User Manual

HDTV Supply 8 Channel HDMI/CVBS Digital Modulator

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

Intended Audience

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

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Chapter 1 - Introduction

1.1 Product Overview

This 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).

These units are widely used every where 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
- MPEGI layer 2, AAC, and Dolby Digital AC3 audio encoding
- I 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 Ix DVB-C/T/ATSC/J.83B/ISDB-T output option
- Control via web NMS, and easy updates via web

1.3 Specifications

HDMI Encoding Section		
Input	Interface	HDMI*8,CVBS*8
	Encoding	MPEG2
	Input	Output
Video	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

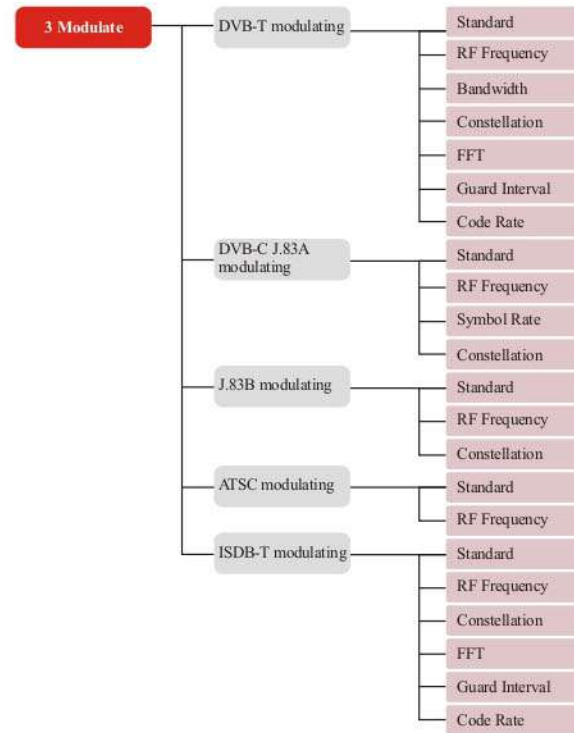# Chapter 2 - Operation

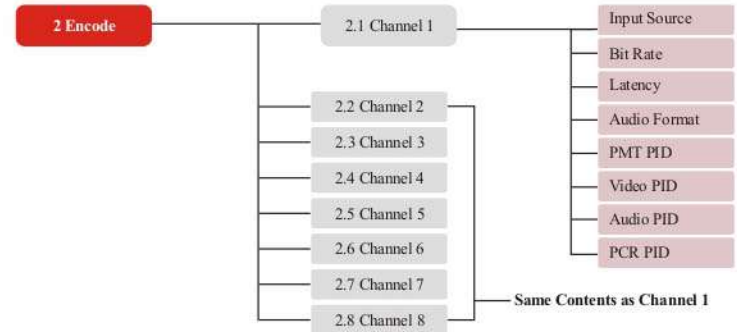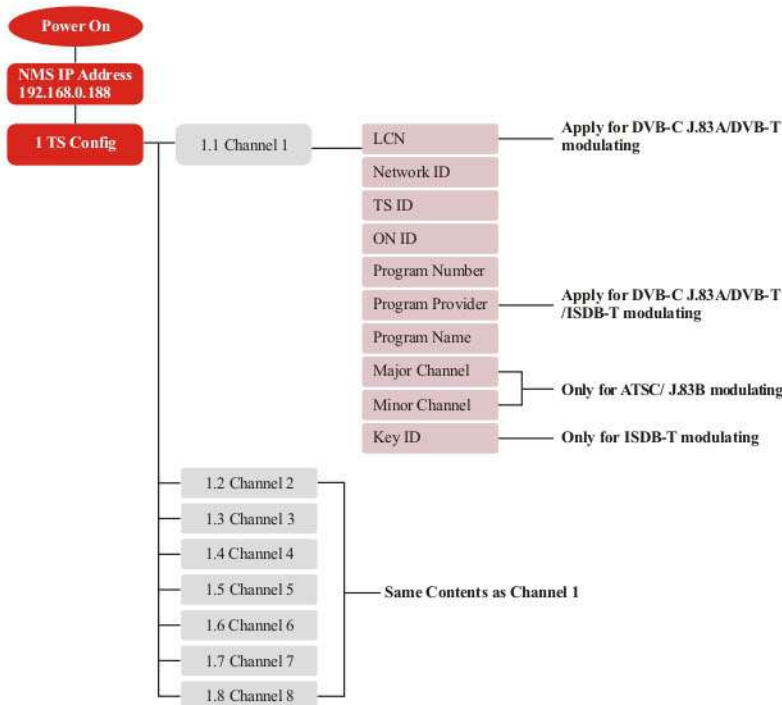## Keyboard Function Description:

OK: Activate the parameters which need modifications, or confirm the change after modification.
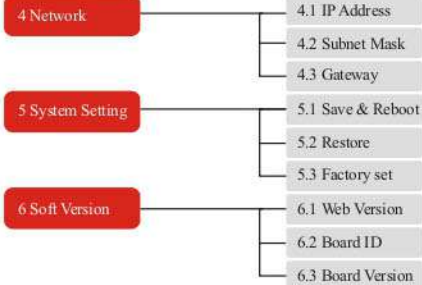
RETURN: Cancel current entered value, resume previous setting; Return to previous menu.

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

Power On

NMS IP Address
192.168.0.188

1 TS Config

1.1 Channel 1
- LCN — **Apply for DVB-C J.83A/DVB-T modulating**
- Network ID
- TS ID
- ON ID
- Program Number
- Program Provider — **Apply for DVB-C J.83A/DVB-T /ISDB-T modulating**
- Program Name
- Major Channel
- Minor Channel — **Only for ATSC/ J.83B modulating**
- Key ID — **Only for ISDB-T modulating**

1.2 Channel 2
1.3 Channel 3
1.4 Channel 4
1.5 Channel 5 — **Same Contents as Channel 1**
1.6 Channel 6
1.7 Channel 7
1.8 Channel 8

2 Encode

2.1 Channel 1
- Input Source
- Bit Rate
- Latency
- Audio Format
- PMT PID
- Video PID
- Audio PID
- PCR PID

2.2 Channel 2
2.3 Channel 3
2.4 Channel 4
2.5 Channel 5
2.6 Channel 6
2.7 Channel 7
2.8 Channel 8 — **Same Contents as Channel 1**

3 Modulate

DVB-T modulating
- Standard
- RF Frequency
- Bandwidth
- Constellation
- FFT
- Guard Interval
- Code Rate

DVB-C J.83A modulating
- Standard
- RF Frequency
- Symbol Rate
- Constellation

J.83B modulating
- Standard
- RF Frequency
- Constellation

ATSC modulating
- Standard
- RF Frequency

ISDB-T modulating
- Standard
- RF Frequency
- Constellation
- FFT
- Guard Interval
- Code Rate

HDTV SUPPLY

4 Network	4.1 IP Address
	4.2 Subnet Mask
	4.3 Gateway
5 System Setting	5.1 Save & Reboot
	5.2 Restore
	5.3 Factory set
6 Soft Version	6.1 Web Version
	6.2 Board ID
	6.3 Board Version

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
```
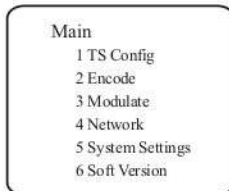
2.2.1 TS Config

The 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
```
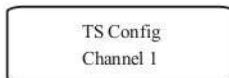
● Channel 1/2/3/4/5/6/7/8

It 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
```
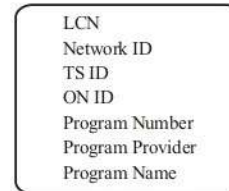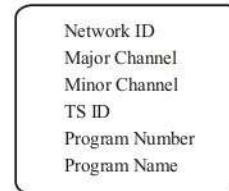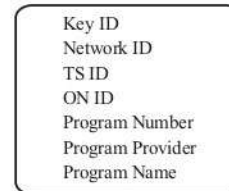
2.2.2 Encode

This device 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
```
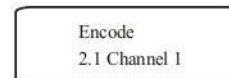
● Channel 1/2/3/4/5/6/7/8

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.

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

2.2.3 Modulate

This 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
Channel 1
```

● 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:

```
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 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.

Status

Version Information → Check the version information

Version: 1.11.11g
Board ID: 00000202

Modulator Status

Channel	Status	Standard	Frequency	Video Info.
1	●	J.83B	Ch 65-471.000MHz	Unknown
2	●	J.83B	Ch 66-477.000MHz	Unknown
3	●	J.83B	Ch 67-483.000MHz	Unknown
4	●	J.83B	Ch 68-489.000MHz	Unknown
5	●	J.83B	Ch 69-495.000MHz	Unknown
6	●	J.83B	Ch 70-501.000MHz	Unknown
7	●	J.83B	Ch 71-507.000MHz	Unknown
8	●	J.83B	Ch 72-513.000MHz	Unknown

Get

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

The modulate channels status summary

Figure-2

Parameters → Encode:

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

J.83B Modulation

HDMI or CVBS

AC3, AAC, MPEG1 Layer2 Audio encoding format

DVB-T Modulation

DVB-C(J.83A) Modulation

ATSC Modulation

ISDB-T Modulation

System → Modulate:

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

J.83B Modulation

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.
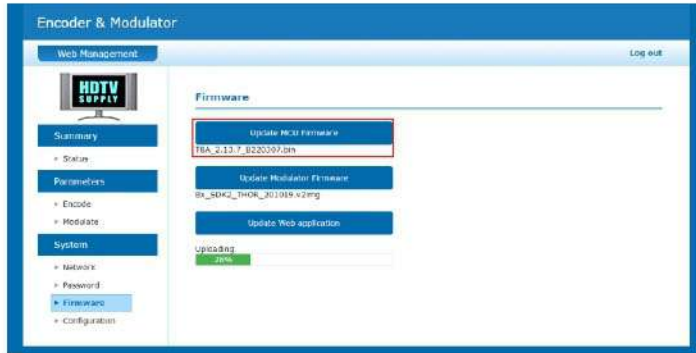

[Remark]

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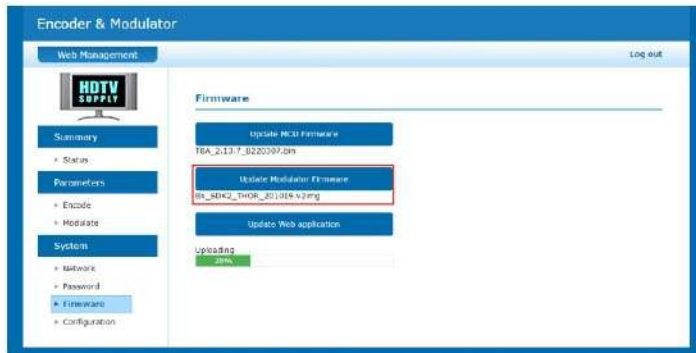
Click **[Update Web application]** to put file up then auto start update.

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.
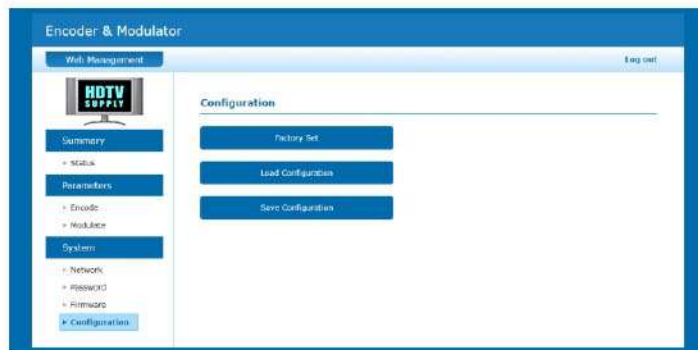
System → Configuration:

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

HDTV-THUNDER-4	1PC
User's Manual	1PC
HDMI Cable	8 PCS
Power Cord	1PC

For Further Tech Support
833-965-3722
support@hdtvsupply.com