

Professional HD Integrated Receiver Decoder

User Manual

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	Tips that help you to solve problems or save your time.
 REMARKS	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-N: First revision of the manual. (Date: September 10th, 2013).
- V1.02-N: Last revision of the manual. (Date: April 17th, 2014)

Contents

1	About This Product.....	4
	1.1 Introduction.....	4
	1.2 Safety.....	4
	1.3 Architecture.....	5
	1.4 Methods of Operation.....	6
	1.4.1 Operation through WEB UI.....	6
	1.4.2 Operation through Front Panel Operation.....	7
	1.5 Technical Specifications.....	7
	1.5.1 Physical Specifications.....	7
	1.5.2 Performance and Capacity.....	8
	1.5.3 Interfaces and Protocols.....	8
2	Installation.....	10
	2.1 Installation Procedure.....	10
	2.2 Preparation before Installation.....	10
	2.3 Check Package and Accessories.....	11
	2.4 Equipment Wiring and Connection.....	11
	2.4.1 Connection Setup for RF Signal Input.....	12
	2.4.2 Connection Setup for ASI signal input.....	12
	2.4.3 Connection Setup for IP signal input.....	12
3	Operation Guide.....	13
	3.1. Operation Overview.....	13
	3.2. Powering Up and Initialization.....	13
	3.3. Front Panel Operation.....	13
	3.3.1 Front Panel Menu Structure.....	14
	3.3.2 Front Panel Operation Guide.....	16
	3.4. WEB UI Operation.....	17
	3.4.1 WEB Management Connecting.....	17
	3.4.2 Parameters Configuration.....	19
	3.5. Operation Verification.....	33
	3.5.1 Signal Reception Verification.....	33
	3.5.2 Descrambling Function Verification.....	34
	3.5.3 Decoding Function Verification.....	34
	3.6. Preparation before Officially Operation.....	35
	3.6.1 Clear all useless data.....	35
	3.6.2 Configure the equipment with working data.....	36
	3.6.3 Full checking before implementation.....	36
4	FAQ.....	37
5	Terminology.....	39

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 several of inputs (DVB-S/S2, DVB-C (optional), DVB-T/ISDB-T (optional) and ASI), decrypt, and process/select programs to various outputs including CVBS, HDMI, SD/HD SDI and ASI. It supports multi-channel descrambling. 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, please 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



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

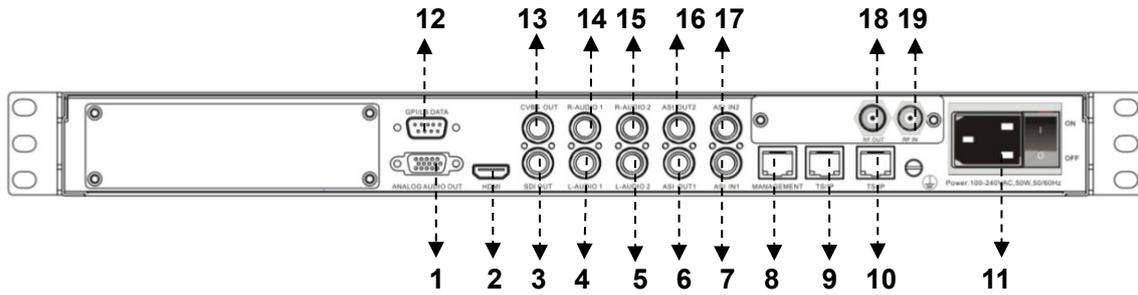
Front Panel



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	Analog Audio Out	2	HDMI Out
3	SDI Out	4	L-AUDIO1
5	L-AUDIO2	6	ASI Out 1
7	ASI IN 1	8	MANAGEMENT
9	TS/IP	10	TS/IP (Redundant)
11	Power switch	12	GPI
13	CVBS	14	R-AUDIO1
15	R-AUDIO2	16	ASI OUT2
17	ASI IN 2	18	RF OUT
19	RF IN 1		

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

Functions	Description	Related Items
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	AC100~240VAC
Max. Power Consumption	Approx 40W
Size	1RU
Dimension	480mm (W) × 44mm (H) × 440mm (D)
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
Decoder Max. Resolution	1920 X 1080i
CI Max. Output Bitrate	100Mbps

1.5.3 Interfaces and Protocols

Physical Connector Interfaces

Inputs	IP Input	ASI Input
	Interface: 1 x 1000 Mbps	Interface: 2 ASI inputs, 75Ω
	IP Encapsulation: UDP/RTP	MPEG Format: 188/204 Bytes per TS
	MPEG TS: MPTS and SPTS	Max bit rate: 100 Mbps (per TS)
	Input processing: 1Socket, max at 72 Mbps per socket.	
	DVB-S/S2 Input	QAM RF Input (optional)
	Input Frequency: 950~2150 MHz	Frequency Range: 48~862 MHz
	Constellation: QPSK, 8 PSK	Modulation Mode: 16/32/64/128/256 QAM
	DVB-T2 (Optional)	DVB-T (Optional)
	Constellation: 16/32/64/128/256 QAM	Constellation: QPSK/16/64QAM
	Bandwidth: 1.7Mhz, 5Mhz, 6Mhz, 7Mhz, 8Mhz, 10Mhz	Bandwidth: 6/7/8Mhz
	Input frequency: 48~862MHz	Input frequency: 48~862MHz
	Max. bitrate: 50Mbps	Max. bitrate: 31.67Mbps
	Transmission mode: 1K, 2K, 4K, 8K, 16K, 32K	Transmission mode: 2K, 8K
	ISDB-T/Tb (Optional)	ATSC (Optional)
	Constellation: QPSK/16/64QAM DQPSK	Constellation: 8VSB
	Bandwidth: 1.7Mhz, 5Mhz, 6Mhz, 7Mhz, 8Mhz, 10Mhz	Bandwidth: 6Mhz
	Input frequency: 48~862MHz	Input frequency: 57~803MHz (fixed)
	Transmission mode: 1K, 2K, 4K, 8K, 16K, 32K	Max bitrate: 19.39Mbps

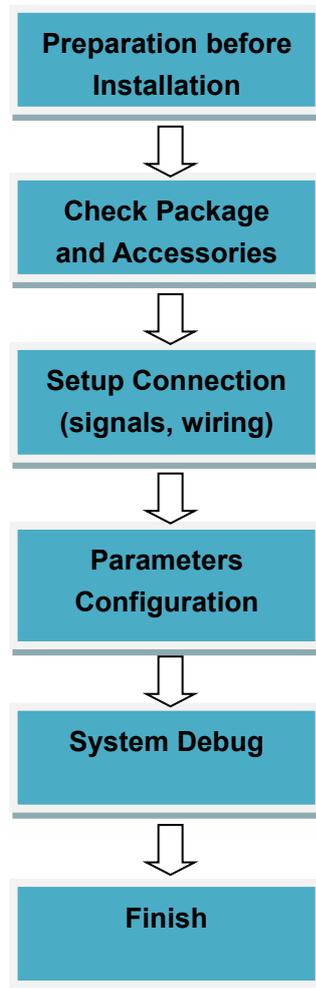
Outputs	IP output	ASI output
	Interface: RJ 45	Interface: 2 ASI outputs, 75Ω
	IP Encapsulation: UDP/RTP	MPEG Format: 188/204 Bytes per TS
	MPEG TS: MPTS and SPTS	Max bit rate: 100 Mbps (per TS)
	Output processing: Up to 8 Sockets, max at 50 Mbps per socket.	



REMARKS The physical connector design is subject to change without advanced notice (either the connector type or specific connector location) according to user's specific 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:

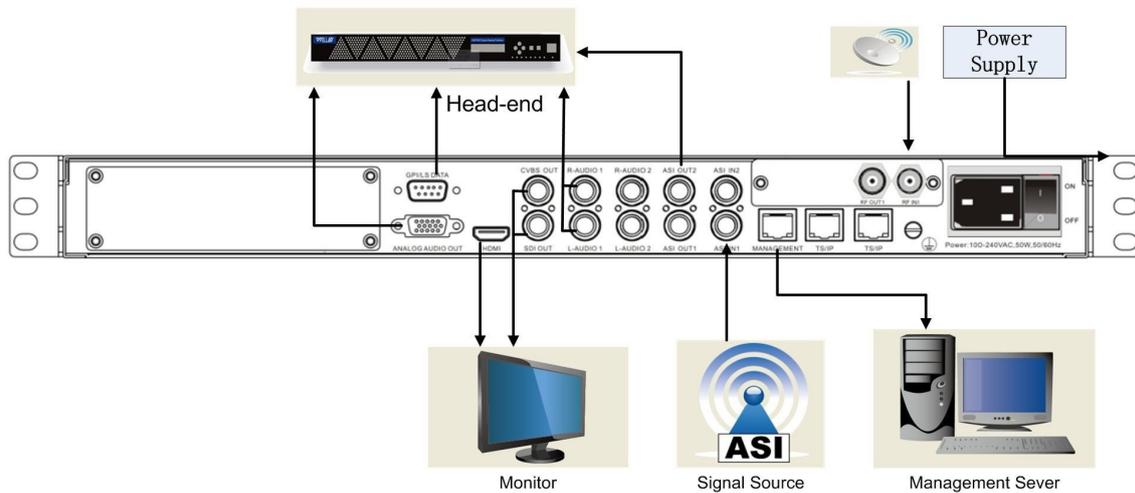
- Base Unit x1
- Power cord x1
- Earth cord x1
- BNC cord x1
- BNC-RCA cord x2
- User Guide Disc x1

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, SDI or CVBS ports.

2.4.2 Connection Setup for ASI signal input

- Connect ASI signal to IRD “ASI IN” port with a BNC 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, SDI or CVBS ports.

2.4.3 Connection Setup for IP signal input

- Connect IP signal to IRD “TS/IP” port with a twisted 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, SDI or CVBS 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



REMARKS

Before powering-up the device, make sure that all cabling is correctly connected (refer to chapter 2.4 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-IP
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-IP
IP: 192.168.001.016
```



TIPS

If the unit fails to initialize and hangs at the “booting” stage, switching 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

1 st Layer	2 nd Layer	3 rd Layer	
Status	Input Tuner	Lock Status	
		Frequency Tune	
		TS Rate	
		C/N	
		BER	
	Input ASI	Lock Status	
		TS Rate	
	Input IP	Lock Status	
		TS Rate	
	Decoder	TS Rate	
		PCR PID	
		Audio PID	
		Video PID	
		PMT PID	
		Program No.	
	CI	CI Slot 1/2	
	Output ASI	TS Rate	
	Output IP	IP 1/2/3/4/5/6/7/8 TS Rate	
	Active Alarms	Tuner LNB Short	Inactive
		Invalid License	Inactive
		CAM1 Communication Err	Inactive
		CAM2 Communication Err	Inactive
		Signal Unlock	Inactive
Inputs	Source	Source Select	ASI/ IPTV/ TUNER

		TS Standard	DVB/ATSC	
		Scan TS		
	Tuner	Satellite Frequency		
		LNB Frequency		
		Symbol Rate		
		LNB Power Supply		
		LNB 22KHz		
		LNB Fre		
		Scan TS		
	ASI	Enable		
		TS Standard		
		Scan TS		
	IP	Local Setting	IP Address	
			Subnet Mask	
			Gateway	
		TSIP Channel 1/8	Mac Address	
			Source IP Address	
			Source IP Port	
			Protocol	
	Outputs Setting	Decoder	Playing Program	
Video			Video Standard	
			Aspect Ratio	
			Video Format	
Audio			Audio Volume	
			Audio Mixer	
			Audio 1/2 Language	
Subtitle			Subtitle Standard	
Teletext		Teletext Standard		
ASI	Constant Rate			

		Trans Mode	
	IP	TSIP Channel 1	Enable
			Dest IP Address
			Dest Port
			Protocol
CA Setting	Common Interface	CI 1/2	Descrambling
		CAM Max Bitrate	
	BISS Setting	BISS Setup	BISS Mode
			BISS-1 Setup
BISS-E Setup			
System	Local Setup	Local IP Address	
		Local Subnet Mask	
		Local Gateway	
		Trap IP1 Addresss	
		Trap IP2 Addresss	
		MAC Address	
	Version		
	Alarms Setting	LNB Connection Short	GPI1/2
			Alarm Mask
		Signal Unlock	
		CAM Descrambling	
CAM Communication			

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.

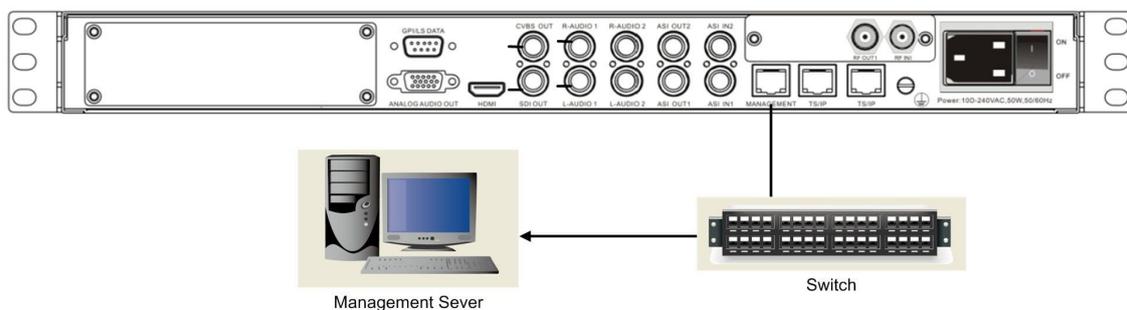
- **To change parameter**
 - Step 1: Enter main menu by pressing **MENU** button.
 - Step 2: Scroll sub-menu by pressing arrow **UP** and arrow **DOWN** button, and press **OK** button to change the selected sub-menu.
 - Step 3: To change parameter settings, press arrow **RIGHT** and arrow **LEFT** button 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**

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:

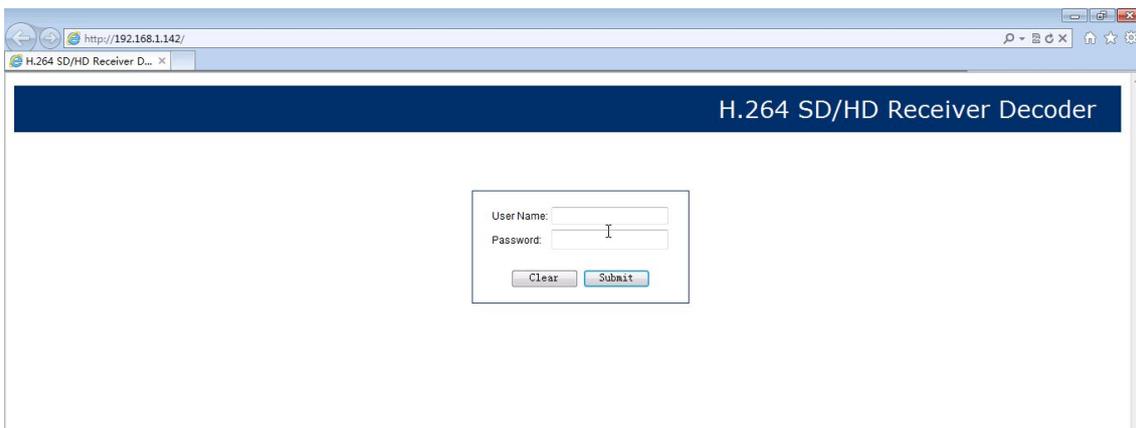


PIC-3.4- 1

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 192.168.1.98 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

The screenshot shows the 'H.264 SD/HD Receiver Decoder' web interface. On the left is a navigation menu with the following items: Status, Programs, Inputs, Receiver, IP, Outputs, Decoder, ASI, IP, CA, System, Local Setting, Import/Export, Alarms Setting, User Management, License, Upgrade, Log, and Logout. The main content area displays several data tables:

Input Tuner Status									
Lock Status	BER	C/N	RF Level	Total TS Rate	Effective TS Rate	Frequency Tune	Frequency Offset	PER	FEC
Un-lock	N/A	0.00 dBc	0 dBm	0.00 Mbps	0.00 Mbps	0.00 MHz	0 KHz	N/A	Unknown

Input ASI Status	
Lock Status	Effective TS Rate
Lock	34.70 Mbps

Input IP Status	
Lock Status	Effective TS Rate
Un-lock	0.00 Mbps

Decoder Status						
Total TS Rate	Effective TS Rate	Program No.	PCR PID	Video PID	Audio PID	PMT PID
108.00 Mbps	34.70 Mbps	304	8190	515	680	260

CI Status	
CI Slot1	CI Slot2
EMPTY	EMPTY

Output ASI Status	
ASI Effective TS Rate	
34.70 Mbps	

Output IP Status							
IP1 Effective TS Rate	IP2 Effective TS Rate	IP3 Effective TS Rate	IP4 Effective TS Rate	IP5 Effective TS Rate	IP6 Effective TS Rate	IP7 Effective TS Rate	IP8 Effective TS Rate
34.70 Mbps	0.00 Mbps	0.00 Mbps	0.00 Mbps	0.00 Mbps	0.00 Mbps	0.00 Mbps	0.00 Mbps

Active Alarms	
Description	Active
None	No

Refresh

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, Programs, Inputs, Outputs, CA, Local Setup, Import/Export, Alarms Setting, User Management, License, Upgrade, Log and etc.

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.



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

This page allows you to monitor the status of input and output signal, and check the information of CI cards.

Input Tuner Status									
Lock Status	BER	C/N	RFLevel	Total TS Rate	Effective TS Rate	Frequency Tune	Frequency Offset	PER	FEC
Un-lock	N/A	0.00 dBc	0 dBm	0.00 Mbps	0.00 Mbps	0.00 MHz	0 KHz	N/A	Unknown
Input ASI Status									
Lock Status	Total TS Rate			Effective TS Rate					
Lock	38.02 Mbps			34.70 Mbps					
Input IP Status									
Lock Status	Total TS Rate			Effective TS Rate					
Unlock	0.00 Mbps			0.00 Mbps					
Decoder Status									
Total TS Rate	Effective TS Rate		Program No.	PCR PID	Video PID	Audio PID	PMT PID		
108.00 Mbps	34.70 Mbps		304	8190	515	680	260		
CI Status									
CI Slot1					CI Slot2				
EMPTY					EMPTY				
Output ASI Status									
ASI Effective TS Rate									
34.70 Mbps									
Output IP Status									
IP1 Effective TS Rate	IP2 Effective TS Rate	IP3 Effective TS Rate	IP4 Effective TS Rate	IP5 Effective TS Rate	IP6 Effective TS Rate	IP7 Effective TS Rate	IP8 Effective TS Rate		
34.70 Mbps	0.00 Mbps	0.00 Mbps	0.00 Mbps	0.00 Mbps	0.00 Mbps	0.00 Mbps	0.00 Mbps		
Active Alarms									
Description	Active								
None	No								

Refresh

PIC-3.4- 5

- **Input status (tuner/ ASI/ IP):** It shows the main information of input streams, such as lock status, RF BER, RF Level, Total RF Rate , ASI total rate, ASI effective rate

etc.

- **Decoder status:** Here you can see the decoder information: video PID, Audio PID and PMT PID.
- **CI status:** You are able to monitor the status of CI cards.
- **Output status (ASI/ IP):** You can check the output TS rate and the TS status.
- **Active Alarm:** Display the alarm information.

3.4.2.3 Programs

When you turn to the Programs interface, where you are able to check and modify the parameter of programs output.

The screenshot shows the 'Programs' interface. At the top, there is a 'Source Select' section with radio buttons for 'Tuner', 'IP', and 'ASI'. The 'ASI' option is selected and marked with a red '1'. To the right, there are 'ScanTS (DVB)' and 'ScanTS (ATSC)' buttons. Below this, a red instruction reads 'Step one: choose the signal source' and 'Step two: click the ScanTS'. The main area is a table titled 'Service Info' with columns for 'No.', 'Service ID', 'Service Name', 'CI', and 'Destination'. The 'Destination' columns are checkboxes for ASI, IP1 through IP8. The first row is 'Bypass the whole stream' with 'ASI' checked and 'IP1' checked. Rows 1-7 list CCTV services (CCTV 1, 2, 7, 10, 11, 12, 15) with 'Bypass' selected in the CI column. A red '2' is placed next to the 'CCTV 7' row. Below the table, there are 'Other PIDs(1)' and 'Remove CA Descriptors' rows. At the bottom, a red instruction reads 'Step three: Click the Submit button' with 'Submit' and 'Refresh' buttons.

No.	Service ID	Service Name	CI	ASI	IP1	IP2	IP3	IP4	IP5	IP6	IP7	IP8
Bypass the whole stream				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>						
1	301	CCTV 1	Bypass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	302	CCTV 2	Bypass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	303	CCTV 7	Bypass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	304	CCTV 10	Bypass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	305	CCTV 11	Bypass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	306	CCTV 12	Bypass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	307	CCTV 15	Bypass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other PIDs(1)				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Remove CA Descriptors				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PIC-3.4- 6

① **Source Select & TS Scan:** It is able to set the source and scan TS.

② **Program List:** It displays all programs on the received input streams. You can choose CI option and Destination for each program listed. It is also supported to bypass the whole stream via ASI or IP, to bypass other pids and to remove CA descriptors.



TIPS After completing the configuration, you should click “Submit” button to enforce it.

3.4.2.4 Inputs

- **Receiver**

Tuner	
Satellite Frequency(MHz):	<input type="text" value="3840"/>
SymbolRate(KBaud):	<input type="text" value="27500"/>
LNB Frequency(MHz):	<input type="text" value="5150"/>
LNB Power Supply:	<input type="text" value="18V (H)"/>
LNB 22KHz:	<input type="text" value="Off"/>

PIC-3.4-7

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.

- **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 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.
- **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.



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

- IP

The screenshot displays two configuration panels. The top panel, titled 'Setup', contains the following fields: IP Address (192, 168, 1, 34), Subnet Mask (255, 255, 255, 0), Gateway (192, 168, 1, 1), Speed Mode (a dropdown menu set to 'AUTO'), and MAC (A0-69-86-00-A2-E0). The bottom panel, titled 'Channel', contains: Enable (a dropdown menu set to 'On'), Source IP Address (227, 1, 1, 1), Source Port (1234), Protocol (a dropdown menu set to 'UDP'), and an IGMP field with a 'Settings' button. Below these panels are 'Submit' and 'Refresh' buttons.

PIC-3.4- 8

This page shows the local IP setup and Input IP information. There are one channel available to receive IP streams. Then you can press the “Submit” button to save your settings. Before you can receive the IP streams, you should 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.
- **Subnet Mask:** Network 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.
- **Speed Mode:** Here shows the speed mode of the TSIP port.
- **Mac:** Here shows the MAC address of IP module. The MAC address is fixed and not editable.

The parameter of channel:

- **Enable:** Enable or disable corresponding output channel
- **Source IP Address:** it is the IP address of the source IP streams.
- **Source Port:** It is the port of source IP streams.
- **Protocol:** You can choose UDP or RTP for multicast/unicast.
- **IGMP:** to click the “Setting” button to get the configuration page.

- ✧ IP- IGMP

IGMP			
IGMP Version	Auto		
IGMP Auto Report	Off		
Filter	Exclude		
Source IP Address	192	168	1 23 <input type="button" value="Add"/>

Source List			
Source IP Address(Up to 8)		Filter	<input type="checkbox"/> Delete
1	192.168.001.067	Exclude	<input type="checkbox"/>

PIC-3.4- 9

- **IGMP Version:** to choose Auto/IGMP V1/IGMP V2/IGMP V3 options.
- **IGMP Auto Report:** to enable the auto report function.
- **Filter:** to include or exclude the source IP address.
- **Source IP Address:** to input the IP address to include or exclude.
- **Source List:** the IP address added will be listed here.

3.4.2.5 Outputs

- **Decoder**

This page shows Playing Program, video , audio, subtitle and teletext parameter:

Playing Program	
Program:	HD-1[From:4.1.1][ServiceID:1] ▼

Video	
Video Standard:	PAL ▼
Aspect Ratio Conversion:	Automatic ▼
Video Output Resolution:	Automatic ▼

Audio	
Audio Volume[-63,0](dB):	0
Mixer:	Stereo ▼
Audio 1 Preferred Language:	(0x1100) ▼
Audio 2 Preferred Language:	No Audio (0x0000) ▼

Subtitle	
Subtitle Standard:	Disable ▼
Subtitle Language:	None ▼

Teletext(VBI)	
Enable:	Disable ▼
Teletext Language:	None ▼

PIC-3.4- 11

✧ **Playing Program**

On this interface, you can choose the tuner, ASI or IP inputs as signal source. And set the program for decoding.

Playing Program	
Program:	HD-1[From:4.1.1][ServiceID:1] ▼

PIC-3.4- 12

- **Program:** To choose the program for decoding from the selected signal sources.

✧ **Video:**

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

Video	
Video Standard:	Automatic ▼
Aspect Ratio Conversion:	Automatic ▼
Video Output Resolution:	Automatic ▼

PIC-3.4- 13

- **VIDEO STANDARD:** in this item, you can select video standard including Automatic, SECAM, NTSC, PAL-N, PAL-M and PAL.
- **Aspect Radio Conversion:** you had the options to select from various aspect ratios as follows: Automatic, 16:9 LetterBox, 16:9 Pan and Scan, 4:3 LetterBox, and 4:3 Pan and Scan.
- **Video Output Resolution:**you can choose from the following video formats (resolution) for applying to the decoding output program:
Automatic / 480i / 576i / 720p50 / 720p59 / 720p60 / 1080i50 / 1080i59 / 1080i60.



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

✧ **Audio:**

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

Audio	
Audio Volume[-63,0](dB):	0
Mixer:	Stereo
Audio 1 Preferred Language:	No Audio (0x0000)
Audio 2 Preferred Language:	No Audio (0x0000)

PIC-3.4- 14

- **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.
- **Audio1 Preferred Language:** To choose a language for Audio1 output.
- **Audio2 Preferred Language:** To choose a language for Audio2 output.

✧ **Subtitle:**

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

Subtitle	
Subtitle Standard:	EBU
Subtitle Language:	None

PIC-3.4- 15

- **Subtitle Standard:** Set subtitle standard. There are two options to choose from: EBU and DVB.
- **Subtitle Language:** choose a language.

✧ **Teletext (VBI):**

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

Teletext(VBI)	
Enable:	Disable
Teletext Language:	None

PIC-3.4- 16

- **Enable:** to enable or disable the teletext function.
- **Teletext Language:** to choose the teletext language.

● **ASI**

Here, you are able to set the Constant Rate of ASI signal. After configuration you need to click submit button to enforce it.

ASI

Constant Rate(Mbit):

PIC-3.4- 17

- **Constant Rate:** set ASI output bitrate.

● **IP**

This is the main parameter of output IP streams. There are two channels for output and you can set both of them. After configuration you need to click submit button to enforce it.

Channel	Enable	Dest IP Address	Dest Port	Protocol	Constant Rate(Mbit)
1	On ▾	227 . 10 . 20 . 80	1234	UDP ▾	40.000
2	On ▾	227 . 10 . 20 . 81	1234	UDP ▾	40.000
3	On ▾	227 . 10 . 20 . 82	1234	UDP ▾	40.000
4	On ▾	227 . 10 . 20 . 83	1234	UDP ▾	40.000
5	On ▾	227 . 10 . 20 . 84	1234	UDP ▾	40.000
6	On ▾	227 . 10 . 20 . 85	1234	UDP ▾	40.000
7	On ▾	227 . 10 . 20 . 86	1234	UDP ▾	40.000
8	On ▾	227 . 10 . 20 . 87	1234	UDP ▾	40.000

Enable Advanced settings

PIC-3.4- 18

- **Enable:** Enable or disable corresponding output channel
- **Dest IP Address:** The IP address for the multicast/unicast.
- **Dest Port:** The port of the multicast/unicast, it must stay same with the value of the dest device.
- **Protocol:** You can choose UDP OR RTP for multicast/unicast.
- **Constant Rate:** to set IP output bitrate.

3.4.2.6 CA

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

Common Interface

CAM Max Bitrate:

BISS

BISS Mode:

BISS-1 Key:

PIC-3.4- 19

- **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.
 - **CAM Max Bitrate:** Set the max output bit rate of the CAM.
- **BISS:** 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 **BISS Mode:**
 - **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 Setup**

Local Setting				
IP Address:	192	168	1	19
Subnet Mask:	255	255	255	0
Gateway:	192	168	1	1
Trap IP Address1:	0	0	0	0 <input type="checkbox"/> Enable
Trap IP Address2:	0	0	0	0 <input type="checkbox"/> Enable
SFN:	Off			
Mac Address:	A0-69-86-00-A2-DF			
Software Version(Main Board)	V2.2.16			

PIC-3.4- 20

In this page, you can do factory set and reboot, and 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.
- **Subnet 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.
- **SFN:** to enable or disable the SFN supporting.
- **Mac Address:** Here shows the MAC address of the device. The MAC address is fixed and not editable.
- **Software Version (Main Board):** Here shows the Software Version of Main Board.

- **Import/ Export**

This page allows you to import and export configurations.

Note
Import: Restore configuration from file.
Export: Export the current configuration to a file, this file serves as a backup and will be useful when restoring the configuration.

浏览...

Import Export

PIC-3.4- 21

● GPI Alarms Setting

GPI Alarms			
	GPI1	GPI2	Alarm Mask
LNB connection short:	Off ▼	Off ▼	Off ▼
Signal unlock:	Off ▼	Off ▼	Off ▼
CAM descrambling doesn't work:	Off ▼	Off ▼	Off ▼
CAM communication error:	Off ▼	Off ▼	Off ▼

PIC-3.4- 22

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

User Management	
<input checked="" type="radio"/> Change Password	<input type="radio"/> Change User Name
<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-3.4- 23

● 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.

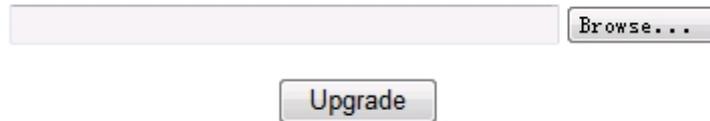
- **License**

This page allows you to upgrade and export license.



PIC-3.4- 24

- **Upgrade**



PIC-3.4- 25

Click Browse button, then you can select the upgrade file, and click “Upgrade” button to start the upgrade. Do not close the IRD or the WEB browser during the upgrade. If succeed, please restart the device and it will load the new version auto.

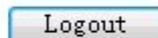
- **Log**



```
1970-01-01 00:00:01 {Error}: [SYSTEM] Signal Un-Lock
1970-01-01 00:00:12 {Error}: tuner 0 search failed!
1970-01-01 00:00:13 {Error}: tuner 0 unlock
1970-01-01 00:08:35 {Error}: [SI](R2_MUX_DeleteInputTS) Can't find this TS!
1970-01-01 00:08:37 {Error}: [SI](R2_MUX_DeleteInputTS) Can't find this TS!
1970-01-01 00:08:39 {Error}: [SI](R2_MUX_DeleteInputTS) Can't find this TS!
1970-01-01 00:08:41 {Error}: [WVCI_GenerateCAPMT] Bad params...
1970-01-01 00:08:41 {Error}: [WVCI_GenerateCAPMT] Bad params...
1970-01-01 00:09:35 {Error}: [WVCI_GenerateCAPMT] Bad params...
```

To get the Log for R&D for analysis.

3.4.2.8 Logout



PIC-3.4- 26

This interface will show a “Logout” button for you to logout the WEB UI.

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 <i>Figure 3.4</i> of this manual)
Signal Connection	Make sure the signal is well connected to the right interfaces: <ol style="list-style-type: none">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
	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, 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.

Problem	Possible Reasons	What to do
	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.
	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