Professional HD
Integrated Receiver Decoder

User Manual

V1.00-C

Preface

About This Manual

This manual provides introductions to users about how to operate the device correctly. The content includes introduction to product installation, product characteristics and product settings, etc.

It is highly suggested users to go through this document before actually operating the device.

Intended Readers

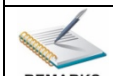
This manual is suggested to be studied by the following readers:

- Technical Service Engineer
- Maintenance Engineer
- Test Engineer
- Sales Engineer

Symbols Definition

For the symbols that might appear in this document, the meanings they represent are as the following:

Symbol	Meaning
	There is highly potential danger. If it cannot be avoided, it will lead to the deaths or serious injury.
	There is medium or low potential danger. If it cannot be avoided, it will lead to medium or slight injury.
	There are potential risks. If ignore these texts, it may cause damage to the device, data loss, equipment performance reduce or unpredictable results.

	Tips that help you to solve problems or save your time.
	Remarks. Additional information to the text, in order to emphasize something.

Revision History

The revision history lists the modification history. The newest one contains all the modifications of the past revision.

- V1.00-C: First revision of the manual. (Date: March 26st , 2015)

Contents

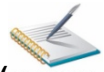
1 About This Product

1.1 Introduction

This product is a new generation integrated receiver decoder to support the growing demands for multi-format, multi-standard video delivery and distribution. It can receive digital signals from DVB-S/S2, decrypt, and process/select programs to various outputs including CVBS, component and HDMI. It supports multi-channel descrambling, multiplexing, external table/data insertion. It also supports video decoding with two audio channels. With remote web-based management interface, it is ideal to support advanced application such as content distribution, real-time signal conversion and transmission.

1.2 Safety

- To avoid electric-shock hazards, do not open the receiver; refer service to qualified personnel only.
- Do not expose the device in the sunlight, and keep it away from the heat source.
- Do not block ventilation holes of the device so that air can circulate freely.
- Switch the device off whenever it remains out of service for an extended period.
- Be sure to turn the device off and disconnect the AC power cord before cleaning the receiver surface.
- The apparatus shall be connected the mains socket outlet with a protective earthing connection
- The appliance coupler used as the disconnect device shall remain readily operable.
- This product has gone through regulated EMC test and meets with EMC safety requirement.



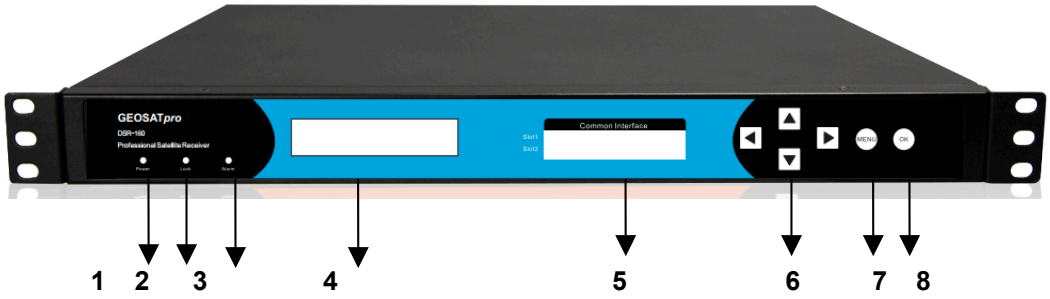
(REMARKS Such tests are conducted in a controlled EMC environment. A controlled EMC environment exists in a building where the installation has been designed having special regards to EMC, and where technical personnel are present with experience of EMC technology.)

1.3 Architecture

REMARKS

The equipment of this section is shown in schematic diagram. It is subject to change for improvement on the real product without advanced notice.

Front Panel



PIC-1.3-1

1. Power status indicator: This LED light is turned on when the IRD is power on.

2. (Signal) Lock status indicator: This LED light is turned on when a channel is locked. Otherwise there is no channel locked.

3. Alarm status indicator: This LED flickers when there is something abnormal. For example, the strength of the input signal is too weak.

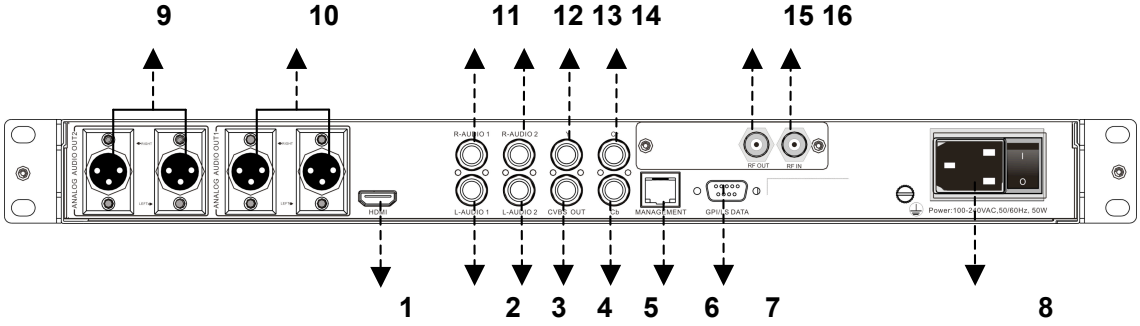
4. Display screen: This LCD screen can show the program and configuration information.

5. CI SLOTS: There are two CI slots for various CAS CAM (PCMCIA) modules.

6. KEY PADS:

- **Up/Down/Left/Right arrow keys**: To change channels, to adjust volumes and configure the IRD.
- **Menu**: To enter the menu and the quit function of the sub menus.
- **OK**: To confirm the operation in the setup.

Rear Panel



PIC-1.3-2

1	HDMI Output	2	L-Audio 1
3	L-Audio 2	4	CVBS
5	Cb OUT	6	MANAGEMENT
7	GPI	8	Power Supply
9	Balanced L/R Analog Audio Out2	10	Balanced L/R Analog Audio Out1
11	R-Audio 1	12	R-Audio 2
13	Y OUT	14	Cr OUT
15	RF OUT	16	RF IN

1.4 Methods of Operation

1.4.1 Operation through WEB UI

Operate the IRD remotely through WEB UI. The WEB UI operation supports:

Functions	Description	Related Items
Parameters Setting	WEB UI allows users to conduct operations of parameters configuration, modification and setup.	Signal receive setup CI setup Decoder setup
Status Monitoring	Support real-time monitoring on running status of input signal, CI descrambling, etc.	RF signal strength indication CI slot/CAM information HW/SW version information
Upgrade	Support unit upgrade through WEB UI	

1.4.2 Operation through Front Panel Operation

Operation through front panel control buttons; users can configure all the parameters as the followings:

Functions	Description	Related Items
Parameters Setting	Allows users to conduct operations of parameters configuration, modification and setup.	Signal receive setup CI setup Decoder setup
Status Monitoring	Support real-time monitoring on running status of input signal, CI descrambling, etc.	RF signal strength indication CI slot/CAM information HW/SW version information

1.5 Technical Specifications

1.5.1 Physical Specifications

Items	Index
Power	AC90~260V, 50/60Hz
Max. Power Consumption	Approx 50W
Size	1RU
Dimension	484mm (L) × 274mm (W) × 44mm (H)
Net Weight	Approx 3.8Kg
Gross Weight	Approx 5Kg

1.5.2 Performance and Capacity

Items	Index
ASI Max. Input Bitrate	100Mbps
ASI Max. Output Bitrate	100Mbps

Items	Index
Decoder Max. Resolution	1920 X 1080P
CI Max. Output Bitrate	100Mbps

1.5.3 Interfaces and Protocols

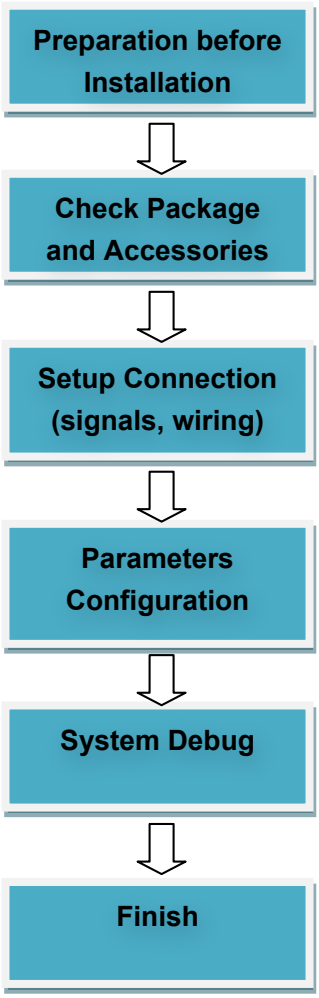
Physical Connector Interfaces

Input	**DVB-S/S2 Input**
	Input Frequency: 950~2150 MHz
	Constellation: QPSK, 8 PSK
Outputs	**CI Descrambling**
	DVB-CI Interfaces: 2 independent CI slots
	CA Method: Multicrypt / Simulcrypt, Hot Plug
	Bit-Rate: Max 100Mbps

The physical connector design is subject to change without advanced notice (either the connector type or specific connector location) according to user's sepcifc order, performance improvement, or for better user experience.

2 Installation

2.1 Installation Procedure



2.2 Preparation before Installation

Before installation, the installation personnel should read through and confirm the followings:

- Go through this user manual.
- Has the knowledge of digital television system.
- Has defined the sources, racks allocation, and set-up plan system wiring.
- Knows how to operate this unit and parameters configuration.
- Go through related engineering design documents about the system.

2.3 Check Package and Accessories

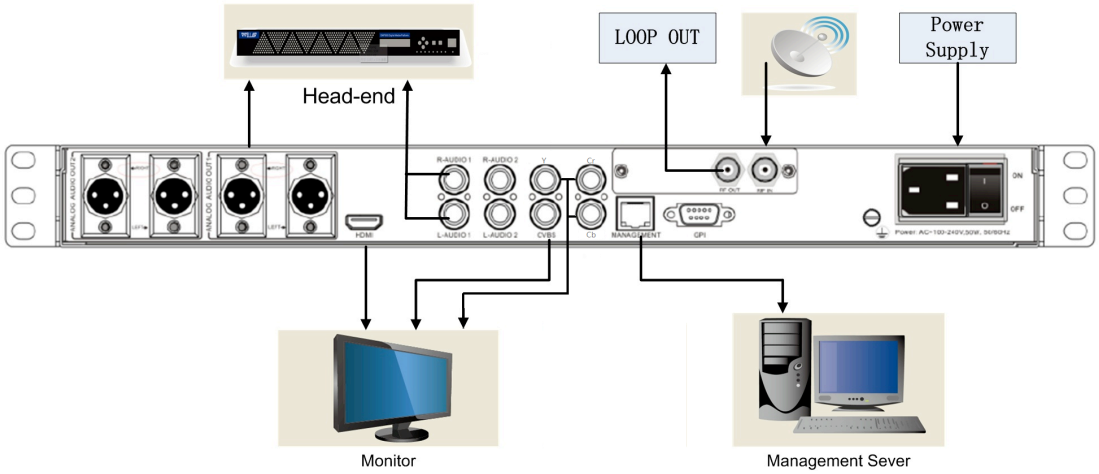
The IRD package includes the following accessories:

- Base Unit x1
- Power cord x1
- Earth cord x1
- BNC cord x2
- BNC-RCA cord x3
- User Manuel Disc x1
- Quick Installation Guide x1

2.4 Equipment Wiring and Connection

ATTENTION To avoid electric shock and damage to the equipment, before setting up the wiring connection, please power off the equipment and all other connected external devices. The equipment and external devices must be grounded. Powering on the equipment only after all the wiring connection is completed.

Connection Diagram



PIC-2.4-1

TIPS In actual application, not all connection interfaces need to be connected with signal/external devices. Please connect according to actual application purpose.

REMARKS To ensure a smooth communication between the management PC and the

IRD, please try to connect the IRD management port to a switch without large data processing.

2.4.1 Connection Setup for RF Signal Input

- Connect signal to tuner input with a RF cable.
- Connect the IRD “Management” port to a switch, set up a management network with the management PC.
- Connect the IRD with the monitor via HDMI, CVBS or component ports.

3 Operation Guide

3.1. Operation Overview

This chapter provides information on how to operate the IRD through front panel and WEB UI. User can select the most proper operation method to set up the unit.

3.2. Powering Up and Initialization

Before powering-up the device, make sure that all cabling is correctly connected (refer to chapter 3.4 of this manual). The device is correctly connected to the power inlet and grounded.

Switch on the equipment through the rear power switch, and the unit is powered up and starts the initialization.

The LCD screen is lighted up, and display information as following:

H.264 SD/HD IRD **Booting…**

The initialization takes about 20 seconds to complete, and then the IRD shows the IP address information as following:

H.264 SD/HD IRD -S2 **IP: 192.168.001.016**

If the unit fails to initialize and hangs at the “booting” stage, swtiching off the device and then powering up again may help. If the device still fails to initialize, please contact your service representative for help.

3.3. Front Panel Operation

Ways of operation: use the 6 navigation keys on front panel: Up / Down / Left / Right / Menu

/ Ok to configure the IRD parameters. The configuration and settings are displayed through front panel LCD.

3.3.1 Front Panel Menu Structure

1st Layer	2nd Layer	3rd Layer	4th Layer	5th Layer	Default Settings
Inputs	Receiver	Tuner1	Frequency Range	C Band	
				L Band	
				Ku Band	
			Satellite Frequency		3840MHz
			SymbolRate		27500KBaud
			LNB Power Supply	18V(H)	
				Off	
				13V(V)	
			LNB 22KHz	Off	
				On	
			LNB L.O. Type	C Band	
				WideBand(9.75,10.75)	
				Universal(9.75,10.6)	
				Ku Band	
			LNB L.O. Frequency		5150MHz
		Tuner2	Frequency Range	C Band	
				L Band	
				Ku Band	
			Satellite Frequency		3840MHz
					27500KBaud
			LNB Power Supply	18V(H)	
				Off	
				13V(V)	
			LNB 22KHz	Off	
				On	
			LNB L.O. Type	C Band	
				WideBand(9.75,10.75)	
				Universal(9.75,10.6)	
				Ku Band	
			LNB L.O. Frequency		5150MHz
	Source Config	RF Auto-Switch	Enable		
			Disable		
		Source Standard Set	DVB		
			ATSC		

	Source Select	Tuner1			
Outputs		Program			
		CAM Select	Bypass		
			Delete		
			CI Slot2		
			CI Slot1		
		Vedio	Video Standard	Auto	
				SECAM	
				NTSC	
				PAL_M	
				PAL_N	
				PAL	
			Aspect Ratio	Auto	
				16:9 Pan and Scan	
				Pillarbox(Side Bars)	
				4:3 Pan and Scan	
				4:3 Letterbox	
			Video Format	Auto	
				1080i60	
				1080i59	
				1080i50	
				720p60	
				720p59	
				720p50	
				576i	
				480i	
		Audio	Audio Volume		0dB
			Audio Mixer	Stereo	
				Dual	
				Mono	
				Right	
				Left	
			Audio1 Language		
			Audio2 Language		
		Subtitle	Subtitle Standard	EBU	
				Disable	
				DVB	
	PID Select	Pcr			8190
		Video			514
		Audio1			670
		Audio2			0

		VBI			0
		Subtitling			0
System	Local Setup	DHCP Enable	On		
			Off		
		Local IP Address			192.168.1.16
		Local Network Mask			255.255.255.0
		Local Gateway			192.168.1.1
		Trap IP Address			
		MAC Address			
	Properties	SW Version			
	Factory Setting	YES			
		NO			
	Alarm Setting	On			
		Off			
Status	Inputs Status	Tuner1	Tuner1 Status		
			FEC Rate		
			BER/PER		
			Frequency Offset		
			Frequency Tune		
			RF Level		
			C/N		
			TS Rate		
	Outputs Status	Program No.			
		PCR PID			
		Audio PID			
		Vedio PID			
		PMT PID			
	CI Status	CI Slot1			
		CI Slot2			
CA	Common Interface	CIMultiDecryntMode	MultiPMT		
			CombinedPMT		
		CAM MAX Bitrate			72Mbps
	Biss Setting	Biss Mode	Biss-1 Mode		
			Biss-E Mode		
		Biss-1 Setup	Biss-1 Key		
		Biss-E Setup	Biss-E Key		
			Biss-E id		

3.3.2 Front Panel Operation Guide

- **Enter “Menu”:**
  - Press “***MENU***” button to enter main menu.

- **Exit Menu/Back to parent Menu**
  - Upon completion of configuration settings, press "***MENU***" button until you go back to the Parent Menu.

- **Enter Sub-Menu**
  - Press ***MENU*** button to enter main menu.
  - Select a sub-menu by pressing arrow ***UP*** and arrow ***DOWN*** button.
  - Press ***OK*** button on the selected sub-menu.

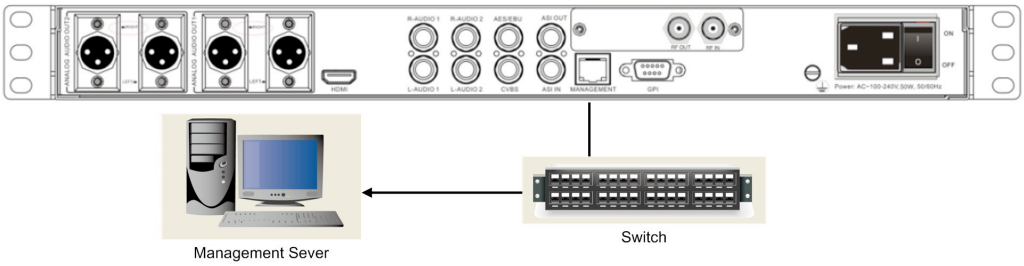
- **To change parameter**
  - Step 1: Enter main menu by pressing ***MENU*** button.
  - Step 2: Scroll sub-menu by pressing arrow ***UP*** and arrow ***DOWN*** button, and press ***OK*** button to change the selected sub-menu.
  - Step 3: To change parameter settings, press arrow ***RIGHT*** and arrow ***LEFT*** button to move the cursor in which change must be made.
  - Press arrow ***UP*** button and arrow ***DOWN*** to input / select an appropriate setting, then press ***OK*** button to save.

3.4. WEB UI Operation (Recommended)

Accessing the equipment via Web can be very convenient for remote configuration of the equipment. Relative to the front panel settings WEB operation can provide a more friendly man-machine interface, and with less limits in space. WEB Management is recommended.

3.4.1 WEB Management Connecting

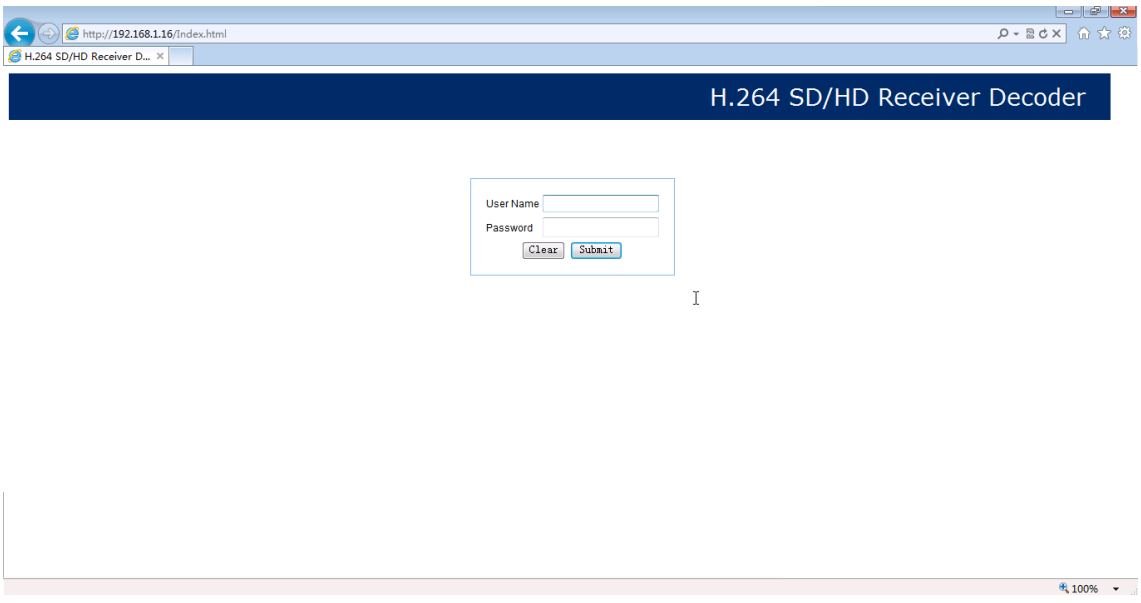
Connection Instruction



PIC-3.4- 1

1. Connect the “MANAGEMENT” port of the IRD to a network switch and connect the management PC/server to the same network switch.
2. The IRD default IP address is 192.168.1.16. Please modify the management server’s IP address or IRD IP address to be in the same IP section. To ensure that the equipment is smoothly connected to the network.
3. Open any web browser (e.g. Mozilla, internet explorer, safari and etc.), input the equipment’s IP address in format: **http://xxx.xxx.xxx.xxx** (xxx.xxx.xxx.xxx refers to IRD’s IP address) and press ENTER button to confirm. The browser will attempt to connect to the device. If succeed, a login page will appear. *(see PIC-3.4.2)*

Note: Through WEB browser, you can manage several pieces of HD IRD at the same time, as long as those equipments are connected to the server via Network Switch. Make sure that the equipment and server’s IP address should be in the same section. Nevertheless, Subnet Mask and Gateway should be the same both the server and the equipment.

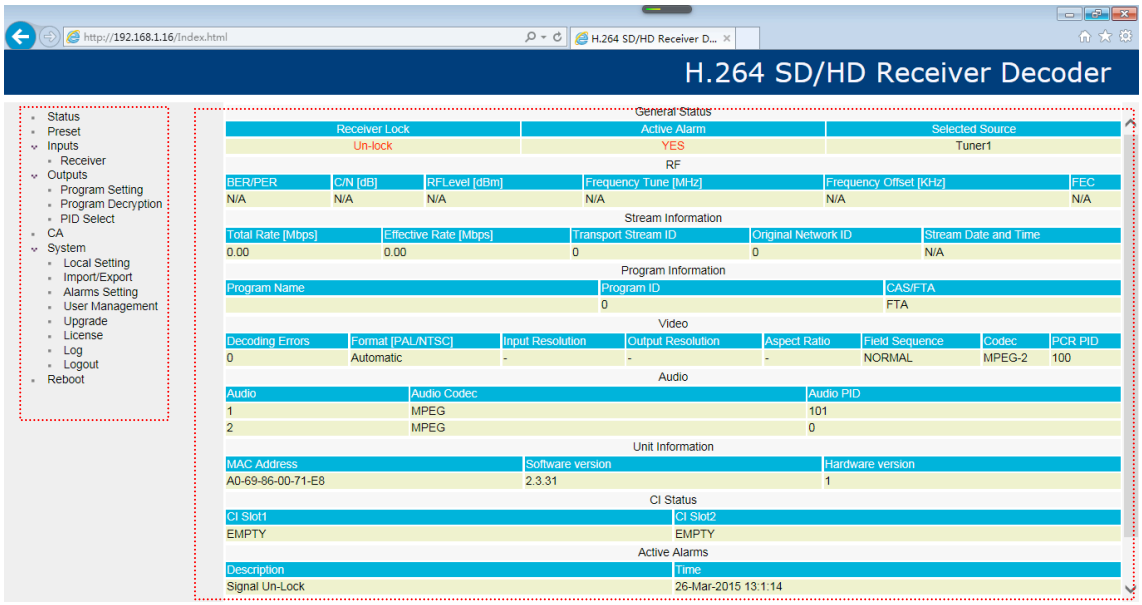


PIC-3.4- 2

- To login, you need to enter the default username “admin” and password “admin”. Then click “Submit”.
- If the user name and password is entered correctly, you will be redirected directly to the main page.

3.4.2 Parameters Configuration

3.4.2.1 Main Page



PIC-3.4- 3

Login the WEB network, you can notice that the WEB management network as a whole is divided into two functional areas:

- Area to the left function menu is used to switch in a different configuration menu page.
- Area to the right, displays the selected content of the configuration of the menu items.

The WEB management page allows you to monitor and/or configure: Status, Preset, Receiver, ASI Output Mode, Program Setting, Program Decryption, PID Select, CA, Local Setup, Import/Export, Alarms Setting, User Management, Upgrade, License, Log, Logout and Reboot.

Left menu section:

This area shows the main menu items of the machine, you can click the item you want configure or monitor, then the detailed information will appear in the right area.

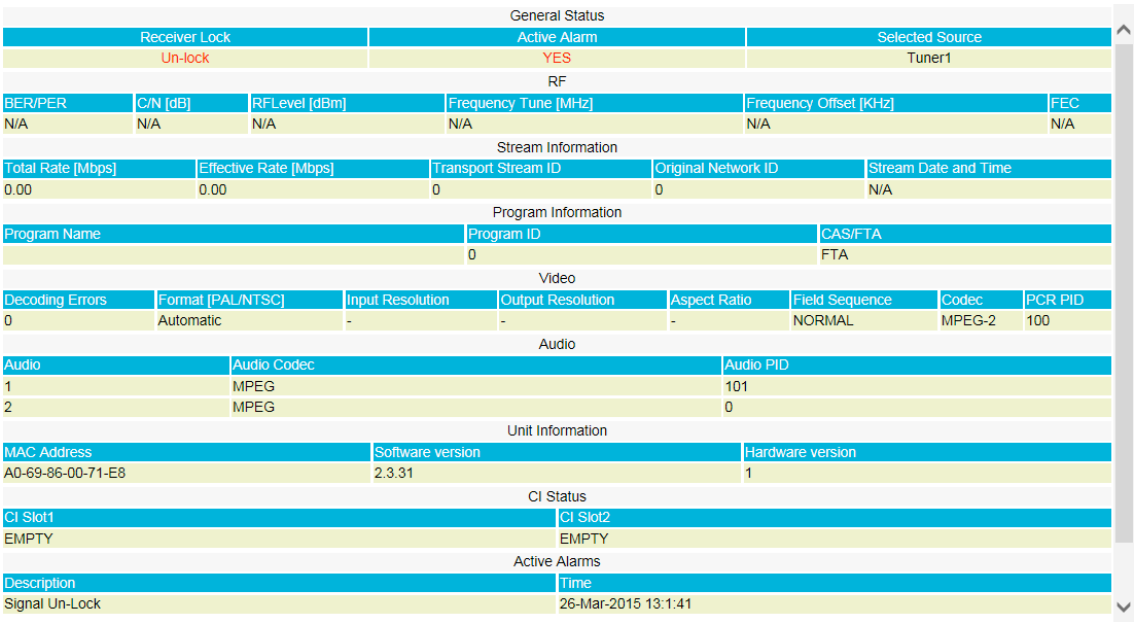
Left menu section:

PIC-3.4- 4

Right function section:

This section is the main place for monitor and configuration of the machine, it can show you the detailed information, you can operate it as follows:

3.4.2.2 Status Page



General Status

Receiver Lock	Active Alarm	Selected Source
Un-lock	YES	Tuner1

RF

BER/PER	C/N [dB]	RFLevel [dBm]	Frequency Tune [MHz]	Frequency Offset [KHz]	FEC
N/A	N/A	N/A	N/A	N/A	N/A

Stream Information

Total Rate [Mbps]	Effective Rate [Mbps]	Transport Stream ID	Original Network ID	Stream Date and Time
0.00	0.00	0	0	N/A

Program Information

Program Name	Program ID	CAS/FTA
	0	FTA

Video

Decoding Errors	Format [PAL/NTSC]	Input Resolution	Output Resolution	Aspect Ratio	Field Sequence	Codec	PCR PID
0	Automatic	-	-	-	NORMAL	MPEG-2	100

Audio

Audio	Audio Codec	Audio PID
1	MPEG	101
2	MPEG	0

Unit Information

MAC Address	Software version	Hardware version
A0-69-86-00-71-E8	2.3.31	1

CI Status

CI Slot1	CI Slot2
EMPTY	EMPTY

Active Alarms

Description	Time
Signal Un-Lock	26-Mar-2015 13:1:41

PIC-3.4- 5

This page shows the current operation status of the equipment. Therefore, you can monitor and check the following:

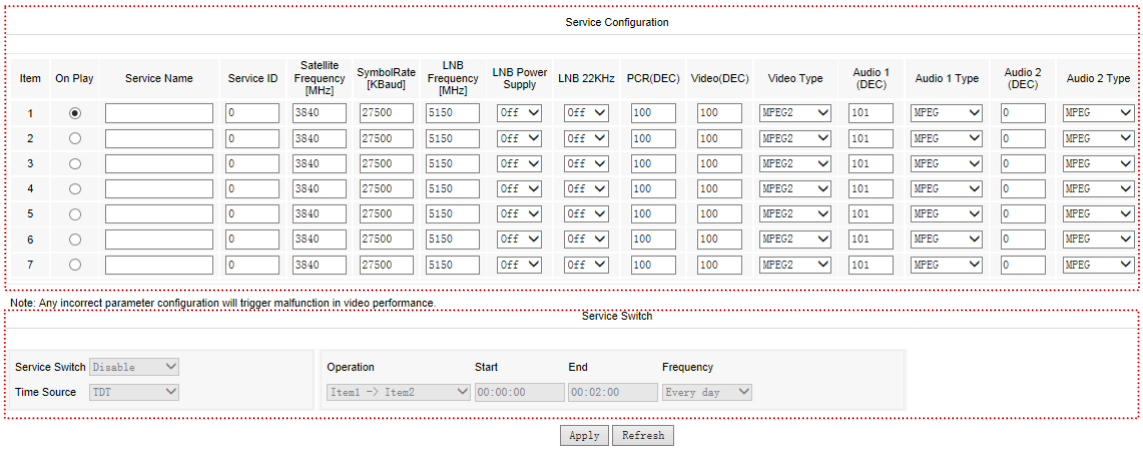
- **General Status:** if the signal locked, it shows the signal status in green, otherwise,

it shows in red.

- **RF Status**: here, you can monitor the main information of RF signal, such as RF level, frequency tune, frequency offset, FEC.
- **Stream Information**: it shows the information of transport stream rate, transport stream ID, original network ID and stream time.
- **Program Information**: here is the information of the program that you selected for output. If the output program is changed, this information will upgrade automatically.
- **Video/ Audio**: it displays the video & audio status, decoding errors etc.
- **Unit Information**: you can check the version of the hardware and software here.
- **CI Status:** if the CI card is plugged in, it will show here.
- **Active Alarms:** it shows the active alarm.

Press the “Refresh” button to refresh the interface.

3.4.2.3 Preset

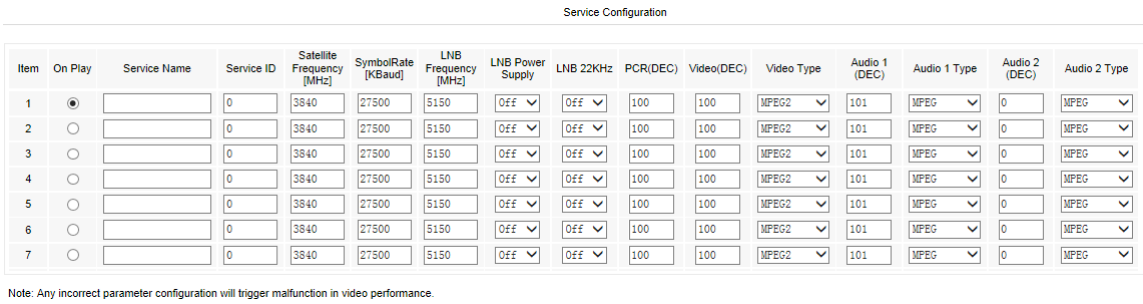


PIC-3.4- 6

There are two parts for this menu: Service Configuration and Service Switch. After configure all parameters, click “Apply” to save and “Refresh” to refresh the interface.

✧ **Service Configuration**

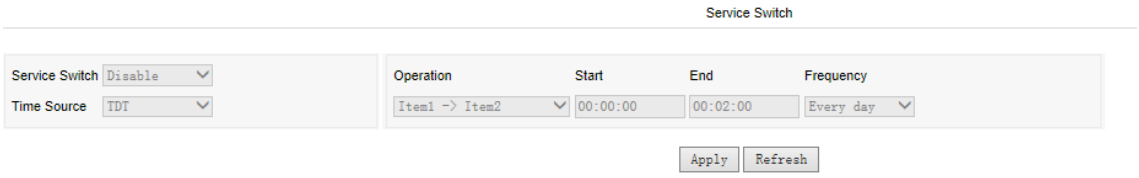
You can configure the transponder parameters and program PID to specify a required program. The preset list has up to 20 presets to specify 20 programs. (Parameter settings of transponder and PID please refer to 3.4.2.4 Tuner Configuration and 3.4.3.5 PID select)



PIC-3.4- 7

✧ Service Switch

Service switch allows switching a program to another in required time range and frequency.



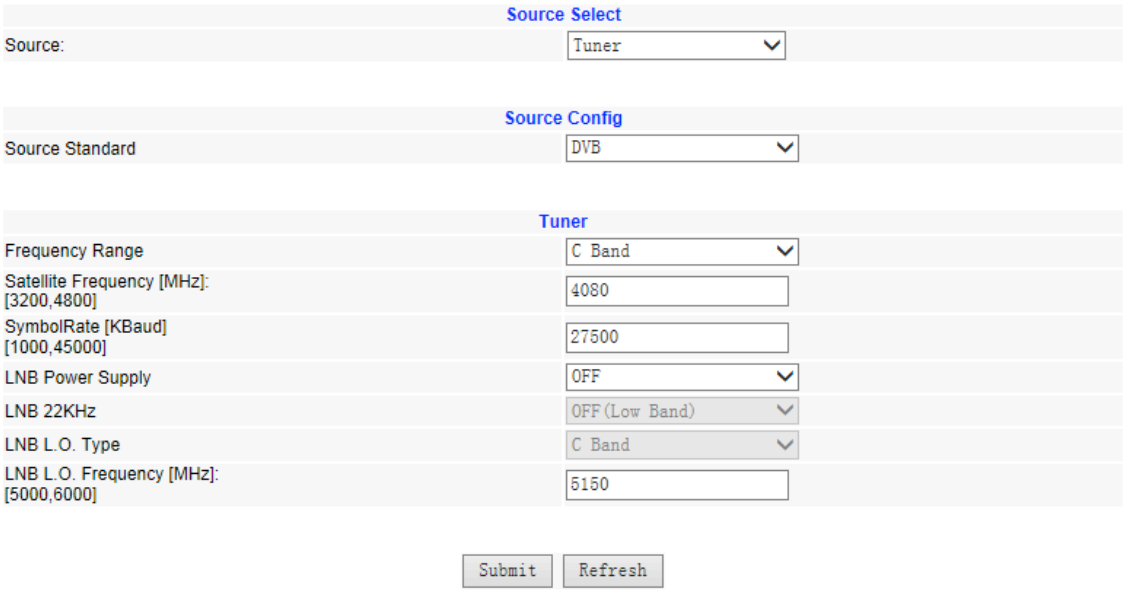
PIC-3.4- 8

- **Service Switch:** enable or disable service switch function.
- **Time Source:** time source use TDT table for time reference.
- **Operation:** you can switch current program to another specified program.
- **Start:** specify a time point to start switch.
- **End:** specify a time point to return to previous program.
- **Frequency:** choose the period to repeat the operation.

3.4.2.4 Inputs

- **Receiver**

You can configure or modify the parameter of input source here, after configuration you can click “Submit” to save and “Refresh” to refresh the interface.



PIC-3.4- 9

✧ **Source Select**

In this interface, it is able to choose any of the two sources as input:

PIC-3.4- 10

1. **TUNER:** the IRD will search the signal from the tuner source (need to enter accurate parameters for the signal to lock).

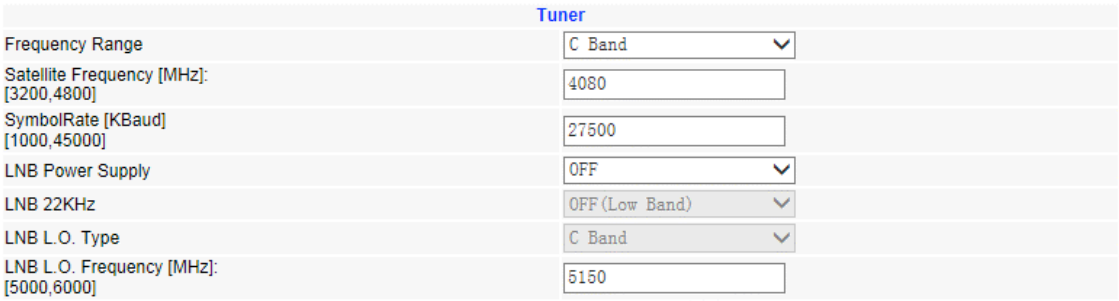
✧ **Source Config**

This section allows the configuration of input signal to ensure a stable operation. It shows as follows:

PIC-3.4- 11

- **Source Standard Set**: you are able to set the standard of the source, including DVB and ATSC.

✧ **Tuner Configuration**



PIC-3.4- 12

Additionally, in this section, you are able to set the dual RF receiver parameters including the Satellite Frequency, Symbol Rate, LNB Frequency, and LNB Voltage (Polarization) with accurate values. Then you can press the “Submit” button to save your settings or click “Refresh” button to refresh the screen.

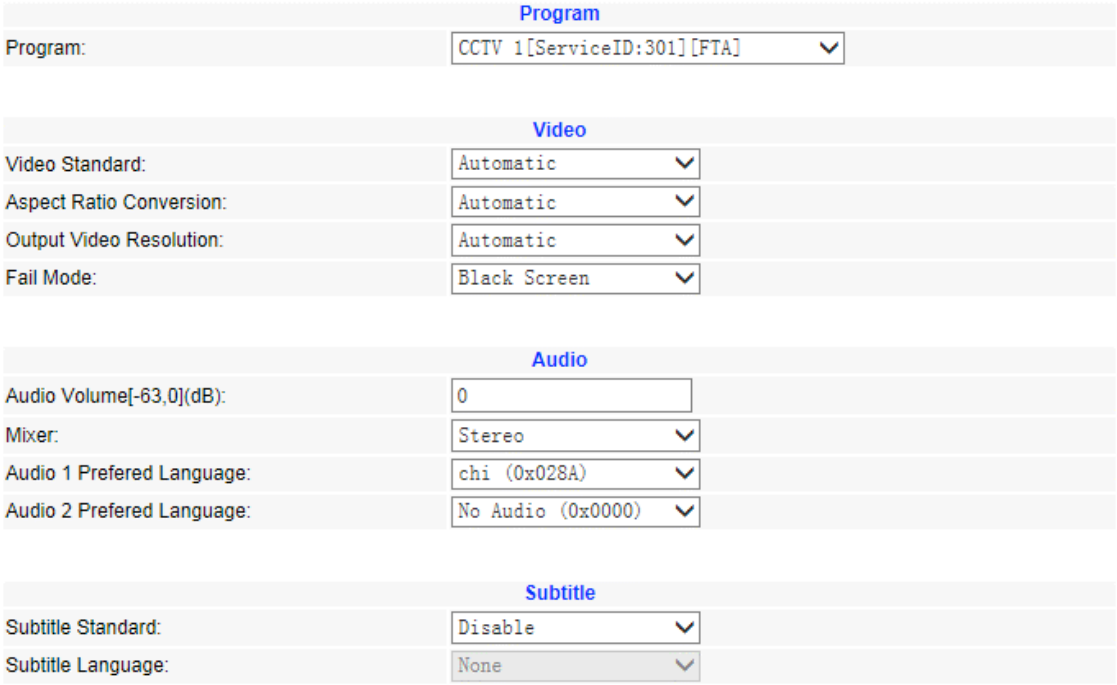
- **Frequency Range:** it is the frequency of satellite, including C band, Ku band and L band. If you want to receive the right satellite signal, it shall be set correctly.
- **SATELLITE FREQUENCY (MHz):** this is the satellite down conversion frequency, every transponder has one frequency, and you can get this parameter from the satellite program provider.
- **SYMBOL RATE (KBaud):** every transponder has one symbol rate; you can get this parameter from the satellite program provider.
- **LNB Power Supply:** LNB voltage is the power that supply to the LNB in order to receive satellite signal with different polarization. Generally 18V is for Horizontal while 13V is for Vertical.
- **LNB 22 KHz:** Generally this is used to control 22KHz switch, typically used for LNB with double L.O. in Ku band. “ON” is for high L.O and “OFF” is for low L.O.
- **LNB LO. Type:** this is the type of LNB, including Ku band, C band, universal and wide band, which also can be obtained from the LNB provider. It usually stays the same with Frequency Range.
- **LNB LO. Frequency:** this is the LNB’s local oscillation (LO) frequency, every LNB have one or two oscillation frequencies which can be obtained from the LNB provider, or you can check on the LNB label. The value is between 5000 and 6000.

Sometimes the parameters may change; it is advisable to check through www.lyngsat.com for the updated satellite parameters.

3.4.2.5 Outputs

- **Program Setting**

In this interface, user can view and configure the decoding output program parameters, including: Program, Video, Audio and Subtitle.



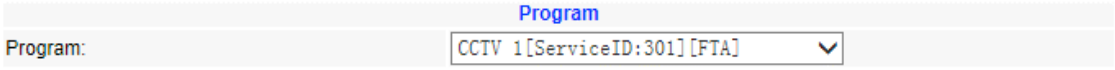
PIC-3.4- 13

The device decoding output is via its CVBS, Component or HDMI output ports. For each time only one program can be set to decoding output.

The parameters set in "Program Setup" interface work for all selected program.

- **PROGRAM:**

This interface, all the programs received will be listed in "Source Select" region. By changing the program's operation, you can determine whether to transmit the program or appoint a CI Slot to descramble the scrambled programs.

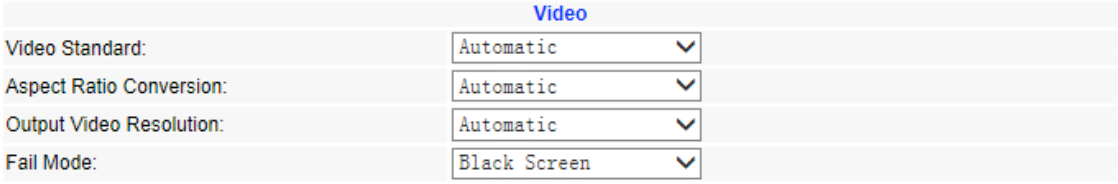


PIC-3.4- 14

If the input signal is not locked and searched, the “program” section shows empty. User cannot do any setup at the moment.

✧ **VIDEO:**

Here, you can configure the video parameter, as follows:



PIC-3.4- 15

- **VIDEO STANDARD:** in this item, you can select video standard including Auto, SECAM, NTSC, PAL-N, PAL-M and PAL.
- **Aspect Radio Conversion:** you had the options to select from various aspect ratios as follows: Auto, 16:9 LetterBox, 16:9 Pan and Scan, 4:3 LetterBox, and 4:3 Pan and Scan.
- **Output Video Resolution**: you can choose from the following video formats (resolution) for applying to the decoding output program:

Auto / 480i / 576i / 720p50 / 720p59 / 720p60 / 1080i50 / 1080i59 / 1080i60.

Fail Mode

TIPS **The decoder output video resolution should meet with the monitor resolution setting to avoid and display issue.**

TIPS **The video supports Dolby 2.1 channel downmix decoding output and 5.1 channel passthrough processing.**

DOLBY DIGITAL

Manufactured under license from Dolby Laboratories. Dolby and the double-D symbol are trademarks of Dolby Laboratories.

✧ **Audio:**

In this section, you can configure the information of Audio, as follows:

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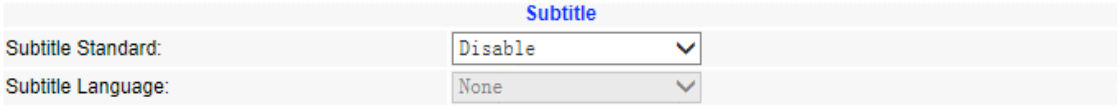
- AUDIO Volume: Set the output audio level from -63 to max. 0.
- Mixer: Shows the format of audio, including Stereo, Left, Right, Mono and Dual.
- AUDIO LANGUAGE: Select different audio language if there are multiple audio PIDs contained in the signal.

✧ **Subtitle:**



PIC-3.4- 17

- Subtitle Standard: You can set the subtitle to be EBU or DVB.

  EBU: The European Broadcasting Union s the world's foremost alliance of public service media entities

  DVB: It means Digital Video Broadcasting, a set of standards relating to digital television
- Subtitle Language: Here you can set the language of subtitle from the existing selections.

TIPS **The decoder can decode Closed Caption (CEA608 /CEA708) and output from CVBS interface or passthrough through ASI and IP.**

- **Program Decryption**

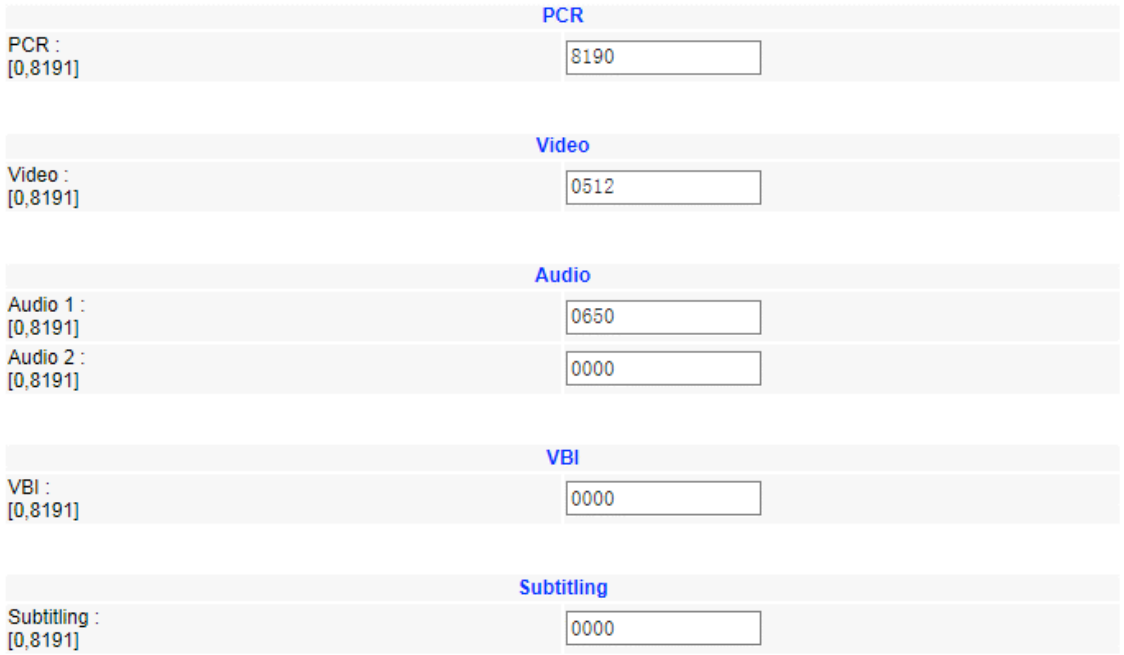
In this section, by changing the CAM operation, you can determine whether to descramble the program or not. Then you can press the “Submit” button to save your settings or click “Refresh” button to refresh the screen. Options for operation:

PIC-3.4- 18

- **BYPASS:** to transmit the program without any disposal.
- **CI SLOT 1 / CI SLOT 2:** Common Interface slot. If the program is scrambled, you can appoint the CAM module with CAM Card to scramble it. Under this condition, the program is transmitted in default.
- **DELETE:** any program you don't want to transmit can be forbidden by selecting this status.

- **PID Select**

In this section, you can set PID for PCR, Video, Audio, VBI and Subtitling. Then you can press the "Submit" button to save your settings or click "Refresh" button to refresh the screen.

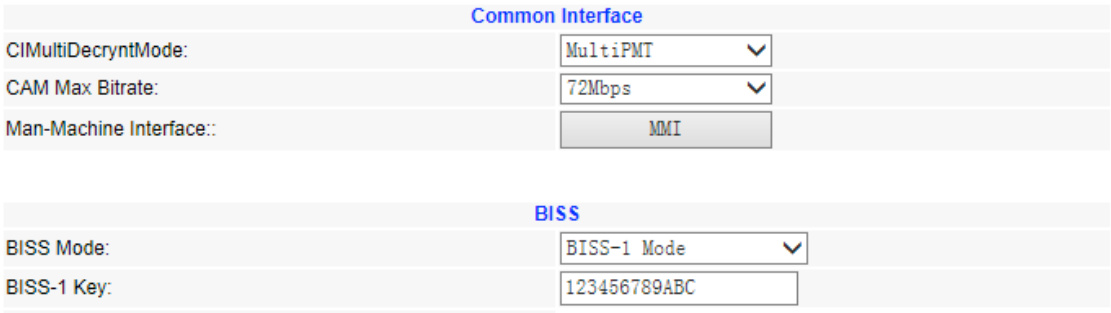


PIC-3.4- 19

3.4.2.6 CA

In this page, user can manage the configuration setting related to the device decryption and

descrambling capability.



PIC-3.4- 20

- **COMMON INTERFACE** is used to interface between the pay-per-view card and the receiver. This is a defined standard that enables the addition of Conditional Access Module (CAM) in a DTV receiver to adapt it to different kinds of cryptography.
  - **CI MULTIDECYPT MODE:**
    - CombinedPMT: convert the PMTs of all selected programs together to a CAPMT and then send this CAPMT to CAM for processing. This setting is in order to let the IRD work more compliantly with some special CAMs. If the CAM can't decrypt programs normally, user can try to select this option.
    - MultiPMT: convert PMTs of the selected programs to corresponding CAPMT respectively, and then send each CAPMT to CAM module for processing. This is the default setting.
  - **CI Bitrate Mode:** Set the max output bit rate of the CAM.

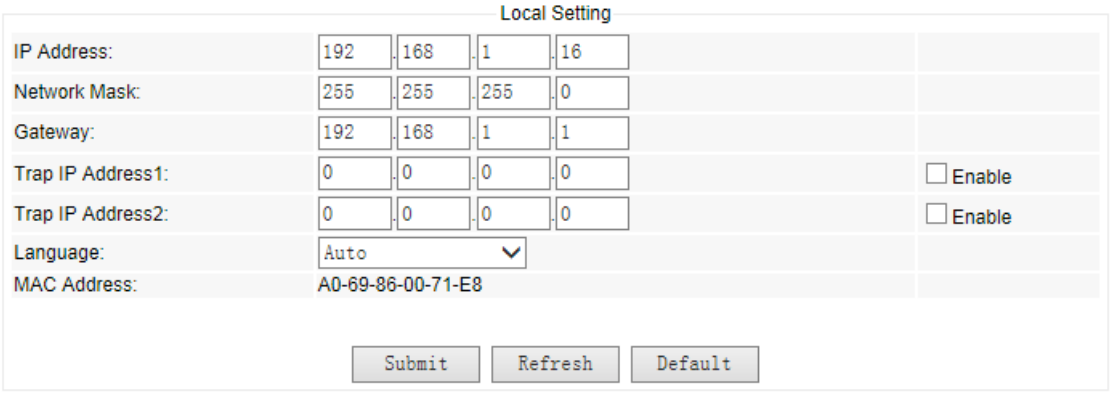
- **BISS (Basic Interoperable Scrambling System):** is a satellite signal scrambling system developed by the European Broadcasting Union and a consortium of hardware manufacturers. There are two types:
  - **BISS-1,** transmission are protected by a 12 digit hexadecimal "session key" that is agreed by the transmitting and receiving parties prior to transmission. The key is entered into both the encoder and decoder, this key then forms part of the encryption of the digital TV signal and any receiver with BISS-support with correct key will decrypt the signal.
  - **BISS-E (E for encrypted),** is a variation where the decoder has stored one secret BISS-key entered by for example a rights holder. This is unknown to the user of the decoder. The user is then sent a 16-digit hexadecimal code, which is entered as a "session key". This session key is then mathematically combined internally to calculate a BISS-1 key that can decrypt the signal.
  - **BISS-E ID,** an identification ID given prior to transmission and reception.

REMARKS **Usually a standard CAM can support Max. 72Mbit data processing unless it has instruction for higher bit rate support. Selecting a wrong CAM output bit rate will**

cause video mosaic issue because the actual processed data exceeds the CAM Max handling capability.

3.4.2.7 System

- **Local Setting**

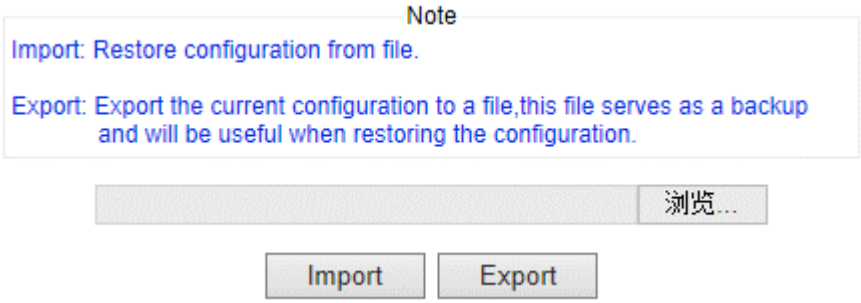


PIC-3.4- 21

In this page, you are able to configure the following parameters:

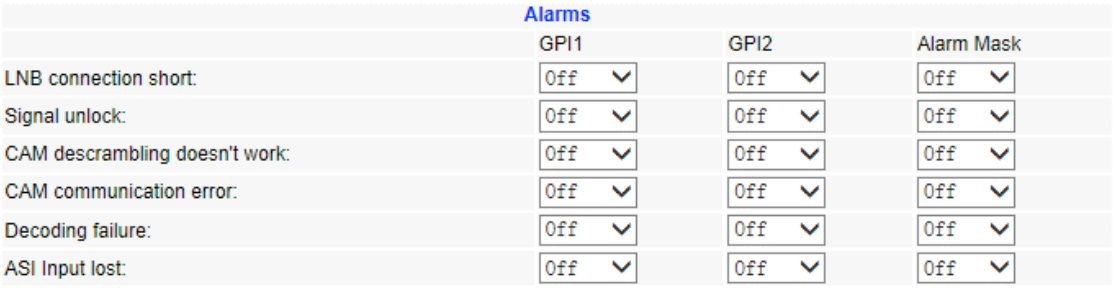
- **IP Address:** Local IP setting for connecting to the server. This IP and the management server's IP should be in the same section.
- **Network Mask:** Subnet Mask setting for connecting to the server. It should be the same as management server: 255.255.255.0
- **Gateway:** Gateway setting for connecting to the server. It should be the same as the management server.
- **Trap IP Address1:** This IP should be the same as the monitoring server's IP. After correct setup, the IRD will pass the alarming and running information to the monitoring server.
- **Trap IP Address2:** This IP should be the same as the monitoring server's IP. After correct setup, the IRD will pass the alarming and running information to the monitoring server.
- **Language:** select the required language from these options. There are 4 default options: auto, English, Russia, Chinese.
- **Mac Address:** Here shows the MAC address of the device. The MAC address is fixed and not editable.

- **Import/Export**



PIC-3.4- 22

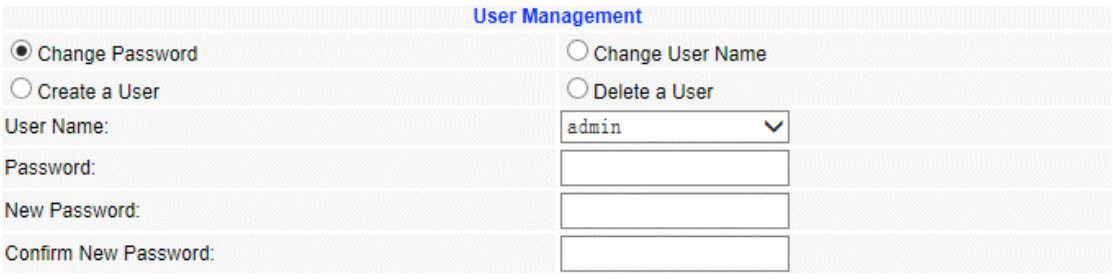
- **Alarms setting**



PIC-3.4- 23

In this section, you can set the alarm information to monitor the device and signal. After setting the “Alarm Mask” on, the “GPI” item will be optional. If you set the GPI on, when there are LNB Disconnect, Signal unlocked, CAM error, decoder failure, ASI output lost error, the alarm information will be sent out via GPI.

- **User Management**



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- Change Password:

When choose this button, you are able to change the password with a new one. But you should enter the old password firstly.

- Change Username:

Here, you can change the existed username to a new one.

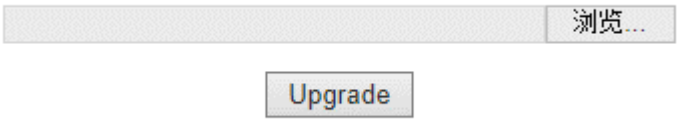
- Create a User:

The device allows you to add up to 10 new users to operate the device. You can set the new username and password after select “Create a User” button.

- Delete a User:

By selecting this section, you are able to delete the user account from the existing account. If the user account is deleted, the user will have no access to the device any more.

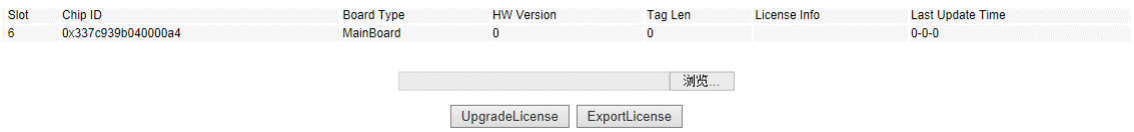
- **Upgrade**



PIC-3.4- 25

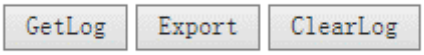
Click Browse button, then you can select the upgrade file, and click “Upgrade” button to start the upgrade. If succeed, restart the device and it will load the new version

- **License**



PIC-3.4- 26

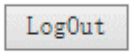
- **Log**



PIC-3.4- 27

Here, you can get and import the log of the device for further analysis. And by clicking the ClearLog button, you are able to clear the redundancy log data.

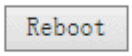
- **LogOut**



PIC-3.4- 28

If you have finished your operation, you can logout the management system by clicking this button.

- **Reboot**



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3.5. Operation Verification

This section briefly describes some simple verification/debugging on the device after configuring the parameters of the device.

3.5.1 Signal Reception Verification

Precondition:

a. **For tuner input test:** satellite signal is ready and strong.

b. **For ASI input test:** ASI signal source equipment can stream out ASI signal.

The configuration of IRD:

The items need to be checked are listed in the following table.

Items	Method
Modify the signal reception mode (Front panel modification)	Inputs -> Source select menu (Through the front panel to select from ASI or Tuner which matches your current input signal).
Modify the signal reception mode (Modification through WEB)	Login WEB UI to select correct input source in "Inputs->Source Select" configuration page. (Refer to *Figure 3.4* of this manual)

Items	Method
Signal Connection	Make sure the signal is well connected to the right interfaces: 1. Whether the RF signal is connected to the tuner input. 2. Whether the ASI source is connected ASI Input. 3. Whether the device has been connected to management network through the device “Management” port.

Verification Result

Once the signal source is properly connected and the parameters based on the input is accurately configured, front panel LOCK indicator will lights up in GREEN, indicating that the signal reception is normal.

3.5.2 Descrambling Function Verification

Precondition:

a. Scrambled satellite signal or test stream are available.

b. The smart card has already been authorized.

c. Corresponding CAM for the test signal/stream is available.

d. The descrambled picture can be seen via monitors.

The configuration of the device:

The items need to be checked are listed in the following table.

Items	Method
Front Panel Modification	Outputs->Program Setup menu (Select the program which needs to be descrambled from Program List. Select CI Slot1or CI Slot2 according to which CI ports the CAM module and CAM Card is inserted.)
Modification through WEB	Select “Outputs->Program Setup” page (Refer to Figure 3.4 of this manual)

Verification Result

If the scrambled programs can be seen on the monitor after descrambling setting, then it verifies the IRD descrambling function works well.

3.5.3 Decoding Function Verification

Precondition:

a. The input signal is available and well fed to the input ports.
b. The scrambled satellite signal and code streams are dealt with correct CAM module and authorized smart card.
c. The descrambled picture can be seen via the monitor.

The configuration of IRD:

The items need to be checked are listed in the following table.

Items	Method
Front Panel Modification	Outputs->Program Setup menu (for scrambled program) (Select the program which needs to be descrambled from Program List. Select CI Slot1or CI Slot2 according to which CI ports the CAM module and CAM Card is inserted.)
	Outputs->Decoder Setup menu (Select the programs that need decoding output, and then choose Output->Decoder Setup->Audio menu and Output->Decoder Setup->Video menu to set decoding resolution, aspect ratio, output mode etc.
Modification through WEB	Outputs->Decoder Setup page (Refer to Figure 3.4 of this manual)

Verification Result

The selected programs are displayed on the monitor after setting. It means the decoding is working fine.

3.6. Preparation before Officially Operation

This section advises what need to be performed on the IRD before formally starts operation. It includes but not limited to the following:

- Clear test data
- Configure the equipment with working data.
- Routing inspection.

3.6.1 Clear all useless data

To do a factory default setting on the device in order to clean up all test data generated in the process of debugging and testing.

3.6.2 Configure the equipment with working data

According to the formal system plan to configure the IRD from signal input, descramble and decoding output.

3.6.3 Full checking before implementation

After completion of the test and configuration, users are recommended to give the equipment a final full-scale checking to ensure everything is on track for working with long-term stability. It shall contain (but not limited to) the following items：

- Check the strength and quality of all input signals.
- Check if there is any alarm lights up on front panel LED indicator.
- Check whether the cable connection is in good condition with each external device.

4 FAQ

Problem	Possible Reasons	What to do
The LCD display on the front panel does not light up.	No power.	Check whether the power cord is plugged into the power socket.
No Video output	Parameters are not properly configured.	Check the parameters configuration

Problem	Possible Reasons	What to do
	No signal	Check the source and other factors that affect the signal reception.
	The TV set is not tuned to the right TV mode.	Set TV in right mode, e.g. (Set TV to CVBS display mode for CVBS decoding input from IRD, component mode for IRD component input, and HDMI mode for IRD HDMI input, etc.)
No or bad signal.	No cable connection or the program does not exist in current satellite.	Check the cable connections, LNB and other equipment connected between the LNB and the STB, and /or adjust the dish.
	The satellite dish is not properly oriented to the satellite.	Align the dish. Check the signal level in the IRD menu.
Bad picture / Blocking error.	The satellite dish is not properly oriented to the satellite.	Align the dish.
	Signal is too strong.	Connect a signal attenuator to the LNB input.
	Signal is too weak.	Change to a larger dish.
	LNB noise figure is too high.	Change a LNB with lower noise figure.

Problem	Possible Reasons	What to do
	The LNB is defective	Change a LNB.
Signal is good. But No picture and no audio on decoding output	The picture and audio are scrambled.	Insert correct CAM and authorized smart card to descramble the programs.
Cannot have access to the IRD through WEB UI	IP setting	Check whether the management PC IP and the IRD IP have been set to be in same section.
	Network cable problem	Make sure the cable is good one and connect well to the IRD management port.
Cannot Decrypt Programs.	Haven't selected decrypted programs or select incorrectly.	Select decrypted programs to be correctly.
	CAM Modular Error.	Change for another CAM.
	Smart Card no authorization	Change for an authorized smart card
	Incorrect insertion of CAM or Smart card.	Correctly insert CAM and Smart card.

5 Terminology

A - Z	
Abbreviation	**Specific Meaning**
AES	Audio Engineering Society
ASI	Asynchronous Serial Interface
BISS	Basic Interoperable Scrambling System
BNC	Bayonet Nut Connector
CI	Common Interface
CVBS	Composite Video Broadcast Signal

DVB	Digital Video Broadcast
DVB-C	DVB-Cable
DVB-S/S2	DVB-Satellite
DVB-T	DVB-Terrestrial
EBU	European Broadcasting Union
ETSI	European Telecommunications Standards Institute
FEC	Forward Error Correction
HD	High Definition
HDMI	High Definition Multimedia Interface
ISO	International Standard Organization
ITU	International Telecommunications Union
LNB	Low Noise Block
MPEG	Moving Pictures Experts Group
PCMCIA	Personal Computer Memory Card International Association
RTP	Real-time Transport Protocol
SD	Standard Definition
SDI	Serial Digital Interface
TS	Transport Stream
UDP	User Datagram Protocol