



# User Manual



## H-HDMI-RF-Petit-IR Modulator



### 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.

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## Chapter 1 - Introduction

### 1.1 Product Overview

The **H-HDMI-RF-Petit-IR** modulator has an HDMI input with local loop through, and a COFDM output which is combined with the RF input. The HDMI input content can be supplied by a number of sources, Blu-rayplayer, Satellite Set top box, CCTV etc. The input signal is modulated as a COFDM output and can be distributed to a number of TV's over an existing private coaxial network.

It has an HDMI loop through, to connect to the local TV, and can also combine existing RF with the modulated output channel on RF Out 1 and RF Out 2. The modulator has adjustable level control to balance the COFDM channel with the incoming RF channels

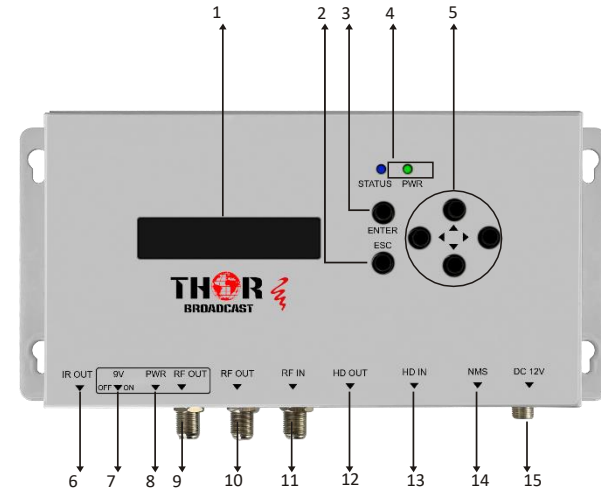
The source Set top box can be controlled from another TV location, via the IR remote control over the coaxial cable, using an IR transmitter and a digital link. The coaxial network must be connected to the RF Out, with the 9vdc able to pass through the network, to remotely power the digital link.

### 1.2 Key features

- ◆ Support IR control return pass
- ◆ Supports HD MPEG2 Encoder
- ◆ Supports output resolutions up to 1080 30p
- ◆ Control via NMS or Key, and easy updates via web
- ◆ Selectable Audio format AAC/Mpeg1 L2, AC3
- ◆ Install multiple units onto TV system

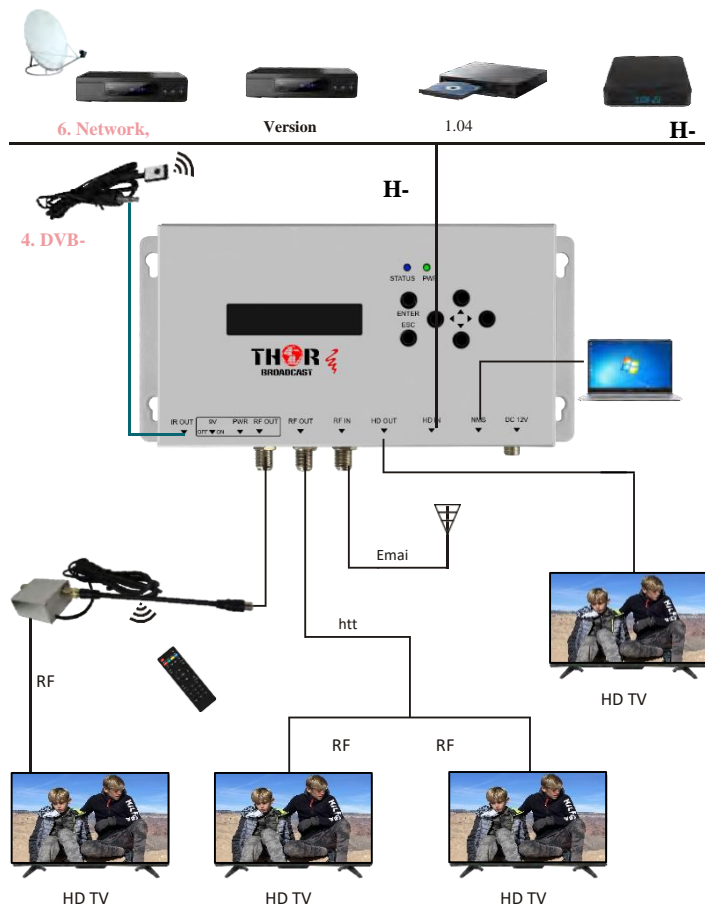
**1.3 Specifications**

<b>Encoding Section-Video</b>		
Encoding	MPEG2/H.264	
Interface	HDMI*2(1×input/1×loop through)	
Resolution	Input 720@50p,720@60p 1080@50i/p,1080@60i/p	Output Max.1080@30p
Bit rate	5-25Mbps	
<b>Encoding Section-Audio</b>		
Encoding	MPEG-1 Layer2, AAC, AC3	
Sample rate	48KHz	
<b>System</b>		
Management	LCD + Control buttons/Ethernet	
Language	English	
Upgrade	Ethernet	
<b>Modulator Section</b>		
MER	Typ. 35dB	
RF range	50~950MHz, 1KHz step	
RF output level	100dBμV(30dB Attenuation)	
Standard	DVB-T	
Bandwidth	6M, 7M, 8M	
Constellation	QPSK, 16QAM, 64QAM	
Code rate	1/2, 2/3, 3/4, 5/6, 7/8	
Guard interval	1/4, 1/8, 1/16, 1/32	
FFT	2K, 8K	
Standard	DVB-C J.83A	
Constellation	64QAM, 128QAM, 56QAM	
Symbol rate	5.000-8.000MspS ADJ	
Standard	ISDB-T	
Constellation	QPSK, 16QAM, 64QAM	
Code rate	1/2, 2/3, 3/4, 5/6, 7/8	
Guard interval	1/4, 1/8, 1/16, 1/32	
Mode	1-3	
Time Interleave	Mode1(l=4,8,16), Mode2(l=2,4,8), Mode3(l=1,2,4)	
Standard	ATSC	QAM J.83B
Constellation	8VSB	64QAM,256QAM
<b>General</b>		
Power supply	DC 12V 1A	
Dimensions	225*105*41mm	
Weight	680g	

**1.4 Appearance and Description**
**Panel Illustration**


- |  |                                    |
|--|------------------------------------|
| 1. LCD Screen                              | 9. RF Output (IR return w/ 9 V DC) |
| 2. ESC(Cancel/Return)                      | 10. RF Output                      |
| 3. Enter key                               | 11. RF IN                          |
| 4. Power & Status LED                      | 12. HDMI Out                       |
| 5. Directional keys(up, down, left, right) | 13. HDMI IN                        |
| 6. IR Output for IR emitter                | 14. NMS Control(LAN PORT)          |
| 7. 9V dc Switch                            | 15. Power input                    |
| 8. LED (9V dc indicator)                   |                                    |

1.5 Application Drawing



**Chapter 2 - Operation**

Keyboard Function Description:

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

**ESC:** 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

**1. DVB-T Menu Settings**

**TS Config**

TS ID	1
ON ID	1
Program Number	1
Program Provider	TF HD1
Program Name	TF HD1
LCN	1
Network ID	1

**Encode**

Input source	HDMI
Bit Rate	19.000Mbps
Latency	500/ 800/ 1000
Audio Format	AAC/ Mpeg1 layer2/ AC3
PMT PID	32
Video PID	48
Audio PID	49
PCR PID	50

**Modulate**

Standard	<b>DVB-T/</b> DVB-C(J.83A)/ ATSC/ DVB-C(J.83B)/ ISDB-T
RF Frequency	474.000MHz
Bandwidth	6M/ 7M/ 8M
Constellation	QPSK/ QAM16/ QAM256
FFT	2K/ 4K/ 8K
Guard Interval	1/4 1/8 1/16 1/32
Code Rate	1/2 2/3 3/4 5/6 7/8

**2. DVB-C(J.83A) Menu Settings**

**TS Config**

TS ID	1
ON ID	1



## H-HDMI-RF-Petit-IR

Program Number 1  
 Program Provider TF HD1  
 Program Name TF HD1  
 LCN 1  
 Network ID 1

### Encode

Input source HDMI  
 Bit Rate 19.000Mbps  
 Latency 500/ 800/ 1000  
 Audio Format AAC/ Mpeg1 layer2/ AC3  
 PMT PID 32  
 Video PID 48  
 Audio PID 49  
 PCR PID 50

### Modulate

Standard DVB-T/ **DVB-C(J.83A)**/ ATSC/ DVB-C(J.83B)/ ISDB-T  
 RF Frequency 474.000MHz  
 Symbol Rate 5-8M  
 Constellation QAM16/ QAM32/ QAM64/ QAM128/ QAM256

### 3. ATSC Menu Settings

#### TS Config

Major Config 1  
 Minor Config 1  
 TS ID 1  
 Program Number 1  
 Program Name TF HD1

#### Encode

Input source HDMI  
 Bit Rate 19.000Mbps  
 Latency 500/800/1000  
 Audio Format AC3/ AAC/ Mpeg1 layer2  
 PMT PID 32  
 Video PID 48  
 Audio PID 49  
 PCR PID 50

#### Modulate

Standard DVB-T/ DVB-C(J.83A)/ **ATSC**/ DVB-C(J.83B)/ ISDB-T  
 RF Frequency 491.000MHz

### 4. DVB-C(J.83B) Menu Settings

#### TS Config

Major Config 1  
 Minor Config 1  
 TS ID 1  
 Program Number 1  
 Program Name TF HD1

Tel: (800) 521-8467

Email: sales@thorfiber.com

<http://www.thorbroadcast.com>



## H-HDMI-RF-Petit-IR

### Encode

Input source HDMI  
 Bit Rate 19.000Mbps  
 Latency 500/800/1000  
 Audio Format AC3/AAC/Mpeg1 layer2  
 PMT PID 32  
 Video PID 48  
 Audio PID 49  
 PCR PID 50

### Modulate

Standard DVB-T/ DVB-C(J.83A)/ ATSC/ **DVB-C(J.83B)**/ ISDB-T  
 RF Frequency 471.000MHz  
 Constellation QAM64QAM64/QAM256

### 5. ISDB-T Menu Settings

#### TS Config

TS ID 1  
 ON ID 1  
 Program Number 1  
 Program Provider TF HD1  
 Program Name TF Hd1  
 Key ID 14  
 Network ID 1

#### Encode

Input source HDMI  
 Bit Rate 19.000Mbps  
 Latency 500/ 800/ 1000  
 Audio Format AAC/ Mpeg1 layer2/  
 PMT PID 32  
 Video PID 48  
 Audio PID 49  
 PCR PID 50

#### Modulate

Standard DVB-T/ DVB-C(J.83A)/ ATSC/ DVB-C(J.83B)/ **ISDB-T**  
 RF Frequency 474.143MHz  
 Constellation QPSK/ QAM64/ QAM256  
 FFT 2K/ 4K/ 8K  
 Guard Interval 1/4 1/8 1/16 1/32  
 Code Rate 1/2 2/3 3/4 5/6 7/8

### 6. Network, System settings , Version Settings

#### Network

IP Address 192.168.0.188  
 Subnet Mask 255.255.255.0  
 Gateway 192.168.0.1

#### System settings

Save & Reboot  
 Restore  
 Factory Set

#### Version

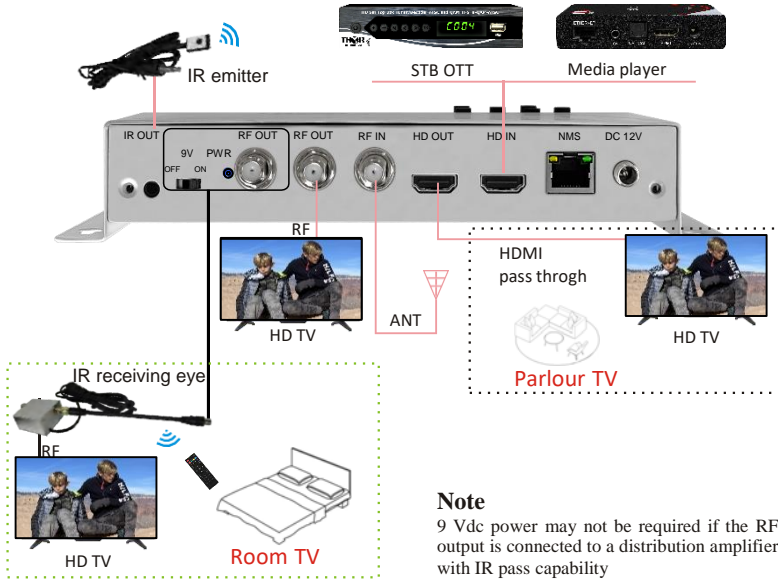
NMS 1.04  
 Board ID 00000203  
 Modulator 02050107

Tel: (800) 521-8467

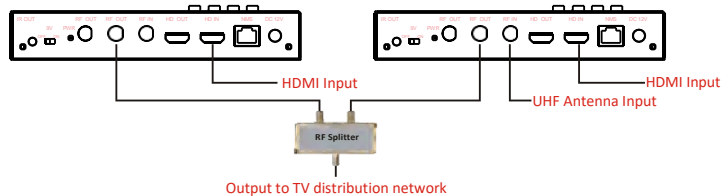
Email: sales@thorfiber.com

<http://www.thorbroadcast.com>

**2.2 Installation Operation**



**2.3 Connect more modulators.**



Two, or more modulators can be combined together and the signal can then be distributed over the TV distribution network. There are a few parameters that have to be changed on the modulators to enable the TV's to see all the channels. Each modulator must have a different output channel/frequency, Local Channel Number (LCN), Service ID Number.  
**Note:** if IR control is required, use RF2 out

**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.

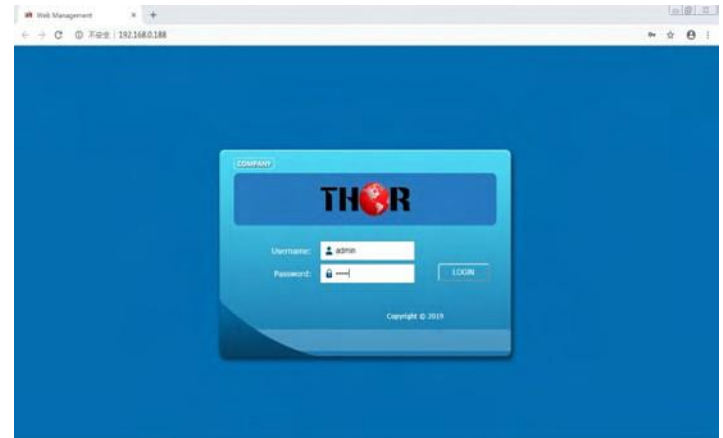


Figure-1

### 3.2 Operation

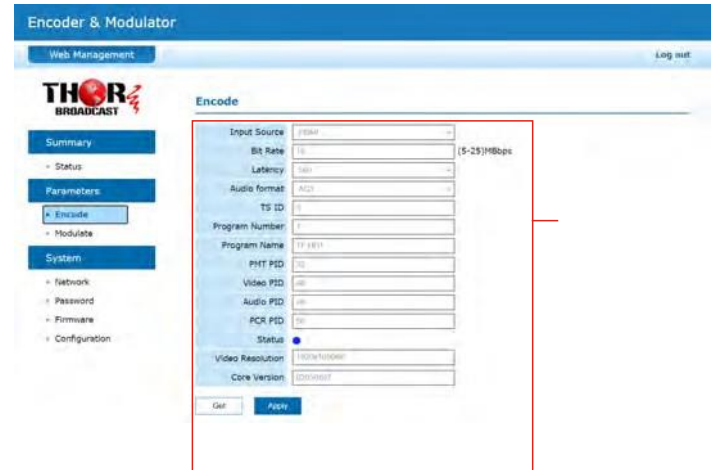
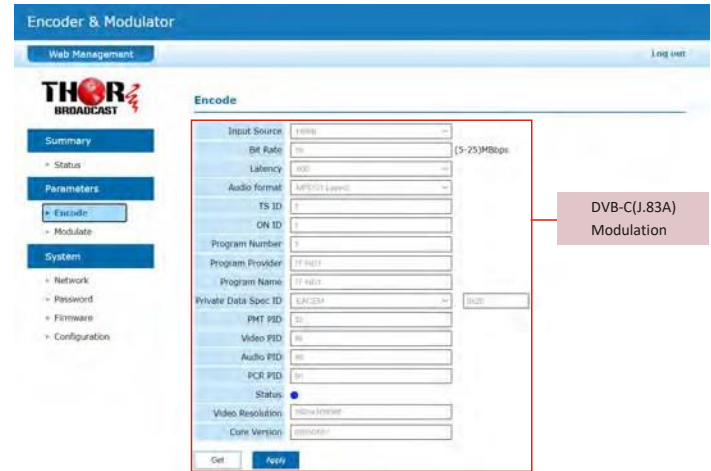
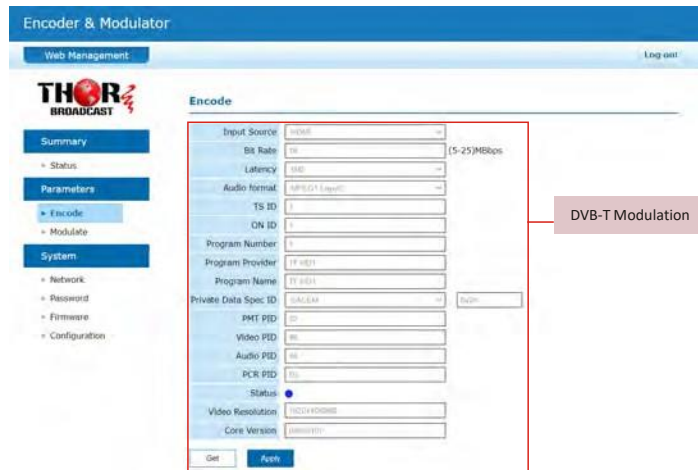
#### Summary

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



#### Parameters → Encode:

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



The screenshot shows the 'Encoder & Modulator' web interface. The 'Encode' section is active, displaying various input and output parameters. A red box highlights the 'Encode' section, and a label 'J.83B Modulation' points to it.

Input Source	TS01
Bit Rate	25 (5-25)Mbps
Latency	300
Audio format	AC3
TS ID	1
Program Number	1
Program Name	TS 001
PMT PID	01
Video PID	02
Audio PID	03
PCR PID	TS 1
Status	On
Video Resolution	1080i 60Hz
Core Version	20080107

The screenshot shows the 'Encoder & Modulator' web interface. The 'Encode' section is active, displaying various input and output parameters. A red box highlights the 'Encode' section, and a label 'ISDB-T Modulation' points to it.

Input Source	TS01
Bit Rate	25 (5-25)Mbps
Latency	300
Audio format	AC3
TS ID	1
DN ID	1
Service ID	1
Program Provider	TS 001
Program Name	TS 001
PMT PID	01
Video PID	02
Audio PID	03
PCR PID	TS 1
Status	On
Video Resolution	1080i 60Hz
Core Version	20080107

## System → Modulate:

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

The screenshot shows the 'Encoder & Modulator' web interface. The 'Modulate' section is active, displaying various modulation parameters. A red box highlights the 'Modulate' section, and a label 'DVB-T Modulation' points to it.

Standard	TS01
RF Frequency	57 (50.0-950.0)MHz
RF Attenuator	0 (0-30)dB
Bandwidth	
Constellation	QPSK
FFT	6K
Guard Interval	1/4
Code Rate	3/4
Network ID	1
LCN	1
Status	On

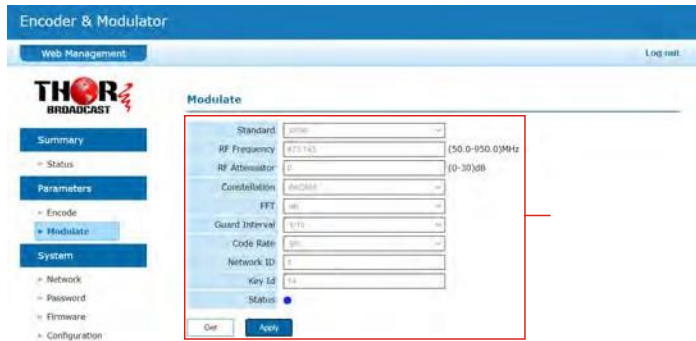
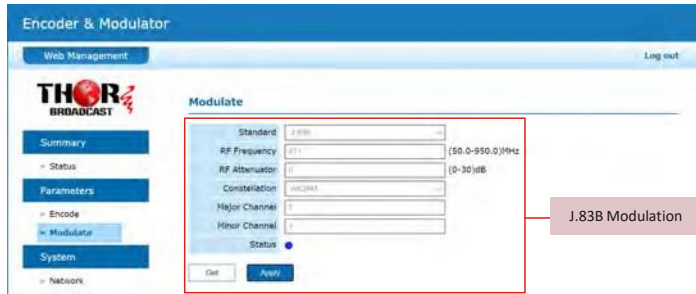
The screenshot shows the 'Encoder & Modulator' web interface. The 'Modulate' section is active, displaying various modulation parameters. A red box highlights the 'Modulate' section, and a label 'ISDB-T Modulation' points to it.

Standard	TS01
RF Frequency	57 (50.0-950.0)MHz
RF Attenuator	0 (0-30)dB
Symbol Rate	
Constellation	QPSK
Network ID	1
LCN	1
Status	On

The screenshot shows the 'Encoder & Modulator' web interface. The 'Modulate' section is active, displaying various modulation parameters. A red box highlights the 'Modulate' section, and a label 'ATSC Modulation' points to it.

Standard	ATSC
RF Frequency	57 (50.0-950.0)MHz
RF Attenuator	0 (0-30)dB
Constellation	QPSK
Major Channel	1
Minor Channel	1
Status	On





## 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.

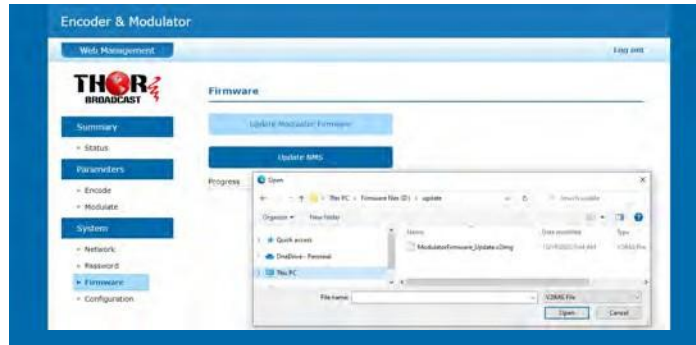


### [ Remark ]

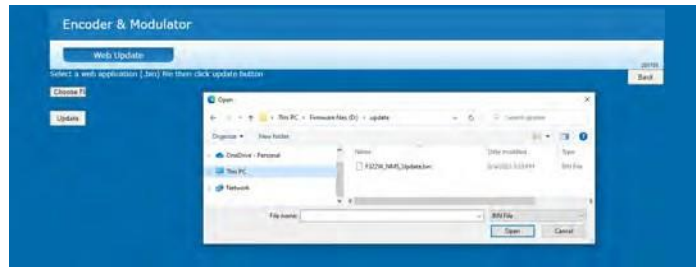
#### Read this carefully before starting the update operation

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



Click [ **Update NMS** ] 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

<b>BROADCAST H-HDMI-RF-Petit-IR</b>	<b>1PC</b>
<b>User's Manual</b>	<b>1PC</b>
<b>HDMI Cable</b>	<b>1PC</b>
<b>Power adaptor</b>	<b>1PC</b>
<b>IR emitter</b>	<b>1PC</b>
<b>IR receiving eye</b>	<b>1PC</b>

**For Further Tech Support**

**1-800-521-Thor(8467)**

**support@thorfiber.com**