

DMP900

Digital Media Platform


User's Manual

V1.07-W

About This Manual

This manual describes the installation, setup and operation of the DMP900 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

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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.

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Chapter1 DMP Overview

1.1 General

DMP900 Digital Media Platform is the new generation of intelligent headend processing equipment. With a central processing capability of 384 TS streams (~1500 programs), this compact, high density 1RU equipment comes with 6 independent module slots. All six modules can be hot-swapped and hot-inserted to support the growing requirements of network operators. Each module can be configured individually base on the application including receiving, encoding, decoding, transmodulating, transcoding, ASI to IP mutual conversion, scrambling, descrambling, multiplexing, and QAM/OFDM modulation.

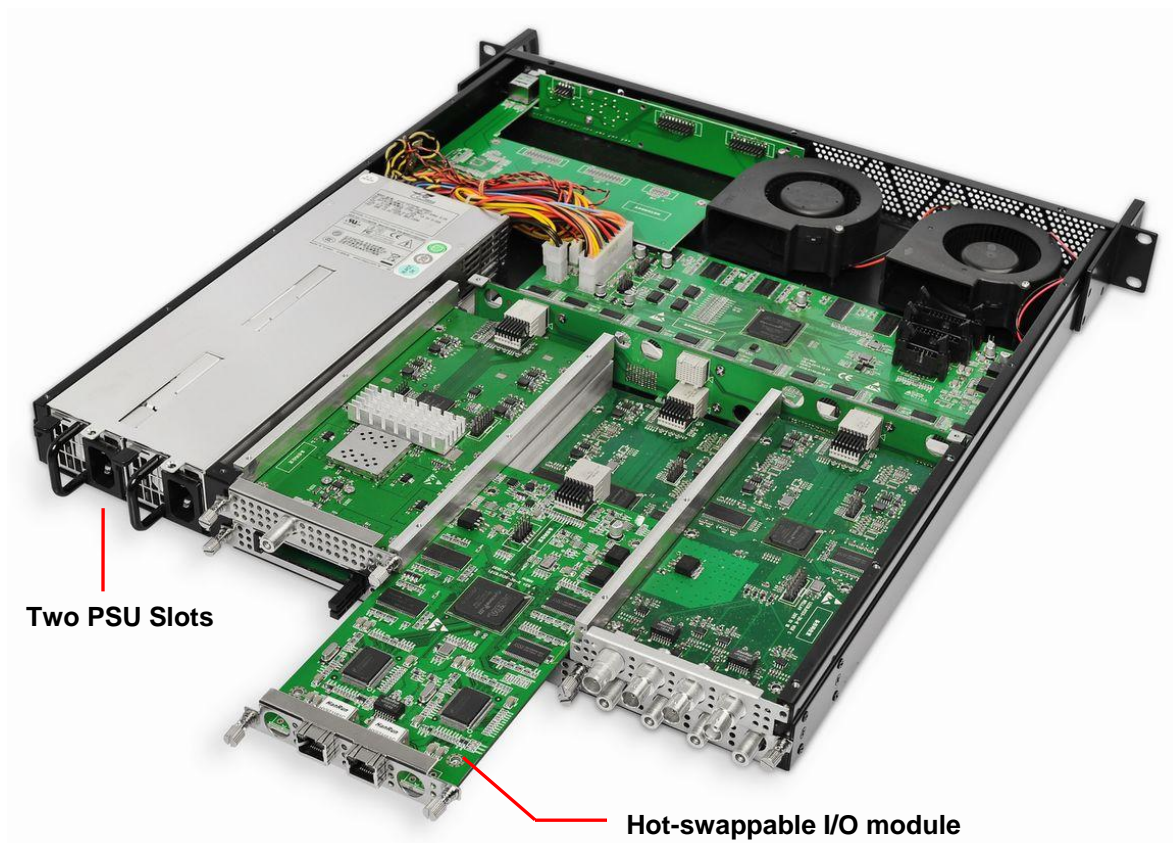


Of total 6 I/O slot, each I/O slot can be equipped with:

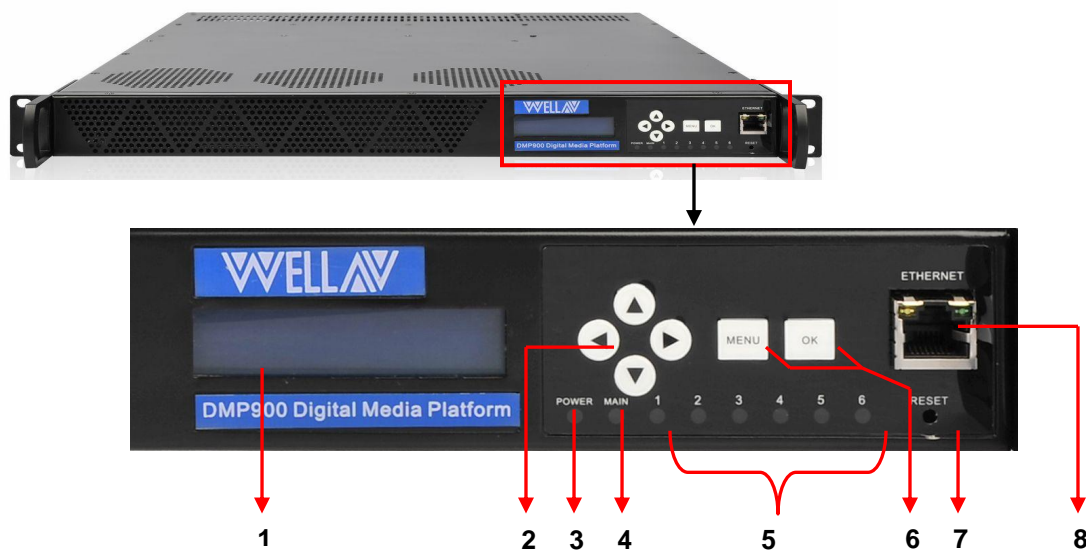
- an ASI Interface module containing 4 ASI ports for input/output stream
- a GbE Interface module containing one pair of Gigabit Ethernet ports for input and output IP stream
- a DVB-S/S2 module provided with 4 RF input ports
- a DVB-C/T module provided with 2 RF input ports (receive 4 frequencies) and 2 RF loop out ports
- a DVB-CI module containing dual CI slots
- a 8-QAM/4-OFDM module provided with 1 RF output ports
- a 4-OFDM module provided with 1 RF output ports
- a GbE interface scrambling module for up to 1G data scrambling
- a MPEG-2/MPEG-4 transcoder module
- a SD/HD H.264 HDMI encoder module
- a CVBS/HDMI decoder module
- a SD/HD SDI decoder module

1.2 The Housing

The DMP housing is a compact, modular 1 RU high 19-inch chassis containing six I/O slots and two PSU slots. The housing is rear loadable, meaning the cards, PSUs, and slot cover plates are loaded via the rear panel of the housing.



1.3 Front Panel & LED Indicators



1. LCD Display
2. Front panel operation Keys

3. Power indicator
 - Power On: green LED indicator is ON
 - Power Off: LED indicator is OFF
4. Mainboard indicator
 - Green: normal
 - Red: Error detected
5. Module indicator
 - Green and flashing: module is under initiation
 - Green: normal
 - Red and flashing: initiation fails
 - Red: error detected
6. Menu & OK operation buttons
7. Reset button
8. Ethernet interface for remote management control

1.4 Introduction to Each I/O Module

1.4.1 Modular Concept

The DMP 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 DMP module is available:

- 4-DVB-S/S2 module
- 4-DVB-C/T module
- Gigabit IP module
- CI module
- 4-ASI I/O module
- 2-SD&HD H.264 SDI/AV Encoder module
- Gigabit Scrambler module
- 8-QAM module
- 4-OFDM module
- 2-MPEG2 to MPEG4 Transcoder module

More modules will be available at a later date. Please contact your service provider for the details.



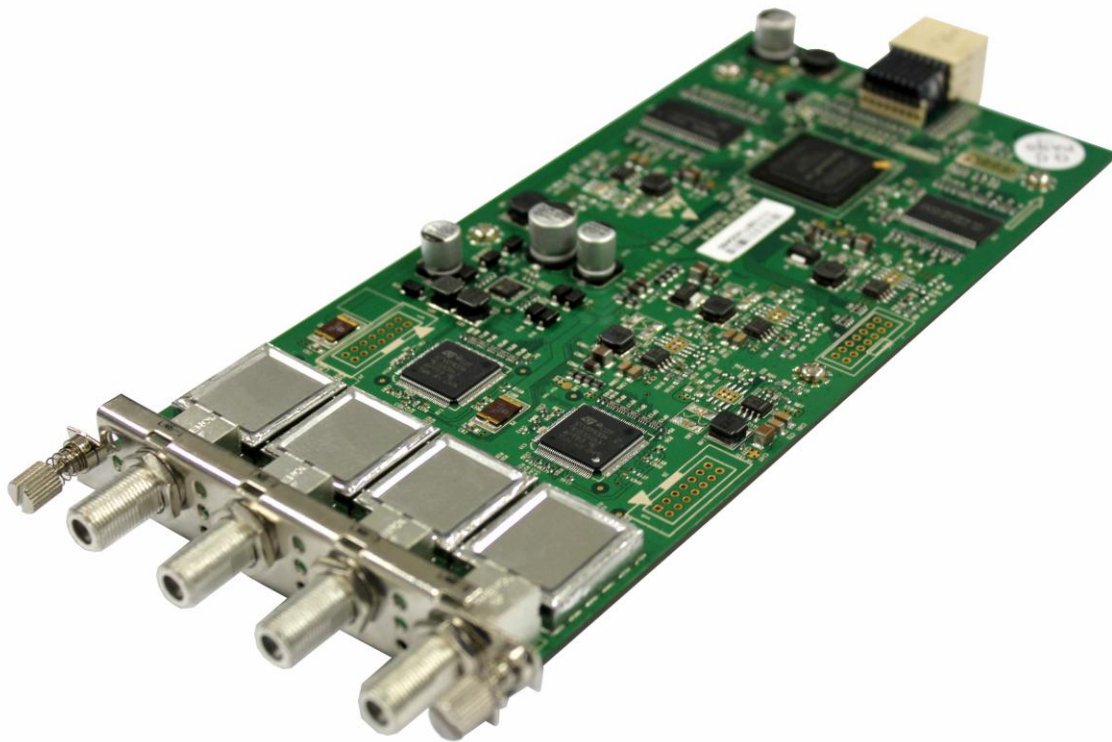
When the DMP leaves our assembly line, the device is configured as ordered. When the device is not fully populated, the device can always be upgraded at a later date by

adding or replacing different modules.

1.4.1.1 4-DVB-S/S2 module

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

Up to 5 DVB-S/S2 modules can be installed on a DMP unit, which means that one DMP can support up to 20 DVB-S/S2 input signals (20 transponders).



Description	Specification
Inputs	4XRF inputs, 75Ω , F-type connector
Frequency Range	950~2150MHz
Symbol Rate	QPSK: 2~45MBauds 8PSK: 2~37Mbauds
FEC Mode	QPSK: 1/2, 2/3, 3/4, 5/6, 7/8 8PSK: 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
Input Level	-65dBm~-25dBm
LNB Power Supply	Vertical: 11.5V~14.0V Horizontal: 16.0V~19.0V
22KHz	18~26KHz

1.4.1.2 4-DVB-C/T module

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

One DMP supports to install a max of 5 DVB-C/T modules.



Description	Specification
Inputs	2XRF inputs, 75Ω , F-type connector 2Xloop out
Frequency Range	DVB-C module: 48~862MHz DVB-T module: 50~858MHz
Symbol Rate	DVB-C module: 1.0~6.9MBauds DVB-T module: 0.45~7.0MBauds
FEC Mode	DVB-C module: Annex A/C, Annex B (optional) DVB-T module: 2K & 8K (FTT)
Input Level	DVB-C module: 32~105dBuV DVB-T module: -96~-6dBm
QAM Mode	16/32/64/128/256 QAM

1.4.1.3 Gigabit IP module

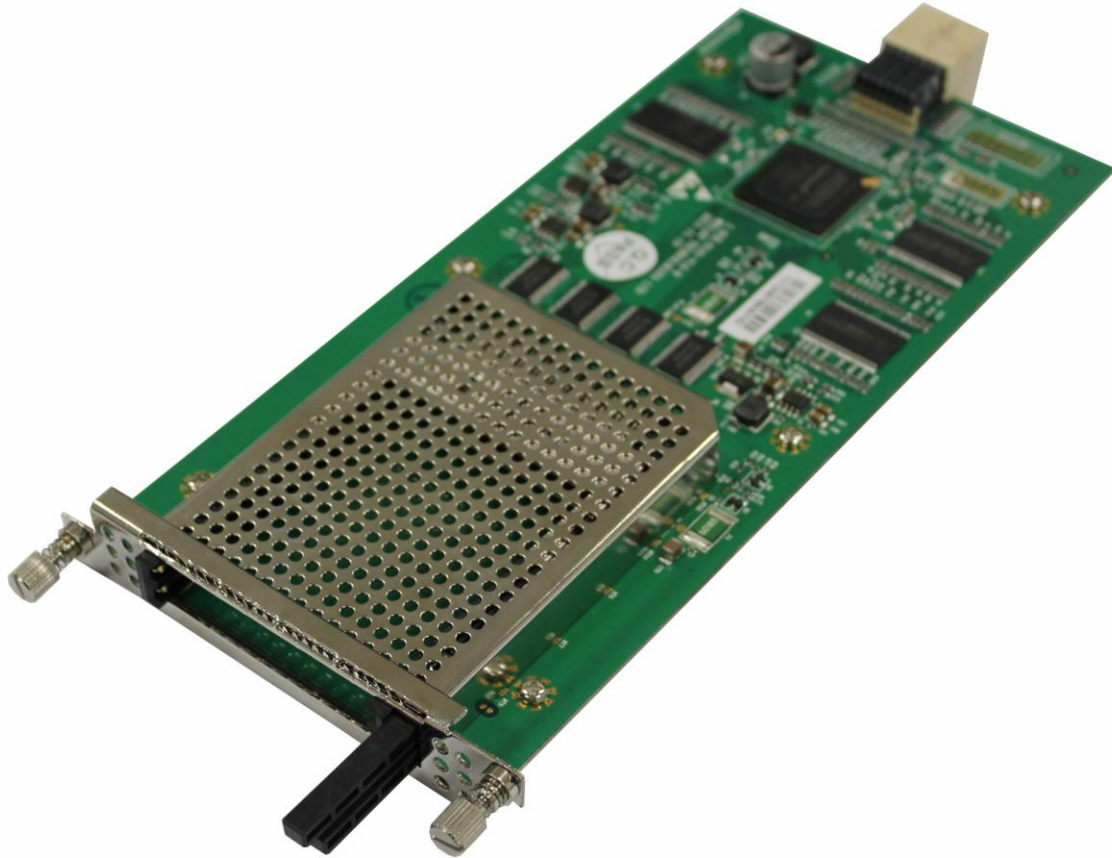
A GbE Interface Card of the DMP is provided with 2 Gigabit Ethernet interfaces, giving the card a total throughput of 1 Gbps in and 1 Gbps out. To protect video services transported over IP networks from impairments caused by network jitter, IP packet loss, or out-of-order IP packets, a GbE Interface Card with FEC option based on Pro-MPEG COP3 is provided. The following illustration depicts a standard GbE Interface Card and a GbE Interface Card with FEC option.



Description	Specification
Input/Output	2X1000Base-T, RJ45 (one for input/output; one for backup output)
Gigabit-8 IP Max Input/Output	8 input TS streams and 8 output TS streams
Gigabit-32 IP Max Input/Output	32 input TS streams and 32 output TS streams
Error Correction	Pro-MPEG FEC
Encapsulation Protocol	MPEG-2/MPEG-4 TS over UDP/RTP
Broadcasting Type	Unicast & Multicast

1.4.1.4 CI module

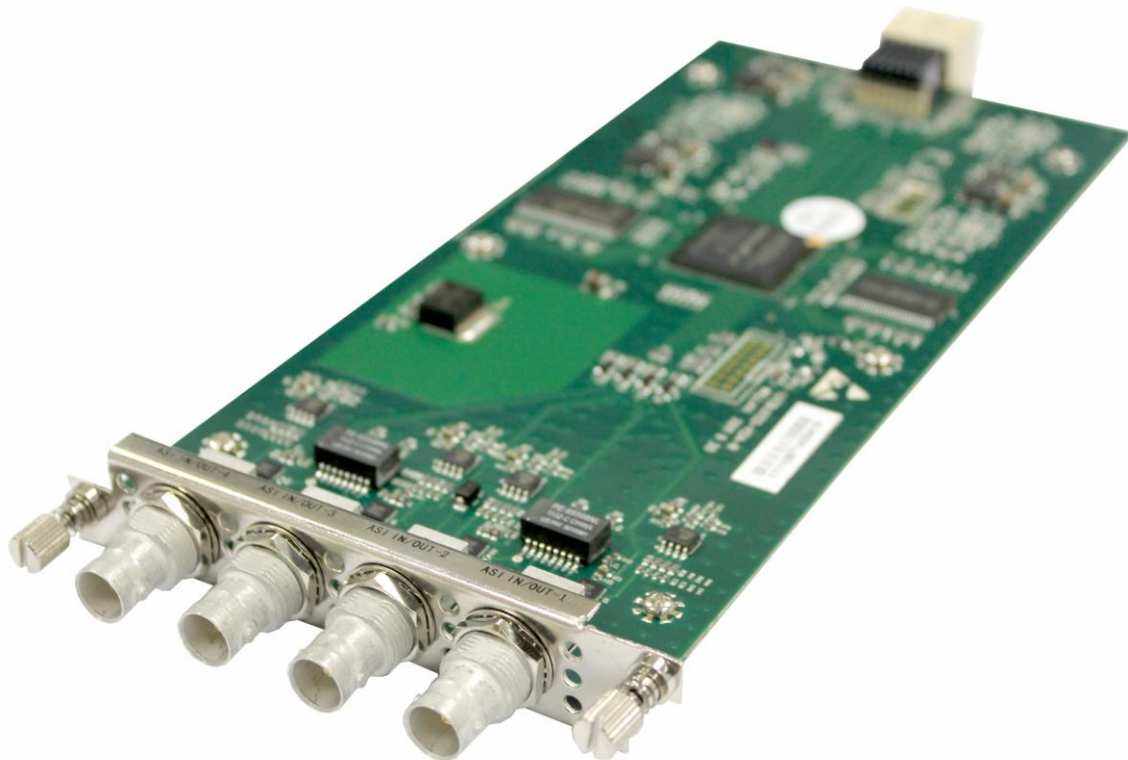
The CI module is with 2 independent common interface slots, which supports multi-channel descrambling by inserting different CAM modules.



Description	Specification
Interface	2Xcommon Interface slots
Standard	DVB/NRSS-B/DAVIC V1.2
CA methods	Multicrypt, Simulcrypt
CAS support	Conax, Irdeto, Viaccess, CTI, Nagravision, DVCrypt, etc.

1.4.1.5 4-ASI I/O module

The ASI Interface module of the DMP is provided 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 DMP can be equipped with maximum six ASI Interface Modules, meaning that the device can support a max of 24 ASI interfaces.

1.4.1.6 2-SD&HD H.264 SDI/AV Encoder module

The SD&HD H.264 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 very low bitrate 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	1920x1080x59.94i/50; 1440x1080x 59.94i/50i; 1280x720x59.94p/50p; 720x480x59.94i; 720x576x50i
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	48KHz
Audio mode	Stereo, joint stereo, dual channel, mono

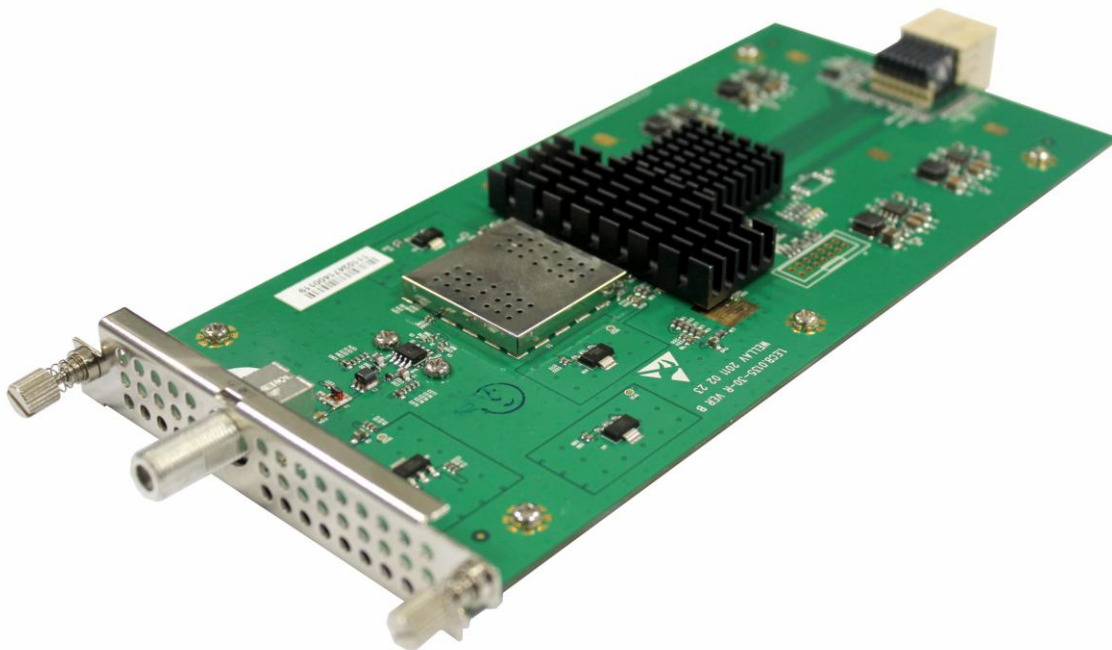
1.4.1.7 Gigabit Scrambler module

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



1.4.1.8 8-QAM/4-COFDM module

This modulation module supports either 8 channels QAM or 4 channels COFDM modulation output. With up to 5 modules on a single DMP unit, the DMP supports up to 40RF QAM or 20RF COFDM outputs.



1.4.1.9 TC2 & TC4 Transcoder module

The TC2 & TC4 transcoder module is capable of transforming MPEG-4/H.264 programs to MPEG-2 encoding format (TC2) or reversely MPEG-2 to MPEG-4/H.264 transforming (TC4). On a single module, it is optionally to support up to 4 programs transcoding which enables as up to 20 programs transcoding processing on a DMP unit simultaneously.



MPEG-4 to MPEG-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 MPEG-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

Chapter2 Installation

2.1. Introduction

This chapter contains the information for technicians installing the DMP900.



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

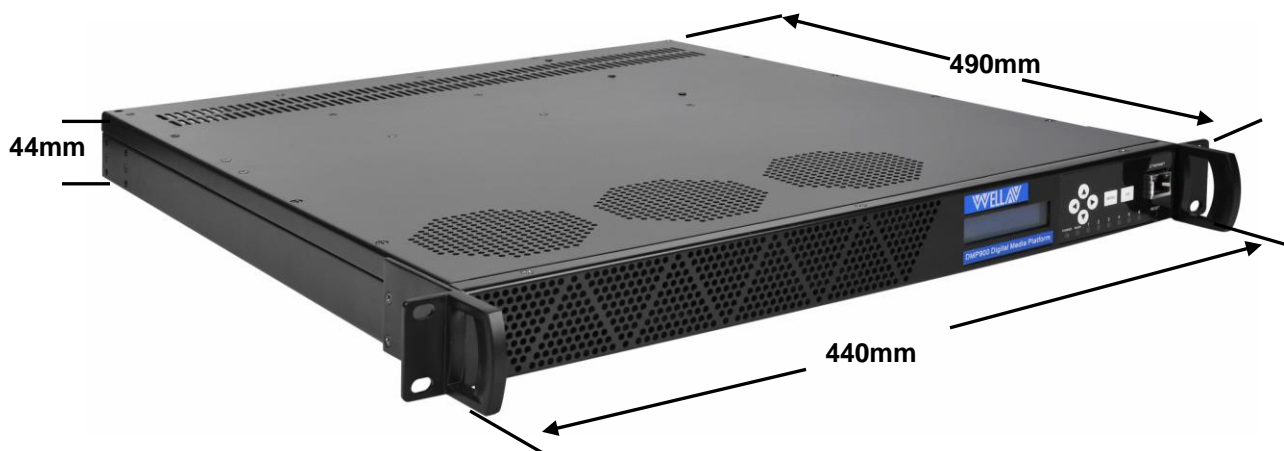
Make sure that the chassis is in good condition and that you have the tools and equipment needed.

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 DMP.



2.3 Operating Temperature

The DMP is designed to operate within a specified operating temperature range. Please install the DMP in an environment that fits for the operation requirements.

**WARNING:**

Avoid damage to the DMP. 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:

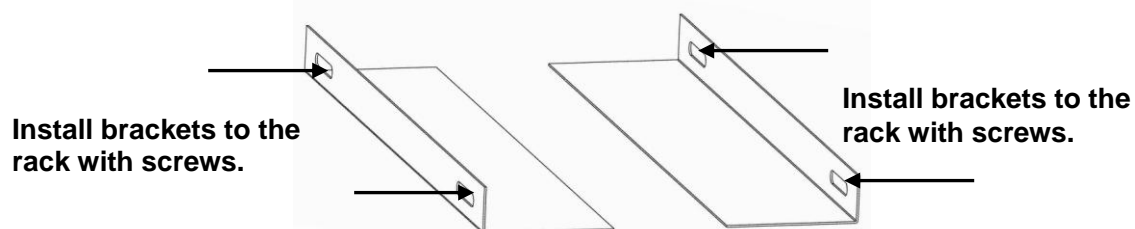
- Screwdriver.
- Support brackets and rack mounting screws.

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.

Note: There are 2 brackets shipped along with the DMP for installing to the rack. The brackets must be installed on the rack for holding the DMP properly.



- Pay attention to the mechanical loading and stability to avoid hazardous situations.

2.4.3 Mounting the DMP



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

Perform the following procedure to install the DMP.

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 DMP.

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 DMP 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 DMP is powered up, the device starts booting. Booting the DMP 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 a DMP 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.**

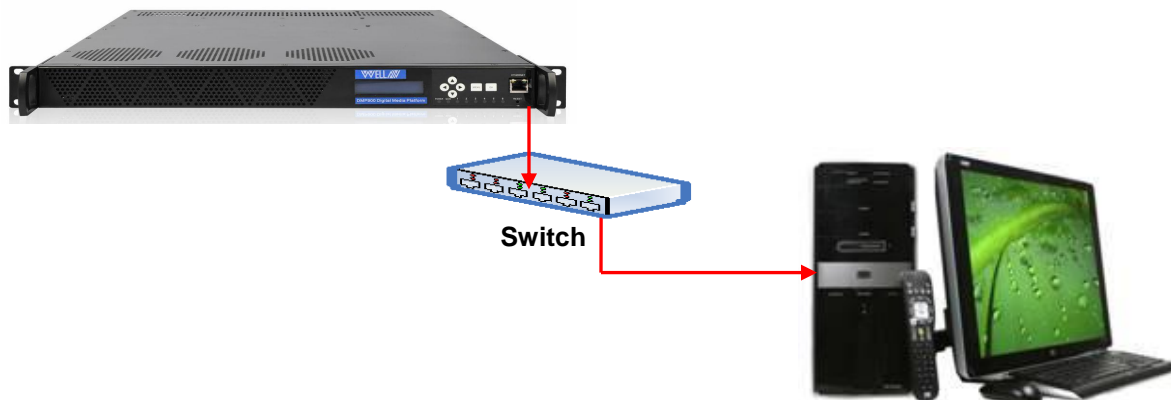
2.6 Cabling the Management Ports

Introduction

The operation on the DMP will be mostly carried out through the Wellav Network Management Software (NMS). Please connect the DMP management port 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 DMP is equipped with a 10/100Base-T port for communication with a remote control and monitoring PC.

When the DMP leaves our factory, both Ethernet ports are configured with the following parameter settings:

Parameter	Default Setting
IP address	192.168.1.16
Subnet Mask address	255.255.255.000
Gateway	192.168.1.1

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

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 DMP to the same network without any L3 routers in-between.

To Adapt the IP Settings

Perform the following procedure to assign IP addresses to the DMP.

1. Use a PC with IP settings of 192.168.1. X and connect the PC to a hub or a router.
2. Connect the 10/100Base-T interface of the DMP to the LAN connection point. Use straight-through cable for connection to a hub/router to set up connection with the monitoring PC.

Note: The DMP can be connected directly to a local PC using a crossover Ethernet cable.

3. Start the **Network Management Software** on the accessory CD.

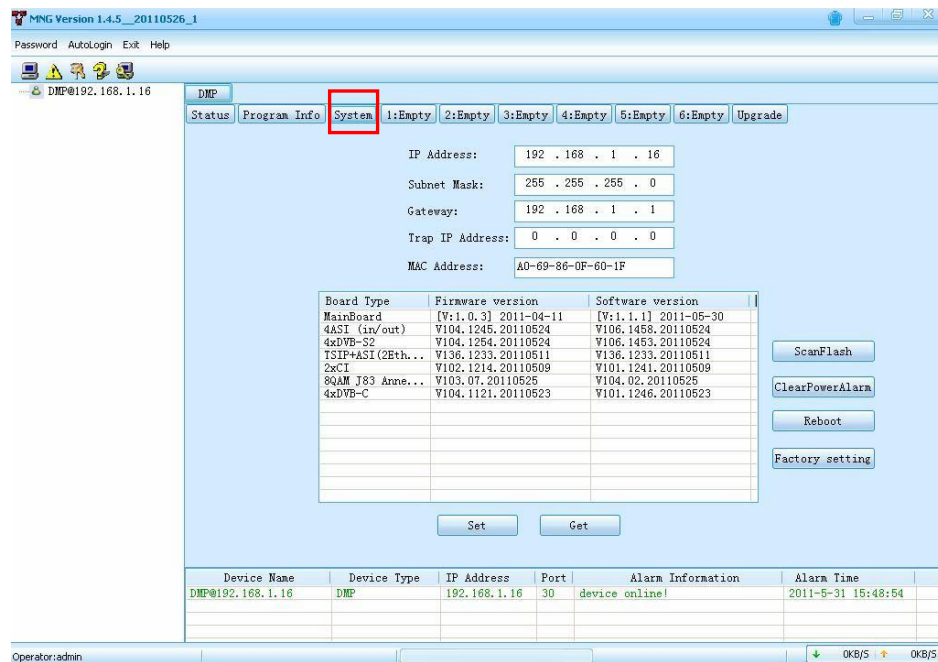


Network Management Software Icon

4. 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.

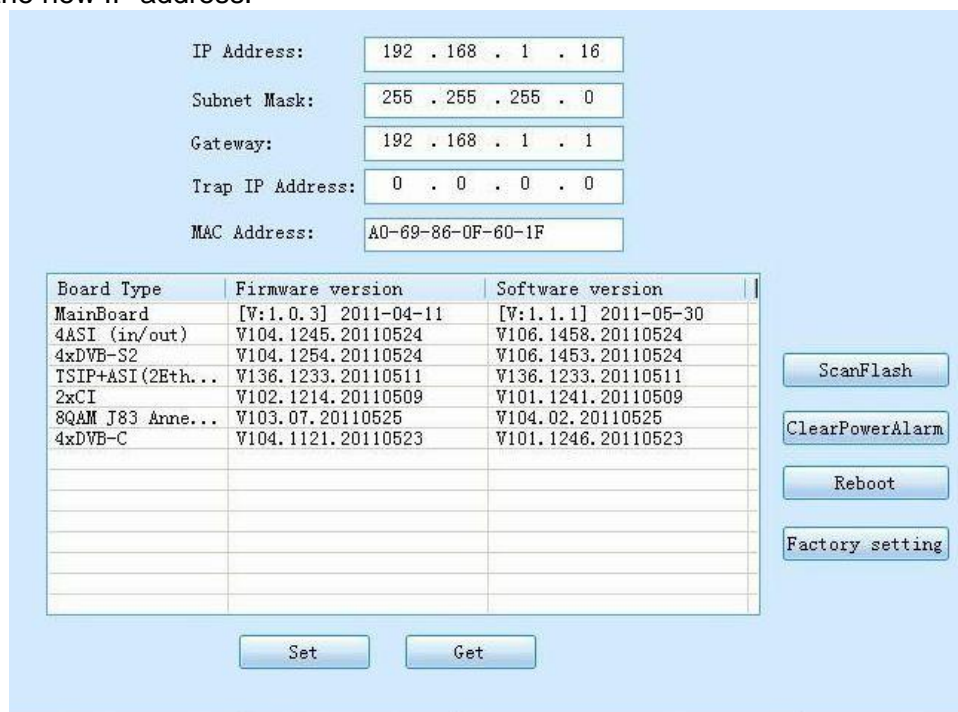


5. In the main interface, select “**System**” tab.



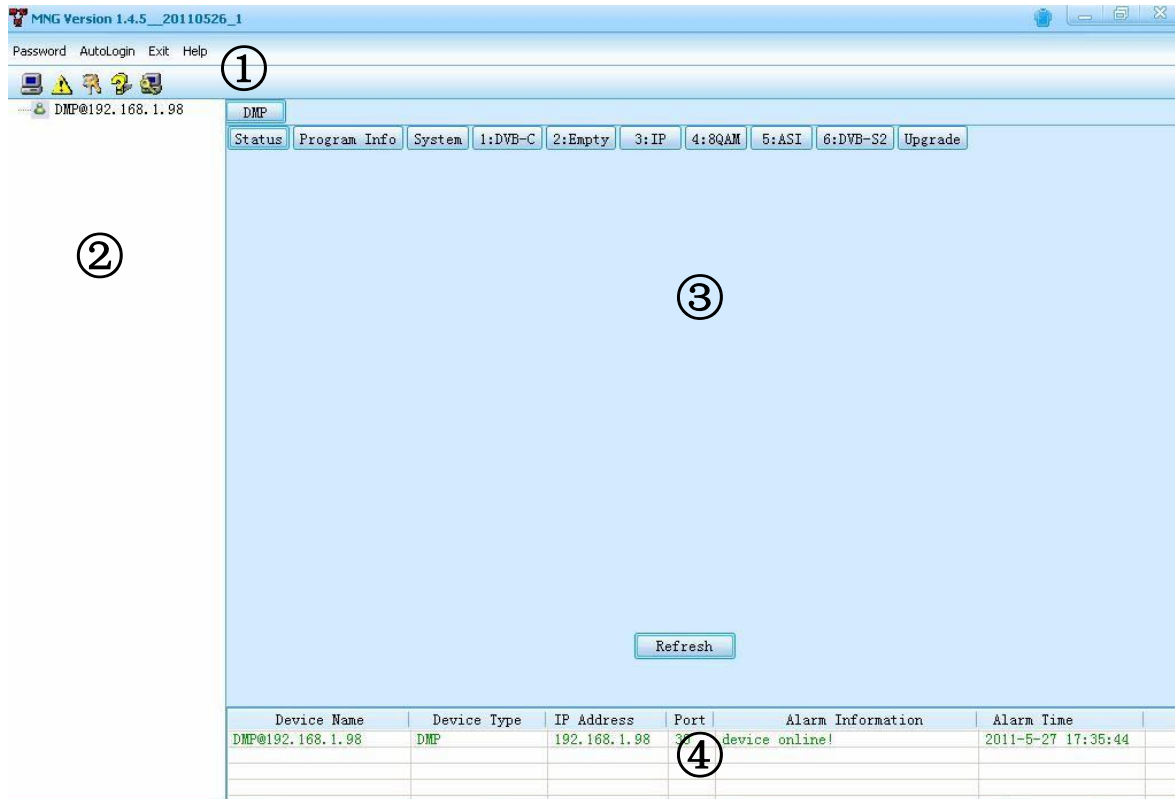
6. In the “**System**” tab, it lists the DMP basic system information of the main board and hardware/software information of each inserted sub-module.

To modify the default IP address, type in the new IP address in the “IP Address” column, then click “Set” button. The DMP will reboot automatically and apply with the new IP address.



3.1.2 Main Interface Introduction

The following screen will display after program startup:



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

- ① Toolbar. It includes shortcut to change password and save setting etc.
- ② Equipment list. If more than one DMP is connected to the NMS, the DMP will be listed in this area by its IP address.
- ③ Parameter setting and configuration area. The parameters of the DMP are shown and configured here by selecting different tabs. This is the main operation area of the NMS.
- ④ Event information window.

3.1.2.1 Toolbar



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



A dialog box titled "Change Password" with a blue header bar. It contains four text input fields labeled "User:", "Old password:", "New password:", and "Retype password:". At the bottom, there are two buttons: "OK" and "Cancel".


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

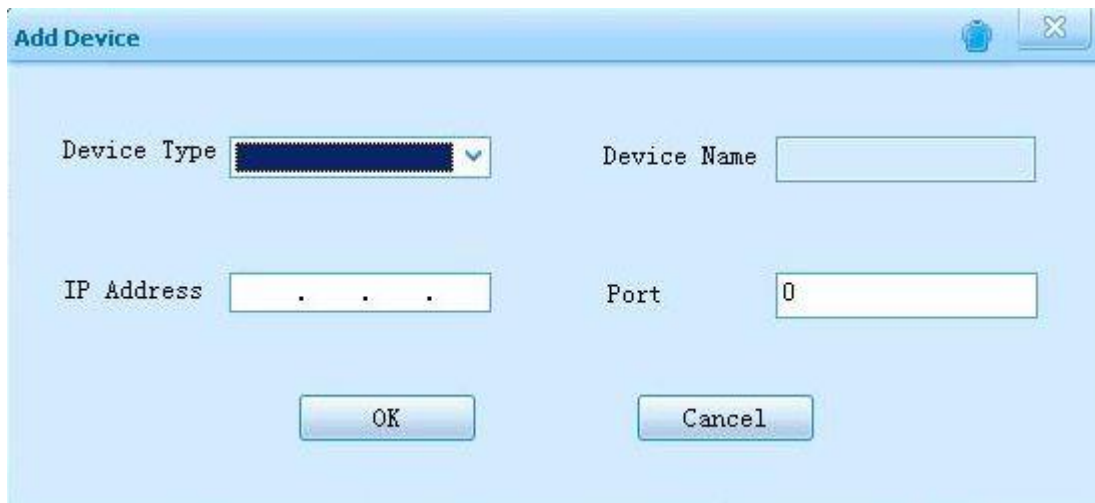


A dialog box titled "AutoLoginSetting" with a blue header bar. It contains a single checkbox labeled "AutoLogin". At the bottom, there are two buttons: "OK" and "Cancel".

(3) Exit: exit the NMS.

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

(5)  add new device to the NMS. After selecting this button, a "Add device" window shows up

A screenshot of a Windows-style dialog box titled "Add Device". It has a light blue background and a title bar with a close button. The dialog contains four input fields: "Device Type" is a dropdown menu with a dark blue arrow; "Device Name" is a text box; "IP Address" is a text box with three dots as placeholders; "Port" is a text box with "0" as the value. At the bottom are "OK" and "Cancel" buttons.

Device Type: Choose "DMP" 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.



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

(7)  to change the login password. Equals to the "Password" button.



(8)  to display the "HELP" information and NMS software version. Equals to the "HELP" button.

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

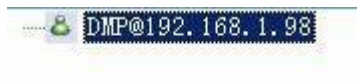
3.1.2.2 Equipment List



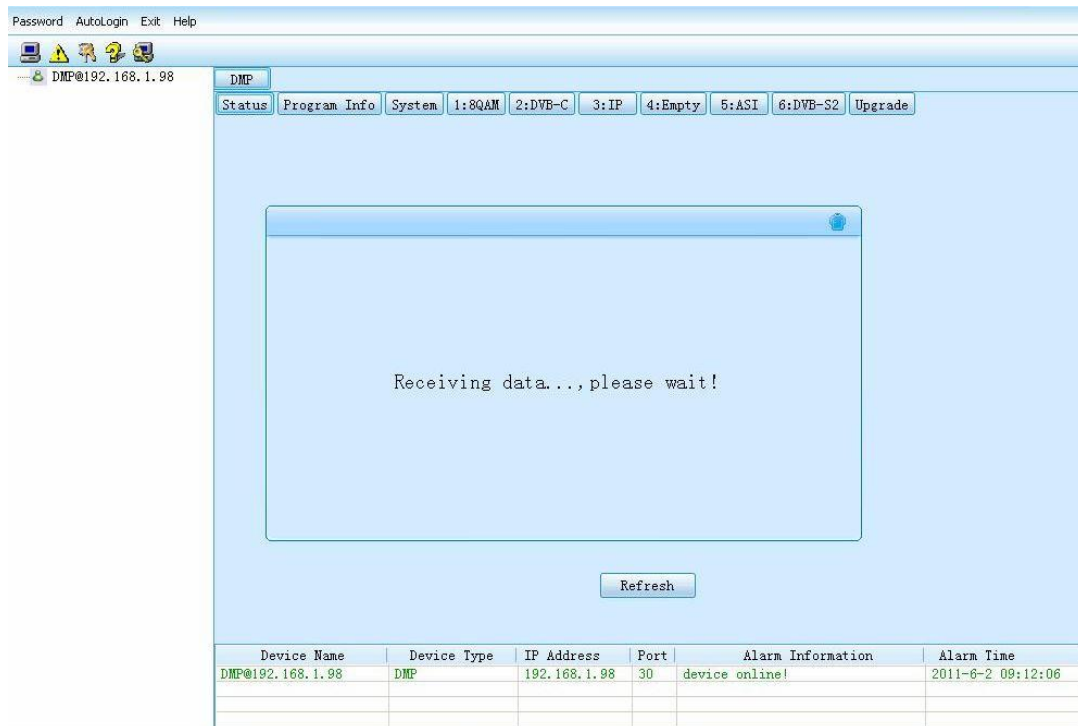
In this section, it shows the connection status of all the DMPs that the NMS scans in the network, and user can do “Connecting the Device”, “Add Device”, “Delete Device” operation.

- (1)  If this icon is in Green, it means the connection of the DMP and PC has been successfully set up.
- (2)  If this icon is in Red, it means the DMP is not connected. Please check the network connection and the IP setting of the DMP.
- (3) 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;



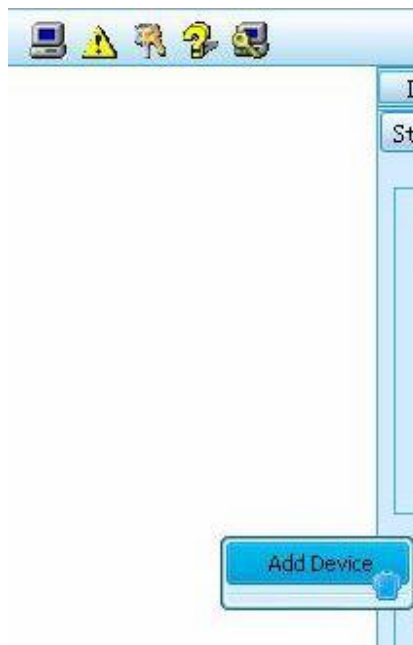
- Double click the left mouse button on the selected device. The NMS starts to connect the device and requesting parameters data from the device.



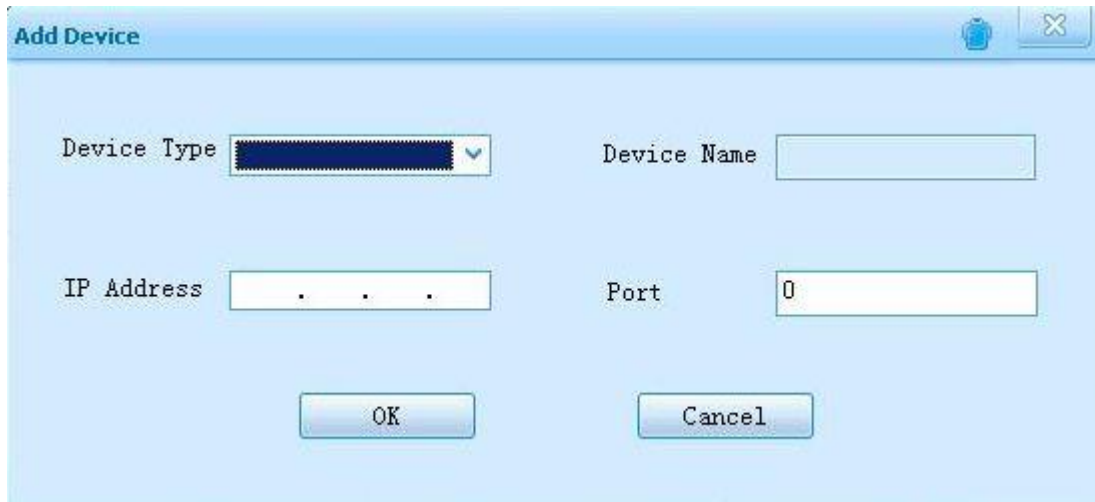
- Connection set-up completes.

(4) Add device: In case the DMP 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. A “Add Device” menu shows up.



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

A screenshot of the "Add Device" dialog box. It has a light blue background and a title bar with the text "Add Device" and a close button. The dialog contains four input fields: "Device Type" with a dropdown menu, "Device Name" with a text box, "IP Address" with a text box containing three dots, and "Port" with a text box containing the number 0. At the bottom, there are two buttons: "OK" and "Cancel".

Device Type: Choose “DMP” in the list.

Device Name: Not editable

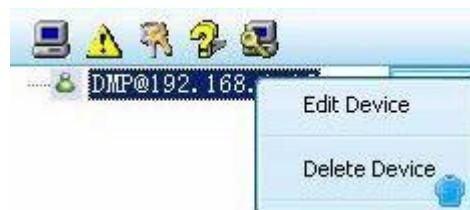
IP Address: type the target add device IP address

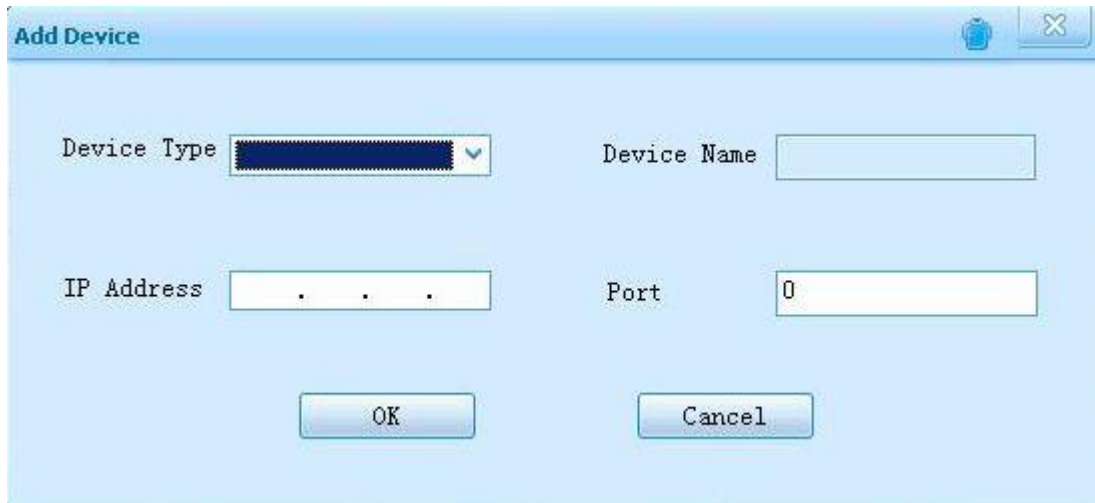
Port: must be “30”

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

(5) 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”.





The "Add Device" dialog box is a light blue window with a title bar containing a blue robot icon and a close button. It contains four input fields: "Device Type" (a dropdown menu), "Device Name" (a text box), "IP Address" (a text box with pre-filled dots), and "Port" (a text box with the value "0"). At the bottom are "OK" and "Cancel" buttons.

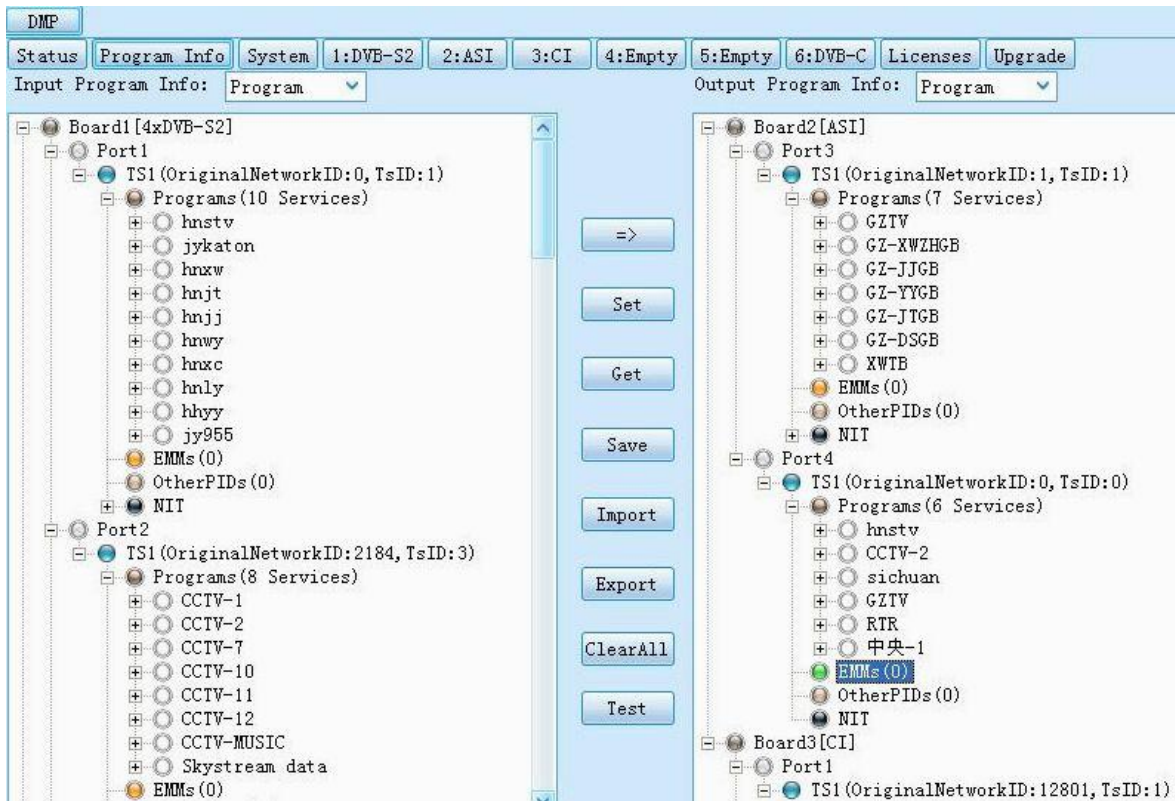
(6) Delete device: to delete the selected device from the NMS list.

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 DMP and each module is conducted here. Please refer to **Chapter 3.1.3** for the detailed operation instruction.

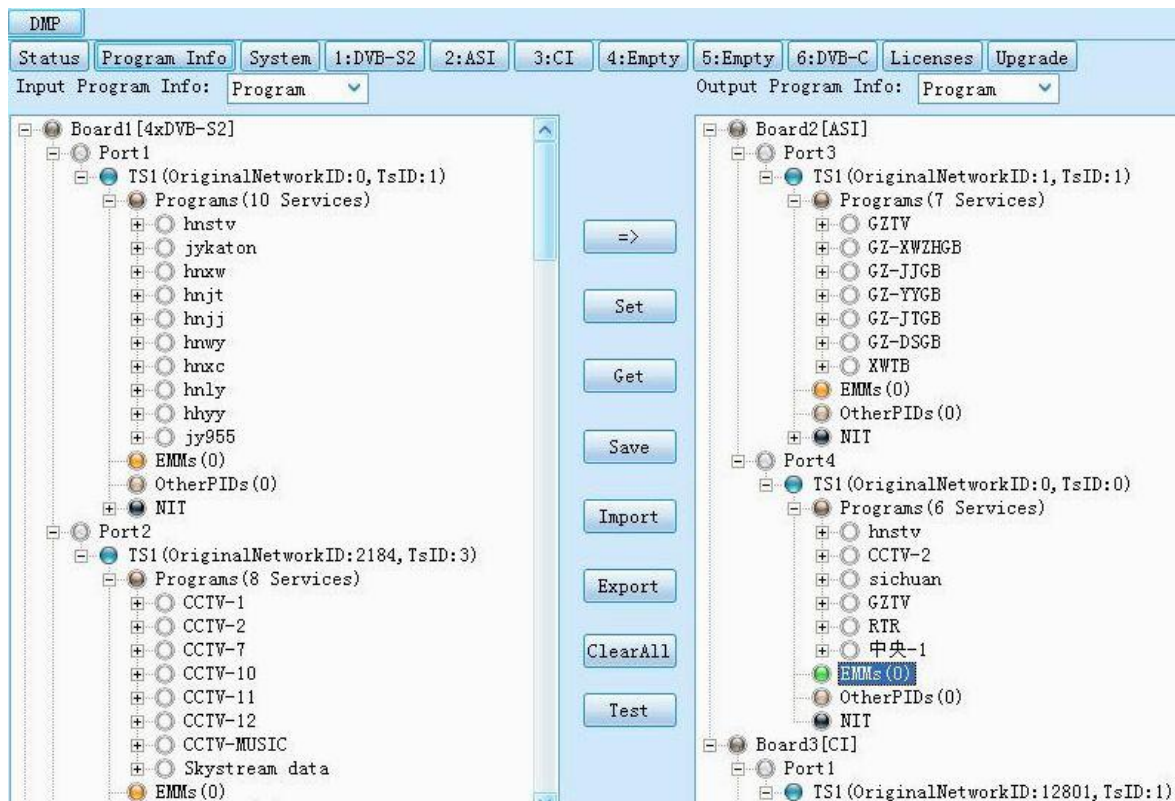


3.1.2.4 Event information window

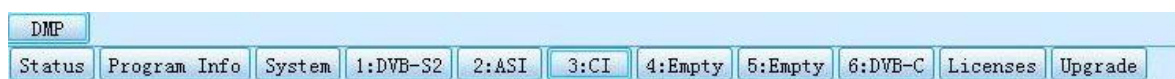
Device Name	Device Type	IP Address	Port	Alarm Information	Alarm Time
DMP@192.168.1.98	DMP	192.168.1.98	30	device online!	2011-5-27 17:35:44

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 Parameters Setting of the Mainboard



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



● Setting and Configuration on the Mainboard

The mainboard configuration includes 4 tabs: “**Status**”, “**Program Info**”, “**System**”, “**License**” and “**Upgrade**”.

- **Status:** by selecting this item the NMS displays the current system operation data status of the DMP. User 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;

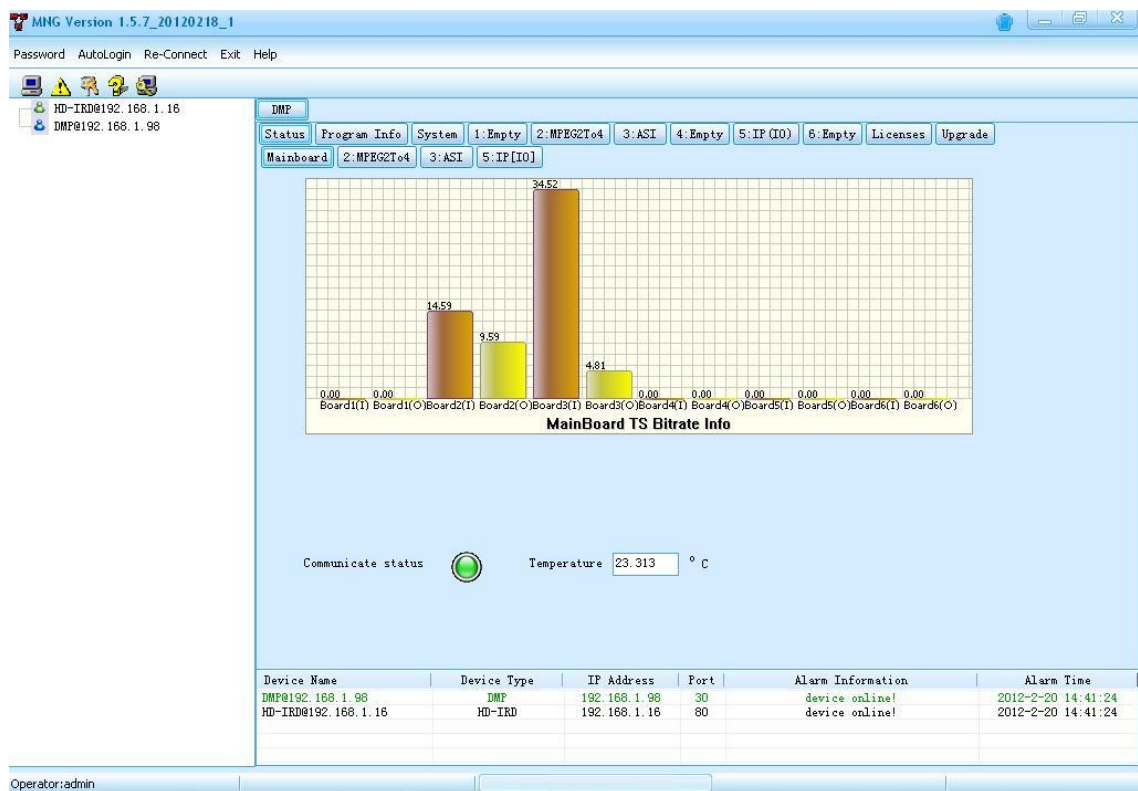
Green: the effective output bit rate;

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

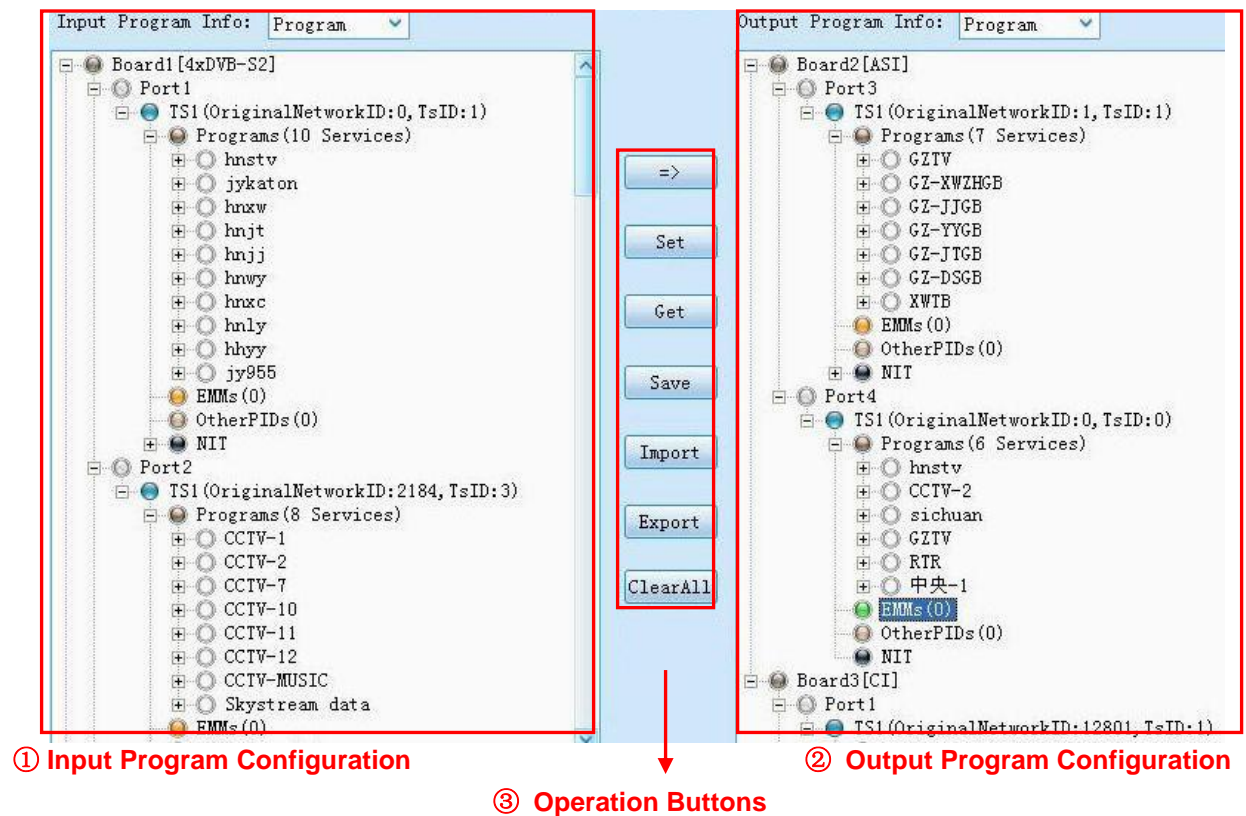
2. Communicate Status indicates the communication status between NMS and DMP900 equipment.

Green: the communication is normal. All the parameters in NMS are updated according to DMP900 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.



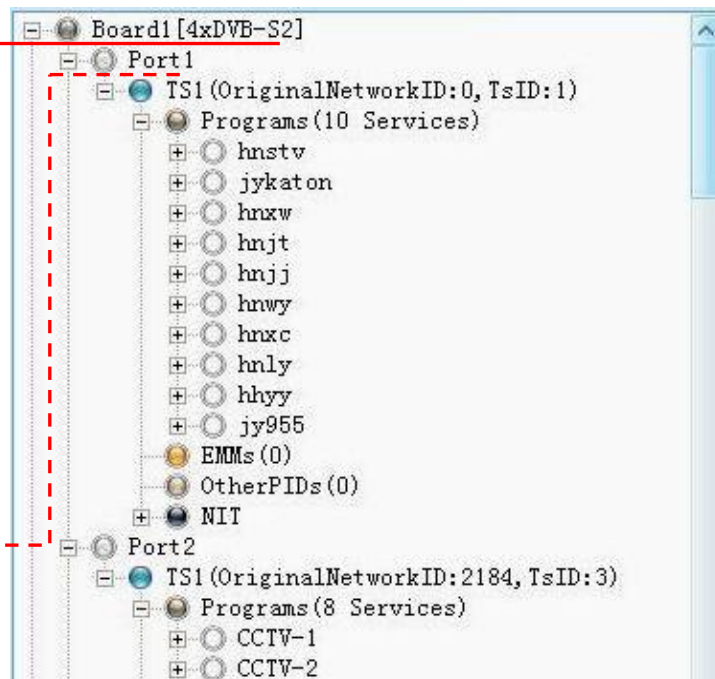
- **Program Info:** this menu is to configure the input and output program of the DMP.



- 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.

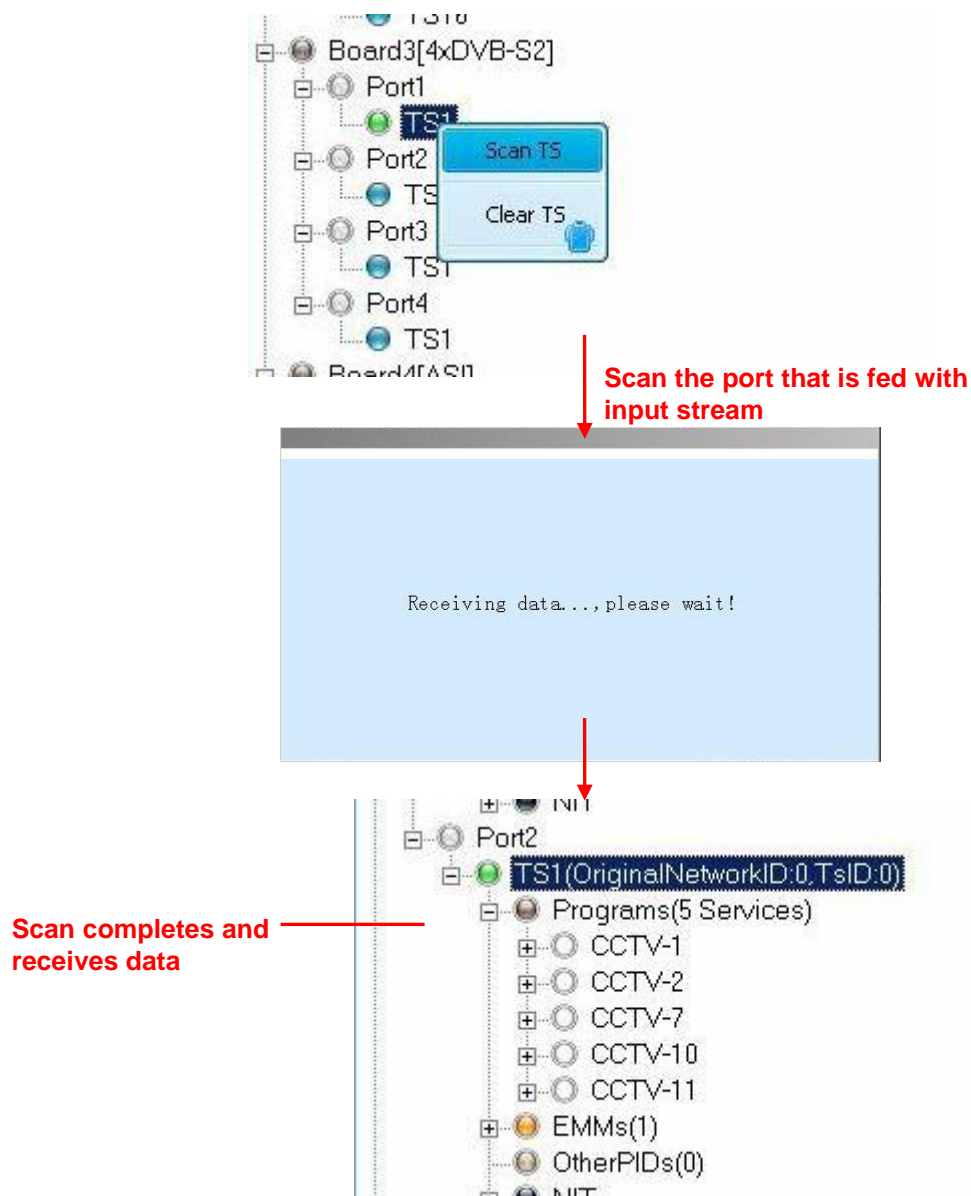
**4XDVB-S2 Module
inserted in Slot 1**

**Port 1 & 2 of
DVB-S2 module are**



- ◆ Board1~6 represents the corresponding slots of the DMP. 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.

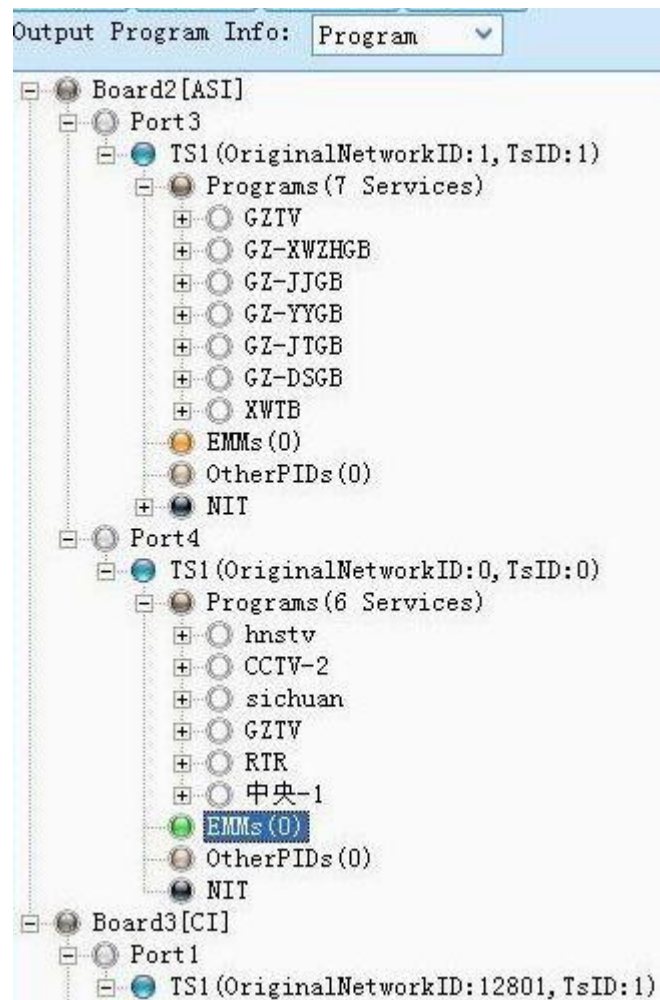
Scan the input TS: after the parameters of the inserted module are properly configured (refer to **Chapter 3.1.4** of this manual), select one port which is connected with input stream, and then click the mouse right button and select “Scan TS” menu. All the input stream of that port will be scanned and displayed.



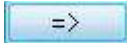
② Output Program Configuration:

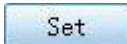
In the “Output Program Configuration” window, it shows the inserted module which can be set to transmit output stream. These kinds of modules include the Gigabit IP module, ASI module, 8-QAM and 4-OFDM module, etc.

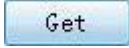
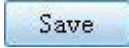
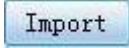
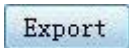
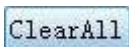
Settings on the Output Program please refer to **Chapter 3.1.5** of this manual.

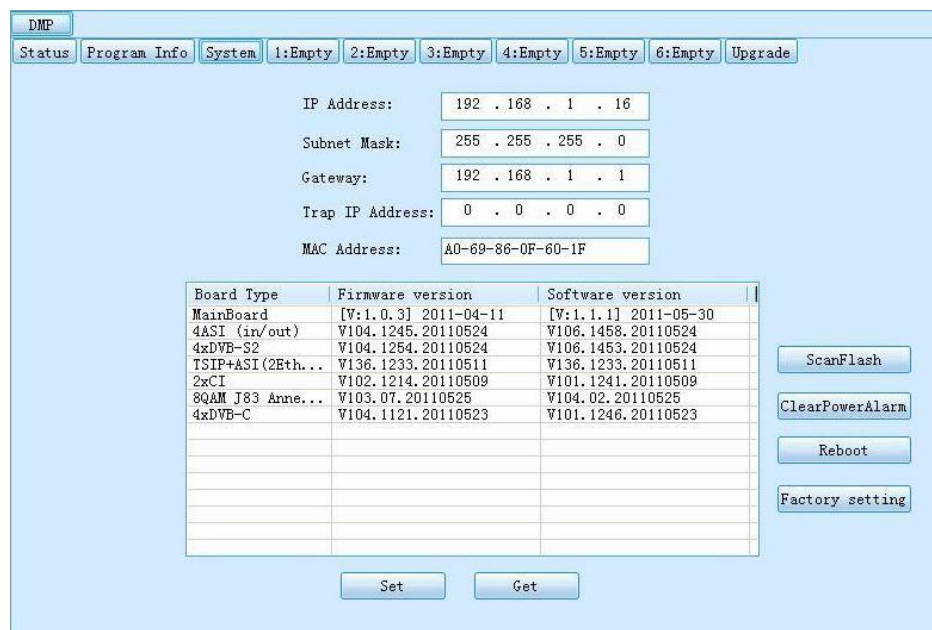


③ **Operation Buttons:** the operation buttons include 4 different function buttons:

◆  Transfer button: to transfer the selected stream/PID from the input program window to the output program window.

◆  Set button: to apply the changes to the NMS. The setting will lose if the NMS is close or DMP is powered off.

- ◆  To obtain/refresh the current parameters status of the DMP mainboard.
 - ◆  To save the configuration. The saved data can be kept after NMS is closed or DMP power off.
 - ◆  Import a configuration file.
 - ◆  Export the current settings of the DMP and save as a configuration file.
 - ◆  To eliminate all the settings in the input and output window.
- **System:** the “System” setting provides the system information of the DMP mainboard and inserted modules, including the mainboard IP address, Subnet Mask, Gateway, Trap IP address, MAC address and hardware/software version of each module.



DMP

Status Program Info **System** 1:Empty 2:Empty 3:Empty 4:Empty 5:Empty 6:Empty Upgrade

IP Address: 192 . 168 . 1 . 16

Subnet Mask: 255 . 255 . 255 . 0

Gateway: 192 . 168 . 1 . 1

Trap IP Address: 0 . 0 . 0 . 0

MAC Address: A0-69-86-0F-60-1F

Board Type	Firmware version	Software version
MainBoard	[V:1.0.3] 2011-04-11	[V:1.1.1] 2011-05-30
4ASI (in/out)	V104.1245.20110524	V106.1458.20110524
4xDVB-S2	V104.1254.20110524	V106.1453.20110524
TSIP+ASI(2Eth...	V136.1233.20110511	V136.1233.20110511
2xCI	V102.1214.20110509	V101.1241.20110509
8QAM J83 Anne...	V103.07.20110525	V104.02.20110525
4xDVB-C	V104.1121.20110523	V101.1246.20110523

ScanFlash

ClearPowerAlarm

Reboot

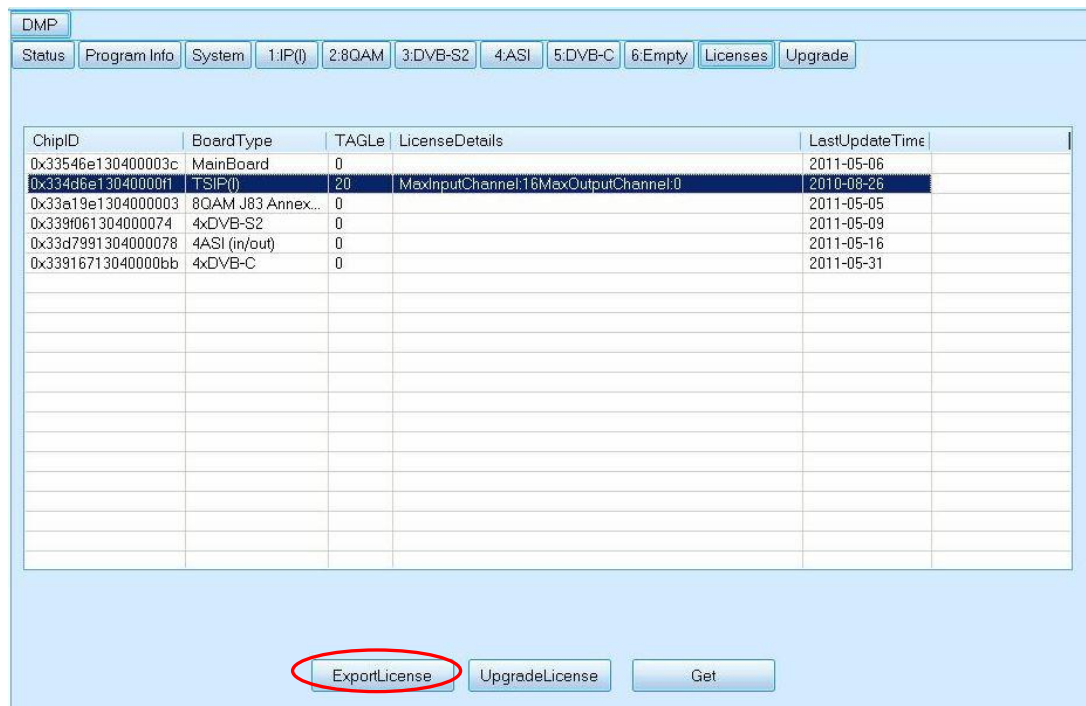
Factory setting

Set Get

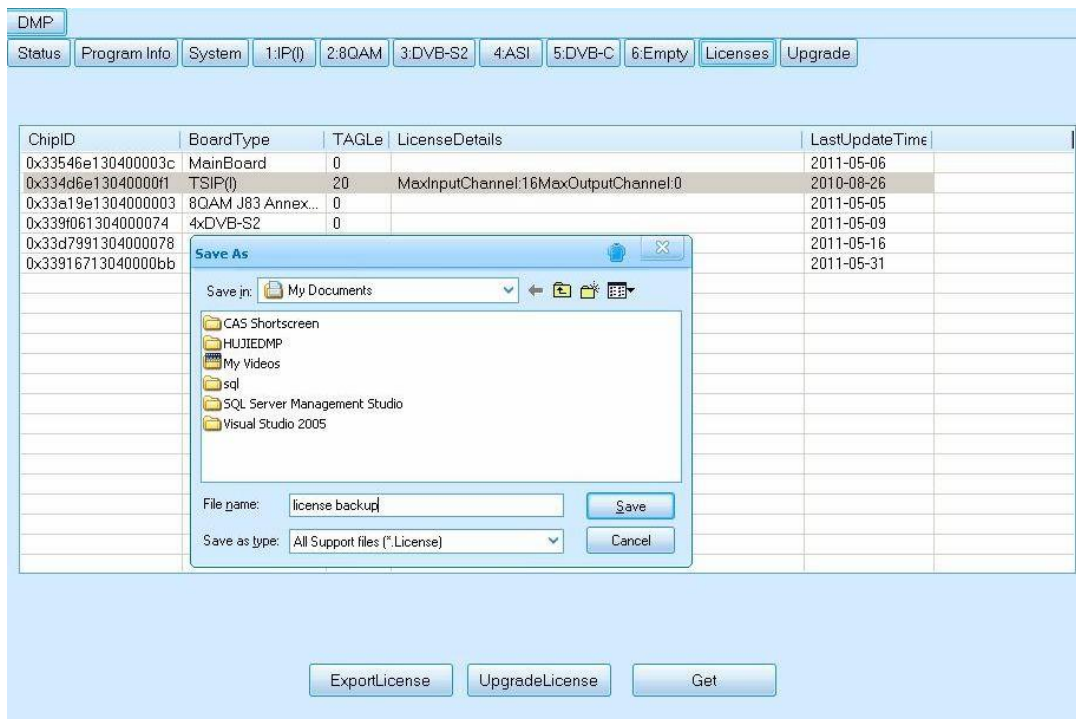
- **License:** Wellav DMP provides very flexible license management on its modules. User can purchase new license to expand the module capability along with the business development, e.g. to update the license of a QAM module to let it support more channel output.

License update procedure:

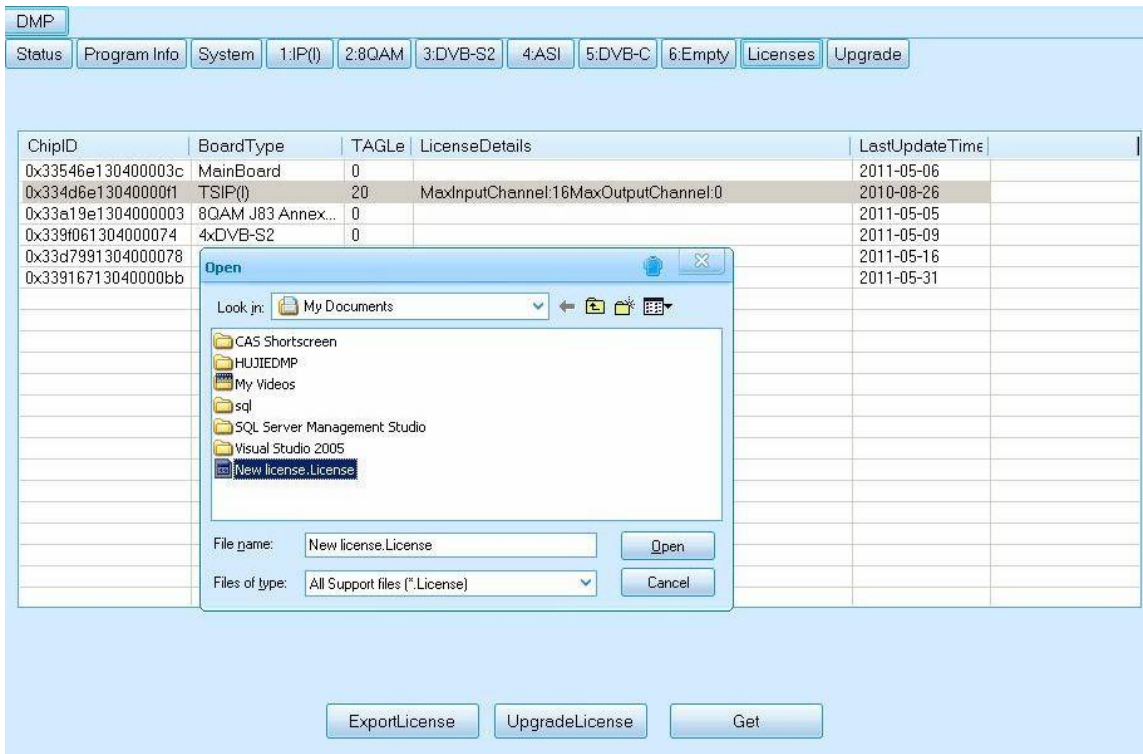
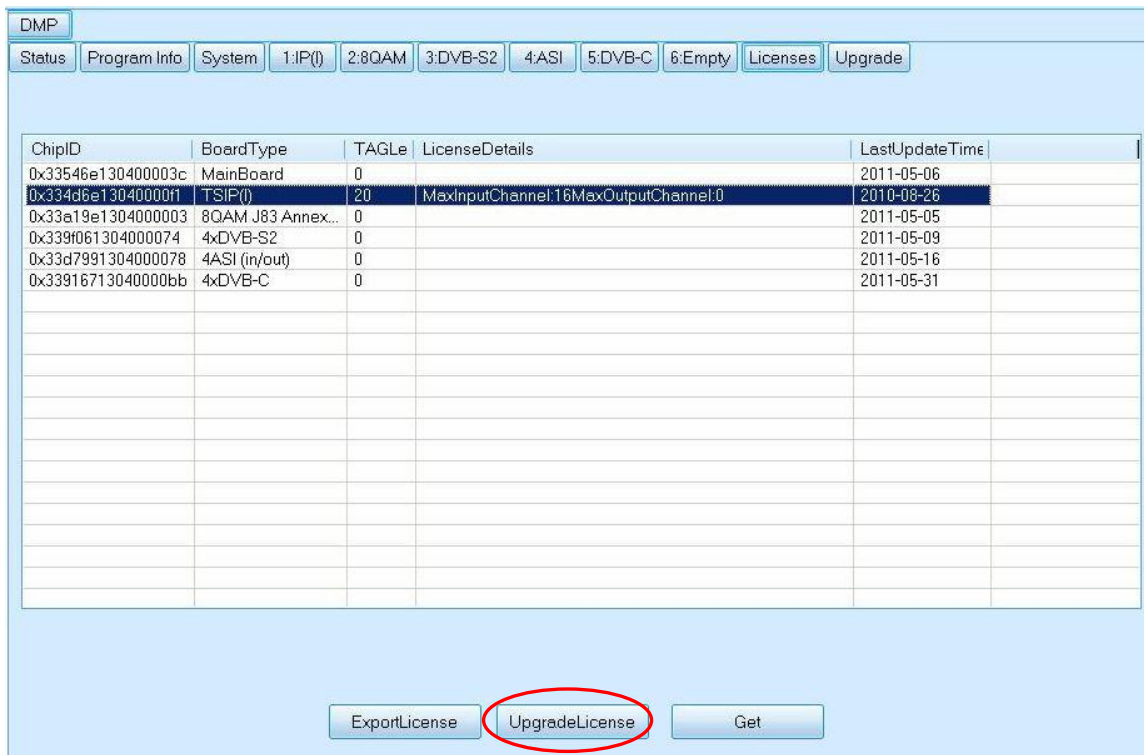
- ◆ Select “License” tab in the NMS. In the “License” main interface, select a module which you want to update the license.



- ◆ 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 Wellav for an updated license.
- ◆ Select “UpgradeLicense” button to import the new license file from Wellav.



- ◆ License update succeeds.

The screenshot shows the 'DMP' software interface with the 'Licenses' tab selected. The interface includes a top navigation bar with buttons for 'Status', 'Program Info', 'System', '1:IP(I)', '2:8QAM', '3:DVB-S2', '4:ASI', '5:DVB-C', '6:Empty', 'Licenses', and 'Upgrade'. Below the navigation bar is a table with the following data:

ChipID	BoardType	TAGLe	LicenseDetails	LastUpdateTime
0x33546e130400003c	MainBoard	0		2011-05-06
0x334d6e13040000f1	TSIP(I)	20	MaxInputChannel:16MaxOutputChannel:0	2010-08-26
0x33a19e1304000003	8QAM J83 Annex...	0		2011-05-05
0x339f061304000074	4xDVB-S2	0		2011-05-09
0x33d7991304000078	4ASI (in/out)	0		2011-05-16
0x33916713040000bb	4xDVB-C	0		2011-05-31

An 'Upgrade' button is located to the right of the 'Licenses' tab. A dialog box titled 'NMS_V1.4.9_SVN1542_20110601' is displayed in the center, showing a yellow warning icon and the message 'Upgrade license succeed!' with an 'OK' button.

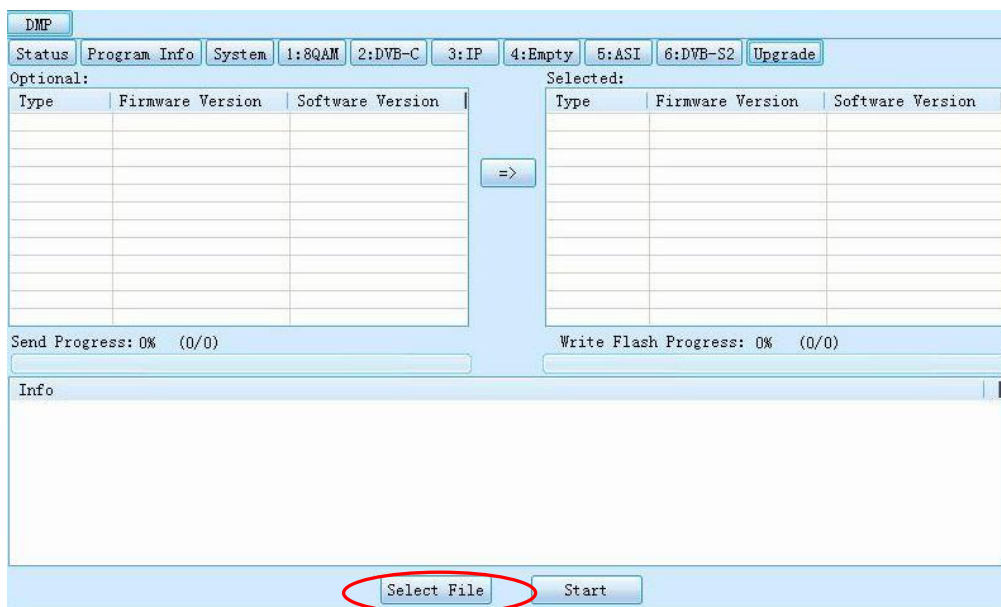
- **Upgrade:** In the “Upgrade” tab, user can upgrade the software version of the DMP mainboard and its module components. The upgrade usually is either to fix any bug or implement new features.



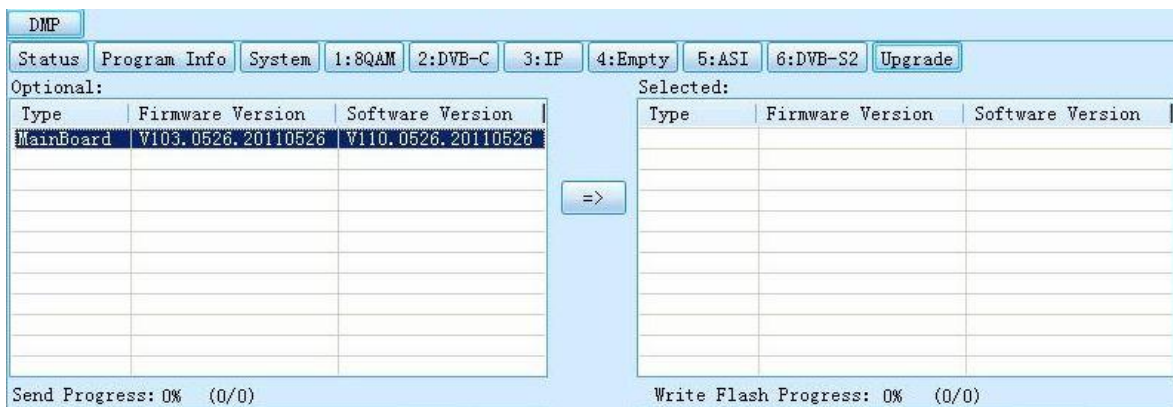
- Improper upgrade operation might damage the DMP. Contact your service provider before the upgrade.
- Make sure the network connection and power supply is in good condition before the upgrade. **NEVER TURN OFF THE DMP, CUT OFF THE POWER SUPPLY OR UNPLUG ANY MODULAR CARD DURING THE UPGRADE.**

Standard upgrade procedures:

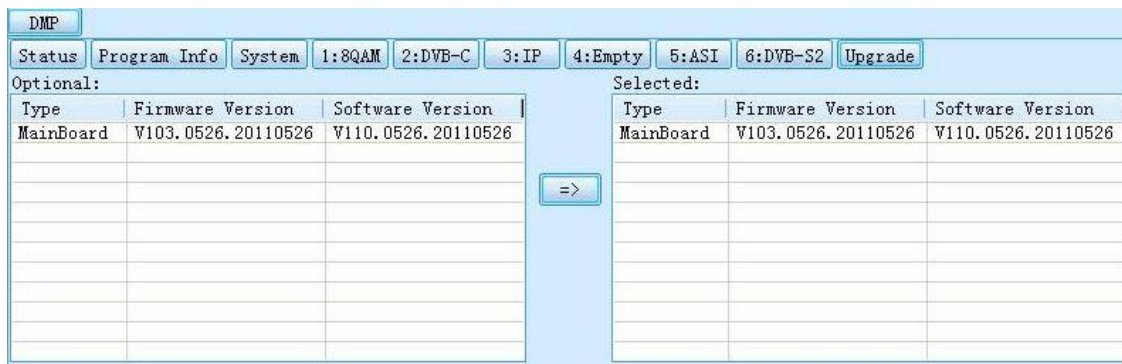
- ◆ Select “Upgrade” tab and open the “Upgrade” interface;



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



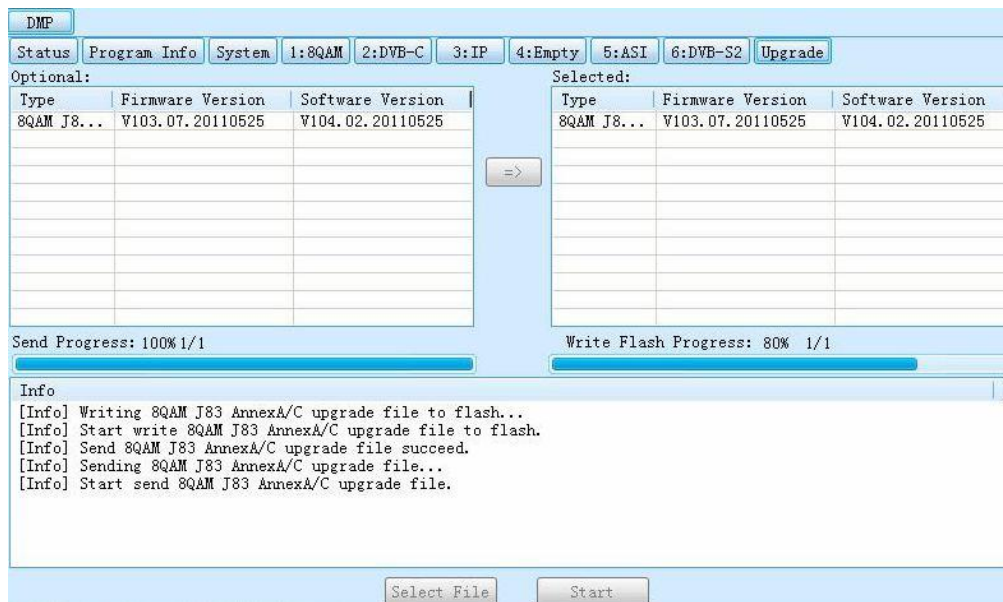
- ◆ Click the => button to transfer the upgrade file from the left “Optional” window to the right “Selected” window.



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.

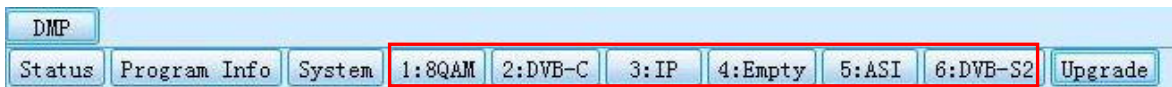
- ◆ Click the “Start” button to start the upgrade. The upgrade process can be monitored in the “Send Progress” bar, “Write Flash Progress” bars and the Info window.



- ◆ A notifying window shows up after successful upgrade.



3.1.4 Parameters Setting of the Sub-module



In accordance with the 6 modular slots of the DMP, there are total 6 module parameters setting tabs in the configuration menu. Each tab represents the corresponding slot of the DMP.

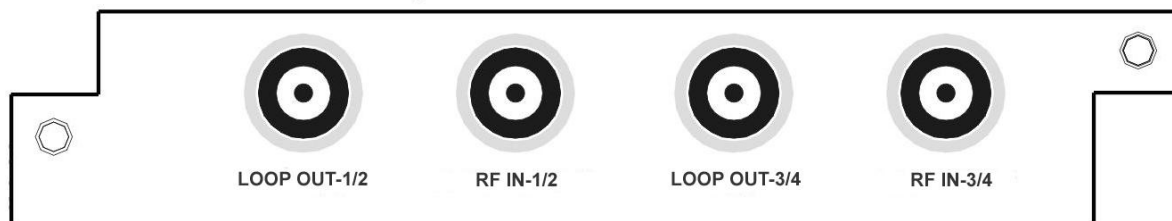
Each tab displays the name of the inserted module. If the slot is empty, then the tab shows "Empty" as well.



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

DVB-C Receiving Module

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



4-DVB-C Receiving Module

The config 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.

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

● Status

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.

Status:						
Port	Status	Size	TotalRate (Mbit)	Effective Rate (Mbit)	SignalStrength	SignalQuality
1	UNLOCK	188				
2	UNLOCK	188				
3	UNLOCK	188				
4	UNLOCK	188				

Introduction to the parameters of “Status”

Parameters	Description
Port	Indicates which input port the channel comes from.
Status	Indicates whether the input signal is LOCK) or UNLOCK.
Size	Indicates the packet size within the input TS stream. (188 or 204)
Total Rate	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps
Effective Rate	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.
Signal Strength	Indicates the strength of input signal
Signal Quality	Indicates the quality of input signal

● Setting

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

in the setting menu.

Setting:			
Port	Frequency(KHz)	Symbol Rate(Ksym/s)	QAM Mode
1	<input type="text" value="227000"/>	<input type="text" value="6875"/>	<input type="text" value="Qam64"/>
2	<input type="text" value="243000"/>	<input type="text" value="6875"/>	<input type="text" value="Qam64"/>
3	<input type="text" value="235000"/>	<input type="text" value="6875"/>	<input type="text" value="Qam64"/>
4	<input type="text" value="227000"/>	<input type="text" value="6875"/>	<input type="text" value="Qam64"/>

The key parameters of a received channel include 'Frequency', 'Symbol Rate', and 'QAM Mode'.

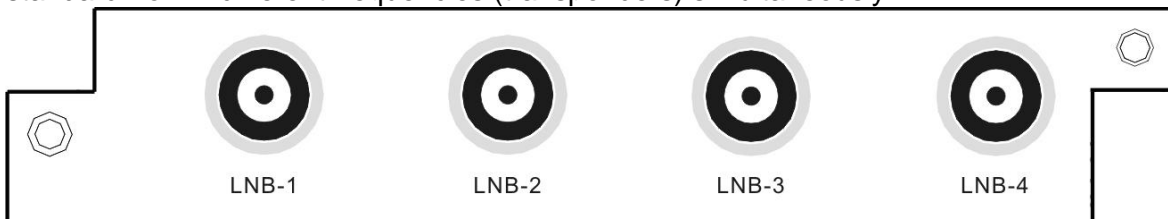
Parameters	Description
Port	Indicates which input port the channel comes from.
Frequency	Frequency on which the channel is transmitted. The unit is in KHz.
Symbol Rate	Symbol rate of the input channel. The unit is in KS/s.
QAM Mode	Select the actual QAM mode of the input channel.

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.

DVB-S/S2 Receiving Module

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



The config 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.

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

DMP

Status Program Info System 1:DVB-C 2:Empty 3:IP 4:8QAM 5:ASI 6:DVB-S2 Upgrade

Status:

Port	Status	Size	TotalRate (Mbit)	Effective Rate (Mbit)	Mode	FECCodeRate	RFLevel	C/N	BER	Constellation	Center Frequency (MHz)
1	UNLOCK	188			DVB S	1/4				QPSK	0.0
2	UNLOCK	188			DVB S	1/4				QPSK	0.0
3	UNLOCK	188			DVB S	1/4				QPSK	0.0
4	UNLOCK	188			DVB S	1/4				QPSK	0.0

Setting:

Port	SatFrequency (MHz)	SymbolRate (KSym/s)	Polarization	BandSelection	Type	LOLowFrequency (MHz)	LOHighFrequency (MHz)	Bias
1	3840.0	27500.000	13V (V)	Auto	Single Band	5150.0	10600.0	Disable
2	3750.0	10490.000	13V (V)	Auto	Single Band	5150.0	10600.0	Disable
3	3750.0	10490.000	13V (V)	Auto	Single Band	5150.0	10600.0	Disable
4	3796.0	6930.000	13V (V)	Auto	Single Band	5150.0	10600.0	Disable

Set Get Reboot Power off Factory setting

● Status

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.

Status:

Port	Status	Size	TotalRate (Mbit)	Effective Rate (Mbit)	Mode	FECCodeRate	RFLevel	C/N	BER	Constellation	Center Frequency (MHz)
1	UNLOCK	188			DVB S	1/4				QPSK	0.0
2	UNLOCK	188			DVB S	1/4				QPSK	0.0
3	UNLOCK	188			DVB S	1/4				QPSK	0.0
4	UNLOCK	188			DVB S	1/4				QPSK	0.0

Introduction to the parameters of "Status"

Parameters	Description
Port	Indicates which input port the channel comes from.
Status	Indicates whether the input signal is LOCK) or UNLOCK.
Size	Indicates the packet size within the input TS stream. (188 or 204)
Total Rate	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps
Effective Rate	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.
Mode	Indicates which standard the input signal is, DVB-S or DVB-S2.
FEC CodeRate	Indicates the code rate which is used in FEC.
C/N	Indicates the real-time carrier to noise ratio.
BER	Indicates the real-time bit error rate.

Constellation	Indicates the constellation used in the input signal.
Center Frequency	Indicates the center frequency from the transponder. The unit is MHz.

● Setting

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

Setting:								
Port	SatFrequency (MHz)	SymbolRate (KSym/s)	Polarization	BandSelection	Type	LOLowFrequency (MHz)	LOHighFrequency (MHz)	Bias
1	3840.0	27500.000	13V (V)	Auto	Single Band	5150.0	10600.0	Enable
2	3750.0	10490.000	13V (V)	Auto	Single Band	5150.0	10600.0	Disable
3	3786.0	5440.000	13V (V)	Auto	Single Band	5150.0	10600.0	Enable
4	3796.0	6930.000	13V (V)	Auto	Single Band	5150.0	10600.0	Disable

Parameters of the 'Setting' menu:

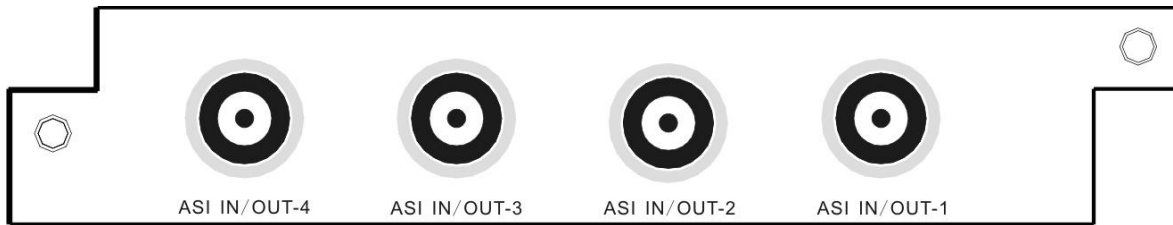
Parameters	Description
Port	Indicates which input port the channel comes from.
SatFrequency	Input the frequency of transponder which you want to receive programs from. The unit is MHz.
SymbolRate	Input the symbol rate of the transponder. The unit is KS/s.
Polarization	Select the voltage provided to LNB (13V for vertical or 18V for Horizontal).
BandSelection	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.
LOLowfrequency	The low frequency of LNB. The unit is MHz.
LOHighFrequency	The high frequency of LNB. The unit is MHz.
Bias	Enable or disenable the polarization setting.

Note:

1. Parameters 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.

DVB-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.



● Settings in the ASI module NMS

DMP

Status Program Info System 1:DVB-C 2:Empty 3:IP 4:8QAM 5:ASI 6:DVB-S2 Upgrade

Port	Type	PacketSize	Output			Input			
			Mode	ConstantRate (Mbit)	MaxRate (Mbit)	MinRate (Mbit)	Signal	TotalRate (Mbit)	EffectiveRate (Mbit)
1	Input	188	CBR	34.037	0.000	0.000	UNLOCK	0.000	0.000
2	Input	188	CBR	34.037	0.000	0.000	UNLOCK	0.000	0.000
3	Output	188	CBR	50.000	0.000	0.000	UNLOCK	0.000	0.000
4	Output	188	CBR	45.000	0.000	0.000	LOCK	0.000	0.000

Set Get

Power off

Reboot

Factory setting

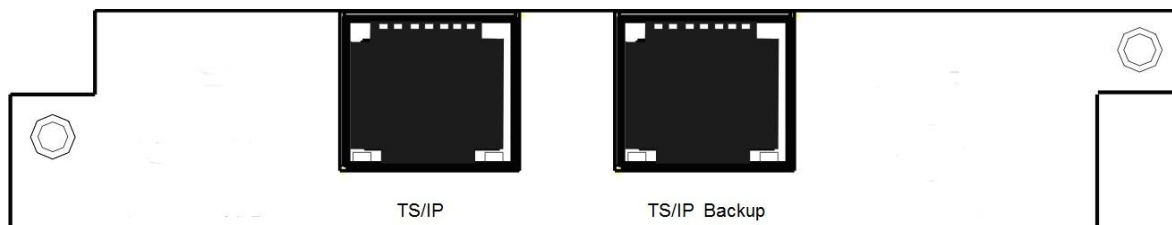
The key parameters in this NMS interface include:

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 in not editable status.

Gigabit IP I/O Module

The IP module is equipped with two RJ45 connectors. One is for the IP stream input/output; the other is for stream output only, it's as the backup output when you set 'TS/IP' 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 DMP NMS operation interface, the IP module setting interface will be displayed.



The settings on the IP module include the settings on the 'Receiver', 'Transmitter' and 'System'.

● 'System' Setting of the IP I/O Module

The screenshot shows the 'System' setting interface for the IP I/O module. The 'System' sub-tab is selected. The interface displays the following settings:

- Ethernet:**
 - IP Address: 192 . 168 . 1 . 34
 - Subnet Mask: 255 . 255 . 255 . 0
 - Gateway: 192 . 168 . 1 . 1
 - MAC Address: A0-69-86-00-82-10
 - SpeedMode: 100M
 - IGMP Version: IGMP V2

At the bottom of the interface, there are buttons for 'Set', 'Get', 'Reboot', 'Power off', and 'Factory setting'.

In the 'System' 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 basic unit of DMP that should be in the same IP section with IP address of DMP.
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.

● 'Receiver' Setting

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

The screenshot displays the 'Receiver' setting menu within the DMP interface. The menu is organized into several sections:

- Channel Select:** A dropdown menu set to 'Channel1'.
- Enable:** A dropdown menu set to 'ON'.
- Channel Configuration:** A section containing several parameters:
 - EnableChannel:** A dropdown menu set to 'OFF'.
 - SourceIPAddress:** A text input field containing '227 . 40 . 50 . 60'.
 - SourcePort:** A text input field containing '1234'.
 - Protocal:** A dropdown menu set to 'UDP'.
 - ColPortMatching:** A dropdown menu set to 'Disable'.
 - RowPortMatching:** A dropdown menu set to 'Disable'.
- FEC Parameter:** A section containing several parameters:
 - ColFECSeen:** A dropdown menu set to '0'.
 - RowFECSeen:** A dropdown menu set to '0'.
 - FECL:** A text input field containing '0'.
 - FECD:** A text input field containing '0'.
- Bitrate Parameter:** A section containing two parameters:
 - TotalRate (Mbit):** A text input field containing '0.000'.
 - EffectiveRate (Mbit):** A text input field containing '0.000'.

At the bottom of the menu, there are two buttons: 'Set' and 'Get'.

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.

● 'Transmitter' Setting

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

The screenshot displays the 'DMP' (Digital Media Platform) configuration window, specifically the 'Transmitter' tab. The interface includes a top navigation bar with tabs for 'Status', 'Program Info', 'System', and 'Upgrade'. Below this, there are sub-tabs for 'Receiver', 'Transmitter', and 'System'. The 'Transmitter' tab is active, showing a 'ChannelSelect' dropdown set to 'Channel1' and an 'Enable' dropdown set to 'ON'. The main configuration area is divided into two columns. The left column contains settings for 'Channel Configuration' (EnableChannel: Disable, SourcePort: 10000, DestIPAddress: 227.10.20.60, DestPort: 1234, Protocol: UDP, EncapNumTSPackets: 7, TSPacketSize: 188, TypeOfService: Normal, Time To Live: 8, EnableVLAN: Disable, VLAN ID: 1). The right column contains settings for 'FEC Parameter' (EnableFEC: Disable, ColFECOnly: Yes, InterleaveMode: Annex_a, FECL: 4, FECD: 5) and 'Bitrate Parameter' (Mode: CBR, ConstantRate(Mbit): 0.000, MaxRate(Mbit): 0.000, MinRate(Mbit): 0.000). At the bottom, there are 'Set' and 'Get' buttons.

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

8-QAM/4-COFDM Module

The 8-QAM/4-COFDM module can output up to 8 separate RF QAM frequencies signals with its physical output interface. With adopting corresponding license key, the module can turn to a 4-COFDM module without changing the hardware.



8-QAM/4-COFDM module NMS configuration interface:

DMP

Status Program Info System 1:DVB-C 2:Empty 3:IP 4:8QAM 5:ASI 6:DVB-S2 Upgrade

Bandwidth: 6M RF Level: 95 dBu

SymbolRate(Channel 1-4): 5217 Kbaud SymbolRate(Channel 5-8): 5217 Kbaud

Port	Enable	RF Frequency (KHz)	Mode	MaxRate (Mbit)	ActualRate (Mbit)
1	Enable	2	QAM256	38.463	0.000
2	Enable	6002	QAM64	28.847	0.000
3	Enable	12002	QAM64	28.847	0.000
4	Enable	18002	QAM64	28.847	0.000
5	Enable	24002	QAM64	28.847	0.000
6	Enable	30002	QAM64	28.847	0.000
7	Enable	36002	QAM64	28.847	0.000
8	Enable	42002	QAM16	19.231	0.000

Set Get Reboot Power off Factory setting

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 90dBu~115dBu
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
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.
MaxRate	The maxrate is automatically calculated by the NMS according to the QAM mode the user selects. The actualrate set by the user shall not exceed the maxrate to ensure best signal quality.
ActualRate	The bitrate user set for the output. It is set by the user in other related sub-module such as the encoding module.

CI Descrambling Module

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

CAM	Enable	TSClock	Mode	ConstantRate (Mbit)
1	Enable	9MHz	CBR	50.000
2	Enable	9MHz	CBR	50.000

Buttons: Set, Get, Power off, Factory setting, Reboot

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. And usually a standard CAM can support Max. 72Mbit data processing unless it has

	instruction for higher bitrate support. Selecting a wrong CAM output bitrate will cause video mosaic issue because the actual processed data exceeds the CAM Max. handling capability.
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.

2-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.

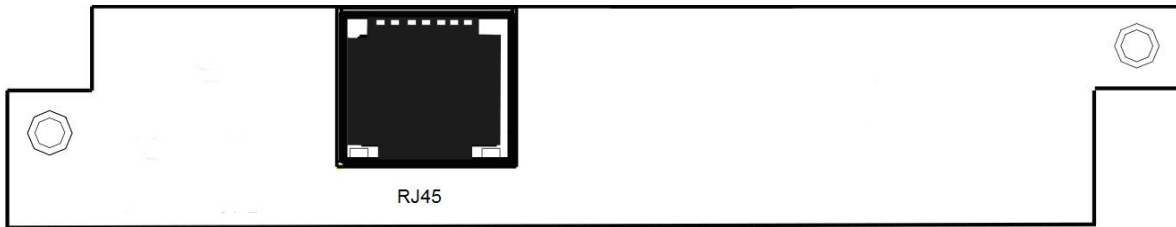


- **Settings in the Encoder module NMS**

Introduction to the parameters in this NMS:

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 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.
Encode Mode	Select CBR or VBR for the encoding mode.
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.
Program Number	To edit the program number.
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.

1GB Scrambling Module



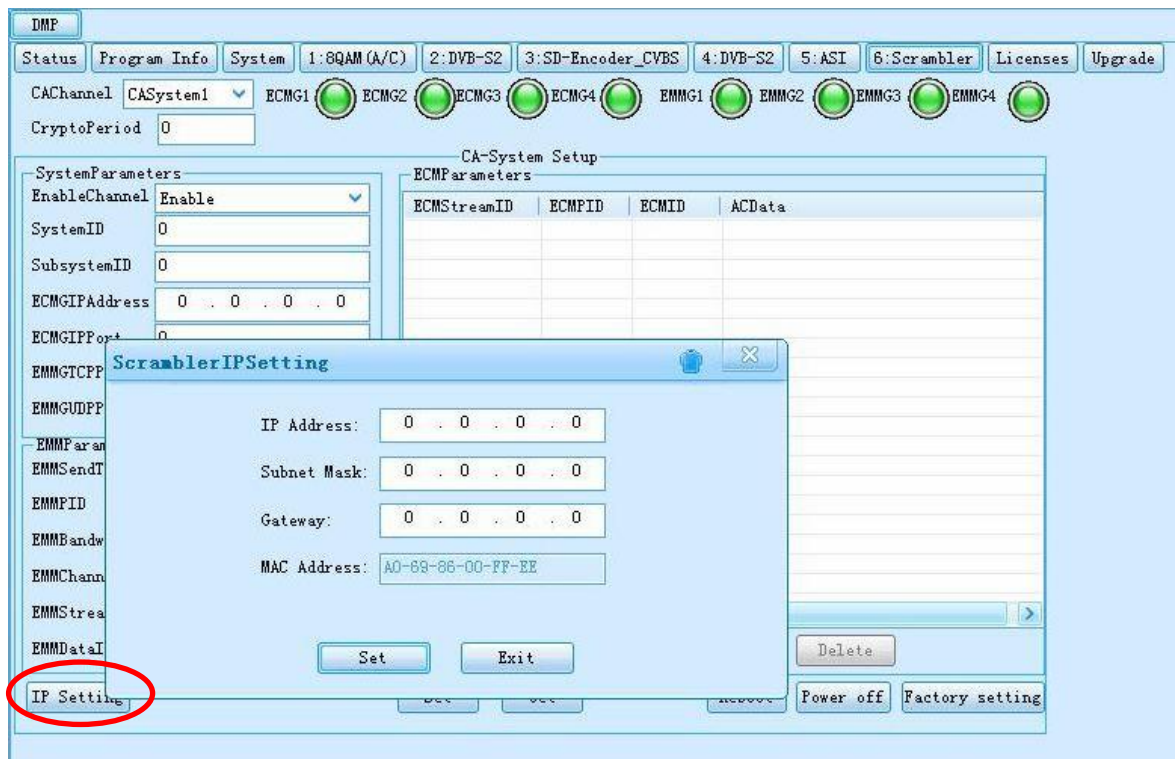
Insert the scrambler module to a DMP empty slot, and select the “Scrambler” tab on the NMS to enter the scrambler configuration window:

CACchannel: the scrambler module supports up to 4 CAS Simulcrypt. User can configure different settings for each CAS system by select different “CACchannel” in this item.

[illegible]

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 a IP address for the scrambler module per the network environment.



Other key parameters settings on the scrambler module:

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

After inputting the correct parameters, the scrambler module shall connect successfully with the CAS server. Next is to add the AC Data for each program of a TS stream.

- Click "Add" button on the NMS

The screenshot shows the 'CA-System Setup' interface. At the top, there are tabs for 'DMP', 'Status', 'Program Info', 'System', '1:8QAM (A/C)', '2:DVB-S2', '3:SD-Encoder_CVBS', '4:DVB-S2', '5:ASI', '6:Scrambler', 'Licenses', and 'Upgrade'. Below these, there are buttons for 'CACHannel' (set to 'CASystem1'), 'CASystem1', 'ECMG1', 'ECMG2', 'ECMG3', 'ECMG4', 'EMMG1', 'EMMG2', 'EMMG3', and 'EMMG4'. A 'CryptoPeriod' field is set to '0'. The main area is divided into three sections: 'SystemParameters' on the left, 'ECMPParameters' in the center, and 'EMMPParameters' on the right. The 'SystemParameters' section includes fields for 'EnableChannel' (set to 'Enable'), 'SystemID' (0), 'SubsystemID' (0), 'ECMGIPAddress' (0.0.0.0), 'ECMGIPPort' (0), 'EMMGTCPPort' (0), and 'EMMGUDPPort' (0). The 'ECMPParameters' section is a table with columns 'ECMStreamID', 'ECMPID', 'ECMID', and 'ACData'. The 'EMMPParameters' section includes fields for 'EMMSendType' (set to 'TCP'), 'EMMPID' (0), 'EMMBandwidth' (0), 'EMMChannelID' (0), 'EMMStreamID' (0), and 'EMMDataID' (0). At the bottom, there are buttons for 'IP Setting', 'Set', 'Get', 'Add', 'Edit', 'Delete', 'Reboot', 'Power off', and 'Factory setting'. The 'Add' button is highlighted with a red circle.

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

The screenshot displays the DMP configuration interface. At the top, there are tabs for 'DMP', 'Status', 'Program Info', 'System', '1: DVB-S2', '2: DVB-S2', '3: ASI', '4: 8QAM (A/C)', '5: Empty', '6: Scrambler', 'Licenses', and 'Upgrade'. The 'System' tab is selected, showing 'CACHannel' set to 'CASystem1' and 'CryptoPeriod' set to '25'. Below these are buttons for 'ECMG1' through 'ECMG4' and 'EMMG1' through 'EMMG4', each with a green indicator light.

The main configuration area is divided into 'SystemParameters' and 'CA-System Setup'. Under 'SystemParameters', 'EnableChannel' is set to 'Enable' and 'SystemID' is '5218'. Under 'CA-System Setup', there is a table of 'ECMP parameters'.

ECMStreamID	ECMPID	ECMID	ACData
1	1	4000	0001000100014000
			1000100024001

A modal window titled 'Add ECM' is open, allowing the user to add a new ECM entry. It contains the following fields:

- ECMStreamID: 3
- ECMID: 3
- ECMPID: 4002
- ACData (Hex): (empty text area)

At the bottom of the modal window are 'Add' and 'Cancel' buttons. The main interface also has 'IP Setting', 'Set', 'Get', 'Reboot', 'Power off', and 'Factory setting' buttons at the bottom.

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

CA-System Setup

SystemParameters

EnableChannel: Enable

SystemID: 5218

SubsystemID: 0

ECMGIPAddress: 192.168.1.63

ECMGIPPort: 5000

EMMGTCPPort: 6000

EMMGUDPPort: 7000

EMMParameters

EMMSendType: TCP

EMMPID: 4097

EMMBandwidth: 200

EMMChannelID: 1

EMMStreamID: 1

EMMDataID: 1

ECMPParameters

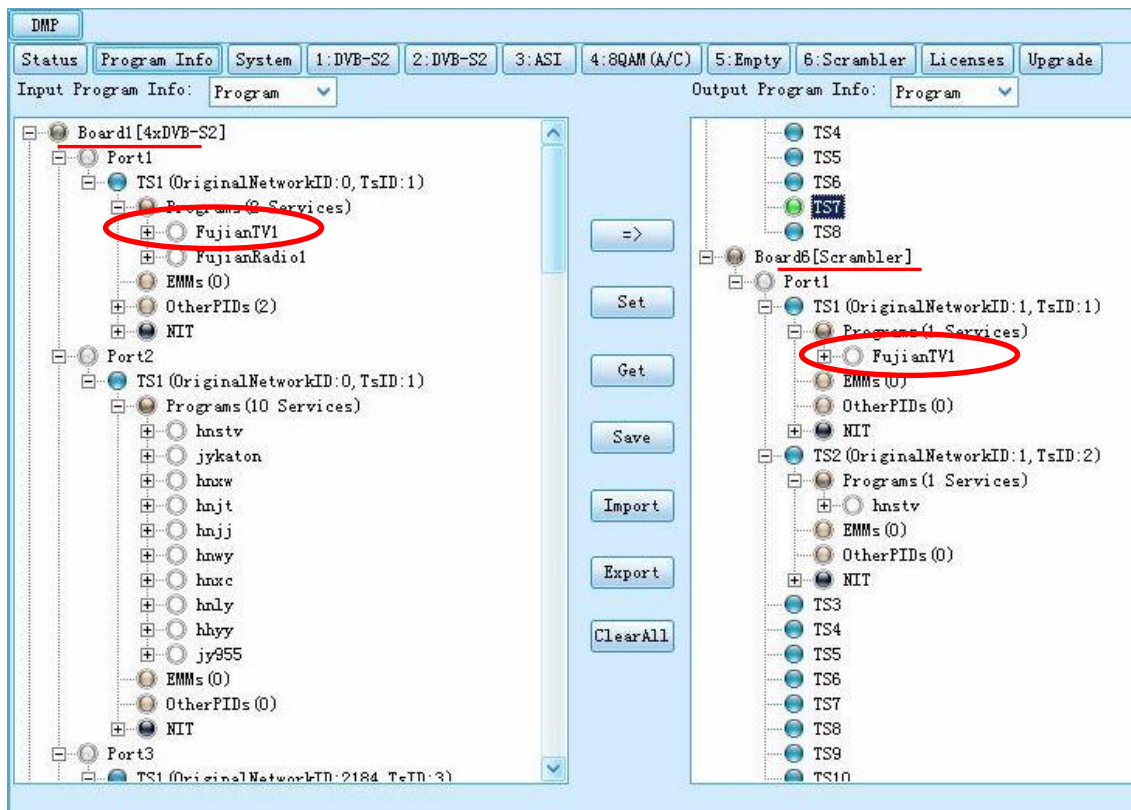
ECMPStreamID	ECMPID	ECMID	ACData
1	1	4000	0001000100014000
2	2	4001	0001000100024001

Buttons: Add, Edit, Delete, Set (circled), Get, Reboot, Power off, Factory setting

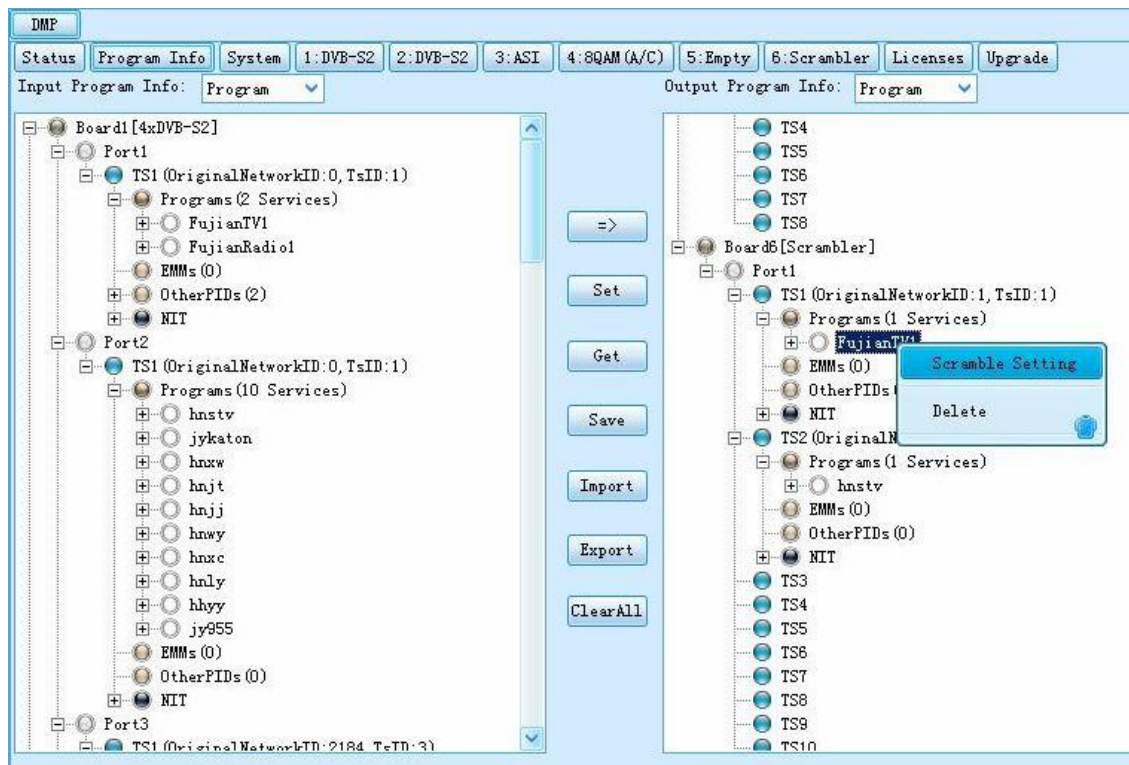
After configuring on the scrambler module setting window, user shall operate in the “Program Info” tab to specify which program to be scrambled and transfer to the transmission module (QAM/IP/ASI) for output. Operation steps are as following:

- 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)

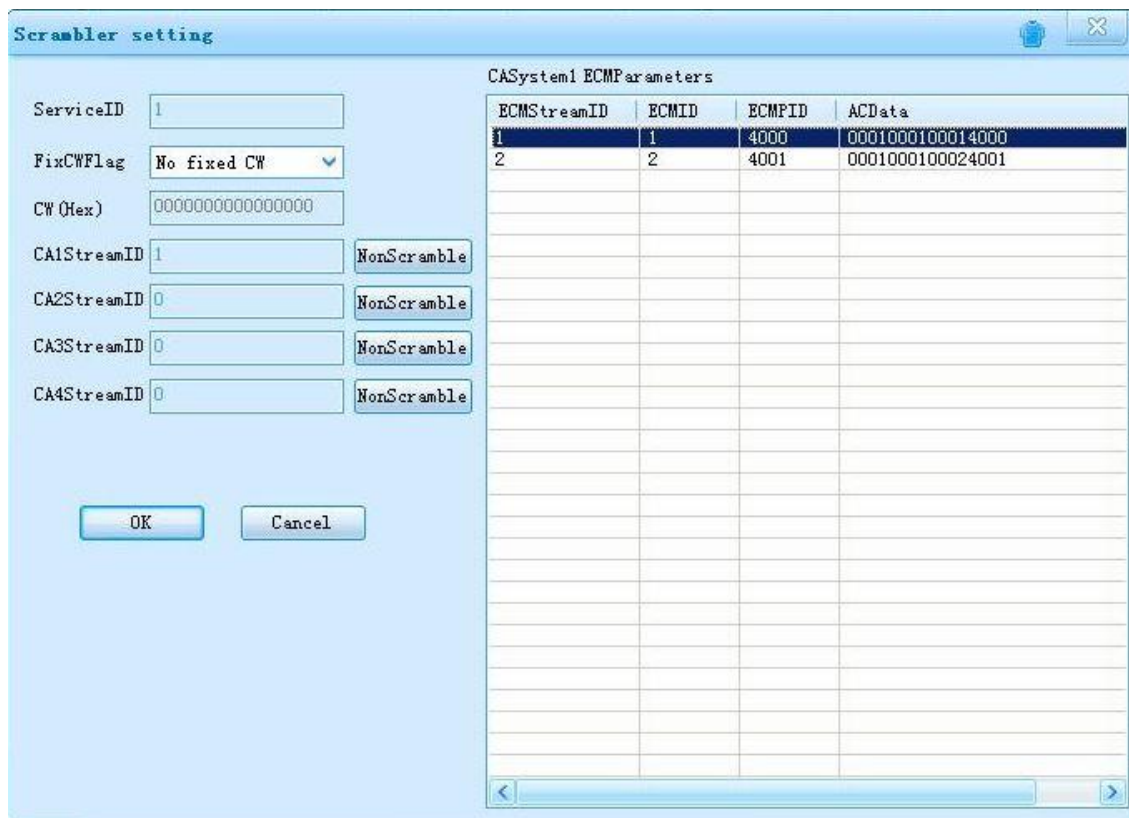
In below example picture, program “FujianTV1” is selected and is transferred from DVB-S2 module in “Input Program Info” window to scrambler module in “Output Program Info” window.



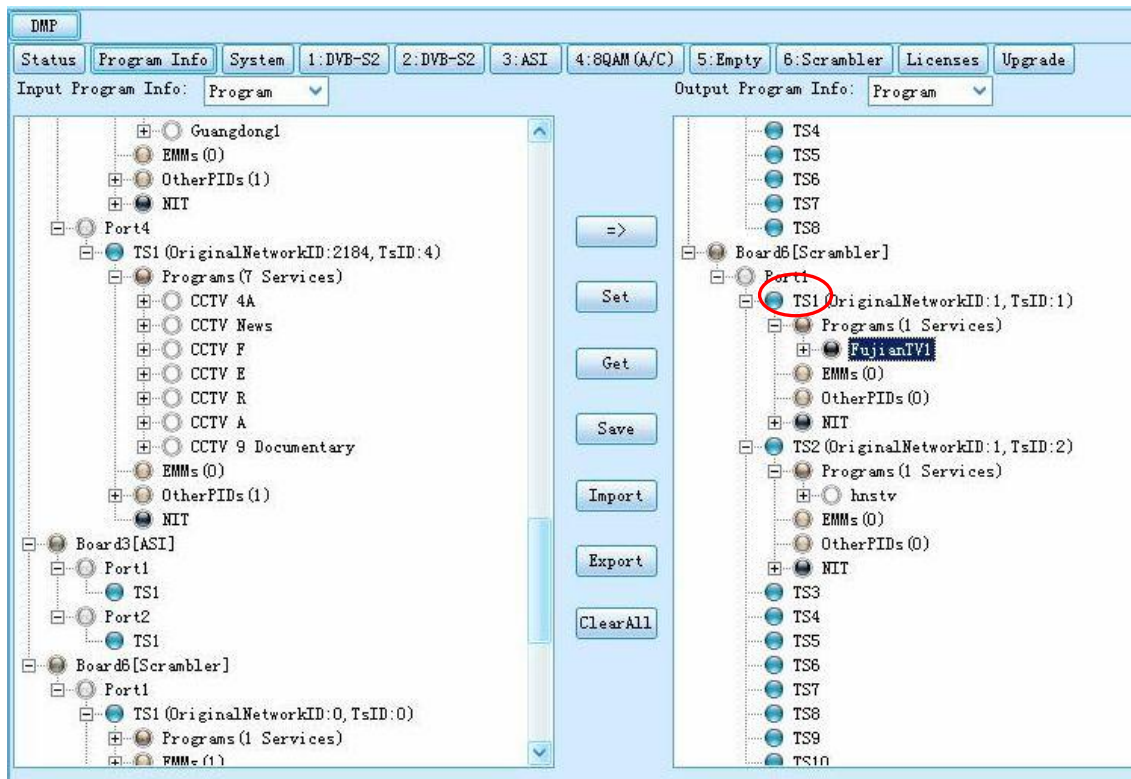
- Edit the Network ID, TsID for the selected program, same as the setting in the CAS server for that program. Select the program name and click mouse right button to select “Scramble Setting”.



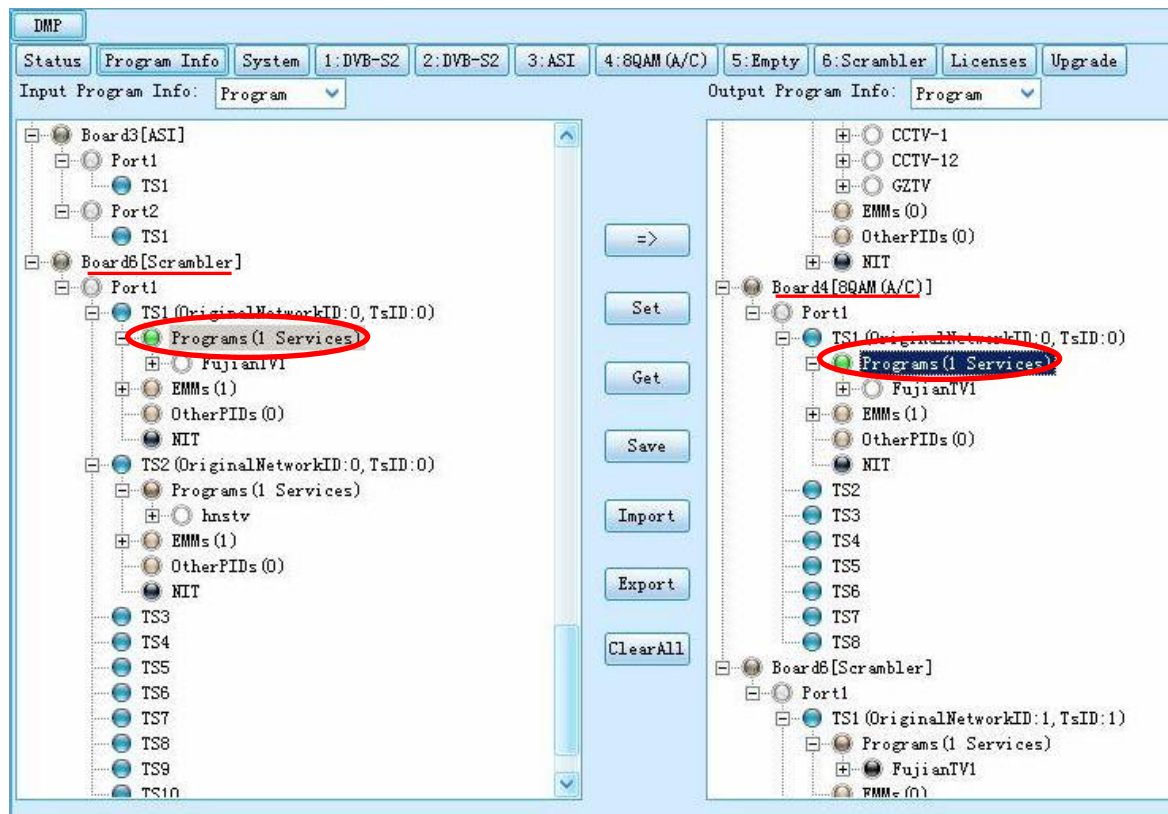
- In the “Scrambler Setting” window, select an AC Data we previously input and click “OK” to bond with the selected program.



- 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 scramble in the Scrambler module in "Input Program Info" window, and transfer it to any transmission module. The output program is already scrambled.



TC2 & TC4 Transcoder Module

Introduction to the parameters on this module NMS:

Parameters	Description
Channel	<ul style="list-style-type: none"> 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	<p>The transcoder module type is automatically recognized by the software and not selectable.</p> <p>->H.264: Means the inserted module is a TC4 module (MPEG-2 to MPEG-4/H.264);</p> <p>->MPEG-2: represents the inserted module is a TC2 module</p>

	(MPEG-4 to MPEG-2)
Video Encode Mode (TC4 only)	<ul style="list-style-type: none"> ● CBR: Constant Bitrate. The bitrate is fixed at the bitrate set in the “Video Encode Rate” option. ● VBR: Variable Bitrate. The bitrate is floating between the Maximum and Minimum bitrate range defined by the Max. and Min. Encode rate options.
Audio Mode (TC2 only)	Select different audio encoding mode for the program.
Video Encode Rate	Set the encoded video bitrate, range from 1.0 to 20.0Mbps
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 Standard (TC2 only)	Select from PAL or NTSC.
Video Max. Encode Rate	<p>This parameter takes effect only when the Video Encode Mode is set to “VBR” on TC4 module.</p> <p>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.</p>
Video Min. Encode Rate	<p>This parameter takes effect only when the Video Encode Mode is set to “VBR” on TC4 module.</p> <p>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.</p>
GOP Size (TC2 only)	Base on the GOP structure definition and bandwidth to input an appropriate parameter.
GOP Structure	Base on the bandwidth and requirement on the video quality to select the appropriate GOP structure.
Aspect Ration Conversion	Options are available for 4:3 and 16:9 aspect ratio.
Output Video Resolution (TC4 only)	<p>A list of video resolution can be selected for output video:</p> <p>1920x1080 (60p/59.94p/30p/24p/60i/59.94i/50i); 1280x720 (60p/59.94p/50p); 720x480 (60i); 720x576 (50i)</p>

DMP

Status Program Info System 1:Transcoder 2:Transcoder 3:Transcoder 4:DVB-S2 5:IP (IO) 6:ASI_DDR Licenses Upgrade Log

Channel Channel1

TranscoderType: ->MPEG2

Audio Mode: Stereo VideoStandard: NTSC

Video Encode Rate: 4000 GOP Size: 15

Audio Encode Rate: 128K GOP Struct: IBBPBBPBB

Encode Rate(Total): 4128 Aspect ratio Conversion: Automatic

Volume (0-49): 40

UpgradeFirmware Reboot

Set Get Import Export PowerOff FactorySetting

Parameters setting page of NMS (TC2)

DMP

Status Program Info System 1:Transcoder 2:Transcoder 3:Transcoder 4:DVB-S2 5:IP (IO) 6:ASI_DDR Licenses Upgrade Log

Channel Channel1

TranscoderType: ->H264

Video Encoder Mode: CBR Video Max Encode Rate: 6000

Video Encode Rate: VBR Video Min Encode Rate: 0

Audio Encode Rate: 128K GOP Struct: IBBPBBPBB

Encode Rate(Total): 4128 Aspect ratio Conversion: Automatic

Volume (0-49): 40 OutputVideoResolution: 720x480_60i

UpgradeFirmware Reboot

Set Get Import Export PowerOff FactorySetting

Parameters setting page of NMS (TC4)

3.1.5 Program Input and Output Operation

Note: the proper functionality of the DMP 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 DMP.

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

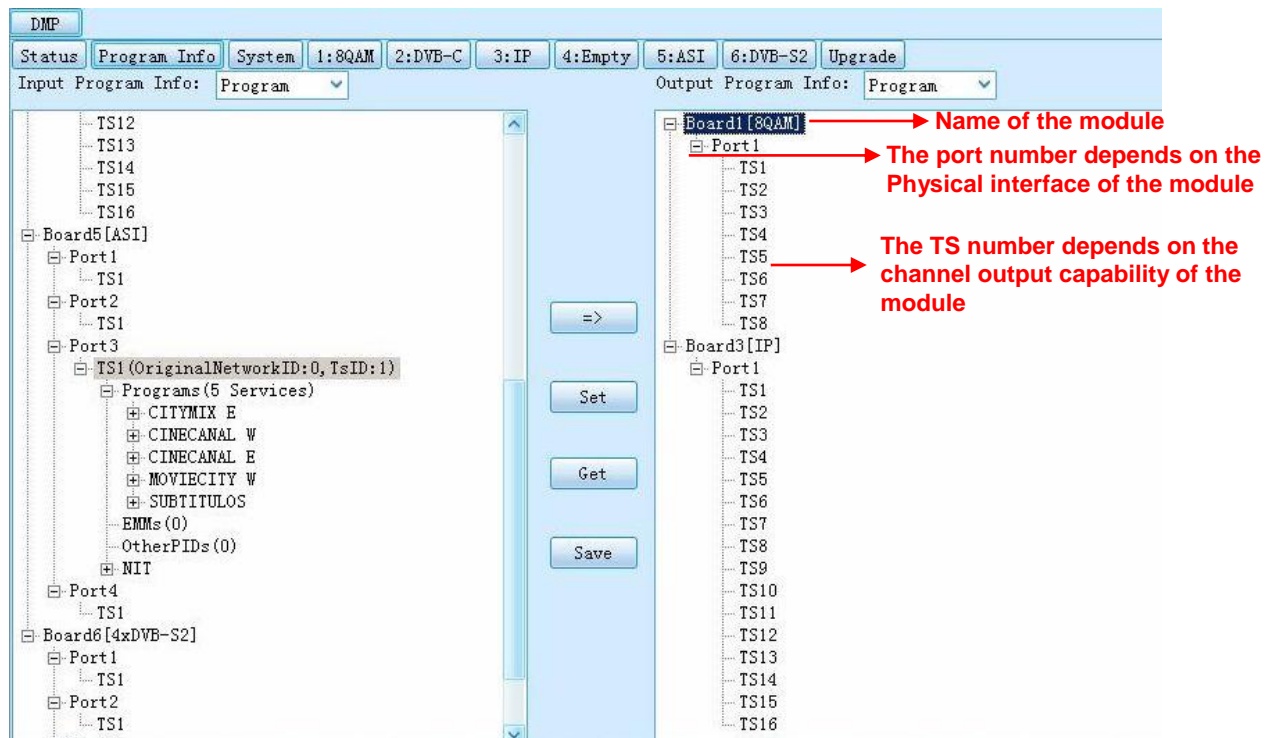
Input Program Configuration

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.

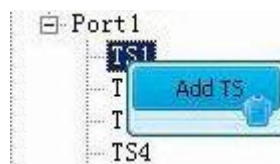
Output Program Configuration

Basic Configuration

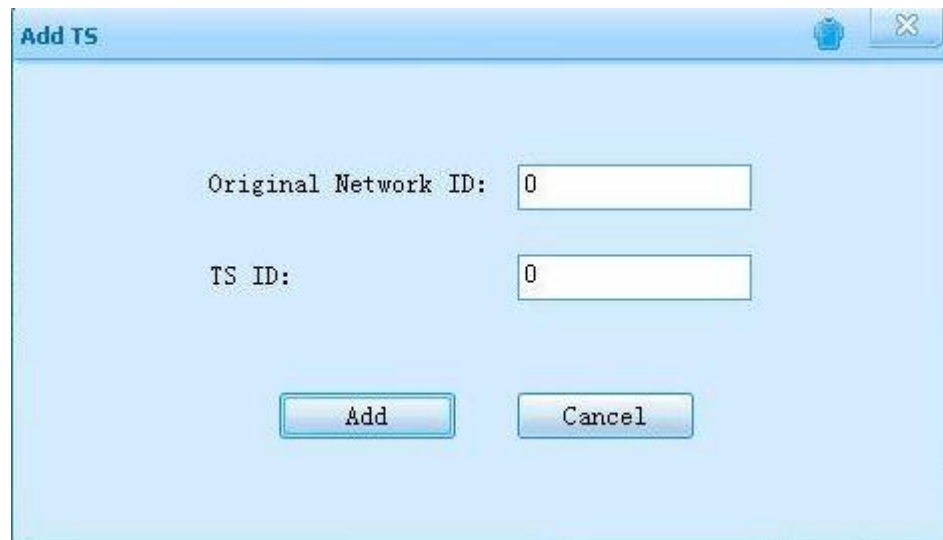
- In the “Output Program Configuration” window, it shows the inserted module which can be set to transmit output stream. These kinds of modules include the Gigabit IP module, ASI module, 8-QAM and 4-OFDM module, etc. The operations on these modules are all the same.
- Operation Procedures
 - Select the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



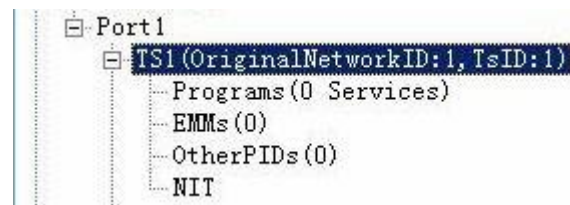
- Select which TS (Channel) to output the stream, and then click the right mouse button to choose 'Add TS'.



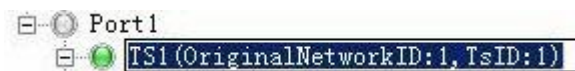
- Input the "Original Network ID" and "TS ID" for the channel, and click the "Add" button.



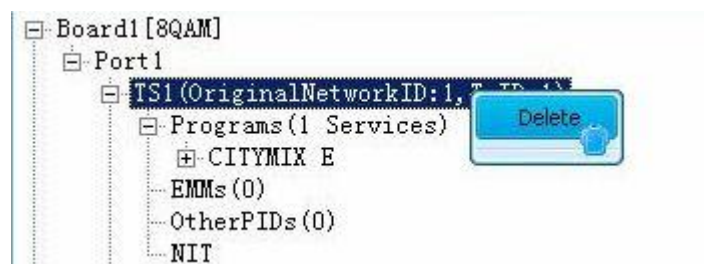
The input “Original Network ID” and “TS ID” will be assigned to the selected output TS (channel).



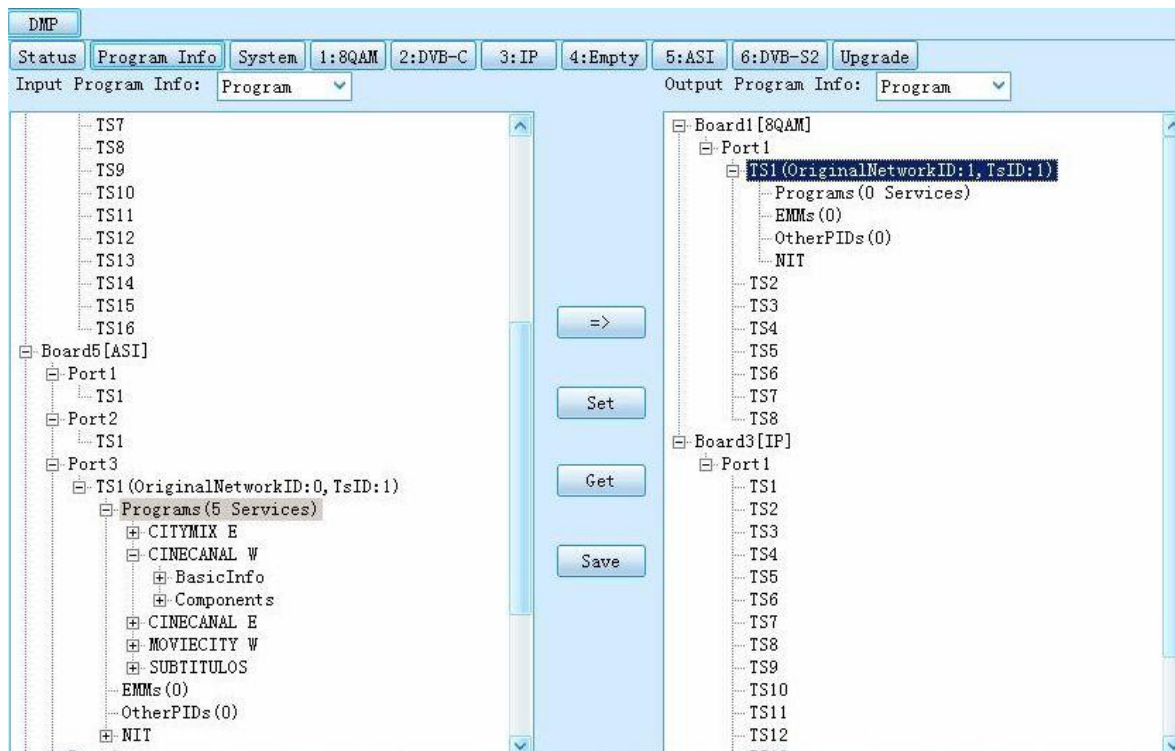
To change the “Original Network ID” and “TS ID”, use the left mouse button to click the TS (channel) name when it is being selected. Then the TS (channel) name will be in editable status.

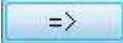


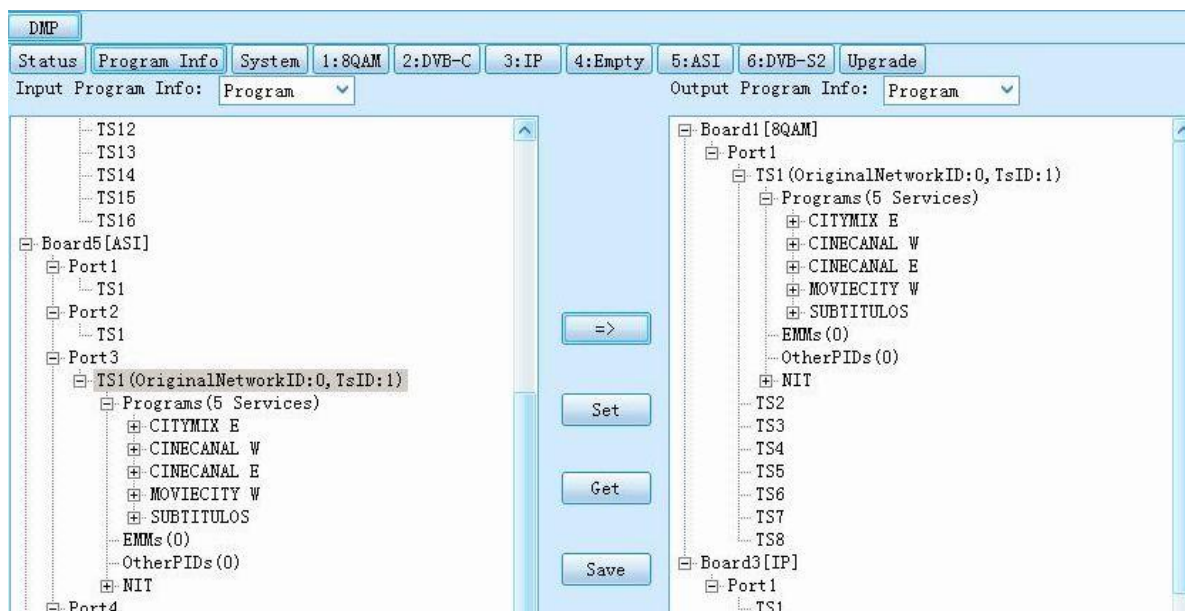
To delete the inserted “Original Network ID” and “TS ID”, click the right mouse button on the TS, and select “Delete”.



- Select TS which is going to be transmitted on the left hand side “Input Program Info” window, and select the port, TS (channel) 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”.

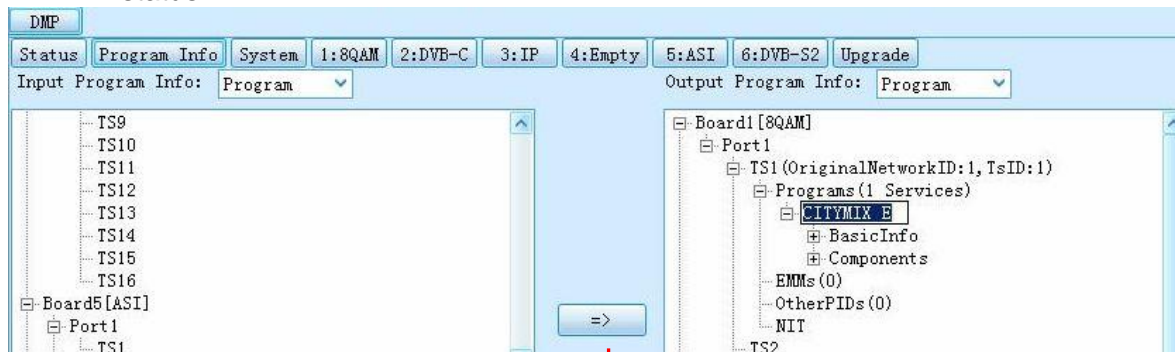


- Follow the save operation steps, user can set the selected input stream to be transmitted at any assigned output TS (channel).

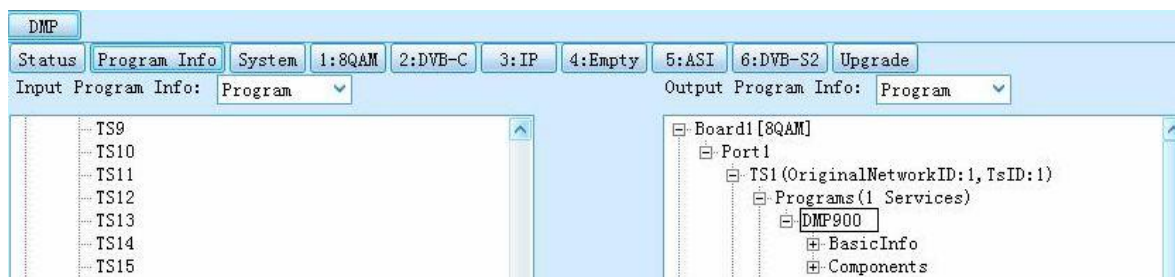
Advanced Configuration

● Channel Name Edit

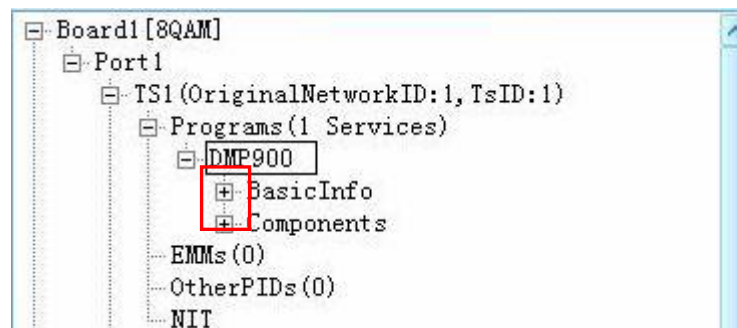
- To change the Channel Name, use the left mouse button to click the TS (channel) name when it is being selected. Then the TS (channel) name will be in editable status.



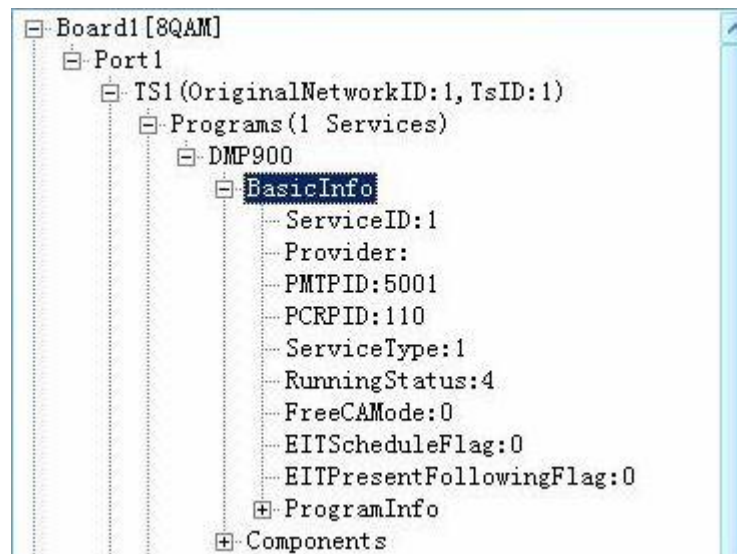
Select and change the TS (Channel) Name



● 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**

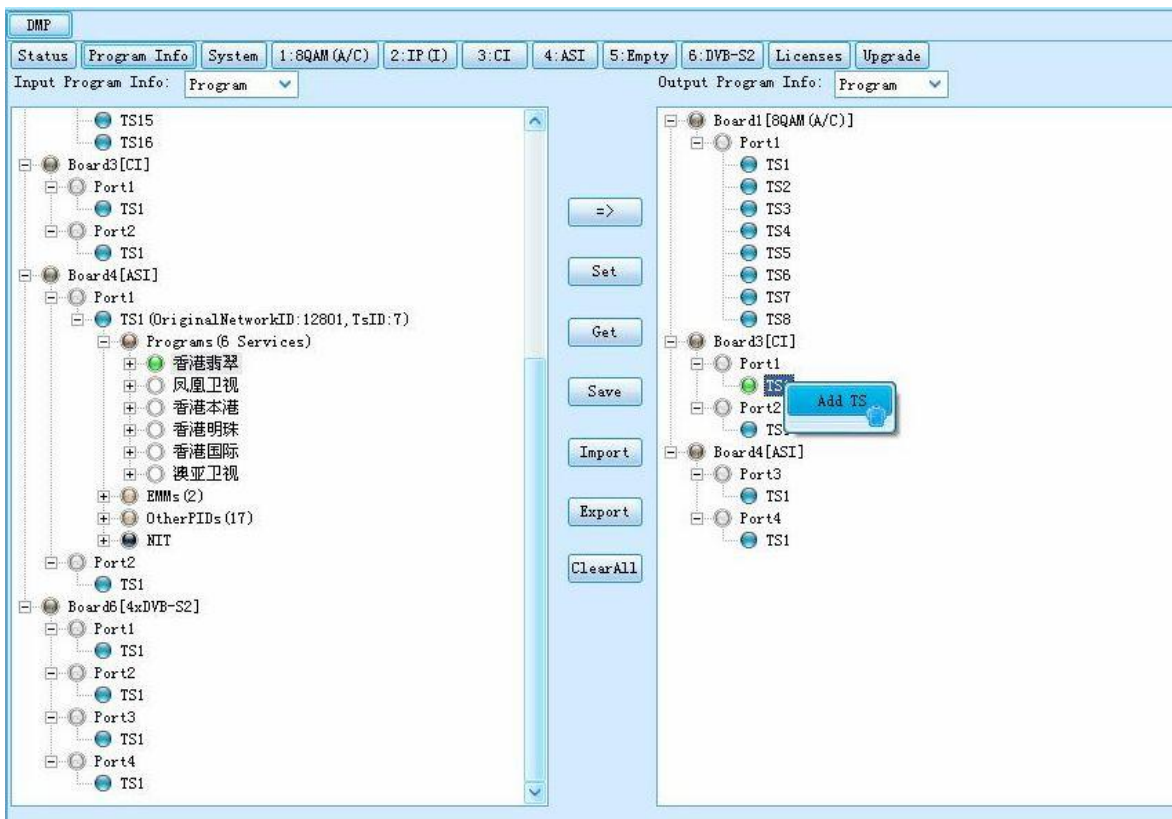
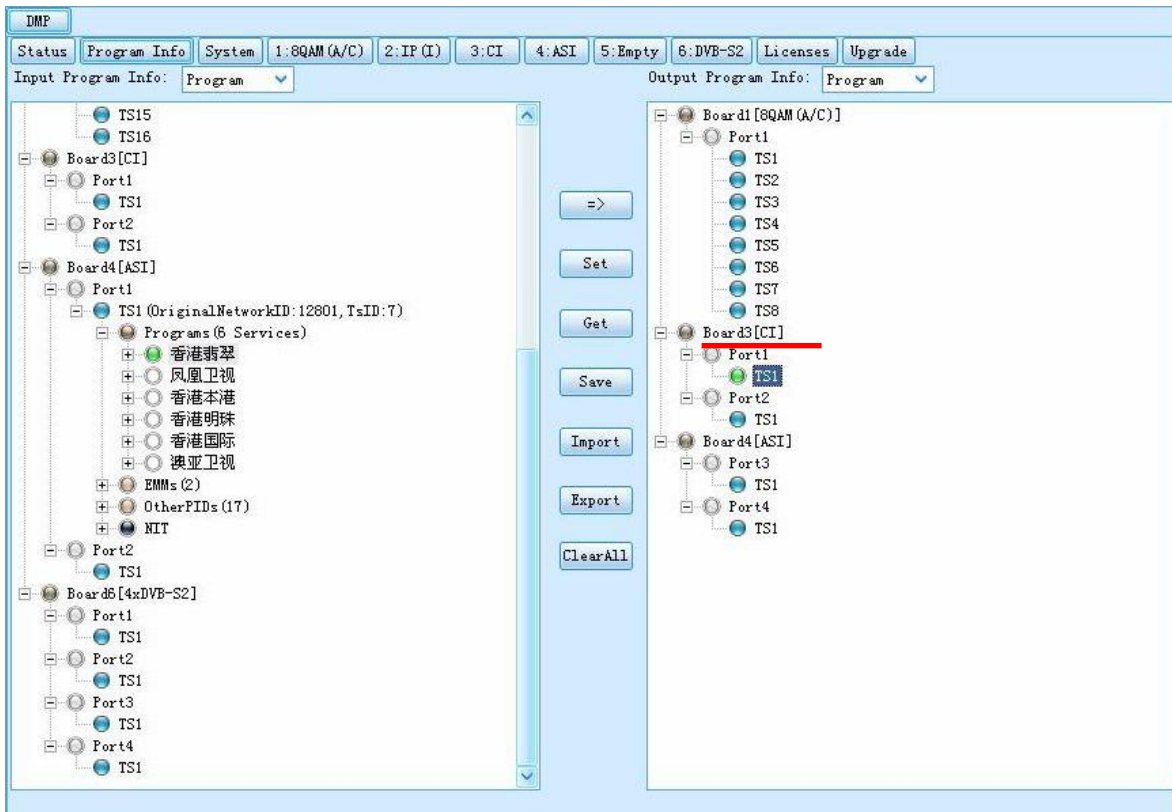
Note: 1. the descramble function needs the support of a CI descrambling module.

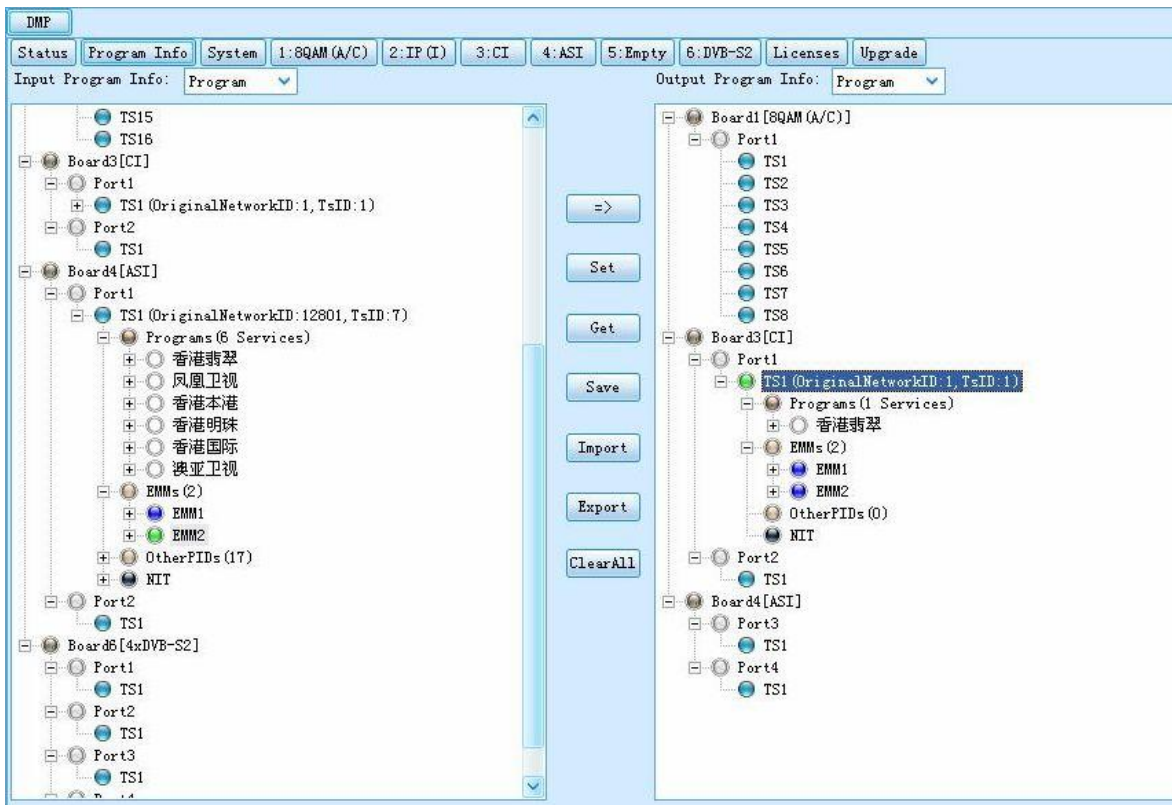
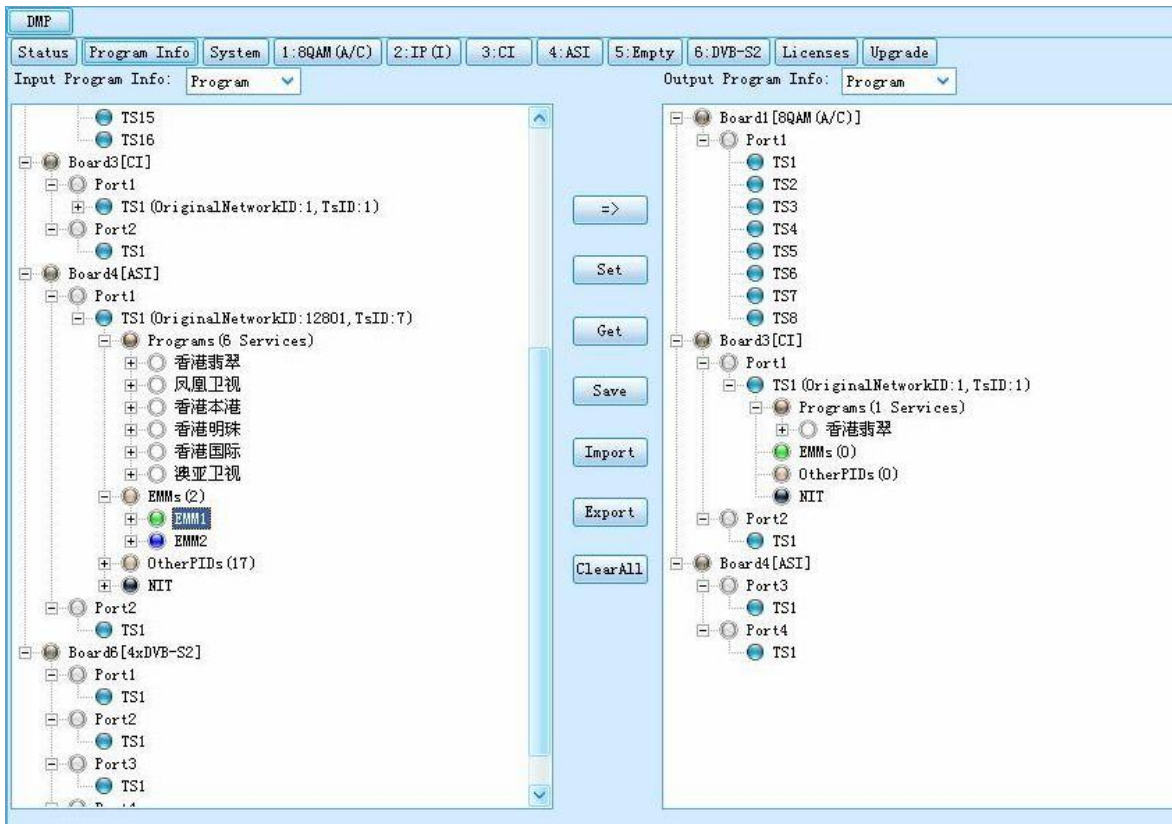
2. the inserted CAM should be able to support the CAS of the scrambling program.

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

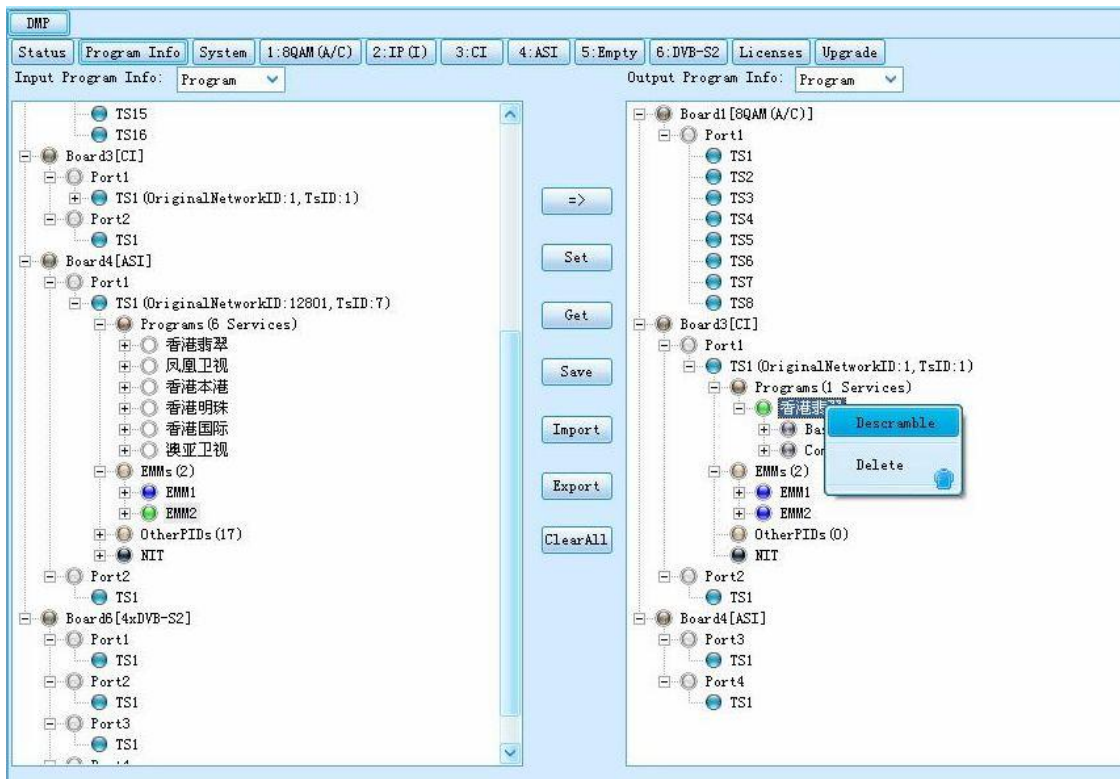
Operation Procedure:

- 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.**



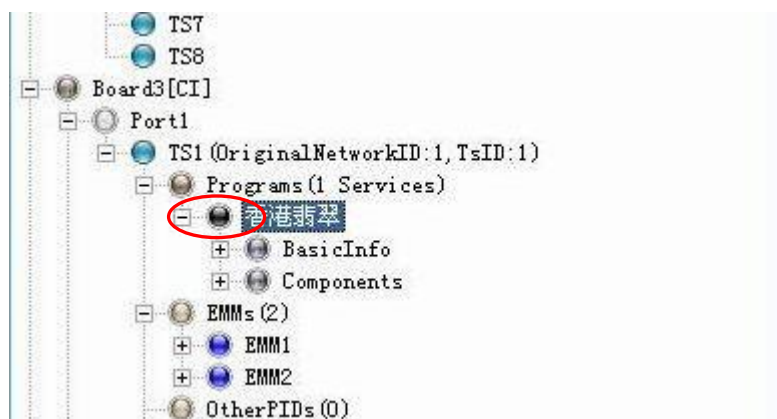


- Use the right mouse button to click on the transferred program, and select “Descramble” menu.

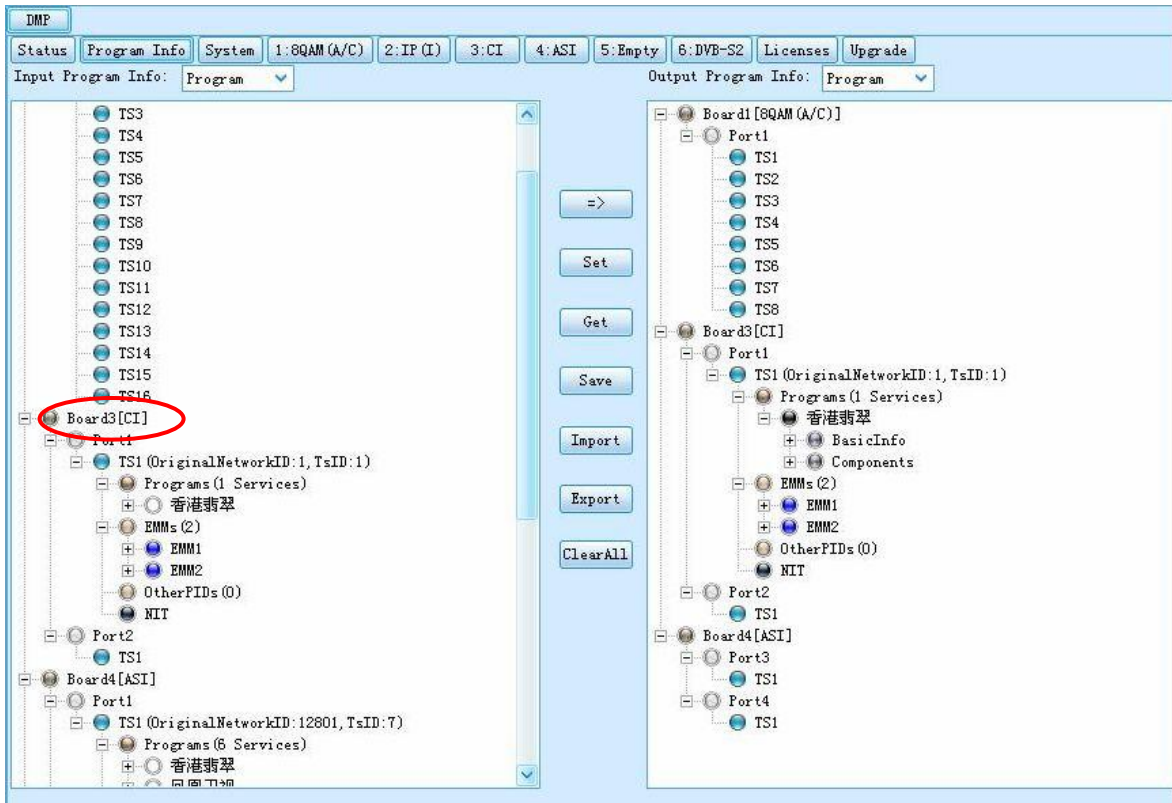


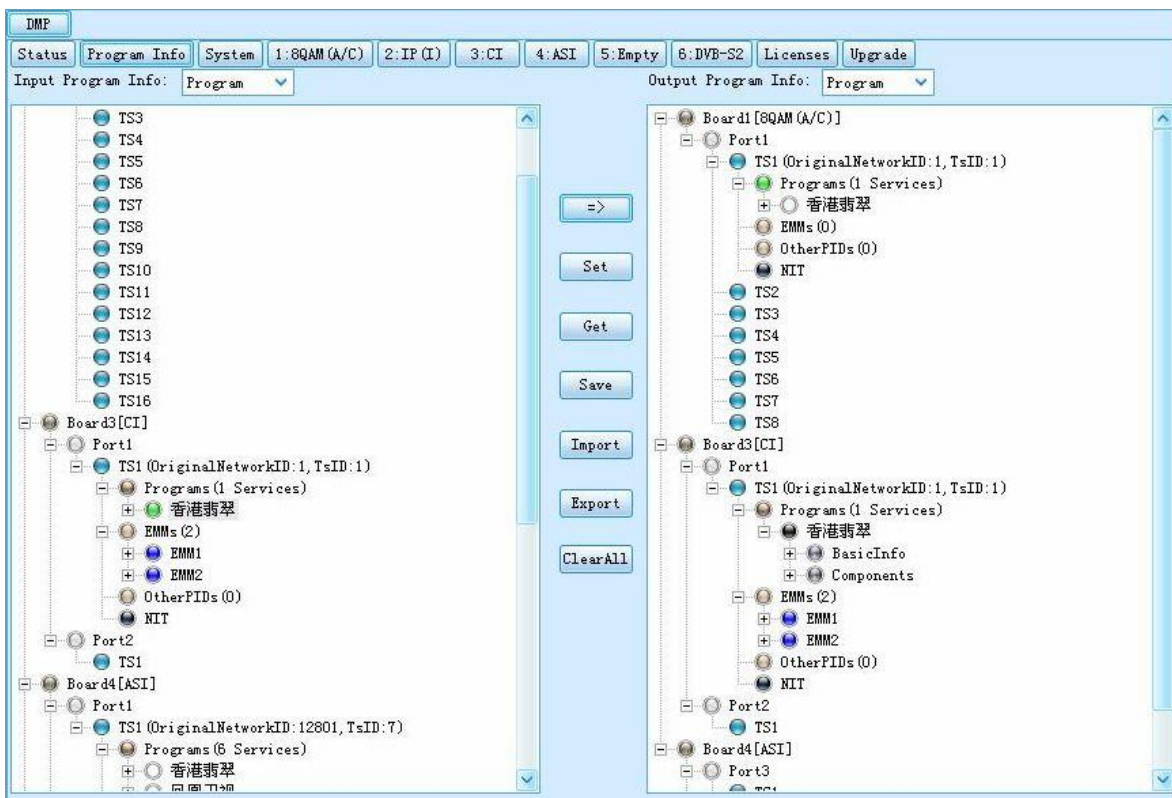
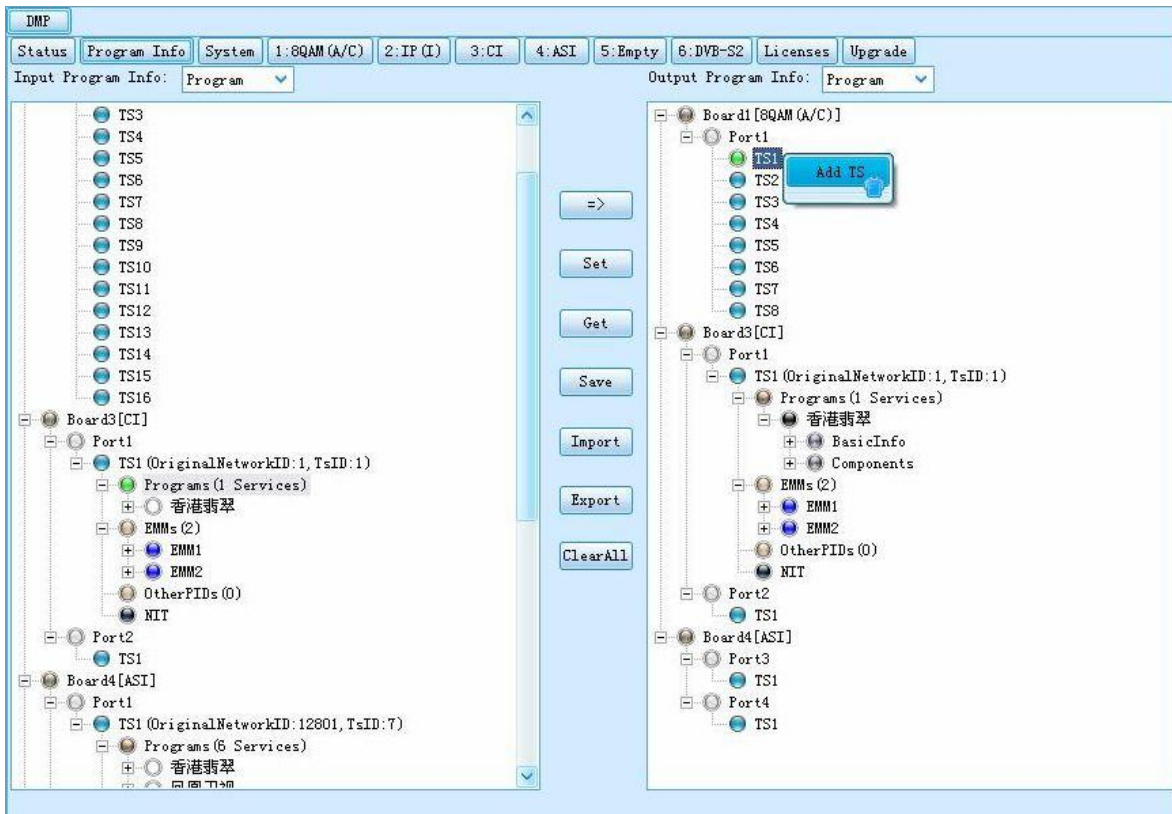
To cancel the descrambling operation on a program, just use the right mouse button to click the descrambling program and select menu “Non-descramble”.

- 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.

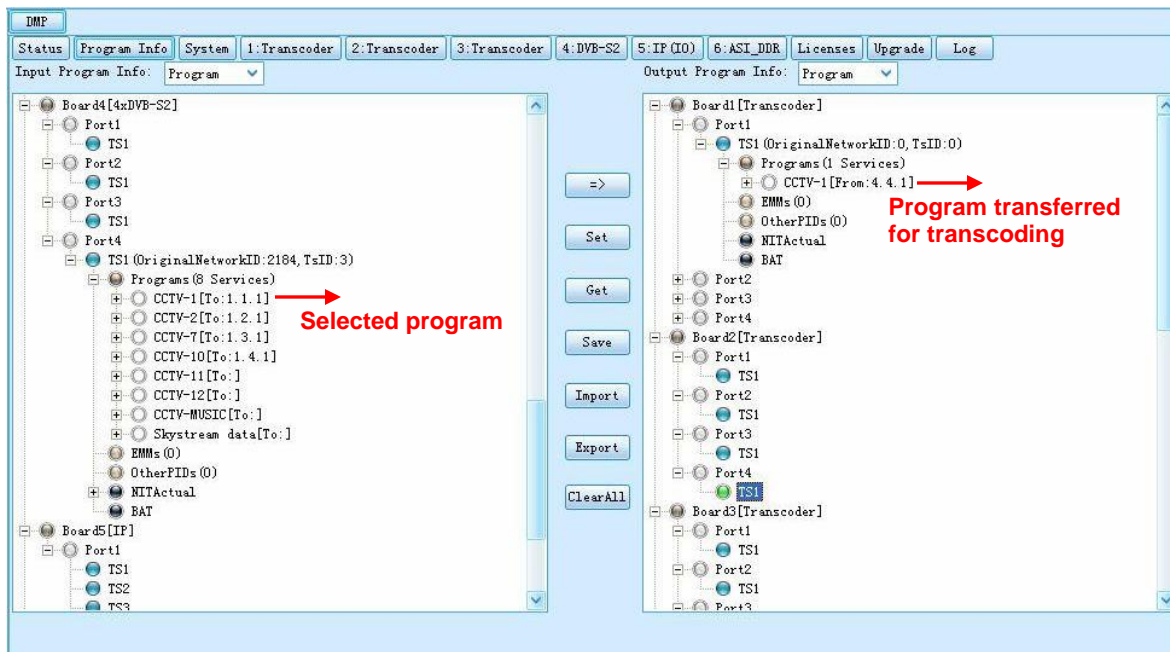




● Transcoding Operation

Operation procedures:

- Select programs in “Input” which need transcoding processing, and follow the output program operation procedure to transfer the selected programs to transcoder output port.



Note: When a program is transferred to transcoder module for output, a list of digits will be shown at end of the selected program name, which represents the transcoding source/target module and port. The meanings of the number are:

a) Selected programs in “Input” window:

Program name (To: X.X.X) – “To:” means this program has been selected to transcoding output, X.X.X represents the output module No., port No. and TS No. For example, “Program1 (To: 1.1.1)” means Program1 has been transferred to transcoding module which installed on DMP slot1, and set to Port1 and TS1 for output.

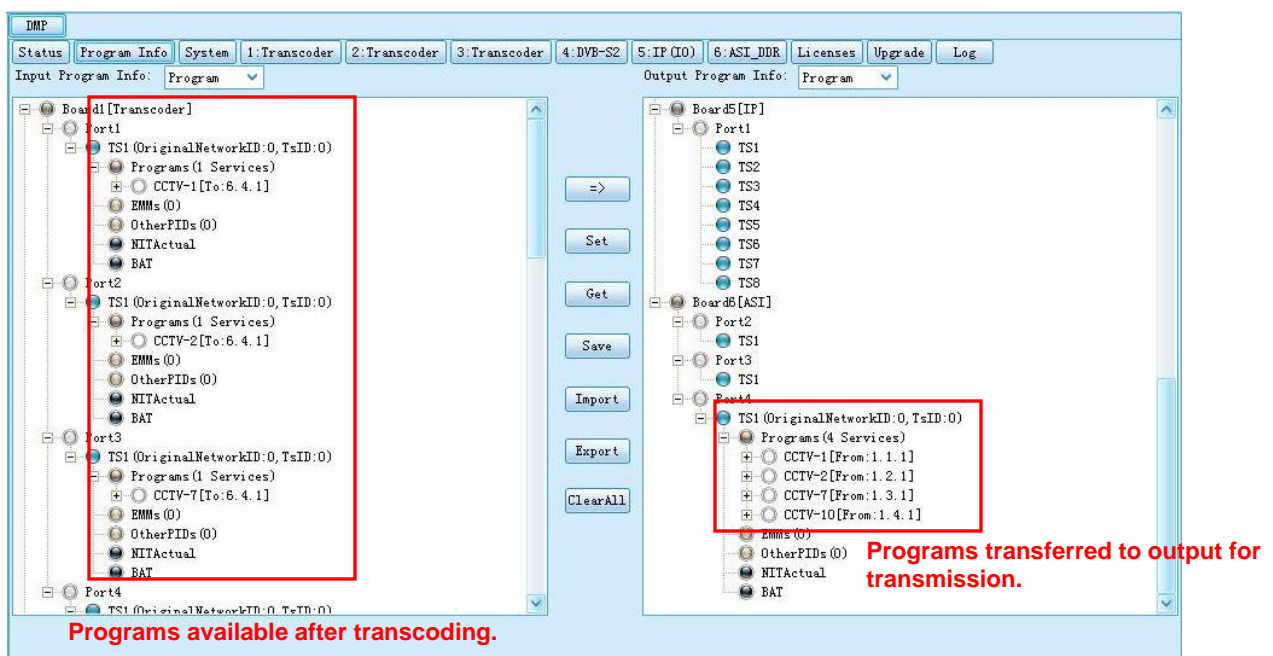
b) Selected programs in “Output” window:

Program name (From: X.X.X) – “(From:X.X.X)” represents the input source of the program. X.X.X represents the input module No., port No. and TS No. For example, “Program1 (From: 4.4.1)” means Program1 comes from module 4, port 4 and TS1.

c) For 2-channel transcoding module, only 2 outputs are available at output option, which are Port1 and Port2. While for 4-channel transcoding module, Port1, Port2, Port3 and Port4 are available for output.

- After transferring to transcoding module output, the selected programs will be re-encoding and available at the “Input->Transcoder module” for output transmission.

Output the transcoded programs to any DMP transmission modules (TS/IP, ASI, QAM modulator, etc.) for output, and then the transcoder output operation is done.



● Data Insertion

■ NIT Insertion

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

HWG Version 1.5.6_20120117_1

Password AutoLogin Re-Connect Exit Help

DMP

Status Program Info System 1:ASI 2:DVB-C 3:SD-Encoder_CVBS 4:MPEG2To4 5:8QAM(A/C) 6:HD-Encoder_SDI Licenses Upgrade

Bandwidth: 8M RF Level: 90 dBuV

SymbolRate(Channel 1-4): 6875 Kbaud SymbolRate(Channel 5-8): 6875 Kbaud

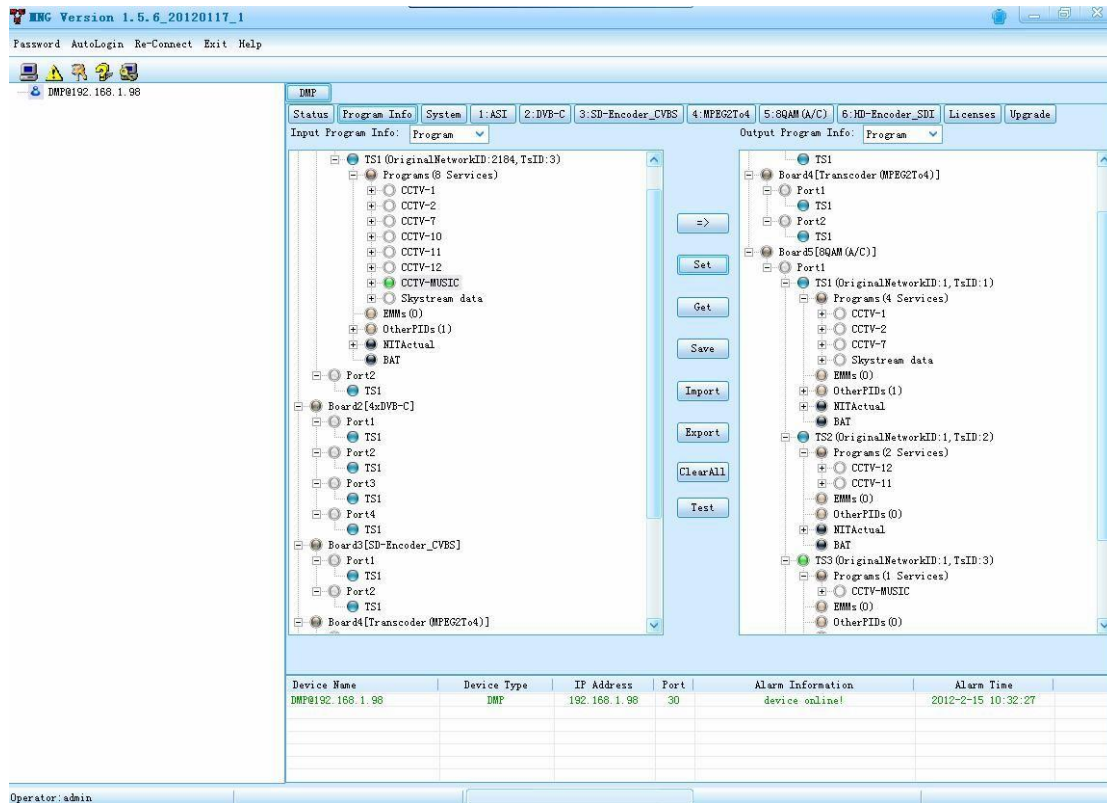
SpectrumShaping: Disable

Port	Enable	RF Frequency (GHz)	Mode	MaxRate (Mbit)
1	Enable	474000	QAM64	38.015
2	Enable	482000	QAM64	38.015
3	Enable	490000	QAM64	38.015
4	Enable	498000	QAM64	38.015
5	Enable	506000	QAM64	38.015
6	Enable	514000	QAM64	38.015
7	Enable	522000	QAM64	38.015
8	Enable	530000	QAM64	38.015

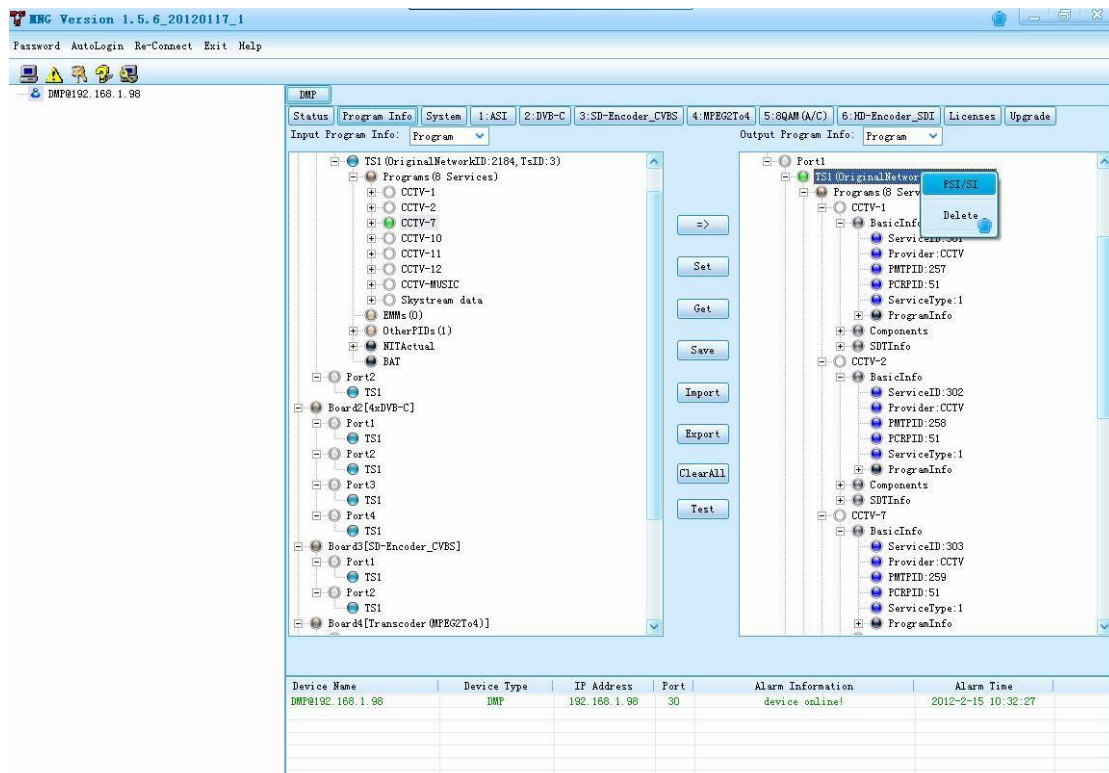
Set Get Import Export Reboot Power off Factory setting

Device Name	Device Type	IP Address	Port	Alarm Information	Alarm Time
DMP0192.168.1.98	DMP	192.168.1.98	30	device online!	2012-2-15 10:32:27

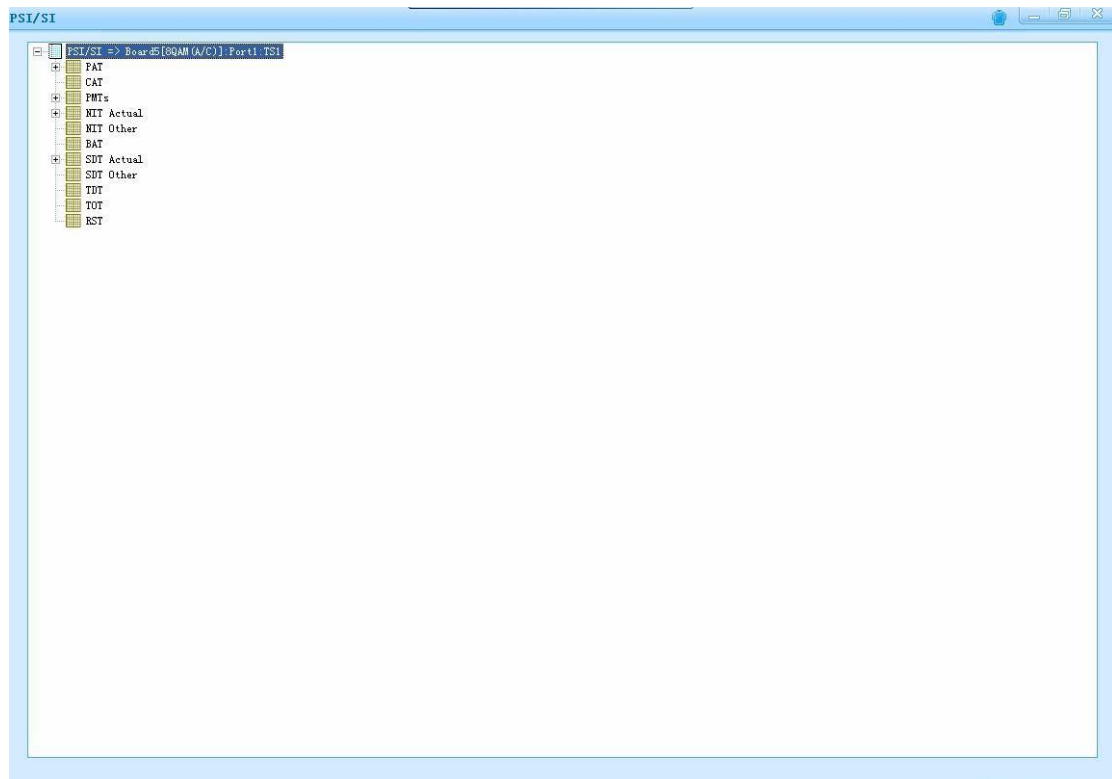
- Switch to **"Program Info"** tab to configure the output channels at each QAM channel. Here we output total 6 programs at 3 TS channels:
 CCTV-1, CCTV-2 and CCTV-7 at TS1;
 CCTV-11, CCTV-12 at TS2;
 CCTV-MUSIC at TS3



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



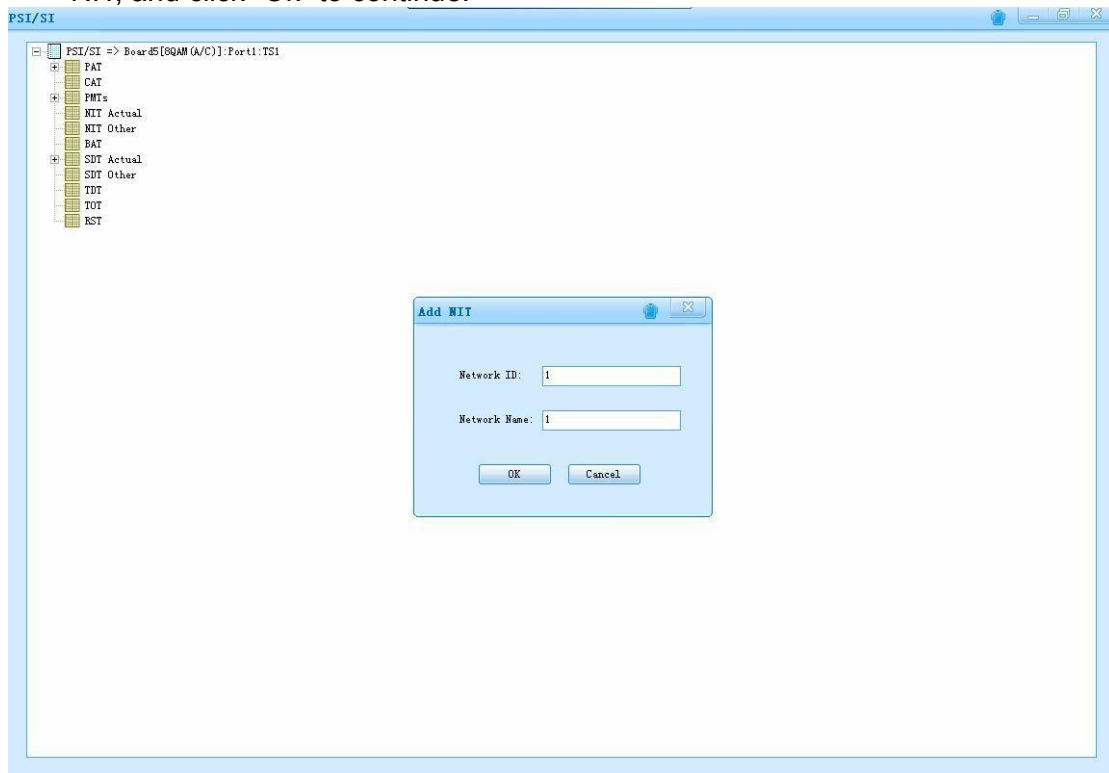
4. PSI/SI menu interface.



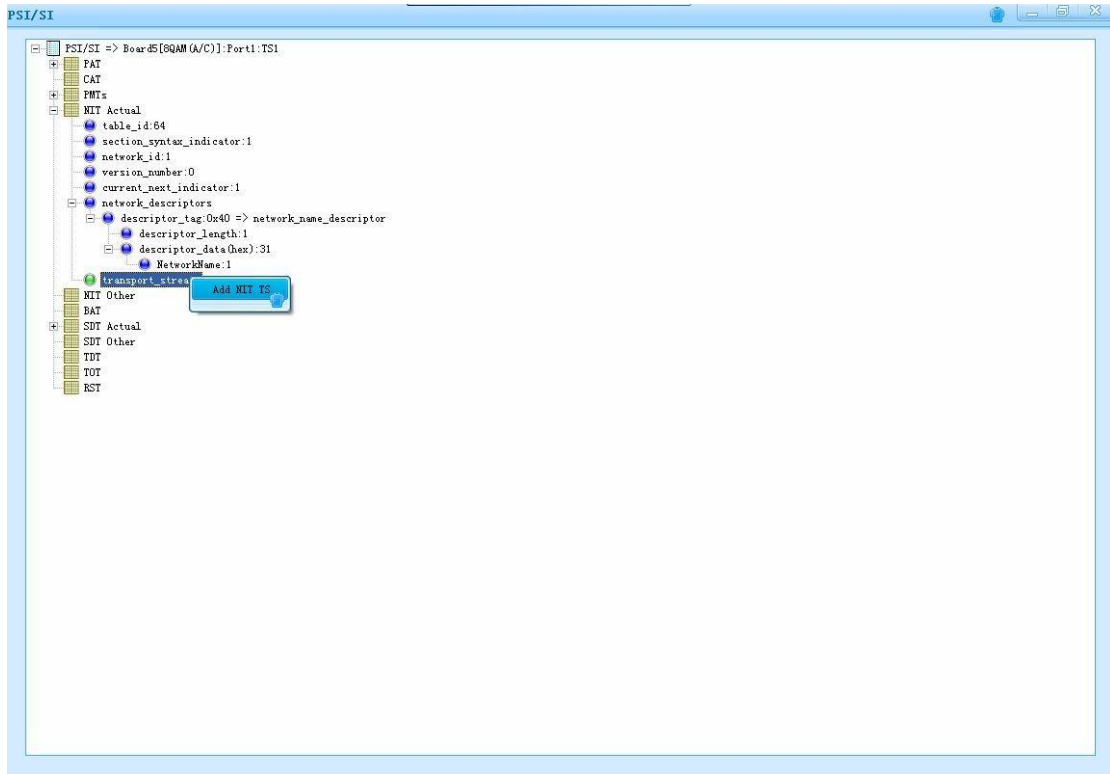
5. Select "NIT Actual", and use mouse right button to click and select "Add NIT".



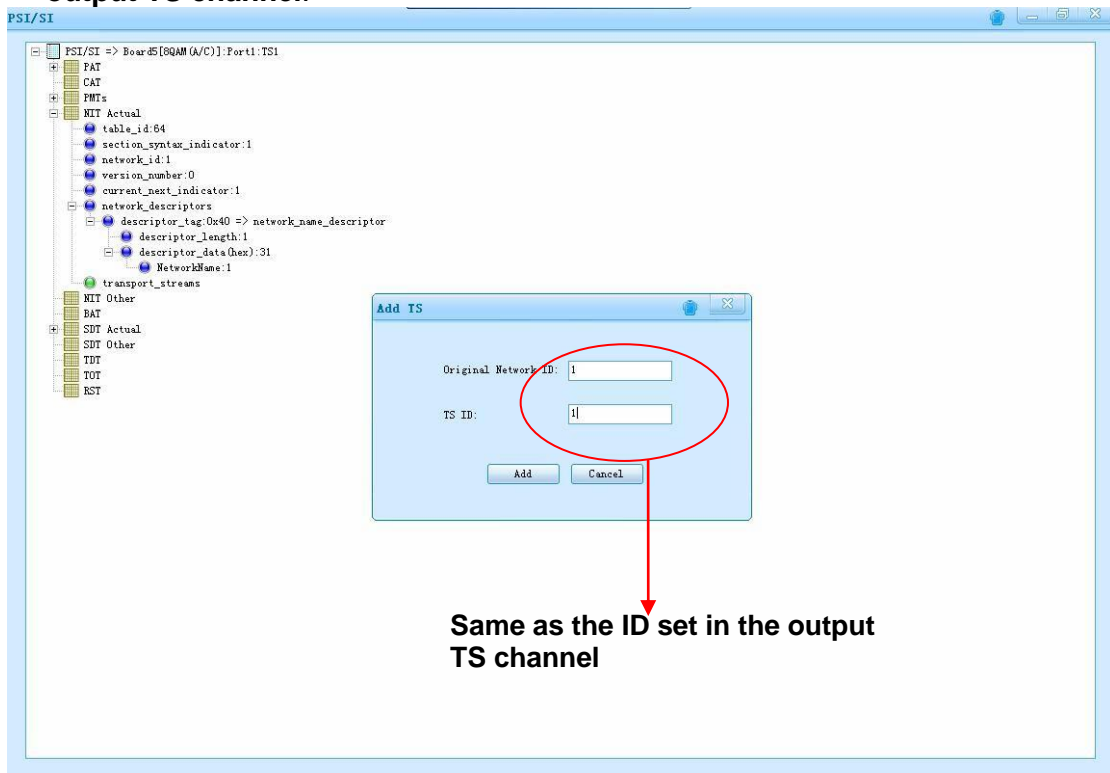
6. Input “Network ID” and “Network Name” for the new NIT to distinguish with other NIT, and click “Ok” to continue.

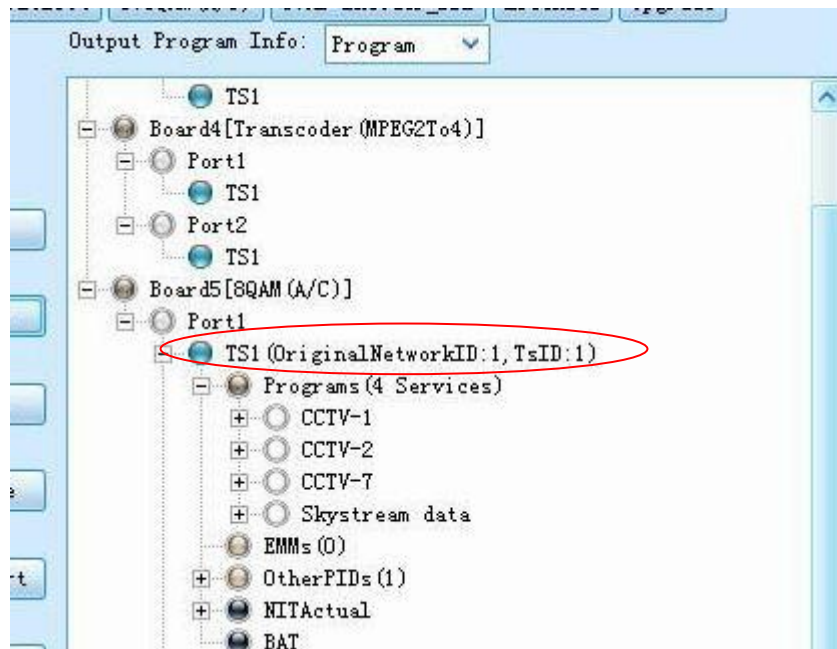


7. Under the new added NIT table, find the “transport_stream” item and use mouse right click on it to select “Add NIT TS”.

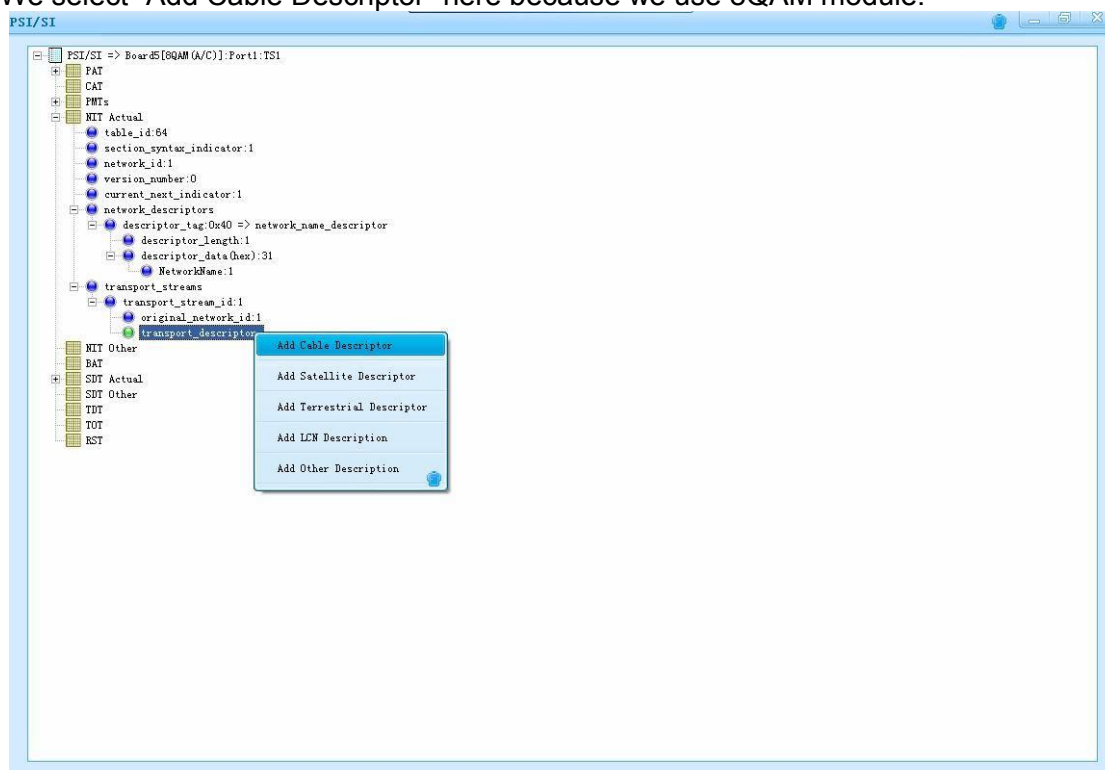


8. Input the Network ID and the TS ID. The ID must be same as that set in the output TS channel.

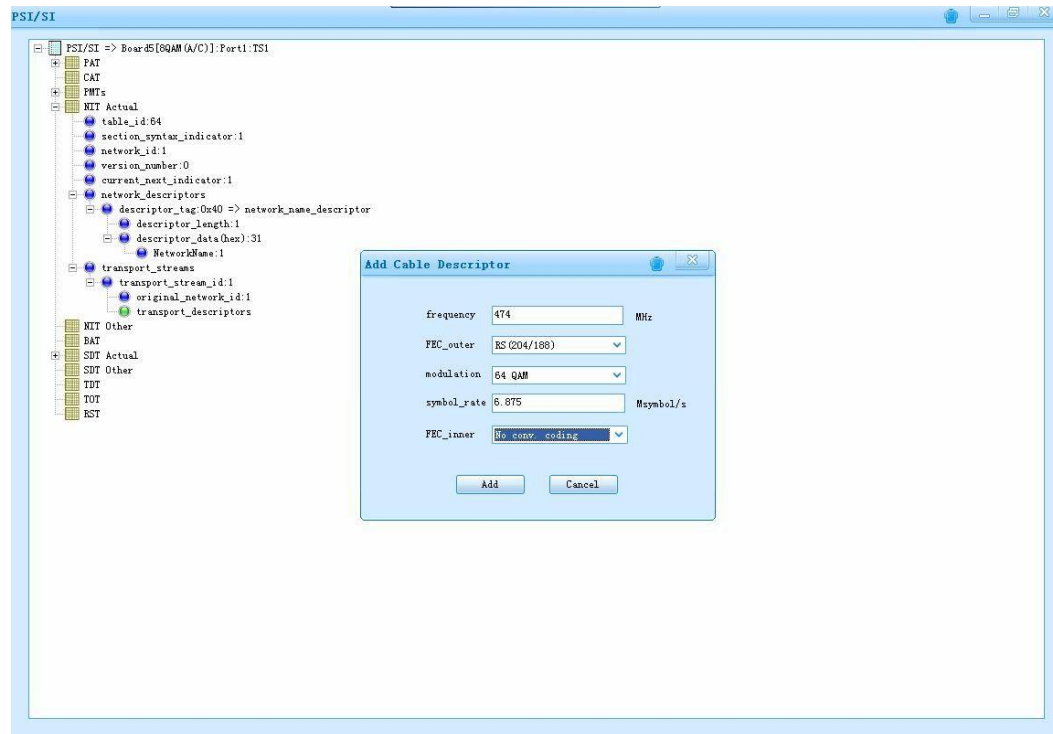




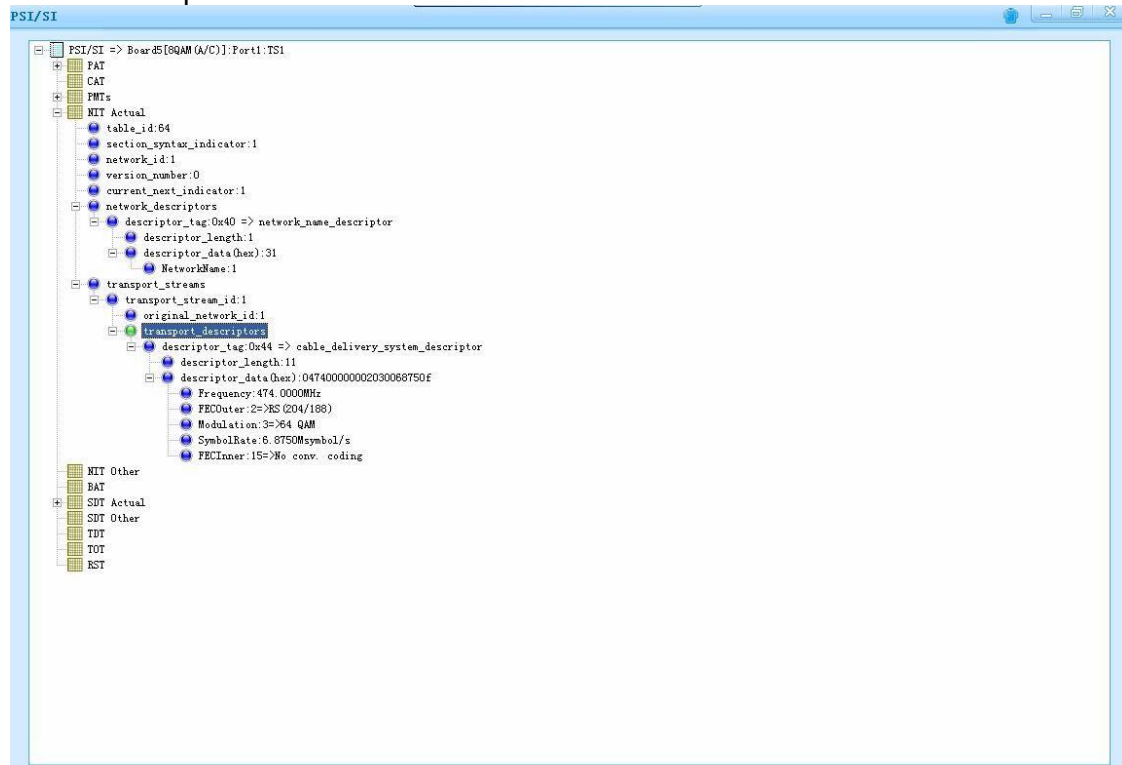
9. Under the new added “transport_stream”, find the item “transport_descriptor”, use mouse right button to select to add proper descriptor base on the actual situation. We select “Add Cable Descriptor” here because we use 8QAM module.



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

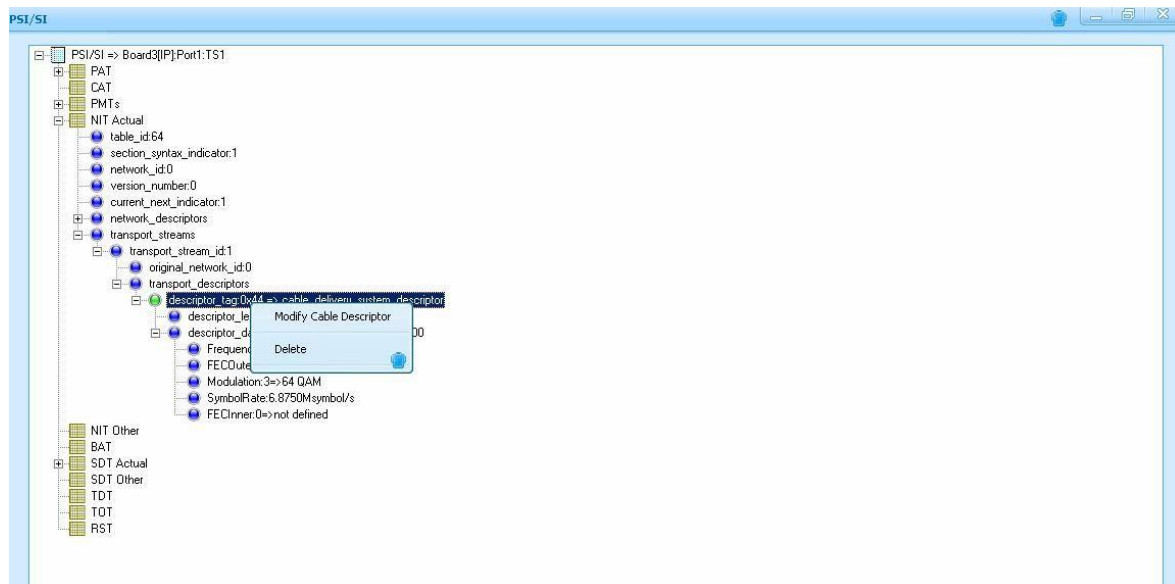


After input the descriptor, click “Add”, then user can expand the “transport_descriptor” menu to check whether the new added data correct or not. Then repeat steps 7~10 to add other frequencies to this NIT table.



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.

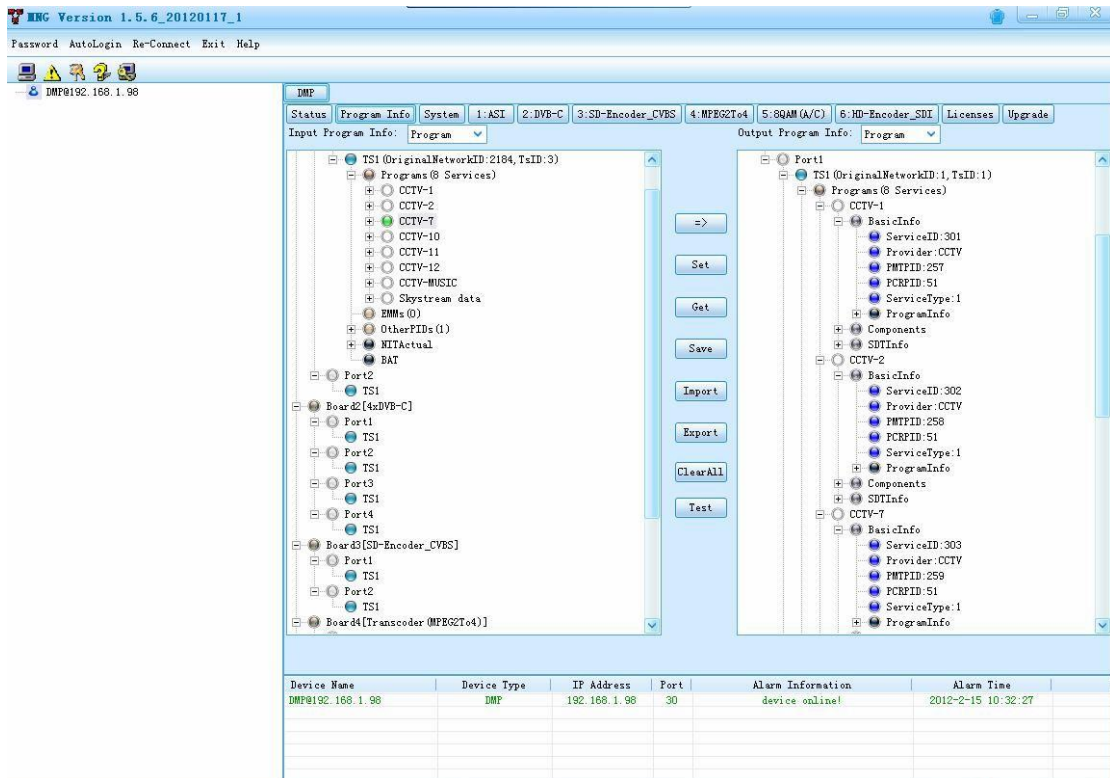
The most common reason for a television station using a virtual channel is to minimize viewer confusion when a digital transmission is airing on a different channel from the one the station used in analog mode. The virtual channel thus enables viewers to tune in the station by choosing the same channel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

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

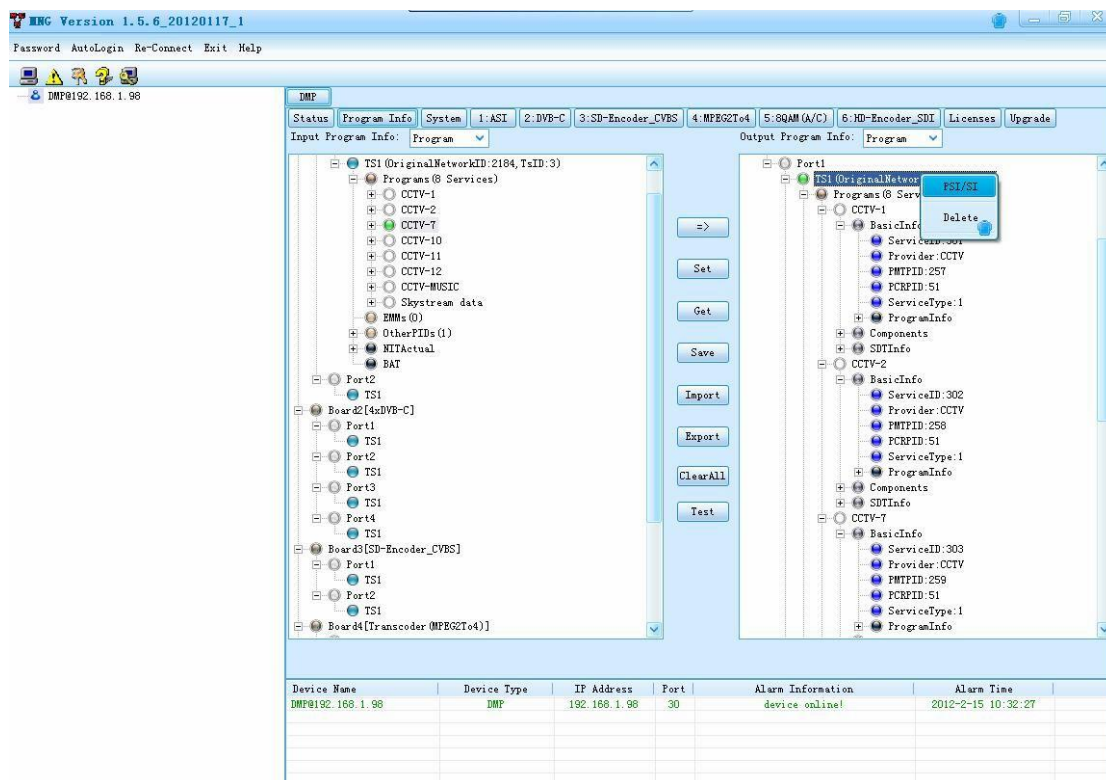
1. Check out the **service ID** of each program under some TS. For example, we check the first TS-'TS1', the service ID can be found under "BasicInfo" menu if expanding the "+" before each program.

The service ID of the 6 test programs are:

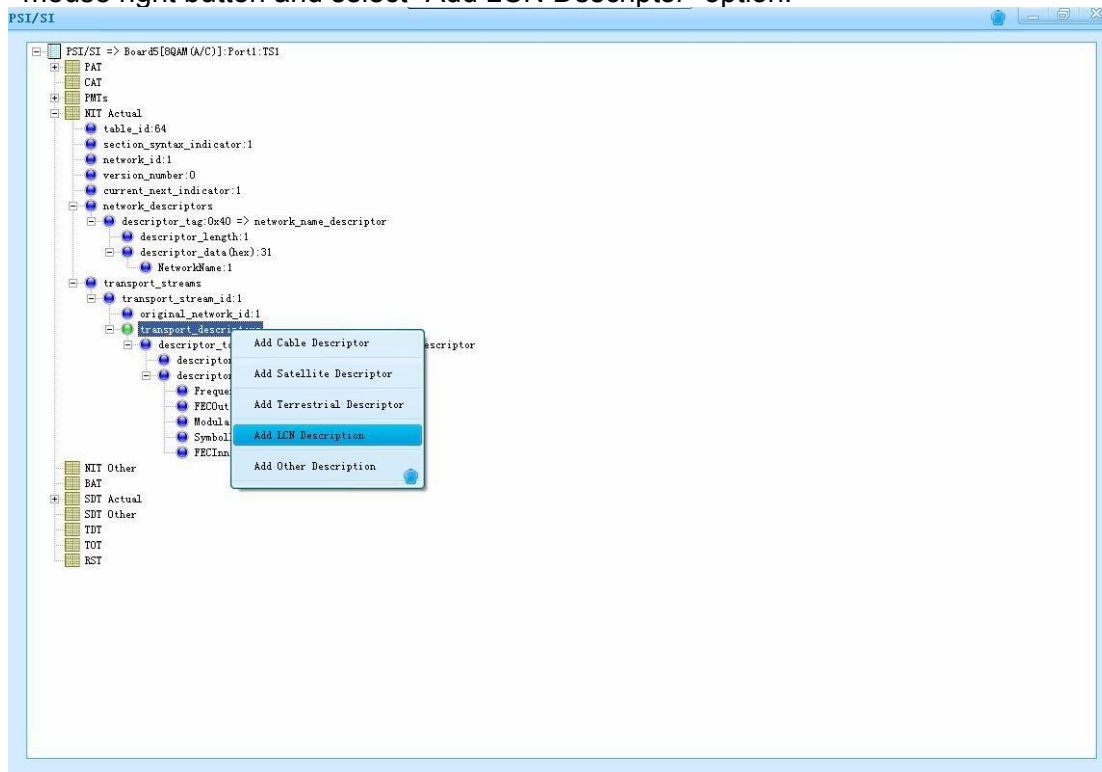
CCTV-1: 301
 CCTV-2: 302
 CCTV-7: 303
 CCTV-10: 304
 CCTV-11: 305
 CCTV-12: 306
 CCTV-MUSIC: 307



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

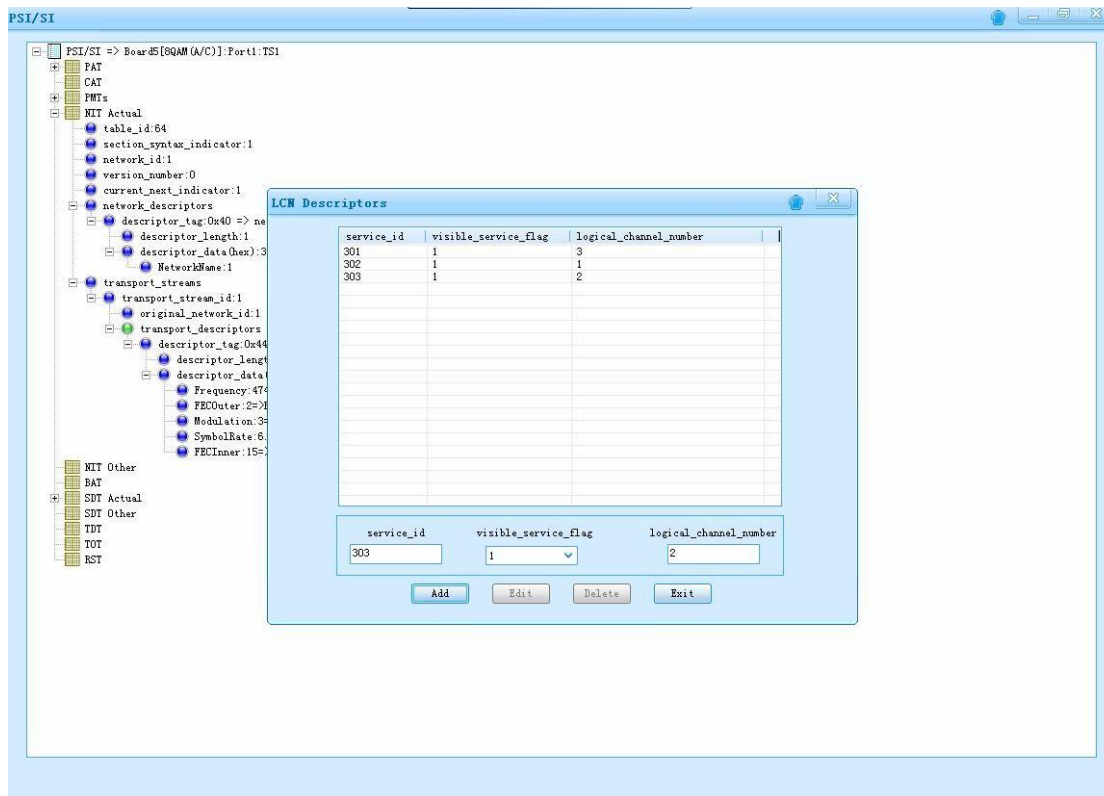


3. Enter 'NIT Actual→Transport _Streams' and then select "transport_descriptor" with mouse right button and select "Add LCN Descriptor" option.

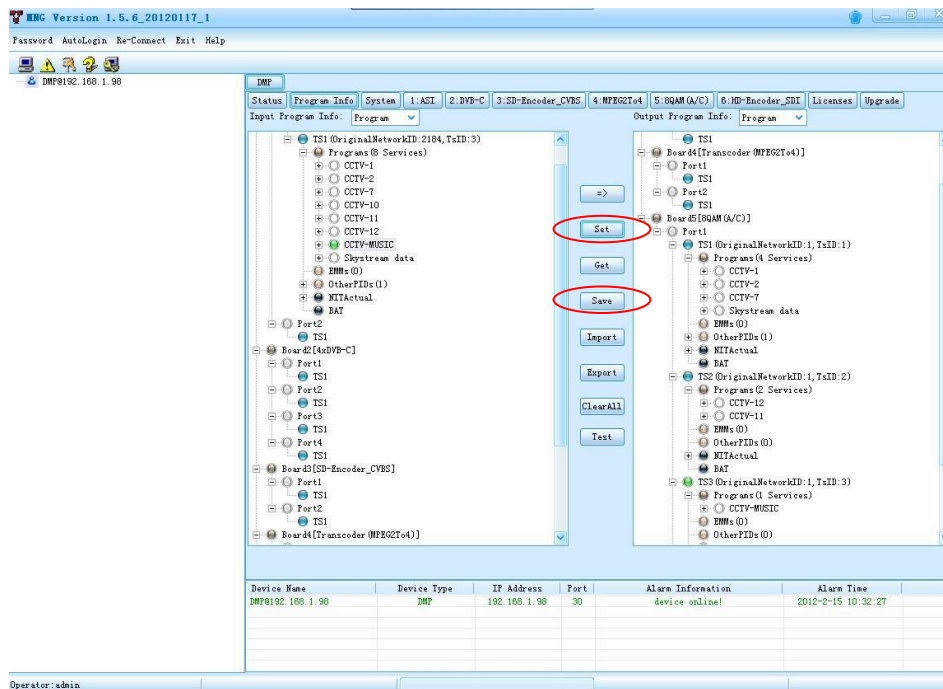


In the displayed operation window, input the service ID of the programs that transmitted in this channel, and the LCN that designated for this program. The "visible_service_flag"

please keeps using the default setting which is “1”. After the setting, click “Add” to confirm the settings.



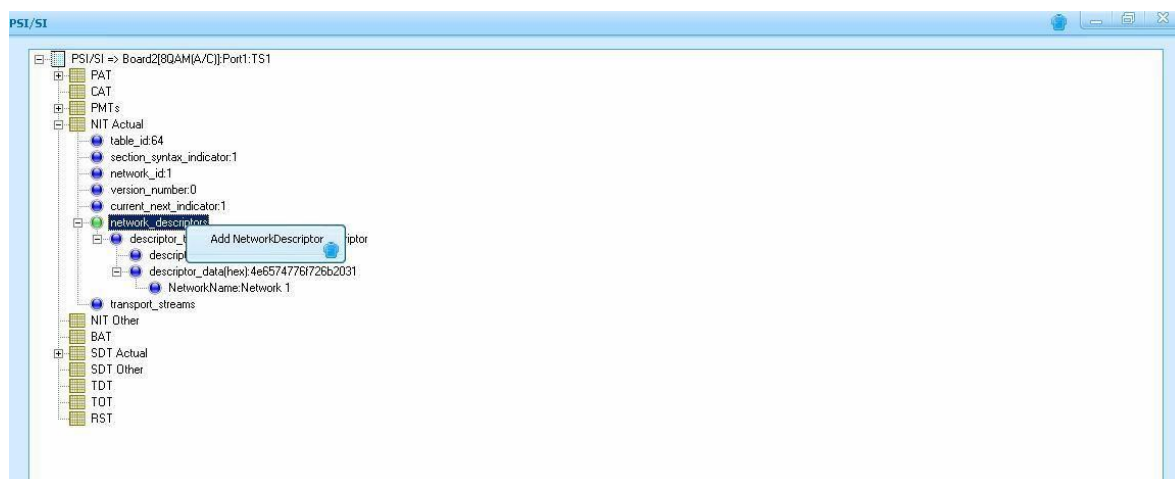
4. In the “Program Info” window to select other TS channel which need to edit PSI/SI, and follow the operation steps 1~3 to add LCN for each program in all TS.
5. After the settings on all output TS channel, do remember to click “Set” and then “Save” button in the “Program Info” window to apply the settings.



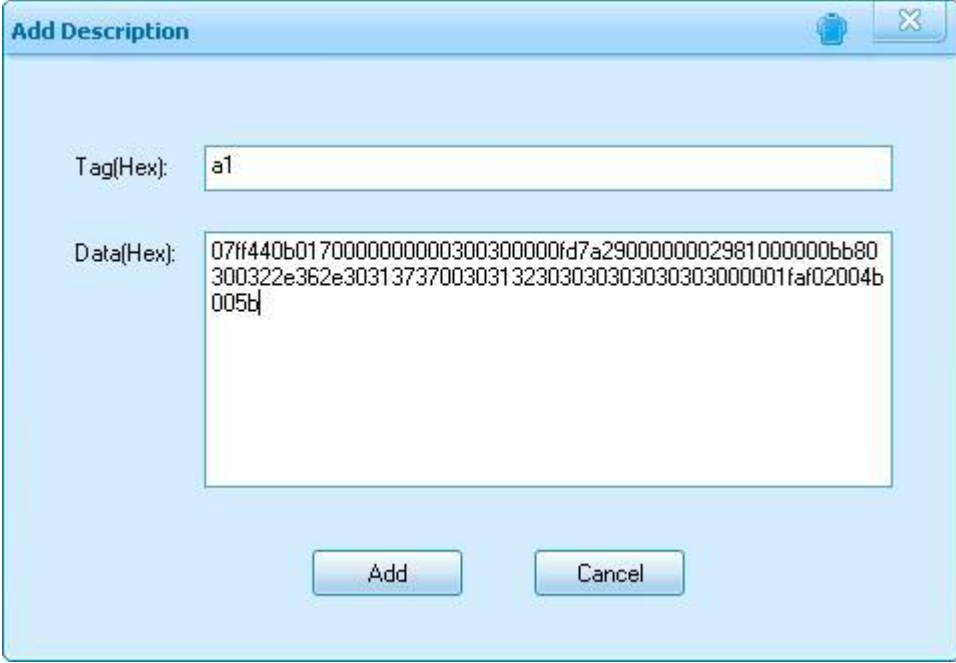
■ OTA descriptor Insertion

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'

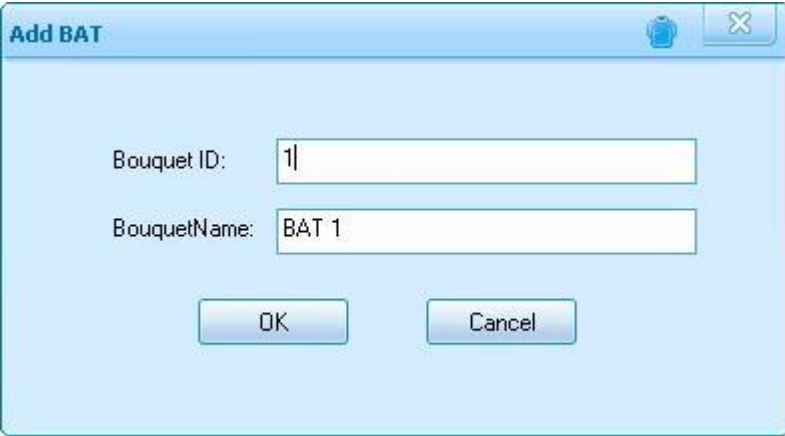


The 'Add Description' dialog box has a title bar with a blue icon and a close button. It contains two text input fields. The first field is labeled 'Tag(Hex):' and contains the text 'a1'. The second field is labeled 'Data(Hex):' and contains a long hexadecimal string: '07ff440b0170000000000300300000fd7a2900000002981000000bb80300322e362e30313737003031323030303030303000001faf02004b005b'. At the bottom of the dialog are two buttons: 'Add' and 'Cancel'.

■ BAT Insertion

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

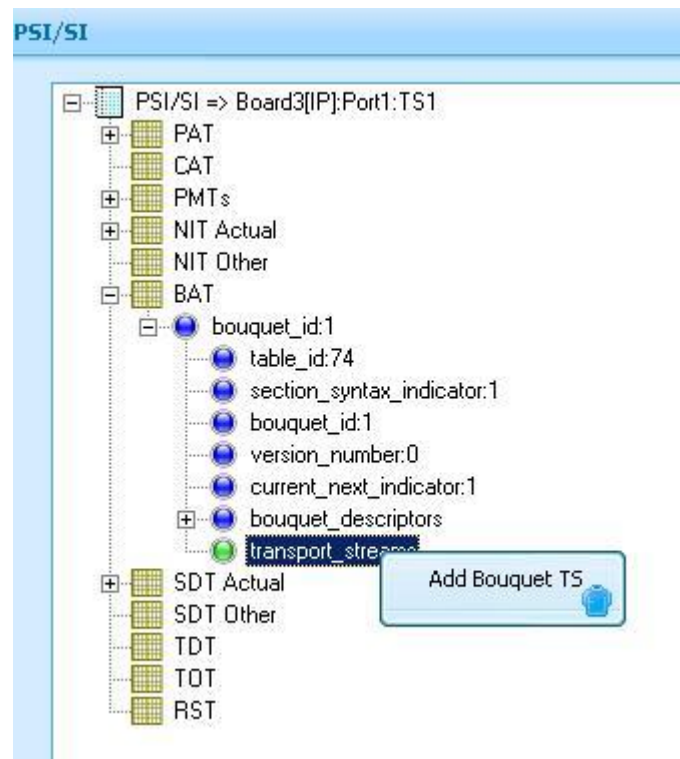
1. Right click the TS where you want to insert the BAT and click 'PSI/SI'.
2. Find BAT and right click it. Select 'Add BAT' and then input the Bouquet ID and Name to create the BAT.



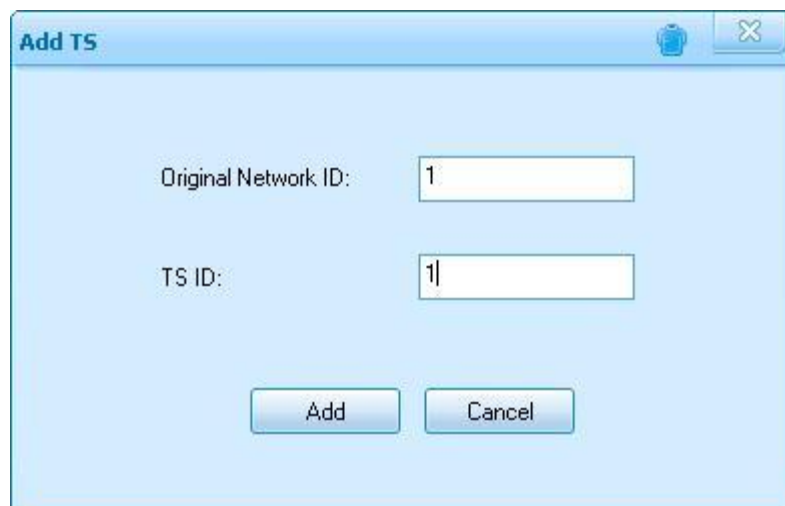
The 'Add BAT' dialog box has a title bar with a blue icon and a close button. It contains two text input fields. The first field is labeled 'Bouquet ID:' and contains the text '1'. The second field is labeled 'BouquetName:' and contains the text 'BAT 1'. At the bottom of the dialog are two buttons: 'OK' and 'Cancel'.

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

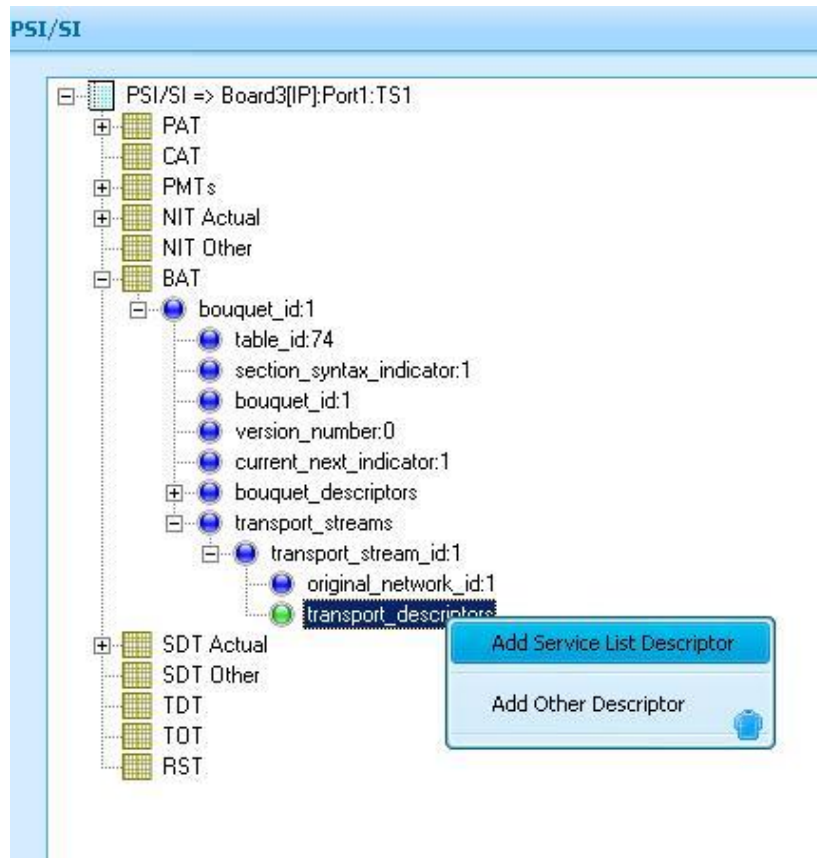
To delete the BAT, right click 'Bouquet ID x' and then click 'Delete'.



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.

Service List Description

service_id	service_type	service_type	Description
1	2	0	reserved for future use
		1	digital television service
		2	digital radio sound service
		3	Teletext service
		4	NVOD reference service
		5	NVOD time-shifted service
		6	mosaic service
		7	FM radio service
		8	DVB SRM service
		9	reserved for future use
		10	advanced codec digital radio sound service
		11	advanced codec mosaic service
		12	data broadcast service
		13	reserved for Common Interface Usage
		14	RCS Map
		15	RCS FLS
		16	DVB MHP service
		17	MPEG-2 HD digital television service
		18-21	reserved for future use
		22	advanced codec SD digital television service
		23	advanced codec SD NVOD time-shifted service
		24	advanced codec SD NVOD reference service
		25	advanced codec HD digital television service
		26	advanced codec HD NVOD time-shifted service
		27	advanced codec HD NVOD reference service
		28-127	reserved for future use
		128-254	user defined
		255	reserved for future use

service_id:

service_type:

Service type coding

- 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'.

Add Description

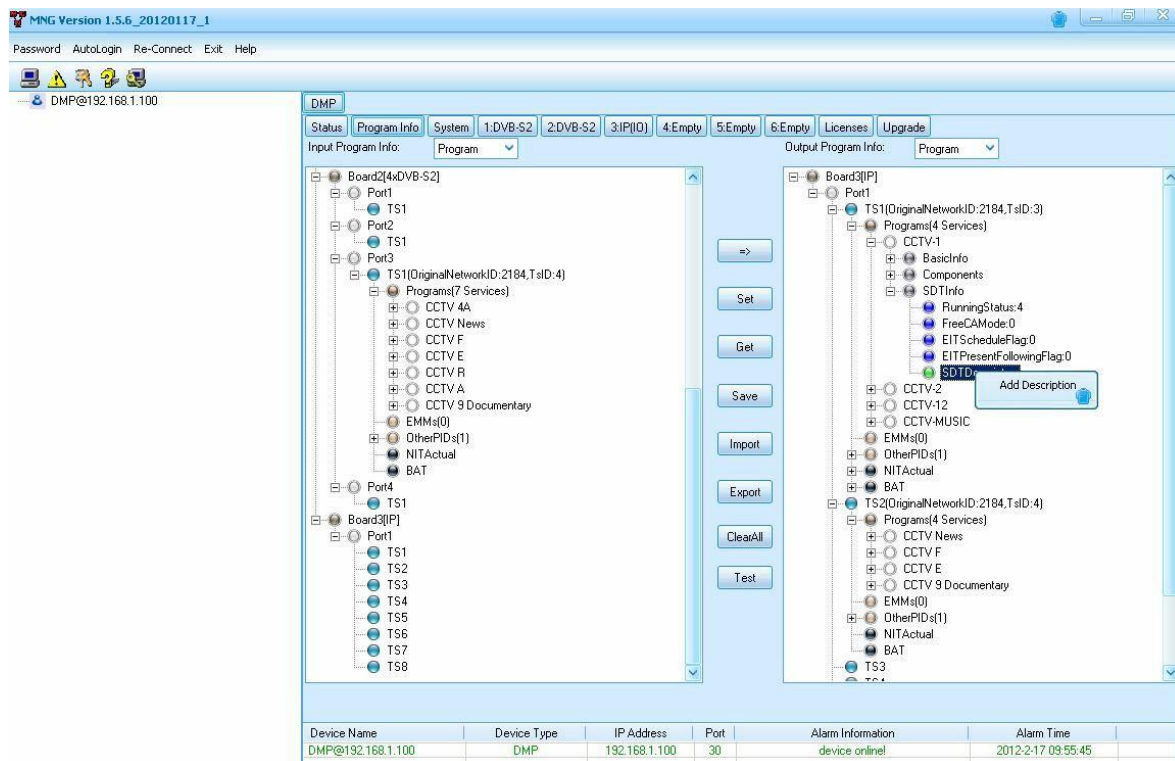
Tag(Hex):

Data(Hex):

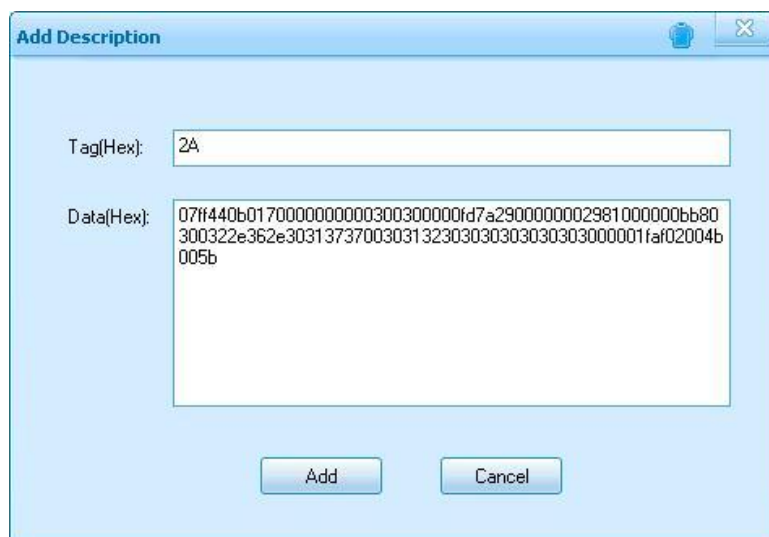
■ SDT Descriptor Insertion

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

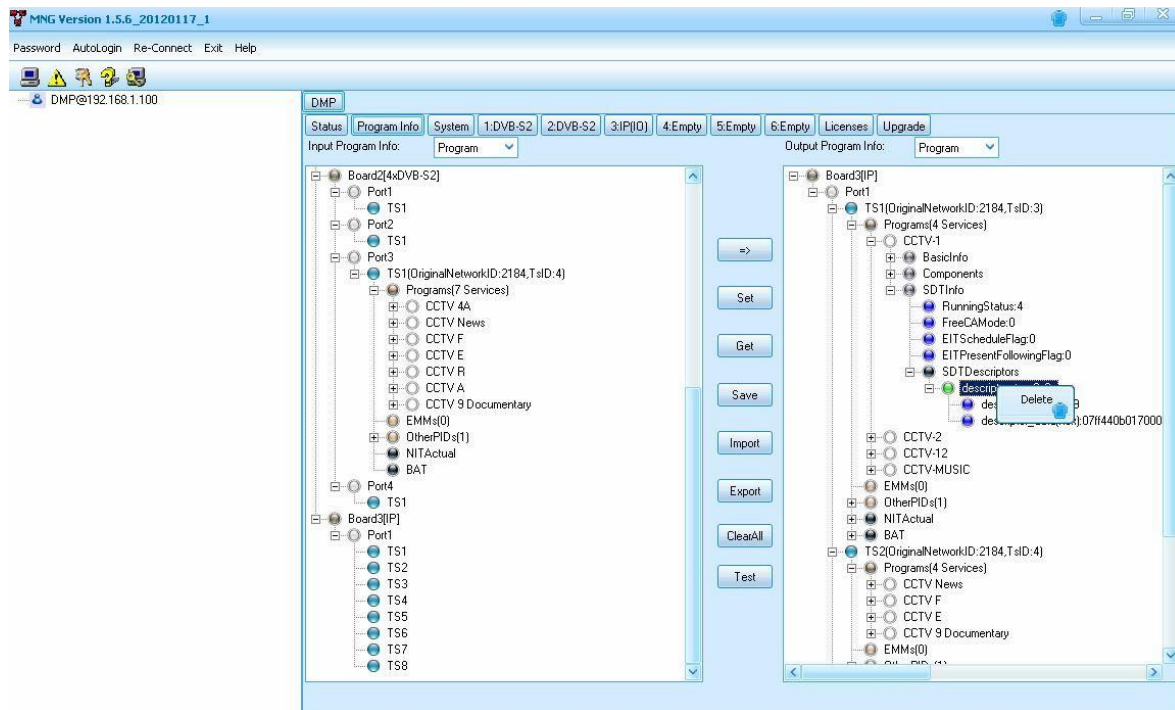
1. Find the program you want to add the SDT descriptor in and click '+' before 'SDT Info'. Right click 'SDT Descriptors' and then click 'Add Description'.



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'.

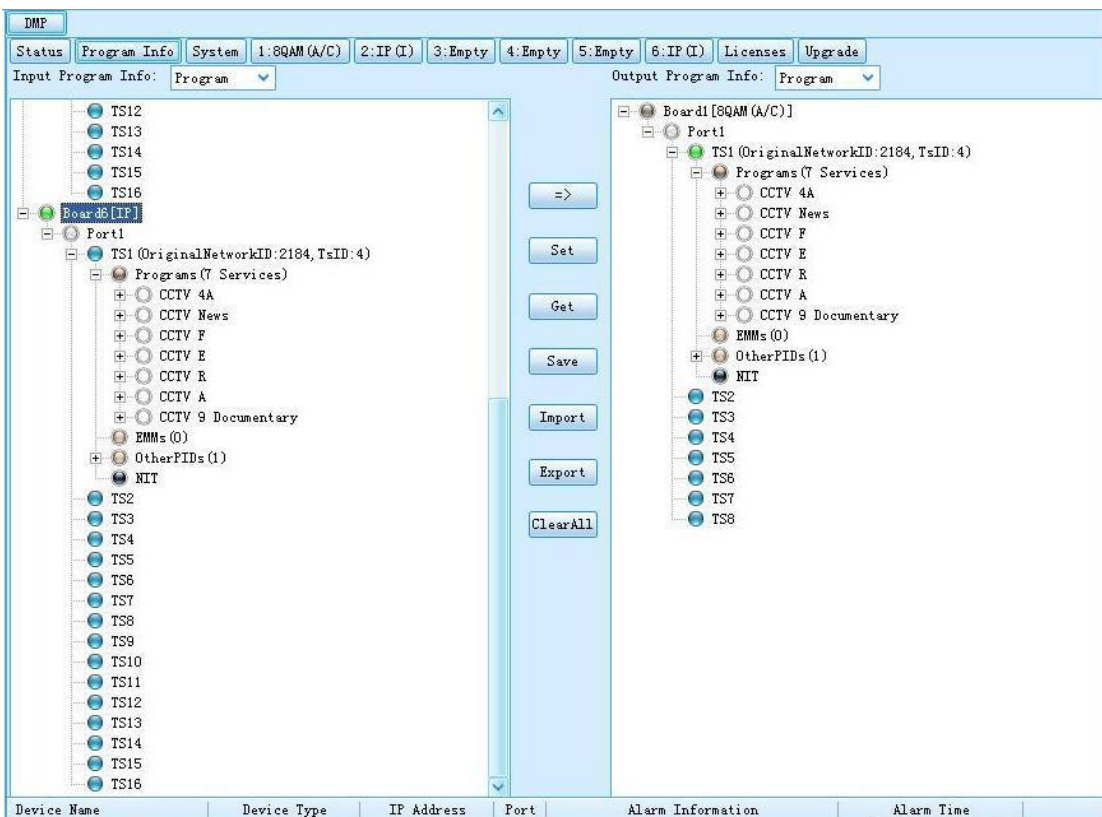
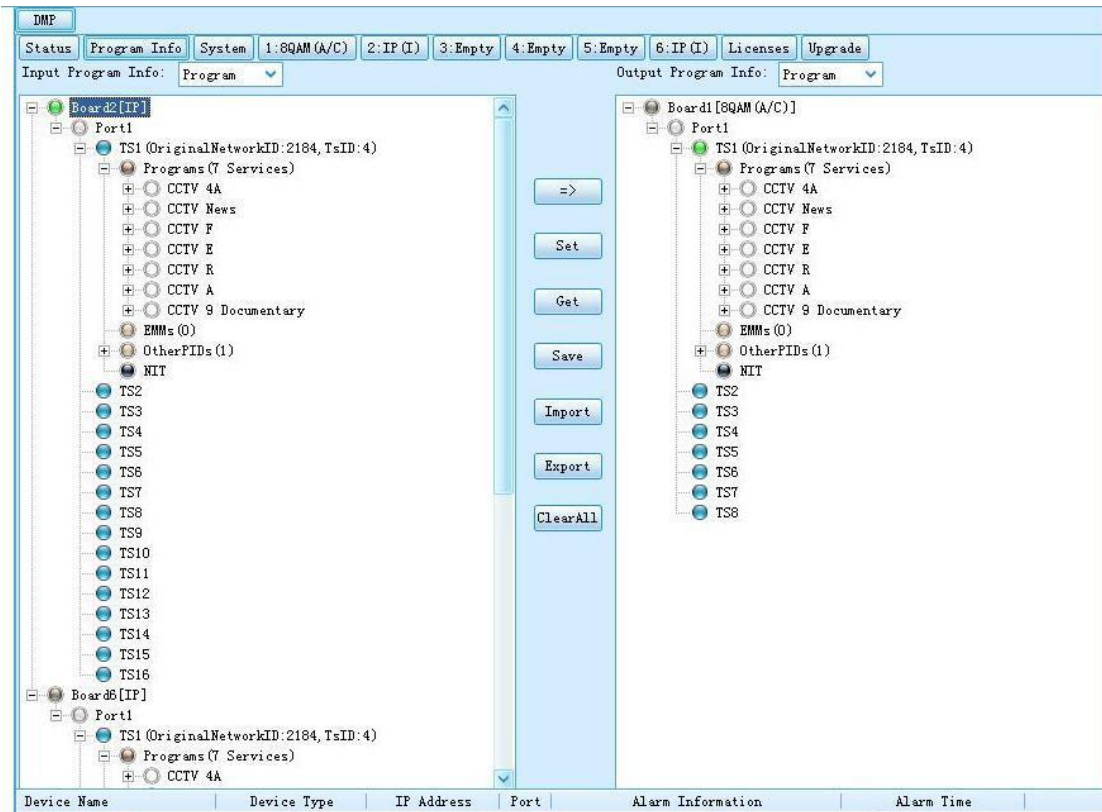


3.1.6 Receiving Signal Auto- Backup Function

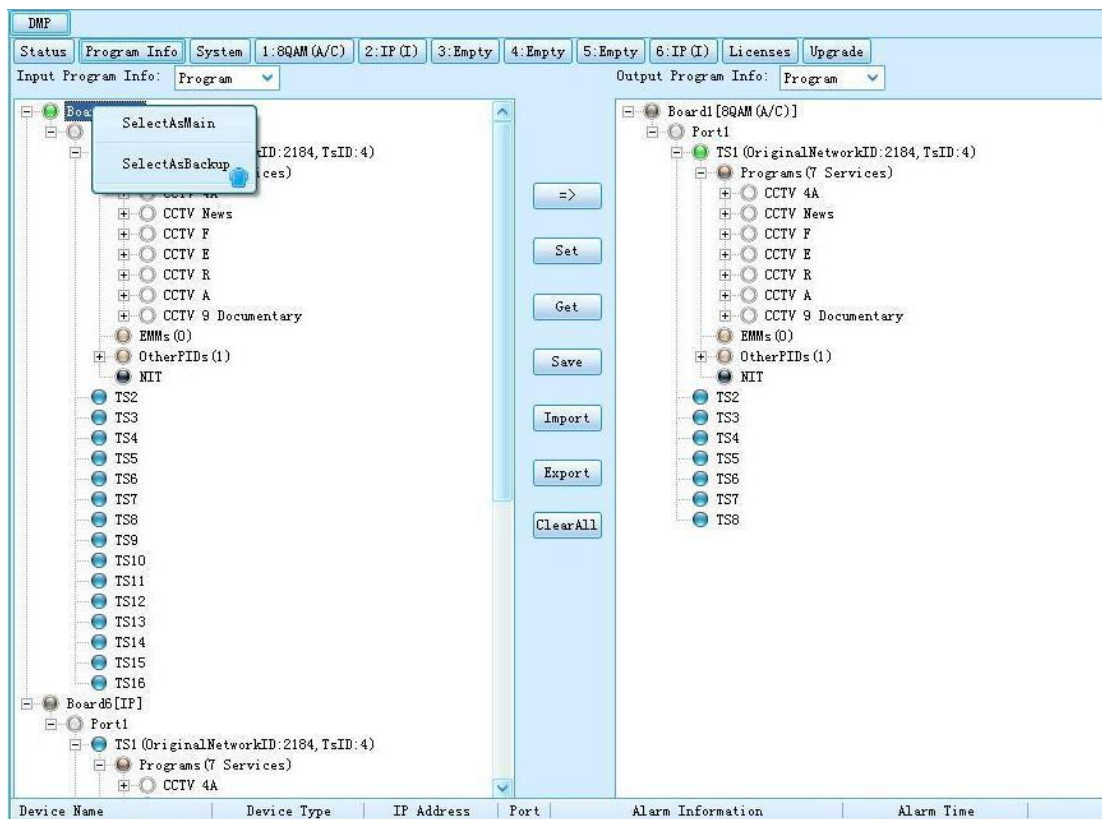
The DMP900 supports auto-backup function for the receiving signals. Once the main receiving module breaks down, the backup module automatically takes over the signal receiving function to guarantee no signal lost happen in this case.

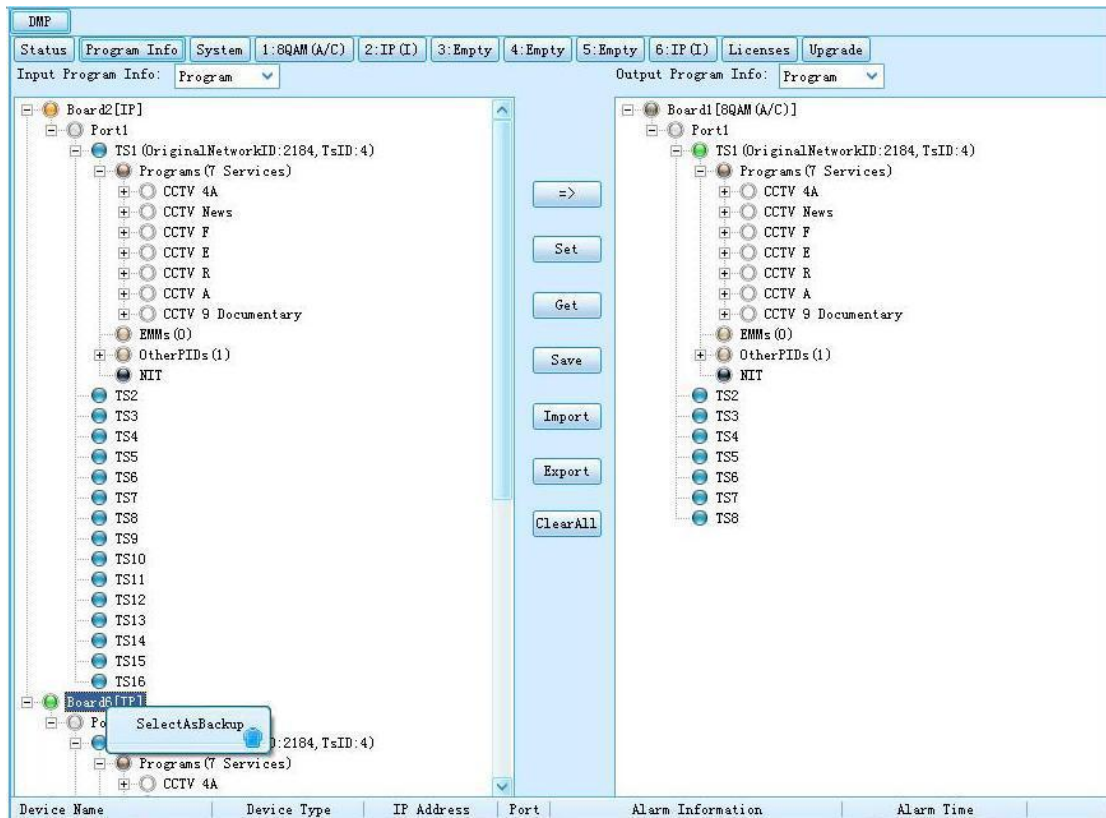
This auto-backup function can be achieved on all DMP receiving module types, including DVB-S2 module, IP Input module and ASI module. To enable this function, user shall prepare 2 same type receiving modules, feed them with same signal sources, and assign "Main" / "Backup" for the two modules. The following 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.

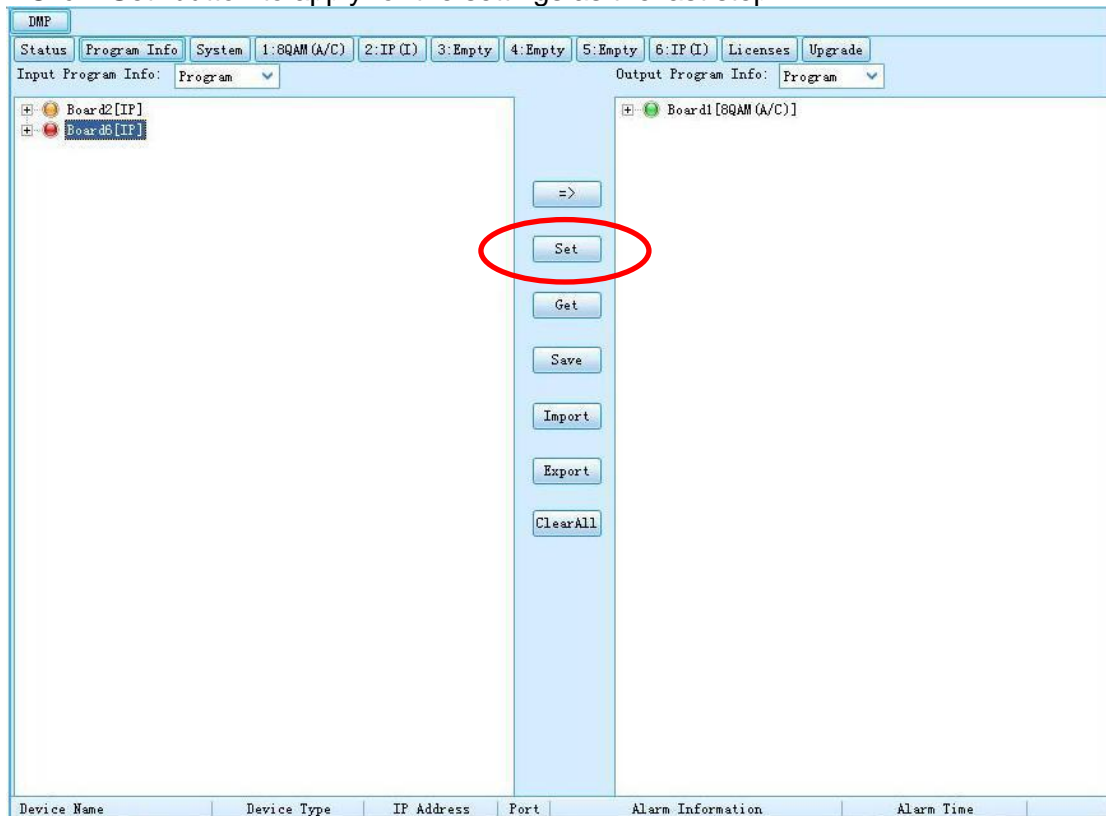


- Mouse right click on the module name, and select “Main” or “Backup” for each module.
As an example, here we set module in slot 2 as the “Main” module, and the one in slot 6 as the “Backup” module. After the setting, the modules will be marked with different color buttons in front of the module names 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 DMP900 loses configuration or you need replace the current DMP900 due to any reason, so that the DMP900 can continue operating with less break time.

- **Export and import the entire configuration of DMP900.** It includes program list, the configuration of each sub-board.

1. Go to 'System' and click 'Export'.

The screenshot shows the 'System' configuration page in the MNG web interface. The 'Export' button is highlighted with a red box. The page displays various network and hardware settings, a table of board types and versions, and a table of device information.

Network Settings:

- IP Address: 192 . 168 . 1 . 100
- Subnet Mask: 255 . 255 . 255 . 0
- Gateway: 192 . 168 . 1 . 1
- Trap IP Address1: 0 . 0 . 0 . 0 ☐ Enable
- Trap IP Address2: 0 . 0 . 0 . 0 ☐ Enable
- MAC Address: A0-69-86-00-20-37
- MainBoardHardwareVersion: 2

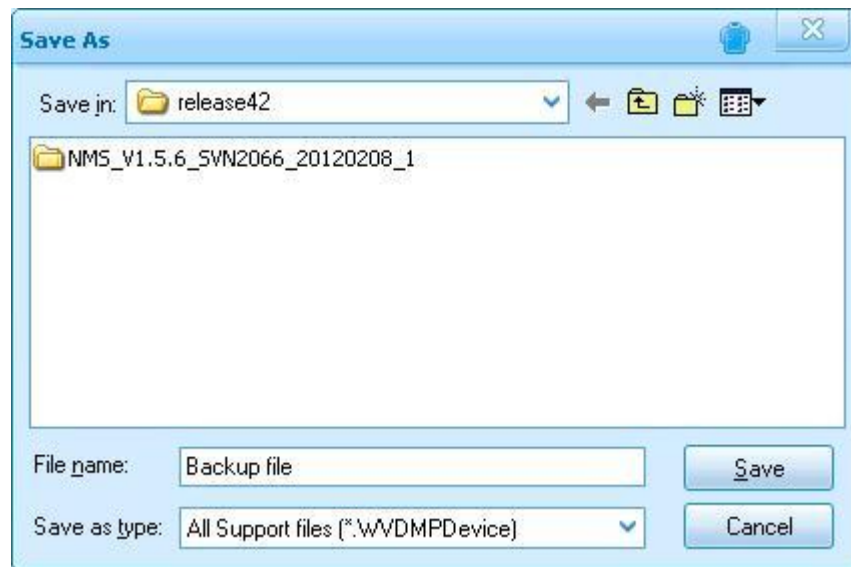
Board Type and Version Table:

Board Type	Firmware version	Software version
MainBoard	V2.0.8] 2012-01-12	[V1.4.5] 2012-02-19
4ASI (in/out)	V126.1225.20111226	V126.1226.20111226
4xAVB-S2	V106.2148.20120113	V109.3264.20120113
8QAM J83 AnnexA/C	V106.02.20111229	V106.02.20111229
Scrambler	V141.1000.20120213	V100.2071.20120213
Transcoder(MPEG2T...	V103.2141.20111228	V106.2185.20111228
HD-Encoder_SDI	V102.2154.20111123	V103.2145.20111123
TSIP(I/O)	V163.1018.20120208	V215.0056.20120208
4xAVB-S2_New	V106.2312.20120113	V109.3254.20120113
TSIP(I/O)	V163.1009.20110928	V214.0052.20110928
TSIP(I)	V163.1017.20120210	V215.0057.20120210

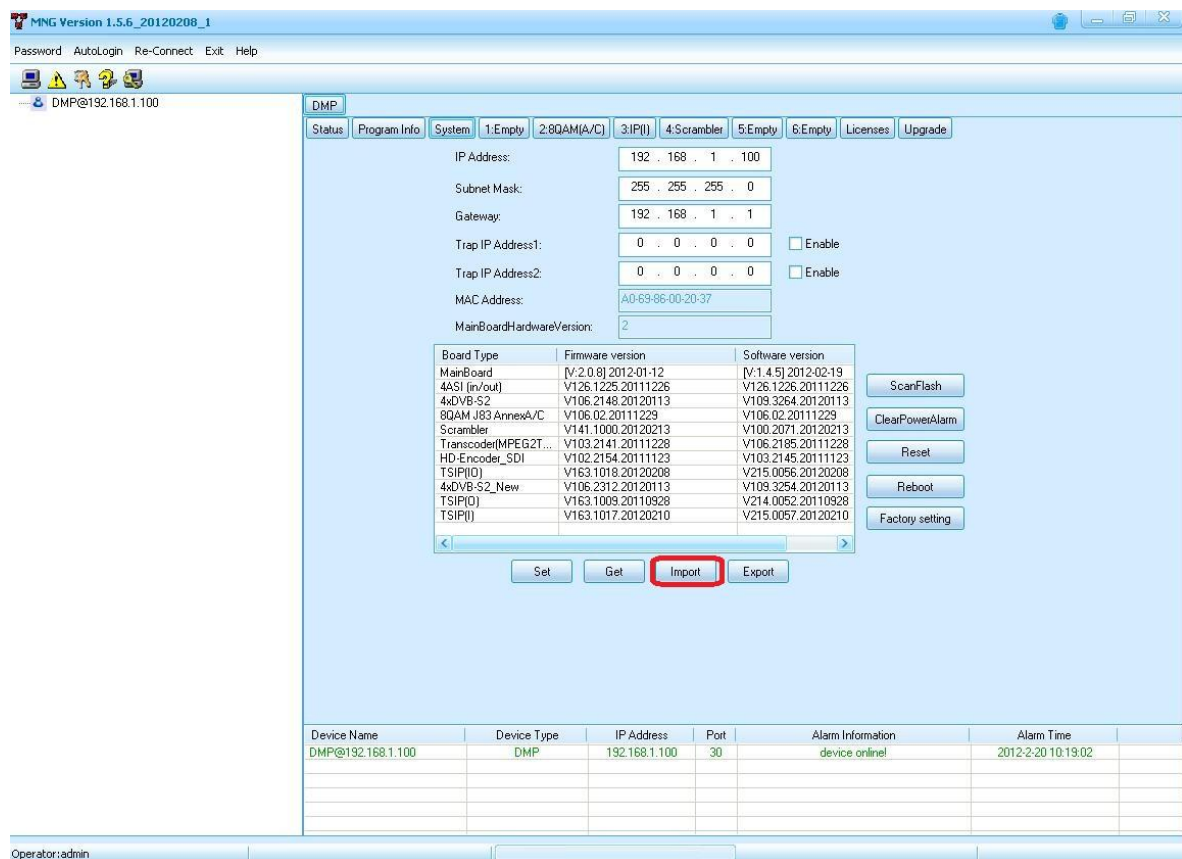
Device Information Table:

Device Name	Device Type	IP Address	Port	Alarm Information	Alarm Time
DMP@192.168.1.100	DMP	192.168.1.100	30	device online!	2012-2-20 10:19:02

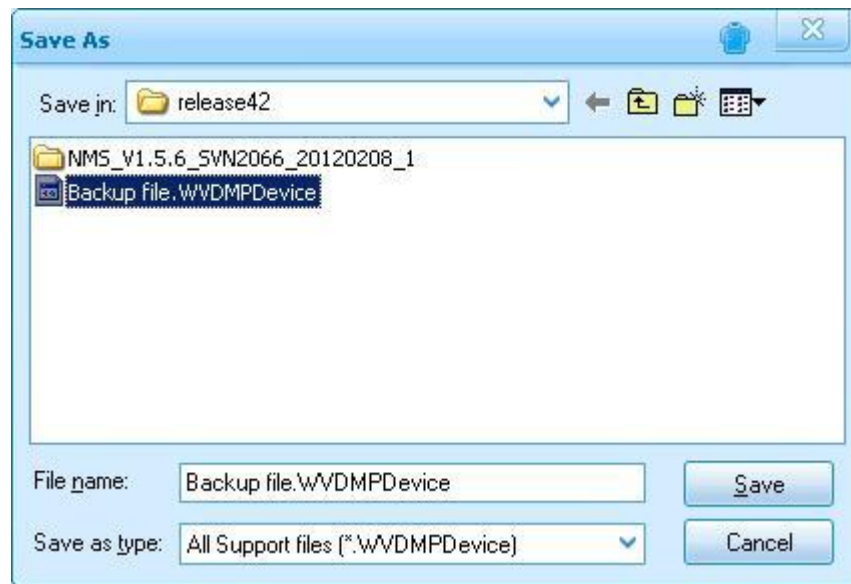
2. Input the name of the backup file and click 'Save' to save the entire configuration of DMP900.



3. To import the backup file to DMP900, go to 'System' and click 'Import'.



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



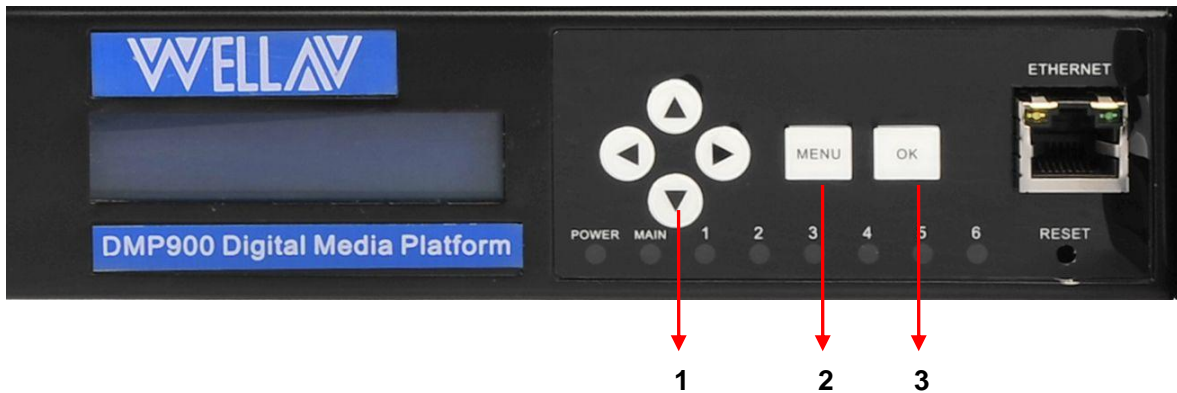
- **Export and import the program list only.** Go to 'Program Info' and click 'Export' or 'Import' to export or import the program list.
- **Export and import the configuration of one sub-board only.** Go to the sub-board which you want to export configuration from or import configuration into, and click '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 DMP 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

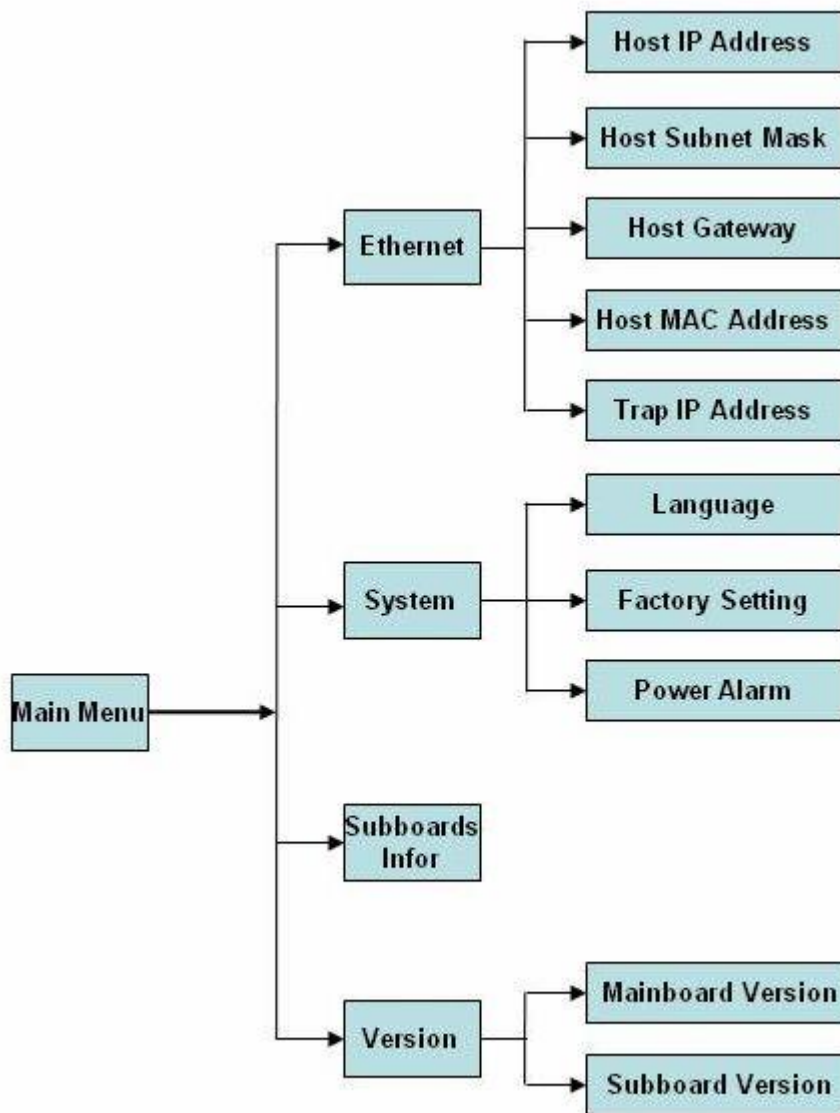


1. Navigation Keys: Up/Down/Left/Right buttons. Used for moving the cursor during the operation.

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

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

3.2.2 Front Panel Operation Menu Structure



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: 44mm x 499mm x 440mm (1.75" x 19.6" x 17.3")

Weight: 10Kg

Power Supply Unit:

Up to 2 X PSU/per DMP

Max. 250W/per PSU (fully loaded)

AC90~240V 50/60Hz

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

Storage Temperature: -10~70°C (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