

Simple Media Platform


User's Manual

V1.02-N

About This Manual

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

Important

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

Notices

● Trademark Acknowledgments

All trademarks shown in this manual are trademarks of their respective owners.

● Publication Disclaimer

Our company assumes no responsibility for errors or omissions that may appear in this publication. We reserve the right to change this publication at any time without notice. This document is not to be construed as conferring by implication, estoppel, or otherwise any license or right under any copyright or patent, whether or not the use of any information in this document employs an invention claimed in any existing or later issued patent.

● Copyright

Information in this publication is subject to change without notice. No part of this publication may be reproduced or transmitted in any form, by photocopy, microfilm, xerography, or any other means, or incorporated into any information retrieval system, electronic or mechanical,

Safety Instructions



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

Electric Shock Hazard

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



WARNING:

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

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

Know the following safety warnings and guidelines:

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

Important Safety Instructions

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

instructions.

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



WARNING:

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

Installation Site

When selecting the installation site, comply with the following:

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

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

Installation Requirements

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

Equipment Placement

- Make sure the mounting surface or rack is stable and can support the size and weight of this equipment.

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

AC Power

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

Circuit Overload

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



WARNING:

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

General Servicing Precautions



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

Be aware of the following general precautions and guidelines:

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

Electrostatic Discharge

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

Take the following precautions against electrostatic discharge:

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

Contents

CHAPTER1 OVERVIEW	8
1.1 GENERAL	8
1.2 FRONT PANEL	8
1.3 REAR PANEL	9
CHAPTER2 INSTALLATION	10
2.1 INTRODUCTION	10
2.2 INSTALLATION PREPARATION	10
2.3 OPERATING TEMPERATURE	11
2.4 RACK MOUNTING.....	11
2.4.1 Tools and Accessories.....	11
2.4.2 Mounting Requirements	11
2.4.3 Mounting the equipment.....	11
2.5 CONNECTING THE AC POWER	12
2.6 CABLING THE MANAGEMENT PORTS.....	13
CHAPTER3 OPERATION GUIDE	14
3.1 OPERATION THROUGH WEB MANAGEMENT SYSTEM.....	14
3.1.1 Assigning IP Addresses.....	14
3.1.2 Web UI Introduction.....	15
3.1.3 Basic Operation Introduction.....	18
3.1.4 Parameters Setting of the Sub-module.....	30
3.1.5 Advanced Configuration	72
3.2 OPERATION THROUGH FRONT PANEL.....	84
3.2.1 Front Panel Control Buttons.....	84
3.2.2 Front Panel Operation Menu Structure	85
3.2.3 Front Panel Operation Procedure	85
CHAPTER4 TERMINOLOGIES	86

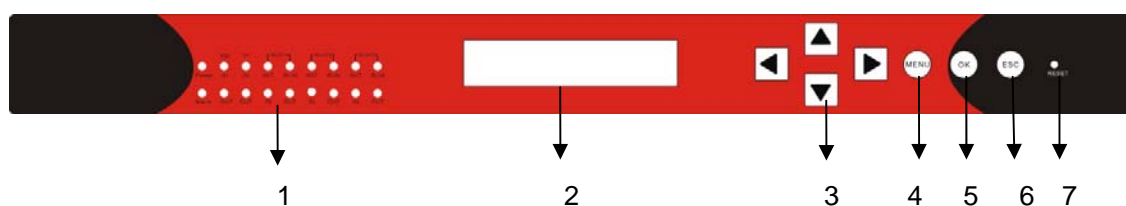
Chapter1 Overview

1.1 General

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



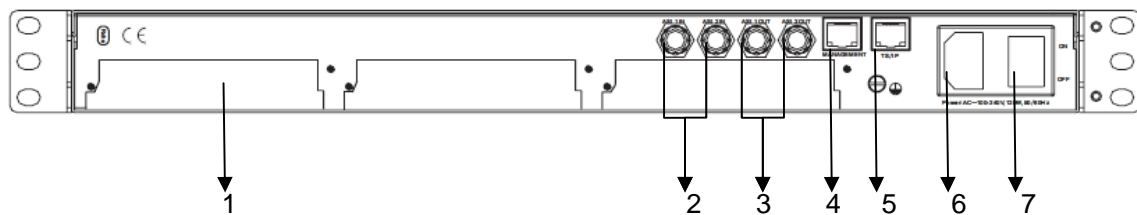
1.2 Front Panel



1. LED indicator: Indicate the status of the mother board and modules.
 - Green and flashing: module is under initiation
 - Green: normal
 - Red and flashing: initiation fails
 - Red: error detected
2. LCD display.
3. Front panel operation Keys

4. Menu button.
5. OK button
6. Esc button
7. Reset button

1.3 Rear Panel



1. Module slot: Inset Modules
2. ASI IN;
3. ASI OUT:
4. Ethernet interface for remote management control
5. TS/IP I/O
6. Power supply interface
7. Switch

NOTE: Submodules in SMP is not hot swappable. Hot swappable might cause unrecoverable hardware damage to the unit. Before pulling in or pulling out the submodules, please power off the SMP.

Chapter2 Installation

2.1 Introduction

This chapter contains the information for technicians installing the equipment.



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

2.2 Installation Preparation

Before You Start

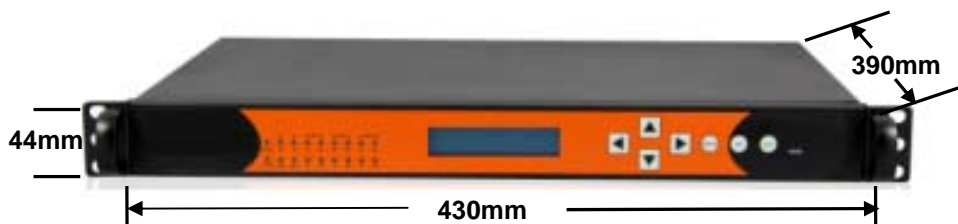
Make sure that the chassis is in good condition and that you have the tools and equipment needed.

Unpacking and Inspecting the Housing

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

Chassis Dimensions

The following drawing shows the dimensions of the equipment.



2.3 Operating Temperature

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



WARNING:

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

We recommend the following activities to moderate the operating temperature:

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

2.4 Rack Mounting

2.4.1 Tools and Accessories

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

- Screwdriver.
- Support brackets and rack mounting screws.

2.4.2 Mounting Requirements

Follow the mounting guidelines below:

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

2.4.3 Mounting the equipment



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

Perform the following procedure to install the equipment.

1. Unpack the device.
2. Select a 1 RU high location in the rack.
3. If the rack holes are not threaded, install a cage nut in the top and bottom holes of the selected 1 RU space.
4. Mount a left and right support bracket in the 19-inch rack.
5. Slide the housing completely in the 19-inch rack with the bottom being supported by the support brackets.
6. Insert the front panel rack mounting screws through the washers into the threaded holes or cage nuts.
7. Tighten the front panel rack mounting screws.

2.5 Connecting the AC Power

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

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

Note:

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



Caution:

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

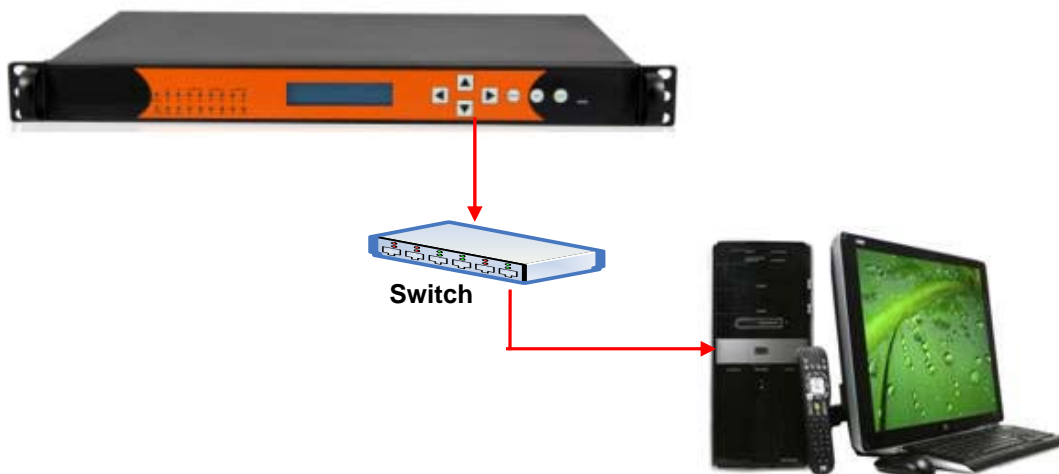
2.6 Cabling the Management Ports

Introduction

The operation on the equipment will be mostly carried out through the Network Management Software (NMS). Please connect the management port on the rear panel with the monitoring computer in advance

Required Cable

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



Chapter3 Operation Guide

3.1 Operation through Web Management System

3.1.1 Assigning IP Addresses

The equipment is equipped with a 10/100Base-T port for communication with a remote control and monitoring PC.

When the equipment leaves our factory, the Ethernet port is configured with the following parameter settings:

Parameter	Default Setting
IP address	192.168.1.241
Subnet Mask address	255.255.255.000
Gateway	192.168.1.1

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

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

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

- **Step 1:** Check out the device IP
Press **MENU** button to enter main menu.
Press **UP** button and **DOWN** to navigate to the sub menu **System**.
Press **OK** to Enter the Sub menu **Ethernet Setup**, within it, press **UP** button and **DOWN** button, you can check out the **IP**, **Gateway**, **Subnet Mask**, etc.
- **Step 2:** Change the **IP**, **Gateway** and **Subnet Mask** to make it in the same network section as the management PC:
Example:

	Media Platform	Management PC
IP Address	192.168.1.241	192.168.1.XXX
Gateway	192.168.1.1	192.168.1.1
Sub Mask	255.255.255.0	255.255.255.0

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

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

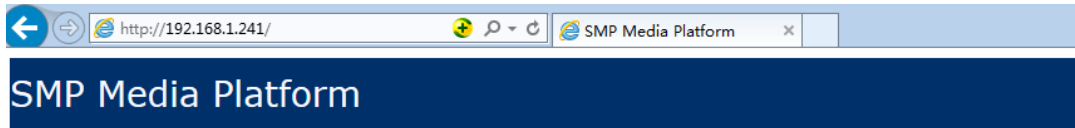
Note:

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

◆ 3.1.2 Web UI Introduction

The device provides a web-based management system to configure the device and constantly monitor the device running status.

Step 1: Open a web browser (Internet Explorer, Firefox, Chrome, etc.) and enter the IP address of the device in the address bar, then click OK, it will redirect to the login interface.



User Name

Password

Clear

Login

Step 2: Enter the correct User Name and Password (Default User Name and Password are “admin”.) and click Login to enter the web-based system management interface.

User Name

admin

Password

•••••

Clear

Login

PIC-3.1-1

After successful log on, the following screen will display:

SMP Media Platform

- Status
 - Chassis
 - Service Overview
 - Slot 1:EN4AV-4SM
 - Slot 2:EN4AV-4SM
 - Slot 3:EN4AV-4SM
- Service Configuration
- Module Configuration
 - Slot 1:EN4AV-4SM
 - Slot 2:EN4AV-4SM
 - Slot 3:EN4AV-4SM
- ASIP[Embedded]
 - TSIP[Embedded]
 - Input
 - Channel(1-12)
 - Batch Set
 - Output
 - Channel(1-12)
 - Batch Set
 - Setup
- Equipment Configuration
 - Version Information
 - License
 - Import/Export
 - Upgrade
 - User Authorization
- Logout

Mainboard Status

TS Bitrate Overview

Input(Mbps)		Output(Mbps)	
Board1	16.00	Board1	0.00
Board2	18.70	Board2	0.00
Board3	0.00	Board3	0.00

ASIP[Embedded] Status

TS Bitrates Overview

Input (Mbps)		Output (Mbps)	
Port	Total Bitrate	Port	Total Bitrate
Port1	38.01	Port3	0.00
Port2	0.00	Port4	0.00

TSIP[Embedded] Status

TS Bitrate Overview

Input (Mbps)		Output (Mbps)	
Channel	Total Bitrate	Channel	Total Bitrate
1	0.00	1	0.00
2	0.00	2	0.00
3	0.00	3	0.00
4	0.00	4	0.00
5	0.00	5	0.00
6	0.00	6	0.00
7	0.00	7	0.00
8	0.00	8	0.00
9	0.00	9	0.00
10	0.00	10	0.00

PIC-3.1-2

● Main Interface Introduction

(1) **Tool Bar:** Tool bar contains below 5 tabs, click the √ mark beside these tabs to expand these tabs structure, the sub-tabs will appear.

a. **Status:** This tab provides you access to view the chassis and sub-module running status (the SMP chassis can be inserted with at most three sub-modules). Below status are common for the chassis and most of the sub-modules

- **Total bitrate:** Indicates the total bit rate of input / output signal (including the null packet). The unit is Mbps.
- **Effective bitrate:** Indicates the valid bit rate of input / output signal. (excluding the null packet). The unit is Mbps.

Since the chassis is embedded with 2 ASI input & 2 ASI output interface as well as 12 IP input / output internal channels, the chassis status includes the signal throughput information of the embedded ASI and IP interfaces, which is different from the ASI /IP modules status.

b. **Service configuration:** This tab provides you access to configure the business logic of the services that going through the chassis.

c. **Module Configuration:** This tab provides you access to configure the sub-module parameters to indicate how this module will work. The embedded ASI and IP module parameter can also be configured under this tab (It is showing as “ASI [Embedded], IP [Embedded]”), the method is the same with that to configure an independent ASI or IP sub-module.

d. **Equipment Configuration:** This tab provides you access to view the equipment information like software / firmware version, License of the chassis and the sub-modules as well as some basic management options, like upgrade, Import / Export service configuration, User Authorization.

- **Version Information:** This tab allows the software/firmware/hardware version of the sub-modules and mainboard.
- **License:** the equipment provides very flexible license management on its modules. User can purchase new license to expand the module capability along with the business development, e.g. to update the license of a QAM module to let it support more channel output.
- **Import / Export:** This tab allows you to export the existing service configuration or import a prepared service configuration file to the chassis.

- **Upgrade:** This tab allows you to upgrade the firmware/ software for the sub-modules / chassis.
 - **User Authorization:** This tab allows the system administrator to create / delete authorized user to access the management system.
- e. **Logout:** This tab provides you access to logout from the web-based management UI.

(2) **Information Window:** This part showing the specific information according to your selection in the tool bar. You can set the parameter of the chassis and sub-modules as well as the business logic of the services in this page.

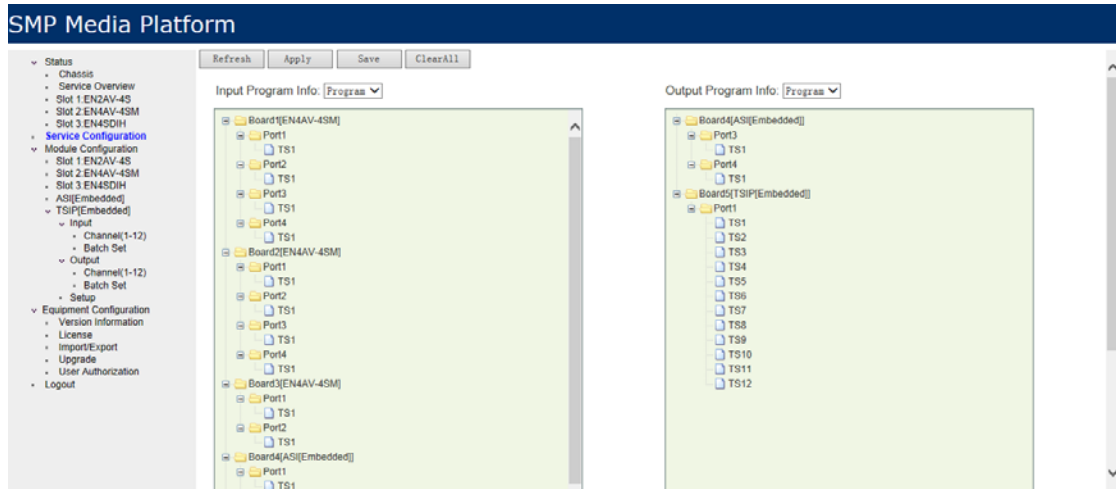
3.1.3 Basic Operation Introduction

3.1.3.1 Service Configure Introduction:

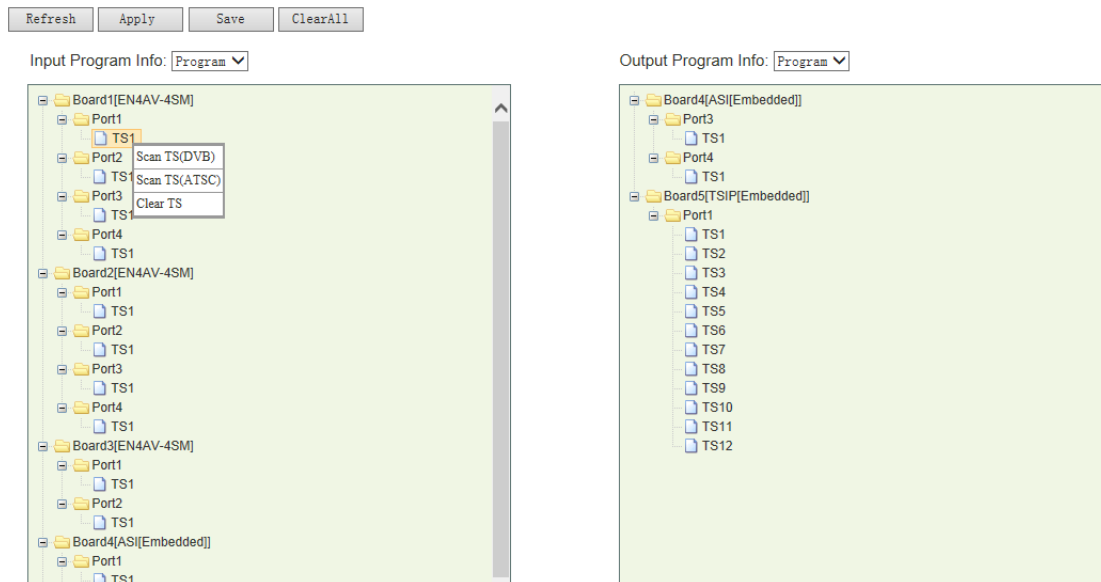
Below content introduce the basic configuration of the service business logic in the service configuration page:

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.

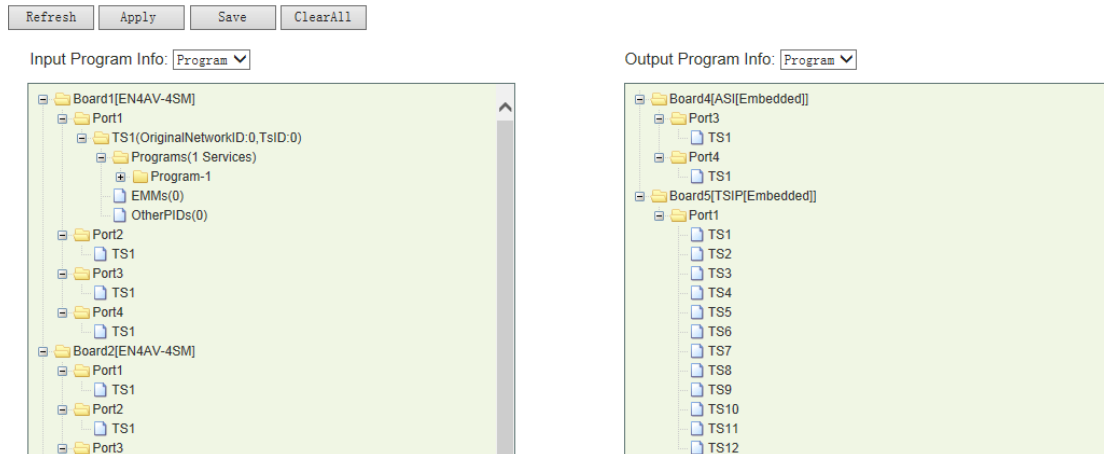
1. Scan the input TS: after the parameters of the inserted module are properly configured, select one port which is connected with input stream, and then click the mouse right button. If the input stream complies to DVB standard, please select “Scan TS (DVB)”; If the input stream complies to ATSC standard,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



Pic-3.1-3



Pic-3.1-4

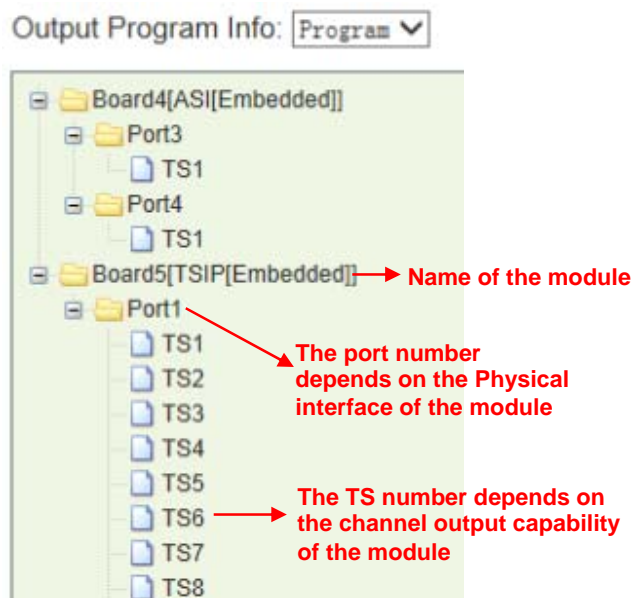


Pic-3.1-5

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.

- In the “Output Program Info” 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.



Pic-3.1-6

- Operation Procedures

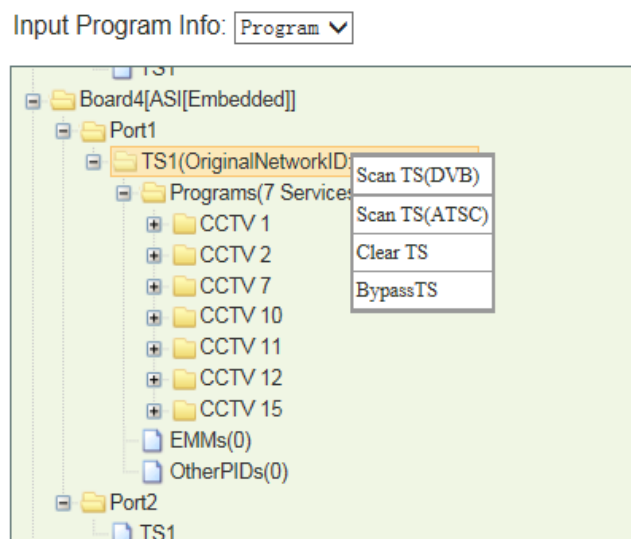
Two kinds of operation are provided: 1) transfer the whole TS including all PIDs; 2) transfer programs one by one.

1) Transfer the whole TS

- In “Input Program Info”, select a TS# that you want to transfer the ts from, click left button of the mouse, and keep the mouse light button being pressed and drag the TS# to a TS# in “Output Program Info”, then the whole TS will be transferred.

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

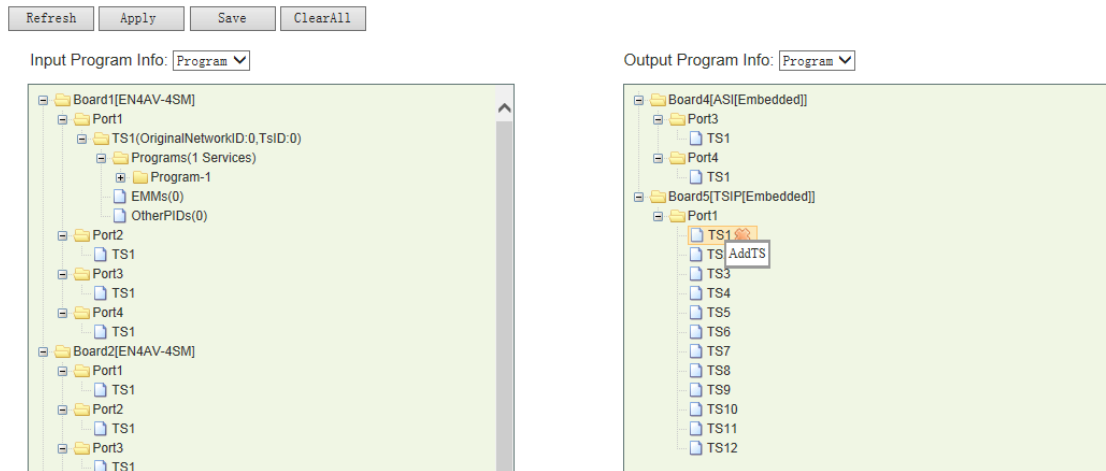
BypassTS—this option allows the whole TS stream transferred without any change. In this case, it's not allowed to transfer program one by one, and only TS transfer is allowed. Especially, it's used when there's problem in CI descrambling.



Pic-3.1-7

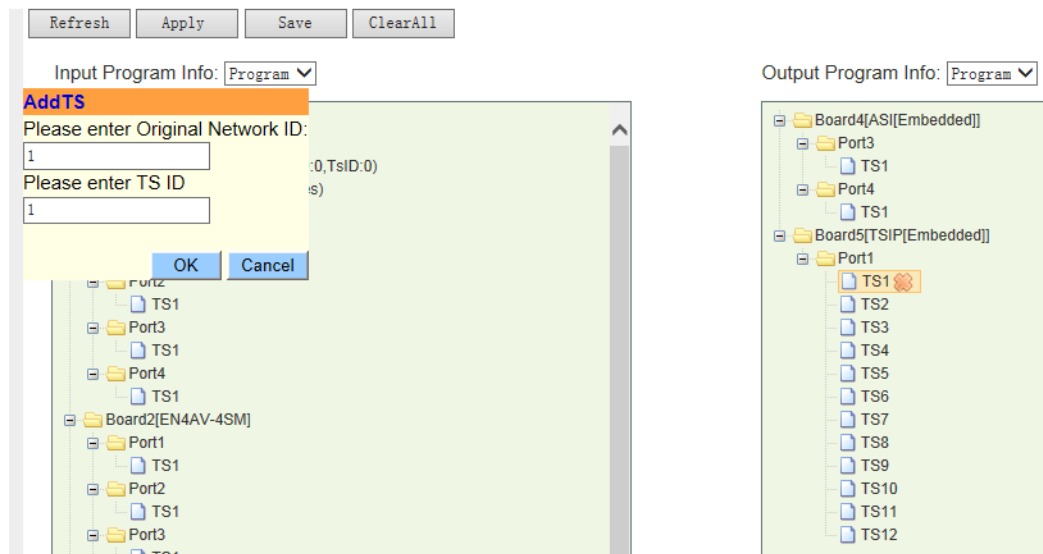
2) Transfer programs one by one

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



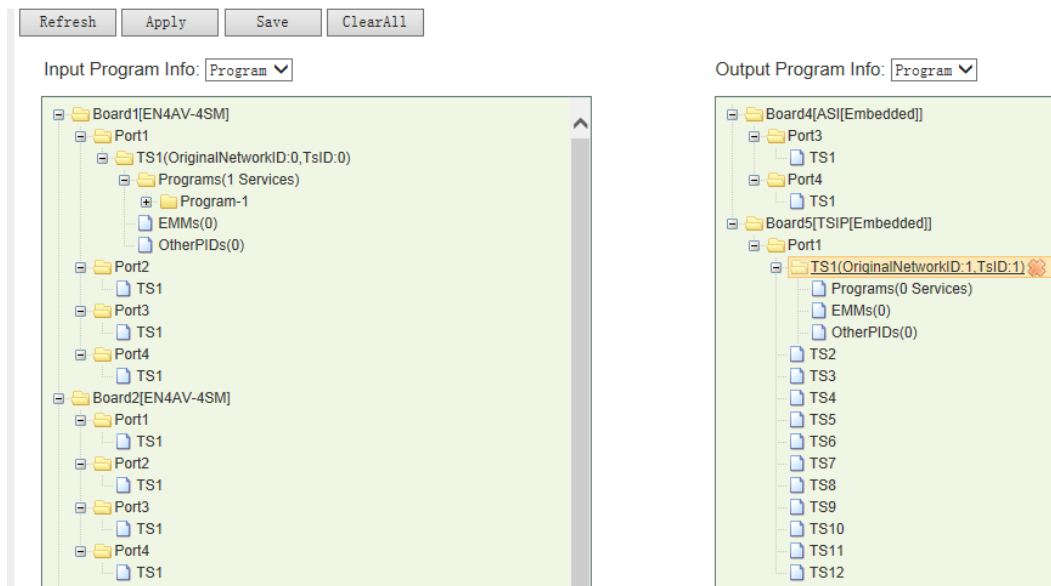
Pic-3.1-8

- Input the “Original Network ID” and “TS ID” for the channel, and click the “OK” button.



Pic-3.1-9

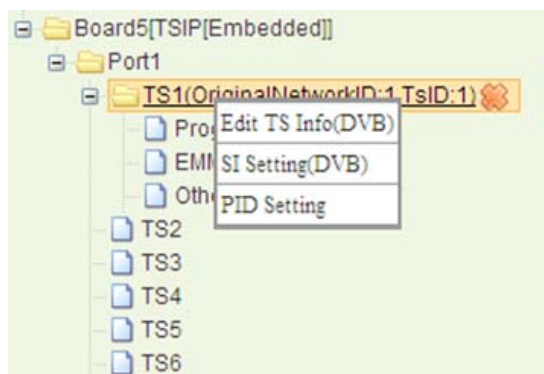
The TS# will be created and assigned with “Original Network ID” and “TS ID”. Under the TS#, a program port is created to receive the programs.



Pic-3.1-10

To delete the existing TS#, click on the TS# to highlight it, a “X” mark will appear besides the TS#, click on the X mark, the TS will be deleted.

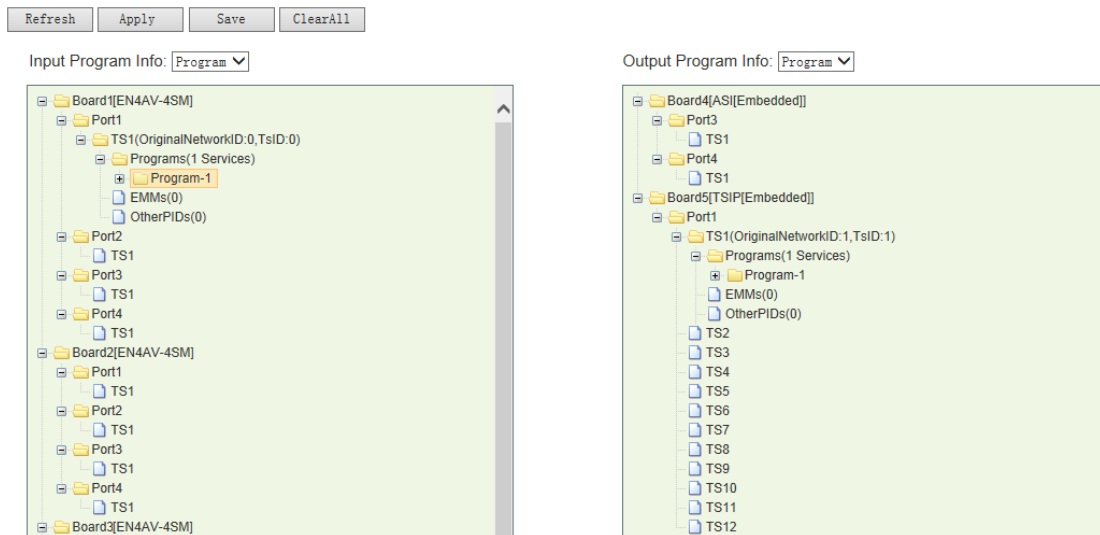
To change the “Original Network ID” and “TS ID”, right click on the TS (channel) name, Then select Edit TS Info (DVB), the TS information will become editable.



Pic-3.1-11

Note: When you right-click TS#, you’ll see “SI Setting (DVB) and PID Setting” option. The SI Setting option allows operator editing the NIT, SDT, BAT and inserting LCN and private descriptors. The PID Setting allows operators to change the service related PID values. (Will be introduced in other chapters)

- Select a program to be transmitted out on the left hand side “Input Program Info” window, click on left button of the mouse and keep it being pressed, then drag the program to the program port under the TS you just created in “Output Program Info” window, then the program will be transferred there.

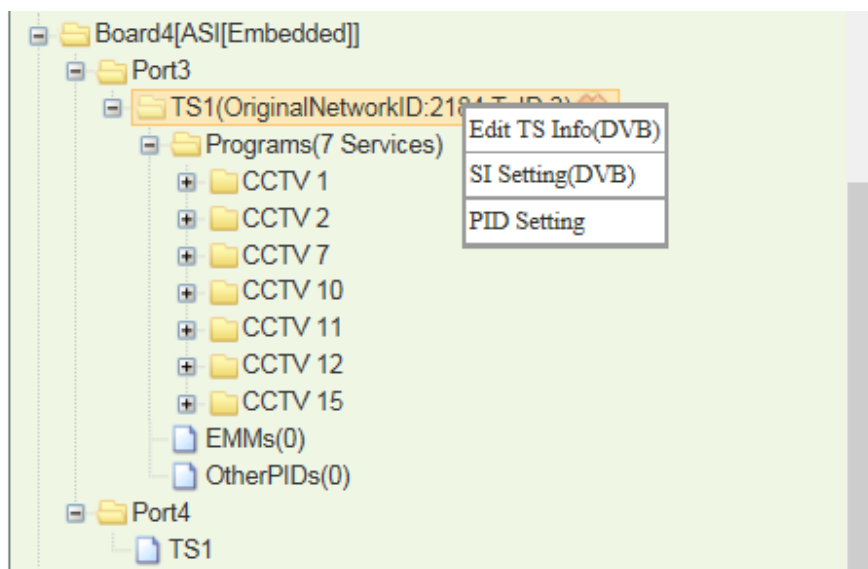


Pic-3.1-12

- Follow the same operation steps, user can set the selected input stream to be transmitted at any assigned output TS (channel). After the program/ ts has been transferred as you desired, click “Apply” to allow the configuration take effect.
- you can click “Clear All” to delete all of the existing service configuration.

③ PID edit:

Customer can edit the program / stream ID / PID: Select a TS in output program Info window, and right click on it, select “Edit TS Info”. Customer can edit the Network ID, TS ID, Service Name, Provider Name, Service ID, PMT PID, PCR PID and Service Type.



Pic-3.1-13

Original Network ID		2184		Ts ID		3	
Service Name	Provider Name	Service ID	PMT PID	PCR PID	Service Type		
1 CCTV 1	CCTV	301	257	8190	1		
2 CCTV 2	CCTV	302	258	8190	1		
3 CCTV 7	CCTV	303	259	8190	1		
4 CCTV 10	CCTV	304	260	8190	1		
5 CCTV 11	CCTV	305	261	8190	1		
6 CCTV 12	CCTV	306	262	8190	1		
7 CCTV 15	CCTV	307	263	8190	1		

Please apply and save your setting after complete setting in Service Configuration page.

Apply

Pic-3.1-14

After above information has been edited as your need, you can click Apply to make it take effect.

3.1.3.2 Change IP setting of the equipment

System operator can change the IP setting of the equipment from the Equipment Configuration page, IP address, Network Mask, Gateway and Mac address are all available for change, after change these parameters, you can click Apply to make the change take effect.

IP Address	192	168	1	40	
Network Mask	255	255	255	0	
Gateway	192	168	2	1	
Trap IP Address1	0	0	0	0	<input type="checkbox"/> Enable
Trap IP Address2	0	0	0	0	<input type="checkbox"/> Enable
Mac Address	A0-69-86-00-91-3B				

Apply Refresh Default Reboot

Pic-3.1-15

3.1.3.3 License update procedure

- ◆ Select “License” tab under Equipment Configuration in the tool bar. In the “License” main interface, select a module which you want to update the license.

The screenshot shows the SMP Media Platform interface. On the left is a navigation tree with categories like Status, Service Overview, Service Configuration, Module Configuration, and Equipment Configuration. The 'License' tab is selected under Equipment Configuration. The main area displays a table of license information for various modules.

Slot	Chip ID	Board Type	Tag Len	License Info	Last Update Time
0	0xc357827040000d9	Mainboard	101	bf010ca0696000b30da0996...	2014-3-5
1	0xc335e8ef04000053	EN4AV	0		2014-1-17
2	0xc337499c504000075	EN4AV	0		2013-11-12
3	0xc33cc39960400002d	EN4SDIH	9	bf06020000bf070101	2014-1-21
4	0xa069696000026001	ASII[1]	0		2011-4-22
5	0xa069696000026002	TSIP[1]	20	Max Input Channel:12,Max Output Channel:12	2012-7-29

Below the table, there are buttons for 'UpgradeLicense' and 'ExportLicense'. The 'ExportLicense' button is highlighted, indicating the next step in the procedure.

Pic-3.1-16

- ◆ Click “License Export” button to save the license file of the selected module, e.g. to export the old license as “license backup.license”
- ◆ Send the license file “license backup.license” to our company for an updated license.

- ◆ Select “License Update” button to import the new license file.
- ◆ License update succeeds.

3.1.3.4 Import & Export configuration file

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

1. To export the configuration file, click Export, and input the name of the backup file and click ‘Save’ to save the entire configuration.
2. To import the backup file to the equipment, click Import, and select the backup file and click ‘Save’. Then the file will be imported automatically.

3.1.3.5 Upgrade

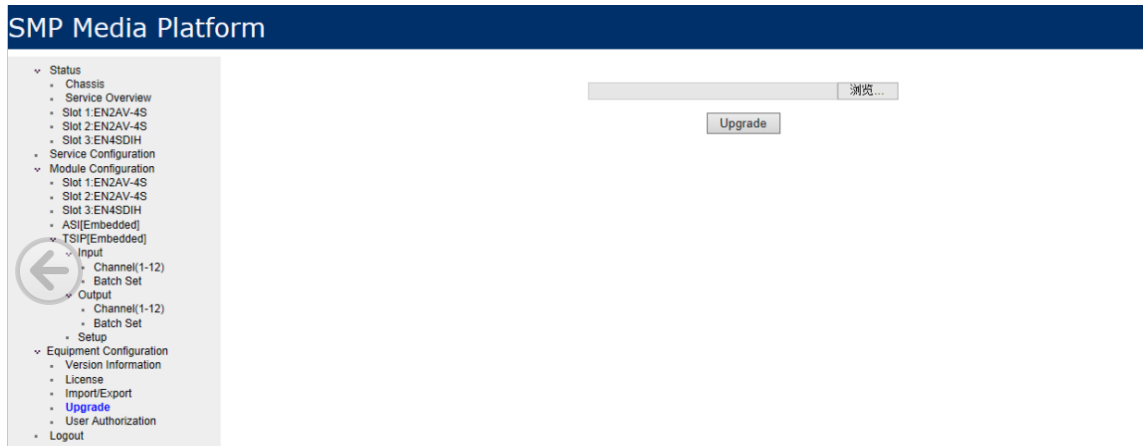
In the “Upgrade” tab, user can upgrade the software version of the mainboard and sub-modules. The upgrade usually is either to fix any bug or implement new features.



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

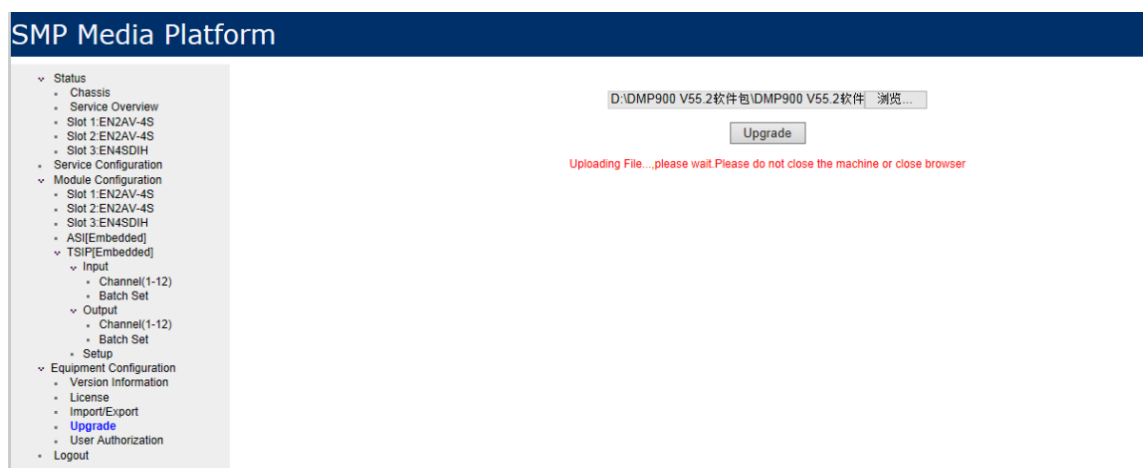
Standard Upgrade Procedures:

- ◆ Select “Upgrade” tab under Equipment Configuration in the Tool bar.

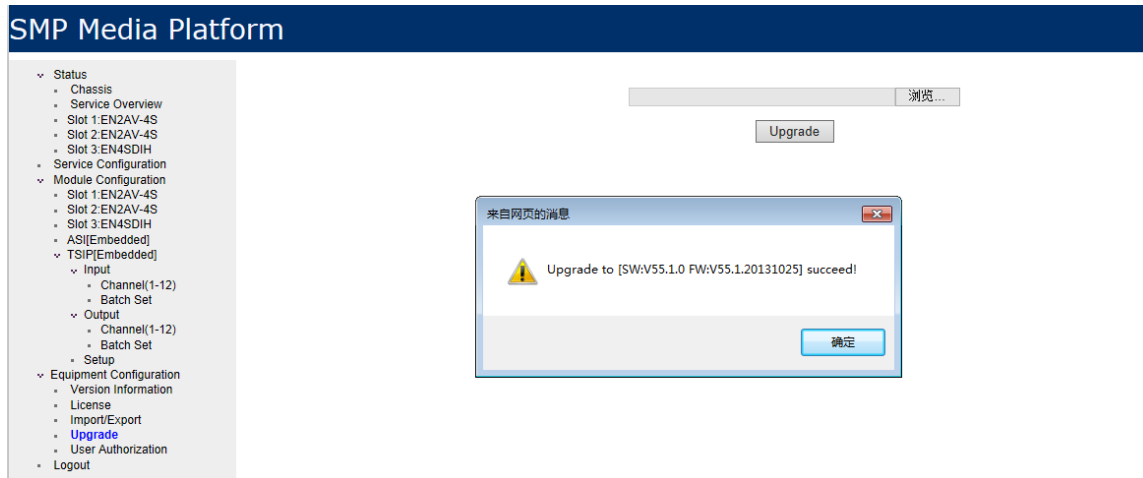


Pic-3.1-17

- ◆ Click “Browse” button and navigate the corresponding directory where the upgrading file is stored, find the correct upgrading file, and click OK.
- ◆ Then click Upgrade, the upgrading procedure will automatically processed until a message appears: Upgrade to [version No.] successfully”.



Pic-3.1-18



Pic-3.1-19

3.1.3.6 User Authorization

This page allows system operator to manage user authorization to access the system. System operator can create a new user to access the system or delete a existing user, change user name / password. After the change is made, click Apply to save the changes.

<input checked="" type="radio"/> Change Password	<input type="radio"/> Change UserName
<input type="radio"/> Create a User	<input type="radio"/> Delete a User
User Name	<input type="text"/>
Password	<input type="text"/>
New Password	<input type="text"/>
Confirm New Password	<input type="text"/>

Pic-3.1-20

3.1.4 Parameters Setting of the Sub-module

In accordance with the 3 modular slots of the equipment, there are total 3 module parameters setting tabs under the tab Module Configuration in the tool bar. Each tab contains the access to configure the parameters of the module.



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

3.1.4.1 DVB-C Module

- **Setting**

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

DVB-C+				
Port	Frequency(KHz)	SymbolRate (KSym/s)	QAM Mode	Lock Status
1	474000	6875	Qam128	Un-lock
2	474000	6875	Qam128	Un-lock
3	474000	6875	Qam128	Un-lock
4	474000	6875	Qam128	Un-lock

Pic-3.1-21

Below are the key parameters:

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

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

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

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

- **Status**

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

Slot 1:DVB-C+ Status				
TS Bitrate Overview				
	Port1	Port2	Port3	Port4
Lock Status	Un-lock	Un-lock	Un-lock	Un-lock
Total Rate (Mbps)	0.00	0.00	0.00	0.00
Effective Rate (Mbps)	0.00	0.00	0.00	0.00
Carrier Level(dBm)	0	0	0	0
SNR(dB)	0.0	0.0	0.0	0.0
C/N(dB)	0.0	0.0	0.0	0.0
MER(dB)	0.0	0.0	0.0	0.0
BER	0.000xE-0	0.000xE-0	0.000xE-0	0.000xE-0

Pic-3.1-22

Introduction to the parameters of status:

Parameters	Description
Lock Status	Indicate whether a cable signal is locked.
Total Bitrate	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps
Effective Bitrate	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.
Carrier Level	Indicates the carrier level.
SNR	
C/N	
MER	
BER	Indicates the real-time bit error rate.

3.1.4.2 DVB-T Receiving Module

- **Setting**

DVBT/ISDBT

Port	Frequency(KHz)	Bandwidth	Mode
1	0	6M	DVB-T
2	0	6M	DVB-T
3	0	6M	DVB-T
4	0	6M	DVB-T

Pic-3.1-23

Below are the key parameters:

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

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

● Status

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

Slot 1:DVBT/ISDBT Status				
TS Bitrate Overview				
	Port1	Port2	Port3	Port4
Total Rate(Mbps)	0.00	0.00	0.00	0.00
Effective Rate(Mbps)	0.00	0.00	0.00	0.00
C/N(dB)	0	0	0	0
BER	0.000xE-0	0.000xE-0	0.000xE-0	0.000xE-0

Pic-3.1-24

Introduction to the parameters of status:

Parameters	Description
------------	-------------

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.
C/N	Indicates the real-time carrier to noise ratio.
BER	Indicates the real-time bit error rate.

3.1.4.3 DVB-S/S2 Module

- **Setting**

DVBS2

	Port1	Port2	Port3	Port4
Frequency (MHz)	11060	11060	11060	11060
Symbol Rate (KSym/s)	27500	27500	27500	27500
LNB Type	Single Band ▾	Single Band ▾	Single Band ▾	Single Band ▾
Band Selection	Auto ▾	Auto ▾	Auto ▾	Auto ▾
LO Low LNB Frequency (MHz)	9750	9750	9750	9750
LO High LNB Frequency (MHz)	10600	10600	10600	10600
Bias	Disable ▾	Disable ▾	Disable ▾	Disable ▾
Polarization	13V (V) ▾	13V (V) ▾	13V (V) ▾	13V (V) ▾
Lock Status	Lock	Un-lock	Un-lock	Un-lock

Apply Refresh Default Reboot

Pic-3.1-25

Below are the key parameters:

Parameters	Description
Port	Indicates which input port the channels comes from
Frequency	Input the frequency of transponder which you want to receive programs. The unit is MHz
Symbol Rate	Input the symbol rate of the transponder. The unit is KS/s
Polarization	Select the voltage provided to LNB (13V for vertical or 18V for Horizontal).
Band Selection	Select the band of LNB you want to use, including Auto, Forced Low and

	Forced High
LNB Type	Select the actual type of your LNB, Single Band or Dual Band
LO Low Frequency	The low frequency of LNB. The unit is MHz
LO High Frequency	The high frequency of LNB. The unit is MHz
Bias	Enable or disable the polarization setting.

Note:

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

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

● **Status**

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

Slot 1:DVB-S2 Status				
TS Bitrate Overview				
	Port1	Port2	Port3	Port4
Lock Status	Lock	Un-lock	Un-lock	Un-lock
Total Rate(Mbps)	35.79	0.00	0.00	0.00
Effective Rate(Mbps)	31.33	0.00	0.00	0.00
RF Level(dBm)	-83	0	0	0
C/N(dB)	8.1	0.0	0.0	0.0
BER	2.500xE-6	0.000xE-0	0.000xE-0	0.000xE-0
Frequency Offset(KHz)	248	0	0	0
Symbolrate Offset(baud)	-381	0	0	0
SNR(db)	7.8	0.0	0.0	0.0
EB/NO(db)	6	0	0	0
Link margin(db)	0	0	0	0
FEC Code Rate	3/4	1/4	1/4	1/4
Mode	DVB S	DVB S	DVB S	DVB S
Constellation	QPSK	QPSK	QPSK	QPSK
Spectrum Inversion	Normal	Normal	Normal	Normal

Pic-3.1-26

Note:

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

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

Introduction to the parameters of Status:

Parameters	Description
Port#(T)	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps
Port#(E)	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.
Port	Indicates which input port the channel comes from.
Signal	Indicates whether the input signal is LOCK (green) or UNLOCK (red).
RFLevel	Indicates the real-time RF Level of the input signal.
C/N	Indicates the real-time carrier to noise ratio.
BER	Indicates the real-time bit error rate.
Frequency Offset	
Symbolrate Offset	
SNR	
EB/NO	
LINK Margin	
FEC CodeRate	Indicates the code rate which is used in FEC.
Mode	Indicates which standard the input signal is, DVB-S or DVB-S2.
Constellation	Indicates the constellation used in the input signal.
Spectrum inversion	Indicates the Spectrum status: normal or inverse.

3.1.4.4 ASI I/O Module

- Setting

	Port1	Port2	Port3	Port4
Type	Input	Input	Output	Output
Constant Rate(Mbps)	34.037	34.037	34.037	34.037

Apply Refresh Default Reboot

Pic-3.1-27

Below are the key parameters:

Parameters	Description
Type	Set each ASI port to be Input or Output.
ConstantRate(Mbit)	Set constant bitrate for ASI output.

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

- **Status**

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

Slot 2:ASI Status					
TS Bitrates Overview					
Input (Mbps)			Output (Mbps)		
Port	Total Bitrate	Effective Bitrate	Port	Effective Bitrate	
Port1	0.00	0.00	Port3	0.00	
Port2	0.00	0.00	Port4	0.00	

Pic-3.1-28

Introduction to the parameters of status:

Parameters	Description
Total Bitrate	Indicates the total bit rate of input signal, including the valid and null packet. The unit is Mbps
Effective Bitrate	Indicates the bitrate of valid packet (excluding the null packet). The unit is Mbps.

NOTE:

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

3.1.4.5 GbE IP I/O Module

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

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

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

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

IPAddress	192	168	1	34
SubnetMask	255	255	255	0
Gateway	192	168	1	1
IGMP Version	IGMP V2 ▼			
IGMP Auto Report	Off ▼			
MAC Address	A0-69-86-00-2A-4F			

Apply
Refresh
Default
Reboot

Pic-3.1-29

Parameters	Description
IP Address	Set IP address of IP module. The IP address of IP module is used for communication with CAS server that should be in the same IP section with IP address of the equipment
Subnet Mask	Set Subnet Mark of the IP module
Gateway	Set Gateway of the IP module
MAC Address	MAC address of the IP module
IGMP Auto Report	
IGMP Version	Set IGMP Version for multicast. The IGMP version setting should match the IGMP version of the switch in the network.

- **‘Input’ Setting**

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

Channel	Enable Channel	Source IP Address				Source Port	Protocol	Col Port Matching	Row Port Matching
1	<input type="checkbox"/>	227	40	50	60	1234	UDP	Disable	Disable
2	<input type="checkbox"/>	227	40	50	61	1234	UDP	Disable	Disable
3	<input type="checkbox"/>	227	40	50	62	1234	UDP	Disable	Disable
4	<input type="checkbox"/>	227	40	50	63	1234	UDP	Disable	Disable
5	<input type="checkbox"/>	227	40	50	64	1234	UDP	Disable	Disable
6	<input type="checkbox"/>	227	40	50	65	1234	UDP	Disable	Disable
7	<input type="checkbox"/>	227	40	50	66	1234	UDP	Disable	Disable
8	<input type="checkbox"/>	227	40	50	67	1234	UDP	Disable	Disable
9	<input type="checkbox"/>	227	40	50	68	1234	UDP	Disable	Disable
10	<input type="checkbox"/>	227	40	50	69	1234	UDP	Disable	Disable
11	<input type="checkbox"/>	227	40	50	70	1234	UDP	Disable	Disable
12	<input type="checkbox"/>	227	40	50	71	1234	UDP	Disable	Disable
13	<input type="checkbox"/>	227	40	50	72	1234	UDP	Disable	Disable
14	<input type="checkbox"/>	227	40	50	73	1234	UDP	Disable	Disable
15	<input type="checkbox"/>	227	40	50	74	1234	UDP	Disable	Disable
16	<input type="checkbox"/>	227	40	50	75	1234	UDP	Disable	Disable

Pic-3.1-30

Parameters	Description
Channel#	Indicate which channel you are configuring.
Enable Channel	If check this option, the IP receiving function of corresponding channel is enabled, otherwise, it is disabled.
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	

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

● 'Output' Setting

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

Channel	Enable Channel	Dest IP Address				Dest Port	Protocol	Constant Rate(Mbps)	Enable Dest MAC	Dest MAC					
1	<input type="checkbox"/>	227	10	20	80	1234	UDP	6.111	Disable	00	00	00	00	00	00
2	<input type="checkbox"/>	227	10	20	81	1234	UDP	6.111	Disable	00	00	00	00	00	00
3	<input type="checkbox"/>	227	10	20	82	1234	UDP	6.111	Disable	00	00	00	00	00	00
4	<input type="checkbox"/>	227	10	20	83	1234	UDP	6.111	Disable	00	00	00	00	00	00
5	<input type="checkbox"/>	227	10	20	84	1234	UDP	6.111	Disable	00	00	00	00	00	00
6	<input type="checkbox"/>	227	10	20	85	1234	UDP	6.111	Disable	00	00	00	00	00	00
7	<input type="checkbox"/>	227	10	20	86	1234	UDP	6.111	Disable	00	00	00	00	00	00
8	<input type="checkbox"/>	227	10	20	87	1234	UDP	6.111	Disable	00	00	00	00	00	00
9	<input type="checkbox"/>	227	10	20	88	1234	UDP	6.111	Disable	00	00	00	00	00	00
10	<input type="checkbox"/>	227	10	20	89	1234	UDP	6.111	Disable	00	00	00	00	00	00
11	<input type="checkbox"/>	227	10	20	90	1234	UDP	6.111	Disable	00	00	00	00	00	00
12	<input type="checkbox"/>	227	10	20	91	1234	UDP	6.111	Disable	00	00	00	00	00	00
13	<input type="checkbox"/>	227	10	20	92	1234	UDP	6.111	Disable	00	00	00	00	00	00
14	<input type="checkbox"/>	227	10	20	93	1234	UDP	6.111	Disable	00	00	00	00	00	00
15	<input type="checkbox"/>	227	10	20	94	1234	UDP	6.111	Disable	00	00	00	00	00	00
16	<input type="checkbox"/>	227	10	20	95	1234	UDP	6.111	Disable	00	00	00	00	00	00

Pic-3.1-31

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

Parameters	Description
Channel#	Indicate which channel you are configuring on.
Enable Channel	If check this option, the corresponding IP output channel is enabled, otherwise, it is disabled.
Dest Port	Set port of multicast/unicast
DestIPAddress	Set IP address of the multicast/unicast.
Protocol	Select UDP/RTP for multicast/unicast
ConstantRate(Mbit)	Set constant bitrate for output
Enable Dest Mac	
Dest Mac	

Status

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

Slot 2:TSIP																
TS Bitrate Overview																
Channel(1-16)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Input Effective Bitrate (Mbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Channel(1-16)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Output Effective Bitrate (Mbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Channel(17-32)	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Output Effective Bitrate (Mbps)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pic-3.1-32

Parameters	Description
Input Effective Bitrate	Indicates the valid bit rate of input signal. (excluding the null packet). The unit is Mbps
Output Effective Bitrate	Indicates the bit rate of valid packet (excluding the null packet). The unit is Mbps.

NOTE:

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

3.1.4.6 QAM/COFDM Module

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

- **Setting**

RF Level(dBuV)	<input type="text" value="0"/>
BandWidth:	<input type="text" value="6M"/> ▼
(#1-4)SymbolRate(KBaud)	<input type="text" value="0"/>
(#5-8)SymbolRate(KBaud)	<input type="text" value="0"/>
Spectrum Shaping:	<input type="text" value="Disable"/> ▼

#	Enable	Frequency(KHz)	Mode	Max Rate(Mbit)
1	<input type="text" value="Disable"/> ▼	<input type="text" value="0"/>	<input type="text" value="QAM16"/> ▼	<input type="text" value="0"/>
2	<input type="text" value="Disable"/> ▼	<input type="text" value="6000"/>	<input type="text" value="QAM16"/> ▼	<input type="text" value="0"/>
3	<input type="text" value="Disable"/> ▼	<input type="text" value="12000"/>	<input type="text" value="QAM16"/> ▼	<input type="text" value="0"/>
4	<input type="text" value="Disable"/> ▼	<input type="text" value="18000"/>	<input type="text" value="QAM16"/> ▼	<input type="text" value="0"/>
5	<input type="text" value="Disable"/> ▼	<input type="text" value="24000"/>	<input type="text" value="QAM16"/> ▼	<input type="text" value="0"/>
6	<input type="text" value="Disable"/> ▼	<input type="text" value="30000"/>	<input type="text" value="QAM16"/> ▼	<input type="text" value="0"/>
7	<input type="text" value="Disable"/> ▼	<input type="text" value="36000"/>	<input type="text" value="QAM16"/> ▼	<input type="text" value="0"/>
8	<input type="text" value="Disable"/> ▼	<input type="text" value="42000"/>	<input type="text" value="QAM16"/> ▼	<input type="text" value="0"/>

Pic-3.1-33

Below are key parameters:

Parameters	Description
Bandwidth	Select the bandwidth of output RF, 6M/7M/8M are available.
RF Level	Set RF output signal level in dBuV, the value RF Level is 90dBuV~106dBuV.
SymbolRate (Channel 1~4)	Set symbol rate for the first four transmission frequencies
SymbolRate (Channel 5~8)	Set symbol rate for the last four transmission frequencies
Spectrum Shaping	Enable or disable it according to the requirement of receiver.
Enable	Switch 'Enable' or 'Disable' for the selected channel output
RF Frequency (KHz)	Set the carrier frequency for the first modulation frequency. Note: for the RF frequencies of port 2~8, they will be set automatically by the NMS base on the frequency of port 1 and the 'Bandwidth' setting.
Mode	Set modulation type of each modulators port. The modulation mode can be QAM16, QAM32, QAM64, QAM128, QAM256.
Max Rate	The maxrate is automatically calculated by the NMS according to the QAM mode the user selects.

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

QAM Module Status

Go to "Status" tab and click sub-tab "QAM". The parameters of this part are derived from the

input signal; they will be gotten automatically when the input signal is available, and cannot be changed by the user.

Slot 1:QAM Status		
TS Bitrate Overview		
#	Total Rate(Mbps)	Effective Rate(Mbps)
RF Output		
RF Level Status		
OK		

Pic-3.1-34

Introduction to the parameters of status:

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

4-COFDM Module Parameter Setting

BandWidth	8M			
RF Level(dBuV)	0			
Spectrum Shaping	Disable			

	1	2	3	4
Enable	Disable	Disable	Disable	Disable
Frequency(KHz)	0	8000	16000	24000
Guard Interval	1/32	1/32	1/32	1/32
OFDM Mode	Mode 2k	Mode 2k	Mode 2k	Mode 2k
Constellation	QPSK	QPSK	QPSK	QPSK
FEC HP	1/2	1/2	1/2	1/2
Max Rate(Mbps)	0.000	0.000	0.000	0.000

Pic-3.1-35

Below are the key parameters:

Parameters	Description
Bandwidth	Select the bandwidth of output RF, 6M/7M/8M are available.

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

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

COFDM Module Status

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

Slot 1:OFDM Status		
TS Bitrate Overview		
#	Total Rate(Mbps)	Effective Rate(Mbps)
1	0.00	0.00
2	0.00	0.00
3	0.00	0.00
4	0.00	0.00
RF Output		
RF Level Status		
OK		

Pic-3.1-36

Introduction to the parameters of status:

Parameters	Description
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.
RF Level status	Indicates if the physical RF port works (green) or not (red)

Note:

- **Total allowable Bit rate, will automatically appear based on the configuration that was set.**

- Effective bit rate should not exceed total allowable bit rate. Otherwise, overflow will occur.
- It is advisable to save a space to prevent overflow.

3.1.4.7 CI Descrambling Module

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

● Setting

CI			
	TS Clock	Constant Rate(Mbps)	Auto Reset
Slot1	9MHz	64.000	<input type="checkbox"/>
Slot2	9MHz	64.000	<input type="checkbox"/>

Pic-3.1-37

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.
TSClock	<p>The TSClock is selected according to the CAM and actual bitrate of input TS.</p> <p>Five options in the TSClock can be selected:</p> <p>9MHz--support up to 72Mbit input TS.</p> <p>9.5MHz--support up to 76Mbit input TS.</p> <p>10.5MHz--support up to 84Mbit input TS.</p> <p>11.5MHz--support up to 92Mbit input TS.</p> <p>13MHz--support up to 104Mbit input TS.</p> <p>! Please select default 9MHz for the TSClock if input TS is less than 72Mbit in total bitrate.</p>
ConstantRate (Mbit)	<p>To set a fixed output bitrate for the CI module. It will take effect when user selects the CBR mode.</p> <p>! Please set a bigger bitrate value than the input TS rate and reserve a bit buffer.</p>
Auto Reset	

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

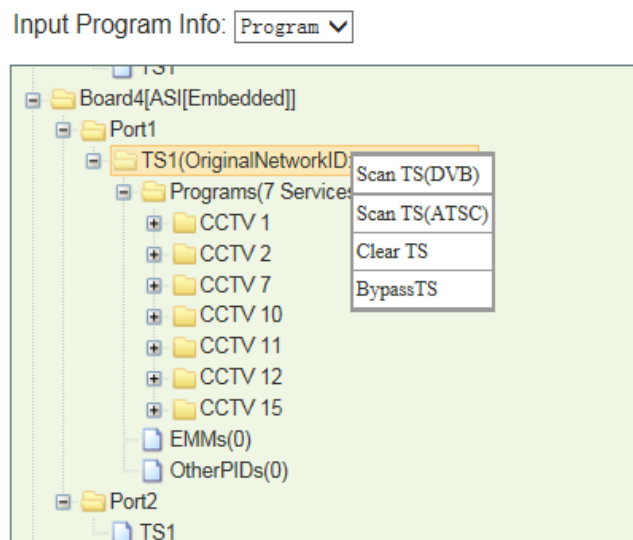
- **Descramble Operation Procedure:**

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.

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

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

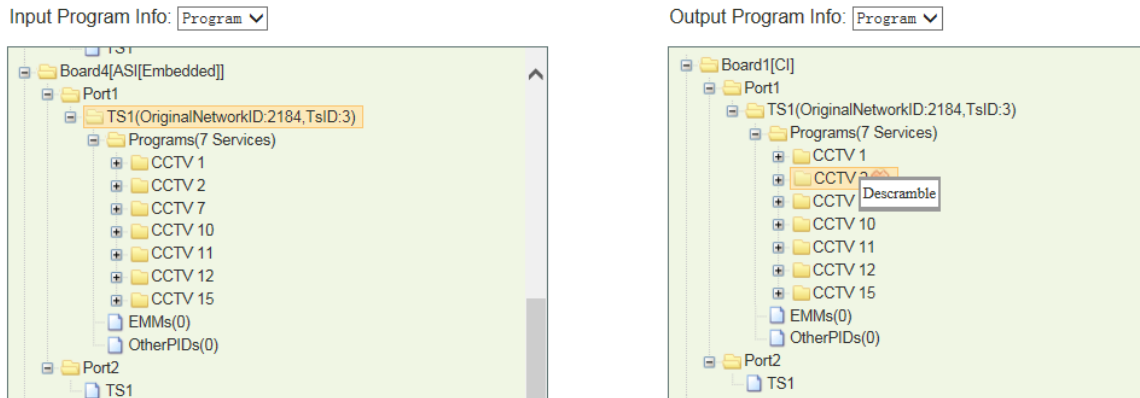


Pic-3.1-38

Right click on the TS in which there is (are) channels need to be decode, and select BypassTS.

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

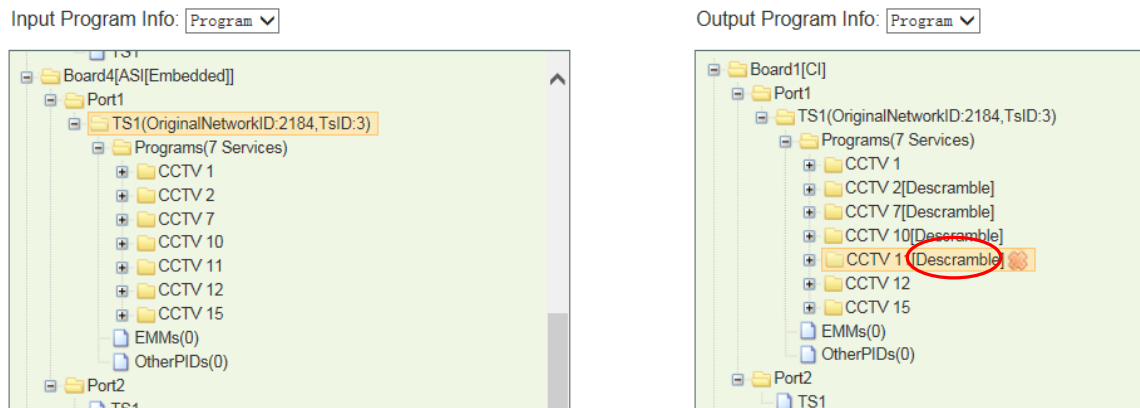
2. Use the right mouse button to click on the transferred program, and select “Descramble” menu.



Pic-3.1-39

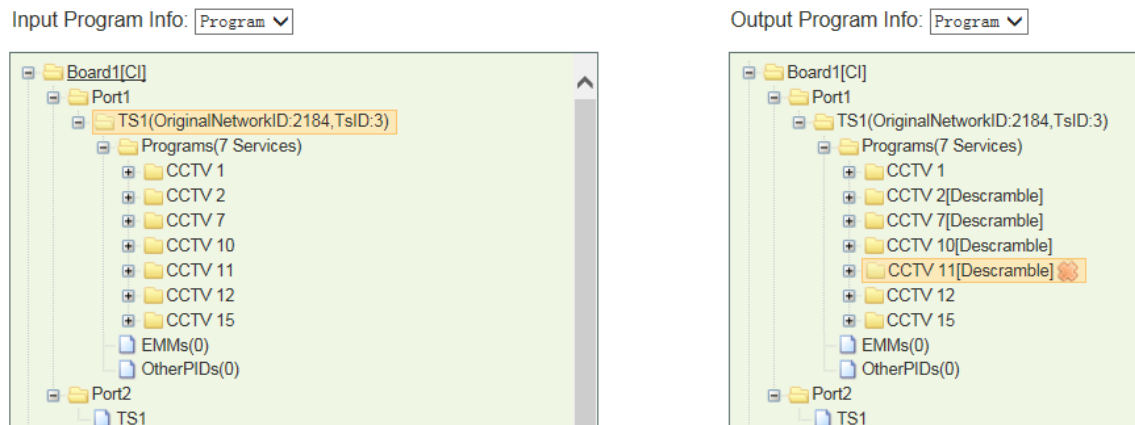
To cancel the descrambling operation on a program, just use the right mouse button to click the descrambling program and select menu “Non-descramble”.

- After the program is descrambled, a tab “[Descramble]” will appear beside the program.

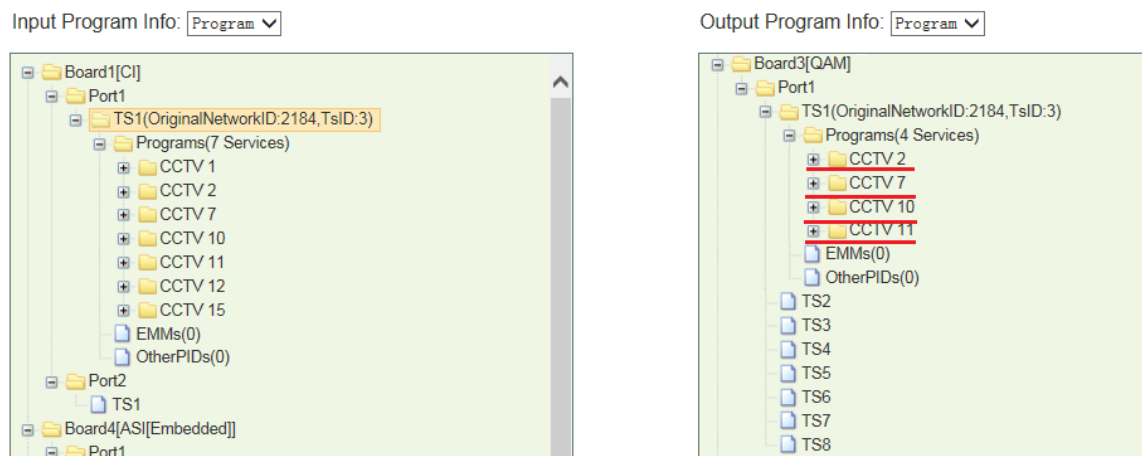


Pic-3.1-40

- 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.



Pic-3.1-41



Pic-3.1-42

- **Status**

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

Slot 2:CI Status		
TS Bitrate Overview		
	Port1	Port2
Input Effective Rate(Mbps)	0.00	0.00
Output Effective Rate(Mbps)	0.00	0.00
Output Total Rate(Mbps)	0.00	0.00
CAM Insert Status	Null	Null
CAM Init Status	No good	No good
CAM Name	EMPTY	EMPTY
CA System ID	<input type="text" value="v"/>	<input type="text" value="v"/>
CC Error	In:0, Out:0	In:0, Out:0

Pic-3.1-43

Below are the key parameters:

Parameters	Description
Input Effective Bitrate	
Output Effective Bitrate	
Output Total Bitrate	
CAM Insert Status	Indicates if the CAM module is detected (Inserted) or not (Null)
CAMInitStatus	Indicates if the initialization of CAM module is successful (Good) or failed (No good)
CAM Name	Indicates the CAM module name.
CASystemID	Indicates the CAS system ID of the inserted CAM module.
CC Error	

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

NOTE:

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

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

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

- **Setting**

	Sub-module 1:H264	Sub-module 2:None
	Port1	Port2
Video Source	SDI	SDI
Video Encode Rate(Kbps)	4000	4000
Video Encode Mode	CBR	CBR
Video VBR Max Encode Rate(Kbps)	6000	6000
Video VBR Min Encode Rate(Kbps)	1000	1000

	Audio1	Audio2
Audio Source	SDI1-Audio1/2	SDI2-Audio1/2
Audio Encoder Type	MPEG1 Layer II	MPEG1 Layer II
Audio Encode Rate(Kbps)	128	128
Belong To	Program1	Program2
Audio Mode	Stereo	Stereo
Audio Volume (0-100)	75	75
Audio PID	67	131

Advanced Setting ☐

Pic-3.1-44

GOP Structure	IBBP	IBBP
Frame Rate(60/59.94)	60I	60I
Video Standard	Auto	Auto
PCR PID	68	132
Video PID	66	130
PMT PID	65	129
Service ID	1	1
Program Name	Program-1	Program-2
Provider Name	Encoder	Encoder

Pic-3.1-45

Below are the key parameters:

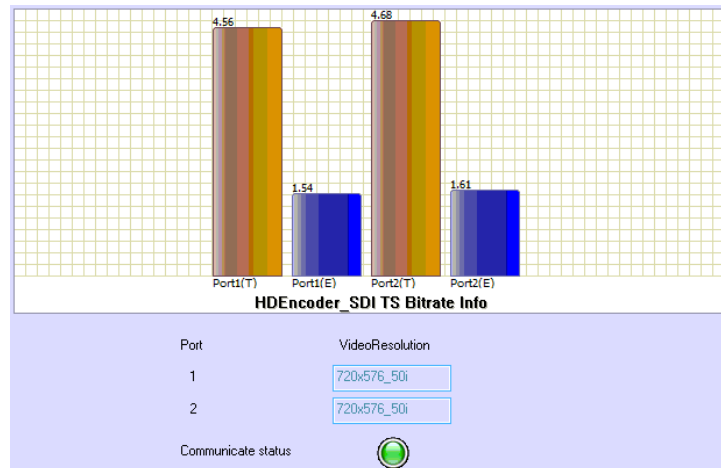
Parameters	Description
Sub-module1	Display the type of the module
Sub-module2	Display the audio type of the expansion board
Video Source	To select the correct video source for the input from SDI or

	CVBS
Video Encode Rate	To set the encode rate for both VBR mode and VBR mode. The range is 2000 ~ 15000 Kbps.
Video Encode Mode	Select CBR or VBR for the encoding mode <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
Video Max Encode Rate	To set the Max encode rate for VBR mode. Max. Encode Rate: base on the parameter set in “Video Encode Rate”, it should be input a parameter from 1.75 to 2 times the encode rate.
Video Min Encode Rate	To set the Min encode rate for VBR mode. 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.
Audio source	To select the correct audio source for the input from SDI or CVBS
Audio Encode Type	To select the audio encode type
Audio Encode Rate	Select the encoded audio bitrate from 64/128/192/256/320/384 Kbps
Belong to	Configure the audio to the program
Audio Mode	To select the audio mode from Stereo/Joint stereo/Dual channel/Single channel.
Volume	To adjust the audio volume
Audio PID	To edit the audio PID.
GOP Structure	Base on the GOP structure definition and bandwidth to select an appropriate parameter
Frame Rate	To select correct frame rate according to the input source. The frame rate should be the same as that of input source
Video Standard	Select the encode video standard
PCR PID	To edit the PCR PID
Video PID	To edit the Video PID
PMT PID	To edit the PMT PID
Service ID	To edit the service ID
Program Name	To edit the program name
Provider Name	To edit the provider name

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

● **Status**

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



Pic-3.1-46

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

3.1.4.9 SD MPEG2 SDI/AV Encoder Module

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

- **Setting**

	Sub-module 1:MPEG2	Sub-module 2:None
	Port1	Port2
Video Source	SDI	SDI
Video Encode Rate(Kbps)	4000	4000

	Audio1	Audio2
Audio Source	SDI1-Audio1/2	SDI2-Audio1/2
Audio Encoder Type	MPEG1 Layer II	MPEG1 Layer II
Audio Encode Rate(Kbps)	128	128
Belong To	Program1	Program2
Audio Mode	Stereo	Stereo
Audio Volume (0-100)	75	75
Audio PID	67	131

Advanced Setting ☐

Apply	Refresh	Default	Reboot	UpgradeFirmware
-------	---------	---------	--------	-----------------

Pic-3.1-47

GOP Structure	IBBPBBPBB	IBBPBBPBB
GOP Size	15	15
Aspect Ratio	4:3	4:3
Video Standard	Auto	Auto
PCR PID	68	132
Video PID	66	130
PMT PID	65	129
Service ID	1	1
Program Name	Program-1	Program-2
Provider Name	Encoder	Encoder

Pic-3.1-48

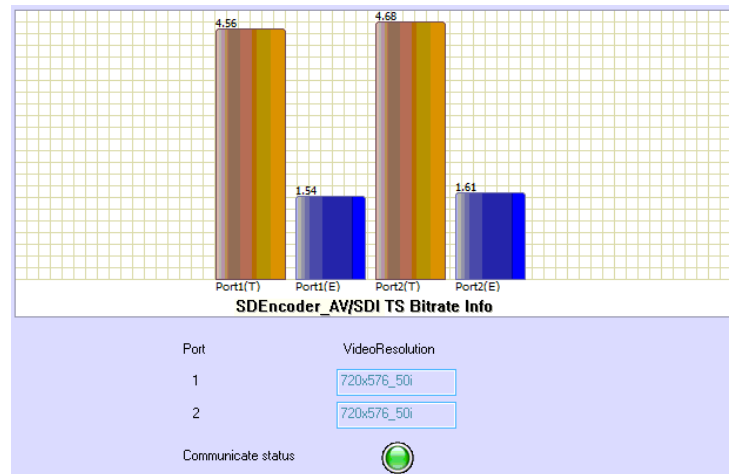
Below are the key parameters:

Parameters	Description
Sub-module 1	Display the type of the module
Sub-module 2	Display the audio type of the expansion board
Video Source	To select the correct video source for the input from SDI or CVBS.
Video Encode Rate	To set the encode rate for video. The range is 2000 ~ 15000 Kbps
Audio source	To select the correct audio source for the input from SDI or CVBS
Audio Encode Type	To select the audio encode type
Audio Encode Rate	Select the encoded audio bitrate from 64/128/192/256/320/384 Kbps
Belong to	Configure the audio to the program
Audio Mode	To select the audio mode from Stereo/Joint stereo/Dual channel/Single channel.
Volume	To adjust the audio volume
Audio PID	To edit the audio PID.
GOP Structure	Base on the GOP structure definition and bandwidth to select an appropriate parameter
GOP Size	Base on the GOP structure definition and bandwidth to input an appropriate parameter
Aspect Ratio	Select the encode aspect ratio
Video Standard	Select the encode video standard
PCR PID	To edit the PCR PID
Video PID	To edit the video PID
PMT PID	To edit the PMT PID
Service ID	Default values of the service ID.
Provider Name	To edit the provider name
Program Name	To edit the program name

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

● **Status**

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



Pic-3.1-49

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

3.1.4.10 HD H.264 HDMI Encoder Module

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

- **Setting**

	Port1	Port2
Video Encode Mode	CBR	CBR
Video VBR Max Encode Rate(Kbps)	6000	6000
Video VBR Min Encode Rate(Kbps)	0	0
Video Encode Rate(Kbps)	4000	4000
Audio Encode Rate(Kbps)	128	128
Total Encode Rate(Kbps)	4128	4128

Advanced Setting ☐

Apply
Refresh
Default
Reboot

Pic-3.1-50

Advanced Setting ☒

GOP Structure	IBBP	IBBP
60/59.94 Frame Rate Setting	60I	60I
PCR PID	516	260
Video PID	514	258
Audio PID	515	259
PMT PID	513	257
Service ID	1	1
Transport Stream ID	0	0
Program Name	Program-1	Program-2
Provider Name	Encoder	Encoder
Video Standard	Auto	Auto

Pic-3.1-51

Below are the key parameters:

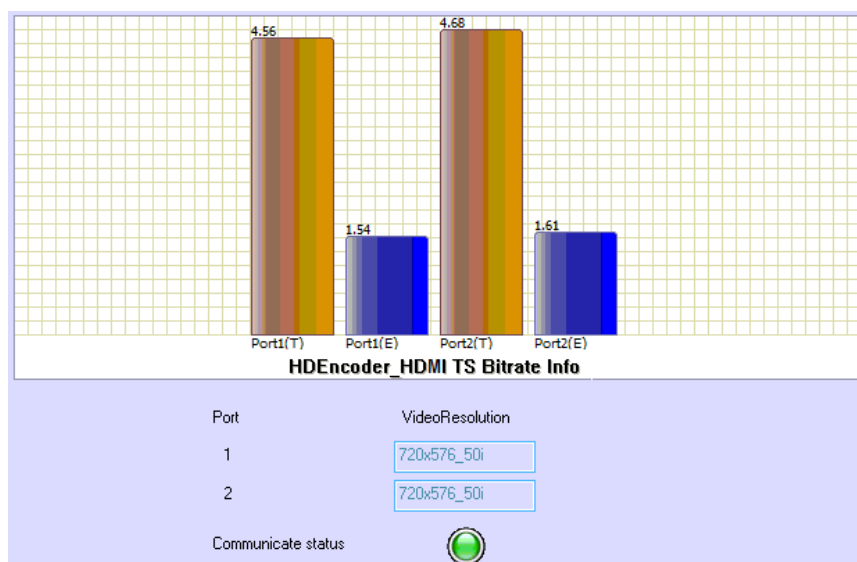
Parameters	Description
Encode Mode	Select CBR or VBR for the encoding mode. <ul style="list-style-type: none"> ● CBR: Constant Bitrate. The bitrate is fixed at the bitrate set in the "Video Encode Rate" option. ● VBR: Variable Bitrate. The bitrate is floating between the Maximum and Minimum bitrate range defined by the Max. and Min. Encode rate options.
Video Max Encode Rate	To set the Max encode rate for VBR mode. Max. Encode Rate: base on the parameter set in "Video Encode Rate", it should be input a parameter from 1.75 to 2 times the encode rate.
Video Min Encode Rate	To set the Min encode rate for VBR mode. 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.
Video Encode Rate	To set the encode rate for both VBR mode and CBR mode. The range is 6000 ~ 20000 Kbps.
Audio Encode Rate	Select the encoded audio bitrate from 64/128/192/256/320/384 Kbps
Total Encode Rate	The total encode rate of video and audio contents. Calculated

	automatically by the software.
GOP Structure	Base on the GOP structure definition and bandwidth to input an appropriate parameter.
Frame Rate Setting	To select correct frame rate according to the input source. The frame rate should be the same as that of input source.
PCR PID	To edit the PCR PID.
Video PID	To edit the video PID.
Audio PID	To edit the audio PID.
PMT PID	To edit the PMT PID.
Service ID	To Edit the Service ID.
Transport Stream ID	To edit the transport stream ID.
Program Name	To edit the program name.
Provider Name	To edit the program provider name.
Video Standard	Select the video standard from PAL, PAL-M, PAL-N, NTSC and Automatic

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

● Status

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



Pic-3.1-52

Introduction to the parameters of status:

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

3.1.4.11 DVB Scrambler Module

Insert the scrambler module to an empty slot. After successful initialization, log on web-based management system and select “Scrambler” tab in the tool bar and click + to expand the configuration option. The scrambler configuration includes four parts:

1. Basic setup:

Click the “Setup” under the Scrambler module in the Module Configuration, this page provide access to check / configure the basic parameters of the scrambler module, like IP address, Subnet Mask, Gateway, Mac Address.

System operator can decide how many CAS is needed for symulcrypt in the system, the module support at most 4 different CAS symulcrypt simultaneously.

SMP Media Platform

- ▼ Status
 - Chassis
 - Service Overview
 - ▼ Slot 2:SQAM
 - Scrambler
 - QAM
 - Slot 3:QAM
 - Service Configuration
 - ▼ Scrambler 1
 - **Setup**
 - ▼ CA System1
 - ECMG
 - ECM
 - EMMG
 - ▼ CA System2
 - ECMG
 - ECM
 - EMMG
 - ▼ CA System3
 - ECMG
 - ECM
 - EMMG
 - ▼ CA System4
 - ECMG
 - ECM
 - EMMG
 - Slot 3:QAM
 - ASI[Embedded]
 - ▼ TSIP[Embedded]
 - Input

Setup

IP Address	192	168	1	58
Subnet Mask	255	255	255	0
Gateway	192	168	1	1
Mac Address	A0-69-96-00-62-5E			
Crypto Period	20			
CA System 1	On ▼			
CA System 2	Off ▼			
CA System 3	Off ▼			
CA System 4	Off ▼			
Bitrate Monitor	Off ▼			
Scrambling Type	Normal ▼			

☐ Machine Information

Pic-3.1-53

Below are the key parameters of the Setup page:

Parameters	Description
CryptoPeriod	the time interval between two ECMs generated by ECMG.
CA System#	the scrambler module supports up to 4 different CAS Simulcrypt. User can enable or disable the running of different CAS system by selecting the CA System filed as on / off.
Bitrate Monitor	This option allow customer to monitor the bitrate of the stream.
Scrambling Type	

2. ECMG Setup: Customer can configure the ECMG from ECMG page.

ECMG1

System ID	DEC: 5218	HEX: 1462
Sub System ID	0	
ECMG IP Address	192	168 . 1 . 58
ECMG Port	5000	

Apply Refresh

Pic-3.1-54

Below are the key parameters for the configuration of this page:

Parameters	Description
System ID	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.
Sub System ID	Input the Sub system ID if the CA system required.
ECMG IP Address	Input the CAS server IP address.
ECMG Port	Input the same ECMG port No. which is set in the CA system.

3. ECM Setting: This page allow system operator to set the parameters for ECM information. Customer can input the proper ECM PID and AC data for each service, and click Add to insert

this AC data.

ECM Stream ID

7

ECM ID

7

ECM PID

4006

AC Data(Hex)

0001000100064005

Add

ECM List

ECM Stream ID	ECM ID	ECM PID	AC Data(Hex)	Delete
1	1	4000	0001000100014000	<input type="checkbox"/>
2	2	4001	0001000100024000	<input type="checkbox"/>
3	3	4002	0001000100034002	<input type="checkbox"/>
4	4	4003	0001000100044003	<input type="checkbox"/>
5	5	4004	0001000100054004	<input type="checkbox"/>
6	6	4005	0001000100064005	<input type="checkbox"/>

Pic-3.1-55

Below are the key parameters:

Parameters	Description
ECM System ID	Showing the ECM System ID.
ECM ID	Showing the ECM ID.
ECM PID	Input a proper ECM PID.
AC Data (Hex)	Input proper AC data according to the requirement of the CA system.

4. EMMG setup: This page allow customer to set the EMMG parameters, these parameters should be coincident with that configured in the CA system.

EMMG1

EMMG TCP Port

6000

EMMG UDP Port

7000

EMM Send Type

TCP+UDP

EMM PID

7000

EMM Bandwidth

300

EMM Channel ID

1

EMM Stream ID

1

EMM Data ID

1

Apply

Refresh

Pic-3.1-56

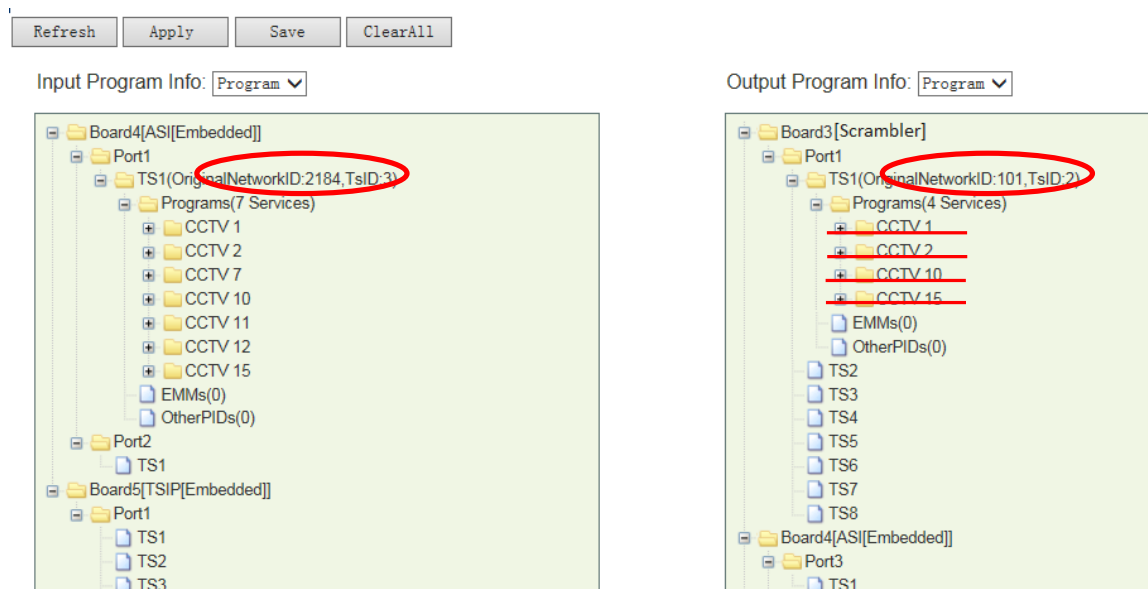
Below are the key parameters:

Parameters	Description
EMMG TCP Port	Input the same EMMG TCP Port No. as the setting in the CA system.
EMMG UDP Port	Input the same EMMG UDP Port No. as the setting in the CA system.
EMM Send Type	
EMM Bandwidth	Input the same EMM bandwidth as the setting in the CA system.
EMM Channel ID	Input the same EMM Channel ID as the setting in the CA system.
EMM Stream ID	Input the same EMM Stream ID as the setting in the CA system.
EMM Data ID	Input the same EMM Data ID as the setting in the CA system.

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

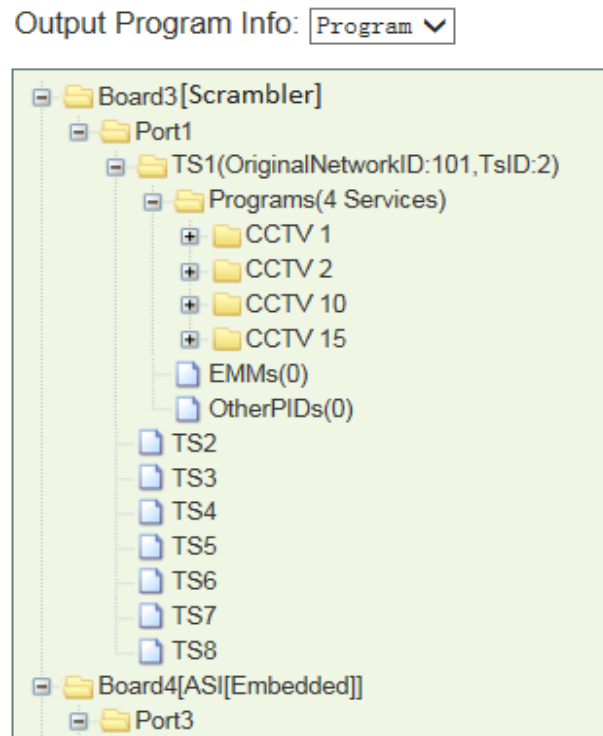
- Select the program which is to be scrambled and transfer it from the signal source to the scrambler module at “Output Program Info”. (To know how to transfer programs, please refer to chapter xxx)

In below example picture, program “CCTV1, CCTV2, CCTV10, CCTV15” is selected and is transferred from DVB-S2 module in “Input Program Info” window to scrambler module in “Output Program Info” window.



Pic-3.1-57

- 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”.



Pic-3.1-58

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

Service ID	Service Name	Fix CW Flag	CW(Hex)	CA1 Stream ID	CA2 Stream ID	CA3 Stream ID	CA4 Stream ID
301	CCTV 1	CAS CW	0000000000000000	1	NonScramble	NonScramble	NonScramble
302	CCTV 2	CAS CW	0000000000000000	2	NonScramble	NonScramble	NonScramble
304	CCTV 10	CAS CW	0000000000000000	3	NonScramble	NonScramble	NonScramble
307	CCTV 15	CAS CW	0000000000000000	4	NonScramble	NonScramble	NonScramble

Pic-3.1-59

- The scrambling program stream will be automatically transferred to the Scrambler module in the “Input Program Info” window for transmission. Select the program we just scrambled in the Scrambler module in “Input Program Info” window, and transfer it to any transmission

module. **Don't forget to transfer EMM PID together.** The output program is already scrambled.

Input Program Info: Program ▼

Output Program Info: Program ▼

Pic-3.1-60

- **Status**

Go to “Status” tab and click sub-tab “Scrambler”. 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.

Slot 2:SQAM		
TS Bitrate Overview		
TS	Input Rate (Mbps)	Output Rate (Mbps)
1	0.00	0.00
2	0.00	0.00
3	0.00	0.00
4	0.00	0.00
5	0.00	0.00
6	0.00	0.00
7	0.00	0.00
8	0.00	0.00
ECM		0.00
EMM		0.00

Communicate Status		
CA System	ECMG	EMMG
1	Lost Connect	Lost Connect
2	Closed	Closed
3	Closed	Closed
4	Closed	Closed
ECM Count		0
Count		613

Refresh

Pic-3.1-61

Introduction to the parameters of status:

Parameters	Description
Input Rate (TS#)	the input bitrate of channel1~channel12
Output Rate(TS#)	the output bitrate of channel1~channel12
ECM	the bitrate of ECM stream generated by ECMG
EMM	the bitrate of EMM stream generated by EMMG
ECMG communication Status	The communication status between ECMG and Scrambler. Green means the status is good, while red indicates the communication is interrupted.
EMMG communication Status	The communication status between EMMG and Scrambler. Green means the status is good, while red indicates the communication is interrupted.
ECM Count	The number is the number of ECM, also the number of programs you have scrambled.
Count	The number is the accumulated number of EMM, which should keep increasing to send the EMM to scrambler.

3.1.4.12 MPEG2 to MPEG4 (TC4) Transcoder Module

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

● Setting

	Channel 1	Channel 2	Channel 3	Channel 4
Video Encode Mode	CBR	CBR	CBR	CBR
Video VBR Max Encode Rate(Kbps)	6000	6000	6000	6000
Video VBR Min Encode Rate(Kbps)	1000	1000	1000	1000
Video Encode Rate(kbps)	3000	3000	3000	3000
Audio Encode Rate(kbps)	320K	320K	320K	320K
Total Encode Rate(Kbps)	3320	3320	3320	3320

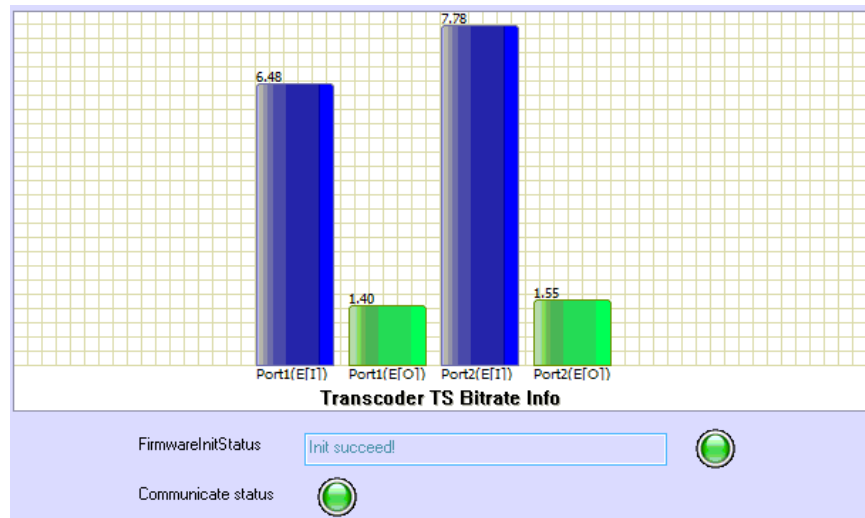
Advanced Setting <input checked="" type="checkbox"/>				
Audio Volume (0-49)	30	30	30	30
Aspect Ratio Conversion	Automatic	Automatic	Automatic	Automatic
Output Video Resolution	720x480_60i	720x480_60i	720x480_60i	720x480_60i
GOP Structure	IBBPBBPBB	IBBPBBPBB	IBBPBBPBB	IBBPBBPBB
Latency Adjustment	9984	9984	9984	9984
Same PID for PCR and Video <input type="checkbox"/>				

Pic-3.1-62

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.
Video Encoder Mode	Set the encode mode, options are available for: CBR/VBR. CBR: the encoded program bitrate is a constant value. VBR: the encoded program bitrate can be variable according to the input program content
Video Encode Rate	Set the encoded video bitrate, range from 1.0 to 20.0Mbps
Audio Encode Rate	Set the encoded audio bitrate, range from 64 to 384Kpbs
Total Encode Rate	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 VBR Max. Encode Rate	This parameter takes effect only when the Video Encode Mode is set to "VBR" on TC4 module. Max. Encode Rate: base on the parameter set in "Video Encode Rate", it should be input a parameter from 1.75 to 2 times the encode rate.
Video VBR Min. Encode Rate	This parameter takes effect only when the Video Encode Mode is set to "VBR" on TC4 module. Min. Encode Rate: base on the parameter set in "Video Encode Rate", it should be input a parameter from 0 to 0.75 times the encode rate.
GOP Struct	Set the GOP structure, options: IBBPBBPBB/IPPPPPPPP/IIIIIIIII/IBBPBBPBB
Latency Adjustment	To adjust the latency between input and output.
Aspect Ration Conversion	Options are available for 4:3 and 16:9 aspect ratios.
Output Video Resolution	Set the output Video resolution

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

● Status



Pic-3.1-63

Introduction to the parameters of status:

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

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

(2) Channel 1 and channel 3 can transcode input signal to SD or HD program, channel2 and channel 4 can only transcode input signal to SD program.

3.1.4.13 MPEG4 to MPEG2 (TC2) Transcoder Module

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

The configuration page of this module includes two parts:

Setting: set the parameters for receiving the input signal.

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

- **Setting**

	Channel 1	Channel 2	Channel 3	Channel 4
Video Encode Rate(Kbps)	3000	3000	3000	3000
Audio Encode Rate(kbps)	320K	320K	320K	320K
Total Encode Rate(Kbps)	3320	3320	3320	3320

Advanced Setting ☐

Advanced Setting ☒

Audio Mode	Joint Stereo	Joint Stereo	Joint Stereo	Joint Stereo
Audio Volume (0-49)	30	30	30	30
Video Standard	NTSC	NTSC	NTSC	NTSC
Aspect Ratio Conversion	Automatic	Automatic	Automatic	Automatic
Output Video Resolution	720x480_60i	720x480_60i	720x480_60i	720x480_60i
GOP Structure	IBBPBBPBB	IBBPBBPBB	IBBPBBPBB	IBBPBBPBB
GOP Size	15	15	15	15
Latency Adjustment	9984	9984	9984	9984
Same PID for PCR and Video	<input type="checkbox"/>			

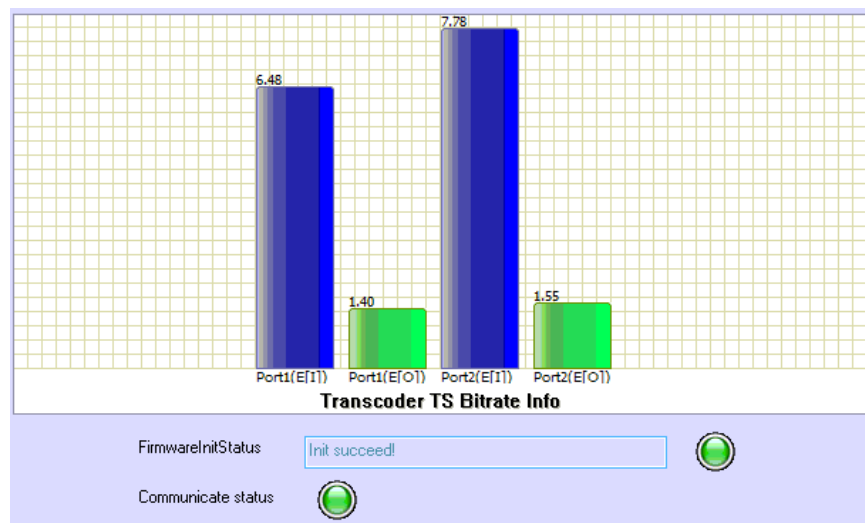
Pic-3.1-64

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.
Audio Mode	To select output channel audio mode. Options are available for: Stereo/Left/Right/Mono/Dual
Video Encode Rate	To set the Video encode bit rate. Range from 2.0Mbps~20.0Mbps
Audio Encode Rate	Select the audio encode bit rate, options: 64K, 128, 192K, 256K, 320K, 384K
Total Encode Rate	Total encode rate generate automatically, can not be editable. This bit rate is summed up by Video and audio encode rate.
Audio Volume	Define the output channel volume after transcoding. Level 0 means mute while level 49 is the Max. volume output.

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

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

- **Status**



Pic-3.1-65

Introduction to the parameters of status:

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

Note:

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

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

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

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

- **Setting**

	Sub-module 1:H264/MPEG2	Sub-module 2:None
	Port1	Port2
Video Source	SDI ▼	SDI ▼
Video Encoder Type	MPEG2 ▼	MPEG2 ▼
Video Encode Rate(Kbps)	4000	4000
Video Encode Mode	CBR ▼	CBR ▼
Video VBR Max Encode Rate (Kbps)	6000	6000
Video VBR Min Encode Rate (Kbps)	1000	1000

	Audio1	Audio2
Audio Source	SDI1-Audio1/2 ▼	SDI2-Audio1/2 ▼
Audio Encoder Type	MPEG1 Layer II ▼	MPEG1 Layer II ▼
Audio Encode Rate(Kbps)	192 ▼	192 ▼
Belong To	Program1 ▼	Program2 ▼
Audio Mode	Stereo ▼	Stereo ▼
Audio Volume (0-100)	82	82
Audio PID	67	131

Advanced Setting ☐

Pic-3.1-66

GOP Structure	IPBB	IPBB
GOP Size	15	15
Frame Rate(60/59.94)	60I	60I
Aspect Ratio	4:3	4:3
Input Resolution	Auto	Auto
Output Resolution	Auto	Auto
PCR PID	68	132
Video PID	66	130
PMT PID	65	129
Service ID	1	2
Program Name	Program-1	Program-2
Provider Name	Encoder	Encoder

Pic-3.1-67

Below are the key parameters:

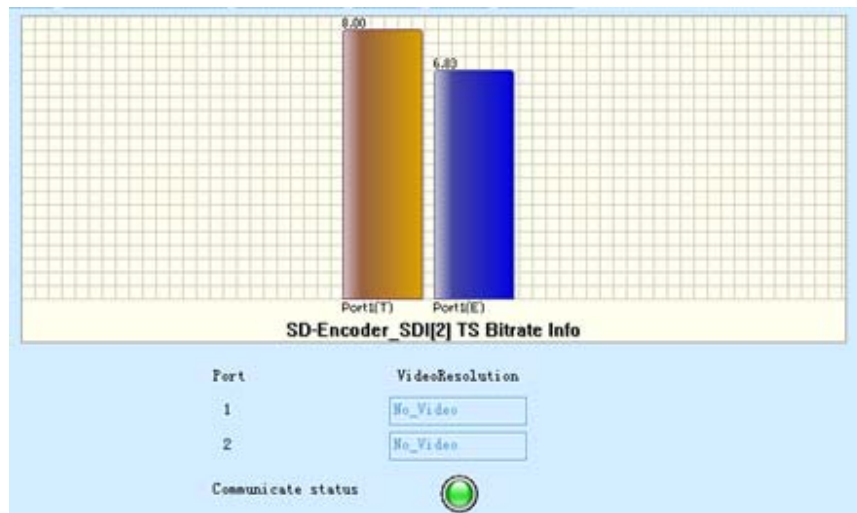
Parameters	Description
Channel	Indicates which input port the channel comes from.
Video Source	To select the correct video source for the input.
Video Encoder Type	To select the video encoding format, available options include: MPEG-2 and H.264
Video Encode Rate	To set the encode rate for CBR mode.
Video Encode Mode	Select encoding mode, available options include: CBR and VBR
Video Max Encode Rate	To set the upper limit of encode rate for VBR mode.
Video Min Encode Rate	To set the bottom limit of encode rate for VBR mode.
Audio Source	To select the correct audio source for the input.
Audio Encoder Type	To select the audio encoding format, available options include: MPEG-1 Layer II and AAC
Audio Encode Rate	To choose the encoding bitrate for the audio.
Belong To	To assign the audio to a certain program.
Audio Mode	To select the Audio Mode.
Audio Volume	To set the Audio volume
Audio PID	To edit the video PID.
GOP Size	To edit the GOP size
GOP Struct	To select GOP structure.
Frame Rate	To select the Frame Rate.
Aspect Ratio	To select the Aspect Ratio.
Input Resolution	To select the Input Resolution.
Output Resolution	To select the output Resolution.
PCR PID	To edit the PCR PID.

Video PID	To edit the Video PID.
PMT PID	To edit the PMT PID.
Service ID	To edit the service ID.
Provider Name	To edit the service provider name.
Program Name	To edit the channel name.

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

● Status

Go to "Status" tab and check the module running 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.



Pic-3.1-68

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

● 3.2.4.15 Low Bitrate H.264/MPEG-2 SD Transcoder Module

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

● Setting

The screenshot shows a configuration window for a device with 4 channels. The 'Channel1' tab is selected. The settings are as follows:

Parameter	Value
TranscoderType	H.264
Channel Delay	9984
Video Encoder Type	MPEG2
Audio Mode	Stereo
Audio Encoder Type	MPEG1_Layer_II
GOP Size	15
Video Encode Mode	CBR
GOP Struct	IPBB
Video Max Encode Rate	6000
Volume (0-49)	40
Video Min Encode Rate	1000
Aspect ratio Conversion	Automatic
Video Encode Rate	3000
OutputVideoResolution	720x480_60i
Audio Encode Rate	192K

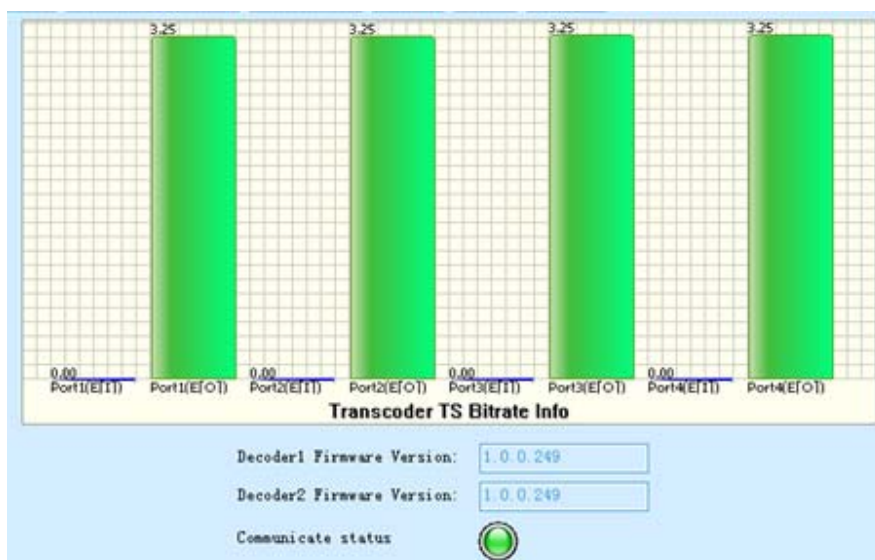
At the bottom, there are buttons for 'Set', 'Get', 'Import', 'Export', 'UpgradeFirmware', 'Reboot', and 'FactorySetting'.

Pic-3.1-69

Parameters	Description
Channel	Indicates which channel the following configuration is on
Video Encoder Type	To select the video encoding format, Available options include: MPEG-2 and H.264
Audio Encoder Type	To select the audio encoding format, available options include: MPEG-1 Layer II and AAC
Video Encode Mode	Select encoding mode, available options include: CBR and VBR
Video Max Encode Rate	To set the upper limit of encode rate for VBR mode.
Video Min Encode Rate	To set the bottom limit of encode rate for VBR mode.
Video Encode Rate	To set the encode rate for CBR mode.
Audio Encode Rate	To choose the encoding bitrate for the audio.
Channel Delay	To set the channel delay time
Audio Mode	To select the audio mode, Available options include: Stereo, Joint Stereo, Dual Channel, Single Channel
GOP Size	To set the GOP size.
GOP Struct	To set the GOP struct
Volume (0~49)	To set the audio volume, Available range is: 0~49
Aspect ratio Conversion	To set the aspect ratio of the picture. Available options include: Automatic, 4:3 letterbox, 4:3 Pan and Scan, 16:9 Letterbox, 16:9 Pan and Scan.
Output Video Resolution	To set the output video resolution

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

● Status



Pic-3.1-70

Introduction to the parameters of status:

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

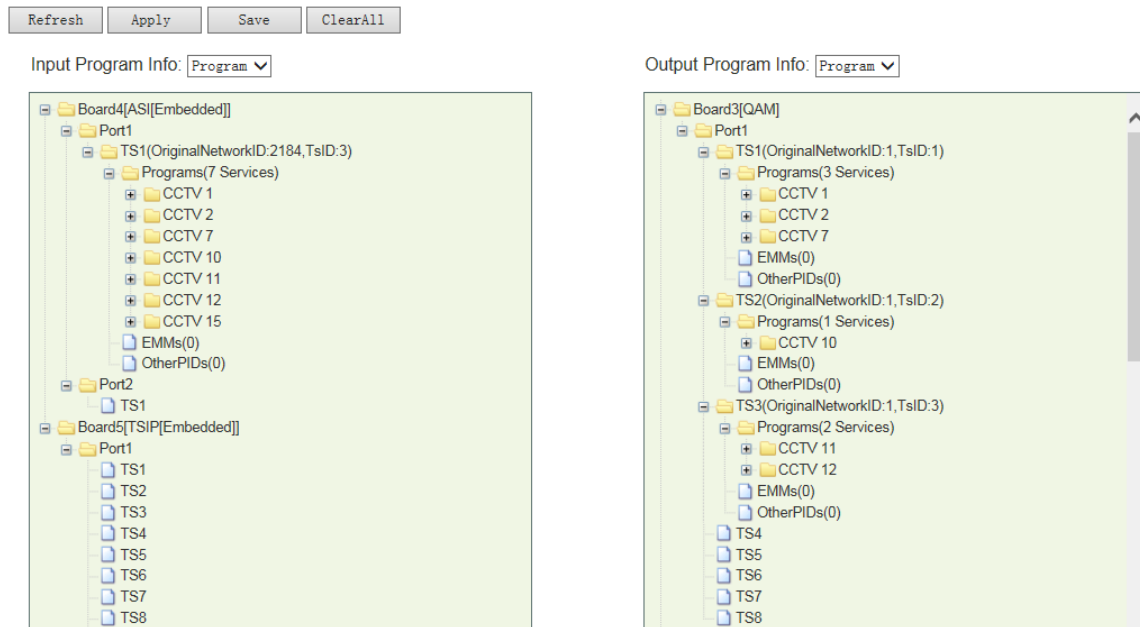
3.1.5 Advanced Configuration

- **Data Insertion**

- **NIT Insertion**

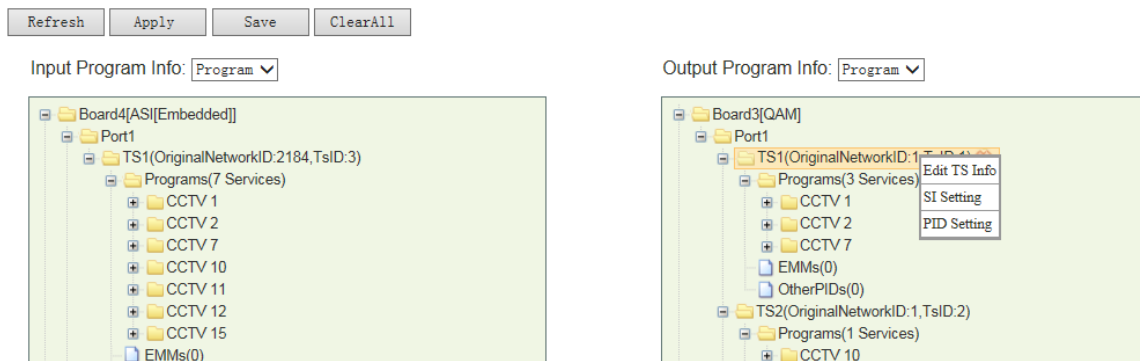
1. Connect the equipment through NMS, and complete the configuration on the output module. Here take 8QAM module as an example. The 8QAM 8TS output is set at frequencies 474, 482, 490, 498, 506, 514, 522 and 530, SR 6.875.
2. Switch to “**Service Configuration**” tab to configure the output channels at each QAM channel. Here we output total 6 programs at 3 TS channels:
CCTV-1, CCTV-2 and CCTV-7 at TS1;

CCTV-10 at TS2;
CCTV-11, CCTV-12 at TS3



Pic-3.1-71

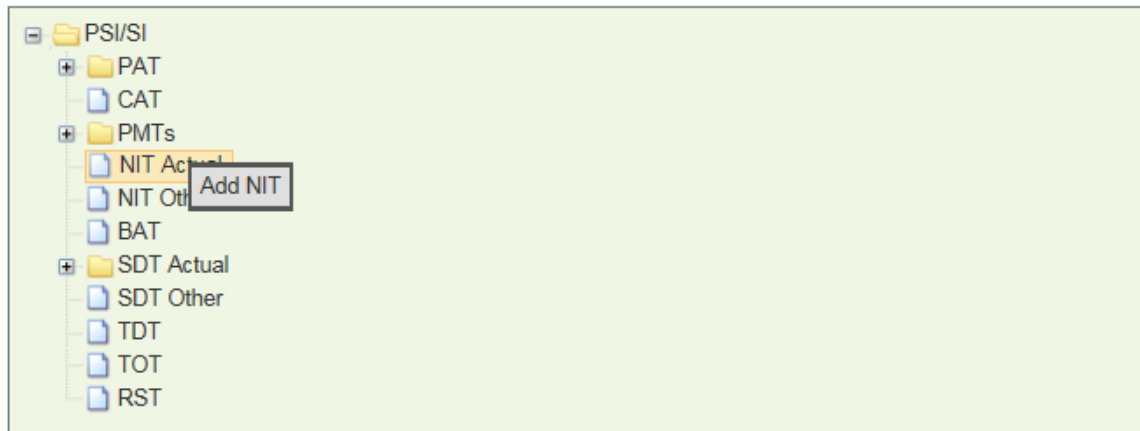
3. Select a TS channel, right click on it and select “SI setting” to enter the “PSI/SI” menu.
Below example will show you the procedure starting from TS1.



Pic-3.1-72

4. The PSI/SI menu is showing as below, select “NIT Actual”, and right click on it and select “Add NIT”.

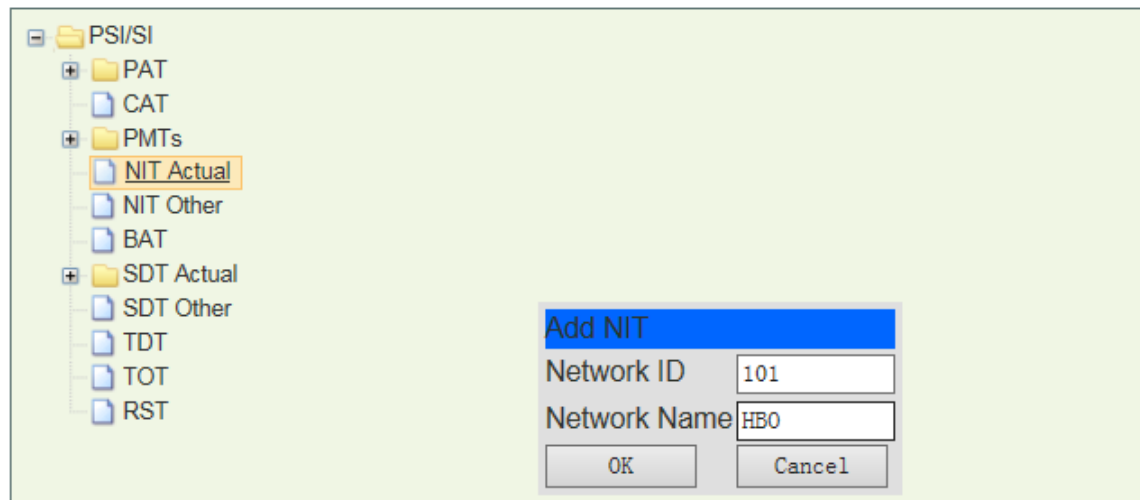
Please apply and save your setting after complete setting in Service Configuration page.



Pic-3.1-73

5. In the pop-up window, enter proper “Network ID” and “Network Name” and click “Ok” to continue,

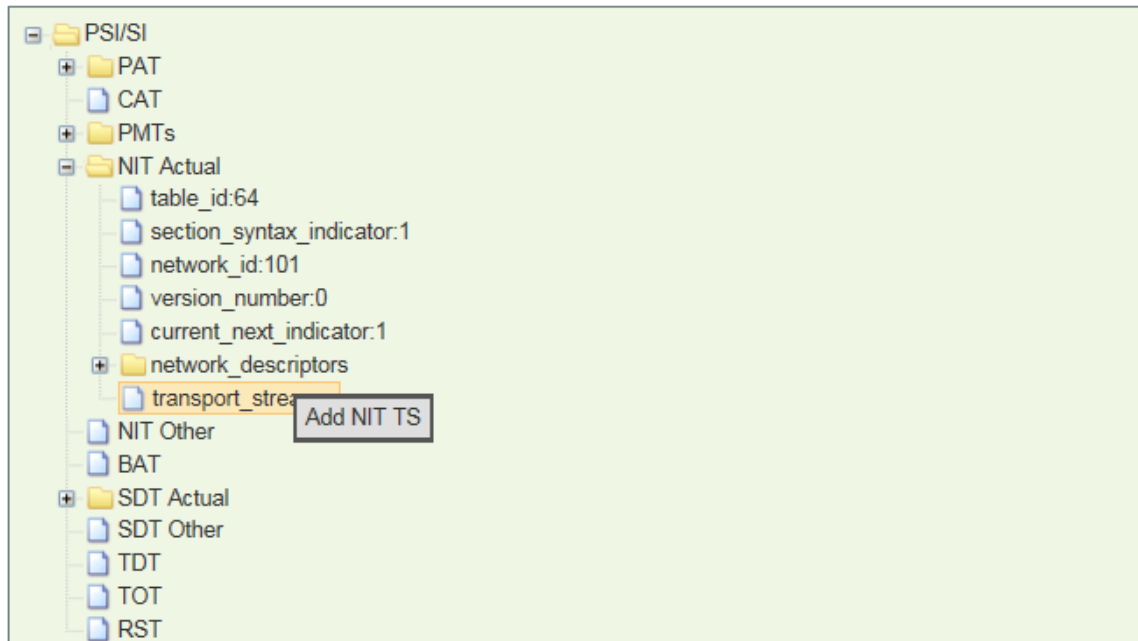
Please apply and save your setting after complete setting in Service Configuration page.



Pic-3.1-74

6. Click + to expand the NIT Actual table, and find the new added NIT table, select the “transport_stream” item and right click on it to select “Add NIT TS”.

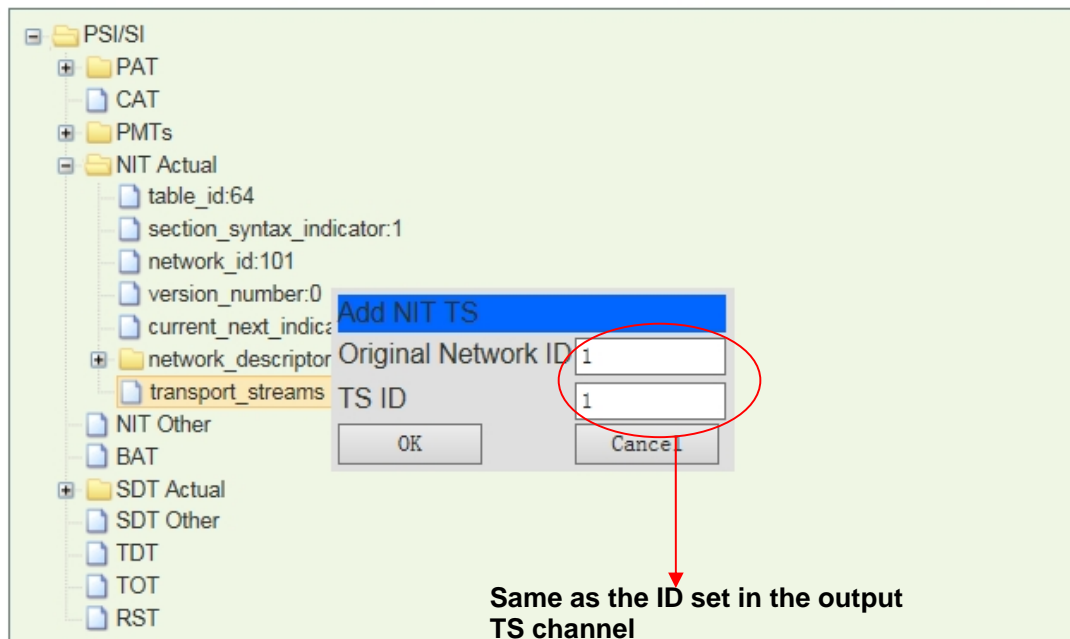
Please apply and save your setting after complete setting in Service Configuration page.

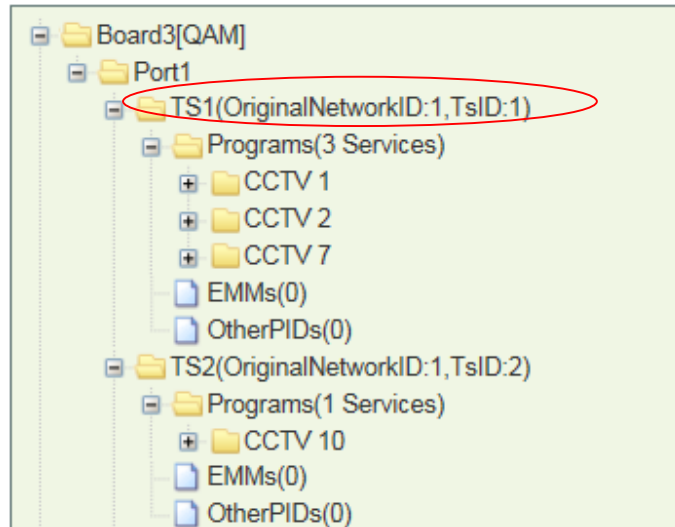


Pic-3.1-75

7. In the pop-up window, enter the Network ID and the TS ID then click OK. **The ID must be same as that set in the output TS channel.**

Please apply and save your setting after complete setting in Service Configuration page.



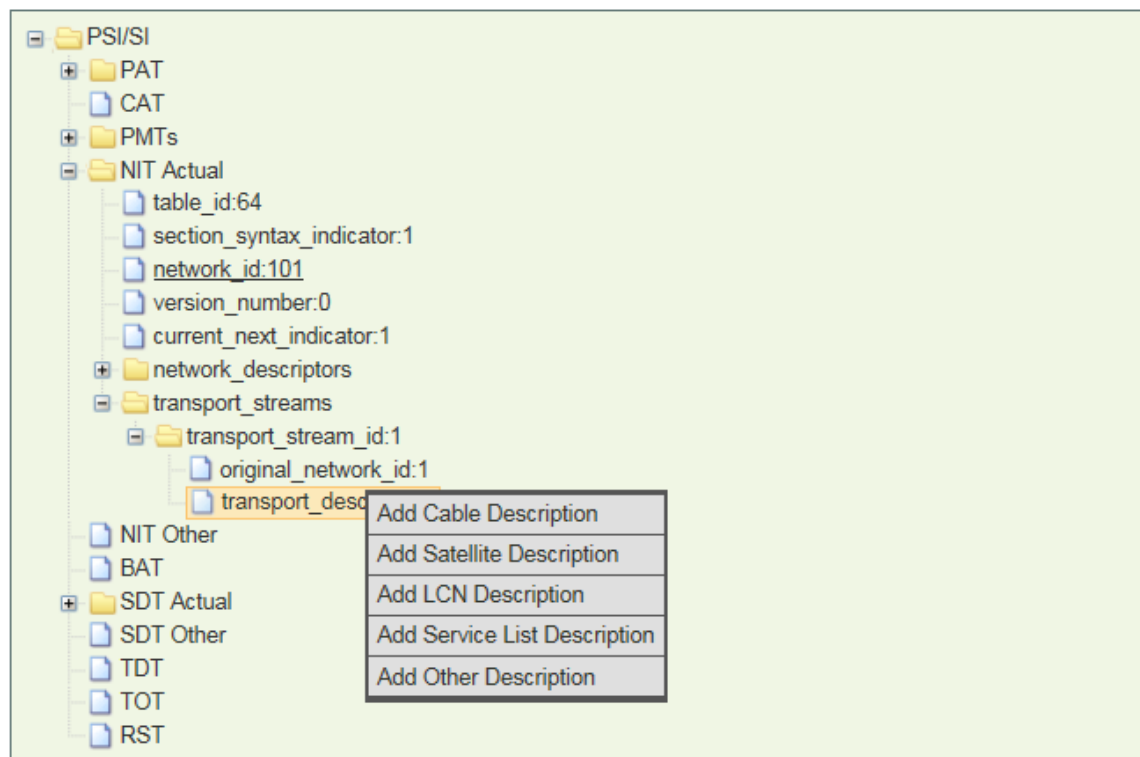


Pic-3.1-76

8. 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.

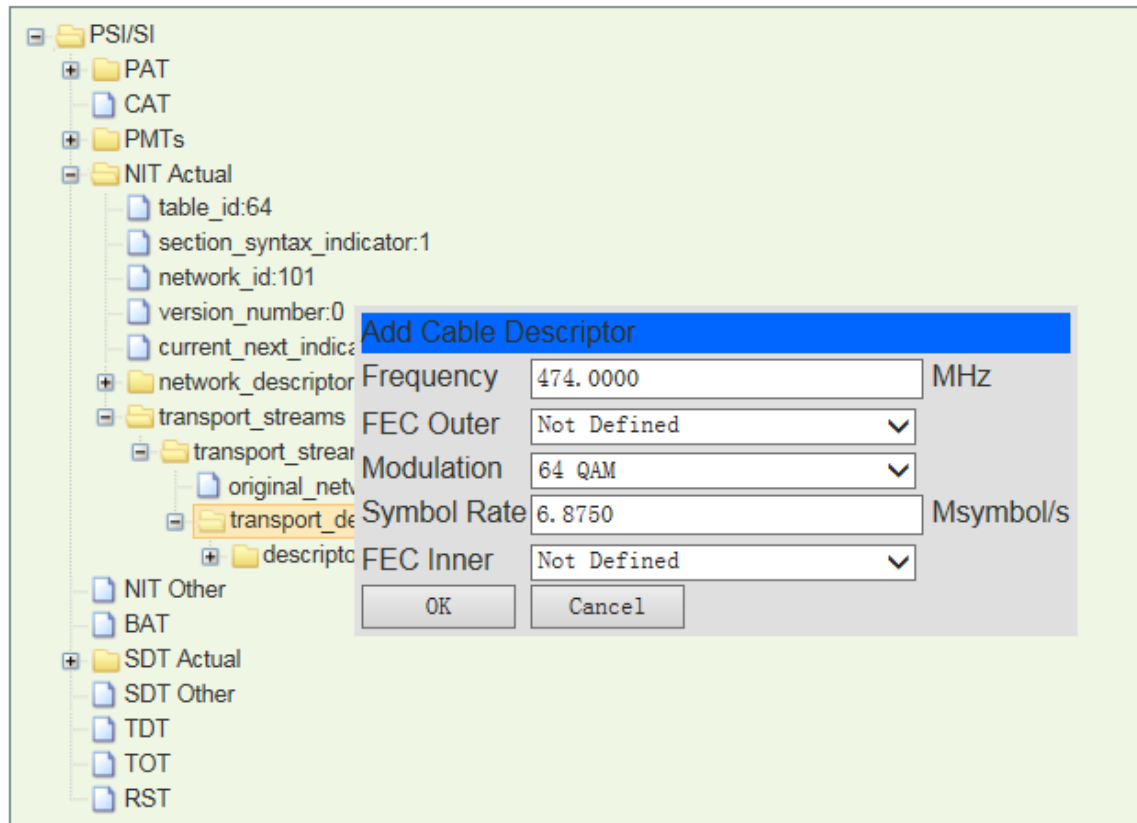
Please apply and save your setting after complete setting in Service Configuration page.



Pic-3.1-77

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

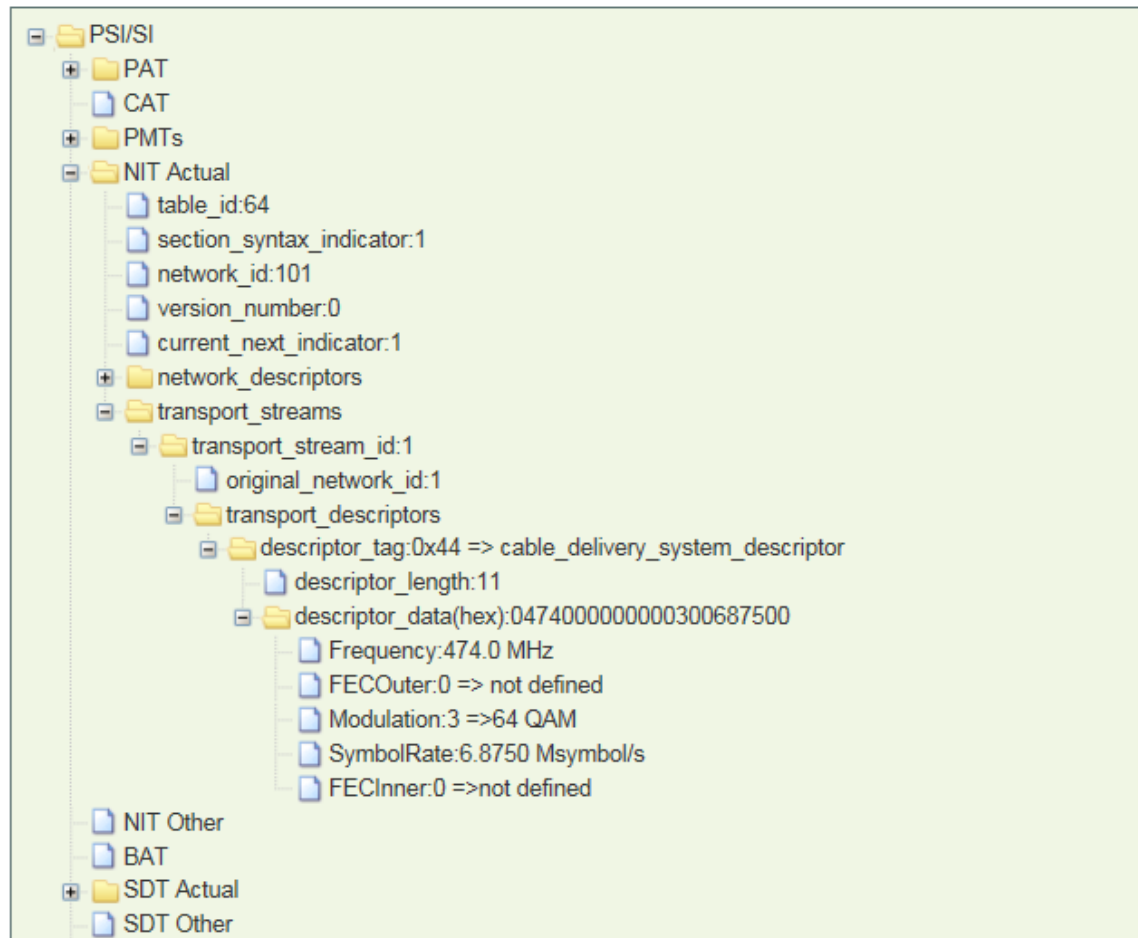
Please apply and save your setting after complete setting in Service Configuration page.



Pic-3.1-78

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.

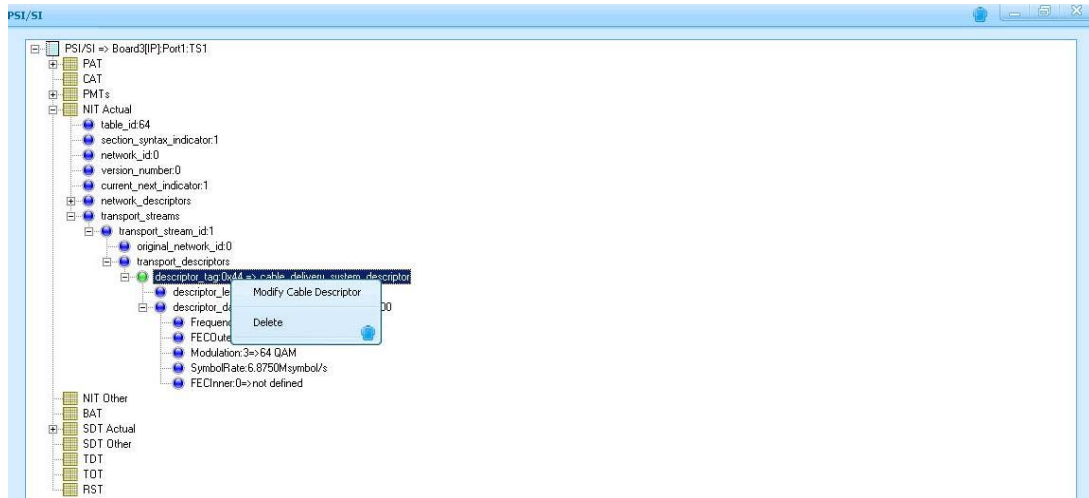
Please apply and save your setting after complete setting in Service Configuration page.



Pic-3.1-79

10. After the configurations of the NIT, do remember to click “Apply” 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.



Pic-3.1-80

■ LCN Insertion

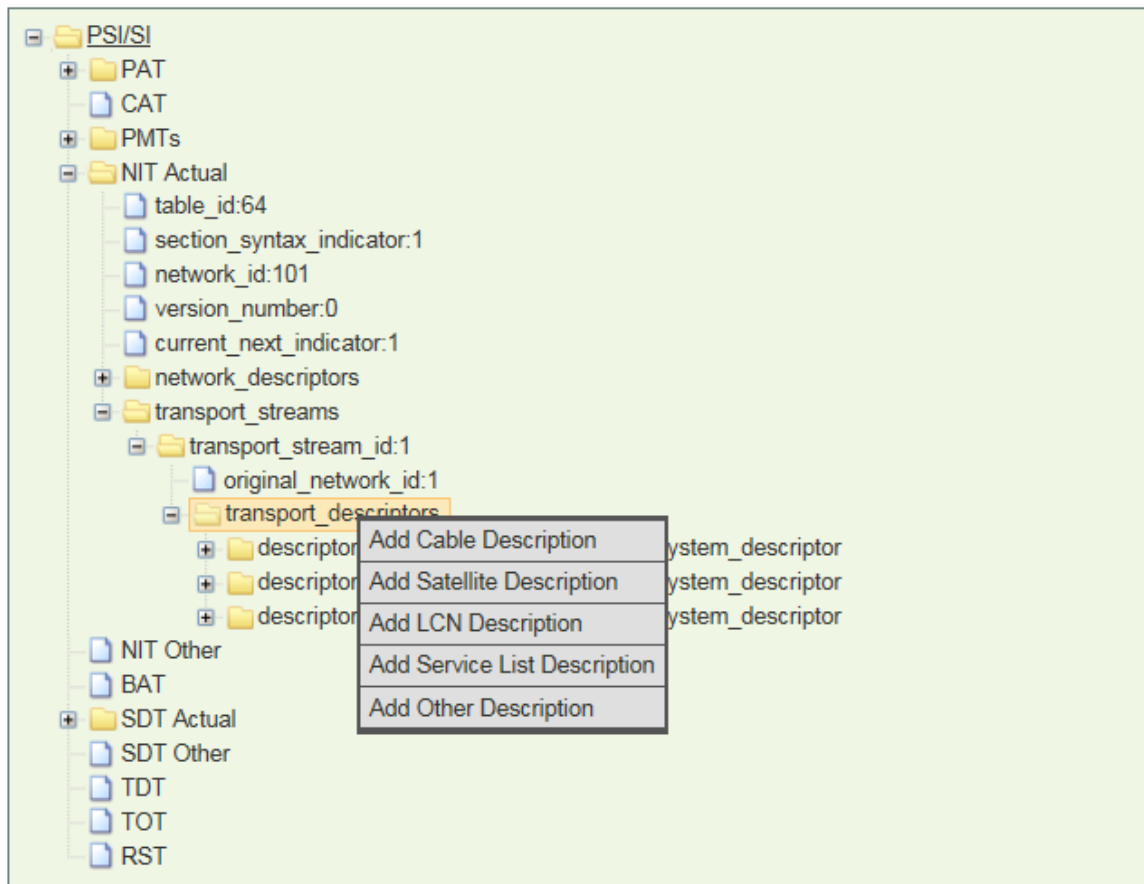
In telecommunications, a **logical channel number** (LCN), also known as **virtual channel**, is a channel designation which differs from that of the actual radio channel (or range of frequencies) on which the signal travels.

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

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

1. Select the TS where your actual NIT table locates from an output module in “Output Program Info” window. Right click on the TS, and select “SI setting” to enter the PSI/SI editing page.
2. In the PSI/SI editing page, click + besides NIT Actual table to expand the table, find the “transport_descriptor”, and right click on it and select “Add LCN Descriptor” to enter the LCN editing page.

Please apply and save your setting after complete setting in Service Configuration page.



Pic-3.1-81

Below example will describe the procedure to edit LCN from a QAM module.(The QAM module in this SMP is inserted to the slot 3. So it is showing as Board3 [QAM] in the LCN editing page)

- 1) In “Board TS List”, Click to check the corresponding TS (for example: “Board3[QAM]-Port1-TS1”) in which the programs need to be assigned with LCN. Then all of the programs within that TS will be listed in the “Services” list.
- 2) Click Add in front of a program name in the Service list, the service ID, Logic Channel Number, Visible Service Flag of this program will appear in the following LCN table. Input a proper LCN for this program; Following above steps to assign LCN for more programs in this TS. Then click Add at the bottom of this page to save the LCN setting. (Please keep “visible_service_flag” as the default setting – 1).
- 3) Repeat steps 1)-2) to add LCN for other programs in other TS, and then click “Exit”.

Please apply and save your setting after complete setting in Service Configuration page.

Board TS List

Board	Port	TS
<input checked="" type="radio"/> Board3[QAM]	Port1	TS1
<input type="radio"/> Board3[QAM]	Port1	TS2
<input type="radio"/> Board3[QAM]	Port1	TS3
<input type="radio"/> Board3[QAM]	Port1	TS4
<input type="radio"/> Board3[QAM]	Port1	TS5
<input type="radio"/> Board3[QAM]	Port1	TS6
<input type="radio"/> Board3[QAM]	Port1	TS7
<input type="radio"/> Board3[QAM]	Port1	TS8
<input type="radio"/> Board4[ASI[Embedded]]	Port3	TS1

Services

Add All	Service Name	Service ID	Service Type
Add	CCTV 1	301	1 -> Digital Television Service
Add	CCTV 2	302	1 -> Digital Television Service
Add	CCTV 7	303	1 -> Digital Television Service

LCN

Service ID	Logic Channel Number	Visible Service Flag	Delete All
301	1	1 <input type="button" value="v"/>	Delete
302	2	1 <input type="button" value="v"/>	Delete
303	3	1 <input type="button" value="v"/>	Delete

Pic-3.1-82

- After the settings on all output TS channel, do remember to click “Apply” and then “Save” button in the “Service Configuration” window to apply the settings.

Input Program Info:

Board4[ASI[Embedded]]

Port1

TS1(OriginalNetworkID:2184,TslD:3)

Programs(7 Services)

CCTV 1

CCTV 2

CCTV 7

CCTV 10

CCTV 11

CCTV 12

CCTV 15

EMMs(0)

OtherPIDs(0)

Port2

TS1

Board5[TSIP[Embedded]]

Port1

TS1

TS2

TS3

Output Program Info:

Board3[QAM]

Port1

TS1(OriginalNetworkID:1,TslD:1)

Programs(3 Services)

CCTV 1

CCTV 2

CCTV 7

EMMs(0)

OtherPIDs(0)

TS2(OriginalNetworkID:1,TslD:2)

Programs(1 Services)

CCTV 10

EMMs(0)

OtherPIDs(0)

TS3(OriginalNetworkID:1,TslD:3)

Programs(2 Services)

CCTV 11

CCTV 12

EMMs(0)

OtherPIDs(0)

Pic-3.1-83

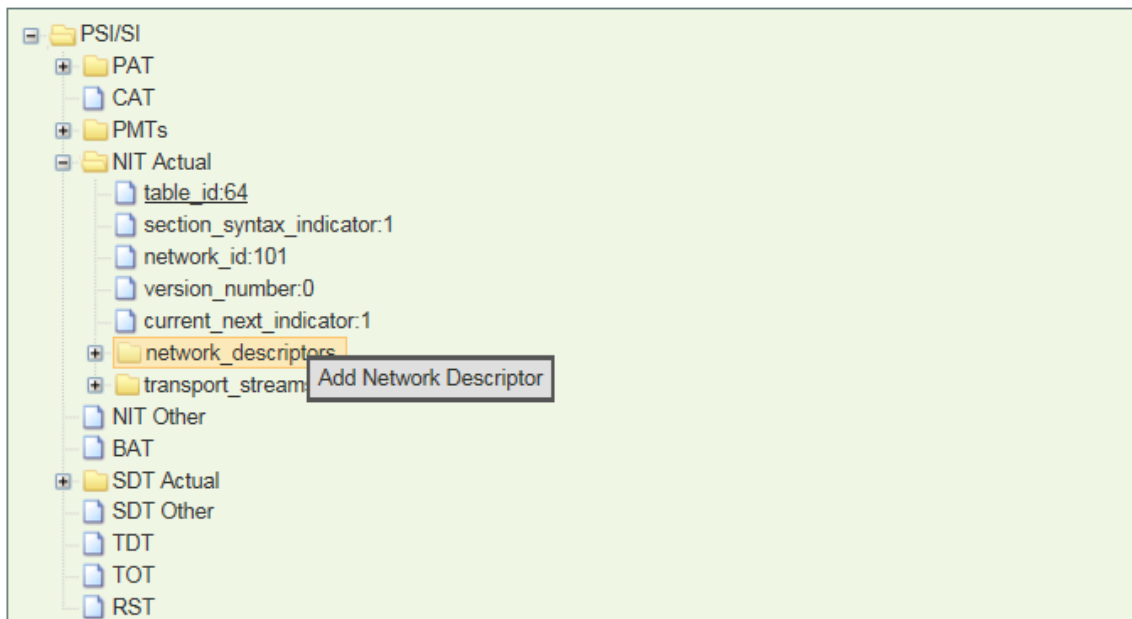
■ OTA descriptor Insertion

81

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'.

Please apply and save your setting after complete setting in Service Configuration page.



Pic-3.1-84

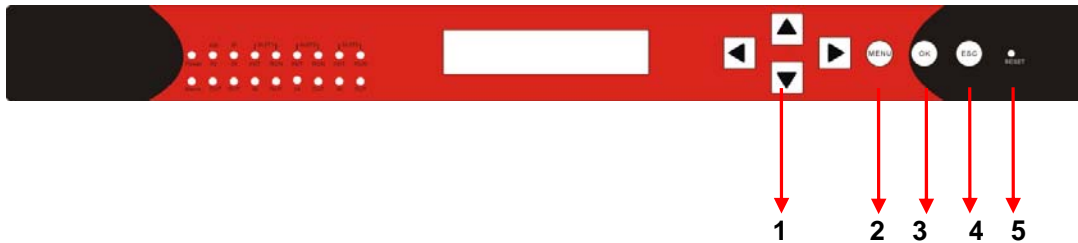
3. Input the Tag and OTA descriptor and click 'Add'

3.2 Operation through Front Panel

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

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

3.2.1 Front Panel Control Buttons



1. **Navigation Keys: Up/Down/Left/Right** buttons. Used for moving the cursor during the operation.
2. **Menu:** to Enter a menu or Return to previous/upper level menu.
3. **OK:** to confirm the edit in the menu.
4. **Esc:** to return to the previous level menu.
5. **Reset:** to reboot the device.

3.2.2 Front Panel Operation Menu Structure

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

3.2.3 Front Panel Operation Procedure

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

Chapter4 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