PRODUCT MODEL NUMBER: TL-9524C ENCODER MODULATOR

ABOUT THIS MANUAL

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CHAPTER 1

INTRODUCTION

1.1 PRODUCT OVERVIEW

TL-9524C encoder modulator is TRANSLITE's all-in-one device integrating MPEG2 encoding and modulating to convert audio/video signals into DVB-C/T/ATSC/ISDB-T/DTMB RF out. It supports 1/4/8 HDMI inputs, and its pay-as-you-grow modular design and flexible configuration are making it extremely scalable, and very reliable with high performance. The signals source could be from STB, satellite receiver, closed-circuit television cameras and antenna etc. Its output signal is to be received by TVs or STBs etc.

1.2 KEY FEATURES

- Support 1/4/8 HDMI channels input
- Support MPEG2 video encoding
- Support 1080p/i,720p, 576i , 480i video resolution
- Support low latency(50~1000ms)
- Support MPEGI layer 2, MPEG-2 AAC, and DD AC3 audio encoding
- Support CC (Closed Caption), EIA 608
- Support LCN (Logical Cluster Number)
- DVB-C/T/ATSC/ISDB-T/DTMB RF out in one device, Modulation dynamic switching
- Each channel supports 1 DVB-C/T/ATSC/ISDB-T/DTMB output option
- Control via web-based NMS, and easy updates via web

1.3 SPECIFICATIONS

HDMI Encoding Section		
Input	Interface	HDMI*4/8
	Encoding	MPEG2
Video	**Input**	**Output**
	480@59.94/60i	480@30p
	576@50i	576@25p
	720@50/59.94/60p	720@25/30p
	1080@50i	1080@25p
	1080@59.94/60i	1080@30p
	1080@50p	1080@25p
	1080@59.94/60p	1080@30p
Audio	Encoding	MPEGI layer 2,MPEG-2AAC, AC3
	Sample rate	48KHz
	Bit rate	MPEGI layer 2 (128kbps)
		MPEG-2 AAC (VBR)
		AC3 (128kbps)

DVB-C Modulator Section		
Standard	J.83A (DVB-C), J.83B	
MER	≥35dB	
RF frequency	100-1000MHz, 1KHz step	
RF output level	-48~ -10dBm, 1dB step	
Symbol rate	3.000~7.000Msps adjustable	
	J.83A	J.83B
Constellation	16/32/64/128/256QAM	64/ 256QAM
Bandwidth	8M	6M

DVB-T Modulator Section	
Standard	DVB-T COFDM
Bandwidth	2M, 3M, 4M, 5M, 6M, 7M, 8M
Constellation	QPSK, 16QAM, 64QAM
Code rate	½, 2/3, ¾, 5/6, 7/8
Guard Interval	1/32, 1/16, 1/8, ¼
Transmission Mode:	2K, 8K
MER	≥35dB
RF frequency	100-1000MHz, 1KHz step
RF output level	-48~ -10dBm, 1dB step
ISDB Modulator Section	
Standard	ARIB STD-B31
Constellation	QPSK, 16QAM, 64QAM
Guard Interval	1/32, 1/16, 1/8, ¼
Transmission Mode	2K, 4K, 8K
Code rate	½, 2/3, ¾, 5/6, 7/8
RF frequency	100~1000MHz, 1KHz step
RF output level	-48~ -10dBm, 1dB step
ATSC Modulator Section	
Standard	ATSC A/53
Constellation	8 VSB
MER	≥35dB
RF frequency	100~1000MHz, 1KHz step
RF output level	-48~ -10dBm, 1dB step

DTMB Modulator Section	
RF frequency	100-1000MHz, 1KHz step
RF output level	-48 ~ -10dBm, 1dB step
Transmission Mode	S-0.8-4QAM-595, S-0.8-16QAM-595, M-0.4-16QAM-945V,M-0.6-16QAM-945V, M-0.6-64QAM-420V, M-0.6-64QAM-945V, M-0.8-16QAM-420V, M-0.8-16QAM-945V, M-0.8-64QAM-420V
System	
Management	Web
Language	English
Upgrade	Web update
General	
Power supply	AC 100V±10%, 50/60Hz or AC 220V±10%, 50/60Hz
Dimensions	482*328*44.5mm
Temperature	0~45℃(operation), -20~80℃(storage)

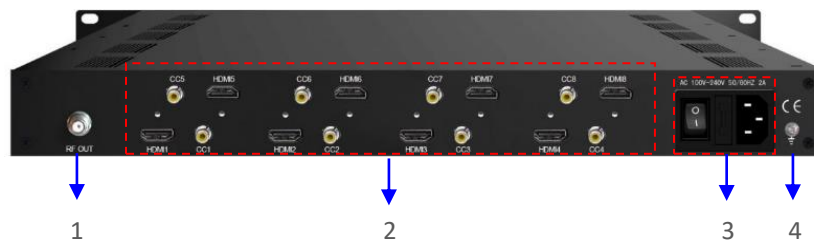# 1.4 PRINCIPLE CHART

Please refer to the principle chart below:
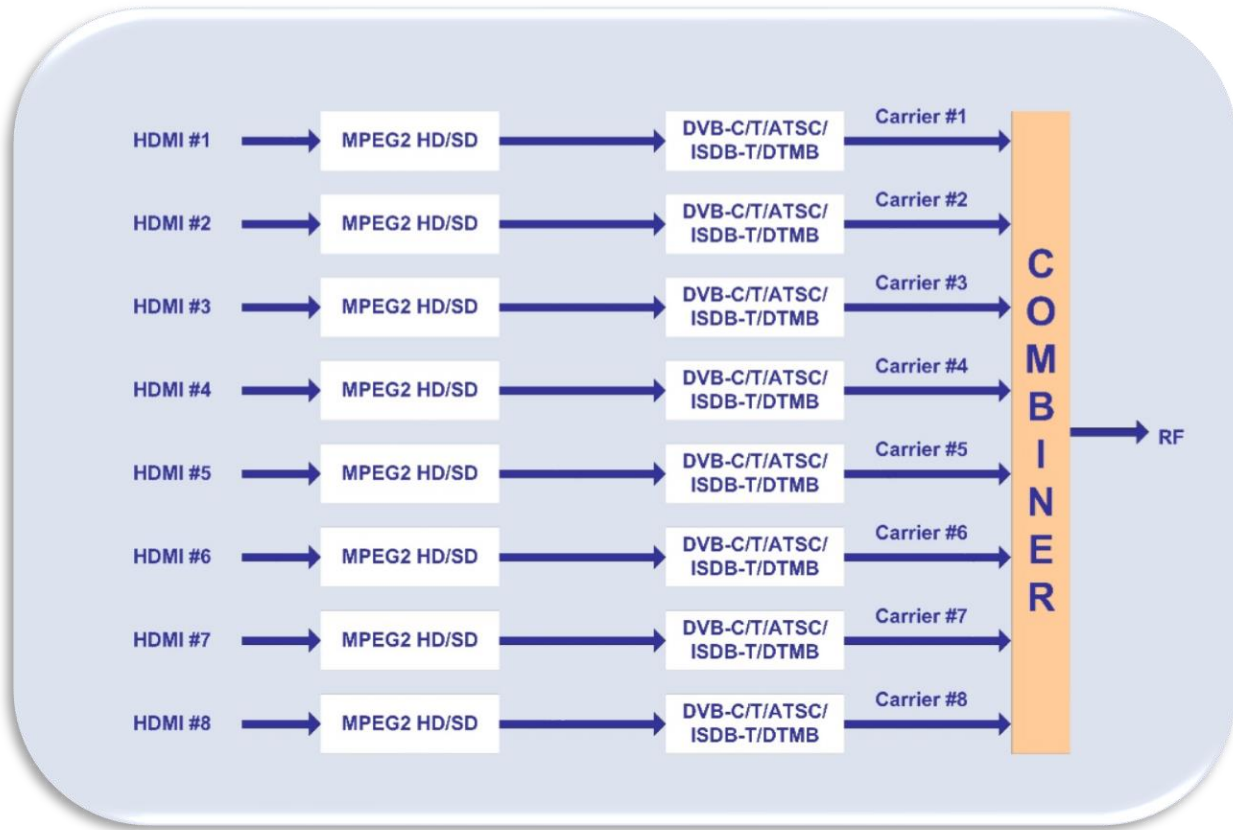
1.5 APPEARANCE AND DESCRIPTION

Front Panel Illustration
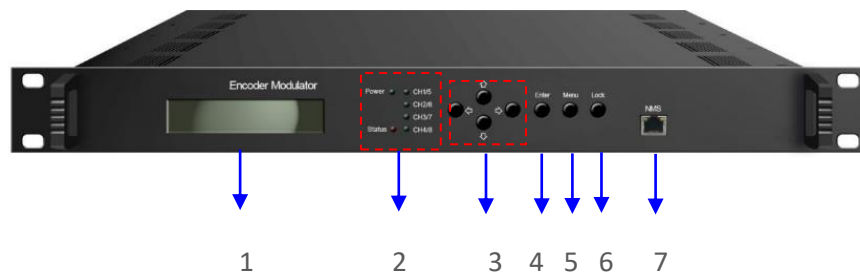
1	LCD screen	
2	Indicators	Power Indicator
		Status Indicator
		CH1-CH4/8 indicates the 4/8 channels input
3	UP/ DOWN, LEFT/RIGHT keys	
4	Enter key	
5	Menu key	
6	Lock key	
7	NMS (Network management port)	

Rear Panel Illustration

1	RF output
2	8 HDMI input and 8 CC input ports
3	Power Switch/Fuse/Power socket
4	Grounding Pole

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.
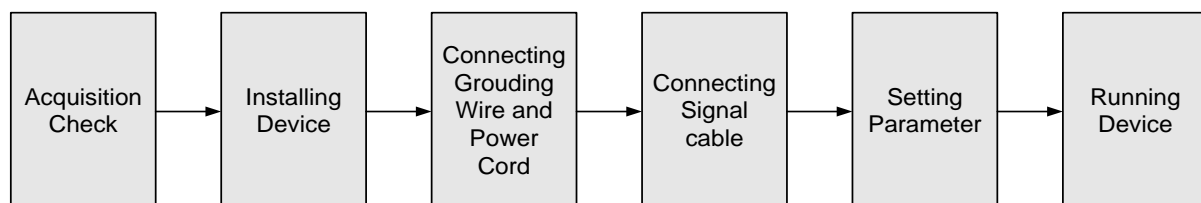
2.1 GENERAL PRECAUTIONS

➢ 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

Acquisition Check → Installing Device → Connecting Grouding Wire and Power Cord → Connecting Signal cable → Setting Parameter → Running Device

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

OPERATION

TL-9524C encoder modulator's front panel is user operating interface. Before operating, user can decide whether directly use the default setting or customize the input and output parameters setting. The detail operations go as follows:

Keyboard Function Description

ENTER: Activating the parameters which need modifications, or confirming the change after modification.

MENU: To cancel presently entered value, resume previous setting and return to previous menu.

LEFT/RIGHT: To move the "►" to choose or set the parameters.

UP/DOWN: To modify activated parameter or page up/down when parameter is inactivated.

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

At the "Factory Configuration" page, user can press "ENTER" key to restore the factory default configuration.

3.1 LCD MENU STRUCTURE

An Overview of the LCD Menus
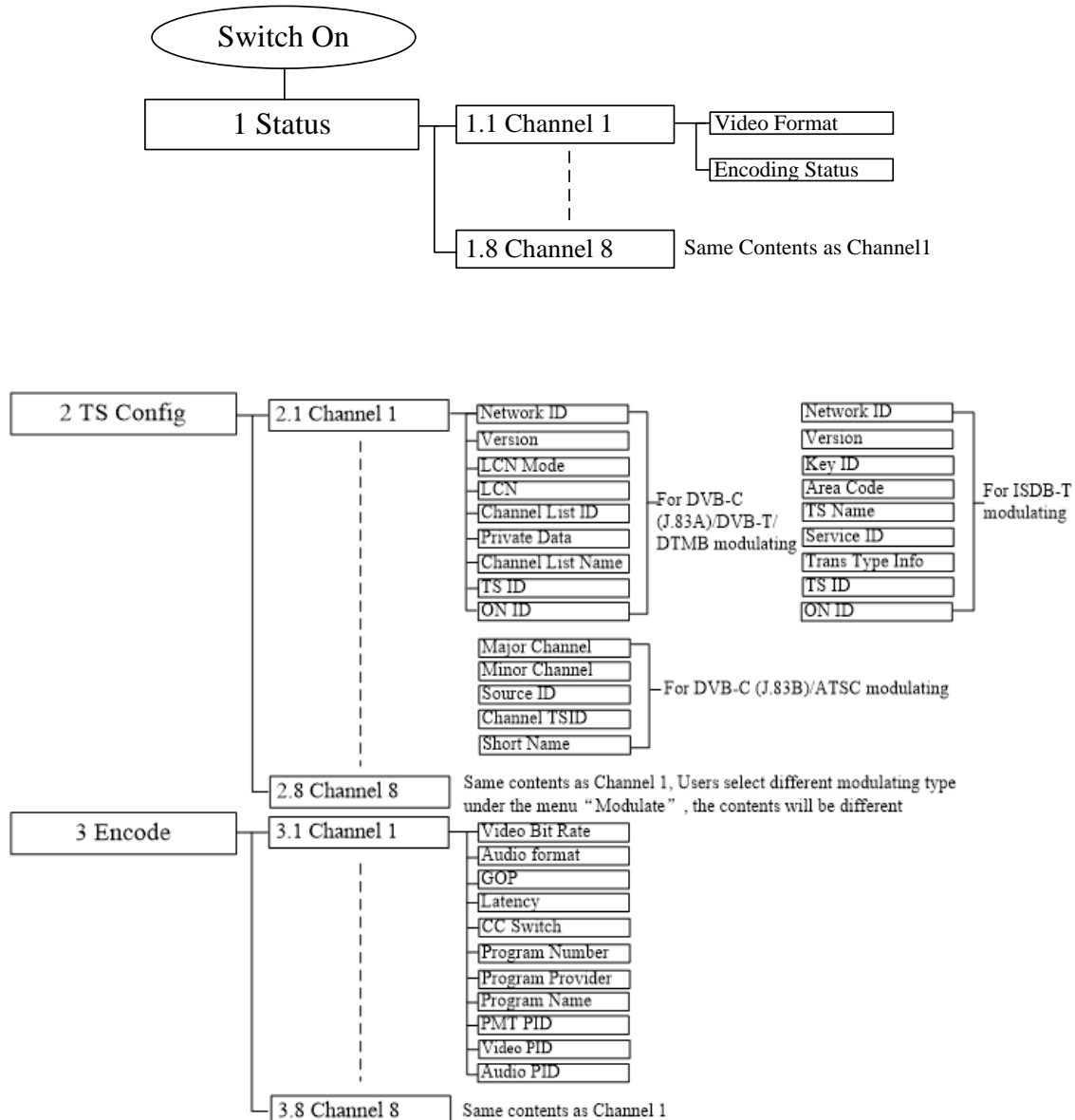
(Please refer to the next page…)

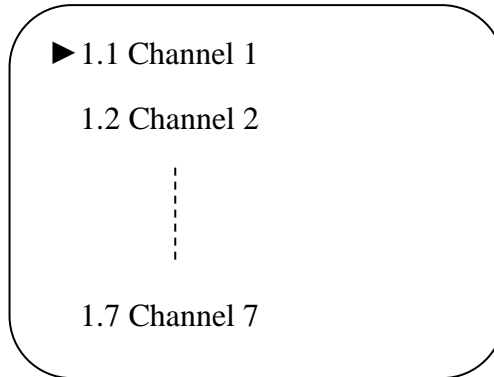**4 Modulate**
Select modulation type for each channel here

- **4.1 Channel 1**
  - DVB-C modulating:
    - Modulate
    - RF Enable
    - Freq
    - Level
    - Symbol Rate
    - Standard
    - Constellation
  - ATSC modulating:
    - Modulate
    - RF Enable
    - Freq
    - Level
  - DTMB modulating:
    - Modulate
    - RF Enable
    - Freq
    - Level
    - Mode
  - DVB-T modulating:
    - Modulate
    - RF Enable
    - Freq
    - Level
    - Symbol Rate
    - Bandwidth
    - Constellation
    - FFT
    - Guard Interval
    - Code Rate
  - ISDB-T modulating:
    - Modulate
    - RF Enable
    - Freq
    - Level
    - Constellation
    - FFT
    - Guard Interval
    - Code Rate
    - Time Interleaving
- **4.8 Channel 8**

Same contents as Channel 1, Users select different modulating type under the menu "Modulate", the contents will be different

5 Network
- 5.1 IP Address
- 5.2 Subnet Mask
- 5.3 Gateway
- 5.4 MAC Address

6 System Setting
- 6.1 Save
- 6.2 Restore
- 6.3 Factory set

7 Version
- CPU Version
- Board Version
- Web Version

3.2 GENERAL SETTINGS

By pressing LOCK key, users can enter in the main menu and set the parameters in the following editing interfaces, the LCD will display the following pages:

```
►1 Status

 2 TS Config

 3 Encode

 4 Modulate

 5 Network

 6 System Setting

 7 Soft Version
```

The option with "►" is the current selection, users can press the ENTER key to enter the specified submenu to modify the parameters.

3.2.1 Status

Under this menu, users can check input source status of each channel. The contents are the same for Channel 1-8, so here just takes one channel as the example.

```
►1.1 Channel 1

  1.2 Channel 2

       ┊

  1.7 Channel 7
```

➢   Channel 1/2/3/4/5/6/7/8

```
►Video Format  ─────────→  Display input video resolution

  Encoding Status ────────→  Display encoding status: Error/Normal
```
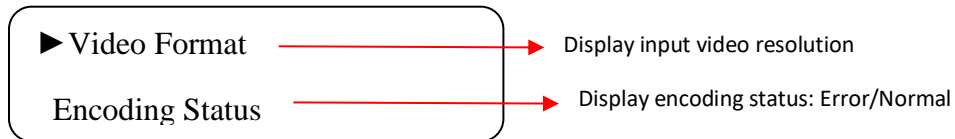
3.2.2 TS Config

This device is equipped with maximum 8 modulator carriers. Under this menu, users can enter the corresponding channels to set the relevant parameters. The setting principle is the same for Channel 1-8, so here this manual just takes one channel as the example to explain. After pressing the enter key, the LCD will display the following pages:

```
►2.1 Channel 1

  2.2 Channel 2

       ┊

  2.7 Channel 7
```
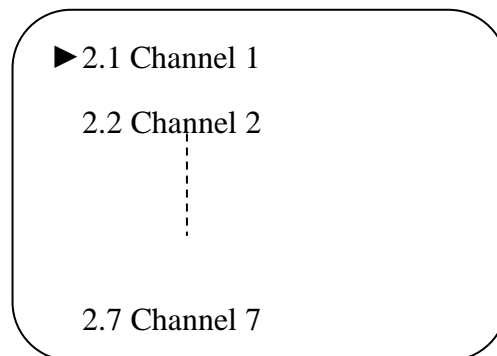
➢ Channel 1/2/3/4/5/6/7/8

TL-9524C supports 8 Channels output with DVB-C, DVB-T, ATSC, DTMB or ISDB-T

modulating. Users select different modulating modes for each channel under the menu of "3.2.4

Modulate", the TS parameters will be different, LCD will display the following pages:
Selecting modulation mode as DVB-C:

DVB-C has 2 standards, selecting standard as J.83A, LCD will display the following pages:

> ►Network ID
>
>   Version Num
>
>   LCN Mode
>
>   LCN
>
>   Channel List ID
>
>   Private Data
>
>   Channel List Name
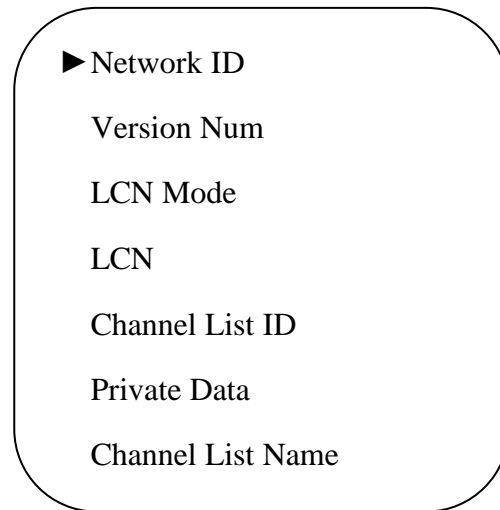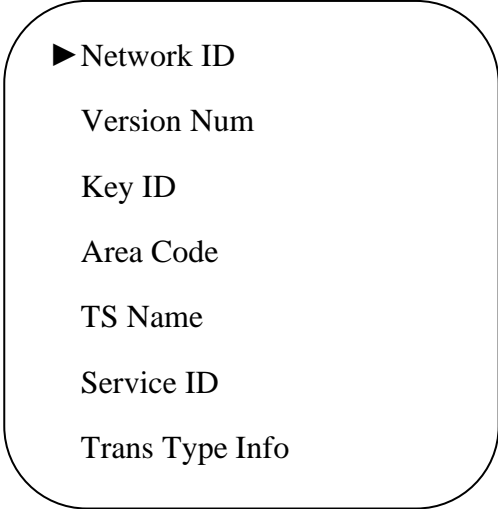
Selecting standard as J.83B, LCD will display the following pages:

> ► Major Channel
>
>   Minor Channel
>
>   Source ID
>
>   Channel TSID
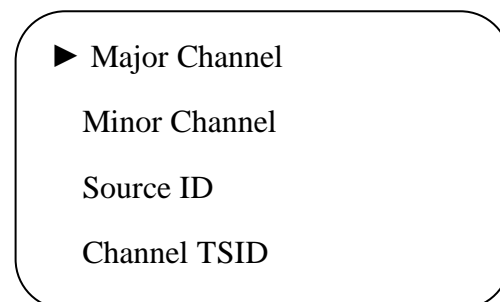
Selecting modulation mode as DVB-T/ DTMB, the LCD contents are the same as DVB-C

(J.83A).

Selecting modulation mode as ATSC, the LCD contents are the same as DVB-C (J.83B).
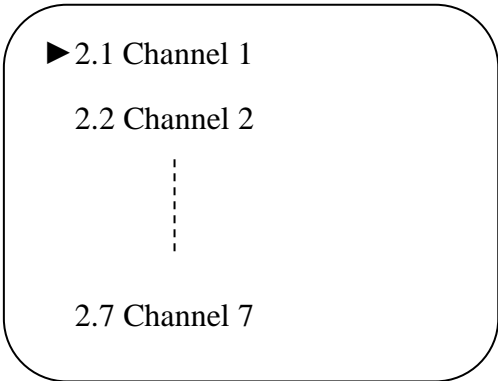
Selecting modulation mode as ISDB-T, the LCD will display the following pages:

```
►Network ID

   Version Num

   Key ID

   Area Code

   TS Name

   Service ID

   Trans Type Info
```

3.2.3 Encode

This device is equipped with maximum 8 HDMI channels input. Under this menu, users can enter the corresponding channels to set the relevant encoding input parameters.

```
►2.1 Channel 1

   2.2 Channel 2

   2.7 Channel 7
```

➢ Channel 1/2/3/4/5/6/7/8

The setting principle is the same for Channel 1-8, so here this manual just takes one channel as the example to explain. After pressing the enter key, the LCD will display the following pages:

```
►Video Bitrate

  Audio format ──────────────────►   Audio format: MPEG-1
                                     Layer2; AC3; MPEG-2 AAC
  GOP

  Latency

  CC Switch

  Program Number

                           ──────►   Users can't set these
  Program Provider                   parameters under ATSC and
                                     DVB-C (J.83B) modulation
  Program Name
```
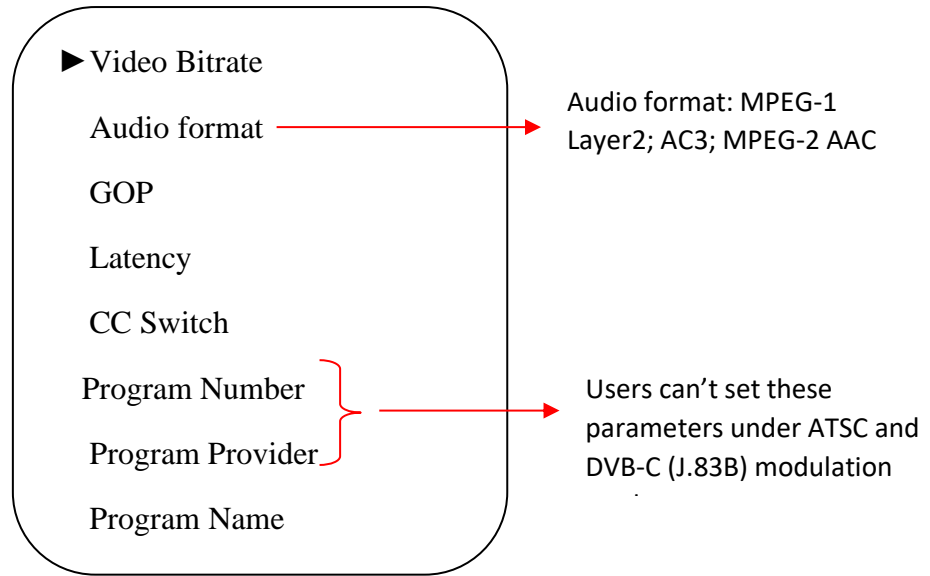
3.2.4 Modulate

TL-9524C supports 8 RF out carriers, users can enter the corresponding channels to select modulation mode and set the relevant RF output parameters.

```
►4.1 Channel 1

 4.2 Channel 2



 4.7 Channel 7
```
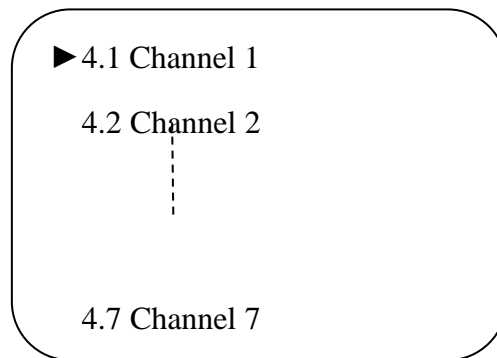
➢ Channel 1/2/3/4/5/6/7/8

Users can set these parameters by pressing ENTER to enter these submenus. The LCD will display the following pages

DVB-C:

▶Modulate Mode

RF Enable

Freq

Level

Symbol Rate

Standard

Constellation

DVB-T:

▶ Modulate Mode

RF Enable

Freq

Level

Symbol Rate

Bandwidth

Constellation

FFT

Guard Interval

Code Rate

ATSC:

► Modulate Mode

RF Enable

Freq

 Level

DTMB:

► Modulate Mode

RF Enable

Freq

 Level

 Mode

ISDB-T:

► Modulate Mode

RF Enable

Freq

 Level

 Constellation

 FFT

 Guard Interval

 Code Rate

 Time Interleaving

3.2.5 Network Setting

After enter Network Setting, there are four submenus shows as the following LCD displays.

```
IP Address

    192.168.000.136
```

```
Subnet Mask

    255.255.255.000
```

```
Gateway

    192.168.000.001
```

```
MAC Address

    xx:xx:xx:xx:xx:xx
```

3.2.6 System setting

➢ **Save**

Users can enter Saving Configuration submenu for saving settings. Choose yes and press ENTER to confirm.

```
Saving Config

    ►YES    NO
```

➢ **Restore**

At this menu, user can choose yes to restore the device into the last saved configuration.

```
Load Saved CFG?

    ►YES    NO
```

➢ **Factory Set**

Choose yes to restore the device into factory's default configuration.

```
Reset all sets?

    ►YES    NO
```

3.2.7 Soft Version

User can check the CPU, Board and Web version of this equipment under this submenu.

```
CPU/Board/Web Version

XX:XX:XX
```

CHAPTER 4

WEB NMS OPERATION

User not only can use front buttons for setting configuration, but also can 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 the TL-9542B's IP address; otherwise, it would cause IP conflict.

4.1 LOGIN

The default IP of this device is 192.168.0.136. We can modify the IP through the front panel.

Connect the pc 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 0 to 255 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 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.
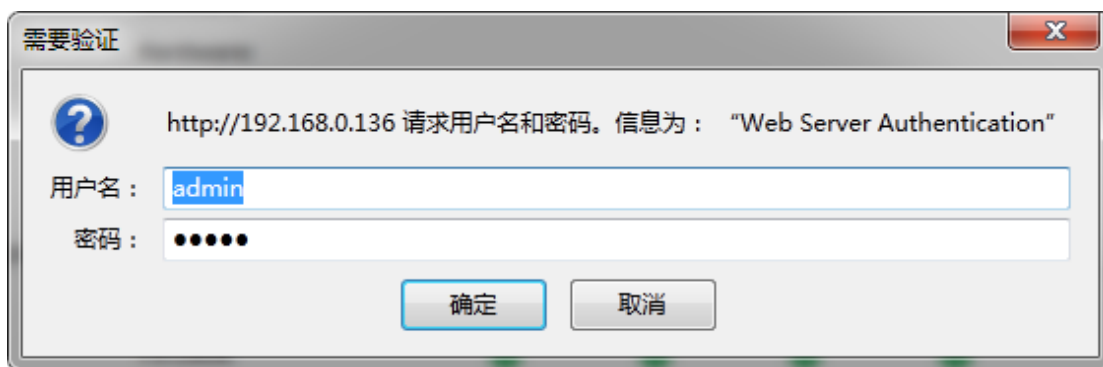
Figure-1

4.2 OPERATION

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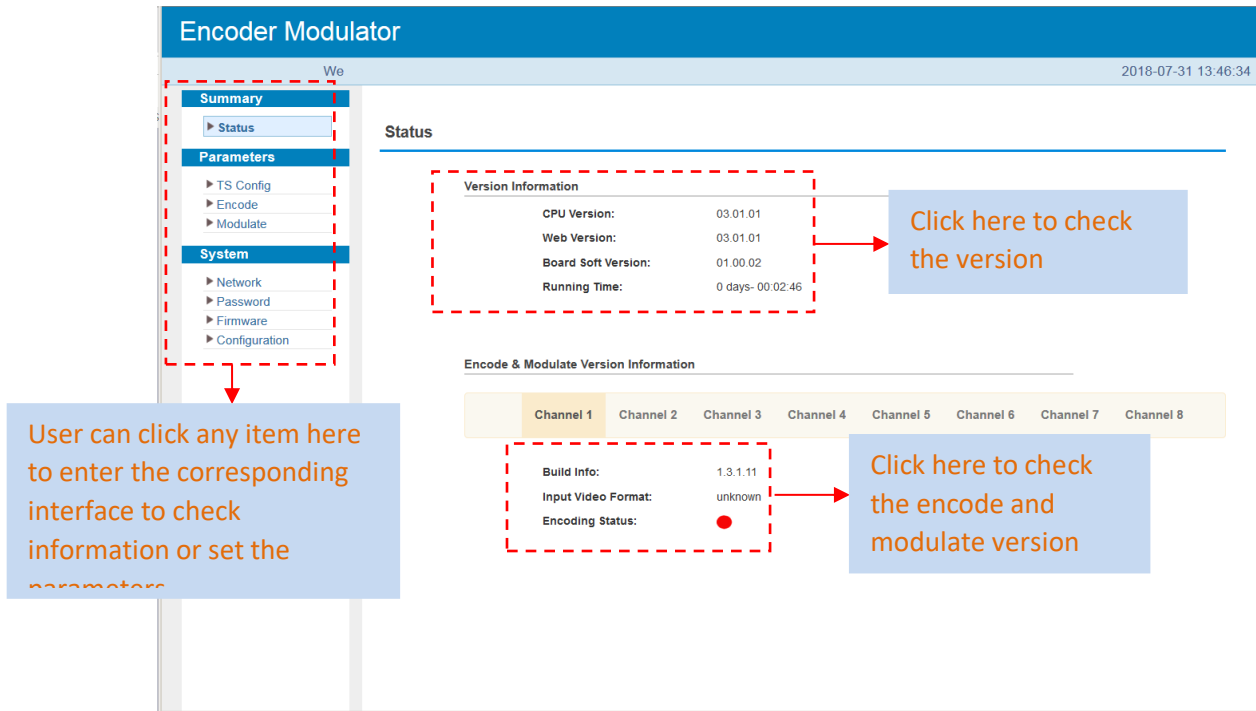
Figure-2

Parameters → TS Config:

Clicking "TS Config", users can configure 8 channels of the output TS, users select different modulating types under "Modulate", the TS config parameters will be different (Figure-3). Each channel support 1 DVB-C/T/ATSC/ISDB-T/DTMB output option, here we select DVB-C/DVB-T/ATSC/DTMB/ISDB-T modulation types for Channel 1-5 as an example.

Under the modulation type of DVB-T

Under the modulation type of ATSC

Figure-3

Parameters → Encode:

Clicking "Encode", it displays the information of the program from the 8 HDMI encoding channels as Figure-4.
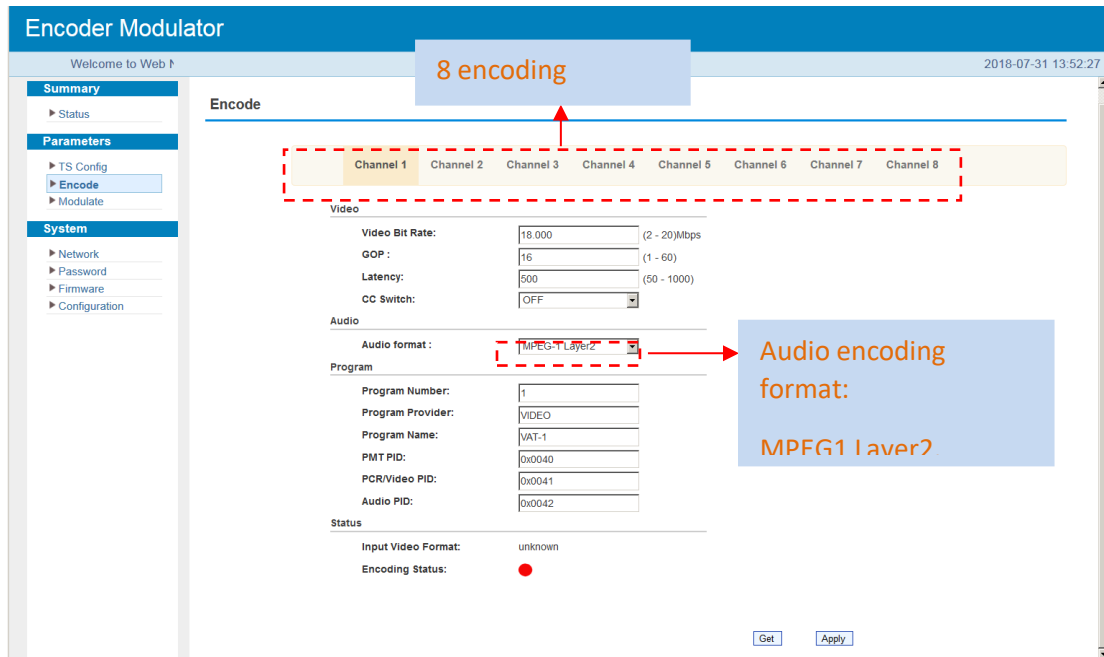
Figure-4

Parameters → Modulate:

Clicking "Modulate", it displays the interface where users can configure the modulating parameters. Clicking "Setting Type→PART SET" to select modulation type and set frequency for each channel (Figure-5); Clicking "ALL SET" and select the "Modulation Type" and set frequency for all channels (Figure-6).
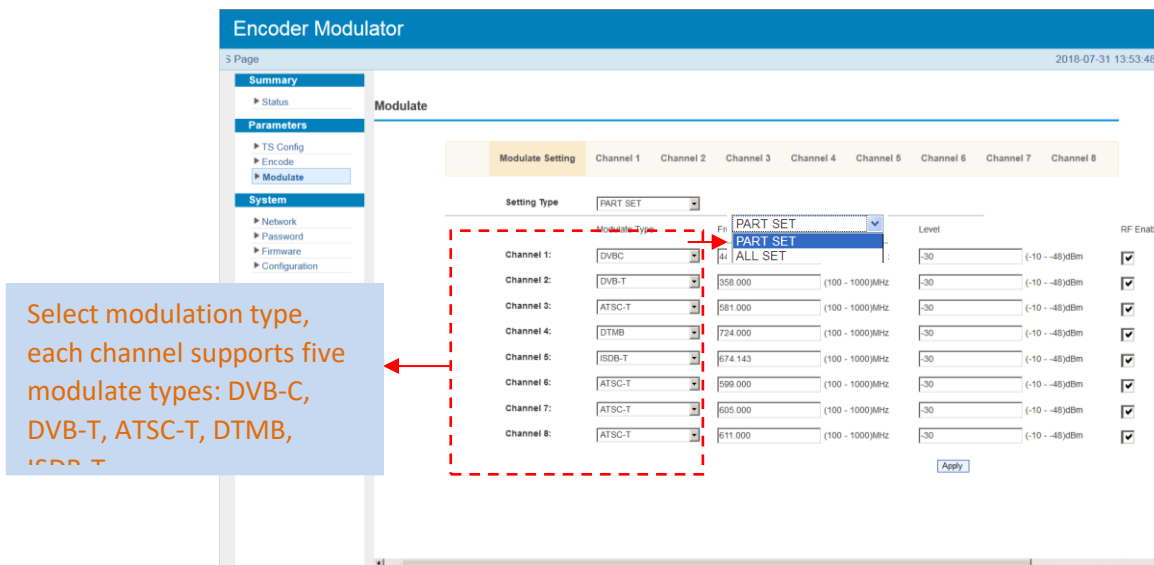
Figure-5
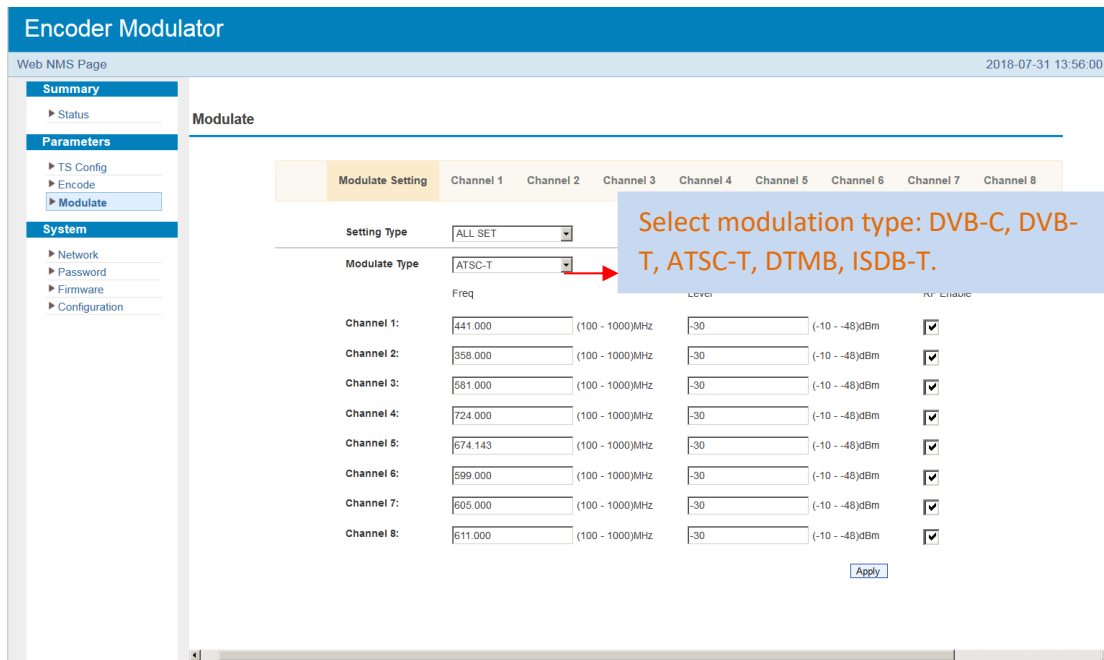
Figure-6

Clicking "Channel1/2/3/4/5/6/7/8", it displays the interface where users can configure the modulation parameters (Figure-7). Each channel supports 1 DVB-C/T/ATSC/ISDB-T/DTMB output option. Here we select DVB-C/DVB-T/ATSC/DTMB/ISDB-T modulation types for Channel 1-5 as an example.

Channel 1: DVB-C modulating
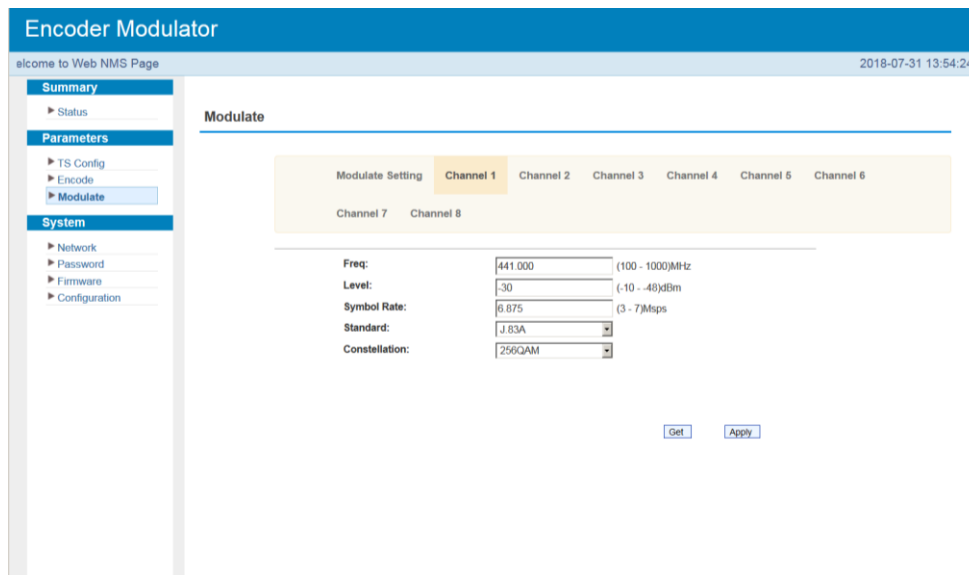
Channel 2: DVB-T modulating

Channel 3: ATSC modulating

Channel 4: DTMB modulating

Channel 5: ISDB-T modulating

Figure-6

System → Network:

Clicking "Network", it displays the interface as Figure-7 where to set network parameters.
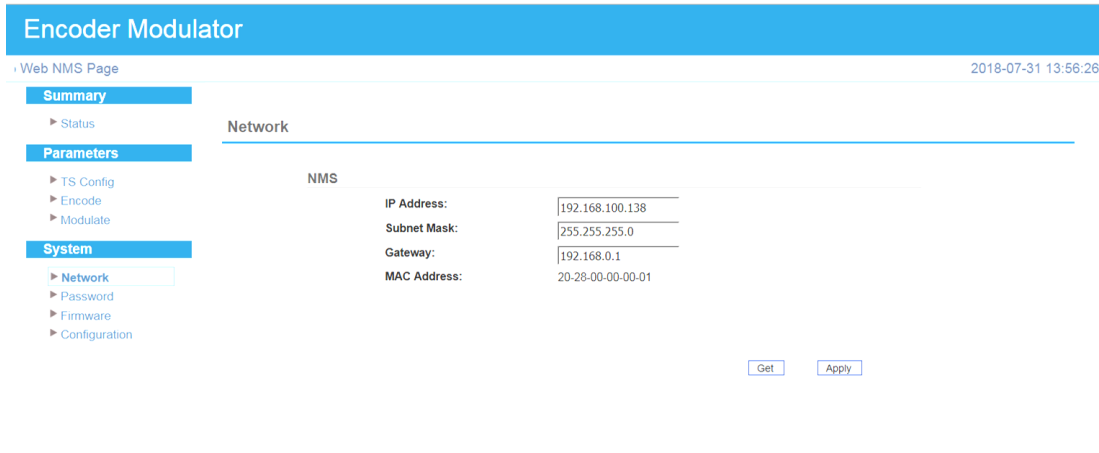

Figure-7

System → Password:

Clicking "Password", it displays the screen as Figure-8 where to set login account and password for the web NMS.
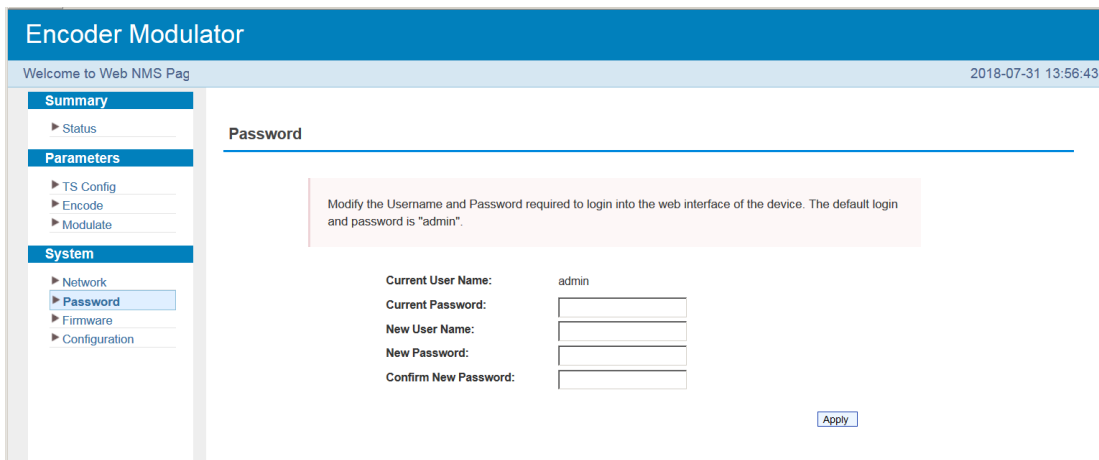

Figure-8

System → Firmware:

Clicking "Firmware", it displays the screen as Figure-9 where to update the firmware of this device.
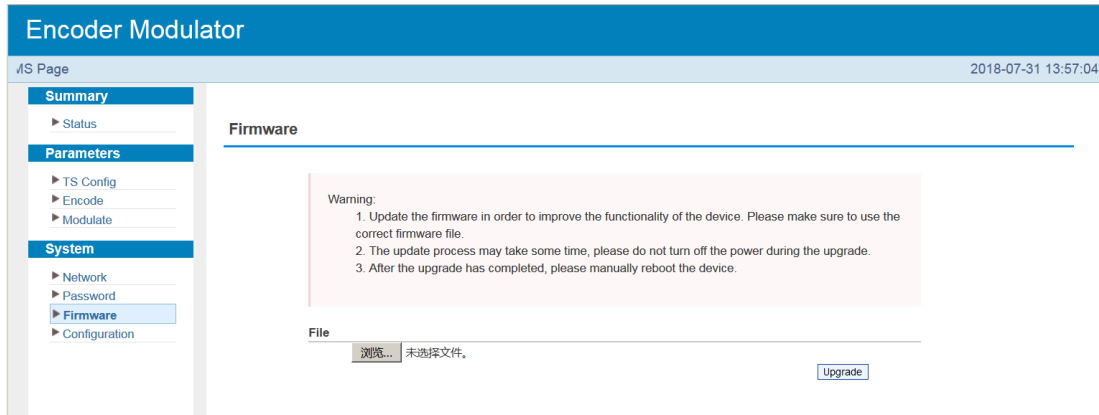

Figure-9

System → Save/Restore/Factory Set/Backup/Load:

Clicking "Save/Restore/Factory Set/Backup/Load", it displays the screen as Figure-10 where to Save/Restore/Factory Set/Backup/Load your configurations.
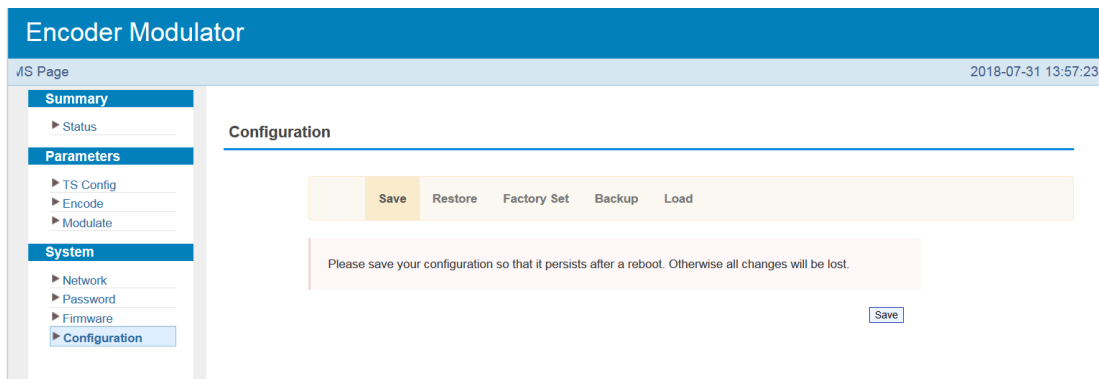

Figure-10

CHAPTER 5

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.
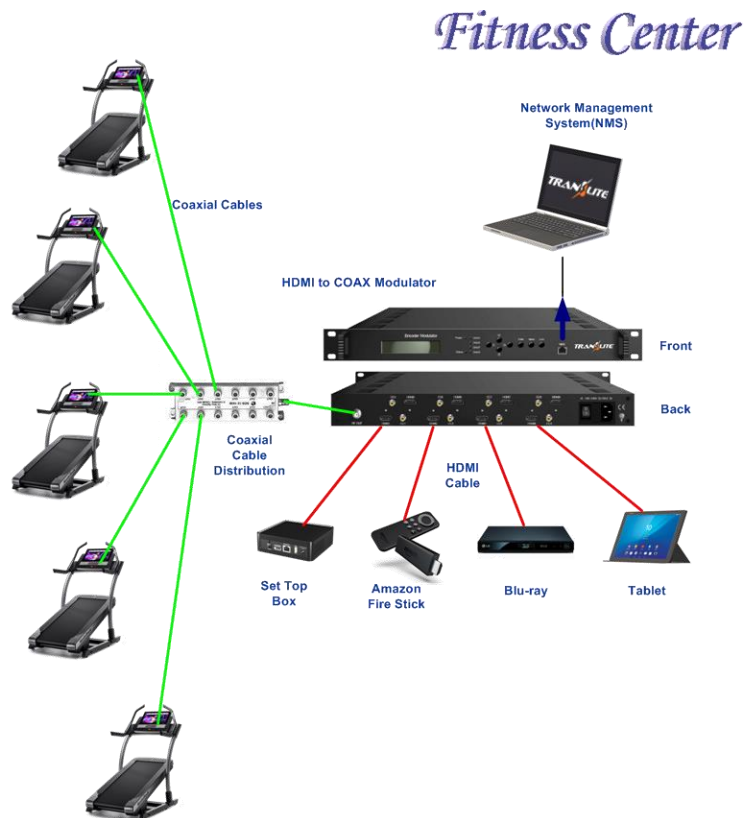- ➢ Maintenance needed

CHAPTER 6

PACKING LIST

TL-9524C Encoder Modulator	1PC
User's Manual	1PC
Power Cord	1PC

CHAPTER 7

APPLICATIONS

For Sales

North America:
sales@transliteglobal.com

Asia:
sales@translite.co.in

Rest Of The World:
sales@transliteglobal.com

For Support

North America:
support@transliteglobal.com

Asia:
support@translite.co.in

Rest Of The World:
support@transliteglobal.com