Simple Media Platform

User’s Manual

V1.01-N

About This Manual

This manual describes the installation, setup and operation of this equipment in details. Please read it carefully to make sure you can operate the multiplexer correctly.

Important

- Avoid personal injury and product damage! Do not proceed beyond any symbol until you fully understand the indicated conditions.  You may find this symbol in the document that accompanies this product. This symbol indicates important operating or maintenance instructions.
- Please use the cable of good quality and make sure the connector is in good condition.
- Please do not use the power supply that doesn't match the requirement.
- Please do not open the machine cover.
- Specifications and functions may be changed for improvement without notice in advance.

Notices

● Trademark Acknowledgments

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● Publication Disclaimer

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● Copyright

Safety Instructions

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

Electric Shock Hazard

This equipment meets applicable safety standards. Refer to this equipment's Identification label or contact factory for details about regulatory compliance approvals.

WARNING:

To reduce risk of electric shock, perform only the instructions that are included in the operating instructions. Refer all servicing and installation to qualified service personnel only.

Electric shock can cause personal injury or even death. Avoid direct contact with dangerous voltages at all times. The protective ground connection, where provided, is essential to safe operation and must be verified before connecting the power supply.

Know the following safety warnings and guidelines:

- Only trained and qualified personnel should be allowed to install, replace, or service this equipment.
- Only qualified service personnel are allowed to remove chassis covers and access any of the components inside the chassis.
- No user-serviceable parts inside. Do not open.

Important Safety Instructions

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer's

instructions.

- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

WARNING:

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. The apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

Installation Site

When selecting the installation site, comply with the following:

Protective Ground - The protective ground lead of the building's electrical installation should comply with national and local requirements.

Environmental Condition - The installation site should be dry, clean, and ventilated. Do not use this equipment where it could be at risk of contact with water.

Installation Requirements

Installation of the equipment must comply with local and national electrical codes.

Equipment Placement

- Make sure the mounting surface or rack is stable and can support the size and weight of this equipment.
- The mounting surface or rack should be appropriately anchored according to manufacturer's specifications. Ensure this equipment is securely fastened to the mounting surface or rack where necessary to protect against damage due to any disturbance and subsequent fall.
- To prevent personal injury or damage to the chassis, never attempt to lift or tilt the chassis using the handles on modules (such as power supplies, fans, or cards); these types of handles are not designed to support the weight of the unit.
- Installation of this equipment in a rack should be such that the amount of airflow required for safe operation of this equipment is not compromised.
- Only install this equipment in a humidity- and temperature-controlled environment that meets the requirements given in this equipment's technical specifications.

AC Power

- This product requires short-circuit (overcurrent) protection to be provided as part of the building installation. Install only in accordance with national and local wiring regulations. The outlet must be near this equipment and must be easily accessible.
- Connect this equipment only to the power sources that are identified on the equipment-rating label normally located close to the power inlet connector(s).
- The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device.
- Always pull on the plug or the connector to disconnect a cable. Never pull on the cable itself.
- Unplug this equipment when unused for long periods of time.

Circuit Overload

Know the effects of circuit overloading before connecting this equipment to the power supply. Take care when connecting units to the supply circuit so that wiring is not overloaded.

WARNING:

Consideration should be given to the connection of this equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring. Appropriate consideration of information given on the equipment-rating label should be used when addressing this concern.

General Servicing Precautions

WARNING: Avoid electric shock! Opening or removing this equipment's cover may expose you to dangerous voltages.

Be aware of the following general precautions and guidelines:

- **Wristwatch and Jewelry** - For personal safety and to avoid damage of this equipment during service and repair, do not wear electrically conducting objects such as a wristwatch or jewelry.
- **Lightning** - Do not work on the system or connect or disconnect cables during periods of lightning activity.
- **Labels** - Do not remove any warning labels. Replace damaged or illegible warning labels with new ones.
- **Covers** - Do not open the cover of this equipment and attempt service unless instructed to do so in the instructions. Refer all servicing to qualified service personnel only. The covers are integral part of the safety design of the product. Do not operate the unit without the covers installed.
- **Safety Checks** - After service, assemble this equipment and perform safety checks to ensure it is safe to use before putting it back into operation.

Electrostatic Discharge

Electrostatic discharge (ESD) results from the static electricity buildup on the human body and other objects. This static discharge can degrade components and cause failures.

Take the following precautions against electrostatic discharge:

- Use an anti-static bench mat and a wrist strap or ankle strap designed to safely ground ESD potentials through a resistive element.
- Keep components in their anti-static packaging until installed.
- Avoid touching electronic components when installing a module.

Contents

Chapter1 Overview

1.1 General

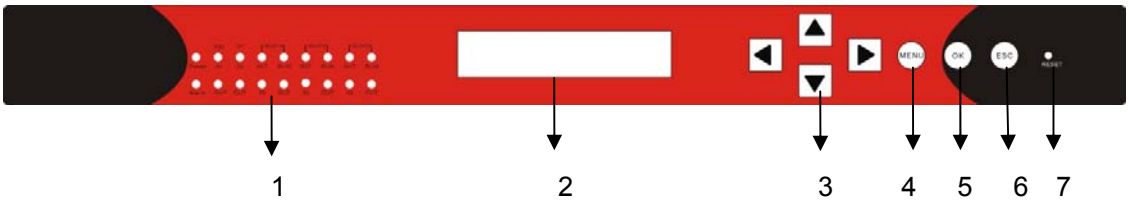
The device is a new generation integrated media platform with powerful media processing capability (4Gigabit data). Focused on the growing small and compound application requirement, it is architected to house three modules of various functional options to perform almost all the critical media application in a 1U chassis, including receiving, decoding, encoding, transcoding, scrambling and modulation. Industry standard interface, user-friendly operation UI and flexible upgrading strategy allow the platform being easily integrated into customer's existing network infrastructures. What the device provide enable the DVB content providers enjoy a highly effective, flexible, reliable and money-saving DVB solution.

Of total 3 I/O slots, each I/O slot can be equipped with:

- **ASI module**: 4 ASI ports for input/output stream
- **GbE IP module**: two Gigabit Ethernet ports for input and/or output IP stream
- **DVB-S/S2 module**: 4 RF input ports
- **DVB-T or ISDB-T module**: 4 RF input ports
- **DVB-C module**: 2 RF input ports (for 4 frequencies) and 2 RF loop out ports
- **DVB-CI module**: 2 CI slots
- **8-QAM module**: 8 frequencies within 1 RF output port and1 monitor port
- **4-COFDM module**: 4 frequencies within 1 RF output port and 1 monitor port
- **DVB Scrambler module**: support up to 1Gbps data scrambling
- **MPEG-2/MPEG-4 transcoder module**: two channels HD or four channels SD transcoding concurrently.
- **MPEG-2 SD AV encoder module**: two channels encoding concurrently
- **MPEG-2 SD SDI/AV encoder module**: two channels encoding concurrently
- **H.264 SD/HD SDI/AV encoder module**: two channels encoding concurrently

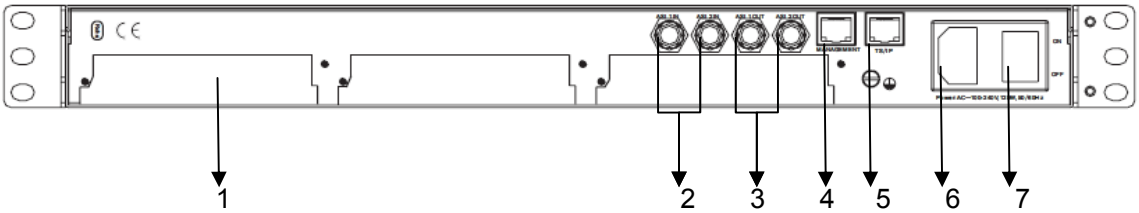
- **H.264 SD/HD HDMI encoder module**: two channels encoding concurrently
- **H.264 SD/HD SDI/HDMI decoder module**: two channels decoding concurrently

1.2 Front Panel



1. LED indicator: Indicate the status of the mother board and modules.
   - Green and flashing: module is under initiation
   - Green: normal
   - Red and flashing: initiation fails
   - Red: error detected
2. LCD display.
3. Front panel operation Keys
4. Menu button.
5. OK button
6. Esc button
7. Reset button

1.3 Rear Panel



1.Module slot: Inset Modules

2.ASI IN;

3.ASI OUT:

4.Ethernet interface for remote management control

5.TS/IP I/O

6.Power supply interface

7.Switch

1.4 Introduction to Each I/O Module

The equipment fully incorporates the modular concept with built around a 1 RU high housing. The flexible modular concept ensures really easy system application switch and capacity upgrades.

The following module is available:

- **DVB-S/S2 module**
- **DVB-C module**
- **DVB-T module**
- **GbE IP module**
- **CI module**
- **ASI I/O module**
- **H.264 SD/HD HDMI Encoder module**
- **H.264 SD/HD SDI/AV Encoder module**
- **MPEG2 SD AV Encoder module**
- **MPEG2 SD SDI/AV Encoder module**
- **DVB Scrambler module**
- **QAM module**
- **OFDM module**
- **MPEG2 to MPEG4 Transcoder module**
- **MPEG4 to MPEG2 Transcoder module**

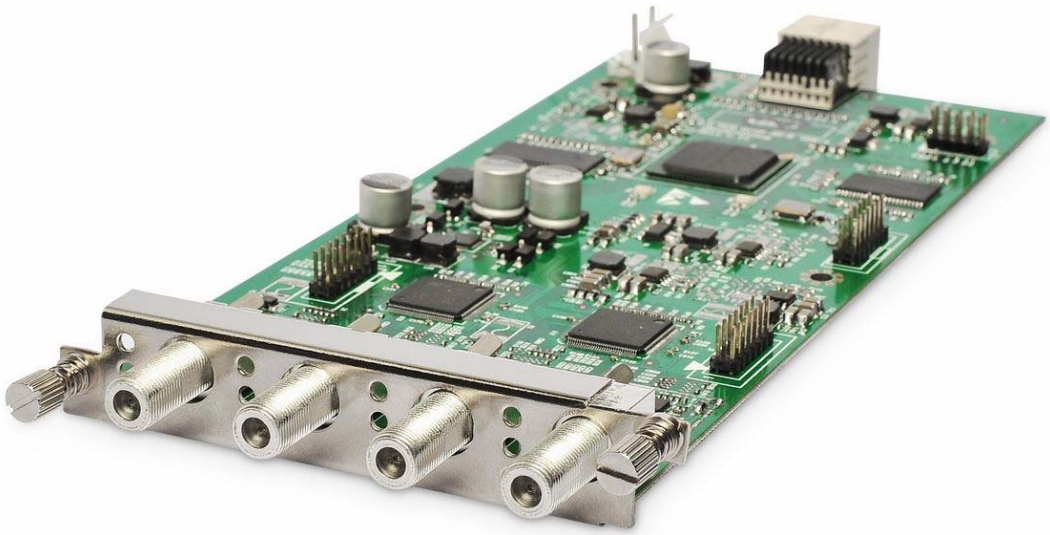
More modules, such as IP-QAM module, will be available at a later date. Please contact your service provider for the details.

When the equipment leaves our assembly line, the device is configured as ordered. If the device is not fully equipped with all six modules, it can always be upgraded at a later date by adding or replacing different modules.

1.4.1 DVB-S/S2 module

The DVB-S/S2 module is equipped with 4 RF interface ports. Each RF interface can be connected to one single LNB cable of a dish and receive all the programs transmitted on a satellite transponder.

Up to 3 DVB-S/S2 modules can be installed on one unit, which means that one unit can support up to 12 DVB-S/S2 input signals (12 transponders).

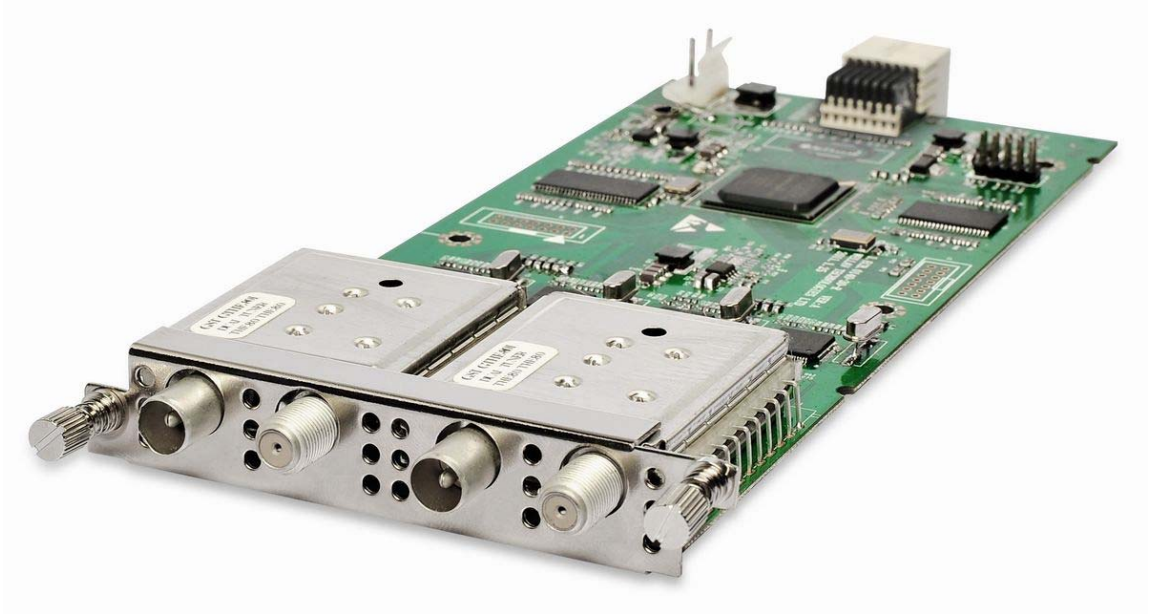


Description	Specification
Inputs	4 x RF input, 75 Ω
Frequency Range	950 ~ 2150 MHz
Constellation	QPSK, 8PSK
FEC Mode	1/2, 2/3, 3/4, 5/6, 7/8 (DVB-S) 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 (DVB-S2)
Signal level	-65dBm ~ -25dBm
Symbol Rate	1M ~ 45Ms/s
22KHz	18 ~ 26 KHz
Per RF input bit rate	Up to 150Mbps
Standard	ETS300421, ETS302307

1.4.2 DVB-C module

Similar to DVB-S/S2 module, this module is for receiving DVB-C signals, and each module can support up to 4 DVB-C signal receiving and loop out.

One unit supports to install a max of 3 DVB-C modules.



Description	Specification
Inputs	2 x input (each handles two RF input signal) 2 x Loop out, 75 Ω
Frequency Range	48 ~ 862 MHz
QAM Mode	16 / 32 / 64 / 128 / 256 QAM
FEC Mode	Annex A/C or Annex B (optional)
Signal Level	32 dBuV ~ 100 dBuV
Symbol Rate	Up to 6.952 Ms/s
Per RF input bit rate	Up to 55 Mbps
Standard	ETS300429

1.4.3 DVB-T / ISDB-T Module

Similar to DVB-S/S2 module, this module is for receiving DVB-T/ISDB-T signals, and each module can support up to 4 DVB-T/ISDB-T signal receiving and loop out.

One unit supports to install a max of 3 DVB-T/ISDB-T modules.

Description	Specification
Inputs	4 x RF input, 75 Ω
Frequency Range	50 ~ 860 MHz
Constellation	QPSK, 16 QAM, 64QAM (DVB-T) DQPSK, QPSK, 16QAM, 64QAM (ISDB-T)
FEC Modes	1/2, 2/3, 3/4, 5/6, 7/8
Guard Interval	1/4, 1/8, 1/16, 1/32
OFDM spectrum	2K and 8K FTT (DVB-T), 1K, 2K and 4K FTT (ISDB-T)
Signal Level	-80 ~ -20 dBm
Channel Bandwidth	6 / 7 / 8MHz (DVB-T), 6MHz (ISDB-T)
Per RF input bit rate	Up to 31.67Mbps (DVB-T) Up to 23.4 Mbps (ISDB-T)
Standard	ETS300744, ISDB-T, ISDB-Tb

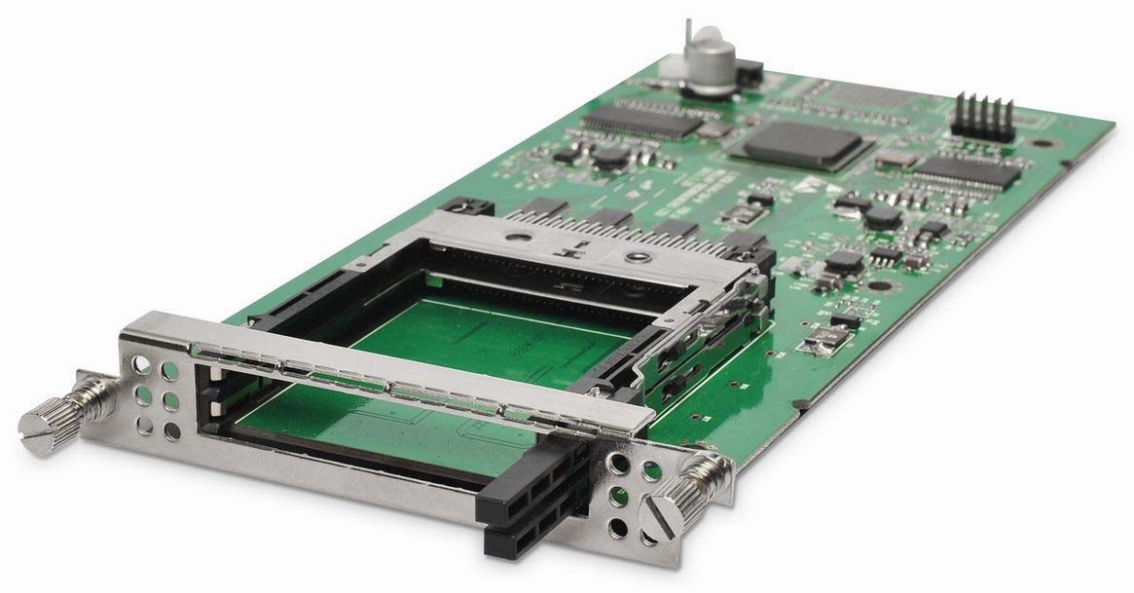
1.4.4 GbE IP module

A GbE Interface module is equipped with 2 RJ45 connectors and 2 SFP connectors. To protect video services transported over IP networks from impairments caused by network jitter, IP packet loss, or out-of-order IP packets, a GbE Interface module with FEC option based on Pro-MPEG COP3 is provided.

Description	Specification
Connector	2 x 100 / 1000Base-T, RJ-45 2 x 100 / 1000Base-T, SFP
Package format	RTP / UDP
Traffic type	Unicast / Multicast
Per module	Up to 720Mbps (72Mbps per stream)

1.4.5 CI module

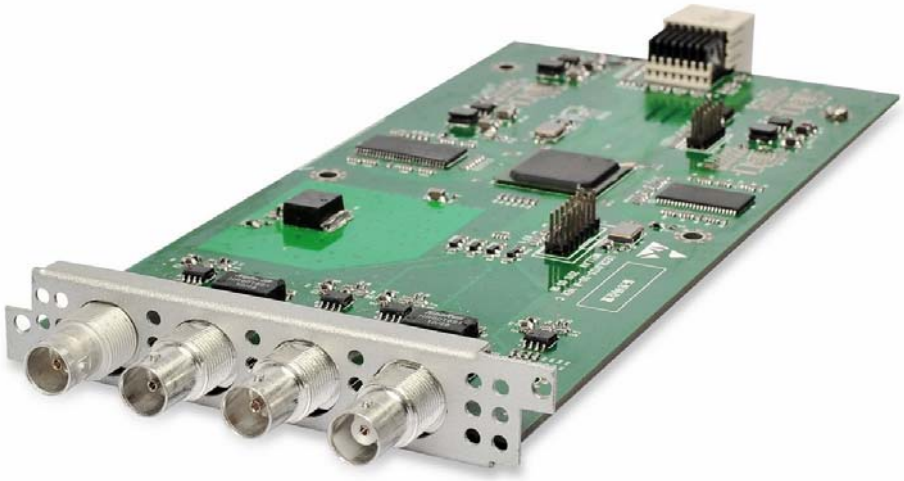
The CI module is with 2 independent common interface slots, which supports multi-channel descrambling by inserting different CAM modules.



Description	Specification
Connector	PCMCIA Dual CI slots
CA module	Multicrypt / Simulcrypt, Hot Plug
CAS Support	Conax, Irdeto, Viaccess, Nagravision, Novel-Super TV, CTI, DVCrypt & etc.
Input & Output Bitrate	Max. 100Mbps (Need to work with supported CAM)

1.4.6 ASI I/O module

The ASI module is equipped with 4 BNC-type ASI interface ports, which can individually be configured as either ASI input port or ASI output port using the management software of the device. All ASI interface ports support Multiple Program Transport Streams (MPTS) as well as Single Program Transport Streams (SPTS) according to ISO/IEC 13818.



Each unit can be equipped with maximum 3 ASI Interface Modules.

Note: ASI interface of this module can be configured as either Input or Output. But, the interface of the ASI module displays as board 4 in the NMS can not be configured.

Description	Specification
Inputs / Outputs	4 x ASI, BNC 75 Ω
TS Max Bit Rate	Up to 150 Mbps (each ASI port)
Packet type	188 / 204 Bytes
Standard	EN50083-9

1.4.7 H.264 SD&HD SDI/AV Encoder module

The H.264 SD&HD encoder module supports two A/V and SD/HD SDI input streams encoding simultaneously. Due to the highly encoding efficiency of the H.264 technology, this encoder module enables the operator to encode the analog and SDI streams at low bit rate for transmission.

Description	Specification
Inputs	2×SDI, BNC 75Ω / 2×CVBS, 2×Audio inputs (balanced and unbalanced)
Video Processing	
Video Format	MPEG-4 / H.264-AVC HP@L4
Image Format	PAL and NTSC
Definition	1920x1080i;1280x720p; 720x480i; 720x576i
Aspect ratio	4:3, 16:9
GOP configurable	I, IP, IPB, IPBB
Video bit rate	CBR & VBR, SD 1.0~20Mbps; HD 6.0~20Mbps
Audio Processing	
Audio Format	MPEG-1 and MPEG-2 Layer-I, II, AAC, Dolby AC-3 (optional)
Sampling frequency	32.1KHz, 44.1KHz, 48KHz
Audio Mode	Stereo, joint stereo, dual channel, mono

1.4.8 H.264 SD&HD HDMI Encoder module

The H.264 SD&HD HDMI encoder module supports two HDMI input streams encoding simultaneously. Due to the highly encoding efficiency of the H.264 technology, this encoder module enables the operator to encode the analog and SDI streams at very low bit rate for transmission.

Description	Specification
Inputs	2×HDMI
Video Processing	
Video Format	MPEG-4 / H.264-AVC HP@L4
Image Format	PAL and NTSC
Definition	1920x1080i; 1280x720p; 720x480i; 720x576i
Aspect ratio	4:3, 16:9
GOP configurable	I, IP, IPB, IPBB
Video bit rate	CBR & VBR, SD 1.0~20Mbps; HD 6.0~20Mbps
Audio Processing	
Audio Format	MPEG-1 and MPEG-2 Layer-I, II
Sampling frequency	32KHz, 44.1KHz, 48KHz
Audio mode	Stereo, joint stereo, dual channel, mono

1.4.9 MPEG2 SD SDI/AV Encoder module

The MPEG-2 SD encoder module supports two A/V or SDI input streams encoding simultaneously. It's suitable for MPEG-2 broadcasting network operator.

Description	Specification
Inputs	2×SDI, BNC 75Ω / 2×CVBS, 2×Audio inputs (balanced and unbalanced)
Video Processing	
Video Format	MPEG-2 4:2:0 MP@ML
Image Format	PAL and NTSC
Definition	720x480i; 720x576i
Aspect ratio	4:3, 16:9
GOP configurable	I, IP, IPB, IPBB
Video bit rate	CBR & VBR, 2.0~15Mbps
Audio Processing	
Audio Format	MPEG-1 Layer-I
Sampling frequency	32KHz, 44.1KHz, 48KHz
Audio mode	Stereo, joint stereo, dual channel, mono

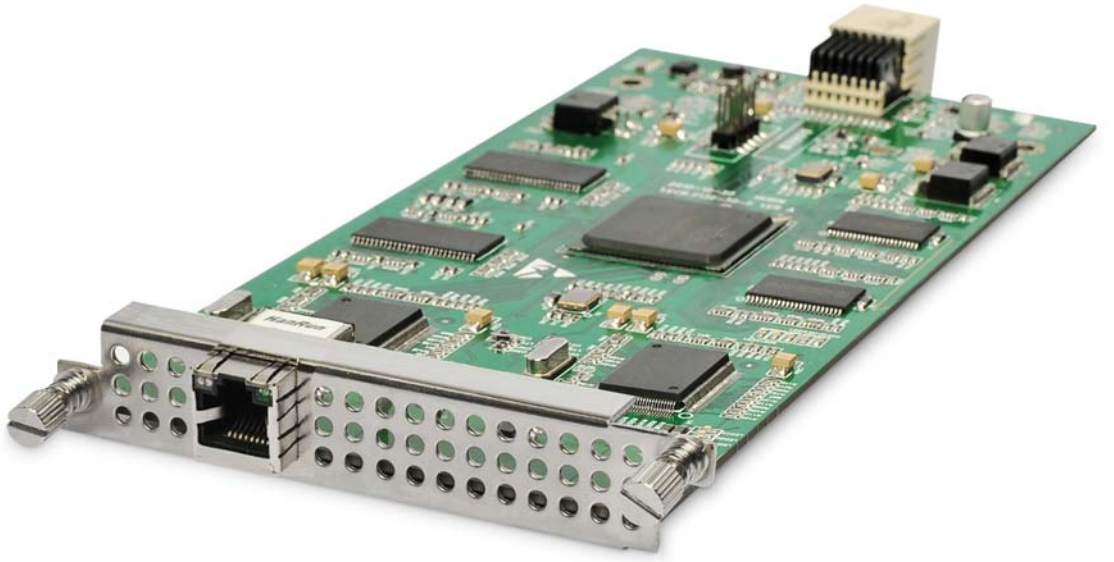
1.4.10 MPEG2 SD AV Encoder module

The MPEG-2 SD encoder module supports two analogue Audio/Video input streams encoding simultaneously. It's suitable for MPEG-2 broadcasting network operator.

Description	Specification
Inputs	2×CVBS, 2×Audio inputs (balanced and unbalanced)
Video Processing	
Video Format	MPEG-2 4:2:0 MP@ML
Image Format	PAL and NTSC
Definition	720x480i; 720x576i
Aspect ratio	4:3, 16:9
GOP configurable	I, IP, IPB, IPBB
Video bit rate	CBR & VBR, 2.0~15Mbps
Audio Processing	
Audio Format	MPEG-1 Layer-I
Sampling frequency	32KHz, 44.1KHz, 48KHz
Audio mode	Stereo, joint stereo, dual channel, mono

1.4.11 DVB Scrambler module

A DVB scrambler module is provided with 1 Gigabit Ethernet interface which is used to communicate with CAS server. The module is capable of a total throughput of 1 Gbps in and 1 Gbps out. It is fully compliant with DVB Simulcrypt standard and supports up to 4 different CAS Simulcrypt application.



Description	Specification
Max TS streams	8 or 12 streams
Max Bitrate	72Mbps per stream
Per module	Up to 720Mbps
CA Support	Compatible with most leading CA systems
Simulcrypt scrambling	4 CA systems simultaneously

1.4.12 QAM/COFDM module

This modulation module supports either 8 QAM channels or 4 COFDM channels modulation output depending on preloaded software. With up to 5 modules on a single unit, it supports up to 40 QAM frequencies or 20 COFDM frequencies outputs.

Description	Specification
QAM Module	
Outputs	1 connector for 8 x RF (F-type female) 1 connector for monitor output (F-type female)
Standard	ITU-T J.83 Annex A/C, Annex B
Constellations	16 / 32 / 64 / 128 / 256 QAM
Symbol Rate	Up to 6.952 Ms/s
Output Level	90 ~ 106 dBuV (eight adjacent channels) 90 ~ 112 dbuV (four adjacent channels) 90 ~ 115 dBuV (one channel only)
Output Frequency Range	48 ~ 862 MHz
Output Frequency step size	50kHz
COFDM Module	
Output	1 connector for 4 x RF (F-type female) 1 connector for monitor output (F-type female)
Transmission mode	2K, 8K
Guard interval	1/4, 1/8, 1/16, 1/32
Constellation	QPSK, 16QAM, 64QAM
Code rate	1/2, 2/3, 3/4, 5/6, 7/8
Output Level	90 ~ 112 dBuV (four adjacent channels) 90 ~ 115 dBuV (one channel only)
Output Frequency Range	50 ~ 858 MHz
Output Frequency step size	50kHz

1.4.13 TC2 & TC4 Transcoder module

The transcoder module is capable of transforming two MPEG-4/H.264 programs to MPEG-2 format in high quality simultaneously. It supports the transformation of two internal programs within the unit, for example, the programs received from DVB-S2 module or ASI module.

MPEG-4 to MEPG-2 Transcoder Module (TC2)	
Description	**Specification**
Video Processing	
Processing Channel Quantity	2 channels (default) 4 channels (optional)
Video Output Format	MPEG-2 4:2:0 MP@ML
Video Standard	PAL and NTSC
Video Resolution	480i, 576i
Aspect ratio	4:3, 16:9
Video encoding bit rate	CBR & VBR, 1.0~20.0Mbps
Audio Processing	
Audio Format	MPEG-1 Layer- I
Sampling frequency	64~384KHz

Audio mode	Stereo, joint stereo, dual channel, single channel

MPEG-2 to MEPG-4 Transcoder Module (TC4)	
Description	**Specification**
Video Processing	
Processing Channel Quantity	2 channels (default) 4 channels (optional)
Video Output Format	MPEG-4 / H.264-AVC HP@L4
Definition	1920x1080 (60p/59.94p/30p/24p/60i/59.94i/50i); 1280x720 (60p/59.94p/50p); 720x480 (60i); 720x576 (50i)
Aspect ratio	4:3, 16:9
Video bit rate	CBR & VBR, 1.0~20Mbps
Audio Processing	
Audio Format	MPEG-1/-2 Layer-I, II
Sampling frequency	64KHz~384KHz

1.4.14 Low Bitrate H.264/ MPEG-2 SD Encoder

This Encoder supports to encode two Audio/ Video or SDI input streams, the encoding format include H.264 and MPEG-2 SD simultaneously. Due to the high encoding efficiency of the encoder chipset, this encoder module enables the operator to encode the analog and SDI streams at very low bitrate for transmission.

Description	Specification
Inputs	2xSDI/CVBS, 2×Audio inputs (balanced and unbalanced)
Video Processing	
Video Format	MPEG-2 4:2:0 MP@ML MPEG-4 AVC/ H.264 4:2:0 MP@L3
Image Format	PAL and NTSC
Definition	720x480i; 720x576i
Aspect ratio	4:3, 16:9
Video bit rate	CBR & VBR, MEPG-2 1.5Mbps~15Mb H.264 0.2~9Mbps
Audio Processing	
Audio Format	MPEG-1 Layer-I, AAC
Sampling frequency	32KHz, 44.1KHz, 48KHz
Audio mode	Stereo, dual channel, single mono

1.4.15 Low Bitrate H.264/ MPEG-2 SD Transcoder

The Low bit rate transcoder module is capable of transcoding four internal programs into MPEG-2 or MPEG-4 AVC/H.264 format in high quality simultaneously. Due to the high efficient processing chipset, this transcoder can transcode the programs at a very low bit rate for operator to transmitting in the networks.

Description	Specification
Video Processing	
Processing Channel Quantity	2 channels (default) 4 channels (optional)
Video Output Format	MPEG-4 AVC/ H.264, MPEG-2
Definition	576i, 480i
Aspect ratio	4:3, 16:9
Video bit rate	CBR & VBR, H.264 0.2~9Mbps MPEG-2 1.5~15Mbps
Audio Processing	
Audio Format	MPEG-1 Layer- II, AAC
Audio Bit rate	96kbps~384Kbps

Chapter2 Installation

2.1 Introduction

This chapter contains the information for technicians installing the equipment.

WARNING:
Allow only authorized and qualified service personnel to install, operate, maintain, and service this product. Otherwise, personal injury or equipment damage may occur.

2.2 Installation Preparation

Before You Start

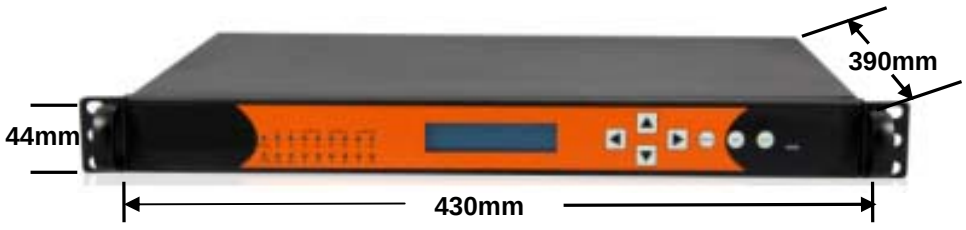
Make sure that the chassis is in good condition and that you have the tools and equipment needed.

Unpacking and Inspecting the Housing

As you unpack the housing, inspect it for shipping damage. If you find any damage, contact the customer services department.

Chassis Dimensions

The following drawing shows the dimensions of the equipment.



2.3 Operating Temperature

The equipment is designed to operate within a specified operating temperature range. Please

install the equipment in an environment that fits for the operation requirements.

WARNING:
Avoid damage to the equipment. Your warranty is void if you operate this product above the maximum specified operating temperature.

We recommend the following activities to moderate the operating temperature:

- Mount ventilation profiles at the bottom and top of the 19-inch equipment rack. This allows the fresh air to enter and the hot air to leave the rack.
- Place the 19-inch equipment rack in a conditioned room with a temperature below 25°C (77°F).

2.4 Rack Mounting

2.4.1 Tools and Accessories

You need the following tools and accessories for mounting the unit:

- Screwdriver.
- Support brackets and rack mounting screws.

2.4.2 Mounting Requirements

Follow the mounting guidelines below:

- Use 19-inch racks with the appropriate depth.
- Mount the unit adequately to secure optimal operation and reliability.
- Use rack-compatible support brackets to support the unit properly.
- Pay attention to the mechanical loading and stability to avoid hazardous situations.

2.4.3 Mounting the equipment

It is of great importance to place the equipment and its components in a conditioned room within the ambient temperature specifications.

Perform the following procedure to install the equipment.

1. Unpack the device.

2. Select a 1 RU high location in the rack.

3. If the rack holes are not threaded, install a cage nut in the top and bottom holes of the selected 1 RU space.

4. Mount a left and right support bracket in the 19-inch rack.

5. Slide the housing completely in the 19-inch rack with the bottom being supported by the support brackets.

6. Insert the front panel rack mounting screws through the washers into the threaded holes or cage nuts.

7. Tighten the front panel rack mounting screws.

2.5 Connecting the AC Power

Perform the following steps to connect AC power to the equipment.

1. Connect the AC power cord to the back of the device.

2. Connect the power cord to the AC power outlet.

Note:

- If your equipment is equipped with two AC type power supply units, it is advisable to plug each power supply unit into a separate dedicated branch circuit.
- Once the equipment is powered up, the device starts booting. Booting the equipment can take some time depending on the configuration and the features of the device.

Caution:

- **Do not insert nor unplug a powered power supply from the chassis without disconnecting the power source.**
- **When the equipment is brought from a cold into a warm environment, the device should be acclimated to the environment temperature and humidity conditions for at least 30 minutes. Non-acclimated devices may not meet the technical specifications as described. Powering up a non-acclimated device may result in damage to the component and/or chassis.**

2.6 Cabling the Management Ports

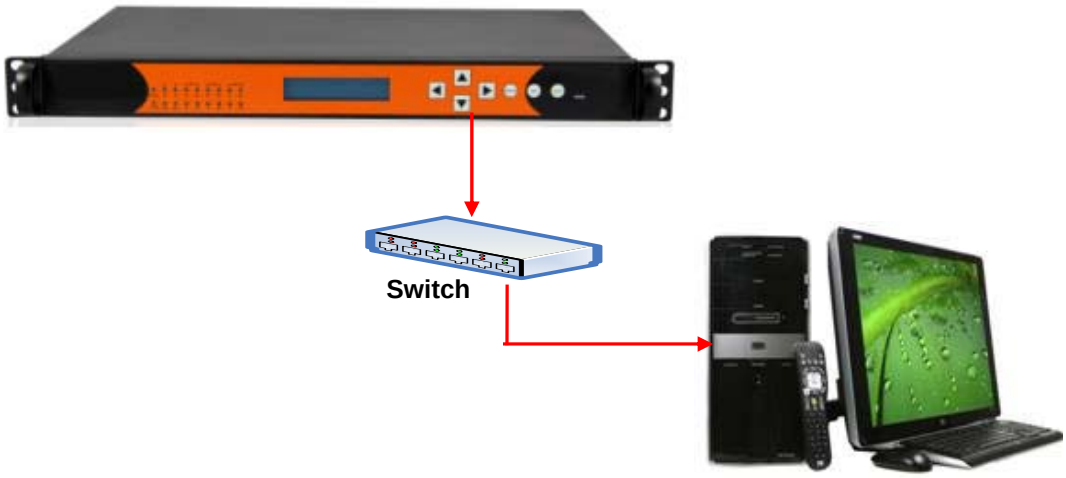
Introduction

The operation on the equipment will be mostly carried out through the Network Management

Software (NMS). Please connect the management port on the rear panel with the monitoring computer in advance

Required Cable

Use Category 5 (CAT5E, minimum) STP Ethernet cable for connecting the management ports.



Chapter3 Operation Guide

3.1 Operation through Network Management Software

3.1.1 Assigning IP Addresses

The equipment is equipped with a 10/100Base-T port for communication with a remote control and monitoring PC.
When the equipment leaves our factory, the Ethernet ports is configured with the following parameter settings:

Parameter	Default Setting
IP address	192.168.1.98
Subnet Mask address	255.255.255.000
Gateway	192.168.1.1

Before the equipment can be connected to a LAN, the default IP settings of the equipment must be changed to correct values according to the actual network environment.

1. Setup a connection between the device and monitor PC.

Note: Step 1 to Step 2 is operated from the front panel. There are six buttons on the front panel: Up / Down / Left / Right / Menu / OK for you to manually configure the basic parameters of the device.

- **Step 1:** Check out the device IP
  Press ***MENU*** button to enter main menu.
  Press ***UP*** button and ***DOWN*** to navigate to the sub menu **System**.
  Press ***OK*** to Enter the Sub menu **Ethernet Setup**, within it, press ***UP*** button and ***DOWN*** button, you can check out the **IP**, **Gateway**, **Subnet Mask**, etc.

- **Step 2:** Change the **IP**, **Gateway** and **Subnet Mask** to make it in the same network section as the management PC:
  Example:

	Media Platform	Management PC
IP Address	192.168.1.16	192.168.1.28
Gateway	192.168.1.1	192.168.1.1
Sub Mask	255.255.255.0	255.255.255.0

Note: to Change a parameter, you can first press *OK* button, Then the parameter will be selected with a blinking short line under its first character (or number), then you can use *UP* and *DOWN* button to change the parameter's value as you desired, press OK button to take effect.

- **Step 3:** After you have setup the above parameters, press ***MENU*** button to exit the configuration, the device will reboot automatically.
- **Step 4:** Ping the new IP of the device through the management PC to check the connectivity.

Note:
- Ethernet interfaces with conflicting IP address may cause serious network problems. Contact your network administrator for correct IP settings.
- Both Ethernet interfaces should be connected to a different subnet.
- Connect your remote PC and the equipment to the same network without any L3 routers in-between.

◆ 3.2.2 NMS Introduction

This device provides a user-friendly management software-NMS to configure the device and constantly monitor the device status.

Step 1: Start the **Network Management Software** on the accessory CD in you package.

Network Management Software Icon

ATTENTION For first time running the NMS, if the system firewall is activated, the connection attempt of the NMS will be blocked by the firewall and a security alert dialog box will pop up to notify you. In order to properly use the NMS, some settings need to be done in the windows firewall otherwise some features of the NMS will be blocked by the firewall.

(Firewall alert message in Windows 7)

Method 1: turn off the Windows firewall.

a) Open Windows Firewall by clicking the **Start** button, clicking **Control Panel**, clicking **Security**, and then clicking **Windows Firewall**.

b) Click **Turn Windows Firewall on or off**. If you are prompted for an administrator password or confirmation, type the password or provide confirmation.

c) Click **Off**, and then click **OK**.

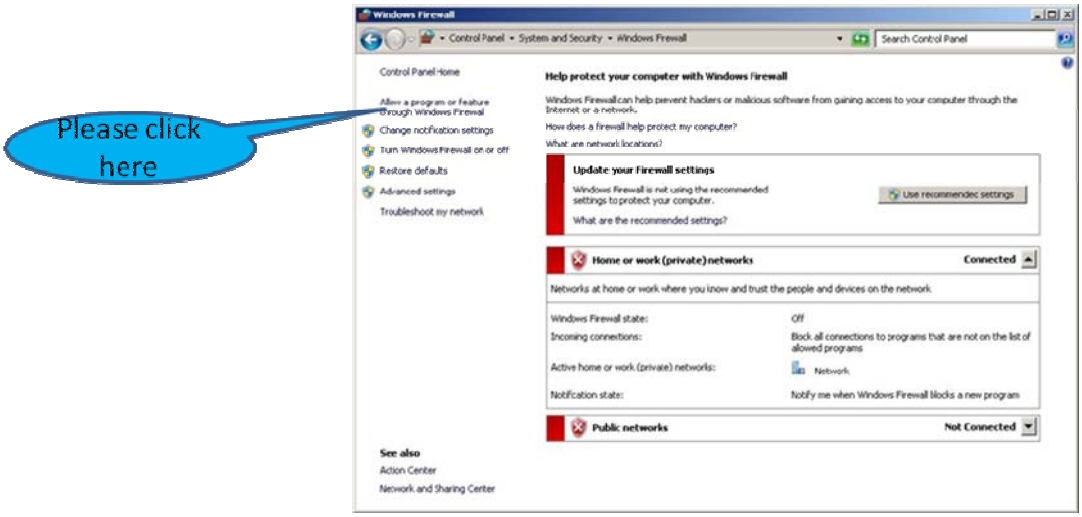
Turning off Windows Firewall might make your computer (and your network, if you have one) more vulnerable to damage from worms or hackers.

Method 2: Allow a program to communicate through Windows Firewall (recommend)

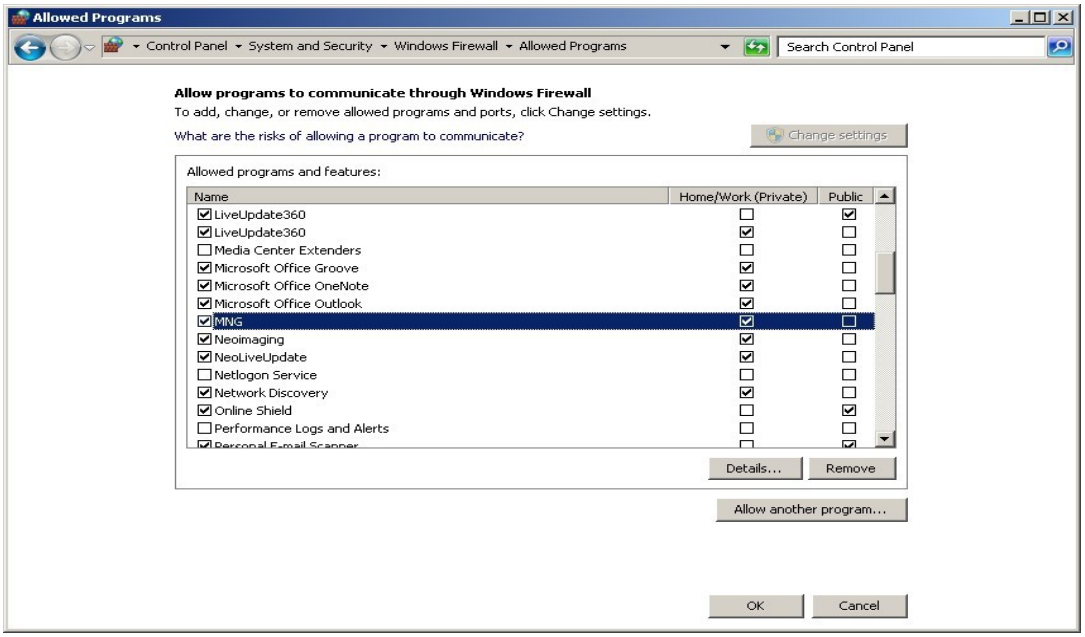
Operation steps:

a) Open Windows Firewall by clicking the **Start** button , clicking **Control Panel,** clicking **Security**, and then clicking **Windows Firewall.**

b) In the left pane, click **Allow a program through Windows Firewall.** If you are prompted for an administrator password or confirmation, type the password or provide confirmation.



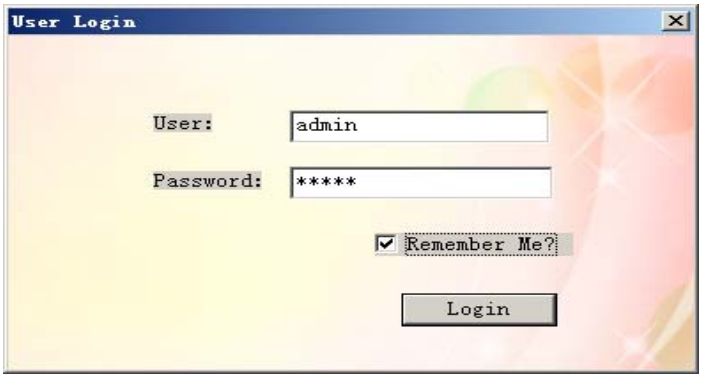
c) Select the check box next to the program you want to allow, and then click **OK.**



Restart the NMS, and the NMS can now communicate properly with the machine.

ATTENTION **Regarding other Firewall and antivirus software settings, it is similar with the settings of Windows Firewall.**

Step 2: For first time log on, **User Name** and **Password** are required. Default User Name and Password are "**admin**". Select "Remember Me" if you want to log on without inputting the User Name/Password next time. Click "Login" to get in the NMS main interface. (PIC-3.2-1)

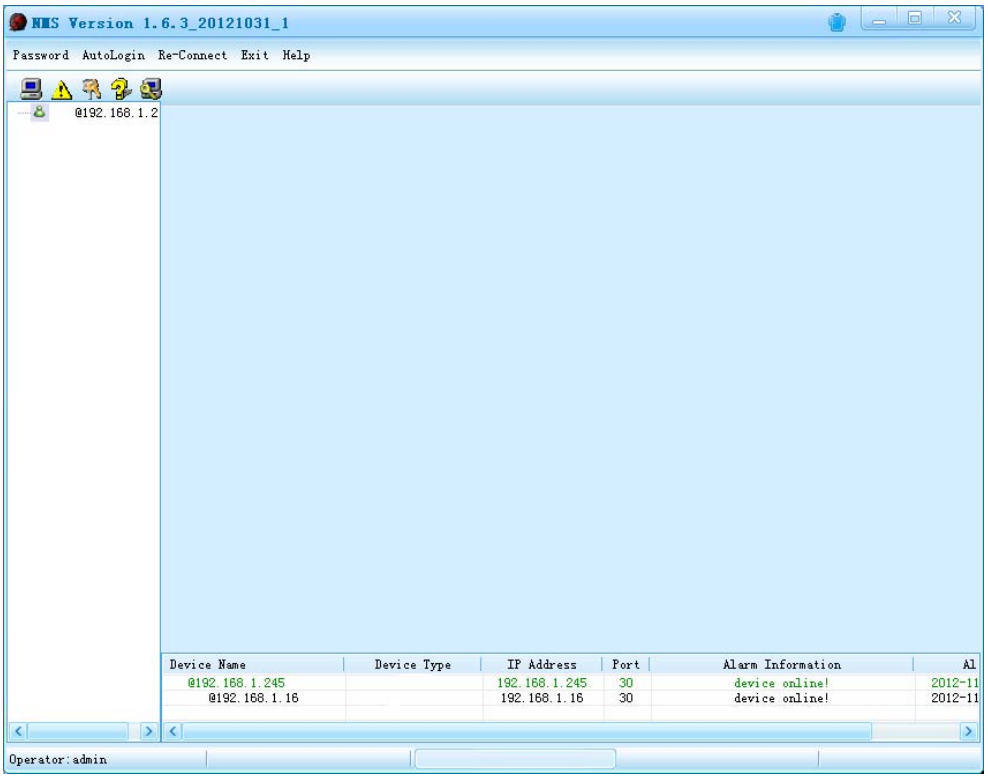


PIC-3.2-1

After successful log on, the following screen will display (PIC-3.2-2):

The equipment you operate on will appear in the left white panel as format:

“Device Name@ IP address”

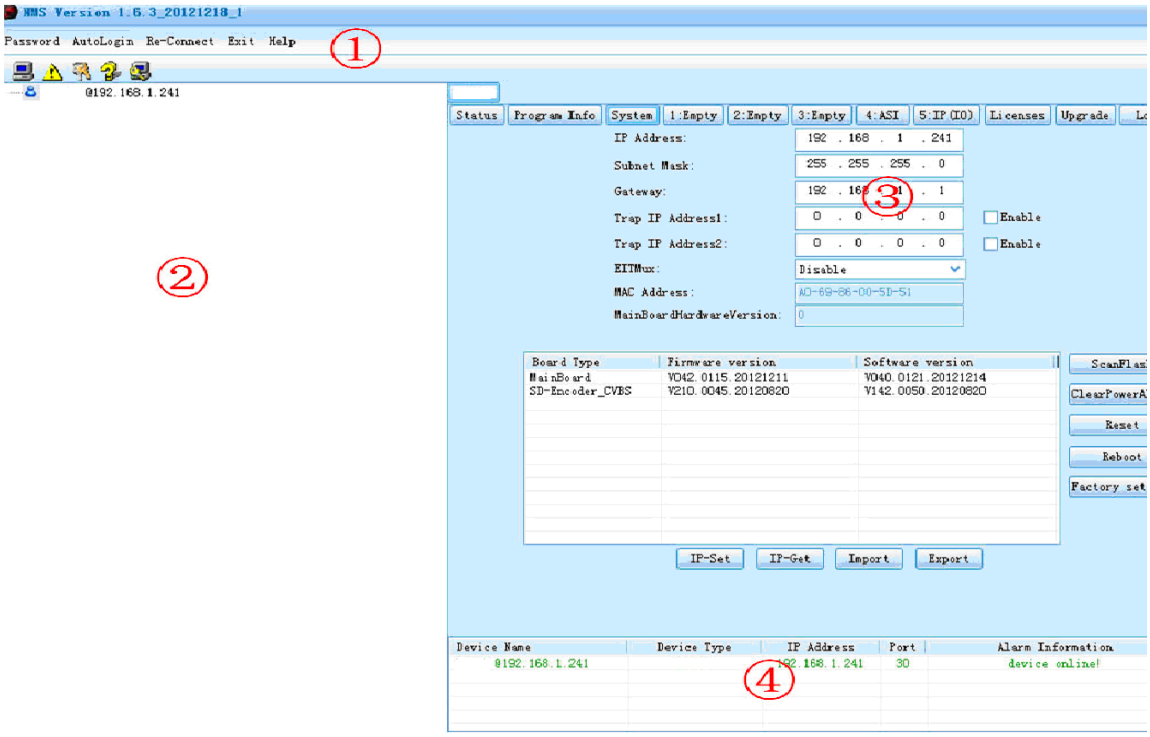


PIC-3.2-2

Note: If the equipment is not shown on the list, please try to Reset the Ethernet through the navigate key on the front panel to active the IP connection.
(Ethernet Reset Steps: Menu>System>Eth Control, Press OK Twice)

- **Main Interface Introduction**

Click on the target equipment in the list, the following screen will display:



The NMS main interface can be divided into four areas according to its functionality.

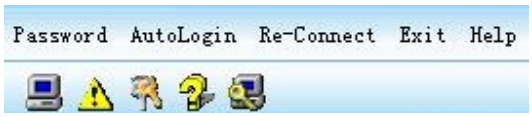
(1) **Toolbar:** It includes shortcut to change password and save settings etc.

(2) **Equipment list:** If more than one piece of equipment is connected to the NMS, the equipment will be listed in this area by its IP address.

(3) **Parameter setting and configuration area:** The parameters of the equipment are shown and configured here by selecting different tabs. This is the main operation area of the NMS. It share same 6 tabs including “**Status**”, “**Program Info**”, “**System**”, “**License**”, “**Upgrade**” and “**Log**”. Specific to each model, the detailed module configuration tab will be different.

(4) Event information window.

3.1.2.1 Toolbar



(1) **Password:** select to change the login password.

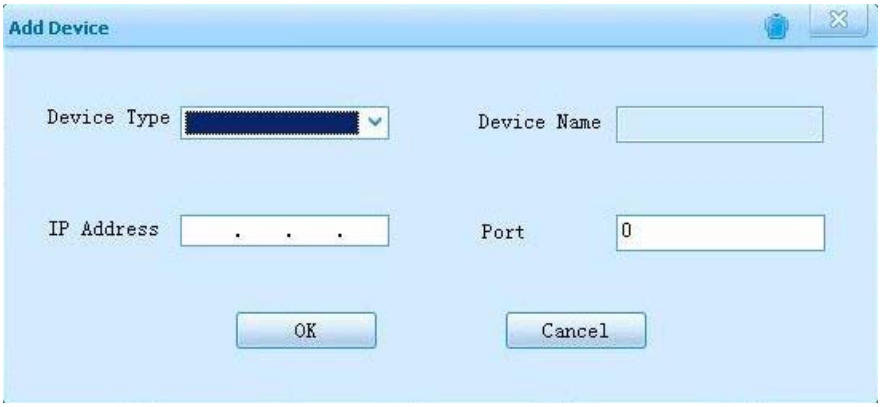
(2) **AutoLogin:** to choose whether auto log on the NMS (without inputting password) next time.

(3) **Re-Connect:** click it to re-connect NMS to the equipment when the connection is lost and resume again due to any reason

(4) **Exit:** exit the NMS.

(5) **Help:** shows the version of the management software and HELP information.

(6)  Add new device to the NMS. After selecting this button, a “Add device” window shows up



- **Device Type**: Choose “equipment name@IP address” in the list.
- **Device Name**: Uneditable
- **IP Address**: type the target add device IP address
- **Port**: must be “30”

Press “OK” and a new device will be added to the device list.

(7)  to delete a selected device from the list.

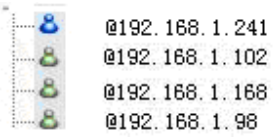
(8)  to change the login password. It equals to the “Password” button.

(9)  to display the “HELP” information and NMS software version. It equals to the “HELP” button.

(10)  to scan other device which is connected to the same network.

3.1.2.2 Equipment List

In this section, it shows the connection status of all the equipments that the NMS scans in the network, and user can do “Connecting the Device”, “Add Device”, “Delete Device” operation.



(1) If this icon is in Green, it means the connection of the equipment and PC has been successfully set up.

(2) If this icon is in Red, it means the equipment is not connected. Please check the network connection and the IP setting of the equipment.

(3) If this icon is in Blue, it means this equipment is the one which you are logging and operating on.

(4) Connecting the device: follow the below steps to connect the device shown on the equipment list:

- Select a device IP address on the equipment list area using the left mouse button;

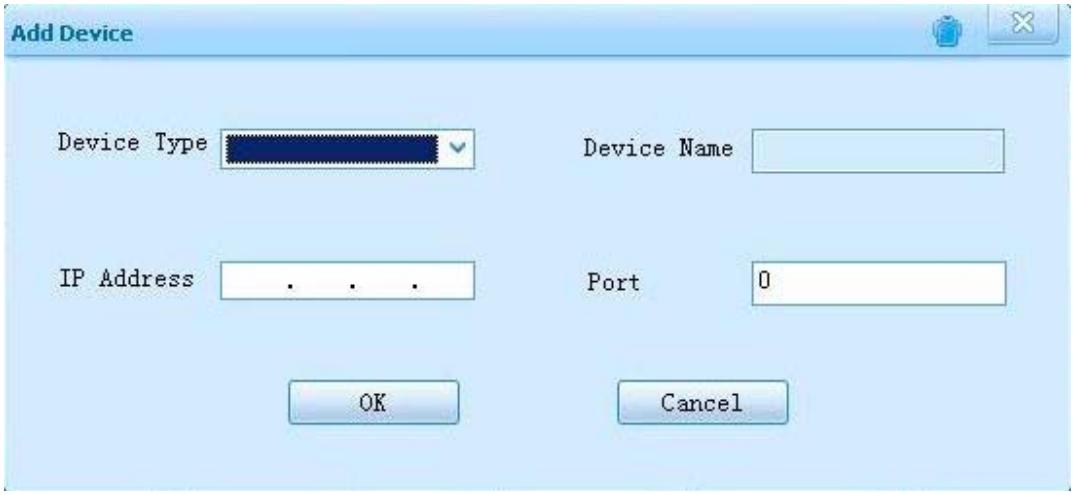
- Double click the left mouse button on the selected device. The NMS starts to connect the device and requesting parameters data from the device.

- Connection set-up completes.

(5) Add device: In case the equipment is not automatically detected by the NMS, user can manually add the device to the NMS. Follow the below procedures to add a device:

- Move the cursor to the ② Equipment List area.
- Use the mouse right button to click on the blank area. An “Add Device” menu shows up.

- Select “Add Device” to enter the device configuration window.



• **Device Type**: Choose the corresponding equipment name in the list.

• **Device Name**: Not editable

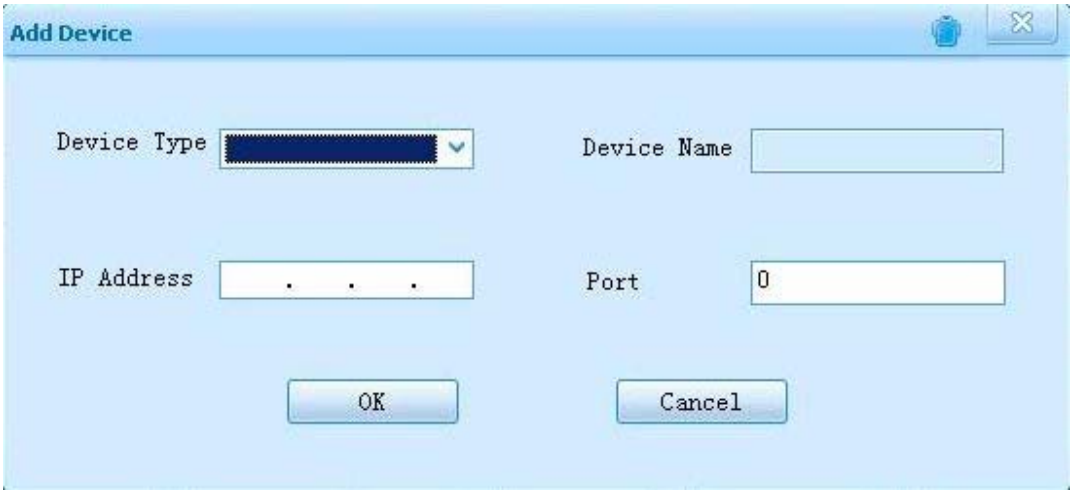
• **IP Address**: type the target add device IP address

• **Port**: must be “30”

Press “OK” and a new device will be added to the device list.

(6) Edit device: to edit the existing device connection parameters.

Operation: Select a device, click the mouse right button. In the pop-up menu, select “Edit Device”, you can change the IP address here.

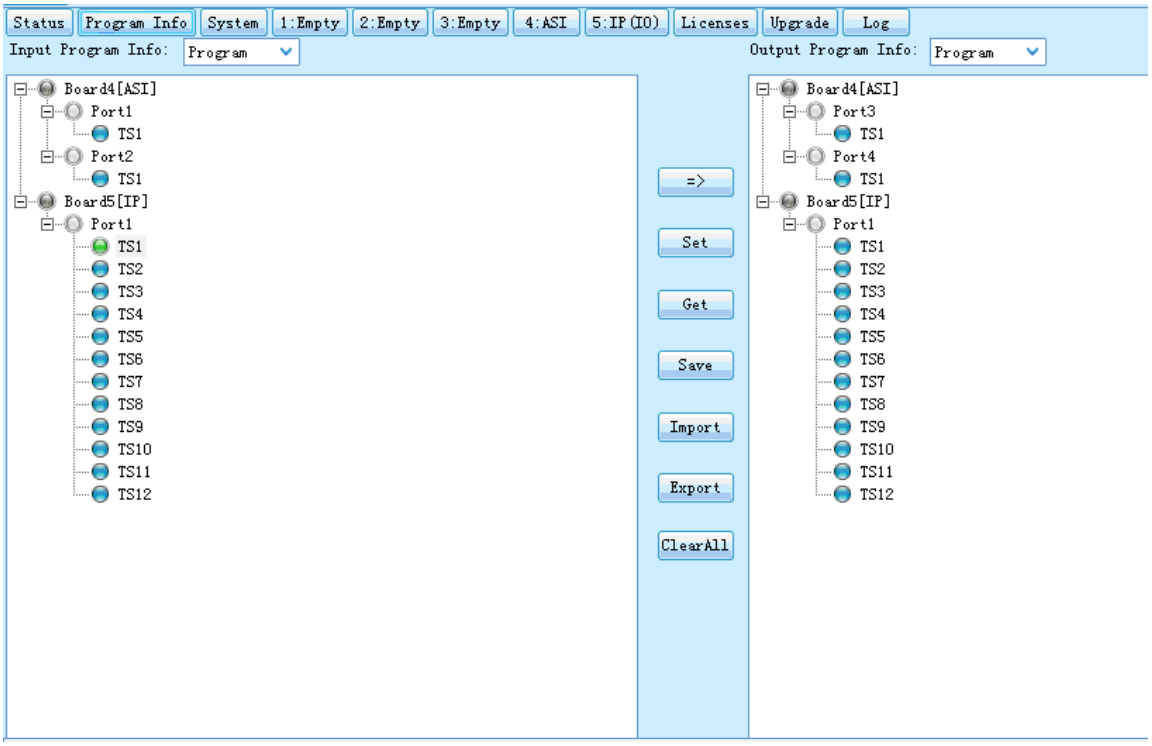


(7) Delete device: to delete the selected device from the NMS list.

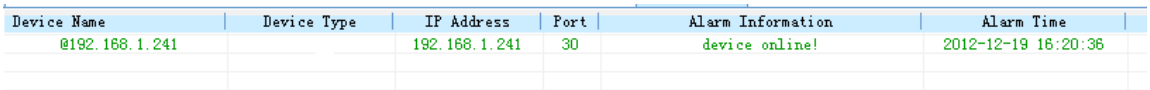
Operation: Select a device, click the mouse right button. In the pop-up menu, select “Delete Device”.

3.1.2.3 Parameter setting and configuration area

This is the main operation and configuration interface of the NMS. All the parameters setting and control on the equipment and each module is conducted here. Please refer to **Chapter 3.1.3** for the detailed operation instruction.

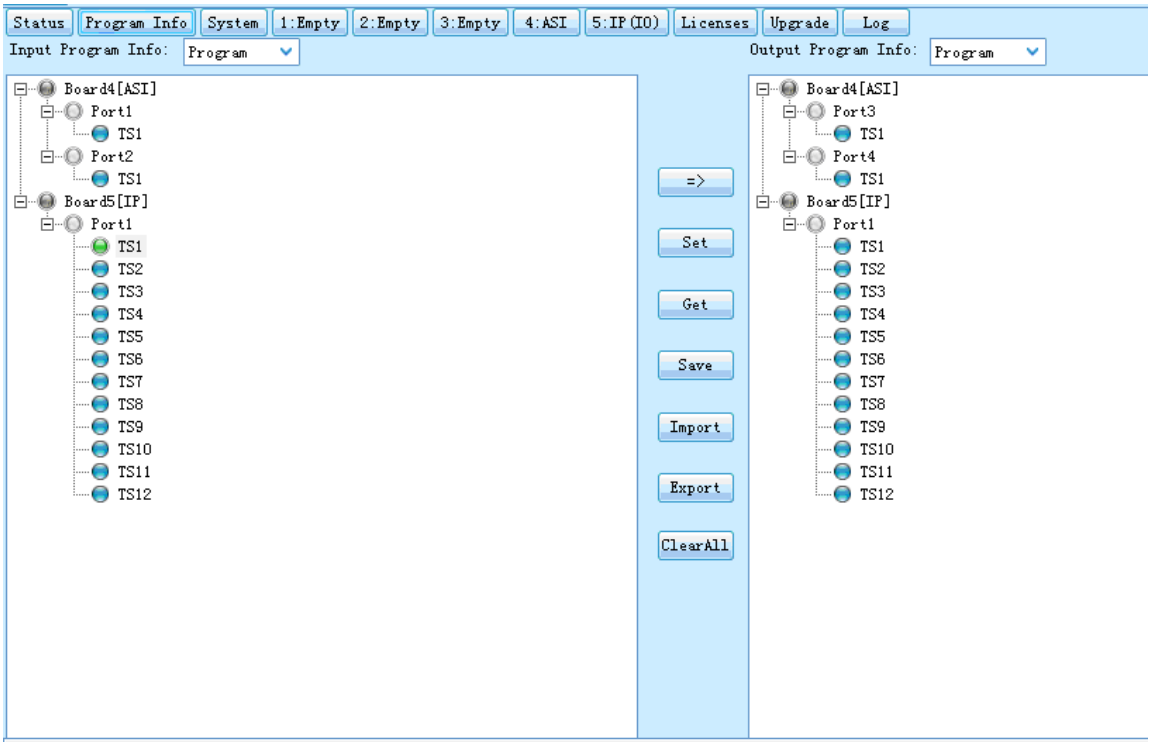


3.1.2.4 Event information window

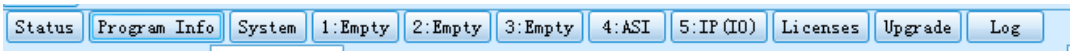


This area shows the system event information including: current connected device name, device type, IP address, connection port, online/off-line status, and event time.

3.1.3 Basic Parameters Setting Introduction



The **Parameters Setting and System Application** area includes the operation on the mainboard and sub-module.



- **Setting and Configuration on the Mainboard**

The mainboard configuration includes 6 tabs: “**Status**”, “**Program Info**”, “**System**”, “**License**”, “**Upgrade**” and “**Log**”.

- **Status**: by selecting this item the NMS displays the current system operation data status. Users can switch between tab under the “Status” to check the current working status of mainboard and inserted modules.

1. Different colors of histogram indicate different meaning:

Orange: the total input bit rate;

Blue: the effective input bit rate;

Yellow: the total output bit rate;

Green: the effective output bit rate;

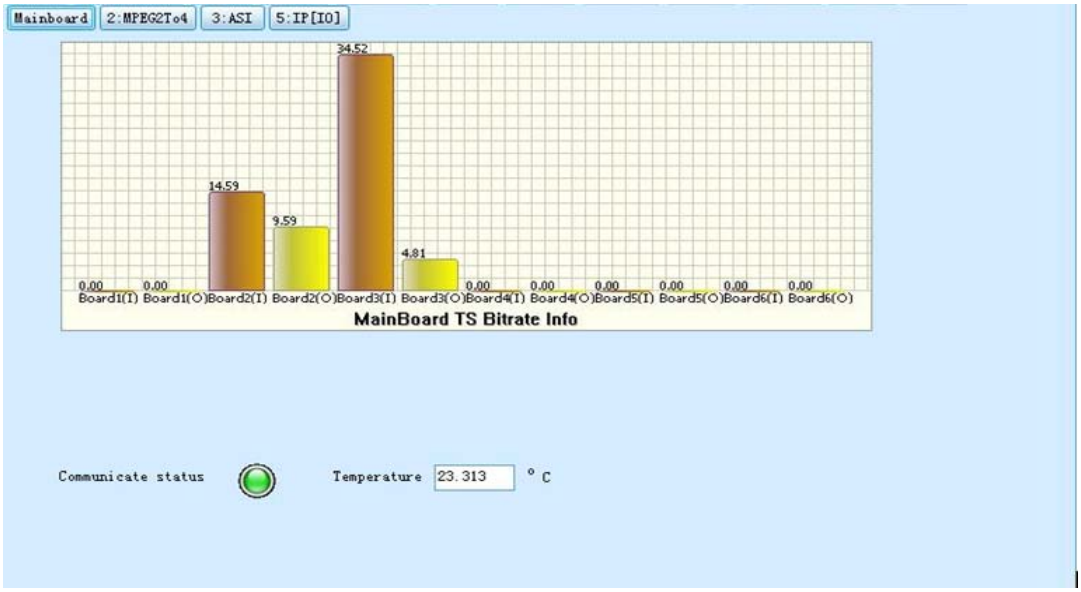
Red: alarm indicator, it means the actual output bit rate (it's proportional to the amount of the programs you transfer from input port to output port in 'Program Info') is more than the output bit rate of some channel you set in sub-board

2. Communicate Status indicates the communication status between NMS and the equipment.

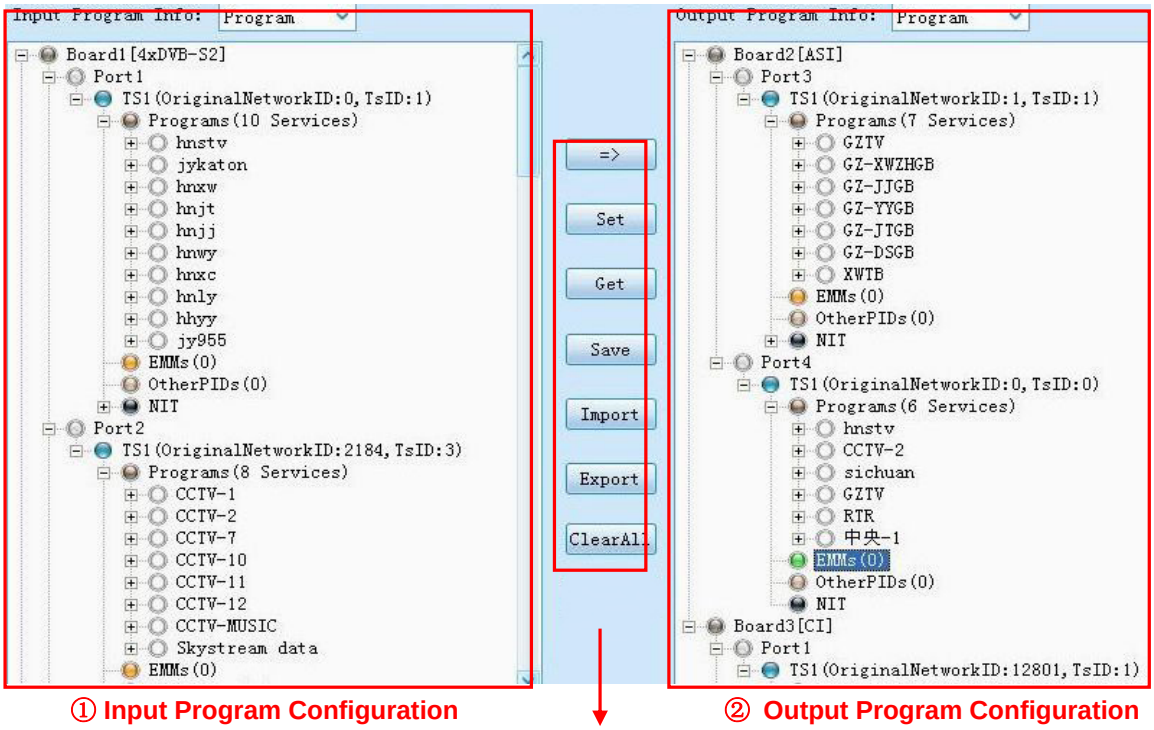
   Green: the communication is normal. All the parameters in NMS are updated according to the equipment synchronously.

   Red: the communication is abnormal. The parameters in NMS maybe not updated in time. You need check the network connection and restart the NMS.

3. For mainboard, Board#(O) indicates the total output bitrate of this board, and Board#(I) indicates the total input bitrate of this board. For each module, Port#(T) indicates the total bitrate, and Port#(E) indicates the effective bitrate.



■ **Program Info**: this menu is to configure the input and output program of the equipment.

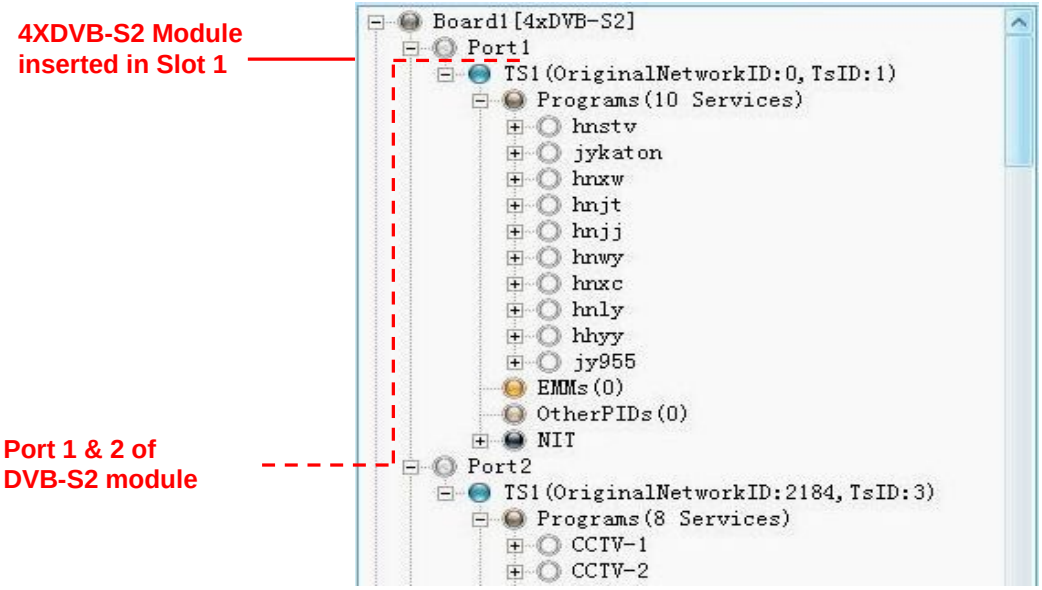


① Input Program Configuration

② Output Program Configuration

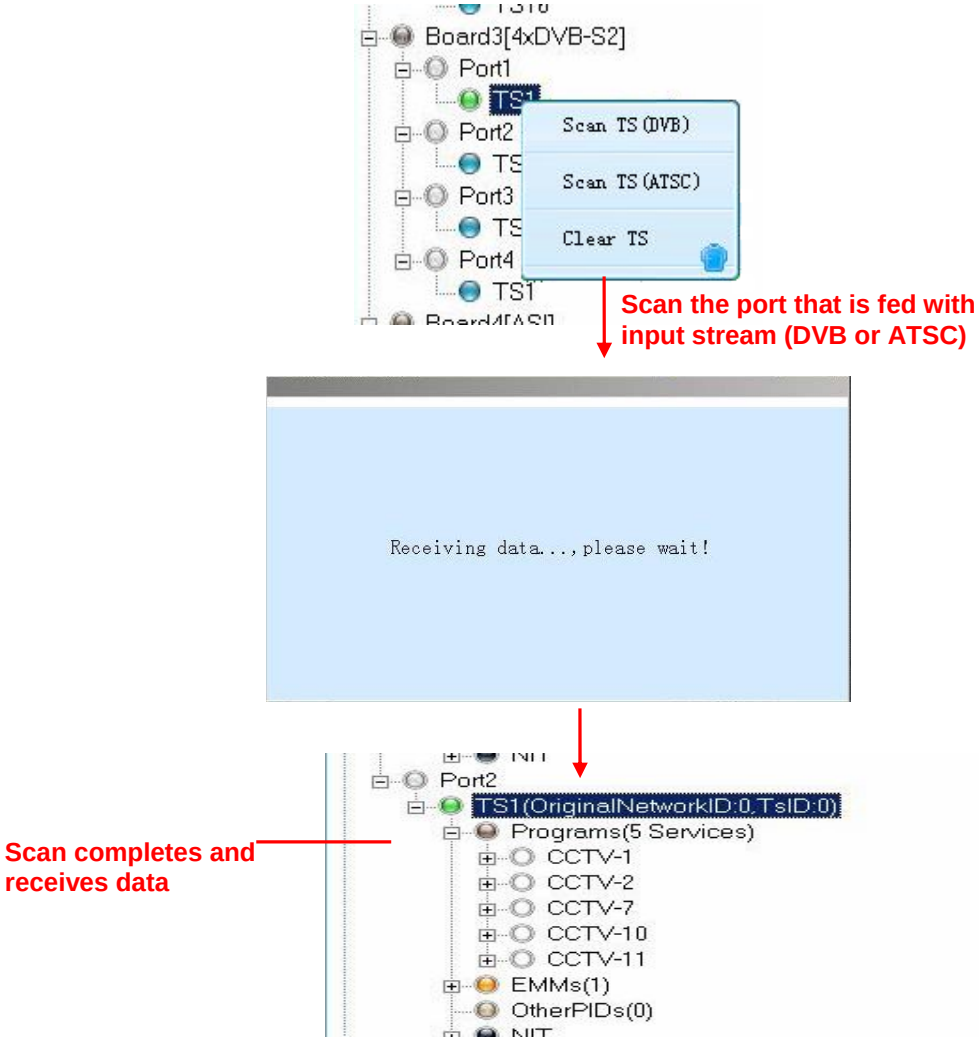
③ Operation Buttons

① **Input Program Configuration**: the “Input Program Configuration” is on the left side of the “Program Info” window. It displays all the inserted modules information and the received input streams.



- Board1~6 represents the corresponding slots of the equipment. If the slot is inserted with a card module, the corresponding Board No. will be displayed on the “Input Program Configuration” window, and the name of the inserted module will be displayed after the Board No.
- For empty slot, no Board No. will be displayed.
- Port No.: represents each physical port of the inserted module.

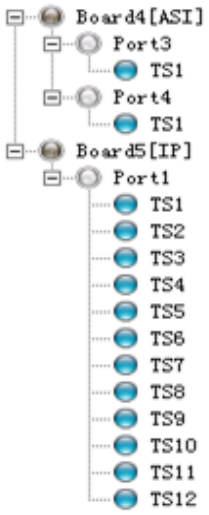
Scan the input TS: after the parameters of the inserted module are properly configured (refer to **Chapter 3.1.4** of this manual), select one port which is connected with input stream, and then click the mouse right button. If the input stream complies to DVB standard, please select “Scan TS(DVB)”; If the input stream complies to ATSC standard, please select “Scan TS(ATSC)”. All the input stream of that port will be scanned and displayed. Click “Clear TS” to clear all input programs of this port if needed.



② **Output Program Configuration**:

In the “Output Program Configuration” window, it shows the inserted module which can be set to transmit output stream. These kinds of modules include the Gigabit IP module, ASI module, 8-QAM and 4-OFDM module, etc.

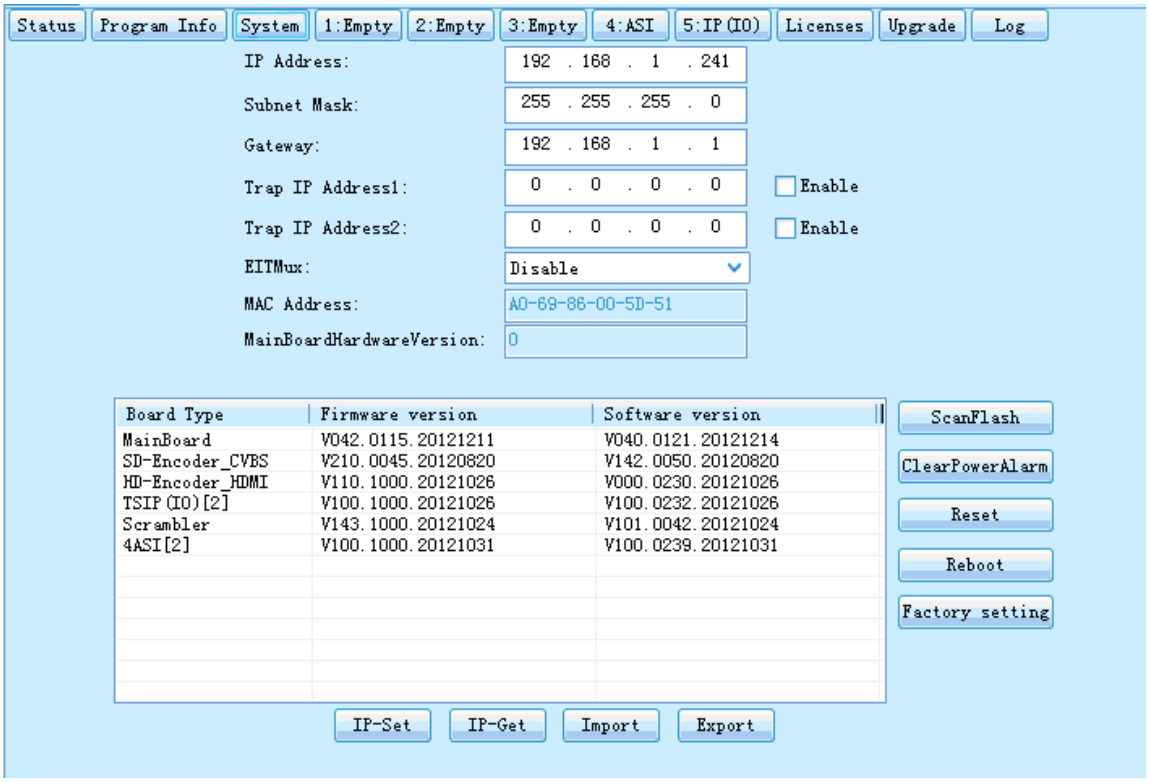
Settings on the Output Program please refer to **Chapter 3.1.5** of this manual.



③ **Operation Buttons**: the operation buttons include 4 different function buttons:

- => Transfer button: to transfer the selected stream/PID from the input program window to the output program window.
- Set Set button: to apply the changes to the NMS. The setting will lose if the NMS is close or the equipment is powered off.
- Get To obtain/refresh the current parameters status of the equipment mainboard.
- Save To save the configuration. The saved data can be kept after NMS is closed or the equipment is powered off.
- Import Import program list (input&output) configuration file.
- Export Export the current program list (input&output) and save as a configuration file.
- ClearAll To eliminate all the settings in the input and output window.

- **System**: the “System” setting provides the system information of the equipment mainboard and inserted modules, including the mainboard IP address, Subnet Mask, Gateway, MAC address and hardware/software version of each module.



TRAP IP ADDRESS: This IP should be the same as the monitoring server’s IP. After correct setup, the IRD will pass the alarming and running information to the monitoring server. To enable this function, the box following the trap IP address should be checked. **It’s not available temporarily**

EITMUX: for input programs with EPG information, if you want to multiplex original EPG with program together, this box should be checked. EPG can be multiplexed from up to 8 input TS channels now.

MainBoardHardwareVersion: so far, two hardware versions (1 and 2) are released. This information is important when you want to do software/firmware upgrade for your equipment.

ScanFlash: click it to get the latest mainboard and modules version information.

ClearPowerAlarm: when one of two power supply modules is removed or failed, the equipment will give sound alarm. Click this button to remove the alarm if needed.

Reset: click it when a module works abnormal.

Reboot: restart the whole equipment completely.

Factory setting: get all parameter settings of main board and each module back to default setting.

IP-Set: after IP modification of mainboard, click it to apply new IP address. Please note, when you click it, the equipment will restart automatically.

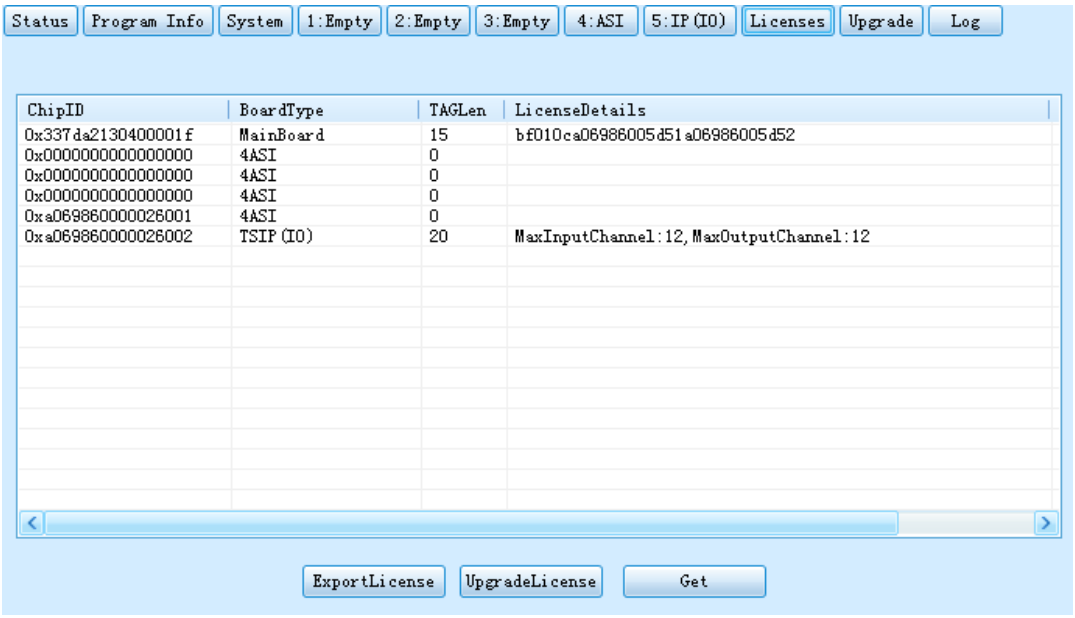
IP-Get: click it to get the latest IP address/Subnet Mask/Gateway information.

Import/Export: import or export the configuration of the whole equipment setting, including input/output programs list and parameters of each module.

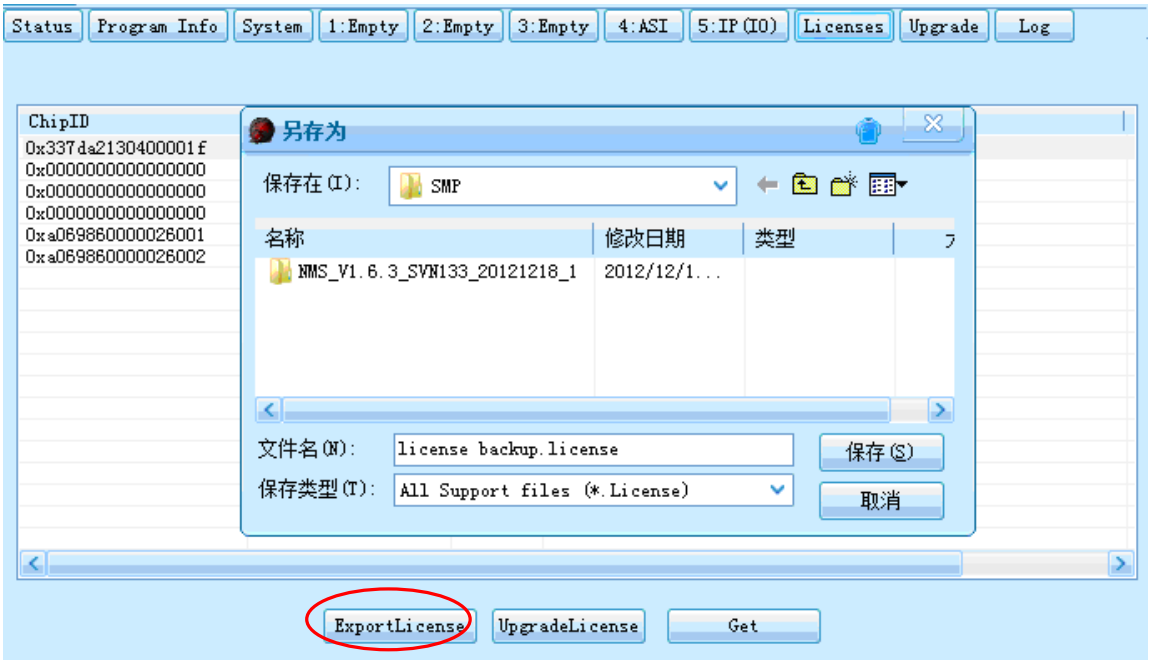
- **License:** the equipment provides very flexible license management on its modules. User can purchase new license to expand the module capability along with the business development, e.g. to update the license of a QAM module to let it support more channel output.

License update procedure:

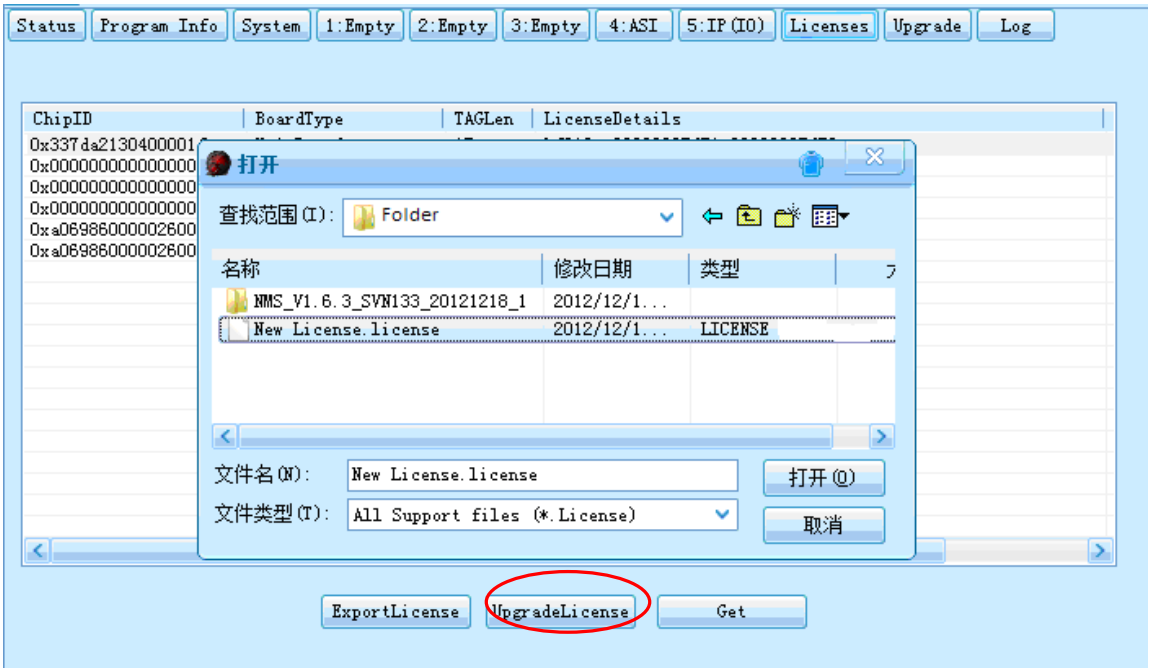
- Select “License” tab in the NMS. In the “License” main interface, select a module which you want to update the license.



- Click “ExportLicense” button to save the license file of the selected module, e.g. to export the old license as “license backup.license”



- Send the license file “license backup.license” to our company for an updated license.
- Select “UpgradeLicense” button to import the new license file from our company.



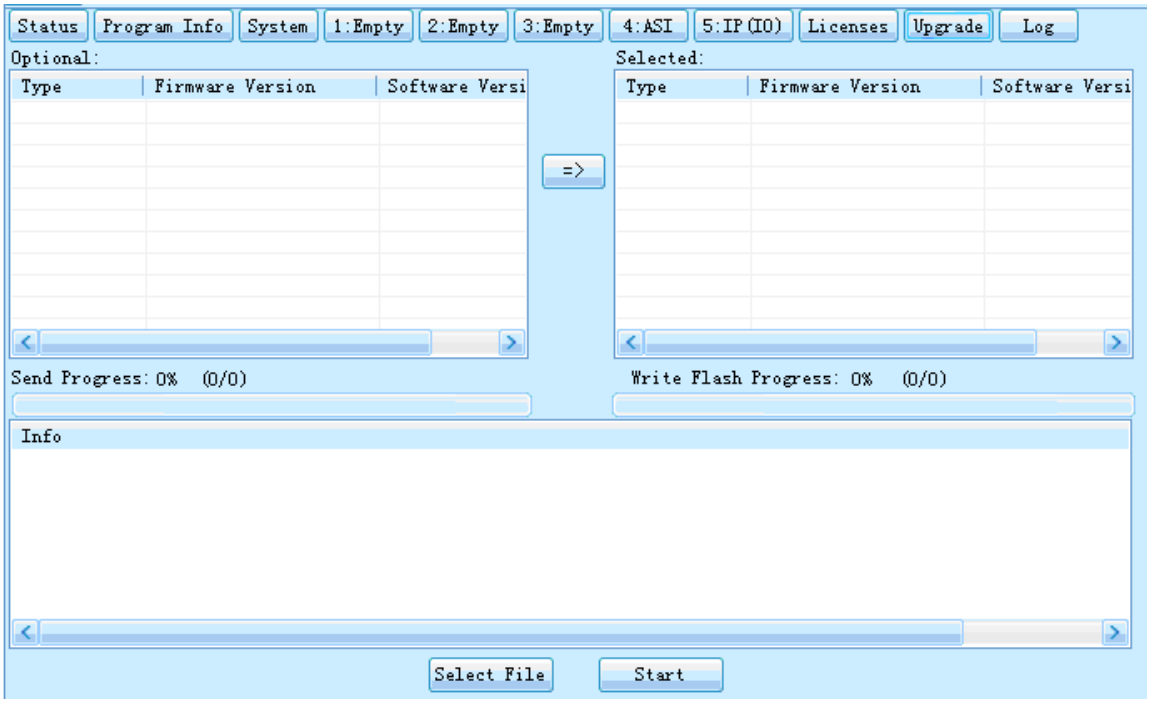
◆ License update succeeds.

■ **Upgrade**: In the “Upgrade” tab, user can upgrade the software version of the mainboard and its module components. The upgrade usually is either to fix any bug or implement new features.

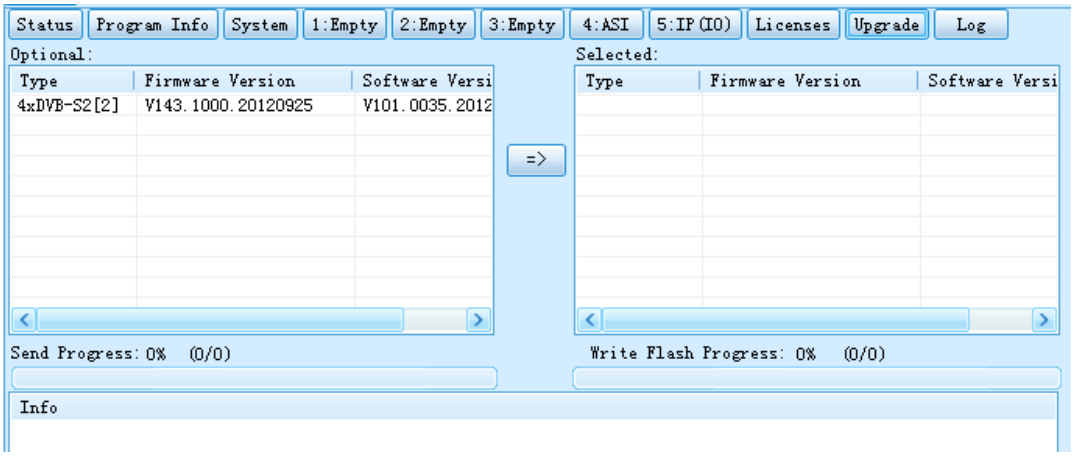
■ Improper upgrade operation might damage the equipment. Contact your service provider before the upgrade.
■ Make sure the network connection and power supply is in good condition before the upgrade. **NEVER TURN OFF THE equipment, CUT OFF THE POWER SUPPLY OR UNPLUG ANY MODULAR CARD DURING THE UPGRADE**.

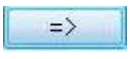
Standard Upgrade Procedures:

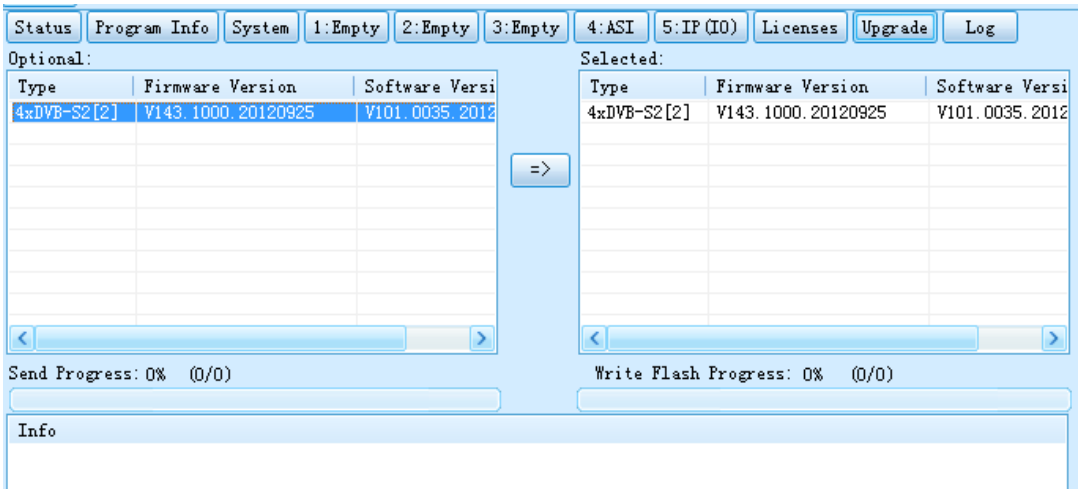
◆ Select “Upgrade” tab and open the “Upgrade” interface;



- Click “Select File” button to open the upgrade files;
- After selecting the upgrade file, the upgrade file will be listed in the “Optional” window.



- Click the  button to transfer the upgrade file from the left “Optional” window to the right “Selected” window.

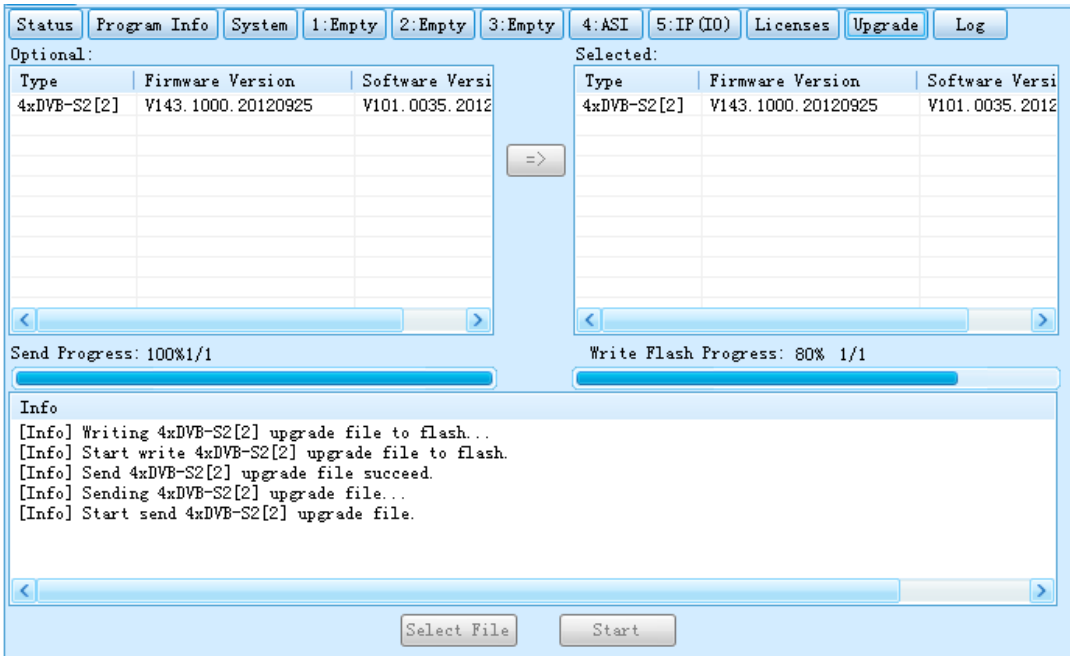


Note:

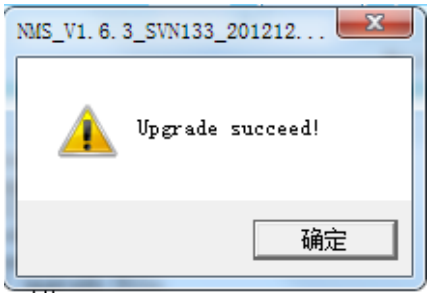
1. For some sub-modules upgrade, the upgrade files will be automatically put into the "Selected" window after selecting the file.

2. To unselect the upgrade file, double click the left mouse button on the selected file to remove it from the selected list.

- Click the "Start" button to start the upgrade. The upgrade process can be monitored in the "Send Progress" bar, "Write Flash Progress" bars and the Info window.

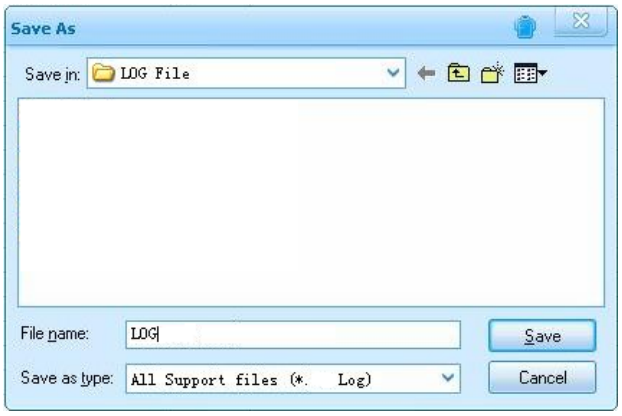


◆ A notifying window shows up after successful upgrade.

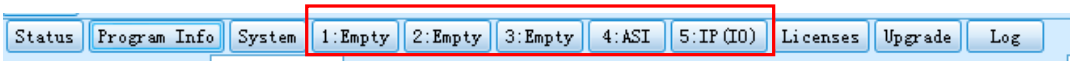


■ **Log**: In the “Log” tab, user can export the log file from storage chipset of the equipment. The log file includes running information which is helpful for our engineer to analyze issue if needed.

◆ Enter “Log” tab and click “GetLog” and save log file.



3.1.4 Parameters Setting of the Sub-module



In accordance with the 5 modular slots of the equipment, there are total 5 module parameters setting tabs in the configuration menu. Each tab represents the corresponding slot of the equipment and displays the name of the inserted module. If the slot is empty, then the tab shows “Empty” as well.

Within the interface of each module, you will see the same following options, and they perform the same function for each module:

Set: after setting parameters for the module, you need click it to bring the setting into effect.

Get: click it to get last or latest setting of this module.

Import: import the setting which was exported before.

Export: export the setting as backup.

Reboot: reboot this module.

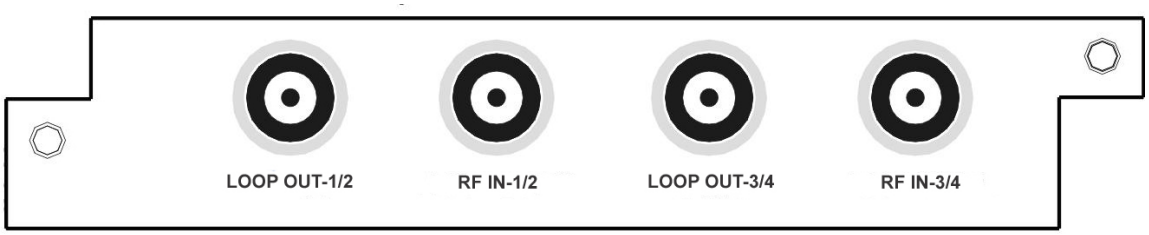
Power off: remove the power supply for this module; in this case, the module won’t work.

Factory Setting: get all parameters back to default value.

It is of great importance to correctly set the parameters of each module so that the equipment can work properly. Please go through this section for the module setting details before operating the equipment.

3.1.4.1 DVB-C Module

The DVB-C module supports receiving programs compliant with DVB-C standard from 4 different frequencies simultaneously.



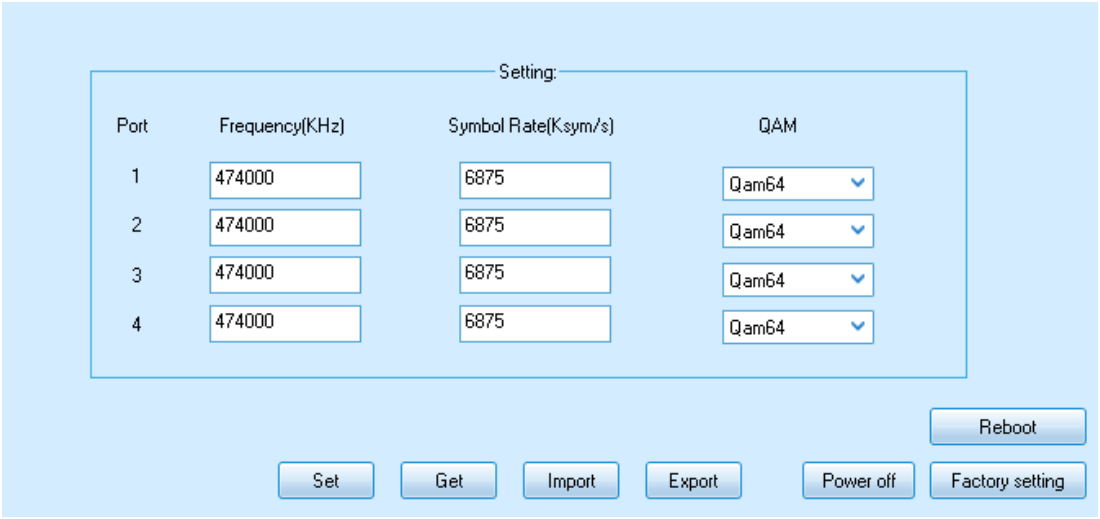
The configuration page of this module includes two parts:

Setting: set the parameters for receiving the input signal.

Status: indicates the basic parameter and locking status of input signal.

- **Setting**

In order to receive the input signal successfully, it's important to set the correct parameters in the setting menu.



Below are the key parameters:

Parameters	Description
Port	Indicates which input port the channel comes from.
Frequency	Frequency on which the channel is transmitted. The unit is in

	KHz.
Symbol Rate	Symbol rate of the input channel. The unit is in KS/s.
QAM Mode	Select the actual QAM mode of the input channel.

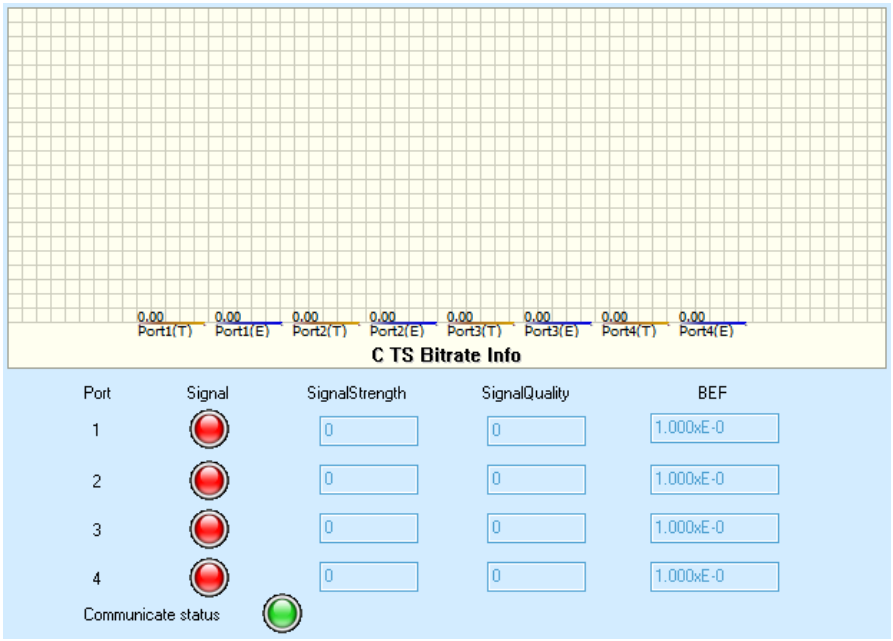
Note: the input signals of Port 1&2 are from the 'RF-IN 1/2' port of tuner 1, and the input signals of Port 3&4 are from the 'RF-IN 3/4' port of tuner 2.

Please contact your program provider for the parameters details of the channel if you are not clear about.

After setting all parameters, you should press the '**Set**' button to save the settings.

- **Status**

Go to "Status" tab and click sub-tab "DVB-C". The parameters of this part are derived from the input signal; they will be gotten automatically when the input signal is available, and cannot be changed by the user.



Introduction to the parameters of status:

Parameters	Description
Port#(T)	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps

Port#(E)	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.
Port	Indicates which input port the channel comes from.
Signal	Indicates whether the input signal is LOCK (green) or UNLOCK (red).
Signal Strength	Indicates the strength of input signal
Signal Quality	Indicates the quality of input signal
BER	Indicates the real-time bit error rate.

3.1.4.2 DVB-T / ISDB-T Receiving Module

The DVB-T / ISDB-T module supports receiving programs compliant with DVB-T / ISDB-T

standard from 4 different frequencies simultaneously.

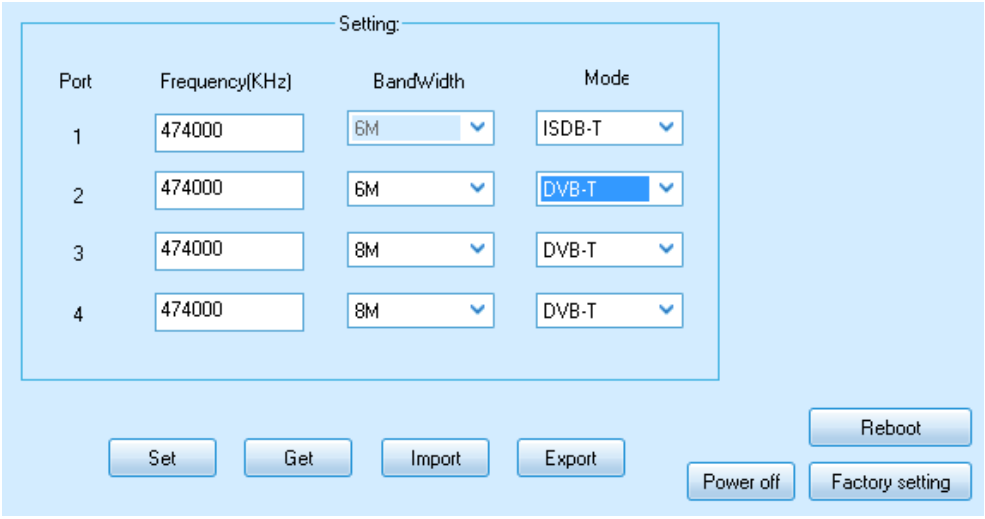
The configuration page of this module includes two parts:

Setting: set the parameters for receiving the input signal.

Status: indicates the basic parameter and locking status of input signal.

- **Setting**

In order to receive the input signal successfully, it's important to set the correct parameters in the setting menu.



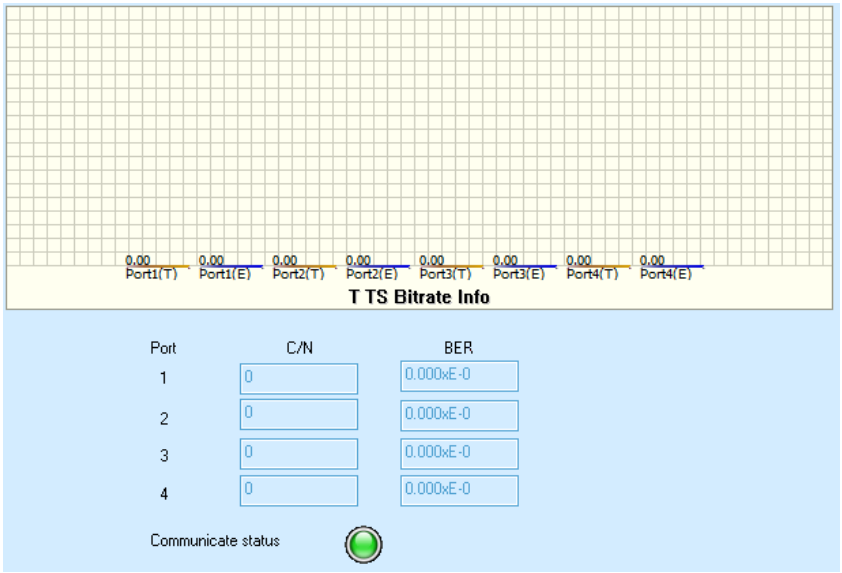
Below are the key parameters:

Parameters	Description
Port	Indicates which input port the channels comes from
Frequency	Input the frequency of being used by the content provider which you want to receive programs. The unit is MHz
Bandwidth	Bandwidth depends upon the current standards on different countries, but it is variable at 6 MHz, 7 MHz, and 8MHz.
Mode	Indicates which signal you want to received (ISDB-T / DVB-T)

After setting all parameters, press '**Set**' button to save the settings.

- **Status**

Go to "Status" tab and click sub-tab "Receiver-T". The parameters of this part are derived from the input signal; they will be gotten automatically when the input signal is available, and cannot be changed by user.



Introduction to the parameters of status:

Parameters	Description
Port#(T)	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps
Port#(E)	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.
Port	Indicates which input port the channel comes from.
C/N	Indicates the real-time carrier to noise ratio.

BER	Indicates the real-time bit error rate.

3.1.4.3 DVB-S/S2 Module

The DVB-S/S2 module supports receiving programs compliant with DVB-S or DVB-S2 standard from 4 different frequencies (transponders) simultaneously.

The configuration page of this module includes two parts:

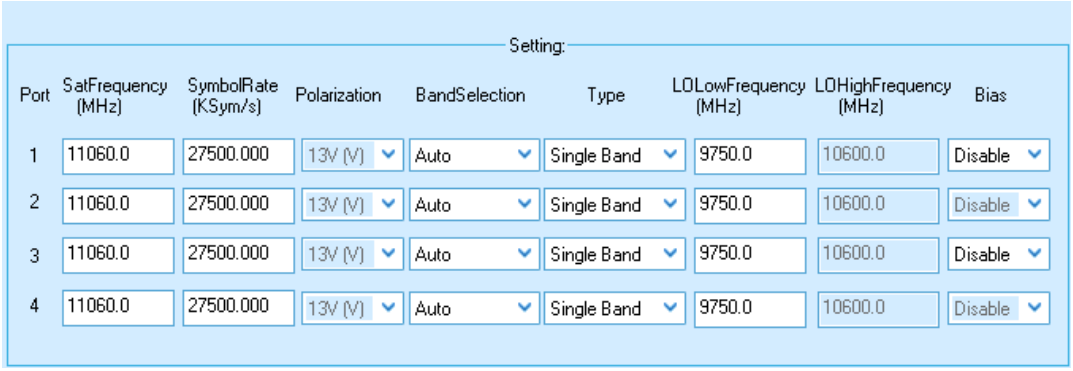
The configuration page of this module includes two parts:

Status: indicates the basic parameter and locking status of input signal.

Setting: set the parameters for receiving the input signal.

- **Setting**

In order to receive the input signal successfully, it's important to set the correct parameters in the setting menu.



Below are the key parameters:

Parameters	Description
Port	Indicates which input port the channels comes from
Downlink Frequency	Input the frequency of transponder which you want to receive programs. The unit is MHz
Symbol Rate	Input the symbol rate of the transponder. The unit is KS/s
Polarization	Select the voltage provided to LNB (13V for vertical or 18V for

	Horizontal).
Band Selection	Select the band of LNB you want to use, including Auto, Forced Low and Forced High
Type	Select the actual type of your LNB, Single Band or Dual Band
LO Low Frequency	The low frequency of LNB. The unit is MHz
LO High Frequency	The high frequency of LNB. The unit is MHz
Bias	Enable or disenable the polarization setting.

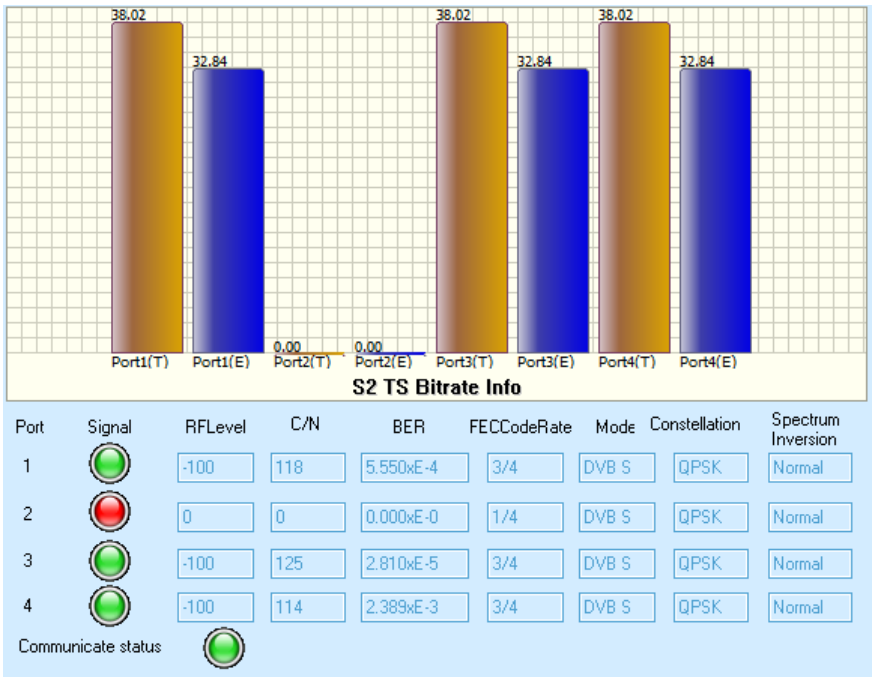
Note:

1. **Paramenters of "FECCodeRate" can be automatically recognized by the NMS.**
2. **Only LNB 1 & 3 inputs support polarization setting. LNB 2 & 4 cannot provide power (13V or 18V) to the LNB.**
3. **Satellite parameters may changed, please coordinate with the content provider or browse www.lyngsat.com for the updated parameters.**
4. **Symbol rate usually if:**
   - **b) Ku-Band: 11,300 KS/s.**
   - **c) C-Band: 5150 KS/s**

After setting all parameters, you should press '**Set**' button to save the settings.

- **Status**

Go to "Status" tab and click sub-tab "DVB-S2". The parameters of this part are derived from the input signal; they will be gotten automatically when the input signal is available, and cannot be changed by user.



Once the signal turns **GREEN**, it means that it is **LOCK**. As a result, a data will appear on the status monitoring. Otherwise, the signal will turn to **RED** which means **No Signal**.

Note:

If there's no signal received, please do as follows:

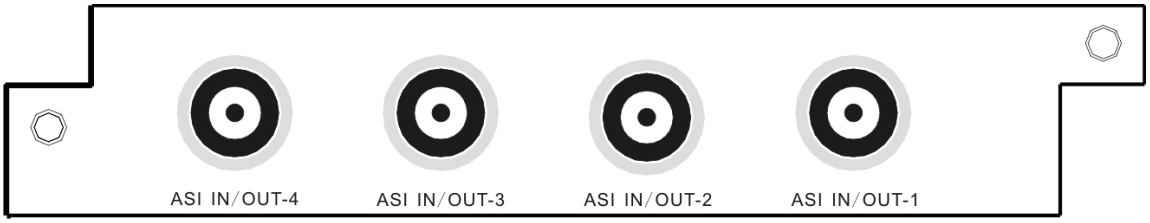
- **Check the Parameters and Setting configuration if it's correct.**
- **Check the Cable.**
- **You can double check at the back of the equipment if there's already a signal coming in. The DVB-S2 module has a LED display as well, showing that the signal is LOCK on the ports on which the signal was connected.**

Introduction to the parameters of Status:

Parameters	Description
Port#(T)	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps
Port#(E)	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.
Port	Indicates which input port the channel comes from.
Signal	Indicates whether the input signal is LOCK (green) or UNLOCK (red).
RFLevel	Indicates the real-time RF Level of the input signal.
C/N	Indicates the real-time carrier to noise ratio.
BER	Indicates the real-time bit error rate.
FEC CodeRate	Indicates the code rate which is used in FEC.
Mode	Indicates which standard the input signal is, DVB-S or DVB-S2.
Constellation	Indicates the constellation used in the input signal.
Spectrum inversion	Indicates the Spectrum status: normal or inverse.

3.1.4.4 ASI I/O Module

The ASI module is equipped with four BNC-type ASI connectors, supporting four ASI input/output. The default setting of the module is: Ports 1 & 2 is for input, and Ports 3 & 4 is for output. User can specify the port to be input or output at any time through the NMS.

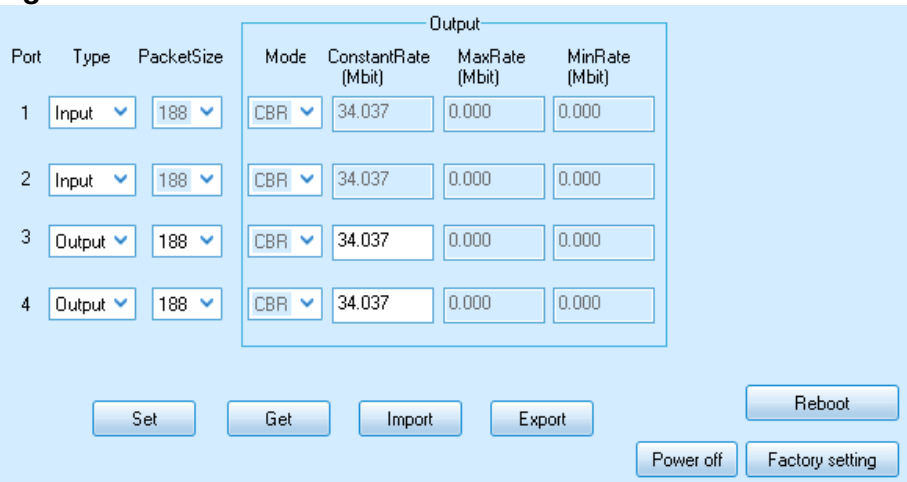


The configuration page of this module includes two parts:

Setting: set the parameters for receiving the input signal.

Status: indicates the basic parameter and locking status of input signal.

- **Setting**



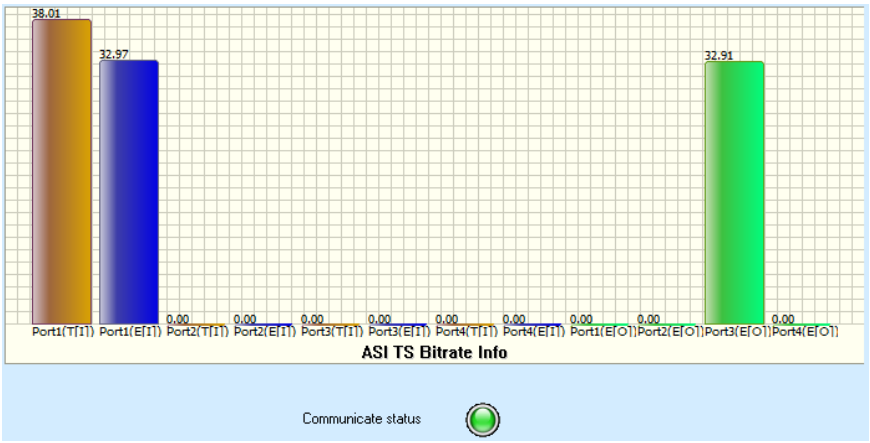
Below are the key parameters:

Parameters	Description
Type	Set each ASI port to be Input or Output.
PacketSize	Set 188 or 204 packet size for outputs.
Mode	Set ASI port into CBR or VBR for output.
ConstantRate(Mbit)	Set constant bitrate for ASI output.
MaxRate(Mbit)	Set max bitrate for ASI output.
MinRate(Mbit)	Set min bitrate for ASI output.

Note: For the input parameters, it is automatically obtained by the NMS when connected with the input signal. It is not editable.

- **Status**

Go to “Status” tab and click sub-tab “ASI”. The parameters of this part are derived from the input signal; they will be gotten automatically when the input signal is available, and cannot be changed by the user.



Introduction to the parameters of status:

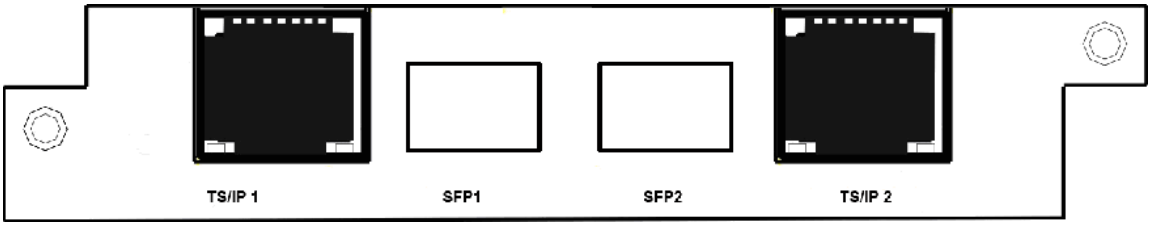
Parameters	Description
Port#(T)	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps
Port#(E)	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.

NOTE:

- **Once the settings is properly configured, when the source what inserted on the proper port, a data will automatically appear on the specific port.**
- **If no data, please check the source if it really has an output or it can be a loose contact.**

3.1.4.5 GbE IP I/O Module

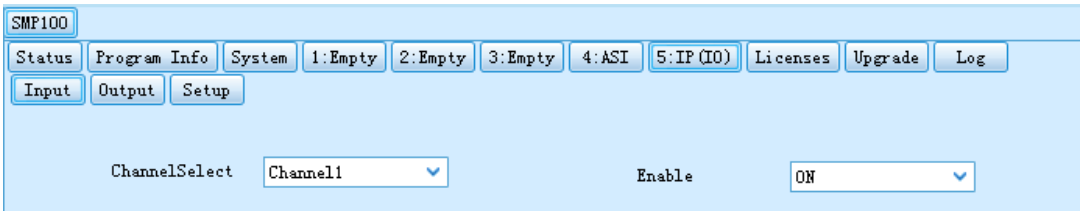
The IP module is equipped with two RJ45 connectors and two SFP connectors. These two types of connectors can not be used simultaneously. For both the RJ45 connectors or SFP connectors: the left one is for the IP stream input/output; The other is for stream output only, and it is as the backup output when you set the left port as output mode.



The configuration of the IP module can be done through its NMS.

- **IP Module Setting Interface**

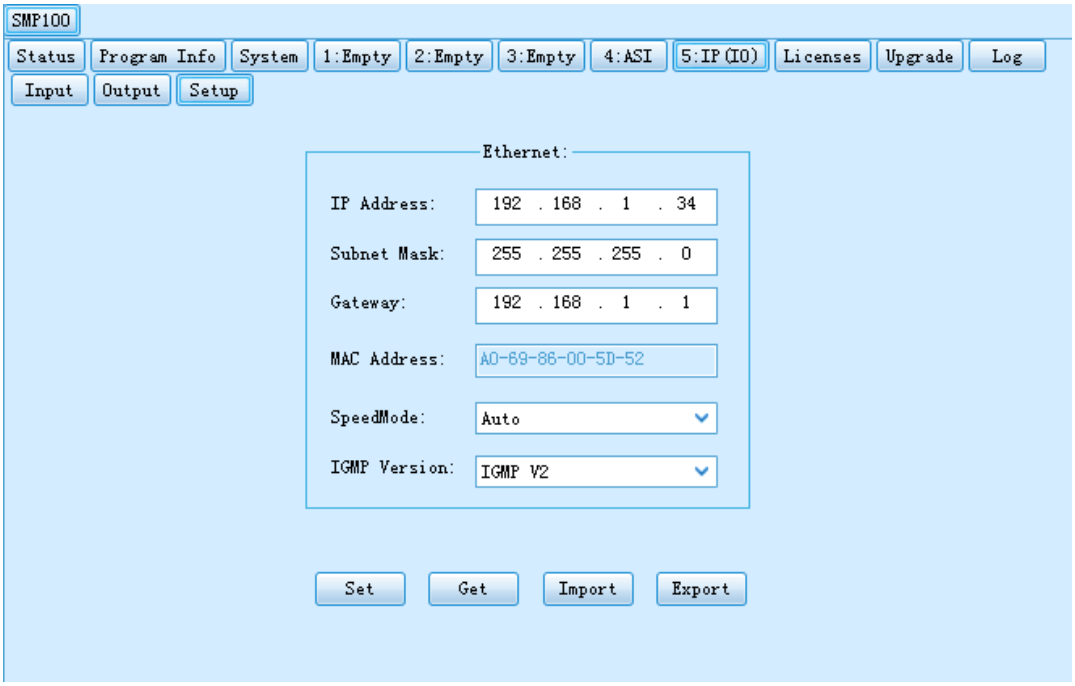
By selecting the ‘IP’ tab on the NMS operation interface, the IP module setting interface will be displayed.



The settings on the IP module include the settings on the ‘**Input**’, ‘**Output**’ and ‘**Setup.**

- **‘Setup’ Setting of the IP I/O Module**

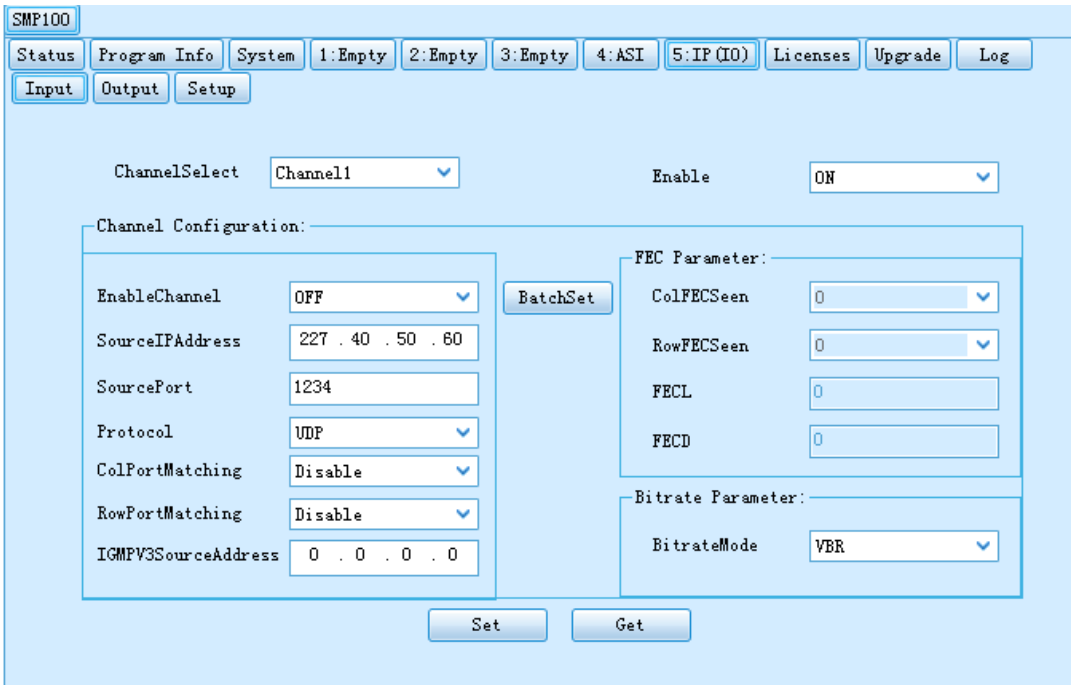
In the ‘Setup’ setting menu, user need to set correct parameters for the IP module such as the IP address, subnet Mask, Gateway, etc, so that the module can work normally in the network.



Parameters	Description
IP Address	Set IP address of IP module. The IP address of IP module is used for communication with CAS server that should be in the same IP section with IP address of the equipment
Subnet Mask	Set Subnet Mark of the IP module
Gateway	Set Gateway of the IP module
MAC Address	MAC address of the IP module
SpeedMode	Set RJ45 connection speed mode. The speed mode support 100Mbit and 1000Mbit.
IGMP Version	Set IGMP Version for multicast. The IGMP version setting should match the IGMP version of the switch in the network.

- **'Input' Setting**

The 'Input' setting menu is to set the IP input function for receiving multicast or unicast IP stream.



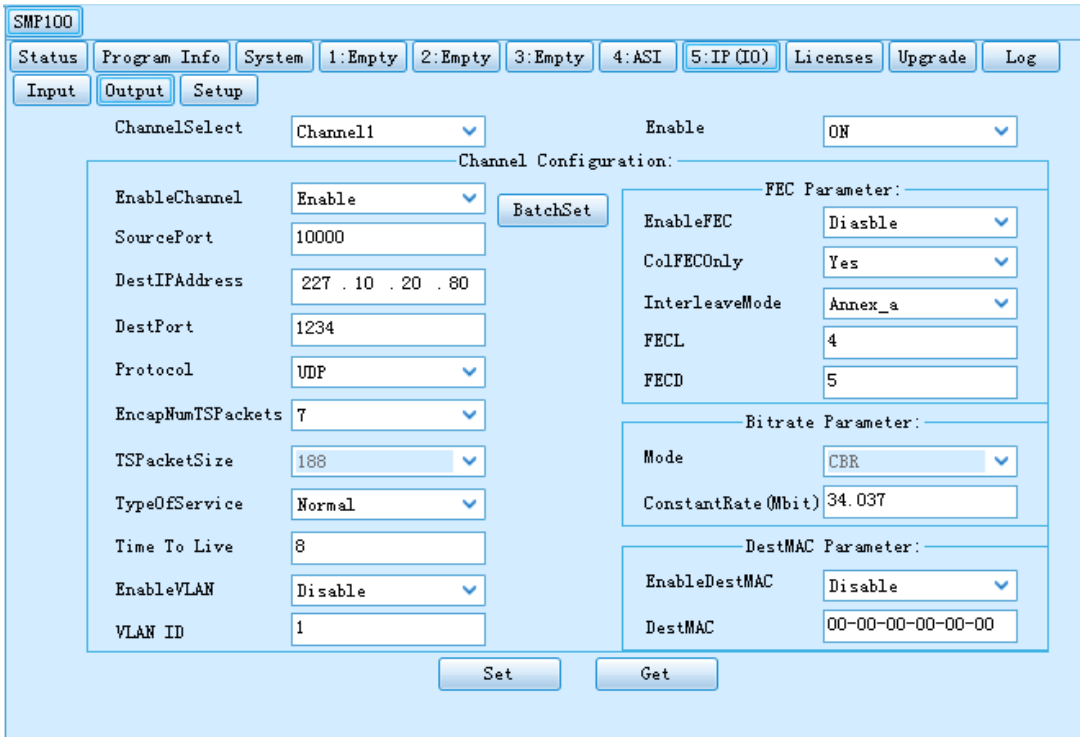
Parameters	Description
ChannelSelect	In this 'ChannelSelect', user can select a channel to configure its parameters.
Enable	On: enable the IP receiving function. Off: disable the IP receiving function.

	Note: this parameter setting applies to all channels.
Channel configuration	
EnableChannel	Enable or disable corresponding input channel
SourceIPAddress	Set the IP address of the multicast/unicast that are going to receive
SourcePort	Set port of multicast/unicast
Protocol	Select UDP/RTP for multicast/unicast
ColPortMatching	If the output IP stream quality looks not as good as the input stream, user can select to 'Enable' these two options then to enable the FEC function.
RowPortMatching	
FEC Parameter	The bigger values it is, the stronger capabilities it has to correct the data mistakes. But the FECL and FECD should be less than 100.

After setting all the parameters, you should press '**Set**' button to save the settings.

- **'Output' Setting**

The 'Output' setting menu is to set the IP output function for transmitting multicast/unicast IP stream to other devices.



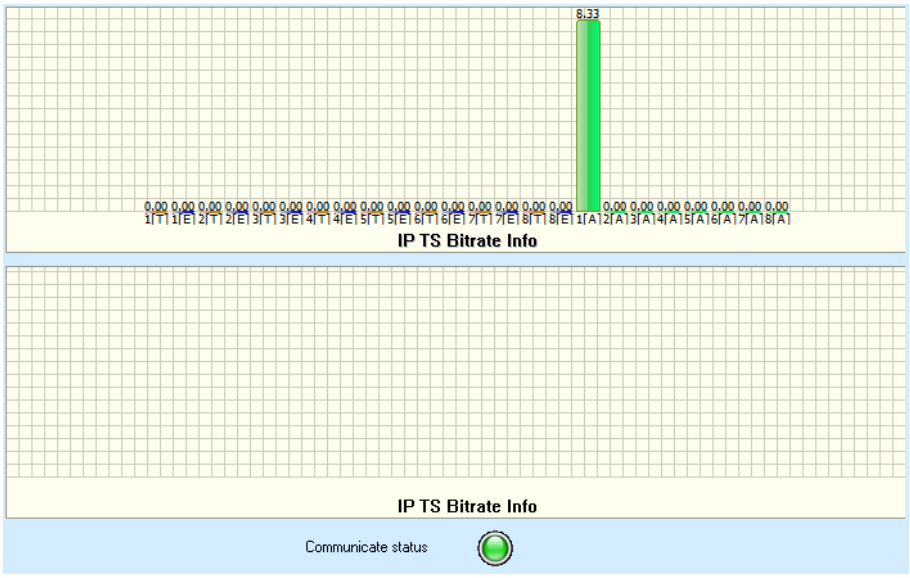
After setting all parameters, you should press '**Set**' button to save the settings.

Parameters	Description
ChannelSelect	In this 'ChannelSelect', user can select a channel to

	configure its transmitting parameters.
Enable	On: enable the IP receiving function. Off: disable the IP receiving function. **Note: this parameter setting applies to all channels.**
Channel configuration	
EnableChannel	Enable or disable corresponding output channel
SourcePort	Set port of multicast/unicast
DestIPAddress	Set IP address of the multicast/unicast.
Protocol	Select UDP/RTP for multicast/unicast
EncapNumTSPackets	Rang 1~7. (Num 7 is recommended)
TSPacketSize	Select 188/204 TS packet size
TypeofService	Select one service type as your requirement. Type including: Normal, Min delay, Monetary cost, Max reliability, Max Throughput.
Time To Live	Range is 1-255. (Num 8 is recommended)
EnableVLAN	Enable/Disable VLAN.
VLAN ID	Set VLAN ID.
FEC Parameter	
EnableFEC	Enable/Disable FEC
ColFECOnly	Yes for only Col FEC, no for Col&Row FEC
InterleaveMode	Mode includes: Annex_a, Annex_b and Off
FECL	The bigger values it is, the stronger capabilities it has to correct the data mistakes. But the FECL and FECD should be less than 100.
FECD	
Bitrate Parameter	
Mode	Mode includes: CBR/VBR
ConstantRate(Mbit)	Set constant bitrate for output
MaxRate(Mbit)	Set max bitrate for output
MainRate(Mbit)	Set min bitrate for output

Status

Go to “Status” tab and click sub-tab “IP”. The parameters of this part are derived from the input signal; they will be gotten automatically when the input signal is available, and cannot be changed by the user.



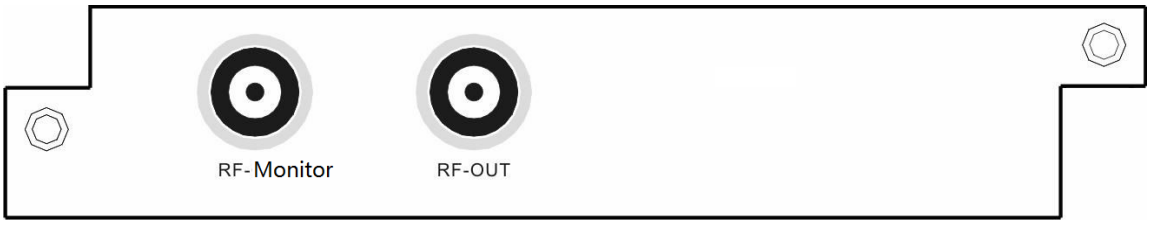
Parameters	Description
#(T)	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps
#(E)	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.

NOTE:

- **Once the IP module is properly configured, a status data will automatically appear.**
- **If no data status shown on the TSIP Input:**
  - o **Check the configuration is the Multicast Address and port is correct based from the source input.**
  - o **Check the TSIP out of the source (via VLC) it is really transmitting.**

3.1.4.6 QAM/COFDM Module

The QAM/COFDM module can output up to 8 separate RF QAM frequencies signals with one physical output interface, and extra monitor port is used for local monitoring. With adopting corresponding license key, the module can turn to a 4-COFDM module without changing the hardware.

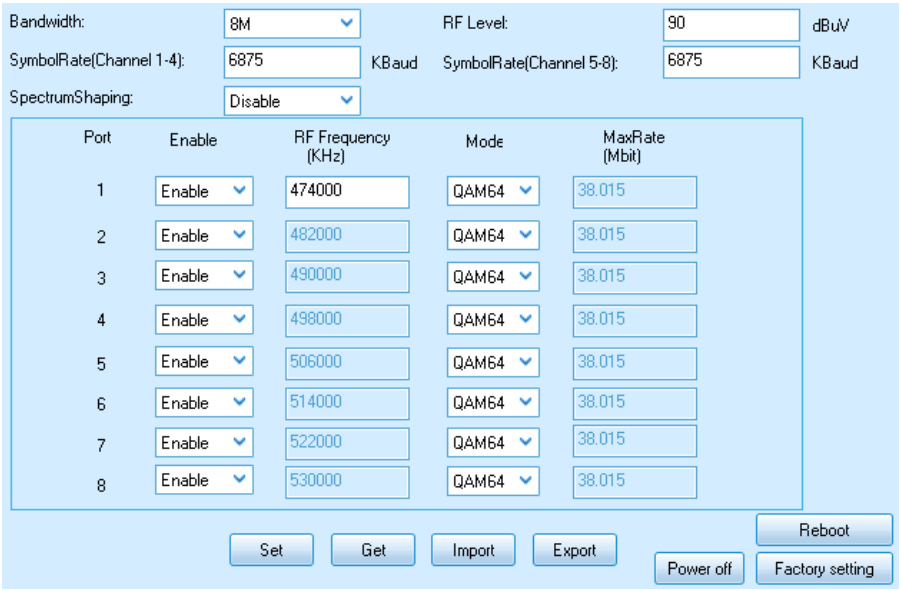


The configuration page of this module includes two parts:

Setting: set the parameters for receiving the input signal.

Status: indicates the basic parameter and locking status of input signal.

QAM Module Parameters Setting



Below are key parameters:

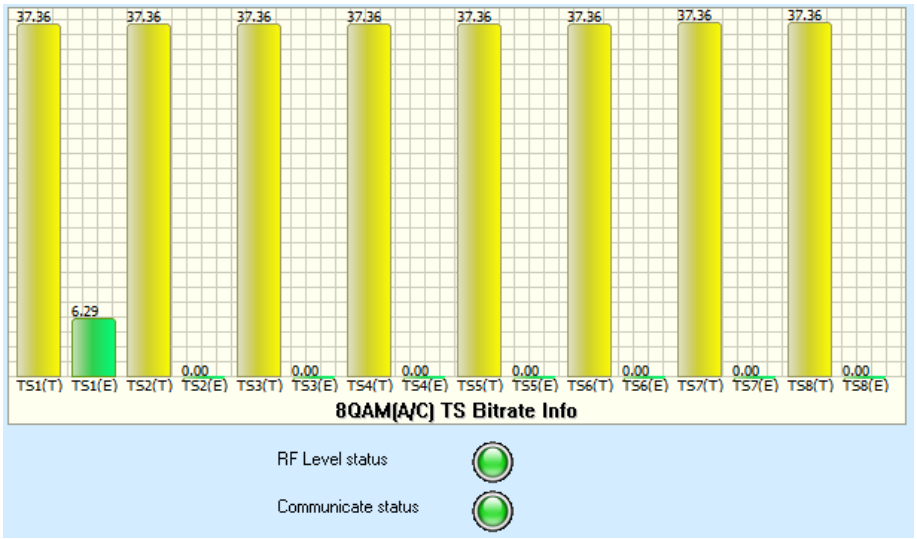
Parameters	Description
Bandwidth	Select the bandwidth of output RF, 6M/7M/8M are available.
RF Level	Set RF output signal level in dBuV, the value RF Level is 90dBuV~106dBuV.
SymbolRate (Channel 1~4)	Set symbol rate for the first four transmission frequencies
SymbolRate (Channel 5~8)	Set symbol rate for the last four transmission frequencies
SpectrumShaping	Enable or disable it according to the requirement of receiver.
Enable	Switch ‘Enable’ or ‘Disable’ for the selected channel output
RF Frequency (KHz)	Set the carrier frequency for the first modulation frequency.

	Note: for the RF frequencies of port 2~8, they will be set automatically by the NMS base on the frequency of port 1 and the 'Bandwidth' setting.
Mode	Set modulation type of each modulators port. The modulation mode can be QAM16, QAM32, QAM64, QAM128, QAM256.
Max Rate	The maxrate is automatically calculated by the NMS according to the QAM mode the user selects.

After setting all parameters, you should press '**Set**' button to save the settings.

QAM Module Status

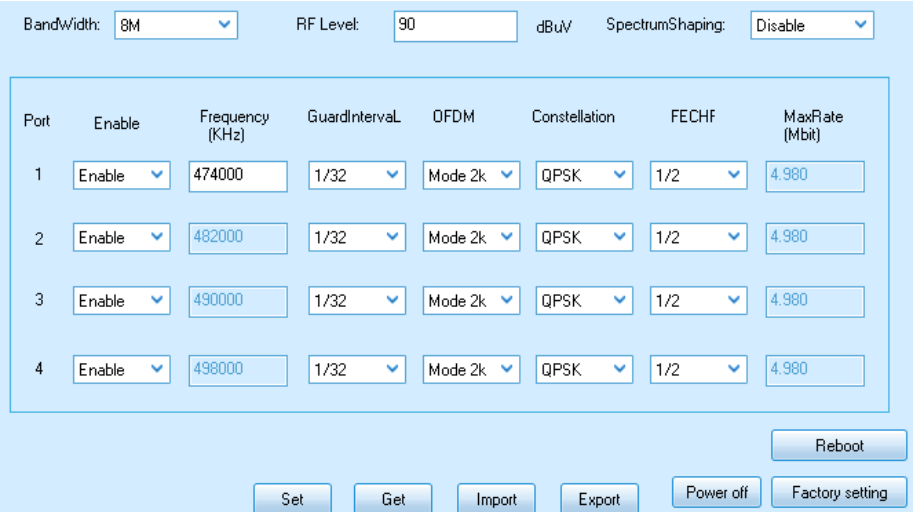
Go to "Status" tab and click sub-tab "QAM". The parameters of this part are derived from the input signal; they will be gotten automatically when the input signal is available, and cannot be changed by the user.



Introduction to the parameters of status:

Parameters	Description
TS#(T)	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps
TS#(E)	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.
RF Level status	Indicates if the physical RF port works (green) or not (red)

4-COFDM Module Parameter Setting



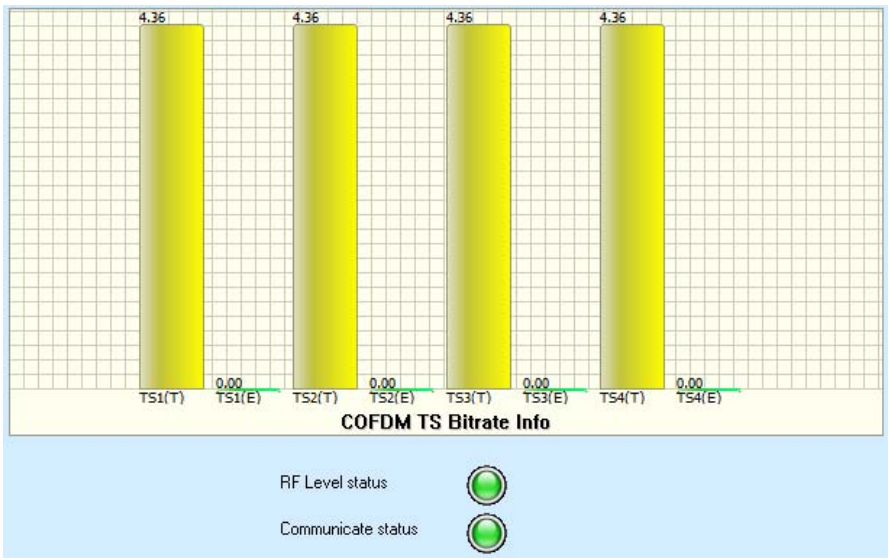
Below are the key parameters:

Parameters	Description
Bandwidth	Select the bandwidth of output RF, 6M/7M/8M are available.
RF Level	Set RF output signal level in dBu, the value RF Level is 90dBuV~112dBuV.
SpectrumShaping	Enable or disable it according to the requirement of receiver.
Enable	Switch 'Enable' or 'Disable' for the selected channel output
Frequency (KHz)	Set the carrier frequency for the first modulation frequency. Note: for the RF frequencies of port 2~4, they will be set automatically by the NMS base on the frequency of port 1 and the 'Bandwidth' setting.
GuardInterval	Select proper guard interval according to your network.
OFDM	Select proper number of carriers according to your network.
Constellation	Select proper constellation according to your network.
FECHF	Select proper FECHF according to your network.
MaxRate	The maxrate is automatically calculated by the NMS according to the QAM mode the user selects

After setting all parameters, you should press '**Set**' button to save the settings.

COFDM Module Status

Go to "Status" tab and click sub-tab "OFDM". The parameters of this part are derived from the input signal; they will be gotten automatically when the input signal is available, and cannot be changed by the user.



Introduction to the parameters of status:

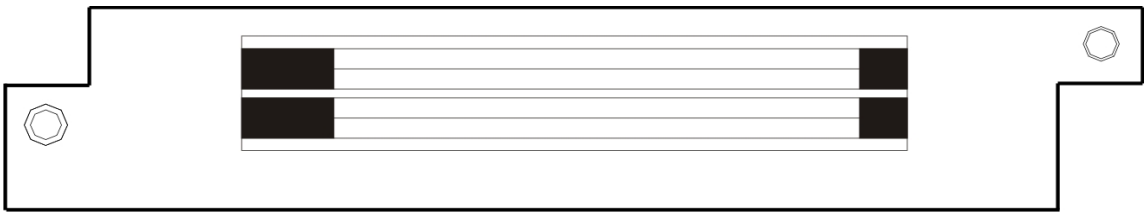
Parameters	Description
TS#(T)	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps
TS#(E)	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.
RF Level status	Indicates if the physical RF port works (green) or not (red)

Note:

- **Total allowable Bit rate, will automatically appear based on the configuration that was set.**
- **Effective bit rate should not exceed total allowable bit rate. Otherwise, overflow will occur.**
- **It is advisable to save a space to prevent overflow.**

3.1.4.7 CI Descrambling Module

The CI descrambling module is for descrambling the input scrambled stream via CAM module. The module supports 2 CAMs working simultaneously.

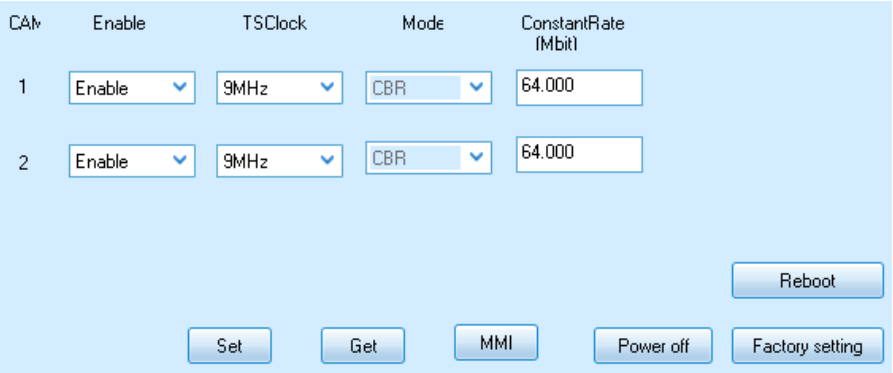


The configuration page of this module includes two parts:

Setting: set the parameters for receiving the input signal.

Status: indicates the basic parameter and locking status of input signal.

- **Setting**



In the CI module NMS interface, there are four items for user to select/configure. Only after the parameters are correctly set can the CI module work normally.

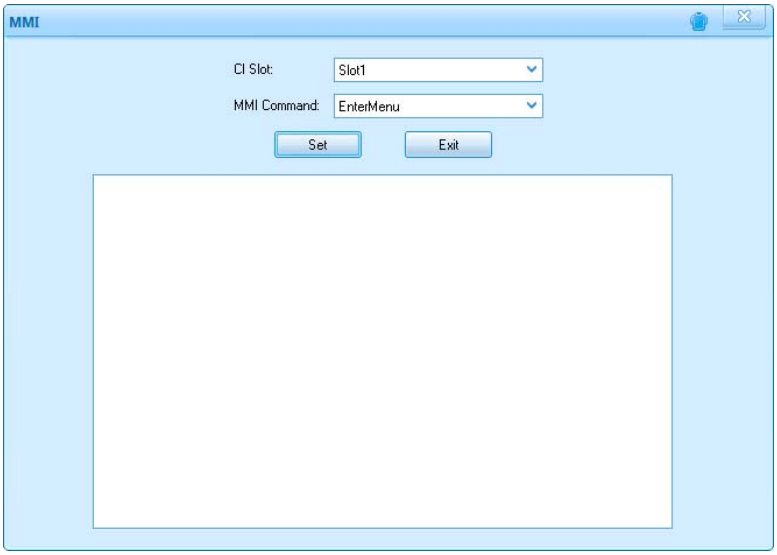
Parameters	Description
CAM No.	Indicates which CAM the user is operating.
Enable/Disable switch	**Enable**--turn on the CI module and enable the input stream to pass through the CI module and get descrambled. **Disable**--Disable any input stream to pass through the CI module and thus the CI module will not be functional. **！Please select Disable if no CAM is inserted in the CI module.**
TSClock	The TSClock is selected according to the CAM and actual bitrate of input TS. Five options in the TSClock can be selected: **9MHz**--support up to 72Mbit input TS. **9.5MHz**--support up to 76Mbit input TS. 10.5MHz--support up to 84Mbit input TS. 11.5MHz--support up to 92Mbit input TS. 13MHz--support up to 104Mbit input TS. **！Please select default 9MHz for the TSClock if input TS is less than 72Mbit in total bitrate.**
Mode	**CBR**--the output descrambling TS bitrate is set at a bitrate which set in the ConstantRate. **VBR**--the output descrambling TS bitrate is changeable depending on the input TS.
ConstantRate (Mbit)	To set a fixed output bitrate for the CI module. It will take

	effect when user selects the CBR mode. ！ **Please set a bigger bitrate value than the input TS rate and reserve a bit buffer.**

Note: for the descrambling operation on a program, please refer to "Descramble Operation", page-51 of this manual for the details.

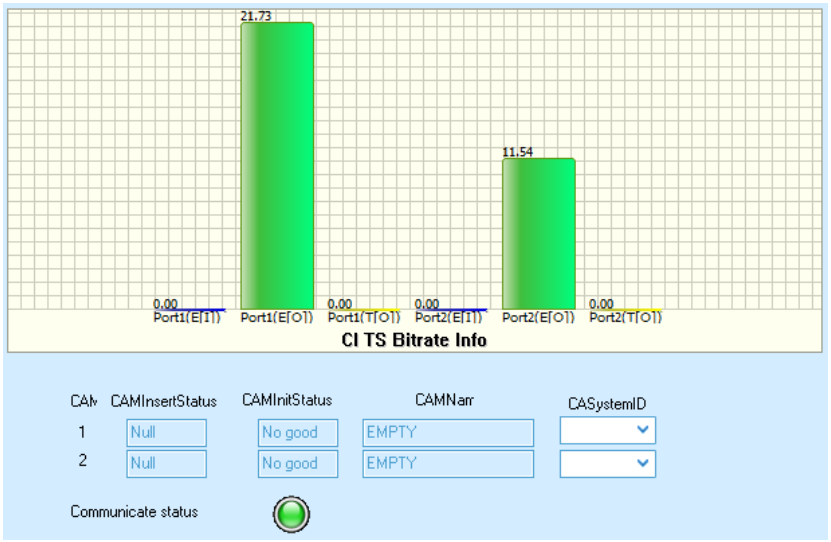
After setting all the parameters, you should press '**Set**' button to save the settings.

MMI: click "MMI" button, you'll see the following picture. This function is used only when decryption problem appears in CAM module. Select the slot where CAM is inserted in "CI Slot" and choose "EnterMenu" in "MMI Command", and then click "Set" to get the information about CAM module. It will be helpful for our engineer to analyze the issue.



- **Status**

Go to "Status" tab and click sub-tab "CI". The parameters of this part are derived from the input signal; they will be gotten automatically when the input signal is available, and cannot be changed by the user.



Below are the key parameters:

Parameters	Description
CAM Port	Indicates which CAM the user is operating.
CAM Insert Status	Indicates if the CAM module is detected (Inserted) or not (Null)
CAMInitStatus	Indicates if the initialization of CAM module is successful (Good) or failed (No good)
CAM Narr	Indicates the CAM module name.
CASystemID	Indicates the CAS system ID of the inserted CAM module.

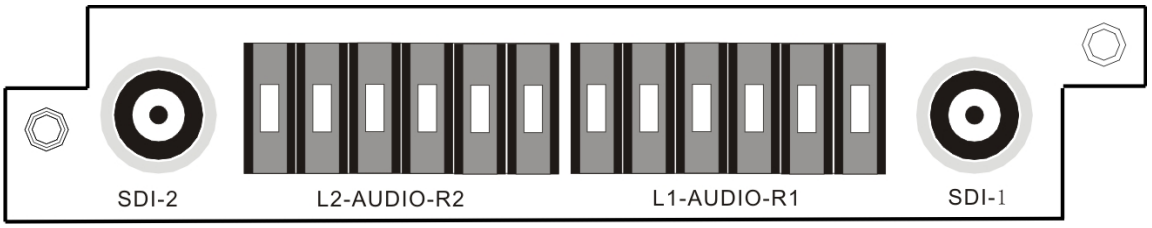
All CI information status will automatically appear once the CAM Card and CAM module is properly inserted.

NOTE:

- **In decrypting the encrypted programs, you just need to pick a specific program and transfer it to the CI board at program information.**
- **CI has two clot, select which slot it should belong (from you the CAM Card is inserted).**
- **Status monitoring, will automatically display the data of the programs being decrypted.**

3.1.4.8 SD&HD H.264 SDI/AV Encoder Module

The 2-SD&HD H.264 SDI/AV Encoder Module supports encoding 2 SDI channels or 2 AV channels simultaneously.

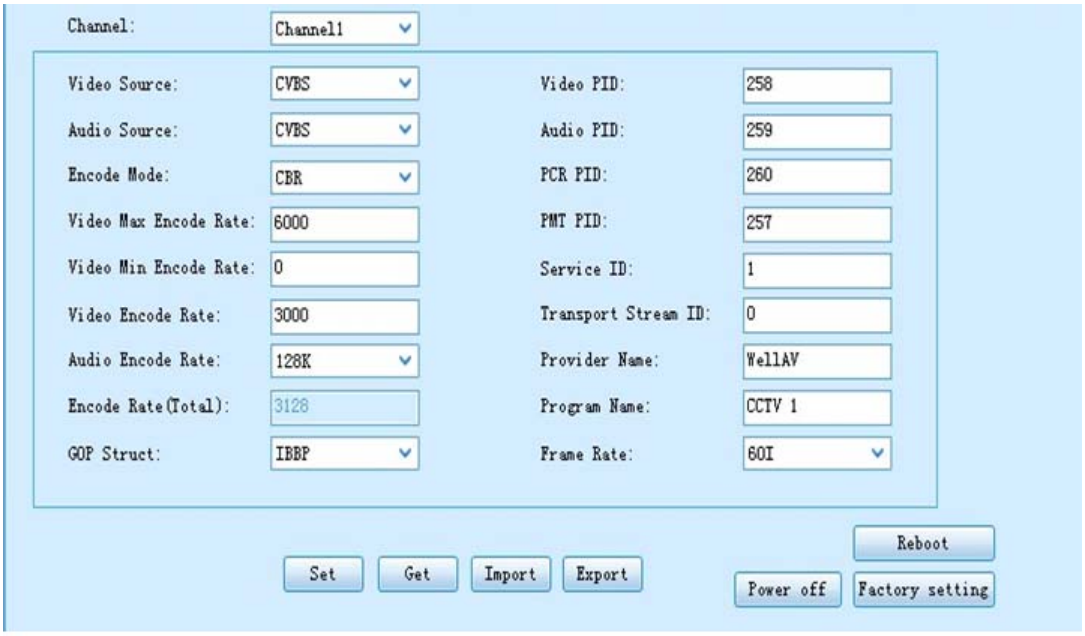


The configuration page of this module includes two parts:

Setting: set the parameters for receiving the input signal.

Status: indicates the basic parameter and locking status of input signal.

- **Setting**



Below are the key parameters:

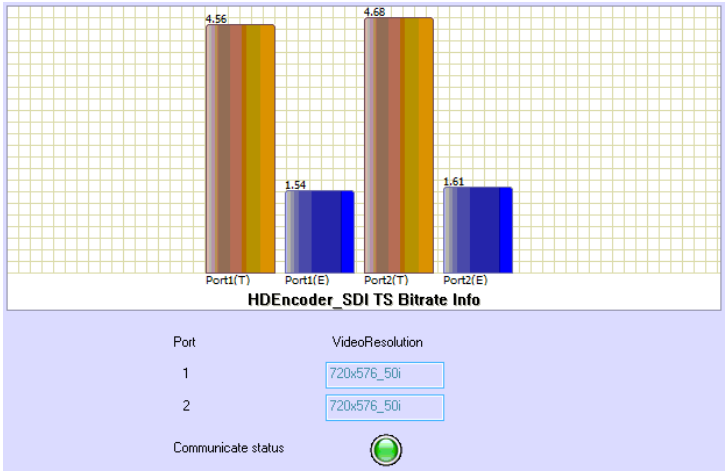
Parameters	Description
Channel	Indicates which input port the channel comes from.
Video Source	To select the correct video source for the input.
Audio Source	To select the correct audio source for the input.
Encode Mode	Select CBR or VBR for the encoding mode.
Video Max Encode Rate	To set the Max. encode rate for VBR mode.
Video Min Encode Rate	To set the Min. encode rate for VBR mode.
Video Encode Rate	To set the encode rate for CBR mode.
Audio Encode Rate	To choose the encoding bitrate for the audio.

Encode Rate	The total encode rate of video and audio contents. Calculated automatically by the software.
GOP Struct	To select GOP structure.
Video PID	To edit the video PID.
Audio PID	To edit the audio PID.
PCR PID	To edit the PCR PID.
PMT PID	To edit the PMT PID.
Service ID	To edit the service ID.
Transport Stream ID	To edit the transport stream ID.
Provider Name	To edit the program provider name.
Program Name	To edit the program name.
Frame Rate	To select correct frame rate according to the input source.

After setting all the parameters, you should press '**Set**' button to save the settings.

- **Status**

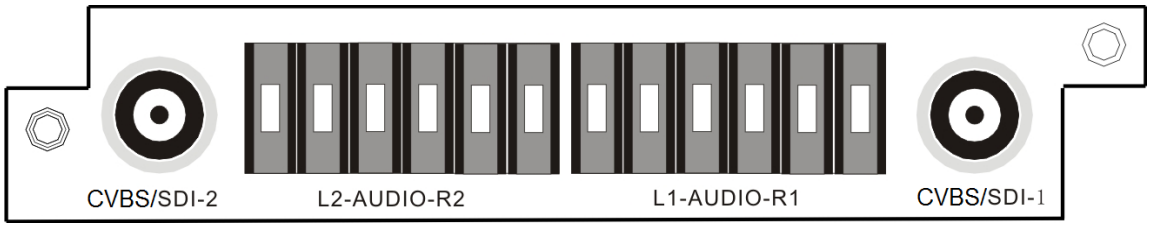
Go to "Status" tab and click sub-tab "HD-Encoder_SDI". The parameters of this part are derived from the input signal; they will be gotten automatically when the input signal is available, and cannot be changed by the user.



Parameters	Description
Port#(T)	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps
Port#(E)	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.
VideoResolution	the resolution of input video

3.1.4.9 SD MPEG2 SDI/AV Encoder Module

The 2-SD MPEG2 SDI/AV Encoder Module supports encoding 2 SDI channels or 2 AV channels simultaneously.

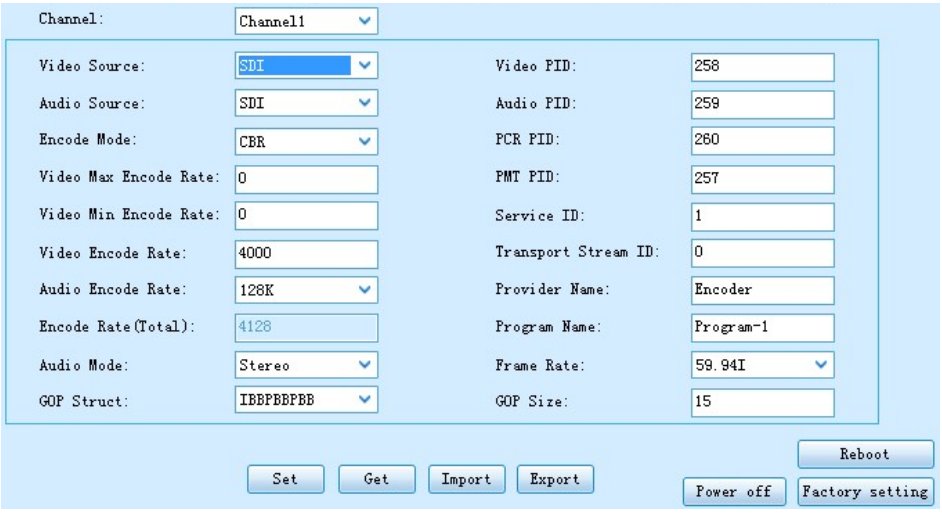


The configuration page of this module includes two parts:

Setting: set the parameters for receiving the input signal.

Status: indicates the basic parameter and locking status of input signal.

- **Setting**



Below are the key parameters:

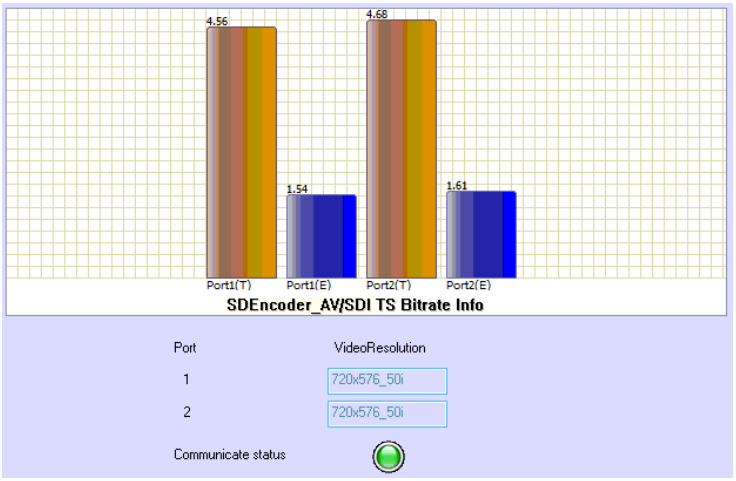
Parameters	Description
Channel	Indicates which input port the channel comes from.
Video Source	To select the correct video source for the input.
Audio Source	To select the correct audio source for the input.
Encode Mode	Select CBR or VBR for the encoding mode.
Video Max Encode Rate	To set the Max. encode rate for VBR mode.
Video Min Encode Rate	To set the Min. encode rate for VBR mode.
Video Encode Rate	To set the encode rate for CBR mode.

Audio Encode Rate	To choose the encoding bitrate for the audio.
Encode Rate	The total encode rate of video and audio contents. Calculated automatically by the software.
Audio Mode	To select the audio mode
GOP Struct	To select GOP structure.
Video PID	To edit the video PID.
Audio PID	To edit the audio PID.
PCR PID	To edit the PCR PID.
PMT PID	To edit the PMT PID.
Service ID	To edit the service ID.
Transport Stream ID	To edit the transport stream ID.
Provider Name	To edit the program provider name.
Program Name	To edit the program name.
Frame Rate	To select correct frame rate according to the input source.
GOP Size	To edit the GOP size

After setting all the parameters, you should press '**Set**' button to save the settings.

- **Status**

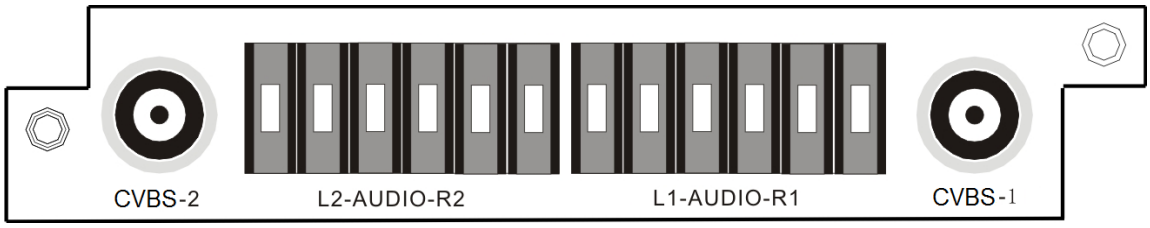
Go to "Status" tab and click sub-tab "SD-Encoder_AV/SDI". The parameters of this part are derived from the input signal; they will be gotten automatically when the input signal is available, and cannot be changed by the user.



Parameters	Description
Port#(T)	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps
Port#(E)	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.
VideoResolution	the resolution of input video

3.1.4.10 SD MPEG2 AV Encoder Module

The 2-SD MPEG2 AV Encoder Module supports encoding 2 AV channels simultaneously.



The configuration page of this module includes two parts:

Setting: set the parameters for receiving the input signal.

Status: indicates the basic parameter and locking status of input signal.

- **Setting**

Below are the key parameters:

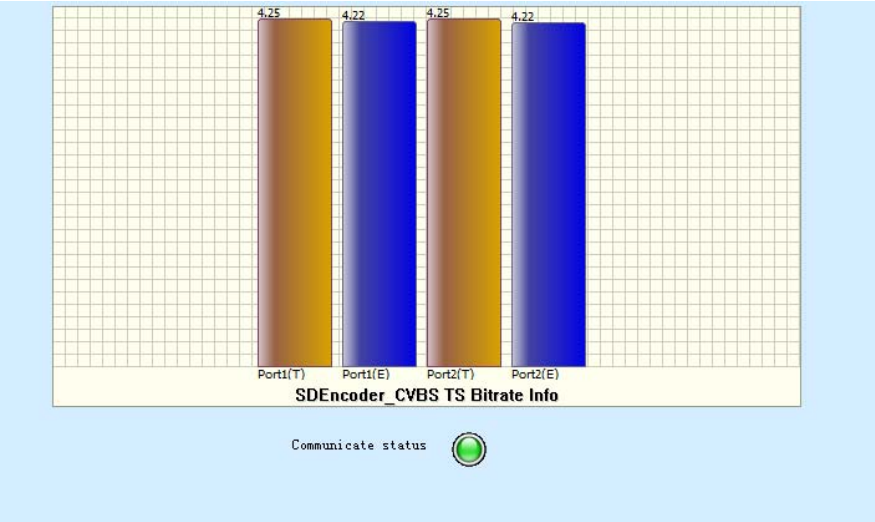
Parameters	Description
Channel	Indicates which input port the channel comes from.
Video Encode Rate	To set the encode rate for CBR mode.
Audio Encode Rate	To choose the encoding bitrate for the audio.
Audio Mode	To select the audio mode
GOP Struct	To select GOP structure.
GOP Size	To edit the GOP size

PCR PID	To edit the PCR PID.
Video PID	To edit the video PID.
Audio PID	To edit the audio PID.
PMT PID	To edit the PMT PID.
Provider Name	To edit the program provider name.
Program Name	To edit the program name.
Service ID	Default value of the service ID.

After setting all the parameters, you should press ‘Set’ button to save the settings.

- **Status**

Go to “Status” tab and click sub-tab “SD-Encoder_CVBS”. The parameters of this part are derived from the input signal; they will be gotten automatically when the input signal is available, and cannot be changed by the user.

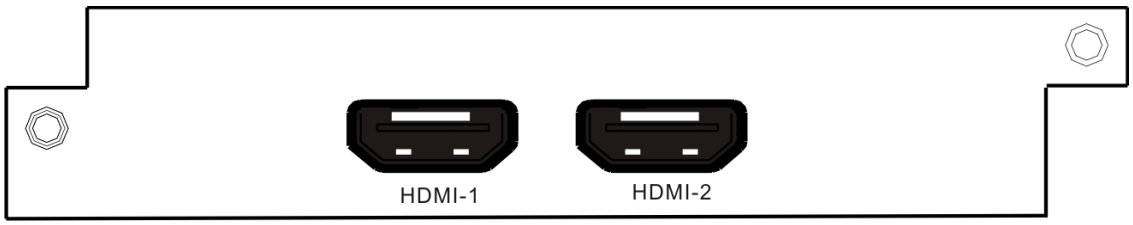


Introduction to parameters of status:

Parameters	Description
Port#(T)	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps
Port#(E)	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.

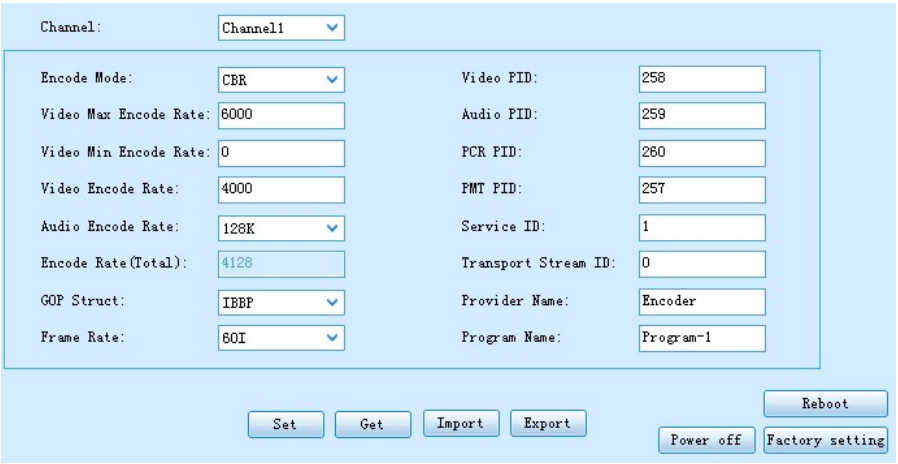
3.1.4.11 HD H.264 HDMI Encoder Module

The HD H.264 HDMI Encoder Module supports encoding 2 HDMI channels simultaneously.



The configuration page of this module includes two parts:
Setting: set the parameters for receiving the input signal.
Status: indicates the basic parameter and locking status of input signal.

- **Setting**



Below are the key parameters:

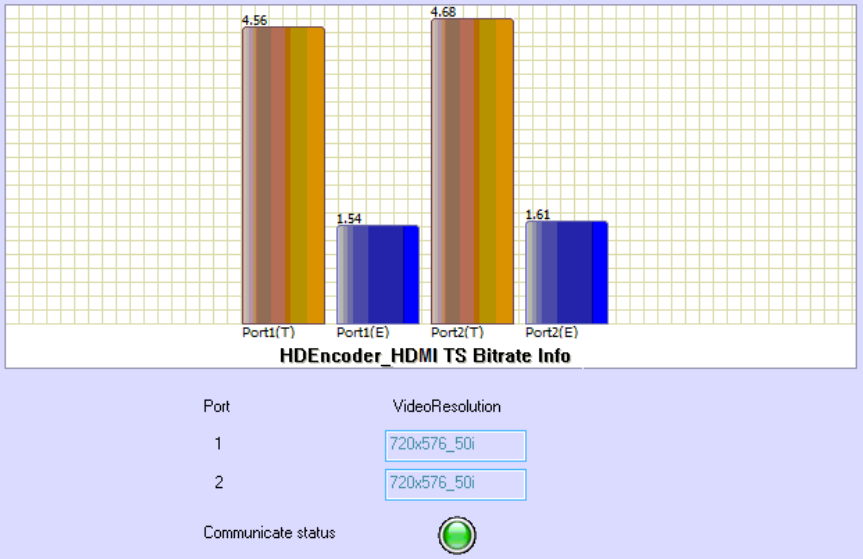
Parameters	Description
Channel	Indicates which input port the channel comes from.
Encode Mode	Select CBR or VBR for the encoding mode.
Video Max Encode Rate	To set the Max. encode rate for VBR mode.
Video Min Encode Rate	To set the Min. encode rate for VBR mode.
Video Encode Rate	To set the encode rate for CBR mode.
Audio Encode Rate	To choose the encoding bitrate for the audio.
Encode Rate	The total encode rate of video and audio contents. Calculated automatically by the software.
GOP Struct	To select GOP structure.
Frame Rate	To select correct frame rate according to the input source.
Video PID	To edit the video PID.

Audio PID	To edit the audio PID.
PCR PID	To edit the PCR PID.
PMT PID	To edit the PMT PID.
Service ID	To edit the service ID.
Transport Stream ID	To edit the transport stream ID.
Provider Name	To edit the program provider name.
Program Name	To edit the program name.

After setting all the parameters, you should press '**Set**' button to save the settings.

- **Status**

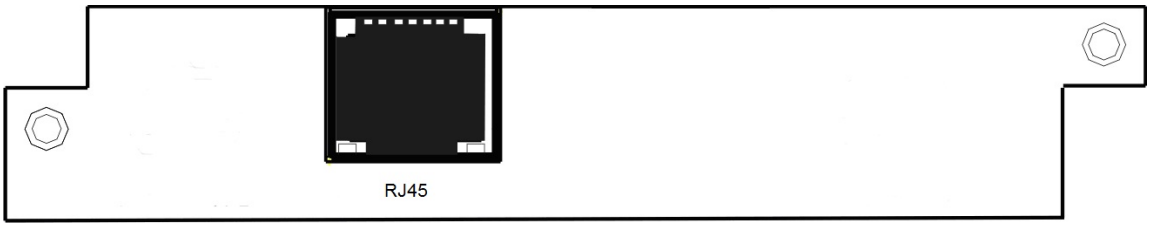
Go to "Status" tab and click sub-tab "HD-Encoder_HDMI". The parameters of this part are derived from the input signal; they will be gotten automatically when the input signal is available, and cannot be changed by the user.



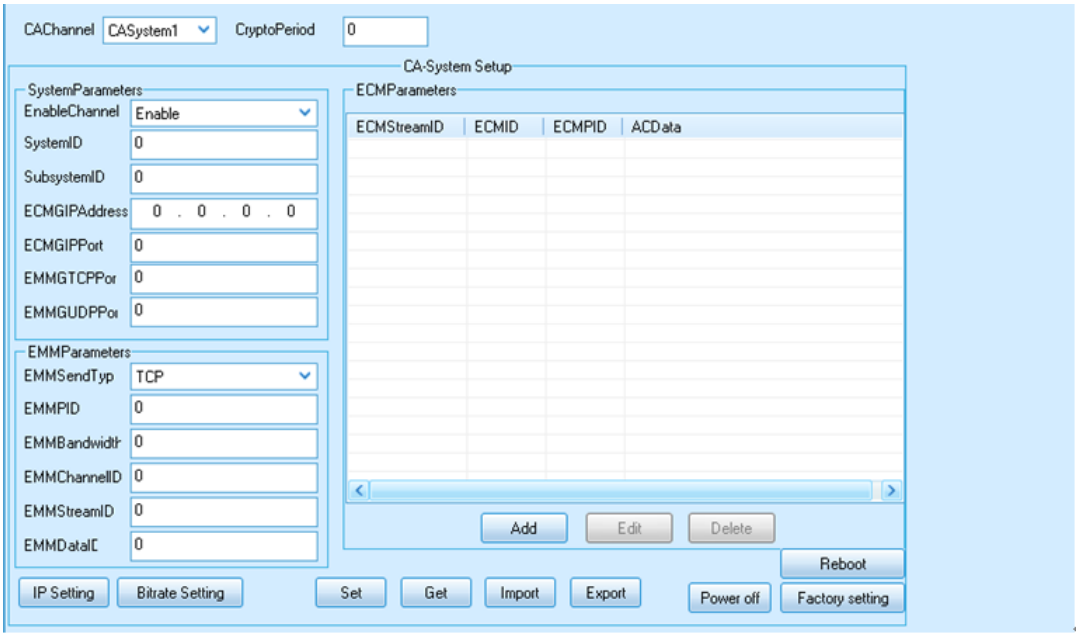
Introduction to the parameters of status:

Parameters	Description
Port#(T)	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps
Port#(E)	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.
VideoResolution	the resolution of input video

3.1.4.12 DVB Scrambler Module



Insert the scrambler module to an empty slot. After successful initialization, log on NMS and select “Scrambler” tab to enter the scrambler configuration window:



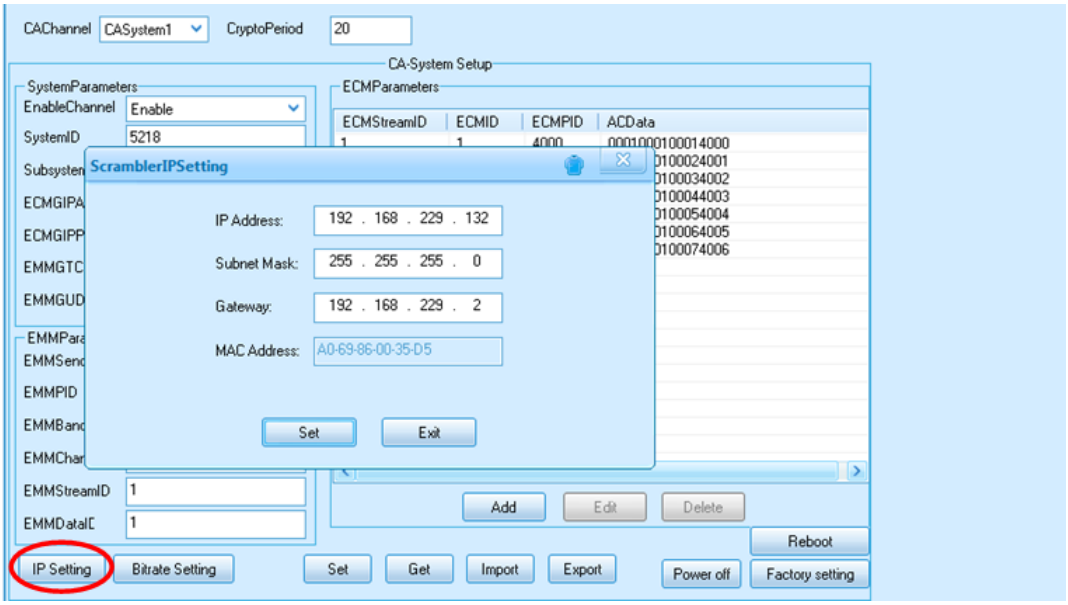
Below are the key parameters:

Parameters	Description
CAChannel	the scrambler module supports up to 4 different CAS Simulcrypt. User can configure different settings for each CAS system by selecting different “CAChannel” in this item.
CryptoPeriod	the time interval between two ECMs generated by ECMG.
SystemID	Each CAS system has a unique SystemID when it is registered in DVB. Please contact your CAS service provider if you don’t know what the ID is.
ECMGIPAddress	Input the CAS server IP address.
ECMGIPPort	Shall input the same port no and ID setting as those on the CAS

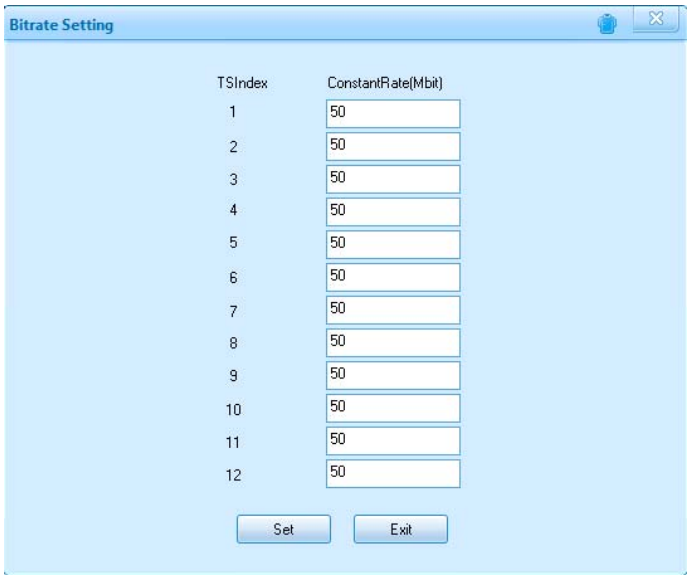
EMMGTCPPort	server. Otherwise connection cannot be set up between the CAS server and the scrambler module.
EMMGUDPPort	
EMMSendType	
EMMPID	
EMMBandwidth	
EMMChannelID	
EMMStreamID	
EMMDataID	

To ensure the scrambler module can set up connection successfully with the CAS server, user shall configure the correct parameters on the scrambler module

IP Setting button: Click this button to set an IP address for the scrambler module per the network environment. After setting the IP address, the scrambler module must be rebooted.



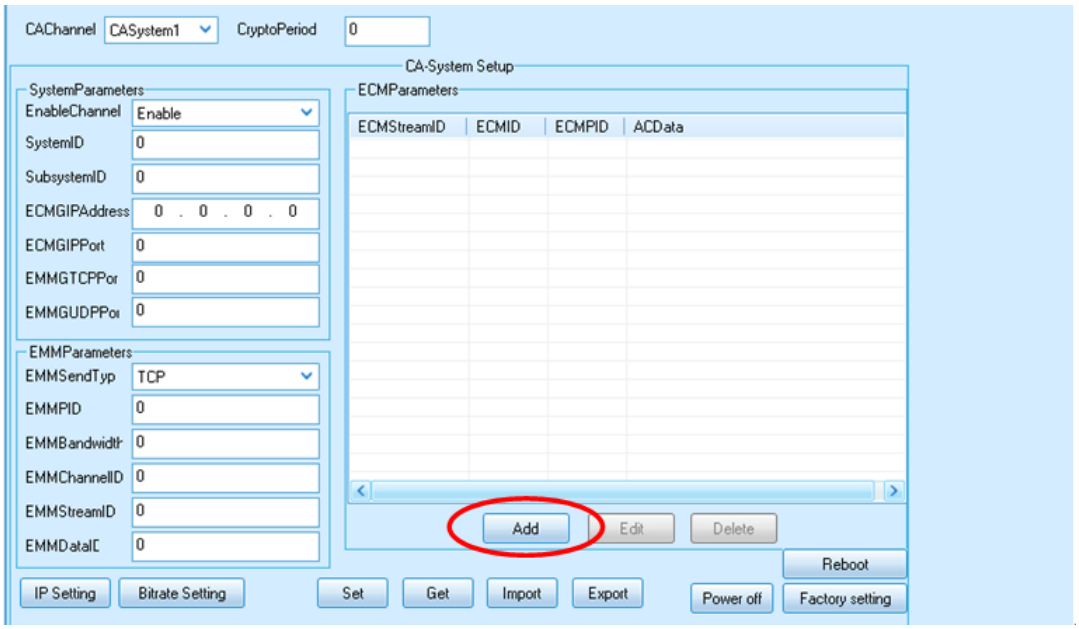
Bitrate Setting button: Click this button to set the allowed max bitrate for each channel of the scrambler module.



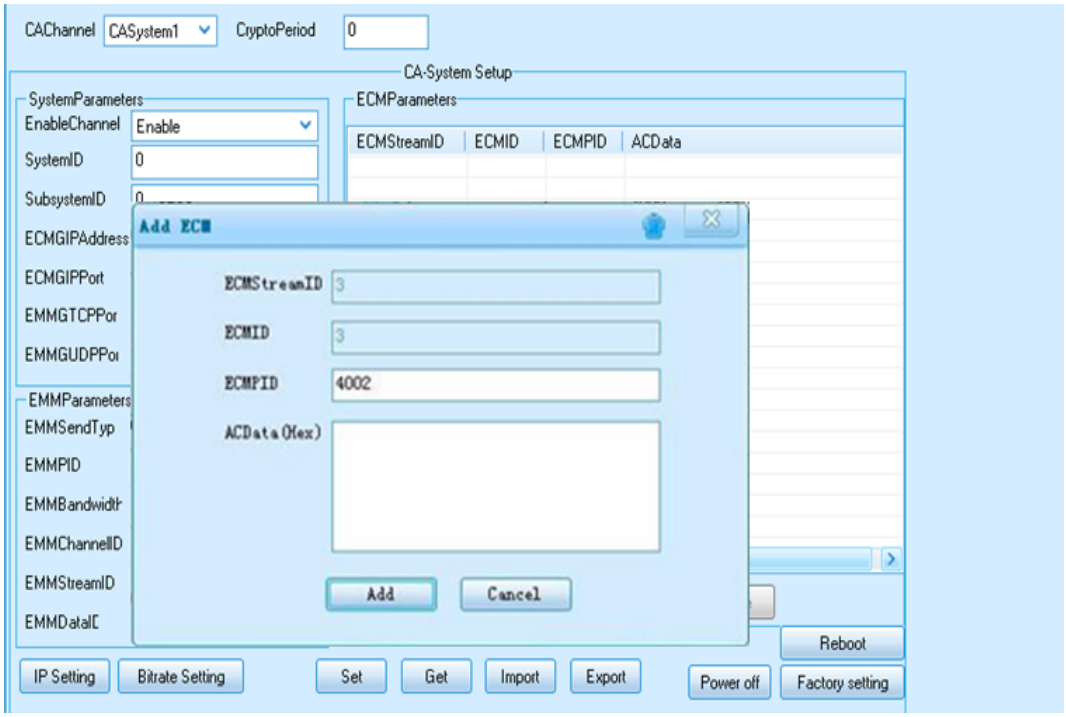
After inputting the correct parameters, the scrambler module shall connect with the CAS server.

Add the AC Data for each program of a TS stream

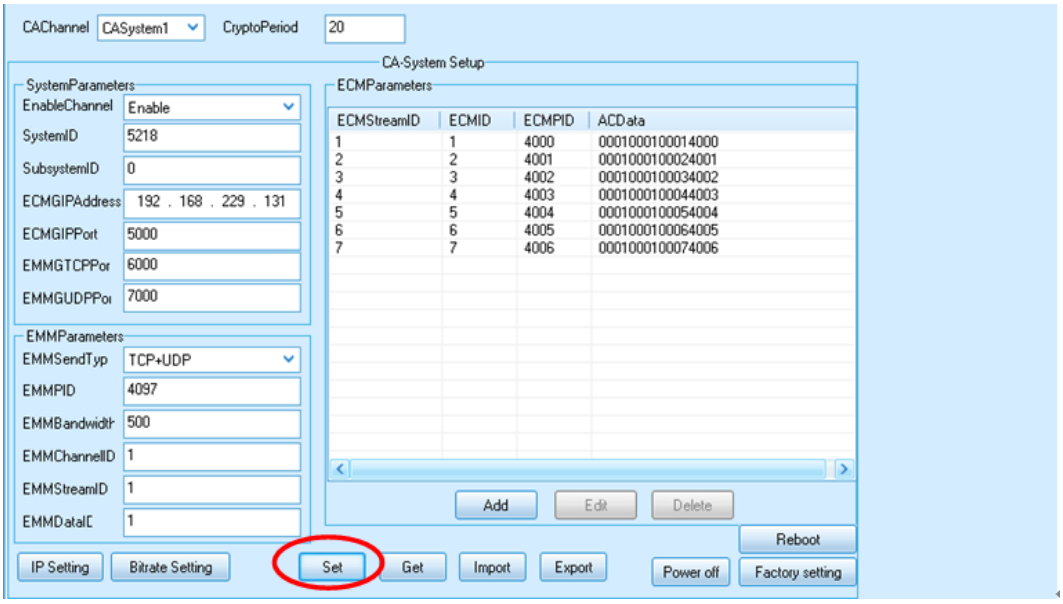
- Click “Add” button on the NMS



- In the “Add ECM” window, input the ACData (Hex), and click “Add” to insert the AC Data.



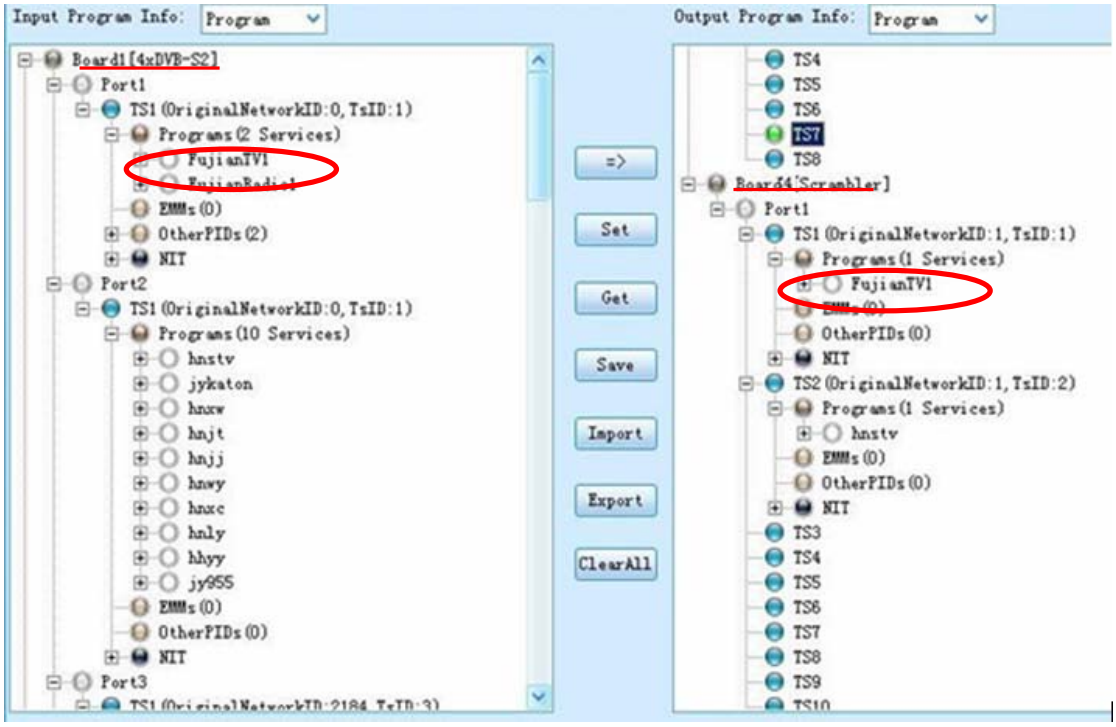
- After finishing all the parameters setting and the AC Data insertion, click “Set” button on the NMS to apply for the settings.



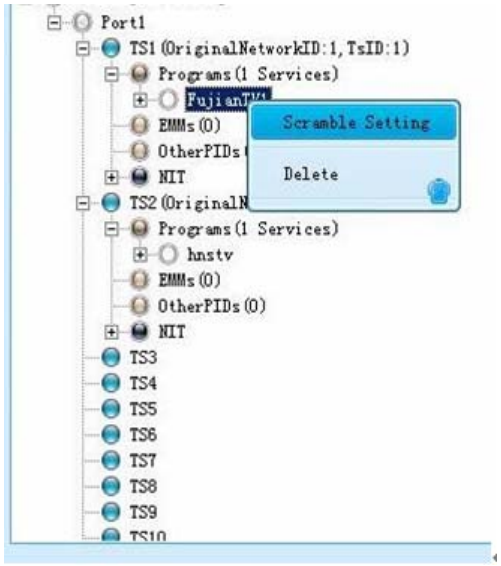
After configuring on the scrambler module setting window, user shall operate in the “Program Info” tab to specify which program to be scrambled and transfer to the transmission module (QAM/IP/ASI) for output. Operation steps are as following:

- Select the program which is to be scrambled and transfer it from the signal source to the scrambler module at “Output Program Info”. (To know how to transfer programs, please refer to chapter 3.1.5)

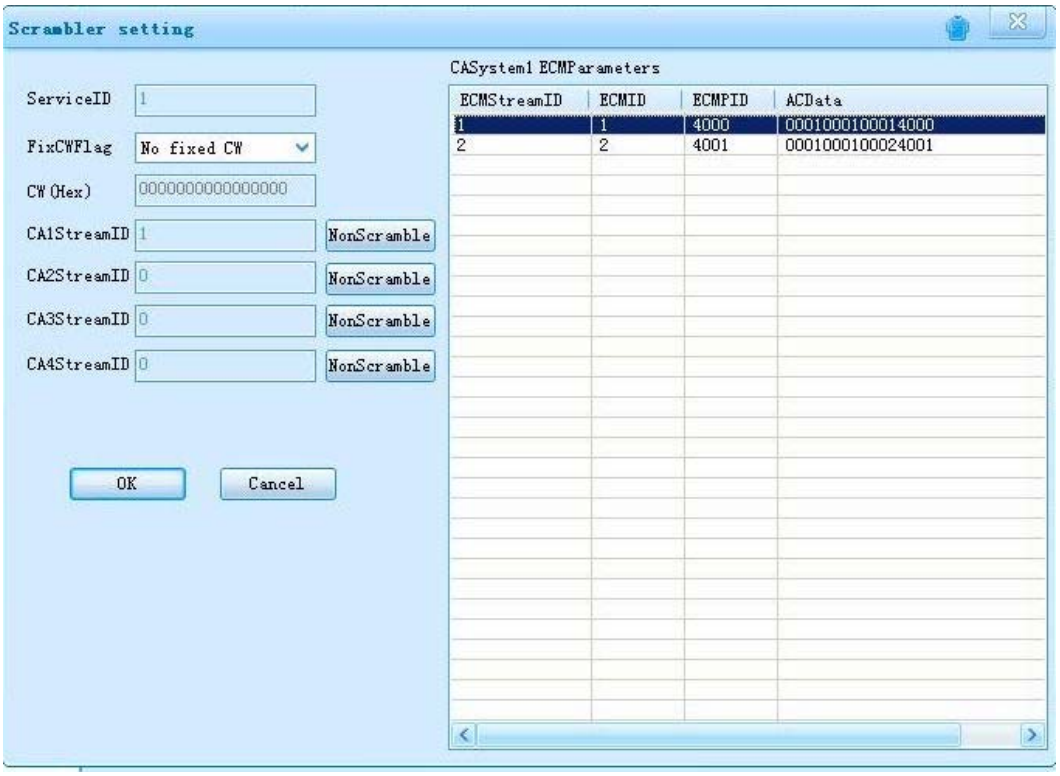
In below example picture, program “FujianTV1” is selected and is transferred from DVB-S2 module in “Input Program Info” window to scrambler module in “Output Program Info” window.



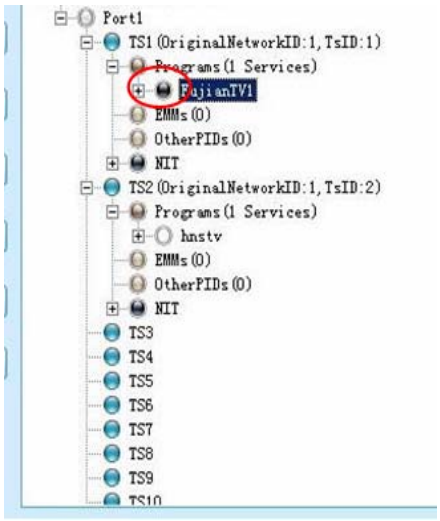
- Edit the Network ID, TSID for the selected program, same as the setting in the CAS server for that program. Select the program name and click mouse right button to select “Scramble Setting”.



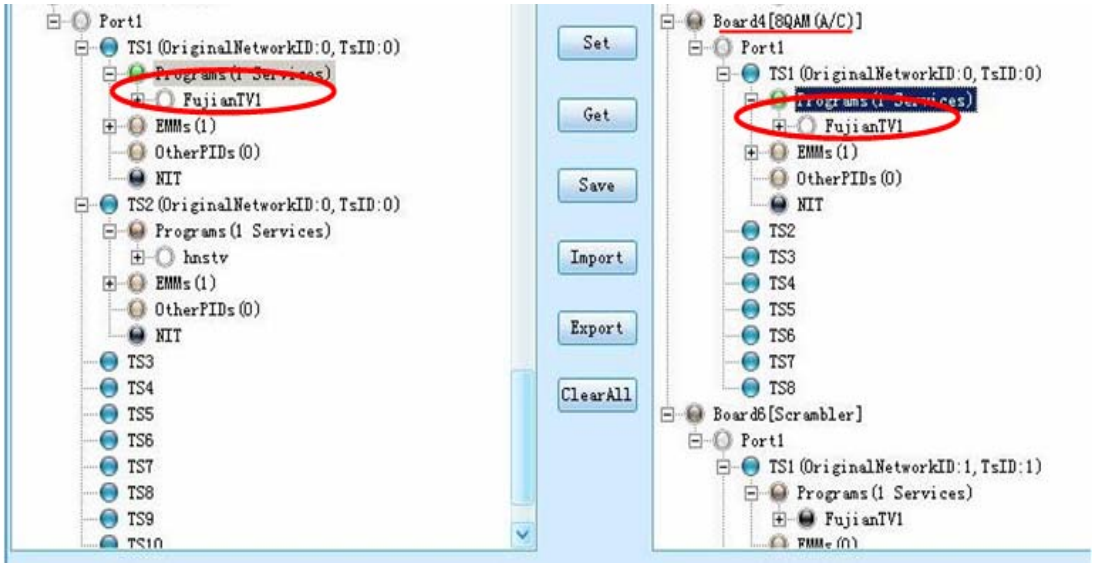
- In the “Scrambler Setting” window, select an AC Data we previously input and click “OK” to bond with the selected program.



- After the program is scrambled, the button indicators of the program name will turn to black color.



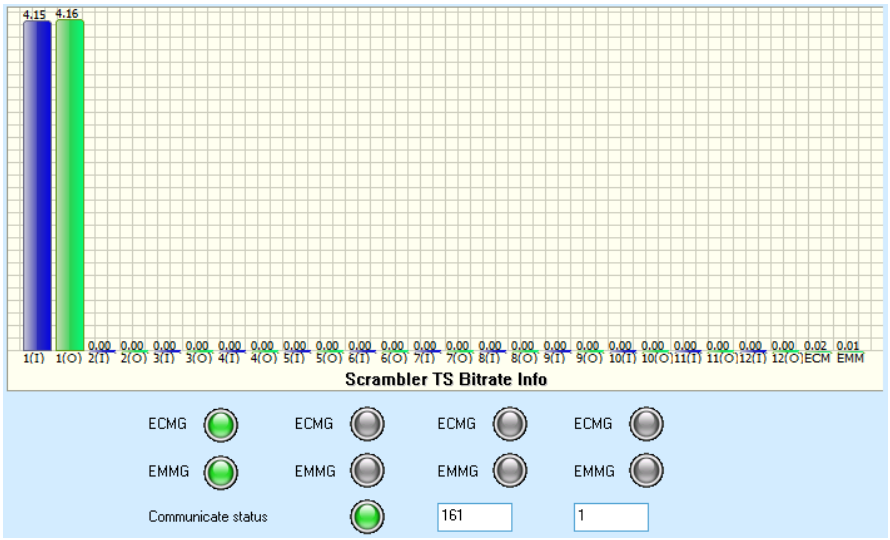
- The scrambling program stream will be automatically transferred to the Scrambler module in the “Input Program Info” window for transmission. Select the program we just scrambled in the Scrambler module in “Input Program Info” window, and transfer it to any transmission module. **Don’t forget to transfer EMM PID together.** The output program is already scrambled.



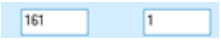
- **Status**

Go to “Status” tab and click sub-tab “HD-Encoder_HDMI”. The parameters of this part are derived from the input signal; they will be gotten automatically when the input signal is available,

and cannot be changed by the user.



Introduction to the parameters of status:

Parameters	Description
1(I)~12(I)	the input bitrate of channel1~channel12
1(O)~12(O)	the output bitrate of channel1~channel12
ECM	the bitrate of ECM generated by ECMG
EMM	the bitrate of EMM generated by EMMG
	The communication status between ECMG and Scrambler. Green means the status is good, while red indicates the communication is interrupted.
	The communication status between EMMG and Scrambler. Green means the status is good, while red indicates the communication is interrupted.
	The first number is the accumulated number of EMM, which should keep increasing to send the EMM to scrambler. The second number is the number of ECM, also the number of programs you have scrambled.

3.1.4.13 MPEG2 to MPEG4 (TC4) Transcoder Module

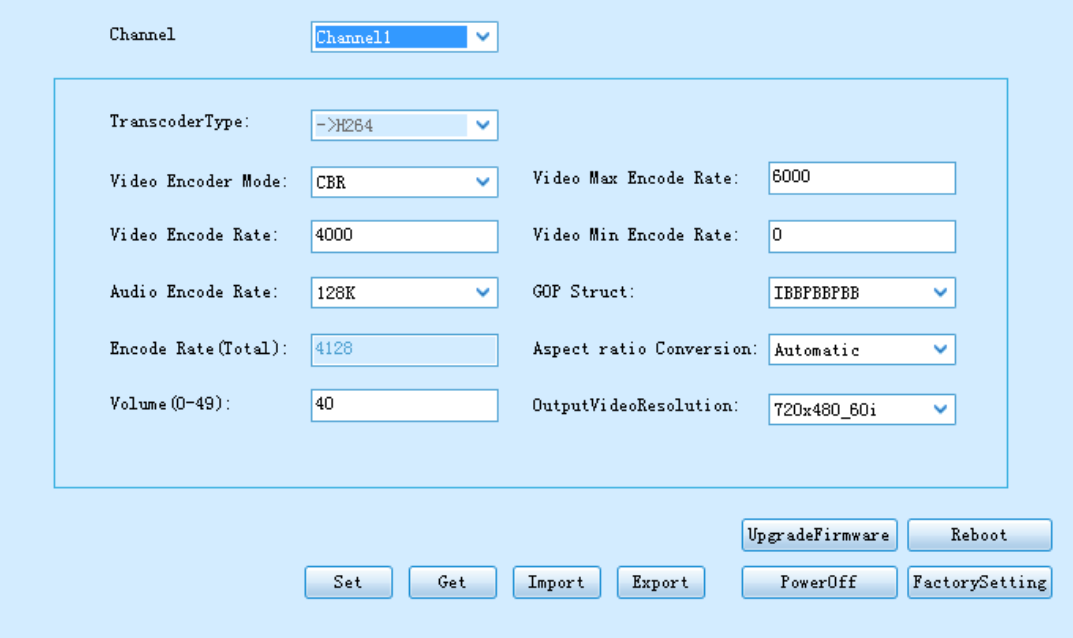
The MPEG2 to MPEG4 transcoder module supports transforming two internal MPEG-2 HD or four MPEG-2 SD programs within the equipment to MPEG4 format simultaneously.

The configuration page of this module includes two parts:

Setting: set the parameters for receiving the input signal.

Status: indicates the basic parameter and locking status of input signal.

- **Setting**

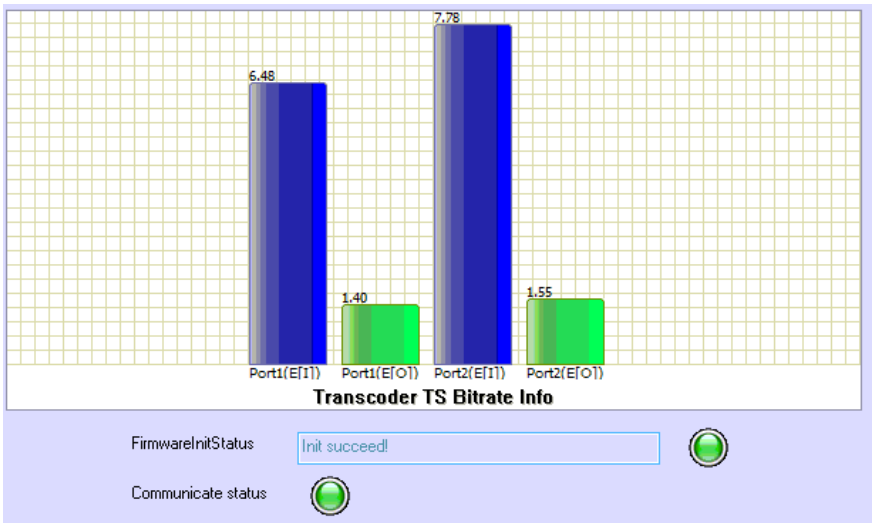


Parameters	Description
Channel	● The channel quantity represents the supported max. transcoding channels. ● For 2-channel transcoding module, channel1~channel2 are available in this option, while channel1~channel4 are available for 4-channel module. ● Each channel transcoding parameters can be set in separated pages when selecting different channel.
Transcoder Type	The transcoder module type is automatically recognized by the software and not selectable. ->H.264: Means the inserted module is a TC4 module (MPEG-2 to MPEG-4/H.264); ->MPEG-2: represents the inserted module is a TC2 module (MPEG-4 to MPEG-2)
Video Encoder Mode	Set the encode mode, options are available for: CBR/VBR.

	CBR: the encoded program bitrate is a constant value. VBR: the encoded program bitrate can be variable according to the input program content
Video Encode Rate	Set the encoded video bitrate, range from 1.0 to 20.0Mpbs
Audio Encode Rate	Set the encoded audio bitrate, range from 64 to 384Kpbs
Encode Rate (Total)	Total bitrate automatically by the software which is not editable. The bitrate is summed up by audio and video bitrate.
Volume (0~49)	Define the output channel volume after transcoding. Level 0 means mute while level 49 is the Max. volume output.
Video Max. Encode Rate	This parameter takes effect only when the Video Encode Mode is set to “VBR” on TC4 module. Max. Encode Rate: base on the parameter set in “Video Encode Rate”, it should be input a parameter from **1.75 to 2 times** the encode rate.
Video Min. Encode Rate	This parameter takes effect only when the Video Encode Mode is set to “VBR” on TC4 module. Min. Encode Rate: base on the parameter set in “Video Encode Rate”, it should be input a parameter from **0 to 0.75 times** the encode rate.
GOP Struct	Set the GOP struct, options: IBBPBBPBB/IPPPPPPPP/IIIIIIIII/IBBPBBPBB
Aspect Ration Conversion	Options are available for 4:3 and 16:9 aspect ratios.
Output Video Resolution	Set the output Video resolution

After setting all the parameters, you should press ‘**Set**’ button to save the settings.

- **Status**



Introduction to the parameters of status:

Parameters	Description
Port#(T)	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps
Port#(E)	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.
FirmwareIniStatus	the status indicates if the firmware is initiated successfully

Note:（1） Each transcoder module has 4 channels (channel1 to channel 4), each channel can only transcode 1 program.

(2) Channel 1 and channel 3 can transcode input signal to SD or HD program, channe2 and channel 4 can only transcode input signal to SD program.

3.1.4.14 MPEG4 to MPEG2 (TC2) Transcoder Module

The MPEG4 to MPEG2 transcoder module supports transforming two internal MPEG-4 HD or four MPEG-4 SD programs within the equipment to MPEG2 SD format simultaneously.

The configuration page of this module includes two parts:

Setting: set the parameters for receiving the input signal.

Status: indicates the basic parameter and locking status of input signal.

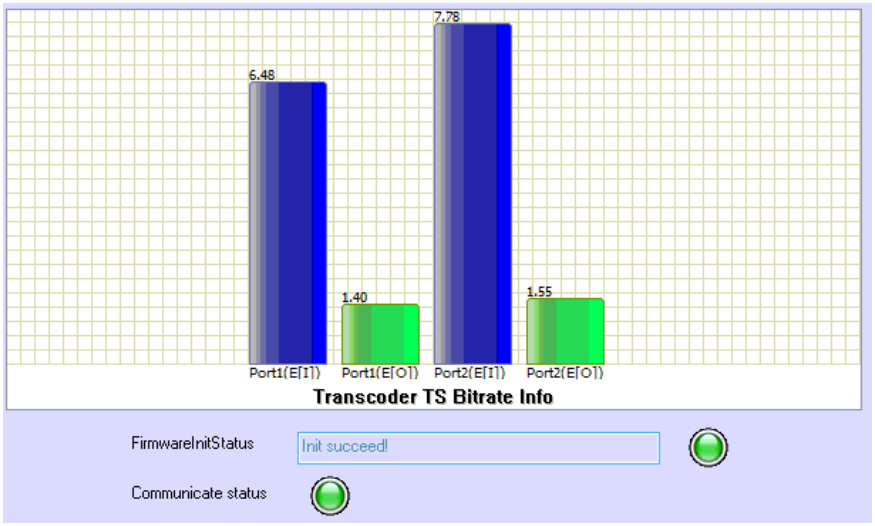
- **Setting**

Parameters	Description
Channel	● The channel quantity represents the supported max. transcoding channels. ● For 2-channel transcoding module, channel1~channel2 are available in this option, while channel1~channel4 are available for 4-channel module. ● Each channel transcoding parameters can be set in separated pages when selecting different channel.
Audio Mode	To select output channel audio mode. Options are available for: Stereo/Left/Right/Mono/Dual
Video Encode Rate	To set the Video encode bit rate. Range from 2.0Mbps~20.0Mbps
Audio Encode Rate	Select the audio encode bit rate, options: 64K, 128, 192K, 256K, 320K, 384K
Encode Rate(Total)	Total encode rate generate automatically, can not be editable. This bit rate is summed up by Video and audio encode rate.
Volume	Define the output channel volume after transcoding. Level 0 means mute while level 49 is the Max. volume

	output.
Video Standard	To select the video standard. Options as available for: NTSC/PAL.
GOP Size	Set the GOP size, range from 0~255
GOP Sruct	Set the GOP struct, options: IBBPBBPBB/IPPPPPPPP/IIIIIIIII/IBBPBBPBB
OutputVideoResolution	To set the output video resolution the same as input video resolution.

After setting all the parameters, you should press '**Set**' button to save the settings.

- **Status**



Introduction to the parameters of status:

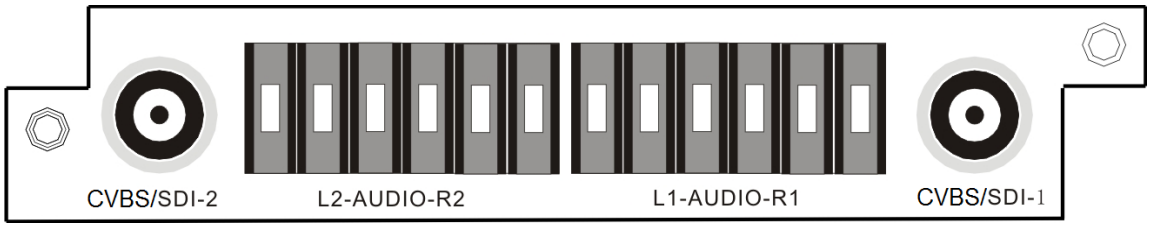
Parameters	Description
Port#(T)	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps
Port#(E)	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.
FirmwareIniStatus	the status indicates if the firmware is initiated successfully

Note:（1） Each transcoder module has 4 channels (channel1 to channel 4), each channel can only transcode 1 program.

(2) Channel 1 and channel 3 can transcode input signal to SD or HD program, channe2 and channel 4 can only transcode input signal to SD program. TC2 can only transcode input signal to SD program.

- **3.2.4.15 SD H.264/MPEG-2 SDI/AV Encoder Module (Premium)**

The 2-SD H.264 SDI/AV Encoder Module supports encoding 2 SDI channels or 2 AV channels in very low bit rate simultaneously.



The configuration page of this module includes two parts:

Setting: set the parameters for receiving the input signal.

Status: indicates the basic parameter and locking status of input signal.

- **Setting**

Below are the key parameters:

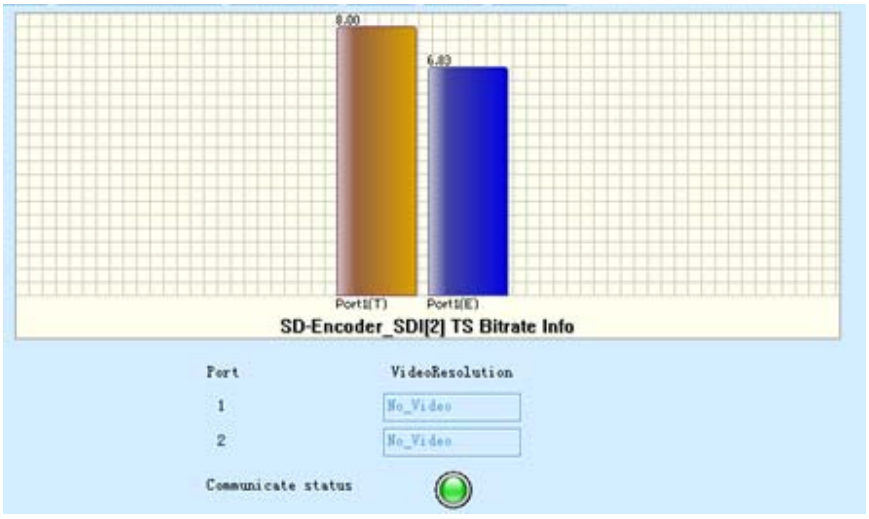
Parameters	Description
Channel	Indicates which input port the channel comes from.
Video Source	To select the correct video source for the input.
Audio Source	To select the correct audio source for the input.
Video Encoder Type	To select the video encoding format, available options include: MPEG-2 and H.264
Audio Encoder Type	To select the audio encoding format, available options include: MPEG-1 Layer II and AAC

Encode Mode	Select encoding mode, available options include: CBR and VBR
Video Max Encode Rate	To set the upper limit of encode rate for VBR mode.
Video Min Encode Rate	To set the bottom limit of encode rate for VBR mode.
Video Encode Rate	To set the encode rate for CBR mode.
Audio Encode Rate	To choose the encoding bitrate for the audio.
Encode Rate(total)	The total encode rate of video and audio contents. Calculated automatically by the software.
Video PID	To edit the video PID.
Audio PID	To edit the audio PID.
PCR PID	To edit the PCR PID.
PMT PID	To edit the PMT PID.
Service ID	To edit the service ID.
Provider Name	To edit the service provider name.
Program Name	To edit the channel name.
GOP Size	To edit the GOP size
GOP Struct	To select GOP structure.

After setting all the parameters, you should press '**Set**' button to save the settings.

- **Status**

Go to "Status" tab and click sub-tab "SD-Encoder_SDI[2]". The parameters of this part are derived from the input signal; they will be gotten automatically when the input signal is available, and cannot be changed by the user.



Parameters	Description
Port#(T)	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps
Port#(E)	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.
Video Resolution	the resolution of input video

- **3.2.4.16 Low Bitrate H.264/MPEG-2 SD Transcoder Module**

The low bitrate SD transcoder module supports transforming 2 HD or 4 SD channels to MPEG-2 or H.264 SD format in very low bit rate simultaneously.

The configuration page of this module includes two parts:

Setting: set the parameters for receiving the input signal.

Status: indicates the basic parameter and locking status of input signal.

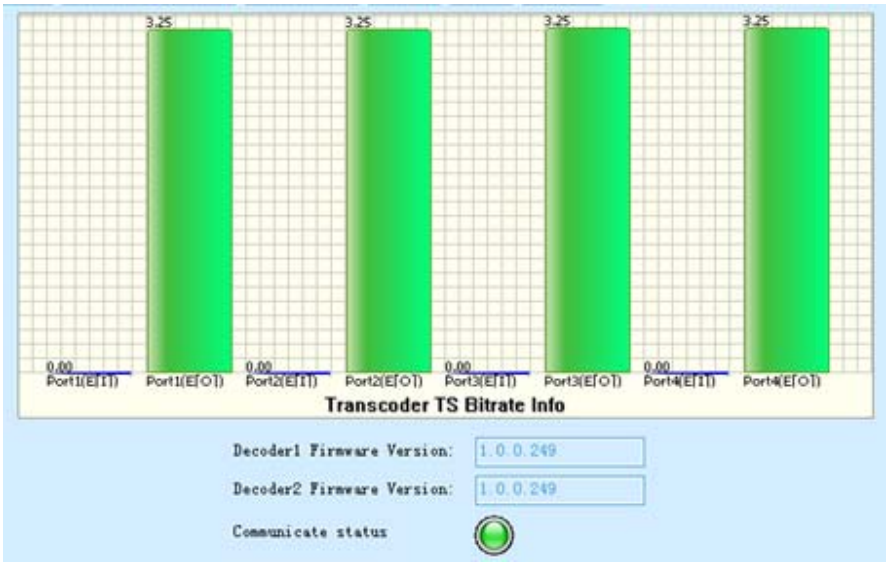
- **Setting**

Parameters	Description
Channel	Indicates which channel the following configuration is on
Video Encoder Type	To select the video encoding format, Available options include: MPEG-2 and H.264
Audio Encoder Type	To select the audio encoding format,

	available options include: MPEG-1 Layer II and AAC
Video Encode Mode	Select encoding mode, available options include: CBR and VBR
Video Max Encode Rate	To set the upper limit of encode rate for VBR mode.
Video Min Encode Rate	To set the bottom limit of encode rate for VBR mode.
Video Encode Rate	To set the encode rate for CBR mode.
Audio Encode Rate	To choose the encoding bitrate for the audio.
Channel Delay	To set the channel delay time
Audio Mode	To select the audio mode, Available options include: Stereo, Joint Stereo,Dual Channel, Single Channel
GOP Size	To set the GOP size.
GOP Struct	To set the GOP struct
Volume (0~49)	To set the audio volume, Available range is: 0~49
Aspect ratio Conversioin	To set the aspect ratio of the picture. Available options include: Automatic, 4:3 letterbox, 4:3 Pan and Scan, 16:9 Letterbox, 16:9 Pan and Scan.
Output Video Resolution	To set the output video resolution

After setting all the parameters, you should press '**Set**' button to save the settings.

- **Status**



Introduction to the parameters of status:

Parameters	Description
Port#(T)	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps
Port#(E)	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.
Decoder1 Firmware Version	Indicate the decoder module firmware version

3.1.5 Program Input and Output Operation

Note: the proper functionality of the equipment input/output depends on the correct settings of each inserted module. Please refer to Chapter 3.1.4 to set up the parameters of each module before taking the Input/Output setting of the equipment.

Click "**Program Info**" tab on the NMS to enter the configuration interface.

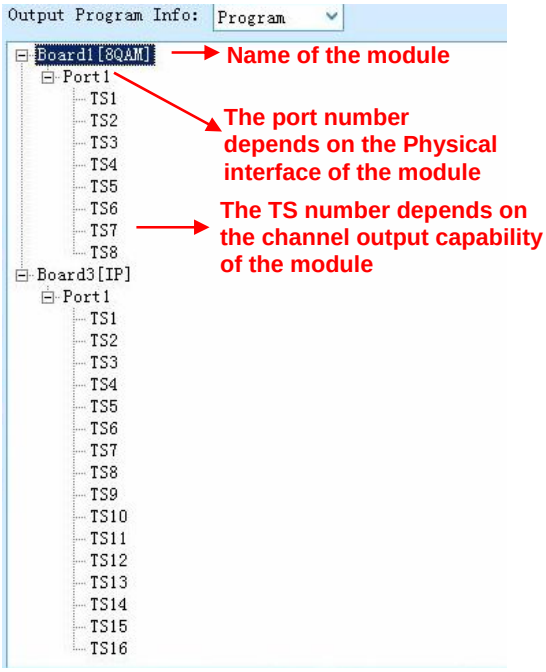
Input Program Configuration

This operation step is to get the input signal information on the inserted module. Please refer to **Chapter 3.1.3**, ① **Input Program Configuration of this manual** for the operation details.

Output Program Configuration

Basic Configuration

- In the "Output Program Configuration" window, it shows the inserted module which can be set to transmit output stream. These kinds of modules include the Gigabit IP module, ASI module, 8-QAM and 4-OFDM module, etc. The operations on these modules are all the same.



- Operation Procedures

  Two kinds of operation are provided: 1) transfer the whole TS including all PIDs; 2) transfer programs one by one.

  1) Transfer the whole TS

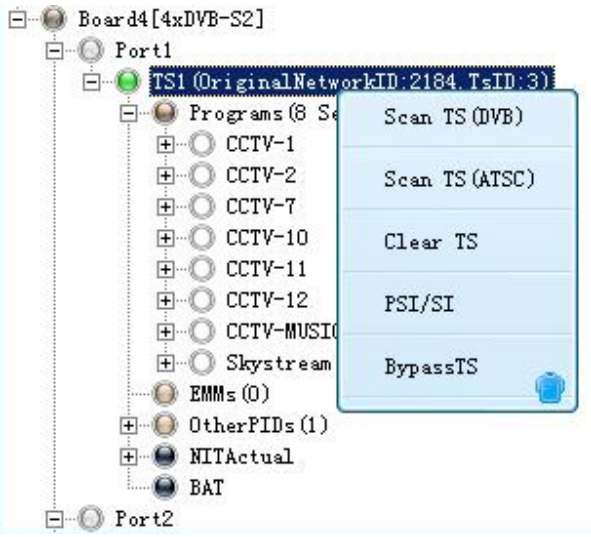
  - In “Output Program Info”, click the TS# which you want to transfer programs to.
  - In “Input Program Info”, click the TS# which you want to transfer programs from.
  - Click 

 button to transfer the TS stream.

  Note: If you right click the TS# containing programs, you’ll see extra two options except for “Scan TS(DVB)”,“Scan TS(ATSC)” and “Clear TS”.

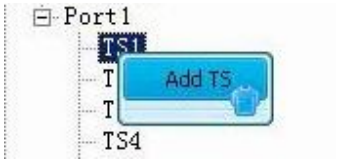
  PSI/SI—click it to open PSI/SI tables and check further programs information, such as PAT,PMT,NIT,EMM,EPG, etc.

  BypassTS—this option allows the whole TS stream transferred without any change. In this case, it’s not allowed to transfer program one by one, and only TS transfer is allowed. Especially, it’s used when there’s problem in CI descrambling.

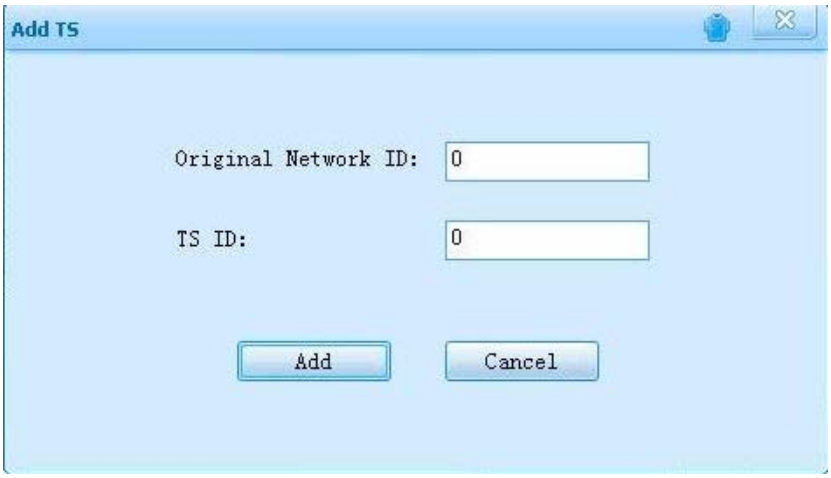


2) Transfer programs one by one

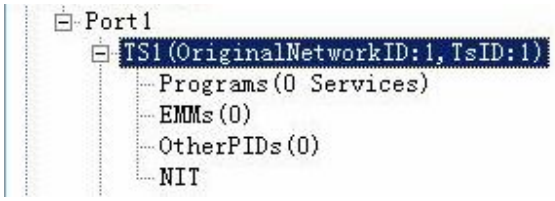
- Select the module which you want to transmit the output stream.
- Select which TS (Channel) to output the stream, and then click the right mouse button to choose '**Add TS**'.



- Input the "Original Network ID" and "TS ID" for the channel, and click the "Add" button.

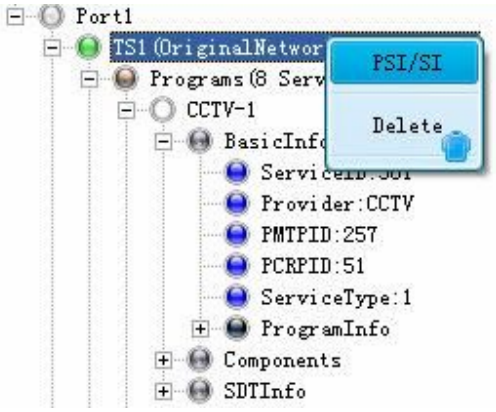


The input “Original Network ID” and “TS ID” will be assigned to the selected output TS (channel).



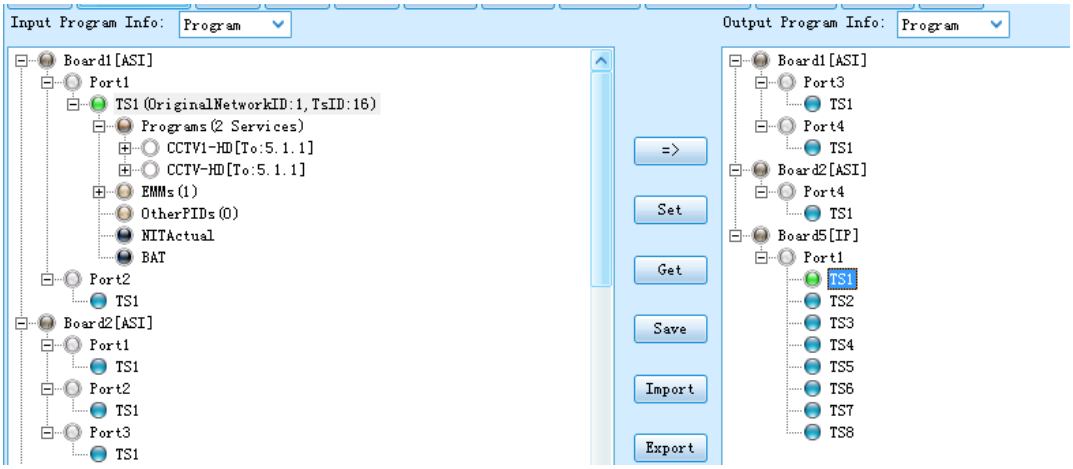
To change the “Original Network ID” and “TS ID”, use the left mouse button to click the TS (channel) name when it is being selected. Then the TS (channel) name will be in editable status.

To delete the inserted “Original Network ID” and “TS ID”, click the right mouse button on the TS, and select “Delete”.

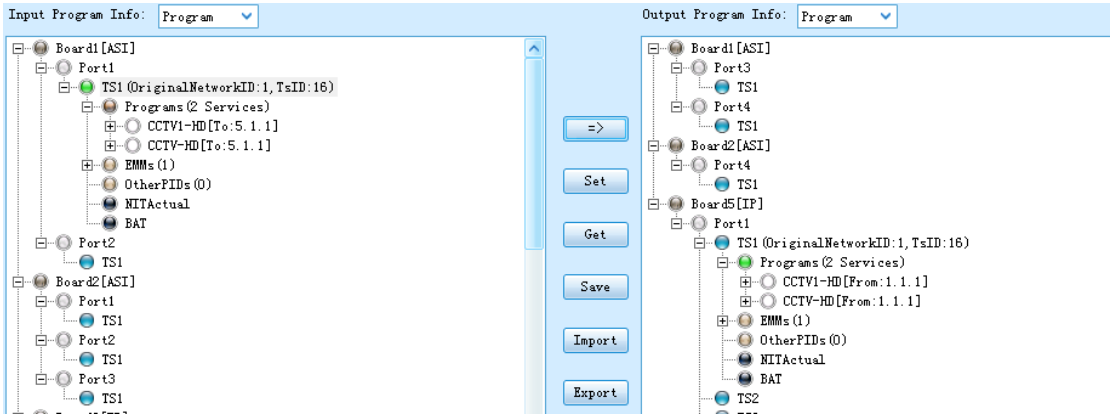


Note: When you right-click TS#, you’ll also see “PSI/SI” option. This option allows operator editing the NIT, SDT, BAT and inserting LCN and private descriptors.

- Select TS which is to be transmitted on the left hand side “Input Program Info” window, and select the port#, TS# which are going to carry the transmission on the right hand side “Output Program Info” window.



- Click the => button to set transfer of the selected TS from the “Input Program Info” to the “Output Program Info”.

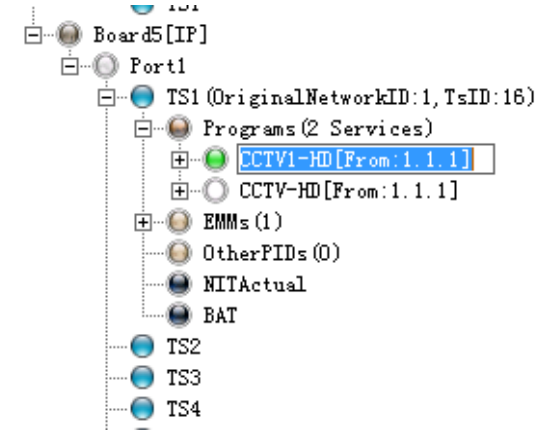


- Follow the save operation steps, user can set the selected input stream to be transmitted at any assigned output TS (channel).

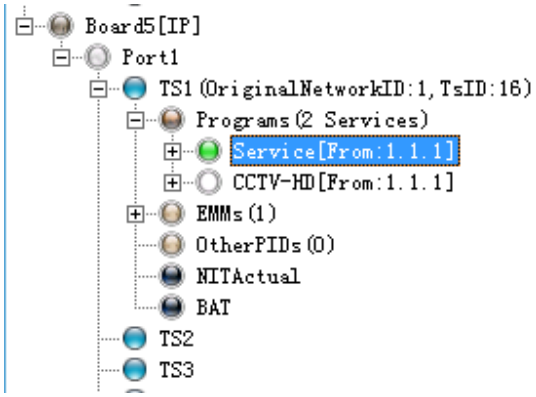
Advanced Configuration

- **Channel Name Edit**

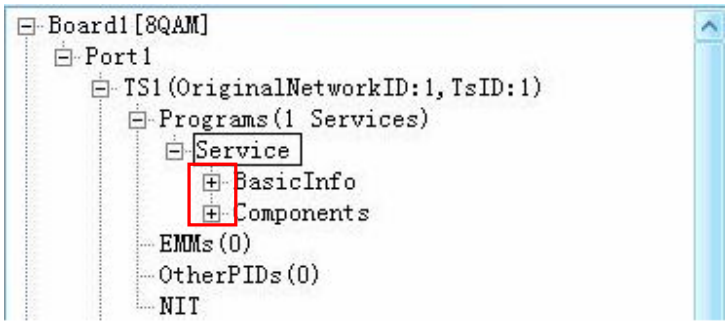
1. To change the Channel Name, use the left mouse button to click the TS (channel) name when it is being selected. Then the TS (channel) name will be in editable status.



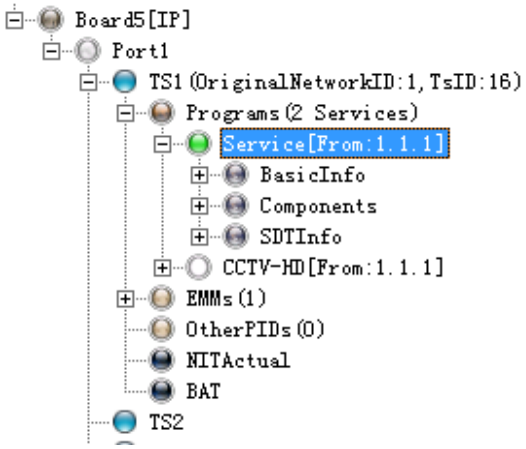
Select and change the TS (Channel) Name



- **PID Edit**



Click the “+” symbol under the channel name, then all the elements of that channel will be expanded and displayed.



All the elements of the channel are editable. The edit shall be compliant with the related regulation of DVB.

- **Descramble Operation**

Note:

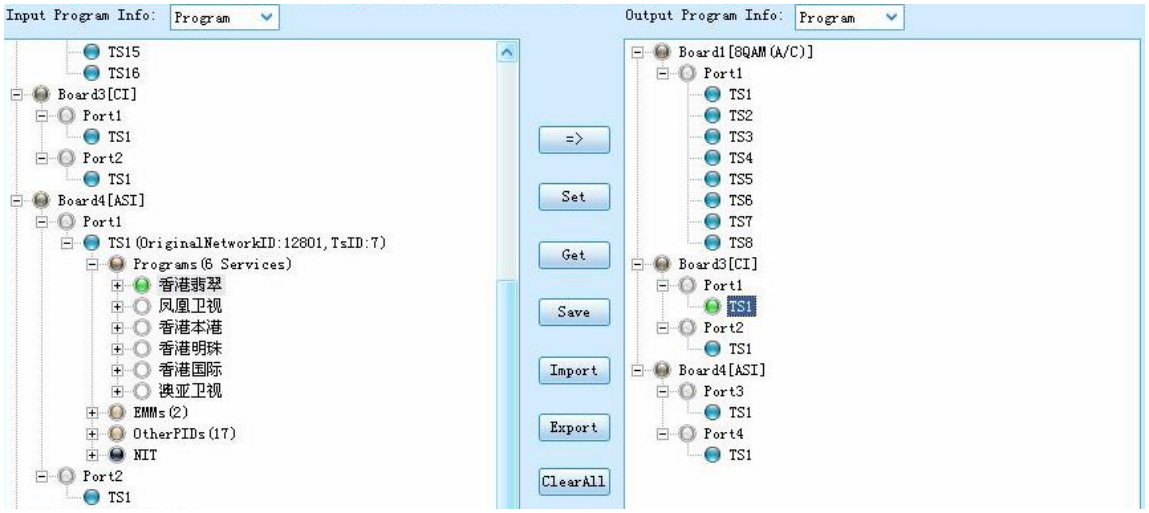
1. The descramble function needs the support of a CI descrambling module.

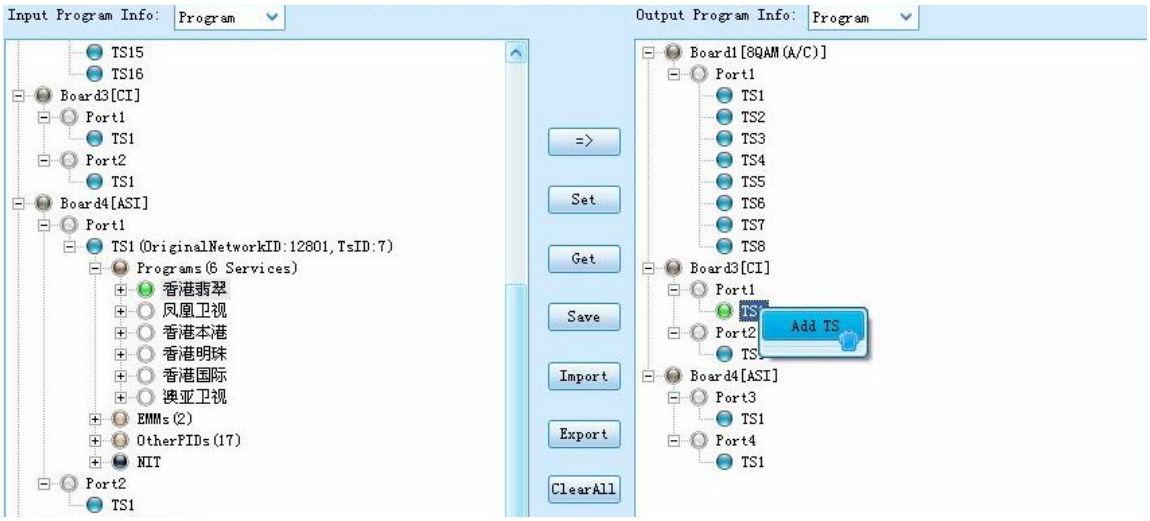
2. The inserted CAM should be able to support the CAS of the scrambling program.

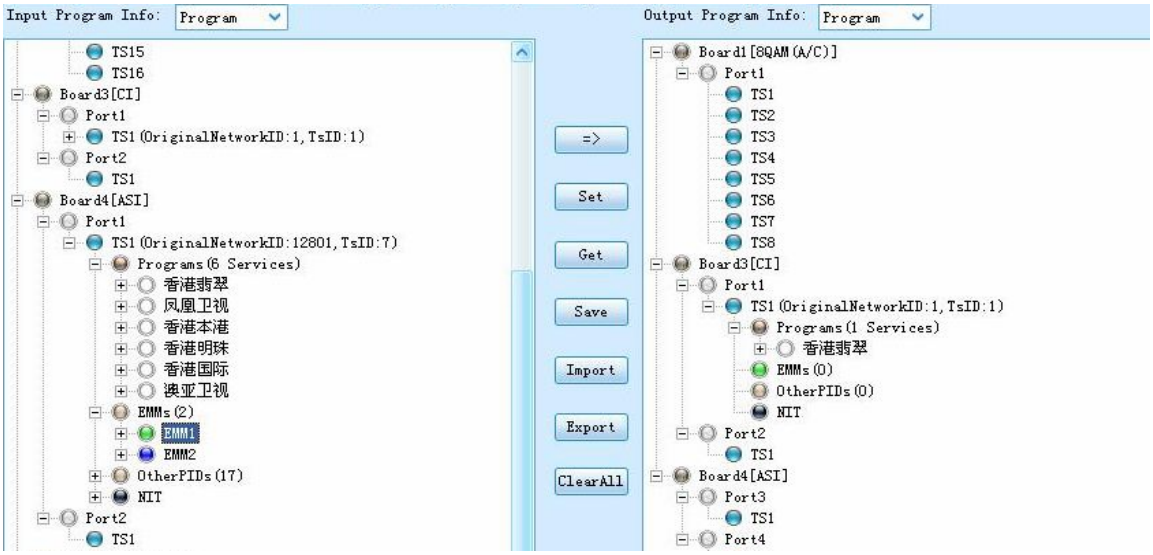
3. User needs to have a valid authorized smart card (same CAS type as the scrambling program) to work with the CAM.

Operation Procedure:

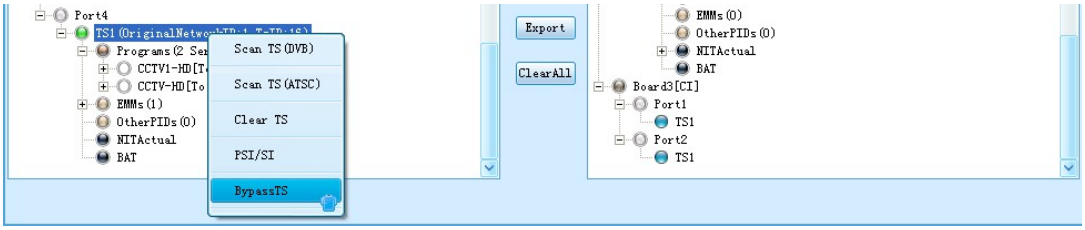
1. Select a scrambling program of a receiving module in the input window and transfer it to the corresponding CI module port (port 1 or 2) in the output window. **The EMM data of the scrambling program must be transferred at the same time.**


Input Program Info:
Program
Output Program Info:
Program
TS15
TS16
Board3[CI]
Port1
TS1
Port2
TS1
Board4[ASI]
Port1
TS1 (OriginalNetworkID:12801, TsID:7)
Programs (6 Services)
香港翡翠
凤凰卫视
香港本港
香港明珠
香港国际
澳亚卫视
EMMs (2)
OtherPIDs (17)
NIT
Port2
TS1
=>
Set
Get
Save
Import
Export
ClearAll
Board1[8QAM (A/C)]
Port1
TS1
TS2
TS3
TS4
TS5
TS6
TS7
TS8
Board3[CI]
Port1
TS1
Port2
TS1
Board4[ASI]
Port3
TS1
Port4
TS1

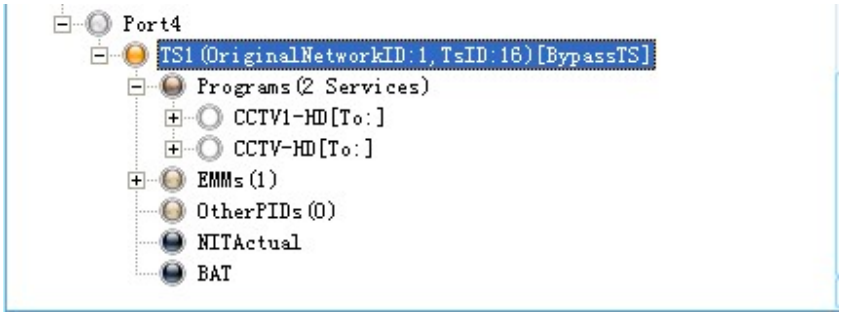

Input Program Info:
Program
Output Program Info:
Program
TS15
TS16
Board3[CI]
Port1
TS1
Port2
TS1
Board4[ASI]
Port1
TS1 (OriginalNetworkID:12801, TsID:7)
Programs (6 Services)
香港翡翠
凤凰卫视
香港本港
香港明珠
香港国际
澳亚卫视
EMMs (2)
OtherPIDs (17)
NIT
Port2
TS1
=>
Set
Get
Save
Import
Export
ClearAll
Board1[8QAM (A/C)]
Port1
TS1
TS2
TS3
TS4
TS5
TS6
TS7
TS8
Board3[CI]
Port1
Port2
Add TS
Board4[ASI]
Port3
TS1
Port4
TS1


Input Program Info:
Program
Output Program Info:
Program
TS15
TS16
Board3[CI]
Port1
TS1 (OriginalNetworkID:1, TsID:1)
Port2
TS1
Board4[ASI]
Port1
TS1 (OriginalNetworkID:12801, TsID:7)
Programs (6 Services)
香港翡翠
凤凰卫视
香港本港
香港明珠
香港国际
澳亚卫视
EMMs (2)
EMM1
EMM2
OtherPIDs (17)
NIT
Port2
TS1
=>
Set
Get
Save
Import
Export
ClearAll
Board1[8QAM (A/C)]
Port1
TS1
TS2
TS3
TS4
TS5
TS6
TS7
TS8
Board3[CI]
Port1
TS1 (OriginalNetworkID:1, TsID:1)
Programs (1 Services)
香港翡翠
EMMs (0)
OtherPIDs (0)
NIT
Port2
TS1
Board4[ASI]
Port3
TS1
Port4

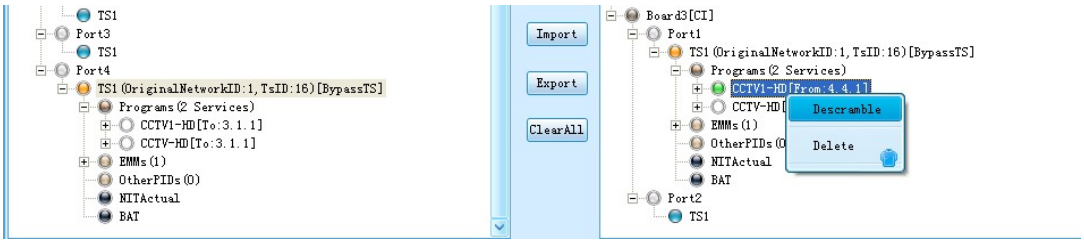
- **Note:** To avoid any SI problem, it is recommended to use “Bypass” mode when transfer the program to CI module, following content will describe the operation:



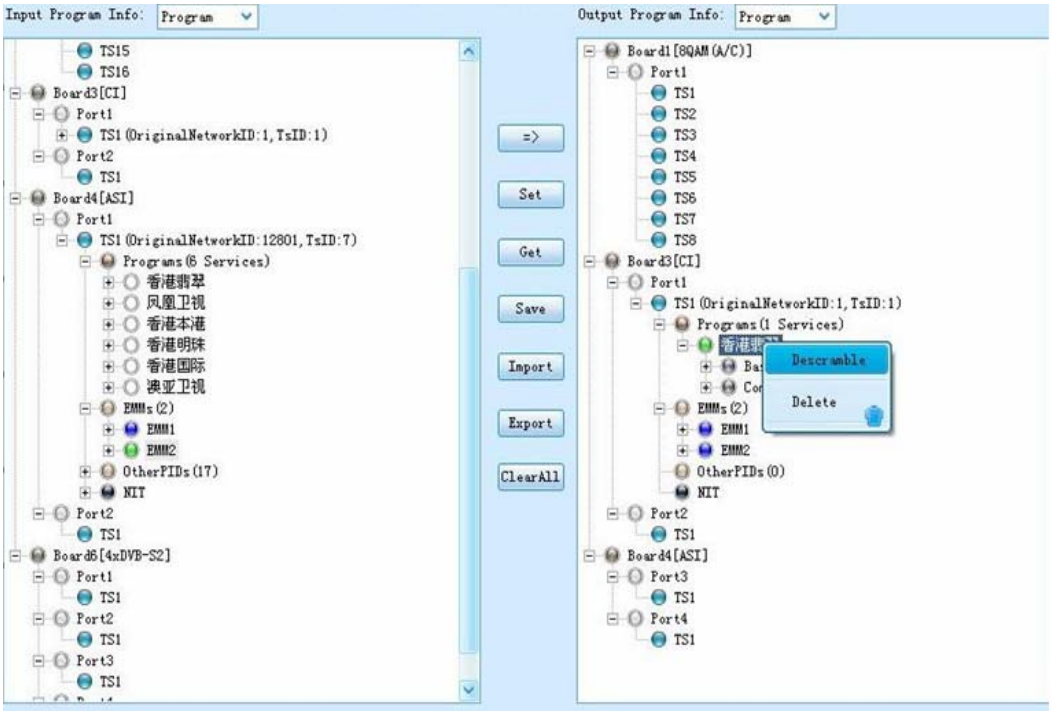
Right click on the TS in which there is (are) channels need to be decode, and select BypassTS, then the status icon besides the TS name will turn to yellow, and the programs in the TS is not abable to be selected seperately.



Then transfer the whole TS to the CI module, and select program(s) need to be decoded from the TS, and right click on the program and select Descramble.

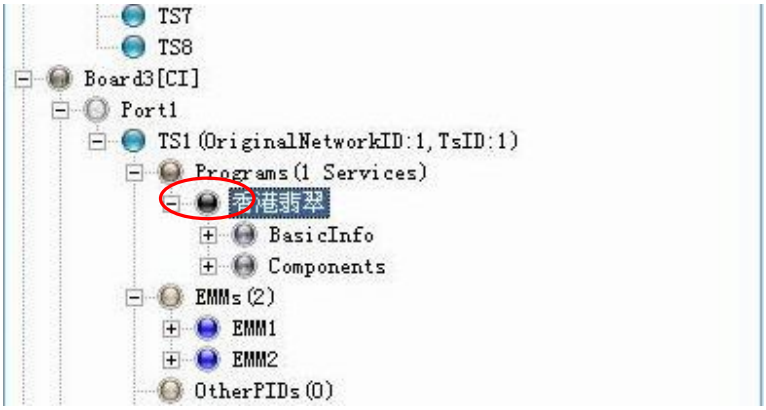


2. Use the right mouse button to click on the transferred program, and select “Descramble” menu.



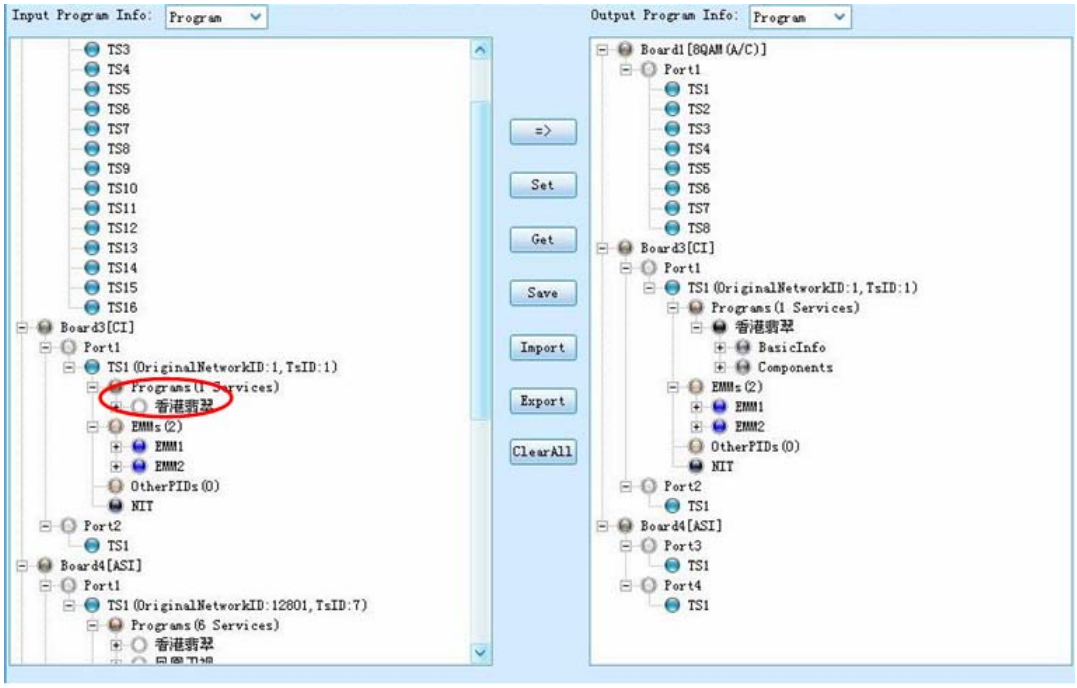
To cancel the descrambling operation on a program, just use the right mouse button to click the descrambling program and select menu “Non-descramble”.

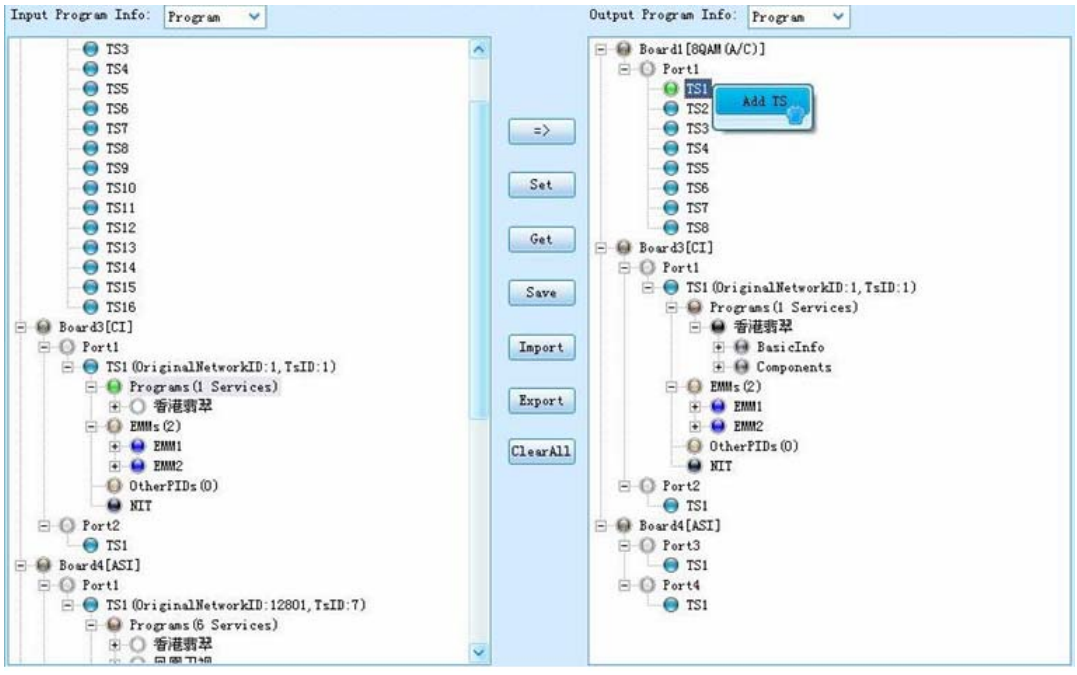
- After the program is scrambled, the button indicators of the program name will turn to black color.

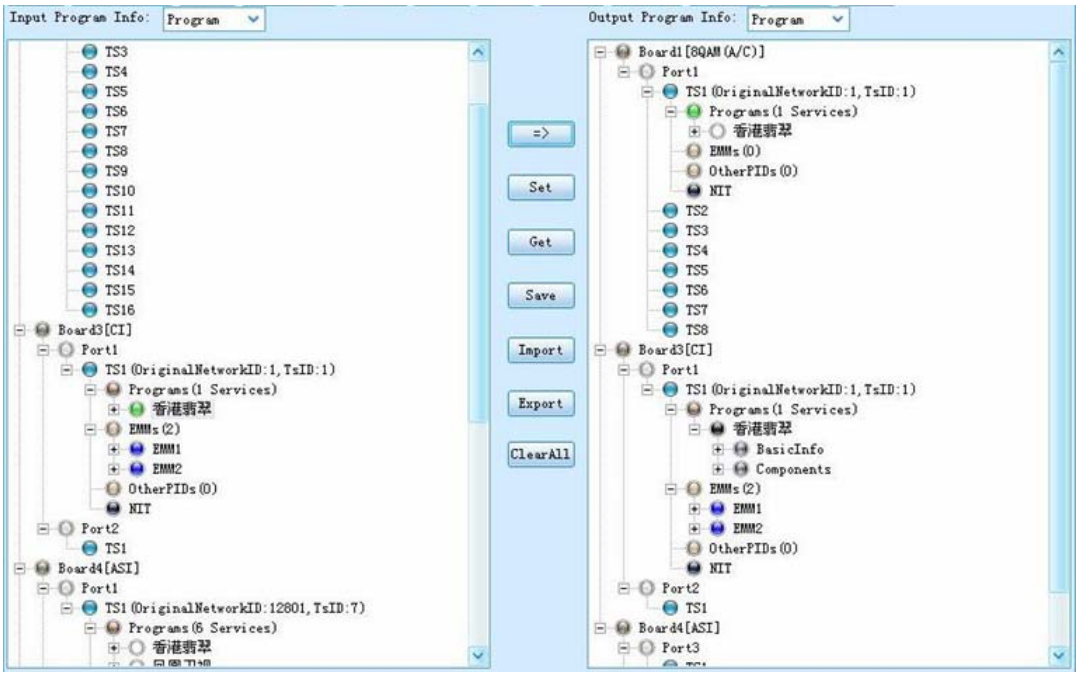


- Back to the input program window, the descrambled programs have already been automatically transferred to the corresponding port of the CI module and waiting for setting to output. Select the descrambled programs and transfer them to any

transmission modules (IP/QAM/ASI). Click “Set” button to apply all the settings at the final step. Operation of program descrambling finish.





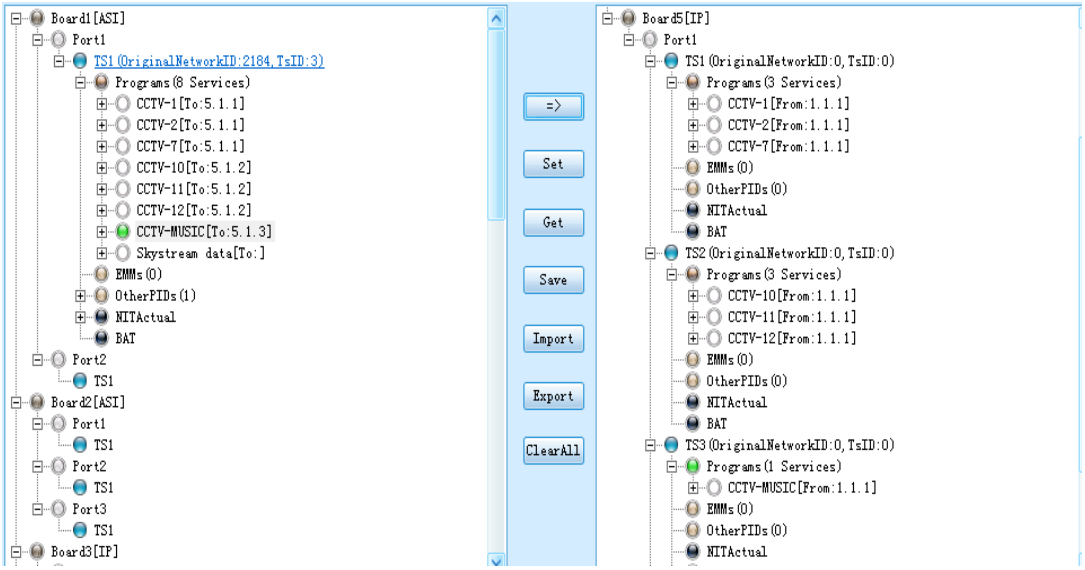


- **Data Insertion**

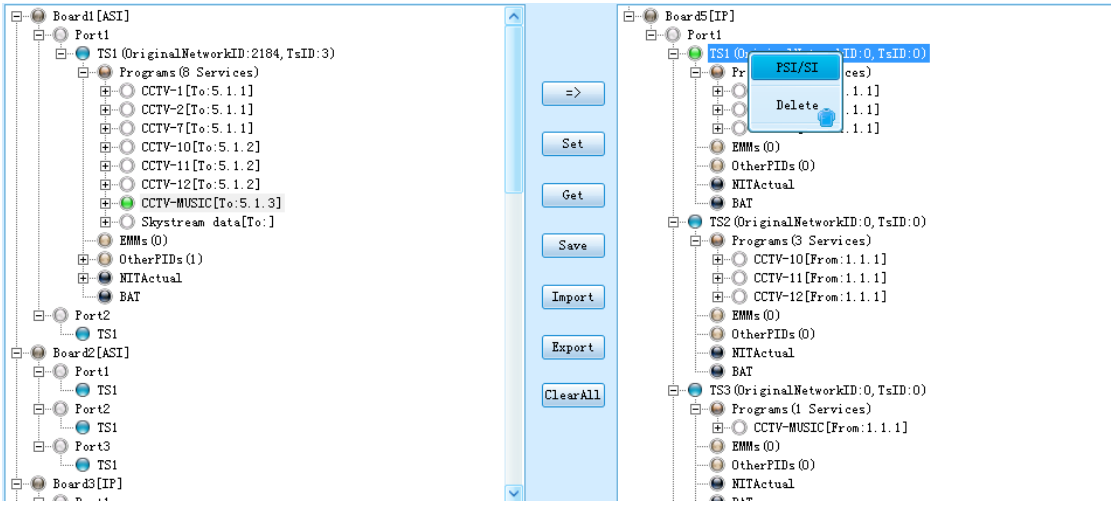
- **NIT Insertion**

1. Connect the equipment through NMS, and complete the configuration on the output module. Here take 8QAM module as an example. The 8QAM 8TS output is set at frequencies 474, 482, 490, 498, 506, 514, 522 and 530, SR 6.875.

2. Switch to “**Program Info**” tab to configure the output channels at each QAM channel. Here we output total 6 programs at 3 TS channels:
   CCTV-1, CCTV-2 and CCTV-7 at TS1;
   CCTV-11, CCTV-12 at TS2;
   CCTV-MUSIC at TS3



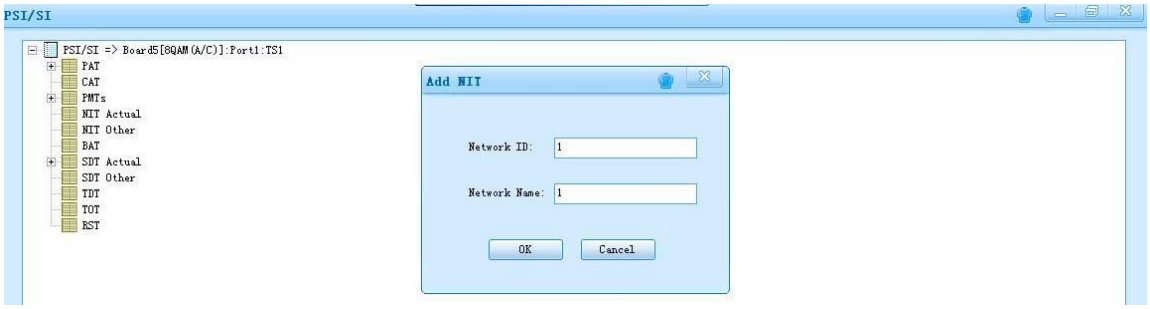
3. Select a TS channel, click mouse right button to enter the “PSI/SI” menu.
   We start with TS1 firstly.



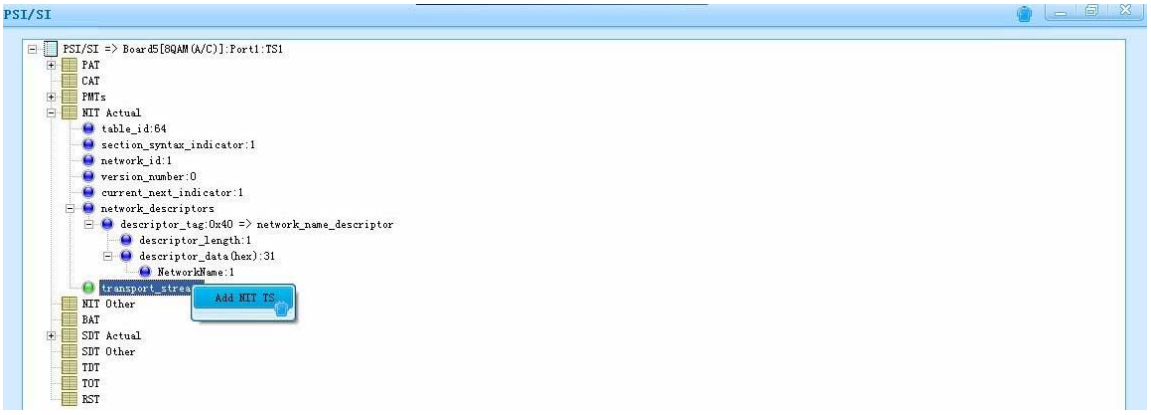
4. PSI/SI menu interface.

5. Select “NIT Actual”, and use mouse right button to click and select “Add NIT”.

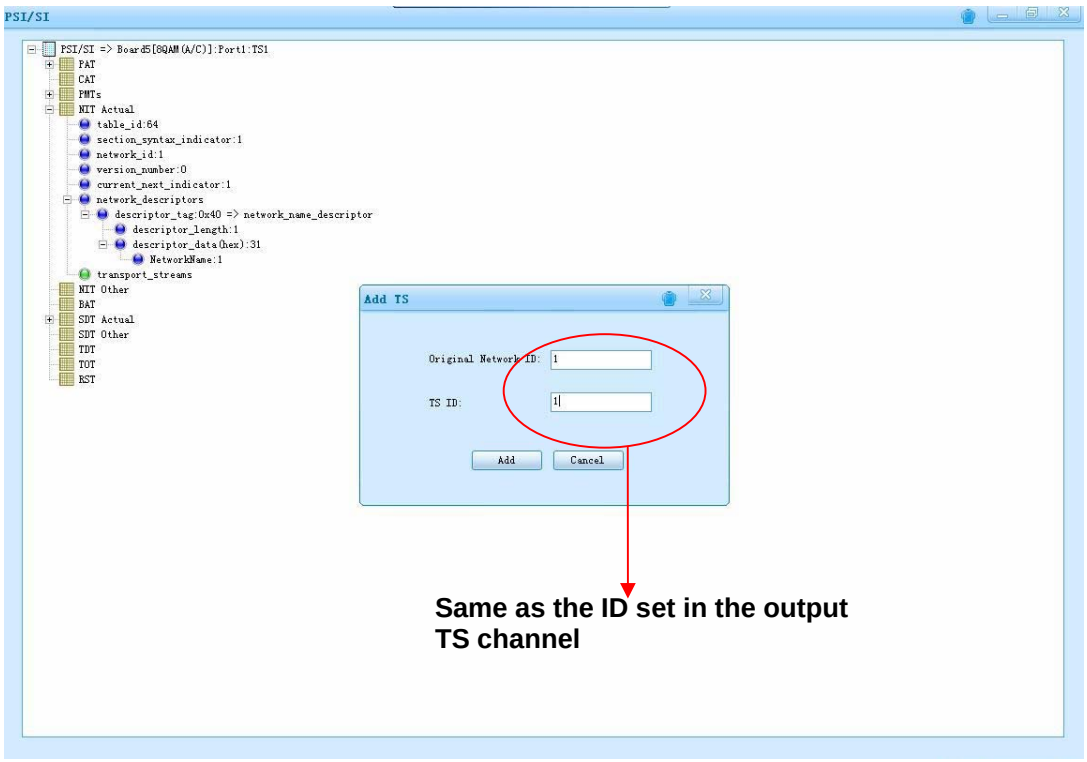
6. Input “Network ID” and “Network Name” for the new NIT to distinguish with other NIT, and click “Ok” to continue.

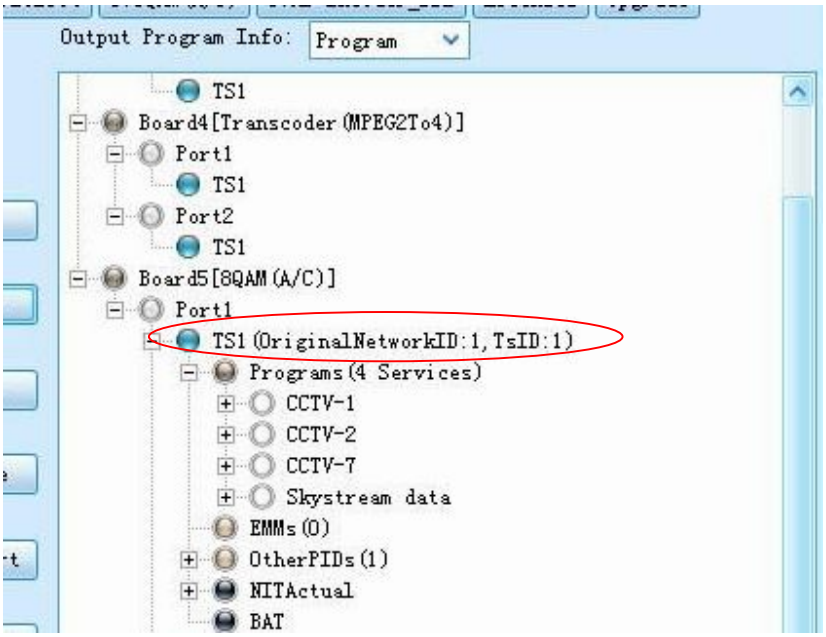


7. Under the new added NIT table, find the “transport_stream” item and use mouse right click on it to select “Add NIT TS”.

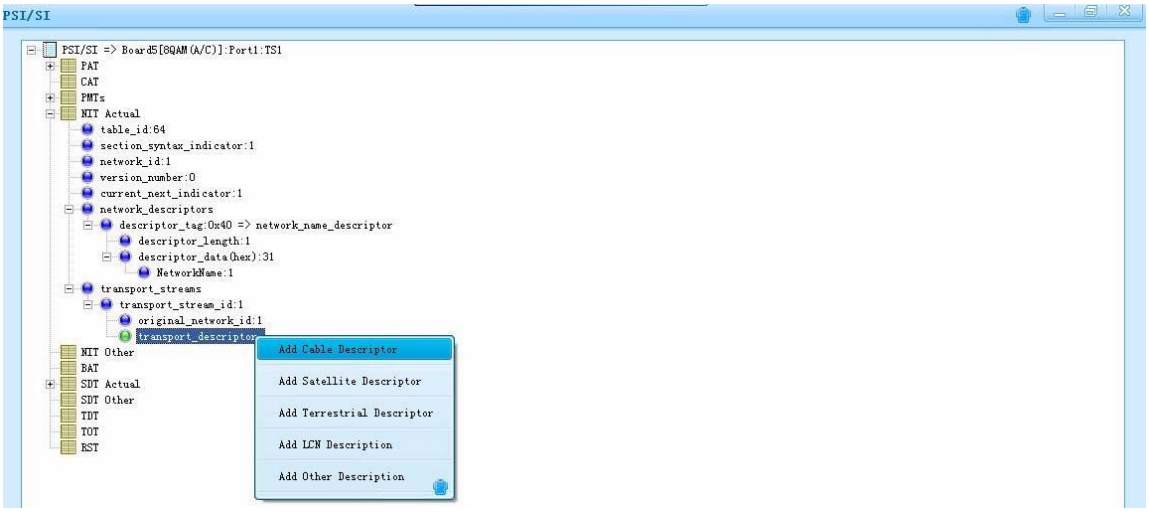


8. Input the Network ID and the TS ID. **The ID must be same as that set in the output TS channel**.

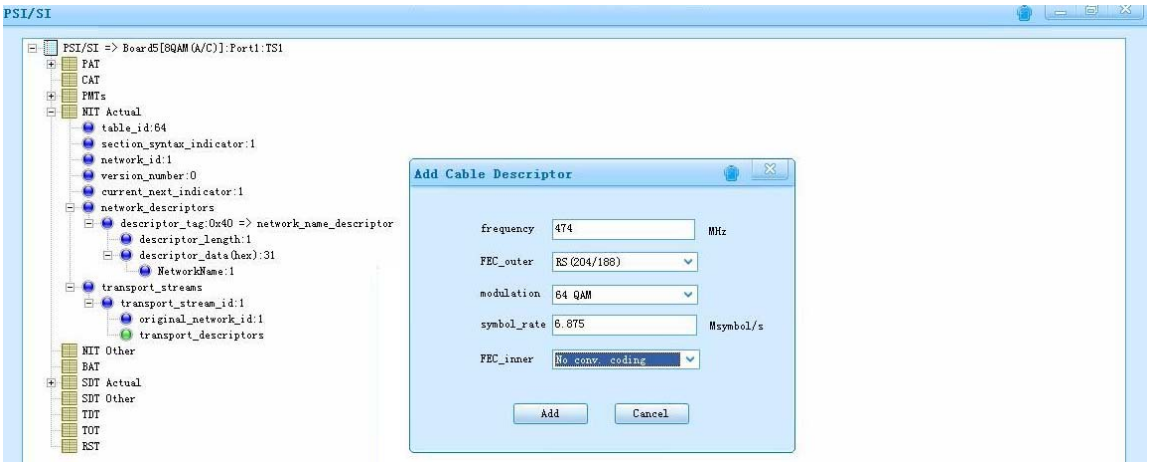




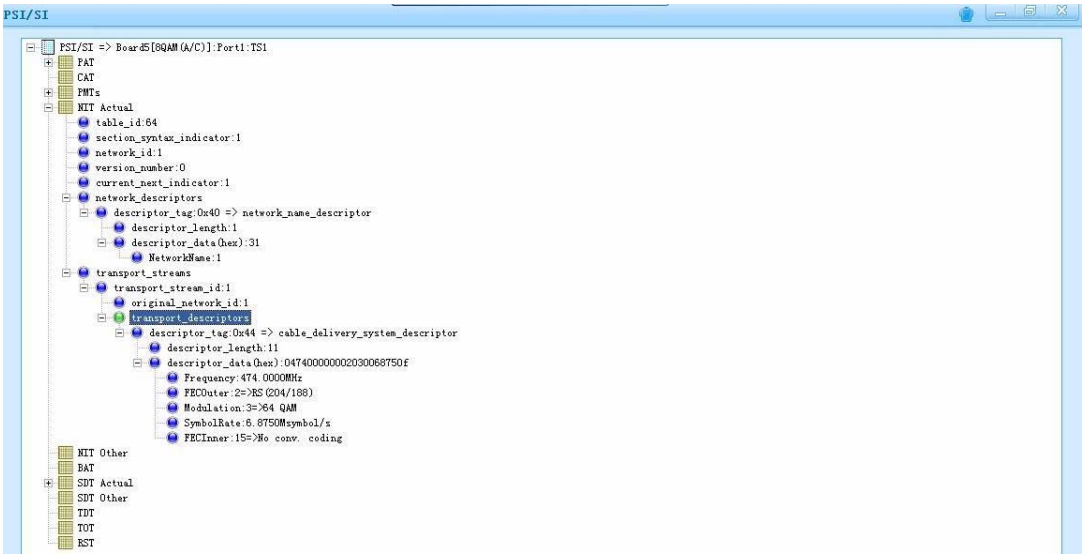
9. Under the new added “transport_stream”, find the item “transport_descriptor”, use mouse right button to select to add proper descriptor base on the actual situation.
   We select “Add Cable Descriptor” here because we use 8QAM module.



10. Input the TS1 channel parameter for the cable descriptor. (for the FEC_Inner option, please always select “No.conv.coding”)

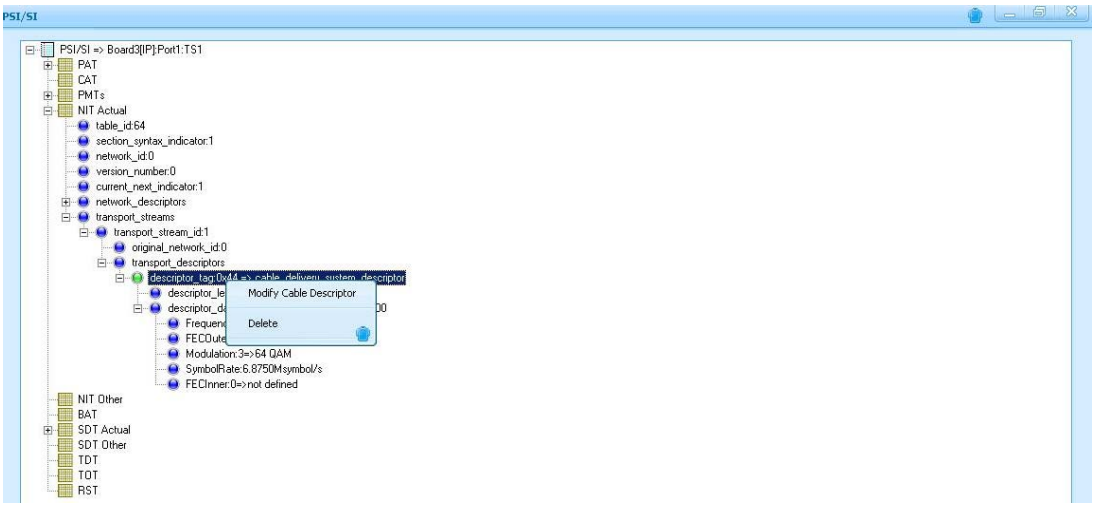


After input the descriptor, click “Add”, then user can expand the “transport_descriptor” menu to check whether the new added data correct or not. Then repeat steps 7~10 to add other frequencies to this NIT table.



11. After the configurations of the NIT, do remember to click “Set” and then “Save” button in the “Program Info” window to apply the settings.

If needed, you can right click ‘Transport Description→Descriptor Tag 0x44 cable delivery system descriptor’ to modify or delete the descriptor.



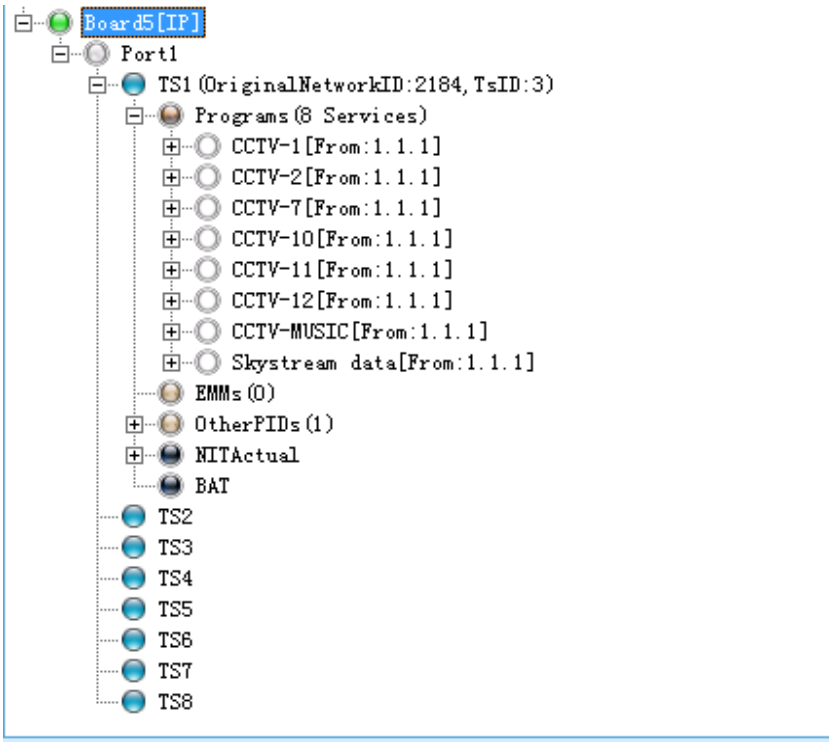
■ LCN Insertion

In telecommunications, a **logical channel number** (LCN), also known as **virtual channel**, is a channel designation which differs from that of the actual radio channel (or range of frequencies) on which the signal travels.

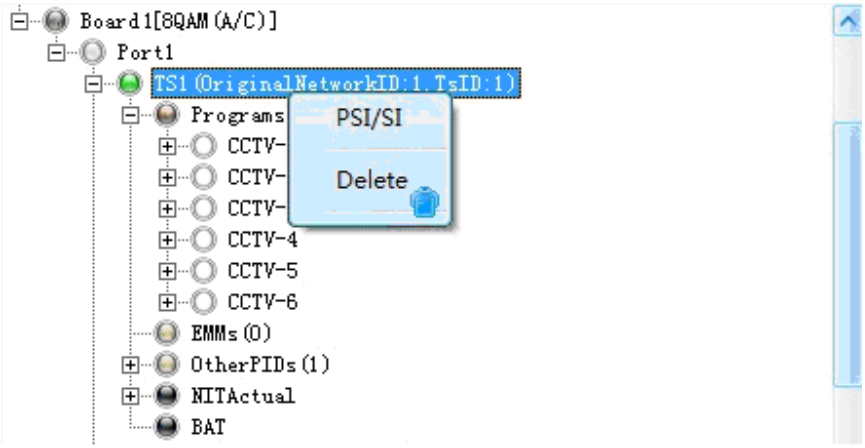
The most common reason for a television station using a virtual channel is to minimize viewer confusion when a digital transmission is airing on a different channel from the one the station used in analog mode. The virtual channel thus enables viewers to tune in the station by choosing the same channel number as they would have previously.

The equipment supports LCN feature in a DTV system. Through following a few simple configuration steps then you can activate this feature.

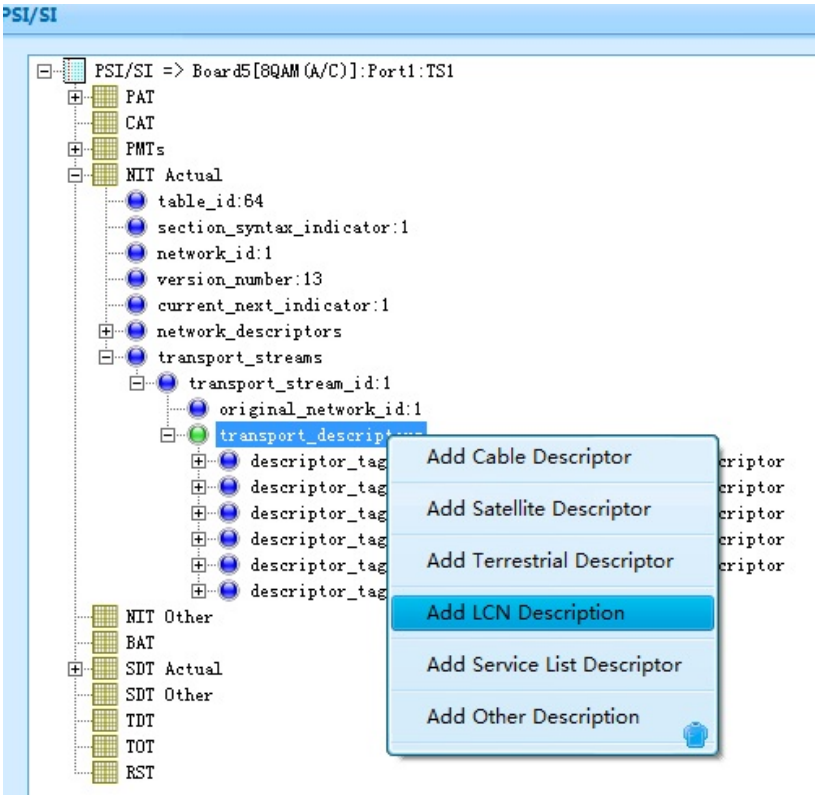
1. Choose the TS where your actual NIT table locates from an output module in “Output Program Info” window. For example, we choose the first TS-‘TS1’ from QAM module. Expanding TS1 by clicking “+”, we can see 6 programs:CCTV-1, CCTV-2, CCTV-3, CCTV-4, CCTV-5, CCTV-6.



2. Select TS1 channel and click mouse right button, then select “PSI/SI” to enter the “PSI/SI” menu.

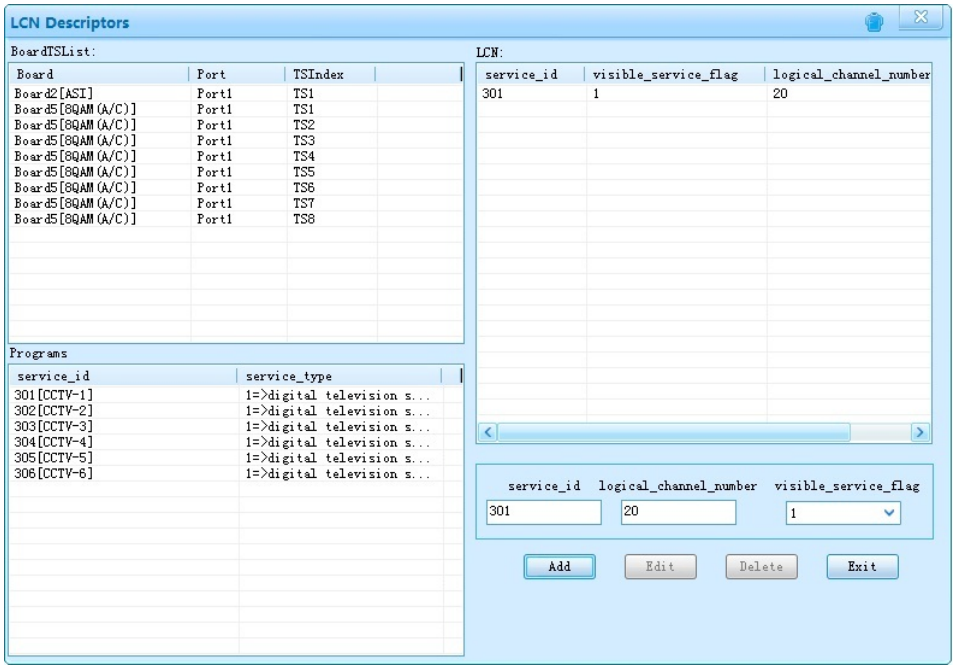


3. Enter ‘NIT Actual→Transport _Streams’ and then select “transport_descriptor” with mouse right button and select “Add LCN Descriptor” option.

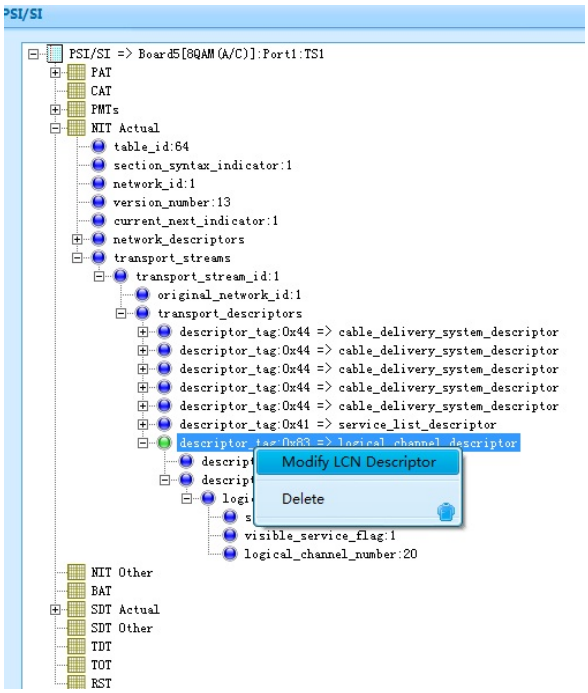


In the displayed operation window:

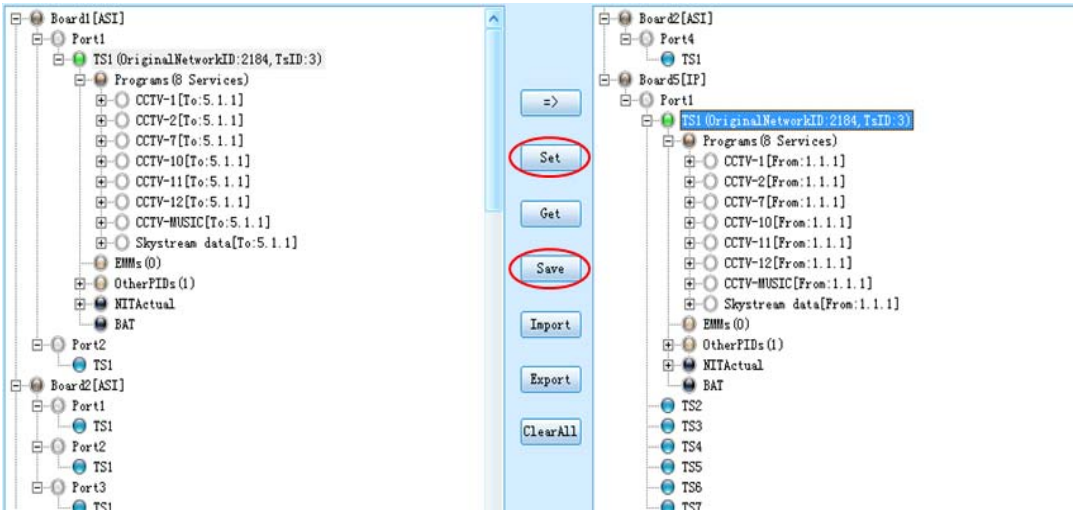
1) Double click “Board5[8QAM(A/C)]-Port1-TS1” in “BoardTSList”. All programs within TS1 will be listed in “Programs”.
2) Double click a program, the service ID of this program will appear in column “service id”. Input the the LCN that designated for this program.
3) Keep “visible_service_flag” as the default setting which is “1”. After the setting, click “Add” to confirm the settings.
4) Repeat steps 1)-3) to add LCN for other programs, and then click “Exit”.



4. To modify the LCN descriptor, right click “Local_channel_descriptor” and select “Modify LCN Descriptor” to go back to step3. Select “Delete” to delete LCN descriptor.



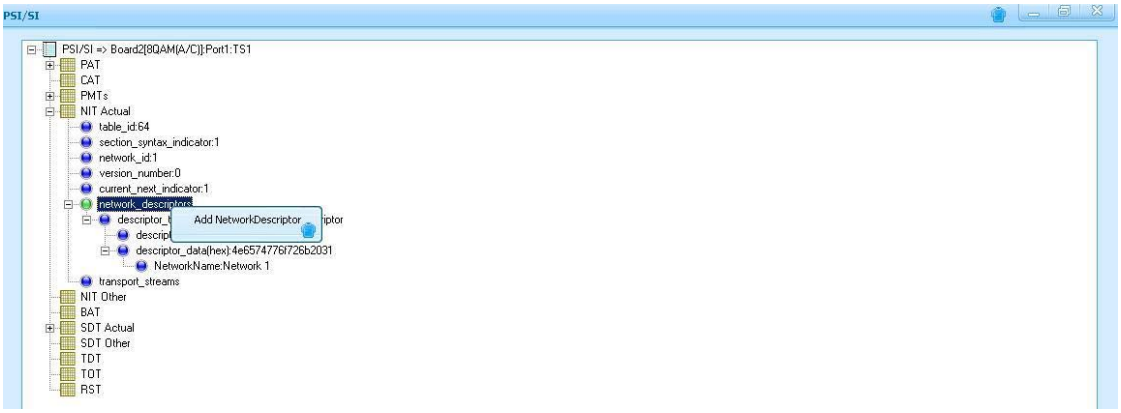
5. After the settings on all output TS channel, do remember to click “Set” and then “Save” button in the “Program Info” window to apply the settings.



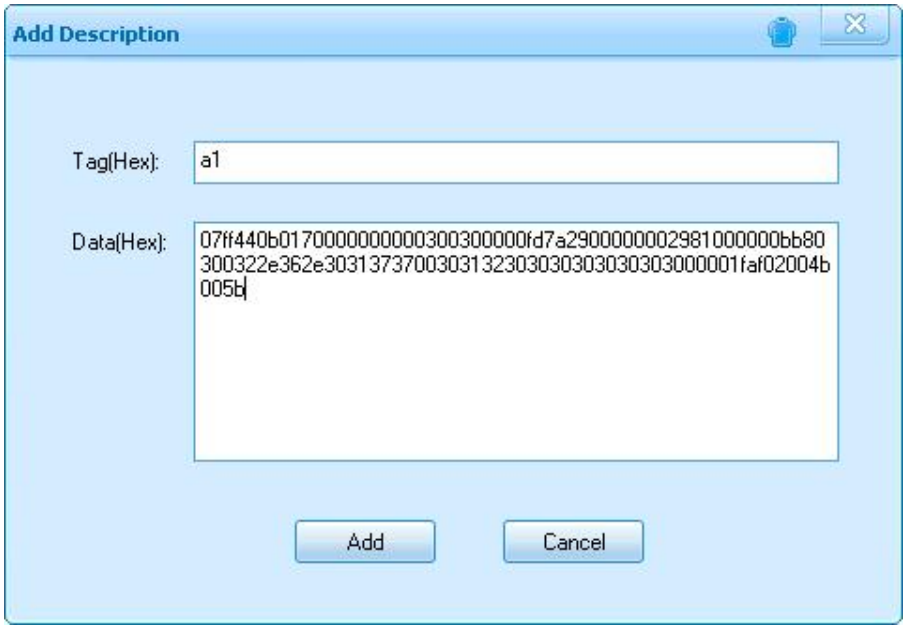
■ OTA descriptor Insertion

To do the OTA upgrade for STB, generally you need insert an OTA descriptor into the NIT under the central frequency in head-end equipments.

1. Right click the TS which you set as central frequency TS and click ‘PSI/SI’.
2. Enter ‘NIT Actual→Network Descriptors’ and right click it and select ‘Add network description’.



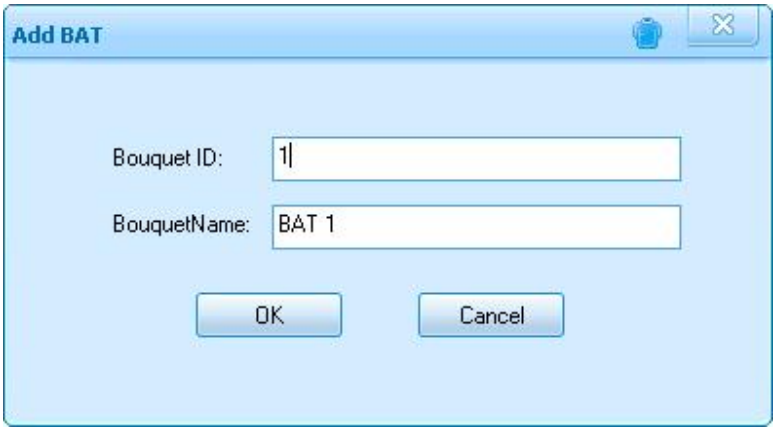
3. Input the Tag and OTA descriptor and click ‘Add’



■ BAT Insertion

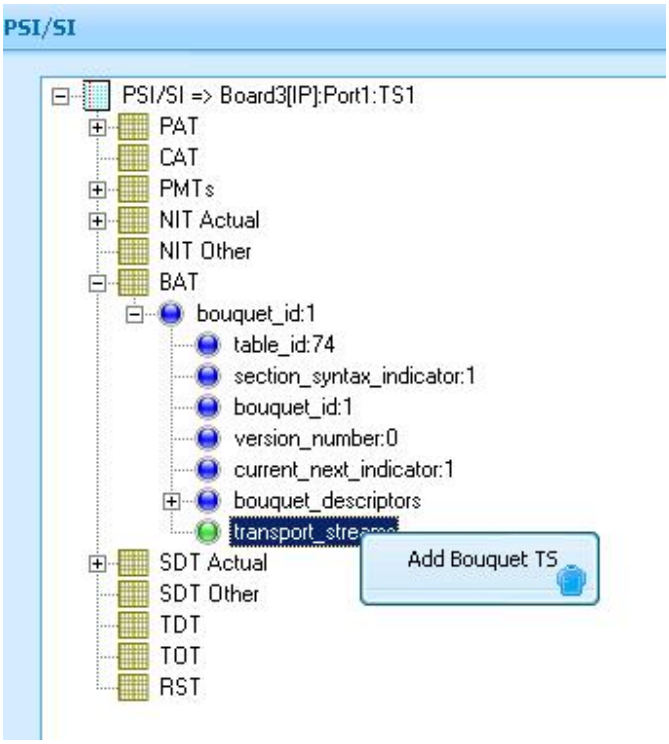
If you need insert the BAT table in some frequency, you can simply following the steps as below:

1. Right click the TS where you want to insert the BAT and click ‘PSI/SI’.
2. Find BAT and right click it. Select ‘Add BAT’ and then input the Bouquet ID and Name to create the BAT.

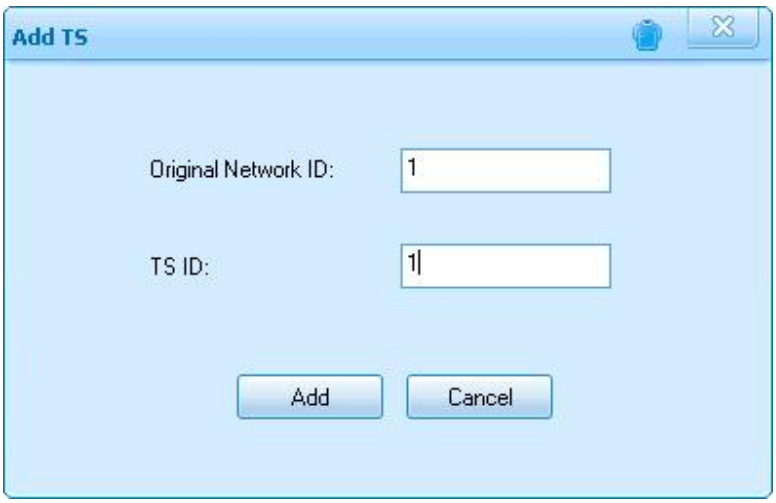


3. Right click ‘Transport Stream’ under ‘Bouquet Descriptor’ and click ‘Add Bouquet TS’.

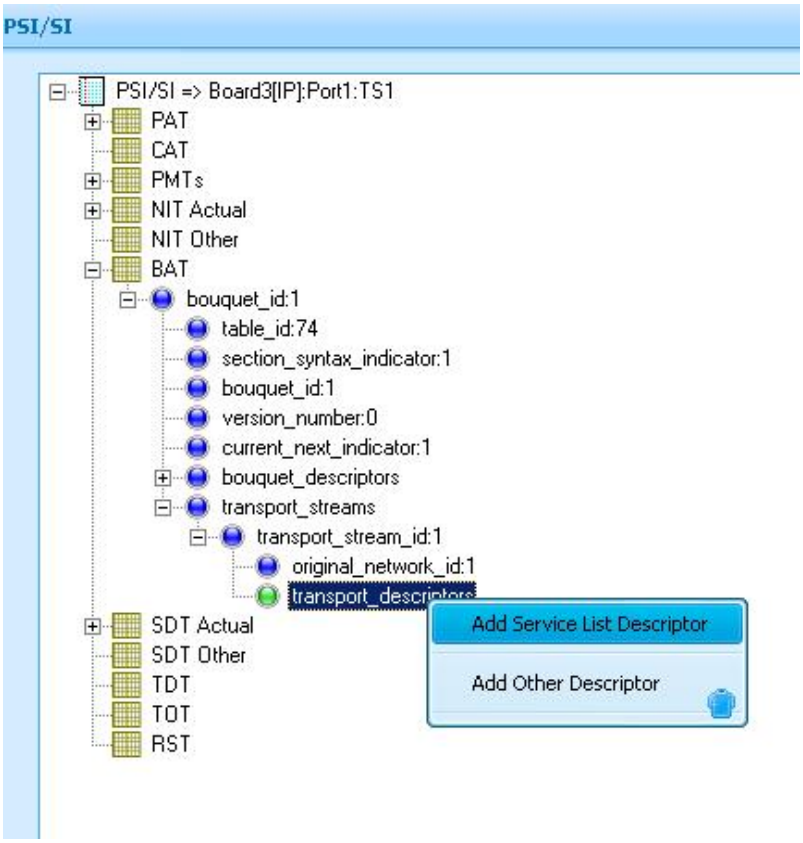
To delete the BAT, right click ‘Bouquet ID x’ and then click ‘Delete’.



4. Input the Original Network ID and TS ID.

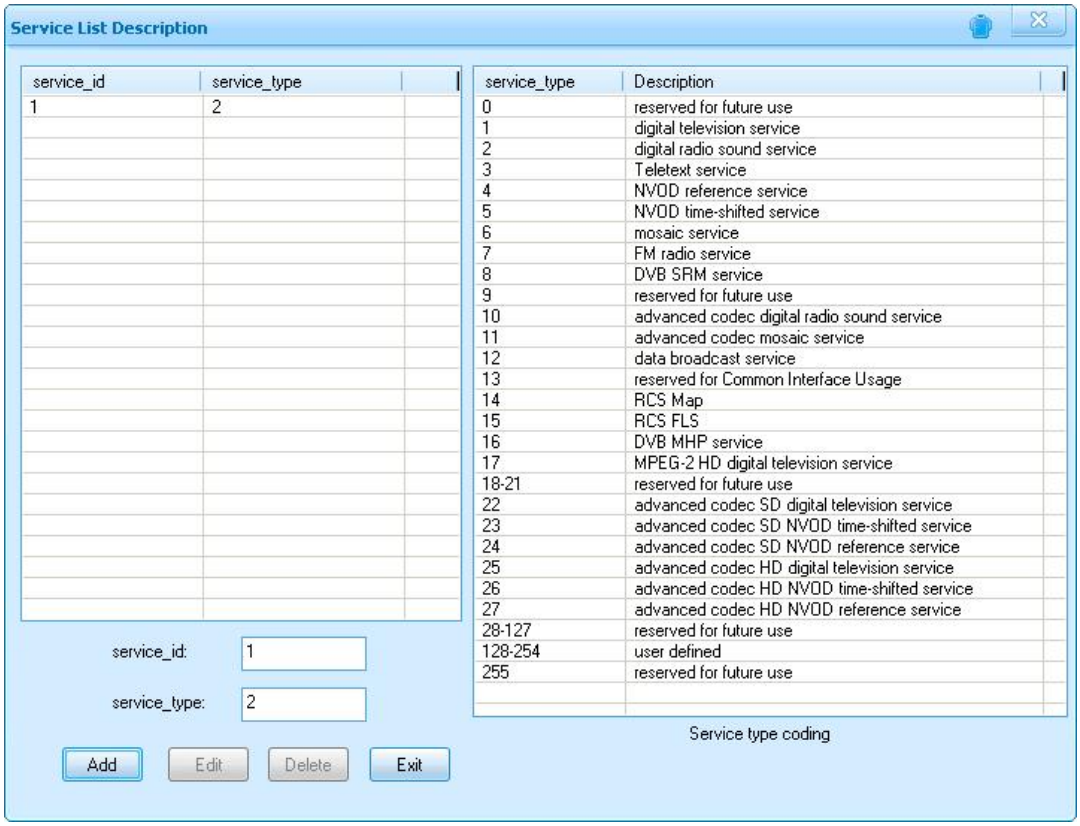


5. To add the service type for some program, right click ‘Transport Descriptor’ under ‘Transport stream id’ and then select ‘Add service list descriptor’.

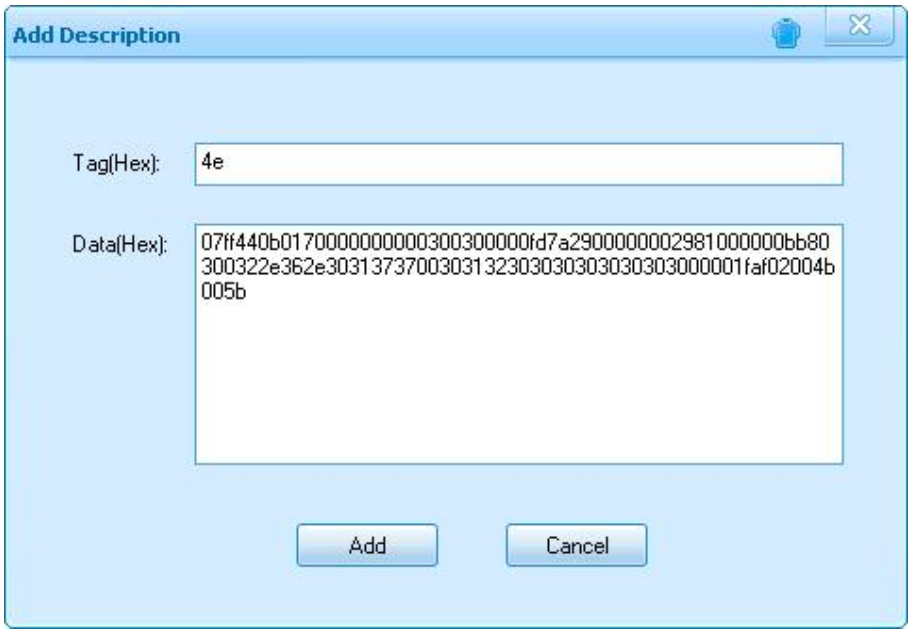


6. Input service ID and select the service type from right part, and then click ‘Add’ to add the service type for this program. You can also edit or delete the existing items by clicking ‘Edit’ or ‘Delete’.

7. After adding the service type for all programs, click ‘Exit’ to exit it.



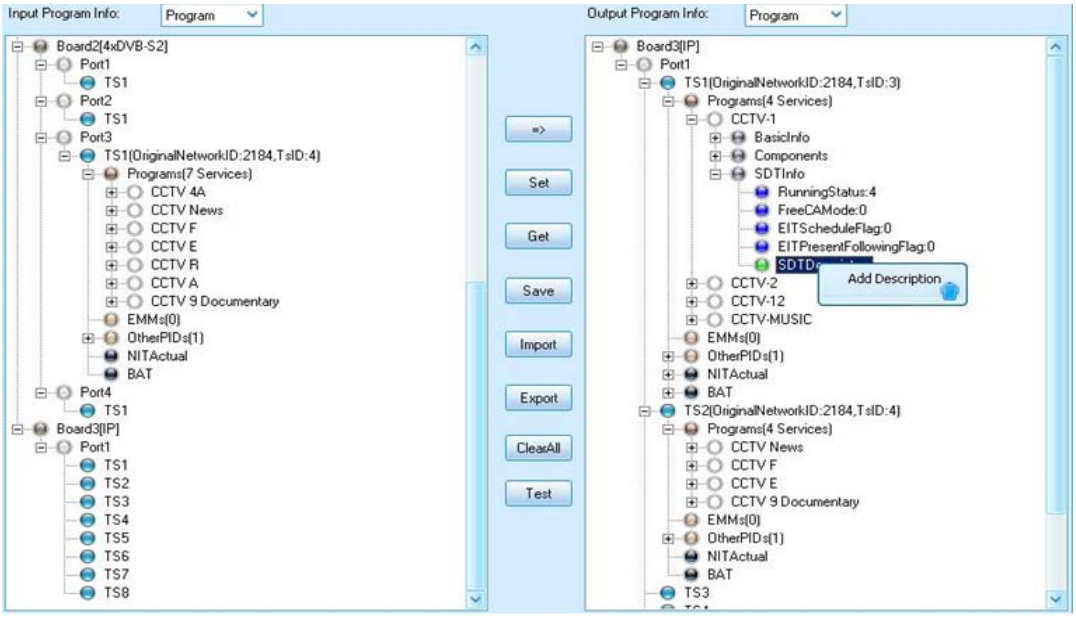
8. To add other private descriptor, right click ‘Transport Descriptor’ under ‘Transport stream id’ and then select ‘Add other descriptors’. Input the Tag and Data in Hexadecimal and click ‘Add’.



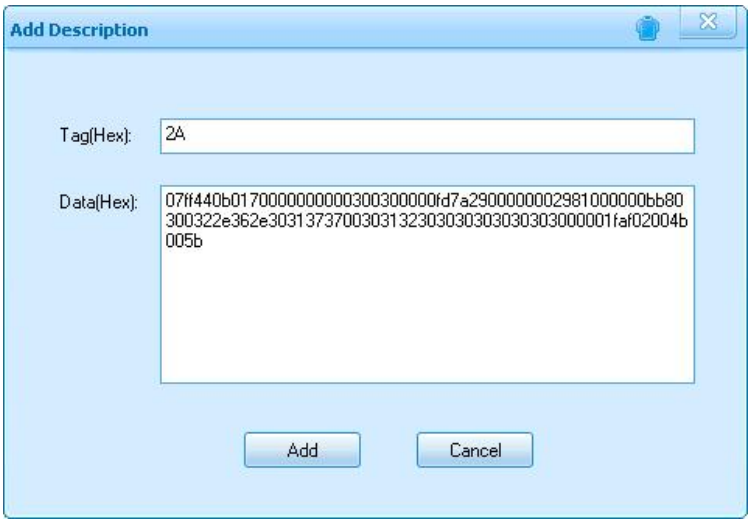
■ SDT Descriptor Insertion

To add the SDT descriptor, please go to ‘Program Info’ of the NMS.

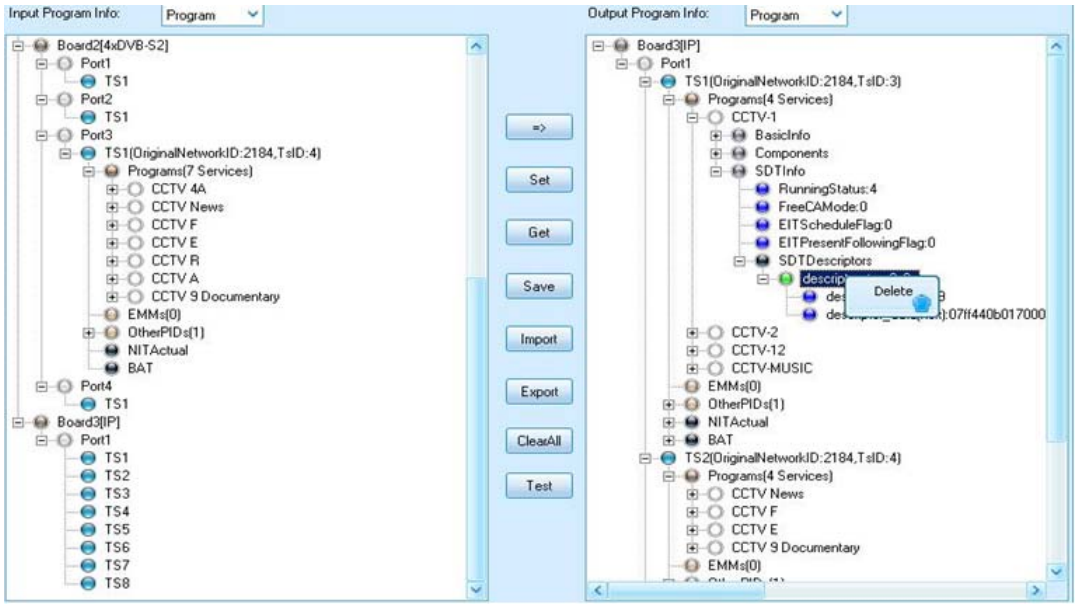
1. Find the program you want to add the SDT descriptor in and click ‘+’ before ‘SDT Info’. Right click ‘SDT Descriptors’ and then click ‘Add Description’.



2. Input the Tag and Data in hexadecimal, and click ‘Add’.



3. To delete the descriptor, right click the descriptor you added and click ‘Delete’.

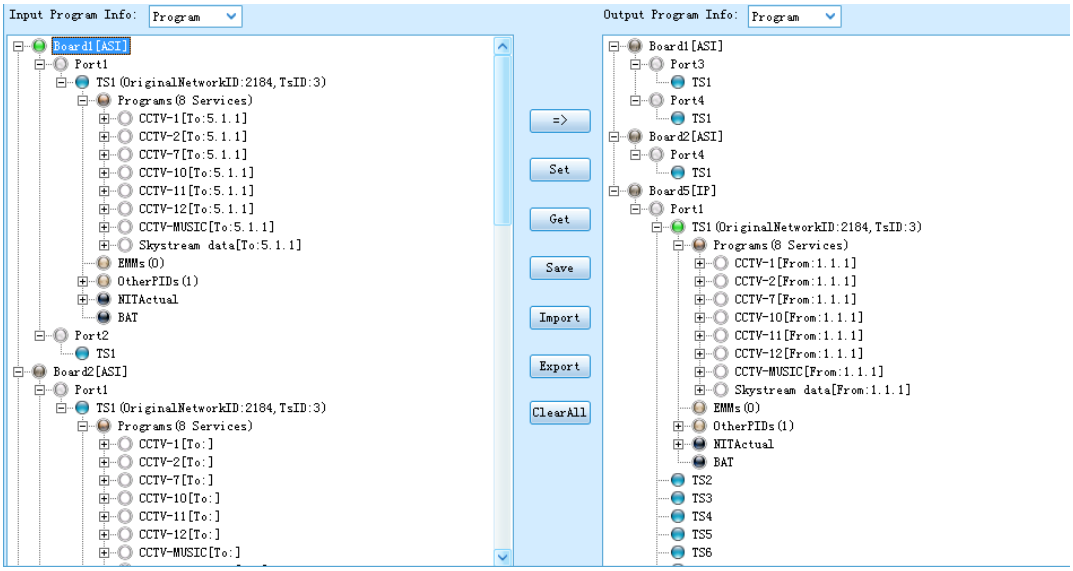


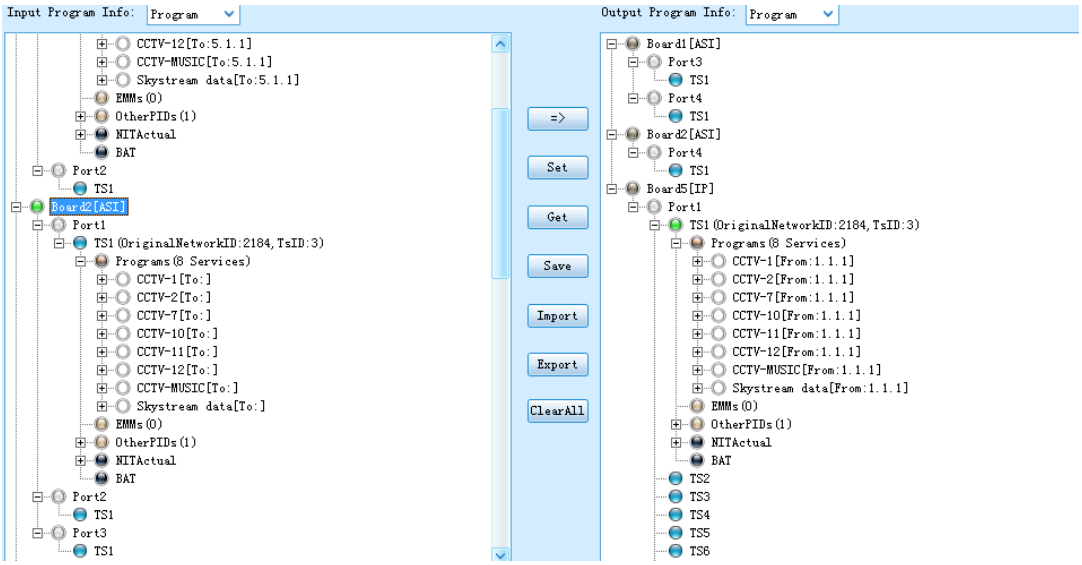
3.1.6 Receiving Signal Auto- Backup Function

The equipment supports auto-backup function for the receiving signals. Once the main receiving module breaks down, the backup module automatically takes over the signal receiving function to guarantee no signal lost happen in this case.

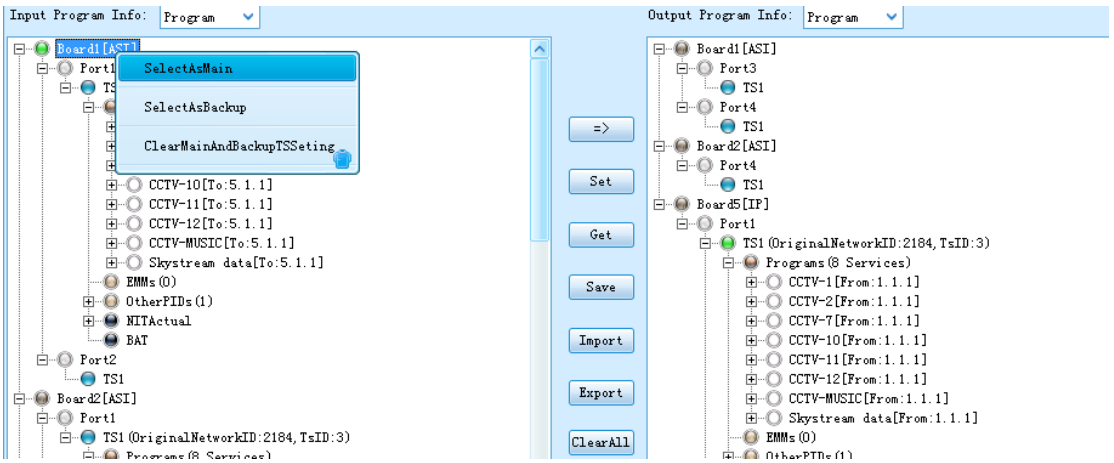
This auto-backup function can be achieved on all equipments receiving module types, including DVB-S2 module, IP Input module and ASI module. To enable this function, user shall prepare 2 same type receiving modules, feed them with same signal sources, and assign “Main” / “Backup” for the two modules. The following we take the IP module setting as an example. Settings for the DVB-S2 and ASI modules are just the same.

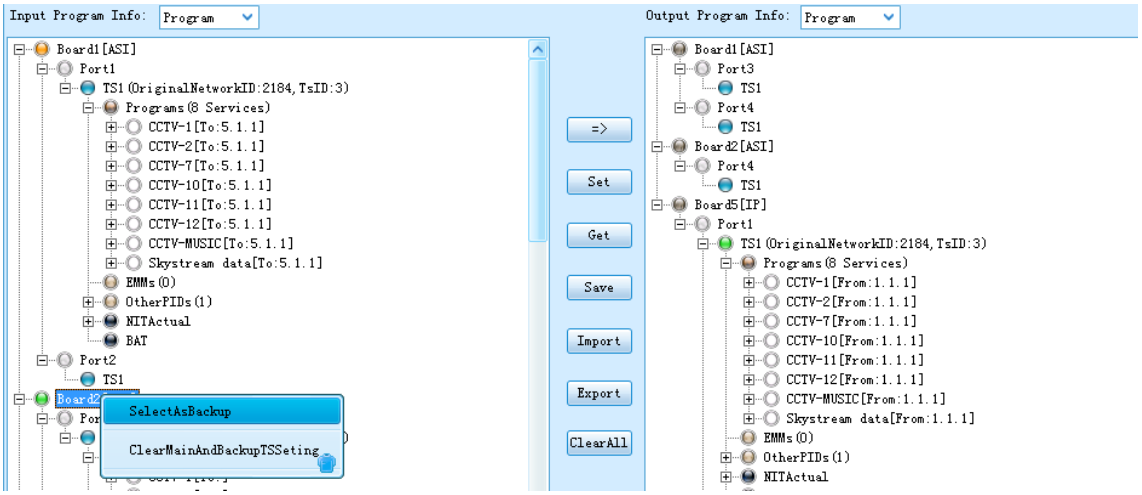
- Insert two IP (Input) modules in slot 2 and slot 6 respectively. Feeding the two modules with same signal sources.



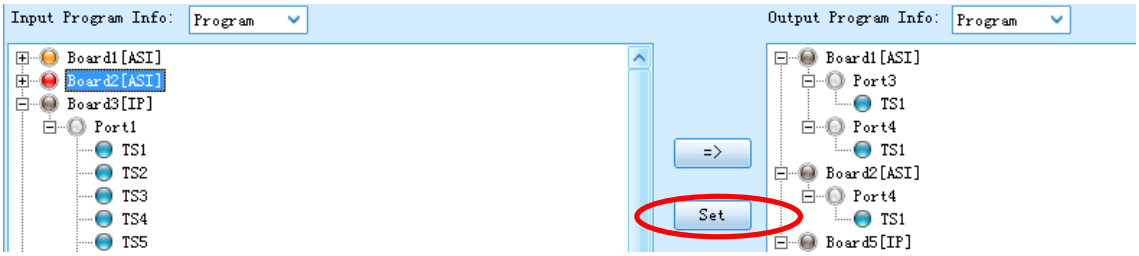


- Right click on the module name, and select “Main” or “Backup” for each module. As an example, here we set module in slot 2 as the “Main” module, and the one in slot 6 as the “Backup” module. After the setting, the modules will be marked with different color buttons in front of the module names for differentiation.





- Click “Set” button to apply for the settings as the last step.

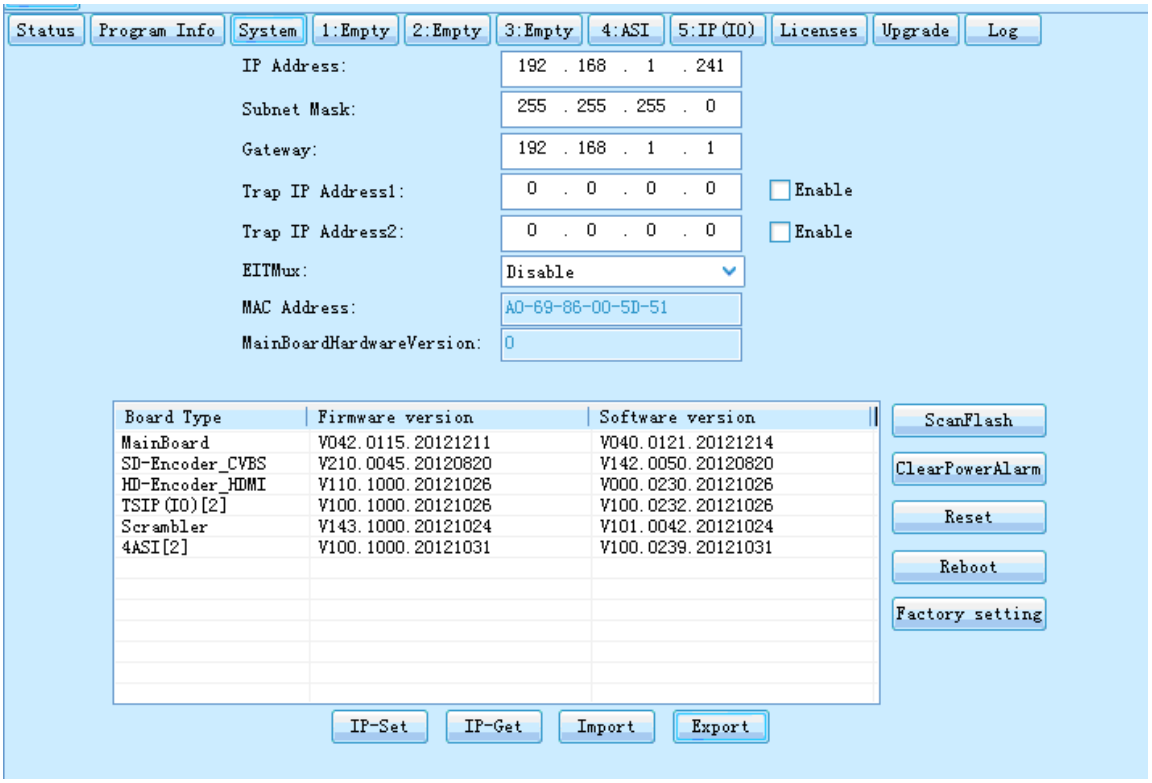


3.1.7 Configuration importation and exportation

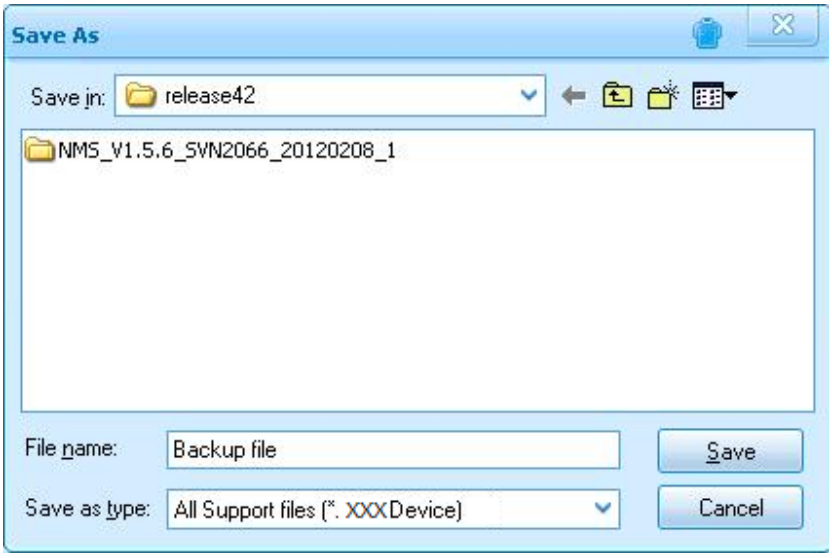
The backup configuration files of equipments are very important for the operator in actual application. It can help operator to restore all previous configuration quickly in case that equipment loses configuration or you need replace the current equipment due to any reason, so that the equipment can continue operating with less break time.

- **Export and import the entire configuration of the equipment.** It includes program list, the configuration of each sub-board.

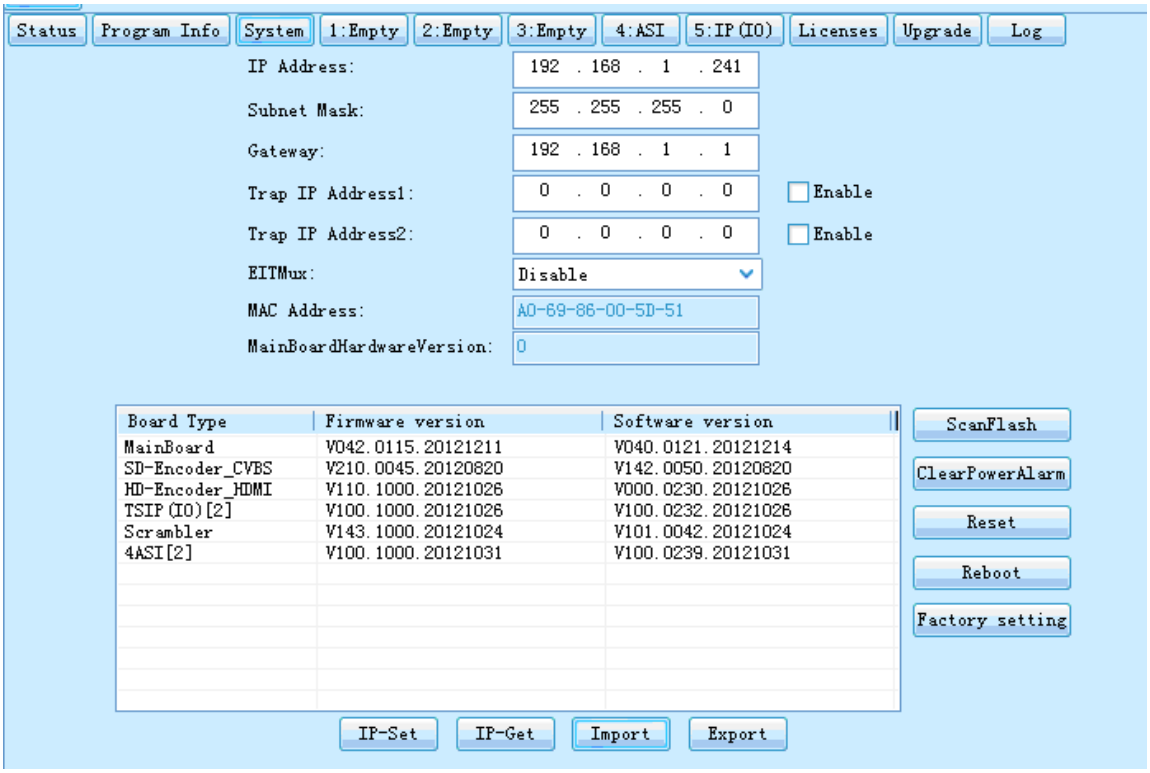
1. Go to ‘System’ and click ‘Export’.



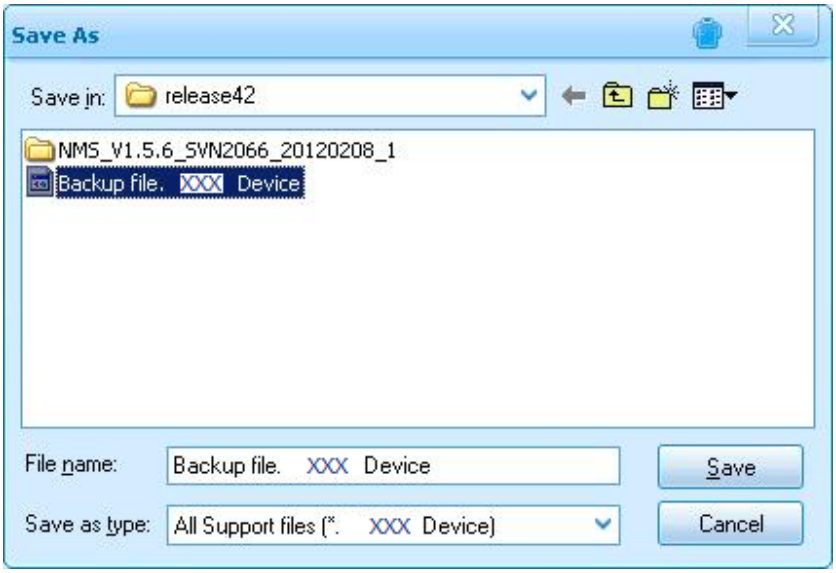
2. Input the name of the backup file and click ‘Save’ to save the entire configuration.



3. To import the backup file to the equipment, go to ‘System’ and click ‘Import’.



4. Select the backup file and click ‘Save’. Then the file will be imported automatically.



- **Export and import the program list only.** Go to ‘Program Info’ and click ‘Export’ or ‘Import’ to export or import the program list.

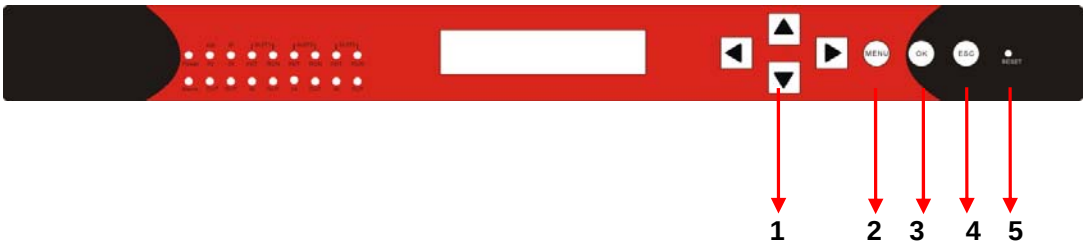
- **Export and import the configuration of one sub-board only.** Go to the sub-board which you want to export configuration from or import configuration into, and click ‘Export’ or ‘Import’ to export or import the sub-board configuration.

3.2 Operation through Front Panel

For some basic operation, such as checking the equipment and sub-board information, and working status, besides using the NMS, user can also operate via the front panel control buttons and menu.

For detailed configuration on each module and advanced application, it is recommended to operate via NMS.

3.2.1 Front Panel Control Buttons



1. **Navigation Keys: Up/Down/Left/Right** buttons. Used for moving the cursor during the operation.

2. **Menu:** to Enter a menu or Return to previous/upper level menu.

3. **OK:** to confirm the edit in the menu.

4. **Esc:** to return to the previous level menu.

5. **Reset:** to reboot the device.

3.2.2 Front Panel Operation Menu Structure

Class1	Class2	Class3	Class4	Class5	Default Parameter
Main Menu	TS/IP Output Setting	Channel 1 Program Setup	Enable		ON
			Dest Address		227.010.020.080
			Dest Port		01234
			TS Packet		7
		Channel 2-12 Program Setup	The same with Channel 1		
		Stream IP Address			192.168.001.034
		Stream MAC Address			A0-69-86-00-FF-FF
		Stream Subnet Mask			255.255.255.000
		Stream Gateway			192.168.001.001
		IGMP Version			IGMP-V2
	System	Ethernet Setup	Host IP Address		192.168.001.241
			Host Subnet Mask		255.255.255.000
			Host Gateway		192.168.001.001
			Host MAC Address		00-00-00-00-00-00
			Trap IP Address1		000.000.000.000
			Trap IP Address2		000.000.000.000
		Menu Language	English, Chinese		English
		Factory Setting	YES,NO		NO
	Save & Clean	Save Setting			
		Clean Setting			
	Version	Show Current software version			

3.2.3 Front Panel Operation Procedure

- Press “MENU” button to enter the main menu list;
- Use Up/Down navigation keys to select each sub-menu, and press “OK” to enter that menu.
- To change any parameters of the menu, press “OK” to enter the editable status, and then use Up/Down/Left/Right navigation keys to modify the parameters. After the modification, press “OK” to confirm.
- Press “ENTER” to cancel the modification and return to the previous menu.

Chapter4 Equipment Specifications

Chassis Height: 1RU

Dimension: 480mm x 44mm x 440mm

Weight: 7.5Kg

Power Supply Unit:

Single PSU

Max. 125W (fully loaded)

AC90~240V 50/60Hz

Operating Temperature: 0~50℃ (35~118° F)

Storage Temperature: -10~70℃ (14~158° F)

Humidity: 5%~95%

Operating Altitude: 200~10000AMSL

Chapter5 Terminologies

ASI：Asynchronous serial interface

BAT：Bouquet Association Table

CAT：Condition Access Table

CVBS: Composite Video, Blanking, and Sync, equals to “Composite video”.

DVB: Digital Video Broadcasting

EIT：Event Information Table

FEC：Forward Error Correction

HD：High Definition

HDMI：High-Definition Multimedia Interface

IEC：International Electrotechnical Commission

ISO：International Organization for Standardization

LCD：Liquid Crystal Display

QAM：Quadrature Amplitude Modulation

LED：Light-emitting diode

LNB：Low noise block-downconverter

MPEG：Moving Picture Experts Group

MPTS：Multiple Programs Transport Stream

NIT：Net work Information Table

NMS：Network Management Software

OFDM：Orthogonal Frequency-Division Multiplexing

PAT：Program Association Table

PCR：Program Clock Reference

PID：Packet Identifier

PMT： Program Map Table

PSI：Program Specific Information

PSU：Power Supply Unit

QPSK：Quadrature Phase-Shift Keying

SD：Standard Definition

SDT：Service Description Table

SI：Service Information

SPTS：Single Program Transport Stream

TDT：Time and Date Table