User Manual

4 / 8 / 16 / 24
HDMI IPTV Streaming H.264 Encoder
UDP, RTP/RTSP - SPTS & MPTS
Multicast & Unicast

H-HDPerformux-4/8/16/24

A Note from Thor Broadcast about this Manual

Intended Audience

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

Disclaimer

The contents of this document are subject to revision without notice due to continued progress in methodology, design and manufacturing. Thor shall have no liability for any error or damage of any kind resulting from the use of this document.

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DIRECTORY

Chapter 1 Product Introduction

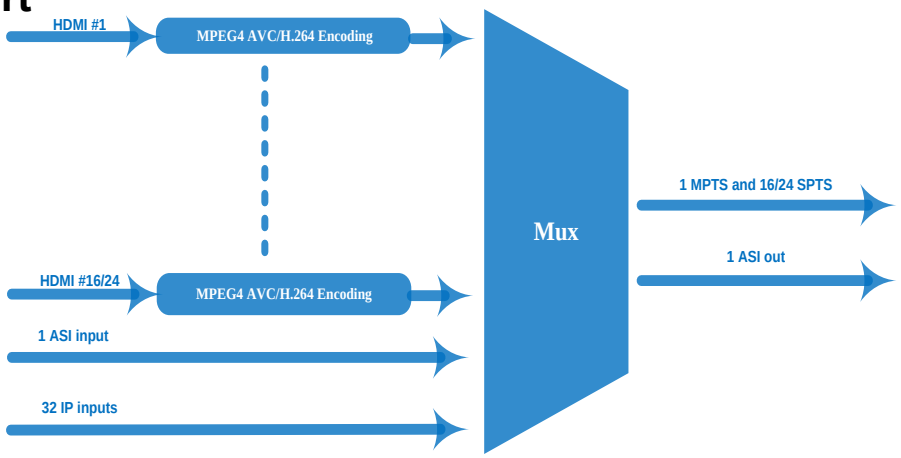
1.1 Outline

The Thor Broadcast HDMI HD-Performux network encoder is a unique solution for IP Broadcasting in high density. This unit can be ordered with 4/8/16/24 HDMI inputs with MPEG-4 AC/H264 video encoding and LC-AAC or HE-AAC or AC3 Passthrough audio encoding. Audio Multi-Channel encoder is a professional HD/SD audio & video encoding device that can intake up to 24 HDMI sources like an STB, PC, Game Console, DVD/BluRay or any HDMI source within the resolution scope. It can transfer the Live programs through the internet/LAN and outputs IP out over UDP/RTP in Unciast/Multicast. The new generation model includes QR Code insertion, 1 ASI input, 1 USB input and 32 IP inputs via the GE port and supports 1MPTS and 16/24 SPTS output, 1 ASI out as mirror of the MPTS.

1.2 Main Features

- **Up to 24 HDMI inputs**
- **1 ASI input for re-mux**
- **1 USB Player (Insert the USB Flash drive with "xxx.ts" videos in H-HDPerformux-4/8/16/24 and play back the content in an easy way; file system FAT 32.)**
- **32 IP inputs over UDP and RTP via GE port**
- **MPEG4 AVC/H.264 video encoding format**
- **MPEG1 Layer II, LC-AAC，HE-AAC audio encoding format and AC3 Pass Through, and audio gain adjustment**
- **1 MPTS and 16/24 SPTS output over UDP and RTP/RTSP protocol**
- **1 ASI out as mirror of the MPTS**
- **QR code, LOGO, caption insertion**
- **"Null PKT Filter" function**
- **Control via web management, and easy updates via web**

1.3 Flow Chart



1.4 Tech Specs

Input	4/8/16/24 HDMI inputs 1 ASI in for re-mux 1 USB Player input for re-mux 32 IP input over UDP and RTP, GE port, RJ45		
Video	Resolution	input	1920×1080_60P, 1920×1080_60i, 1920×1080_50P, 1920×1080_50i, 1280×720_60P, 1280×720_50P, 720 x 576_50i,720 x 480_60i
		Output	1920×1080_30P, 1920×1080_25P, 1280×720_30P, 1280×720_25P, 720 x 576_25P, 720 x 480_30P
	Encoding		MPEG-4 AVC/H.264
	Bit-rate		1~13Mbps 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 and AC3 Pass through
	Sampling rate		48KHz
	Resolution		24-bit
	Audio Gain		0-255 Adjustable
	MPEG-1 Layer 2 Bit-rate		48/56/64/80/96/112/128/160/192/224/256/320/384 kbps
	LC-AAC Bit-rate		48/56/64/80/96/112/128/160/192/224/256/320/384 kbps
	HE-AAC Bit-rate		48/56/64/80/96/112/128 kbps
Stream output	IP output(1 MPTS and 16/24 SPTS) through DATA (GE) over UDP and RTP/RTSP protocol 1 ASI output as mirror of the MPTS		
System function	Network management (WEB)		
	English		
	Ethernet software upgrade		
Miscellaneous	Dimension(W×L×H)		440mm×324mm×44mm
	Environment		0~45℃(work)；-20~80℃（Storage）
	Power requirements		AC 110V± 10%, 50/60Hz, AC 220 ± 10%, 50/60Hz

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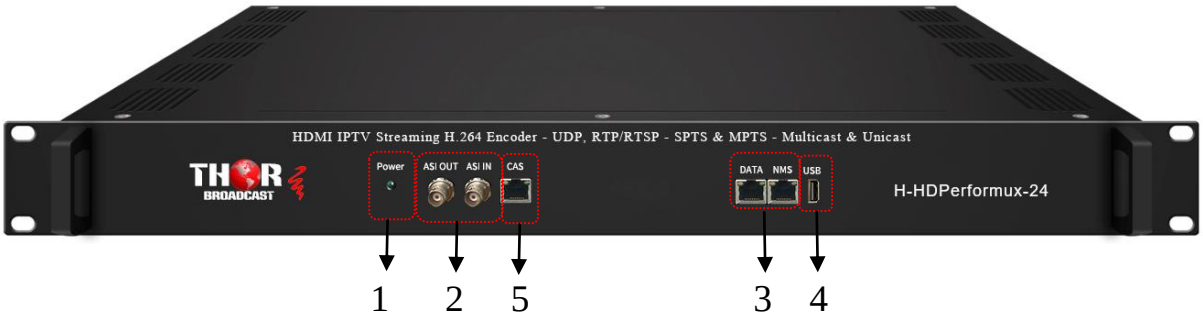
1.5 Part Numbers

P/N	Configuration
H-HDPerformux-4	4 HDMI inputs
H-HDPerformux-8	8 HDMI inputs
H-HDPerformux-16	16 HDMI inputs
H-HDPerformux-24	24 HDMI inputs

1.6 Appearance and Pics

Front Panel Illustration:

1U chassis (H-HDPerformux-4/8/16/24) illustration：



1	Power indicator
2	ASI IN and ASI OUT interfaces
3	NMS (Network Management Port) DATA Port (for IP Signal Input/Output)
4	USB socket (USB Player)
5	Used to update the encoder boards

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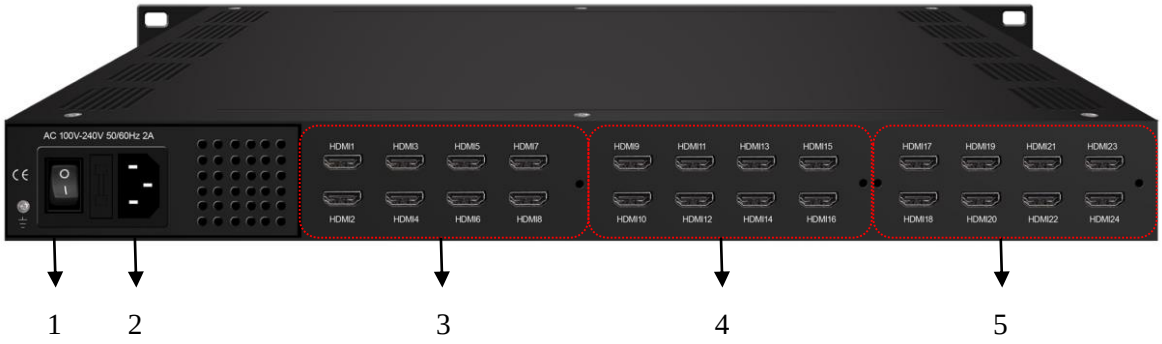
Rear Panel Illustration:



1	Grounding
2	Power Switch and socket
3	HDMI 1-8
4	HDMI 9-16
5	HDMI 17-24

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Chapter 2 Installation Guide

2.1 What's in the Box

Thor Broadcast will deliver the unit with the following items:

- H-HDPerformux-4/8/16/24 Multi-Channel Encoder
- Power Cord
- Ground lead
- HDMI cables

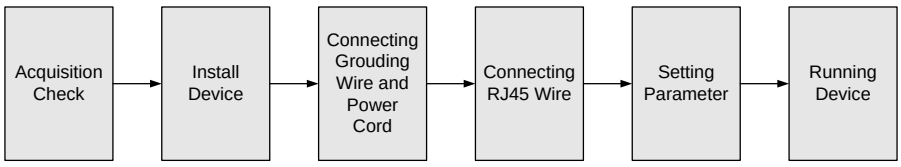
If any item is missing or mismatching with the list above, please contact local dealer.

2.2 Installation Prep

When you install the encoder, please follow the steps below. You need to check the device for any potential damage and missing pieces during transportation.

- Preparing relevant environment for installation (rack room or Headend)
- Installing Encoder
- Connecting cables
- Connecting communication port

2.2.1 Device's Flow Chart is as following：



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2.2.2 Rack Room

Item	Requirement
Machine Hall Space	When installing unit on rack, 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
Environment Temperature	5~40℃(sustainable), 0~45℃(short time), installing air-conditioning is recommended
Relative Temperature	20%~80% sustainable 10%~90% short time
Pressure	86~105KPa
Power	Device power, HVAC and lighting should be independent to each other. Device power requires AC 110V±10%, 50/60Hz or AC 220V±10%, 50/60Hz. Please carefully check before running.

2.2.3 Grounding Requirement

- Must be operated and maintained in an area free of dust and debris.
- The cover should be securely fastened, do not open the cover of the chassis when the power is on. This will also void Thor's manufacturer's warranty.
- After installation, securely stow away all loose cables, external antenna, and others.
- Be careful when connecting a power source to the device.
- Do not operate in wet or damp areas. Make sure the extension cable is in good condition
- Make sure the power switch is off before you start to install the device
- It is important to keep this device grounded to ensure all of the modules function correctly. Correctly grounding the device will also help prevent any electrical interference, lightening. Etc. Also it helps reject minor interference that may disrupt the devices ability to function smoothly. General rule of them, make sure the device is grounded when installing anywhere.
- Always use copper wire. When applied correctly the ground must be wrapped well to ensure maximum conduction so it can reduce any high frequencies. The copper ground wire should also be as short and thick as possible
- Installer must make sure that the two ends of the ground are well conducted and have appropriate anti-rust properties.
- It is prohibited to use any other device as part of the grounding electric circuit.

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Chapter 3 WEB NMS Operation

The Thor Broadcast HD Performux Encoder series does not support front D-pad buttons or an LCD screen, you can only control and set the configuration by connecting the Encoder to a PC to web NMS Port. Make sure that the computer's IP address is different from the Encoder's IP address otherwise it would cause an IP conflict and you will not be able to login.

3.1 Login

The default IP address of H-HDPerformux-4/8/16/24 is 192.168.0.136

Connect the PC (Personal Computer) and the encoder with ethernet cable, and use ping command to confirm they are on the same network segment (subnet).

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 0 to 255 except 252 to avoid IP conflict).

Use any web browser to connect the device with the PC by inputting the Encoder's IP address in the browser's address bar and press Enter. (our units usually work better on Mozilla and IE, not Chrome)

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.

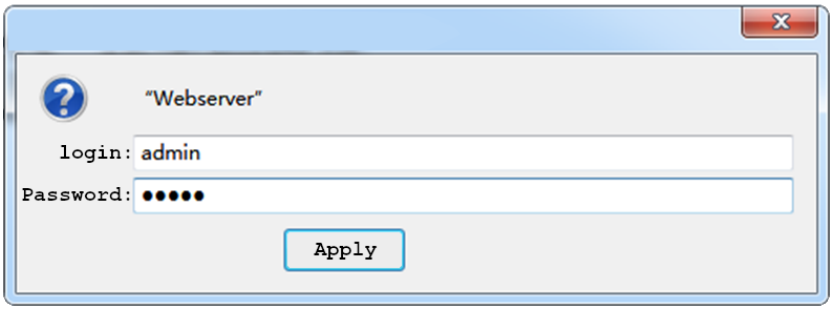

Figure-1

3.2 Operation

When we confirm the login, it will display the WELCOME interface as Figure-2.

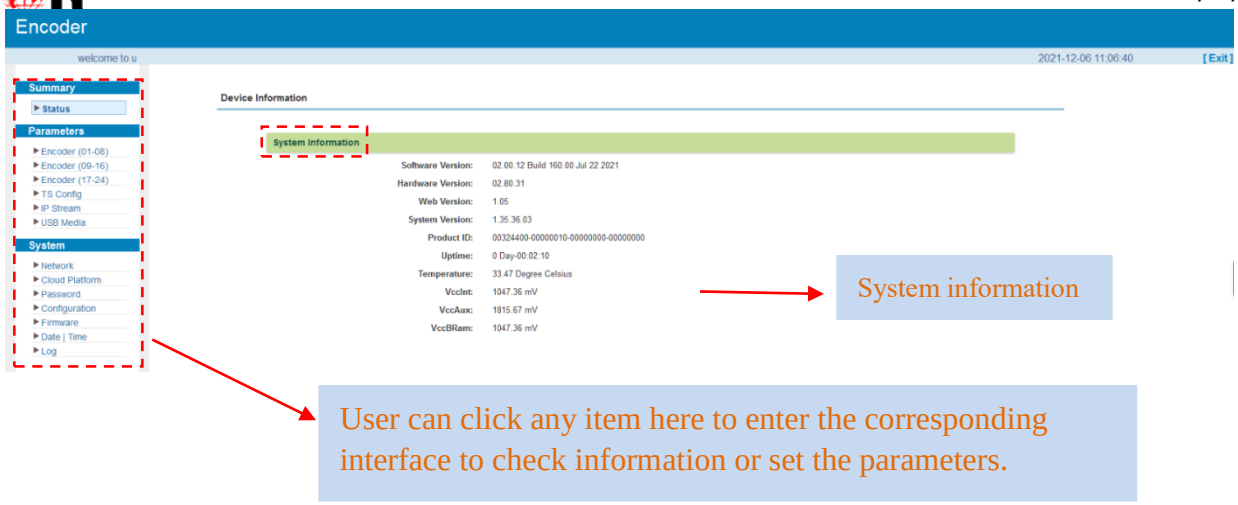

Figure-2

Parameters →Encoder(01-08)

From the menu on left side of the webpage, clicking "Encoder(01-08)", it displays the information of each encoding channel from the encoder as Figure-3.

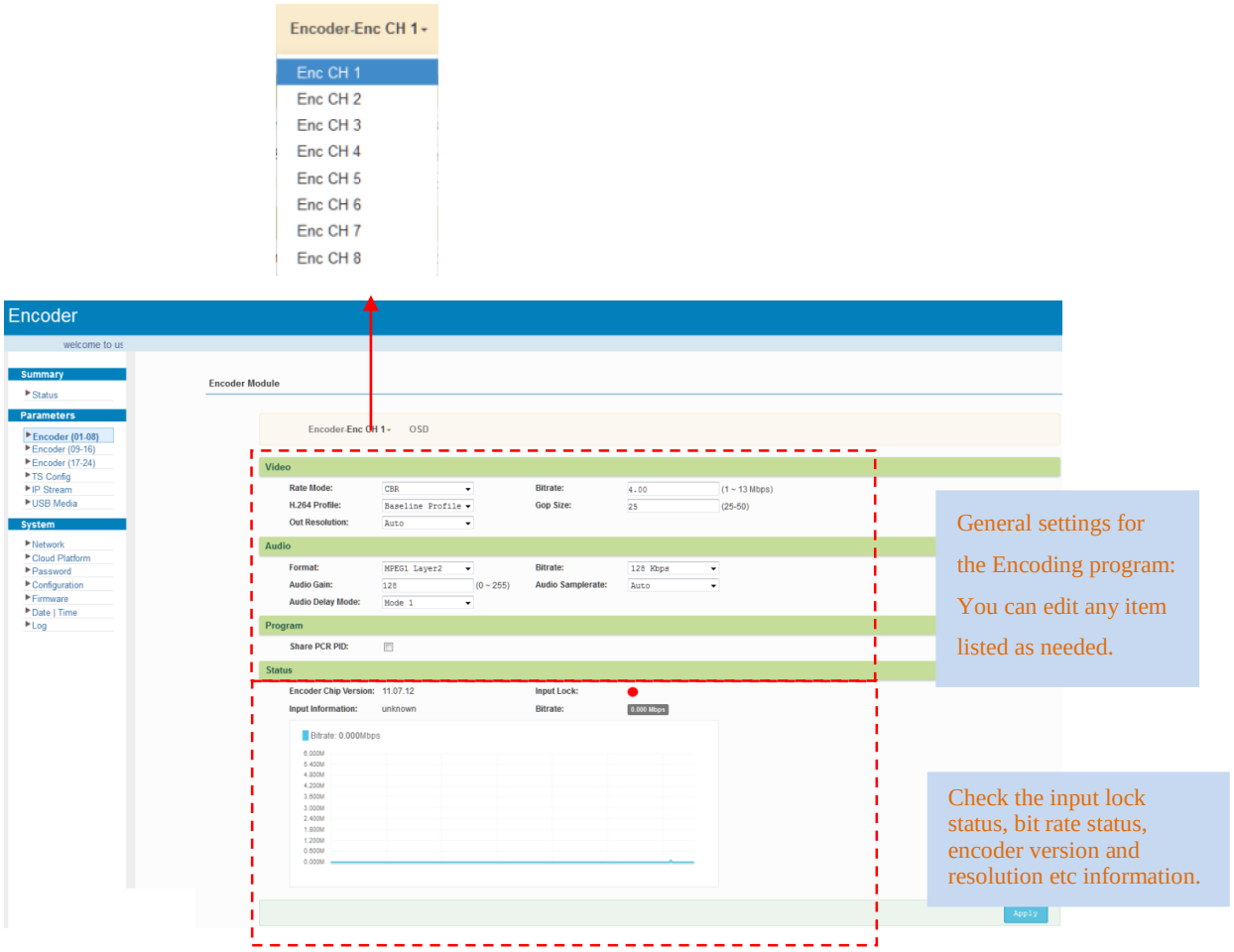

Figure-3

Apply button to apply the modified parameters.

Encoder (01-08) → OSD:

Click "OSD", it displays the interface as Figure-4/5/6 where to set Logo/ Caption/ QR Code parameters.

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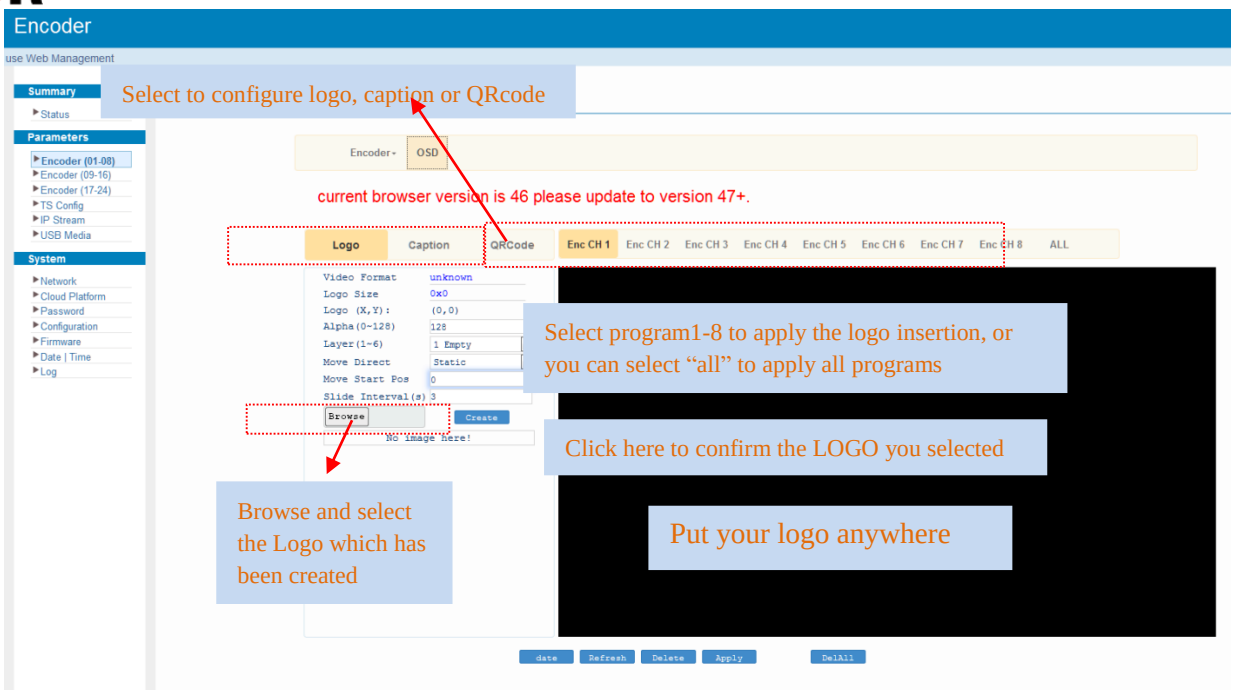

Figure-4

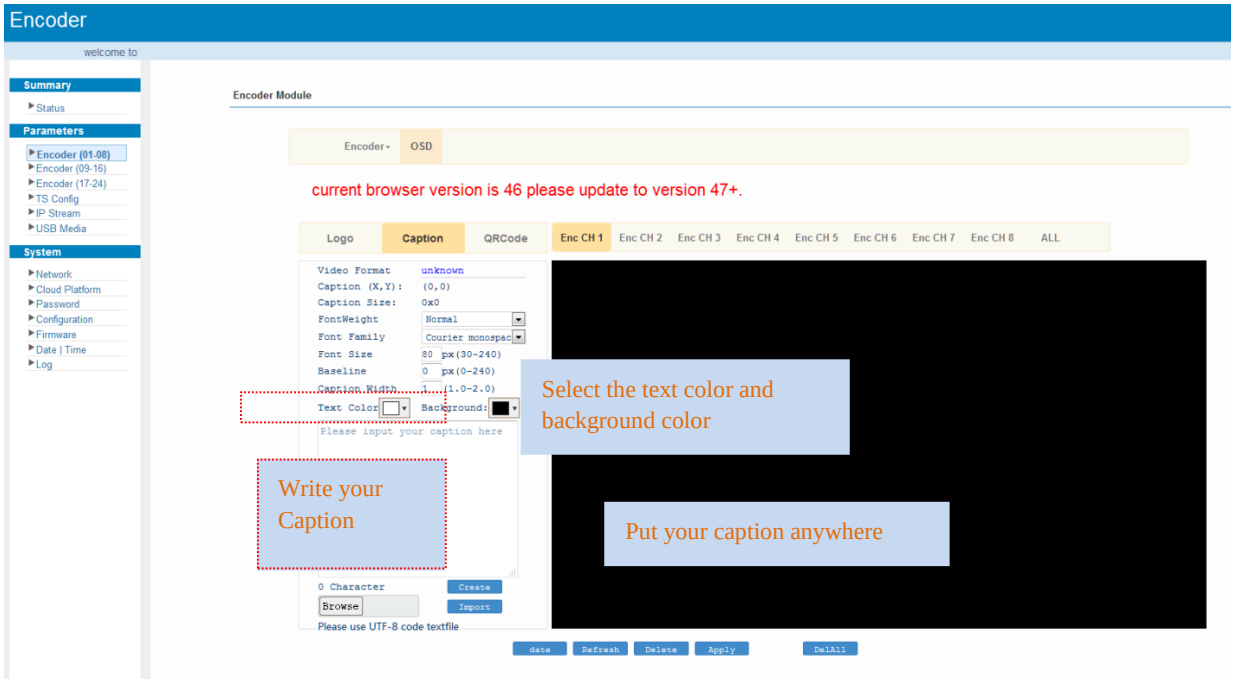

Figure-5

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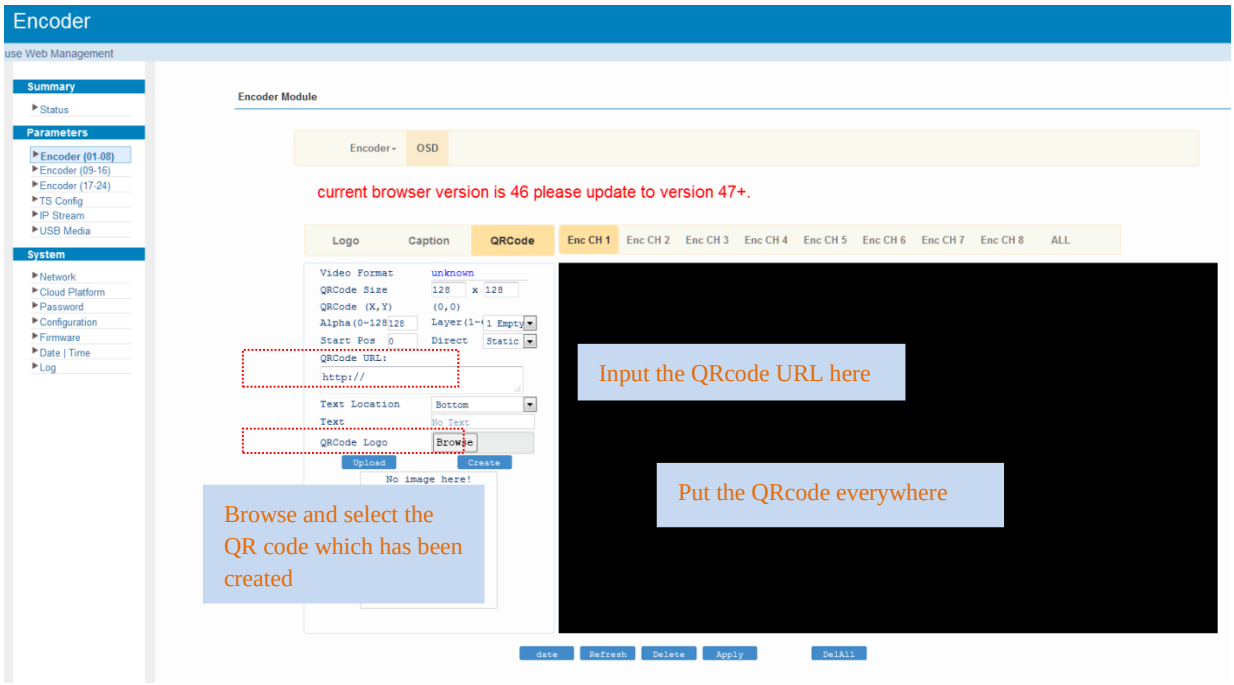

Figure-6

Parameters → Encoder (09-16)

From the menu on left side of the webpage, clicking "Encoder (09-16)", it displays the information of each encoding channel from the encoder as Figure-7.

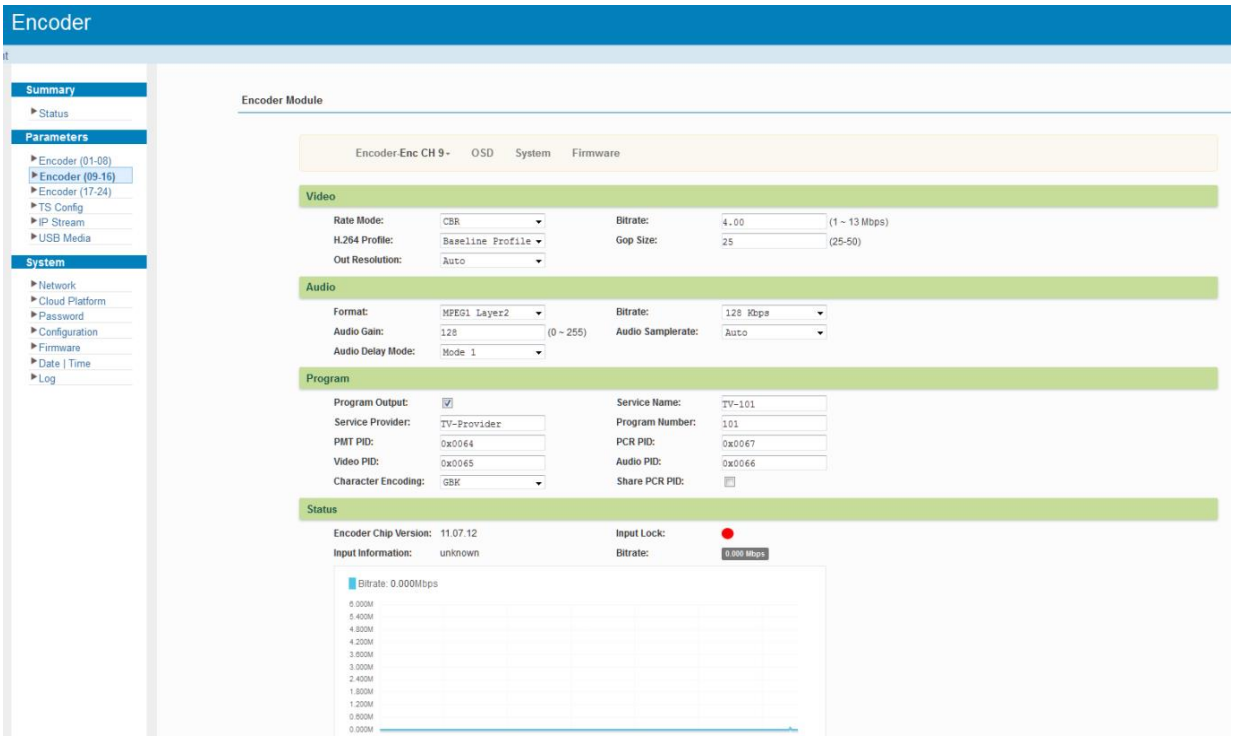

Figure-7

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Encoder (09-16) → OSD

OSD setting is same as the one in the encoder (01-08).

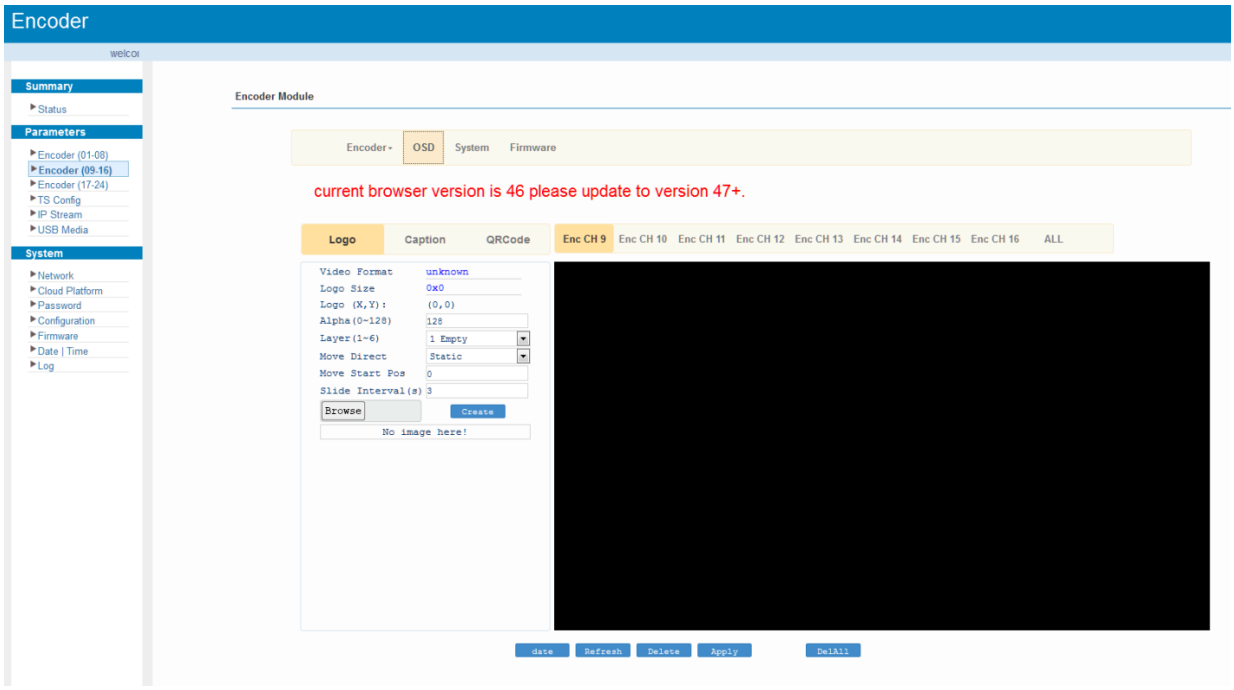

Figure-8

Encoder (09-16) → System

Under **System** page, you can check the software version information of the encoder module, save, restore or load factory set the module configuration.

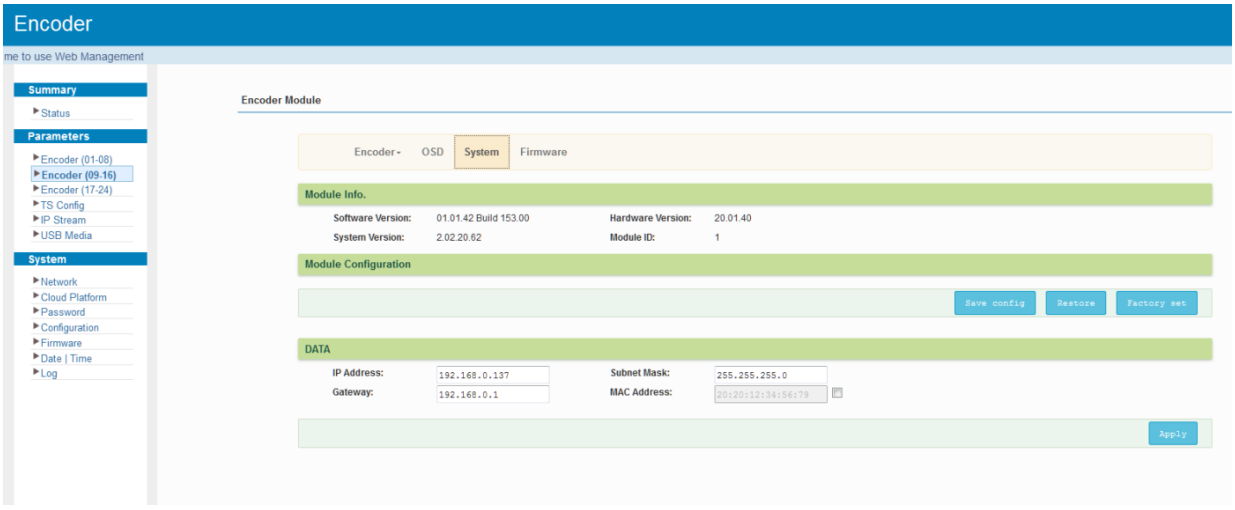

Figure-9

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Encoder (09-16) → Firmware

Under the Firmware page, you can update the software for the encoder module.

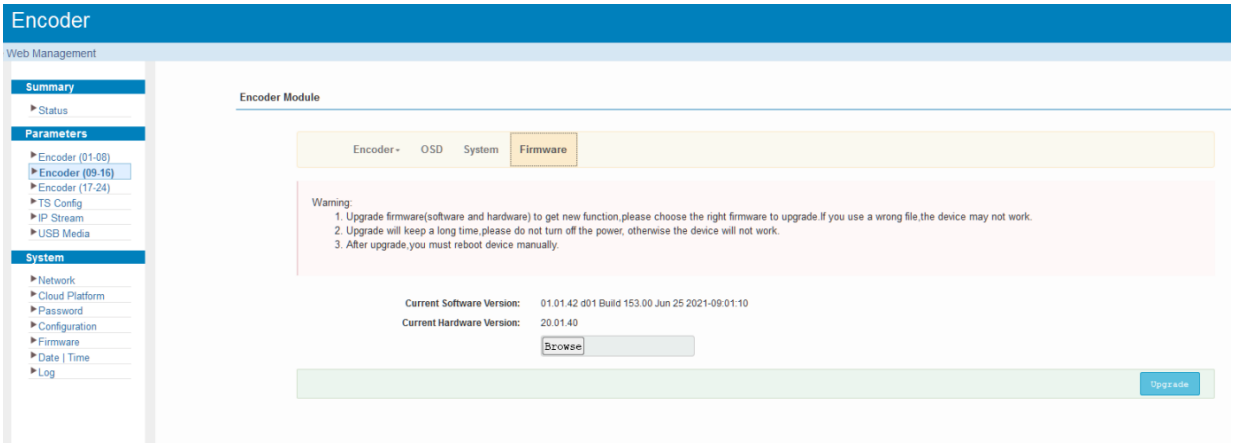

Figure-10

Parameters → Encoder (17-24)

Encoder (17-24) shares the same configuration steps with encoder (09-16).

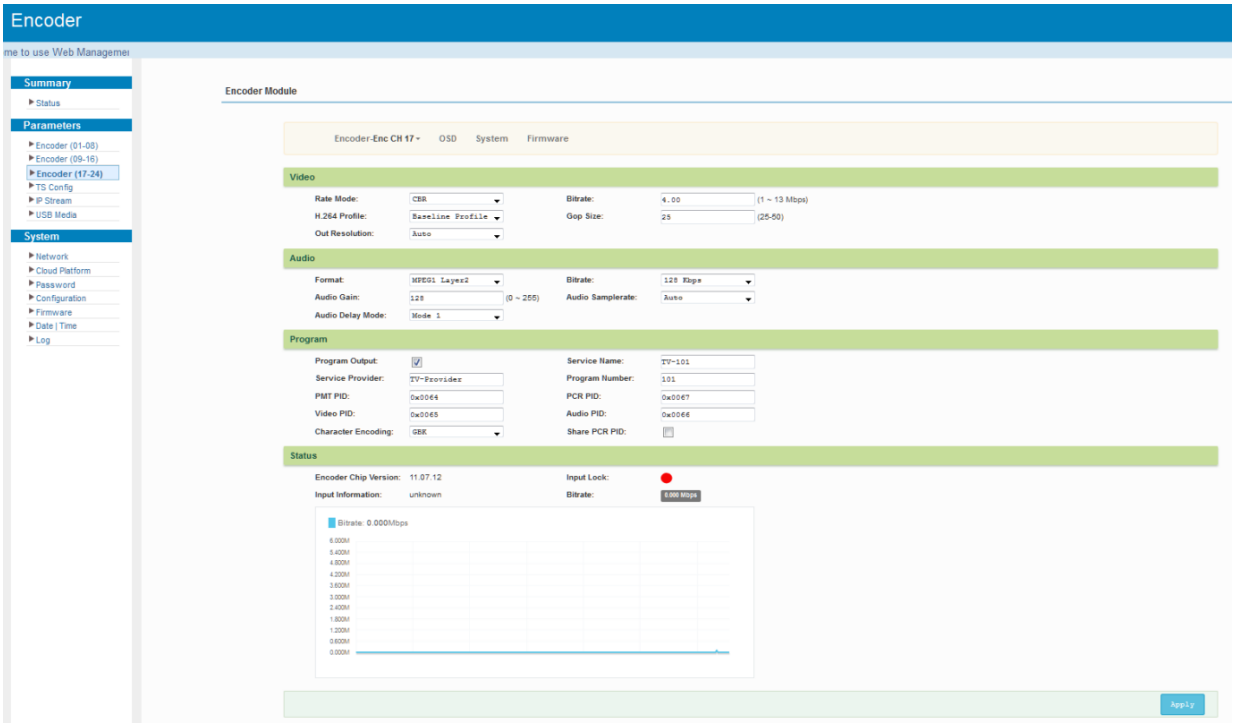

Figure-11

Parameters → TS Config:

From the menu on left side of the webpage, click “TS Config”, it displays the interface where you can configure the TS output parameters.

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- **TS Config→MPTS:**

Clicking “Stream select”, it displays the interface where users can select program(s) to multiplex out and modify program info. (Figure-12)

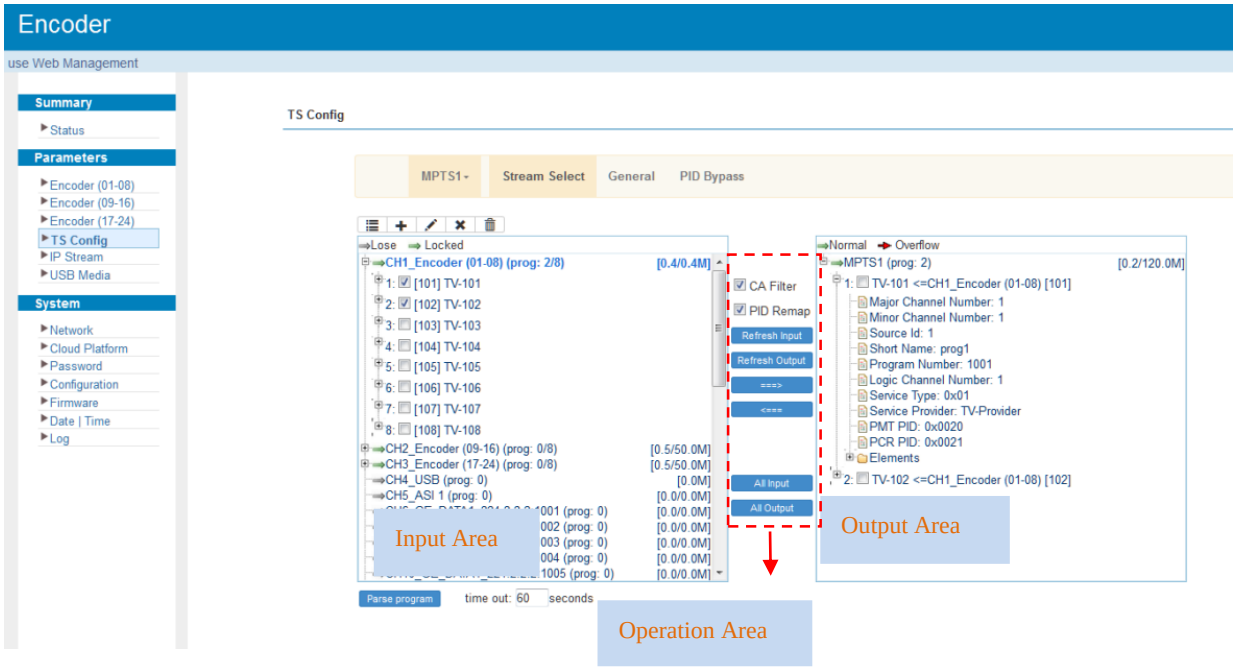

Figure-12

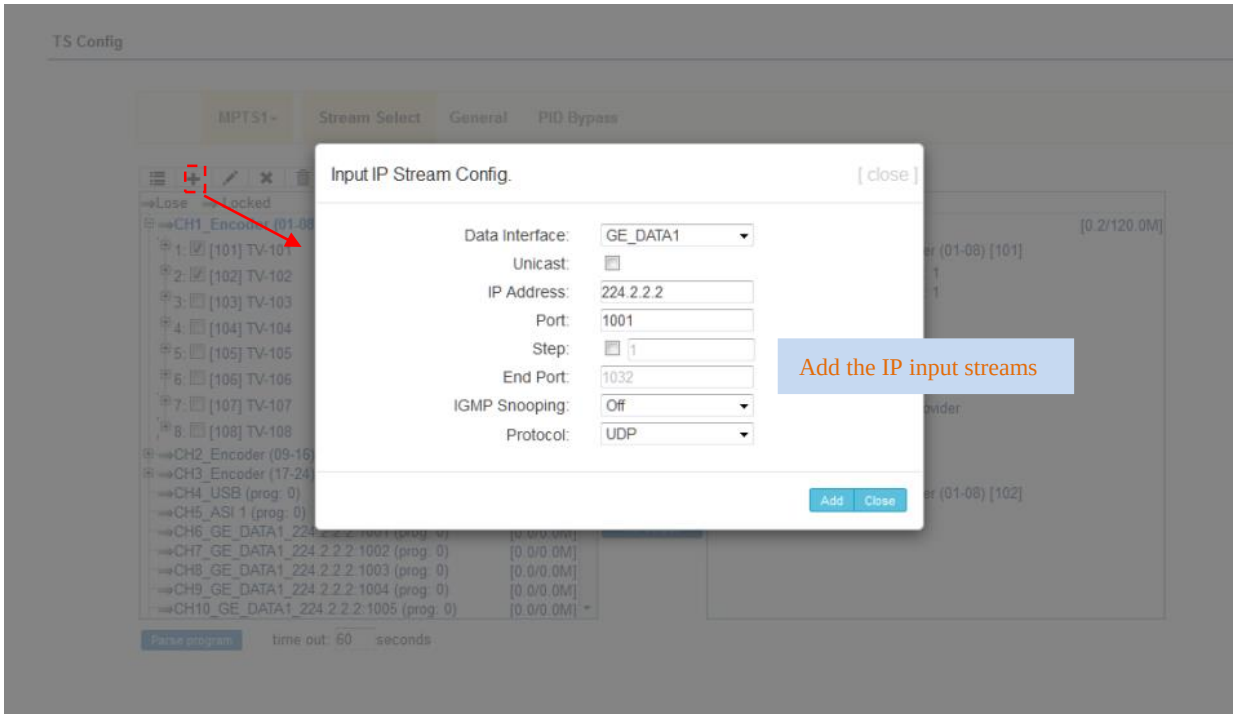

Figure-13

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

Lose Locked : To check source streams locked or not, green means current source streams locked

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

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

PidRemap : 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

➢ **Program Modification:**

The multiplexed program information can be modified by clicking the program in the 'output' area. For example, when clicking TV-101 <=CH1_Encoder (01-08) [101], it triggers a dialog box (Figure-14) where users can input new information.

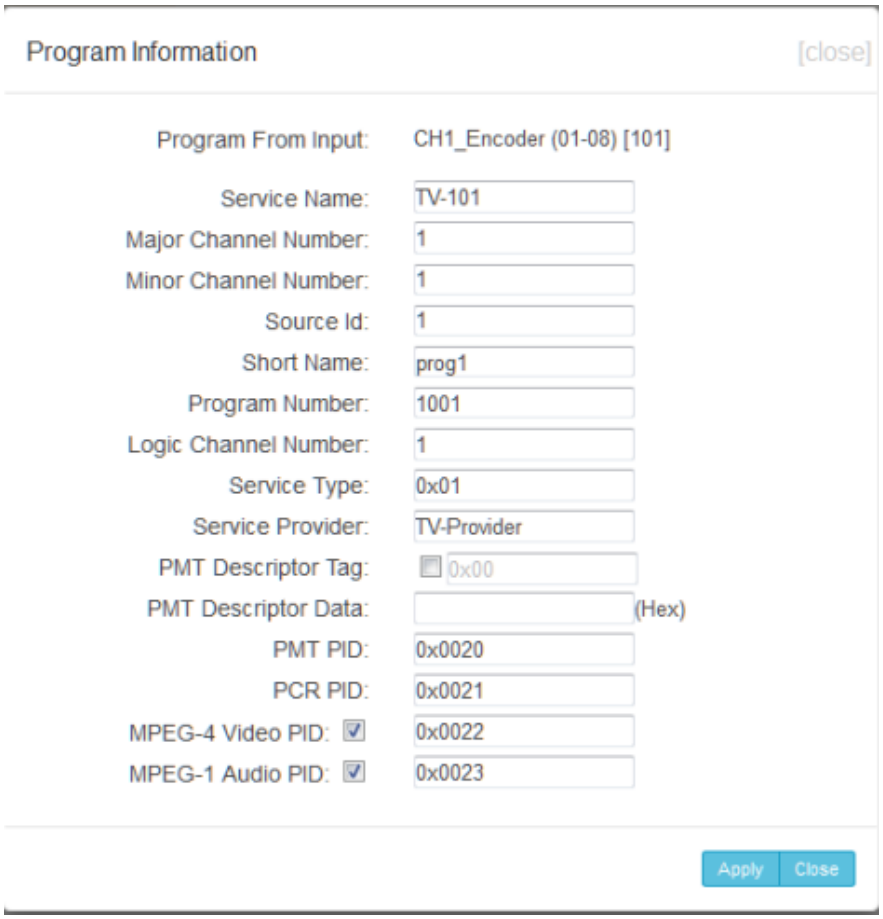

Figure-14

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➢ **TS Config→General:**

From the TS Config menu on up side of the webpage, clicking “General”, it displays the interface where users can enable PSI/SI table out and insert NIT etc. (Figure-15)

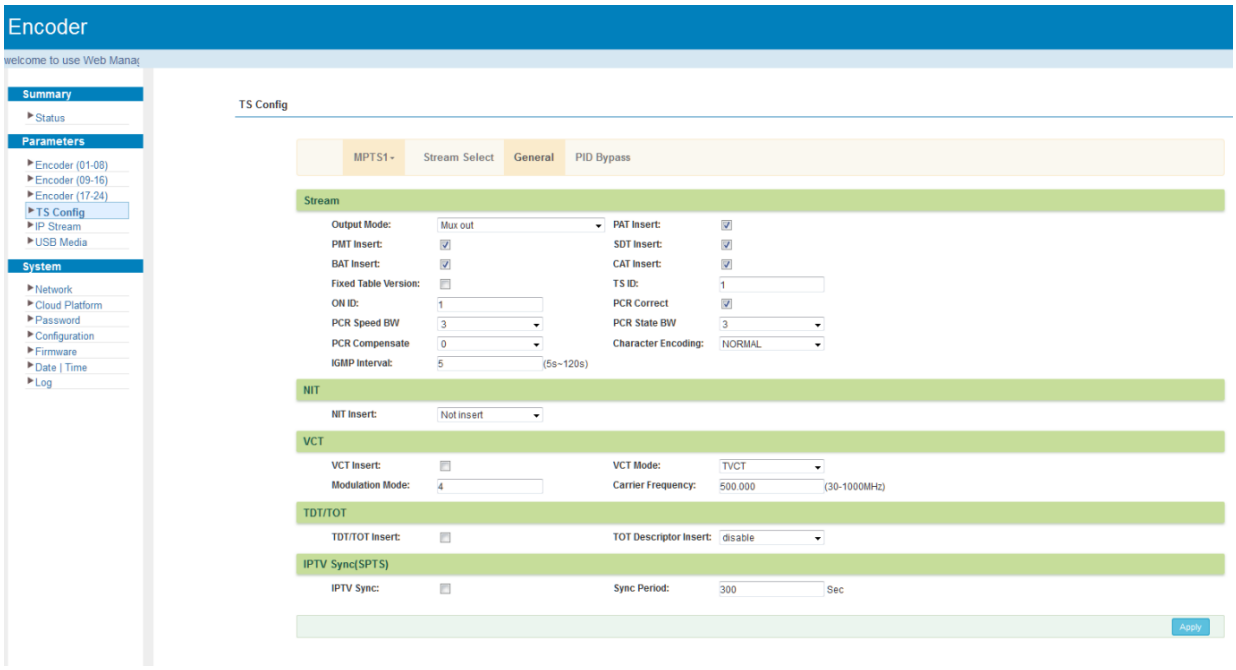

Figure-15

➢ **TS Config → PID Bypass:**

You can bypass the wanted PIDs here.

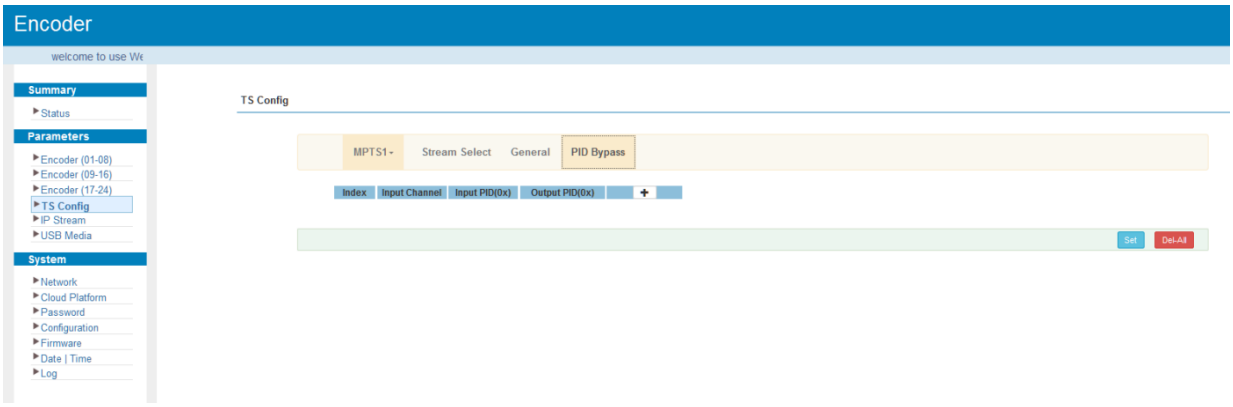

Figure-16

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➢ TS Config→SPTS:

You can enter this Web page to edit the program information in SPTS out as Figure-17.

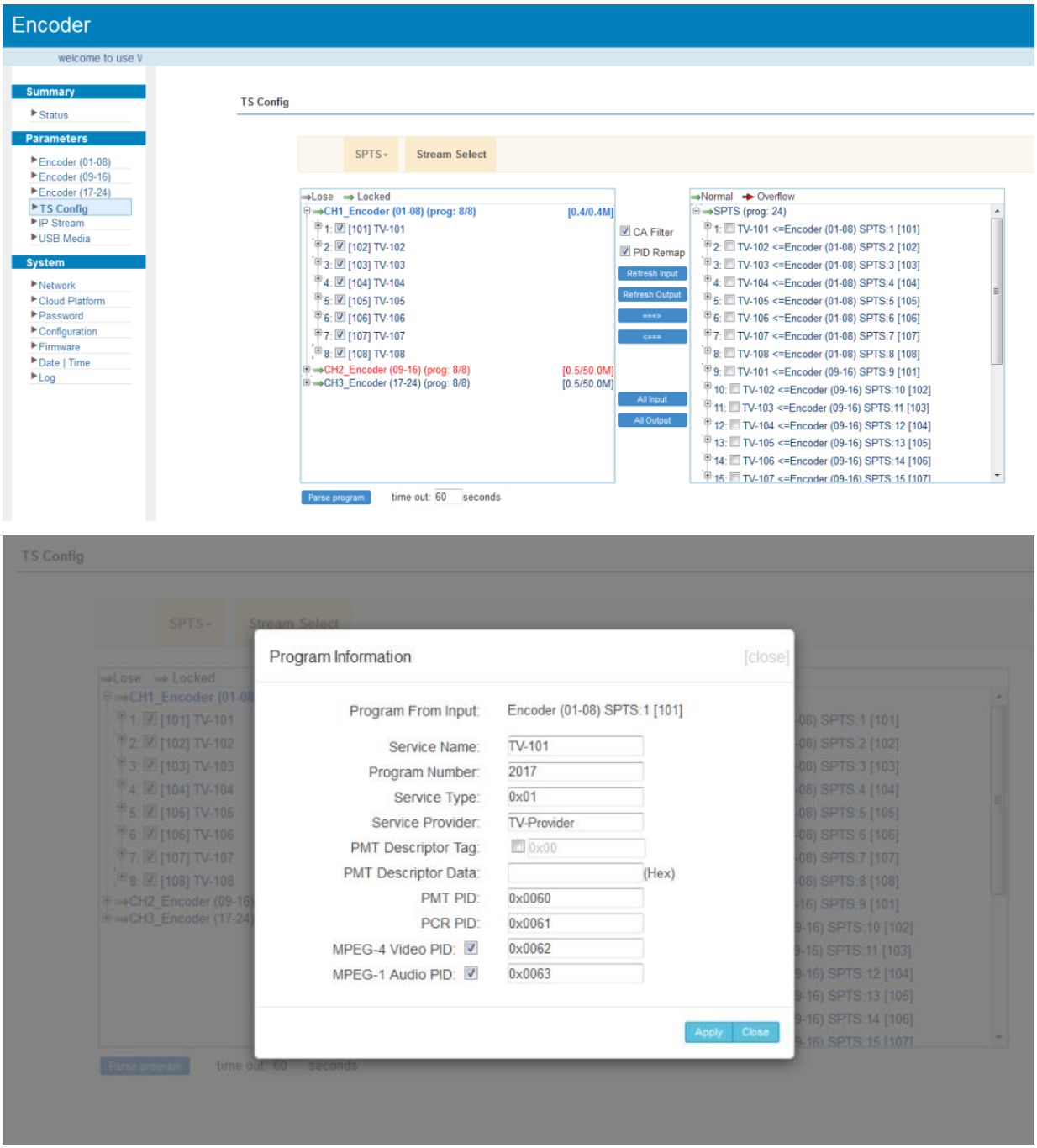

Figure-17

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Parameters →IP Stream

H-HDPerformux-4/8/16/24 has 1MPTS output and 4/8/16/24 SPTS output through the DATA port.

When you click “IP Stream”, it will display the interface as Figure-18 where to set IP out parameters.

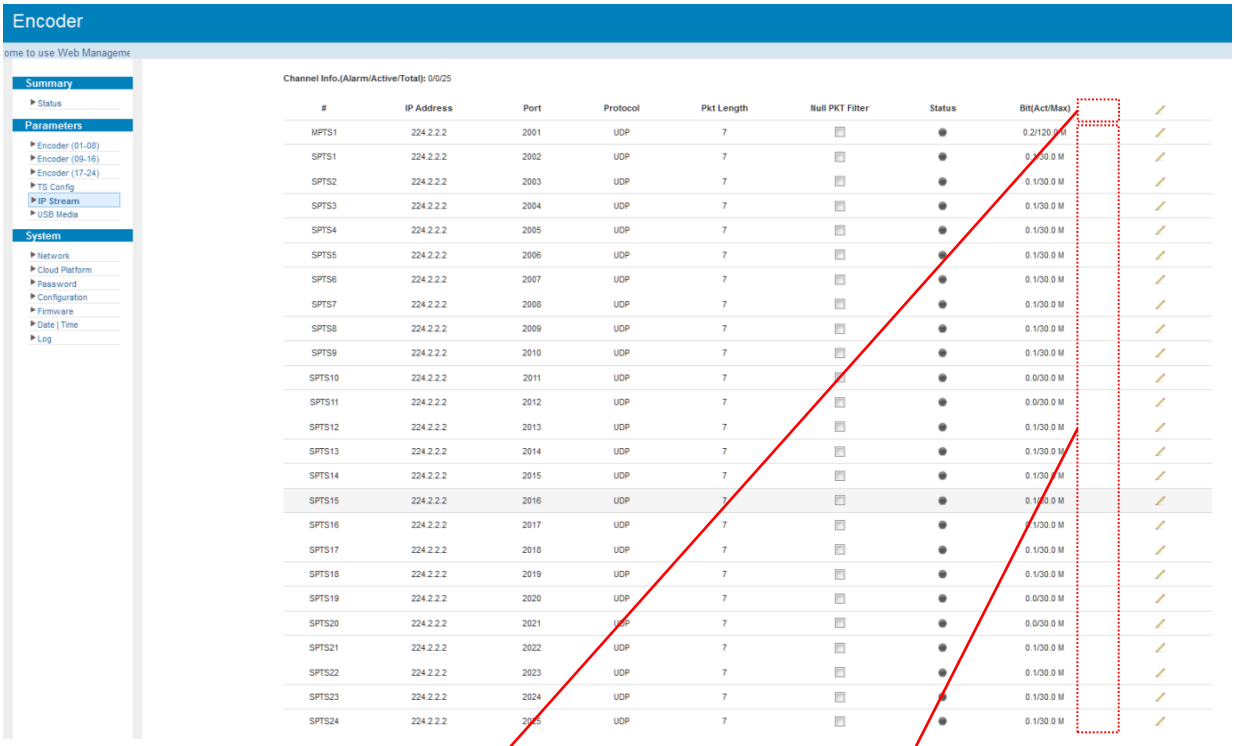

Figure-18

When you click “pen” button, it triggers a dialog box (Figure-19) where you can set the parameters of the corresponding IP output streams. The setting in Quickly Config will take effect for all IP outputs, and the setting in Channel X Config will take effect for the correspondingly individual IP output stream only.

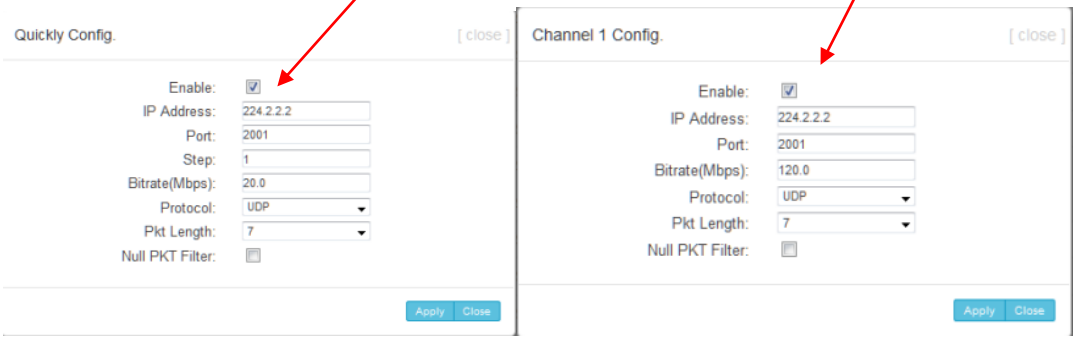

Figure-19

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Parameters → USB Media:

Under USB Media page, user can play the TS files from the USB disk. Play Mode is selectable as the below list shows. After playing the files, the programs in the .ts files can be multiplexed out in TS Config page.

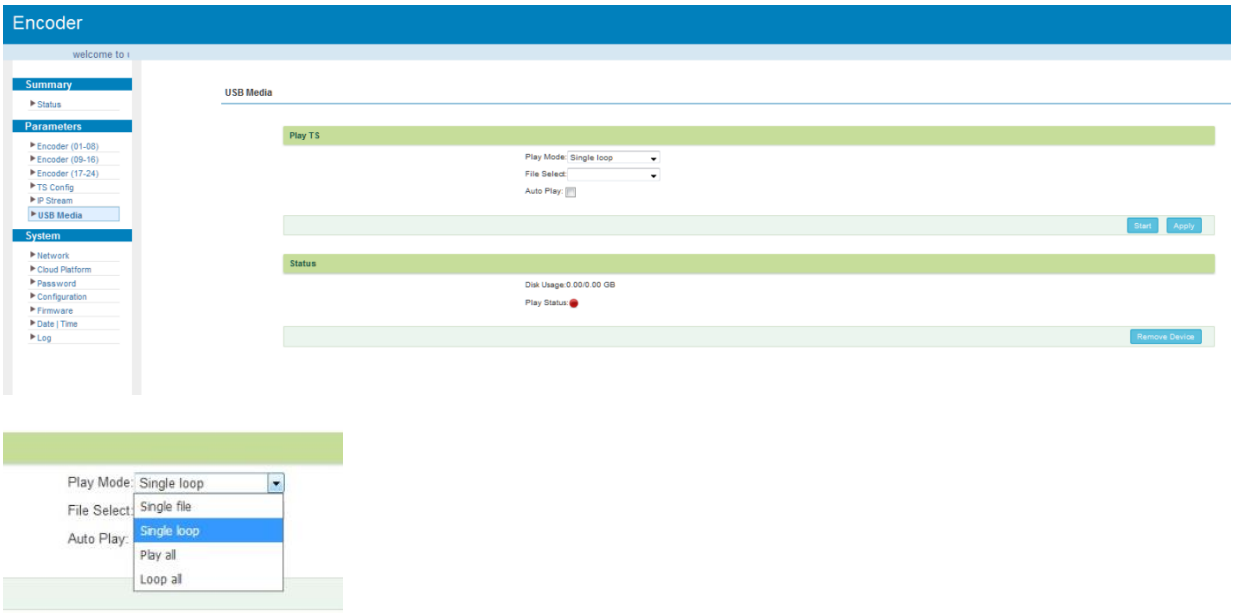


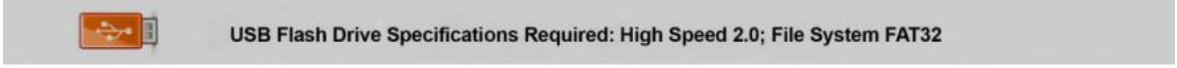
Figure-20

Detailed Explanation:

Play Mode: Youcan select a play mode for the *.ts files as needed before playing the *.ts file and specify a video under ‘Single file’ / ‘Single loop’ mode and press “Apply” and “Start” button to start play. While under ‘Play all’ / ‘Loop all’ mode, it automatically plays files from first to end. Loop means that it will pay the selected files round.

Auto Play: If ticked, the device will automatically play the .ts files as per the saved setting after reboot.

The .ts files can also be generated by our TS Creator software. If needed, users can contact our technician to get the software.



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System→ Network:

Clicking “Network”, it will display the interface as Figure-21 where to set NMS and DATA parameters.

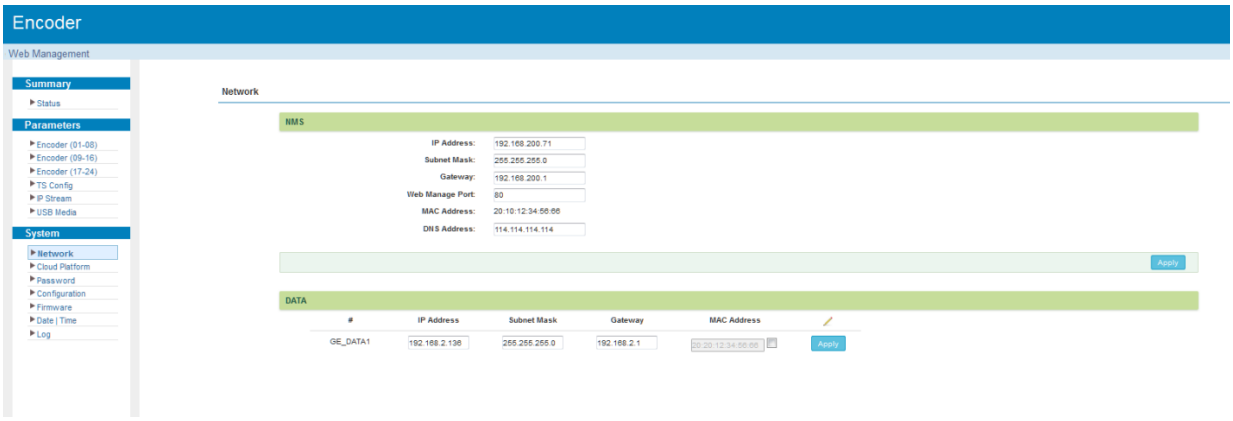

Figure-21

System→ Cloud Platform:

WE ARE STRICTLY TESTING THIS FOR NOW; NOT AVAILABLE WITH HARDWARE.

Figure-22

System → Password:

Clicking “Account”, it will display the screen as Figure-23 where to set the login account and password for the web NMS. Both the current username and password are “admin”.

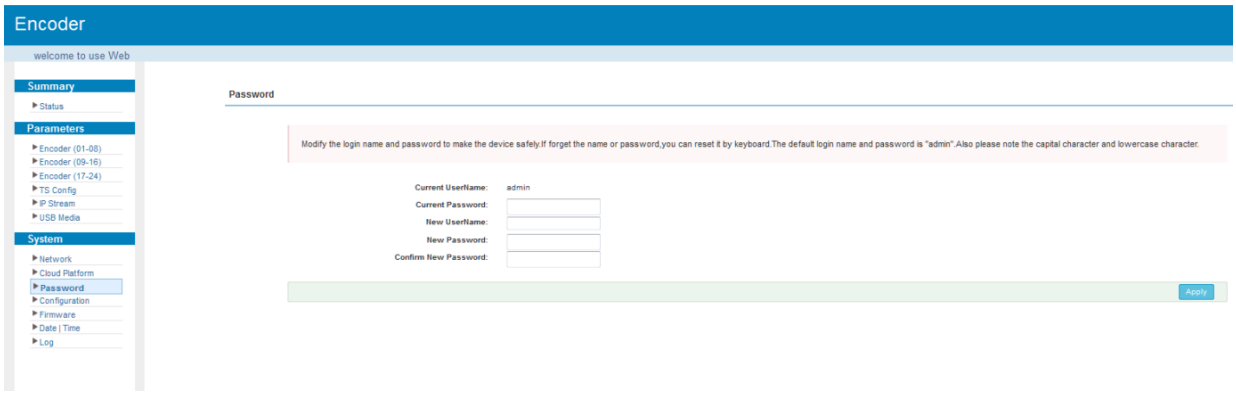

Figure-23

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System → Configuration:

Clicking “Configuration”, it will display the screen as Figure-24 where to save/ restore/factory set/ backup/ load your configurations.

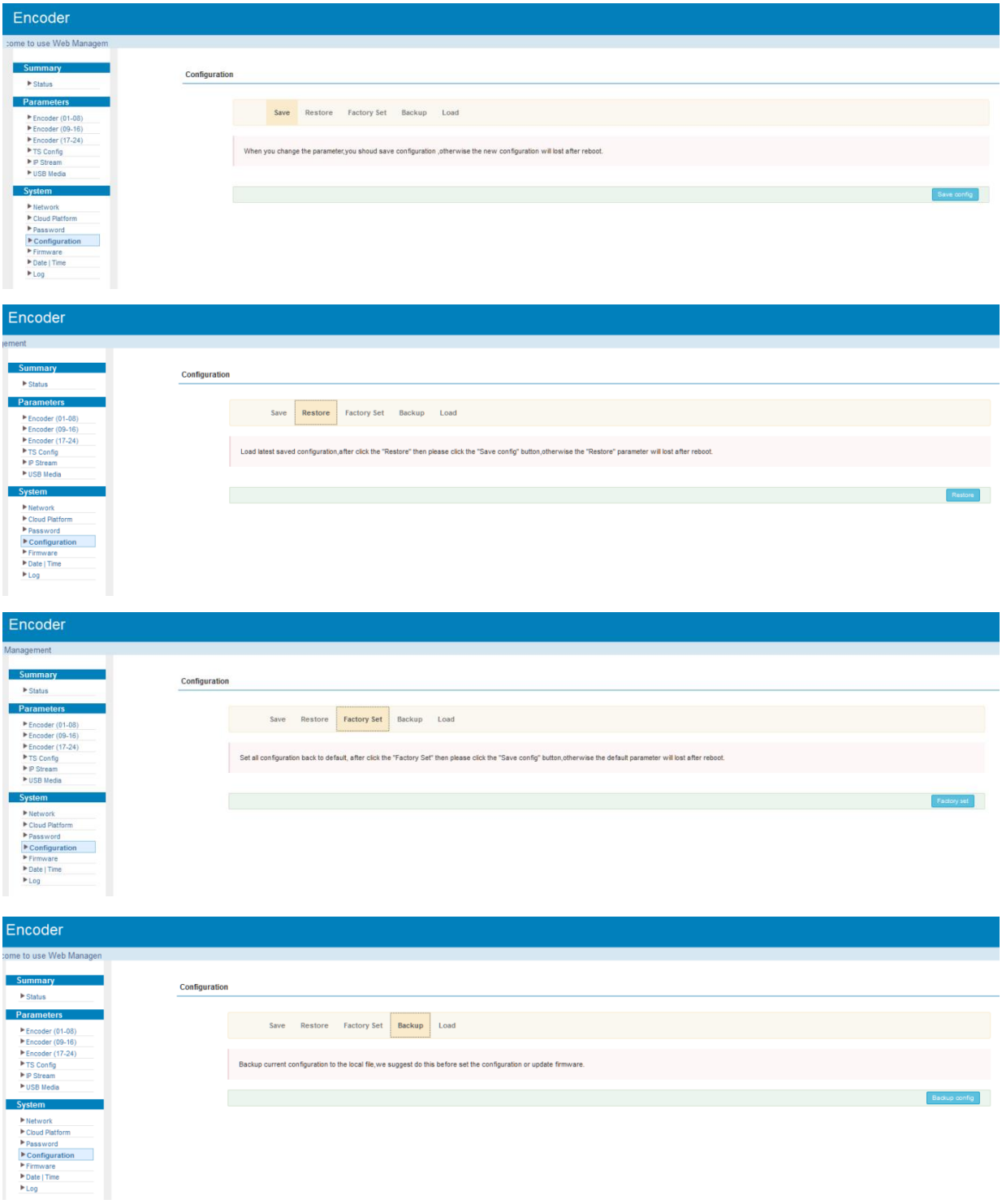

Figure-24

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System → Firmware:

Clicking “Firmware”, it will display the screen as Figure-25 where to update firmware for the encoder.

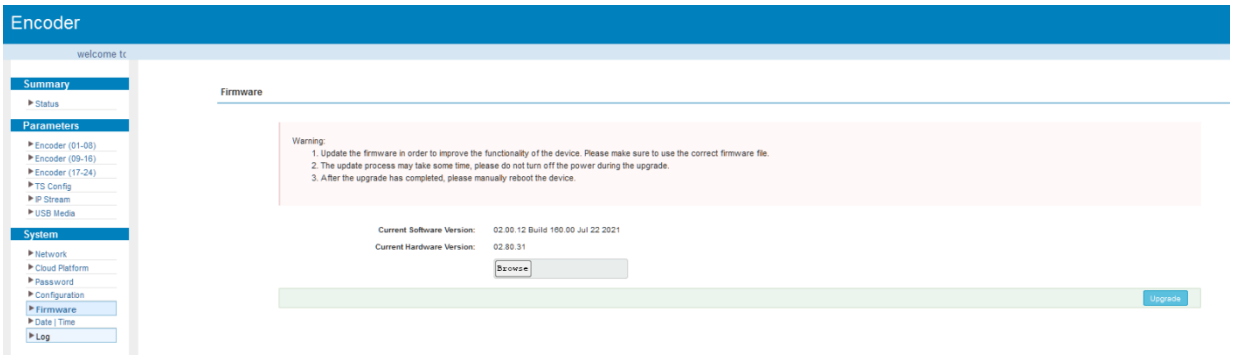

Figure-25

System → Date/Time:

Clicking “Date/Time”, it will display the screen as Figure-26 where to set date and time for the device.

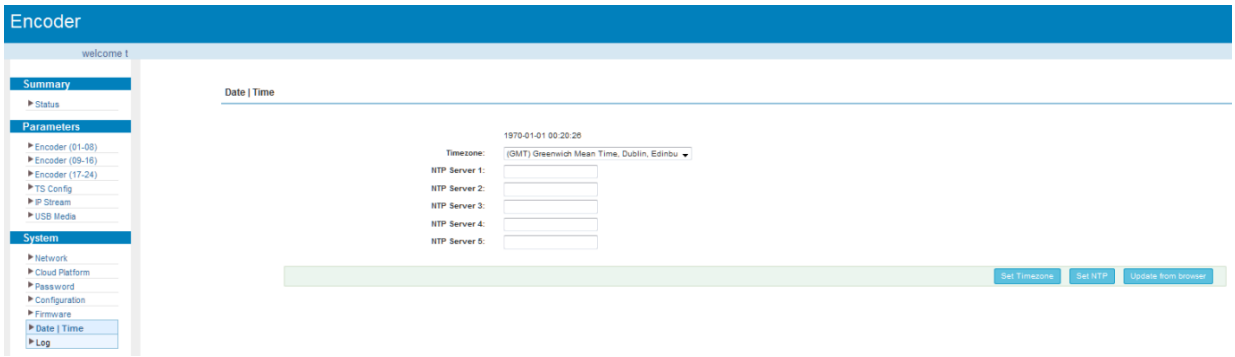

Figure-26

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System → Log:

Clicking “Log”, it will display the log interface as Figure-27 where to check or export the Kernel/System log.

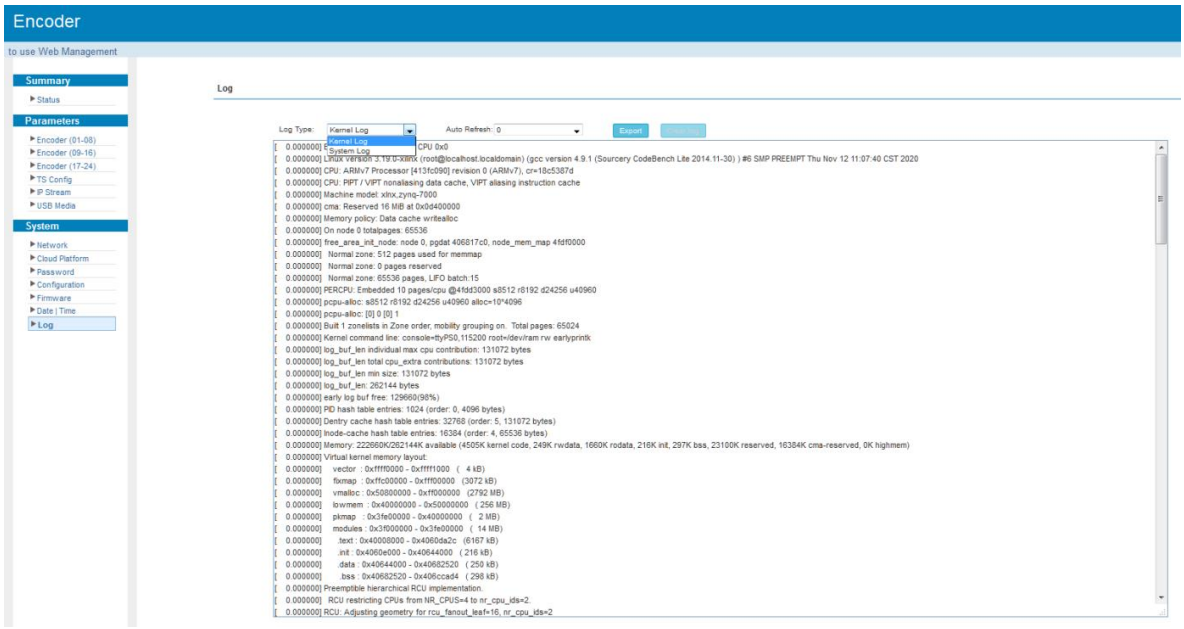

Figure-27

Chapter 4 Troubleshooting

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

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Chapter 5 Packing list

- H-HDPerformux-4/8/16/24 Multi-Channel Encoder 1pc
- HDMI cables 4/8/16/24 pcs as per HDMI model
- Power cord 1pc
- Ground lead 1pc

For Further Tech Support

1-800-521-Thor(8467)

support@thorfiber.com

Quick Install Guide

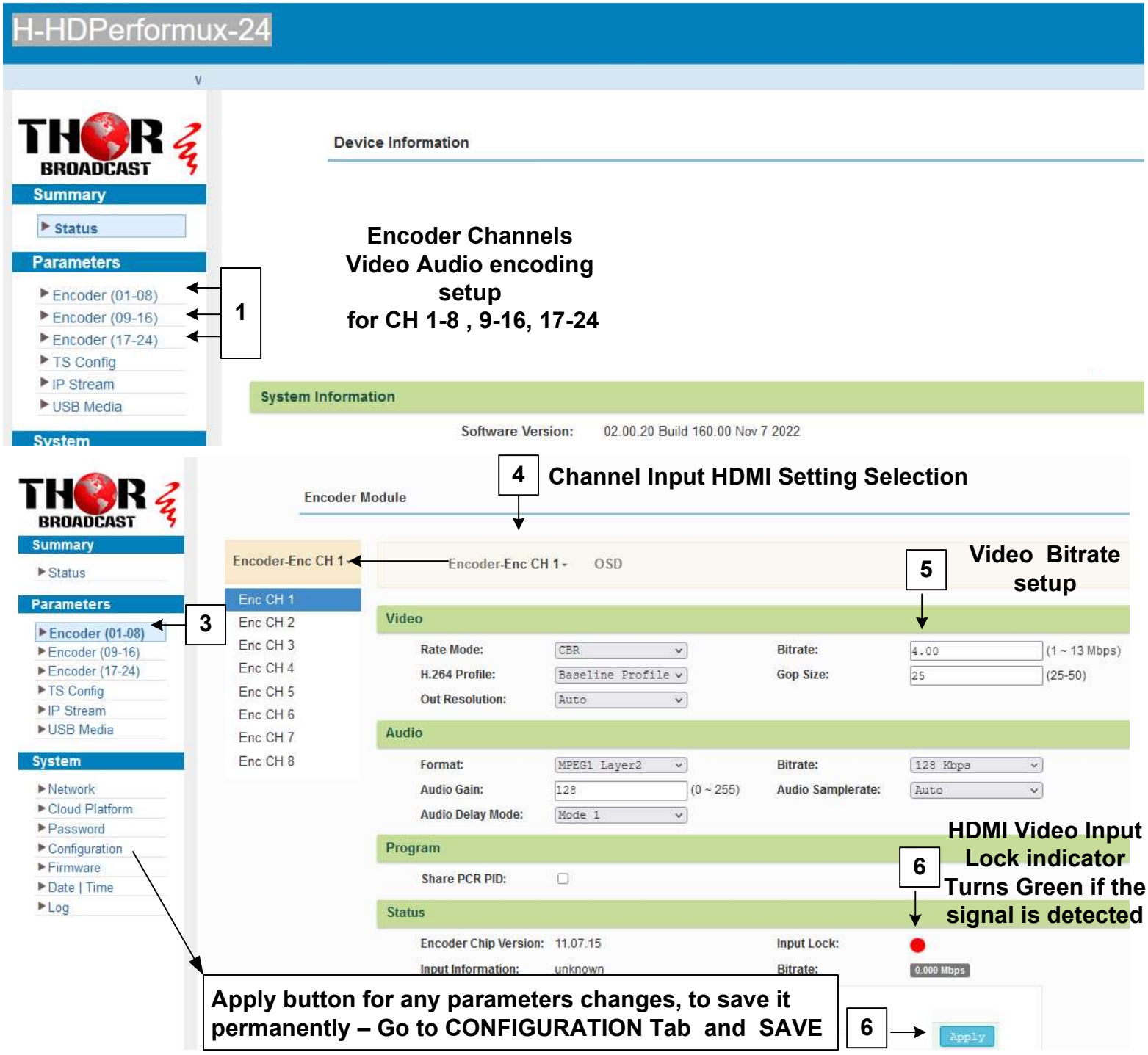
Quick configuration Guide for H-HDPerformux- 8/16/24

Login instructions:

In order to log in to the Modulator NMS port, please set your PC's NIC Ethernet card to the following IP address: 192.168.0.100.

Access Modulator GUI by typing derail IP address 192.168.0.136 in to the browser
Login /password – admin/admin

192.168.0.136



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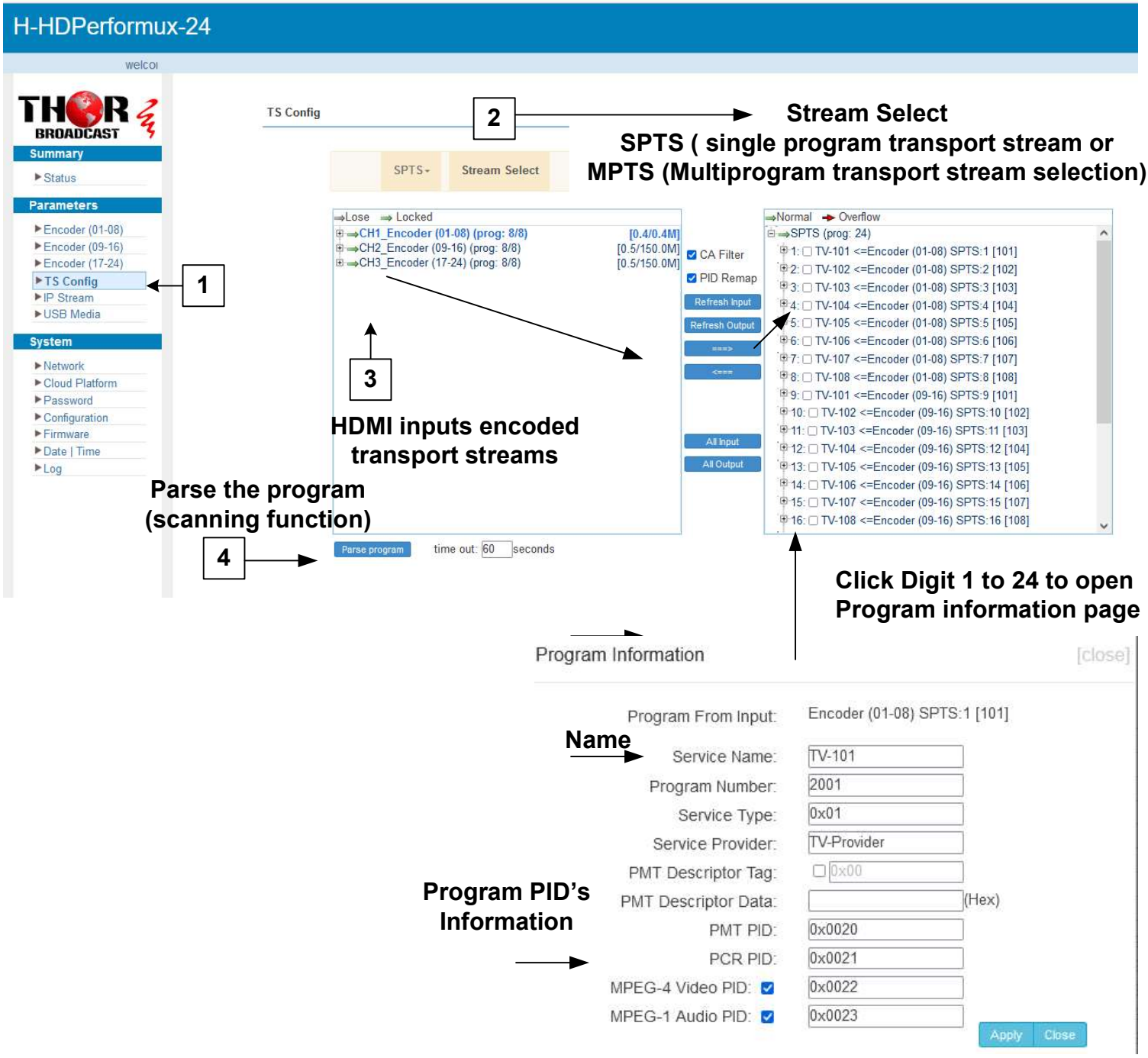
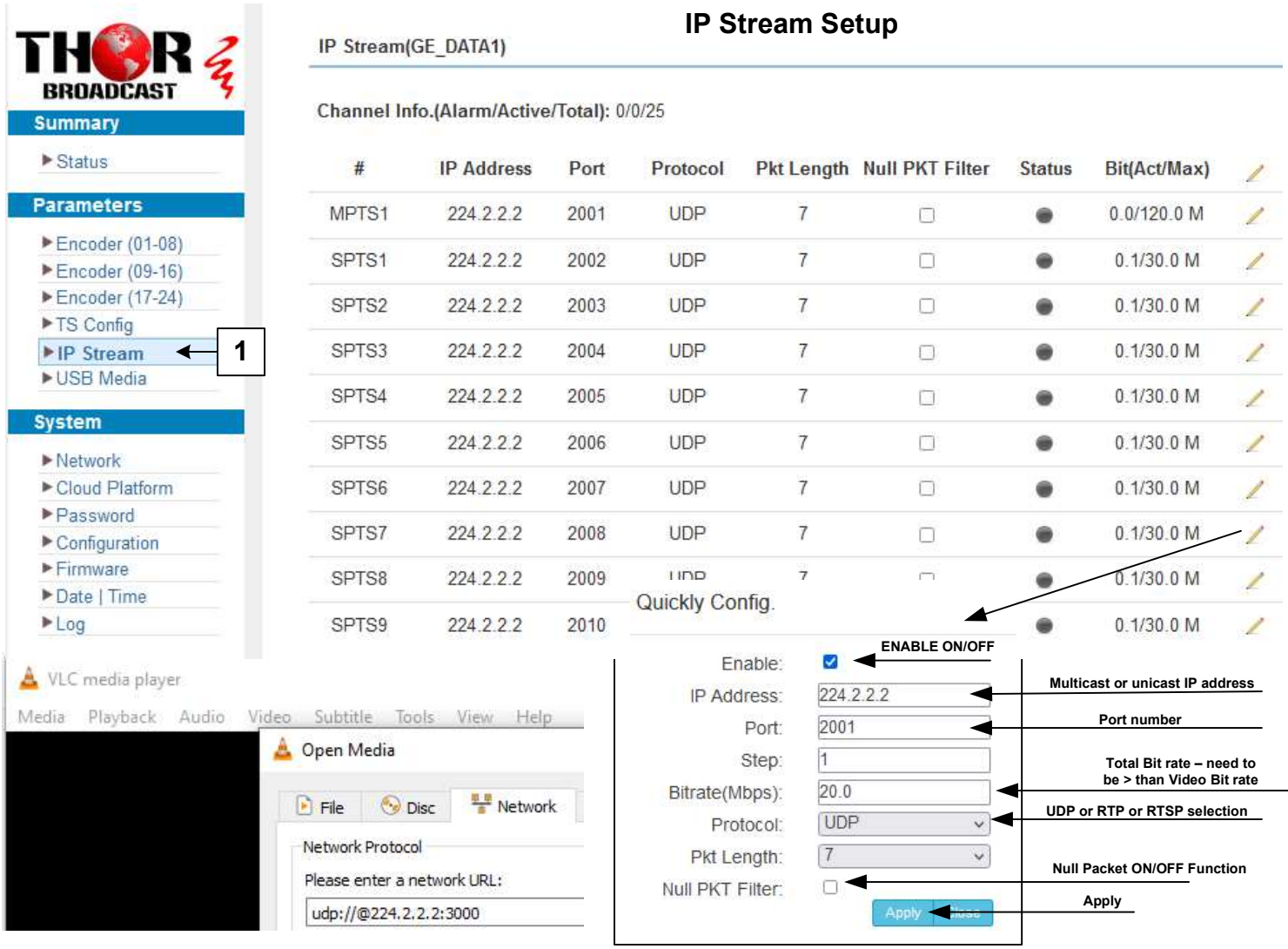
TS Config **Program Information setting**

This page controls which HDMI Input CH 1-24 or ASI or USB (in MPTS) are selected and moved to the IPTV outputs
By default all 24 channels are selected



IP Stream Setup

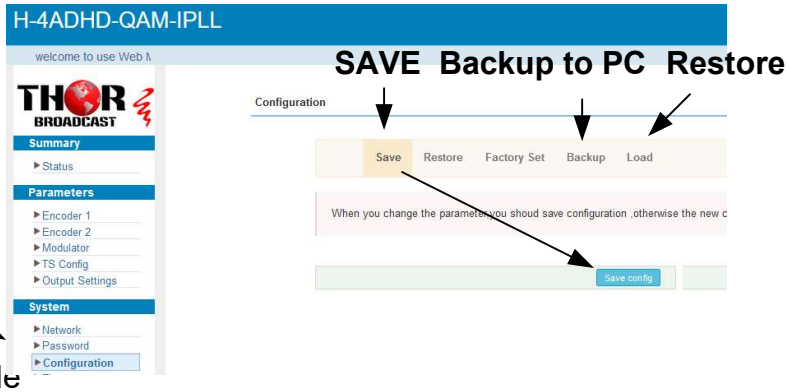


IPTV streaming is sent out from the data port and can be tested using VLC player.

UDP syntax example is udp://@224.2.2.2:2001
RTP syntax example is rtp://@224.2.2.2:2001
RTSP syntax example is rtsp://(DATA IP ADRESS):5000/1-4

1. Click the pencil icon for MPTS's or SPTS's section. Drop box will open to configure channel 1
2. Enable and edit your IP preferences
3. Press apply

Configuration Saving / Backup / Restore



1. Click the configuration tab on the left hand side
2. Click the save tab
3. Press save config –

YOU MUST SAVE OR ALL CHANGES WILL BE LOST AFTER RESTART!