PRODUCT MODEL NUMBER: TL-9596S DVB-C Encoder Modulator

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CHAPTER 1

INTRODUCTION

1.1 PRODUCT OVERVIEW

TL-9596S is a professional high integration device which includes encoding, multiplexing, and modulation. It supports 8/16/24 HDMI inputs, 1 ASI input, 1 USB payer input and 128 IP inputs via the GE port. It also supports DVB-C RF out with 12 non-adjacent carriers, and supports 12 MPTS as mirror of 12 carriers through the GE port and 1 ASI out (optional) as mirror of one of the carriers. This full function device 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, etc.

1.2 KEY FEATURES

- 8/16/24 HDMI inputs, MPEG-4 AVC/H.264 Video encoding
- 1 ASI input for re-mux
- 1 USB Player (Insert the USB Flash drive with "xxx.ts" videos in TL-9596S and play back the content in an easy way; file system FAT 32.)
- 128 IP input over UDP and RTP via GE port
- Each carrier out channel processes maximum 32 IP inputs from the GE port(UDP&RTP protocol)
- MPEG1 Layer II, LC-AAC and HE-AAC Audio encoding, AC3 Pass Through and audio gain adjustment
- Support 12 groups multiplexing/DVB-C modulating
- Support 1 ASI out as mirror of one of RF output carriers---Optional
- Support 12 MPTS IP output over UDP, RTP/RTSP
- Support LOGO, Caption and QR code insertion(Language Supported: 中文, English, العربية, р у с с к и й , 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

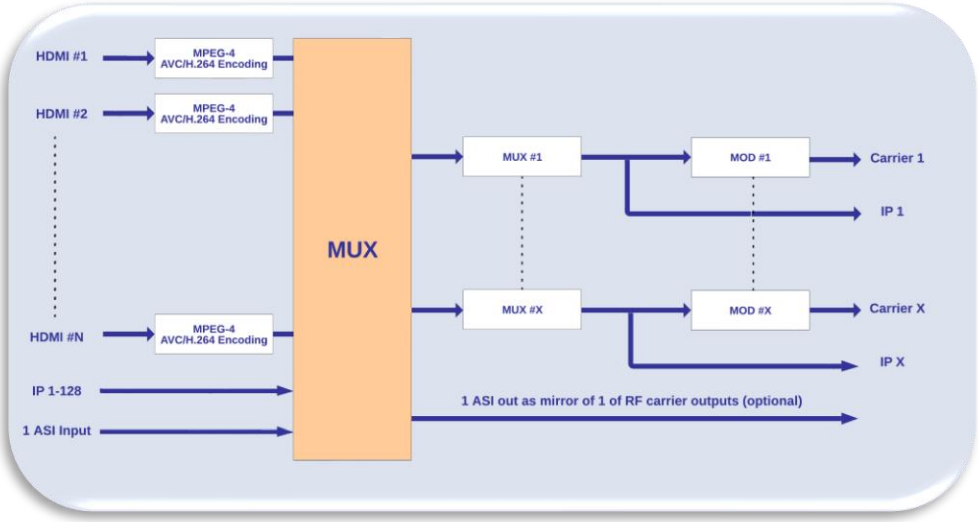
Input	
8/16/24 HDMI inputs for option 1 ASI in for re-mux 1 USB Player input for re-mux 128 IP input over UDP and RTP, GE port, RJ45—DVB-C RF out 128 IP input over UDP and RTP, GE port, RJ45—DVB-T/ATSC RF out 128 IP input over UDP and RTP, GE port, RJ45—ISDBT RF out	
Video	
Input Resolution	1920×1080_60P, 1920×1080_60i, 1920×1080_50P, 1920×1080_50i, 1280×720_60P, 1280×720_50P, 720×576_50i,720×480_60i,
Output Resolution	1920×1080_30P, 1920×1080_25P, 1280×720_30P, 1280×720_25P, 720×576_25P,720×480_30P,
Encoding	MPEG-4 AVC/H.264
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 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	
Multiplexing		
Maximum PID Remapping	255 input per channel	
Function	PID remapping (automatically or manually)	
	Accurate PCR adjusting	
	Generate PSI/ SI table automatically	
DVBC Modulator Section		
QAM Channel	12 non-adjacent carriers output (maximum bandwidth 192MHz)	
Standard	EN300 429/ITU-T J.83A/B	
MER	≥40db	
RF frequency	50~960MHz, 1KHz step	
RF output level	-20~+3dbm, 0.1db step	
Symbol Rate	5.0Msps~7.0Msps, 1ksps stepping	
	J.83A	J.83B
Constellation	16/32/64/128/256QAM	64/256 QAM
Bandwidth	8M	6M
DVB-T Modulator Section		
Standard	EN300744	
FFT mode	2K,4K, 8K	
Bandwidth	6M, 7M, 8M	
Constellation	QPSK, 16QAM, 64QAM	
Guard Interval	1/4, 1/8, 1/16, 1/32	
FEC	1/2, 2/3, 3/4, 5/6, 7/8	

MER	≥42 dB
RF frequency	50~960MHz, 1KHz step
RF out	8 non-adjacent carriers' output (maximum bandwidth 192MHz)
RF output level	-20~ +3dBm, 0.1db step
ATSC Modulator Section	
Standard	ATSC A/53
Bandwidth	6M
Constellation	8VSB
FEC	RS(208 188)+Trellis
MER	≥40dB
ACL	-55 dBc
RF frequency	50~960MHz, 1KHz step
RF out	8 non-adjacent carriers' output (maximum bandwidth 192MHz)
RF output level	-20~+3dbm (for all carriers), 0.5db stepping
ISDB-T Modulator Section	
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, 1KHz step
RF out	6 (or 16) non-adjacent carriers' output (maximum bandwidth 192MHz)
RF output level	-20dBm~+3dBm, 0.1dB stepping

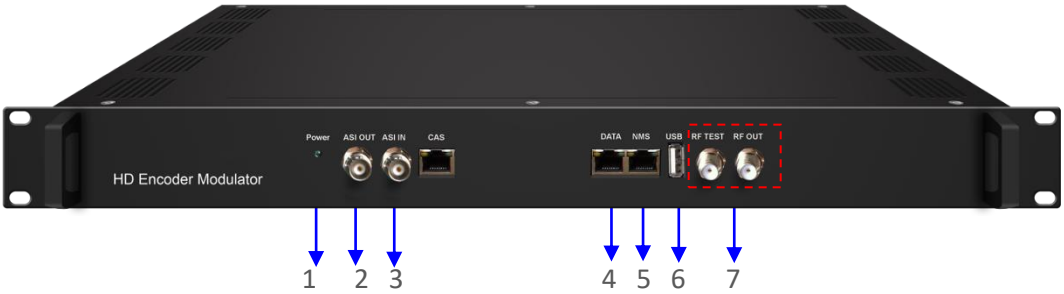
Stream Output	
1 ASI output as mirror of one of RF output carriers (Optional)	
12 MPTS output over UDP and RTP/RTSP as mirror of 12 DVB-C carriers,	
8 MPTS output over UDP and RTP/RTSP as mirror of 8 DVB-T/ATSC carriers (Optional)	
6 MPTS output over UDP and RTP/RTSP as mirror of 6 ISDB-T carriers (Optional)	
16 MPTS output over UDP and RTP/RTSP as mirror of 16 ISDB-T carriers (Optional)	
1*1000M Base-T Ethernet interface, GE port	
System Function	
Network management (WEB)	
Chinese and English language	
Ethernet software upgrade	
General Information	
Dimension (W×L×H)	482mm×328mm×44mm
Environment	0~45℃(work) ; -20~80℃ (Storage)
Power requirements	AC 110V± 10%, 50/60Hz, AC 220 ± 10%, 50/60Hz

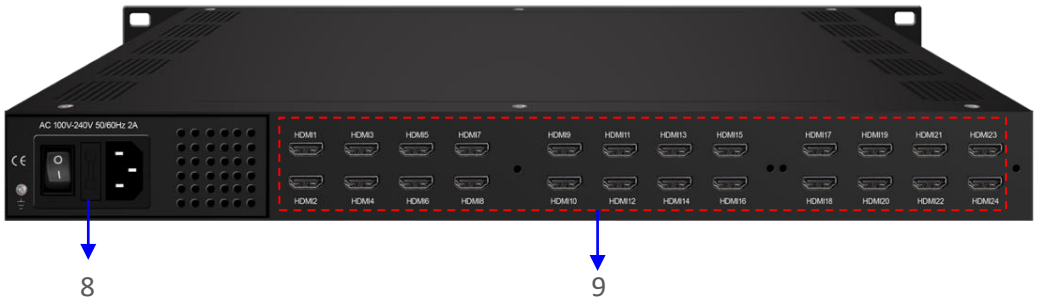
1.4 PRINCIPLE CHART



1.5 APPEARANCE AND DESCRIPTION

Front and Rear Panel Illustration





1	Power Indicator
2	ASI out (Optional)
3	ASI in
4	DATA: IP input and output port (GE)
5	NMS (Network management port)
6	USB Port (TS playing)
7	RF test and RF out port
8	Power supply and Grounding Pole
9	HDMI inputs

CHAPTER 2

INSTALLATION GUIDE

This section is to explain the cautions the users must know in some case that possibly 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.

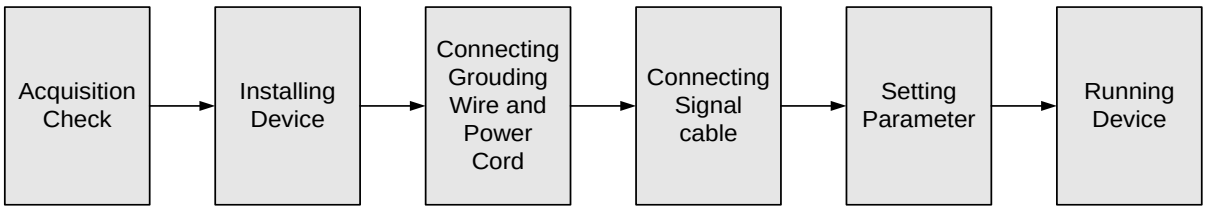
2.1 GENERAL PRECAUTIONS

- 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: 1X107~1X1010Ω, 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.

- 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.

CHAPTER 3

WEB NMS OPERATION

Users can only control and set the configuration in computer by connecting the device to web NMS Port. User should ensure that the computer's IP address is different from this device'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.

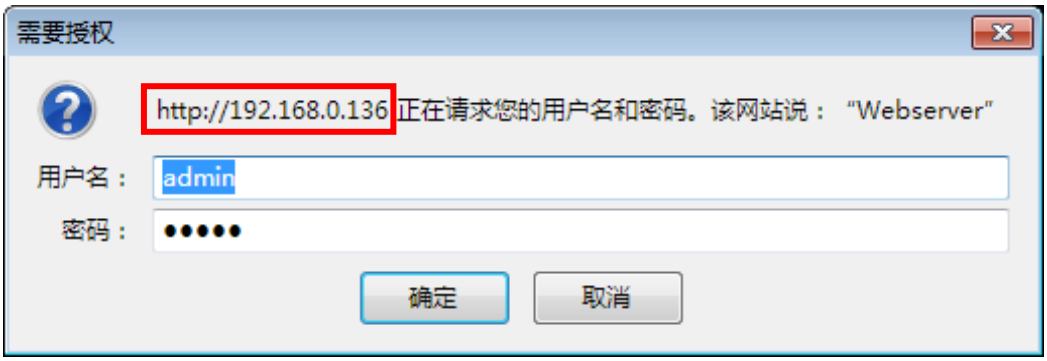


Figure-1

3.2 OPERATION

1) Summary → Status

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

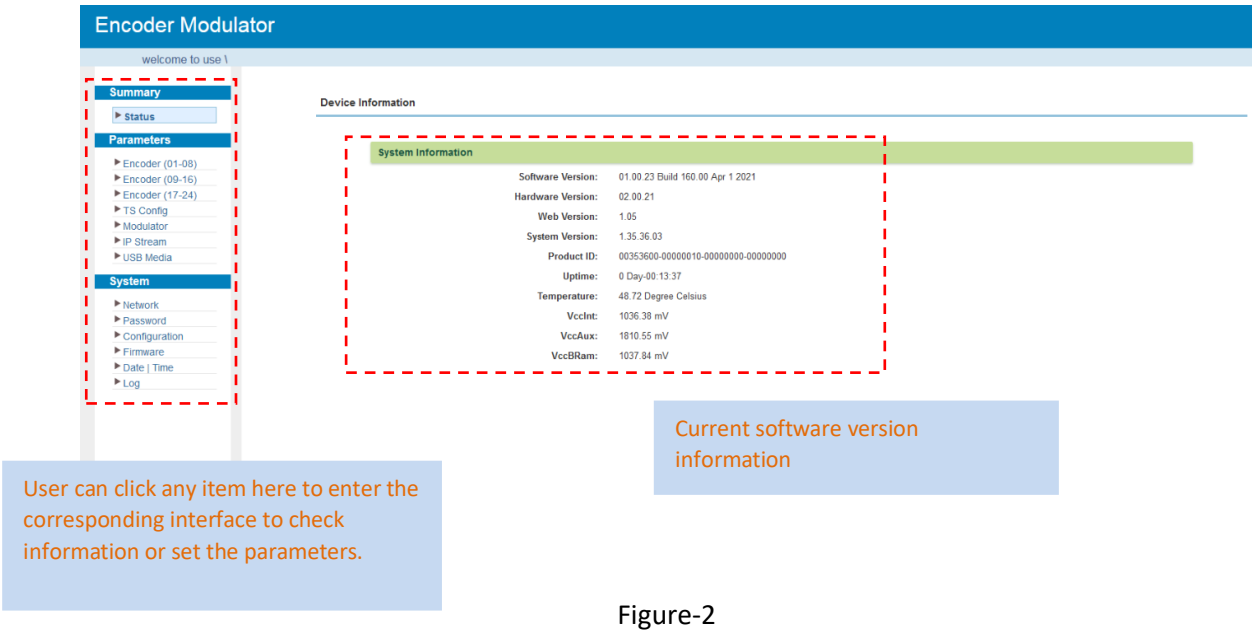


Figure-2

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.

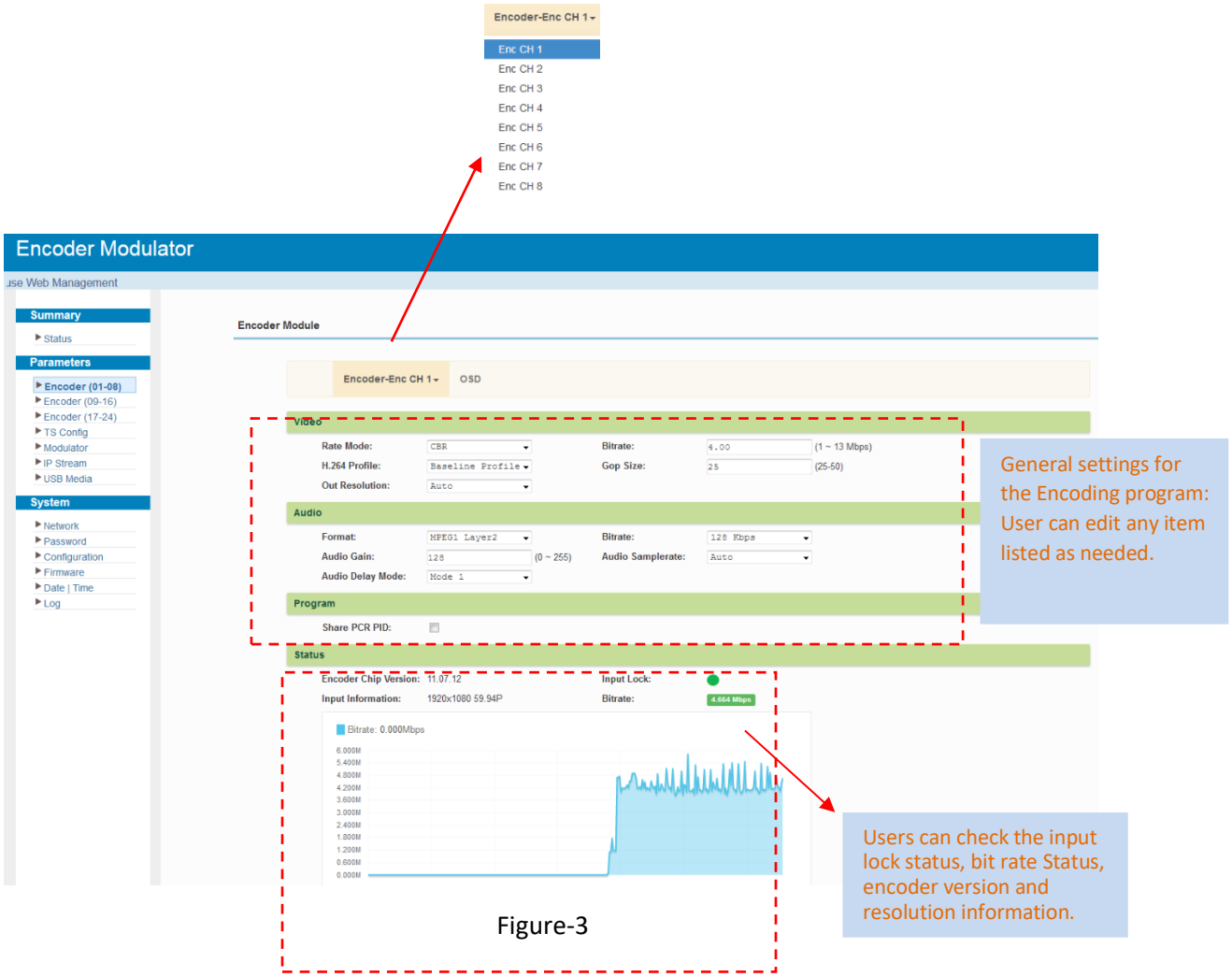


Figure-3

Encoder(01-08) → OSD:

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

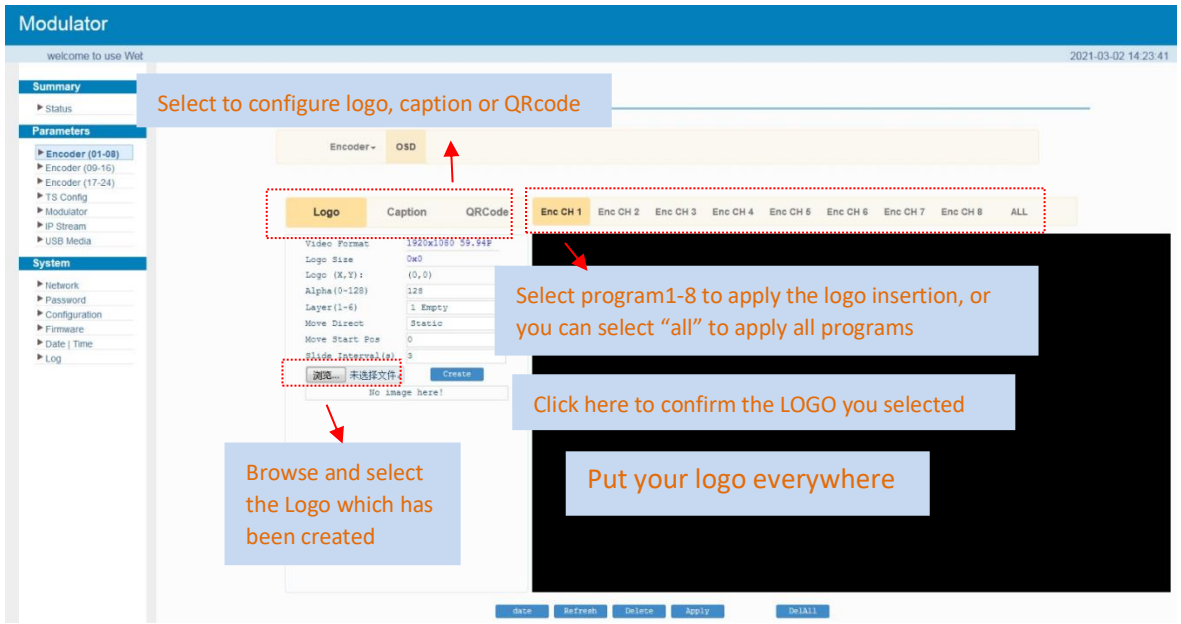


Figure-4

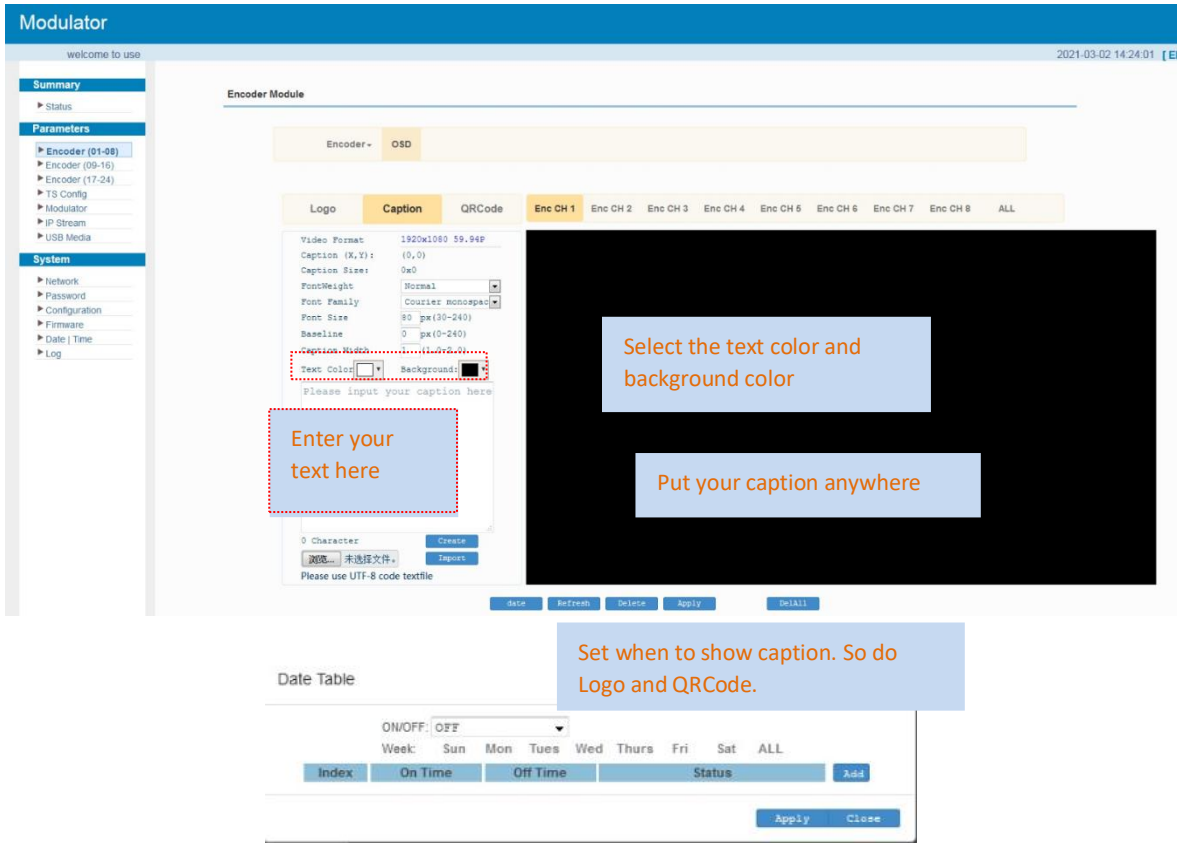


Figure-5

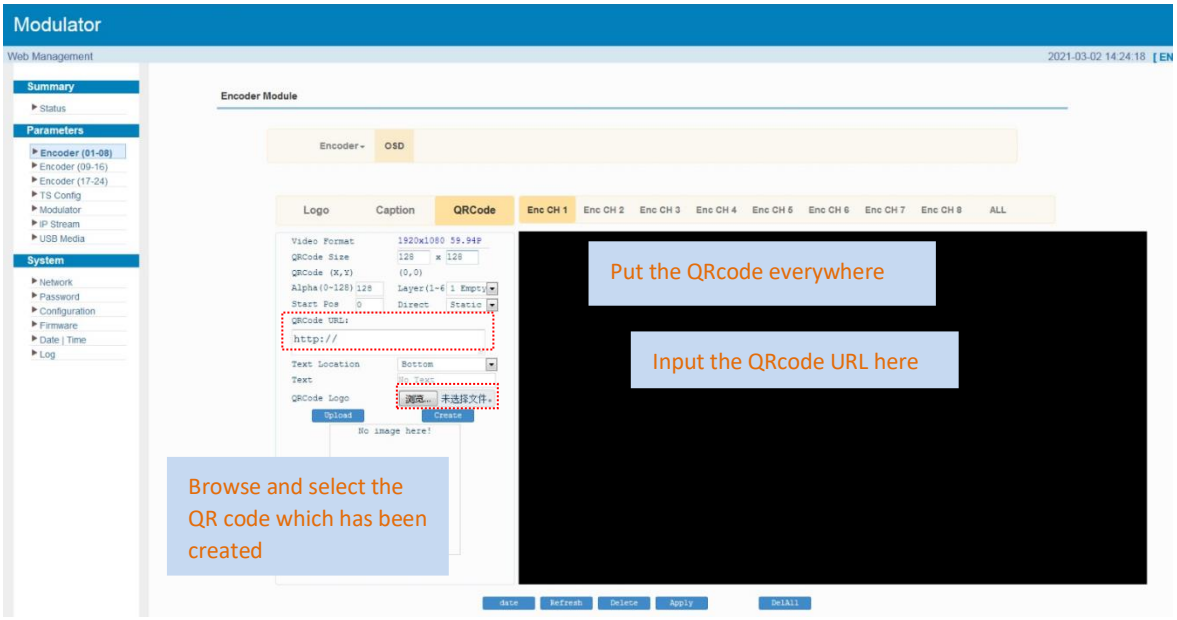


Figure-6

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.

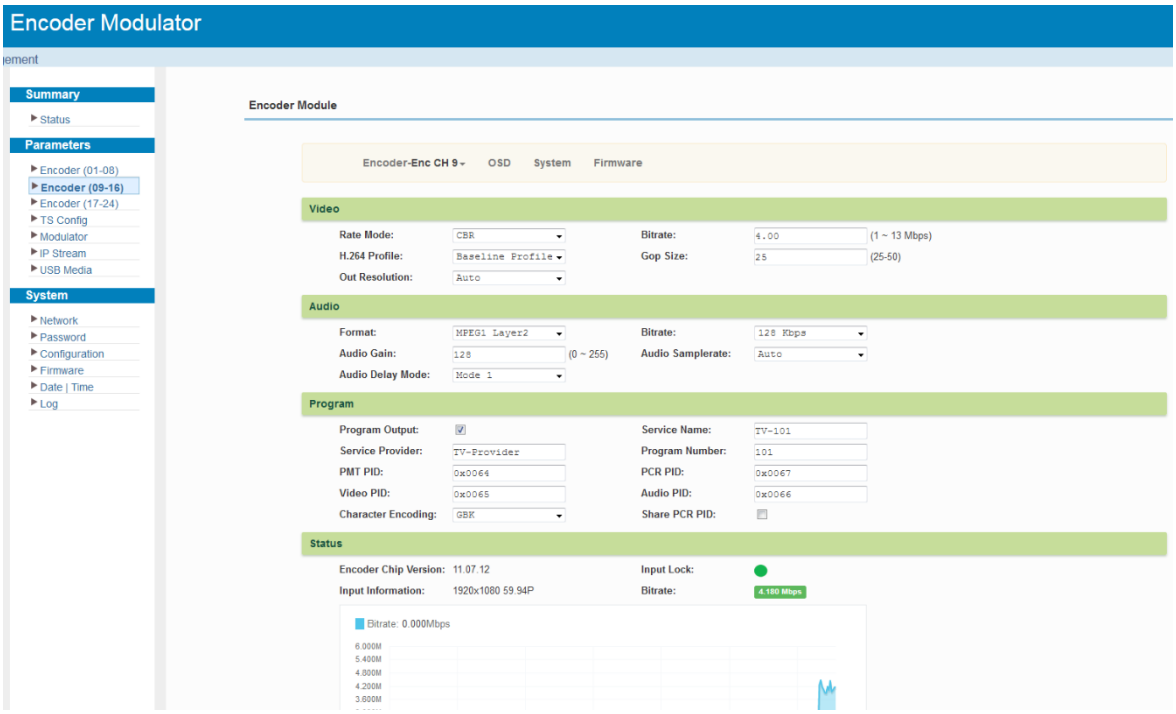


Figure-7

Encoder (09-16) → OSD

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

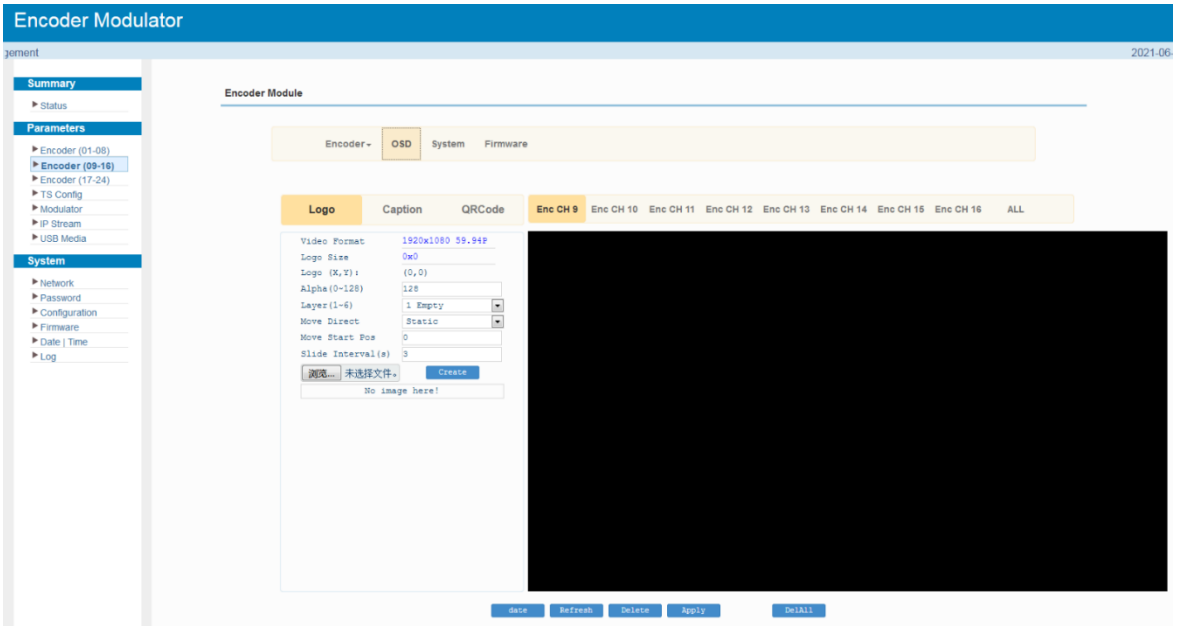


Figure-8

Encoder (09-16) → System

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

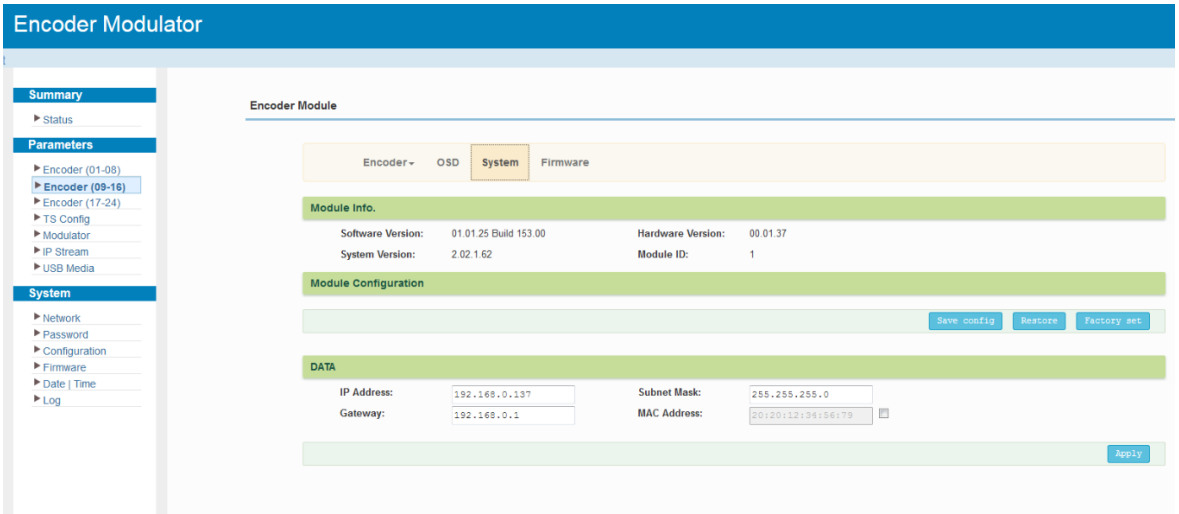


Figure-9

Encoder (09-16) → Firmware

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

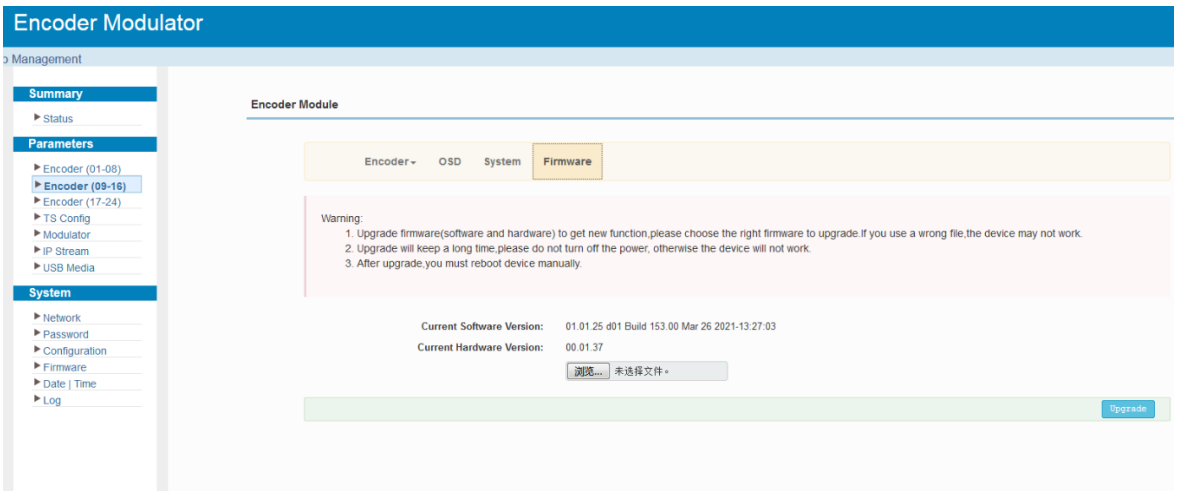


Figure-10

Parameters → Encoder(17-24)

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

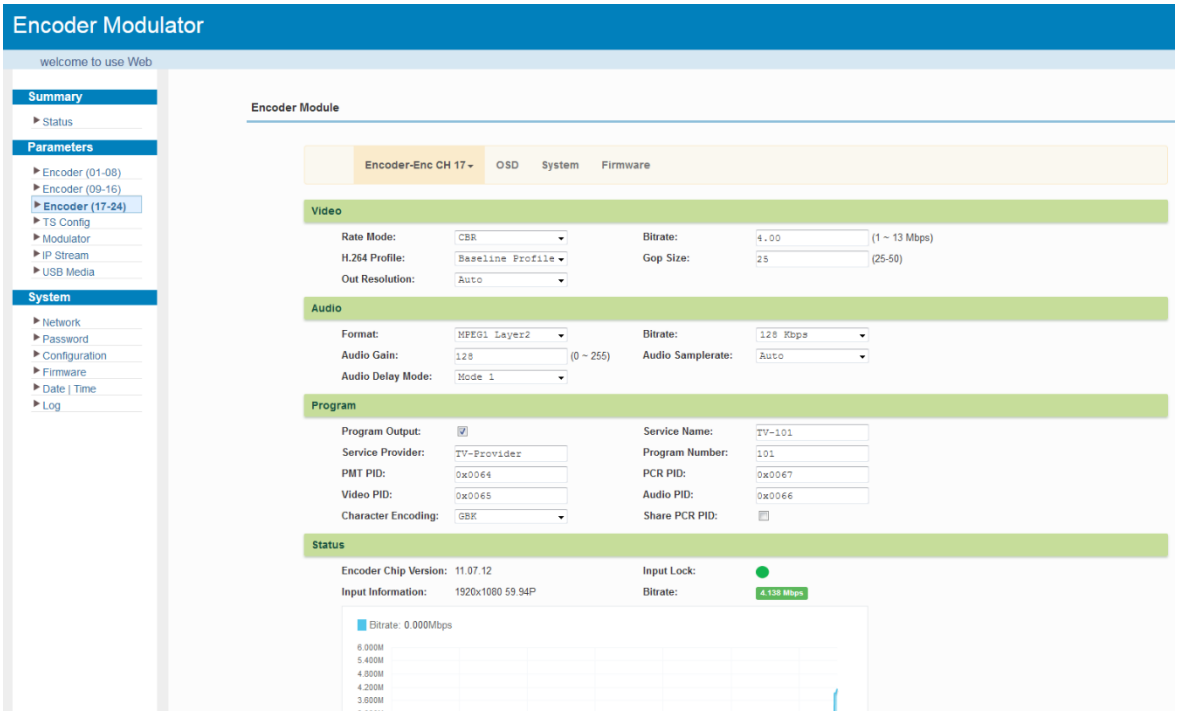


Figure-11

Parameters → TS Config:

From the menu on left side of the webpage, 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 (Figure-12)

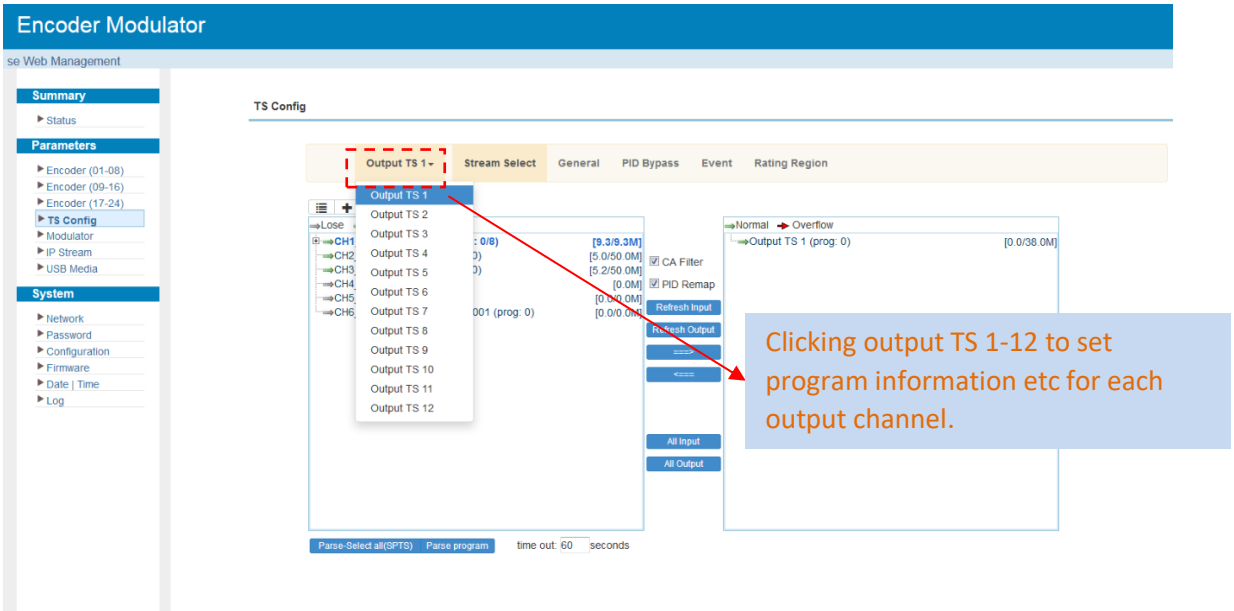
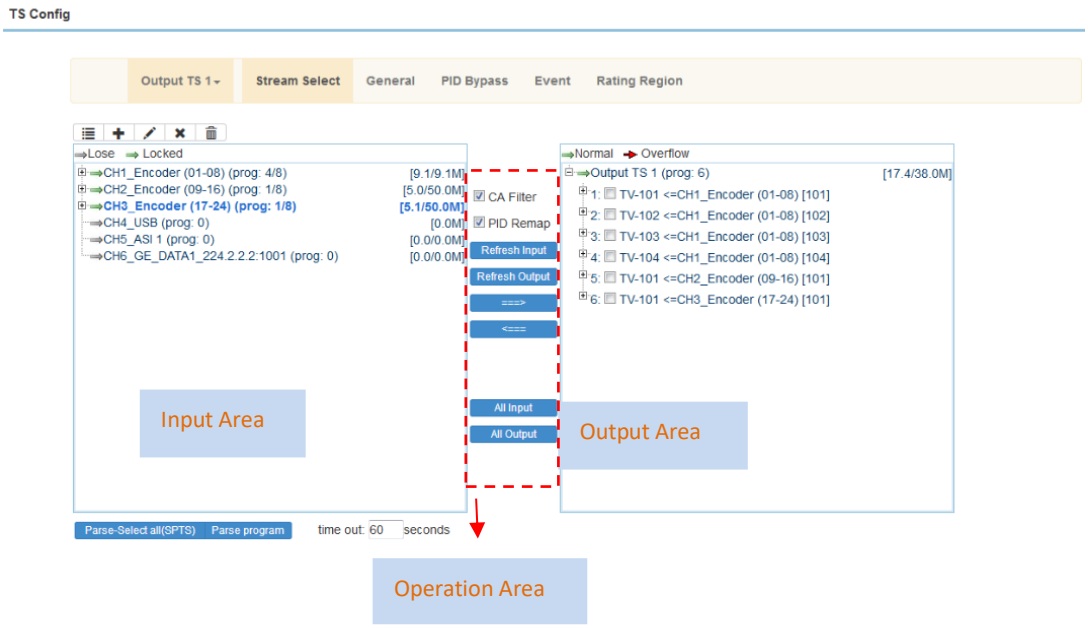


Figure-12

➢ 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-13)



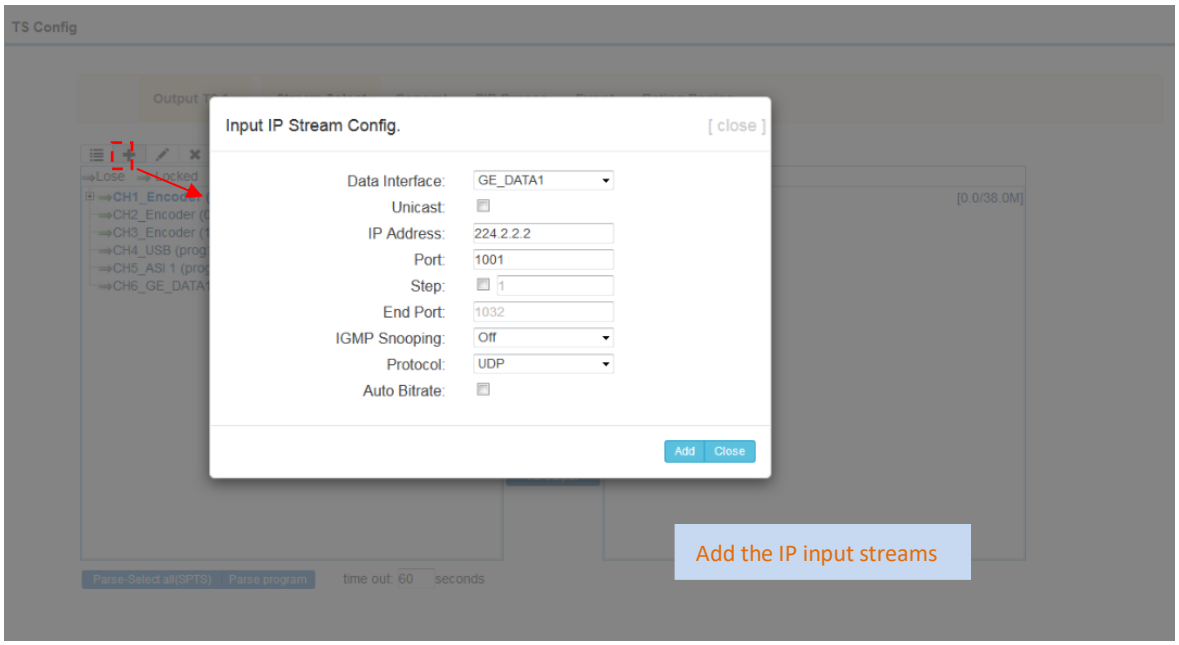


Figure-13

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

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.

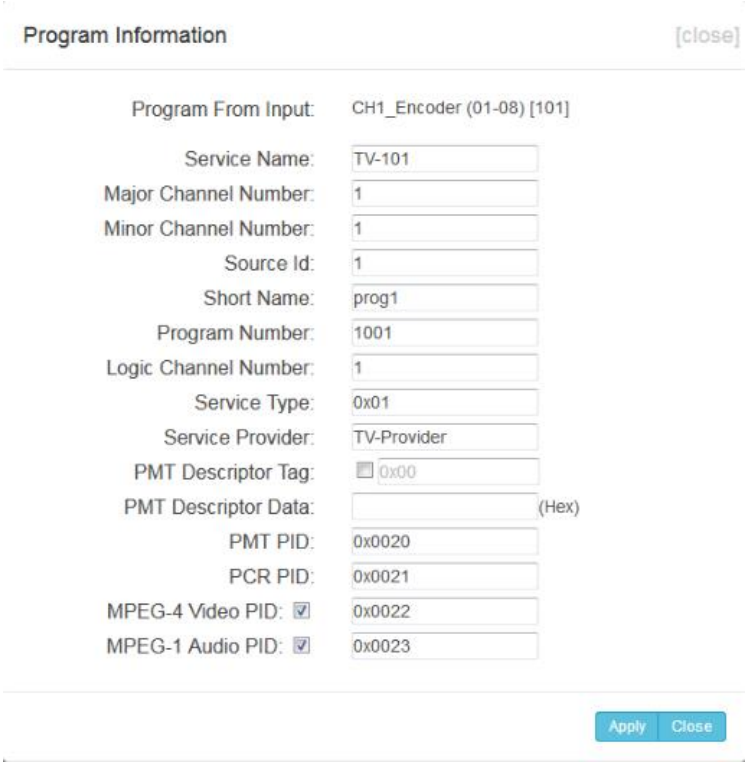


Figure-14

➢ 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)

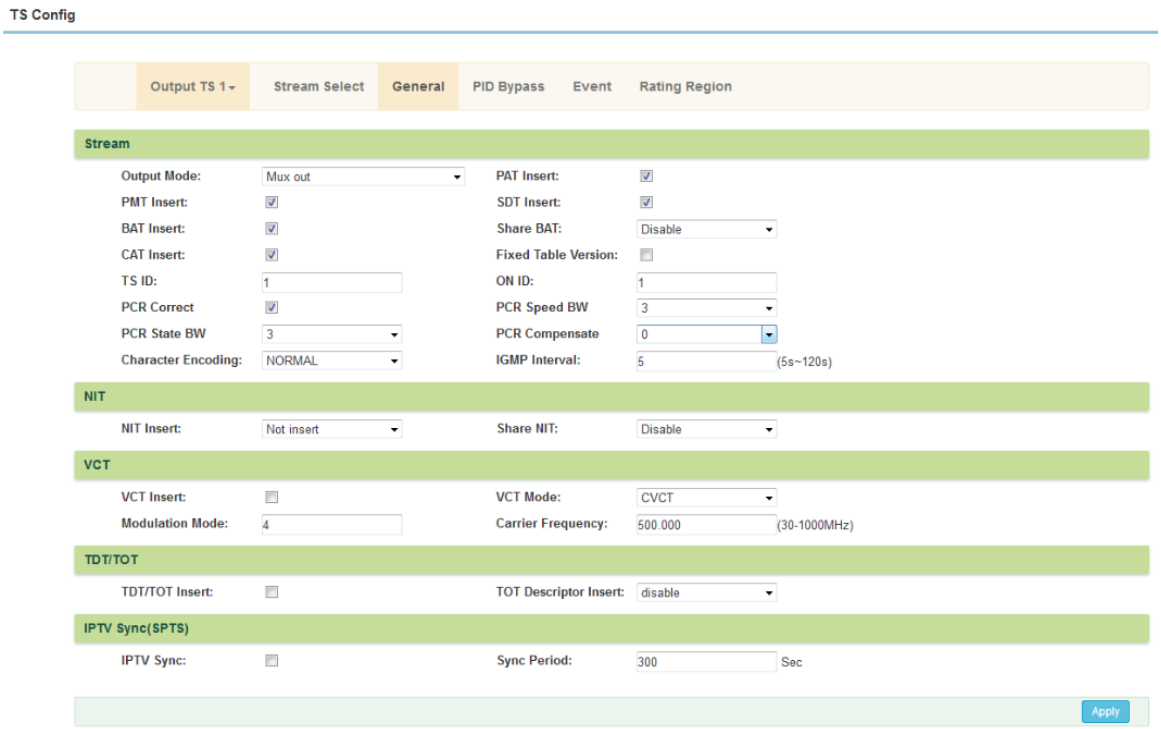


Figure-15

➢ TS Config → PID Bypass:

Users can bypass the wanted PIDs here

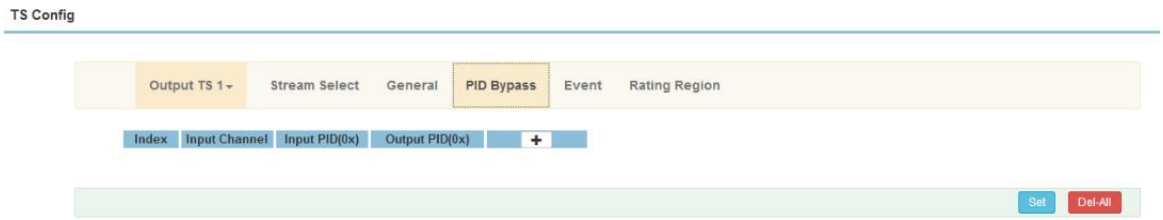


Figure-16

➢ TS Config → Event:

Users can edit the event information for the selected information as the below picture shows.

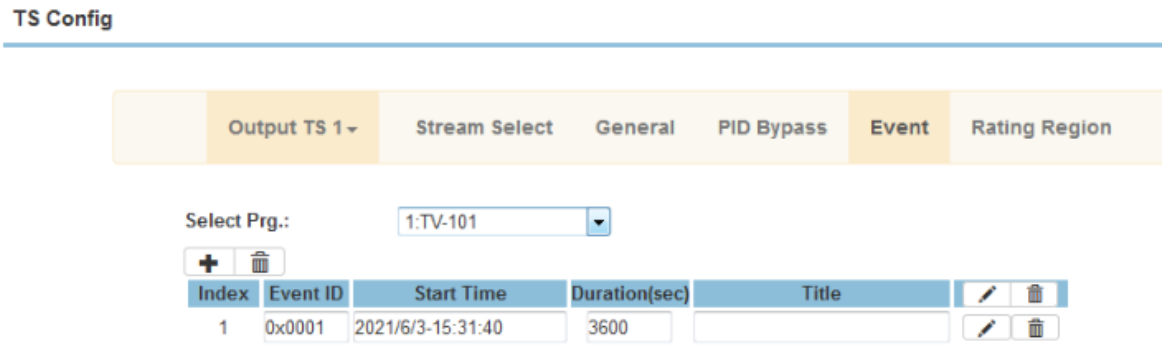
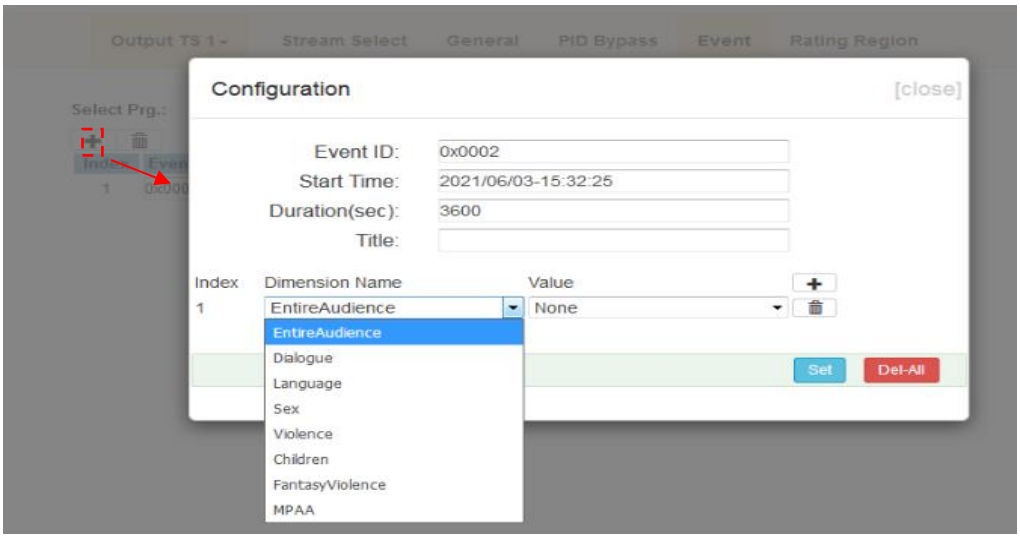


Figure-17



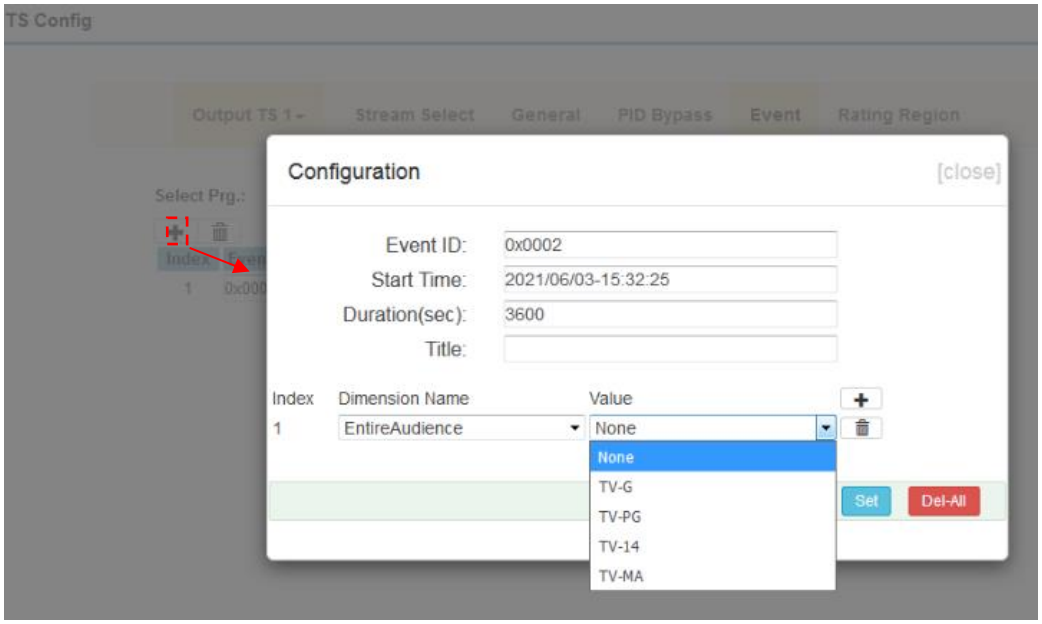
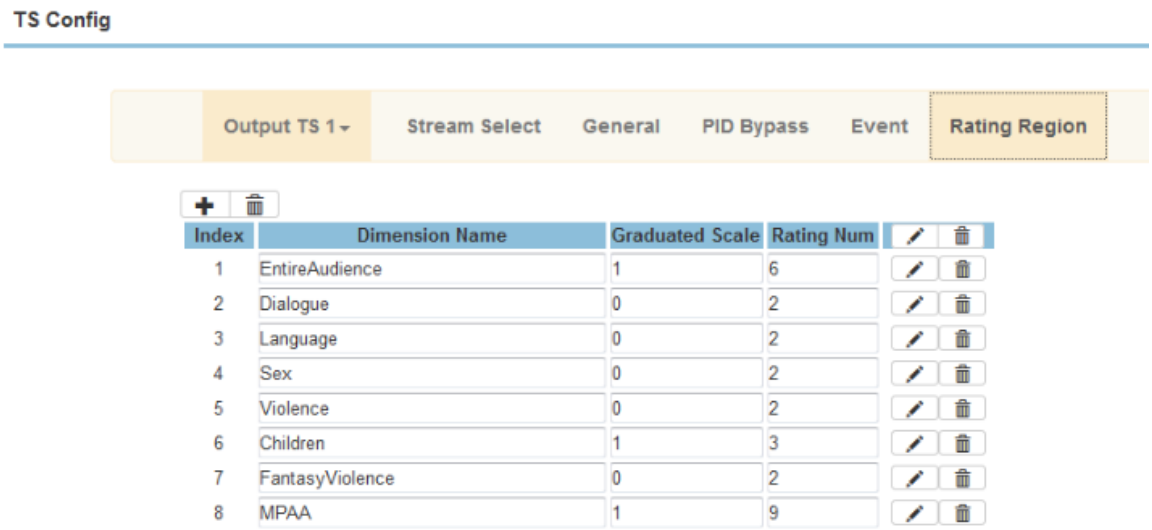


Figure-18

➢ TS Config → Rating Region:

Users can edit the Rating Region options for Event as the below picture shows.

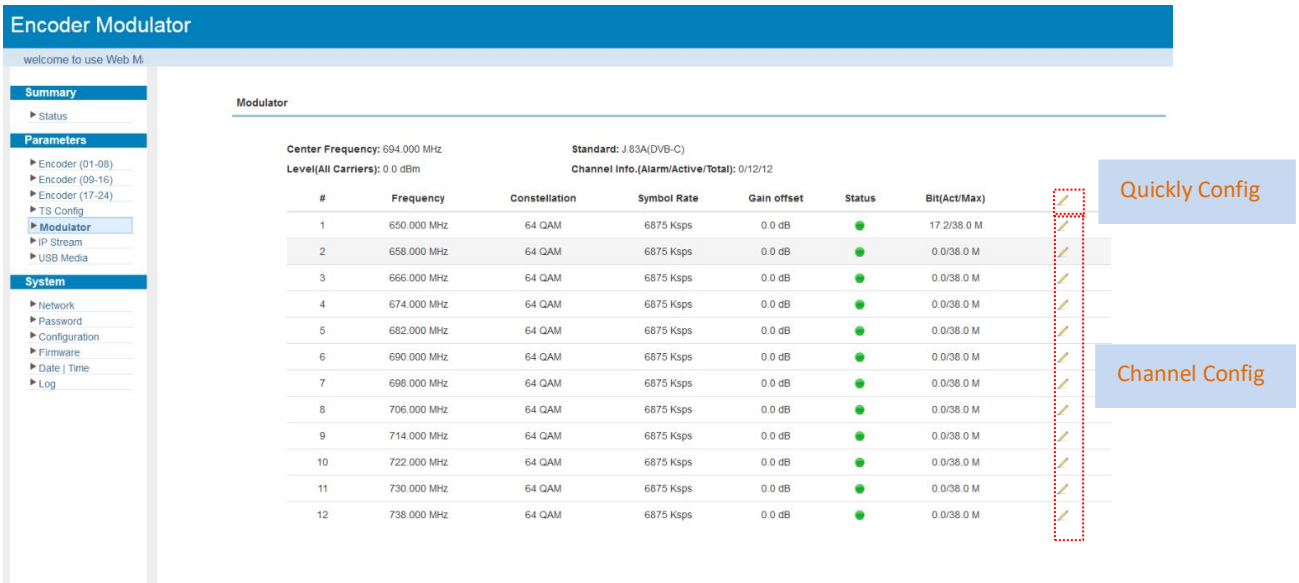


Index	Dimension Name	Graduated Scale	Rating Num
1	EntireAudience	1	6
2	Dialogue	0	2
3	Language	0	2
4	Sex	0	2
5	Violence	0	2
6	Children	1	3
7	FantasyViolence	0	2
8	MPAA	1	9

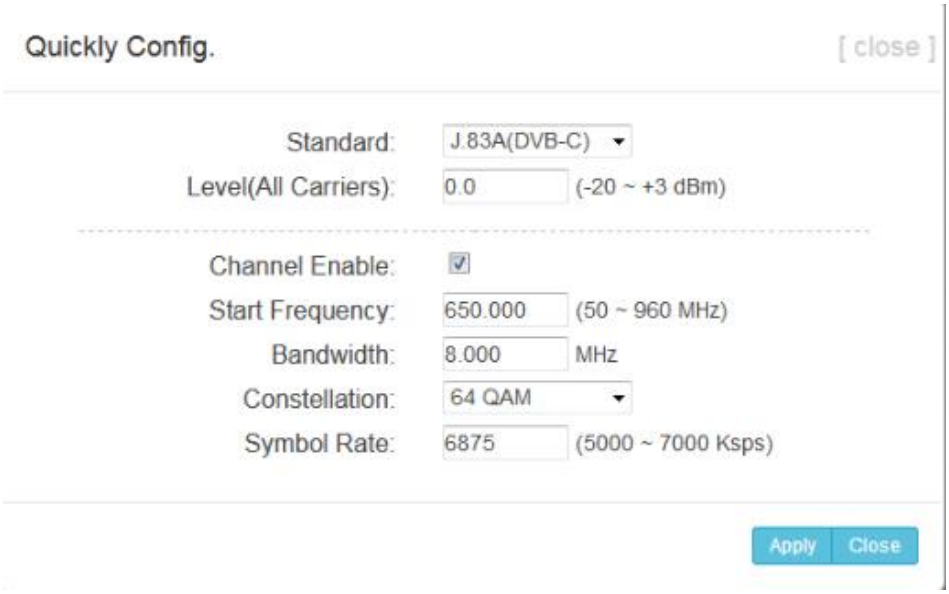
Figure-19

➢ Parameters → Modulator:

Clicking “Modulator”, it displays the Modulator Configuration screen as Figure-20. TL-9596S supports 12 DVB-C frequencies out. Here user can set modulation parameters, such as level and frequency etc.



#	Frequency	Constellation	Symbol Rate	Gain offset	Status	Bit(Act/Max)
1	650.000 MHz	64 QAM	6875 Ksps	0.0 dB	●	17.2/38.0 M
2	658.000 MHz	64 QAM	6875 Ksps	0.0 dB	●	0.0/38.0 M
3	666.000 MHz	64 QAM	6875 Ksps	0.0 dB	●	0.0/38.0 M
4	674.000 MHz	64 QAM	6875 Ksps	0.0 dB	●	0.0/38.0 M
5	682.000 MHz	64 QAM	6875 Ksps	0.0 dB	●	0.0/38.0 M
6	690.000 MHz	64 QAM	6875 Ksps	0.0 dB	●	0.0/38.0 M
7	698.000 MHz	64 QAM	6875 Ksps	0.0 dB	●	0.0/38.0 M
8	706.000 MHz	64 QAM	6875 Ksps	0.0 dB	●	0.0/38.0 M
9	714.000 MHz	64 QAM	6875 Ksps	0.0 dB	●	0.0/38.0 M
10	722.000 MHz	64 QAM	6875 Ksps	0.0 dB	●	0.0/38.0 M
11	730.000 MHz	64 QAM	6875 Ksps	0.0 dB	●	0.0/38.0 M
12	738.000 MHz	64 QAM	6875 Ksps	0.0 dB	●	0.0/38.0 M



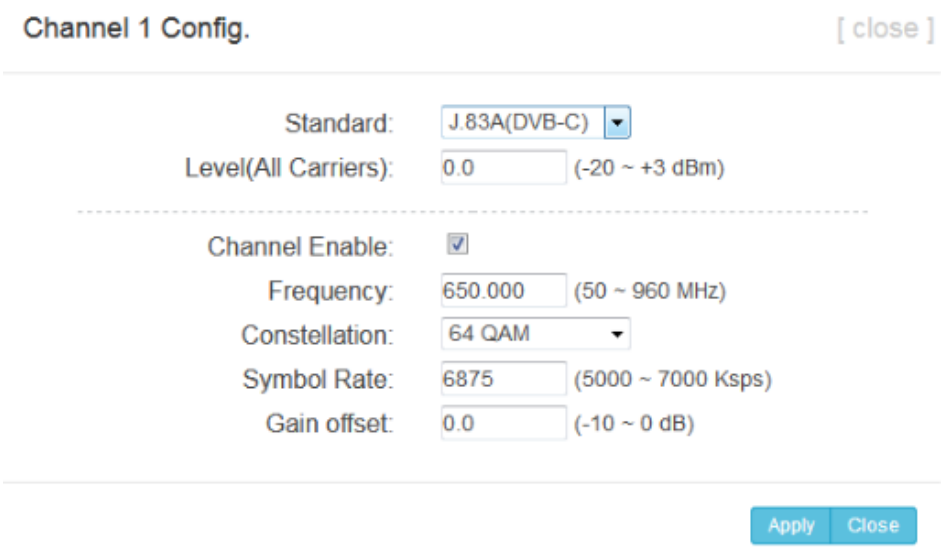
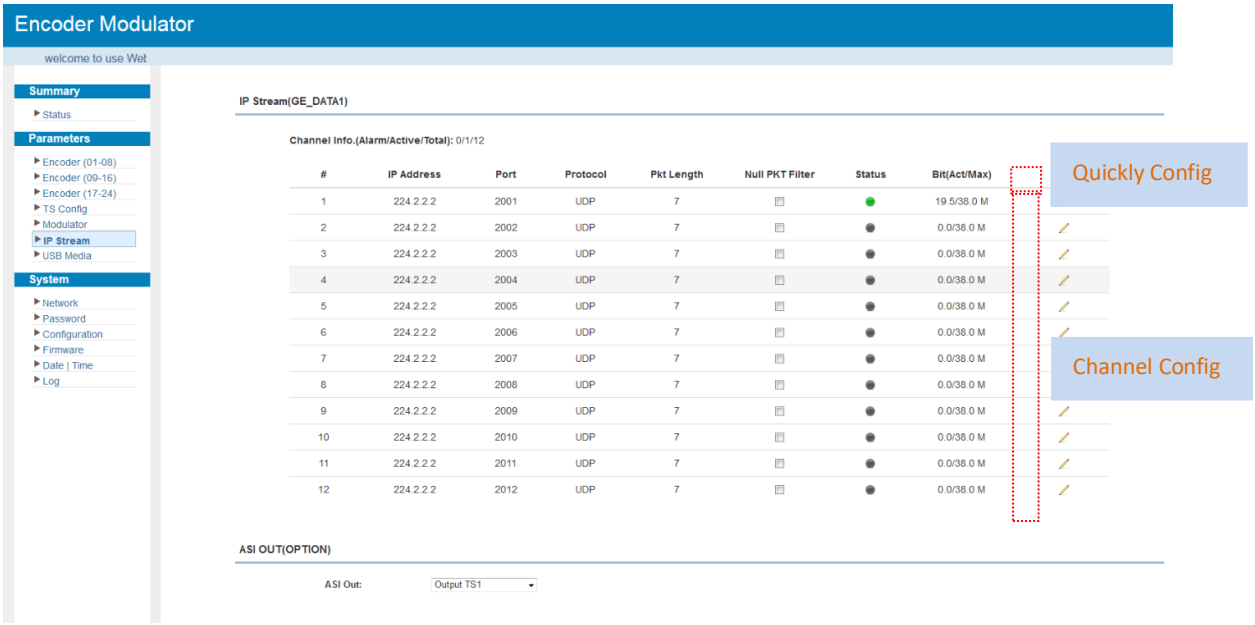


Figure-20

➢ Parameters → IP Stream:

TL-9596S supports 12 TS to output in IP format through the DATA port under DVB-C modulation.

Clicking “IP Stream”, it displays the interface where to set IP out parameters (Figure-21).



#	IP Address	Port	Protocol	Pkt Length	Null PKT Filter	Status	Bit(Act/Max)
1	224.2.2.2	2001	UDP	7			19.5/38.0 M
2	224.2.2.2	2002	UDP	7			0.0/38.0 M
3	224.2.2.2	2003	UDP	7			0.0/38.0 M
4	224.2.2.2	2004	UDP	7			0.0/38.0 M
5	224.2.2.2	2005	UDP	7			0.0/38.0 M
6	224.2.2.2	2006	UDP	7			0.0/38.0 M
7	224.2.2.2	2007	UDP	7			0.0/38.0 M
8	224.2.2.2	2008	UDP	7			0.0/38.0 M
9	224.2.2.2	2009	UDP	7			0.0/38.0 M
10	224.2.2.2	2010	UDP	7			0.0/38.0 M
11	224.2.2.2	2011	UDP	7			0.0/38.0 M
12	224.2.2.2	2012	UDP	7			0.0/38.0 M

Figure-21

When users click “pen” button, it triggers a dialog box (Figure-22) where users can set the parameters of the corresponding IP output streams.

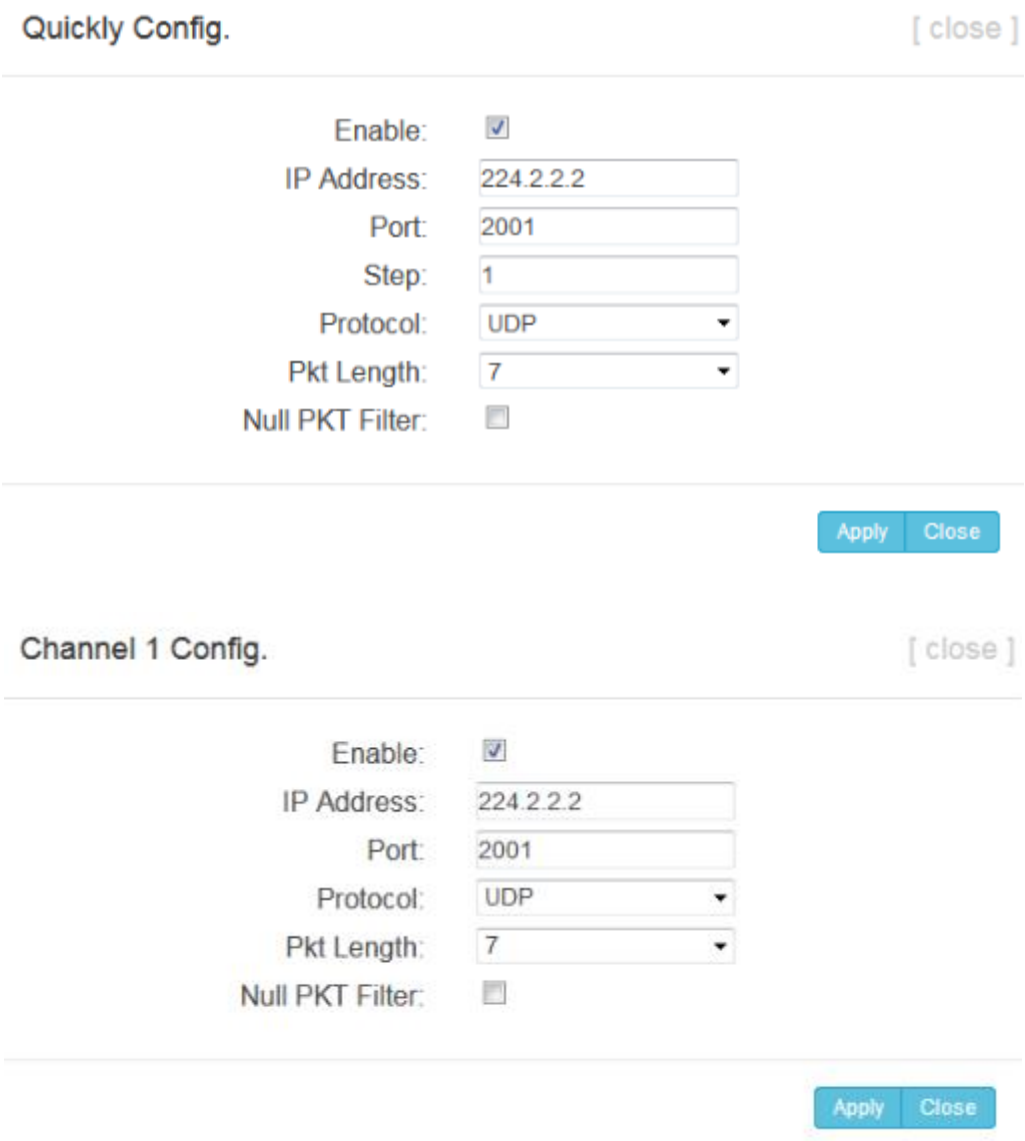


Figure-22

When users click “ASI Out” list, users can set one TS out from MPTS 1 to MPTS 12 as the ASI out (ASI out is optional as per the order).

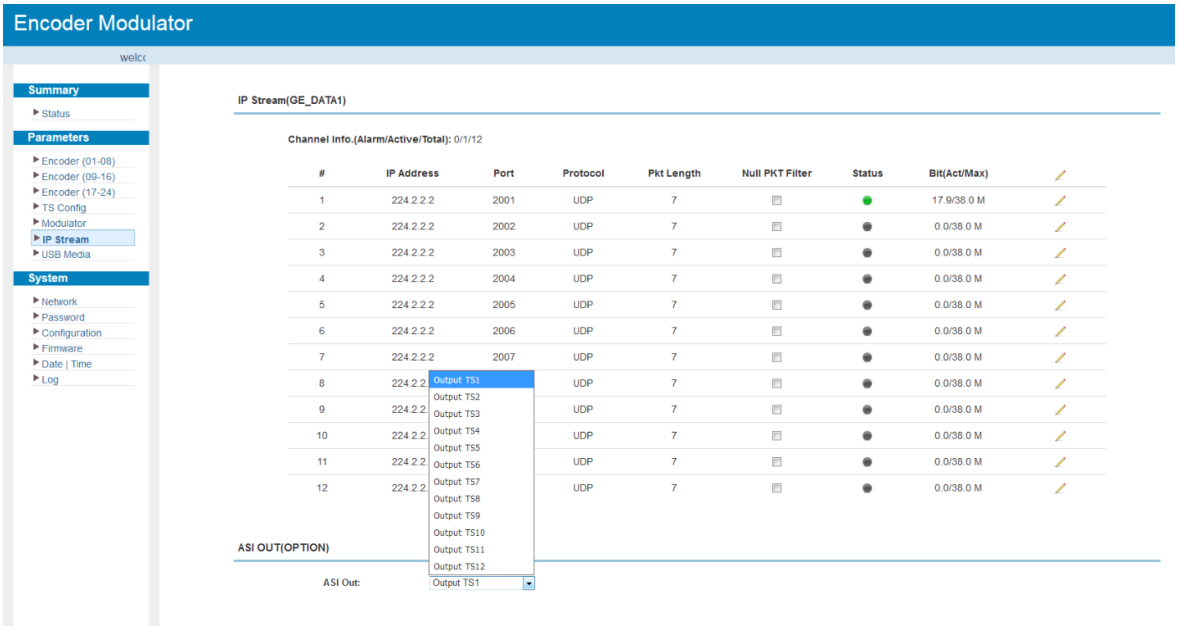


Figure-23

Parameters → USB Media:

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

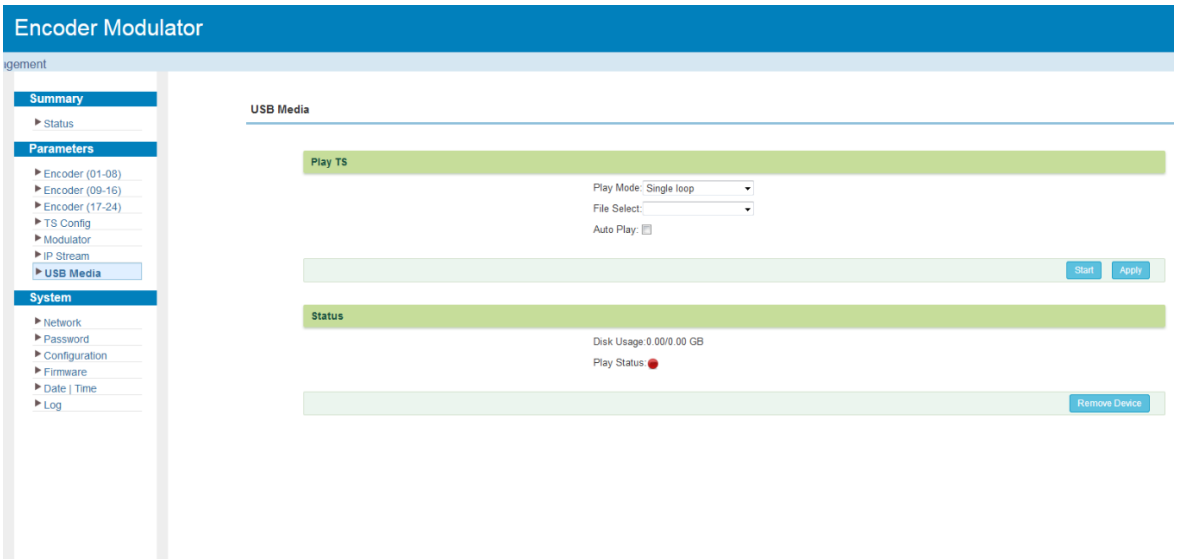


Figure-24

Detailed Explanation:

Play Mode: User can 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.

*.ts Video Creation Software:

Users can also create *.ts videos containing pictures, videos and music with our creator software on a PC and save them into the USB flash drive.

- Drag the files to "Creator" application.
  Formats supported include:
  Image: JPG, PNG, BMP, GIF
  Audio: MP3, WAV
  Video: WMV, MPG, MP4, TS, AVI…

- Start the conversion process to generate *.ts videos

USB Flash Drive Specifications Required: High Speed 2.0; File System FAT32

System → Network:

Clicking “Network”, it displays the interface as Figure-25 where to set network parameters.

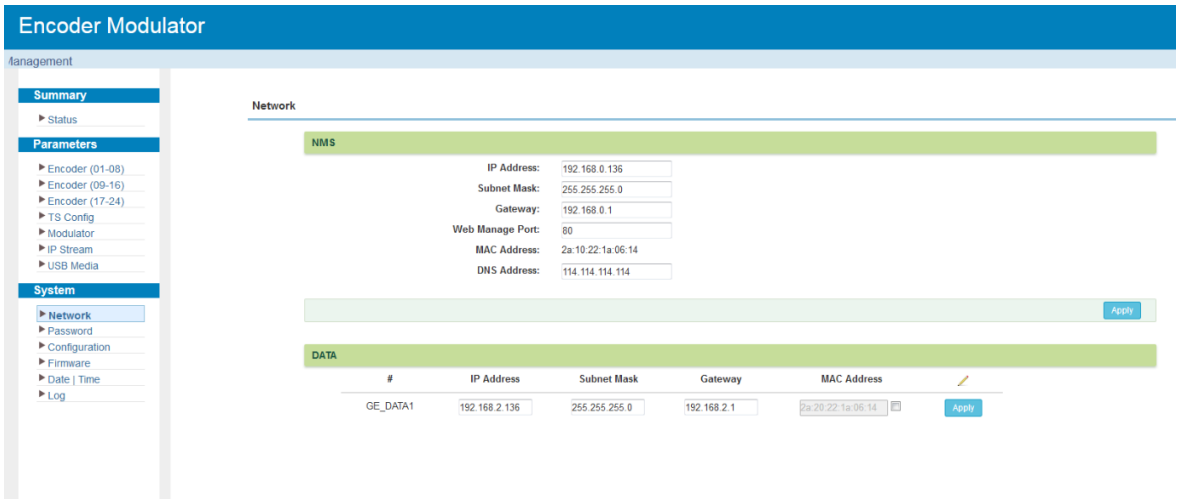


Figure-25

System → Password:

Clicking “Password”, it displays the screen as Figure-26 where to set the login account and password for the web NMS. Both the current username and password are “admin”.

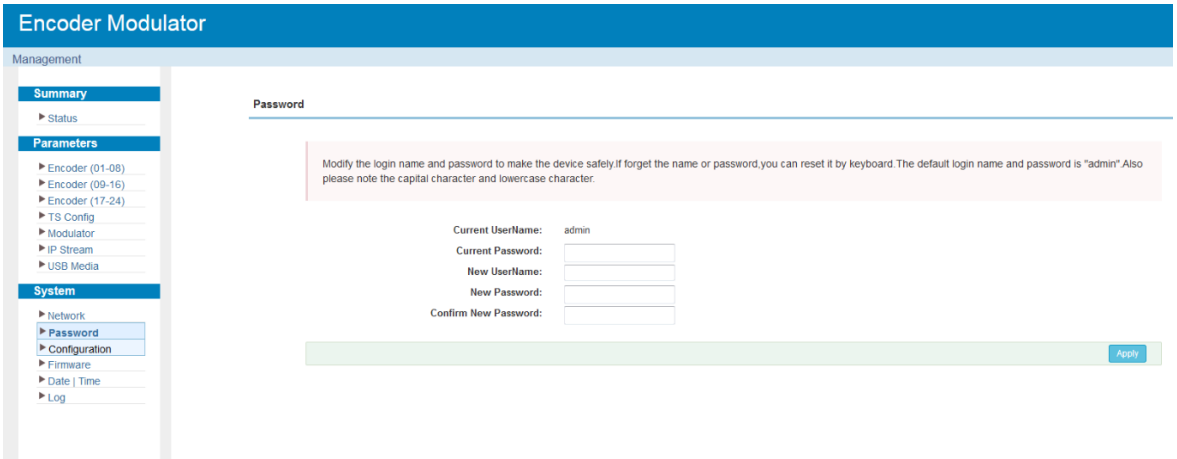
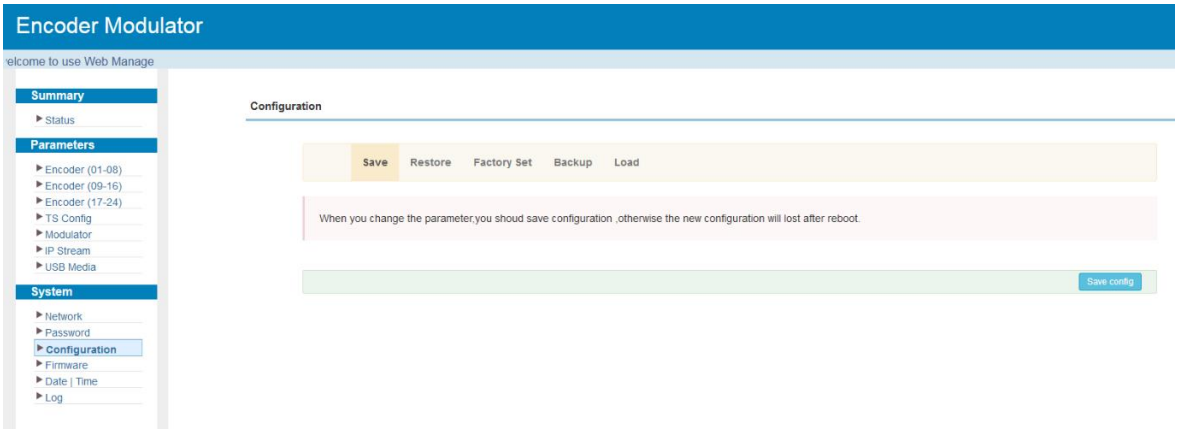
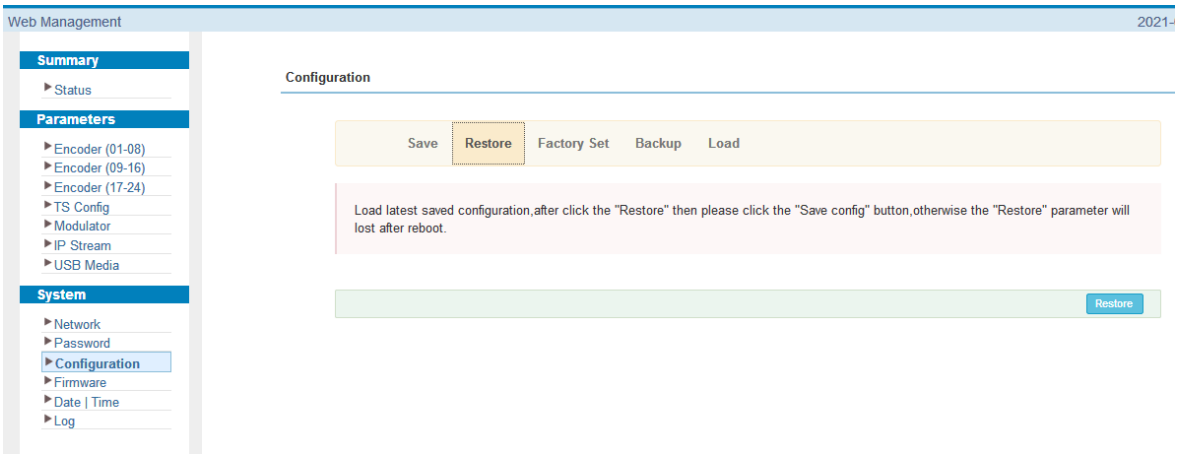


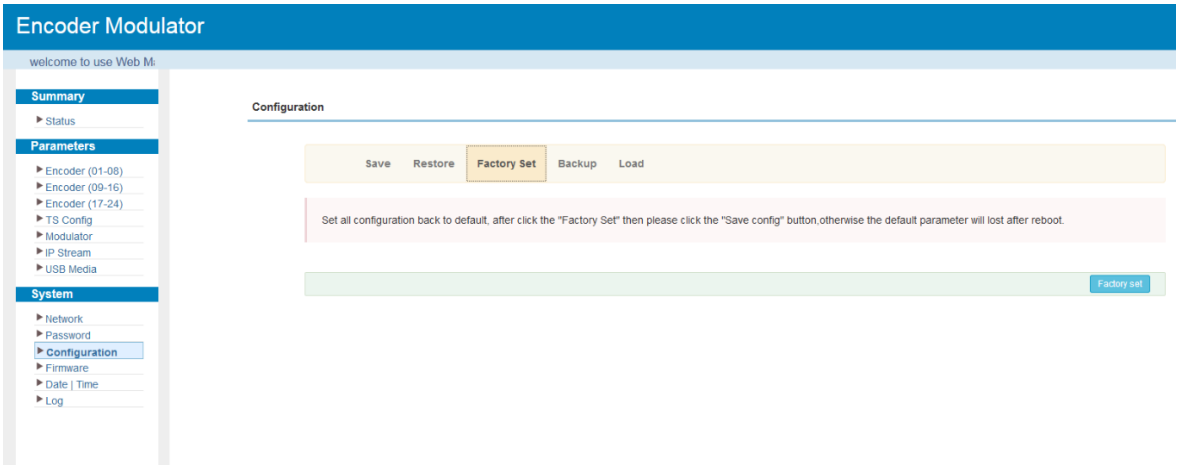
Figure-26

System → Configuration:

Clicking “Configuration”, it displays the screen as Figure-27 where to save/ restore/factory setting/ backup/ load your configurations.







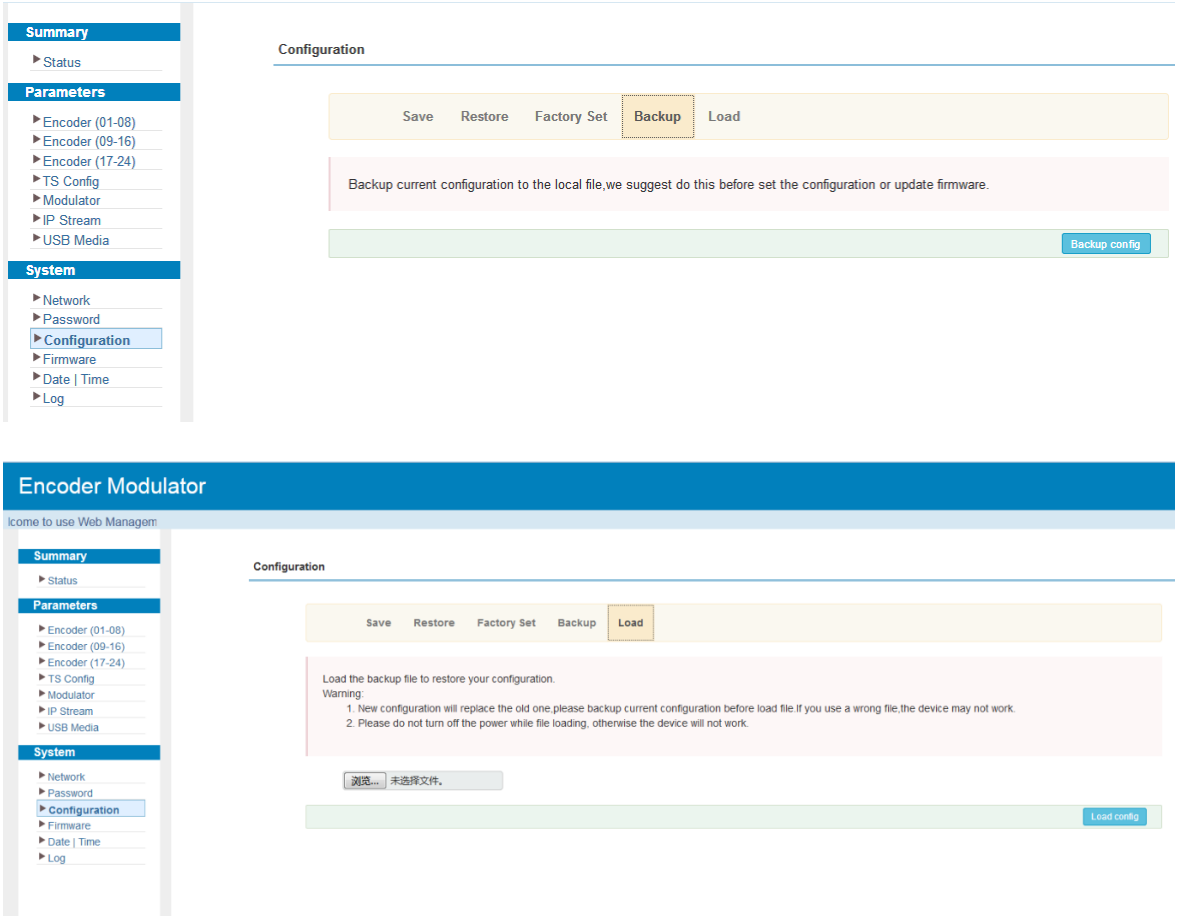


Figure-27

System → Firmware:

Clicking “Firmware”, it displays the screen as Figure-28 where to update firmware for the modulator.

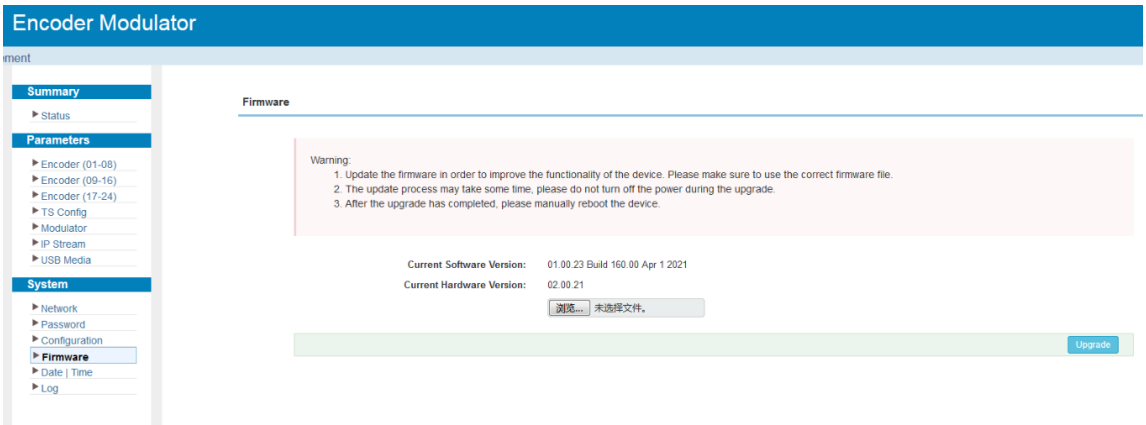


Figure-28

System→ Date/Time:

From the menu on left side of the webpage, clicking “Date/Time”, it will display the screen as Figure-29 where to set date and time for the device.

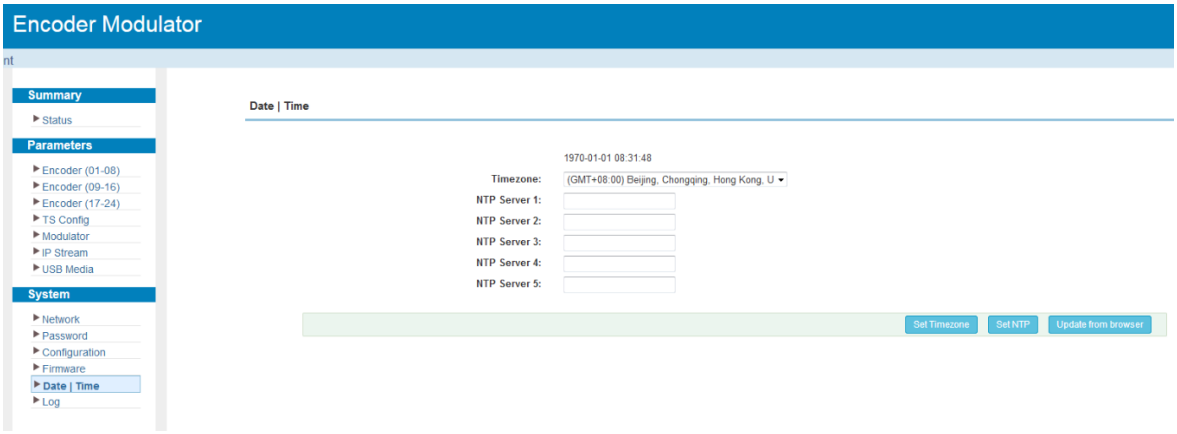


Figure-29

System→ Log:

Clicking “Log”, it displays the log interface as Figure-30 where to check or export the Kernel/System log.

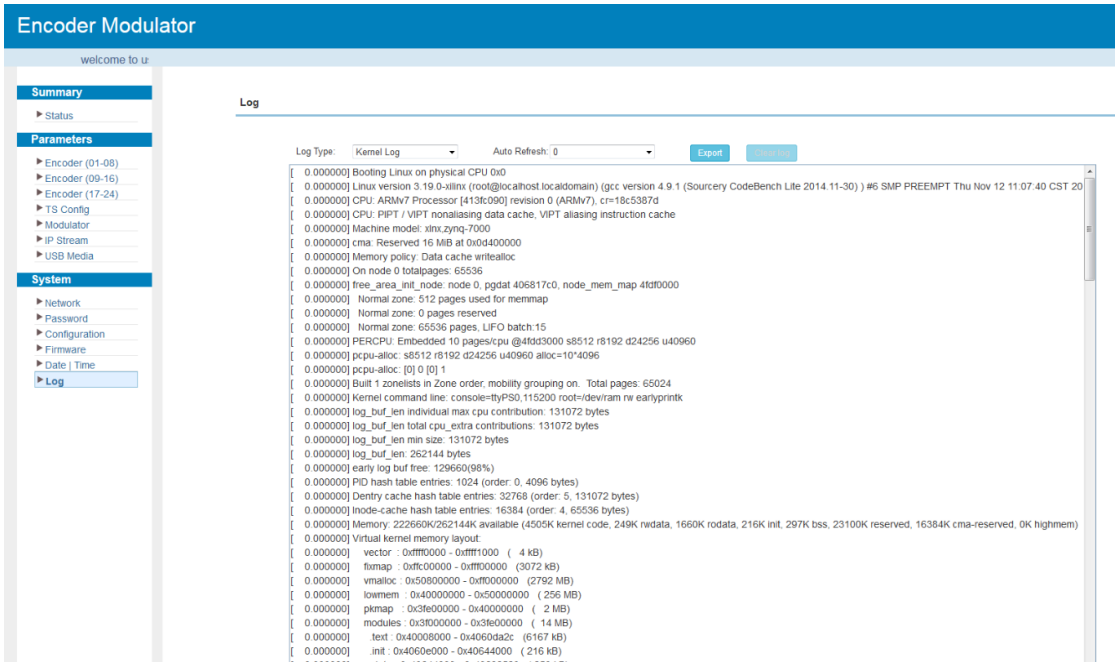


Figure-30

CHAPTER 4

TROUBLESHOOTING

All TRANSLITE products have been passed the testing and inspection before shipping out from factory. The testing and inspection scheme already covers all the Optical, Electronic and Mechanical criteria which have been published by TRANSLITE. 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

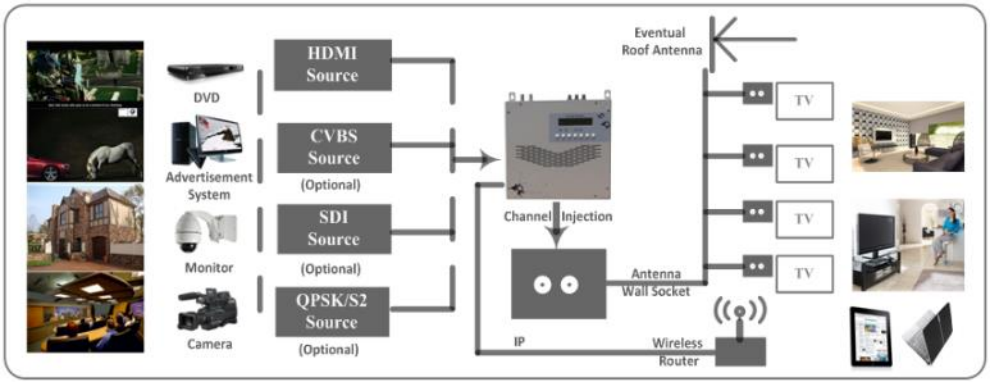
PACKING LIST

TL-9596S Encoder Modulator	1PC
HDMI Cables	8/16/24PCS
Ground Lead	1PC
Power Cord	1PC

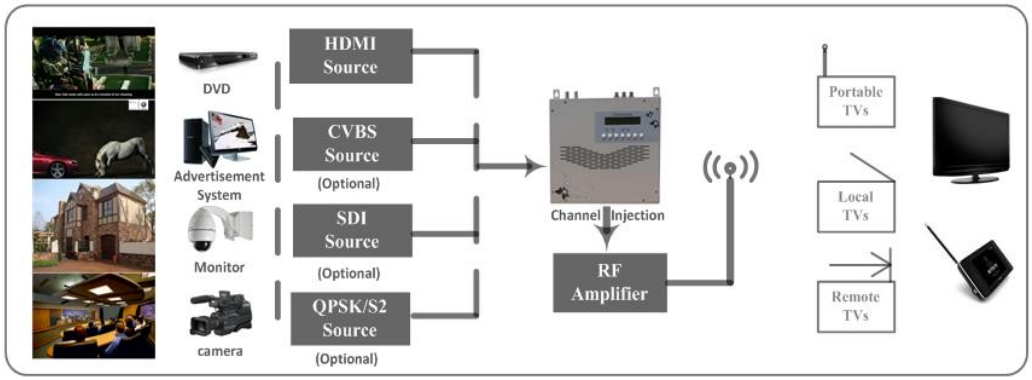
CHAPTER 6

APPLICATIONS

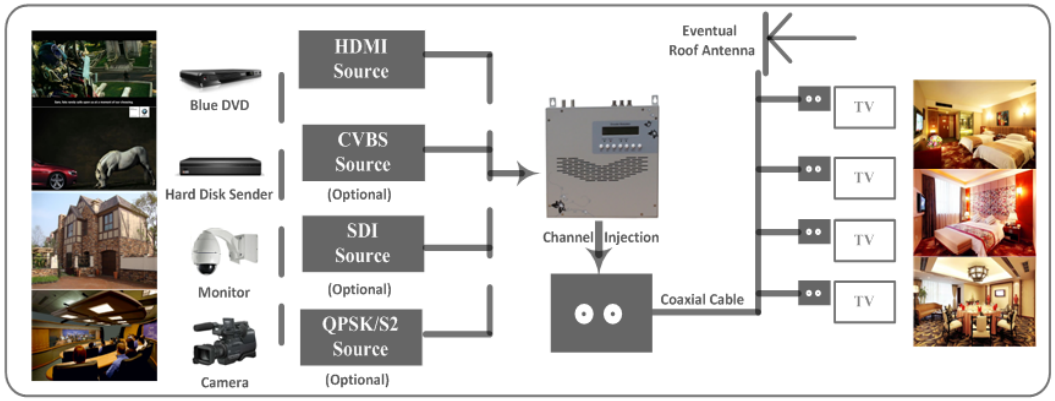
1. **Residences and Private Homes Video content DVB-T/ISDB-T distribution**



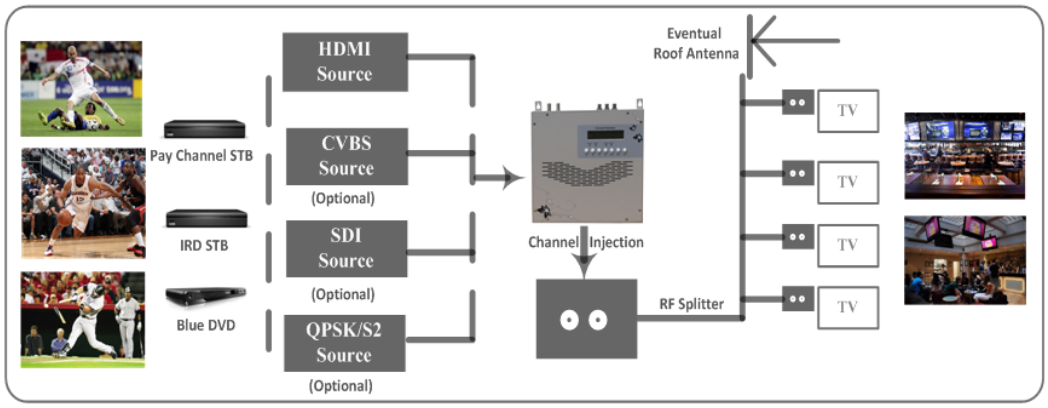
2. Outside Audio-Video contents ON-AIR DVB-T/ISDB-T distribution



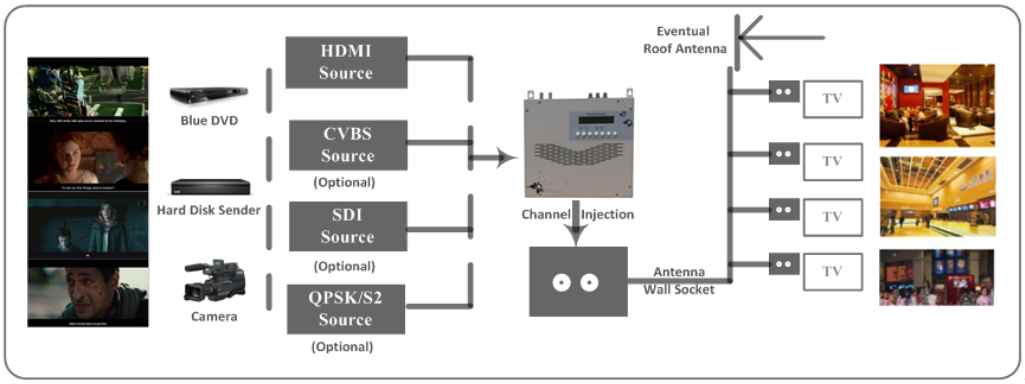
3. Hotel Audio-Video contents DVB-T/ISDB-T distribution



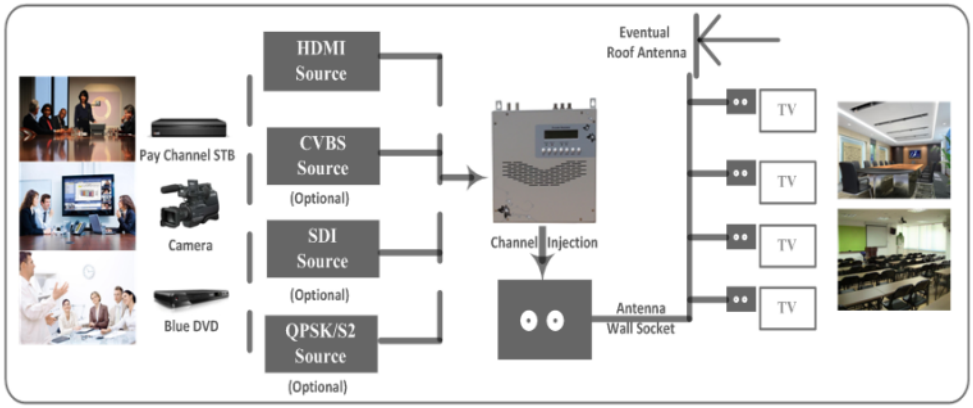
4. Bar Audio-Video contents distribution



5. Cinema Audio-Video contents DVB-T/ISDB-T distribution



6. Company Audio - Video contents distribution



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