

# THOR BROADCAST

## User Manual



## 8 channel HDMI and SDI Clear CATV RF Modulator QAM, ATSC, DVB-T, ISDB-T

**H-HYBRID-RF-8**

All information is under copyright © of THOR FIBER

# Table of Contents

<b>CHAPTER 1-INTRODUCTION .....</b>	<b>1</b>
<i>1.1 PRODUCT OVERVIEW .....</i>	<i>1</i>
<i>1.2 KEY FEATURES .....</i>	<i>1</i>
<i>1.3 SPECIFICATIONS .....</i>	<i>2</i>
<i>1.4 APPEARANCE AND DESCRIPTION .....</i>	<i>3</i>
<b>CHAPTER 2-LCD OPERATION .....</b>	<b>4</b>
<i>2.1 LCD MENU STRUCTURE .....</i>	<i>4</i>
<i>2.2 GENERAL SETTINGS .....</i>	<i>7</i>
<b>CHAPTER 3 - WEBNMS OPERATION .....</b>	<b>11</b>
<i>3.1 LOGIN .....</i>	<i>11</i>
<i>3.2 OPERATION .....</i>	<i>12</i>
<b>CHAPTER 4 -PACKING LIST .....</b>	<b>21</b>

## **Chapter 1 - Introduction**

### **1.1 Product Overview**

The Thor Broadcast Hybrid-8 encoder modulator is an all-in-one device integrating MPEG2 encoding and modulating to convert audio/video signals into DVB-C/T/ATSC/ISDB-T RF out. It supports 8 HDMI inputs and 8 3G-SDI inputs; this flexible configuration makes it extremely scalable for building a headend combination of HDMI and SDI sources.

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/DVB-T/ DVB-C/ISDB-T).

The Hybrid-8 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
- HDCP Compliant
- 8 3G-SDI inputs
- MPEG2 video encoding
- MPEG1 layer 2, AAC, and Dolby Digital AC3 audio encoding
- 1 RF input, to by-pass terrestrial or cable signals
- DVB-C/T/ATSC/ISDB-T RF output in every device, Modulation dynamic switching
- Each channel supports 1x DVB-C/T/ATSC/ISDB-T output option
- Control via web NMS, and easy updates via web

### 1.3 Specifications

HDMI Encoding Section		
<b>Input</b>	Interface	HDMI*8,SDI*8
<b>Video</b>	Encoding	MPEG2
	<b>Input</b>	<b>Output</b>
	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
<b>Audio</b>	Encoding	MPEG1 layer 2, AAC, AC3
	Sample rate	48KHz
	Bit rate	MPEG1 layer 2(192kbps)
		AAC(VBR) AC3(128kbps)

DVB-C Modulator Section		
Standard	DVB-C (J.83A), 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	

RF frequency	50~1000MHz, 1KHz step
RF output level	70~100 dBμV, 1dB step
MER	≥35dB
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

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

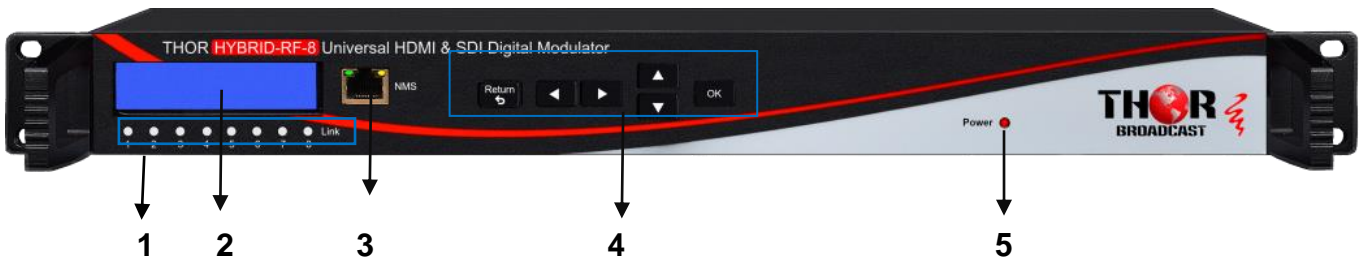
ATSC Modulator Section	
Standard	ATSC A/53
Constellation	8 VSB
MER	≥35dB
RF frequency	50~1000MHz, 1KHz step
RF output level	70~100 dBμV, 1dB step

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°C(operation), -20~80°C (storage)

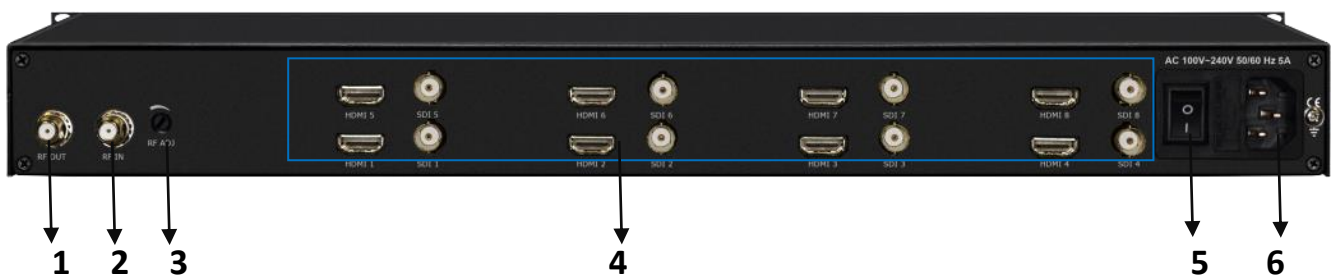
### 1.4 Appearance and Description

#### 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 Input
- ③ RF Output Level Regulation
- ④ HDMI + SDI Input Ports
- ⑤ Power switch
- ⑥ Power supply Slot

## Chapter 2 - Operation

### Keyboard Function Description:

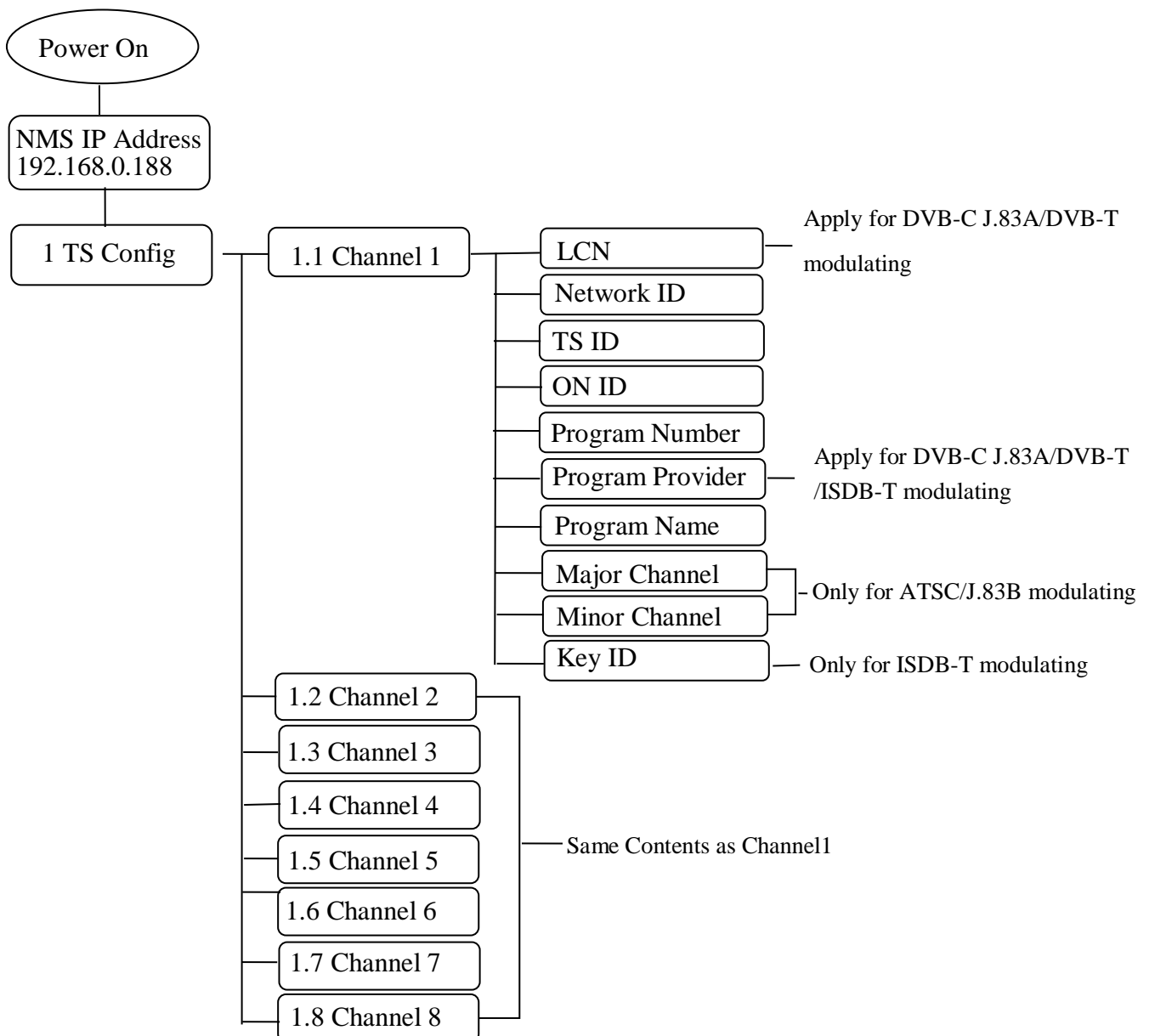
**OK:** Activate the parameters which need modification, or confirm the change after modification.

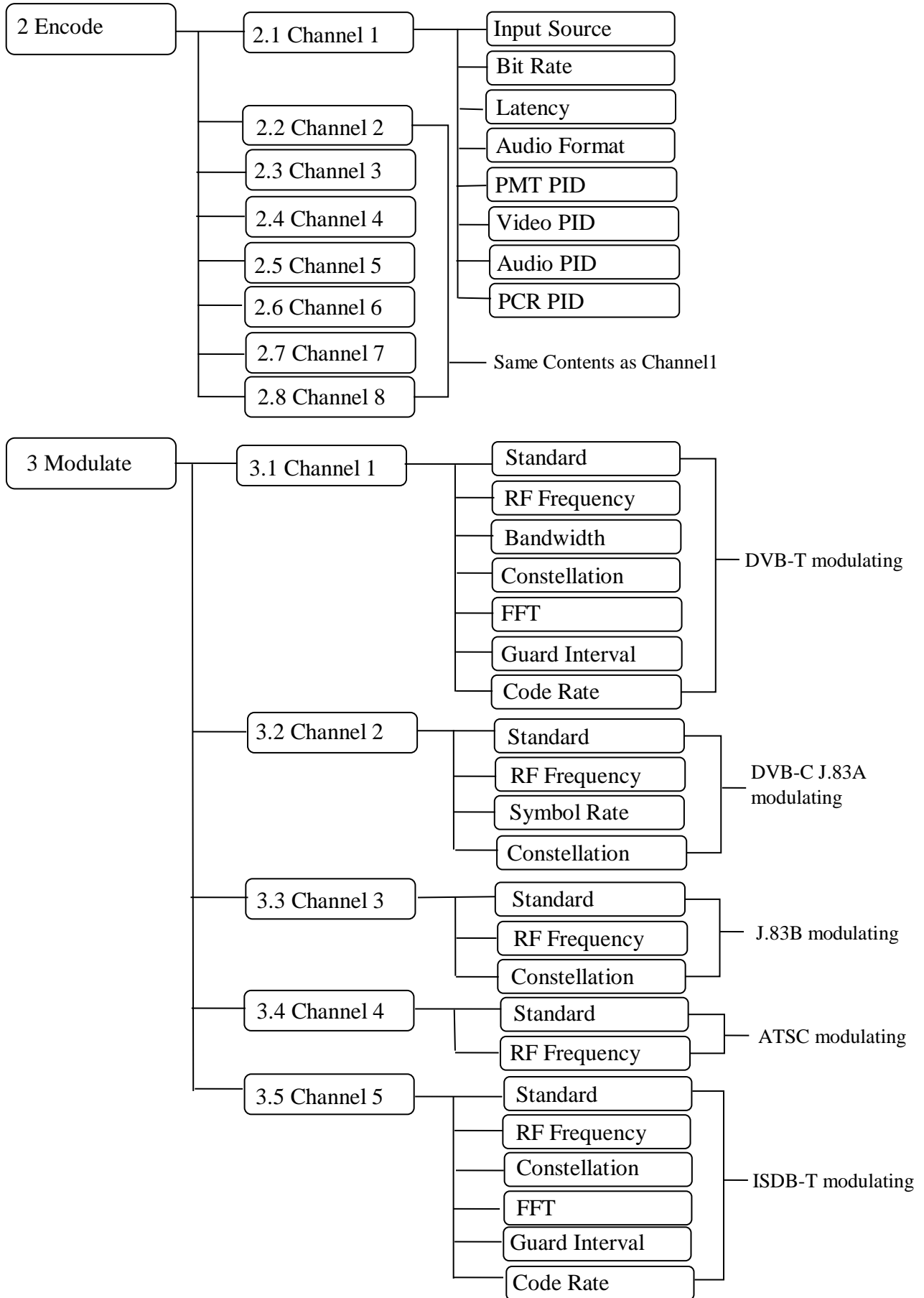
**RETURN:** Cancel current entered value, resume previous setting; Return to previous menu.

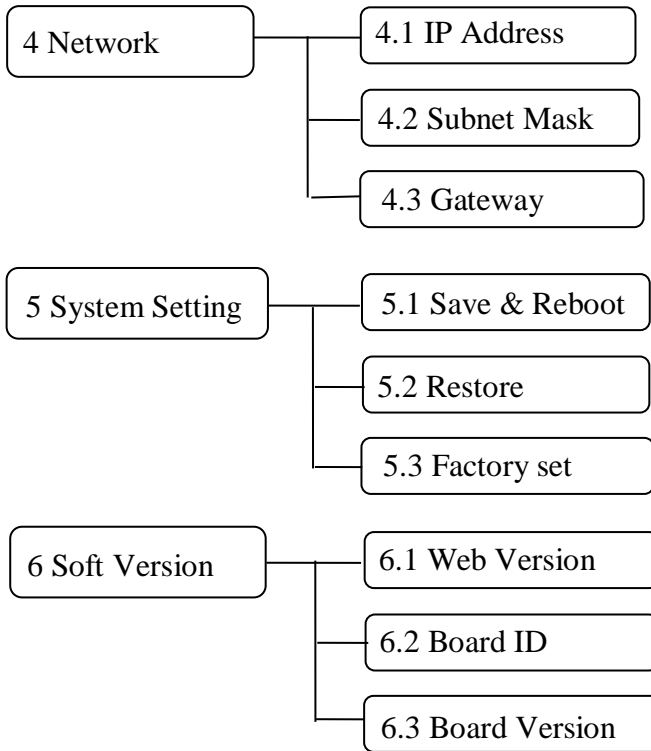
**LEFT/RIGHT:** Choose and set the parameters.

**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's IP address.

When you 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 TH8 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  
Channel1

#### ➤ **Channel 1/2/3/4/5/6/7/8**

The TH8 can output any standard DVB-C, DVB-T, ATSC or ISDB-T modulation. Select different modulation standards 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 TH8 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 Channel1

**Channel 1/2/3/4/5/6/7/8**

The setting sub-menus are the same for Channels 1-8, so here well 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.

Channel 1  
Bit Rate  
Audio format  
Latency  
PMT PID  
Video PID  
Audio PID  
PCR PID

**2.2.3 Modulate**

The TH8 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.

Modulate  
Channel1

**Channel1/2/3/4/5/6/7/8**

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

**DVB-T:**

Standard  
RF Frequency  
Bandwidth  
Constellation  
FFT  
Guard Interval  
Code Rate

**DVB-C J.83A:**

Standard  
RF Frequency  
Symbol Rate  
Constellation

**J.83B:**

Standard  
RF Frequency  
Constellation

**ATSC:**

Standard  
RF Frequency

**ISDB-T:**

Standard  
RF Frequency  
Constellation  
FFT  
Guard Interval  
Code Rate

### 2.2.4 Network Setting

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

IP Address  
192.168.0.188

Subnet Mask  
255.255.255.0

Gateway  
192.168.0.1

### 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 0 to 255 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.

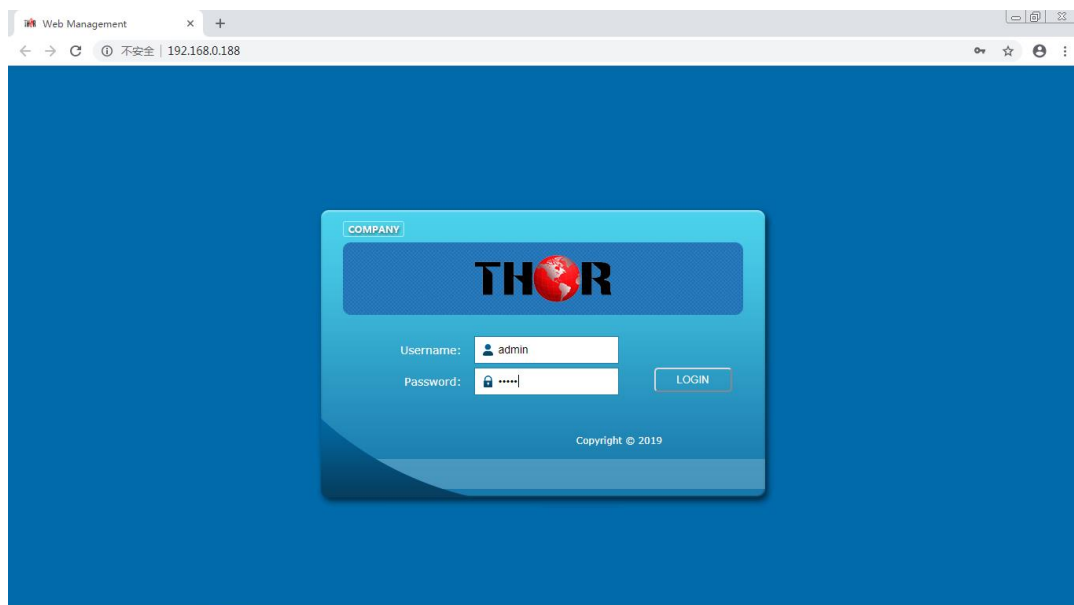


Figure-1

**3.2 Operation**

**Summary**

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

Channel	Status	Standard	Frequency	Video Info.
1	●	J.83B	471.000MHz	1280x720 50P
2	●	J.83B	477.000MHz	1280x720 50P
3	●	J.83B	483.000MHz	1280x720 50P
4	●	J.83B	489.000MHz	1280x720 50P
5	●	J.83B	495.000MHz	1280x720 50P
6	●	J.83B	501.000MHz	1280x720 50P
7	●	J.83B	507.000MHz	1280x720 50P
8	●	J.83B	513.000MHz	1280x720 50P

Click any item here to enter the corresponding interface to check information or set the parameters.

Figure-2

The modulate channels status summary

**Parameters → Encode:**

Click[ Encode ], it displays the information of the program from the 8 HDMI/SDI encoded channels, users select different modulation standards

Encoder & Modulator

Web Log out

**THOR BROADCAST**

- Summary
  - Status
- Parameters
  - Encode**
  - Modulate
- System
  - Network
  - Password
  - Firmware
  - Configuration

**Encode**

Channel 1 Channel 2 Channel 3 Channel 4 Channel 5

Bit Rate:  (5-25)MBbps

Latency:

Audio format:

TS ID:

ON ID:

Program Number:

Program Provider:

Program Name:

PMT PID:

Video PID:

Audio PID:

PCR PID:

Input Source:

Status:

Video Resolution:

Version: 1.5

Core Version: 01030704

AC3, AAC, MPEG1 Layer2  
Audio encoding format

DVB-T Modulation

Encoder & Modulator

Web Log out

**THOR BROADCAST**

- Summary
  - Status
- Parameters
  - Encode**
  - Modulate
- System
  - Network
  - Password
  - Firmware
  - Configuration

**Encode**

Channel 1 Channel 2 Channel 3 Channel 4 Channel 5

Bit Rate:  (5-25)MBbps

Latency:

Audio format:

TS ID:

ON ID:

Program Number:

Program Provider:

Program Name:

PMT PID:

Video PID:

Audio PID:

PCR PID:

Input Source:

Status:

Video Resolution:

Version: 1.5

Core Version: 01030704

DVB-C(J.83A)  
Modulation

Encoder & Modulator

Web Management
Log out

- Summary
- Status
- Parameters
  - Encode
  - Modulate
- System
  - Network
  - Password
  - Firmware
  - Configuration

Encode

Channel 1
Channel 2
Channel 3
Channel 4
Channel 5
Channel 6
Channel 7

Bit Rate:  (5-25)MBbps

Latency:

Audio format:

TS ID:

Program Number:

Program Name:

PMT PID:

Video PID:

Audio PID:

PCR PID:

Input Source:

Status: ●

Video Resolution:

Version: 1.5

Core Version: 01030704

→ ATSC Modulation

Encoder & Modulator

Web Management
Log out

- Summary
- Status
- Parameters
  - Encode
  - Modulate
- System
  - Network
  - Password
  - Firmware
  - Configuration

Encode

Channel 1
Channel 2
Channel 3
Channel 4
Channel 5
Channel 6
Channel 7

Bit Rate:  (5-25)MBbps

Latency:

Audio format:

TS ID:

ON ID:

Program Name:

Program Provider:

PMT PID:

Video PID:

Audio PID:

PCR PID:

Input Source:

Status: ●

Video Resolution:

Version: 1.5

Core Version: 01030704

→ ISDB-T Modulation

Tel: (800) 521-8467

Email: sales@thorfiber.com

http://www.thorbroadcast.com

16



**System → Modulate:**

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

**Encoder & Modulator**

Web Management Log out

**THOR BROADCAST**

**Modulate**

Channel 1 Channel 2 Channel 3 Channel 4 Channel 5 Channel 6 Channel 7 Channel 8

Standard:

RF Frequency:  (50.0-950.0)MHz

Constellation:

Major Channel:

Minor Channel:

Status: ●

**J.83B Modulation**

Click[ Channel 2/3/4/5 ],it displays the interface where you can configure the modulating parameters.

Channel 2: DVB-T modulation

**Encoder & Modulator**

Web Management Log out

**THOR BROADCAST**

**Modulate**

Channel 1 Channel 2 Channel 3 Channel 4 Channel 5 Channel 6 Channel 7 Channel 8

Standard:

RF Frequency:  (50.0-950.0)MHz

Bandwidth:

Constellation:

FFT:

Guard Interval:

Code Rate:

Network ID:

LCN:

Status: ●

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

**Encoder & Modulator**

Web Management Log out

**THOR BROADCAST**

**Modulate**

Channel 1 Channel 2 Channel 3 Channel 4 Channel 5 Channel 6 Channel 7 Channel 8

Standard:

RF Frequency:  (50.0-950.0)MHz

Symbol Rate:

Constellation:

Network ID:

LCN:

Status: ●

Channel 4: ATSC modulation

The screenshot shows the 'Encoder & Modulator' web interface. On the left is a navigation menu with 'Web Management' at the top, followed by 'Summary', 'Parameters' (with 'Modulate' selected), and 'System'. The main content area is titled 'Modulate' and has tabs for Channel 1 through Channel 8, with 'Channel 4' selected. The configuration for Channel 4 is as follows:

- Standard: ATSC
- RF Frequency: 491 (50.0-950.0)MHz
- Constellation: 8VSB
- Major Channel: 4
- Minor Channel: 1
- Status: ●

Buttons for 'Get' and 'Apply' are located at the bottom of the configuration area.

Channel 5: ISDB-T modulation

The screenshot shows the 'Encoder & Modulator' web interface for Channel 5. The navigation menu is similar to the previous screenshot, with 'Modulate' selected under 'Parameters'. The main content area is titled 'Modulate' and has 'Channel 5' selected. The configuration for Channel 5 is as follows:

- Standard: ISDB
- RF Frequency: 497.143 (50.0-950.0)MHz
- Constellation: 64QAM
- FFT: 8K
- Guard Interval: 1/16
- Code Rate: 5/6
- Network ID: 1
- Key Id: 18
- Status: ●

Buttons for 'Get' and 'Apply' are located at the bottom of the configuration area.

**System → Network:**

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

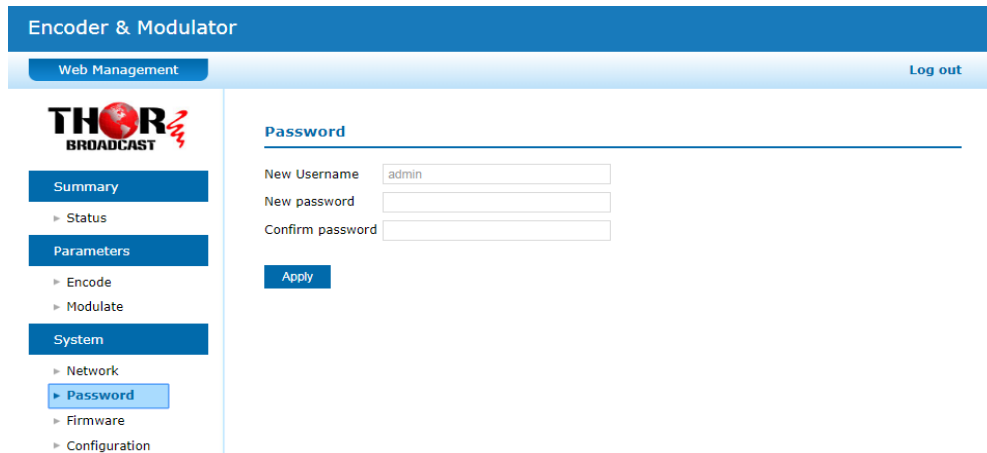
The screenshot shows the 'Encoder & Modulator' web interface with the 'Network' configuration page selected in the left-hand menu. The main content area is titled 'Network' and contains the following fields:

- IP Address: 192.168.0.188
- Subnet Mask: 255.255.255.0
- Default Gateway: 192.168.0.1

Buttons for 'Get' and 'Apply' are located at the bottom of the configuration area.

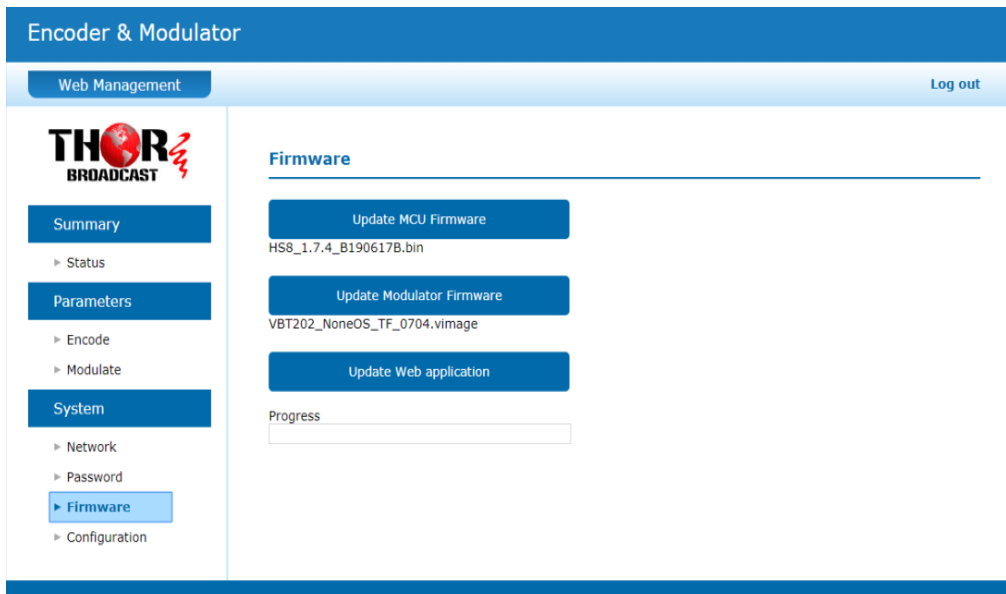
**System→Password:**

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.



**CAUTION:**

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 select file then auto start update.  
Progress shown below.

The screenshot shows the 'Encoder & Modulator' web interface. On the left is a navigation menu with 'Firmware' selected. The main content area is titled 'Firmware' and contains three buttons: 'Update MCU Firmware', 'Update Modulator Firmware', and 'Update Web application'. The 'Update MCU Firmware' button is highlighted with a red box. Below the buttons, a progress bar shows '100%' completion. The filename 'HS8\_1.7.4\_B190617B.bin' is visible below the first button.

Click [Update Modulator Firmware] to put file up then auto start update.  
Progress shown below.

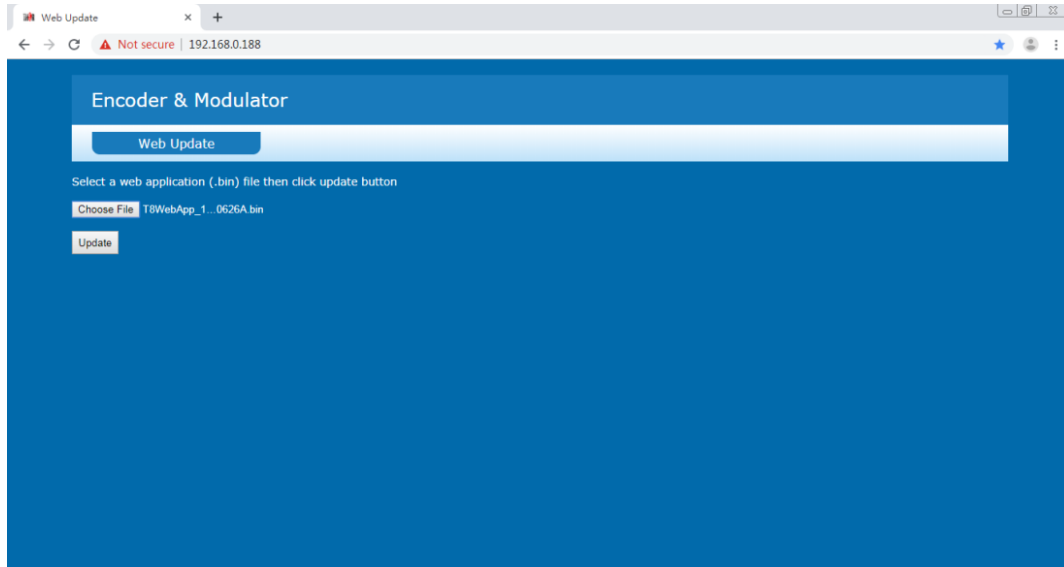
This screenshot shows the 'Encoder & Modulator' web interface after the first update. The 'Update Modulator Firmware' button is now highlighted with a red box. The progress bar below it shows '100%' completion. The filename 'VB1202\_NoneOS\_TF\_0704.vimage' is displayed below the second button. The 'Update MCU Firmware' button is now disabled.

Click [Update Web application:] to put file up then auto start update.  
Progress shown below.

This screenshot shows the 'Encoder & Modulator' web interface after the second update. The 'Update Web application' button is highlighted with a red box. The progress bar below it shows '100%' completion. The filename 'T8WebApp\_1.3.8\_190626A.bin' is visible below the third button. The 'Update Modulator Firmware' button is now disabled.

If web app cannot open, please following bellow:

First, turn off the power supply and press OK button to power on; Then it will be forced to enter the boot loader interface and select the file to burn again. During the process, the link indications will show blue from left to right, and then green from right to left.

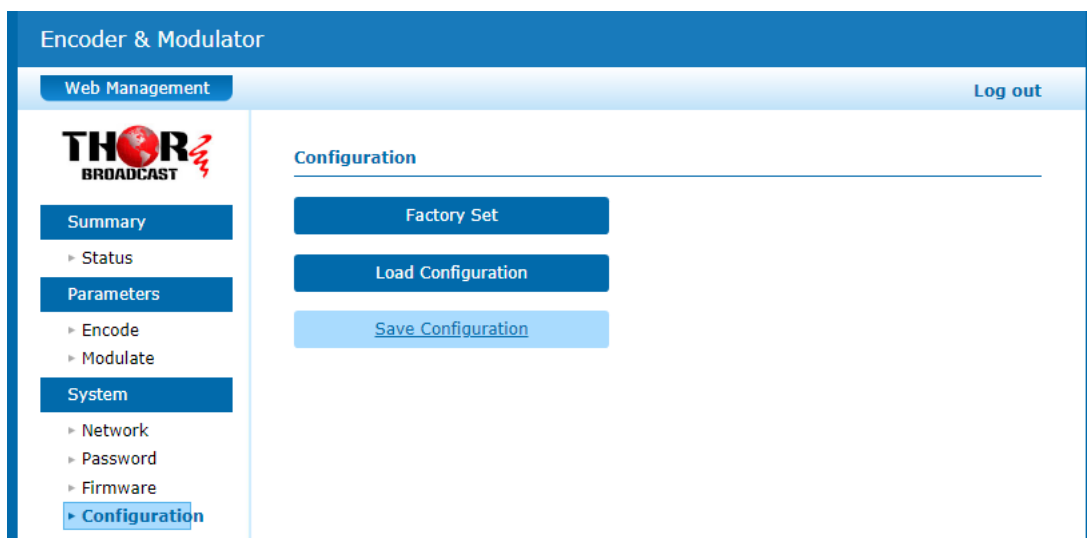


**System → Configuration:**

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**

Thor Hybrid-8	1PC
User'sManual	1 PC
HDMI Cable	8 PCS
PowerCord	1 PC

**For Further Tech Support  
1(800)521-THOR (8467) Ext 2  
support@thorfiber.com**