HP824IU

Encoder Modulator User Manual

About This Manual

Intended Audience

This user manual has been written to help people who have to use, to integrate and to install the product. Some chapters require some prerequisite knowledge in electronics and especially in broadcast technologies and standards.

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Chapter 1 Introduction

1.1 Product Overview

HP824IU is a professional high integration device which includes encoding, multiplexing, and modulation in one body. It supports up to 24 HDMI input, one DVB-C/T/ISDB-T (ATSC optional) tuner input and up to 512 IP input for re-mux. After multiplexing, it output 16 non-adjacent ISDB-T/DVB-C carries. It also supports 16 MPTS as mirror of 16 carriers through Data2 (GE) port. This full functionality makes it ideal for small CATV head end system, and it's a smart choice for hotel TV system, entertainment system in sports bar, hospital, apartment…

1.2 Key Features

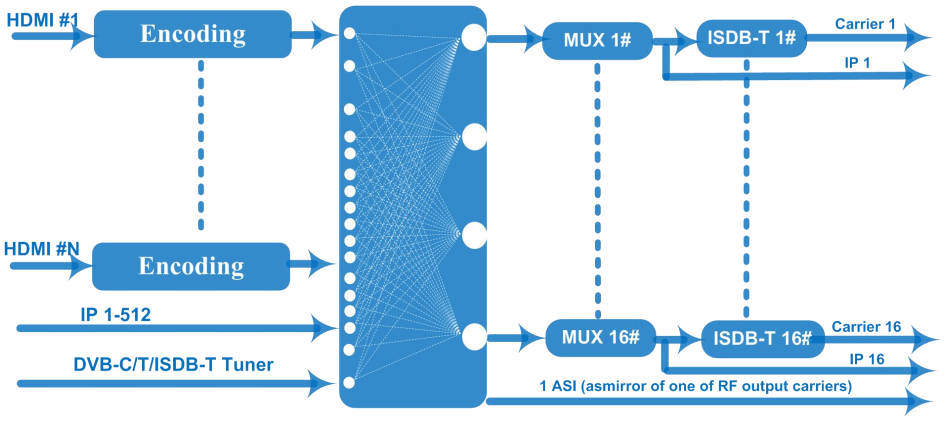
- **8/12/16/20/24× HDMI input with HEVC/H.265, MPEG4 AVC/H.264 video encoding format**
- **Support B frame GOP, high video compression ratio and stable bitrate**
- **MPEG-1 Layer 2, LC-AAC, HE-AAC, HE-AAC V2 audio encoding, AC3 Pass-through**
- **Support 16 groups multiplexing/ISDB-T/DVB-C modulating channels out**
- **Support 1 ASI out as mirror of one of RF output carriers—Optional**
- **Support 16 MPTS IP output over UDP, RTP/RTSP**
- **Support LOGO, Caption and QR code insertion (Language Supported: , English, العربية, , , русская, اردو, for more languages please consult us…)**
- **Support PID remapping/ accurate PCR adjusting/PSI/SI editing and inserting**
- **Control via web management, and easy updates via web**

1.3 Specifications

Input	8/12/16/20/24 HDMI inputs 1 DVB-C(ATSC optional) Tuner for re-mux, F type interface 512 IP input over UDP and RTP, DATA1, RJ45—ISDB RF out			
Video	Resolution	Input	1920×1080_60P,1920×1080_50P, 1920×1080_59.94P,1920×1080_60i,1920×1080_50i, 1920×1080_59.94i, 1280×720_60P, 1280×720_59.94P, 1280×720_50P	
		Output	1920×1080_60P,1920×1080_50P, 1920×1080_30P,1920×1080_25P,1280×720_60P 1280×720_50P	
	Encoding	MPEG-4 AVC/H.264, HEVC/H.265		
	Bit-rate	1Mbps~13Mbps each channel		
	Rate Control	CBR/VBR		
	GOP Structure	IP…P (P Frame adjustment, without B Frame)		
Audio	Encoding	MPEG-1 Layer 2, LC-AAC, HE-AAC, HE-AAC V2, AC3 Pass-through		
	Sampling rate	48KHz		
	Audio Delay	-400—-1000ms		
	Bit-rate	48Kbps~384Kbps (MPEG-1 Layer 2 & LC-AAC) 24 Kbps~128 Kbps (HE-AAC) 18 Kbps~56 Kbps (HE-AAC V2)		
Multiplexing	Maximum PID Remapping	180 input per channel		
	Function	PID remapping (automatically or manually)		
		Accurate PCR adjusting		
		Generate PSI/ SI table automatically		
Modulation	ISDB-T	Standard	ARIB STD-B31	
		Bandwidth	6M	
		Constellation	QPSK, 16QAM, 64QAM	
		Guard Interval	1/32, 1/16, 1/8, 1/4	
		Transmission Mode	2K, 4K, 8K	
		Code rate	1/2, 2/3, 3/4, 5/6, 7/8	
		MER	≥40dB	
		RF frequency	50~960MHz	
		RF out	16 non-adjacent carriers output (maximum bandwidth 192MHz)	
		RF output level	-20dBm~+10dBm, 0.1dB stepping	

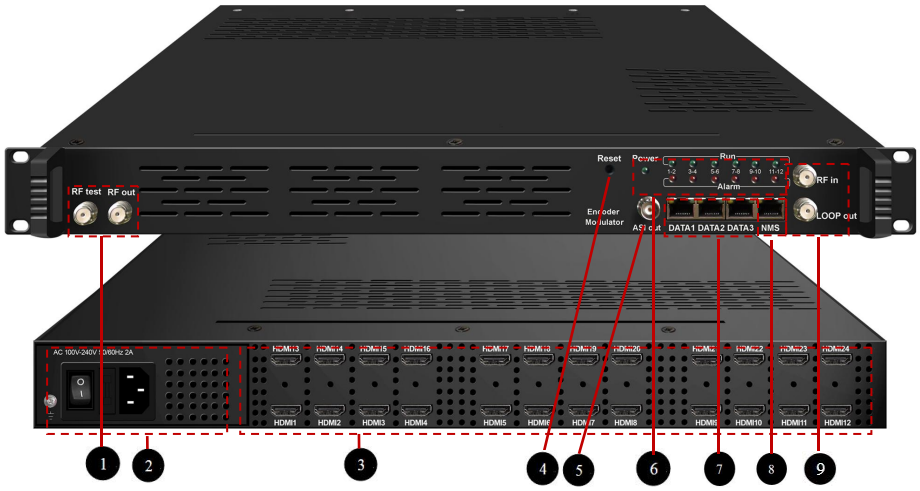
Stream output	1 ASI output as mirror of one of RF output carriers-Optional 16 MPTS output over UDP and RTP/RTSP as mirror of 16 ISDB-T carriers 1*1000M Base-T Ethernet interface	
System function	Network management (WEB)	
	Chinese and English language	
	Ethernet software upgrade	
Miscellaneous	Dimension (W×L×H)	482mm×440mm×44mm
	Environment	0~45℃(work)；-20~80℃（Storage）
	Power requirements	AC 110V± 10%, 50/60Hz, AC 220 ± 10%, 50/60Hz

1.4 Principle Chart



1.5 Appearance and Description

Front and Rear Panel Illustration



1	RF test and RF out port
2	Power supply and Grounding Pole
3	24 input port
4	Reset Key
5	ASI output port(Optional)
6	Indicators
7	DATA Port (DATA1 for IP stream input and DATA2 for output, DATA 3 for upgrading modules)
8	NMS port for web-based management
9	Tuner input and Loop out port

Chapter 2 Installation Guide

This section is to explain the cautions the users must know in some case that possible injure may bring to users when it's used or installed. For this reason, please read all details here and make in mind before installing or using the product.

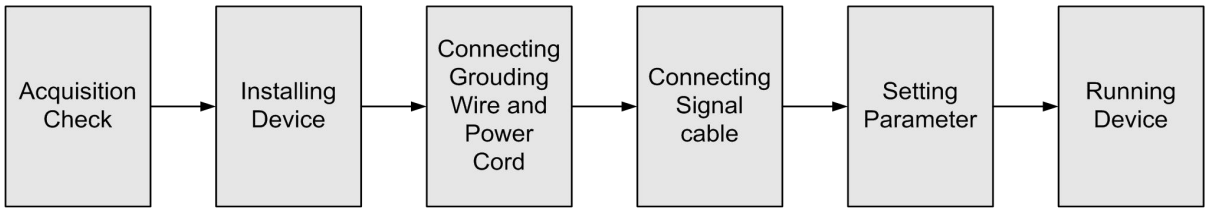
2.1 General Precautions

- ✓ Must be operated and maintained free of dust or dirty.
- ✓ The cover should be securely fastened, do not open the cover of the products when the power is on.
- ✓ After use, securely stow away all loose cables, external antenna, and others.

2.2 Power precautions

- ✓ When you connect the power source, make sure if it may cause overload.
- ✓ Avoid operating on a wet floor in the open. Make sure the extension cable is in good condition
- ✓ Make sure the power switch is off before you start to install the device

2.3 Device's Installation Flow Chart Illustrated as following



2.4 Environment Requirement

Item	Requirement
Machine Hall Space	When user installs machine frame array in one 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: $1X10^{7}$~$1X10^{10}\Omega$, Grounding current limiting resistance: 1MΩ (Floor bearing should be greater than 450Kg/㎡)
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 110V±10%, 50/60Hz or AC 220V±10%, 50/60Hz. Please carefully check before running.

2.5 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.

- ✓ 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.WIt 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 25 mm^2.

Chapter 3 WEB NMS Operation

Users cannot use front buttons to set configuration, and can only control and set the configuration in computer by connecting the device to web NMS Port. Users should ensure that the computer's IP address is different from the HPR8544I's IP address; otherwise, it would cause IP conflict.

3.1 Login

The default IP address of this device is 192.168.0.136.

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 displays 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.

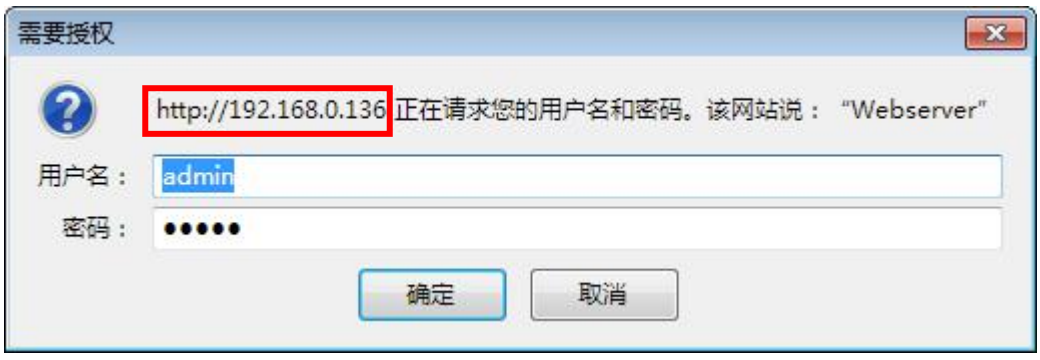


Figure-1

3.2 Operation

Summary →Status

When we login into encoder module, it displays the status interface as Figure-2.

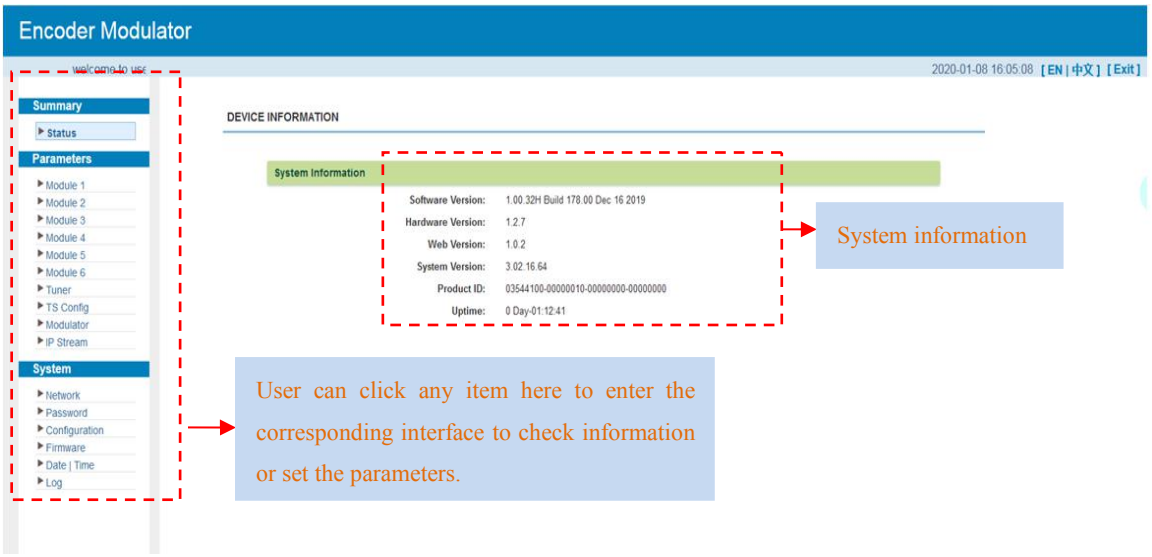


Figure-2

Parameters → Module 1-6

➢ Encoder 1

HP824IU supports up to 6 modules, and each module has 4 HDMI inputs. From the menu on left side of the webpage, clicking "Module1-6→Encoder Enc CH1", it displays the information of 1st encoding channel (Figure-3) where users can configure the video and audio encoding parameters.

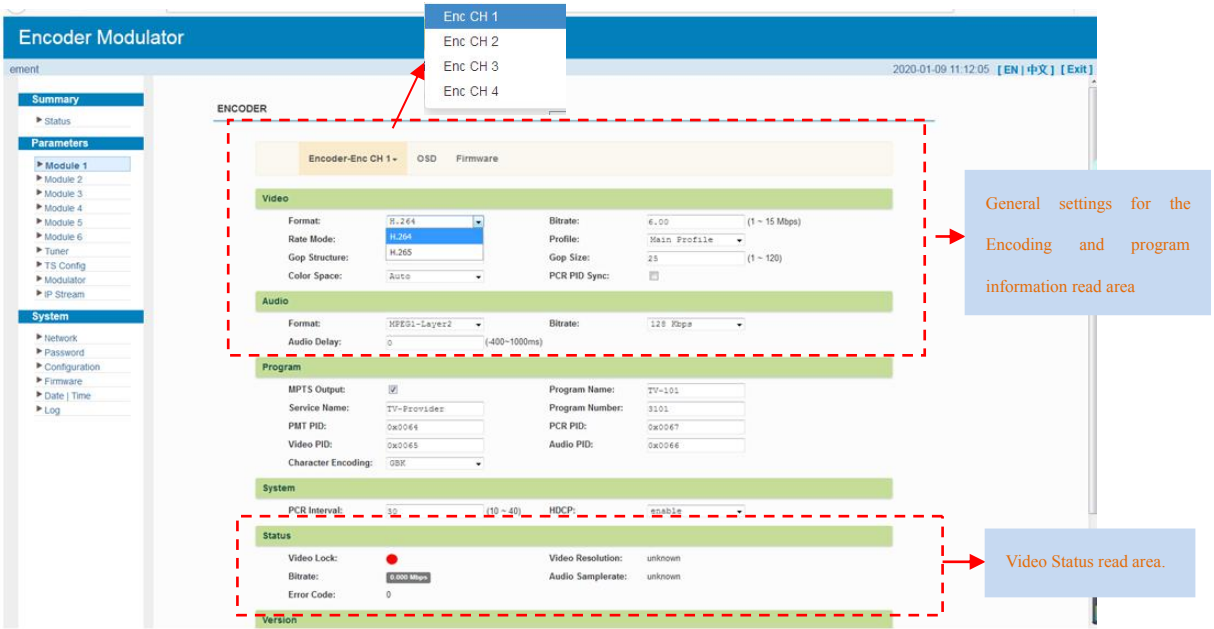


Figure-3

Similarly, from the menu on top side of the webpage, clicking “Enc CH 2/ Enc CH 3/ Enc CH 4”, it displays the information of the encoding channel as “Enc CH1”.

➢ OSD

Clicking “OSD”, it displays the interface where to configure the OSD parameters. Users could set Logo, Caption and QRCode as Figure-4/5/6.

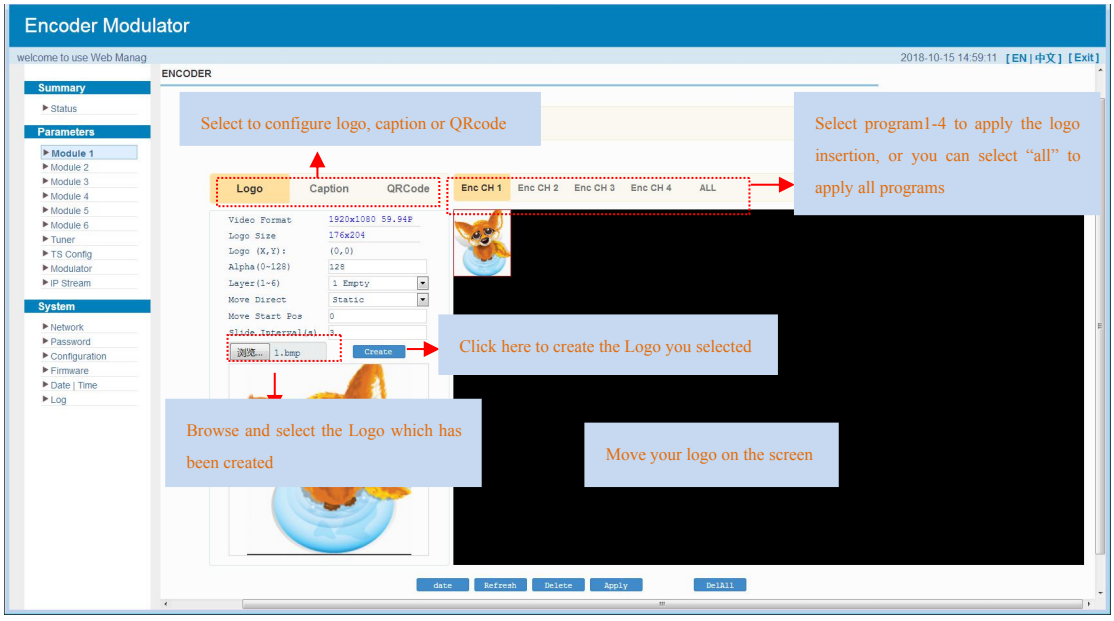


Figure-4

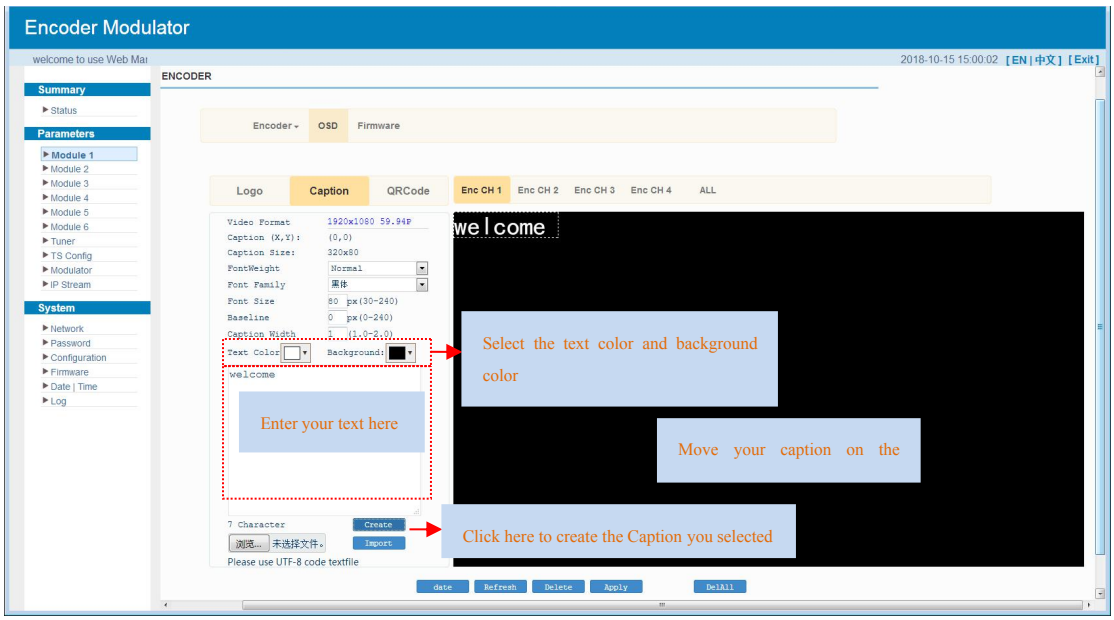


Figure-5

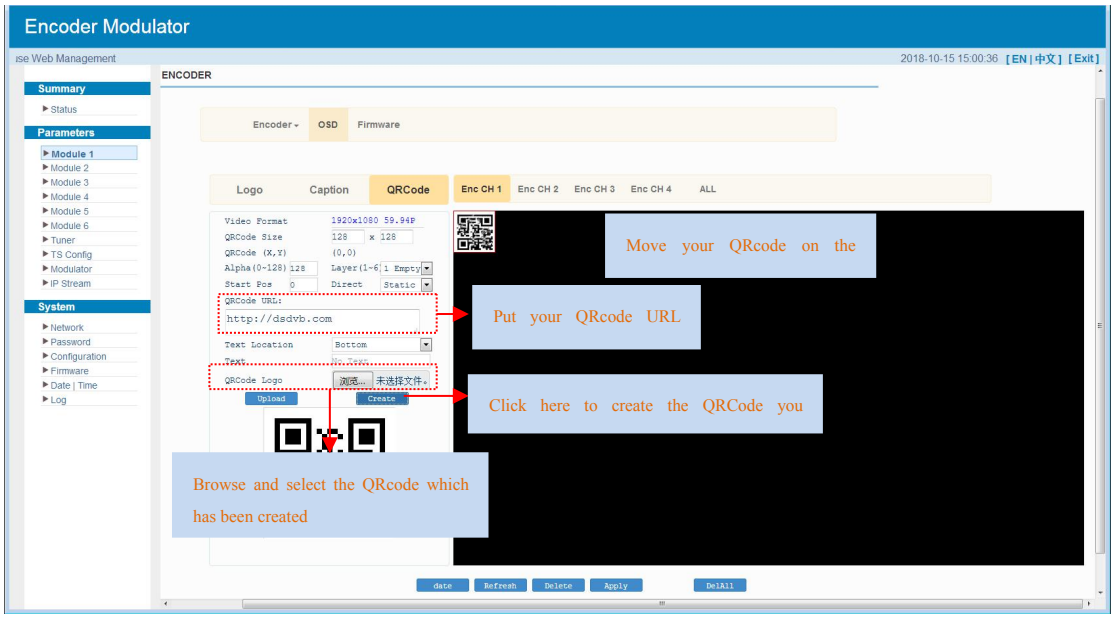


Figure-6

➢ Firmware

Clicking “Firmware”, it displays the interface where to upgrade software and hardware as Figure-7.

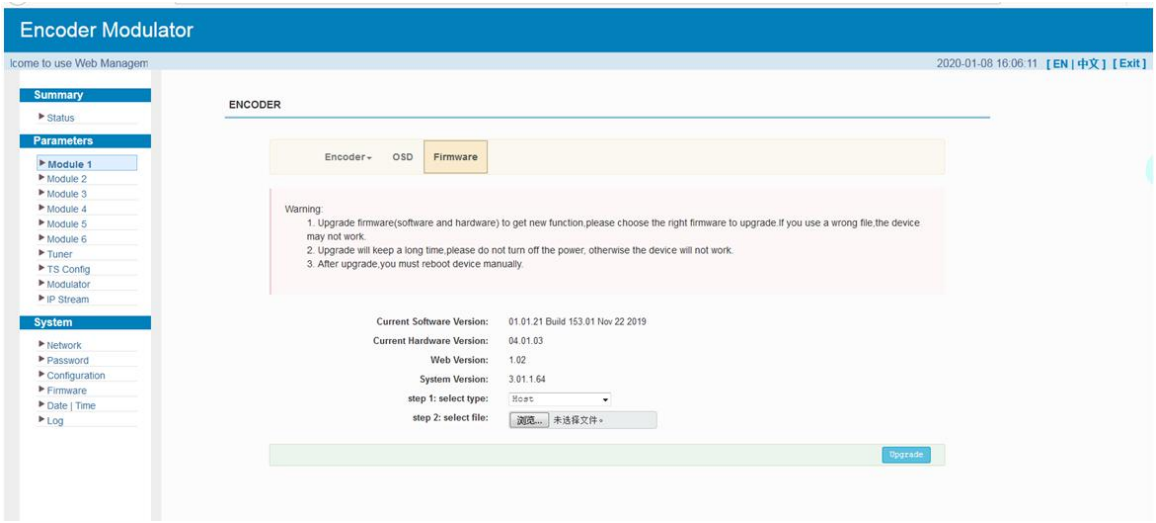


Figure-7

Parameters → Tuner:

This device is equipped with one Tuner input to receive single from cable or terrestrial system and re-mux out.

Clicking “Tuner”, it displays the interface where users can set tuner parameters as Figure-8. If there is signal inputting, the Signal will be green, otherwise it will be gray.

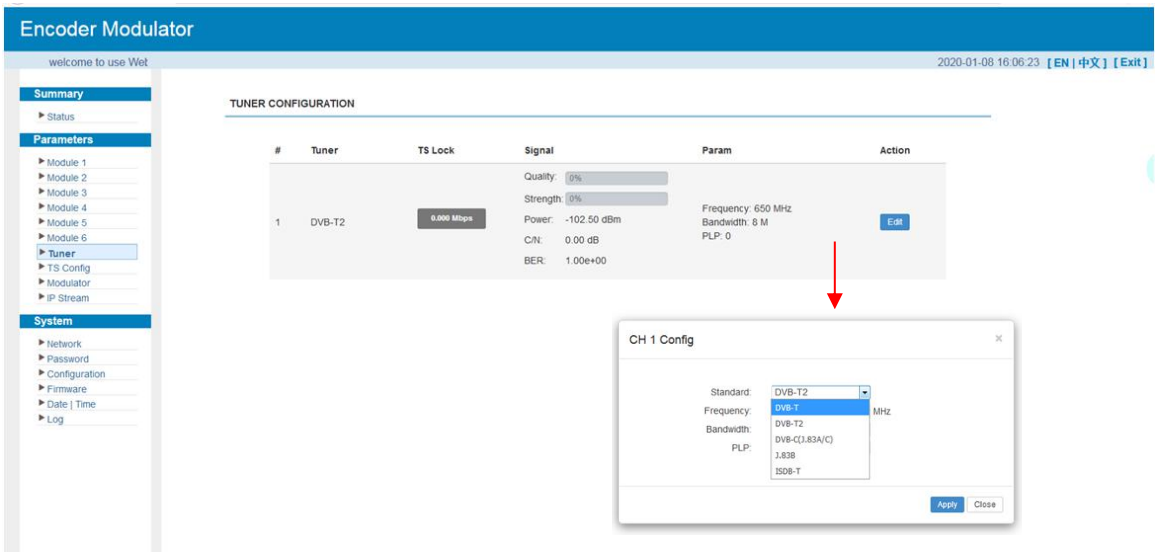


Figure-8

Parameters → TS Config:

Clicking "TS Config", it displays the interface where users can configure the TS output parameters.

➢ TS Config→Output TS X:

Clicking "Output TS X", it displays the interface where users can select the TS output carrier as Figure-9.

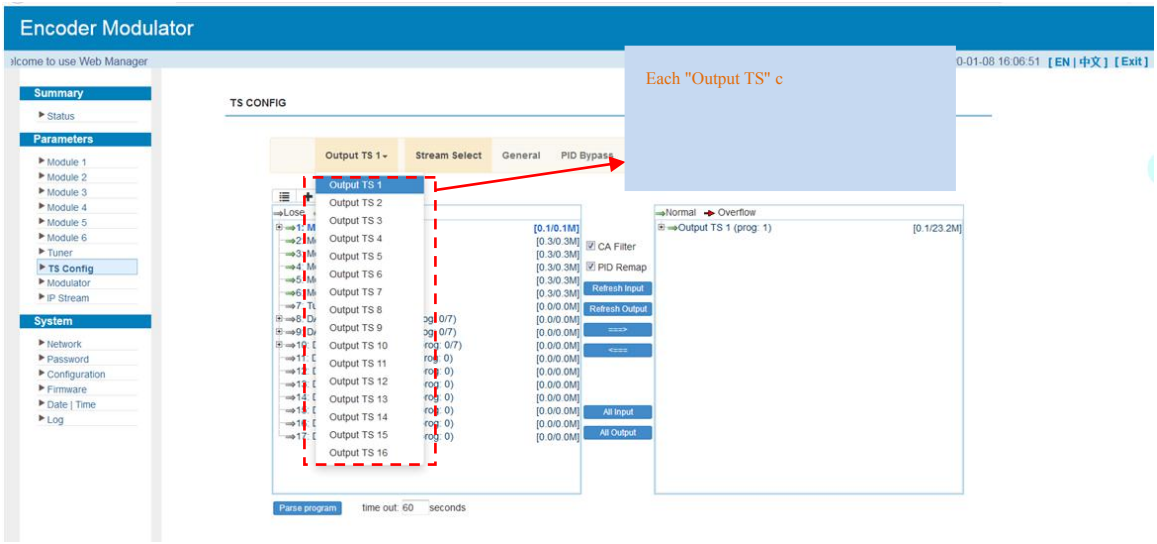


Figure-9

➢ TS Config→Stream select:

Clicking "Stream select", it displays the interface where users can select program(s) to multiplex out and modify program info. (Figure-10)

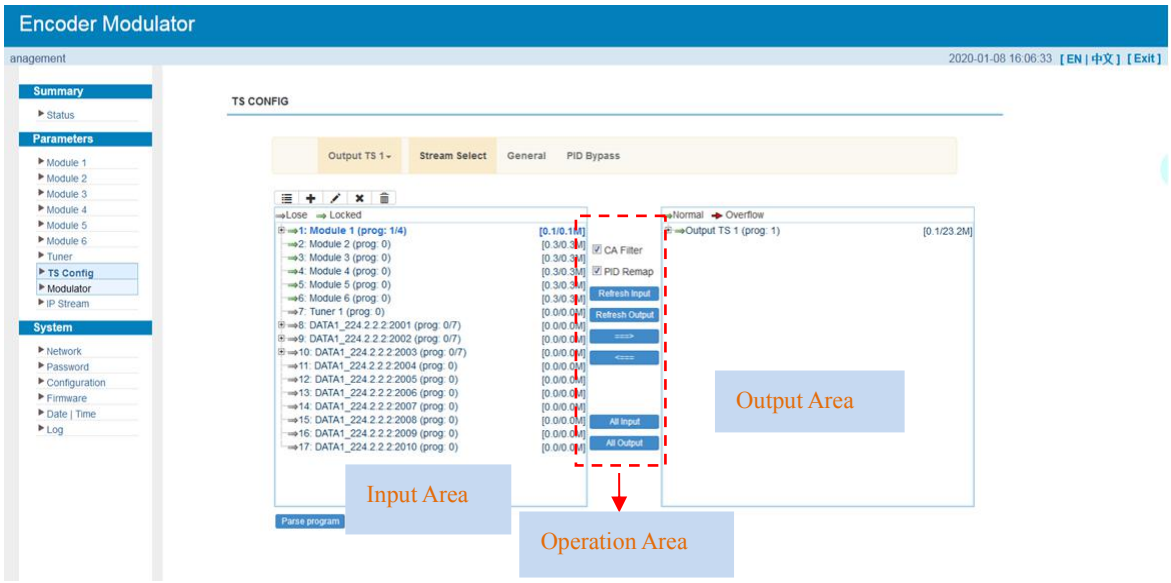


Figure-10

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

: To add input channel which from Data1

: To edit the input channel

: To delete the input channel

: To delete all inputs channel

Lose Locked : To check input IP lock or not, green means current IP locked

Normal Overflow : To check current TS overflow or not, red color means current TS overflow, need to reduce program

CA Filter : To filter/not filter the source CA information

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-1101 <=CH1_Module 1 [1101] , it triggers a dialog box (Figure11)where users can input new information.

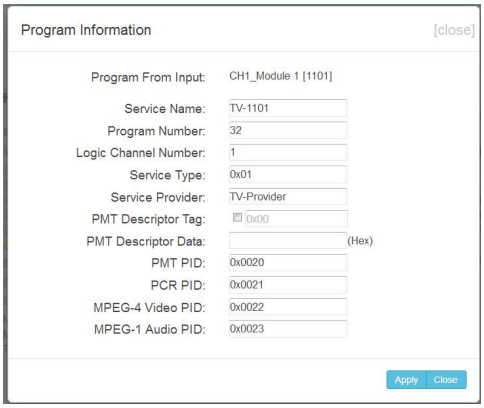


Figure-11

➢ **TS Config→General:**

Clicking "General", it displays the interface where users can set stream output information, NIT insert/VCT insert, PCR correction. (Figure-12)

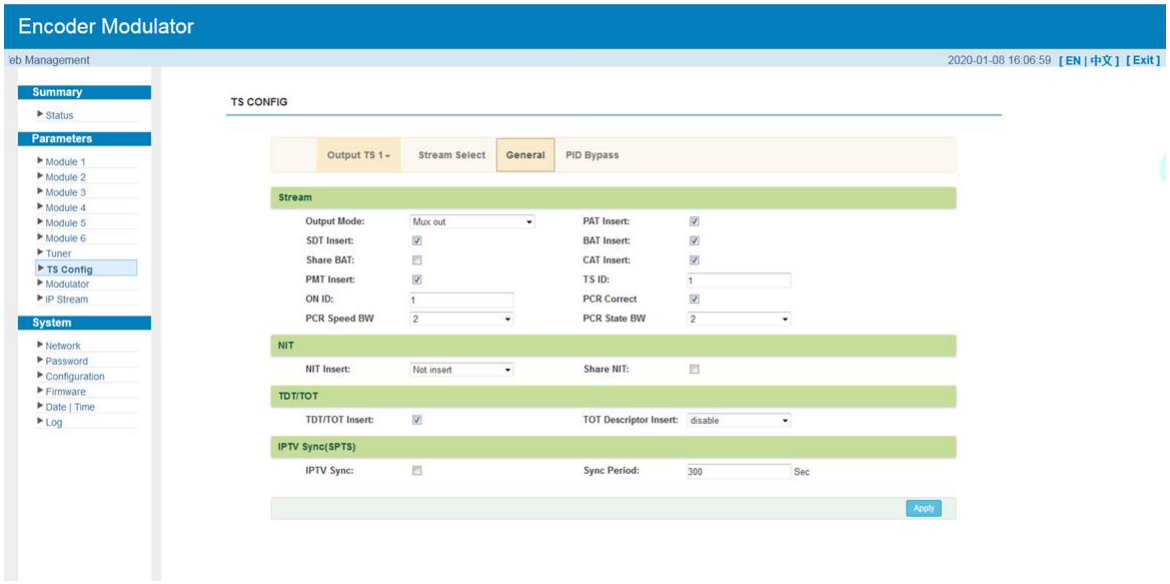


Figure-12

➢ **TS Config→PID Bypass:**

Clicking "PID Bypass", it displays the interface as Figure-13 where user can add PIDs to be passed, click the "+" symbol, input current IP channel number, then input current IP

source Pid and output Pid which is customer needed , then click “set”

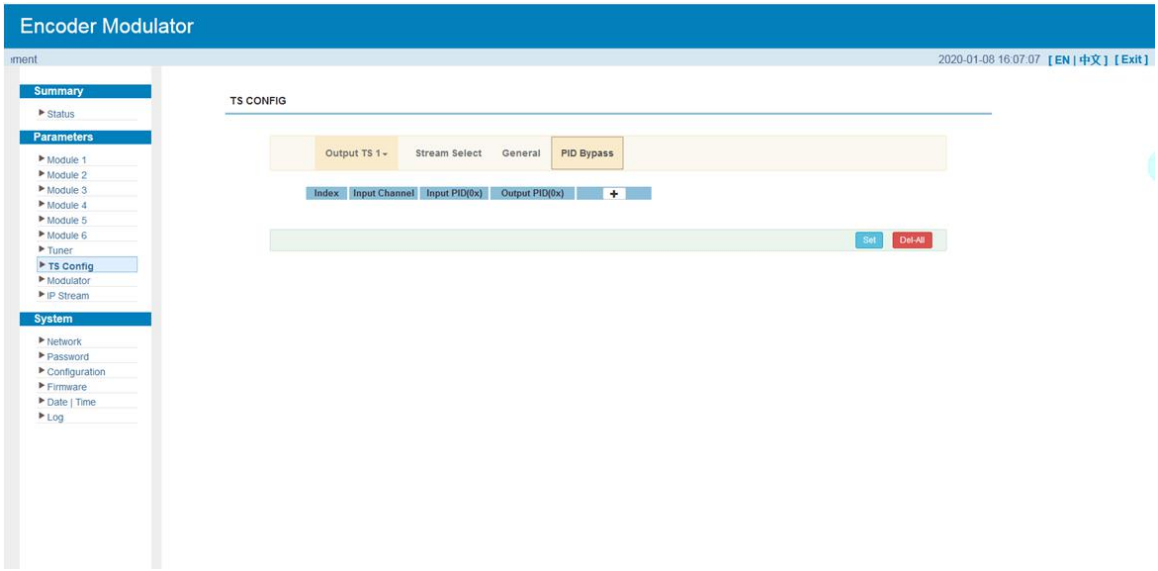


Figure-13

Parameters → Modulator:

Clicking “Modulator”, it displays the Modulator Configuration screen as Figure-14. Here user can set modulating parameters and check modulation standard.

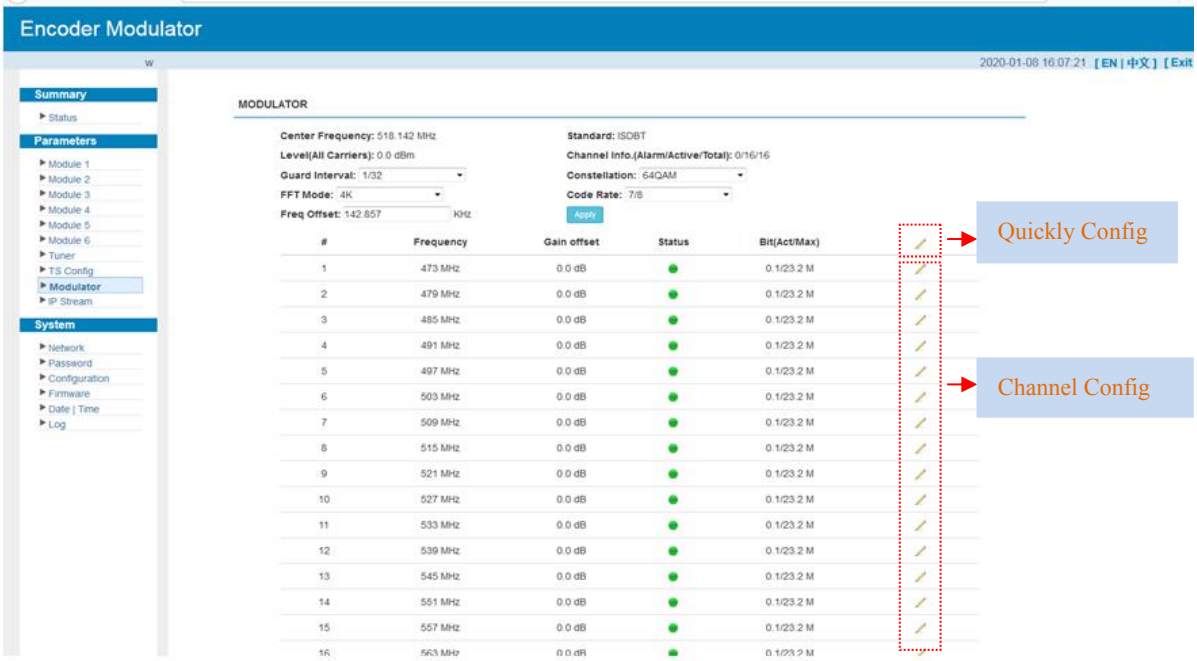


Figure-14

When users click “quickly config” button, it triggers a dialog box (Figure -15) where users can set all channels configration.

Figure-15

When users click “Channel config” button, it triggers a dialog box (Figure-16) where users can set the corresponding channel configration.

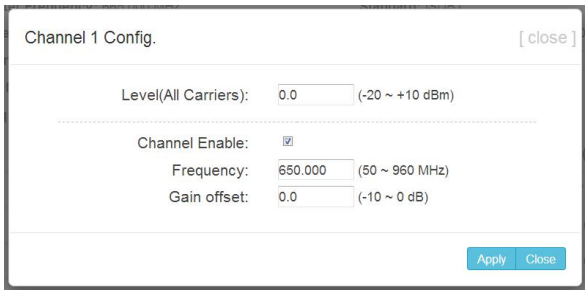


Figure-16

Parameters → IP Stream:

Clicking “IP Stream”, it displays the interface where to set IP out parameters (Figure-17) and select MPTS output from ASI output port.

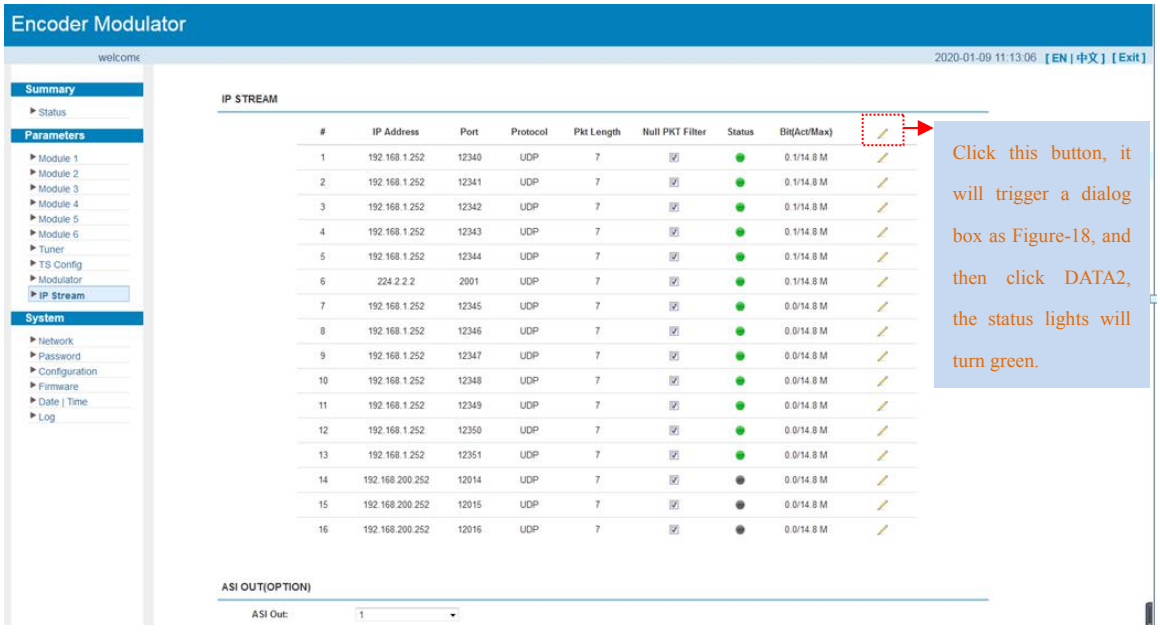


Figure-17

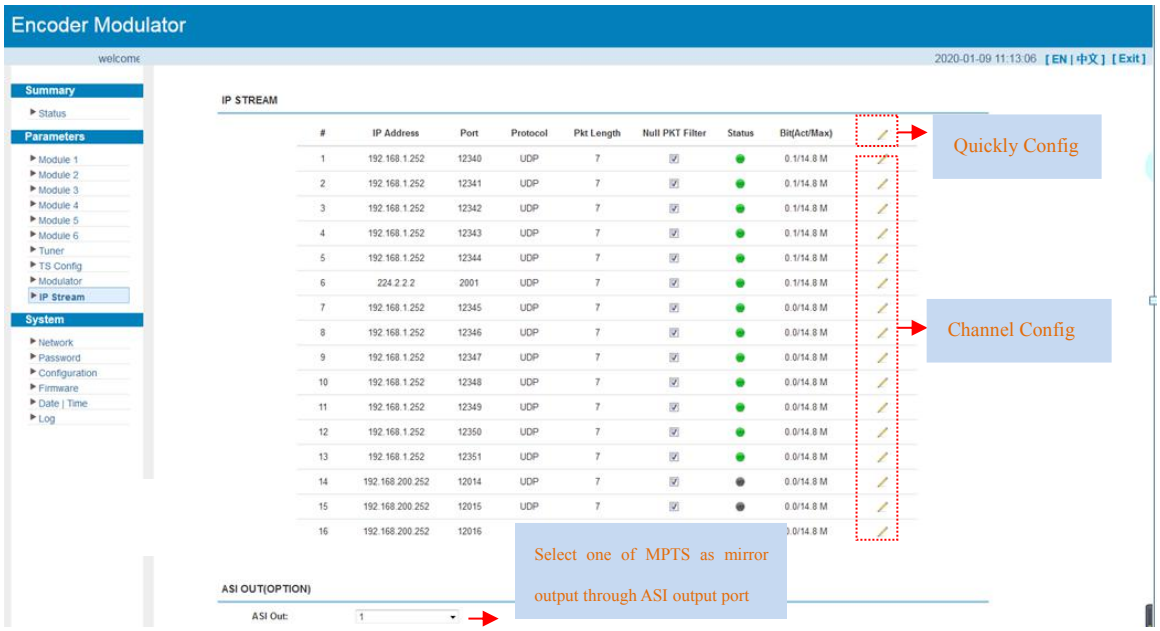


Figure-18

When users click “Quickly Config” button, it triggers a dialog box (Figure-19) where users can set all channels MPTS configration simultaneously.

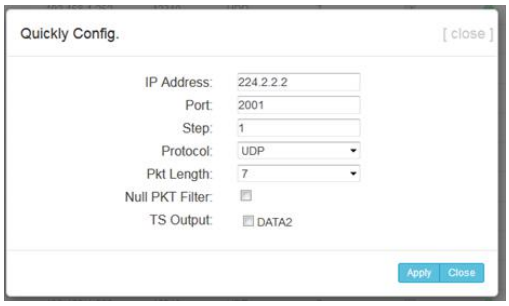


Figure-19

When users click “Channel Config” button, it triggers a dialog box (Figure-20) where users can set corresponding MPTS channel configration.

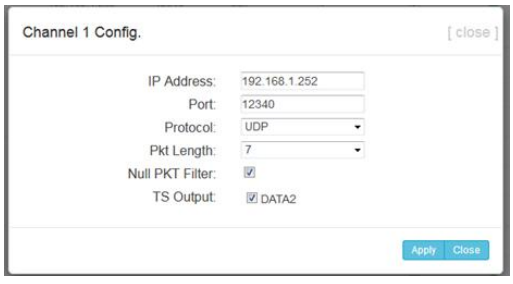


Figure-20

System → Network:

Clicking “Network”, it displays the interface as Figure-21 where to set network

parameters.

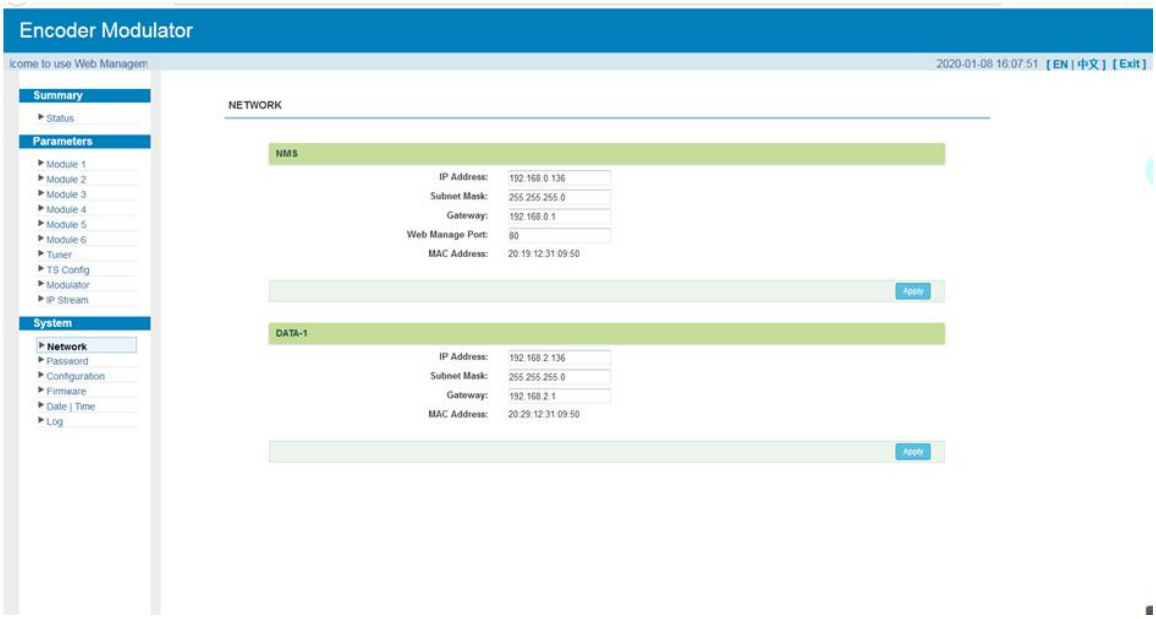


Figure-21

System → password

Clicking “Password”, it displays the screen as Figure-22 where to set the login account and password for the web NMS.

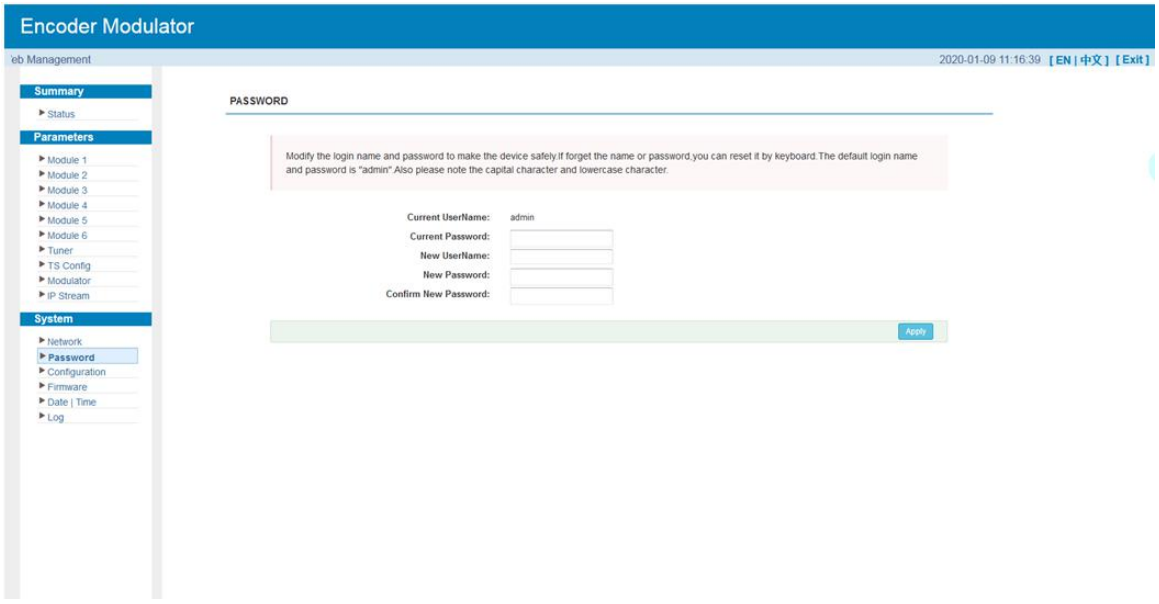


Figure-22

System → Configuration:

Clicking “Configuration”, it displays the screen as Figure-23 where to save/ restore/factory setting/ backup/ load your configurations.

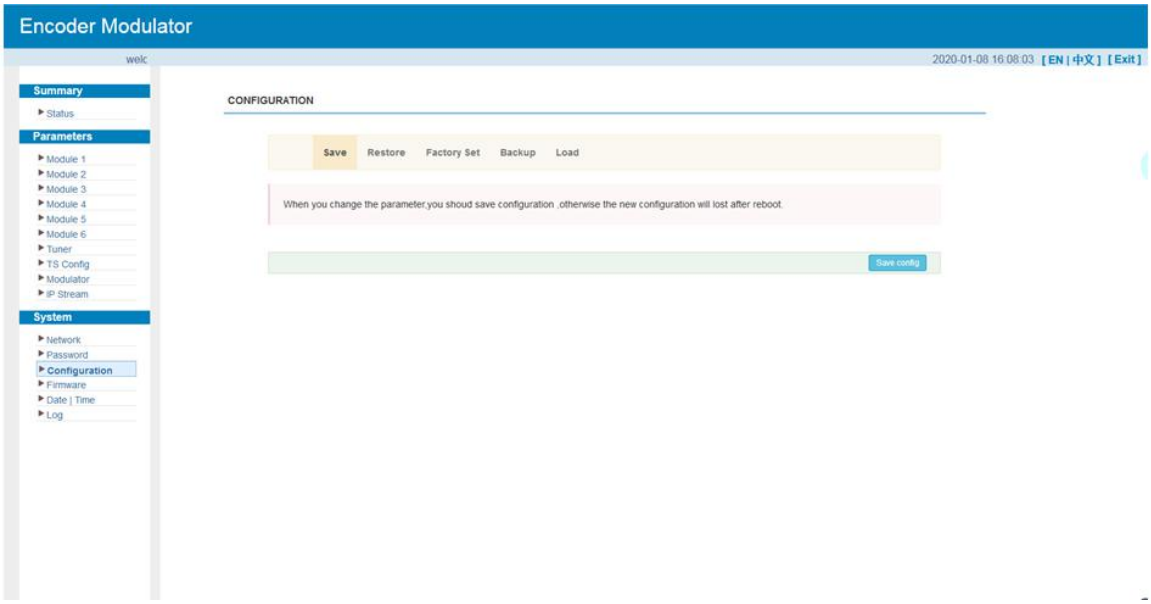


Figure-23

System → Firmware:

Clicking "Firmware", it displays the screen as Figure-24 where to update firmware for this encoder modulator.

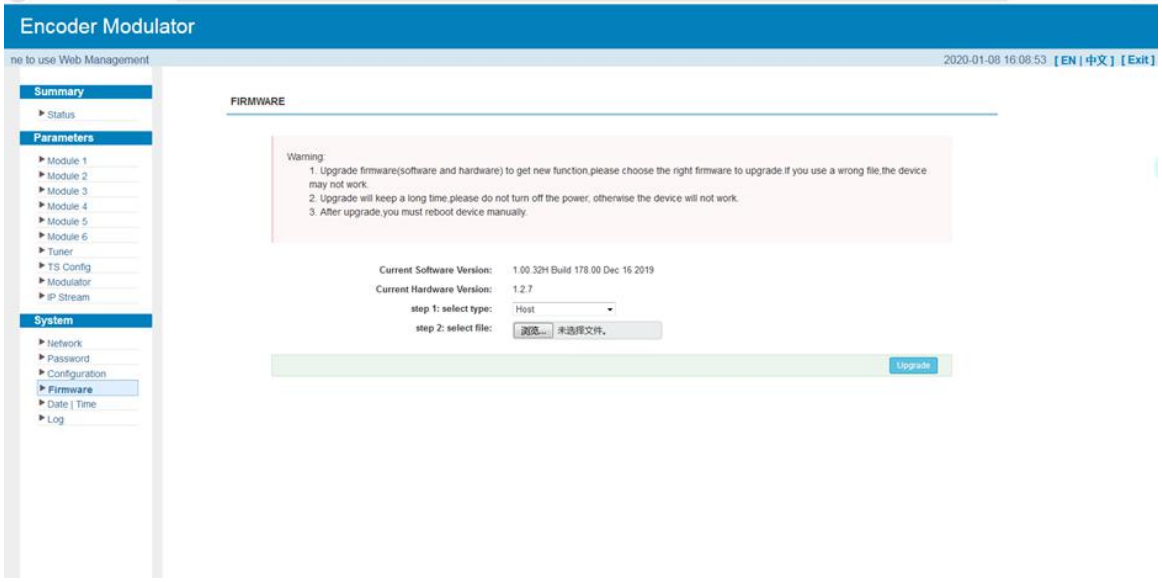


Figure-24

System→ Date/Time:

Clicking "Date/Time", it displays the screen as Figure-25 where to set date and time for the device.

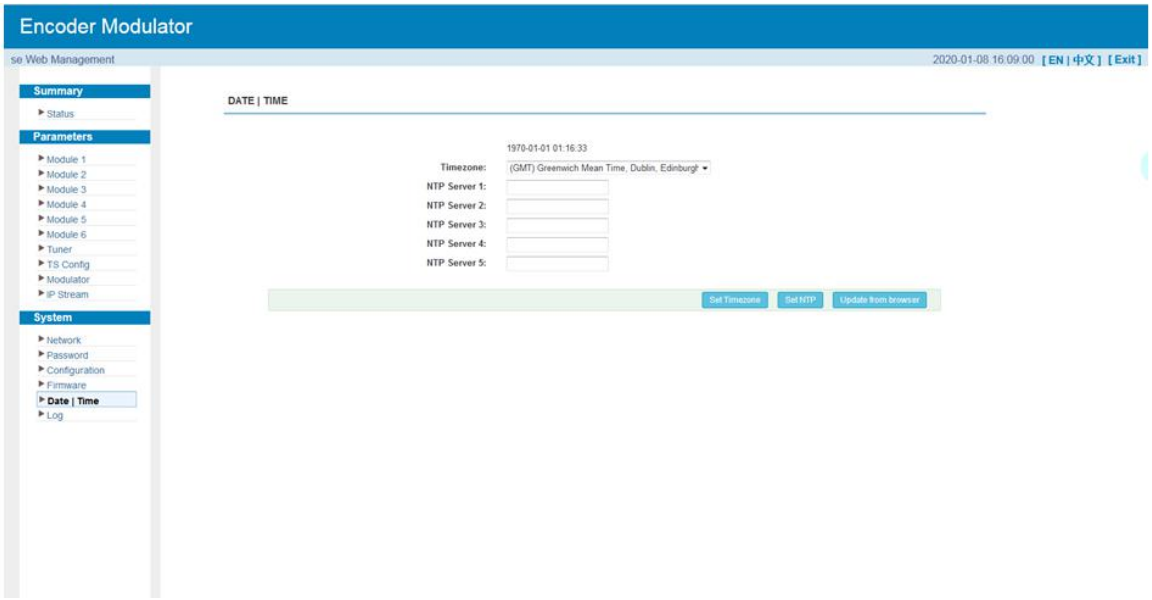


Figure-25

System→ Log:

Clicking "Log", it displays the log interface as Figure-26 where to check or export the Kernel/System log.

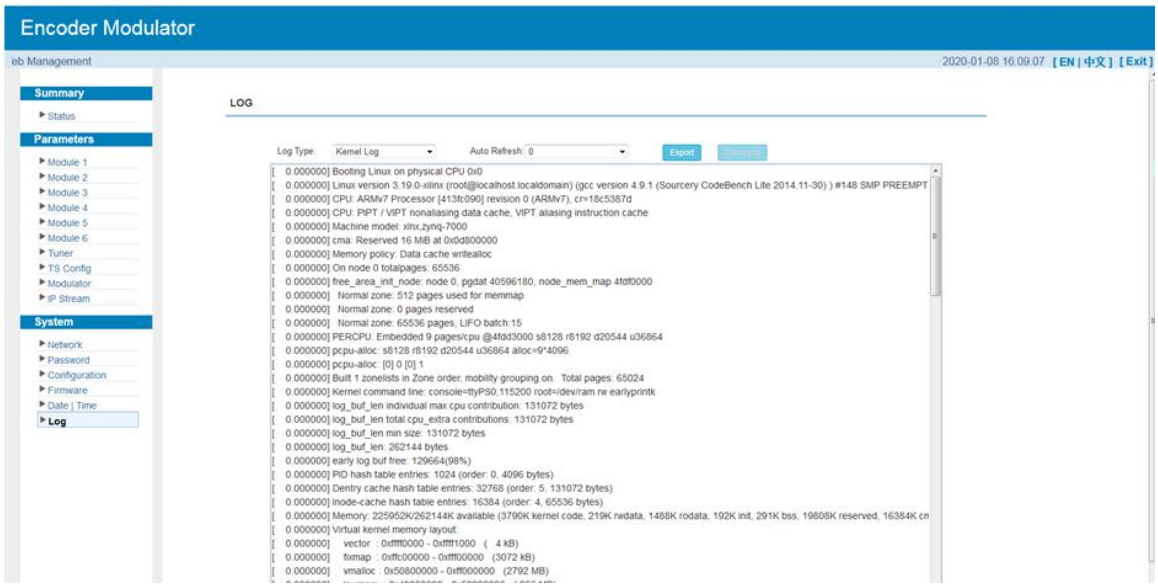


Figure-26

Chapter 4 Troubleshooting

CATCAST's ISO9001 quality assurance system has been approved by CQC organization. For guarantee the products' quality, reliability and stability. All CATCAST 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 CATCAST. 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 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

Chapter 5 Packing List

HP824IU Encoder Modulator

HDMI cable

Power Cord