



# User Manual



**All Inputs IPTV Streaming and ASI HD  
Encoder 608/708 Captioning MPEG2/4 4:2:2**

**H-MPEG2-H264-E2**

## 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

H-MPEG2-H264-E2 Mpeg-2/ H.264 HD Encoder is the new broadcasting audio & video encoding device with powerful functionality. It is equipped with multiple video input interfaces (HDMI, SDI, YPbPr and CVBS) and audio input interfaces (AES, BNC and XLR) to make it possible to compatible with different signal sources.

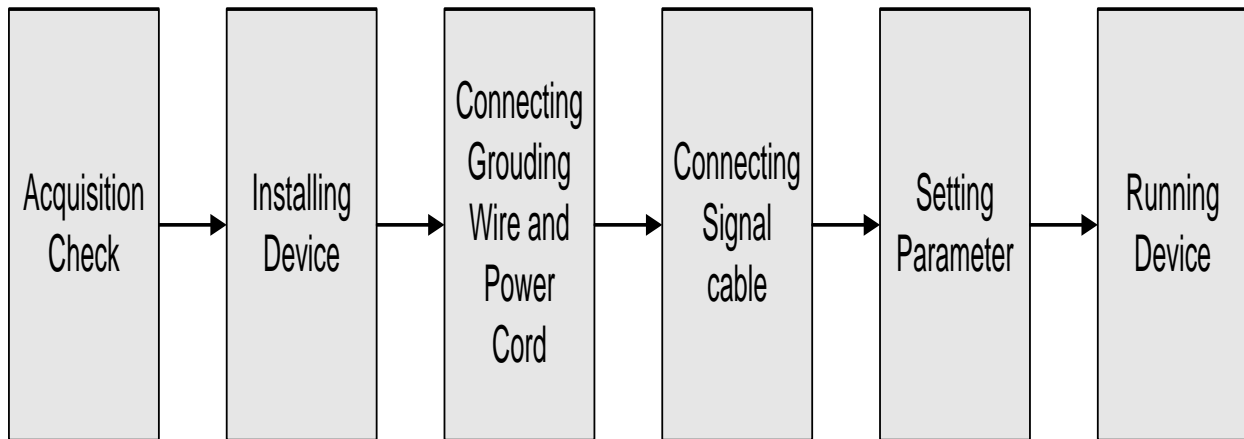
Multiple audio and video encoding formats are available to meet customers' various requirements. It supports 2 stereo to mix with the video to form a stream output. The encoded program will finally output in TS through ASI/IP port.

**H-MPEG2-H264-E2 is also featured with OSD (QR code, LOGO and Caption) insertion function and can display multiple elements at same time. Operator can insert advertisement picture, own LOGO, special QR code, Text content in encoding process independent of STB. It will bring more profit for product user(optional).**

### Key Features

- Support QR code, LOGO, OSD inserted(Language Supported: English for more languages please consult us...)(Optional)
- MPEG-2 HD/SD and MPEG-4 AVC/H.264 HD/SD video encoding
- MPEG1 Layer II, HE-AAC (v1&v2), LC-AAC and DD AC3 audio encoding
- Support DD AC3 audio passthrough (for SDI in) (Optional)
- Support 2 stereo audio encoding
- Support ASI output and IP over UDP and RTP output
- Support 1080I,720P, 480I, 576I video resolution and downscale transform
- Support video buffer, free to switch video sources (all video interface available)
- Support CC (closed caption), EIA 608 and EIA 708 (for CVBS and SDI in)
- LCD / keyboard control and web management
- Support low latency

**Inner Principle Chart**



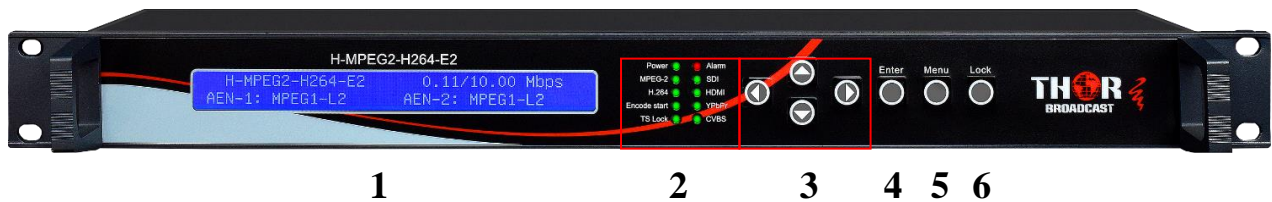
**Tech Specifications**

<b>Video</b>	Interface	1×HDMI, 1×HD-SDI, 1×YPbPr and 1×CVBS(only for CC)			
	Resolution	<b>Input</b>		<b>Output</b>	<b>Interface Applicable</b>
		1920×1080p@60/59.94		1920×1080p@60,	
		1920×1080p@50		1920×1080p@50	SDI, HDMI, YpbPr
		1920×1080i @60/59.94		1920×1080i @60	
		1920×1080i @50		1920×1080i @50	
		1280×720p@60/59.94		1280×720p@60	
		1280×720p@50		1280×720p@50	
		720×576i@50		720×576i @50	SDI, HDMI
	720×480i@60		720×480i @60		
Encoding	MPEG-2 HD/SD, MPEG-4 AVC/H.264 HD/SD				
Bitrate Range	2.5 – 19.00 Mbps				
Rate Control	CBR/VBR				
GOP Structure	IP, IBBP, IBBBP				
Chroma	4:2:0				
<b>Audio</b>	Interface	2×XLR, 2×AES, 2×BNC, 1×SDI (support maximum 2 stereos synchronous processing), 1×HDMI,			
	Encoding	MPEG-1 Layer II, HE-AAC (v1&v2), LC-AAC, DD AC3 pass-through (for SDI and HDMI in)			
	Sampling rate	48KHz			
	Bit-rate	32Kbps~384Kbps			
<b>Stream Input</b>		2 ASI Input for remux			
<b>Stream output</b>		2×ASI output ports, BNC interface 2 IP (MPTS) over UDP / RTP /RTSP, 1000 Base-T Ethernet interface*2 with independent IP addresses (multicast/unicast)			
<b>System function</b>		LCD/keyboard and web management Language: English			

	Ethernet software upgrade	
<b>General</b>	Dimensions	482mm×405mm×44.5mm (W × D × H)
	Temperature	0~45℃ (Operation), -20~80℃ (Storage)
	Power	AC110V±10%, 50/60Hz; AC 220V±10%, 50/60Hz
	Consumption	16W

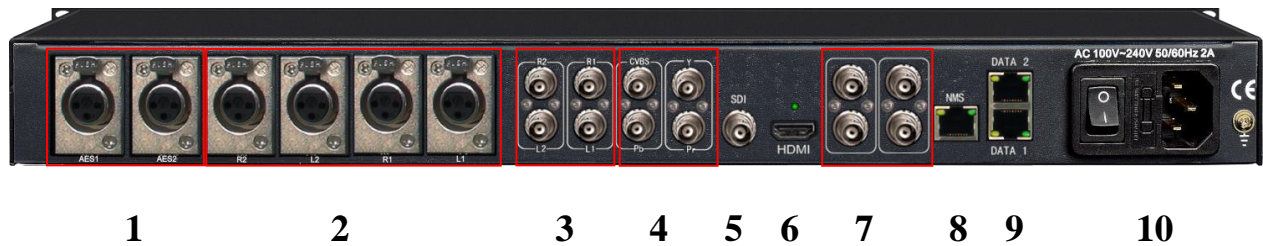
## 1.2 Appearance and Description

### Front Panel Illustration



- ① LCD window
- ② Indicators
- ③ Up and down, left and right navigation buttons
- ④ Enter button: for confirm
- ⑤ Menu button: for back step
- ⑥ Lock button: press to lock set

### Rear Panel Illustration



- ① AES input connector (for two channel digital stereo)
- ② Balanced Audio input connector
- ③ Unbalanced Audio input connector
- ④ YPbPr & CVBS video input connectors
- ⑤ SDI input connector (Audio input embedded)
- ⑥ HDMI input connector (Audio input embedded)
- ⑦ ASI input, ASI output
- ⑧ NMS connector for connecting Web management on PC
- ⑨ DATA Ports for IP stream output
- ⑩ Power Switch/Fuse

## 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.

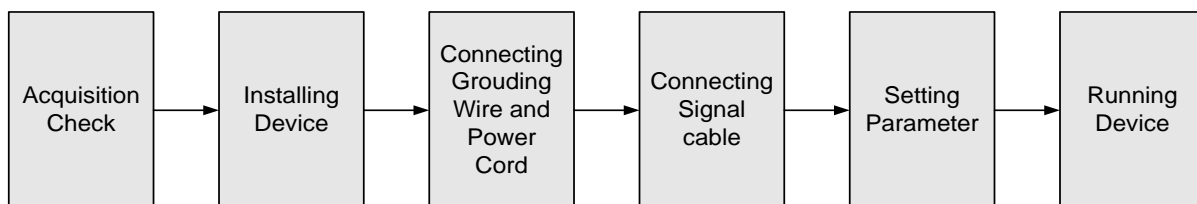
### 2.1 General Precautions

- ✓ 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 <sup>7</sup> ~1X10 <sup>10</sup> Ω , Grounding current limiting resistance: 1MΩ  (Floor bearing should be greater than 450Kg/m <sup>2</sup> )
Environment Temperature	5~40°C(sustainable) , 0~45°C(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 antitrust.
- ✓ 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 25 mm<sup>2</sup>.



## Chapter 3 Front Panel Operation

H-MPEG2-H264-E2 front panel is user operation interface where users configure the device manually. The LCD is a 2-line \* 40-character back-lit dot-matrix user interface with pushbuttons for **UP**, **DOWN**, **LEFT**, **RIGHT**, **ENTER**, **MENU**, and **LOCK** for front panel control.

User can decide whether to directly use the factory setting, or customize the input/output parameters and etc.

### Keyboard Function Description

**LEFT/RIGHT:** choose and set the parameters

**UP/DOWN:** choose parameters or page up/down.

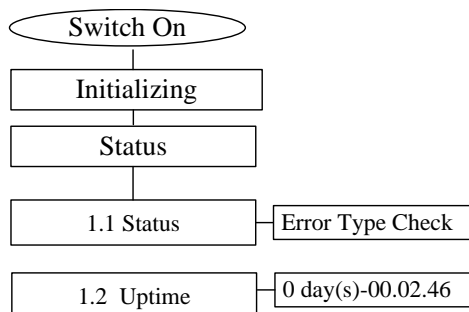
**MENU:** cancel present entered value, return superior setting;

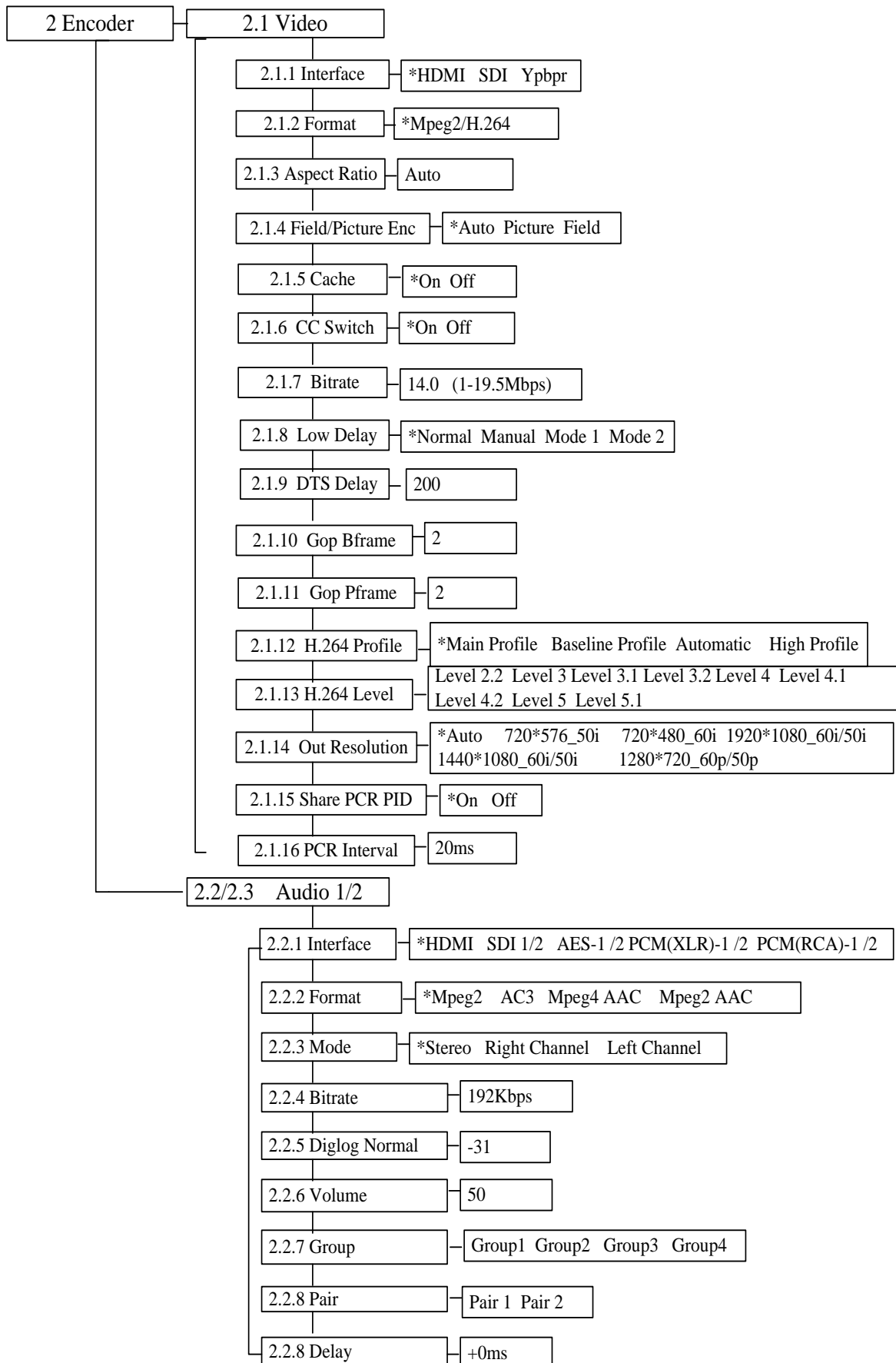
**ENTER:** activate the parameters which need modification and setting

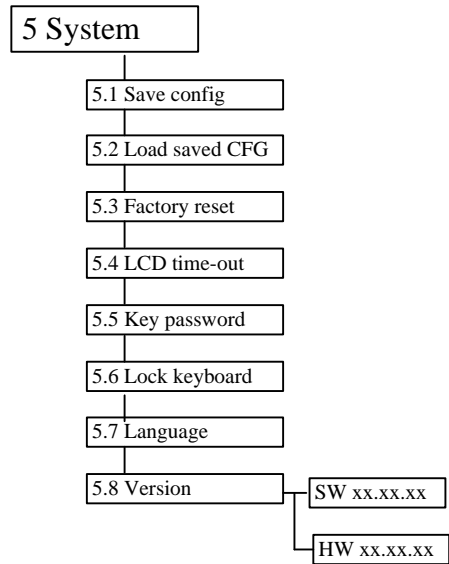
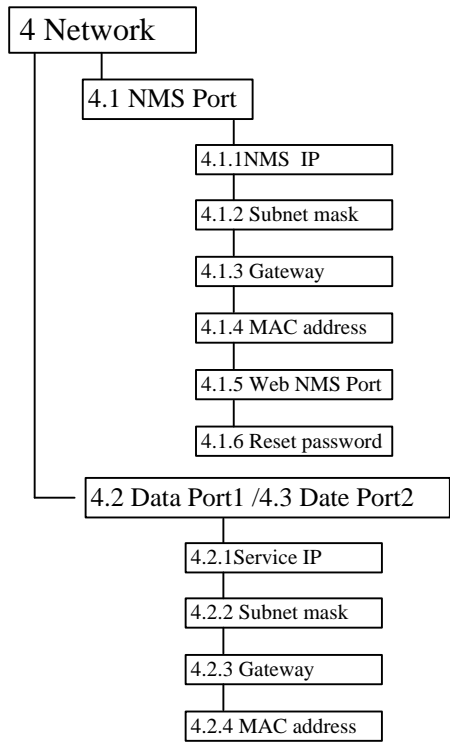
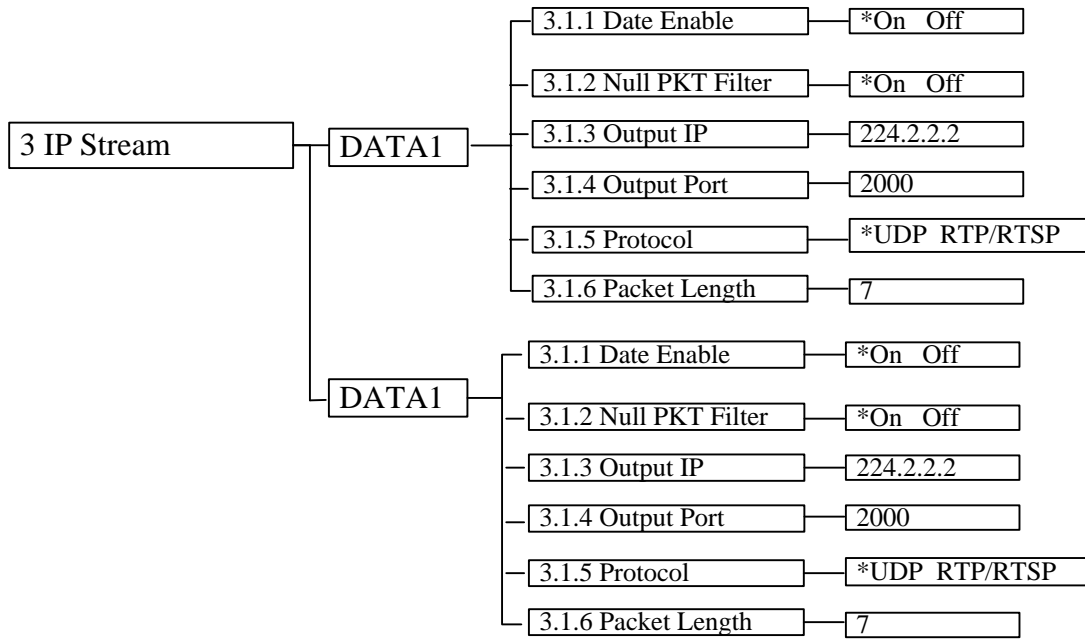
**LOCK:** Lock the screen / cancel the lock state .After pressing lock key, the system will question the users to save or not .If not, the LCD will display the current configuration

### 3.1 LCD Menus

*An overview of the LCD menus:*







## Chapter 4 WEB NMS Operation

User can not only use front panel to set configuration, but also control and set the configuration with a PC (Personal Computer) by connecting the device to web NMS Port. User should ensure that the computer's IP address is different from the H-MPEG2-H264-E2's IP address; otherwise, it would cause IP conflict.

### 4.1 login

The default IP address of this device is 192.168.0.136. Connect the PC and the device with net cable, and use ping command to confirm they are on the same network segment.

Use web browser to connect the device with PC by inputting the device'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.

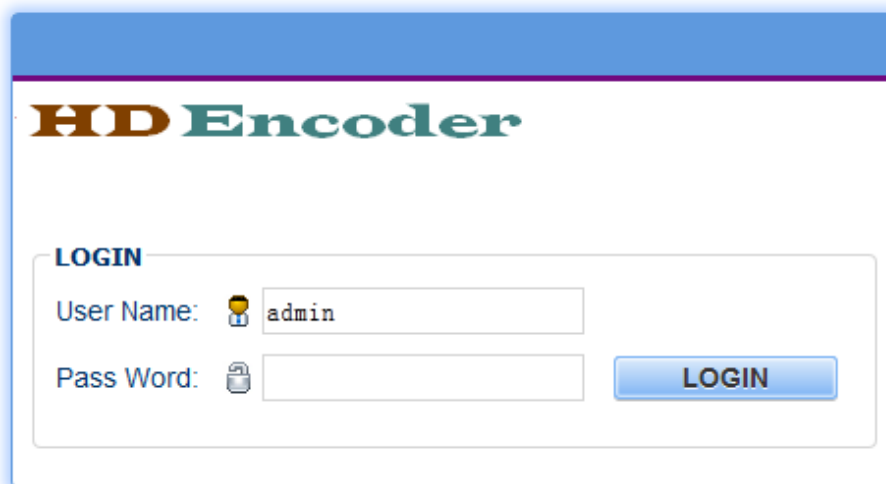


Figure-1

### 4.2 Operation

➤ **Parameter ->Status**

When we confirm the login, it displays the Status interface as Figure-2 where user can view the system information.

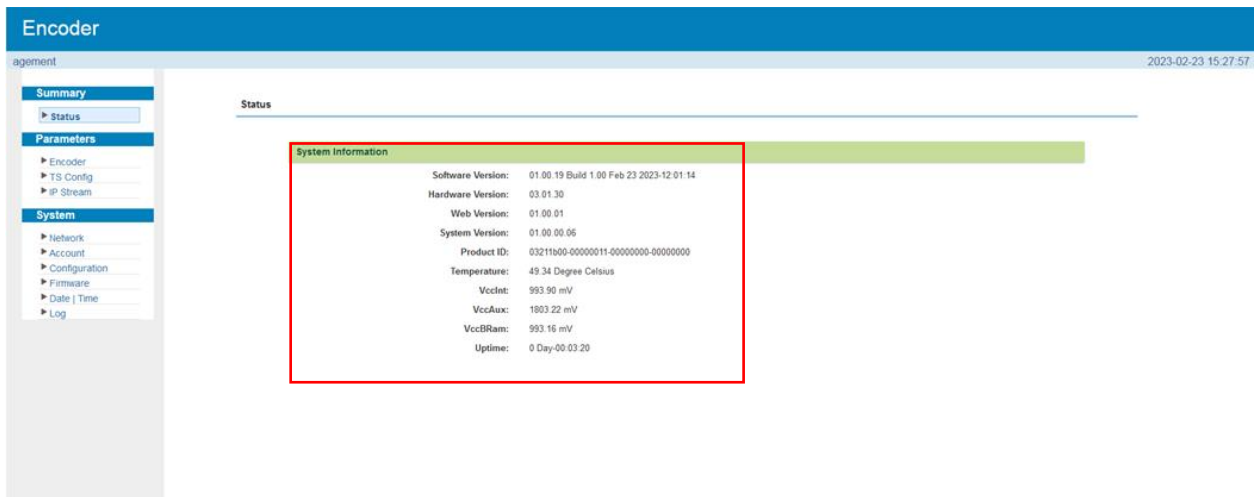


Figure-2

➤ **Parameter -> Encoder**

Click “Encoder” on the top column and it displays interface as Figure-3. User can set the Encoder parameters.

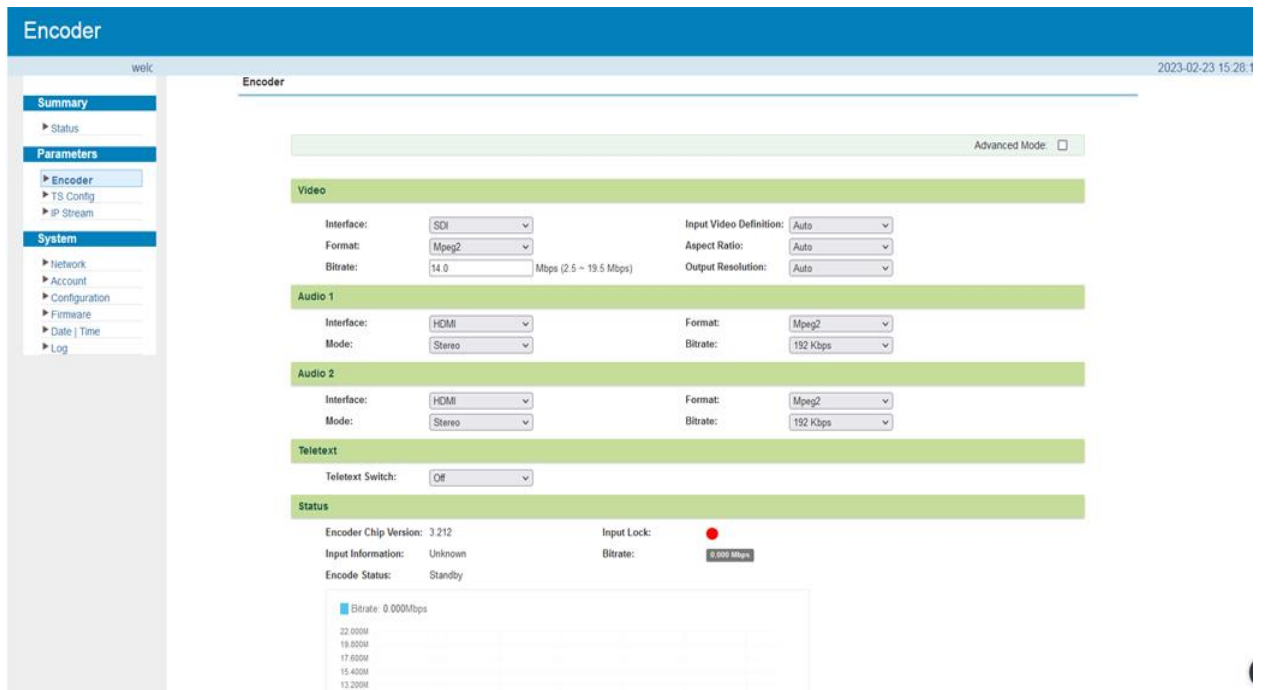


Figure-3

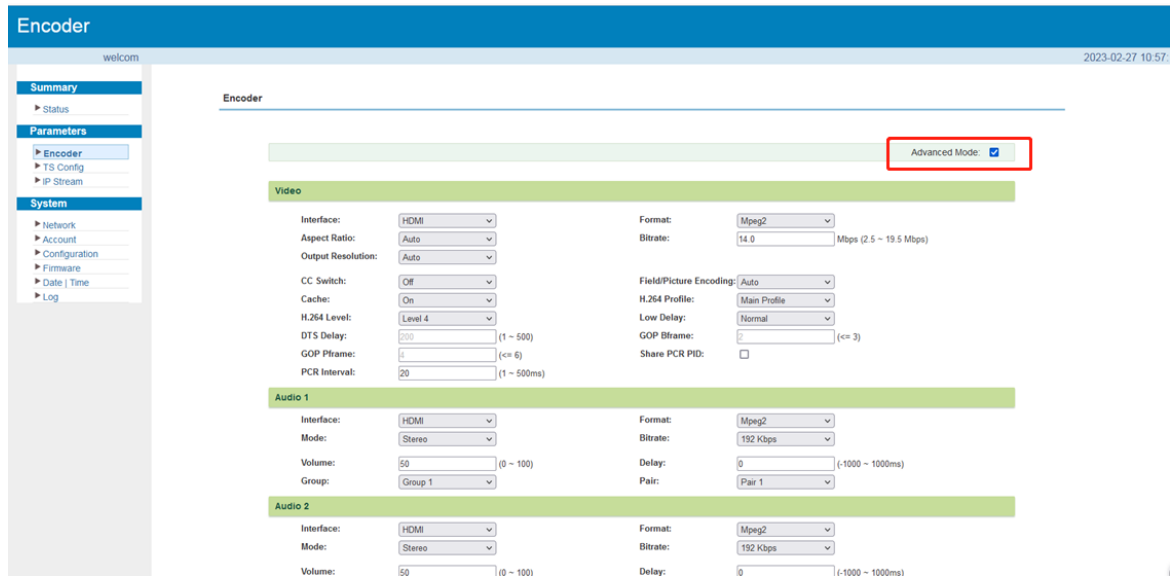


Figure-3

**Parameter -> Encoder-> Video Setting**

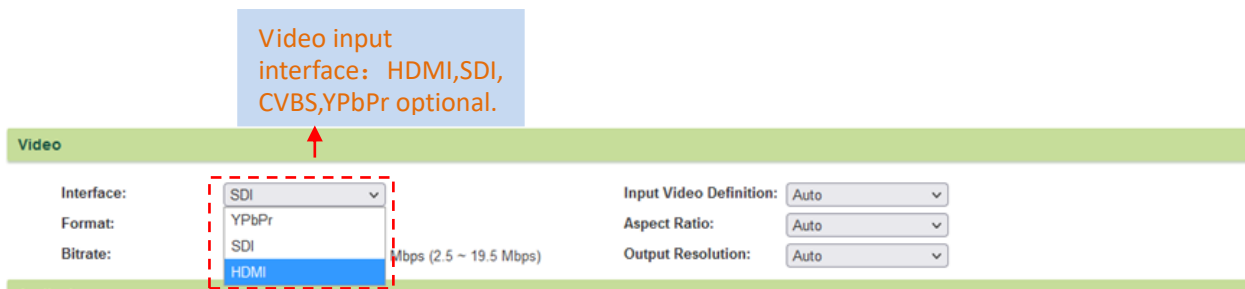


Figure-3

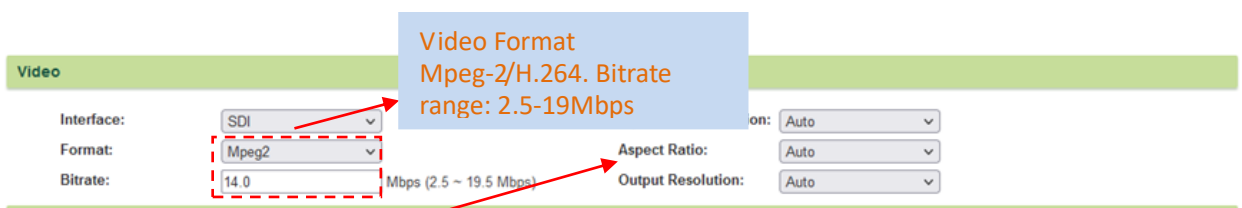


Figure-3

**Aspect Ratio:**

SD Video input can choose Aspect Ratio from 4:3 and 16:9. HD Video input only can choose 16:9.

**Output Resolution:**

NDS 3211B support output resolution: 720\*576\_50i/720\*480\_60i/1920\*1080\_60i  
1440\*1080\_60i/50i /1280\*720\_60p/50p

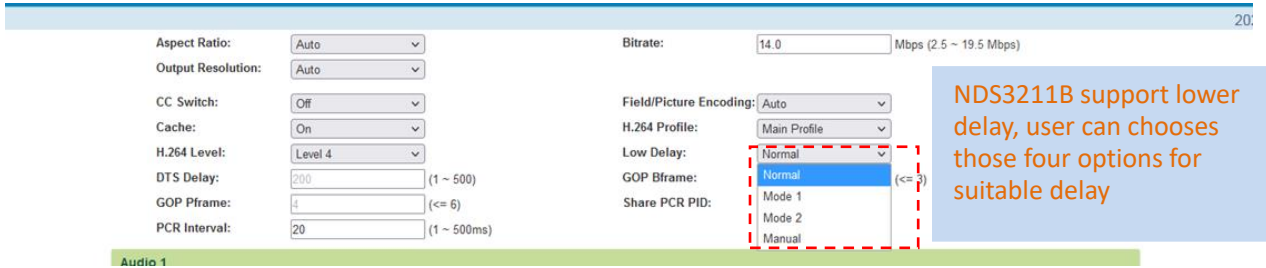


Figure-3

**Parameter -> Encoder->Audio**

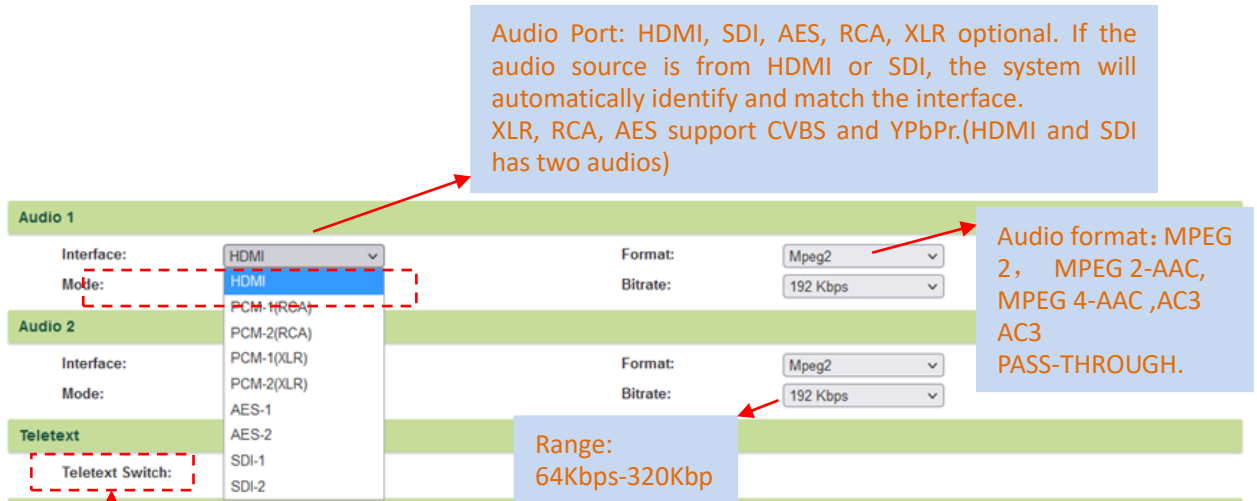


Figure-3

**Closed Caption (CC):**

Note: H-MPEG2-H264-E2 supports CC from CVBS and SDI input.

None: not to insert the CC into the output stream

All: The device will automatically identify the Closed Caption Standard among 608B 608FLD1 608FLD2 and 708B.

**Chroma sampling:**

Select one Chroma Sample mode from the 2 options listed. They are applicable for both MPEG2 and H.264 encoding mode.

**Video Buffer:**

H-MPEG2-H264-E2 support video buffer which makes it free to switch video sources. If enable video buffer, the time of system latency will be raised about 100ms.

➤ **Parameter -> TS config> Stream Select**

From the menu on left side of the webpage, clicking “TS Config”, it displays the interface where users can multiplex the programs from the encoder and ASI inputs.

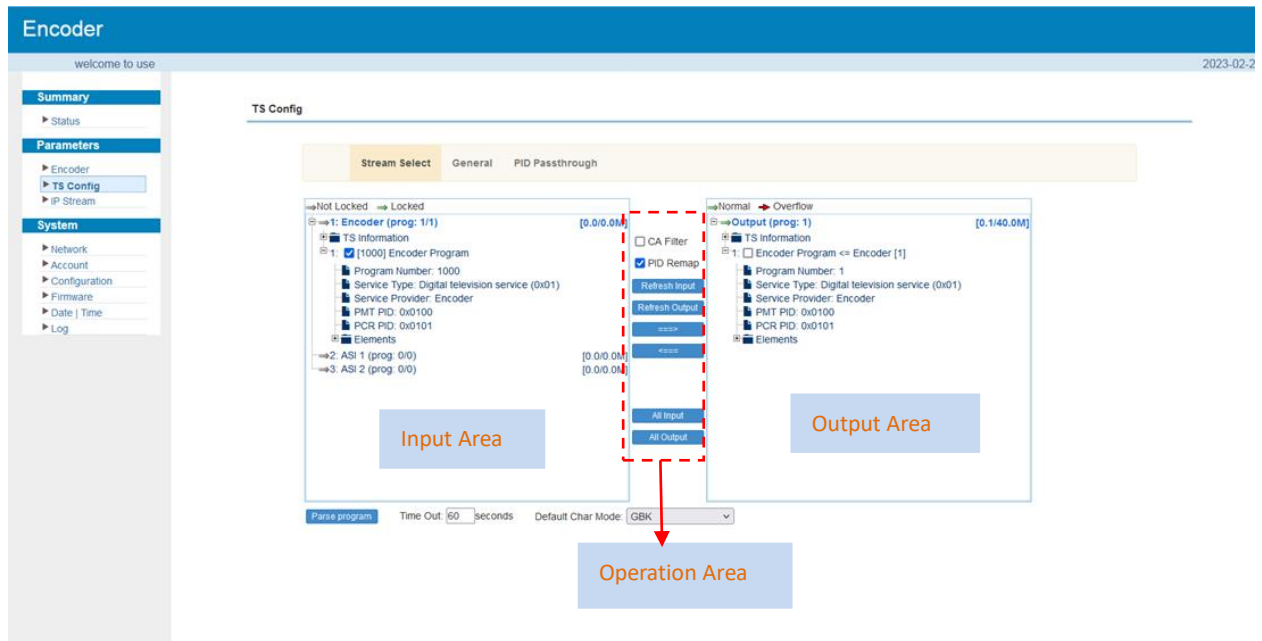


Figure-4

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

⇒ **Not Locked** ⇒ **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 reduce program

**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

**Parameter -> TS config -> General**

From the TS Config menu on up side of the webpage, clicking “General”, it displays the interface where users can set Output Bitrate, Character Encoding and TDT/TOT/NIT tables.

(Figure-5)

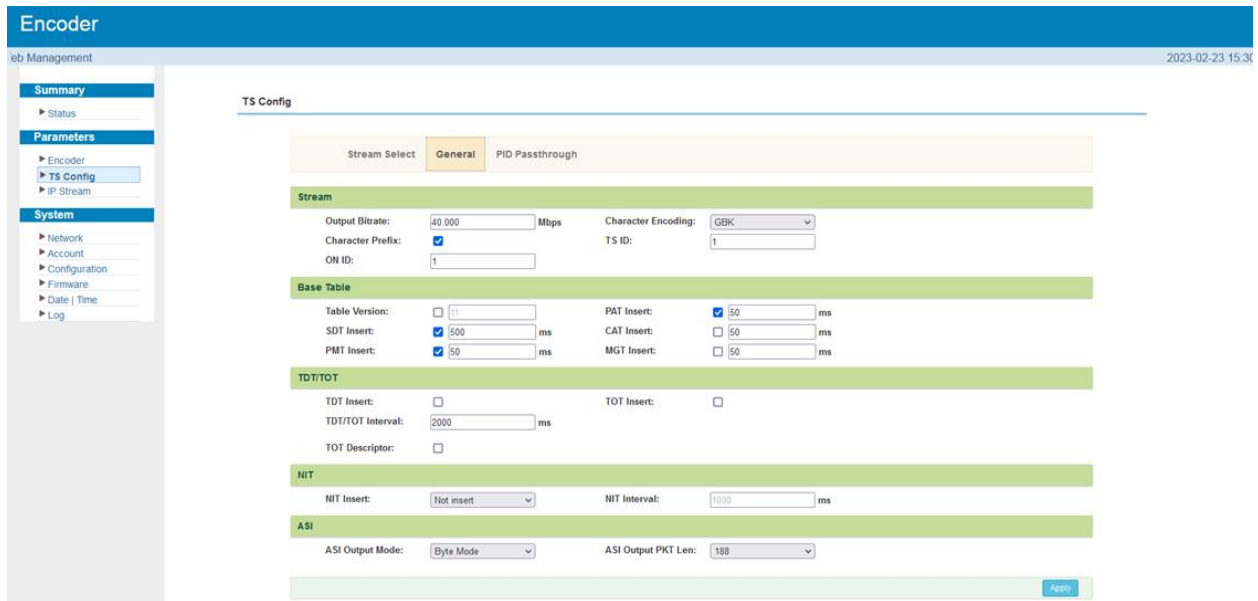


Figure-5

**Parameter -> TS config -> Pass-through**

From the TS Config menu on up side of the webpage, clicking “Pass-through”, it displays the interface where users can set PID. (Figure-6)

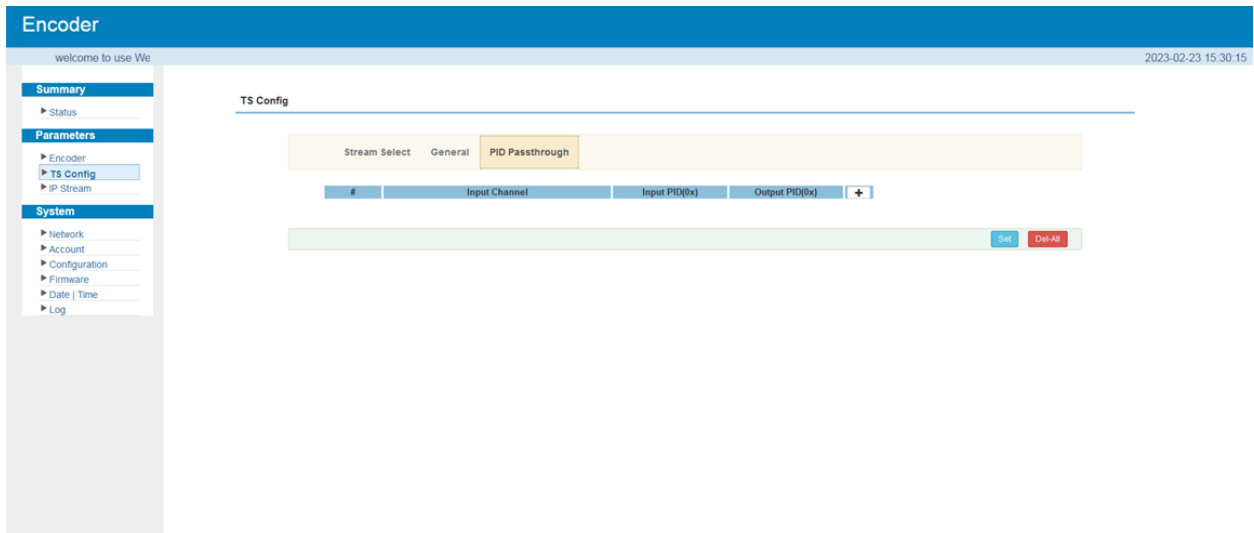


Figure-6

➤ **Parameter -> IP stream**

H-MPEG2-H264-E2 supports TS to output in IP format through the DATA1 (only one MPTS) or DATA2 port. The output programs information in MPTS. Clicking “IP Stream”, it displays the interface where to set IP out parameters (Figure-7).

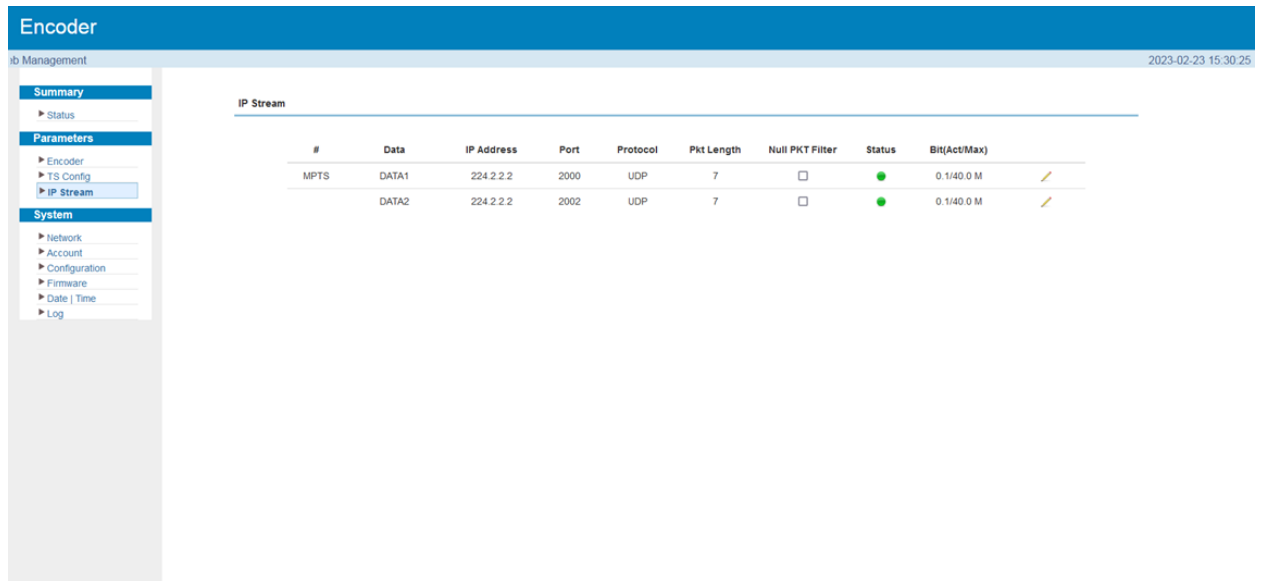


Figure-7

When users click “Channel config” button, it triggers a dialog box where users can set the corresponding channel configuration.

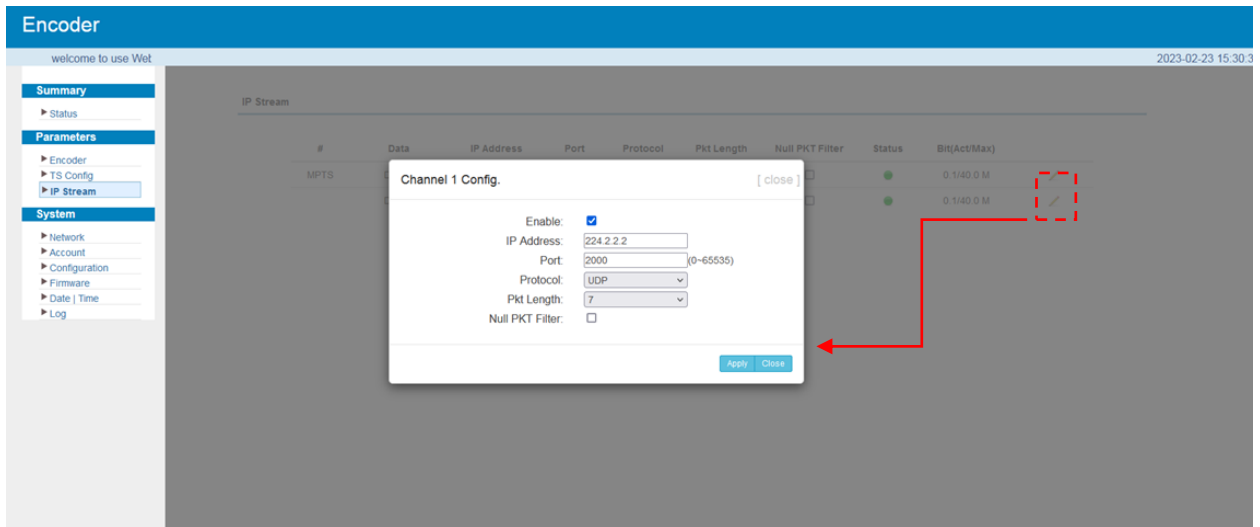


Figure-7

➤ **System -> Network**

Clicking “Network”, it displays the interface as Figure-8 where to set network parameters.

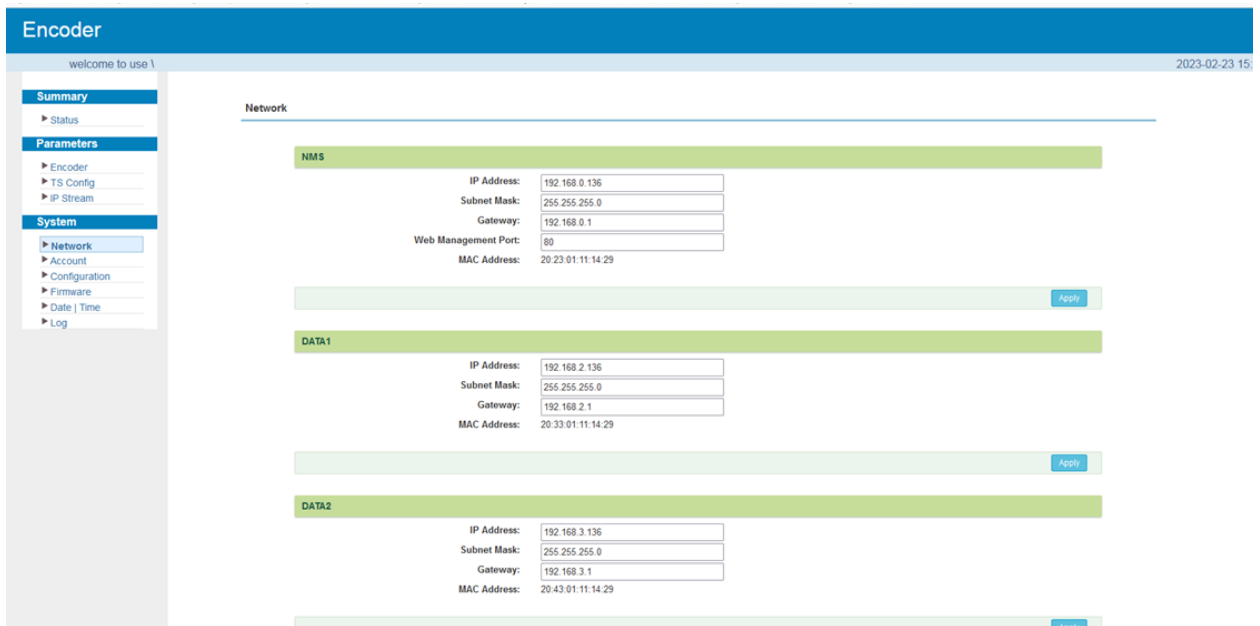


Figure-8

➤ **System -> Account**

Clicking “Account”, it displays the interface as Figure-9 where to set use-name and password of the equipment.

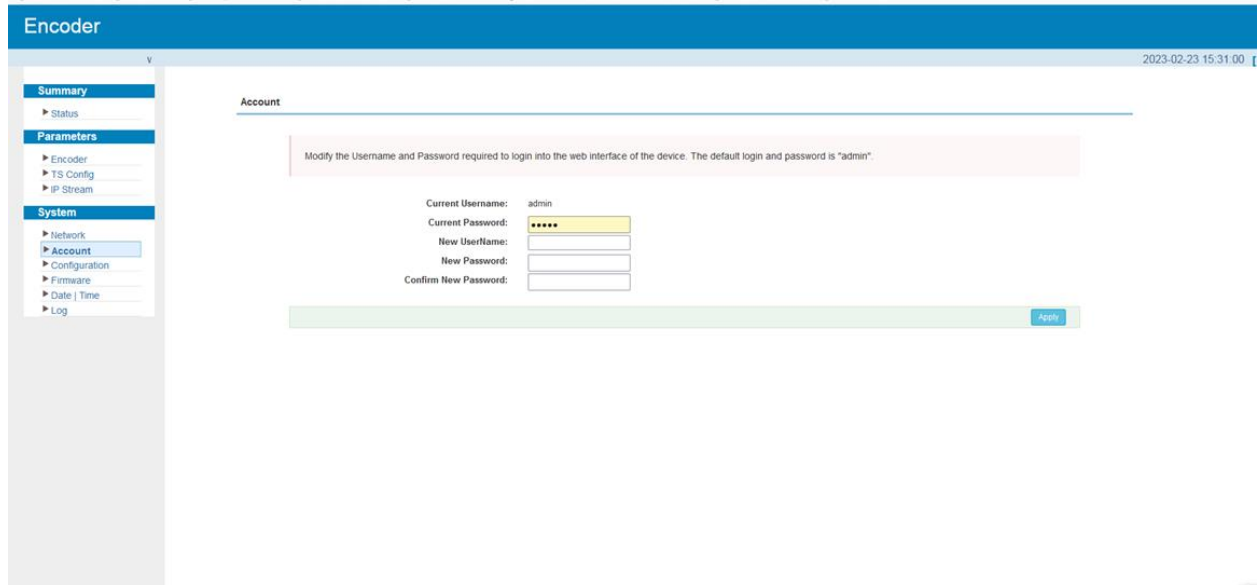


Figure-9

➤ **System -> Configuration**

Clicking “Configuration”, it displays the screen as Figure-10 where to save/ restore/factory setting/ backup/ load your configurations.

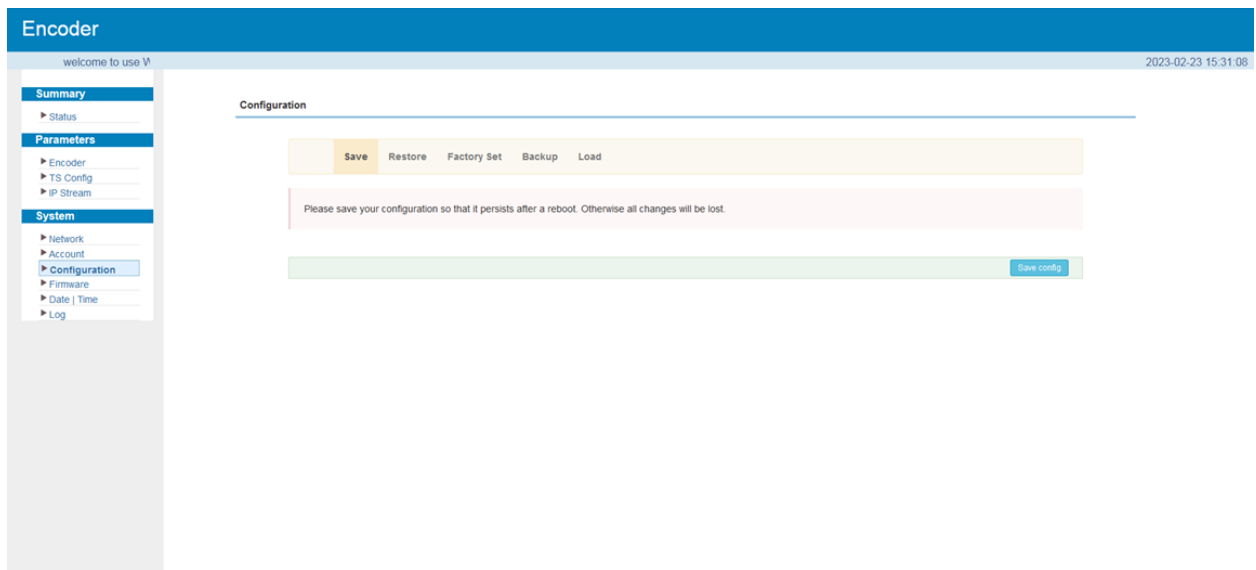


Figure-10

➤ **System -> Firmware**

Clicking “Firmware”, it displays the screen as Figure-11 where to update firmware for the encoder.

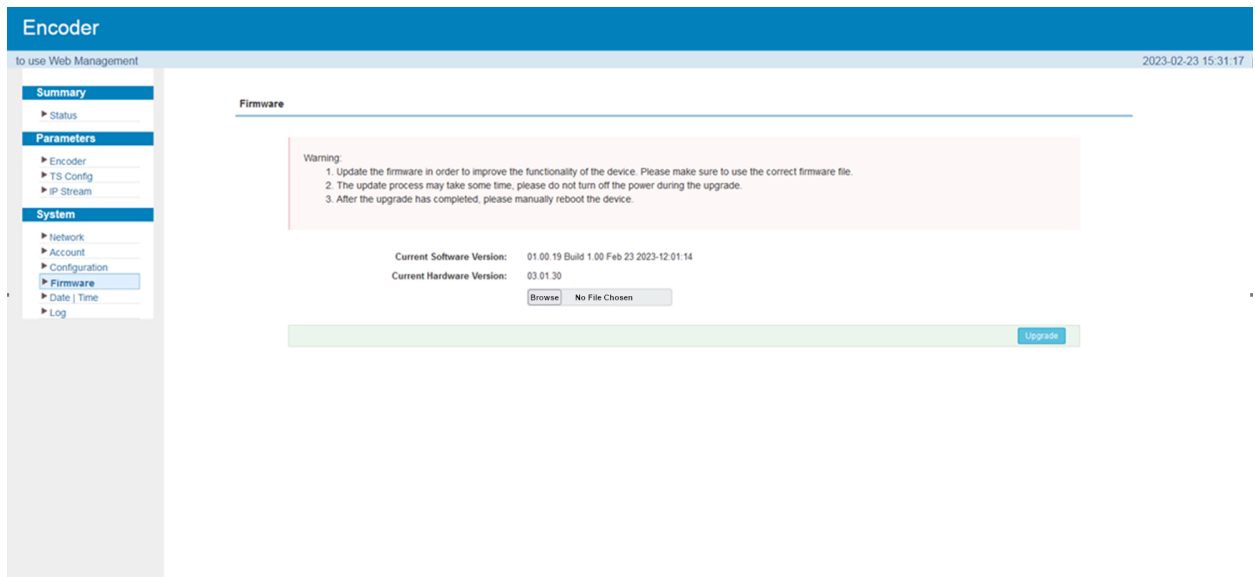


Figure-11

➤ **System -> Date/Time**

Clicking “Date/Time”, it displays the screen as Figure-12 where to set date and time for the device.

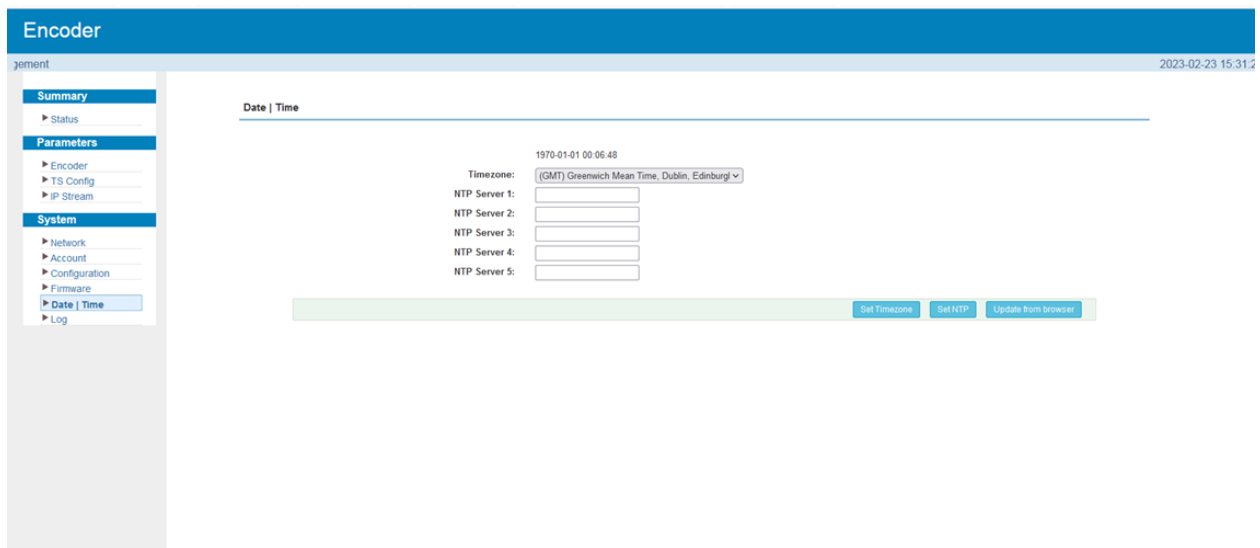


Figure-12

➤ **System -> Log**

Clicking “Log”, it displays the log interface as Figure-13 where to check or export the Kernel/System log.

Encoder
welcome to use Web Mana 2023-02-21

**Summary**

- ▶ Status

**Parameters**

- ▶ Encoder
- ▶ TS Config
- ▶ IP Stream

**System**

- ▶ Network
- ▶ Account
- ▶ Configuration
- ▶ Firmware
- ▶ Date | Time
- ▶ Log

**Log**

Log Type: Kernel Log
Auto Refresh: 0
Export Print

```

[ 0.000000] Kernel Log
[ 0.000000] Kernel Log at CPU 0x0
[ 0.000000] System Log hv (root@localhost.localdomain) (gcc version 4.9.1 (Sourcery CodeBench Lite 2014.11-30) ) #10 SMP PREEMPT Wed Mar 9 20:02:15 CST 2
[ 0.000000] CPU: ARMv7 Processor [413k090] revision 0 (ARMv7), cr=18c53876
[ 0.000000] CPU: PIPT / VIPT nonaliasing data cache, VIPT aliasing instruction cache
[ 0.000000] Machine model: xlnx_zynq-7000
[ 0.000000] cma: Reserved 16 MiB at 0x04400000
[ 0.000000] Memory policy: Data cache writealloc
[ 0.000000] On node 0 totalpages: 65536
[ 0.000000] free_area_init_node: node 0, pgdat 40689a40, node_mem_map 4fd0000
[ 0.000000] Normal zone: 512 pages used for memmap
[ 0.000000] Normal zone: 0 pages reserved
[ 0.000000] Normal zone: 65536 pages, LIFO batch:15
[ 0.000000] PERCPU: Embedded 10 pages/cpu @4fd1000 s8512 r8192 d24256 u40960
[ 0.000000] pcpu-alloc: s8512 r8192 d24256 u40960 alloc=10*4096
[ 0.000000] pcpu-alloc: [0] 0 [0] 1
[ 0.000000] Built 1 zonelists in Zone order, mobility grouping on. Total pages: 65024
[ 0.000000] Kernel command line: console=ttyPS0,115200
[ 0.000000] log_buf_len individual max cpu contribution: 131072 bytes
[ 0.000000] log_buf_len total cpu_extra contributions: 131072 bytes
[ 0.000000] log_buf_len min size: 131072 bytes
[ 0.000000] log_buf_len: 262144 bytes
[ 0.000000] early log buf free: 12968(98%)
[ 0.000000] PID hash table entries: 1024 (order: 0, 4096 bytes)
[ 0.000000] Dentry cache hash table entries: 32768 (order: 5, 131072 bytes)
[ 0.000000] Inode-cache hash table entries: 16384 (order: 4, 65536 bytes)
[ 0.000000] Memory: 222616K/262144K available (4534K kernel code, 249K rdata, 1668K rodata, 212K init, 309K bss, 23144K reserved, 16384K cma-reserved, 0K highmem)
[ 0.000000] Virtual kernel memory layout:
[ 0.000000] vector : 0xffff0000 - 0xffff1000 ( 4 kB)
[ 0.000000] fixmap : 0xfff00000 - 0xffff0000 ( 3072 kB)
[ 0.000000] vmalloc : 0x50800000 - 0xffff0000 ( 2792 MB)
[ 0.000000] lowmem : 0x40000000 - 0x50000000 ( 256 MB)
[ 0.000000] pmem : 0xc3e00000 - 0x40000000 ( 2 MB)
[ 0.000000] modules : 0xc3f00000 - 0xc3e00000 ( 14 MB)
[ 0.000000] text : 0x40008000 - 0x40616d08 (6204 kB)
                    
```

Figure-13

## Chapter 5 Troubleshooting

THOR's ISO9001 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

## Chapter 6 Packing List

H-MPEG2-H264-E2 H.264/H.265 HD Encoder

User Manual

HDMI Cable

SDI Cable

YPbPr Cable

CVBS Cable

XLR adapter Cables

RCA adapter Cables

Power Cord