SUMAVISION

Operating Instructions

Integrated Media Processing Platform
Enhanced Multimedia Router

SUMAVISION TECHNOLOGIES CO., LTD.

Introduction

Version Description

Sumavision Technologies Co., Ltd. Copyright and all rights reserved.
Without paper permission of Sumavision Technologies Co., Ltd, any company or individuals are not allowed to extract, copy part or all of this book, and spread in any form.
The product in this manual is:
Enhanced Multimedia Router—an integrated media processing platform
The version of this manual is V1.0.
This manual provides complete configuration introductions of EMR series. User can choose to read relevant parts of this manual according to the equipment purchased.
Any change or version upgrade of this manual will not notice again.

The Agreements of the Instructions

Before reading the Instructions, please read the following agreements carefully:
1. Font and format
- ✓ The texts in the Instructions are prepared by using V Arial typeface;
- ✓ The first-level titles in the Instructions are prepared in bold using II Arial typeface, the second-level titles are prepared in bold using III Arial typeface, and the third-level titles are prepared in bold using IV Arial typeface;
- ✓ All the notes of the Instructions are prepared by using regular Arial, and are separated before and after the texts by using "=======";

2. Keyboard operation
- ✓ The Arial characters in “<>” refer to the key name or button name, for instance <Enter>, <Tab>, <Back Space> are refer to Return, Tab, Backspace respectively.
- ✓ <Key 1 + Key 2> refers to pressing the key 1 and key 2 on the keyboard at the same time, for instance <Ctrl+Alt+A> refers to pressing "Ctrl", "Alt" and "A" three keys at the same time.
- ✓ < Key 1, Key 2> refers to pressing Key 1 first on the keyboard, releasing, and then pressing Key 2, for instance <Alt, D> refers to pressing <Alt> key, after releasing the key and then pressing <D> key.

3. Mouse operation
- ✓ Click: Quickly press and release a mouse button.
- ✓ Double-click: Press twice quickly and release a mouse button.
- ✓ Drag: Hold down a mouse button, and move the mouse.

4. Signs

- ✓ ⚠Note, carefulness, warning and danger: to remind users the matters should be paid attention to in the day-to-day maintenance and operation.
- ✓ Description, prompts and tips: to necessarily add and describe the descriptions of the operation contents.
- ✓ Help: to describe in detail the parts of the operation contents that it is not easy for users to understand.

Target Readers

This manual introduces the functions and methods of using and maintaining the integrated media processing platform--EMR, and is applicable to the following readers:

- ✓ Digital video/audio engineering technicians
- ✓ Digital video/audio system administrators
- ✓ Digital video/audio system engineers

Contact Us

Sumavision Technologies Co., Ltd. is committed to providing a full range of technical support. When users are not familiar with the device or any fault of the device occurs, it is recommended not to disassemble the device, but to contact Sumavision Office or the After-sales Technical Support Department of the Company.

You can contact us by the following addresses:

Address: Building 1, No.15 Kaituo Road, Shangdi Information and Industry Base, Haidian District, Beijing ,CHINA, 100085

After-sales Technical Support Hotline: 8008103018

24-hour hotline:

Website: www.sumavision.com

Table of Contents

Chapter 1 Overview

SUMAVISION Enhanced Multimedia Route, which can be abbreviated to EMR, is a new generation multi-media exchange platform. This device, which uses 1U card plug-in structure, and supports at most 6 boards (cards) as well as dual-power redundancy backup. The platform integrates multiple functions such as encoding, decoding, multiplexing, modulation, IP input/output and adaption, can be configured flexibly according to the different needs of users, and meet the vast number of operators' demands for integrated devices and multiple functions in the process of digital TV head-end platform construction sufficiently .

1.1 Network Solution

The typical networking of EMR is shown as Fig. 1-1 EMR Network solution Diagram.

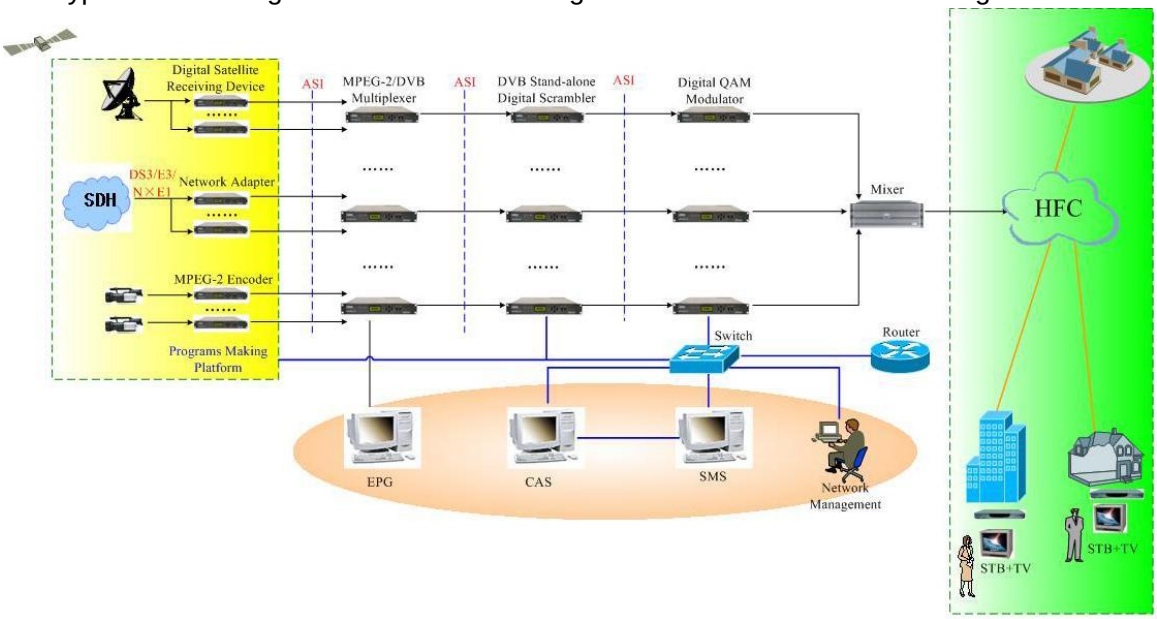


Fig. 1-1 EMR Networking Diagram

In Fig. 1-2 EMR Network solution Diagram, EMR receives and encodes & compresses the analog or digital TV video & audio signals; and can also receive and adapt the adaptive signals such as DS3 and ATM; additionally, it can receive and demodulate the satellite signals as TS, and transmit them into the multiplexer, then multiplex with EPG information to become a standard DVB stream, which will be encrypted by the scrambler and CAS, and modulated by the modulator and finally transmitted on HFC network.

1.2 Main Performance Parameters

Main performance parameters of EMR are shown as follows:

- ✓ Support MPEG-2, H.264 standard encoding

- ✓ Support the encoding of HD and SD video resolutions
- ✓ Audio encoding: Dolby AC3 and MPEG-1 Layer II
- ✓ Support DS3, ATM and other adaption format
- ✓ Support Gigabit Ethernet input/output
- ✓ Support multi-channel ASI output
- ✓ Support ASI, DS3 and RF signal backup and switching
- ✓ Support bit rate shaping and statistical multiplexing
- ✓ The encoding supports at most 12-channel AV or SDI input and 24-channel single-track balanced audio input
- ✓ Support DVB-S/DVB-S2 descrambling and receiving, and support at most 6-channel DVB-S2 signal input descrambling
- ✓ Support BISS descrambling
- ✓ DVB-S/DVB-S2 receiving supports at most 24-channel satellite receiving and multiplexing
- ✓ DVB-T/DVB-T2 receiving supports at most 24-channel Terrestrial signal receiving and multiplexing
- ✓ Support digital SDI (embeddable audio) and digital audio input
- ✓ Support PCR correction, PSI/SI table editing and inserting functions
- ✓ Built-in comb filter and time-base correction circuitry, significantly reducing the requirements for signal sources
- ✓ Card-insertion 1U stand-alone structure, which can be used flexibly and conveniently
- ✓ Support key-press LCD operations
- ✓ Support SNMP network management functions

1.3 Applicable Standards

EMR is in compliance with the national and industrial standards, including:

- ✓ GB/T 17975.2-2000 Information technology--Generic coding of moving pictures and associated audio information--Part 2: Video
- ✓ GY/T 170-2001 Specifications of framing structure, channel coding and modulation for digital cable broadcasting system.

Chapter 2 Product Descriptions

2.1 Product Identification

There are product name, model and manufacturer, etc. on the front panel of EMR, as shown in Fig. 2-1 EMR Front Panel.

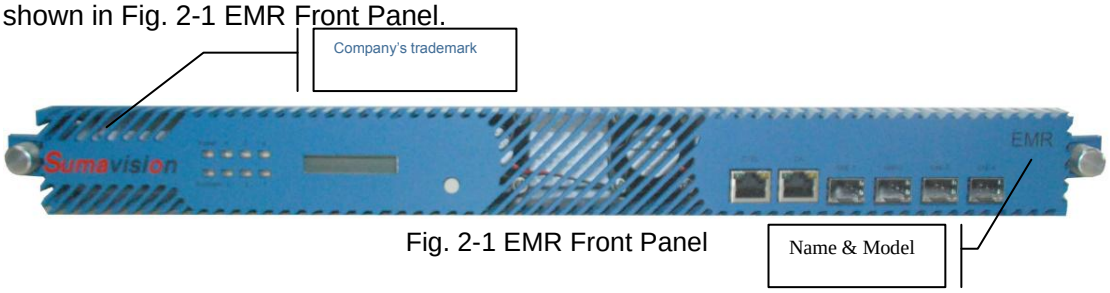


Fig. 2-1 EMR Front Panel

Product name: Integrated Media Processing Platform

Model: EMR3.0, as shown in Fig. 2-2 EMR Front Panel.

Manufacturer: Sumavision Technologies Co., Ltd., as shown in Fig. 2-3 EMR Front Panel.

Identification description: there's the ex-factory identification on the rear panel of the device, as shown in Fig. 2-2 Ex-factory Identification.

Fig. 2-4 Ex-factory Identification

Where, "S/N" refers to the ex-factory serial number, "EMR3B" stands for the device model and "081006" is the production code.

2.2 Appearance

EMR appearance is shown as Fig. 2-3 EMR Appearance.

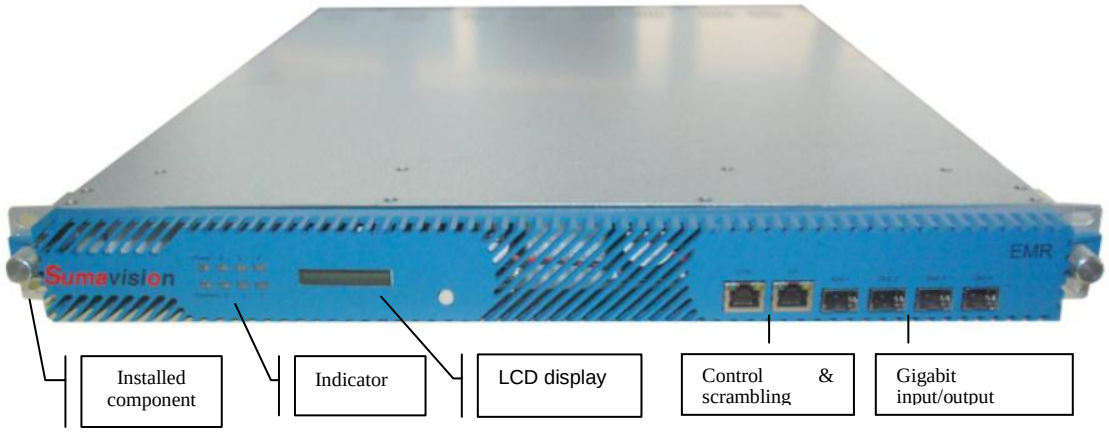
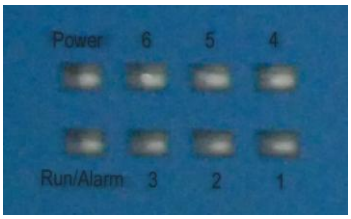


Fig. 2-3 EMR Appearance

2.2.1 Indicator



There are 8 indicators on EMR front panel, including:

- **Power**
- **Run/Alarm**
- **Operating indicators (1-6)**

Connect to the power supply and turn on the power switch, the indicator of Power keep lighting.

When the device starts and operates normally, there is no abnormalty, the indicator of Run/Alarm on the device panel will turn green.

When the device operates abnormally, the indicator of Run/Alarm on the device panel will turn red, which prompts the user that an error has occurred.

Operating indicators of 1 to 6 are used to indicate the operating status of slot 1 to 6 respectively, and the indicator of Alarm is used to indicate the device status.

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After the device has been powered on, generally the indicator of power will keep lighting once the device is started.

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Table 2-1 Description for the operating status of indicator 1: lists the operating status of indicator 1 by taking one MPEG2 analog encoding card in slot 1 as an example.

Table 2-1 Description for the operating status of indicator 1:

Operating indicator	No.	Encoder	Signal source	Multiplexing or not	Indicator result	Slot
Indicator 1	1	Encoder 1	Y	Y	Green	Slot 1
		Encoder 2	Y	Y		
	2	Encoder 1	Y	Y		
		Encoder 2	—	N		
	3	Encoder 1	—	N		
		Encoder 2	Y	Y		
	4	Encoder 1	—	N		
		Encoder 2	—	N		
	5	Encoder 1	—	Y	Red	
		Encoder 2	N	Y		
	6	Encoder 1	N	Y		
		Encoder 2	—	Y		

Indicator 1 can be divided into six kinds of status as shown in the table above, “Y” stands for normal or Yes; “N” refers to abnormal or No; "-" denotes the content has nothing to do with this item. For detailed alarm contents, please query in [Status Information] of sub-cards in the menu of the device or in [Alarm Display] of Sumavision network management system.

The operating indicator of slot 2, 3, 4, 5 and 6 has the same status of indicator 1. Here no repeated description will be made.

2.2.2 LCD

Users can check IP address of the device and alarm information by querying LCD. Touch LCD button to display IP and subnet mask information of the device, press and hold the LCD button to display current alarm information of the device.

2.2.3 Keyboard Operating

User can enable the LCD panel through keyboard to view the IP of the device.

2.2.4 Connector of the Device

SUMAVISION EMR rear panel adopts the form of sub-panels. 6 slots formed with 6 sub-panels can be handled independently, which can facilitate the plugging and un-plugging of sub-cards. Ground terminal, power switch are placed on the rear panel, see Fig. 2-4 Appearance of SUMAVISION EMR rear panel.

Definition of slot: lower left Slot 1; lower center Slot 2; lower right Slot 3; upper left Slot 4; upper center Slot 5; upper right Slot 6.

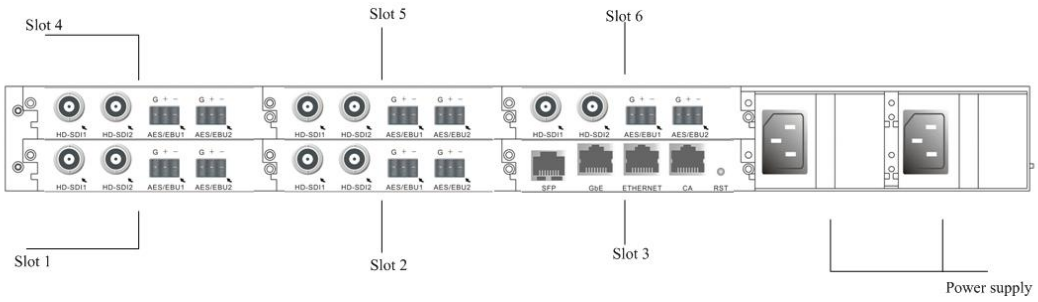

Fig. 2-5 Appearance of SUMAVISION EMR Rear Panel

The corresponding relationship between the function board and the slot used is shown in Table 2-1 Function board and the slot used.

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User can select to read relevant part of the Instructions according to the function board/card purchased.

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Table 2-2 Function board and the slot used

	Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6
ASI 5-input card	▼	▼	▼	▼	▼	▼
ASI 4-output scrambling card	▼	▼	▼	▼	▼	▼
6-adjacent-channel QAM modulation card	▼	▼	▼	▼	▼	▼

2.2.5 Interface Performance

2.2.5.1 ASI 5-input card

ASI 5-input card provides 5-channel 75ΩBNC interface for ASI signal input, as shown in Fig. 2-6 ASI 5-input card:

Fig. 2-7 ASI 5-input card

2.2.5.2 ASI 4-Output Scrambling Card

ASI 4-Output Scrambling Card provides 4-channel 75ΩBNC interface for ASI signal output, and an Ethernet interface for CAS connection, as shown in Fig. 2-8 ASI 4-Output Card:

Fig. 2-9 ASI 4-Output Card

2.2.5.3 6-adjacent-channel QAM modulation card

6-adjacent-channel QAM modulation card provides one 6-adjacent-channel RF output interface for the output of modulated signals, and one Ethernet interface for connecting and communicating CAS, as shown in Fig. 2-7 6-adjacent-channel QAM Modulation Card:

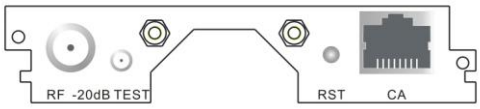

Fig. 2-10 6-adjacent-channel QAM modulation card

2.2.5.4 Power socket

EMR provides two power sockets on the rear panel. The device will be powered on if the power lead is insert the power socket correctly.

The power sockets used by EMR fully conform to the international industrial standards, for detailed information, refer to Table 10-3 Power Socket Parameters.

2.3 Heat Emission Descriptions

There are two exhaust fans installed inside the EMR to lower the risen temperature caused by the working chips during the operation of the device.

EMR exhaust flow is shown as Fig.2-8 Exhaust Diagram.

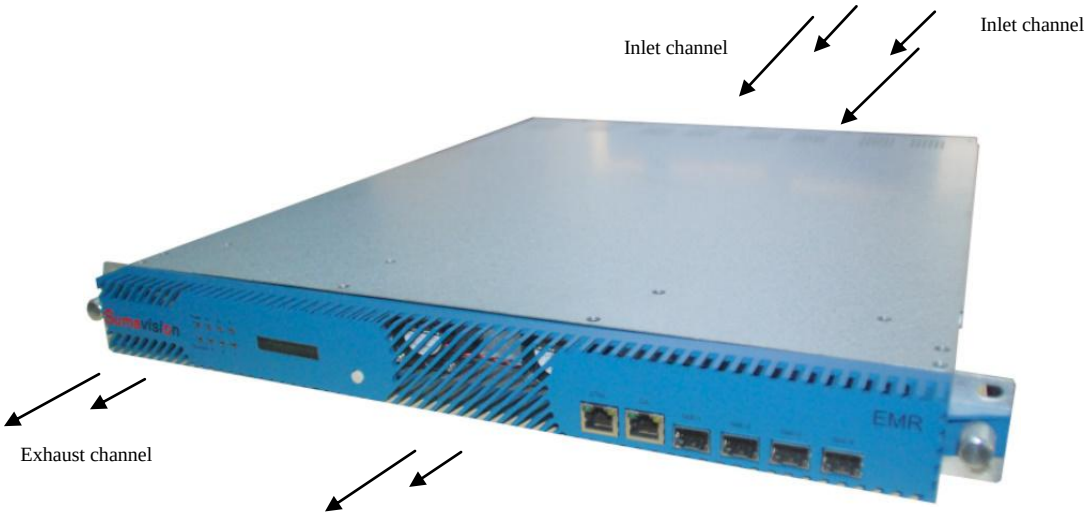

Fig. 2-11 Exhaust Diagram

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- Do not block the exhaust channel when installing the device.

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2.4 Control Descriptions

The integrated media processing platform-- SUMAVISION EMR can achieve the control through Web and SNMP network management system.

Chapter 3 Safety Precautions

3.1 Outline Dimensions

EMR external structure is shown as Table 3-1 EMR Physical Parameters.

Table 3-1 EMR Physical Parameters

Physical Parameters	Value (Unit)
Height	44.4mm (1U)
Width	482.6mm (19")
Depth	564.7mm

3.2 Weight

The device weights <7.5kg, and its specific quality is related to the configurations of the device. Please be subject to the device actually purchased.

3.3 Environmental Requirements

3.3.1 Requirements on Transportation Environment

The device must be handled prudently and carefully to avoid damages to the device. Ensure that people who transport, maintain or operate the device have professional skills and are familiar with the operation of device. If there's any question during the transport, maintenance and operation of the device, please contact the Aftersales Technical Support Department of Sumavision, with the way to contact refering to the foregoing contents.

The device is high-grade electronic product, and should be handled gently and kept away from falling or collision. And additionally, attention should be paid to the following:

✓ Please do not place this device on unstable trolleys, shelves, brackets or tables, otherwise, the device may fall and cause serious damages, which can lead to abnormal operation.

✓ During transportation, the trolley used to transport the device should be kept balance. When user has arrived at the designated location or have to stop on the way, ensure whether the trolley is reliable first, and then stop moving to aviod the falling of device, causing malfunction.

✓ Please arrange special person to transport or install this device, and avoid many persons participating in the transportation.

3.3.2 Site room environmental requirements

✓ Site room area:

The front door and back door of the cabinet should leave at least 1.2m to 1.5m for opening

the door or routine maintenance. The cabinet can not be installed against the wall, and the distance between the cabinet side and the wall should be not less than 0.8m.

✓ Site room floor:

Site room floor should be non-conductive, dust-proof, and its surface smoothness error should be less than 2mm per square meter. The volume resistivity of anti-static material should range from $1\times10^{7}\Omega$ to $1\times10^{20}\Omega$, and the ground current-limiting resistor is 1MΩ. Floor load-bearing should be larger than 450kg/ m^2.

✓ Environment temperature:

The device can operate normally in the environment whose temperature ranges from 10℃ to 40℃, and the places where conditions permit can install air-conditioning system for cooling.

✓ Relative humidity:

Normal working humidity: ≤90% (20℃);

Allowed working humidity: ≤95% (without condensation).

✓ Environmental pressure:

86-105kpa.

✓ Site room doors and windows:

Doors and windows of the site room should be sealed with dust-proof rubber strips, and windows should be double-glazed and strictly sealed.

✓ Site room wall suface:

The wall suface of site room can use wallpapers or be printed with lusterless paint, however, powder coating is not suitable.

✓ Air cleanliness:

The requirements are shown as Table 3-2 Site room dust indicators and Table 3-3

Table 3-2 Site room dust indicators

Maximum diameter (μm)	0.05	1.00	3.00	5.00
Maximum concentration (particles per cubic meter)	14×10^{5}	7×10^{5}	24×10^{4}	13×10^{4}

Table 3-3 Site room harmful gas indicators.

Gas	Average (mg/m^3)	Max. (mg/m^3)
Sulfur dioxide SO_2	0.20	1.50
Hydrogen sulfide, H_2S	0.01	0.30
Nitrogen dioxide, NO_2	0.04	0.15
Ammonia, NH_3	0.05	0.15
Chlorine, Cl_2	0.01	0.30

✓ Fire-fighting requirements:

Site room should be equipped with automatic fire alarm system, hand-held extinguishing

system or fixed extinguishing system.

✓ Power supply requirements:

The devices, air-conditioning system and lighting system should have their own power system respectively.

3.3.3 Power supply Requirement

Parameters for normal operation of EMR are shown as follows:

- ✓ Power supply:
  Voltage: 100V-240V AC;
  Power frequency: 50Hz-60Hz
- ✓ Power consumption:: < 100W
- ✓ Nominal fuse: 2A
- ✓ Grounding: the device should be well grounded through the ground terminal.

3.4 Storage

Requirement:

Humidity: ≤95% (20℃) ;

Temperature: -20℃～60℃

Don't store with corrosive liquids and gases.

Don't place the device nearby strong electromagnetic fields.

Prohibit infection by radioactive substances.

3.5 Transport

EMR is packaged by using the special packaging of Sumavision. In case of intact packaging, such transportation modes like highway, railway, airline and shipping are acceptable. In case of damaged packaging, the device should be transported after being packaged by professional electronic product transportation companies.

During the transportation, the device should be handled gently to avoid throwing, falling or severe collision, and kept the labeling on the package upward.

Chapter 4 Installation and Debugging

4.1 Unpacking and Checking

Please check whether the package of the device is damaged or not when receiving the device; in case of device's damage, please contact the carrier company or the After-sales Technical Support Department of Sumavision in a timely manner.

If you complete the installation and debugging of the device by yourself, please pay attention to the deformation of device and abnormal sound inside the device when unpacking the device; check whether the device model and name are in conformity with those specified in the contract; whether the serial number of device is identical to that in the *Delivery and Maintenance Certificate of Device*; and whether the power lead, connectors and fittings, operating instructions and Certificate of Fitness are completely contained in the package case of the device.

If the installation and debugging are conducted by the after-sales technical engineers of Sumavision, they will confirm the above-mentioned information with you.

You are required to sign and return the *Delivery and Maintenance Certificate of Device* to our company after confirming there's no problem upon the unpacking and inspection, and according to which we'll provide high-quality satisfactory after-sales services.

4.2 Installation Precautions

Check whether the environmental requirements in Section 3 of Chapter III have been met. The device can be powered on for debugging after the installation is completed by following the installation steps.

4.3 Steps and Methods of Installation

EMR needs to be installed and used on a 19-inch cabinet. When installing the device, please open the box first, then take out the device. To ensure the device is installed firmly, please put the device on L bracket after installing L bracket on the cabinet, and fasten the device on the assembly cabinet with screws. Device installation can be shown as Fig. 4-1 Assembly cabinet for EMR.

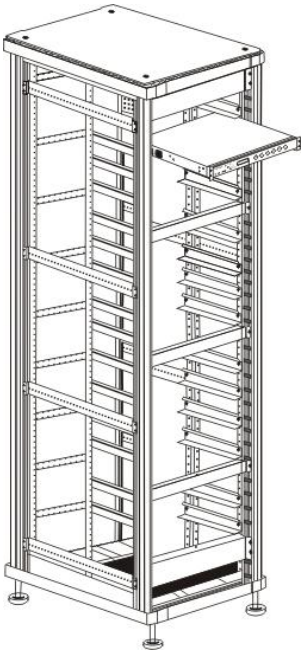

Fig. 4-2 Assembly cabinet for EMR

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The device can be installed in any plug-in frame of the assembly cabinet. However, the general principle for arranging the location of the device is that the connection between various stand-alone devices should be arranged neatly on the assembly cabinet in accordance with the flow of signal.

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4.4 Debugging

Preparations before configuration:

- The device should be stably fixed on the cabinet, and the operation environment is normal.
- The device should be connected to the ground very well.
- Check whether input video and audio signals are correct on the encoder side.
- The device has been connected to the power supply correctly.
- If network management is needed to control devices, please connect the device with the computer.

Device power-on inspection:

- Indicators of the device display normal.
- Standby interface is displayed on the LCD of the device.
- Device keys can respond normally.
- The fans of the device can operate normally without harsh noise.
- No abnormal sounds and offensive smell.

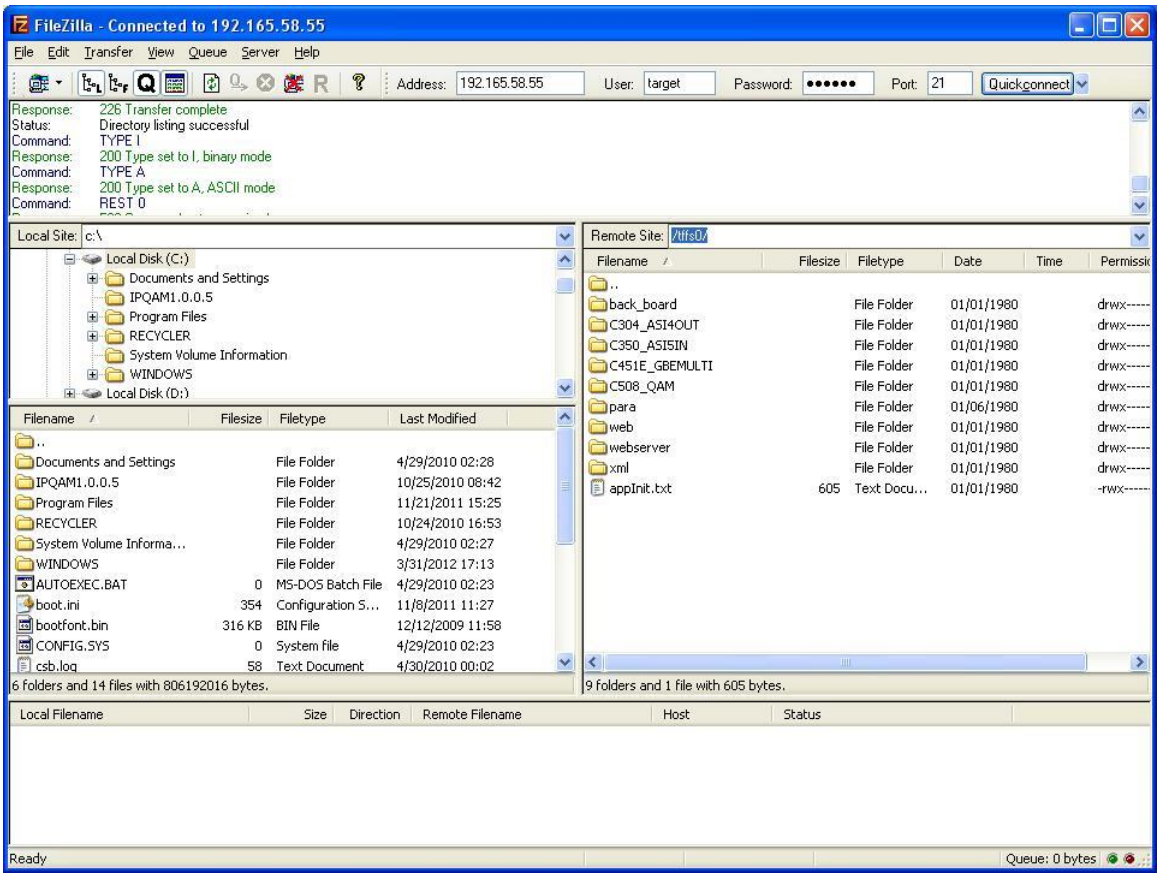
4.5 Methods for Debugging and Testing

EMR provides the function of Device IP address search through LCD display. The button can be used to light the LCD normally to facilitate the use by users.

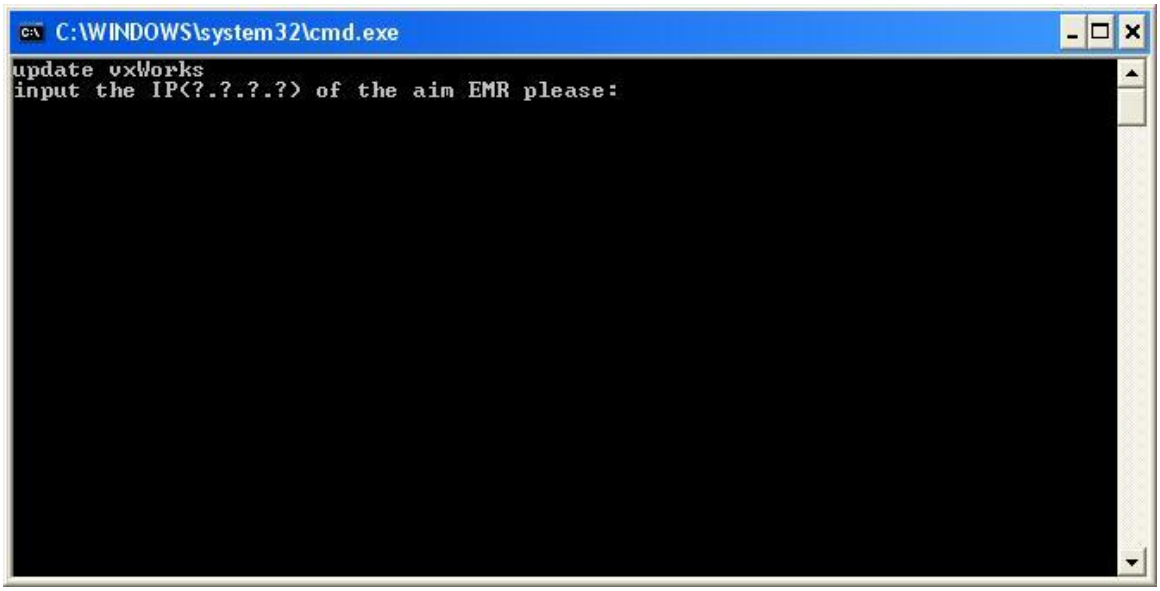
4.6 Device Upgrade

Step 1: View device IP through the LCD panel.

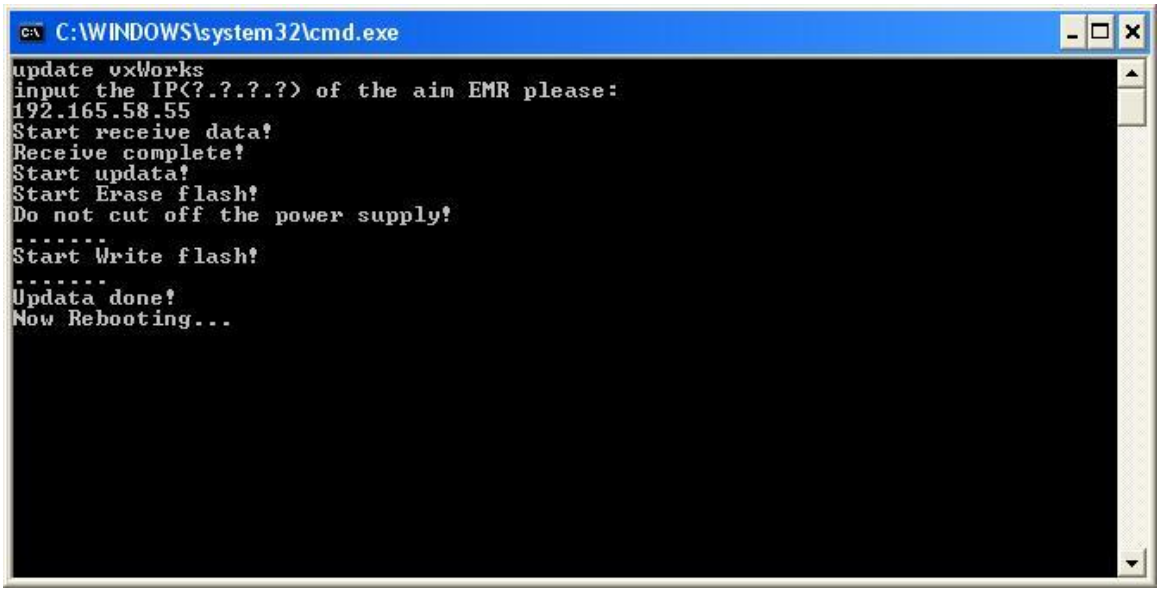
Step 2: Login the device ftp with ftp tool (Username: target, password: target), empty the original file. To preserve the original parameters, do not delete the files under para folder, and then upload new upgrade files.



Step 3: Use the online upgrade tool and enter the device IP for upgrade.



The device will restart automatically after completing the upgrade.



Chapter 5 Operating Methods

This chapter mainly introduces the methods for system setting and use of EMR and is divided into two parts: Web and SNMP Network Management, which may be helpful for users to know initial knowledge about the system setting and operation steps of EMR. The system setting includes device IP, user management, factory reset and restart; and the operating method is composed of input setting, multiplexing setting and output interface operation.

5.1 Web Network Management

When setting the EMR the first time, searching IP address may be required, which can be realized through LCD on the front panel of the EMR by pressing the buttons, at this time, the LCD would display local device IP and subnet mask. The computer will be set the IP address again to make it be in the same network segment with EMR. Enter the IP address of EMR in the IE browser: http://IP_address/, with the initial username as Admin and password as sumavisionrd. The network management screen is shown as Fig. 5-1 EMR WEB Network Management Screen.

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- The browser must support HTML 4.0. Internet Explorer 8.0 is recommended.

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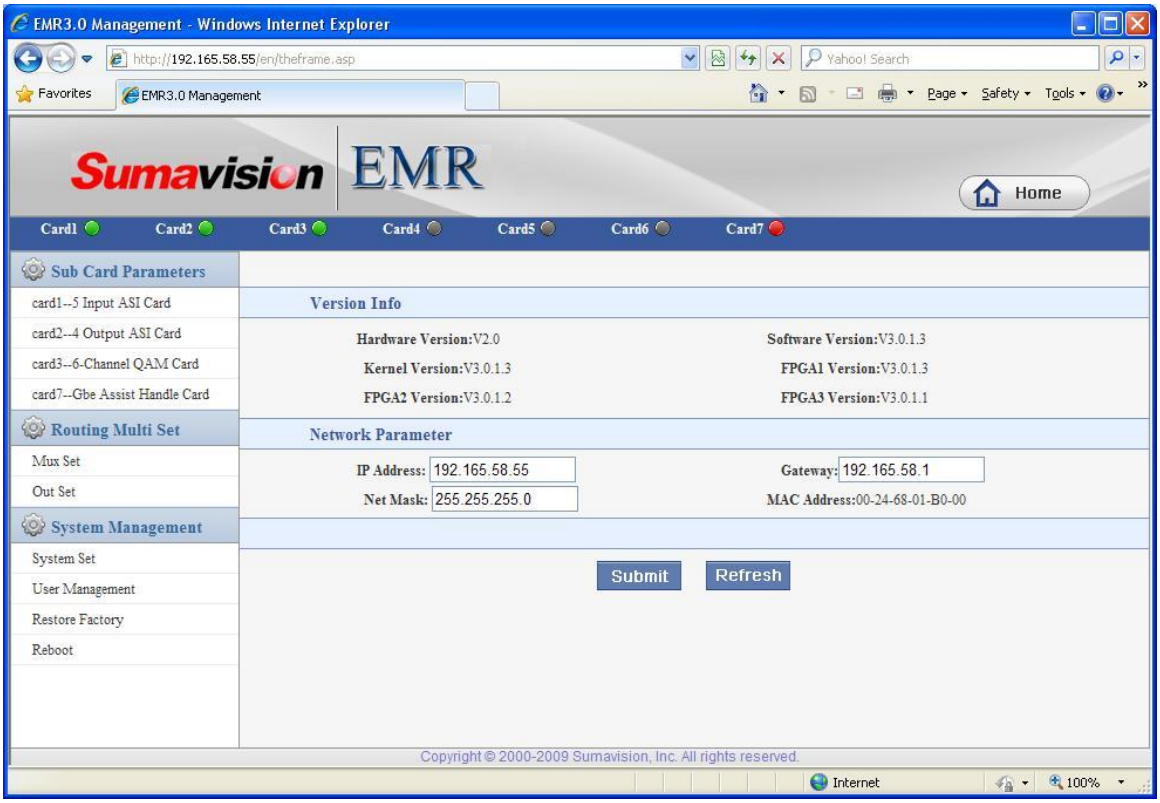
Fig. 5-1 EMR WEB Network Management Screen

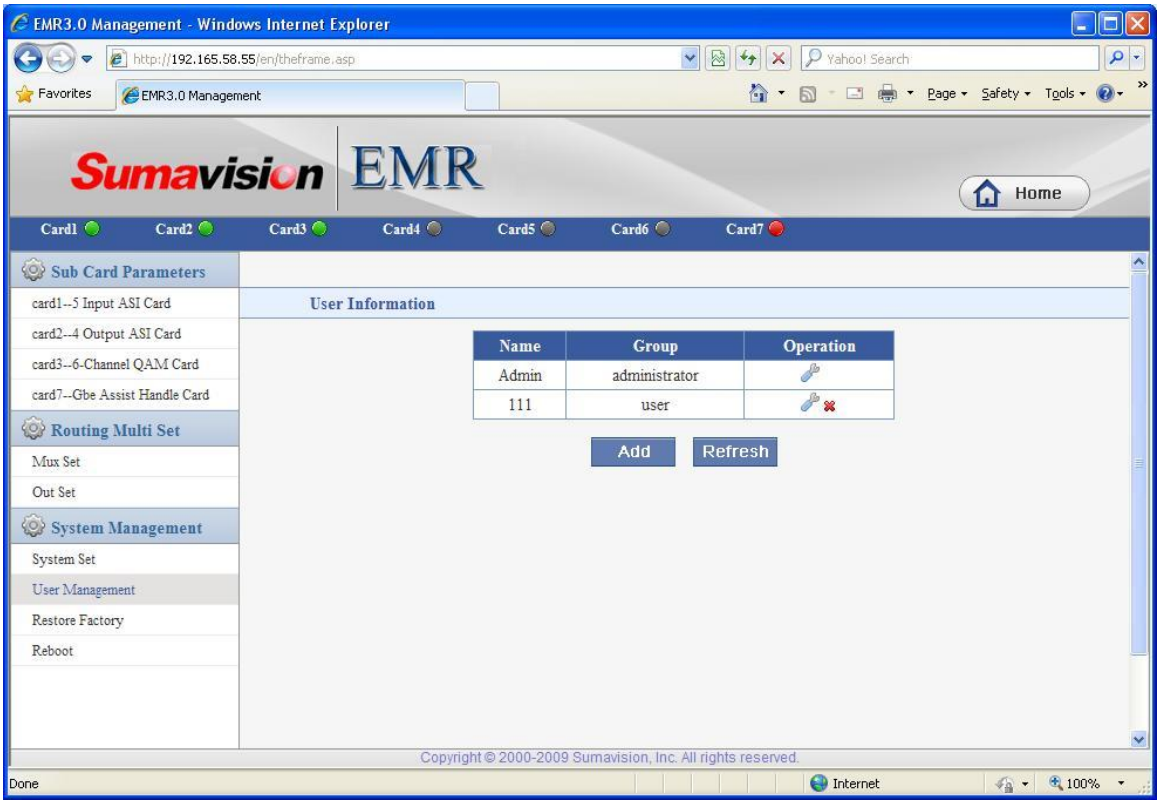
5.1.1 System Setting

The System Setting menu includes the following four sub-menu:

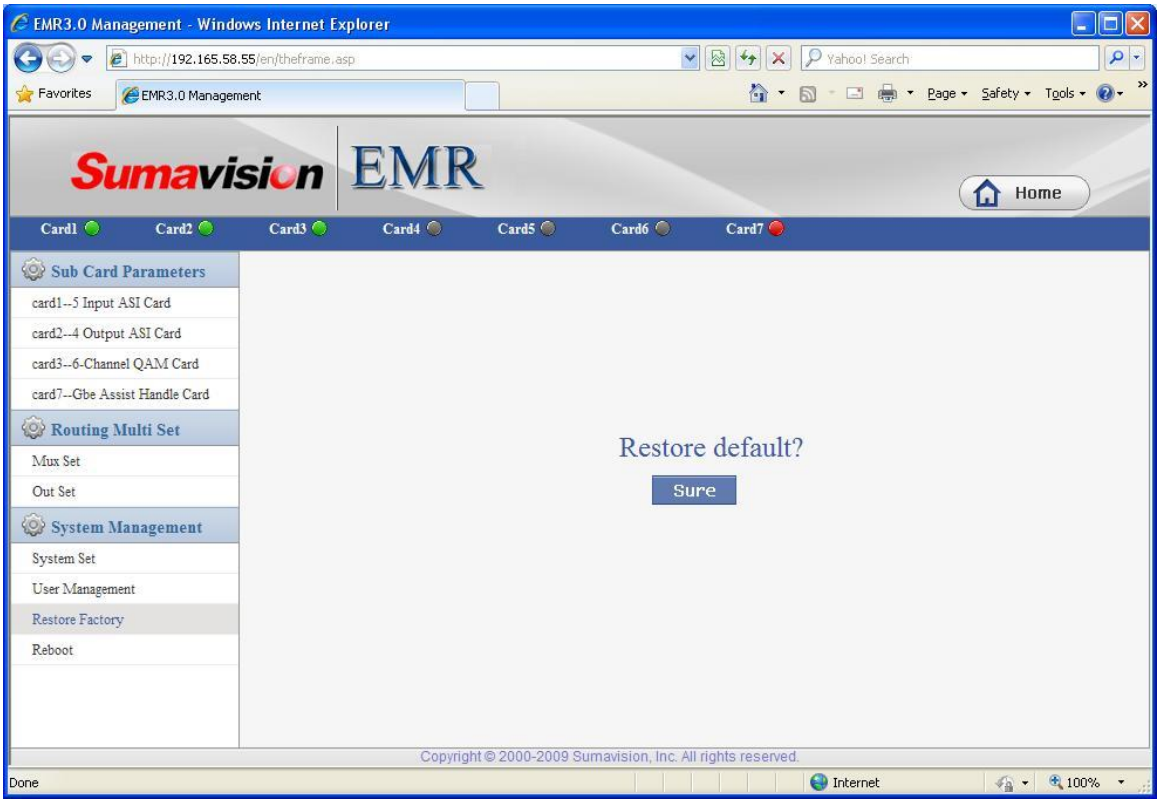
- System parameter: search EMR version information, set the IP address, gateway address and subnet mask, then click “Submit” button to complete the setting;



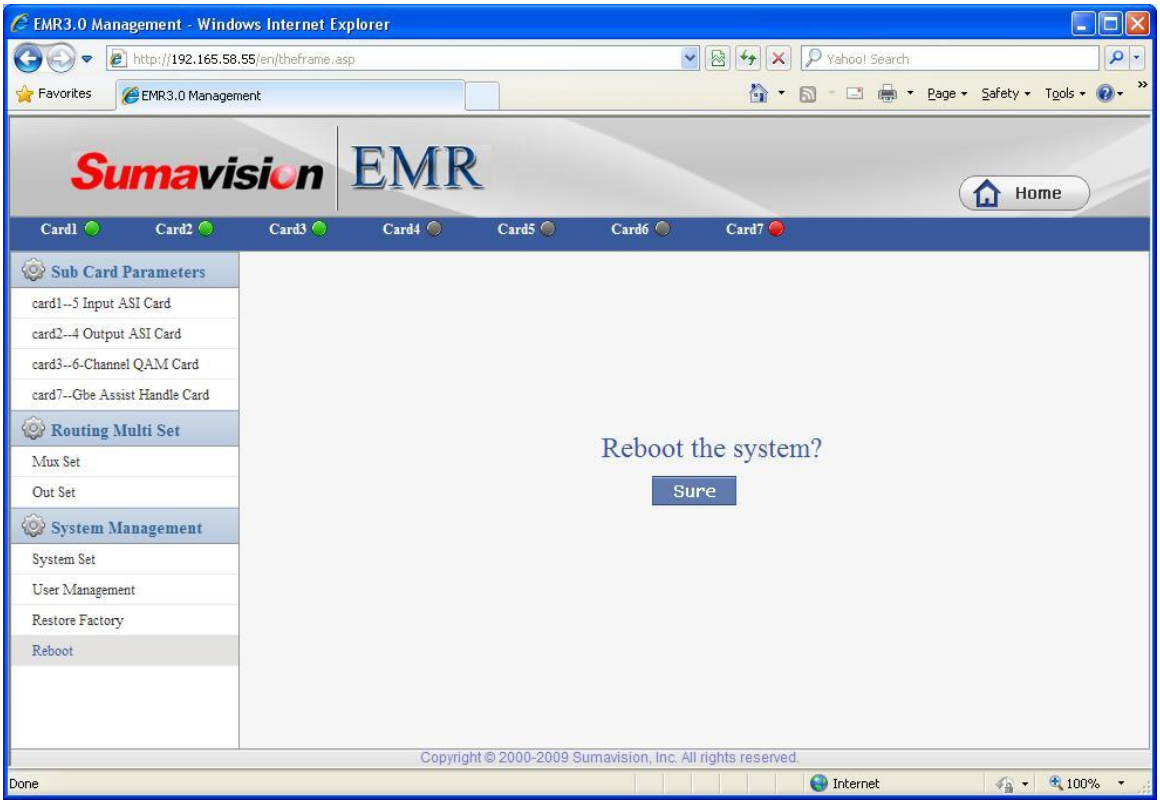
- User Management: you can add/delete users, the user types including system administrator and ordinary user.



- Factory reset: after using this function, EMR will restart automatically, and all parameters except the device IP will be resorted to the factory settings. Does not recommend to use.



- Restart: It means that soft reboot the EMR.



5.1.2 Operating method

EMR is the core head-end access device of digital TV. By configuring different board cards,

users can finish encoding, decoding, QPSK demodulation, DVB-S2 demodulation and descrambling, QAM demodulation and descrambling, DS3 adaptive input/output, QAM modulation output, ASI multiplexing and routing, IP multiplexing and routing, TS and IP signal scrambling, etc. To complete the configuration of device successfully, we'll describe basic operating processes of EMR through three parts: input section, multiplexing section and output interface section.

EMR functions can be divided into three parts:

- Part one is about the input section . In consideration that each board card can achieve different input functions, EMR input daughter card can be understood as a separate device. For example, the encoding card is equivalent to an encoder, QPSK card is equivalent to a satellite receiver, DS3 adapter card is equivalent to the adapter, and the five ASI input card functions like the multiplexer.
- Part two is about the Multiplexing section which would be realized in multiplexing screen. The relationship between the input and output can be configured to achieve the service exchange between the input interface and output interface.
- Part three is about the output interface, which output configuretion should be finished on the right side of the Multiplexing screen.

To complete the configuration of EMR, the above-mentioned three functional modules should be configured step by step.

5.1.2.1 Input

EMR platform can support several kinds of program sources according to the board cards inserted, including ASI input and IP input.

- ASI Input: ASI input cards are inserted into EMR (for the method of setting, please refer to ASI input card), to provide ASI input for the platform;
- IP Input: the platform's Gigabit card can provide IP input (Refer to the method of the Gigabit Ethernet port setting);

5.1.2.2 Multiplexing Setting

The multiplexing screen is shown as Fig. 5-2 Multiplexing Screen of WEB Network Management. The selected board card on the left is used as input source, which is multiplexed to the output board card on the right by pressing the Multiplex button.

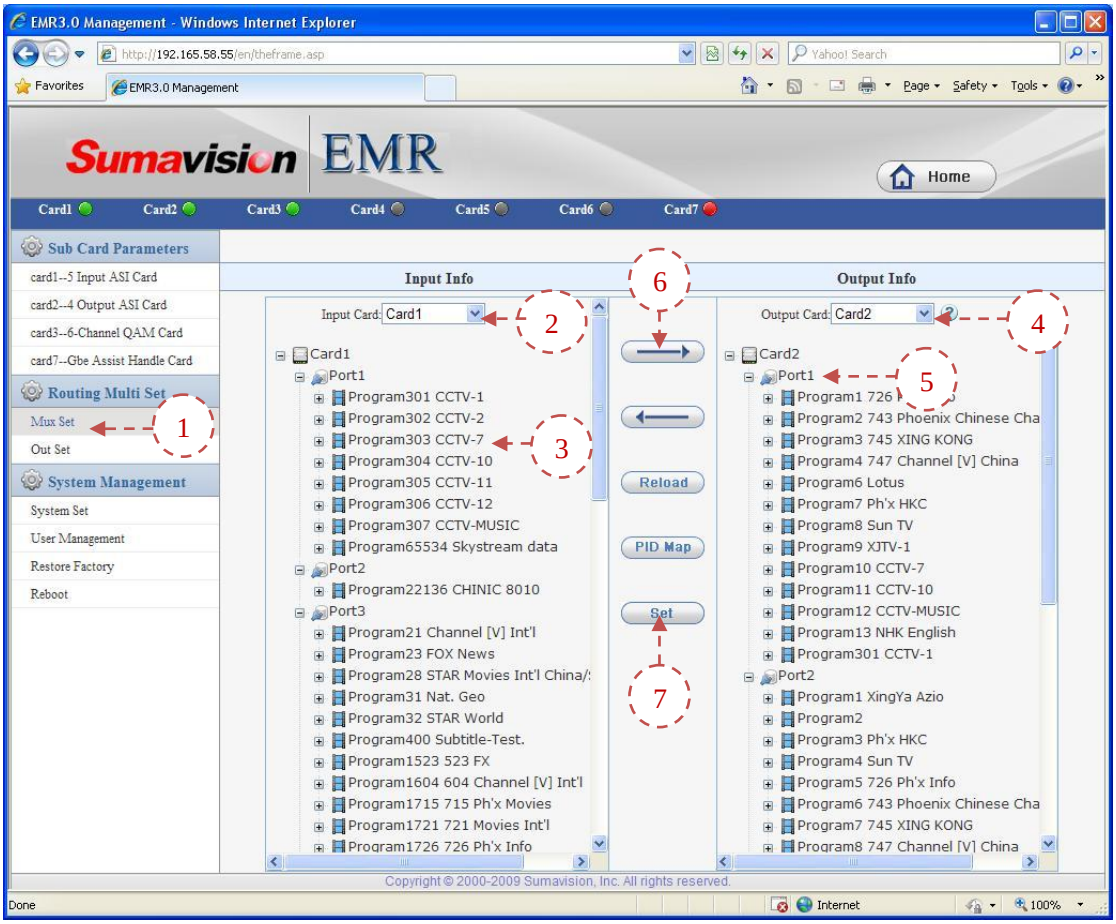


Fig. 5-1 Multiplexing Screen of WEB Network Management

Step 1: Click “Multiplexing Setting” on the network management screen to navigate to the multiplexing screen;

Step 2: Select an input board card;

Step 3: Select a program to be multiplexed;

Step 4: Select an output board card for multiplexing;

Step 5: Click a destination output port for multiplexing;

Step 6: Click “Multiplex” button;

Step 7: Click “Set” to make the multiplexing relationship valid.

5.1.2.3 Output Interface

Select different output interfaces to achieve diversified output streams of the platform. According to the board card inserted, the platform can select ASI output, IP output or RF output. The following describes the operating methods for board card output.

- ASI output: Insert ASI 4-channel output card (Refer to ASI 4-channel output card) into the platform to provide ASI output for the platform;
- IP output: the platform itself has a main contol gigabit card for IP output (for the

method of setting, refer to Steps for Network Port Output Setting);

- RF output: Insert a 6-adjacent-channel QAM modulation card (Refer to 6-adjacent-channel QAM modulation card) into the platform to provide RF output for the platform.

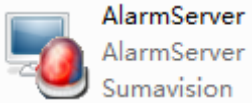
5.2 SNMP Network Management System

EMR background software is embedded in the network management software eManager that is developed by Sumavision Technologies Co., Ltd, as it uses the same SNMP communication protocol with network management software, users can manage EMR at the same time by installing network management software. After the SNMP network management software is installed normally, the following operating steps can start the SNMP network management system.

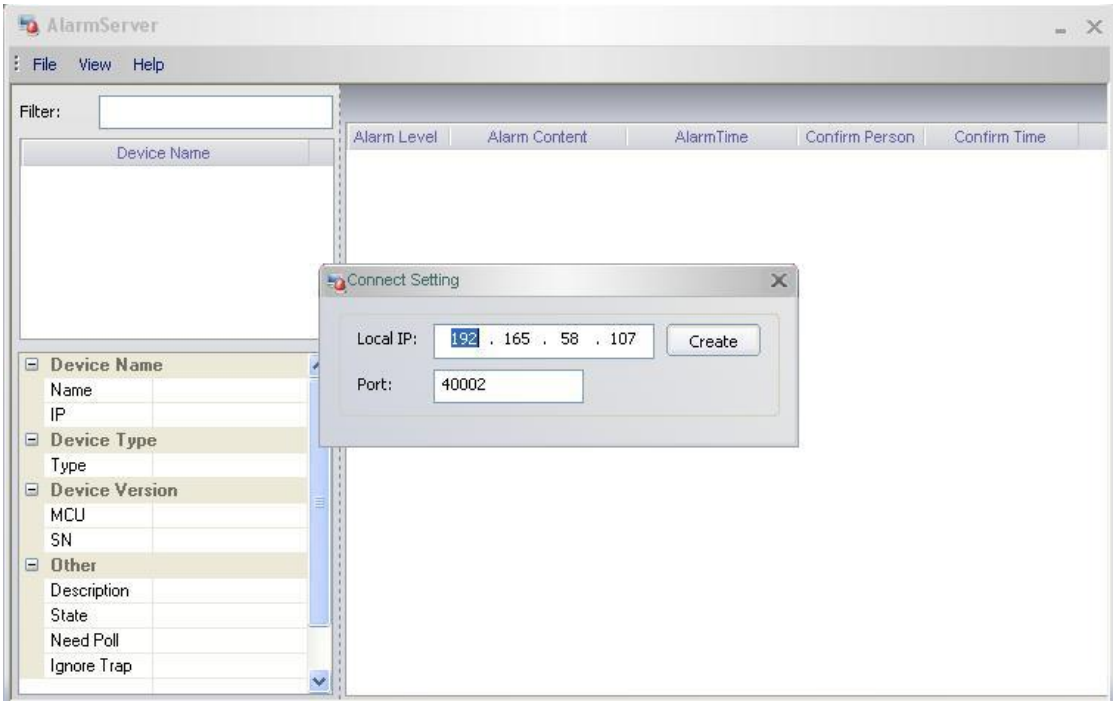
═══════════════════════════════════════

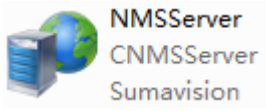
- Local computer where alarm server, network management server and SNMP software are located must be installed with simple network protocol and SNMP protocol to enable normal application of the network management system and acquire the device status information such as alarm.

═══════════════════════════════════════

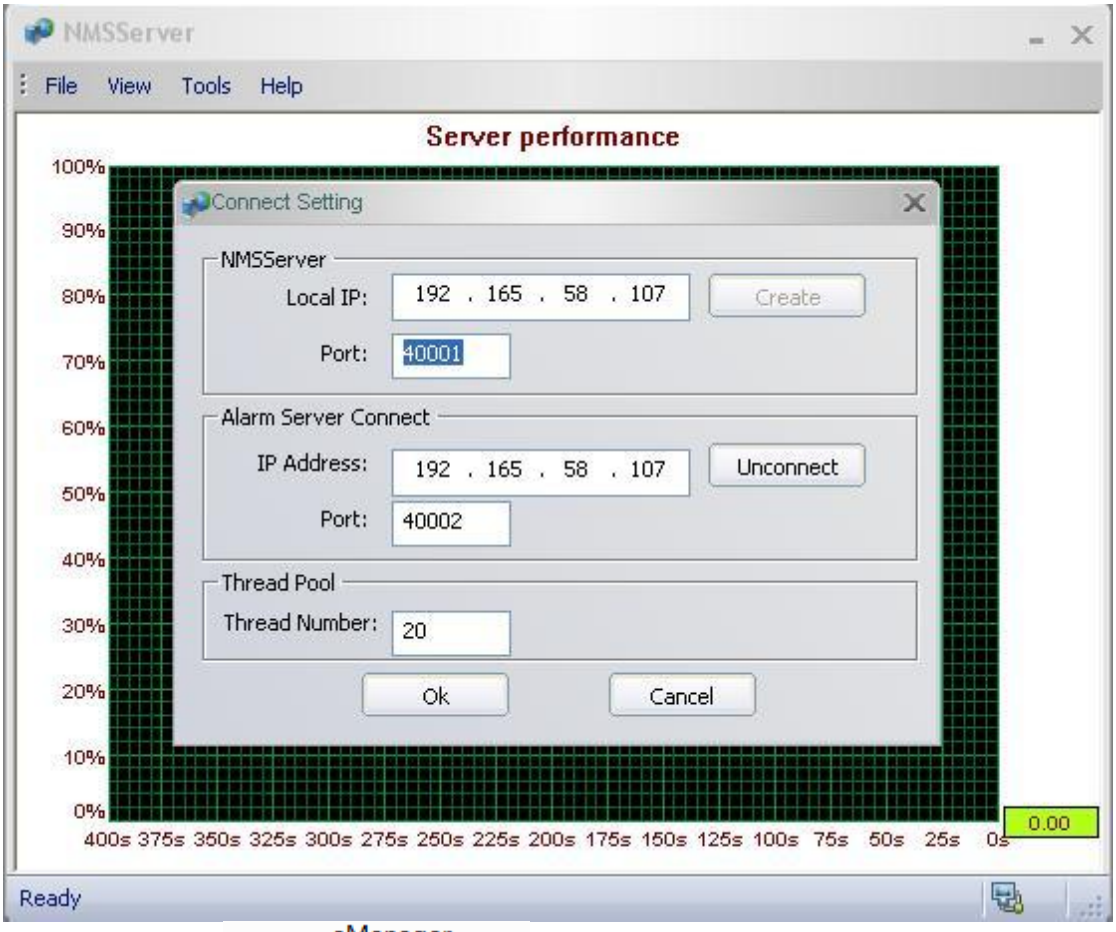
Step 1: In the Alarm Server, run the 

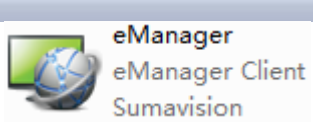
under the installation directory to activate the alarm server, and fill in local IP and port in “Connection Setting” of “File” menu, and then click “Create connection”.



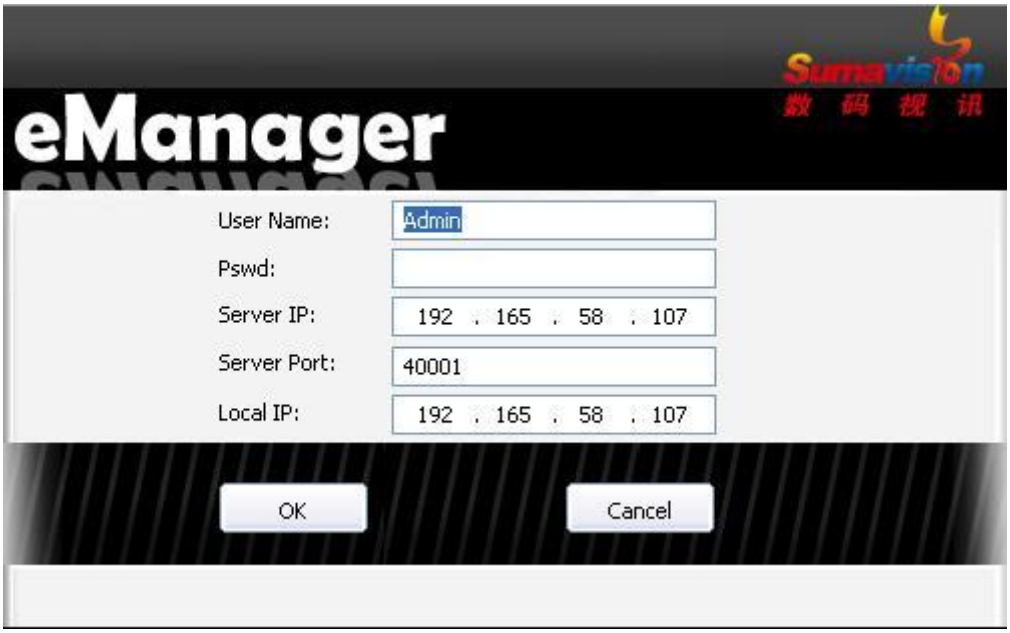


Step 2: In the Network Management Server, run the under the installation directory to activate the network management server, and fill in local IP and port, alarm server IP and port as well as the number of threads in the thread pool in “Connection Setting” of “File” menu, and then click “Connect” to connect the alarm server.





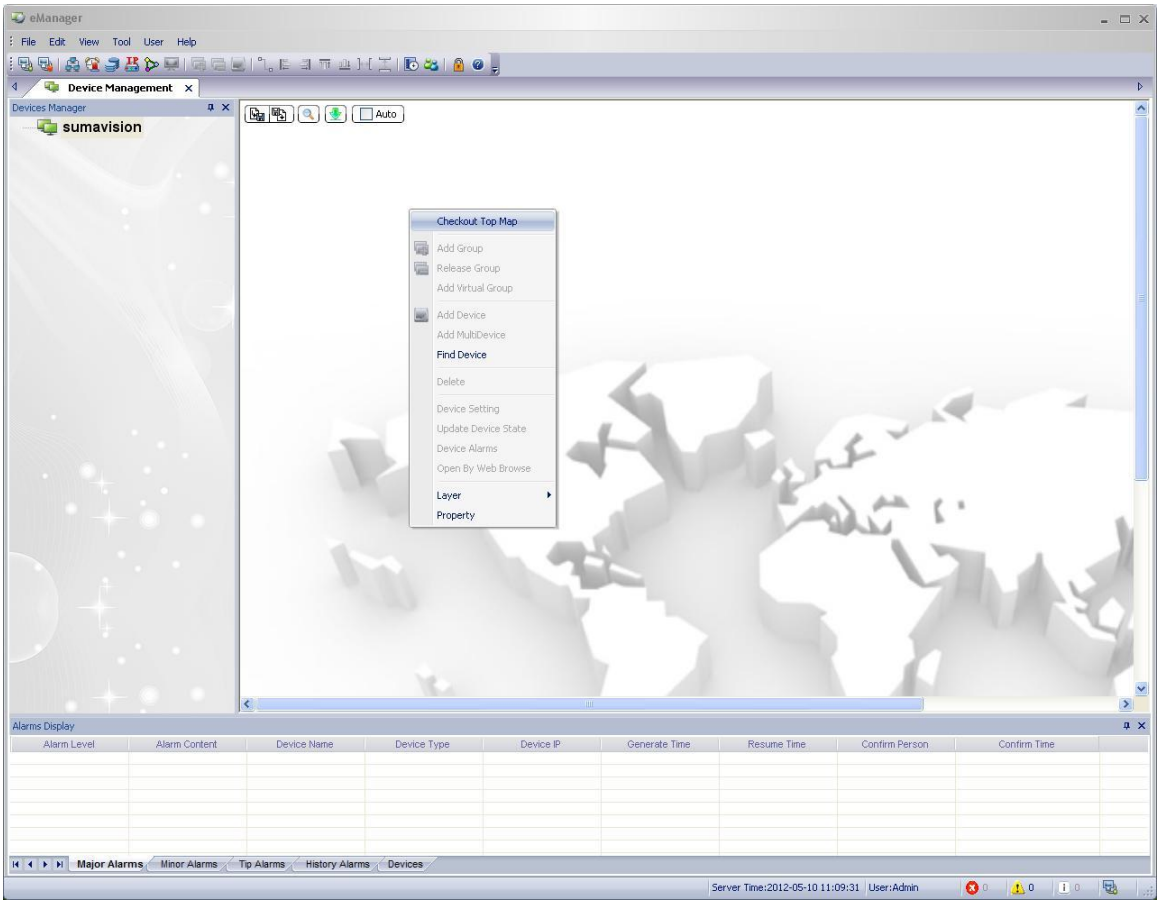
Step 3: Run the under the installation directory to activate the SNMP network management. Enter the username and password with initial username as Admin and password as sumavision. Fill in the server IP, Server Port Number and local IP and click “OK” to start SNMP network management.



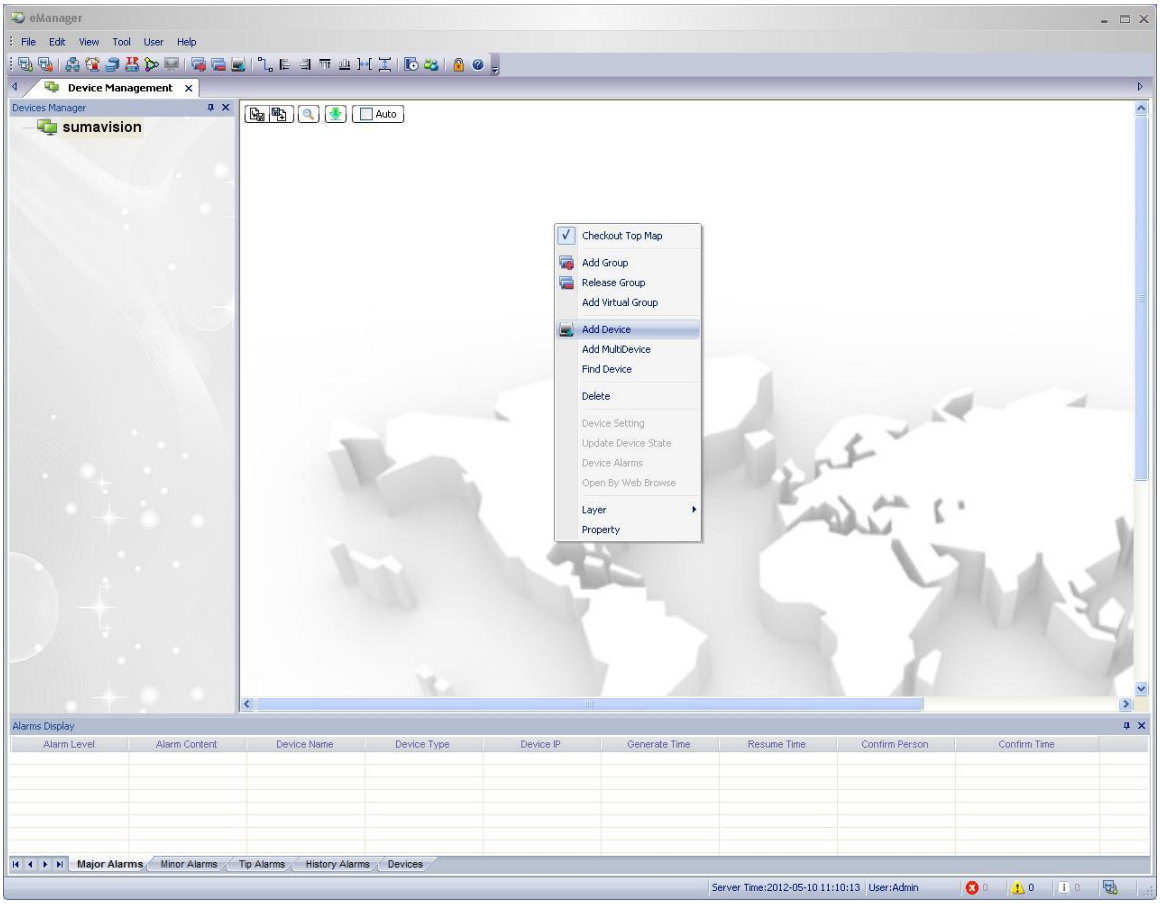
5.2.1 System Setting

After starting SNMP network management software, first you're required to add the device and refresh the hardware to manage EMR normally. The steps are shown as follows:

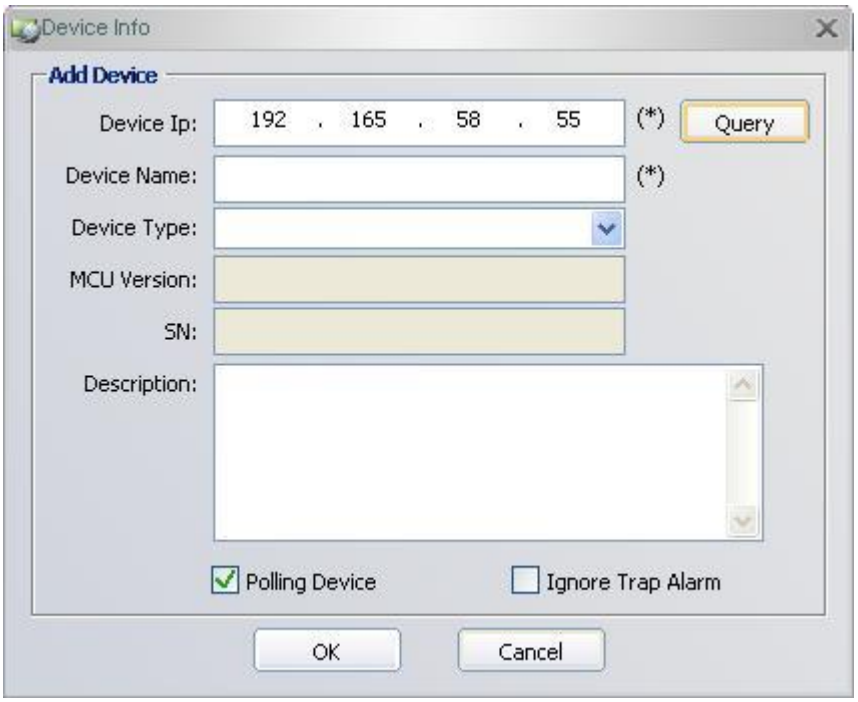
Step 1: Right click on the management screen of network management device, and click "Check out topology" on the menu, the network management system enters into the check-out status and corresponding operations will be allowed;



Step 2: Right click again and you find corresponding changes in the menu, then click “Add device”;

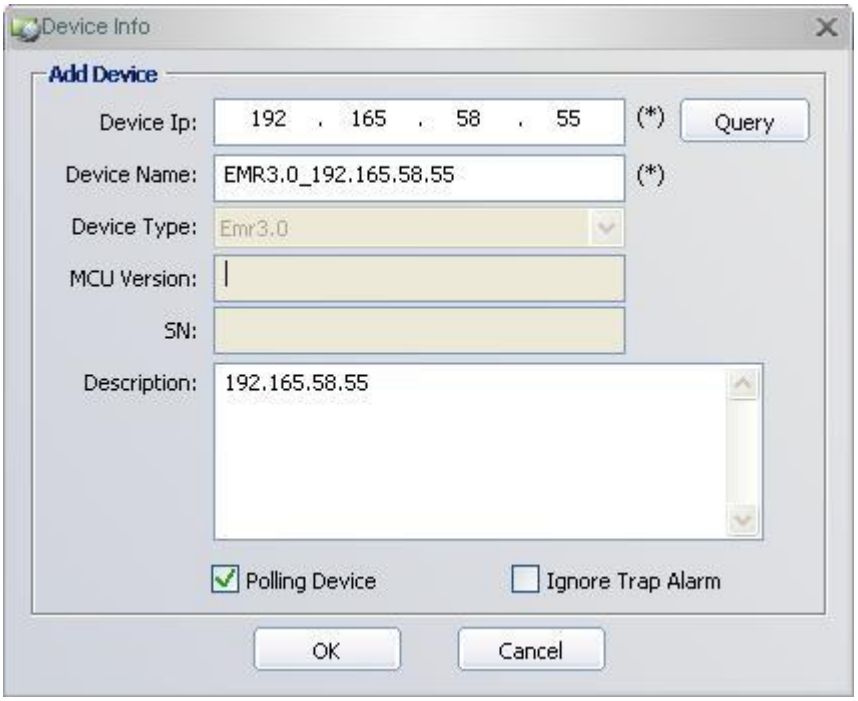


Step 3: Fill in the “Add Device” screen with the device IP address searched on the device LCD panel and click “Search”;

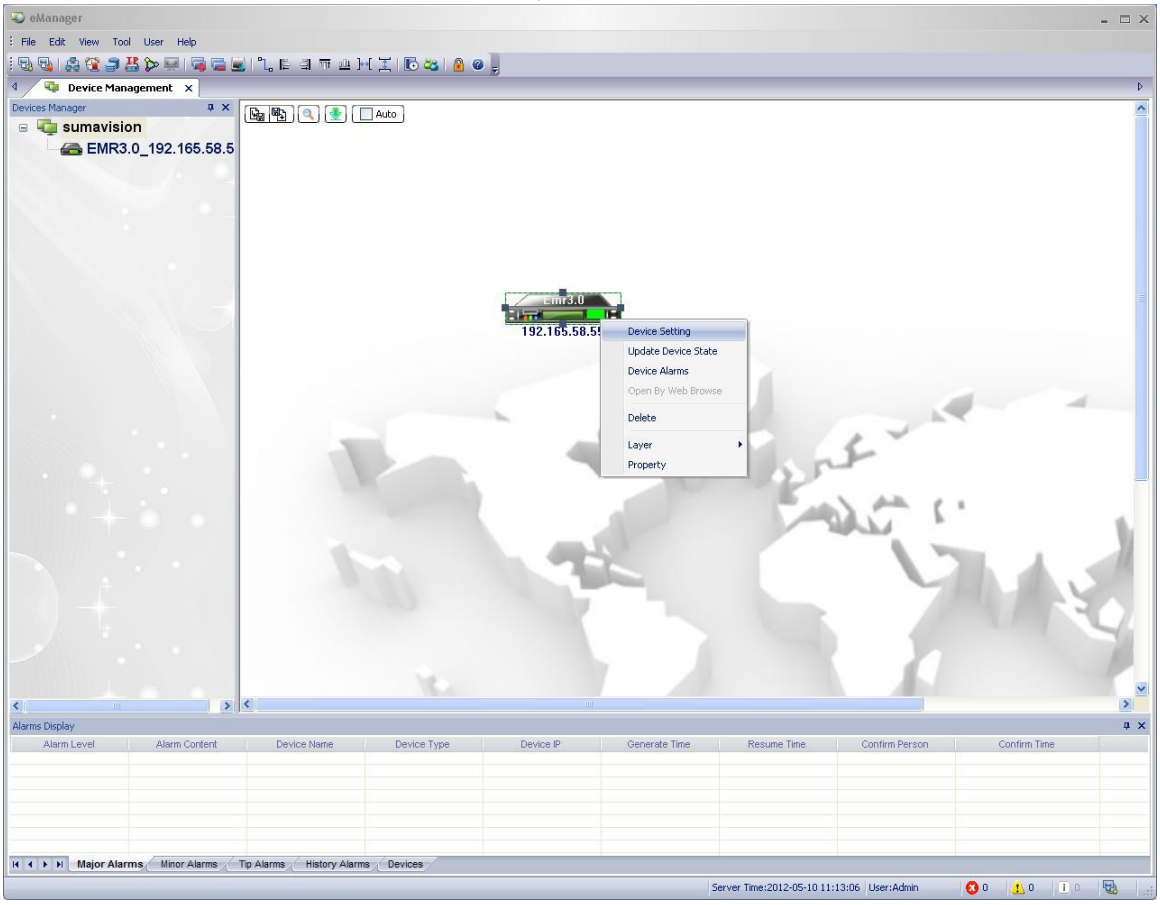


If correct IP address is filled in and the communication between the network management

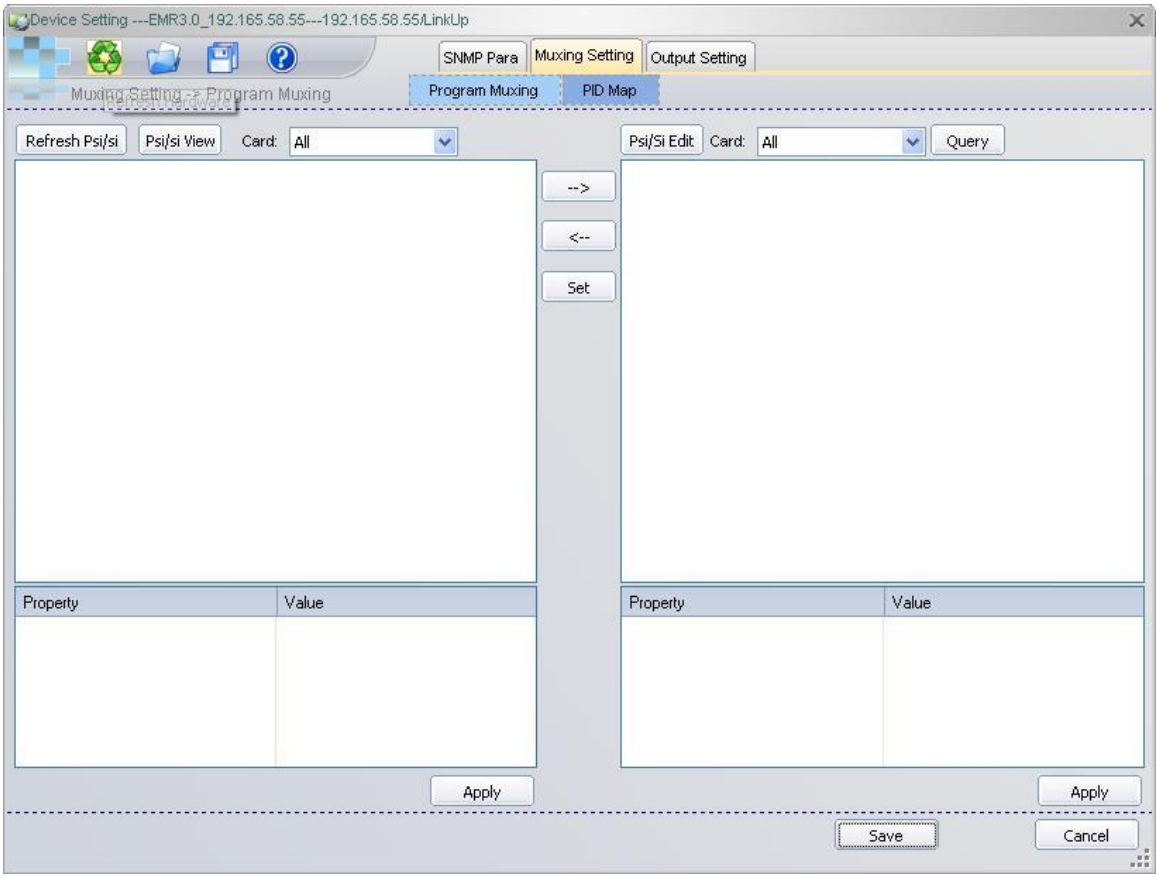
system and the device is normal, the network management system will be refreshed to the advice type. Now enter the device name and select relevant functions according to the actual situations and fill in relevant information, then click “Ok” to finish adding the device.



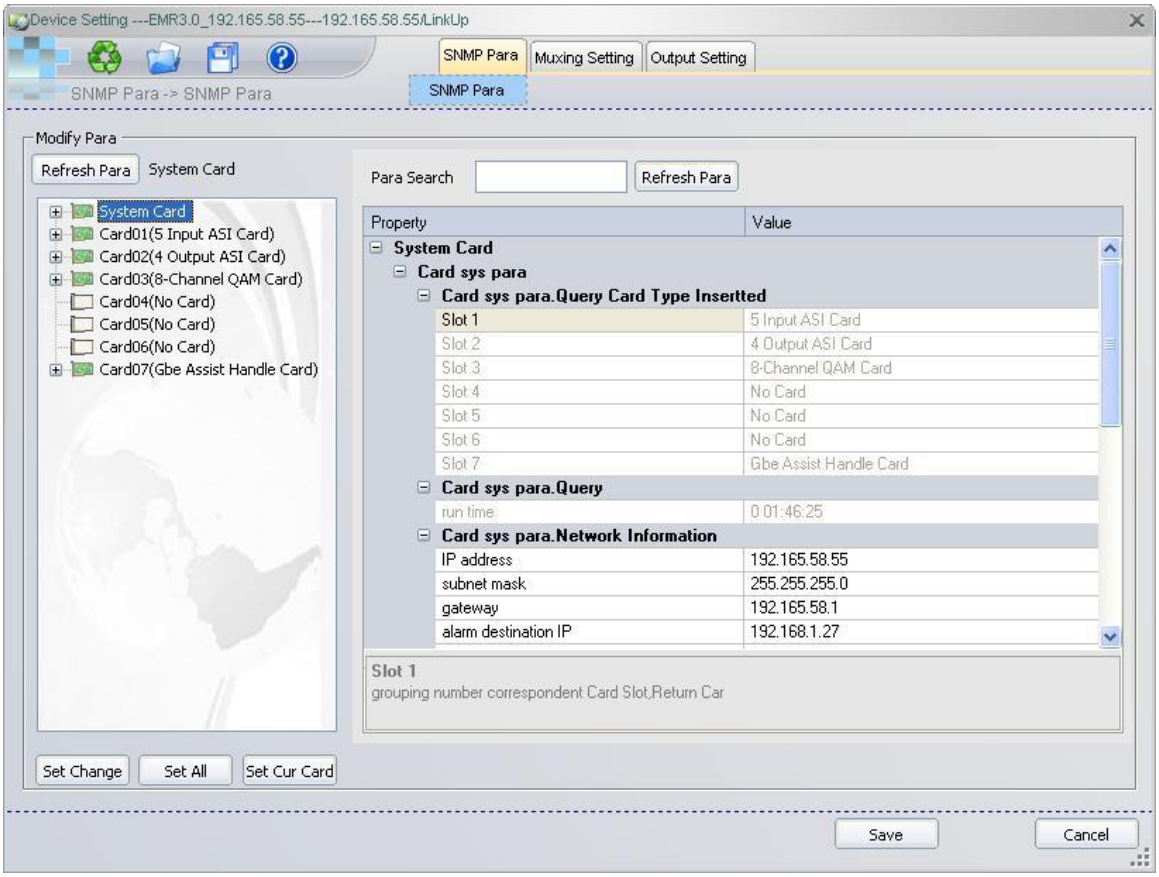
Step 4: Right click the icon of added device, and click “Device Setting” on the pop-up menu to open the Screen of “Device Setting”.



Step 5: Click the Refresh icon on upper left corner of the Multiplexing Setting screen to refresh the device and hardware on the Multiplexing screen.



Step 6: Switch to the Parameter Setting screen and click the “Refresh Parameters” button on the left to refresh the parameters of board card.



After the above steps are finished, users can modify the parameters of EMR and configure other functions normally.

5.2.2 Operating Methods

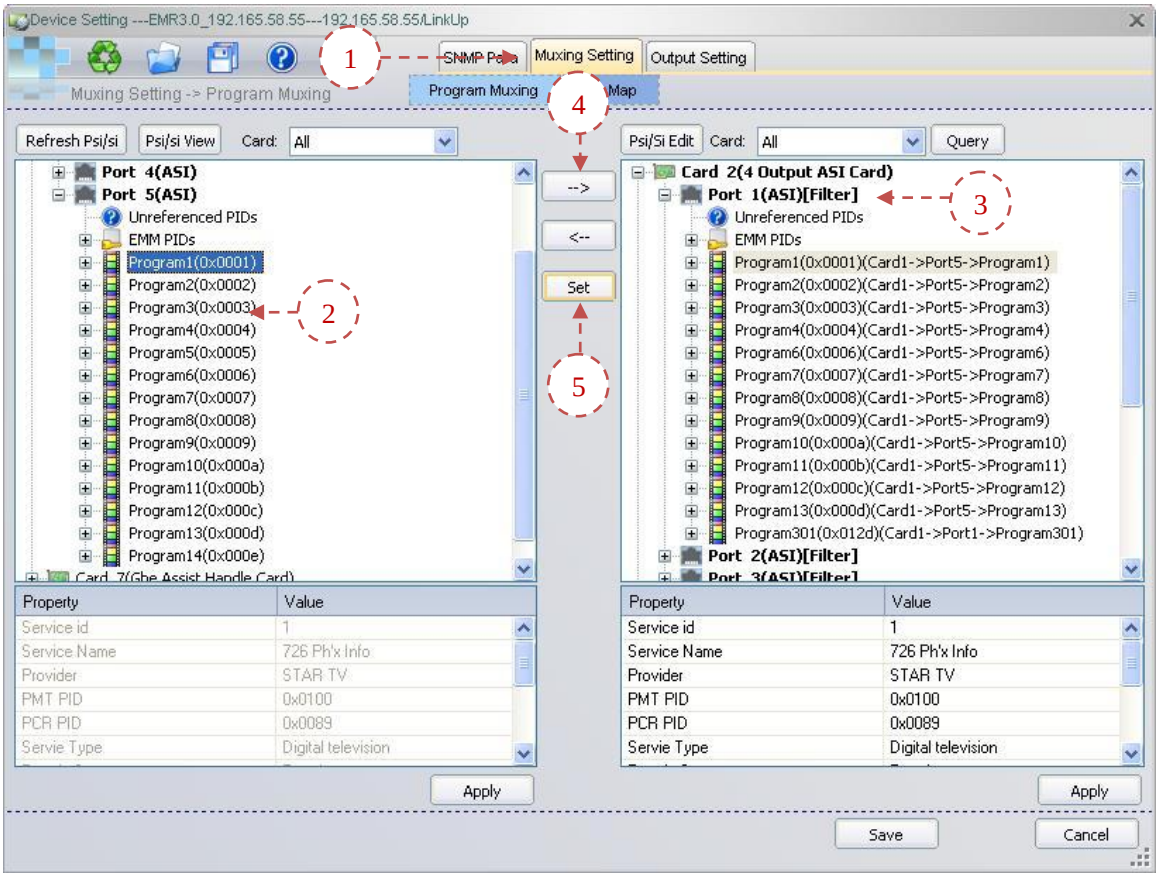
5.2.2.1 Input

EMR platform can select several kinds of program sources, ASI input or IP input according to the inserted board cards

- ASI input: Insert ASI 5-channel input card (refer to ASI 5-channel input card for the setting methods) into EMR to provide the platform with ASI input;
- IP input: the platform's main Gigabit card can provide the platform with IP input (Refer to the Setting for Network Port Input Setting for the setting method);

5.2.2.2 Multiplexing Setting

The multiplexing screen is shown as the following figure. The selected board card on the left is used as input source, which is multiplexed to the output board card on the right by pressing the Multiplex button.



Multiplexing Screen of Network Management

Step 1: Click “Multiplexing Setting” on the network management screen to navigate to the multiplexing screen;

Step 2: Expand the input port and select a program to be multiplexed;

Step 3: Select a destination output port for multiplexing;

Step 4: Click “Multiplex” button;

Step 5: Click “Set” to make the multiplexing relationship valid.

5.2.2.3 Output Interface

Select different output interfaces to achieve diversified output streams of the platform. According to the board card inserted, the platform can select ASI output, IP output or RF output. The following describes the operating methods for board card output.

- ASI output: Insert ASI 4-channel output card (Refer to ASI 4-channel output card) into the platform to provide ASI output for the platform;
- IP output: the platform itself has a main Gigabit card for IP output (for the method of setting, refer to Steps for Network Port Output Setting);
- RF output: Insert a 6-adjacent-channel QAM modulation card (Refer to 6-adjacent-channel QAM modulation card) into the platform to provide RF output for the platform.

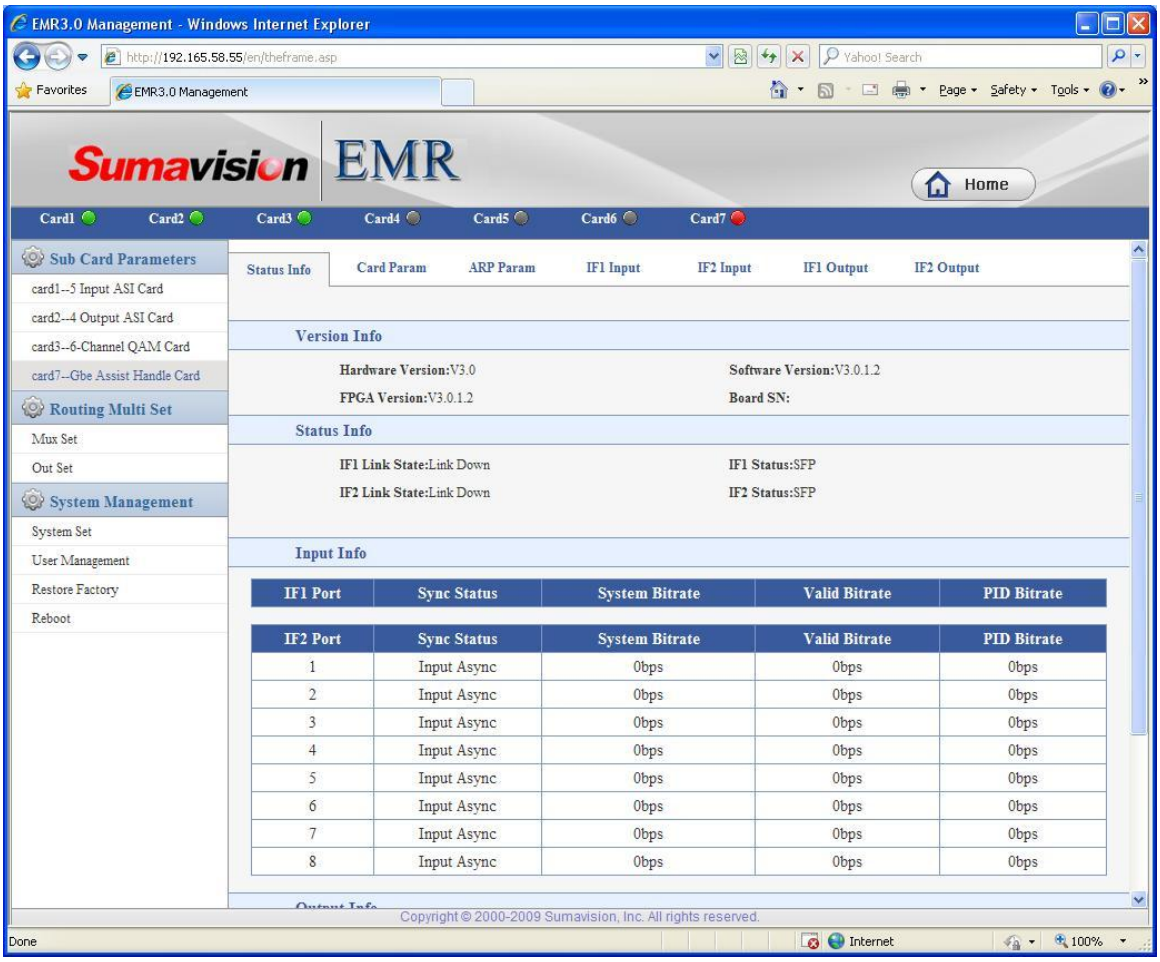
5.3 Board Card Description

This section will introduce the board cards applied in EMR to help users understand the version information, status information and parameter settings of each kind of board card.

5.3.1 Main Gigabit card

The main Gigabit card is provided by the EMR itself and is different from other board cards because the main Gigabit card occupies any card slot but is integrated with the EMR. The interface card has four Ethernet ports, from left to right, they are Gigabit input/output port 1, Gigabit input/output port 2, Gigabit input/output port 3 and Gigabit input/output port 4. Gigabit input/output Ethernet port 1 and 2 are used for the output and input of IP stream, while Gigabit input/output Ethernet port 3 and 4 are backup Ethernet port of the Gigabit input/output Ethernet port 1 and 2, which requires Gigabit module to connect the Gigabit line and the router for normal communication.

The parameter screen of the main Gigabit card is shown as follows:



WEB Network Management Screen

There are the following seven sub-menu:

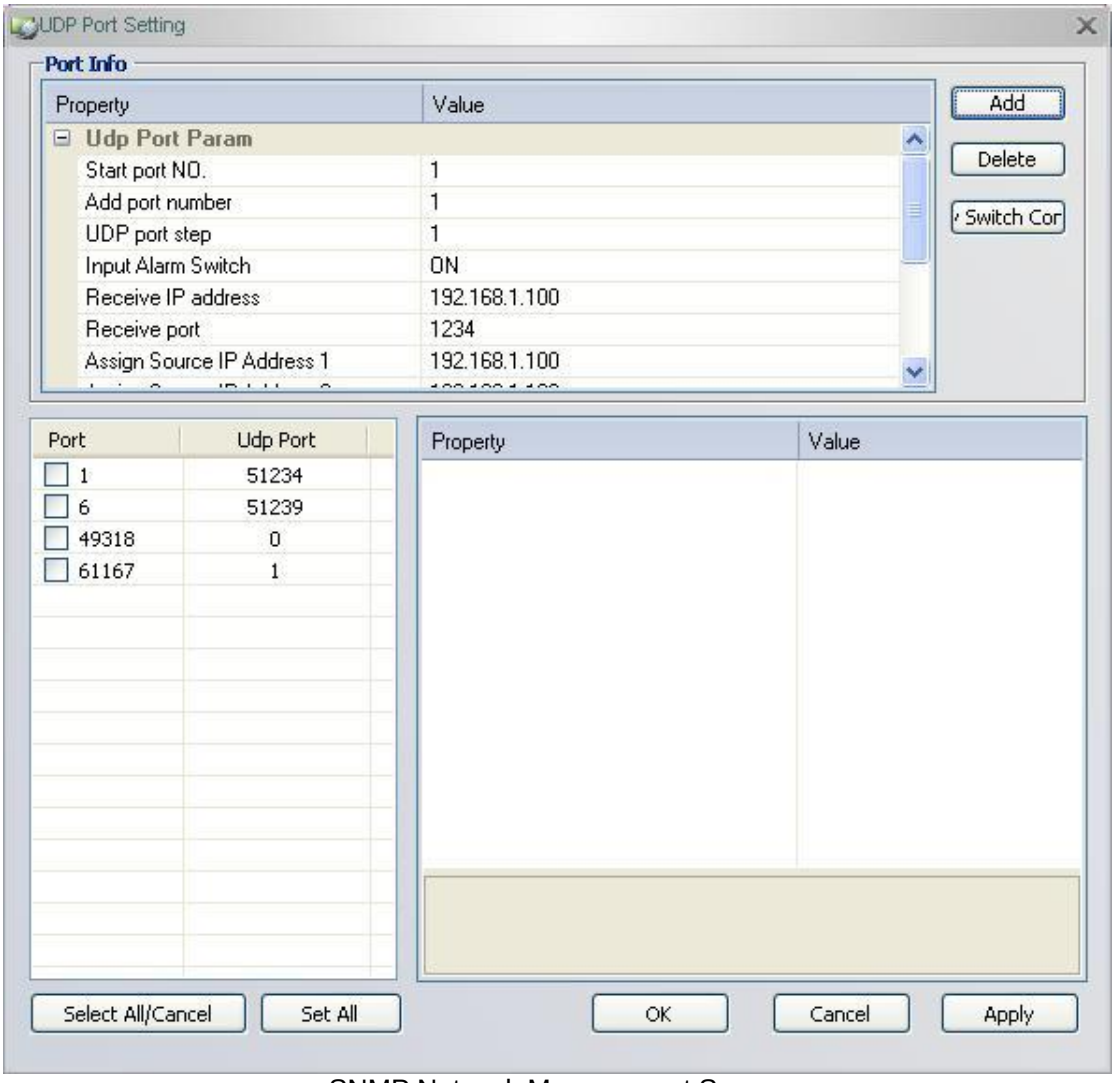
- Status information: search the version information, status information, input/output information of the board card;
- Board card parameter setting: Set the parameters for Ethernet port 1 and 2, including IP address, subnet mask, gateway, speed and duplex, optical output amplitude; after modifying the parameters, and click “Submit the setting” to finish the operations;
- ARP parameters: Modify ARP static list and view ARP dynamic list;
- Ethernet port 1 input setting: Add the input port and other receiving parameters;
- Ethernet port 2 input setting: Same as above;
- Ethernet port 1 output setting: Add the output port and other sending parameters;
- Ethernet port 2 output setting: Same as above.

5.3.1.1 Steps for Ethernet Port Input Setting

The Network Management Input Setting screen displays the parameter information of the added receiving port, and includes such functions as Add, Delete, Delete All and Modify in Batch. After finishing the modification, click “Submit” to make the modifications take into effect.

Add Port: This screen is used to add ports and set the parameters of the added ports.

Web Network Management Screen



SNMP Network Management Screen

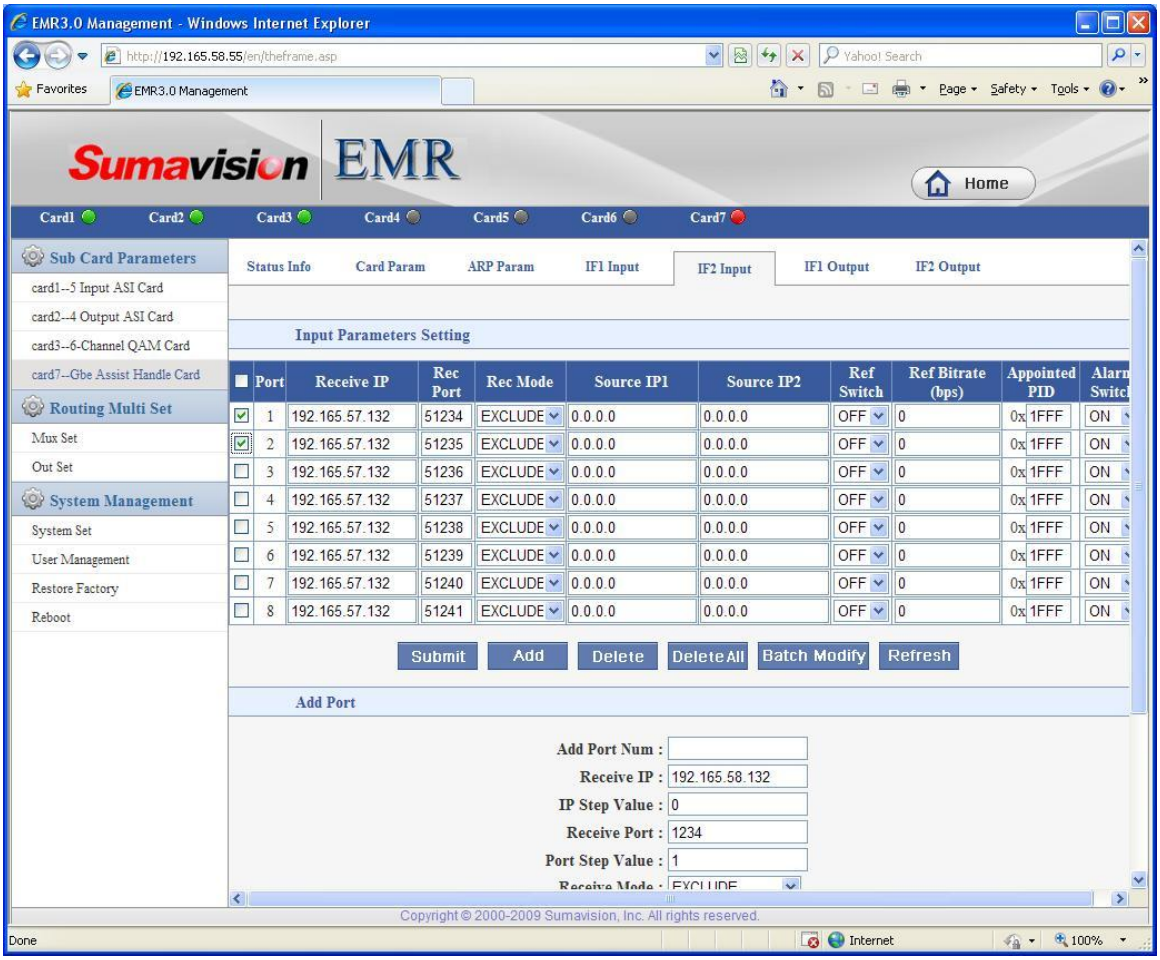
Parameter	Range	Recommended value
Number of port added	1~256	Complete according to the actual situations.
Receiving IP	Local Ethernet port IP or multicast group IP	Complete according to the actual situations.
IP address step value	1~	Complete according to the actual situations.
Receiving port	1~65535	Complete according to the actual situations.
Port No. step value	1~	Complete according to the actual situations.
Receiving mode	INCLUDE/EXCLUDE	EXCLUDE
Source IP1	1.1.1.1~223.254.254.254 (127.0.0.0~127.255.255.255, the IANA reserved address unavailable)	Complete according to the actual situations.
Source IP2	1.1.1.1~223.254.254.254 (127.0.0.0~127.255.255.255, the IANA reserved address	Complete according to the actual situations.

	unavailable)	
Baseline switch	On/Off	Off
Baseline bit rate	0-300000000	0
Specified PID	1~1FFF	1FFF
Alarm switch	On/Off	On

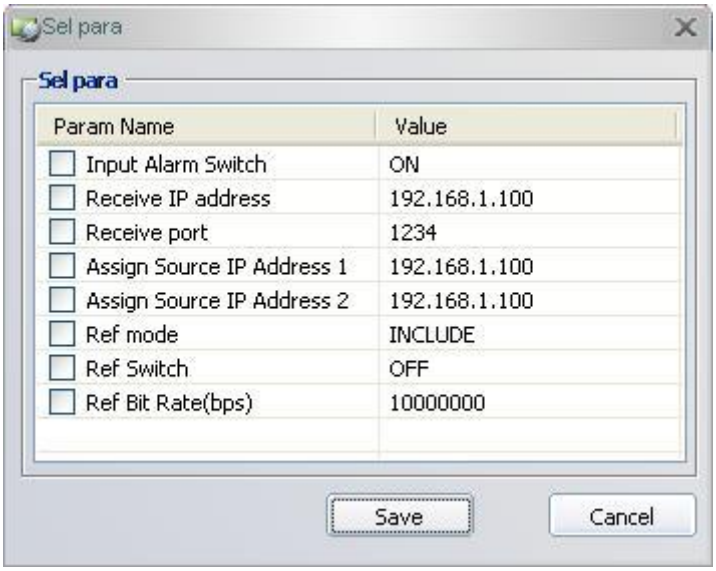
Delete: Delete the selected port;

Delete All: Delete all added ports;

Modify in batch: Select several ports to select and modify specific parameters;



Web Network Management Screen



SNMP Network Management Screen

Parameter	Range	Recommended value
Receiving IP	1.1.1.1~223.254.254.254 (127.0.0.0~127.255.255.255, the IANA reserved address unavailable)	Complete according to the actual situations.
Receiving port	1~65535	Complete according to the actual situations.
Receiving mode	INCLUDE/EXCLUDE	EXCLUDE
Source IP1	1.1.1.1~223.254.254.254 (127.0.0.0~127.255.255.255, the IANA reserved address unavailable)	Complete according to the actual situations.
Source IP2	1.1.1.1~223.254.254.254 (127.0.0.0~127.255.255.255, the IANA reserved address unavailable)	Complete according to the actual situations.
Baseline switch	On/Off	Off
Baseline bit rate	0-300000000	0
Specified PID	1~1FFF	1FFF
Alarm switch	On/Off	On

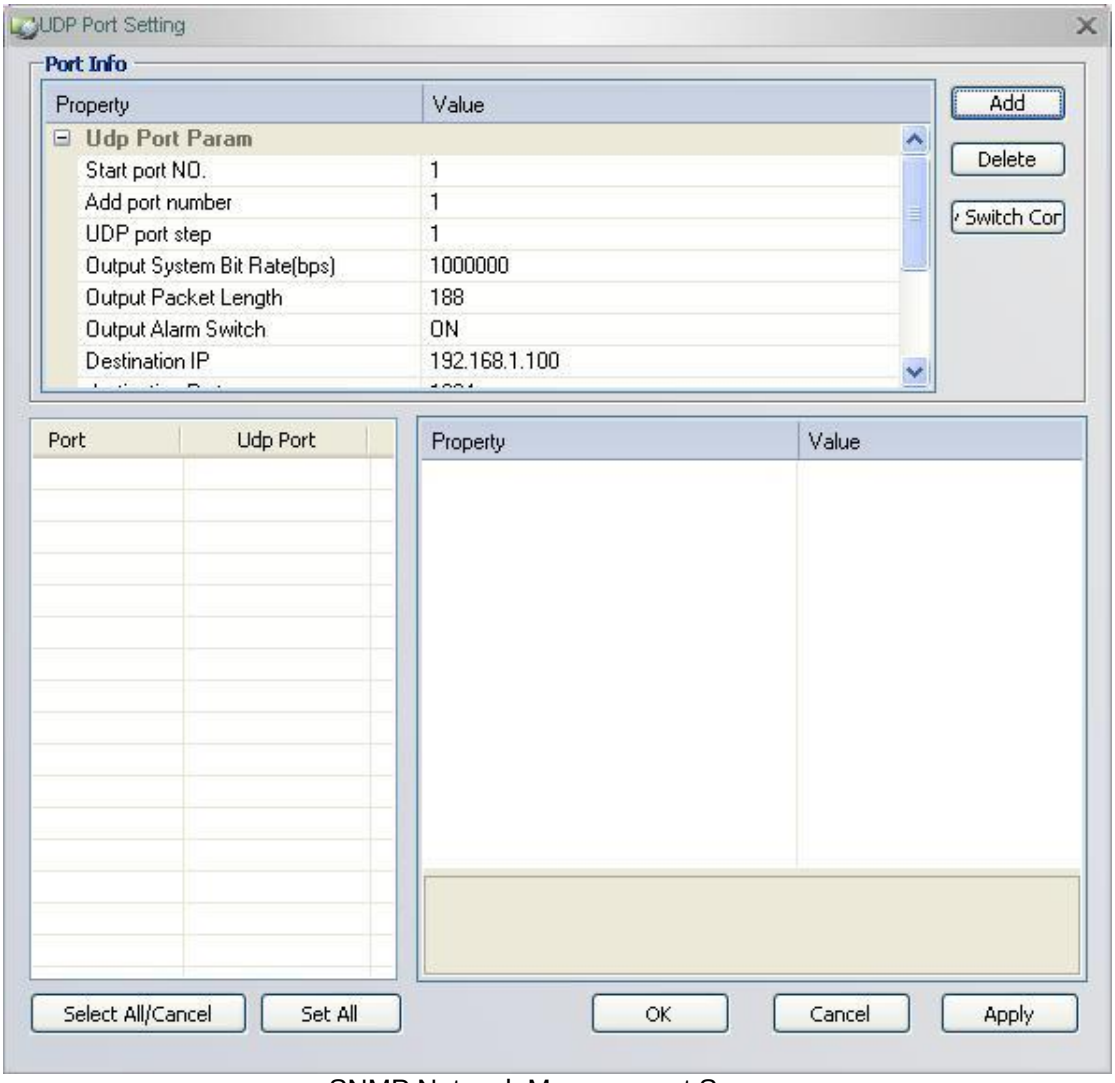
Refresh: Refresh the screen to acquire current parameters of the device.

5.3.1.2 Steps for Ethernet Output Setting

The Network Management Output Setting screen displays the parameter information of the added sending port, and includes such functions as Add, Delete, Delete All and Modify in Batch. After finishing the modification, click “Submit” to make the modifications take into effect.

Add Port: This screen is used to add ports and set the parameters of the added ports.

Web Network Management Screen



SNMP Network Management Screen

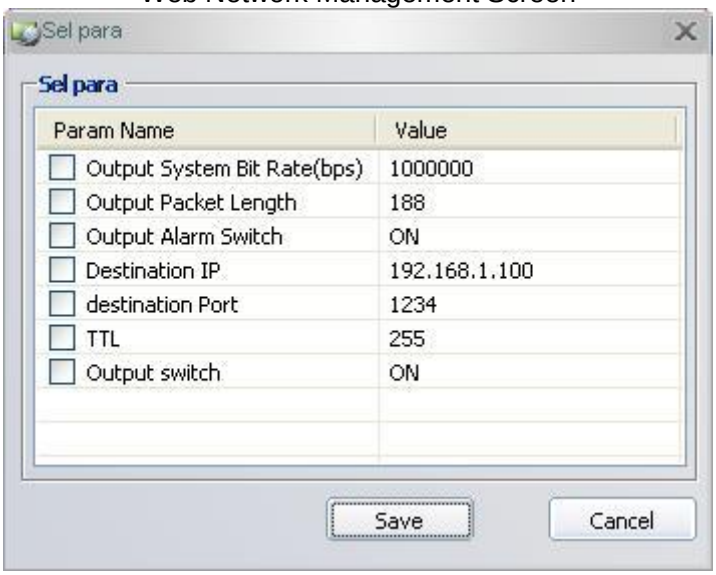
Parameter	Range	Recommended value
Number of port added	1~256	Complete according to the actual situations.
System bit rate	0~1000000000	30000000
Output packet length	188/204	188
Destination IP	Unicast IP or multicast IP	Complete according to the actual situations.
Destination IP step value	1~	Complete according to the actual situations.
Destination port	1~65535	Complete according to the actual situations.
Port No. step value	1~	Complete according to the actual situations.
TTL	1~255	255
Service	General services / minimum cost / highest reliability / maximum throughput / minimum delay	Complete according to the actual situations.
Alarm switch	On/Off	On
Output switch	On/Off	On

Delete: Delete the selected port;

Delete All: Delete all added ports;

Modify in batch: Select several ports to select and modify specific parameters;

Web Network Management Screen



SNMP Network Management Screen

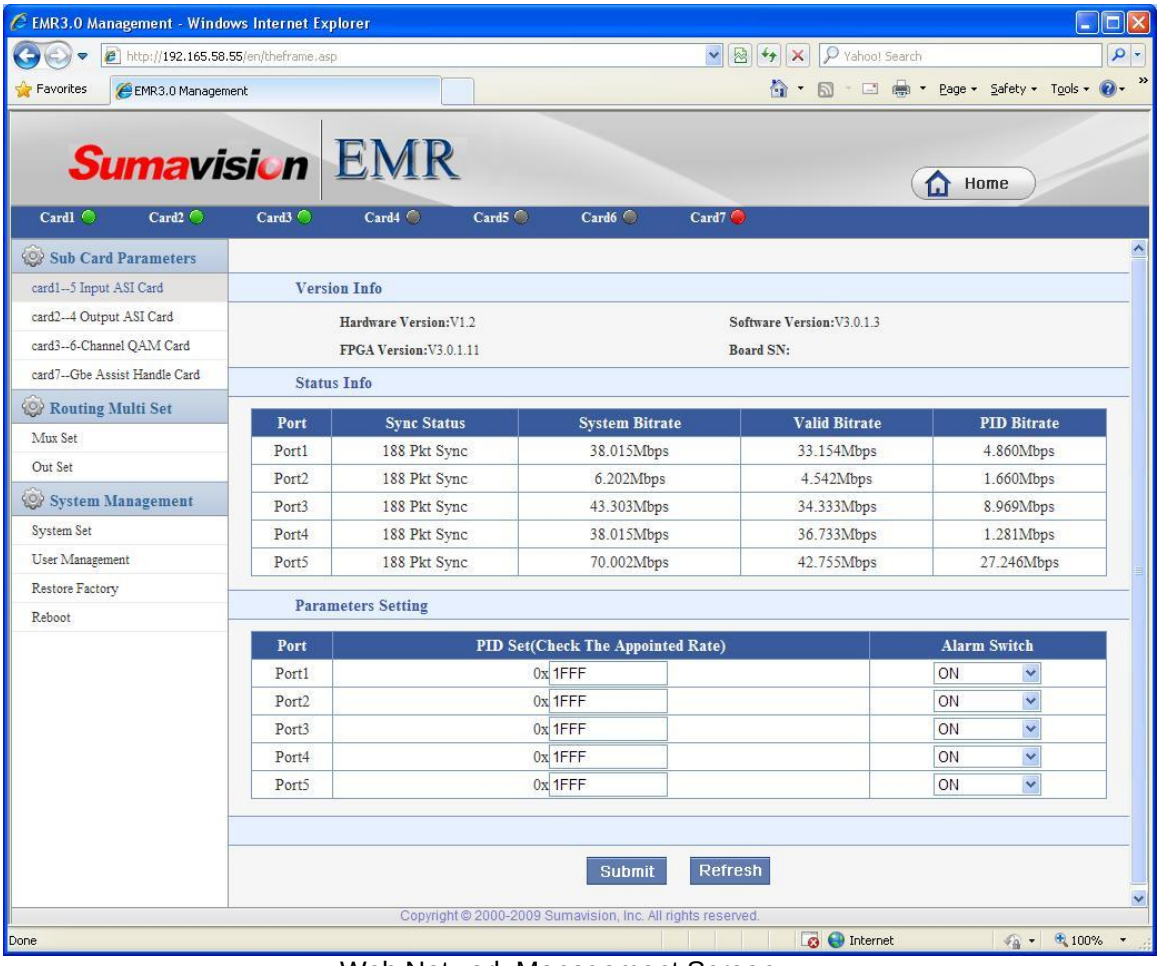
Parameter	Range	Recommended value
System bit rate	0~1000000000	30000000

Output packet length	188/204	188
Destination IP	Unicast IP or multicast IP	Complete according to the actual situations.
Destination port	1~65535	Complete according to the actual situations.
TTL	1~255	255
Service	General services / minimum cost / highest reliability / maximum throughput / minimum delay	Complete according to the actual situations.
Alarm switch	On/Off	On
Output switch	On/Off	On

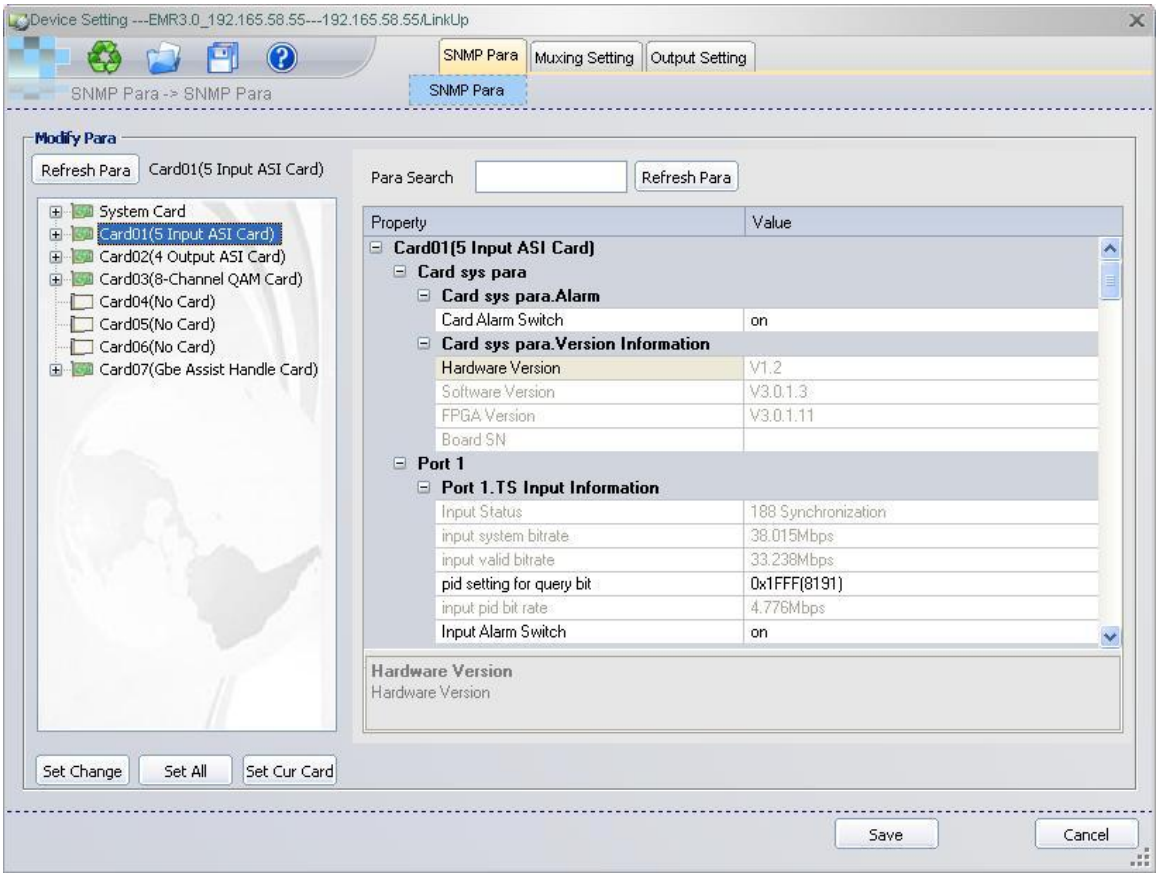
Refresh: Refresh the screen to acquire current parameters of the device.

5.3.2 ASI 5-channel input card

ASI 5-channel input card supports 5-channel ASI input, and can search current version information, status information and parameter settings of ASI 5-channel input card through WEB and SNMP Network Management Systems.



Web Network Management Screen

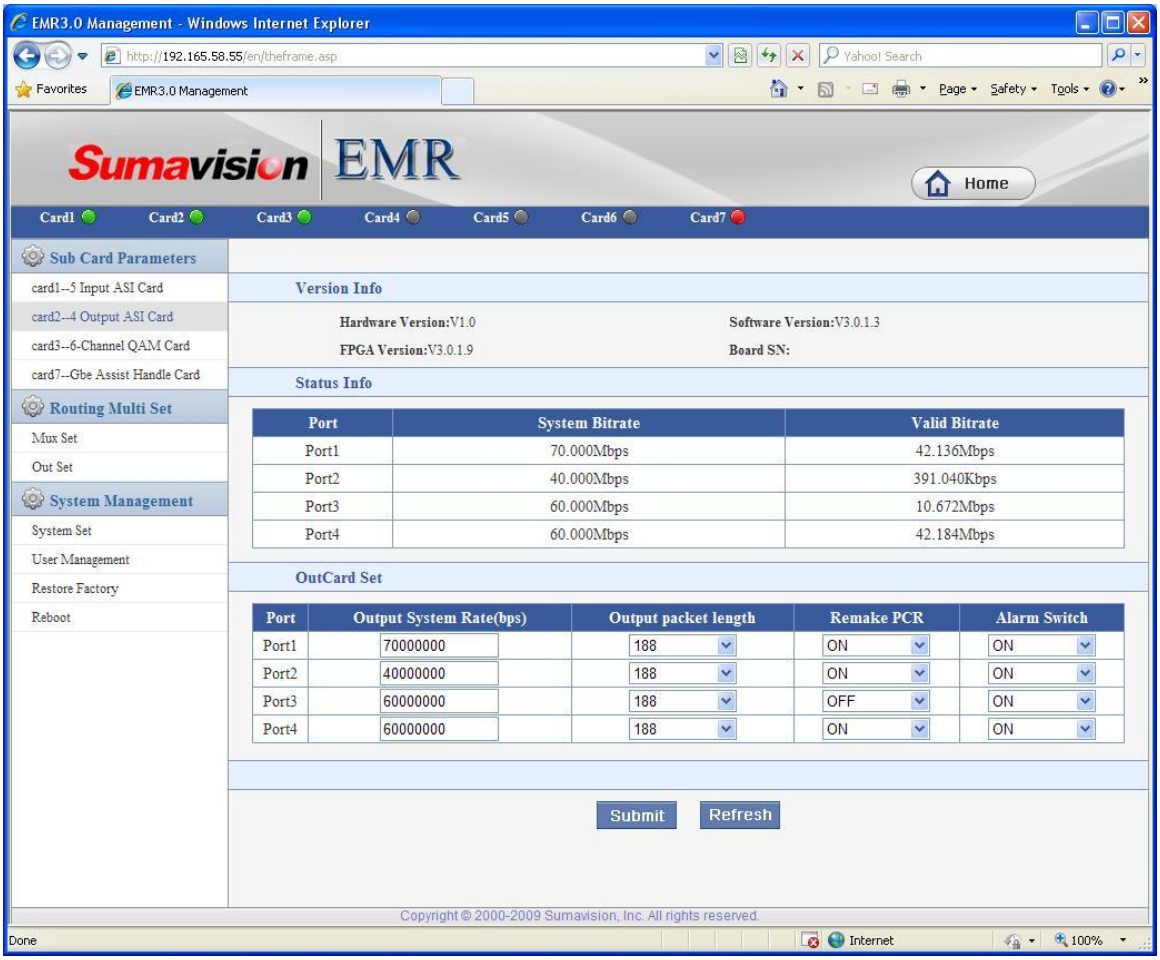


SNMP Network Management Screen

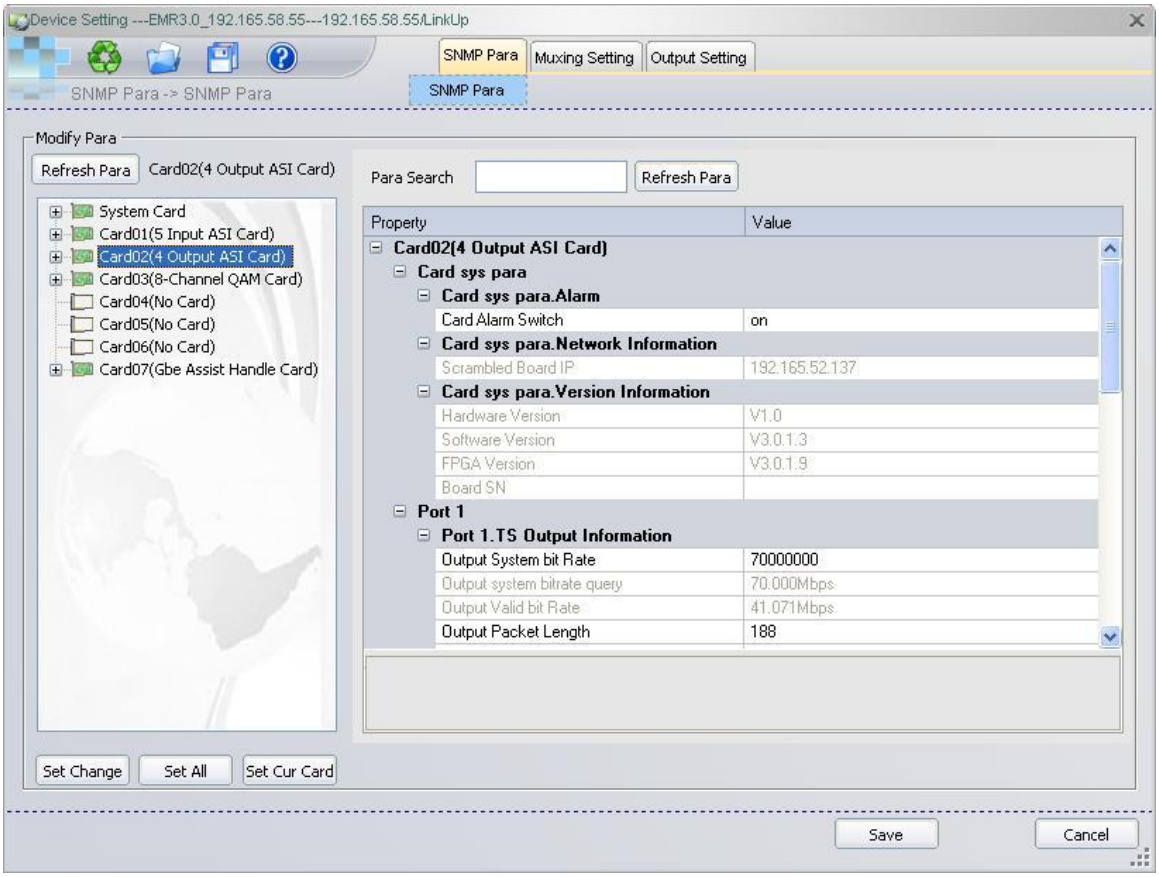
Parameter	Range	Recommended value
Specified PID	1~1FFF	1FFF
Alarm switch	On/Off	On

5.3.3 ASI 4-channel output card

ASI 4-channel output card supports 4-channel ASI output, and achieves the scrambling of 4-channel ASI output programs through the scrambling Ethernet port integrated with the board card. The WEB Network Management System can be used to search current version information, status information and parameter settings of ASI 4-channel output card, as shown in the following figure:



WEB Network Management Screen



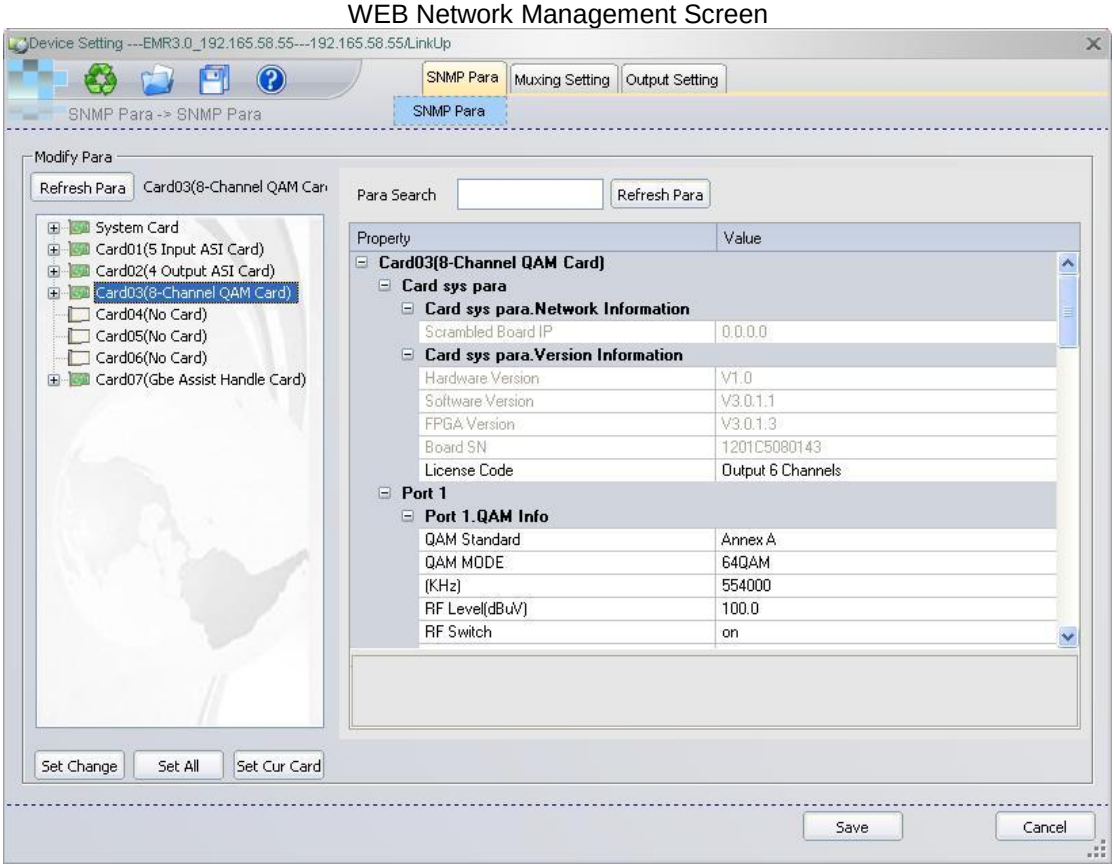
SNMP Network Management Screen

Parameter	Range	Recommended value
System output bit rate	0~213000000	30000000
Output packet length	188/204	188
Regenerated PCR	On/Off	Off
Alarm switch	On/Off	On

5.3.4 6-adjacent-channel QAM modulation card

6-adjacent-channel QAM modulation card is equipped with a RF output interface supporting 6-adjacent frequency output. The WEB Network Management System can be used to search the current version information, status information and system & output parameter settings of 6-adjacent-channel QAM modulation card, as shown in the following figure:

WEB Network Management Screen



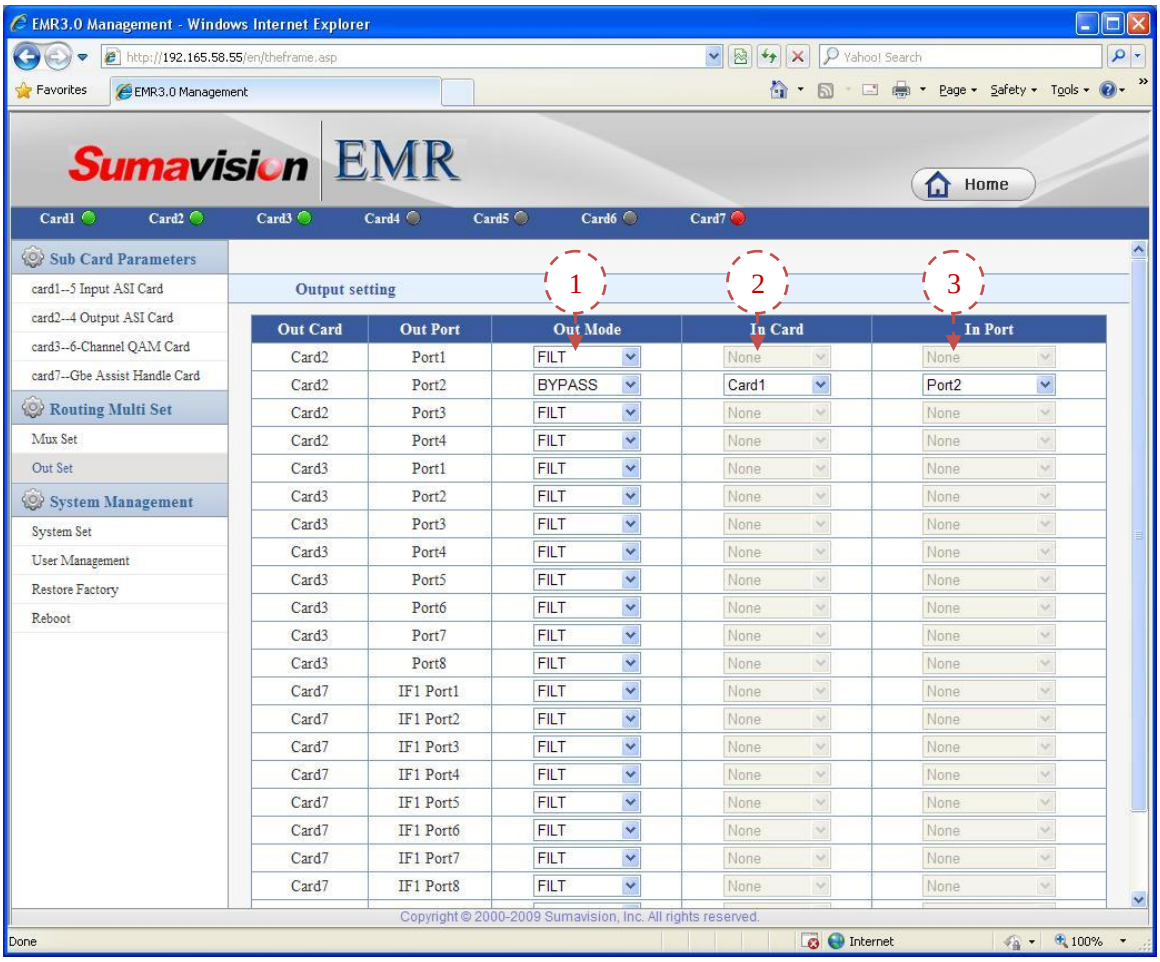
SNMP Network Management Screen

Parameter	Range	Recommended value
Channel encoding mode	ANNEX_A/B	Set according to the needs
Channel bandwidth	6/8M	Set according to the channel encoding mode
Authorization code	Output 1-6 Channels	No need to modify
QAM mode	64/128/256QAM	64QAM
Output frequency	52-940Mhz	Set according to the needs
Output level	95-115dB	Set according to the needs
RF switches	On/Off	Open with the frequency point setting
Symbol rate	5000-7000Khz	6875Khz

Chapter 6 Descriptions of Advanced

6.1 Output Settings

This screen can add the corresponding pass-through relationship by applying the function of set-port mapping, and then the output port can directly output the input stream of corresponding port.



Step 1: Set the output mode of corresponding output port as pass-through;

Step 2: Select the board card where the output source to be passed through is located;

Step 3: Select the port corresponding to the input source to be passed through;

Step 4: Click “Submit” button to make the pass-through relationship valid.

Chapter 7 Fault Analysis and Troubleshooting

7.1 Alarm Information

When EMR runs abnormally, the alarm indicator on the front panel of the device will light, and the Web network management will provide a variety of abnormality alarm to prompt the users to facilitate the investigation and solve the problems. Users can search the WEB network management alarm on the device and parameters of the menu to make a preliminary judgment on the reasons causing EMR alarm and take appropriate measures. If users fail to solve the problem of EMR abnormity by themselves, they can call the After-sales Technical Support Department of Sumavision.

The EMR alarm information is shown as Table 7-1.

Table 7-1 Troubleshooting of EMR Common Faults or Abnormity

Fault	Reason	Solution
LCD does not display or working indicator is not on after powering on	The power lead is poorly connected;	Replace the power lead.
	The fuse on the power socket is broken.	Replace the fuse.
ASI 5-channel input card fails to refresh any input signals.	No input signal is available.	Check the line for input signal.
		Check the input signal sources.
ASI 4-channel output card fails to output the decoding normally	The output program stream decoding turns out no video & audio frequency	Check the multiplexing program sources.
	The output program stream decoding turns out mosaic.	Check the output system bit rate.
The QAM modulator output can't be received by STB	QAM output level is too high.	Lower the level or increase the number of attenuators.
	Wrong parameters of the STB are set.	Set parameters matching with QAM again.
The main Gigabit card inputs no system bit rate	The input program stream is interrupted.	Check head-end program sources and network cable connection.
The destination IP of the main Gigabit card is unreachable.	The connection with the sending device is broken.	Check the network settings of destination device and network cable connection.
The main Gigabit card outputs no valid bit rate.	The input program stream is interrupted.	Check whether the multiplexing program sources are normal.

7.1.1 LCD does not display after powering on

Reasons for such fault:

- ✓ The LCD module of the device is broken;
- ✓ The power lead is poorly contacted;
- ✓ The fuse on the power socket is broken.

Solution:

EMR can be allowed to leave the factory only if the test ensures that all function indicators meet the requirements. Therefore it is almost unlikely that the LCD module of the device is broken, thus this cause can be excluded; check the power lead of the device to confirm whether there's any damage to the surface of the power lead, check the quality of power socket to confirm whether the supply voltage is normal.

In case of fault in the power lead, suggest replacing he power lead to ensure smooth signal transmission inside the power lead;

In case of fault in the power socket, suggest checking whether the power supply switch of the power socket is on first; if the power supply switch is on and the power supply to the slot where the faulty device is located is normal, but the LCD is still abnormal, suggest checking whether the fuse on the socket is broken, and replacing the fuse.

If the foregoing solutions can't be enough to solve the problems, it is suspected that the LCD module is damaged. Please notify the After-sales Technical Support Department of Sumavision for solution.

7.1.2 ASI 5-channel input card fails to refresh any input signals.

Reasons for such fault:

- ✓ The input signal or the line for input sign is abnormal.

Solution:

Confirm the board card of the device with normal input signal can receive which kind of signals; check the cable for input signal is exempted from short circuit and open circuit; check the port that which is connecting the cable for input signal is existing refresh port of the device.

7.1.3 ASI 4-channel output card fails to output the decoding normally

Reasons for such fault:

- ✓ The input program source is abnormal
- ✓ The output bit rate overflows

Solution:

Confirm normal input program sources of the input board card, without video & audio loss; modify the settings of output system bit rate to make the bit rate be larger than the valid bit

rate for output programs.

7.1.4 6-adjacent-frequncy QAM modulation card output can't be received by STB.

Reasons for such fault:

- ✓ The output level of 6-adjacent-frequency QAM modulation card is too high;
- ✓ Wrong receiving parameters of the STB are set.

Solution:

Lower the output level of 6-adjacent-frequency QAM modulation card to be in the range that STB can receive the output; or increase the number of attenuator to lower the output level to be in the range that STB can receive the output.

Check and set the demodulation parameters of the STB as identical to the output parameters of 6-adjacent-frequency QAM modulation card.

7.1.5 The main Gigabit card inputs no system bit rate.

Reasons for such fault:

- ✓ The input program stream is interrupted.

Solution:

Check the head-end program sources and network cable connection of the device.

7.1.6 The main Gigabit card outputs abnormally

Reasons for such fault:

- ✓ The input program stream is interrupted.
- ✓ The connection with the output destination device is broken.

Solution:

Check the head-end program sources; check whether the connection between the device and the destination device is normal.

Chapter 8 Maintenance

8.1 Maintenance method

To make the EMR operate under the best operating status, extend the service life of device, discover and eliminate the potential problems in time, and ensure normal operation of the device, the routine maintenance must be carried out regularly.

The EMR should be maintained according to the following rules.

- Must prepare for the detailed device maintenance target plan.

  The EMR should be checked and maintained every day. If not, some small failures will develop into worse, so proper daily inspection, monthly inspection, quarterly inspection and annual inspection plans should be developed according to the operation features of the device, including the maintenance and inspection class in every period (class I maintenance, class II maintenance and class III maintenance) and detailed maintenance contents.

- Appoint the maintenance person.

  It is the key for the device maintenance. The combination mode of “one person inspection and several persons’ inspection” is recommended for EMR maintenance.

- Establish the device maintenance archive.

  The individual maintenance archive should be kept since the EMR is purchased till it is abandoned. The maintenance and repair should be recorded in details. The replaced and changed parts and wire should be marked on the circuit diagram and device maintenance archive, so the diagram is consistent with the actual device. Meanwhile, it can facilitate others to maintain and repair the device.

8.2 Maintenance details

The following details should be paid attention to in the routine maintenance of EMR device.

- The transmission device is of great importance, and should have trained person for the routine maintenance.
- Keep the site room clean, dustproof and damp-proof.
- Follow the “Device Maintenance Target Plan” for routine inspection and test of the device, and record the checking results.
- Wipe the dustproof mesh of the fan every week. If the surface temperature of the device is too high, check whether the dustproof mesh of the fan is blocked.
- The device is inspected according to the specifications & instruction manual of Sumavision Technologies Co., Ltd. The man-made accident should be prevented.
- Wear the anti-static bangle when operating the device hardware.

- The connection between other devices in the cabinet and EMR should not be plugged-in or unplugged freely; to plug-in or unplug the connection, you're required to mark the original location for plugging.
- If EMR can be controlled in the control center by using the network management software, the network management password of EMR should be strictly managed and regularly changed, which is only distributed to the responsible maintenance person. The administrator password can only be known by the responsible maintenance person.
- Installing other software in the computer for network management system transmission and playing games with such computer are strictly prohibited; the computer with network management system should be installed the real-time virus detection software for regular virus killing.
- The computer with network management system uses UPS for power supply and regular data backup will be conducted.
- Don't reset the device easily and change the service data.
- For any alarm with unidentified reasons, please contact the After-sales Technical Support Department of Sumavision Technologies Co., Ltd.

8.3 Routine maintenance

Refer to Table 9-1 for routine maintenance.

Table 8-1 Routine maintenance

Maintenance type	Maintenance contents	Operation guide	Reference standard	Reference maintenance hour (man×hour)
Inspect external environment	Power supply of site room (DC/AC)	Check the power monitoring system or test the power output voltage	The voltage output is normal. The power gives no exception alarm.	0.05
	Temperature of site room	Measure temperature	Temperature range: 5-40℃; 15℃-30℃ is recommended	
	Humidity of site room	Measure relative humidity	Relative humidity: 20%-80%; 40%-65% is recommended。	
Inspect the device operation status	Indicator status on the device panel	Observe the indicator of the device panel.	Only power indicator is on under normal operation. The operation indication keeps on.	0.1
Inspect the device operation status	Service tel. status (2-3 times every month)	Test the calling.	Addressing call and conference call support normal communications.	0.1

8.4 Monthly maintenance

Refer to Table 9-2 for monthly maintenance.

Table 8-2 Monthly maintenance

Maintenance type	Maintenance contents	Operation guide	Reference standard	Reference maintenance hour (man×hour)
Check external environment	Cabinet cooling hole state	Check the state of cooling holes.	Keep clean around the cooling holes, without any mess.	0.1

8.5 Quarterly Maintenance

Refer to Table 9-3 for quarterly maintenance.

Table 8-3 Quarterly maintenance

Maintenance type	Maintenance contents	Operation guide	Reference standard	Reference maintenance hour (man×hour)
Inspect the cabinet cleanness	Inspect the cabinet cleanness	Observe the inside and outside the cabinet.	The cabinet surface is clean. There is no much dust inside the cabinet. Otherwise, the cabinet should be cleaned	0.5
Inspect the device cleanness	Inspect the device cleanness	Observe device surface	There no much dust outside the device. Otherwise, it should be cleaned. Watch out the external wiring of the device in cleaning.	0.5

8.6 Annual Maintenance

Refer to Table 9-4 for annual maintenance.

Table 8-4 Annual maintenance

Maintenance type	Maintenance contents	Operation guide	Reference standard	Reference maintenance hour (man×hour)
Inspect grounding, ground cable and power lead connection	Check the earth resistance	Use the earth resistance tester for testing.	The joint grounding resistance is less than 1 ohm.	1
	Check the ground cable connection.	Inspect whether the ground cable is reliably and securely connected to the ground cable group of the office.	(1) The connection is secure and reliable. (2) No wire aging exists. (3) No erosion exists on the ground cable group, with proper anti-corrosion.	0.2
	Inspect the power lead connection	Inspect whether the power lead is reliably and securely connected to the power lead of the office.	(1) The connection is secure and reliable. (2) No wire erosion and aging exist.	0.2

8.7 Clean-up and maintenance

Pay attention to the following contents for the clean-up and maintenance of the device.

- Clean the working site; wipe the device shell with a soft cloth. The water can not

be penetrated into the device.

- Do not plug in and out all connection cables with current without instructions.
- Check whether the cable is pressed or pulled by the heavy object, whether the plug and socket are connected tightly, ensure that the cable is not extruded by the external force and is placed in order. The connection part is under good contact.
- Check whether the device and cable label are missing and incorrect. Keep the label intact and correct.
- Check whether the engineering document is complete and correct. Keep the engineering document complete for check at any time.

8.8 Operation and maintenance

Pay attention to the following contents for the maintenance when the device is operating.

- Check whether the ground cable and power supply are normal. Ensure the power supply works properly before turning on the power.
- Sequence for starting the device: start the power supply of peripheral devices, and power on the cabinet, and ensure the device for signal input works normally before starting EMR.
- Sequence for device shutdown: contrary to the sequence for starting the device. Power off the EMR, and then other devices.
- Observe the indicators on front panel of EMR and observe the system running in the studio and the control room. In case of any abnormity, the maintenance instructions in this chapter can be referred for solution as soon as possible.
- Before the system is used, power on and inspect the system, adjust the peripheral device, and guarantee that the EMR functions are normal.
- The local configuration can’t be changed without instructions. The configuration can only be changed by the professional operator.
- Do not place the EMR in highly noisy environment.

Annex A

Table 8-5 Parameters of input/output ASI interface

Electrical characteristics	Normal impedance	75Ω	Its appearances can be shown as the figure below: 
	Frequency range	0-2GHz	
	Voltage rating	500 VRMS (Sea-level Max.)	
	Dielectric withstand voltage	1500 VRMS (Sea-level Min.)	
	VSWR	1.5 (Max)	
Material characteristics	Main part and metal fittings	Nickel plating	
Mechanical characteristics	Insertion force	Max. acrotorque 2.5 lbs	
	Pullout force	Maximum axial tensile force 3 lbs	
	Nut pulling force	Min. 100 lbs	
	Centric pin thrust	Min. 6 lbs	
	Durability	More than 500 times drawing	

Table 8-6 Ethernet interface connector parameters

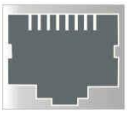
Electrical characteristics	Maximum current	2 amps	Its appearances can be shown as the figure below: 
	Insulation resistance	5000 megohms	
	Signal pin DC resistance	30 milli-ohms @100 mA	
	Metal shell shielding force	Min. 20dB (20-200MHz)	
	Applicable ambient temperature	-50～+105 ℃	
Material characteristics	Signal pin contact surface plating	Metal shell, tin-plated	
	Filler	UL90V-0 retardant thermoplastic	
Mechanical characteristics	Durability	750 times	
	Insertion/pullout force	Max. 5 lbs	

Table 10 3 Power Socket Parameters

GB 1002-1996	Types, basic parameters and dimensions of single phase plugs and socket-outlets for household and similar purposes	Its appearances can be shown as the figure below: 
GB 2099.1-1996	Plugs and Socket-outlets for Household and Similar Purposes — Part1: General Requirements	