NDS3536S

Encoder Modulator ISDB-T（16 carriers） User Manual

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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.

Disclaimer

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

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Chapter 1 Introduction

1.1 Product Overview

NDS3536S 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 ISDB-T RF out with 16 non-adjacent carriers, and supports 16 MPTS as mirror of 16 carriers through the GE port and 1 ASI out 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…

1.2 Key Features

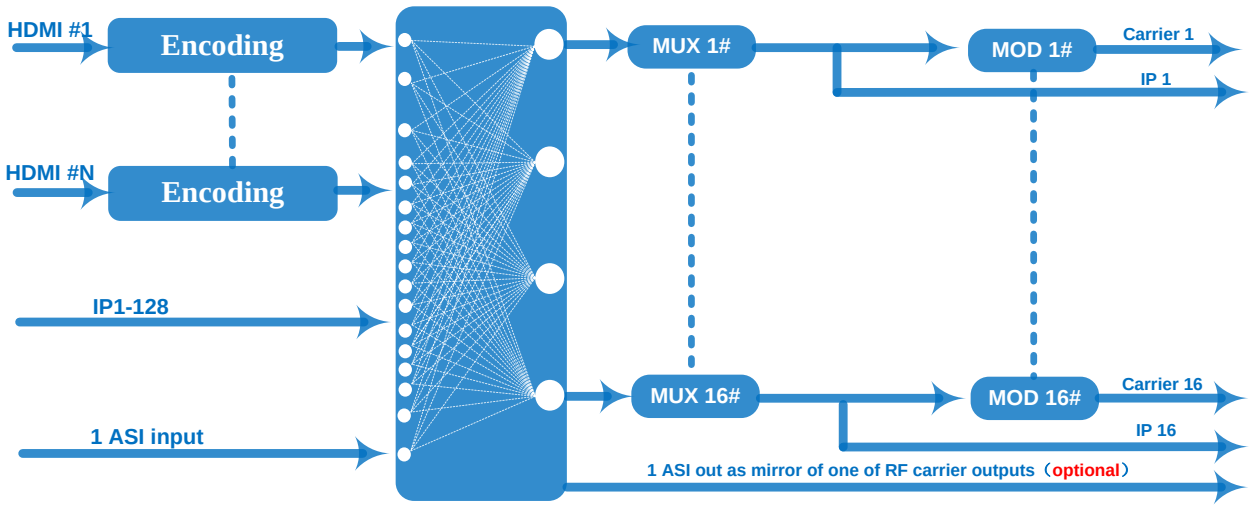
- **8/16/24 HDMI inputs, MPEG-4 AVC/H.264 Video encoding**
- **1 ASI input for re-mux**
- **1 USB Player (Insert the USB Flash drive with "xxx.ts" videos in NDS3536S and play back the content in an easy way; file system FAT 32.)**
- **128 IP input over UDP and RTP via GE port**
- **Each carrier out channel 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 16 groups multiplexing/ISDB-T modulating**
- **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: 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		
Video	Resolution	Input	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	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	
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, 1KHz step
		RF out	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) 16 MPTS output over UDP and RTP/RTSP as mirror of 16 ISDB-T carriers 1*1000M Base-T Ethernet interface, GE port	
System function	Network management (WEB)	
	Chinese and English language	
	Ethernet software upgrade	
Miscellaneous	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 supply and Grounding Pole
2	Power Indicator
3	ASI out (Optional)
4	ASI in
5	HDMI inputs
6	DATA: IP input and output port(GE)
7	NMS (Network management port)
8	USB Port(TS playing)
9	RF test and RF 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.

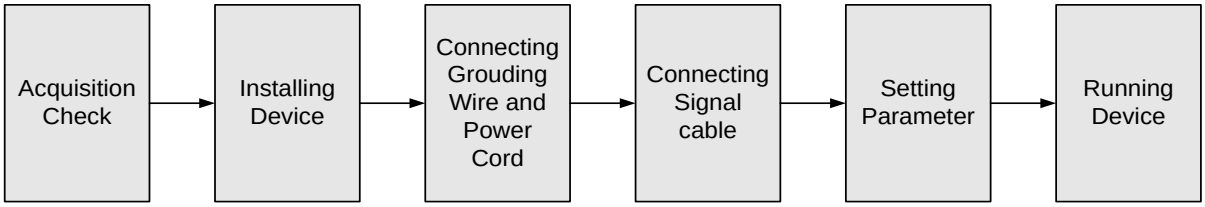
2.1 General Precautions

- ✓ 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.
- ✓ 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^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.

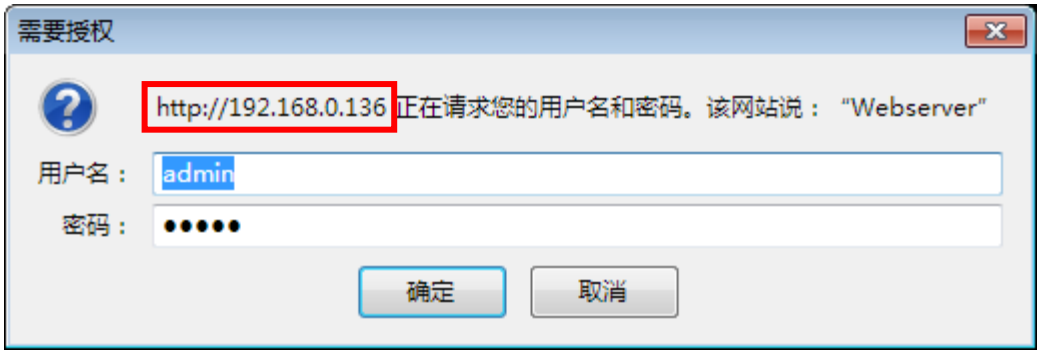


Figure-1

3.2 Operation

Summary → Status

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

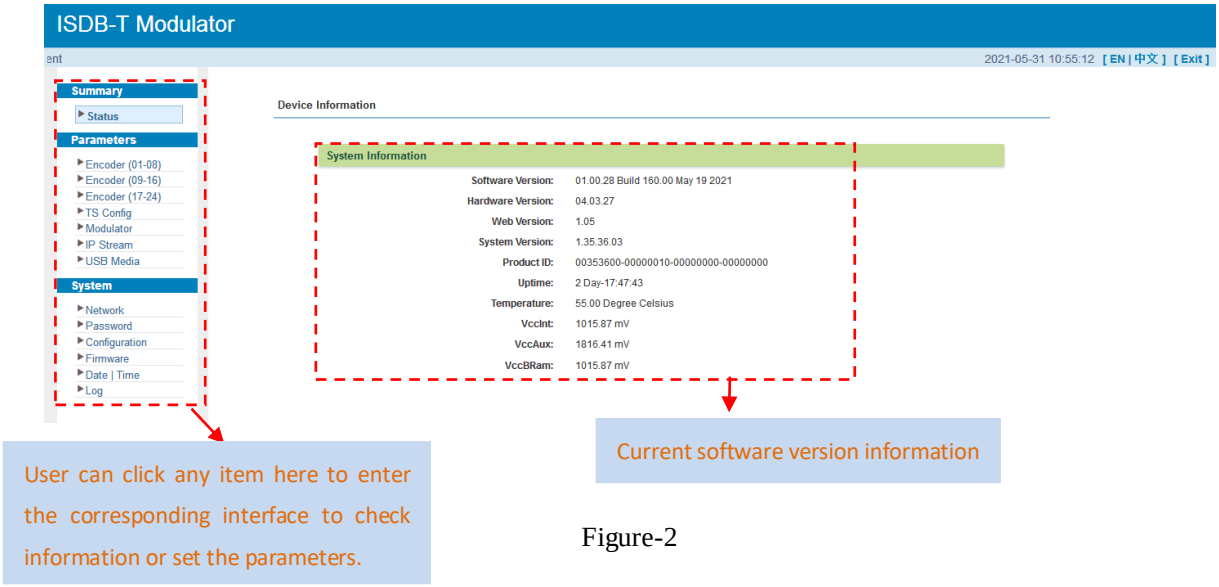
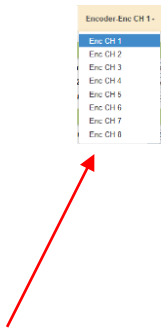
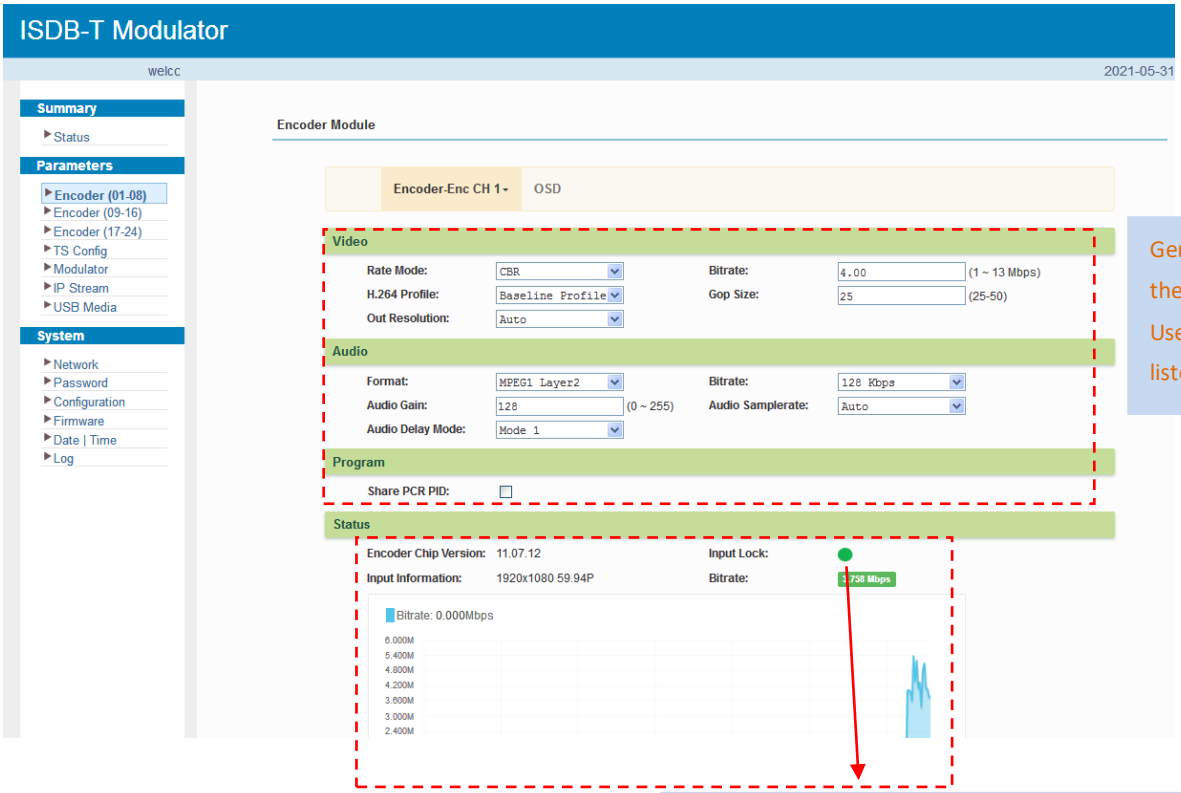


Figure-2

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.





General settings for the Encoding program: User can edit any item listed as needed.

Users can check the input lock status, bit rate Status, encoder version and resolution etc information.

Figure-3

Encoder(01-08) → OSD:

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

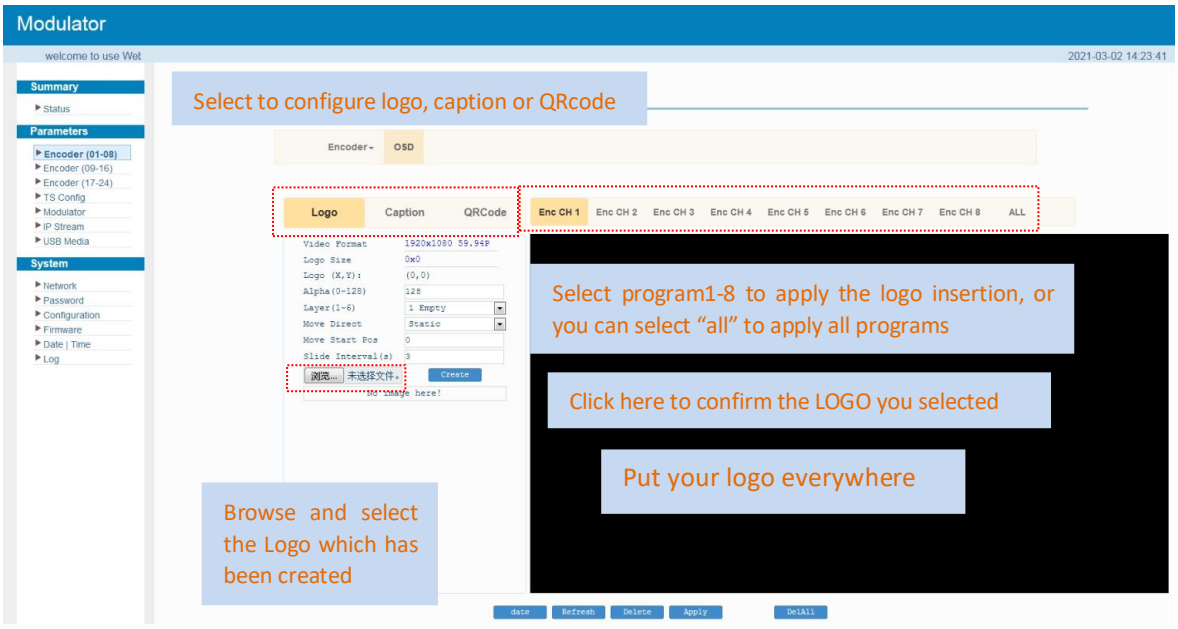


Figure-4

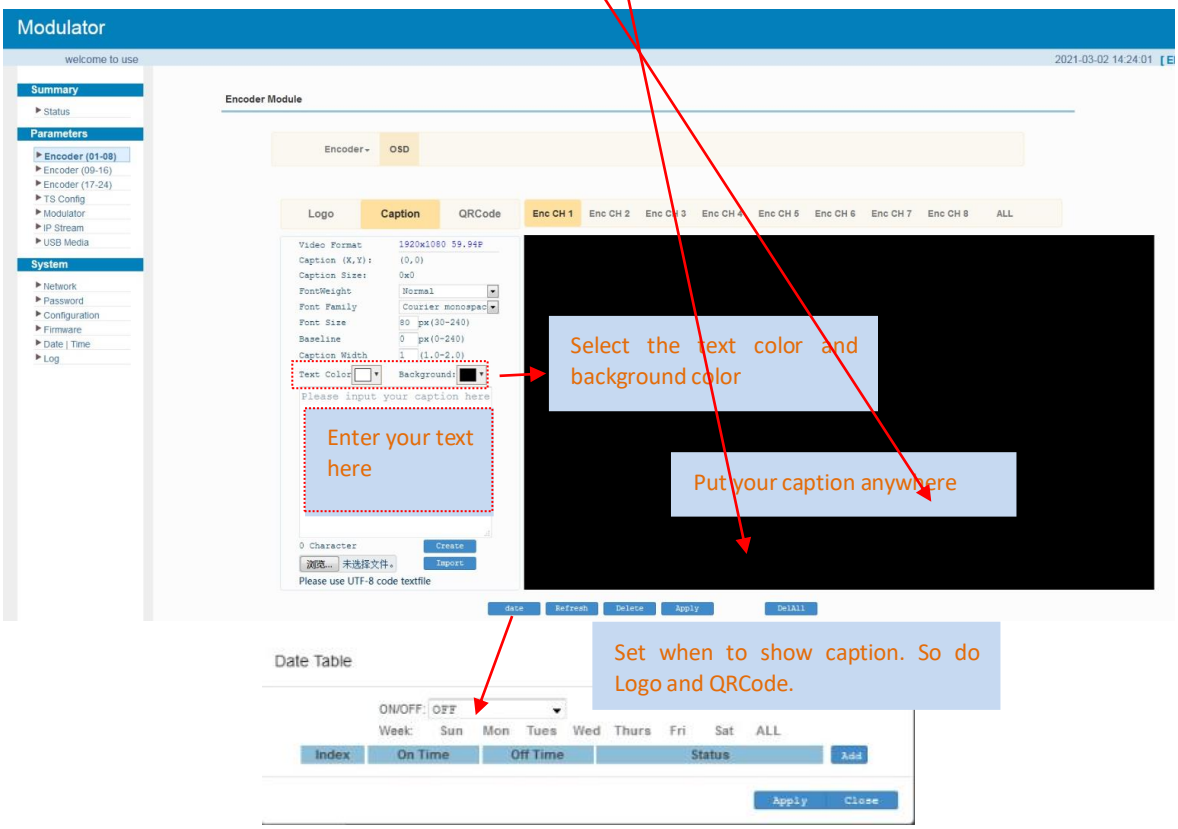


Figure-5

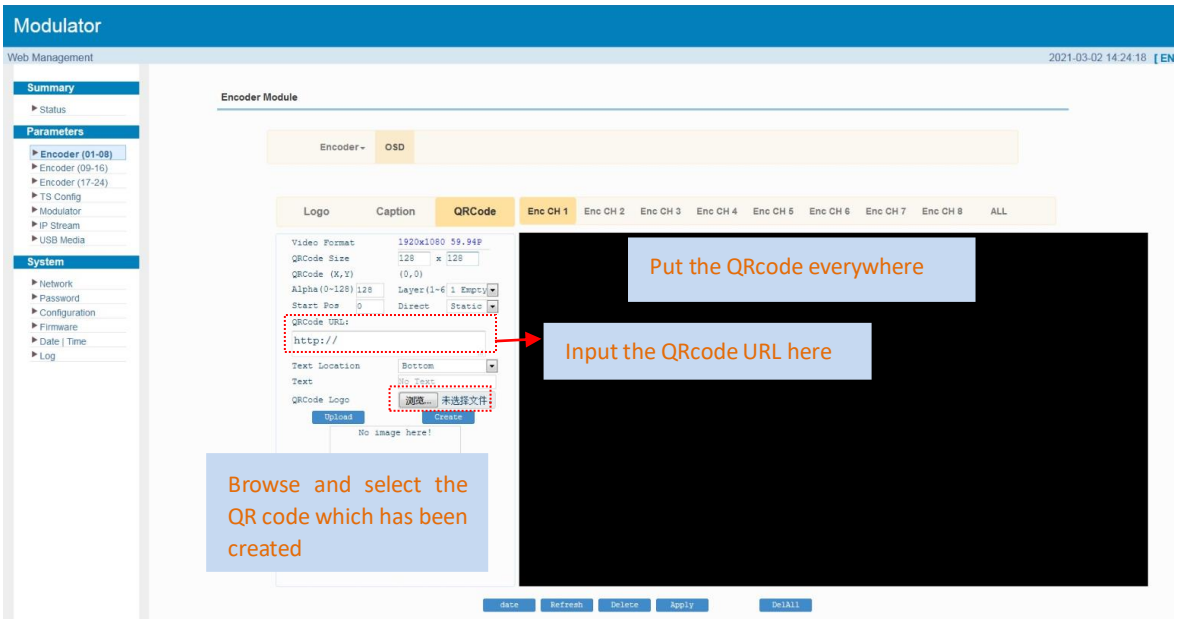


Figure-6

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.

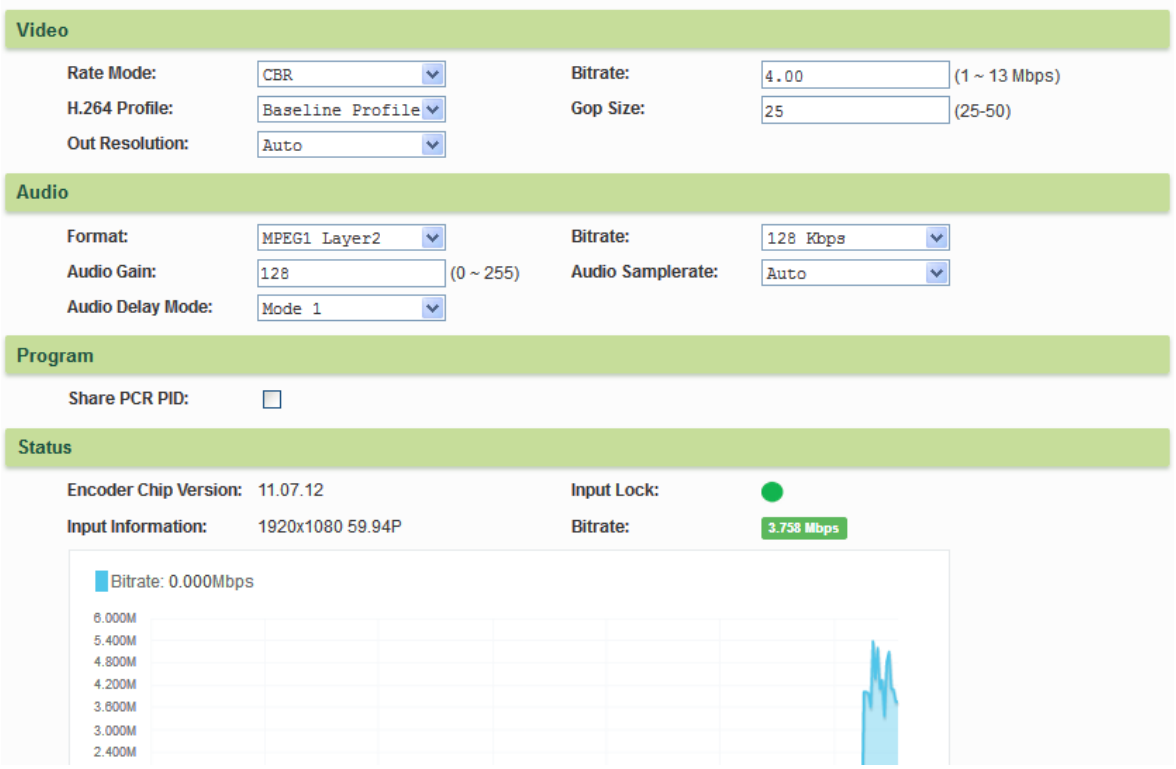


Figure-7

Encoder (09-16) → OSD

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

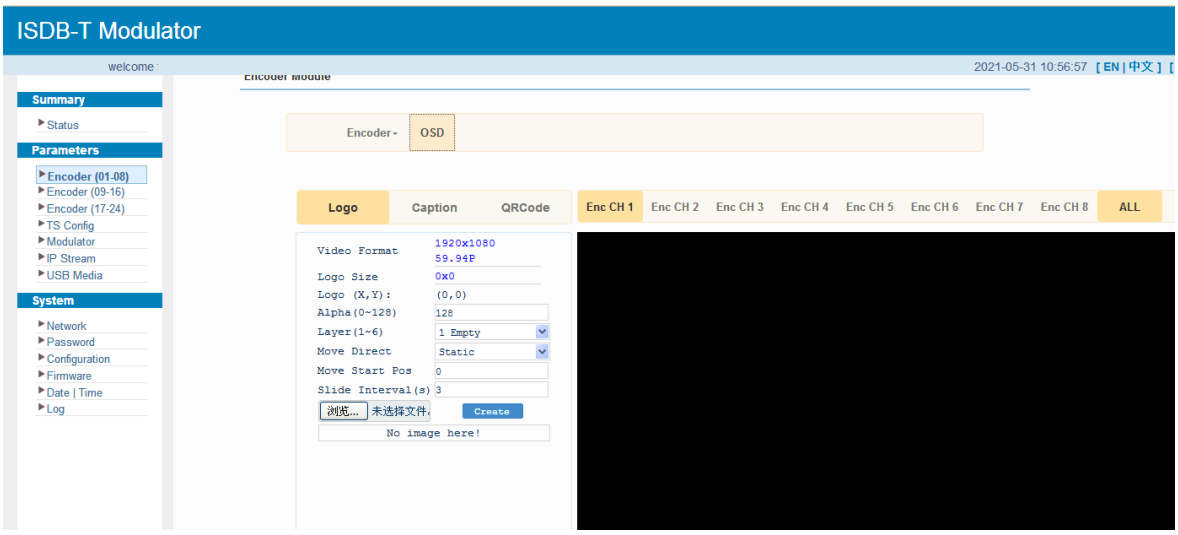


Figure-8

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.

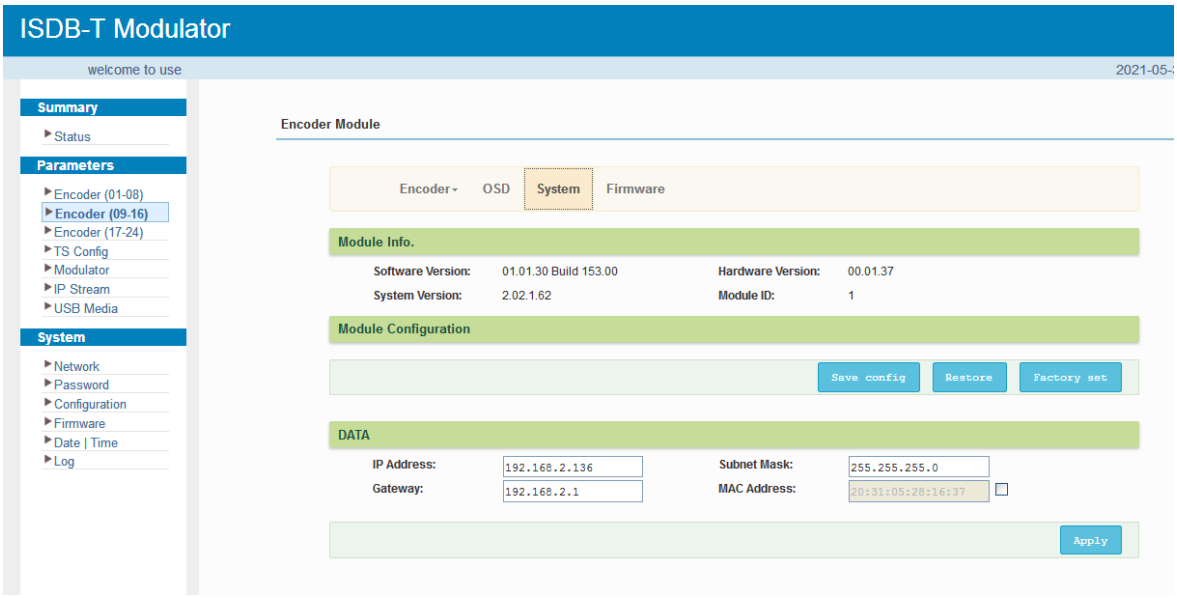


Figure-9

Encoder (09-16) → Firmware

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

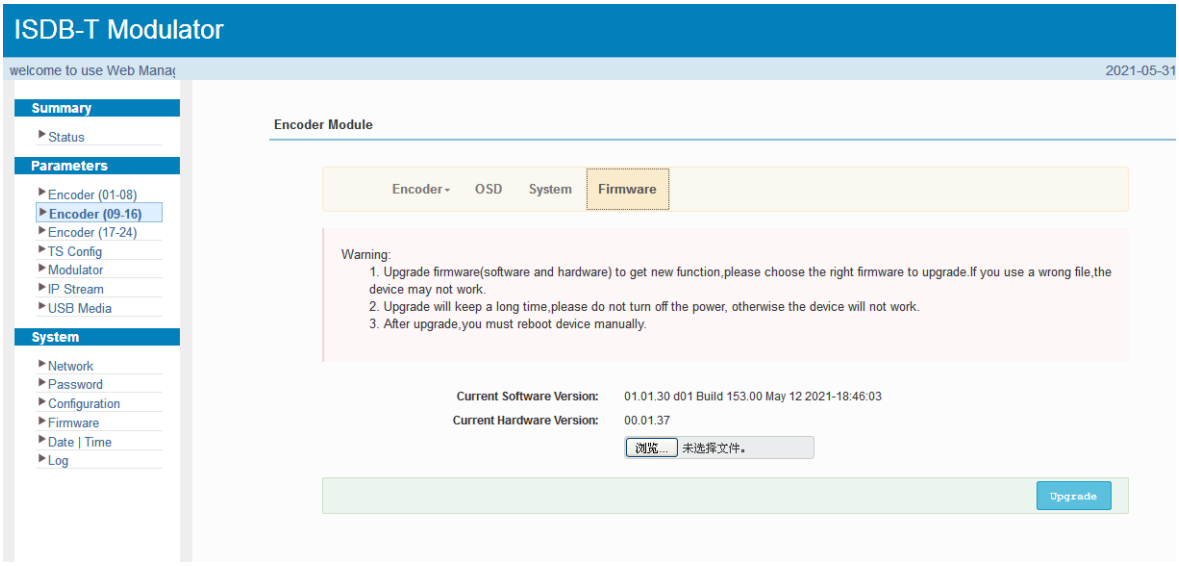


Figure-10

Parameters → Encoder(17-24)

Encoder (17-24) shares the same configuration steps with encoder(01-08).

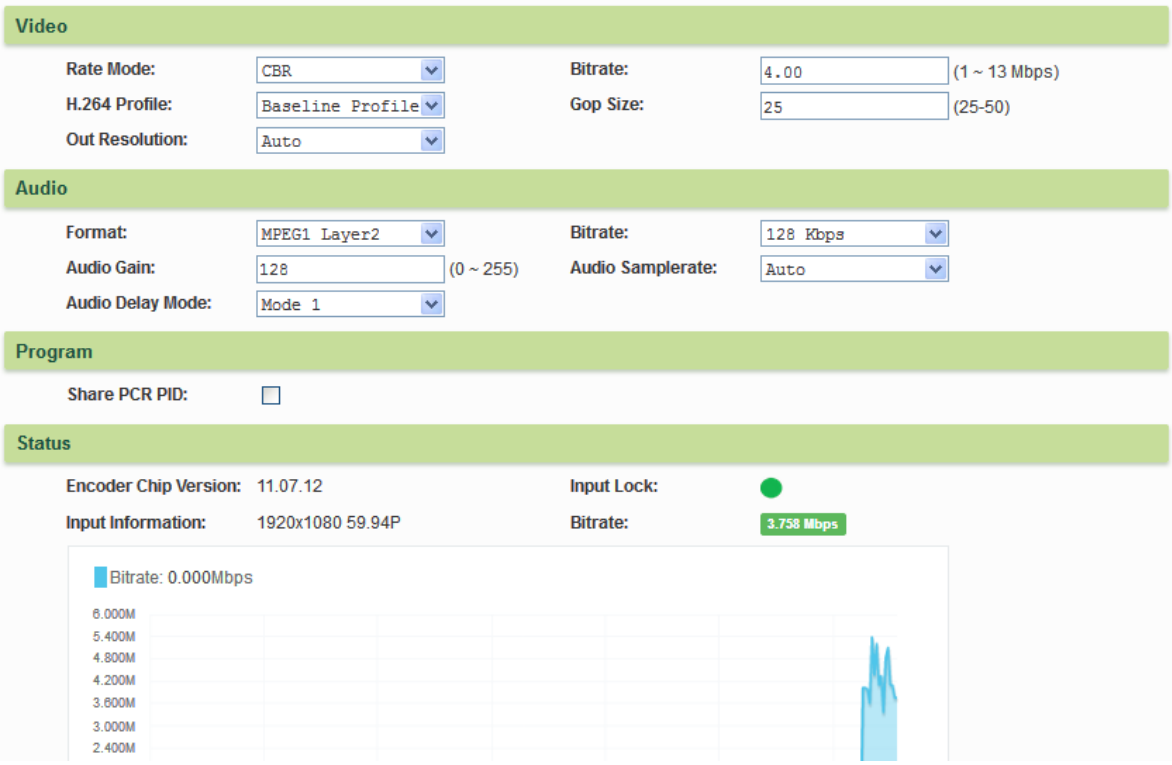


Figure-11

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)

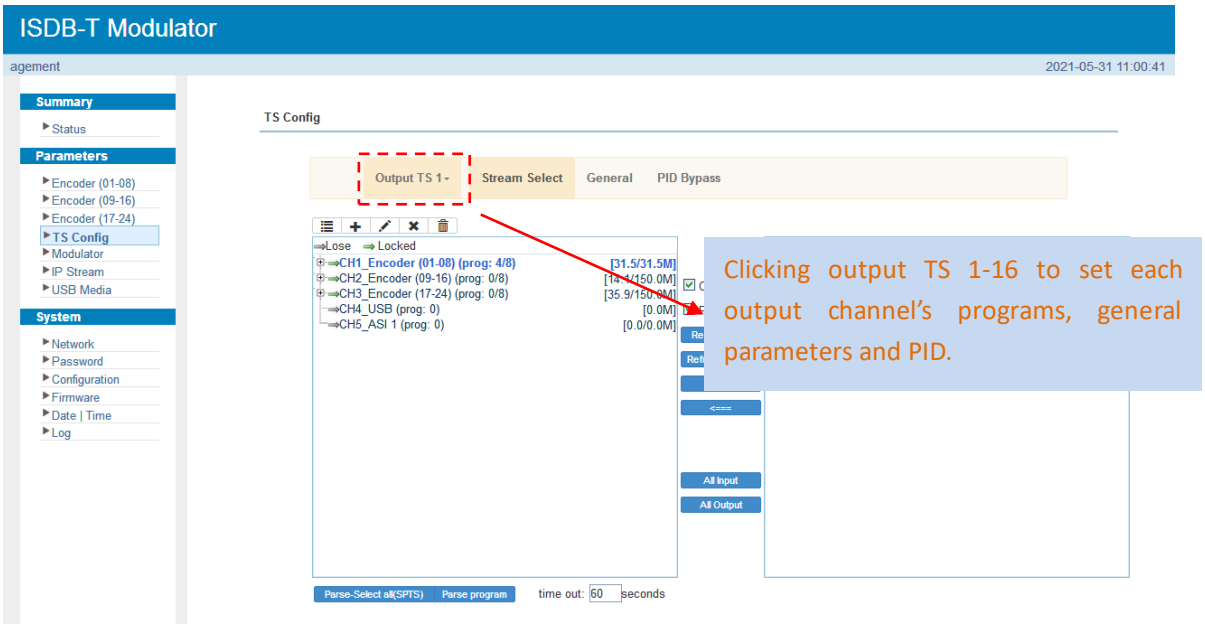


Figure-12

➢ **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)

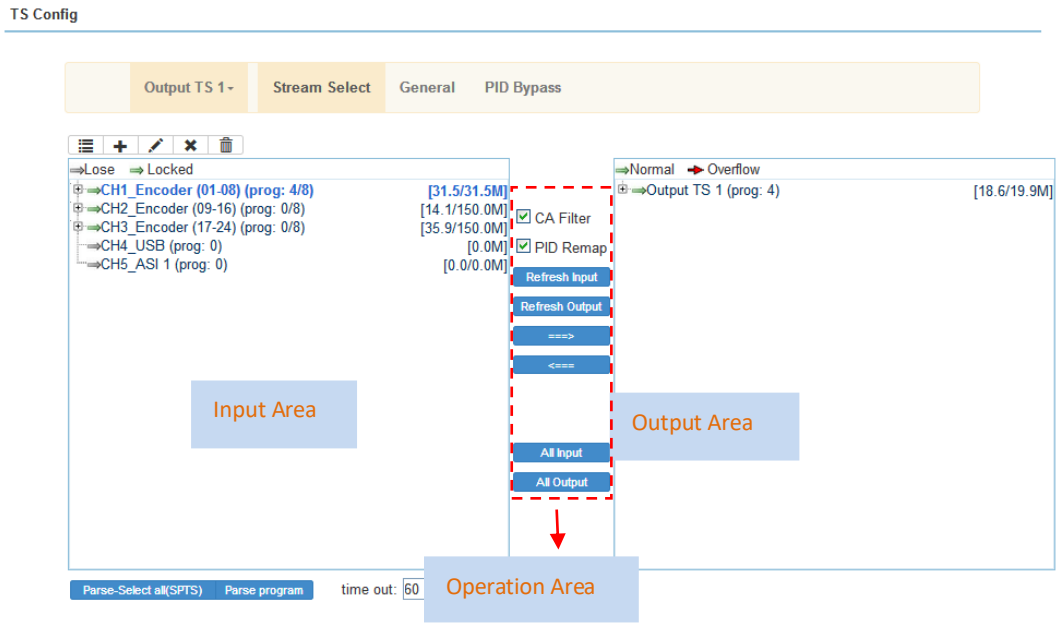
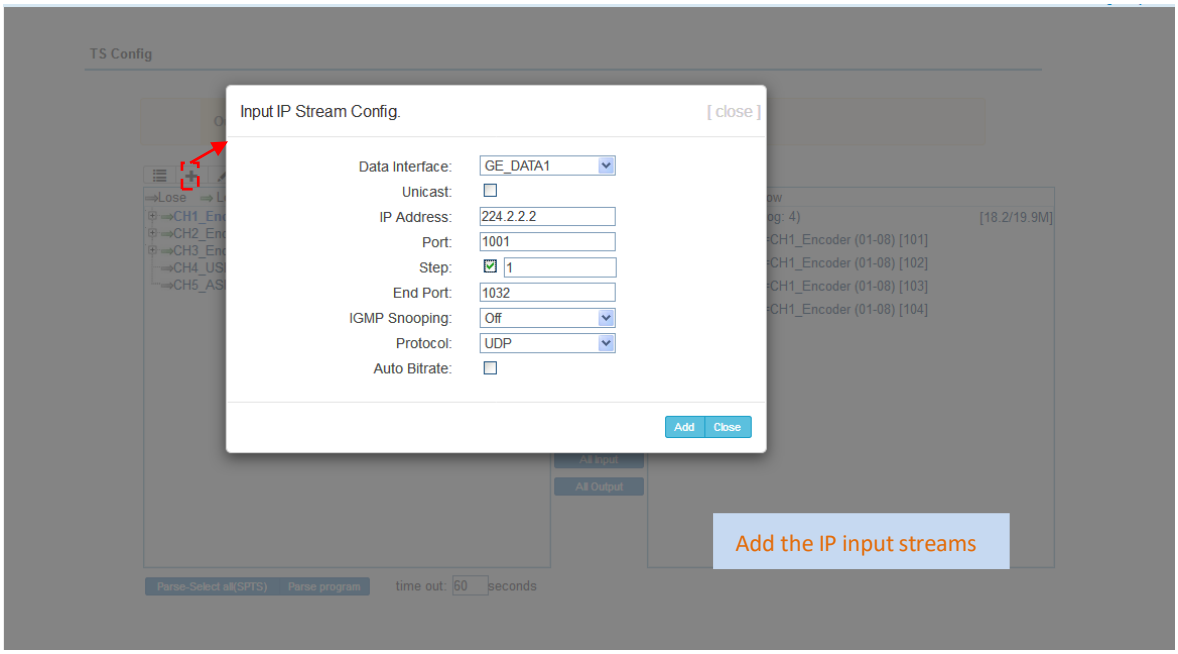


Figure-13



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 1: TV-101 <=CH1_Module 1 [101], it triggers a dialog box (Figure-14) where users can input new information.

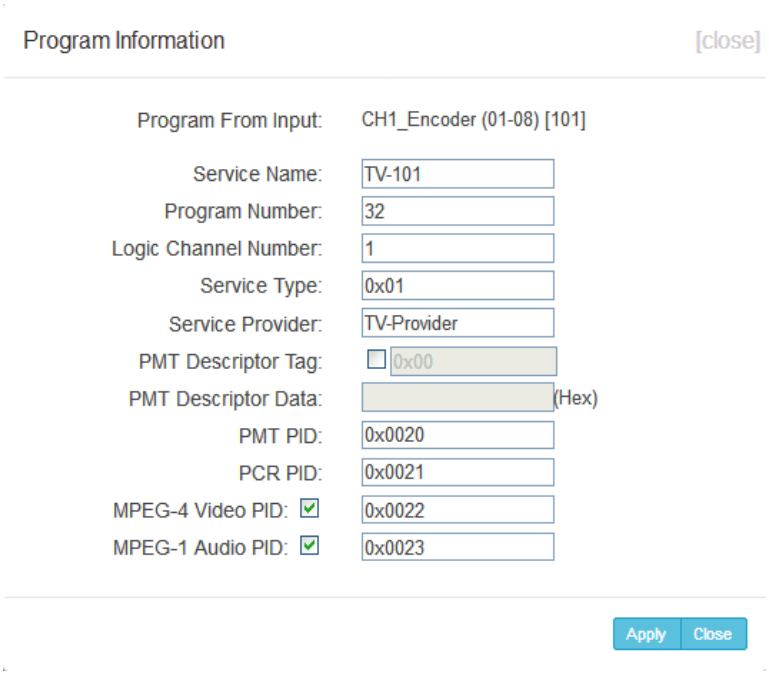


Figure-14

➢ **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. (Figure-15)

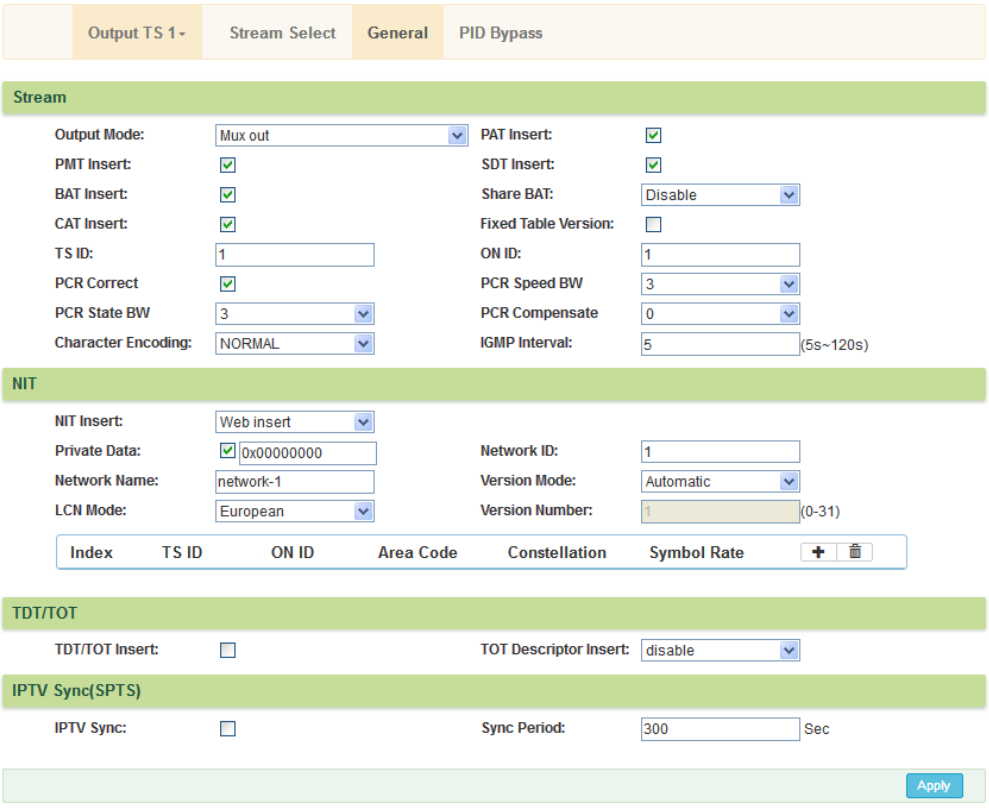


Figure-15

➢ **TS Config → PID Bypass:**

Users can bypass the wanted PIDs here.

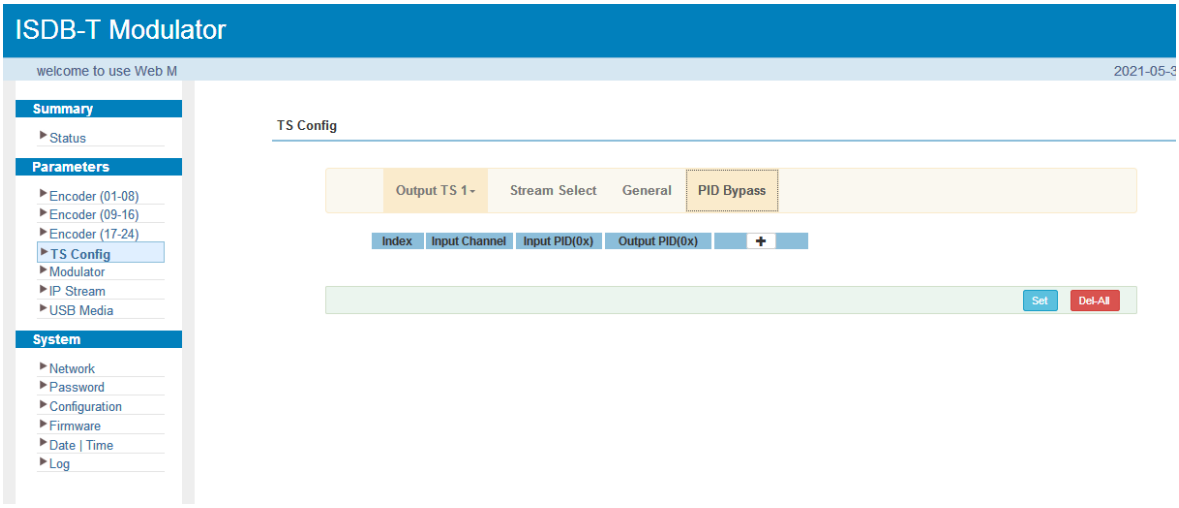
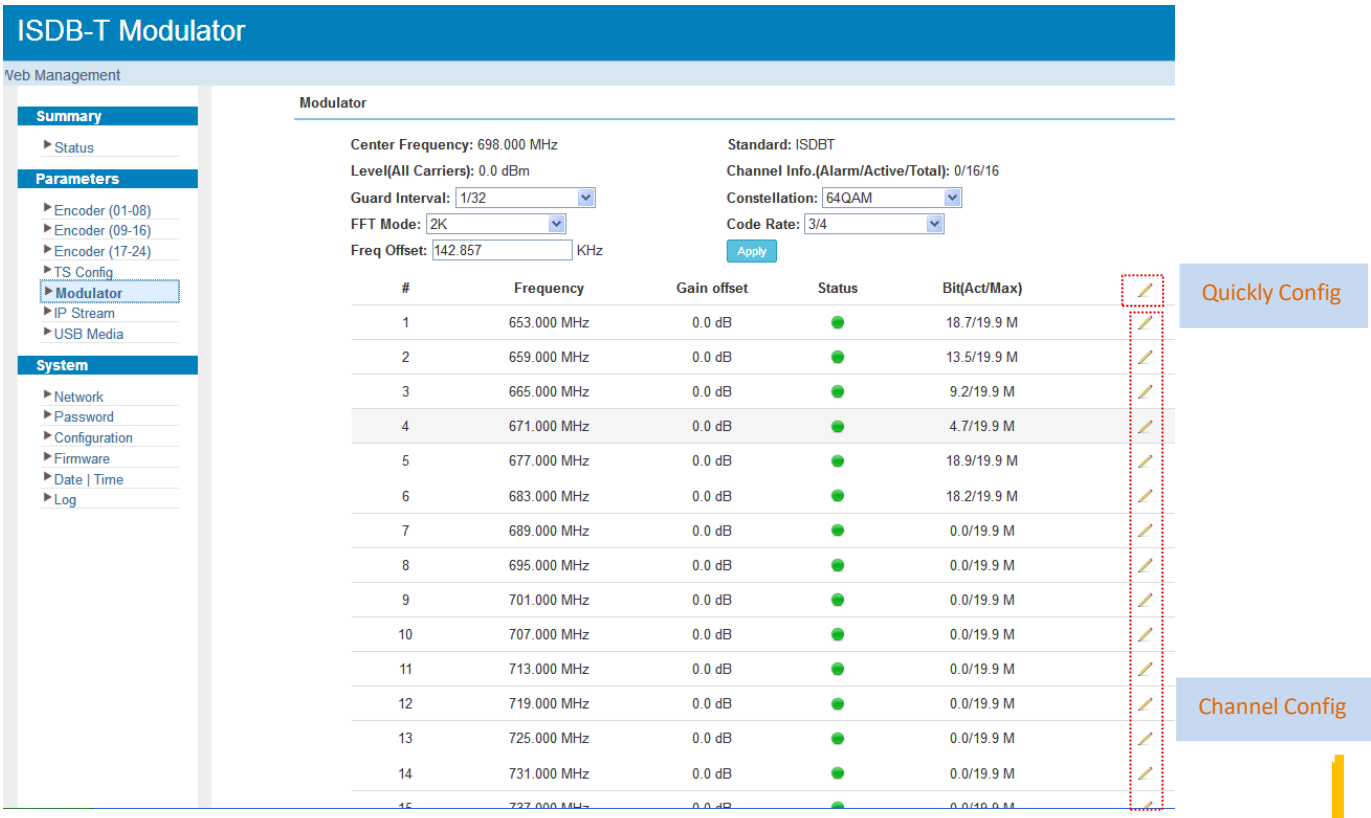


Figure-16

Parameters → Modulator:

Clicking "Modulator", it displays the Modulator Configuration screen as Figure-17. NDS3536S supports 16 ISDB-T frequencies out. Here user can set modulation parameters, such as level and frequency etc.



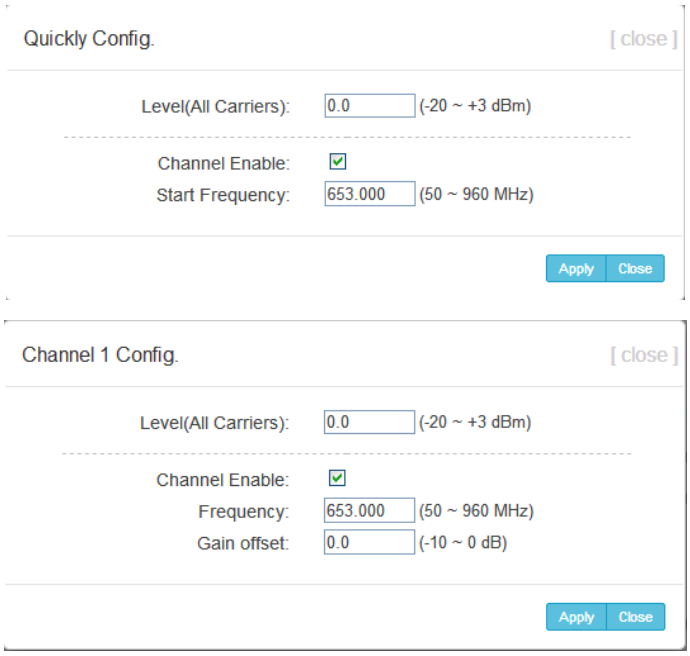


Figure-17

Parameters → IP Stream:

NDS3536S supports 16 TS to output in IP format through the DATA port under ISDB-T modulation.

Clicking “IP Stream”, it displays the interface where to set IP out parameters (Figure-18).

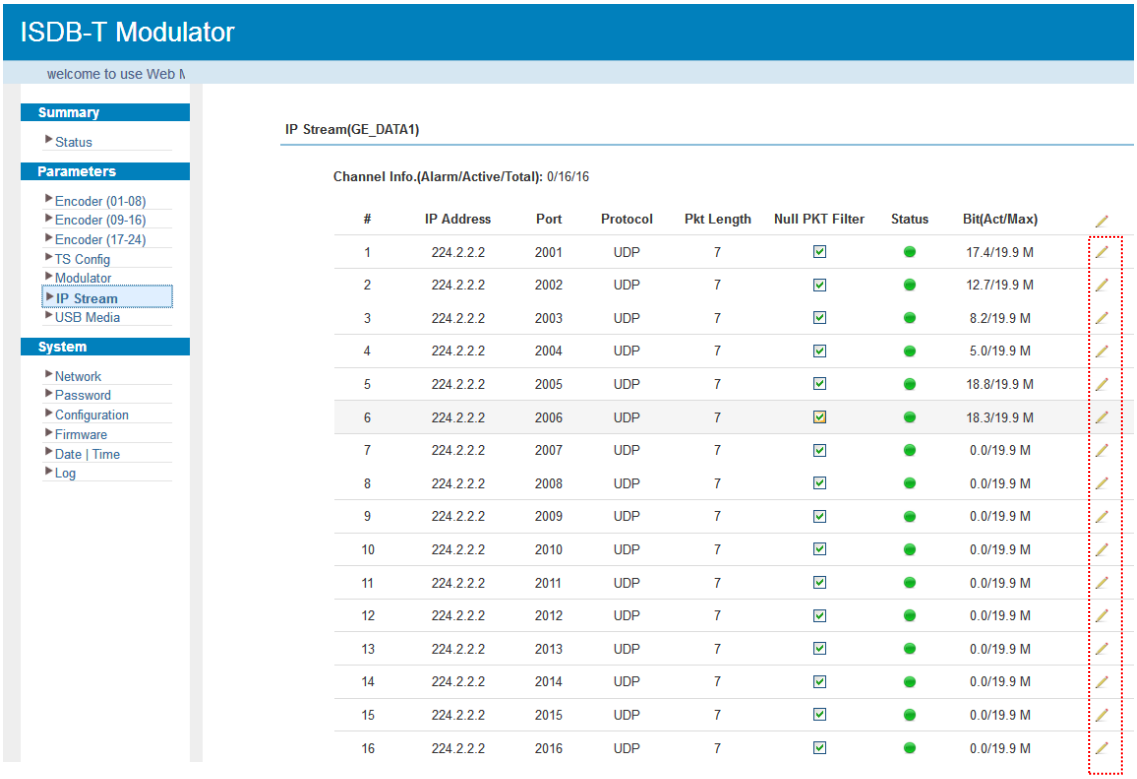


Figure-18

When users click “pen” button, it triggers a dialog box (Figure-19) where users can set the corresponding channel configuration.

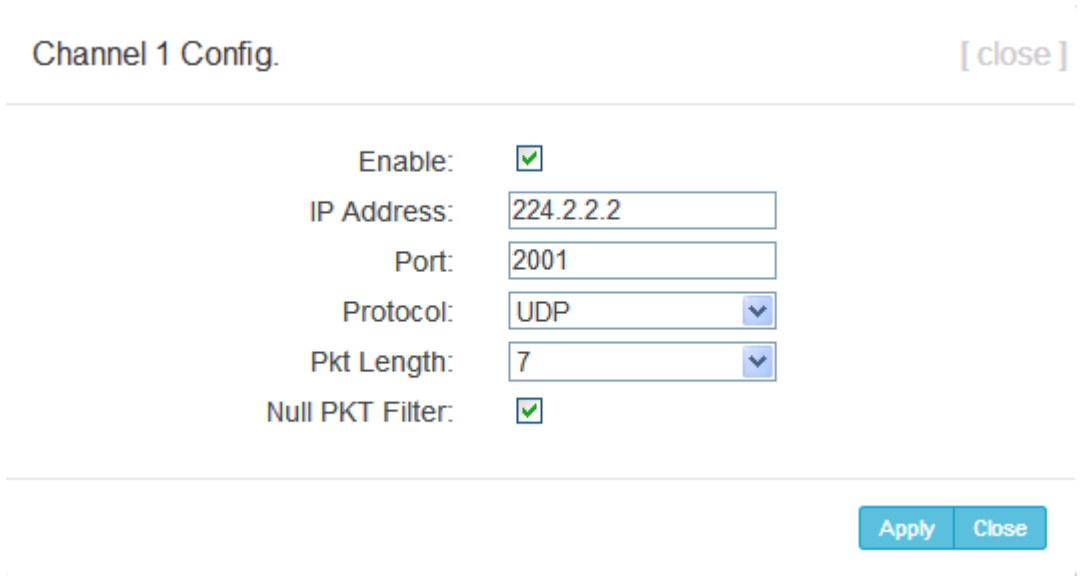


Figure-19

When users click “ASI Out” list, users can set one TS out from MPTS 1 to MPTS 16 as the ASI out (ASI out is optional as per the order).

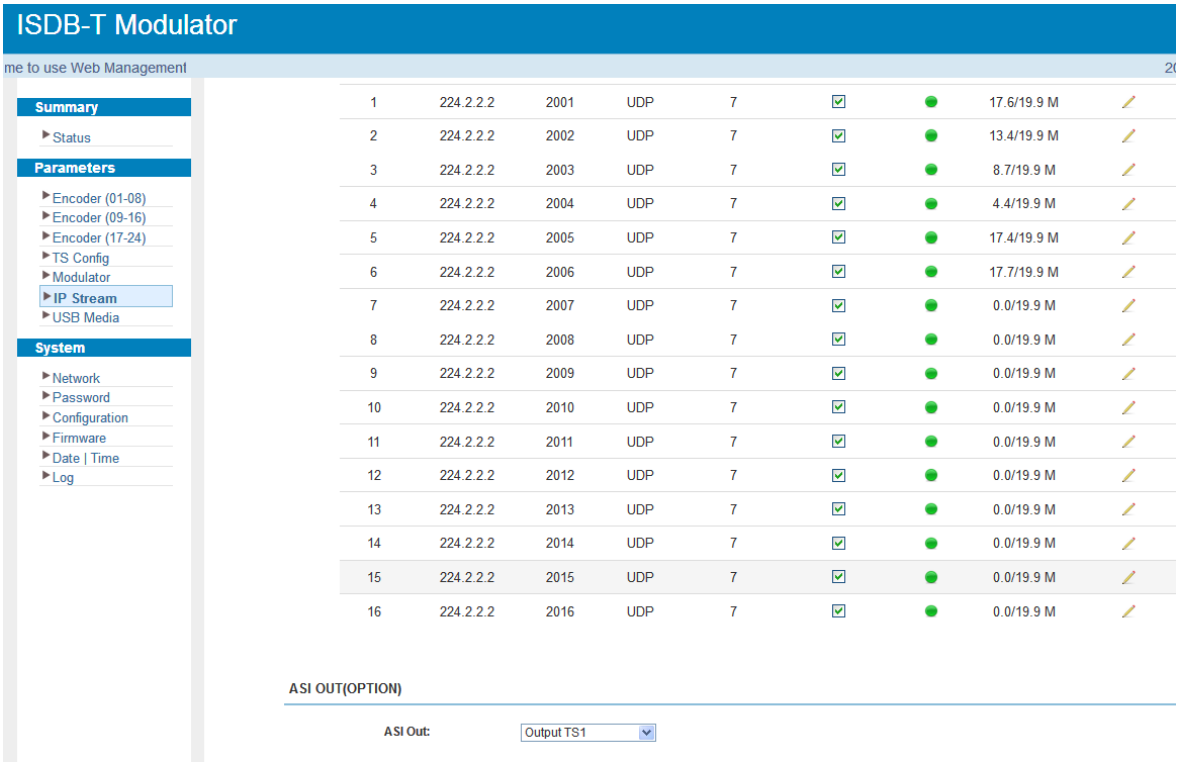


Figure-20

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.

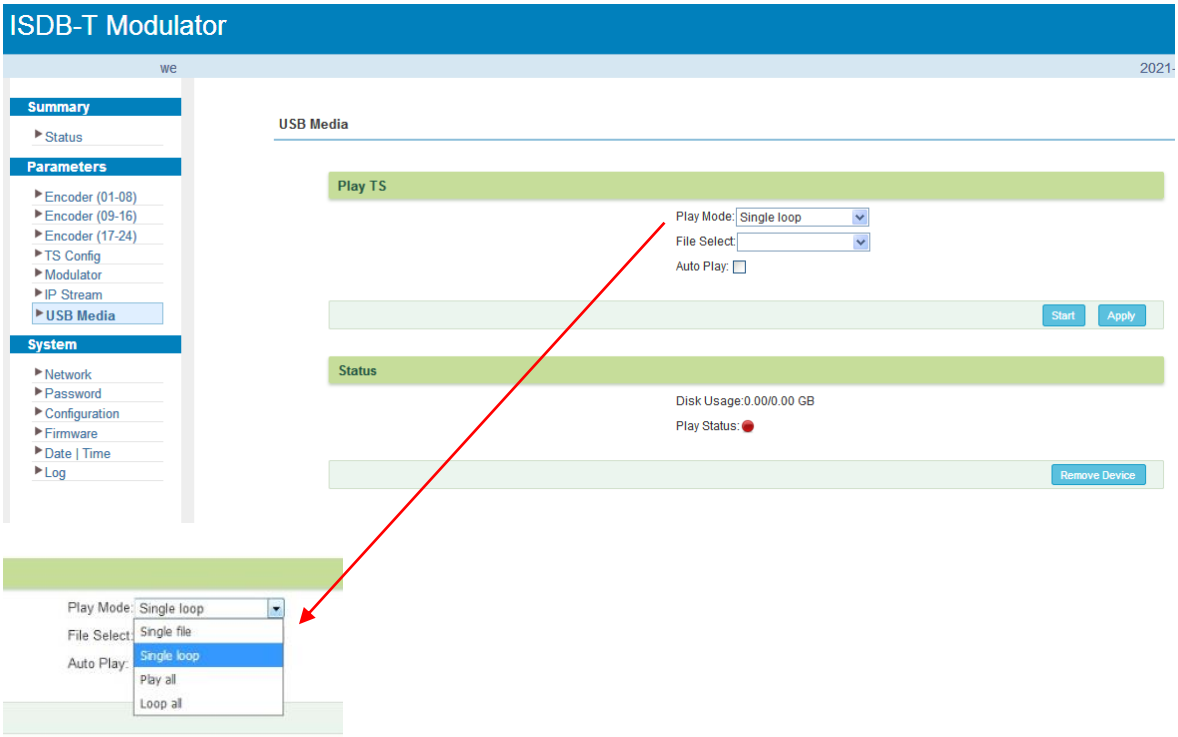


Figure-21

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.

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

System → Network:

Clicking "Network", it displays the interface as Figure-22 where to set network parameters.

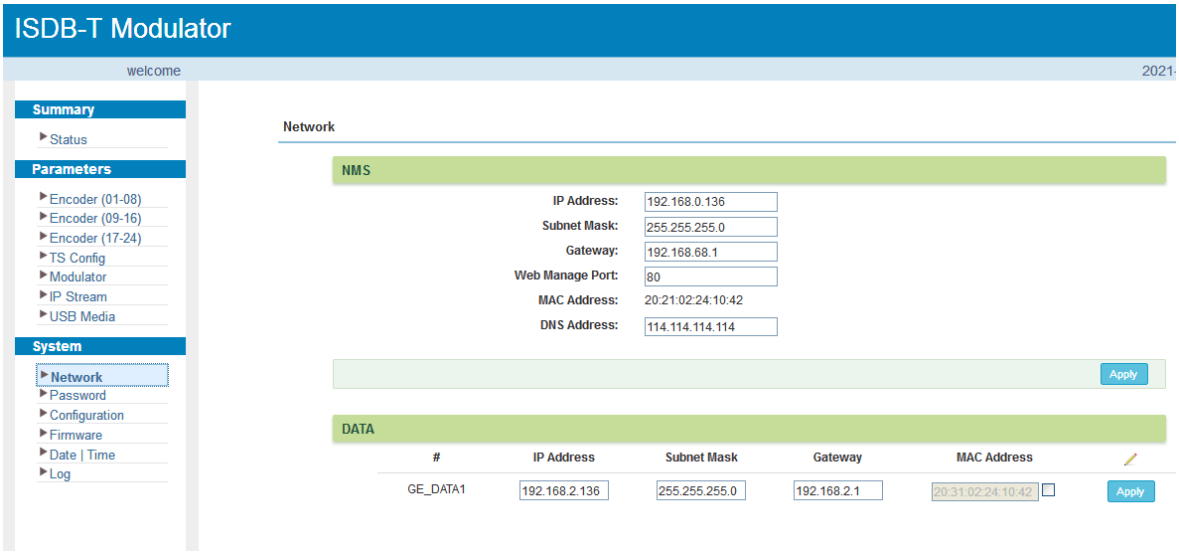


Figure-22

System → Password:

Clicking "Password", it displays 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".

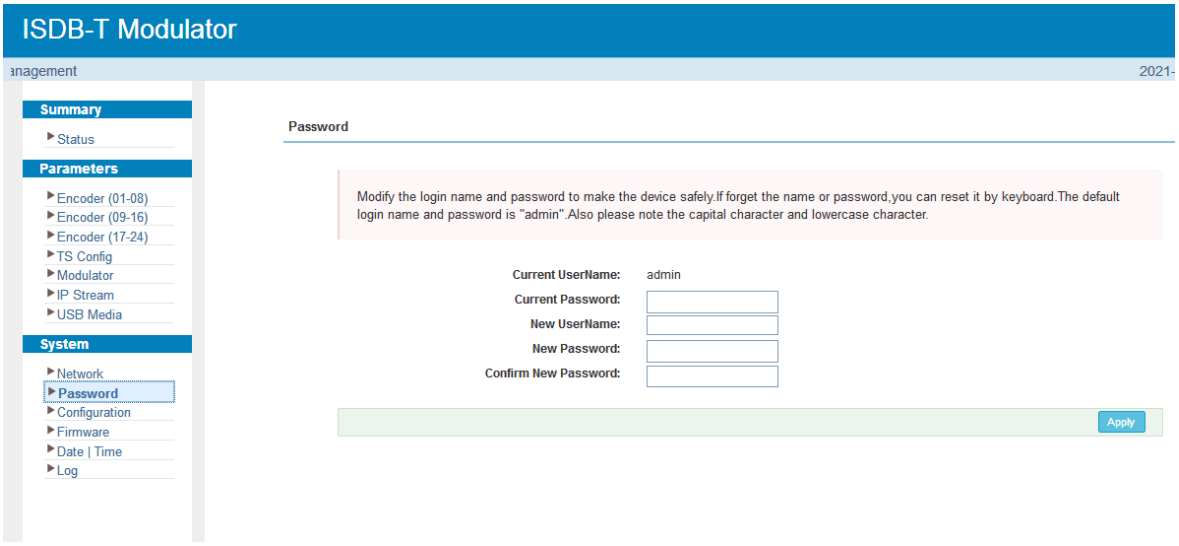
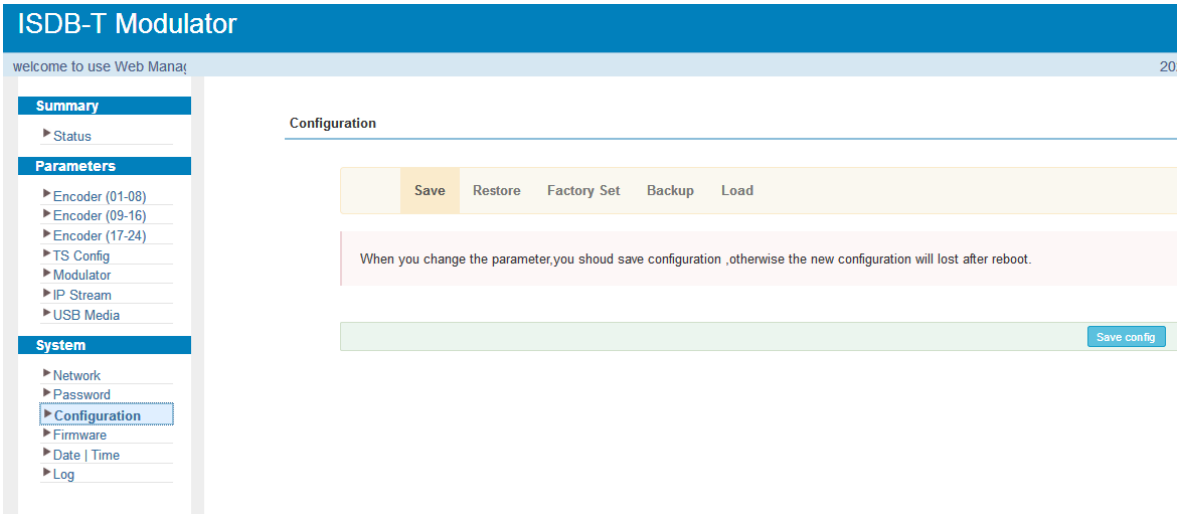


Figure-23

System → Configuration:

Clicking "Configuration", it displays the screen as Figure-24 where to save/ restore/factory setting/ backup/ load your configurations.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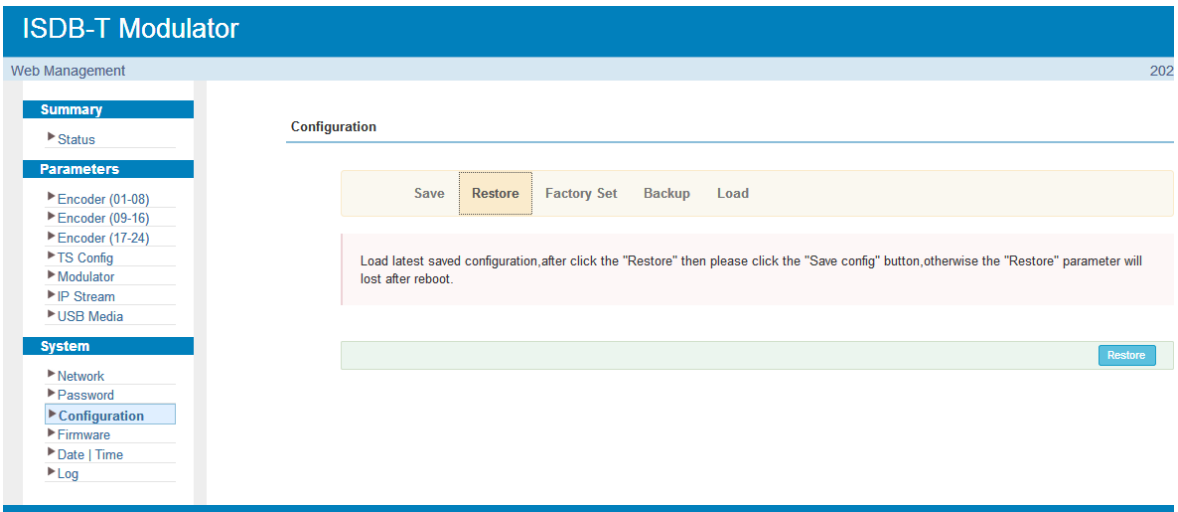
Firmware
Date | Time
Log
Configuration
Save
Restore
Factory Set
Backup
Load
When you change the parameter,you shoud save configuration ,otherwise the new configuration will lost after reboot.
Save config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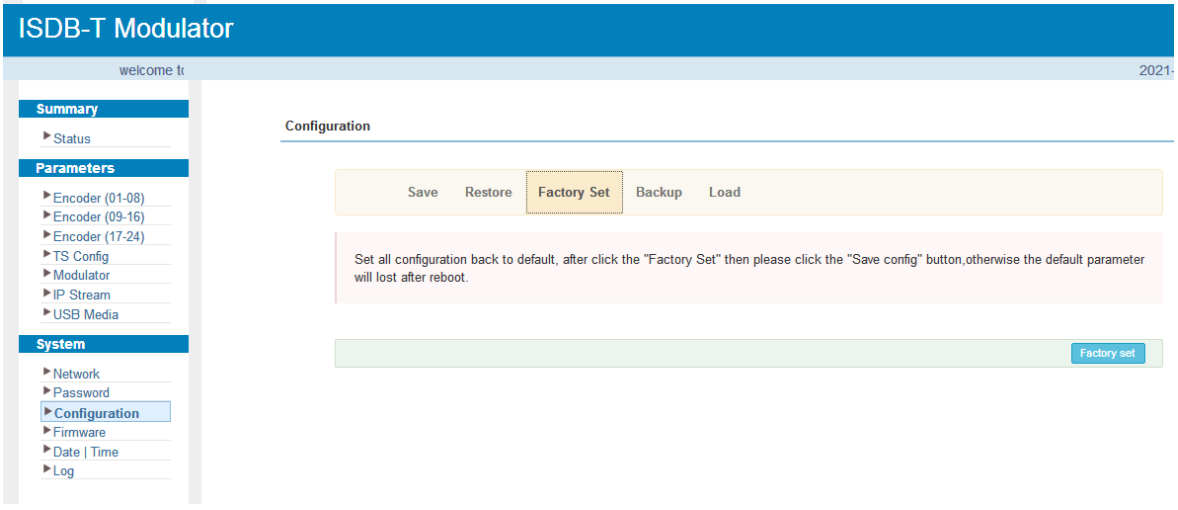
Log
Configuration
Save
Restore
Factory Set
Backup
Load
Load latest saved configuration,after click the "Restore" then please click the "Save config" button,otherwise the "Restore" parameter will lost after reboot.
Restore


ISDB-T Modulator
welcome t
2021
Summary
Status
Parameters
Encoder (01-08)
Encoder (09-16)
Encoder (17-24)
TS Config
Modulator
IP Stream
USB Media
System
Network
Password
Configuration
Firmware
Date | Time
Log
Configuration
Save
Restore
Factory Set
Backup
Load
Set all configuration back to default, after click the "Factory Set" then please click the "Save config" button,otherwise the default parameter will lost after reboot.
Factory set

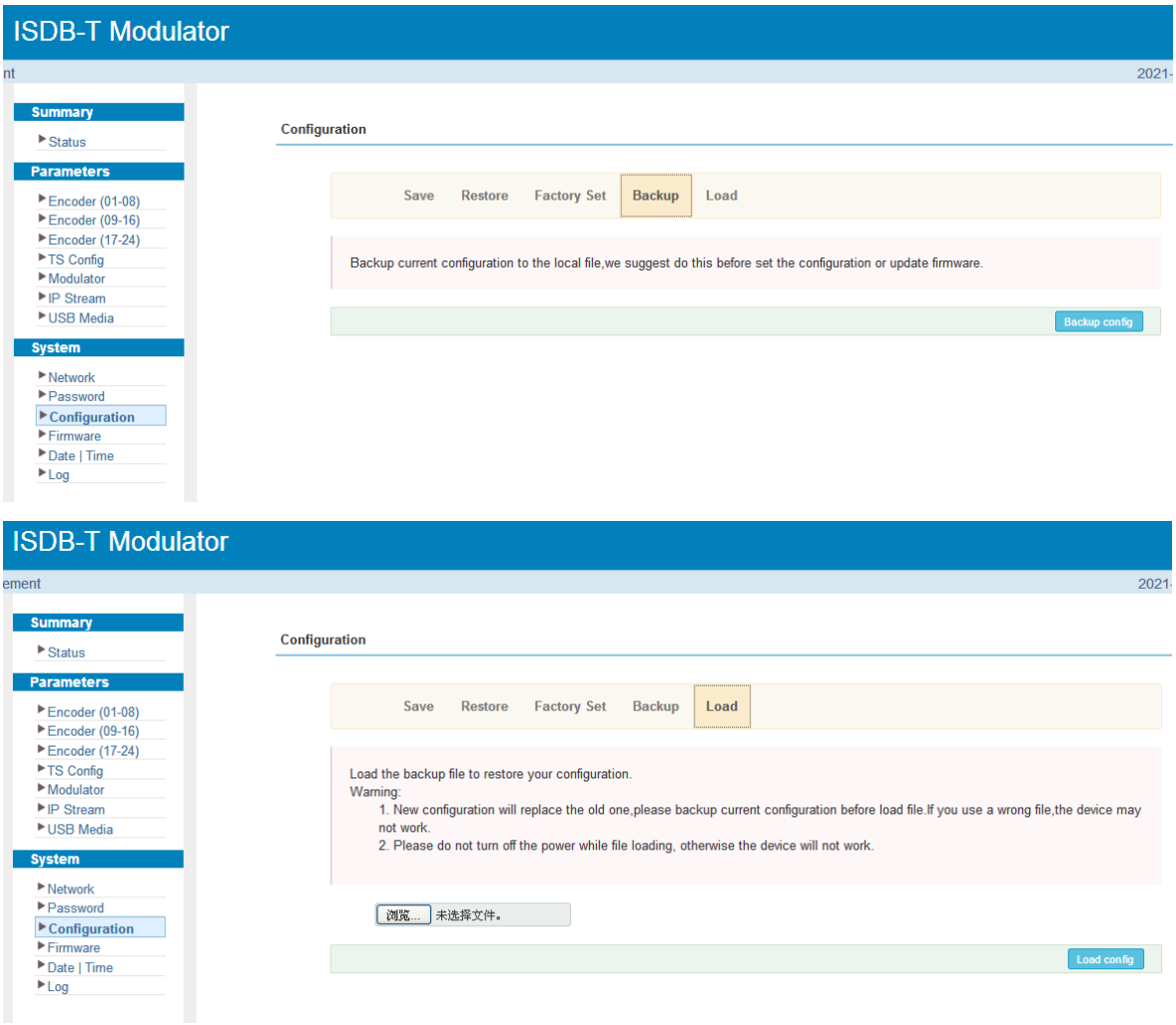


Figure-24

System → Firmware:

Clicking "Firmware", it displays the screen as Figure-25 where to update firmware for the modulator.

Figure-25

System→ Date/Time:

From the menu on left side of the webpage, clicking "Date/Time", it will display the screen as Figure-26 where to set date and time for the device.

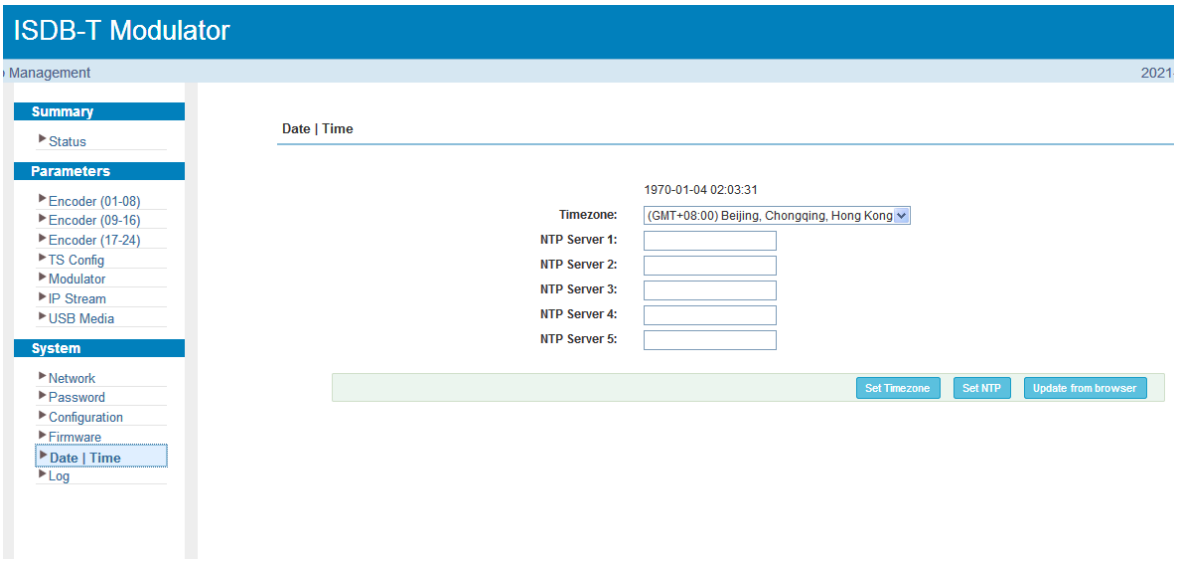


Figure-26

System→ Log:

Clicking "Log", it displays the log interface as Figure-27 where to check or export the Kernel/System log.

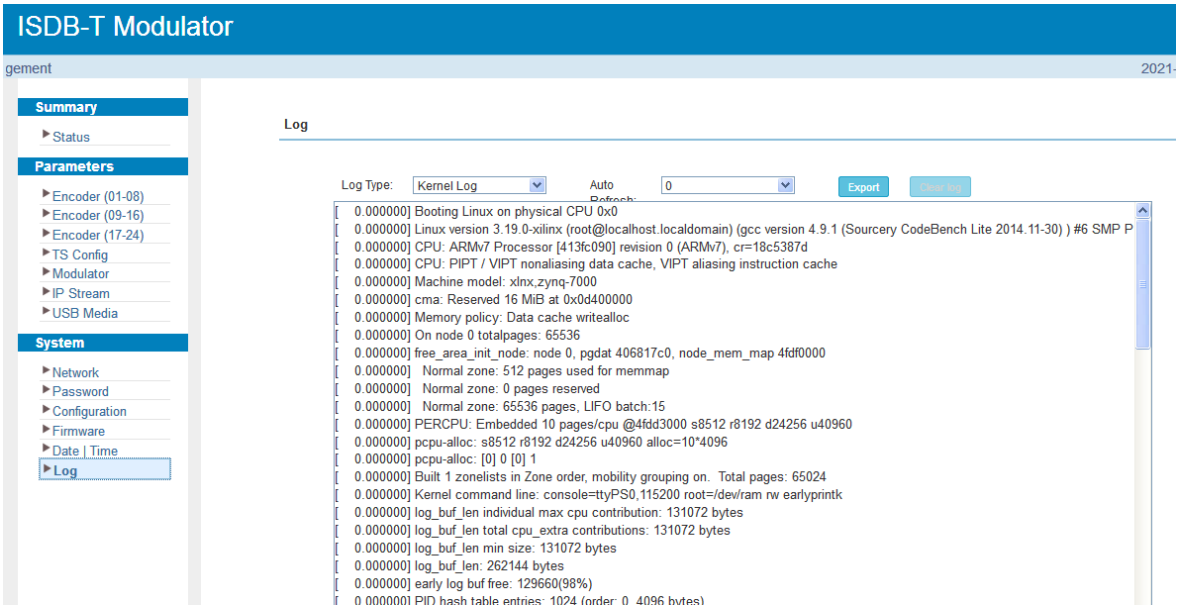


Figure-27

Chapter 4 Troubleshooting

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

NDS3536S Encoder Modulator	1pc
HDMI Cables	8/16/24pcs
Power Cord	1pc