User Manual

Thor H-THUNDER-8 8 Channel HDMI/CVBS Digital Modulator

DVB-C Annex A/B QAM - ATSC - DVB-T -ISDB-T

A Note from Thor Broadcast about this Manual

Intended Audience

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

Disclaimer

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

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H-Thunder-8

Chapter 1 - Introduction

1.1 Product Overview

TH8 encoder modulator is a all-in-one device integrating MPEG2 encoding and modulating to convert audio/video signals into DVB-C/T/ATSC/J.83B/ISDB-T RF out. It supports 8 HDMI inputs, and its pay -as-you-grow modular design (maximum support 8 HDMI inputs) and flexible configuration are making it extremely scalable, very reliable with high performance.

The signal source could vary from satellite receivers, closed-circuit television cameras, Blu-ray players, and antenna (off air). Its output signals are to be received by TVs, STB, etc. with the correlated standard the unit is set to encode with (ATSC/J.83B/DVB-T/ DVB-C/ISDB-T).

The 8-TH8A units are widely used everywhere such as the mall, market hall, theatre, hotels, restaurants, stadiums, race tracks, amphitheatres and etc. for advertising, monitoring, training and educating in company, schools, campuses, and healthcare.

Convert your local HDMI signal into an RF signal, ready for distribution over coaxial cables.These modulators support all cable and terrestrial standards.

1.2 Key features

- 8 HDMI input, capable of receiving all resolutions up to 1080p
- 8 CVBS Support CC input
- MPEG2 video encoding
- MPEG1 layer 2, AAC, and Dolby Digital AC3 audio encoding
- 1 RF test, to by-pass terrestrial or cable signals
- DVB-C/T/ATSC/J.83B/ISDB-T RF output in every device, Modulation dynamic switching
- Each channel supports 1x DVB-C/T/ATSC/J.83B/ISDB-T output option
- Control via web NMS, and easy updates via web

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1.3 Specifications

HDMI Encoding Section			
Input	Interface	HDMI*8,CVBS*8	
Video	Encoding	MPEG2	
	Input	Output	
	PAL,NTSC 720@50p 720@60p 1080@50i/p 1080@60i/p	Max.1080@30p	
	Bit-rate	2.000~20.000 Mbps	
	Rate Control	VBR	
	Aspect Ratio	16 :9	
Audio	Encoding	MPEG1 layer 2, AAC, AC3	
	Sample rate	48KHz	
	Bit rate	MPEG1 layer 2(192kbps)	
		AAC（VBR）	
		AC3（128kbps）	

DVB-C Modulator Section		
Standard	J.83A (DVB-C), J.83B	
MER	⩾35dB	
RF frequency	50-1000MHz, 1KHz step	
RF output level	70~100 dBμV, 1dB step	
Symbol rate	3.000~7.000Msps ADJ	
	J.83A	J.83B
Constellation	16/32/64/128/256QAM	64/256QAM
Bandwidth	8M	6M

DVB-T Modulator Section	
Standard	DVB-T COFDM
Bandwidth	6M, 7M, 8M
Constellation	QPSK, 16QAM, 64QAM
Code rate	1/2, 2/3, 3/4, 5/6, 7/8
Guard Interval	1/32, 1/16, 1/8, 1/4
Transmission Mode	2K, 8K
MER	⩾35dB
RF frequency	50-1000MHz, 1KHz step
RF output level	70~100 dBμV, 1dB step

ISDB-T Modulator Section	
Standard	ARIB STD-B31
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
RF frequency	50~1000MHz, 1KHz step
RF output level	70~100 dBμV, 1dB step

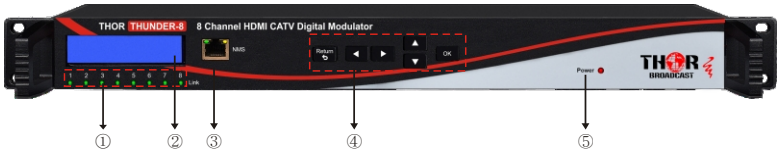
ATSC Modulator Section	
Standard	ATSC A/53
Constellation	8 VSB
MER	⩾30dB
RF frequency	50~1000MHz, 1KHz step
RF output level	70~100 dBμV, 1dB step

System	
Management	Web and LCD controlled
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)

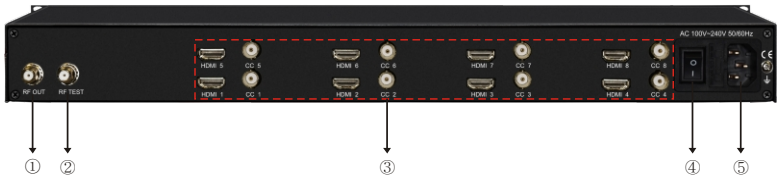
1.4 Appearance and Description

Front Panel Illustration



① Link Indicators
② LCD Screen
③ NMS Ethernet Port
④ Directional Keys (up, down, left, right)
⑤ Power Indicator

Rear Panel Illustration



① RF output
② RF test
③ HDMI + CVBS Input Port
④ Power switch
⑤ Power supply Slot

Chapter 2 - Operation

Keyboard Function Description:

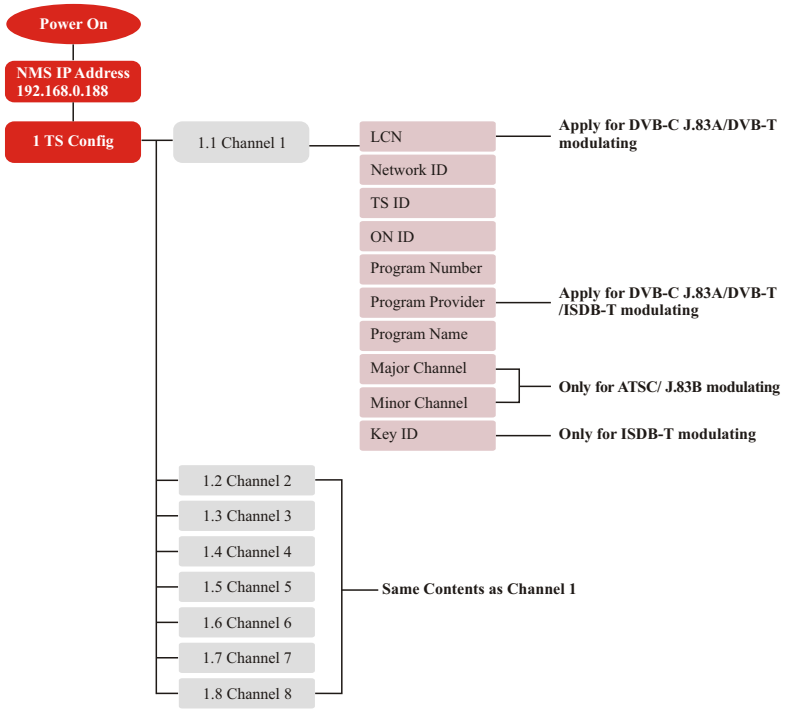
OK: Activate the parameters which need modifications, or confirm the change after modification.

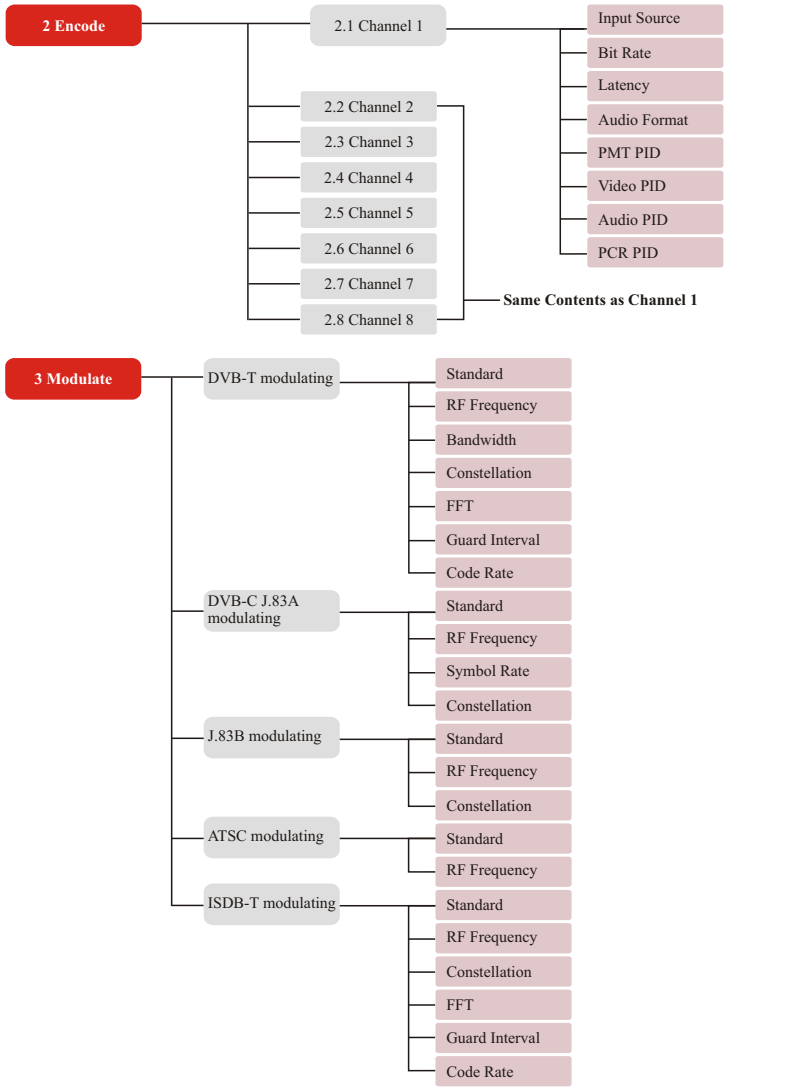
RETURN: Cancel current entered value, resume previous setting; Return to previous menu.

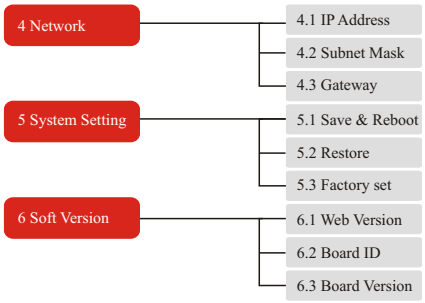
LEFT/RIGHT: Choose and set the parameters.

UP/DOWN: Modify activated parameter or paging up/down when parameter is inactivated.

2.1 LCD Menu Structure







2.2 General Settings

After powering on the device, It will show the device IP address.

When press the ENTER key,the main interface has optional 6 menu's and sub-menus, press the up and down keys to switch the options, press the OK key to enter the specified sub-menu to modify the parameters.

Main
- 1 TS Config
- 2 Encode
- 3 Modulate
- 4 Network
- 5 System Settings
- 6 Soft Version

2.2.1 TS Config

The TH8A outputs up to 8 RF modulation carriers. Under this menu you can enter the corresponding channels(1-8) to set your relevant parameters. Select each channel and set your settings as you see fit.

TS Config
Channel 1

●*Channel 1/2/3/4/5/6/7/8*

The TH8A also has can output any standard DVB-C, DVB-T, ATSC, J.83B or ISDB-T modulation. Select different modulation standard under the modulate menu, the TS parameters will be different with each standard, the LCD will display the following sub-menu,press the up and down keys to switch the options.

DVB-T/ DVB-C J.83A:

LCN
Network ID
TS ID
ON ID
Program Number
Program Provider
Program Name

J.83B/ATSC:

Network ID
Major Channel
Minor Channel
TS ID
Program Number
Program Name

ISDB-T:

Key ID
Network ID
TS ID
ON ID
Program Number
Program Provider
Program Name

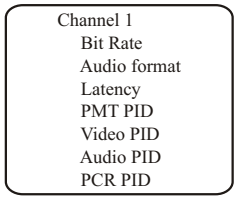
2.2.2 Encode

This Broadcast TH8A is will allow you to alter audio and video settings as needed per channel 1/2/3/4/5/6/7/8 for variable results.

Encode
2.1 Channel 1

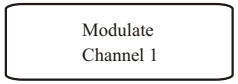
●*Channel 1/2/3/4/5/6/7/8*

The setting sub-menus are the same for Channels 1-8, so here we'll show you one channel as an example. Press the OK key and enter the sub-menu,press the up and down keys to switch the options.



2.2.3 Modulate

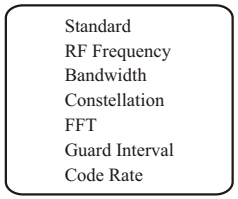
The TH8A has up to 8 RF carriers, press the up and down keys to switch the channels, then press OK key enter the corresponding channel to set the relevant RF output parameters.



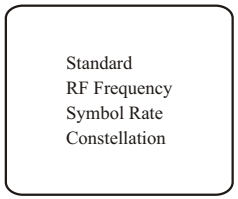
●*Channel 1/2/3/4/5/6/7/8*

Press the up and down keys to switch the option. Set these parameters by pressing OK to enter these sub-menus.

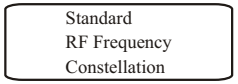
DVB-T:



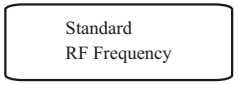
DVB-C J.83A:



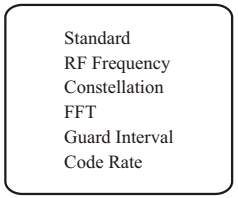
J.83B:



ATSC:

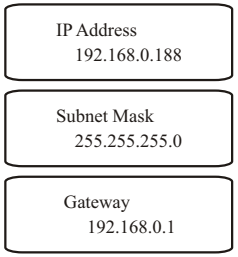


ISDB-T:



2.2.4 Network Setting

The Network Setting has 3 sub-menus as shown below.



2.2.5 System Setting

●*Save & Reboot*

Always save your settings each time you change them, so the next time you restart the unit, they appear as you wanted them.

Save & Reboot
Sure?

●*Restore*

In this menu, press OK key to restore the device the last saved configuration.

Restore
Sure?

●*Factory Set*

Choose press OK key to restore the device into factory's default configuration.

Factory Set
Sure?

2.2.6 Soft Version

Check the CPU, Board and Web version of this modulator under this submenu.

Web Version
X.X.X

Board Version
X.X

Core Version
XXXXXXXX

Chapter 3 - WEB NMS Operation

For setting configurations you can use the front panel; also you are able to control and set the configurations on any computer by connecting the device to the web NMS Port. You should ensure that the computer's IP address is different from the Modulator IP address; otherwise, it would cause an IP conflict.

3. 1 Login

The default IP of this device is 192.168.0.188. 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.

E.G. the PC IP address is 192.168.0.190, we then change the device IP to 192.168.0.xxx (xxx can be 1 to 254 except 190 to avoid IP conflict).

Use any web browser to connect the device with the 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. Both fields of Username and Password are case sensitive.

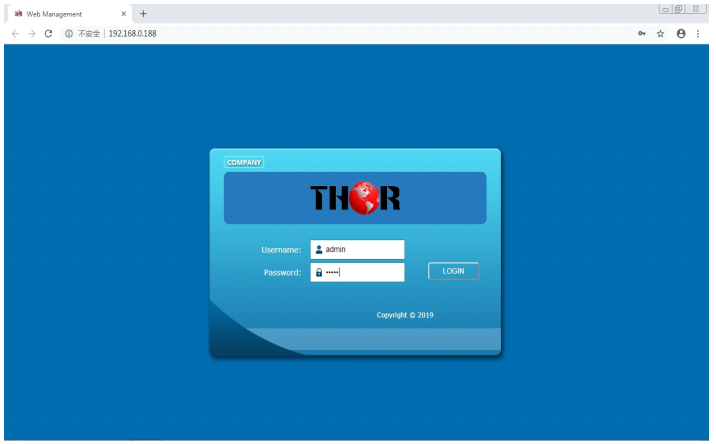


Figure-1

3.2 Operation

Summary

When we confirm the login, it displays the Summary interface as shown in Figure-2.

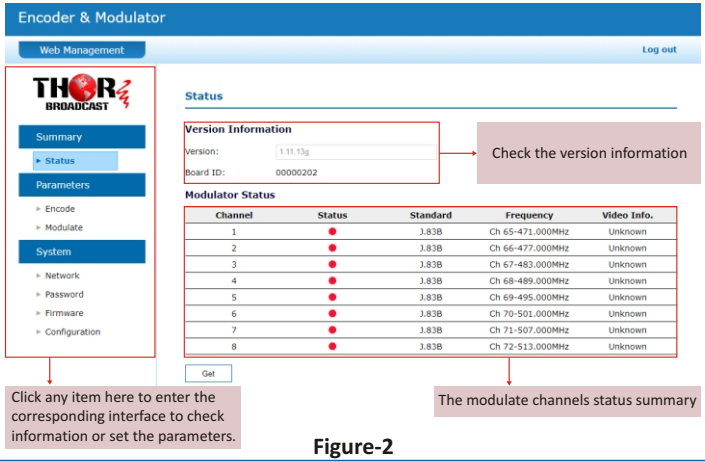
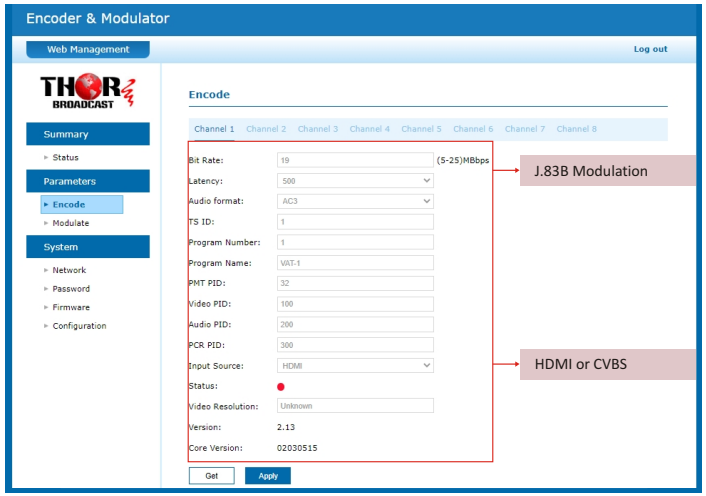
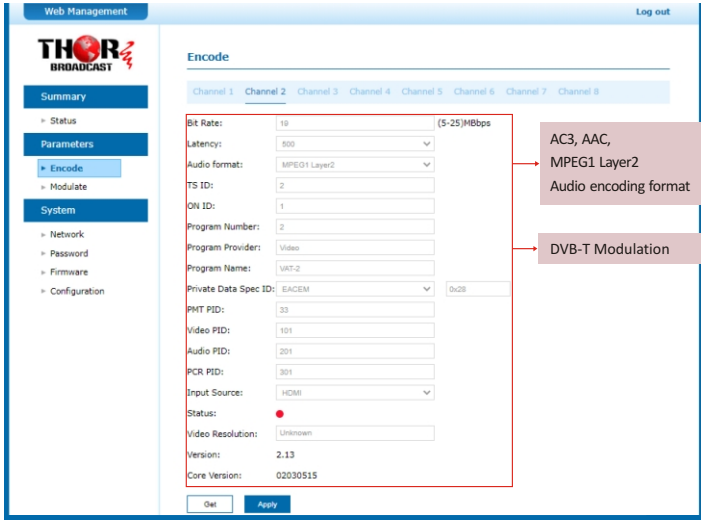


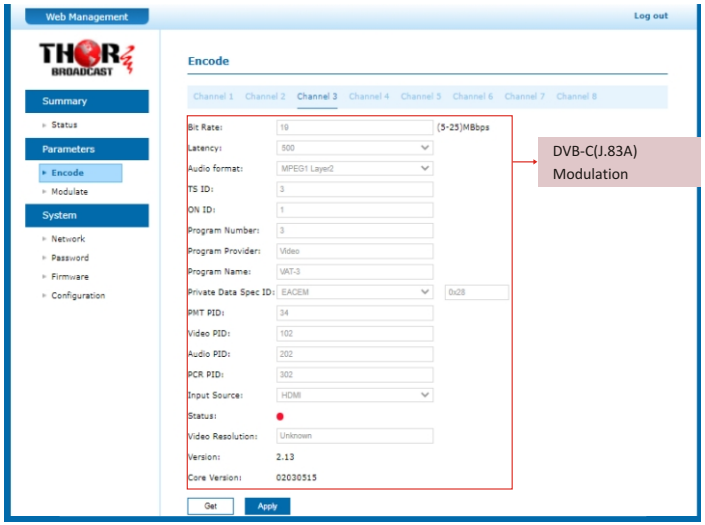
Figure-2

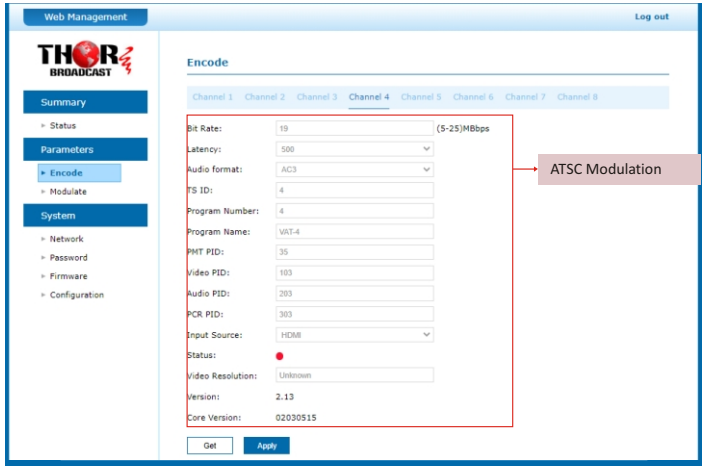
Parameters → Encode:

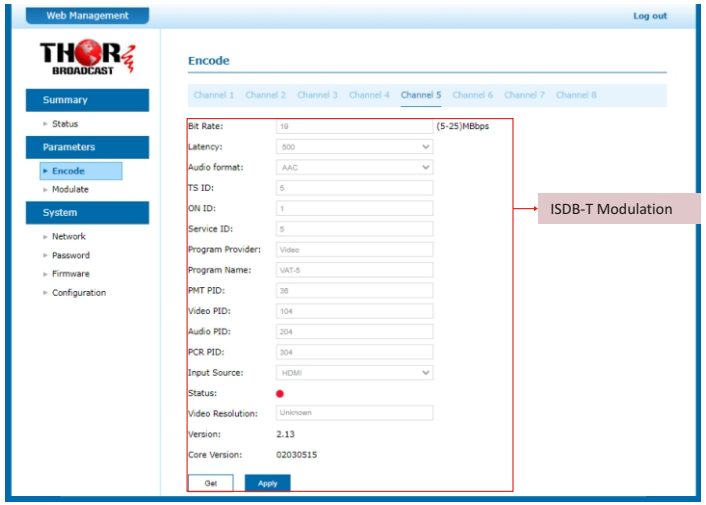
Click **[Encode]**, it displays the information of the program from the 8 HDMI encoded channels, users select different modulating





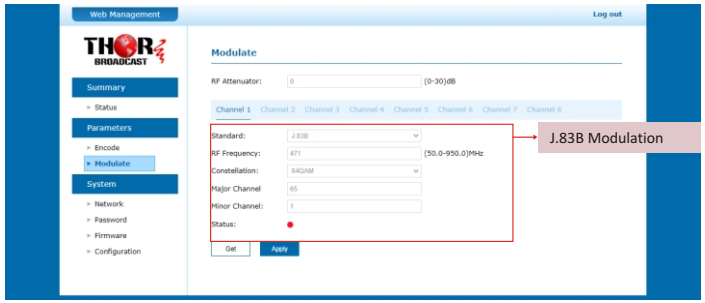






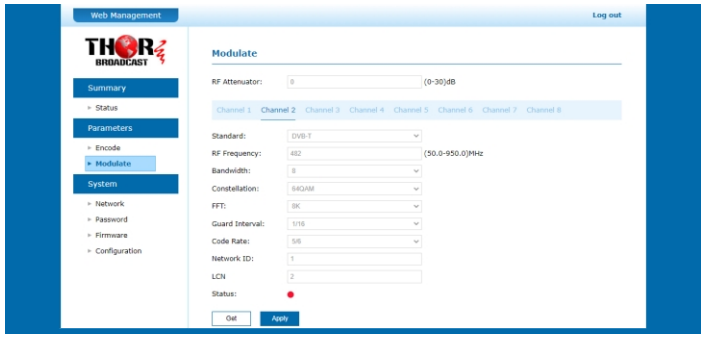
System → Modulate:

Click **[Modulate]**, it displays the interface where users can configure the modulating parameters.

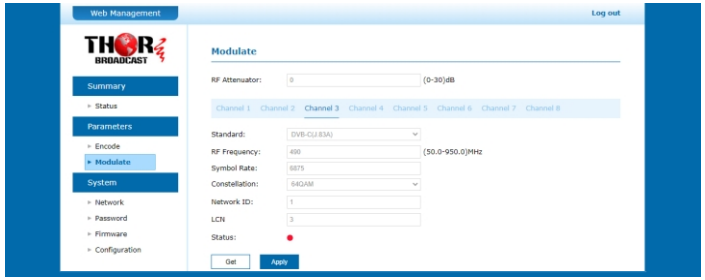


The legend below shows the different standard in **[Channel 2/3/4/5]**

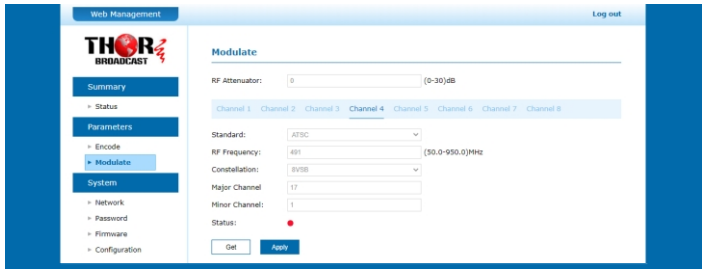
Channel 2: DVB-T modulation



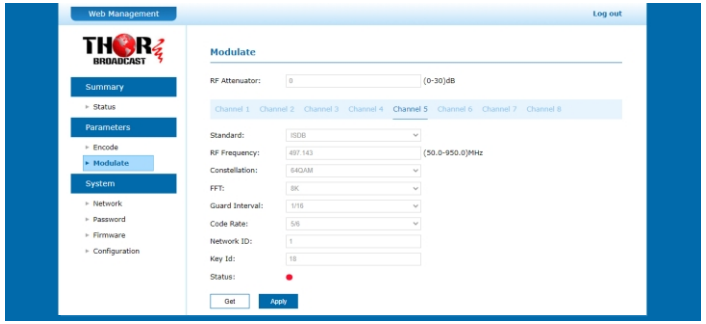
Channel 3: DVB-C(J.83A) modulation



Channel 4: ATSC modulation

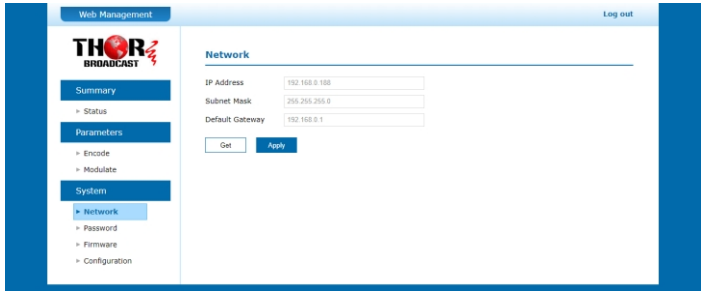


Channel 5: ISDB-T modulation



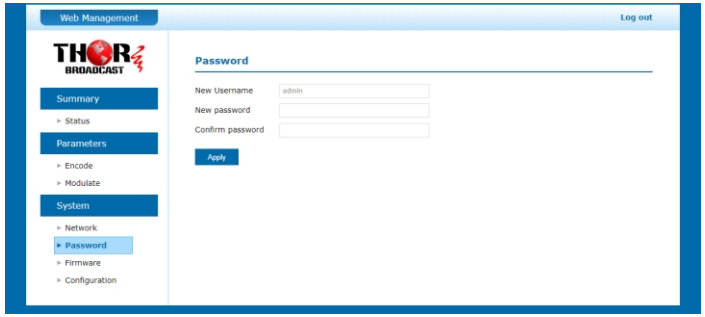
System → Network:

Click **[Network]**, it displays the where to set network parameters.



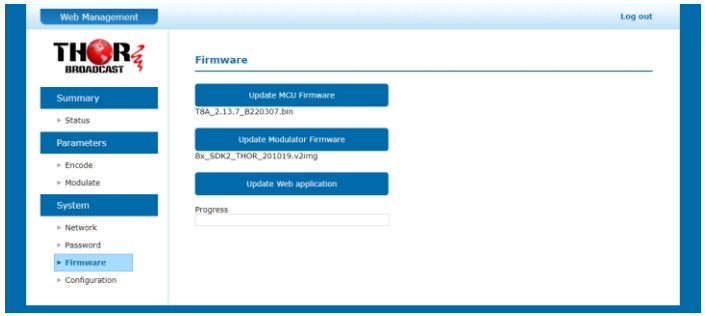
System→Password:

Click **[Password]**, it displays the screen where to set login password for the web NMS



System→Firmware:

Click **[Firmware]**, it displays the screen where to update the firmware on this modulator.



[Remark]

Read this carefully before starting the update operation

[1] Make sure the network connection is solid and stable before operation.

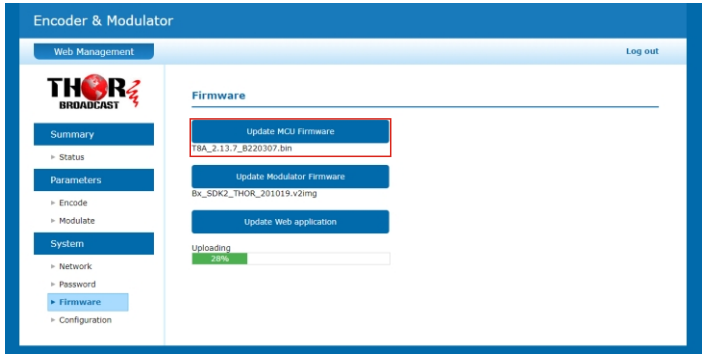
[2] Do not open same web page in different tab.

[3] Ensure network is connected and power is up during whole update process.

[4] Do not turn off power while system is restarting after update.

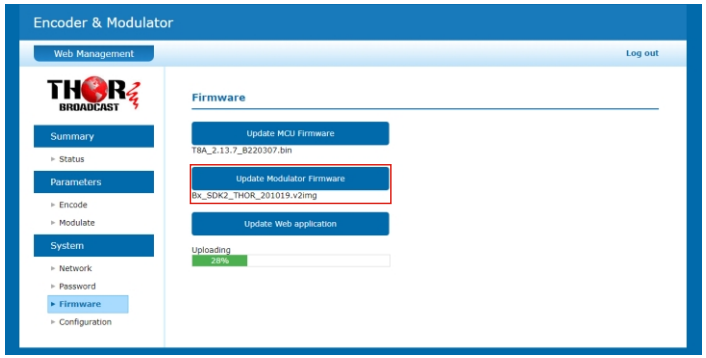
Click **[Update MCU Firmware]** to put file up then auto start update.

Progress shown below.



Click **[Update Modulator Firmware]** to put file up then auto start update.

Progress shown below.



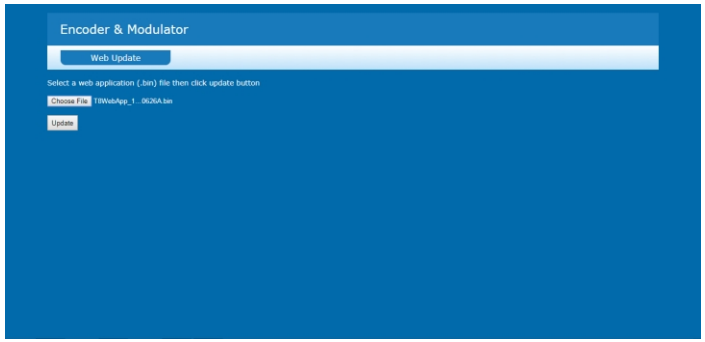
Click **[Update Web application]** to put file up then auto start update.

Progress shown below.

[Remark]

If the web application does not open, do the following:

Please turn off the power first, press the OK button until the power is turned on for three seconds, and then release it; the system will forcefully enter the bootloader burning interface, and select the file to be burned again. During the programming process, the external LED will display blue from left to right, then green from right to left.

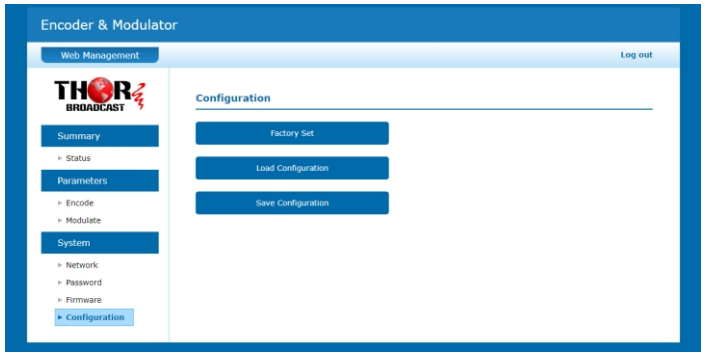


System → Configuration:

Click **[Factory Set]**, it displays the screen Click OK to Factory default Setting.

Click **[Load Configuration]**, it will jump a windows to upload the file that saved settings before.

Click **[Save Configuration]**, it saves parameter settings as a file to convenient uploading.



Chapter 4 - Packing List

BROADCAST TH8A 8	**1PC**
User's Manual	**1PC**
HDMI Cable	**8 PCS**
Power Cord	**1PC**

For Further Tech Support

1-800-521-Thor(8467)

support@thorfiber.com