Encoder modulator IP in QAM

HDI-2 C01

User manual

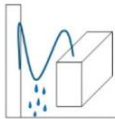CE

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Mounting and Safety Instructions

Attention
The rated voltage stated on the device must correspond with the mains voltage.

Grounding and potential equalization
Please establish grounding and perform potential equalization before initial startup. If not, the device could be damaged, a fire could be created or other dangers could arise.

Connection cable
Always install the connection cables with a loop so that no condensed water can penetrate along the cable.

Select installation site
Install only on a solid, plane and at most fire-resistant surface. Avoid strong magnetic fields in the surroundings. Too strong heat effect or accumulation of heat will have an adverse effect on the durability. Don't mount directly over or nearby heating systems, open fire sources or the like, where the device is exposed to heat radiation or oil vapours. Don't block the ventilation slots of devices fitted with fans, as this will cause heat to build up inside the devices and may cause fire. Free air circulation is absolutely necessary to permit the device to function properly. It's imperative to observe the mounting position!

Moisture
Protect the device from high humidity, dripping and splashing water. If there is condensation, wait until the device is completely dry.

Caution! Danger of life!
According to the currently valid version of the standard DIN EN 60728-11 (VDE 0855-1) the satellite / antenna system must meet safety requirements concerning grounding and potential equalization.

Service works
May be only done by authorized staff. Devices have to be switched off before starting any maintenance or service work.

Thunderstorm
Do not carry out maintenance or repair work on the device due to higher risk of lightning strike.

Caution! Danger of life!
Electrical fuses may only be replaced by authorised specialist persons. For the replacement of electric fuses, only same type and amperage have to be used.

Ambient temperature
Should not be higher than 50 °C.

Termination
Not used receiver and trunk line outputs have to be terminated with 75 Ohm-resistors.

Caution! Laser beam -> risk of accidents due to blinding!
Don't look into the laser beam or at direct reflexes of reflecting or polished surfaces. There is a danger of injury to the eyes.

Recycling
All of our packaging materials (packaging, identification sheet, plastic foil and bag) are fully recyclable.

DIRECTORY

Chapter 1 Product Outline

1.1 Outline

The QAM modulator is a high performance modulator developed according to DVB-C (EN300429) standard. This unit provides a more powerful receiving ability to receive TS coming from encoder, multiplexer, DVB gateway, scrambler and etc. The QAM modulator supports 2 IP (MPTS/SPTS) input and 2 carriers output.

Simultaneously, the modulator disposes the TS with RS encoding, convolution interlacing and QAM modulating. For the field scope, it can be used for Broadcasting, Interactive Services, News Gathering and other Broadband satellite applications.

1.2 Features

- **Fully complying with EN300 429/ITU-T J.83A/B/C (DVB-C), GB/T170 standard**

- **Five constellation modes: 16QAM, 32QAM, 64QAM, 128QAM and 256QAM**

- **2 channel IP input (MPTS/SPTS) over UDP**

- **Huge buffer memory for the burst code stream**

- **Intelligence null packet deleting, automatically TS filling and PCR accurate adjusting**

- **VCT (Virtual Channel Table) support**

- **Support PID filtering, re-mapping and PSI/SI update synchronously.**

- **Effective inputting real-time bit rate monitoring**

- **2 carriers output frequency range: 30MHz~1000MHz, 1 kHz step**

- **LCD and keyboard operation, and Web-based NMS management**

1.3 Specifications

Input	2 channel IP (MPTS/SPTS) input over UDP (Unicast/Multicast) (100M Port)		
Re-multiplex	PID re-mapping		
	PCR accurate adjusting		
	Automatic generating PSI/SI table		
Modulation	QAM Channel	2	
	Standard	EN300 429/ITU-T J.83A/B/C, GB/T170	
	Symbol Rate	5.0~9.0Msps，1ksps stepping	
		J.83A	J.83B	J.83C
	Constellation	16/32/64/128/256 QAM	64/256 QAM	64/256 QAM
	FEC	RS (204, 188)	
RF Output	Connector	F Type, 75Ω impedance	
	RF Range	30~1000MHz，1kHz Stepping	
	Output Attenuation	-30dBm~-10dBm, 0.5dB Stepping	
System	LCD/Keyboard operating and web-based NMS support		
	Ethernet software upgrading		
General	Dimension(W*D*H)	482mm×300mm×44mm	
	Weight	2.3kg	
	Temperature	0~45℃(Operation)；-20~80℃(Storage)	
	Power	AC 100~240V±10%, 50/60Hz	
	Consumption	22W	

1.4 Principle Chart
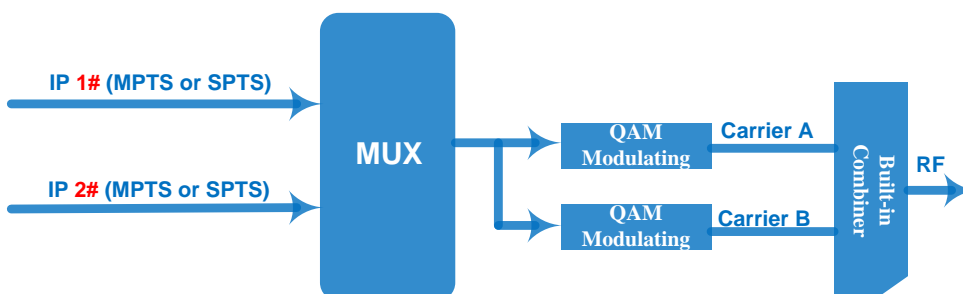
1.5 Appearance and description

Front Panel Illustration:

1	LCD Display
2	Indicators Area
3	Up/Down/Left/Right Buttons
4	Enter Key
5	Menu Key
6	Lock Key

Rear Panel Illustration

1	NMS Ethernet Port (10-100Mbps)
2	IP input Interface
3	ASI input Interface (not installed)
4	RF output
5	Power switch/Fuse/Socket
6	Grounding Wire

Chapter 2 Installation Guide

2.1 Acquisition Check / Packing List

When user opens the package of the device, it is necessary to check items according to packing list.

Normally it should include the following items:

- QAM Modulator   1pcs
- User's Manual   1pcs
- Power Cord   1pcs

If any item is missing or mismatching with the list above, please contact our company.

2.2 Installation Preparation

When users install device, please follow the below steps. The details of installation will be described at the rest part of this chapter. Users can also refer rear panel chart during the installation.

The main content of this chapter including:

- Checking the possible device missing or damage during the transportation
- Preparing relevant environment for installation
- Installing modulator
- Connecting signal cables
- Connecting communication port (if it is necessary)

2.2.1 Device's Installation Flow Chart Illustrated as following：
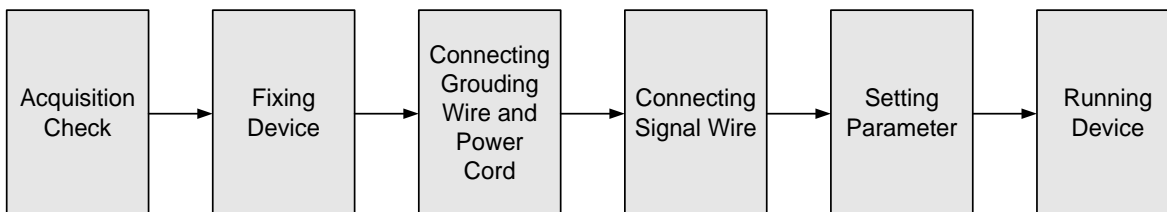
2.2.2 Environment Requirement

Item	Requirement
Machine Hall Space	When user installs machine frame array in a machine hall, the distance between 2 rows of machine frames should be 1.2~1.5m and the distance against wall should be no less than 0.8m.
Machine Hall Floor	Electric Isolation, Dust Free Volume resistivity of ground anti-static material: $1X10^7 \sim 1X10^{10}\Omega$，Grounding current limiting resistance: 1M (Floor bearing should be greater than 450Kg/m²)
Environment Temperature	5~40℃(sustainable)，0~45℃(short time)，installing air-conditioning is recommended
Relative Humidity	20%~80% sustainable 10%~90% short time
Pressure	86~105KPa
Door & Window	Installing rubber strip for sealing door-gaps and dual level glasses for window
Wall	It can be covered with wallpaper, or brightness less paint.
Fire Protection	Fire alarm system and extinguisher
Power	Requiring device power, air-conditioning power and lighting power are independent to each other. Device power requires AC power 100-240V 50-60Hz. Please carefully check before running.

2.2.3 Grounding Requirement
- All function modules' good grounding is the basis of reliability and stability of devices. Also, they are the most important guarantee of lightning arresting and interference rejection. Therefore, the system must follow this rule.
- Coaxial cables outer conductor and isolation layer should keep proper electric conducting with the metal housing of device.
- Grounding conductor must adopt copper conductor in order to reduce high frequency impedance, and the grounding wire must be as thick and short as possible.
- Users should make sure the 2 ends of grounding wire well electric conducted and be antirust.
- It is prohibited to use any other device as part of grounding electric circuit
- The area of the conduction between grounding wire and device's frame should be no less than 25mm^2.

2.2.4 Frame Grounding
All the machine frames should be connected with protective copper strip. The grounding wire should be as short as possible and avoid circling. The area of the conduction between grounding wire and grounding strip should be no less than 25mm^2.

2.2.5 Device Grounding
Connecting the device's grounding rod to frame's grounding pole with copper wire.

2.3 Wire's Connection

The grounding wire conductive screw is located at the right end of rear panel, and the power switch, fuse, power supply socket is just beside ,whose order goes like this, power switch is on the left ,power supply socket is on the right and the fuse is just between them.

● Connecting Power Cord
  User can insert one end into power supply socket, while insert the other end to AC power.
● Connecting Grounding Wire
  When the device solely connects to protective ground, it should adopt independent way, say, share the same ground with other devices. When the device adopts united way, the grounding resistance should be smaller than 1Ω.

☞**Caution:**

Before connecting power cord to QAM Modulator, user should set the power switch to "OFF".

2.4 Signal Cable Connection

The signal connections include the connection of input signal cable and the connection of output signal cable. The details are as follows:

2.4.1 QAM Modulator Cables Illustration:

● **IP Input Cable Illustration:**

● **RF Output Cable Illustration:**

Chapter 3 Operation

The front panel of QAM Modulator is the user-operating interface and the equipment can be conveniently operated and managed by user according to the procedures displayed on the LCD:

Keyboard Function Description:

MENU: Cancel current entered value, resume previous setting; Return to previous menu.
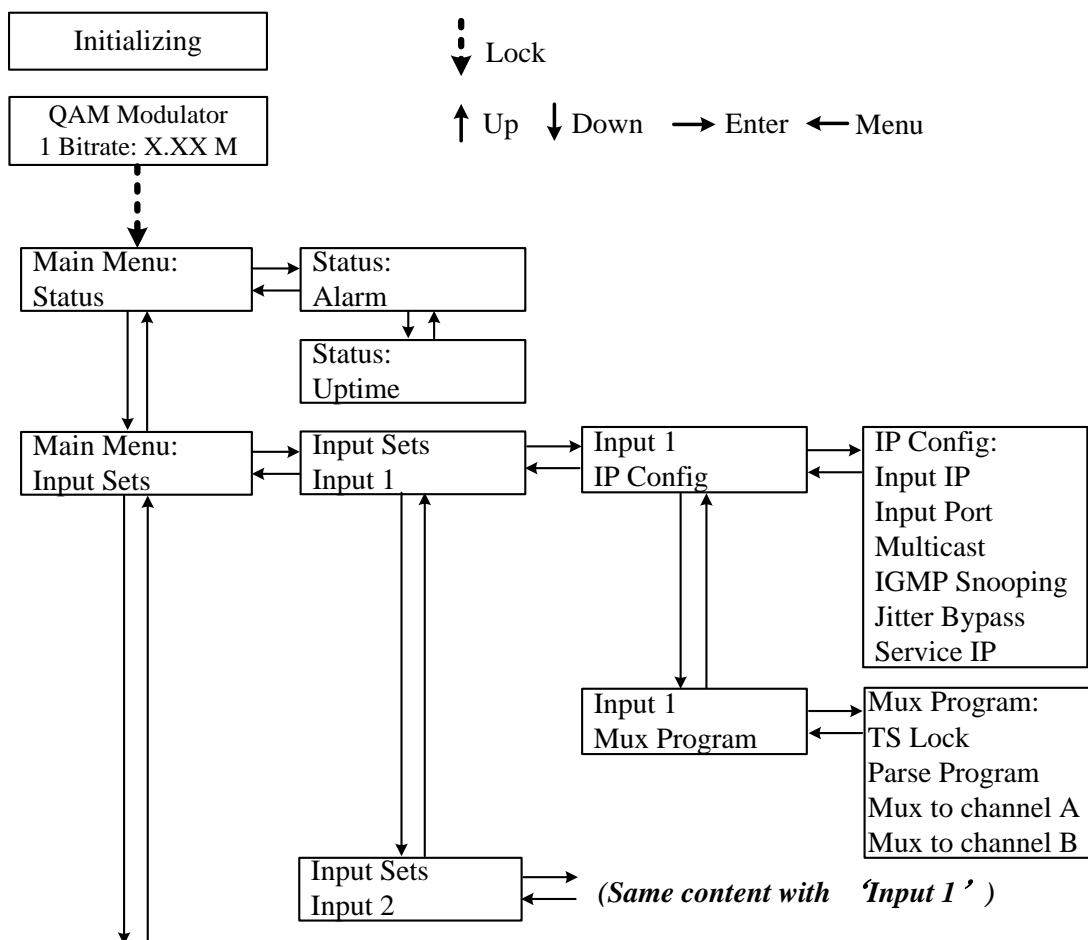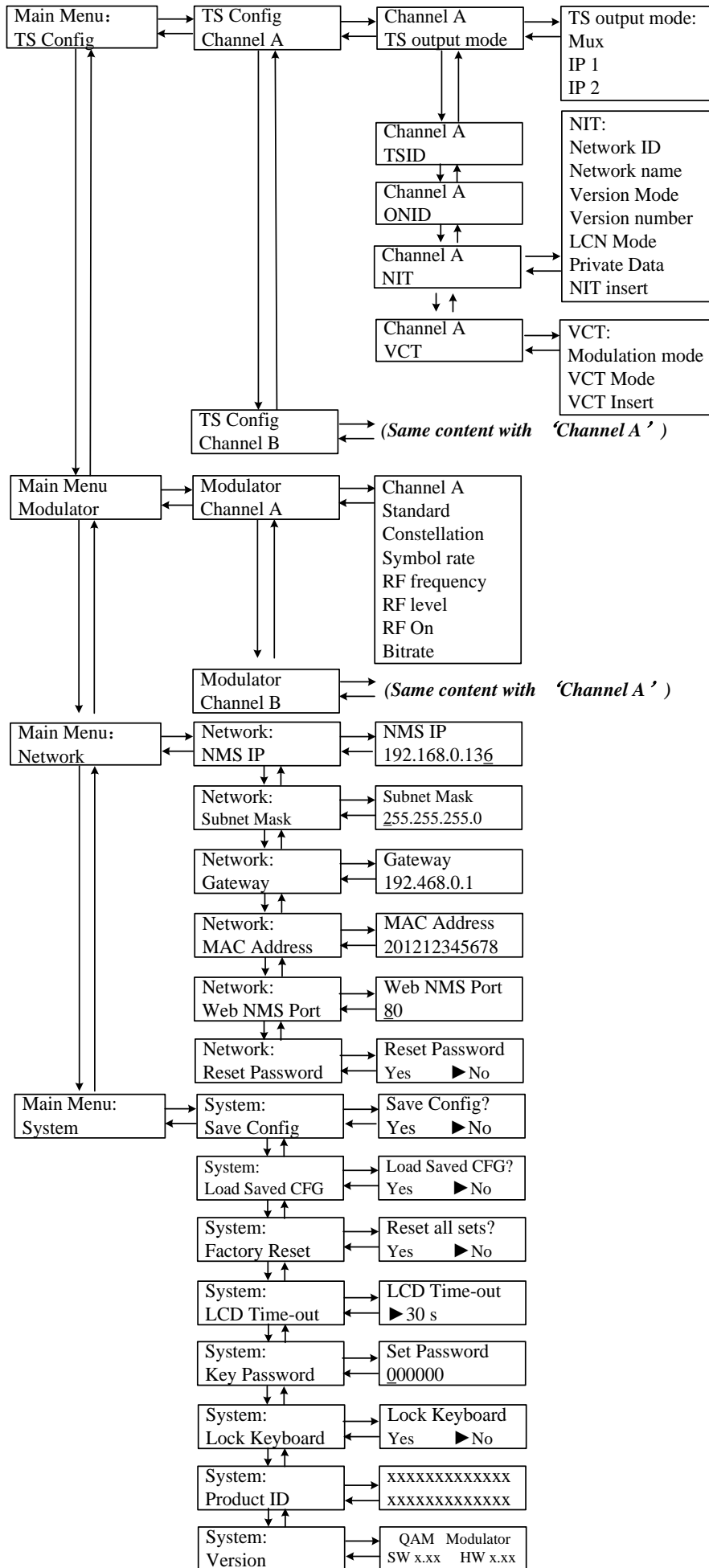**ENTER:** Activate the parameters which need modifications, or confirm the change after modification.
LEFT/RIGHT: Choose and set the parameters.
UP/DOWN: Modify activated parameter or paging up/down when parameter is inactivated.
LOCK: Lock the screen/cancel the lock state. After pressing the lock key, the LCD will display the current configuring state.

3.1 LCD Menu Tree

```
Main Menu：          TS Config          Channel A            TS output mode:
TS Config     ──────▶ Channel A  ──────▶ TS output mode ──────▶ Mux
              ◀──────            ◀──────                 ◀──────  IP 1
                                                                 IP 2

                                         Channel A
                                         TSID                    NIT:
                                                                 Network ID
                                         Channel A               Network name
                                         ONID                    Version Mode
                                                                 Version number
                                         Channel A       ──────▶ LCN Mode
                                         NIT             ◀──────  Private Data
                                                                 NIT insert

                                         Channel A               VCT:
                                         VCT             ──────▶ Modulation mode
                                                         ◀──────  VCT Mode
                                                                 VCT Insert

                      TS Config
                      Channel B  ──────▶ (Same content with 'Channel A')
                                 ◀──────

Main Menu            Modulator            Channel A
Modulator     ──────▶ Channel A  ──────▶ Standard
              ◀──────            ◀──────  Constellation
                                         Symbol rate
                                         RF frequency
                                         RF level
                                         RF On
                                         Bitrate

                      Modulator
                      Channel B  ──────▶ (Same content with 'Channel A')
                                 ◀──────

Main Menu：          Network:             NMS IP
Network       ──────▶ NMS IP     ──────▶ 192.168.0.136
              ◀──────            ◀──────

                      Network:             Subnet Mask
                      Subnet Mask ──────▶ 255.255.255.0
                                  ◀──────

                      Network:             Gateway
                      Gateway     ──────▶ 192.468.0.1
                                  ◀──────

                      Network:             MAC Address
                      MAC Address ──────▶ 201212345678
                                  ◀──────

                      Network:             Web NMS Port
                      Web NMS Port ──────▶ 80
                                   ◀──────

                      Network:             Reset Password
                      Reset Password ──────▶ Yes      ▶No
                                     ◀──────

Main Menu:           System:              Save Config?
System        ──────▶ Save Config ──────▶ Yes      ▶No
              ◀──────             ◀──────

                      System:              Load Saved CFG?
                      Load Saved CFG ──────▶ Yes      ▶No
                                     ◀──────

                      System:              Reset all sets?
                      Factory Reset ──────▶ Yes      ▶No
                                    ◀──────

                      System:              LCD Time-out
                      LCD Time-out ──────▶ ▶30 s
                                   ◀──────

                      System:              Set Password
                      Key Password ──────▶ 000000
                                   ◀──────

                      System:              Lock Keyboard
                      Lock Keyboard ──────▶ Yes      ▶No
                                    ◀──────

                      System:              xxxxxxxxxxxxx
                      Product ID  ──────▶ xxxxxxxxxxxxx
                                  ◀──────

                      System:              QAM  Modulator
                      Version     ──────▶ SW x.xx    HW x.xx
                                  ◀──────
```

3.2 General Setting

Switch on the device and after a few seconds' initialization, it presents start-up pictures as below:

| Start up… | ⟹ | Start OK… | ⟹ | QAM Modulator |
| | | | | 1 Bitrate: xxx.xxx M |
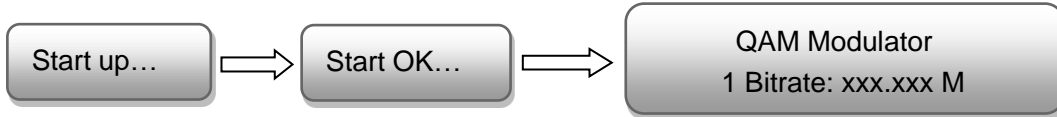
- **QAM Modulator**: indicate the modulation standard of this device.
- **1/2**: '1' and '2' shift alternately indicates the 2 carriers.
- **X.XX Mbps**: indicate the bit rate of each channel respectively.

Press LOCK key on the front panel to enter the main menu. The LCD will display the following pages where user can configure the parameters for the device:

```
Main menu
▶ Status
  Input Sets
  TS Config
  Modulator
  Network
  System
```
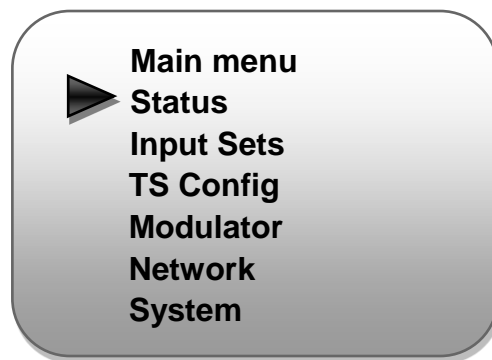
User could do all the settings according to the 6 directions displayed on the LCD. User can press UP/DOWN buttons to specify menu item, and then press ENTER to enter the submenus as below:

3.2.1 Status

Alarm Status: The alarm indicator will turn on if there is no A/V signals inputting or outputting bit rate overflows. User then can enter this menu to check the error type. Otherwise it shows the 'system is normal'.

```
Alarm
System is normal
```
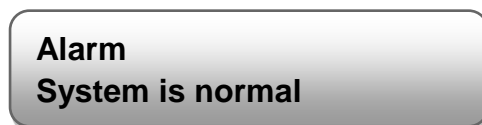
Uptime: It displays the working time duration of the device. It times upon power on.

```
Uptime
1 Day(s) 03:30:02
```
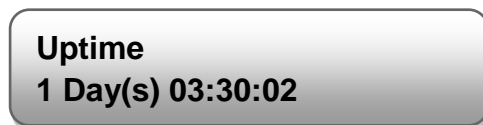
3.2.2 Input Sets

The QAM modulator supports 2 IP stream input. Users can enter 'Input Sets' to configure the IP parameters for the 2 IP inputs respectively. It displays as below:

```
Input Sets
▶ 1: IP
  2: IP
```
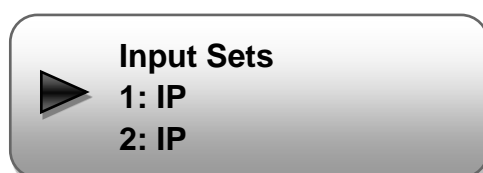
Press ENTER key to enter 1: IP (or 2: IP), it displays as below:

```
        1: IP
   ▶    IP Config
        Mux Program
```

IP Config: Users can enter this menu to set IP address, port number and etc to receive signal.

```
        IP Config
   ▶    Input IP
        Input Port
        Multicast
        IGMP Snooping  ──────────▶  Off, V2 and V3 Optional
        Jitter Bypass
        Service IP
```
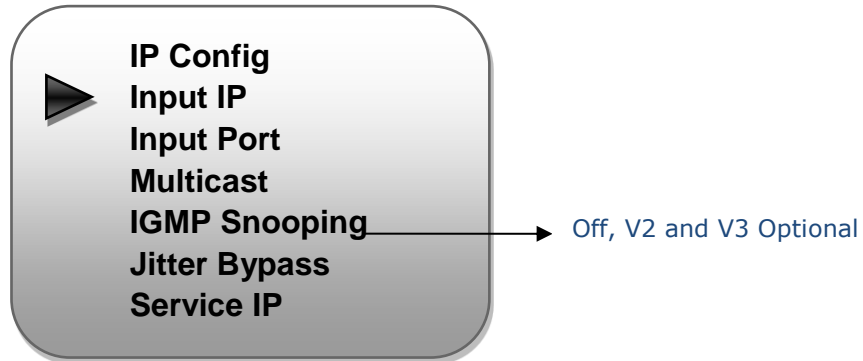
Mux Program: Users can parse the IP input program list and select programs to mux out in this menu.

```
        Mux Program
   ▶    TS Lock ──────────┐
        Parse Program ────┤
        Mux to Channel A  │
        Mux to Channel B  │
```

```
   TS Locked
   Bitrate: 4.040 Mbps
```
For reading the input bitrate of input 1 (or 2)

```
   Searching Program
   Get 4 Programs
```
For reading the number of programs from input 1 (or 2)
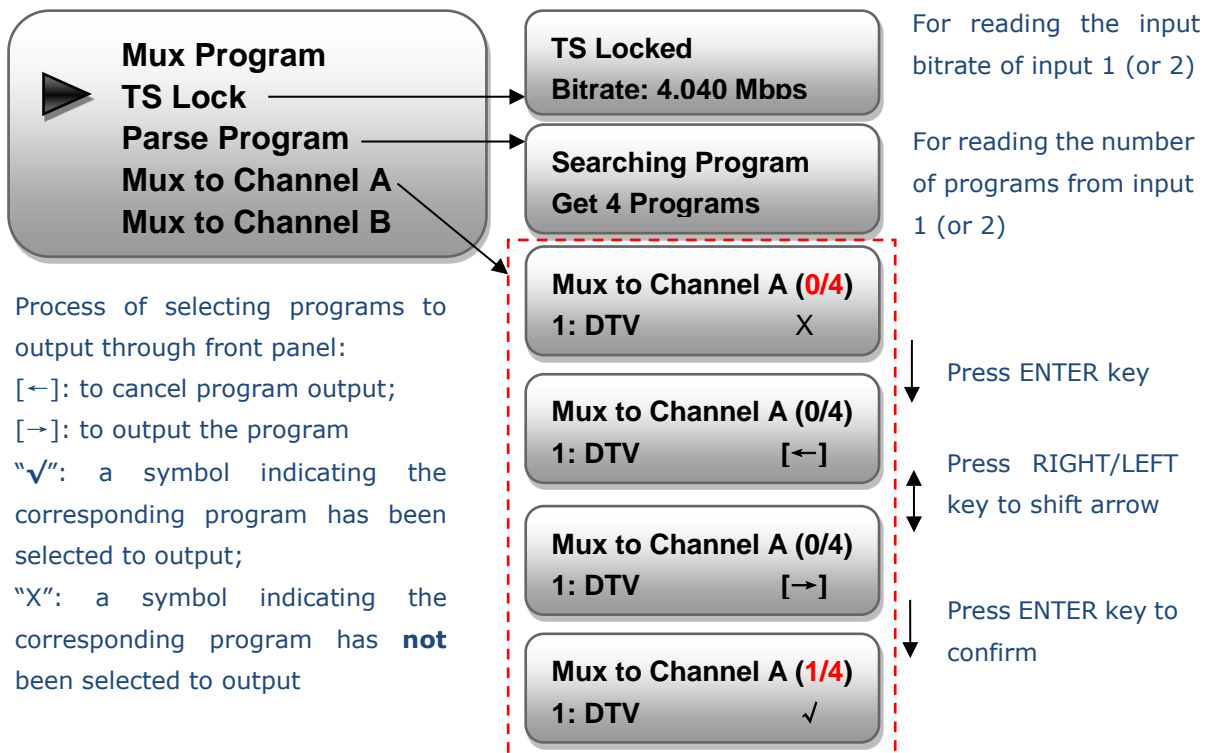
Process of selecting programs to output through front panel:

[←]: to cancel program output;

[→]: to output the program

"√": a symbol indicating the corresponding program has been selected to output;

"X": a symbol indicating the corresponding program has **not** been selected to output

```
   Mux to Channel A (0/4)
   1: DTV              X
```
Press ENTER key

```
   Mux to Channel A (0/4)
   1: DTV           [←]
```
Press RIGHT/LEFT key to shift arrow

```
   Mux to Channel A (0/4)
   1: DTV           [→]
```
Press ENTER key to confirm

```
   Mux to Channel A (1/4)
   1: DTV              √
```

'Channel A' represents carrier output A. '1/4' represents there are all 4 programs in the list and 1 program has been selected to mux out through carrier A.

'Channel B' share the same explanation with 'Channel A'.

Multiplexing operation can only take effect on condition that the "TS output mode" is set to "Mux" under 'TS Config'.

3.2.3 TS Config

The QAM modulator supports 2 carrier outputs. Users can press ENTER key to enter 'TS Config' to configure the TS output parameters respectively for the 2 channels.

```
TS Config
Channel A
▶ Channel B
```

Press ENTER key to enter 1 Channel A (or Channel B):

```
    Channel A
▶   TS output mode
    TSID
    ONID
    NIT
    VCT
```
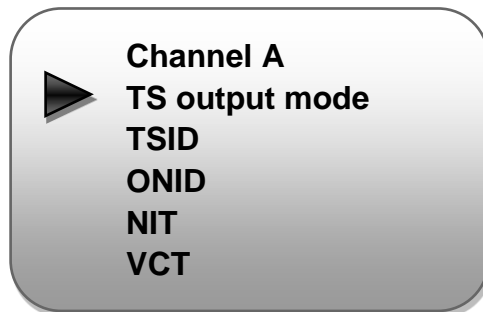
TS output mode: Enter this menu to select a TS output mode.

```
    TS output mode
▶   Mux              Under this mode, users can randomly
                     select programs to mux out.
    IP 1             To passthrough programs from IP 1
                     without mux
    IP 2             To passthrough programs from IP 2
                     without mux
```
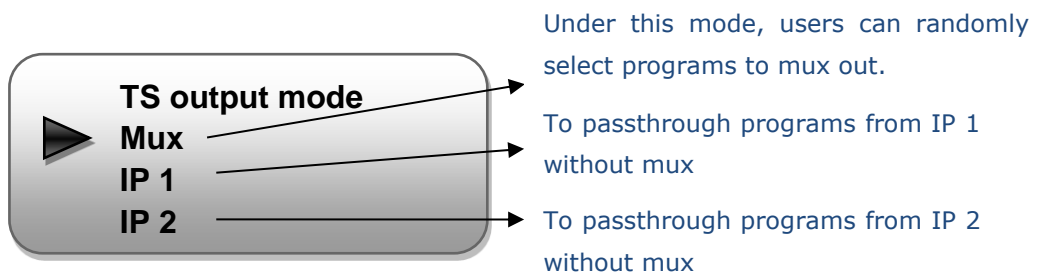
TS ID: Users can set TS ID in this menu.

```
TS ID
00001
```

ON ID: Users can set ON ID (original network ID) in this menu.

```
ON ID
00001
```

NIT: User can set NIT parameter and decide whether to insert NIT in this submenu.

▶ NIT
Network ID
Network name
Version Mode
Version number
LCN Mode
Private date
NIT Insert
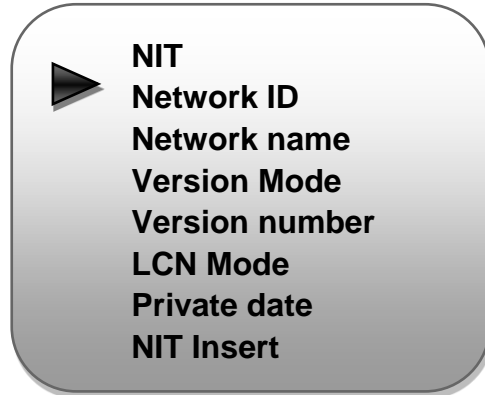
VCT: Users can set Modulation mode and choose to insert VCT in its submenus.

VCT
▶ Modulation mode ——————→ Set a value ranging 0-255
VCT Mode
VCT Insert ——————————→ Choose 'Yes' or 'No'
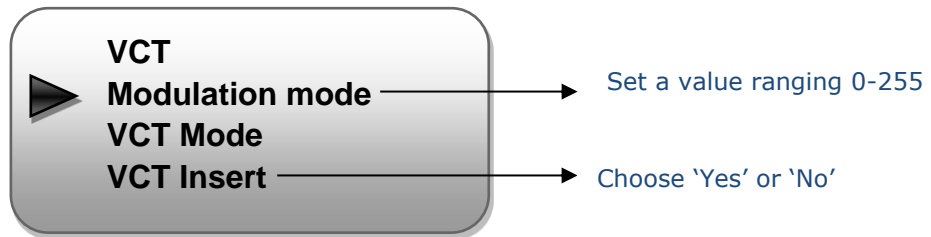
3.2.4 Modulator

The QAM modulator supports 2 adjacent frequency carrier outputs. Users can press ENTER key to enter 'Modulator' to configure the 2 carrier outputs respectively.

Modulator
▶ Channel A
Channel B

Press ENTER key to enter 1 Channel A (or Channel B):

▶ Channel A
Standard
Constellation
Symbol rate
RF Frequency
RF Level
RF On
Bitrate
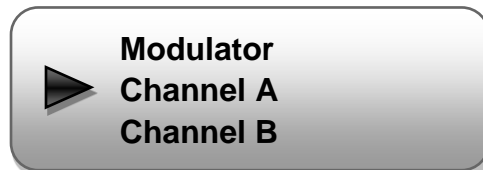
➢ **Standard**
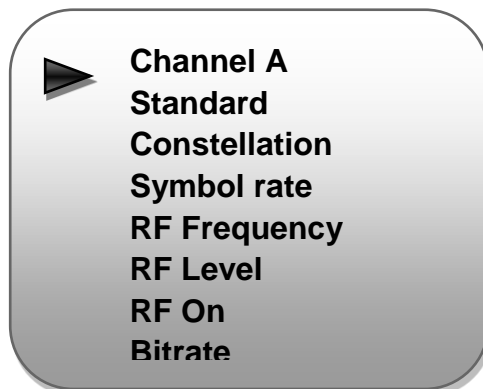
Standard
▶ J.83A (DVB-C)
J.83B
J.83C
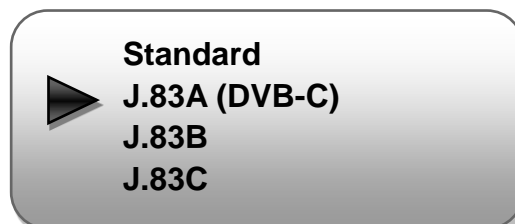
For modulator with DVB-C standard, there are 3 modulating standards to select: J.83A (DVB-C) J.83B and J.83C. User can select anyone as needed by switching RIGHT/LEFT keys and press ENTER key to save the selection.

➢ **Constellation**

```
         Constellation
   ▶     16QAM
```

Three different constellations: J.83A (DVB-C), J.83B, J.83C will show on the LCD window when Constellation been entered.

J.83A (DVB-C) contains 16QAM, 32QAM, 64QAM, 128QAM, and 256QAM;

J.83B contains 64QAM, 256QAM;

J.83C contains 64QAM, 256QAM.

Setting method just the same, when the display shows them, user just need swift LEFT and RIGHT key to choose and repressing "ENTER" for confirm.

➢ **Symbol Rate**

The symbol rate ranges 5.0-9.0Msps in 1ksps stepping.

```
         Symbol rate
         4.040 Mbps
```
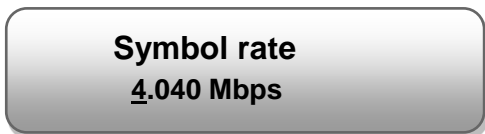
➢ **RF Frequency**

The RF output frequency range is from 30 to 1000MHz with 1Ksps stepping. After entering the RF frequency setting submenu, users the can press LEFT, RIGHT, UP, and DOWN buttons to adjust the frequency and confirm by press ENTER button.

```
         Frequency
         860.000 MHz
```
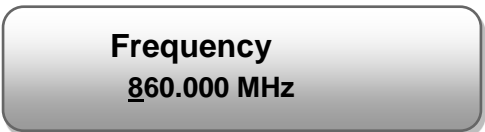
➢ **RF level**

The RF attenuation range is from -30dBm~-10dBm, with 0.5dB Stepping. After entering this setting submenu, user can shift UP/DOWN/LEFT/RIGHT key to set the output level and press ENTER to confirm.

```
         RF level
         -20.0 dBm
```
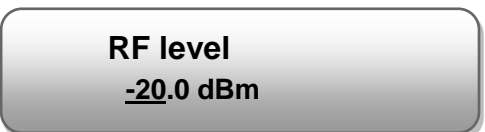
➢ **RF On**

This interface is to decide whether to enable the RF (carrier A/B) output or not.
OFF: to disable programs to output through carrier A/B.
ON: to enable programs to output through carrier A.

> **RF On**
> ▶ Off   On

➢ **Bitrate**

To read the current actual bitrate and the maximum bitrate the carrier supports

> **Bitrate(Act/Max)**
> **XX.XXM/ XX.XXM**

3.2.5 Network

Users can set network parameters in this menu. Enter 'Network' submenus to separately set corresponding parameters.

> **Network**
> ▶ **NMS IP**
> **Subnet Mask**
> **Gateway**
> **MAC Address**
> **Web NMS Port**
> **Reset Password**

> **NMS IP**
> 192.168.000.136   → The IP address for connecting the device to PC

> **Subnet Mask**
> 255.255.255.000

> **Gateway**
> 192.168.000.001

> **MAC Address**
> 201012345678

> **Web NMS Port**
> 00080

> **Reset Password?**
> Yes ▷   NO
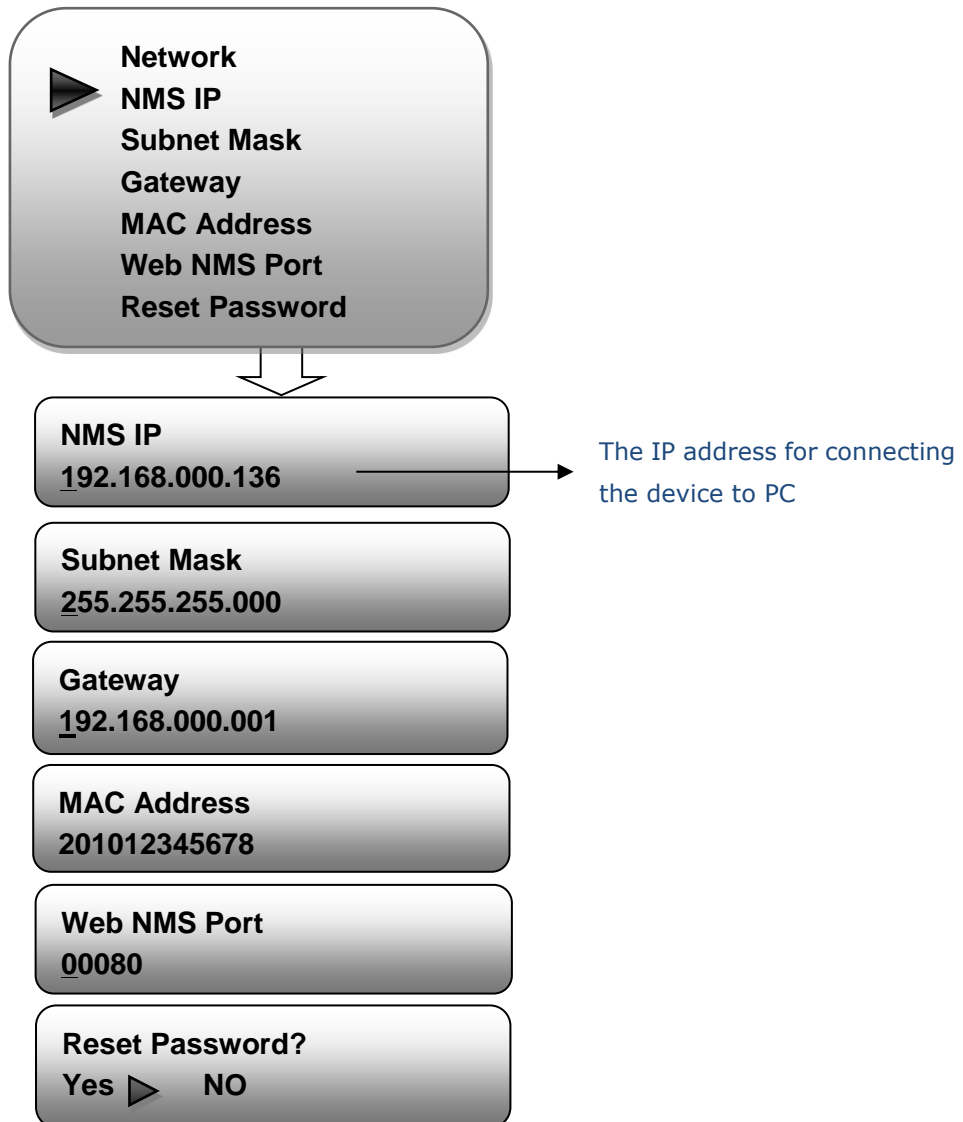
3.2.6 System

Users can set the system parameters in this menu. Enter 'System' submenus to separately set corresponding parameters.

```
        System
      ► Save Config
        Load Saved CFG
        Factory Reset
        LCD Time-out
        Key Password
        Lock Keyboard
        Product ID
        Version
```
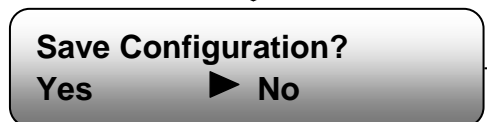
```
Save Configuration?
Yes          ► No
```
→ Choose yes to save settings. and press ENTER to confirm

Choose yes to restore the device into the last saved configuration. ←
```
Load Saved CFG?
Yes          ► No
```

```
Reset All Sets?
Yes          ► No
```
→ Choose yes to restore the device into factory's default configuration.

Press DOWN/UP key to select a time out for the LCD lighting duration (5-120 seconds) ←
```
LCD Time-out
      ►   30 s
```

```
Set Password
000000
```
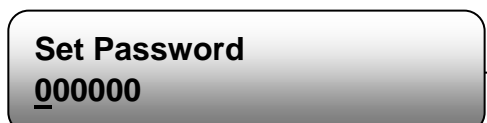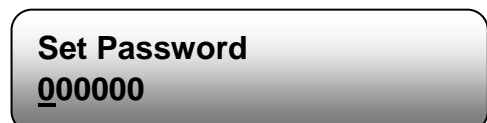
```
Set Password
000000
```
→ To set a 6-digit password for unlocking the keyboard

Choose Yes to lock the keyboard, then the keyboard will be locked and cannot be applicable. It is required to input the password to unlock the key board. This operation is one-off ←
```
Lock Keyboard?
Yes          ► No
```

```
XXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXX
```
→ User can view the serial number of this device. It is read-only and unique
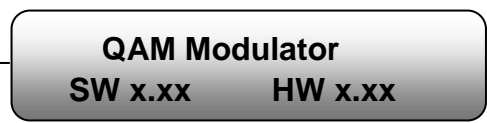
It displays the version information of this device. Encoder Modulator: the name of the device; SW: software version number; HW: hardware version number. ←
```
    QAM Modulator
  SW x.xx       HW x.xx
```

Chapter 4 Web-based NMS Management

In addition to using front buttons to control the device, users can also control and set the configuration with the web Brower in the PC.

4.1 login

The default IP address of this device is 192.168.0.136. (We can modify the IP through the front panel.) Connect the PC (Personal Computer) and the device with net cable, and use ping command to confirm they are on the same network segment.

I.G. the PC IP address is 192.168.99.252, we then change the device IP to 192.168.99.xxx (xxx can be 1 to 254 except 252 to avoid IP conflict).

Use web browser to connect the device with PC by inputting the Encoder & Modulator's IP address in the browser's address bar and press Enter.

It will display the Login interface as Figure-1. Input the Username and Password (Both the default Username and Password are "admin".) and then click "LOGIN" to start the device setting.
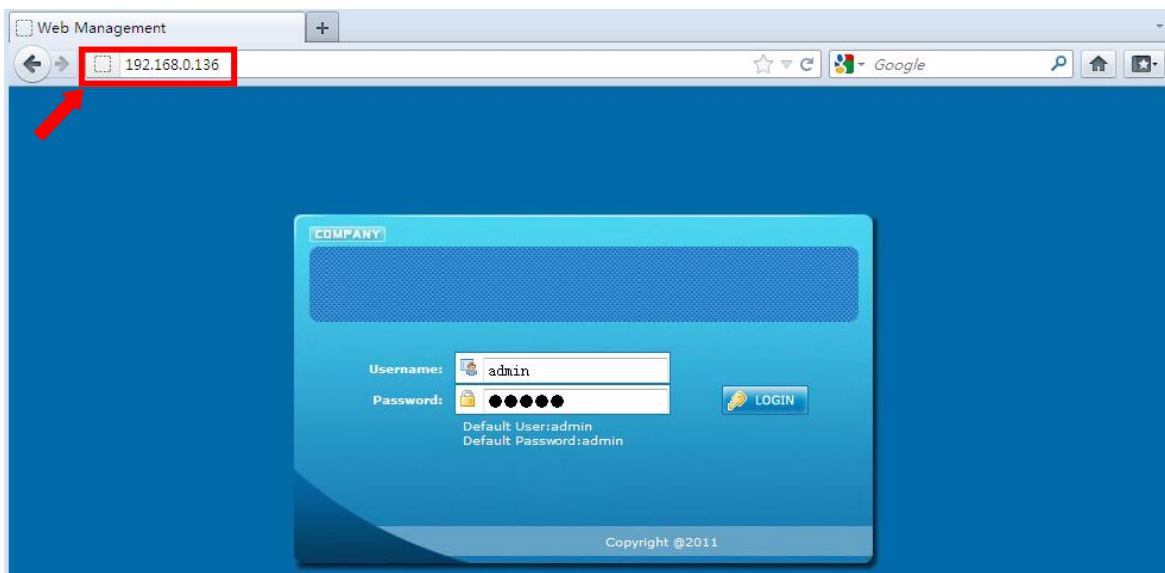
Figure-1

4.2 Operation

Summary:

When we confirm the login, it displays the WELCOME interface as Figure-2 where users can have an overview of the device's system information and working status.

Figure-2

Parameters → Input 1:

From the menu on left side of the webpage, clicking "Input 1", it displays the interface where users can configure the IP 1 input parameters. (Figure-3)
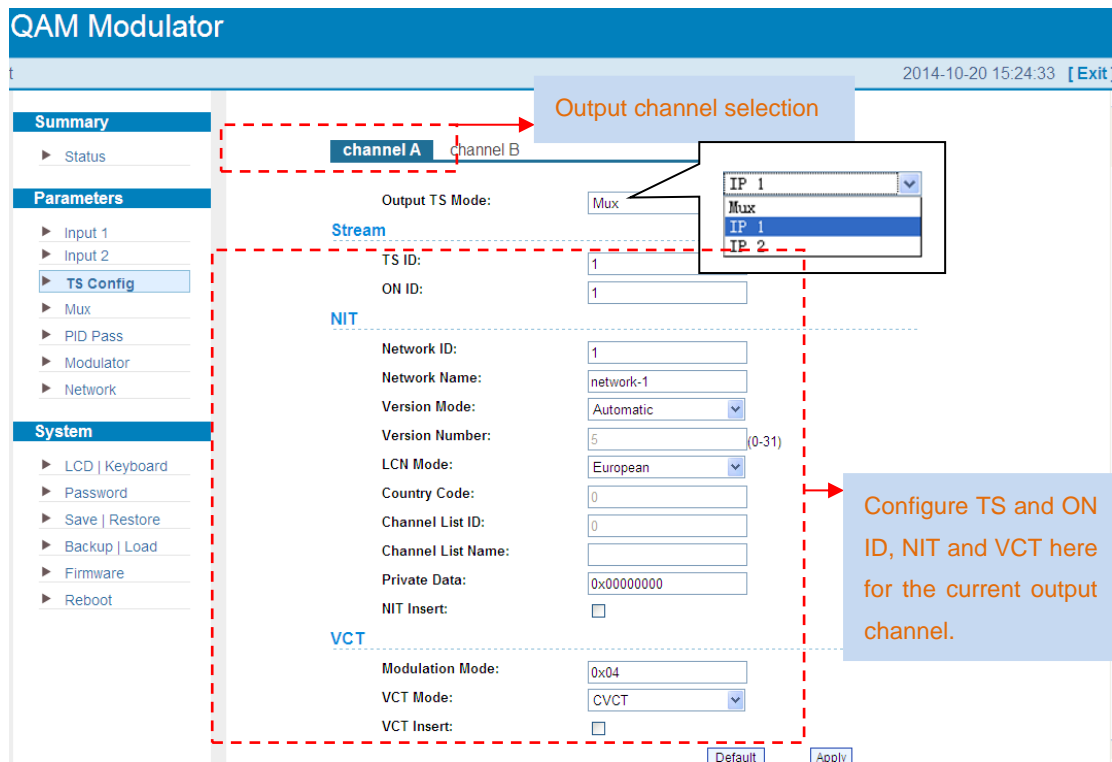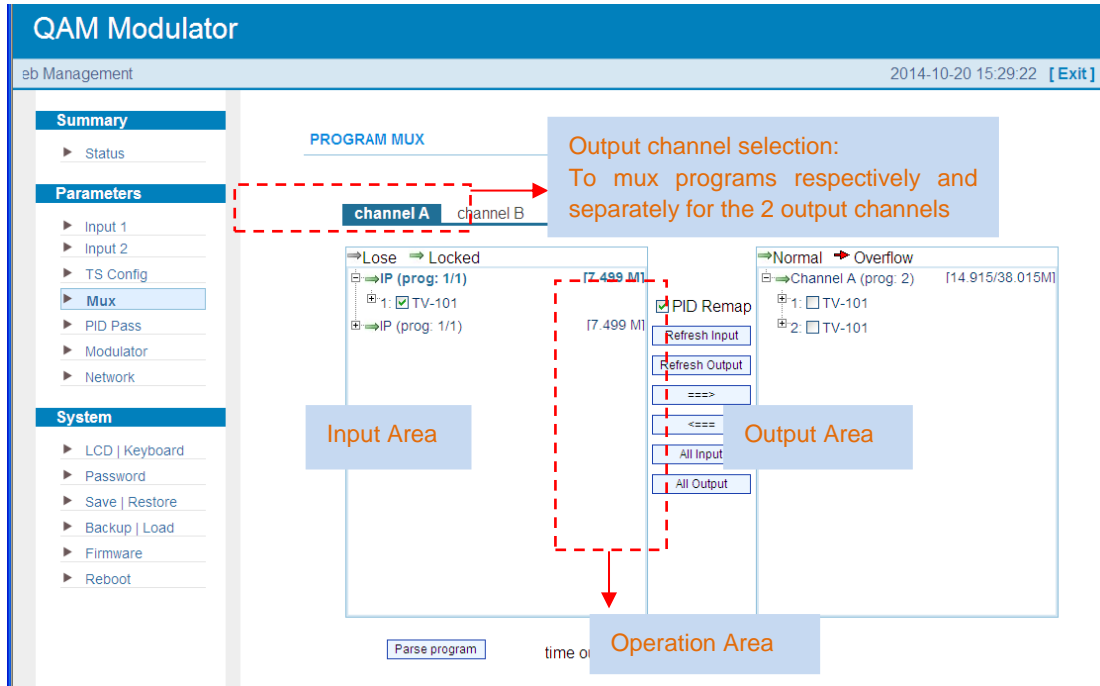

Figure-3

Parameters → Input 2:

Similarly, from the menu on left side of the webpage, clicking "Input 2", it displays the interface where users can configure the IP 2 input parameters.

Parameters → TS Config:

From the menu on left side of the webpage, clicking "TS Config", it displays the interface where users can configure the 2 IP input parameters separately. (Figure-4)

Figure-4

Output TS Mode:

Mux: the input programs (from the 2 IP streams) can be multiplexed out.

IP 1: programs from IP 1 passthrough without multiplexing.
IP 2: programs from IP 2 passthrough without multiplexing.

After finishing the configuration, click [Apply] **to confirm.**

Parameters → Mux:

From the menu on left side of the webpage, clicking "Mux", it displays the interface where users can configure the 2 IP input parameters separately. (Figure-5)

Figure-5

Configure 'Input Area' and 'Output Area' with buttons in 'Operation Area'. Instructions are as below:

☑PID Remap: To enable/disable the PID remapping

Refresh Input To refresh the input program information

Refresh Output To refresh the output program information

===> Select one input program first and click this button to transfer the selected program to the right box to output.

<=== Similarly, user can cancel the multiplexed programs from the right box.

All Input To select all the input programs

All Output To select all the output programs

Parse program To parse programs time out: 60 seconds time limitation of parsing input programs

Program Modification:

The multiplexed program information can be modified by clicking the program in the 'output' area. For example, when clicking 1: ☐ TV-101 , it triggers a dialog box (Figure 6) where users can input new information.
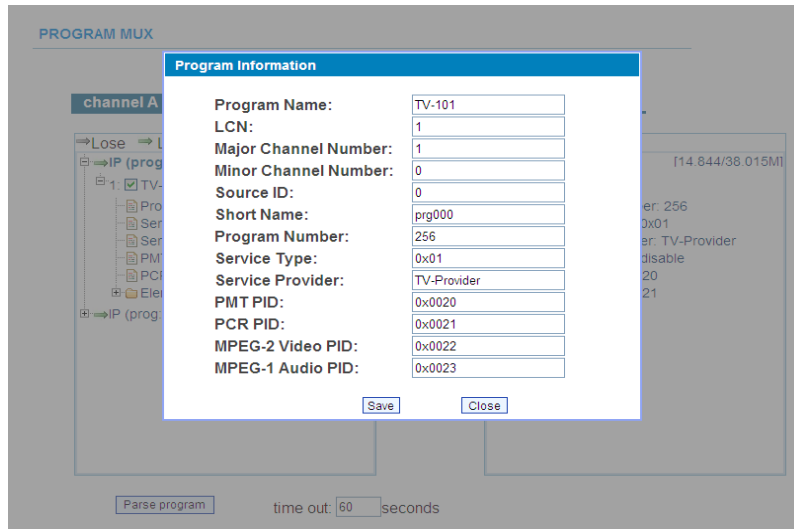
Figure-6

Input new data and click 'Save' button at last to confirm the modification.

Parameters →PID Pass:

From the menu on left side of the webpage, clicking "PID Pass", it displays the interface where to add the PIDs which need pass through. (Figure-7)

In some occasions, there are some PIDs which won't belong to any program, such as EPG, NIT tables and so on which user just wants to pass them through the multiplexing module without changing anything. This is the main purpose of this function.
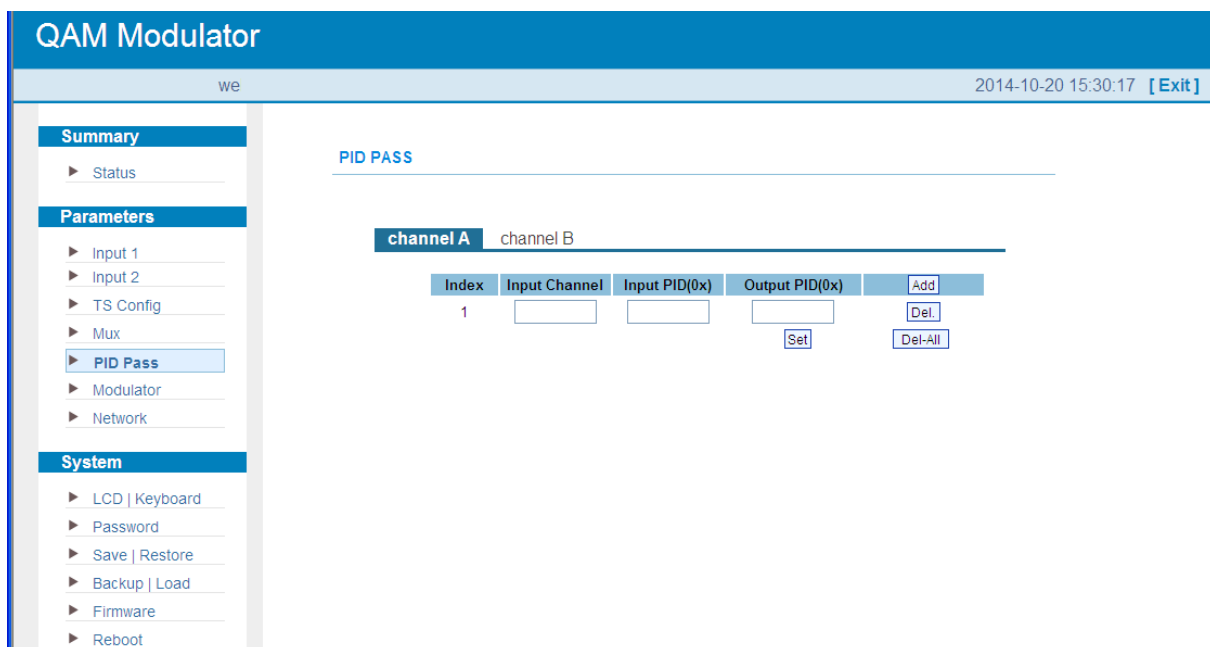
Figure-7

Click "Add" [Add] to add more boxes for filling the Input & Output PIDs, then click "Apply" to confirm.

Parameters → Modulator:

From the menu on left side of the webpage, clicking "Modulator", it will display the Modulator Configuration screen as Figure-8. Here user can set modulation parameters for the 2 carrier output separately.
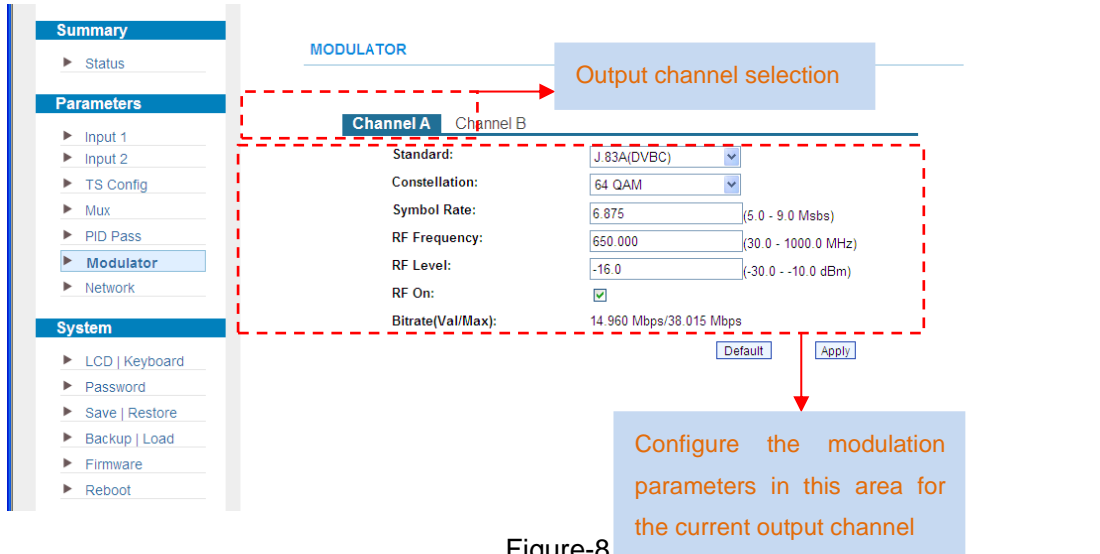
Figure-8

Parameters → Network:

From the menu on left side of the webpage, clicking "Network", it will display the screen as Figure-9 where to configure the network parameters for the device.
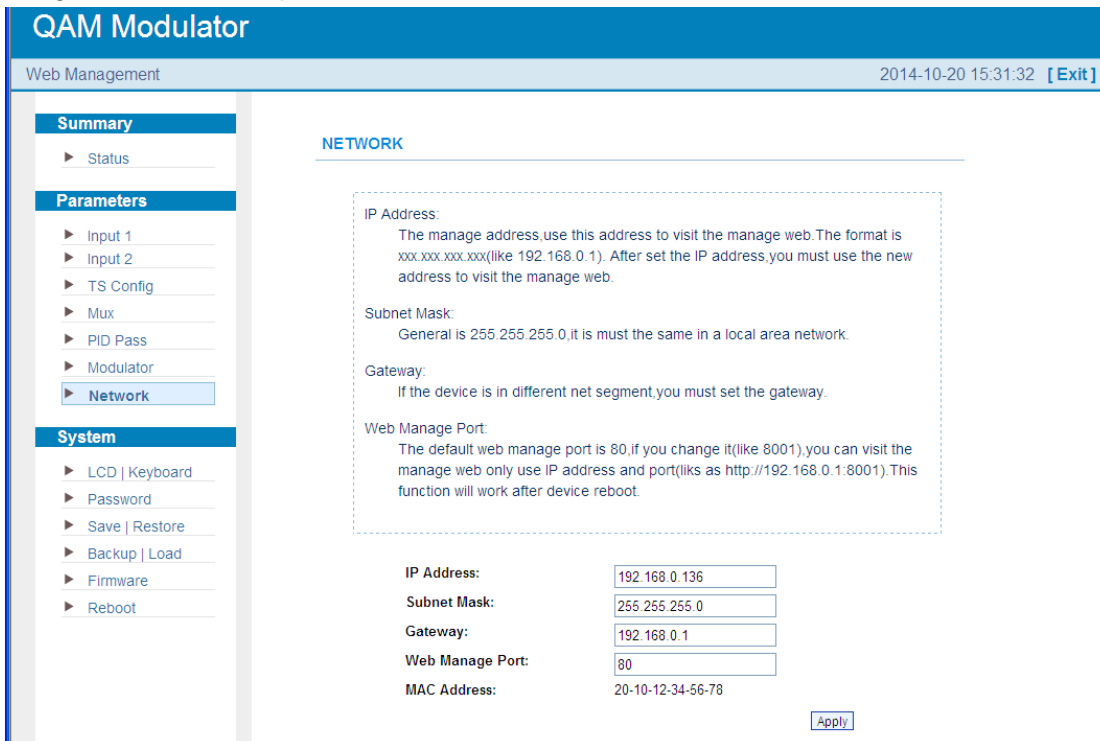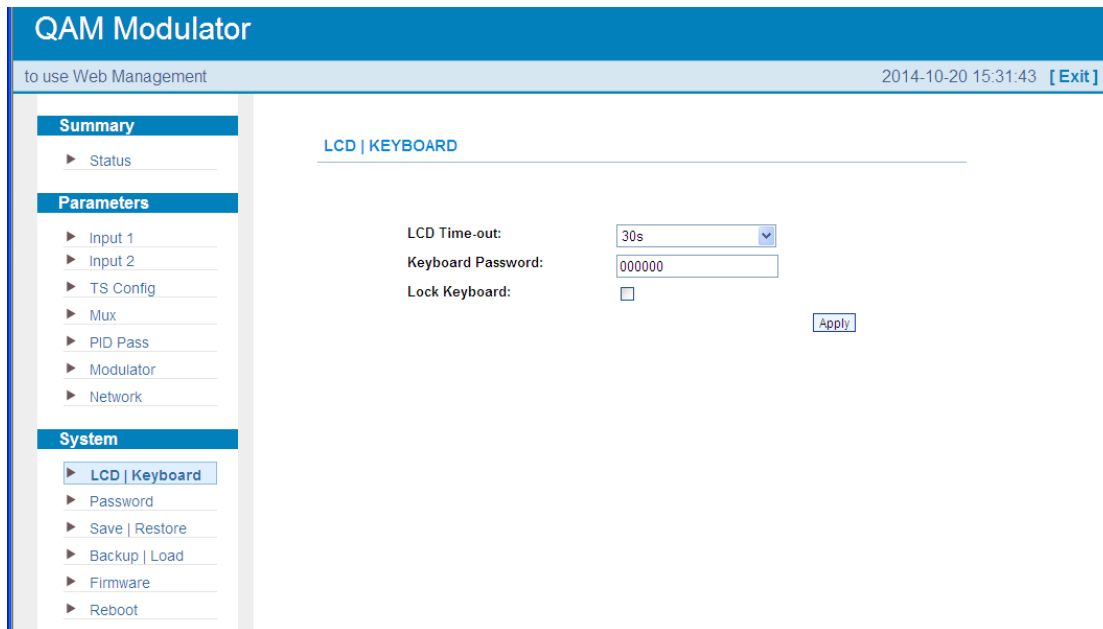

Figure-9

System → LCD/Keyboard:

From the menu on left side of the webpage, clicking "LCD/Keyboard", it will display the screen as Figure-10 where to control the device's front panel.

Figure-10

System → Password:

From the menu on left side of the webpage, clicking "Password", it will display the screen as Figure-11 where to set the login account and password for the web NMS.
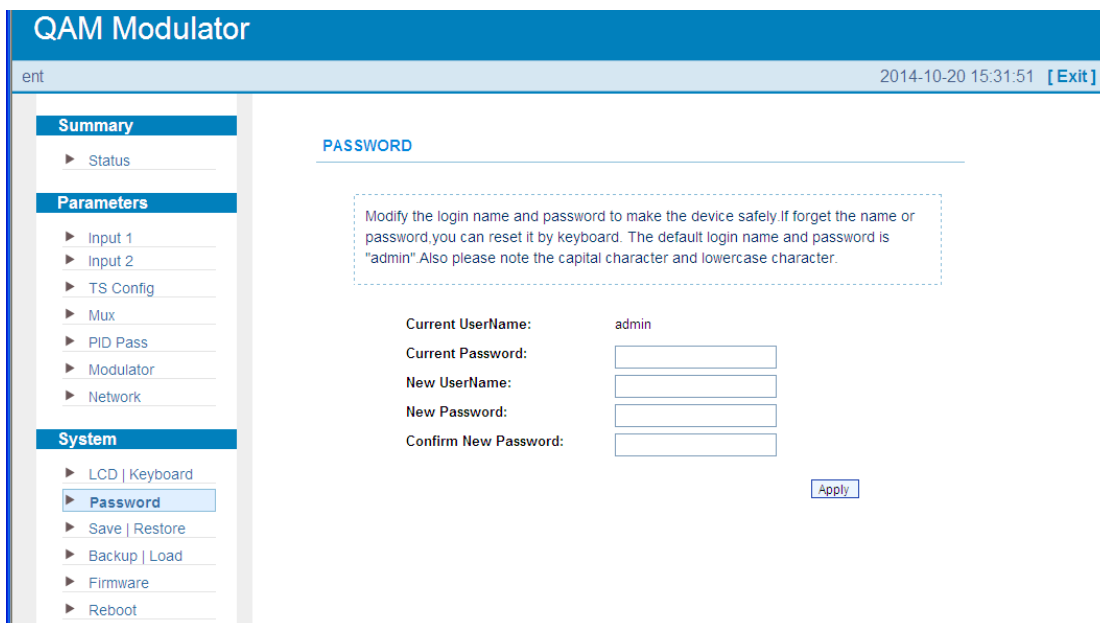

Figure-11

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System → Save/Restore:

From the menu on left side of the webpage, clicking "Save/Restore", it will display the screen as Figure-12 where to save or restore your configurations.
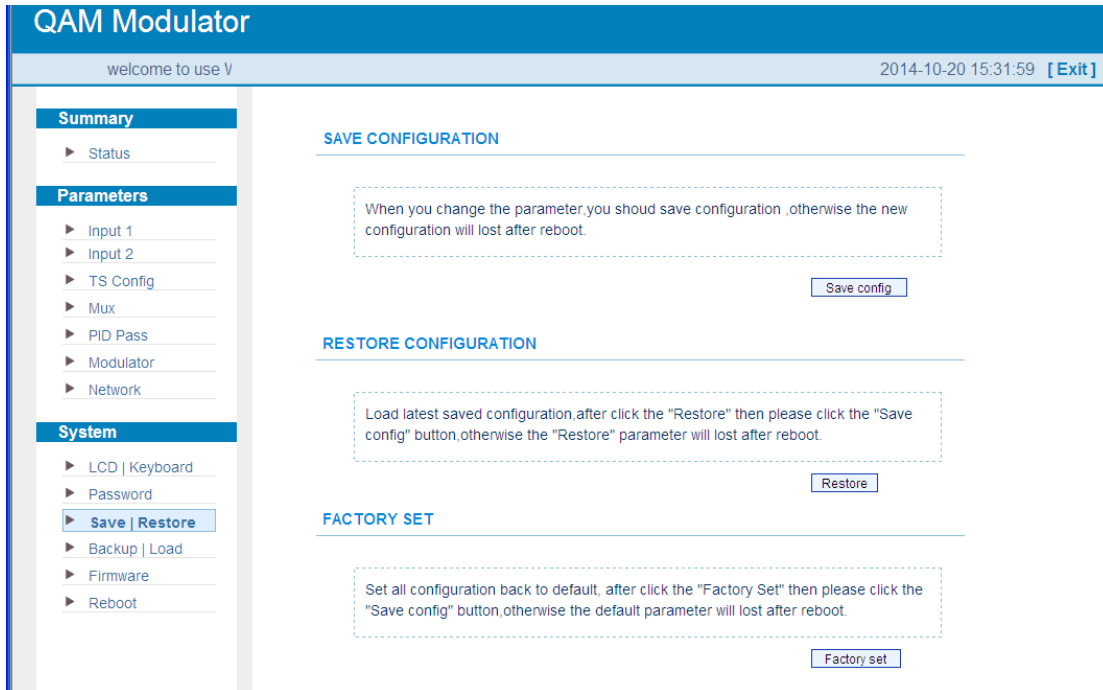

Figure-12

System → Backup/Load:

From the menu on left side of the webpage, clicking "Backup/Load", it will display the screen as Figure-13 where to backup or load your configurations.
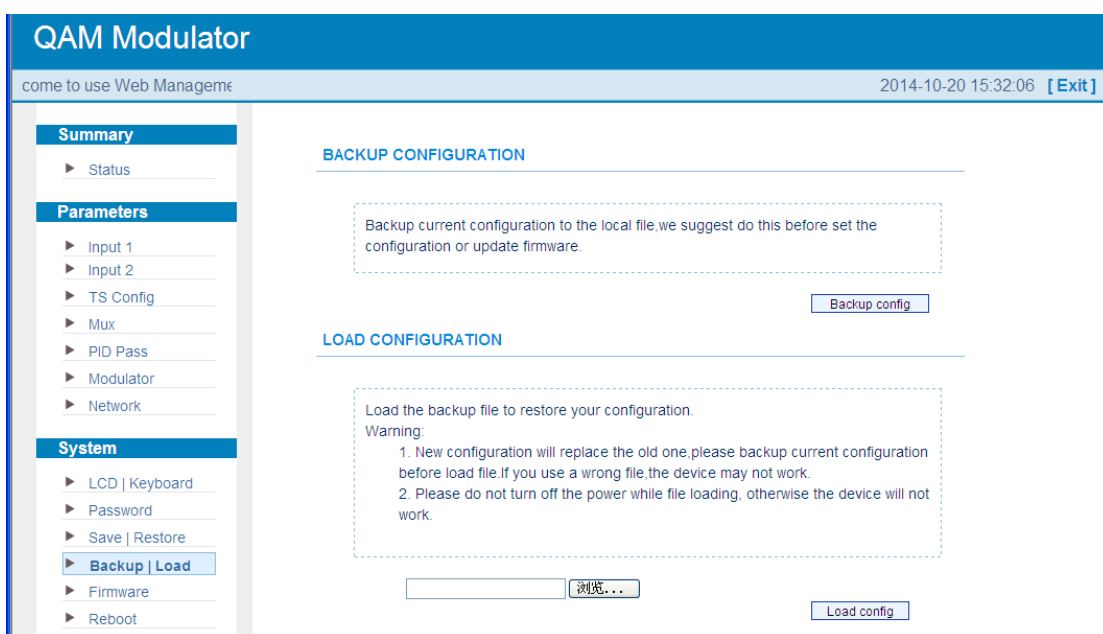

Figure-13

System → Firmware:

From the menu on left side of the webpage, clicking "Firmware", it will display the screen as Figure-14 where to update firmware for the device.
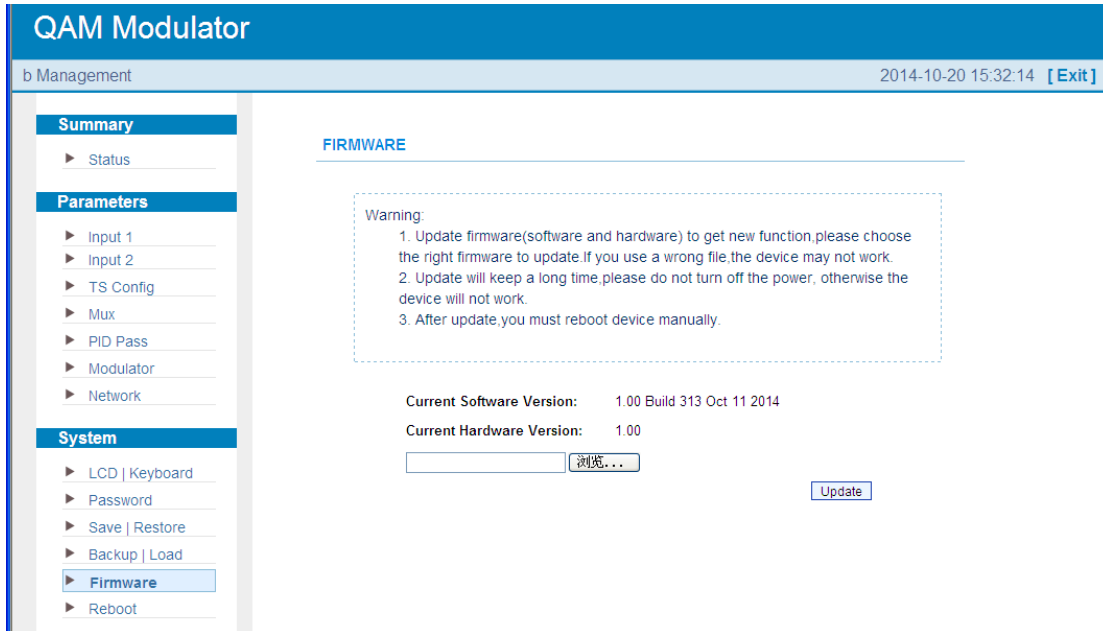

Figure-14

System → Reboot:

From the menu on left side of the webpage, clicking "Reboot", it will display the screen as Figure-15 where to restart the device manually.
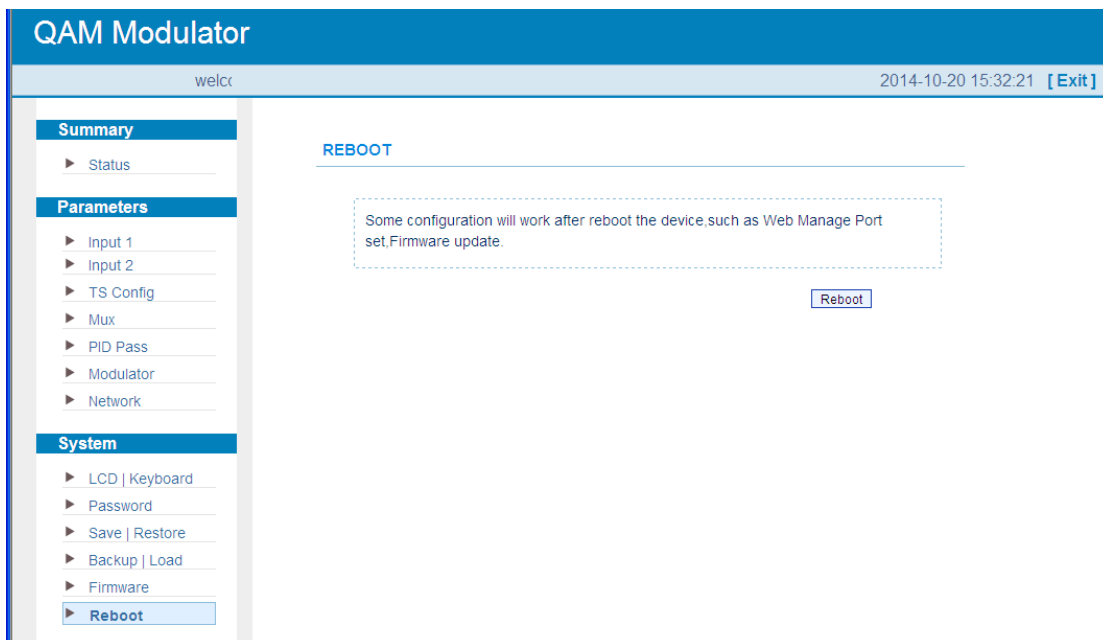

Figure-15

Chapter 5 Troubleshooting

Troubleshooting ISO9001 quality assurance system has been approved by CQC organization. For guarantee the products' quality, reliability and stability. All our products have been passed the testing and inspection before ship out factory. The testing and inspection scheme already covers all the Optical, Electronic and Mechanical criteria which have been published by us. To prevent potential hazard, please strictly follow the operation conditions.

Prevention Measure

Installing the device at the place in which environment temperature between 0 to 45 °C

● Making sure good ventilation for the heat-sink on the rear panel and other heat-sink bores if necessary
● Checking the input AC voltage within the power supply working range and the connection is correct before switching on device
● Checking the RF output level varies within tolerant range if it is necessary
● Checking all signal cables have been properly connected
● Frequently switching on/off device is prohibited; the interval between every switching on/off must greater than 10 seconds.

Conditions need to unplug power cord

● Power cord or socket damaged.
● Any liquid flowed into device.
● Any stuff causes circuit short
● Device in damp environment
● Device was suffered from physical damage
● Longtime idle.
● After switching on and restoring to factory setting, device still cannot work properly.
● Maintenance needed

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Technische Änderungen vorbehalten

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