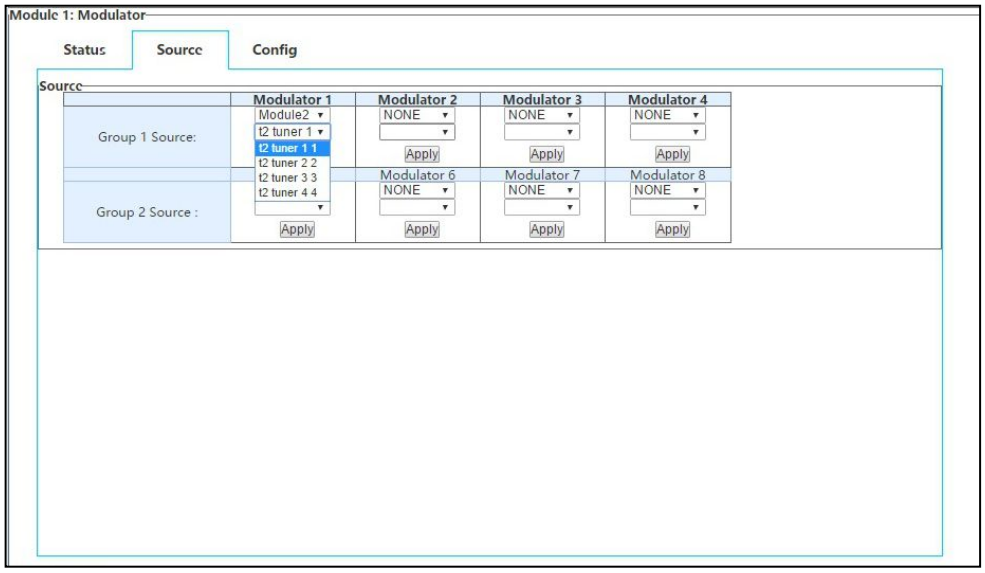
Default source options

Below is the procedure for setup modulator:

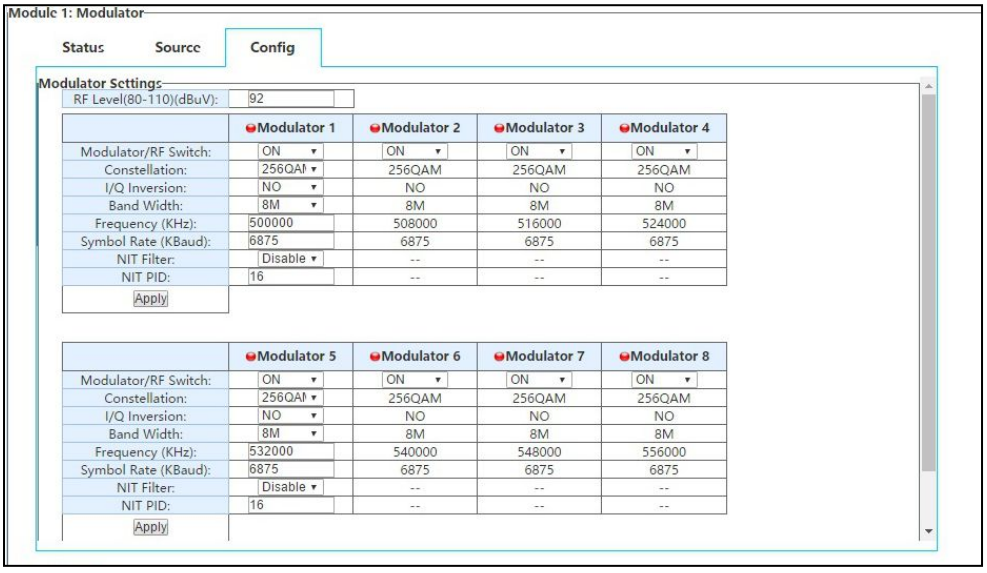
Step1: select module or M/B which will be used for modulator



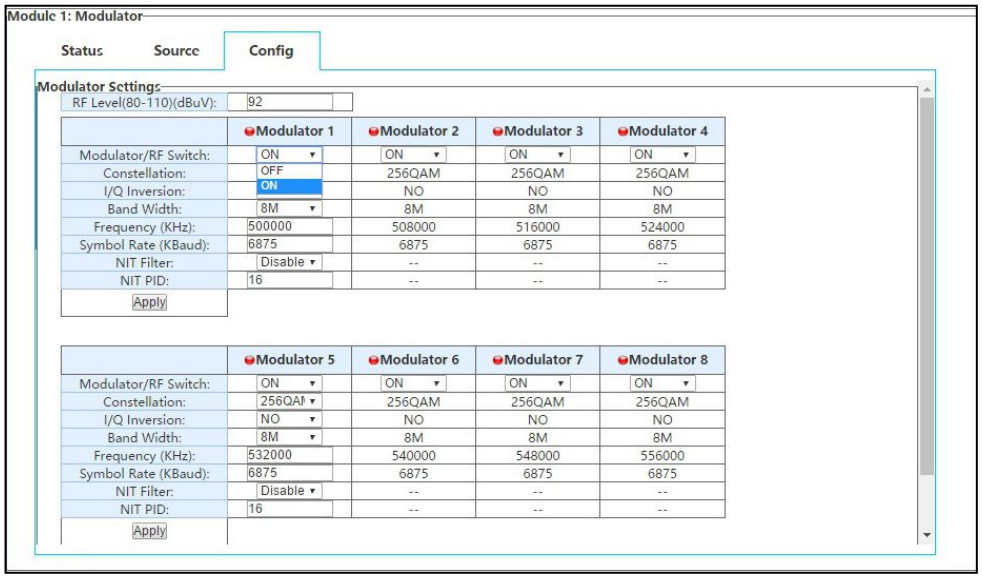
Step2: select the specific transport stream for modulator



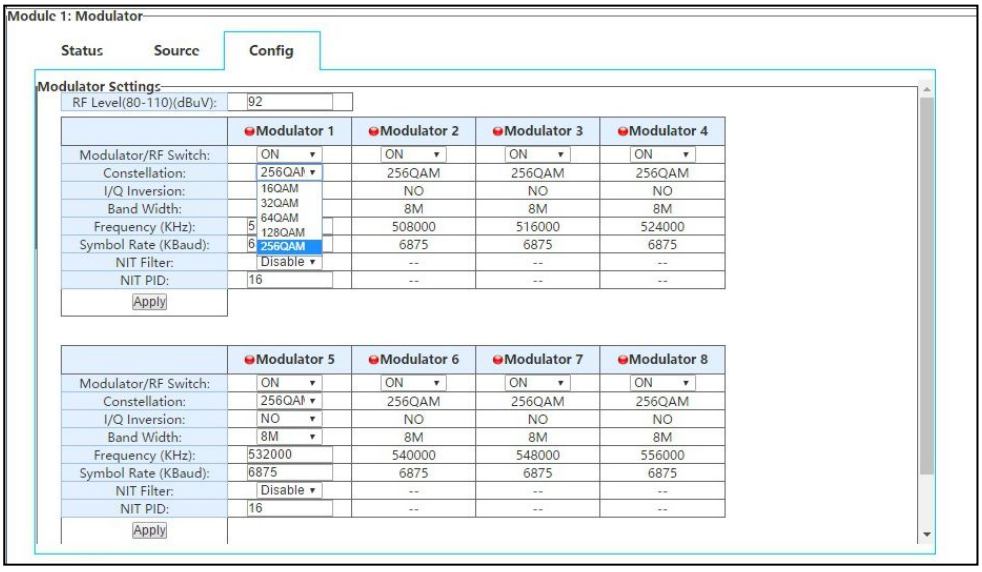
Step3: setup RF Level for output:



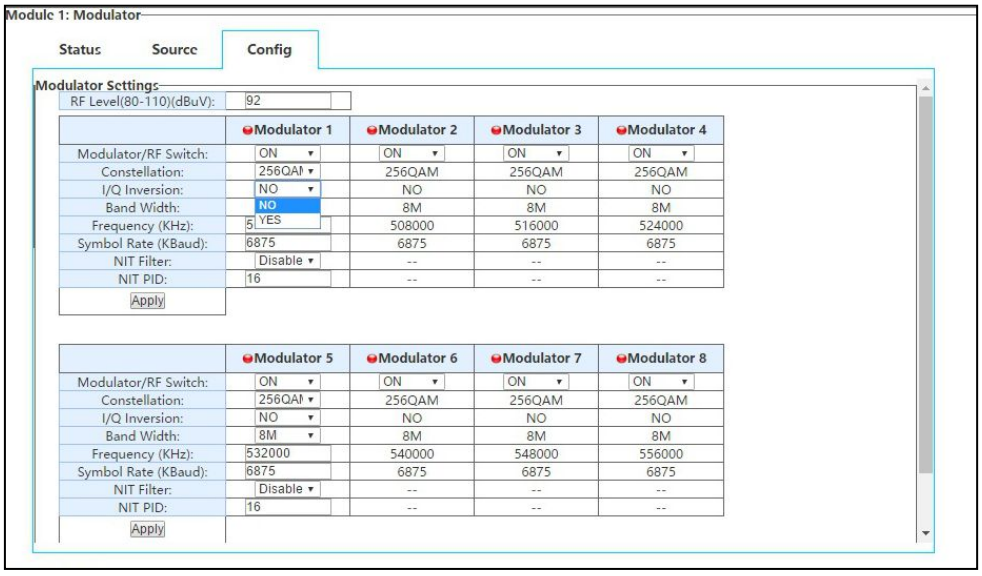
Step4: to setup modulation/RF switch as ON



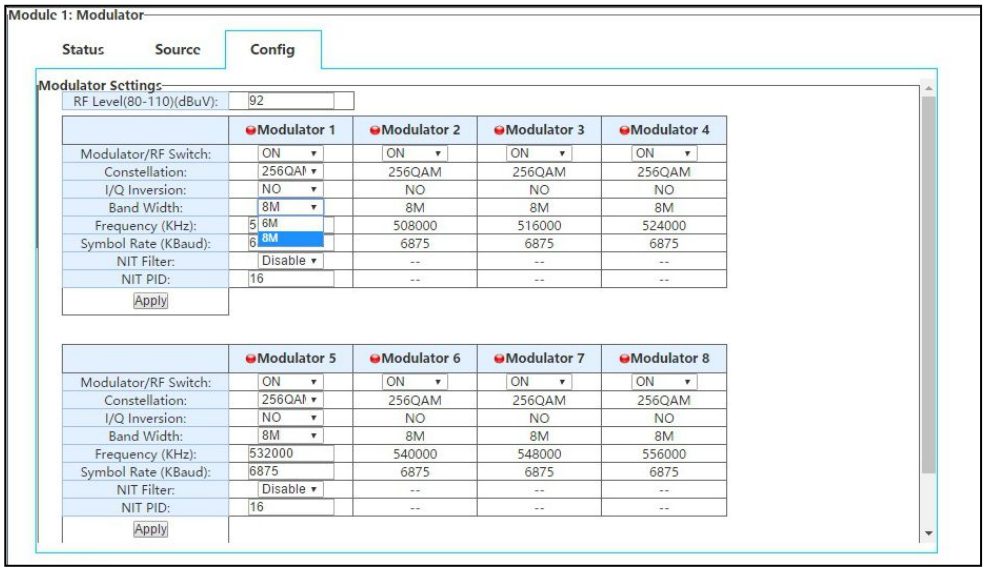
Step4: to setup constellation



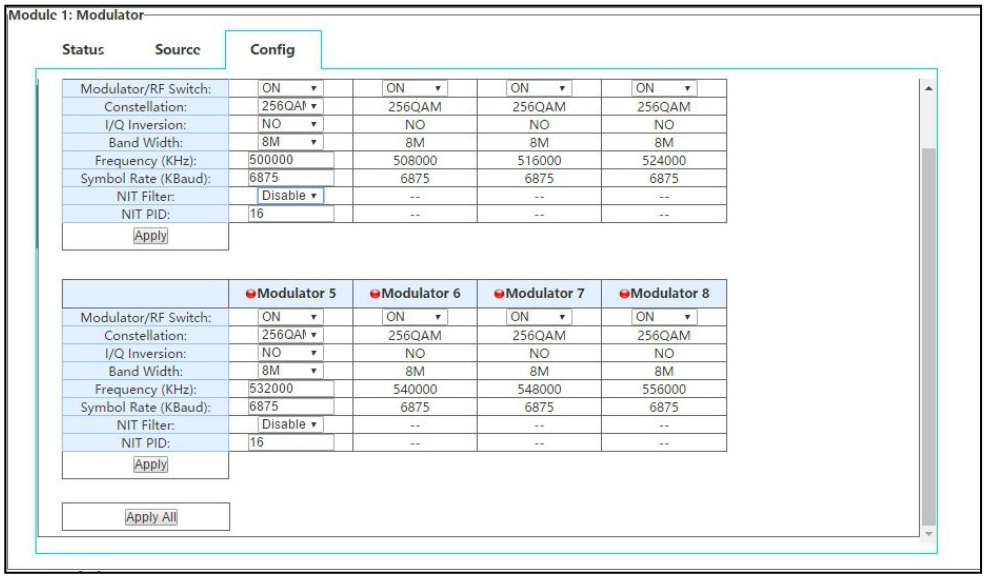
Step5: to setup I/Q Inversion



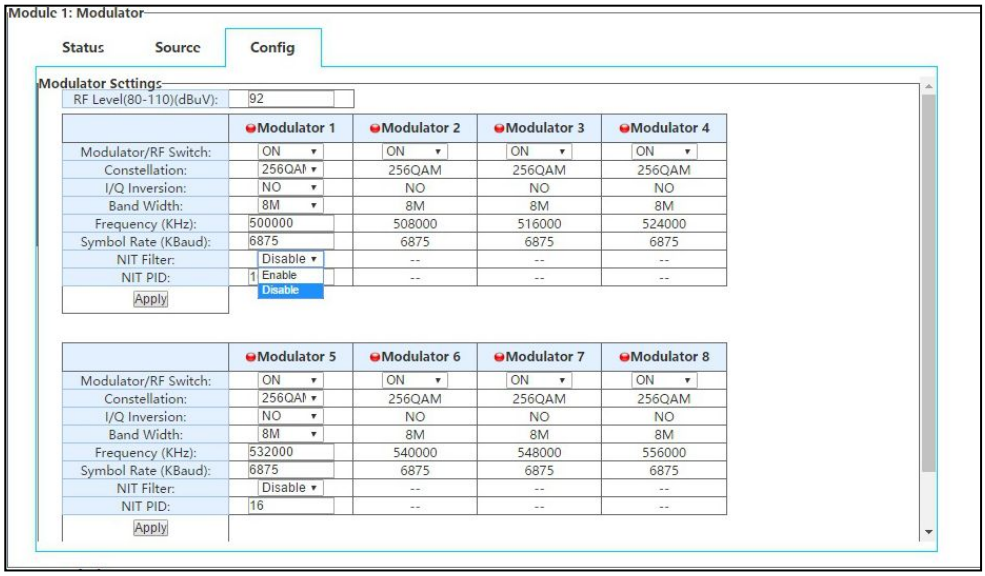
Step6: to setup band width:



Step7: to enter Frequency and Symbol rate, this just for Modulator-1 and Modulator-5, the reset will increased following up according to bandwidth.



Step8: to setup NIT filter, it will pass NIT if the option is enable, Disable will not pass through NIT. NIT PID is for customer defined PID which instead NIT pass through.

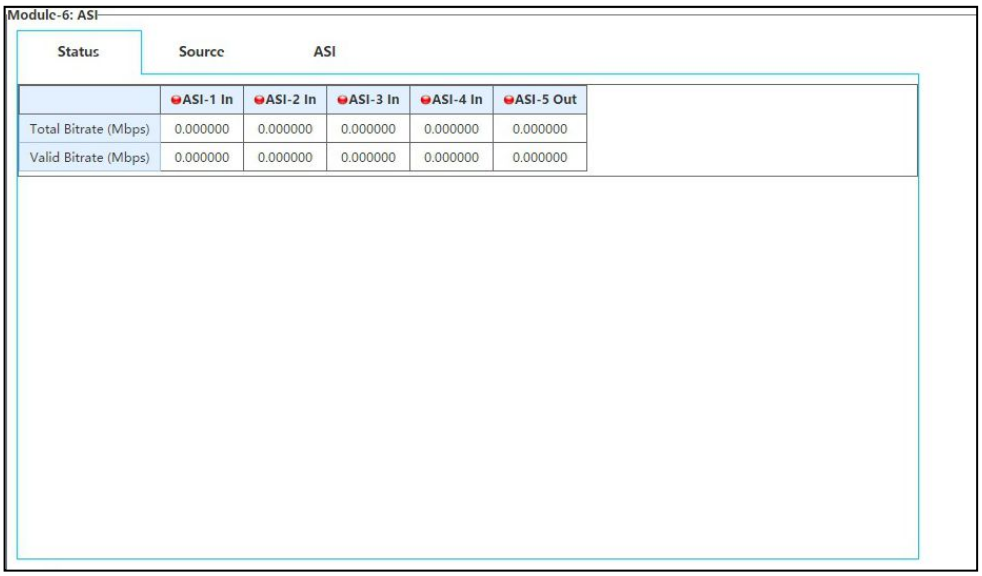


Step9: after all setups, need to click Apply to save and enable all of them.

4.2.7. C01ASI（5 x ASI Input/Output Module）

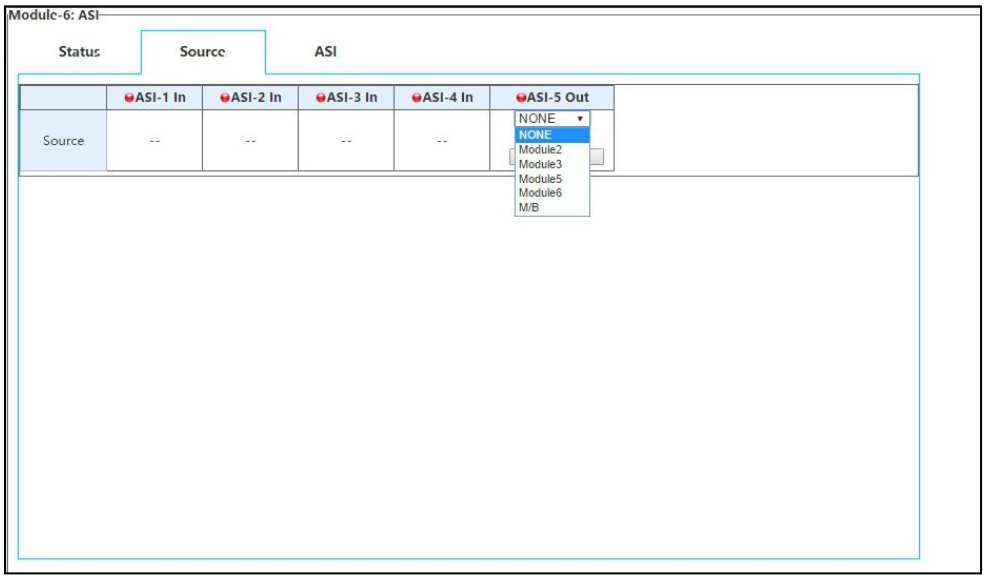
This is a 5 BNC for ASI input and output software option card. User can define the input and output via Web interface configuration. And there is additional option for demodulating T2MI.

This Status page will show bitrate input or output from each of 5 BNC.

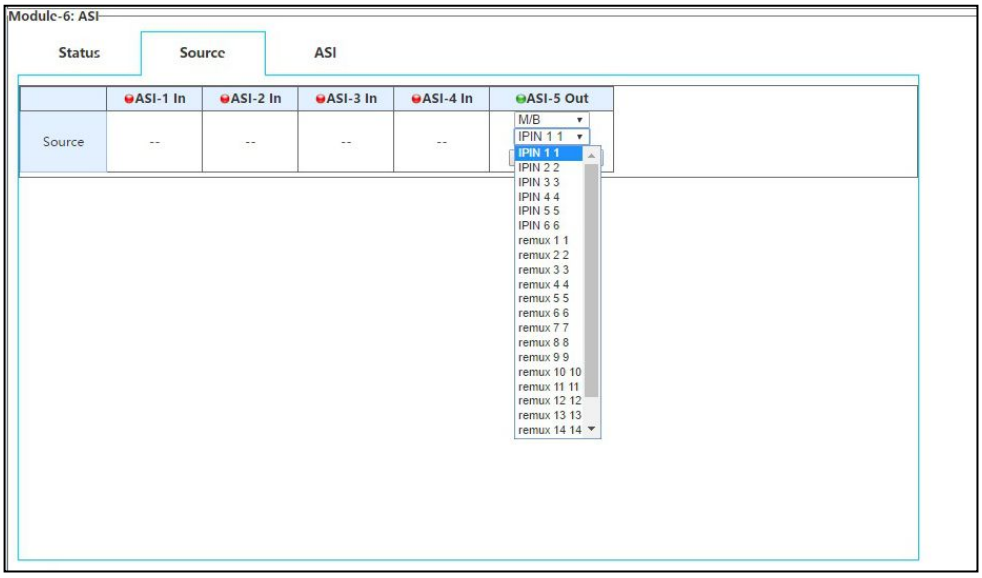


Status

This Source page just for ASI output option. If the BNC configured as input, there is no option on this page. When the BNC configured as Output, user will see options as below. User needs to select card module as picture or M/B first ASI output-1, and then select stream from the shown source as picture ASI output-2.

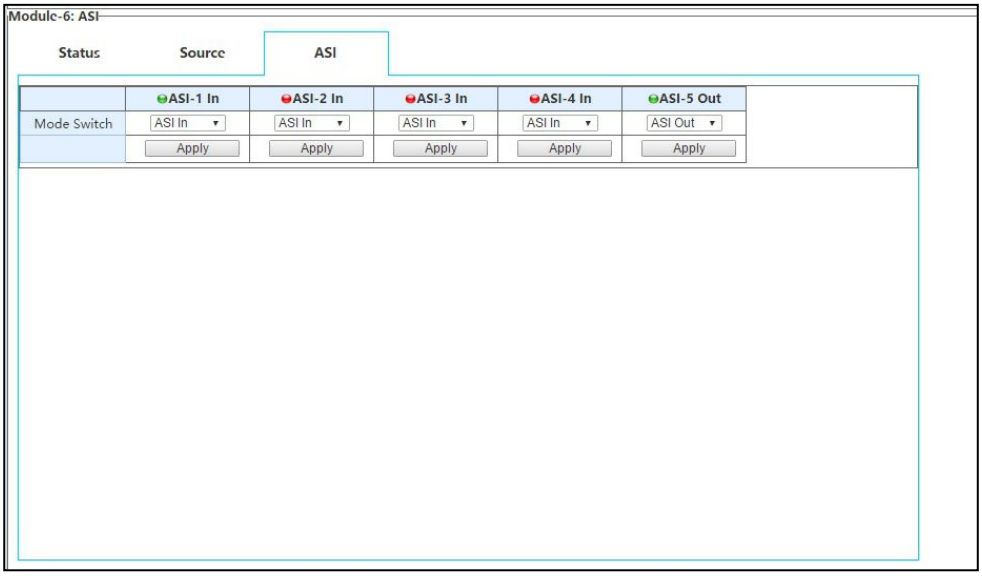


ASI output-1



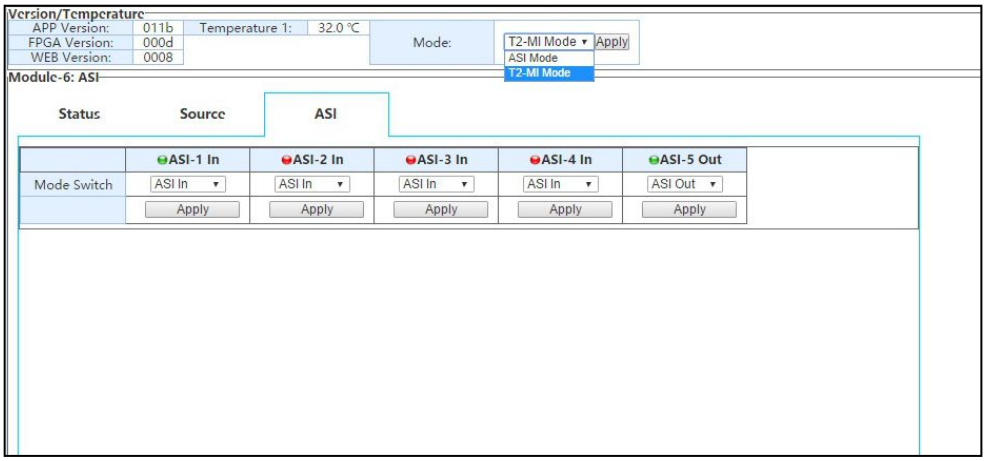
ASI output-2

The ASI page is for configure BNC, input or output. There are two options for each BNC, ASI In or ASI Out.



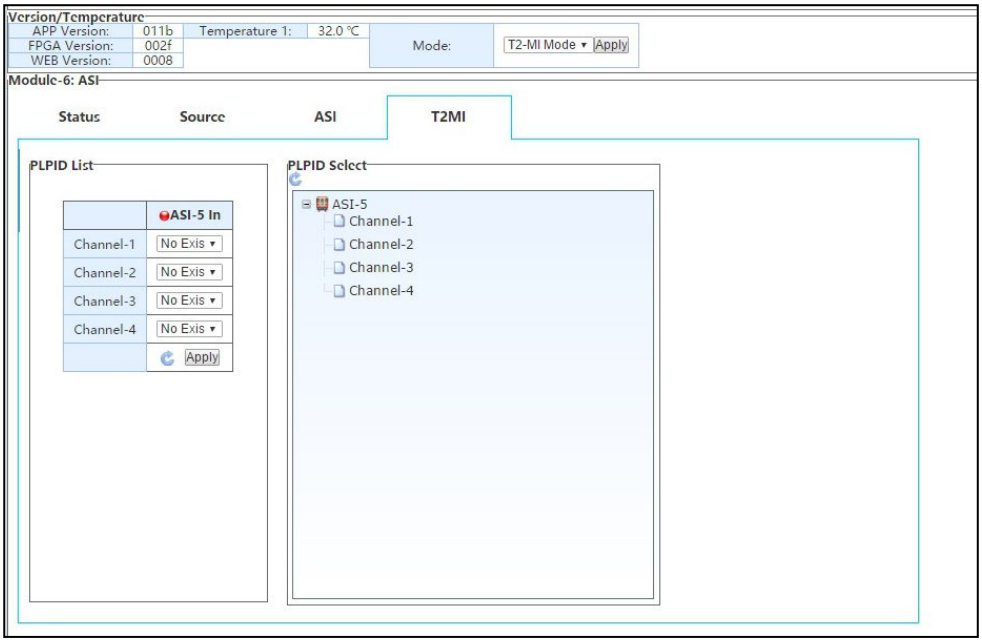
BNC configure

For special using, user can set this card mode as T2MI mode, as picture showed below. After setup as T2MI mode, BNC 5 will fixed as ASI input for T2MI function.



Mode option

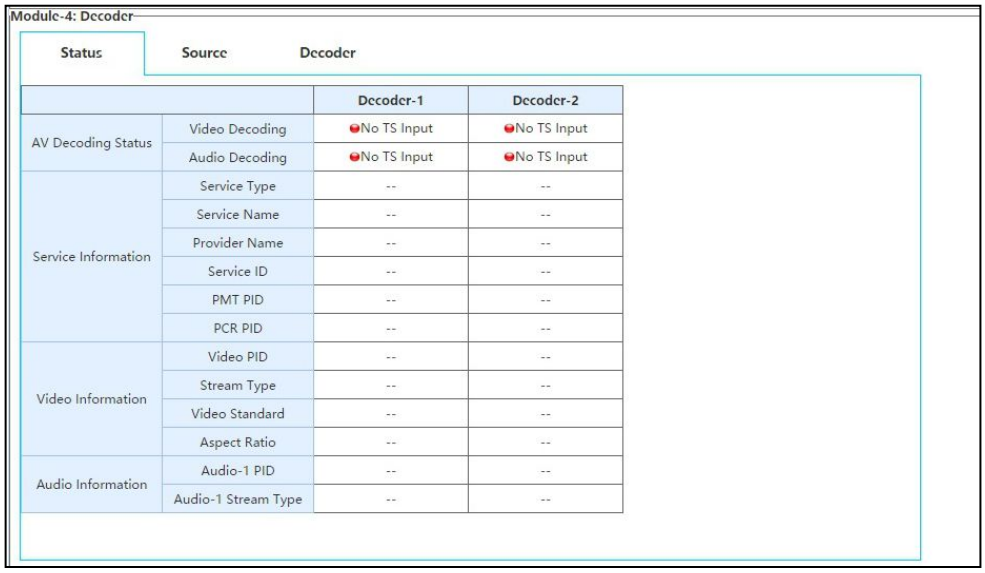
T2MI page will show up when the card set as T2MI mode. It will support demodulate 4 PLPs at same time. As below, user will see PLP ID List on left. There will be PLP IDs if the input stream included.



T2MI configure

4.2.8. D01PA（2 x Channels Multi-format Signal SD/HD Decoder Module）

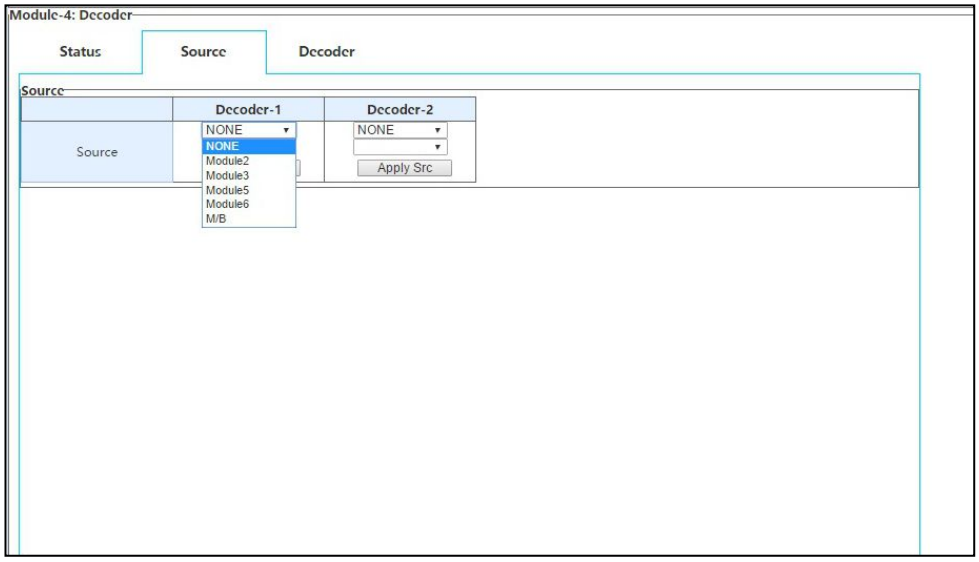
This the decoder card is two channels decoders with HDMI and CVBS interfaces. User can select stream from source menu and to configure the decoding on Decoder menu. Status page will show current decoding services status.



Decoder Status

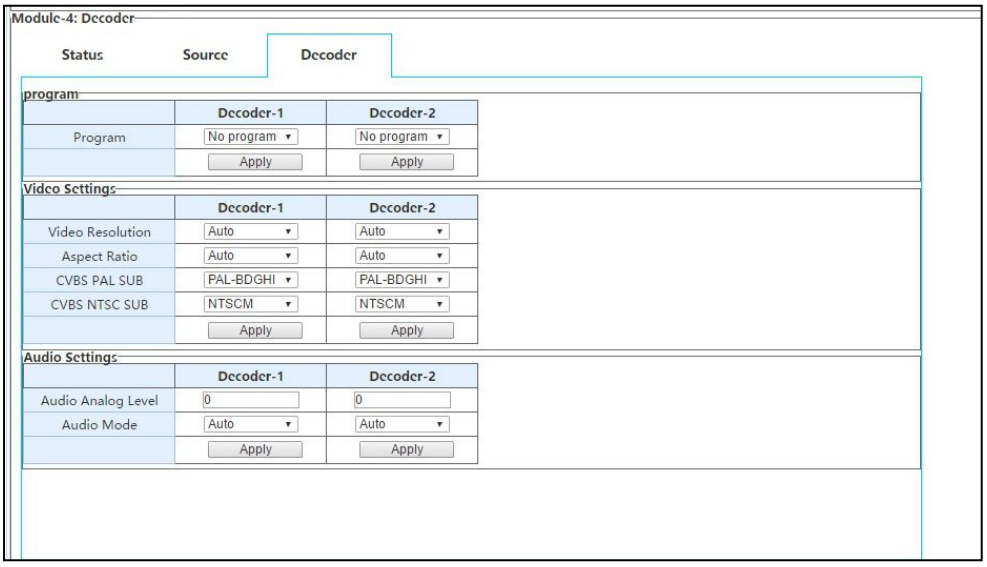
Below is the procedure for setup Decoder:

Step1: select module or M/B which will be used for decoder and select stream from the selected module or M/B;



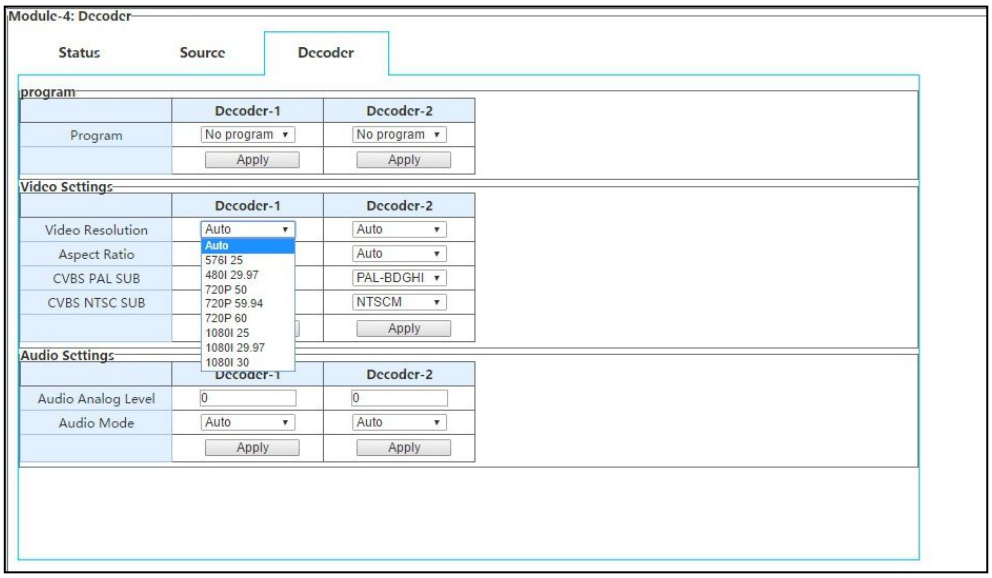
Decoder source-1

Step2: select which service will be used for decoding, user will see output from HDMI or CVBS after this step.Please refer Status page if there is no output. The possible issue could be the service is encrypted.



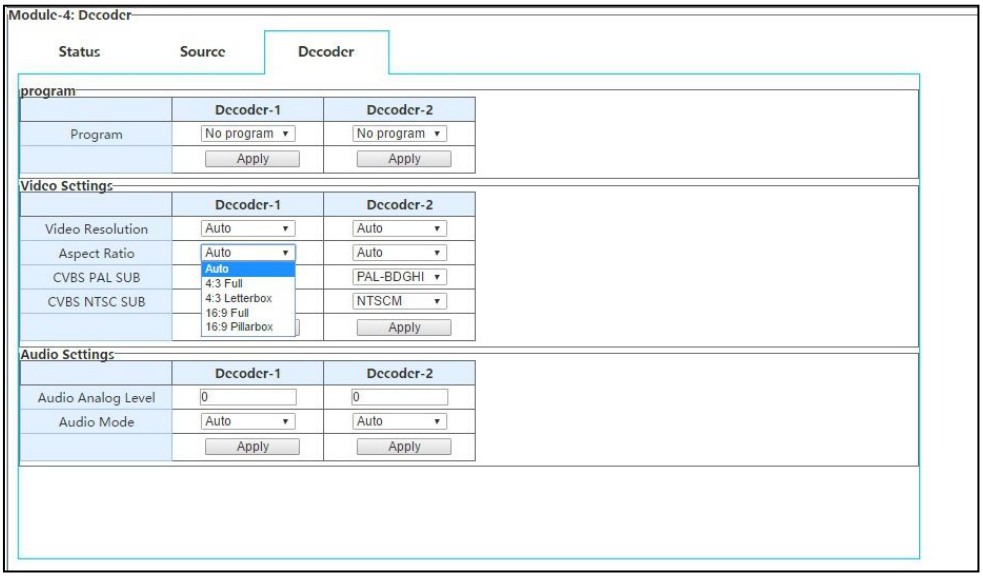
Decoder

Step3: user can adjust out video resolution if user want to see the particular resolution.



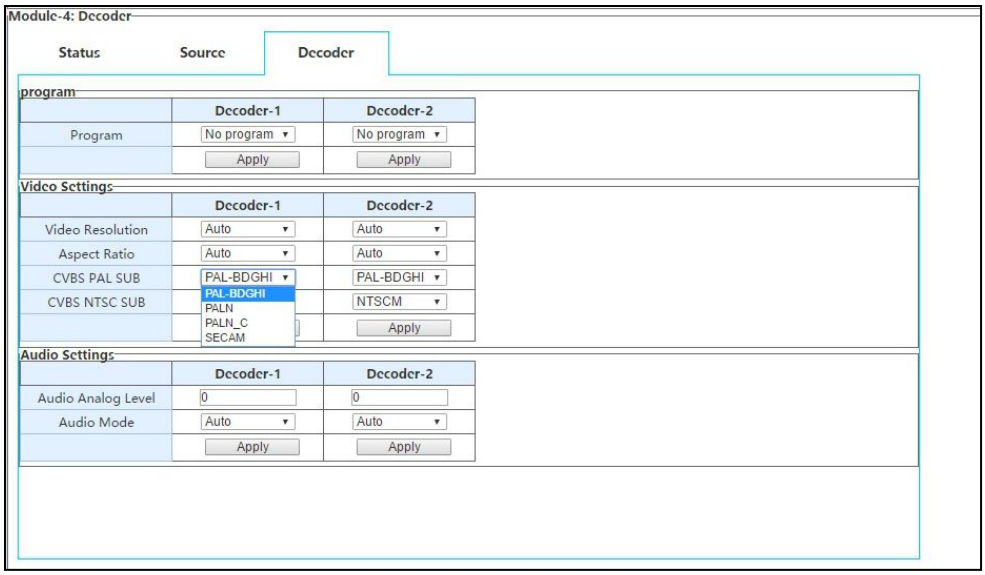
Resolution configure

Step4: user can adjust out Aspect Ratio too if user want to see the particular aspect ratio.



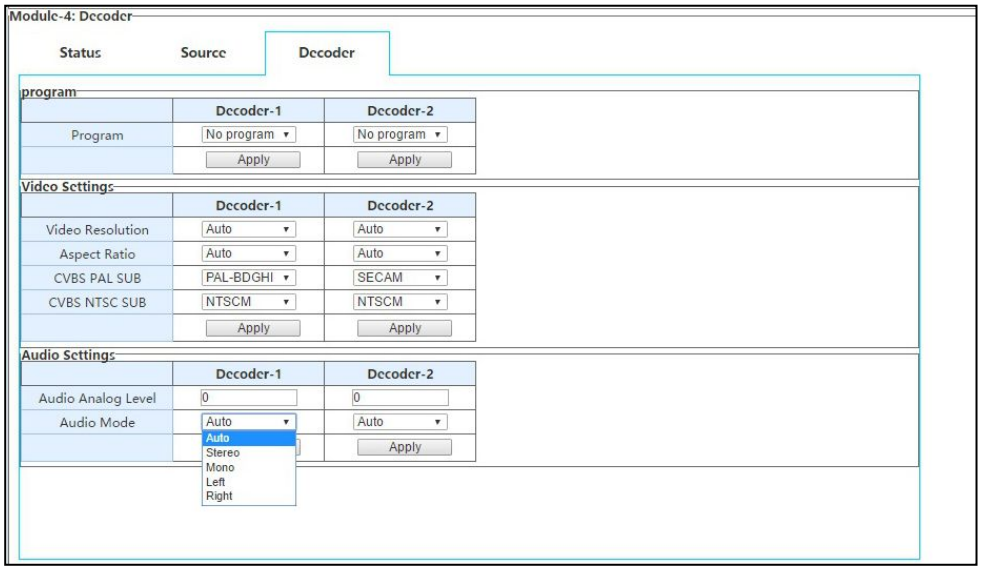
Aspect Ratio

Step5: user can use default setting under most situation, and configure it as required.



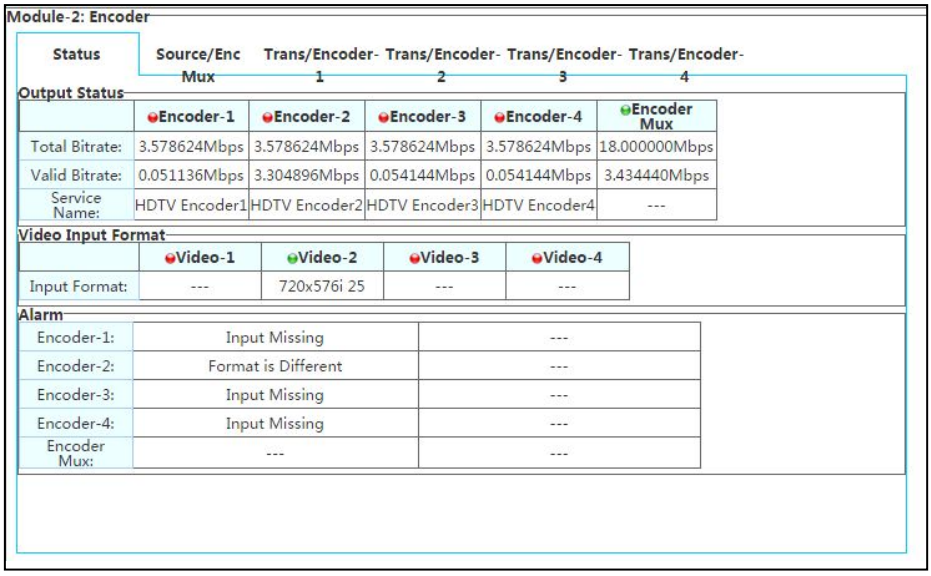
CVBS PAL

Step6: Audio mode include Auto, Stereo, Mono, Left and right. User can configure it as required.



4.2.9. P01EC（4 x HDMI MPEG-2/H.264 Transcoder/Encoder Module）

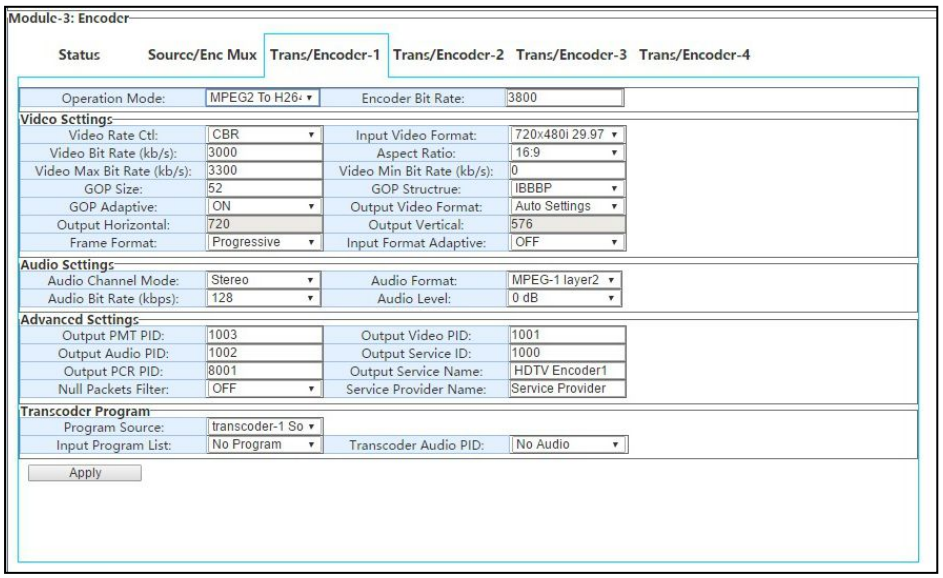
This the HDMI encoder card of GX-5000. It supports 4 channels HDMI encoder, and it can be used as a transcoder too. The 4 encoders are independent hardware, the options for each encoder will not effect others. Specially, there is a simple remux core on the card, user can use the remux to manage the streams after encoding or transcoding.



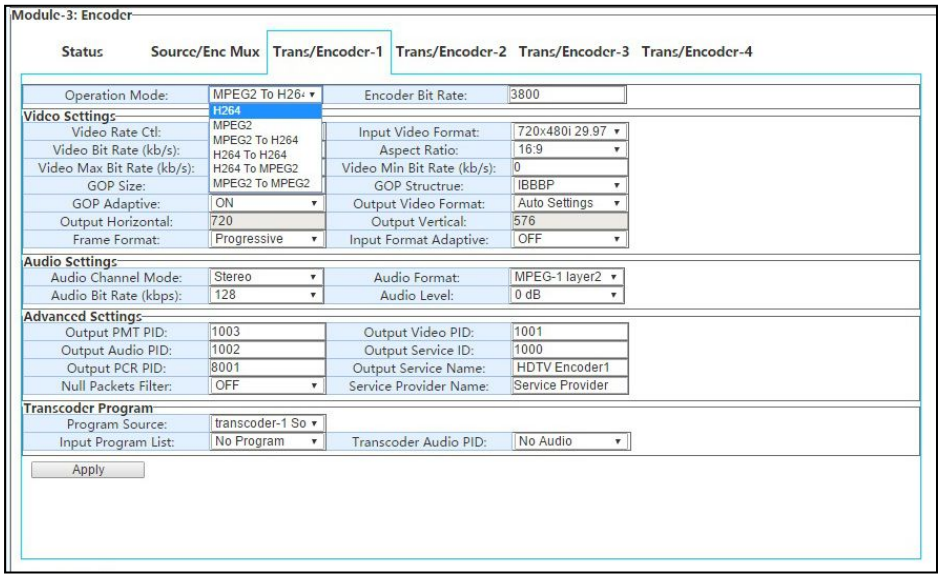
Encoder Status

Quick setup example:

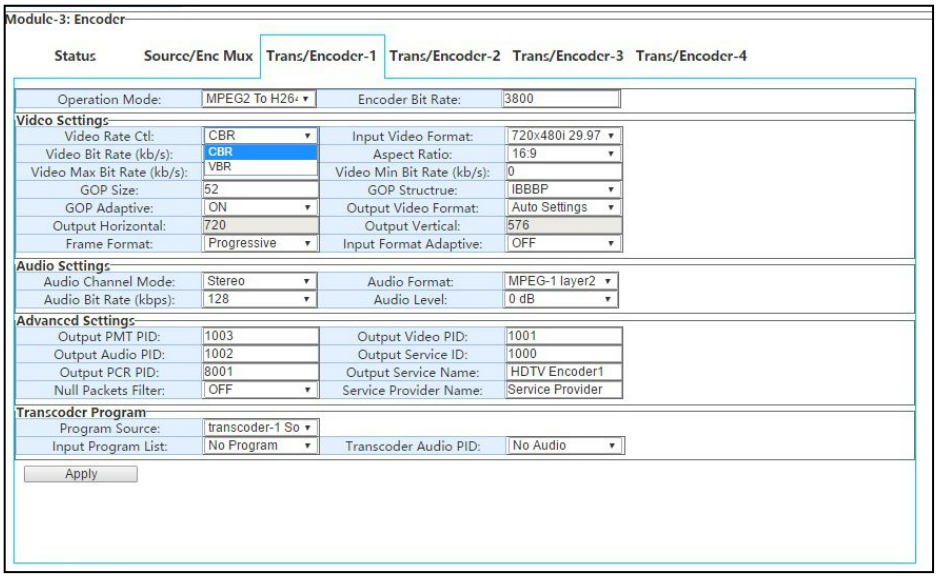
Step1: select on encoder page from encoder 1 to 4.



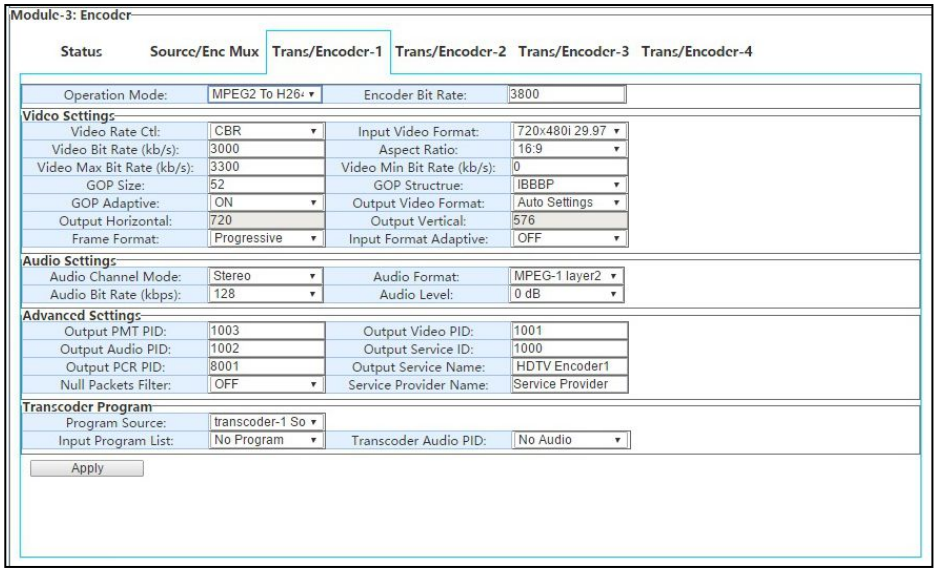
Step2: configure the card operation mode, H264 or MPEG2 encoding or MPEG2 To H264 transcoding. Encoder Bit Rate is for encoding output bit rate, Video + Audio + Null packets.



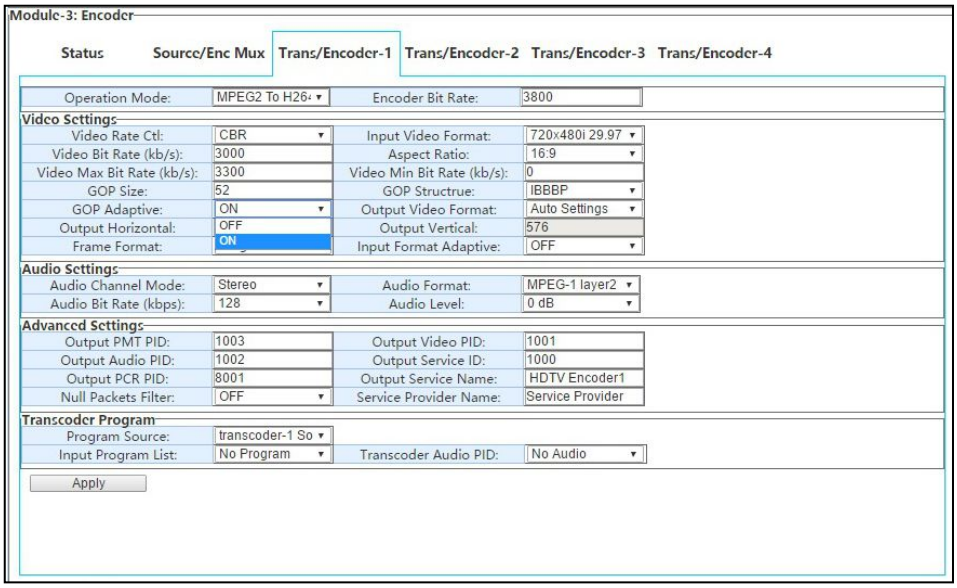
Step3: user can select Video Rate control from CBR and VBR.



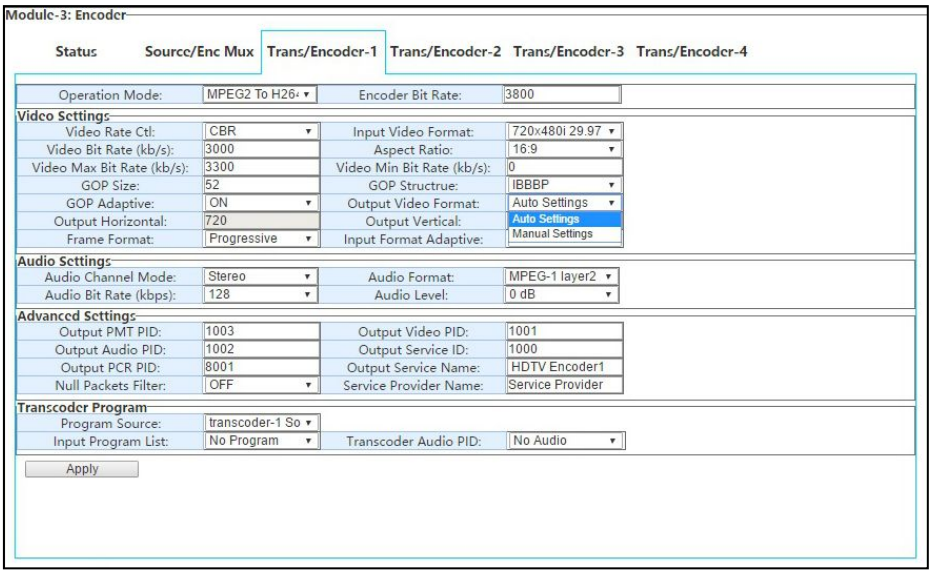
Step4: user can setup video bit rate, video max bit rate and video min bit rate. The difference between Max and Min is the range for video encoding or transcoding. Aspect Ratio will be 16:9 or 4:3.



Step5: GOP size option will be enabled while the GOP Adaptive option is OFF. GOP Structure will IBBP, IPPP, IBP and IBBBP four options.



Step6: The Output Horizontal and Vertical can be enabled when the Output video format is Manual Settings. If it is Auto Settings, video output format will be same as input. The Input Format adaptive is for recognize input video format automatically. The Input video format menu will be disabled if it is ON. And, there will be one more option if the module card Operation Mode is encoding(option: h264 and MPEG2). It is Low delay mode. The delay could be less than 100ms if it is on.



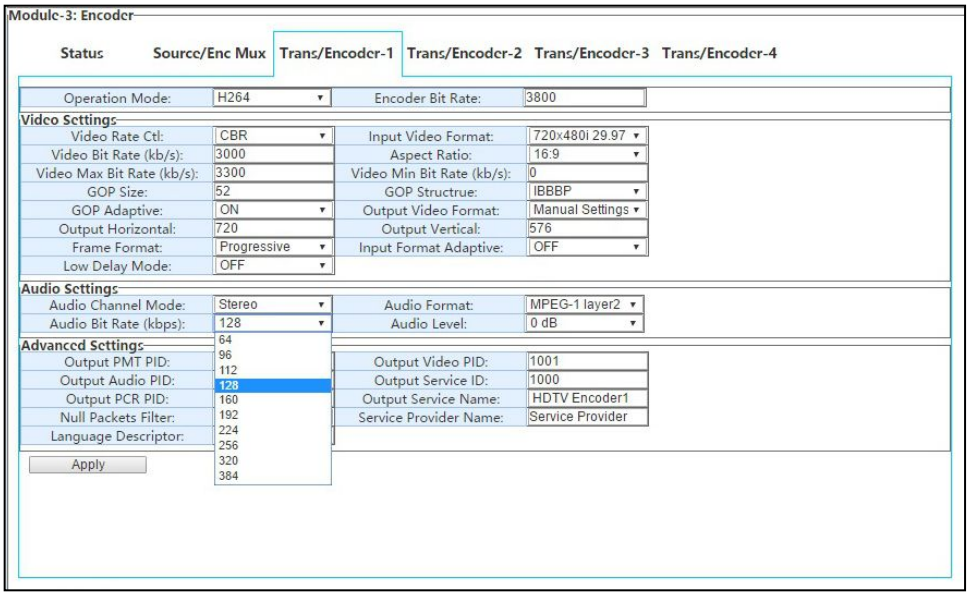
Step7: There are four options of Audio Settings, such as Audio Channel Mode, Audio Format, Audio Bit rate and Audio level.

Audio Channel Mode: Stereo and Mono.

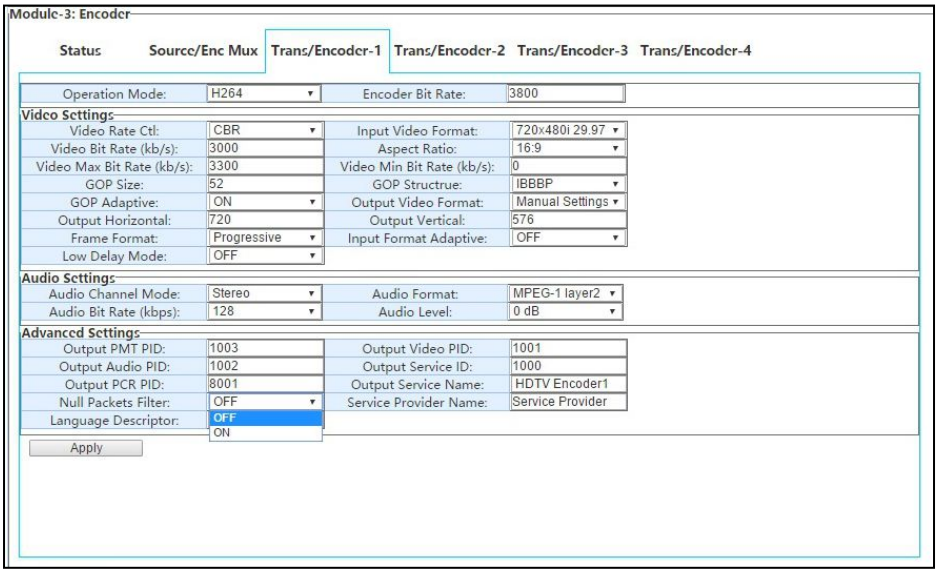
Audio Format: set the audio compression format MPEG-1 Layer II, MPEG-2 AAC LC, MPEG-4 AAC LC, MPEG-2 AAC HE-V1, MPEG-4 AAC HE-V1, MPEG-2 AAC HE-V2, MPEG-4 AAC HE-V2

Audio Bit Rate: Set the audio bitrate, available options: 64k bps /96k bps /112k bps /128k bps /160k bps /192k bps /224k bps /256k bps /320k bps /384k bps

Audio Level: Set the gain of output volume from -7dB to +12dB.

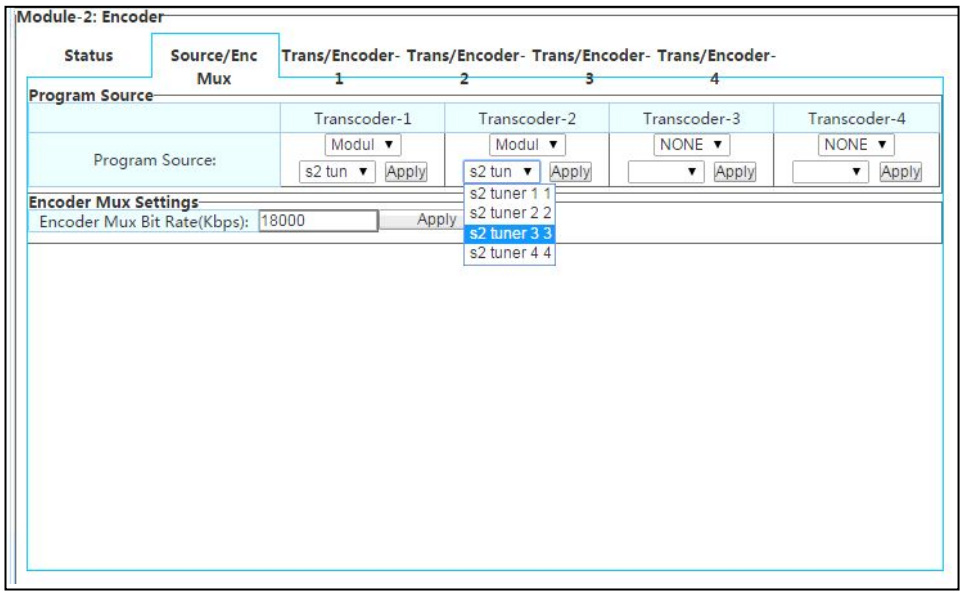


Step7: Advanced Settings is for PSI/SI setup option. User can configure them as required. Null Packets Filter will decide the encoding output stream with null packets or not.

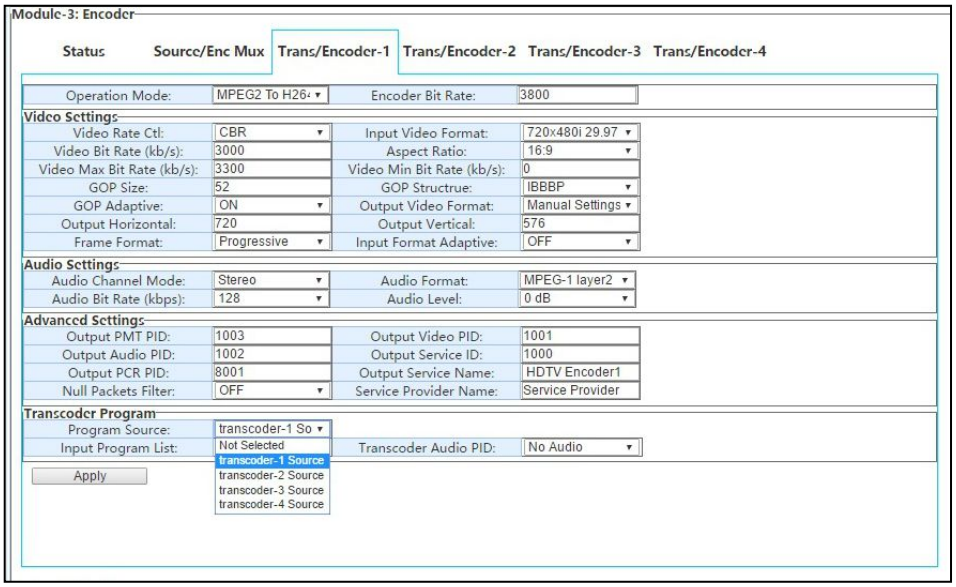


Transcoding function setup is a little different with encoding. User needs to select streams for transcoding first

on the page Source/Enc Mux.



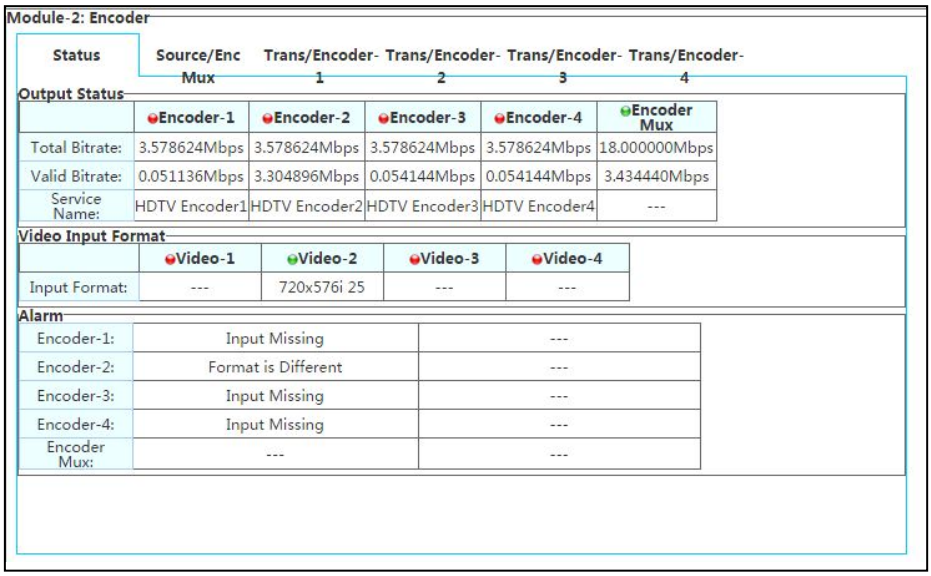
After setup source, user needs to select service and audio on the Trans/Encoder page. The program source could be select from each of four transcoder sources. The rest options please refer to Encoder options process.



4.2.10. P02EC（4 x SDI MPEG-2/H.264 Transcoder/Encoder Module）

This a SDI encoder card of GX-5000. It supports 4 channels SDI encoder, and it can be used as a transcoder too. The 4 encoders are independent hardware, the options for each encoder will not effect others. Specially,

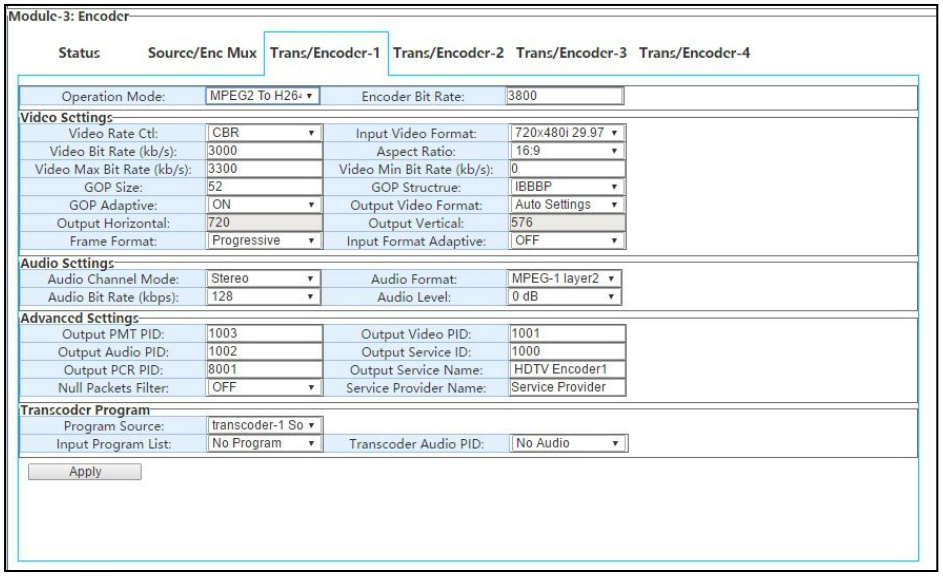
there is a simple remux core on the card, user can use the remux to manage the streams after encoding or transcoding.



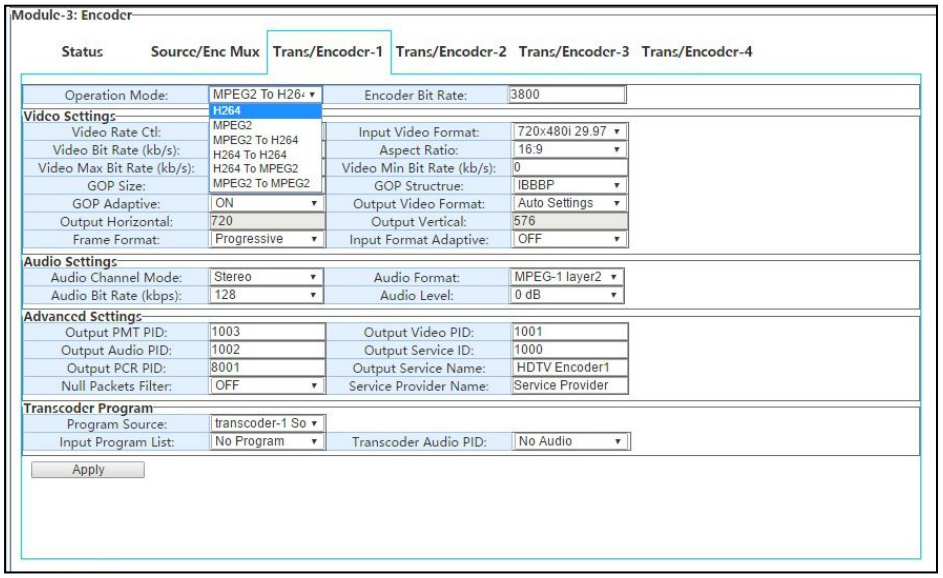
Encoder Status

Quick setup example:

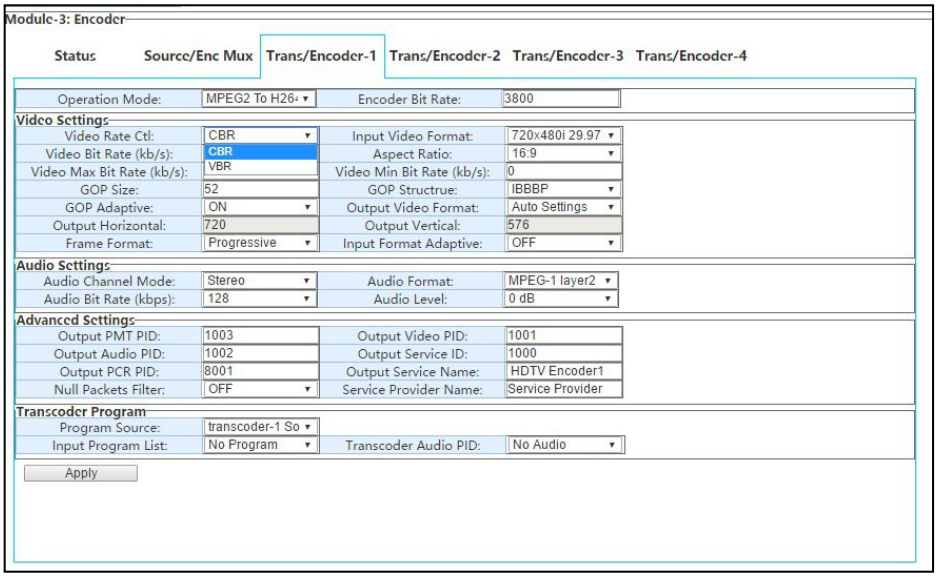
Step1: select on encoder page from encoder 1 to 4.



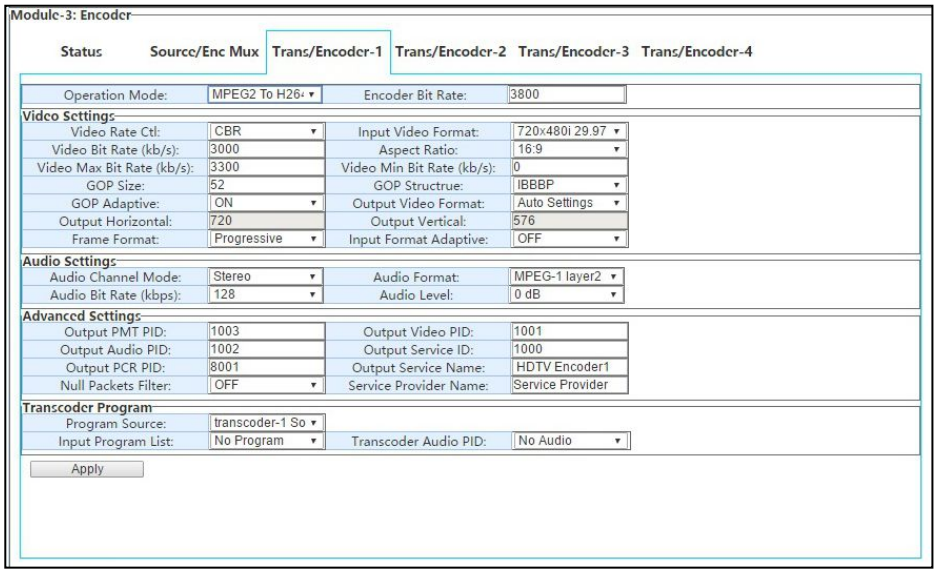
Step2: configure the card operation mode, H264 or MPEG2 encoding or MPEG2 To H264 transcoding. Encoder Bit Rate is for encoding output bit rate, Video Max + Audio + Null packets.



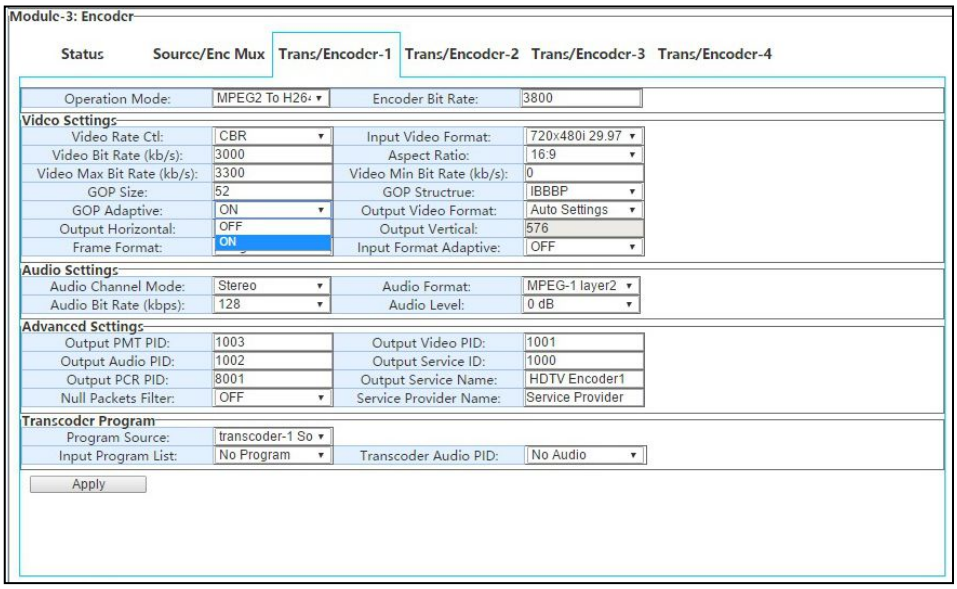
Step3: user can select Video Rate control from CBR and VBR.



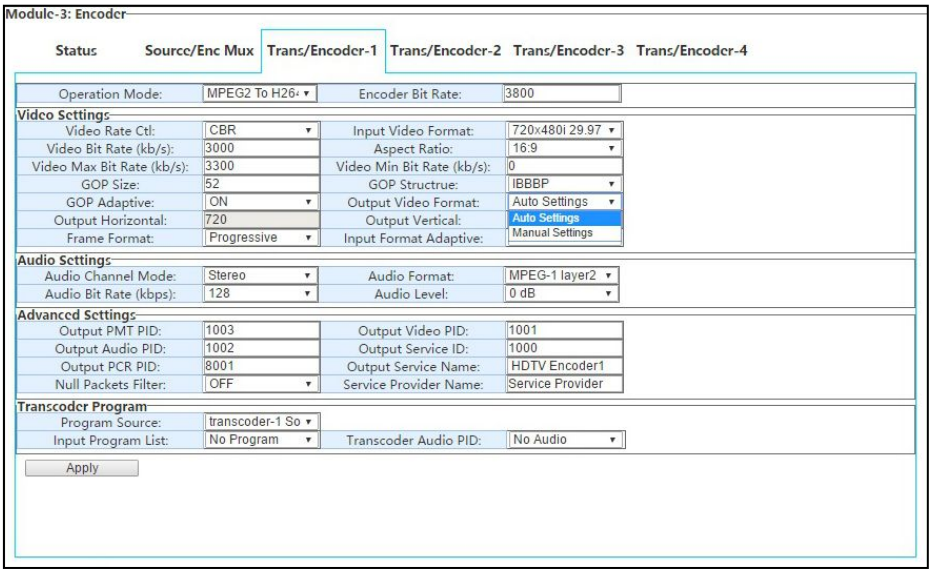
Step4: user can setup video bit rate and video max bit rate. The difference between bit rate and Max bit rate is the jitter range for video encoding or transcoding. The suggested value is 300kpbs. The Aspect Ratio will be 16:9 or 4:3.



Step5: GOP size option will be enabled while the GOP Adaptive option is OFF. GOP Structure will IBBP, IPPP, IBP and IBBBP four options.



Step6: The Output Horizontal and Vertical can be enabled when the Output video format is Manual Settings. If it is Auto Settings, video output format will be same as input. The Input Format adaptive is for recognize input video format automatically. The Input video format menu will be disabled if it is ON. And, there will be two more options if the module card Operation Mode is encoding(option: H264 or MPEG2). One is SDI source selection. The user can select the same SDI source for the different encoder. Another is Low delay mode. The delay could be less than 1s if it is on.



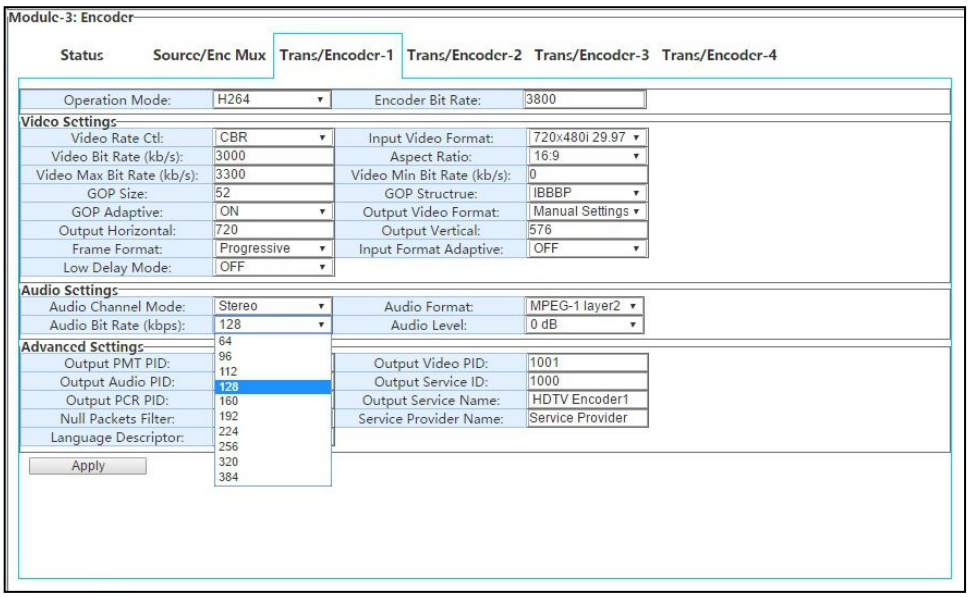
Step7: There are four options of Audio Settings, such as Audio Channel Mode, Audio Format, Audio Bit rate and Audio level.

Audio Channel Mode: Stereo and Mono.

Audio Format: set the audio compression format MPEG-1 Layer II, MPEG-2 AAC LC, MPEG-4 AAC LC, MPEG-2 AAC HE-V1, MPEG-4 AAC HE-V1, MPEG-2 AAC HE-V2, MPEG-4 AAC HE-V2

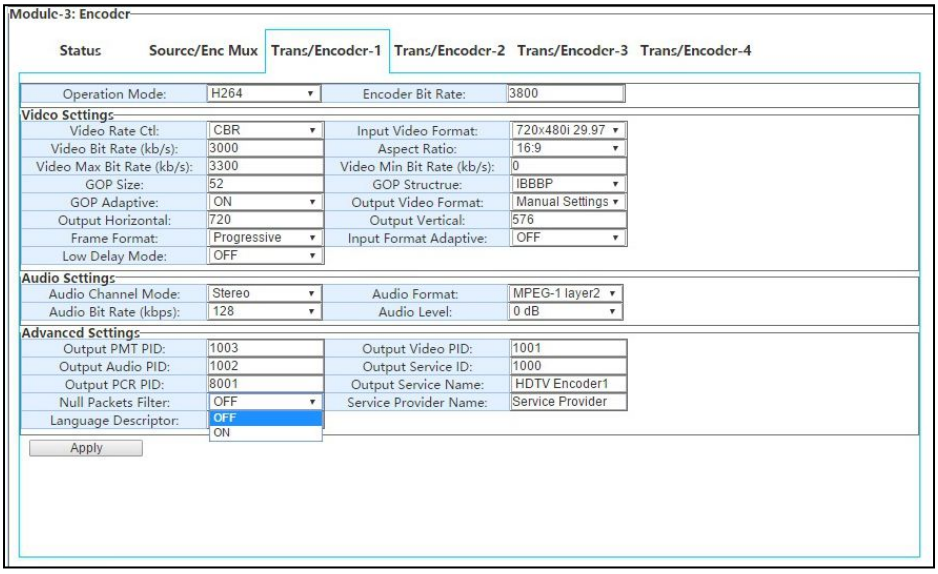
Audio Bit Rate: Set the audio bitrate, available options: 64k bps /96k bps /112k bps /128k bps /160k bps /192k bps /224k bps /256k bps /320k bps /384k bps

Audio Level: Set the gain of output volume from -7dB to +12dB.

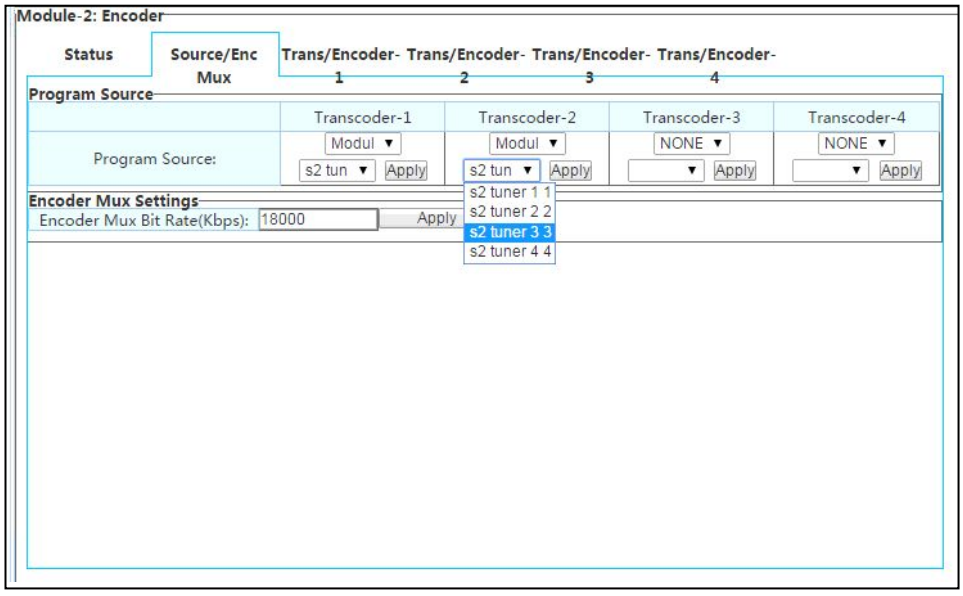


Step7: Advanced Settings is for PSI/SI setup option. User can configure them as required. Null Packets Filter will decide the encoding output stream with null packets or not.

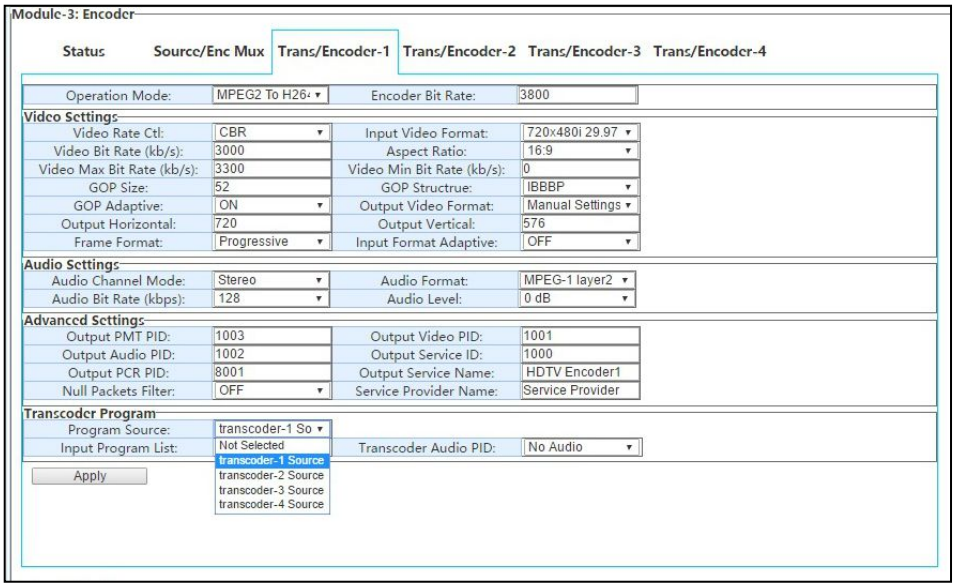
***Attention:** User has to select the remux TS in other modules, if the SDT is needed to be used.



Transcoding function setup is a little different with encoding. User needs to select streams for transcoding first on the page Source/Enc Mux.



After setup source, user needs to select service and audio on the Trans/Encoder page. The program source could be select from each of four transcoder sources. The rest options please refer to Encoder options process.

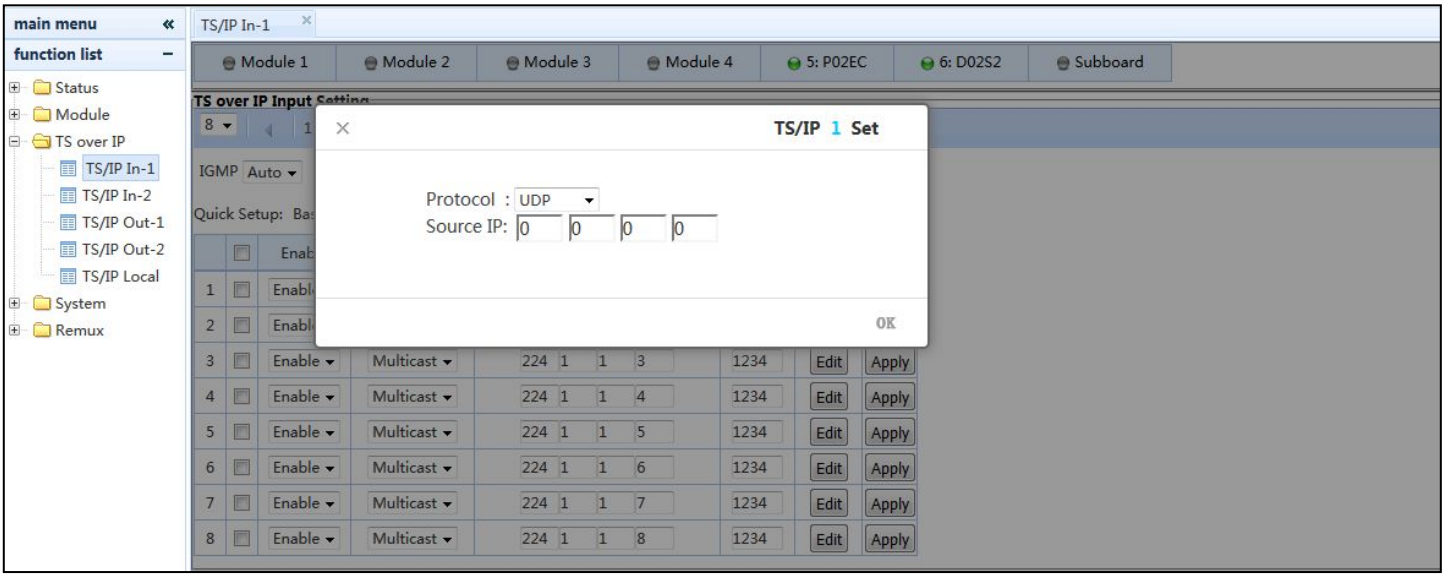

Module-3: Encoder
Status
Source/Enc Mux
Trans/Encoder-1
Trans/Encoder-2
Trans/Encoder-3
Trans/Encoder-4
Operation Mode: MPEG2 To H26
Encoder Bit Rate: 3800
Video Settings
Video Rate Ctl: CBR
Input Video Format: 720x480i 29.97
Video Bit Rate (kb/s): 3000
Aspect Ratio: 16:9
Video Max Bit Rate (kb/s): 3300
Video Min Bit Rate (kb/s): 0
GOP Size: 52
GOP Structrue: IBBBP
GOP Adaptive: ON
Output Video Format: Manual Settings
Output Horizontal: 720
Output Vertical: 576
Frame Format: Progressive
Input Format Adaptive: OFF
Audio Settings
Audio Channel Mode: Stereo
Audio Format: MPEG-1 layer2
Audio Bit Rate (kbps): 128
Audio Level: 0 dB
Advanced Settings
Output PMT PID: 1003
Output Video PID: 1001
Output Audio PID: 1002
Output Service ID: 1000
Output PCR PID: 8001
Output Service Name: HDTV Encoder1
Null Packets Filter: OFF
Service Provider Name: Service Provider
Transcoder Program
Program Source: transcoder-1 So
Input Program List: Not Selected
Transcoder Audio PID: No Audio
Apply
transcoder-1 Source
transcoder-2 Source
transcoder-3 Source
transcoder-4 Source

4.3. TS over IP

There are two TS over IP ports on the main chassis. These two ports are duplex mode, can be used as input and output at the same time.

4.3.1. TS/IP In

There are two pages include the same settings for two TS/IP ports. There are 128 input channels can be configured in each page. The input bit rate can up to 920Mbps.

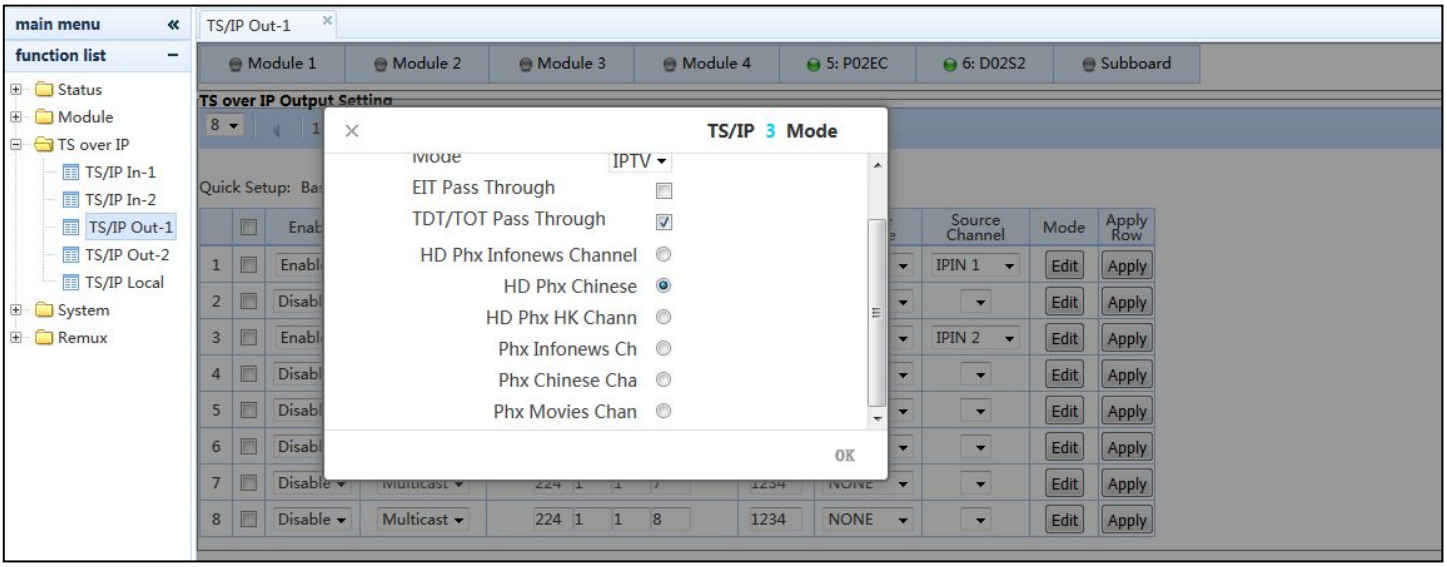


Menu Name	Options
IGMP	IGMP option
Based on index	Quick setup value based on which index
Quantity	Numbers to setup by quick setup option
Increase	Quick setup by Increasing IP Address or Port number or both
Enable	Enable or disable single IP input stream
Uni/Multicast	IP input by Unicast or Multicast option
Target IP	Input the target IP address
Target Port	Input the target port number
Edit	The input source protocol selection. Setup the source IP of input TS, if the user want to enable the source

	filter function, 0.0.0.0 means disable.
Apply Row	Apply row settings
Apply Checked	Enable selected channels
Apply All	Enable all channels

4.3.2. TS/IP Out

There are two pages include the same settings for two TS/IP ports. There are 256 output channels can be configured in each page. The output bit rate can up to 920Mbps.

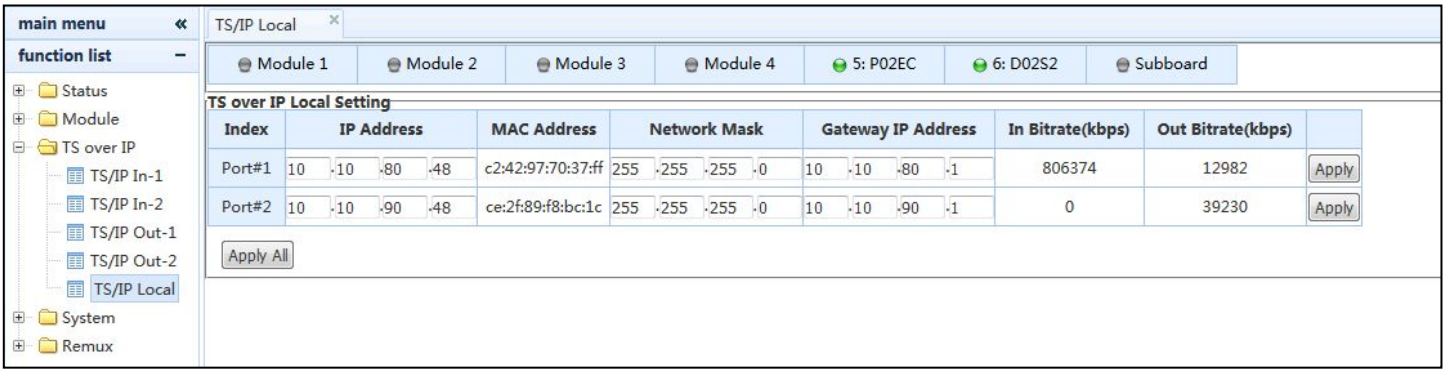


Menu Name	Options
Apply Checked	Enable selected channels
Apply All	Enable all channels
Enable	Enable or disable single IP output stream
Uni/Multicast	IP output by Unicast or Multicast option
Target IP	Output the target IP address
Target Port	Output the target port number
Source Module	Source module selection
Source Channel	Source channel selection
Mode Edit	The output TS/IP protocol selection. The output TS/IP mode selection. DVB means MPTS via DVB

	protocol. IPTV means SPTS which only can be used in IPTV system.
Apply Row	Apply row settings

4.3.3. TS/IP Local

This menu is to setup TS over IP ports physical IP address, Network mask and Gateway IP address. The user also can check the input and output TS bit rate of two ports, but it only display the uni/multicast bit rate via the physical port, no means the actual bit rate for input or output TS of chassis.



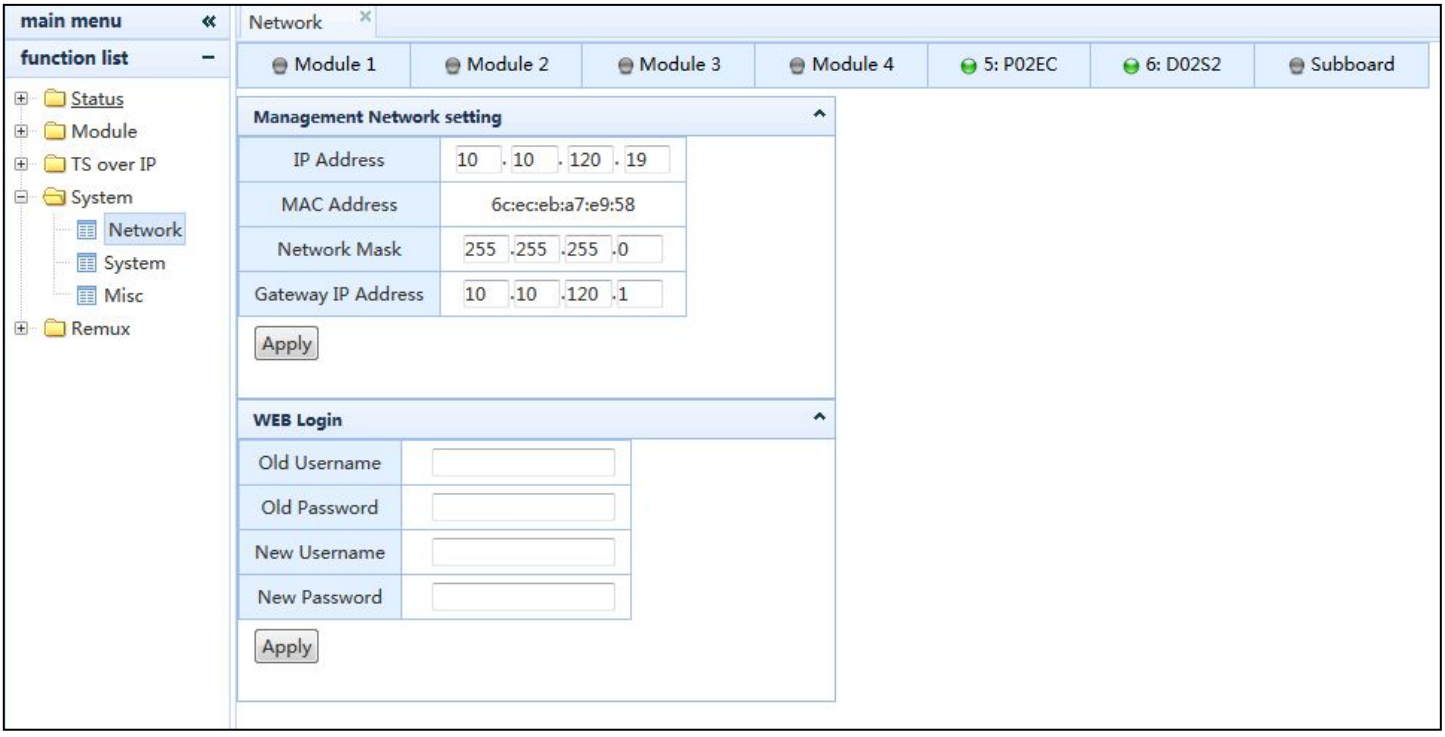
4.4. System

The System page is for configuring the Network, Device, Web login and Upgrade, etc.

4.4.1. Network

This page includes some network settings.

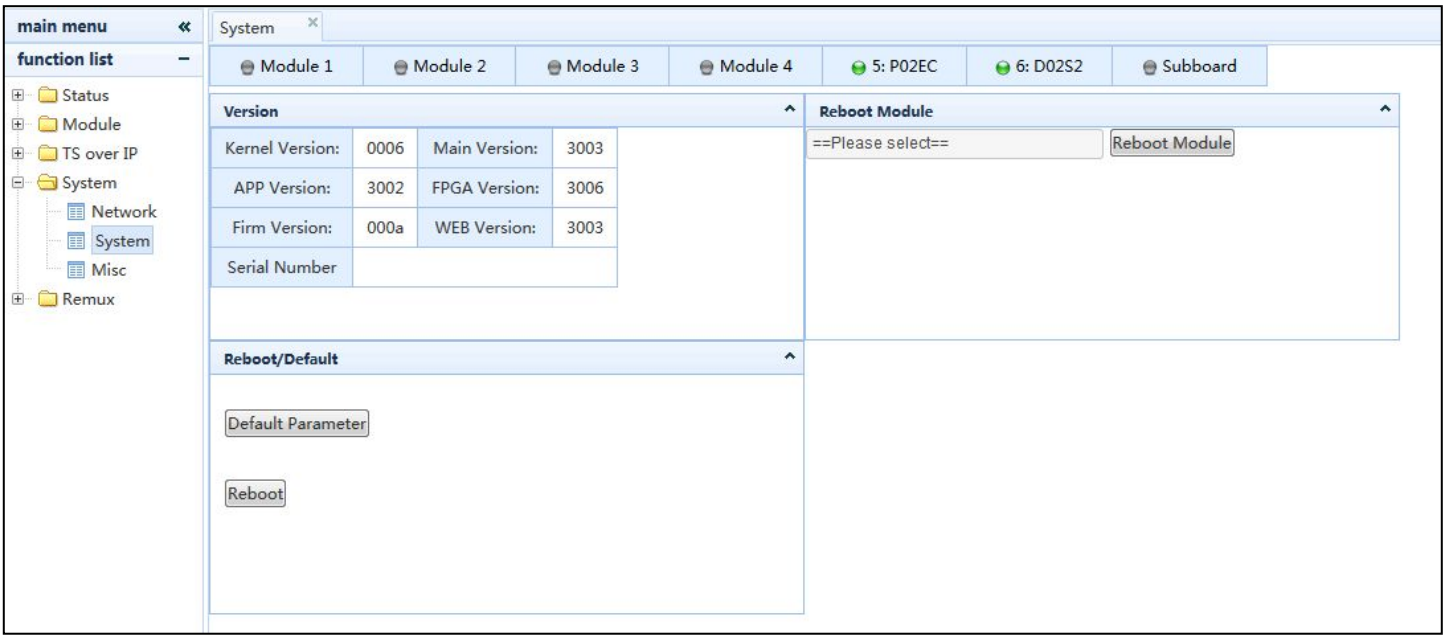
Menu Name	Options
IP Address	Management IP address
MAC Address	MAC address of Ethernet
Network Mask	Subnet mask of management
Gateway IP Address	Gateway of management
Old Username	Web browser login user name option for change to new user name
Old Password	Web browser login password option for change to new password
New Username	Web browser new login user name input
New Password	Web browser new password input



4.4.2. System

This page includes the version information and some system settings.

Menu Name	Options
Version	Main chassis firmware versions
Reboot Module	Sub-module reboot options, user can specific module to reboot independently
Default Parameter	The factory default settings option
Reboot	Soft reboot option

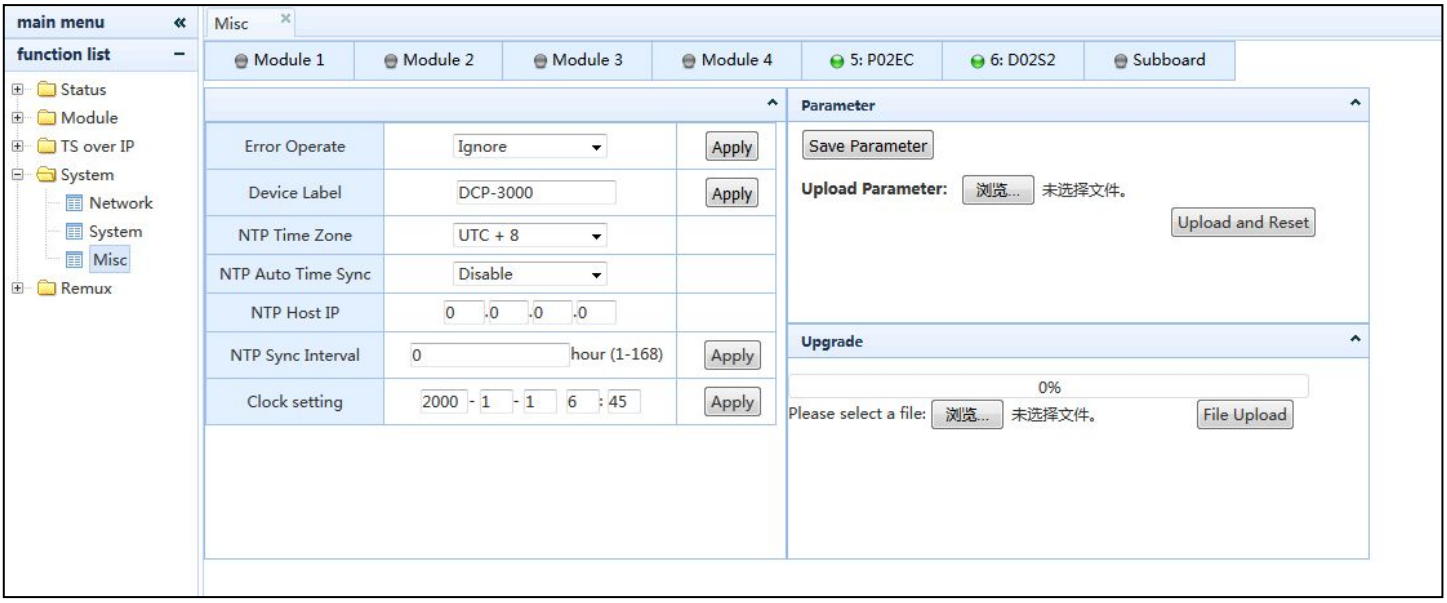


4.4.3. Misc

This page includes some different settings. Such as, Error Operate, NTP, Save/Load and Upgrade, etc.

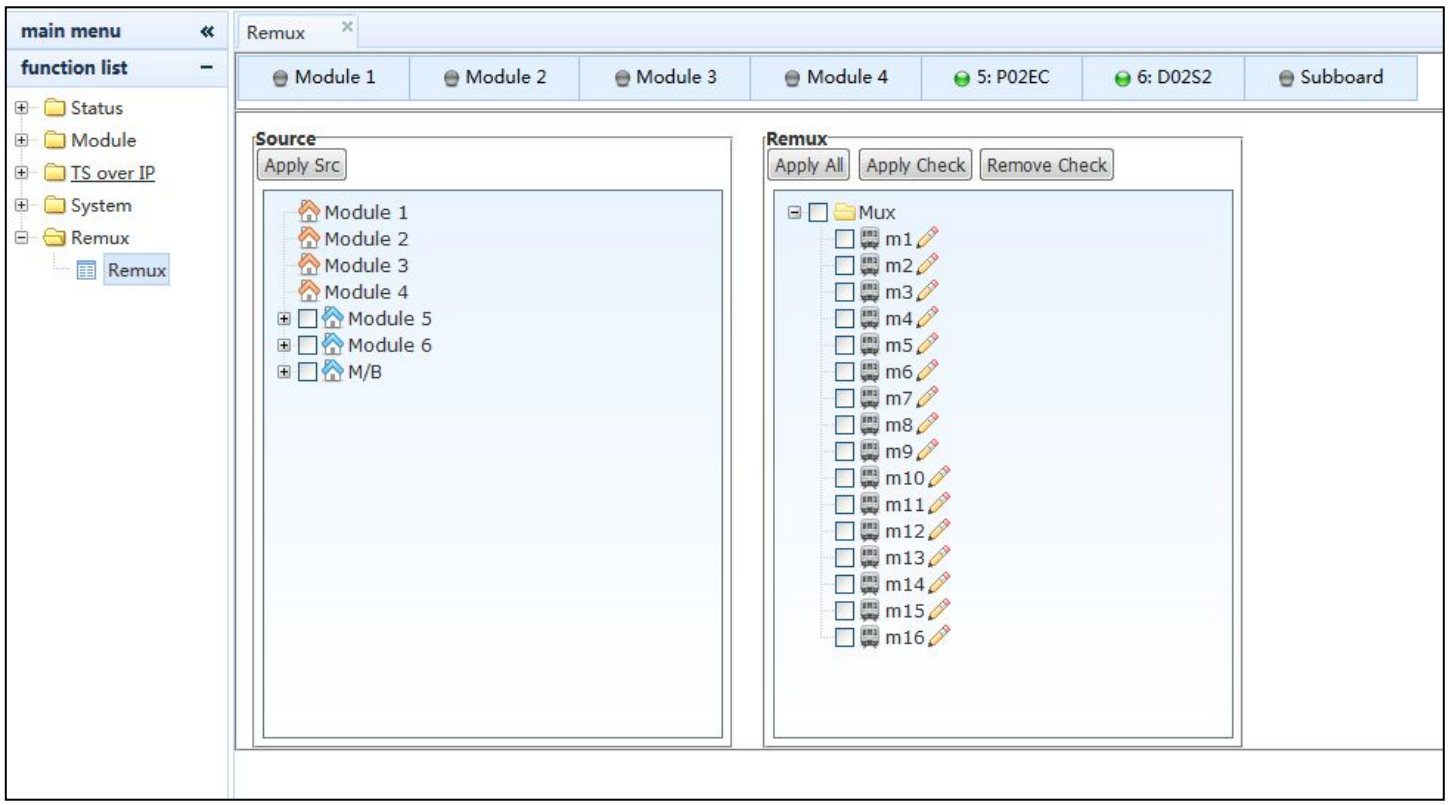
Error Operate	Watchdog setup option
Device label	Device label setup option, the remark of the chassis
NTP Time Zone	The time zone of the chassis location selection
NTP Auto Time Sync	Disable or Enable the NTP sync

NTP Host IP	The IP address of NTP host
NTP Sync Interval	The sync interval between chassis and NTP host, 1 to 168 hours
Clock setting	The clock of chassis option
Parameter	Save Parameter is for saving configurations as a file Upload and Reset is for uploading configure file and reset the unit configure as saved file
Upgrade	Main chassis upgrade option



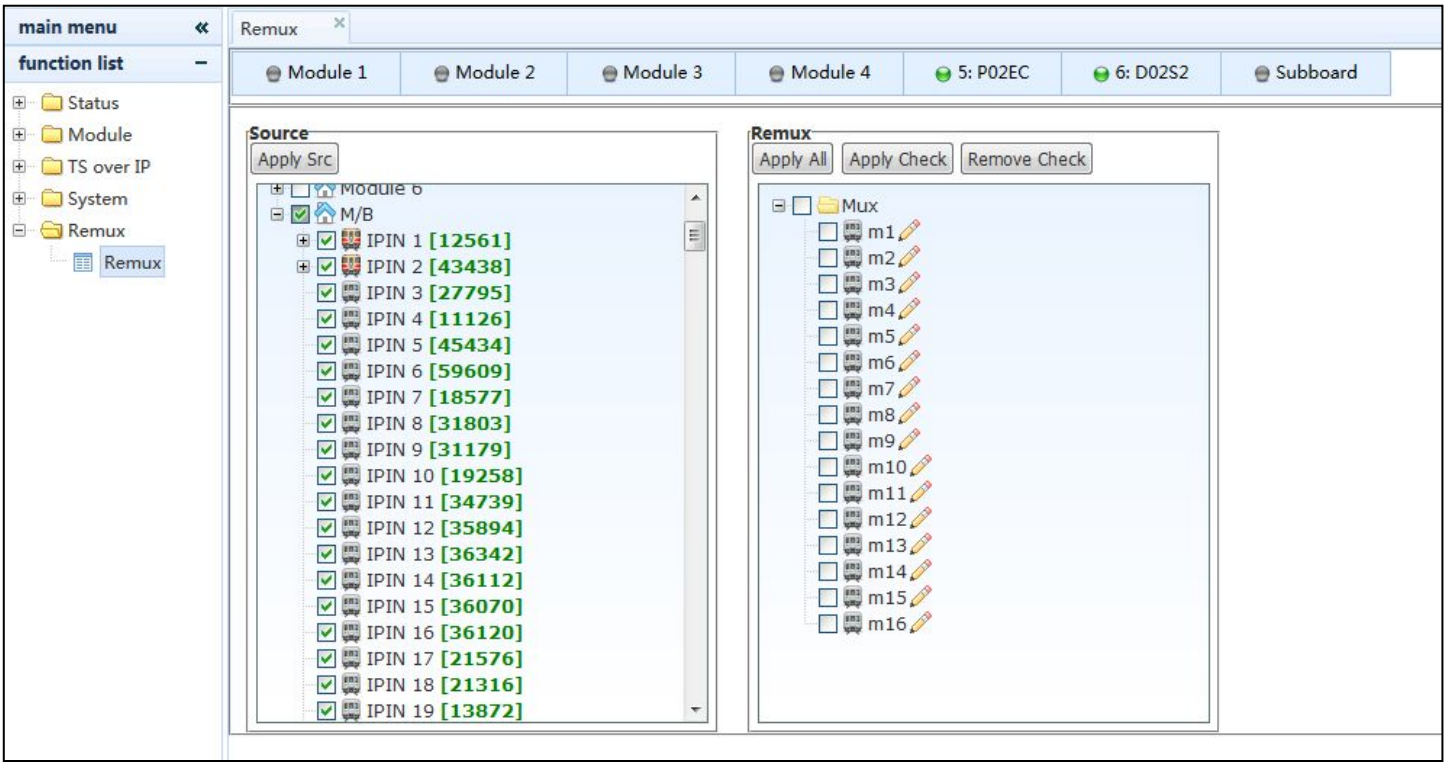
4.5. Remux

The main chassis will install the Remux function, the setup web page will be as below figure. On the left Source menu, user will see all enabled sources. On the right side is remux menu. There are 16 remuxes channels for user to setup. These 16 channels can be used as TS over IP source and input source for CI, modulator, etc.

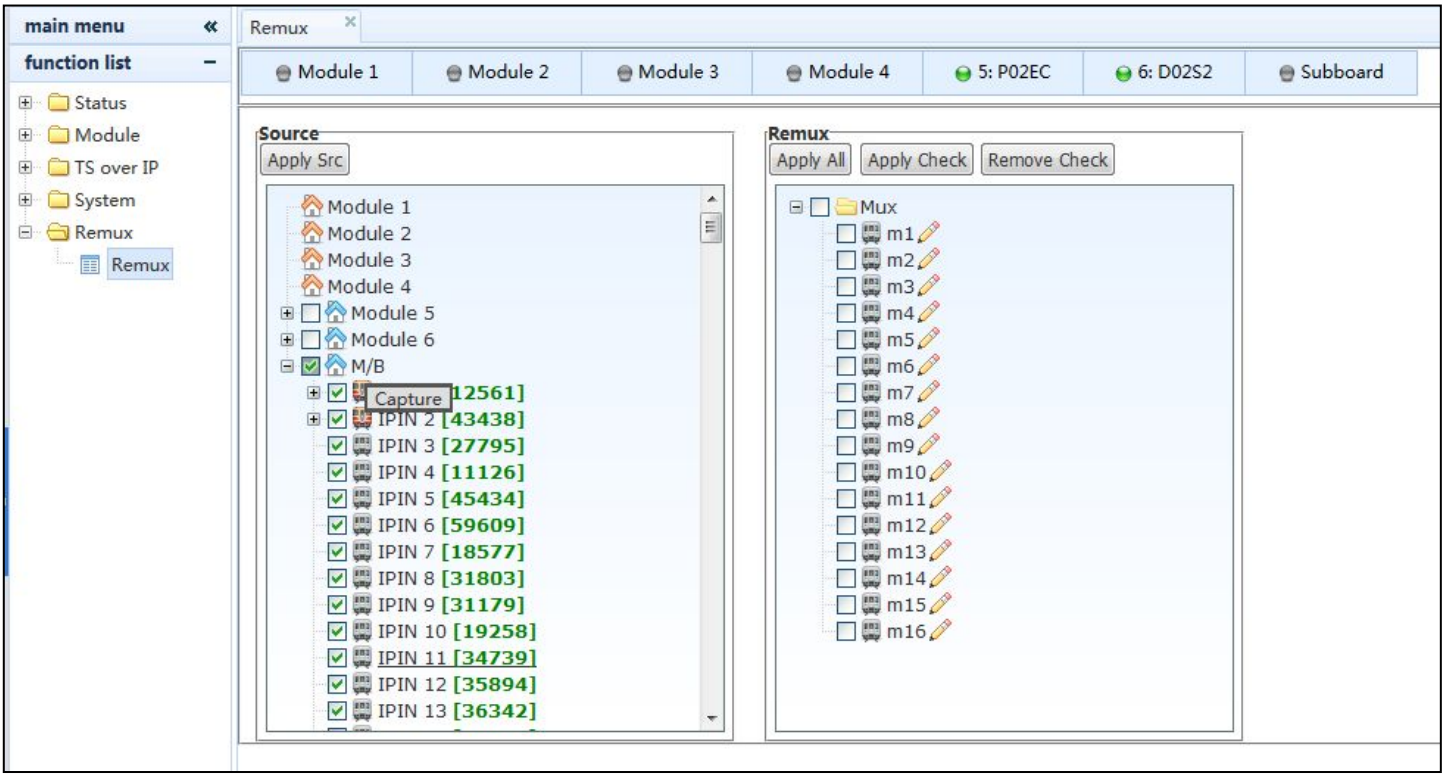


Quick setup example:

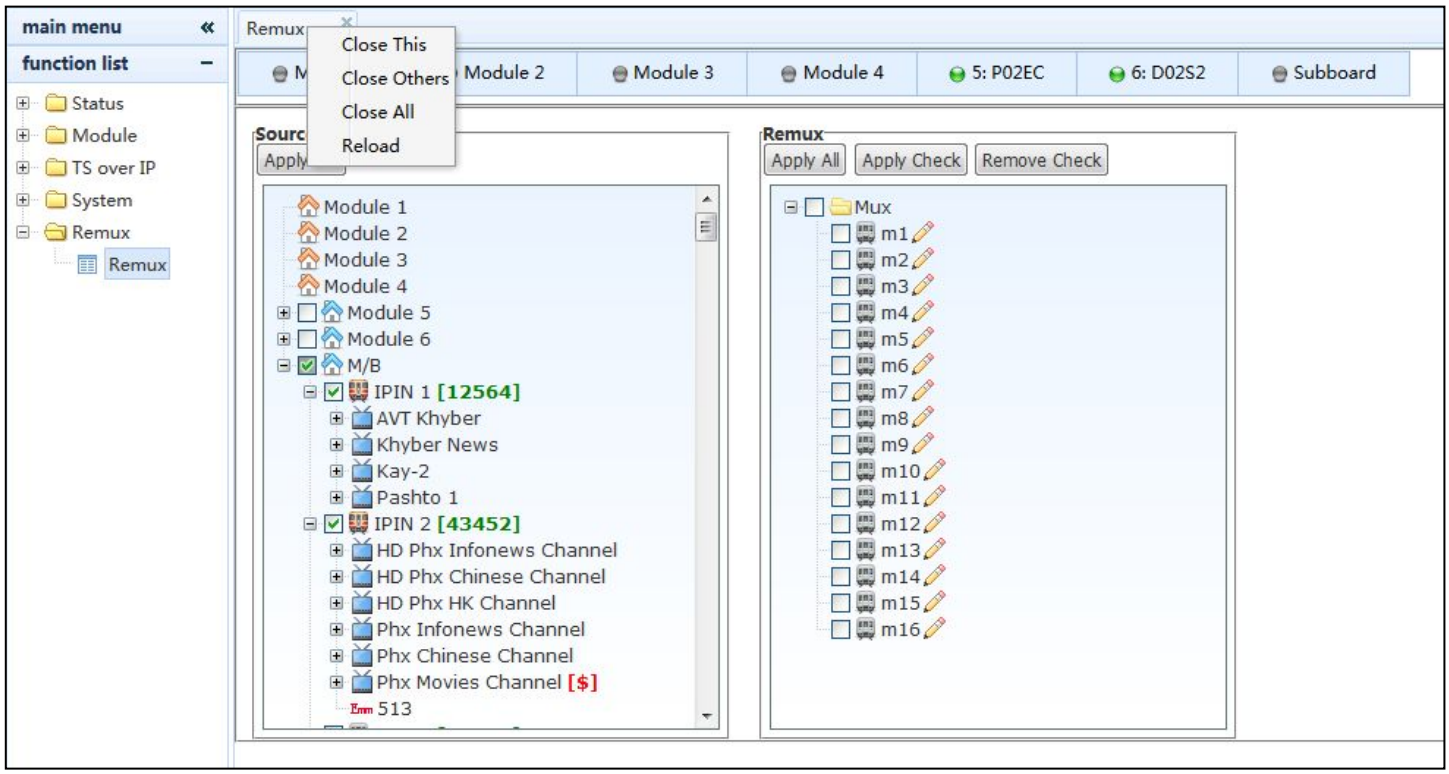
Step 1: select sources will be used as remux source, click Apply Src to sync sources before doing remux. The user can find the green bit rate(Kbps) of each source, if the source settings is successful, as it shown in figure below.



Step 2: move the mouse cursor to the modules and click right button of mouse, 'Capture' button will show up.

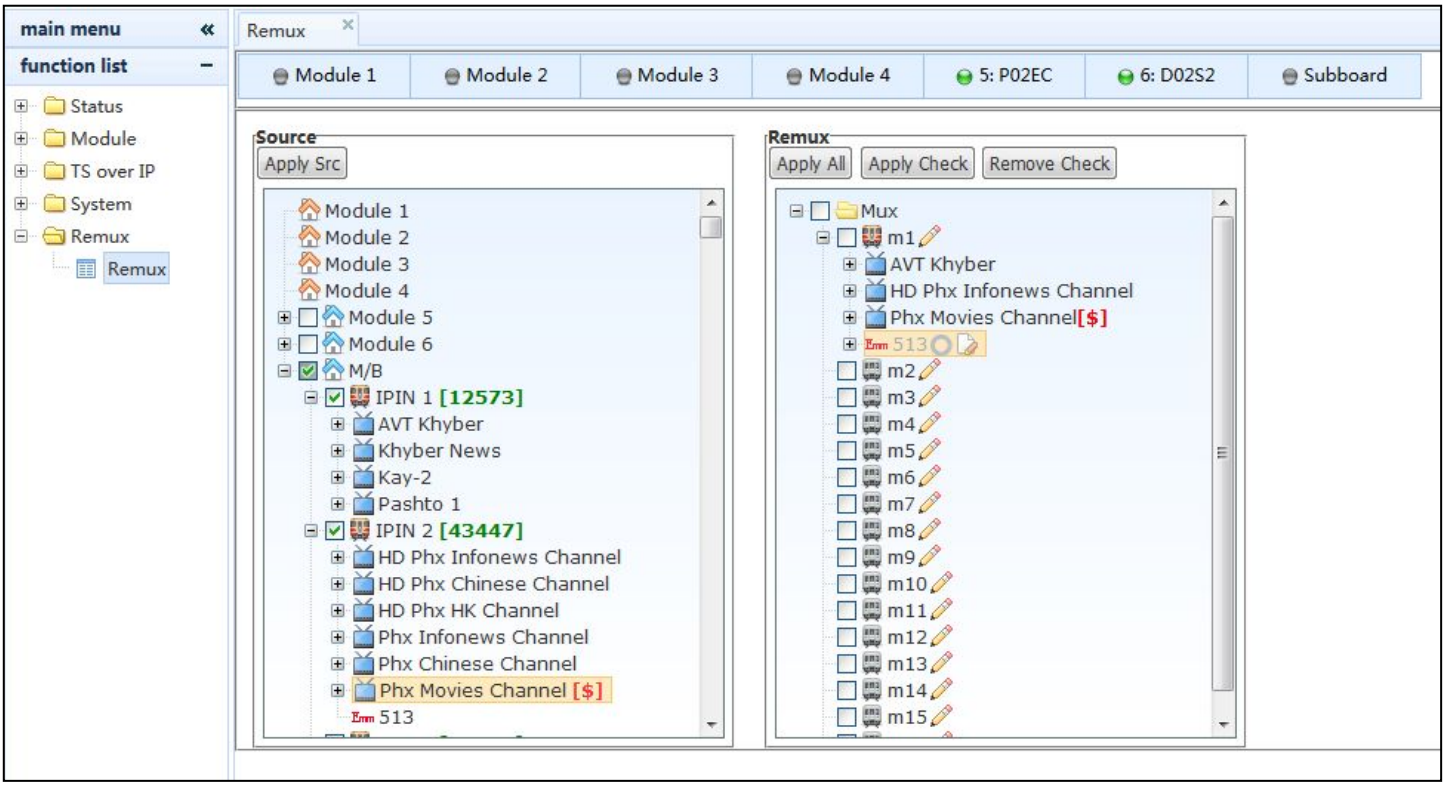


Step 3: click the Capture button and wait for the page refresh automatically. If there is no program list under the channel. The user have to reload the data of page. Move the mouse cursor to the sheet of 'Remux' and click the right button of mouse, 'Reload' button will show up, click it and wait, as it shown in figure below.

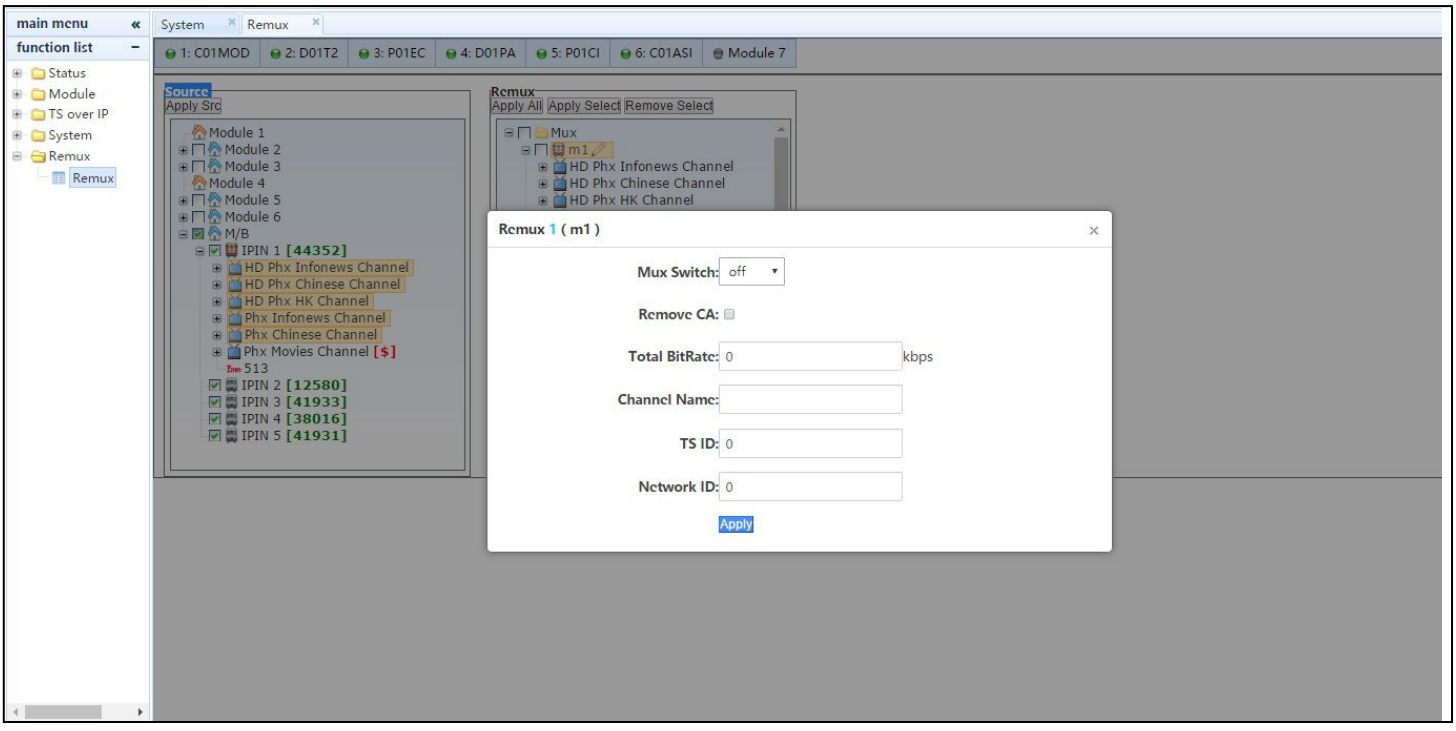


Step 4: move mouse to program which will be used for remux and drag it to one of the 16 remux channel, select the check box of remux channel, and then click the 'Apply Check', as it shown in figure below.

***Attention:** The EMM PID can be filtered when the user click the green cycle. Also, it can be modified.

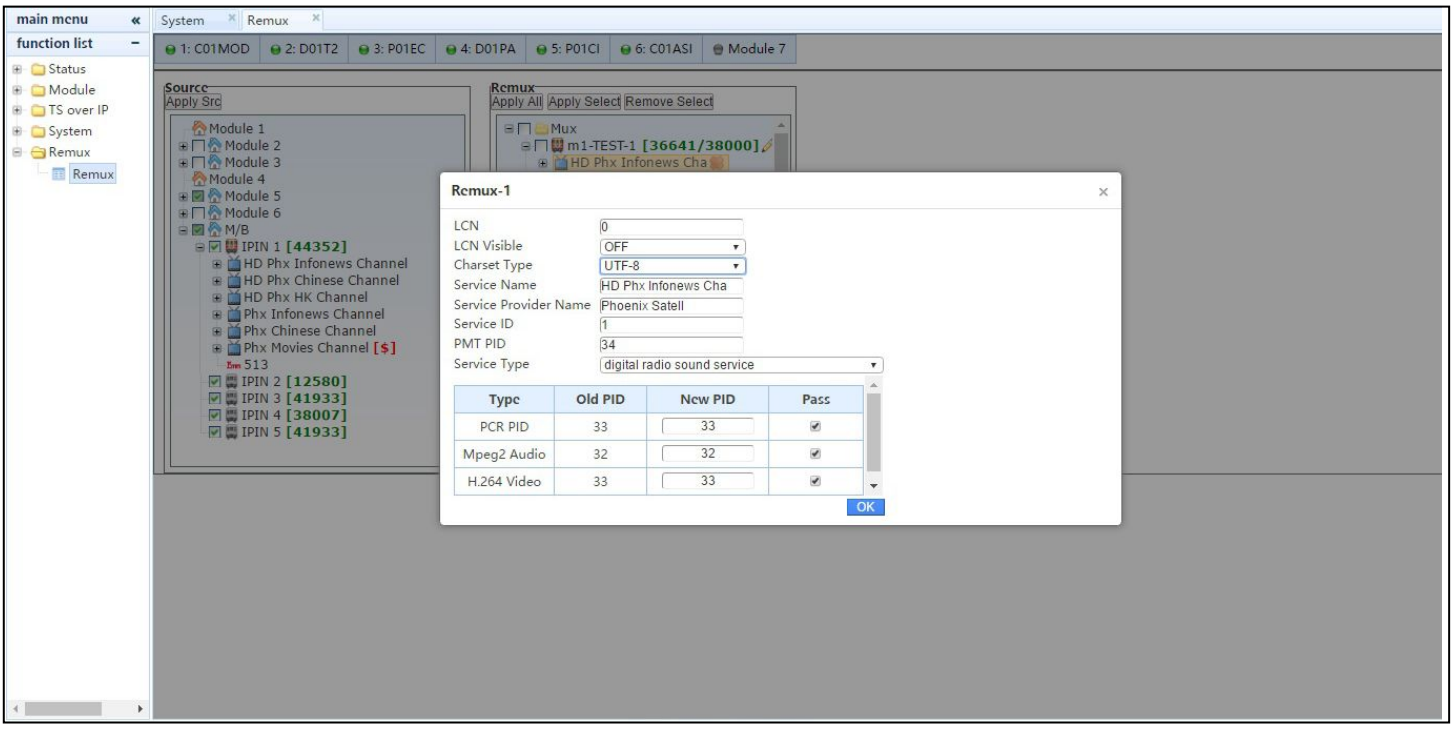


Step 5: click the 'pencil' icon of m1 to setup remux channel.



Menu Name	Options
Mux Switch	Switch of this remux channel
Remove CA	There will be no CAT, EMM and ECM in this remux output TS, if the check box is checked
Total Bitrate	The total bit rate of remux output TS
Channel Name	The name label of this remux channel, only display in the Web GUI
TS ID	TS ID of this remux output TS
Network ID	Network ID of this remux output TS which is belong to NIT

Step 6: move mouse to program of remux and click right button of mouse to edit program. Click the OK button after the settings.



Menu Name	Options
LCN	Local Channel Number of NIT
LCN Visible	LCN visible selection
Charset Type	The characters encode protocol selection of SDT
Service Name	Input the service name
Service Provider Name	Input the service provider name
Service ID	Input the service ID

PMT PID	Input the PMT PID
Service Type	Service Type selection
PID list	Display the PID Type Old PID, the original PID of input TS New PID, the PID of remux output TS Pass, the PID will be filtered, if the check box do not be checked

Step 7: the last step is to enable remux settings by click ‘Apply All’ or ‘Apply Check’ button.