H-XX-DVBS2X

DVBS2X Satellite Modulator
& SDI Encoder

Revision 2019

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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

1.1 Overview

Thor Broadcast's new HD-SDI Encoder and S2 modulator has been made to abide by DVB-S2X standards (EN302 307-2) which is a third generation broadband satellite telecommunication standard that integrates ASI and IP inputs and modula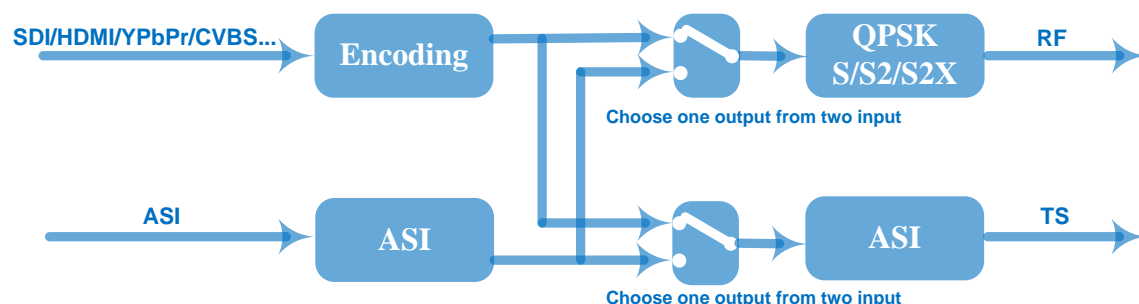te them into a DVB-S/S2/S2X RF output. This 1-RU Chassis supports BISS scrambling for easy signal distribution. It also comes standard with 4 ASI inputs (3 ASI are backups) and a 100mb. The S2X modulator can come with CID, this is optional, and must be ordered as such.

Supports MPEG 2 and H264 with Lband output and low latency settings for easy to distribute Live Satellite video.

1.2 Features

- **MPEG2 SD/HD and MPEG4 SD/HD EncodingModule optional**
- **CVBS/SDI/HDMI/YPbPr…signals in &1x ASI in**
- **Support DVB-S/S2/S2XRF output and ASIoutput**
- **Output Frequency: 950-2150MHz**
- **QPSK,8PSK,8APSK, 16APSK, 32APSKConstellations**
- **RF CID setting**
- **RF 24V power output**
- **Low latency**
- **BISS fucntion**
- **10MHz reference clock output**
- **Web NMS and front panel LCD &Keyboard control**
- **Upgrade device through web NMS**

1.3 Principle Chart

1.4 Specifications

Video	Encoding	MPEG-2 HD/SD or MPEG-4 AVC/H.264 HD/SD		
	Input	HDMI/SDI//YPbPr/CVBS/		
	Resolution	Input	Output	Interface Applicable
		1920×1080i@60	1920×1080,1440×108, 1280×1080, 960×1080	HDMI
		1920×1080i@59.94		SDI
		1920×1080i@50		YPbPr
		1280×720p@60	1280×720, 960×720p, 640×720p	HDMI
		1280×720p@59.94		SDI
		1280×720p@50		YPbPr
		720×576i@50	720×576, 704×576, 640×576, 544×576, 528×576, 480×576, 352×576	SDI,CVBS HDMI
		720×480i@59.94	720×480, 704×480, 640×480, 544×480, 528×480, 352×480	SDI, CVBS, HDMI
	Bit rate	0.5– 60.00 Mbps		
	Rate Control	CBR		
	GOP Structure	Auto, IP, IPB, IPBB, IPBBB		
	Aspect Ratio Chroma	4:3, 14:9, 16:9 (for SD video) 16:9 (for HD video) 4:2:0, 4:2:2		
	Advanced Pretreatment	De-interlacing, noise reduction, sharpening		
Audio	Encoding	MPEG-1 Layer II, HE-AAC (v1&v2), LC-AAC, DD AC3 (2.0, 5.1 available); DD AC3 passthrough (for SDI in)		
	Input	2×XLR, 4×AES, 1×HDMI, 1×SDI (support maximum 4 stereos synchronous processing or one DD 5.1 CH processing)		
	Sample rate	48KHz		
	Bit rate	32Kbps~384Kbps		
	Low delay options	150ms, 200ms, 350ms, 650ms		

Input Interface	1/2*CVBS /1*SDI /1*HDMI/1*(HDMI+YPbPr+CVBS 3-in-1) optional DVB-S/S2/S2XRF output; ASI intput			
Output	DVB-S/S2/S2XRF output ;950-2150MHz ASI outputsame as RF			
Modulation Section	Standard	DVB-S	DVB-S2	DVB-S2X
	Outer coding	RS Coding	BCH Coding	BCH Coding
	Inner coding	Convolution	LDPC Coding	LDPC Coding
	Constellation	QPSK	QPSK,8PSK, 16APSK,32APSK	QPSK,8PSK, 8APSK, 16APSK, 32APSK
	FEC/ Convolution Rate	1/2,2/3, 3/4, 5/6, 7/8	**QPSK:** 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 **8PSK:** 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 **16APSK:**2/3,3/4, 4/5, 5/6, 8/9,9/10 **32APSK:**3/4, 4/5, 5/6, 8/9,9/10	**QPSK:**1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10, 13/45, 9/20, 11/20 **8PSK:**3/5, 2/3, 3/4, 5/6, 8/9, 9/10 ,23/36, 25/36, 13/18 **8APSK:**5/9-L,26/45-L **16APSK:**2/3,3/4, 4/5, 5/6, 8/9,9/10 , 1/2-L, 8/15-L, 5/9-L, 26/45, 3/5, 3/5-L, 28/45, 23/36 , 2/3-L, 25/36, 13/18, 7/9, 77/90 **32APSK:**3/4, 4/5, 5/6, 8/9,9/10, 2/3-L, 32/45, 11/15, 7/9
	Roll-off Factor	0.2,0.25,0.35	0.2, 0.25, 0.35	0.05, 0.10, 0.15, 0.2, 0.25, 0.35
	Symbol Rate	0.5~45Msps	0.5~40Msps (32APSK); 0.5~45Msps (QPSK/8PSK/16APSK)	0.5~40Msps(32APSK); 0.5~45Msps (QPSK/8PSK /8APSK/16APSK)
	BISS Scramble	Mode1, Mode E		
	Output level	+3dBm~-28.5dBm		
System	Local Control	LCD + control buttons		
	Remote Control	Web NMS		
	Low Latency Mode	Normal, Mode 1, Mode 2		
	Language	English		
Physical Specification	Demission	410×460×44mm(W*L*H)		
	Temperature	0~45℃(operation), -20~80℃(storage)		
	Power Supply	AC 100-240V 50/60Hz 2A		

1.5 Appearance and Description

Front Panel Illustration

1   2   3 4 5 6

1	LCD Window
2	Indicators
3	Navigation Keys
4	Enter : Confirmation Key
5	Menu: Back-step Key
6	Lock: Locking Key

Rear Panel Illustration

1   2 3 4   5   6   7   8   9   10

1	Web NMS(Network Management System) interface
2	SDI Encoding Module
3	XLR input connectors (for two channels analog stereoinput) AES input connector (for only one channel digital stereo input)
4	YPbPr& CVBS video input port
5	HDMI input port
6	ASI input and output interface
7	10MHz reference clock output interfaces
8	RF output interface
9	Power socket/switch/fuse
10	Ground pole

Chapter 2 Installation Guide

2.1 What's in the Box

- Thor HD-SDI Encoder DVB-S2 Satellite Modulator

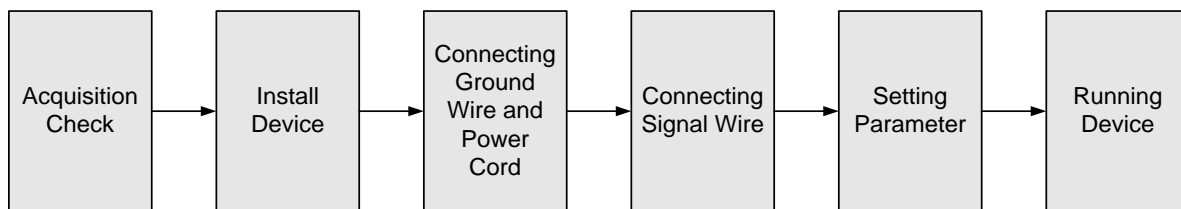- User's Manual

- ASI Cable

- Power Cord

If any item is missing or mismatching with the list above, please contact Thor 1-800-521-8467.

2.2 Installation Prep

When you install the DVB-S2X Modulator, please follow the steps below. Check the device for missing or damage during transport

- Preparing relevant environment for installation (rack room or Headend)

- InstallModulator

- Connect signal cables

- Connecting communication port (if it is necessary)

2.2.1 Device's Installation Flow Chart Illustrated as following：

Acquisition Check	→	Install Device	→	Connecting Ground Wire and Power Cord	→	Connecting Signal Wire	→	Setting Parameter	→	Running Device

2.2.2RackRoom&Headend Install

Item	Requirement
Machine Hall Space	When installing unit on rack, 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, HVAC anti-static material:$1X10^7$~$1X10^{10}\Omega$, Grounding current limiting resistance: $1M\Omega$ (Floor bearing should be greater

	than 450Kg/m²)
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
Fire Protection	Fire alarm system and extinguisher
Power	Device power, HVAC and lighting should be independent to each other. Device power requires AC 110V±10%, 50/60Hz or AC 220V±10%, 50/60Hz. Please carefully check before running.

2.2.3 Grounding Requirement

➢ Must be operated and maintained in an area free of dust and debris.

➢ The cover should be securely fastened, do not open the cover of the chassis when thepower is on. This will also void Thor's manufacturer's warranty.

➢ After installation, securely stow away all loose cables, external antenna, and others.

➢ Be careful when connecting a power source to the device.

➢ Do not operate in wet or damp areas. Make sure the extension cable is in good condition

➢ Make sure the power switch is off before you start to install the device

➢ It is important to keep this device grounded to ensure all of the modules function correctly. Correctly grounding the device will also help prevent any electrical interference, lightening. Etc. Also it helps reject minor interference that may disrupt the devices ability to function smoothly. General rule of them, make sure the device is grounded when installing anywhere.

➢ Always use copper wire. When applied correctly the ground must be wrapped well to ensure maximum conduction so it can reduce any high frequencies. The copper ground wire should also be as short and thick as possible

➢ Installer must make sure that the two ends of the ground are well conducted and have appropriate anti-rust properties.

➢ It is prohibited to use any other device as part of the grounding electric circuit.

➢ The area of the conduction between the ground wire and device's frame should be no less than 25 ㎡.

2.3 Power and Ground

- Connect Power Cord

- Insert one end into power supply socket, while inserting the other end to AC power.

- Connect Grounding Wire

- When the device solely connects to protective ground, it should not share the same ground with any other devices. If the device shares grounding, the resistance should be smaller than 1Ω.

☞**Caution:**

Before connecting power cord to the DVB-S2X ENC, you should set the power switch to "OFF".

2.4 Signal Cable Connection

The signal connections include the connection of input signal cable and the connection of output signal cable.

2.4.1 ASI input and loop-out cable

2.4.2 RF output interface connection

Chapter 3 Operation

The front panel of the Encoder Modulator has any easy to use interface where the equipment can also be conveniently operated and managed the LCD:

Keyboard Function Description:

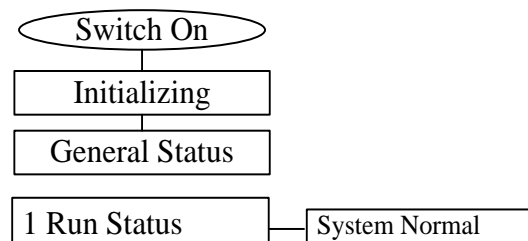**MENU:** Cancel current entered value, resume previous setting; Return to previous menu.

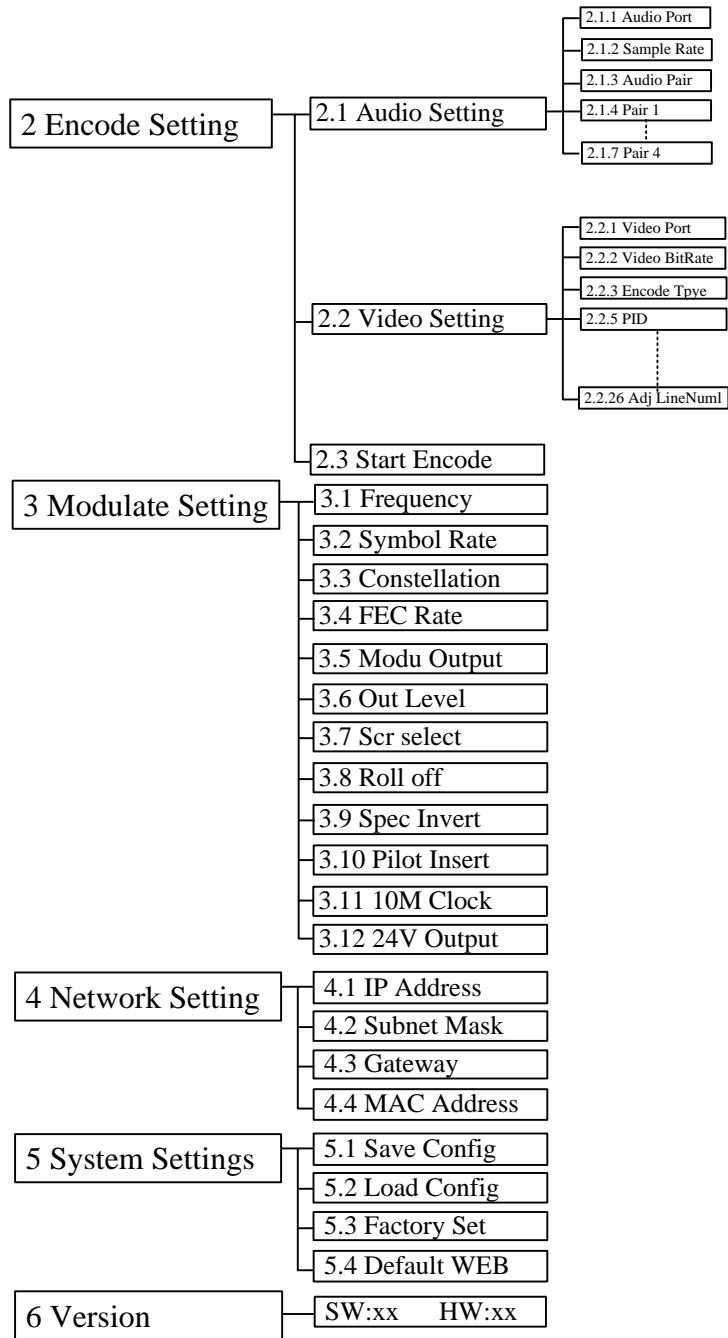**ENTER:** Activate the parameters which need modifications, or confirm the change after modification.

LEFT/RIGHT: Choose and set the parameters.

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

LOCK: Lock the screen/cancel the lock state. After pressing the lock key, the LCD will display the current configuring state.
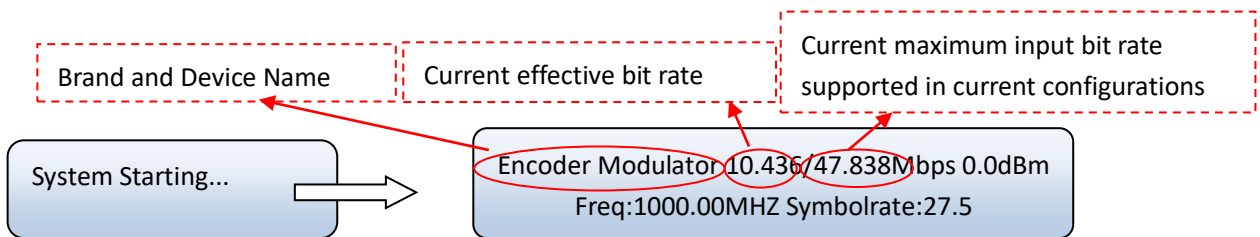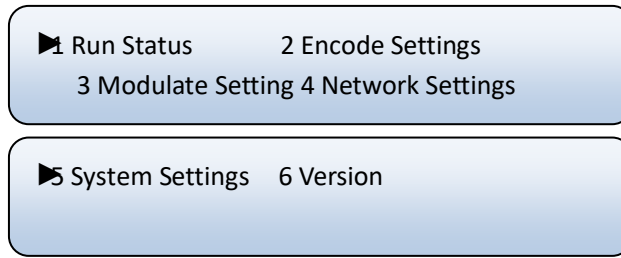
3.1 Menu Tree

Menu tree:

- 2 Encode Setting
  - 2.1 Audio Setting
    - 2.1.1 Audio Port
    - 2.1.2 Sample Rate
    - 2.1.3 Audio Pair
    - 2.1.4 Pair 1
    - 2.1.7 Pair 4
  - 2.2 Video Setting
    - 2.2.1 Video Port
    - 2.2.2 Video BitRate
    - 2.2.3 Encode Tpye
    - 2.2.5 PID
    - 2.2.26 Adj LineNuml
  - 2.3 Start Encode
- 3 Modulate Setting
  - 3.1 Frequency
  - 3.2 Symbol Rate
  - 3.3 Constellation
  - 3.4 FEC Rate
  - 3.5 Modu Output
  - 3.6 Out Level
  - 3.7 Scr select
  - 3.8 Roll off
  - 3.9 Spec Invert
  - 3.10 Pilot Insert
  - 3.11 10M Clock
  - 3.12 24V Output
- 4 Network Setting
  - 4.1 IP Address
  - 4.2 Subnet Mask
  - 4.3 Gateway
  - 4.4 MAC Address
- 5 System Settings
  - 5.1 Save Config
  - 5.2 Load Config
  - 5.3 Factory Set
  - 5.4 Default WEB
- 6 Version
  - SW:xx   HW:xx

3.2 Settings

Switch on the encoder modulator, the LCD will display the start state and the main menu:

Brand and Device Name
Current effective bit rate
Current maximum input bit rate supported in current configurations

System Starting...

Encoder Modulator 10.436/47.838Mbps 0.0dBm
Freq:1000.00MHZ Symbolrate:27.5

Press LOCK key, you can enter the main menu and the LCD will display:

> ▶1 Run Status   2 Encode Settings
>   3 Modulate Setting 4 Network Settings

> ▶5 System Settings   6 Version
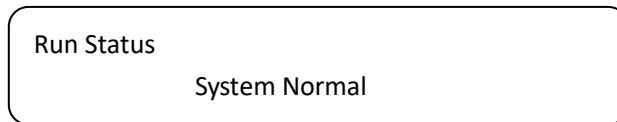
You could manage all these things according to the 6 options displayed on the LCD.

3.2.1 Run Status

Move the triangle to point at menu 1 and press ENTER key to enter this menu:

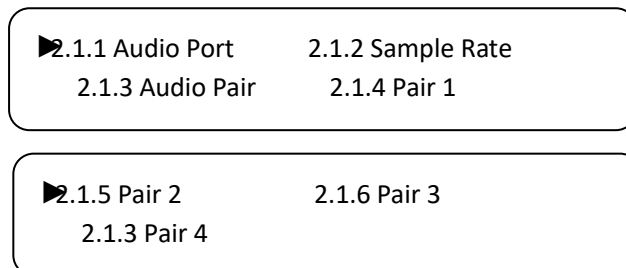If the device is working normally, it indicates No Warning as below:

> Run Status
>   System Normal

3.2.2 Encode Settings

You can enter this menu to configure video/audio parameters for the programs inputting from the encoding module separately.

> ▶2.1 Audio Setting
>   2.2 Video Setting

> ▶2.3 Start Encode
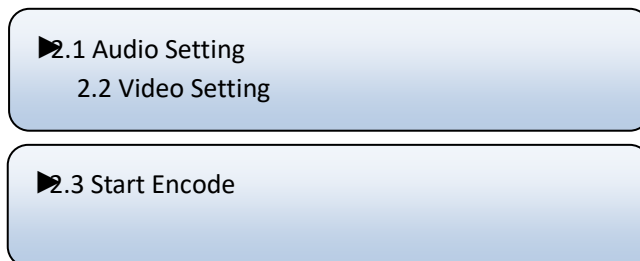
➢ Audio Setting

By pressing UP/DOWN or LEFT/RIGHT to choose this item, ENTER and LEFT/RIGHT to set audio parameters. The system displays following pages:

> ▶2.1.1 Audio Port   2.1.2 Sample Rate
>   2.1.3 Audio Pair   2.1.4 Pair 1

> ▶2.1.5 Pair 2   2.1.6 Pair 3
>   2.1.3 Pair 4

➢ Video Setting

By pressing UP/DOWN or LEFT/RIGHT to choose this item, ENTER and LEFT/RIGHT to set video parameters. The system displays following pages:

▶2.2.1 Video Port   2.2.2 Video BitRate
   2.2.3 Encode Type   2.2.4ClosedCaption

2.2.5 PID   2.2.6 Stream ID
2.2.7ChroSampling   2.2.8 Aspect Ration

2.2.9 Rescaled   2.2.10 COP Structure
2.2.11 GOP Size   2.2.12RateCtrl Mode

2.2.13 IRD Frequency   2.2.14Synloss Image
2.2.15 Coding Mode   2.2.16 Profile

2.2.17 Level   2.2.18 PMT PID
2.2.19 PCR PID   2.2.20 TS Bitrate

2.2.21 Latency   2.2.22 PCR Interval
2.2.23 Video Buffer   2.2.24 Source Error

2.2.25 Adj WinFmt   2.2.26 Adj LineNuml

3.2.3 Start Encode

Pressing UP/DOWN or LEFT/RIGHT to choose this item, ENTER and LEFT/RIGHT to set the parameters. The system displays following page:

Start Encode?
   No

Start Encode?   [01/02]
[No]   YES

3.3 Modulate Setting

Select "3 Modulate Setting" in the main interface and user can set the parameters of modulation:

```
▶  3.1 Frequency      3.2 Symbol Rate
   3.3 Constellation  3.4FEC Rate
```

```
▶  3.5 Modu Output    3.6 Output Level
   3.7Src Select       3.8 Roll off
```

```
▶  3.9Spec Invert     3.10Pilot Insert
   3.1110M Clock       3.12 24V Output
```

● **Frequency:** The RF output frequency range is from 950 to 2150MHzwith 1K stepping. Users then can press LEFT/RIGHT/UP/DOWN button to adjust the frequency and confirm by pressing ENTER button.

```
Frequency
    1000.000 MHz
```

● **Symbol Rate:** user can enter this menu to modify symbol rate(adjustable range: 0.050~45.000Mbps) by pressing right/left and up/down key and to confirm by pressing Lock key

```
Symbol Rate
27.500 Mbps
```

● **Constellation:** this device has 6modulating modes provided: DVB-S, QPSK, 8PSK, 8APSK, 16APSK and 32APSK. User can enter this menu to select constellation by pressing right/left and up/down key and to confirm by pressing Lock key.

```
Constellation
DVB-S      QPSK8PSK 8APSK
```

After entering the submenu by pressing ENTER key, user can choose the "modulation mode" to choose the needed modulation mode.

   DVB-S: This modulator works under DVB-S standard and the constellation is QPSK.

QPSK/8PSK/8APSK/16APSK/32APSK:these options are the constellations under DVB-S2 and DVB-S2X.

- **FEC Rate (Forward Error Correction):**User can select FEC among 3/5, 2/3, 3/4, 5/6, 8/9, 9/10, 23/36, 25/36 and 13/18 by pressing RIGHT/LEFT key.

```
FEC Rate
3/5      2/3   3/4    5/6    8/9    9/10
```
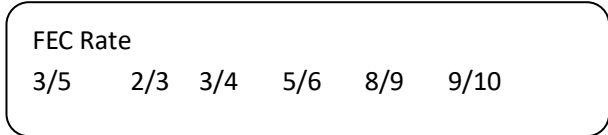
DVB-S2 FEC (Forward Error Correction): User can select one DVB-S2X-8PSK FEC from options provided by pressing RIGHT/LEFT key.

- **NOTE:** This menu will be workable on condition that *DVB-S2-QPSK* or *DVB-S2-8PSK* in 4.1 is selected as the modulating mode. The options provide differently if the modulating mode is set differently.

Modulating Mode	FEC Options
DVB-S2X-QPSK	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10, 13/45, 9/20, 11/20
DVB-S2X-8PSK	3/5, 2/3, 3/4, 5/6, 8/9, 9/10,23/36, 25/36, 13/18
DVB-S2X-8APSK	5/9-L,26/45-L
DVB-S2X-16APSK	2/3,3/4, 4/5, 5/6, 8/9,9/10, 1/2-L, 8/15-L, 5/9-L, 26/45, 3/5, 3/5-L, 28/45, 23/36 , 2/3-L, 25/36, 13/18, 7/9, 77/90
DVB-S2X-32APSK	3/4, 4/5, 5/6, 8/9,9/10, 2/3-L, 32/45, 11/15, 7/9

- **Modu output:** The RF out mode can be selected under this menu: The modes contain: single tone, modulation, and off lation.

```
Modu Output                      [02/03]
    [Single]        Mode        Off
```
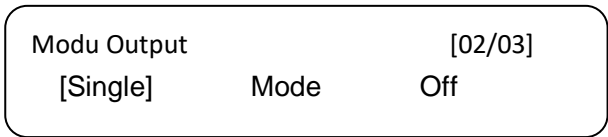
- **Out level:** The RF attenuation range is from -28.5dBm~+3dBm. After entering this setting submenu, user can shift UP/DOWN/LEFT/RIGHT key to set the output level and press ENTER to confirm.

```
Out Level
        03.0dBm
```

- **Scr Select:** User can select the source among Band, ASI and TS mux under this menu.

```
Source Select                    [01/03]
    [Band]          ASI         TSmux
```
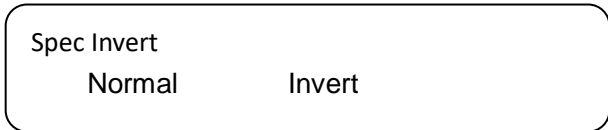
● **Roll Off: E**nter this menu to select roll-off factory shown as below by pressing right/left key and to confirm by pressing Lock key. Different factory has different effect on the max input bit rate.
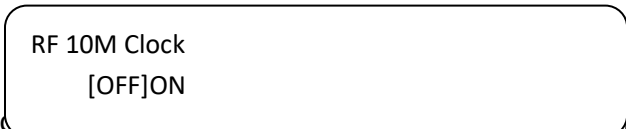
```
Roll OFF
0.35      0.25      0.20    0.15    0.10    0.05
```
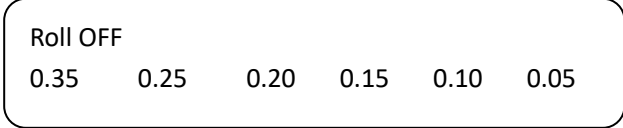
● **Spec Invert: S**witch the Spec Invert mode between Normal and Invert under this menu.

```
Spec Invert
    Normal          Invert
```

● **Pilot Insert:** The DVB-S2 Pilot can be switched on or off through this menu.

```
Pilot Insert
    [On]OFF
```
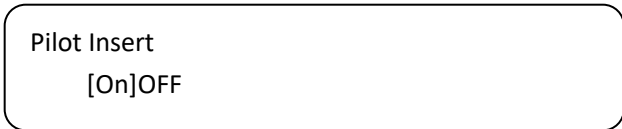
● **10M Clock:** The RF10M Clock (reference clock) can be switched on or off through this menu.

```
RF 10M Clock
    [OFF]ON
```

● **24V Output:** User ~~c~~   ~~l~~ifier connected to this device.

```
RF 24V Output
    [OFF]ON
```

3.4 Network Settings

Press "Enter" key to enter into below menu of the network setting and modify the parameters under its corresponding submenus in the same way explained above.

```
▶4.1 IP Address    4.2Subnet Mask
     4.3 Gateway4.4MAC Address
```
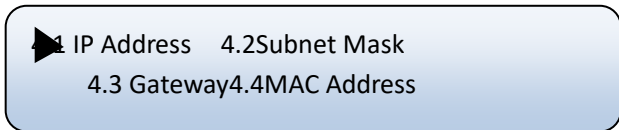
Press "UP/DOWN" to choose one item and "ENTER"&"LEFT/RIGHT" to set the parameters.

IP Address
192.168.000.136

Subnet Mask
255.255.255.000

Gateway
192.168.000.001

MAC Address
72:10:42:7A:00:23

● **NOTE:** The MAC address is default according to the factory setting, and it is unique.

3.5 System Settings

Choose to save the current configured parameters by pressing ENTER key. The system displays following page:

5.1 Save Config   5.2 Load Config
5.3 Factory set   5.4Default WEB

Press "UP/DOWN" to choose one item and "ENTER"&"LEFT/RIGHT" to set the parameters.

Load Config
[CFG1]   CFG2   CFG3

Save Config
[CFG1]   CFG2   CFG3

Factory Set
[YES]   [NO]

Default WEB
[YES]   [NO]

3.6 Version

Check the device's hardware version and software version at this submenu:

Version
    SW xx   HW xx

Chapter 4 Web-based NMS Management

The Thor Broadcast Modulator supports front D-pad buttons with an LCD screen for control and management, but you can also control and set the configuration by connecting the IRD to a PC via the web NMS Port. Make sure that the computer's IP address is different from the Encoder's IP address otherwise it would cause an IP conflict and you will not be able to login.

4.1 Login

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

Connect the PC (Personal Computer) and the device with included net cable, and use ping command to confirm they are on the same network segment (subnet).

E.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 any web browser to connect the device with the PC by inputting the Encoder's IP address in the browser's address bar and press Enter. (our units usually work better on Mozilla and IE, not Chrome)

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.
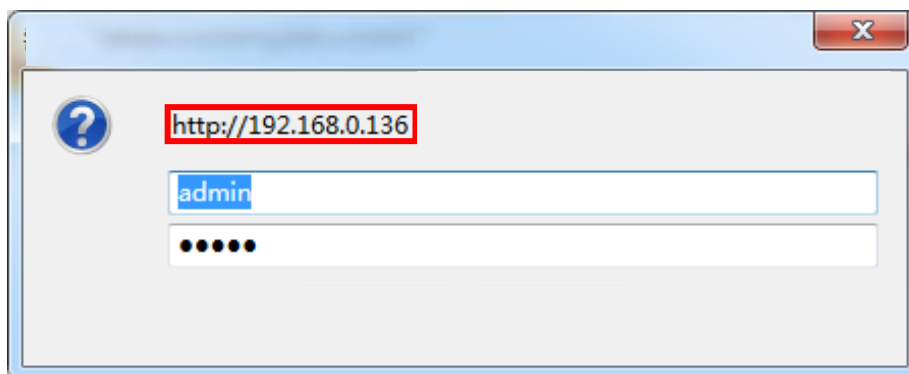
4.2 Operation

When we confirm the login, it will display the Summary interface as Figure-2 where users can have an overview of the device's system information and working status.
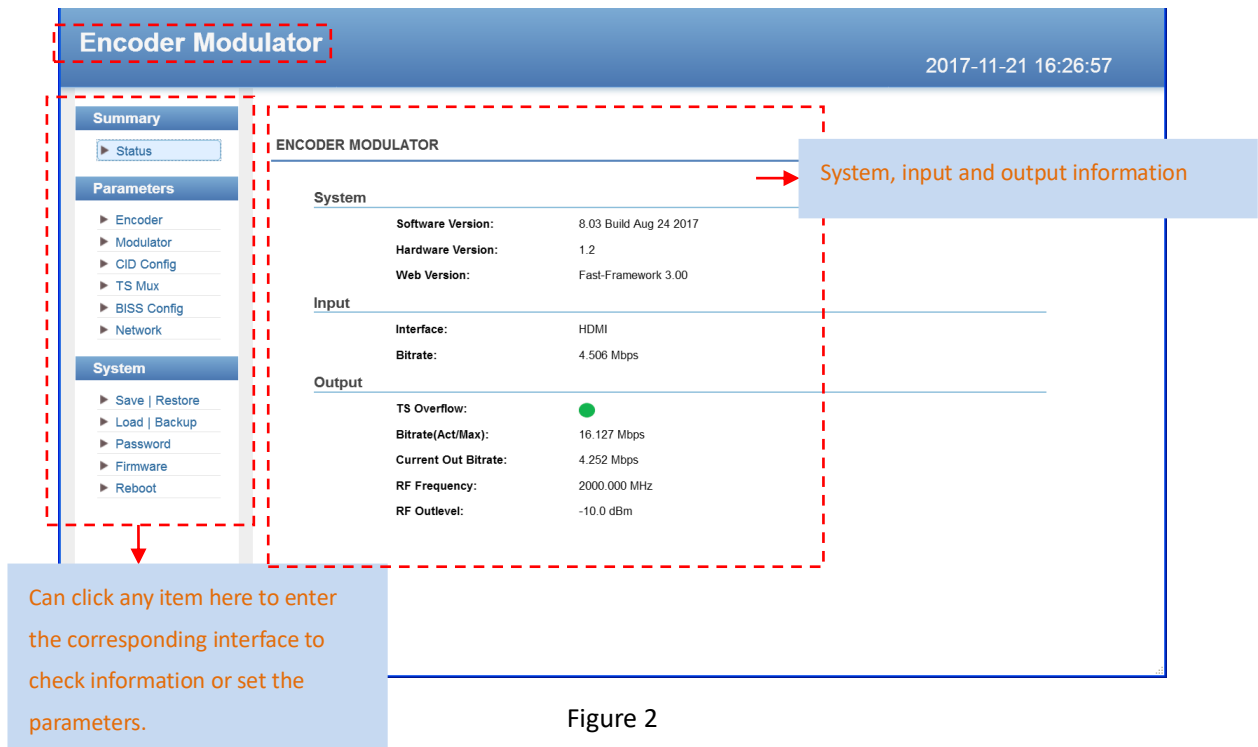
Figure 2

Parameters →Encoder

Clicking "*Encoder*"in the left column, it will display the interface as Figure-3 where users can configure the parameters of audio, video, Dolby meta and SDI channel.

✧ Audio:

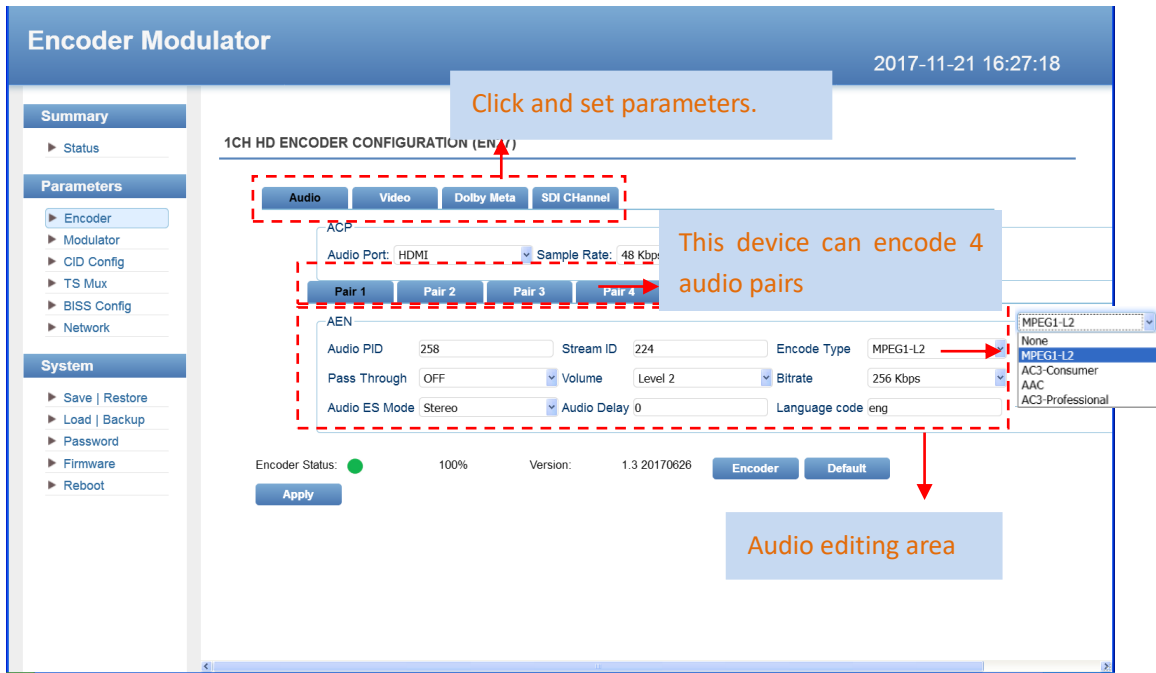Clicking "Audio", it will display the interface as below where users can set audio parameters.

Figure 3

Default Click this button to apply the default setting of *Encoder*.

Apply Click this button to apply the modified parameters.

✧ Video:

Clicking "Video", it will display the interface as Figure 4 where users can set video parameters.
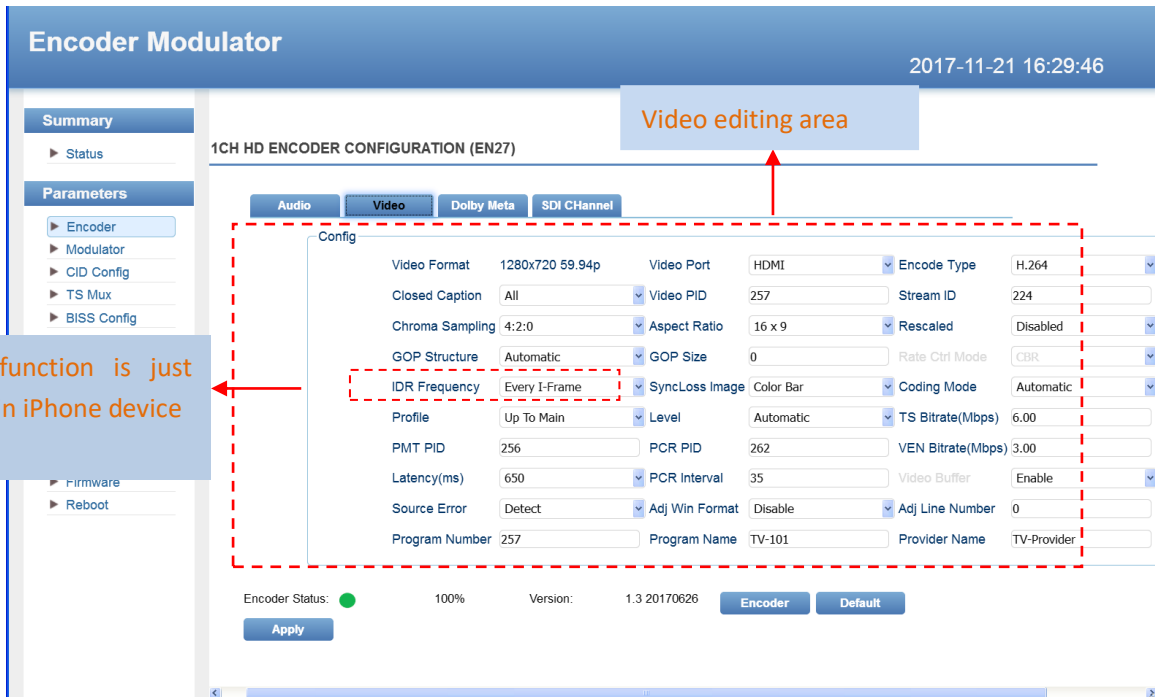
Figure 4

✧ Dolby Meta:

Clicking "Dolby Meta", it will display the interface as Figure 5 where users choose the encode type as AC3-professional under audio setting (Figure 3), they can set these parameters.
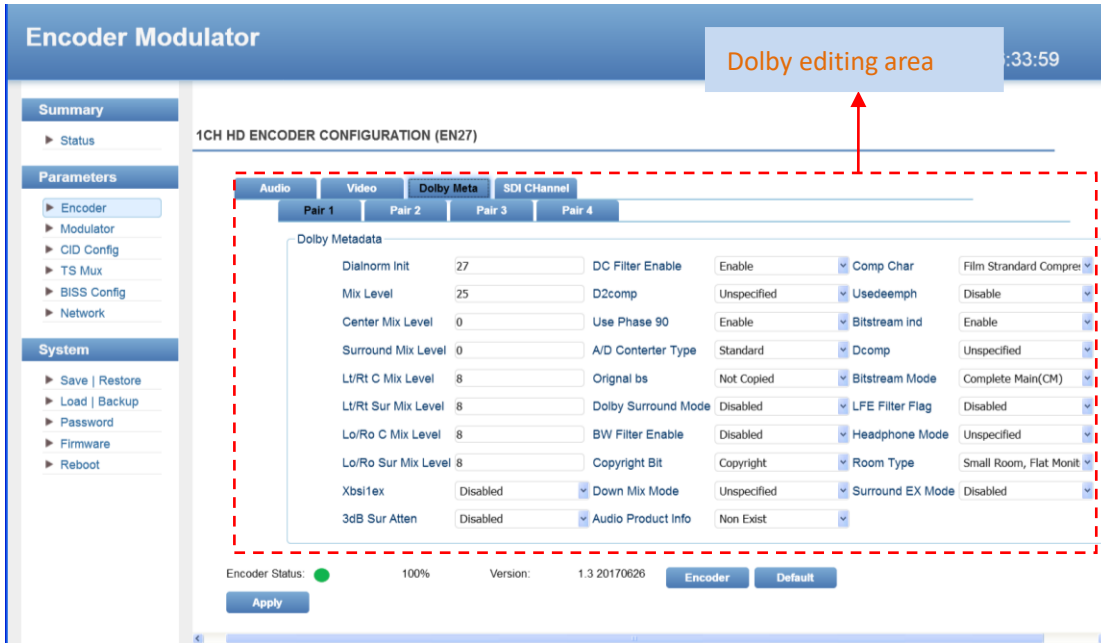
Figure 5

✧ SDI Channel:

Clicking "SDI Channel", it will display the interface as Figure 6 where users can set SDI input audio channels parameters, and can also recombine the input audio channels here.
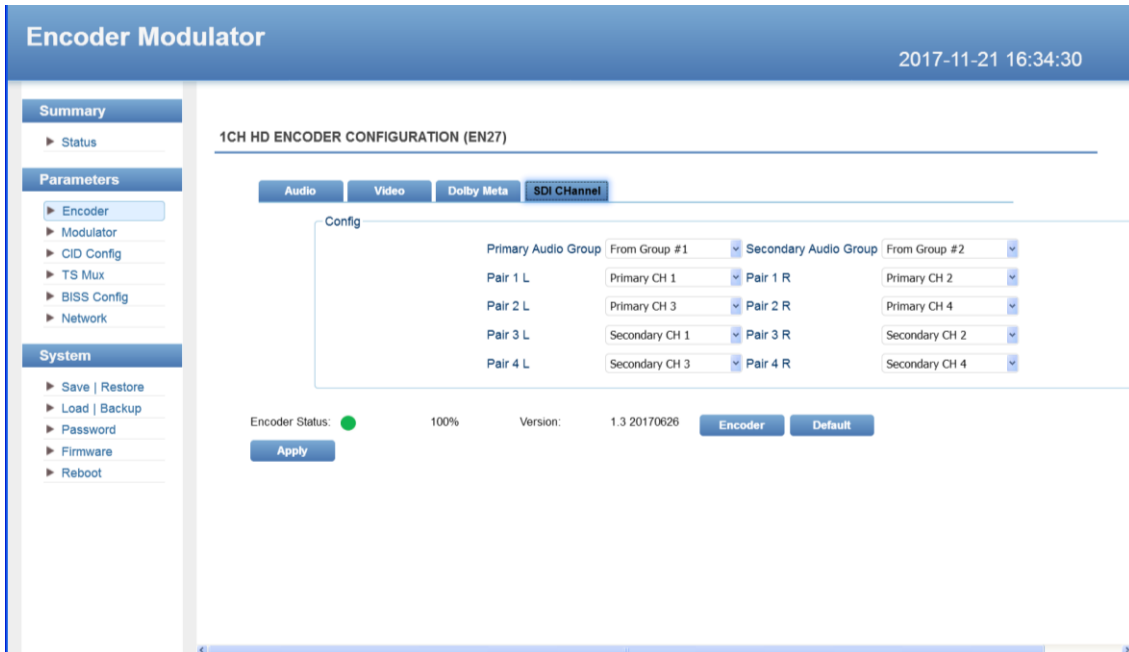
Figure 6

Parameters →Modulator

User can click *Modulator* in the left column and enter into the Modulate interface. More details please refer to **3.3** in this manual.
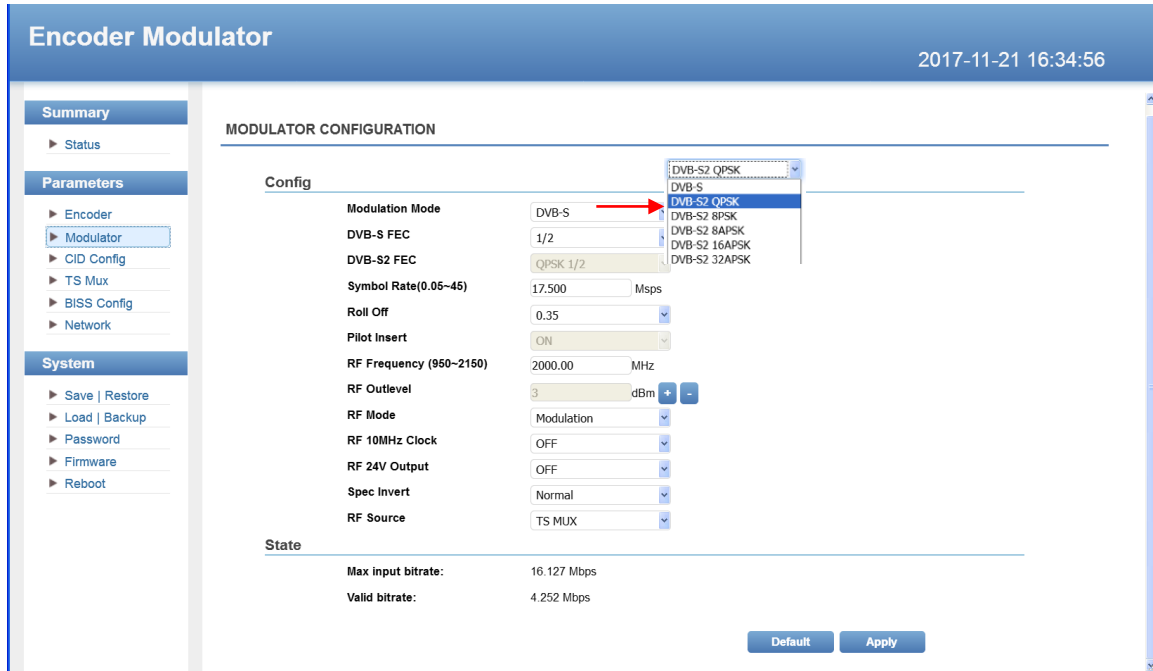
Figure 7

Parameters → CID Config:

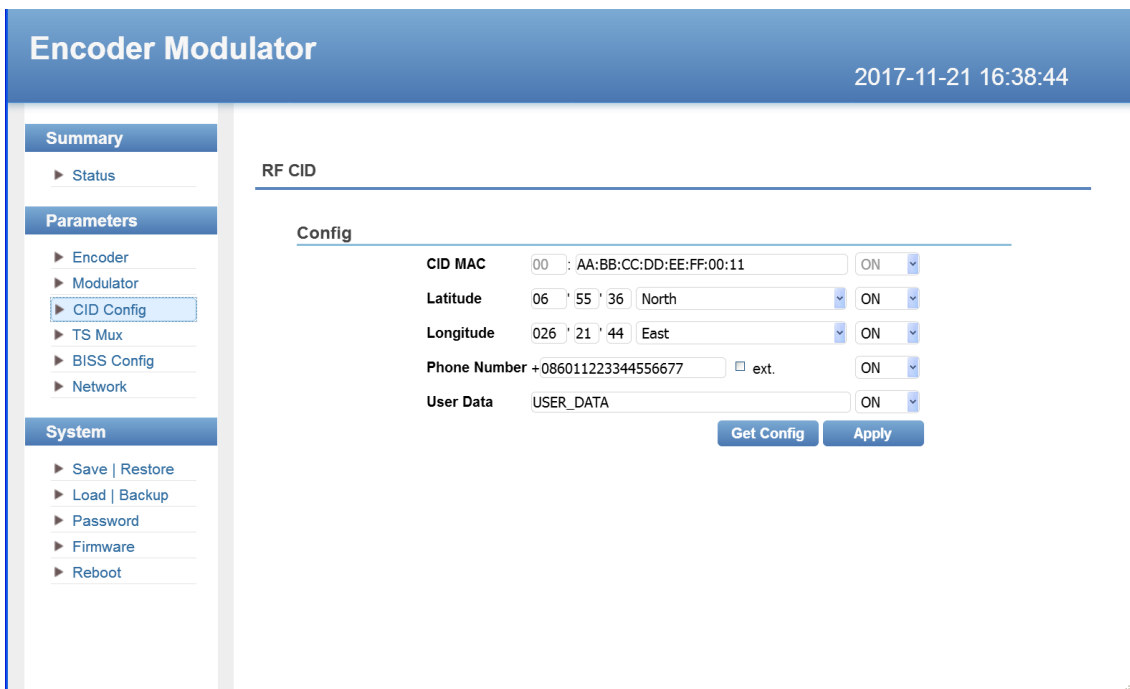Clicking"CID Config", it will display the interface as Figure 8 where users can set RF CID parameters.

Figure 8

Parameters → TS Mux:

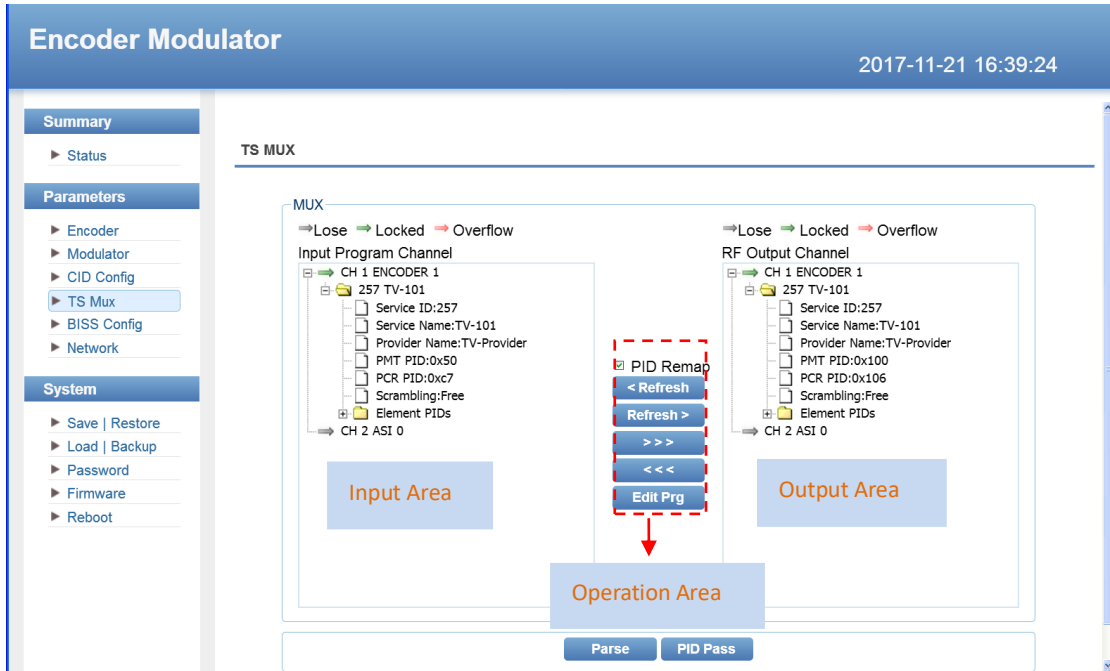Clicking "TS Mux", it displays the interface where users can select program(s) to multiplex out and modify program info.

Figure 9

Configure 'Input Area' and 'Output Area' with buttons in 'Operation Area'. Instructions are as below:

⇒Lose ⇒Locked ⇒Overflow : To check input source /lock current TS or not, green means current input source is locked, red color means the current TS overflow, and users need to reduce programs.

☑ PID Remap : To enable/disable the PID remapping

Refresh > To refresh the input program information

< Refresh To refresh the output program information

>>> Select one input program first and click this button to transfer the selected program to the right box to output.

<<< Similarly, user can cancel the multiplexed programs from the right box.

Parse Clicking this button to parse programs

PID Pass Clicking this button, it triggers a dialog box (Figure-10) where users can set PID parameters.
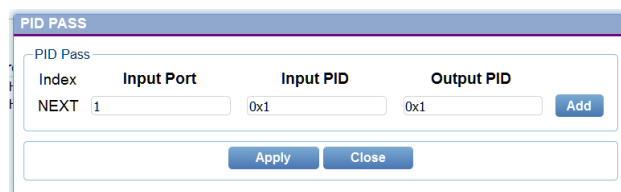

Figure 10

Edit Prg Clicking the multiplexed programs and then click this button, it triggers a dialog box (Figure-11) where users can edit program information.
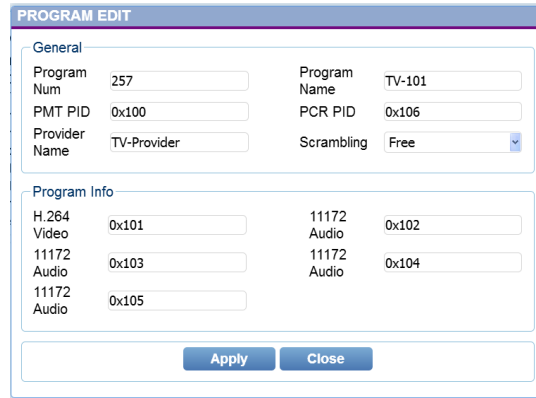

Figure 11

Parameters → BISS Config:

Clicking"*BISS Config"*, it will display the interface as Figure 12 where users can set BISS parameters.
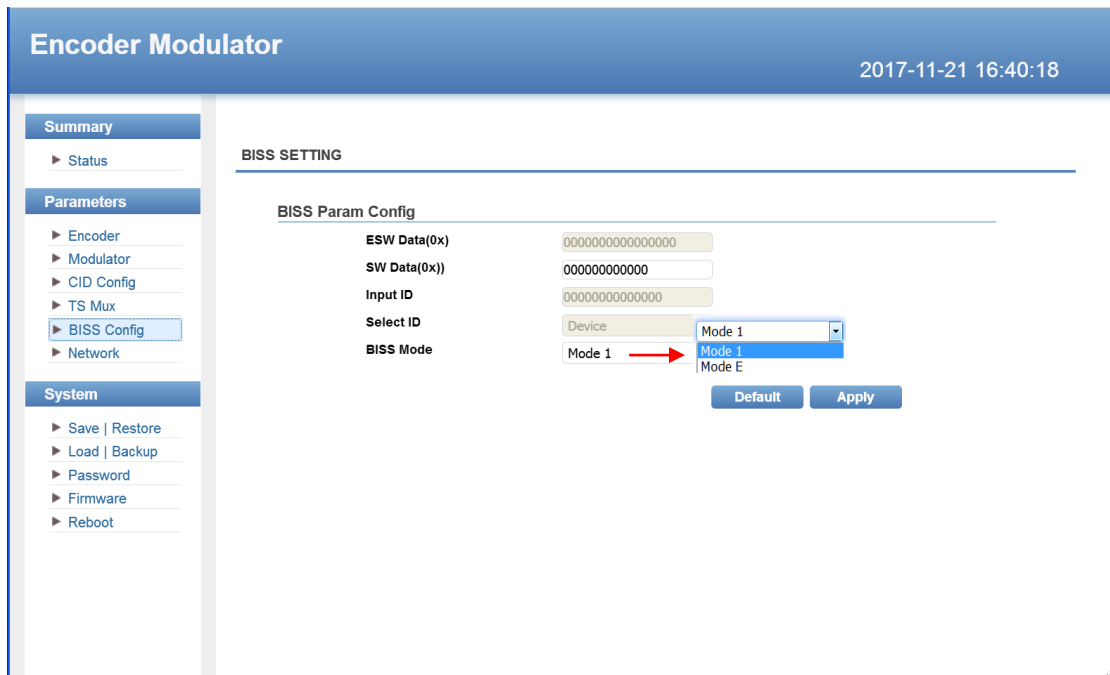

Figure 12

The BISS scrambling supports two modes: "Mode 1" and "Mode E". Users can select one of the two modes in the drop down list.

● **Mode 1**

Under Mode 1, the BISS scrambler applies scrambling by a fixed Control Word (CW) derived from a clear SW (Session Word). In Mode 1, a fixed 12-digit SW is inserted in the scrambler. The 64-bit CW is derived from the SW according to DVB-CAS specification.

Users can select Mode 1 in the drop-down menu, and then input the 12-digit **SW Data** (in hex). The downside device descrambler key equals **SW Data** on the BISS scrambler side.

- **Mode E**

Under Mode E, the BISS scrambler completes scrambling through **ESW Data** and **Input ID** (Input ID is operable when 'Input' is chosen under 'Select ID'.). The ESW data equals Descrambler key on the downside device side, while the input ID equals SK on IRD side.

Selet ID   Device ▼   The select ID has two options: Device and Input. If Users choose Device, the Burned Key on IRD side needs to be selected when descrambling, while if users choose Input and set Input ID, on IRD side, users do not need to select Burned Key but to input SK as per Input ID.

Parameters → Network:

Clicking "Network", it will display the screen as below. It displays the network information of the devicewhere to change the device's network configuration if needed.

Figure 13

System→Save/Restore:

Clicking *'Save/Restore'* from the menu and it will display the screen as below where users can save the configuration permanently to the device. Click 'Save Configuration' button to store the datapermanently to

the device.

By using 'Restore Configuration' users can restore the latest saving configuration to the device.

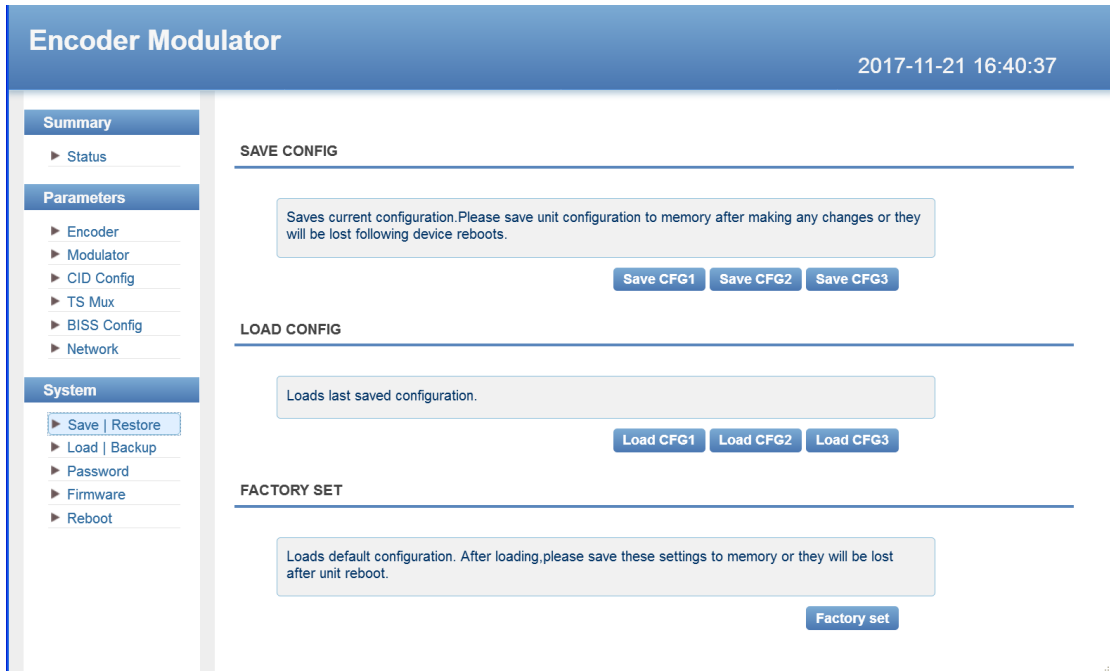By using 'Factory Set,' user can set the default factory setting.

Figure 14

System→Backup/Load

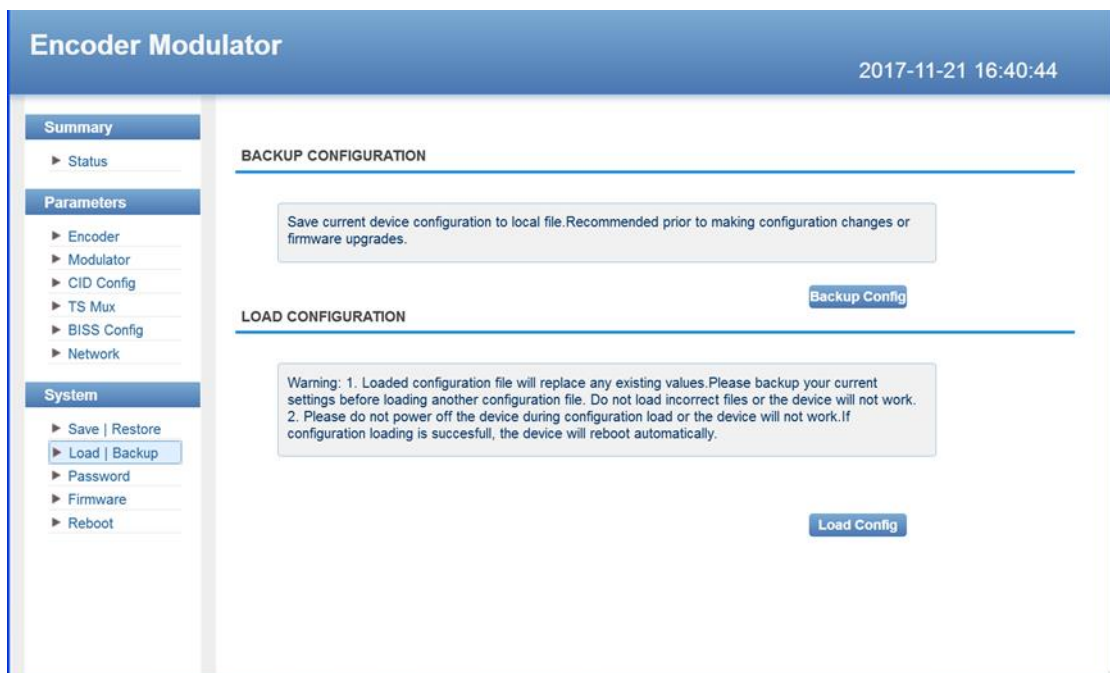Clicking "Backup/Load" from the menu, it will display the screen as Figure 15.

Figure 15

System→Password:

User can change the password in this interface as Figure 16 by puttingcurrentusername and password and then putting new username and password to change.

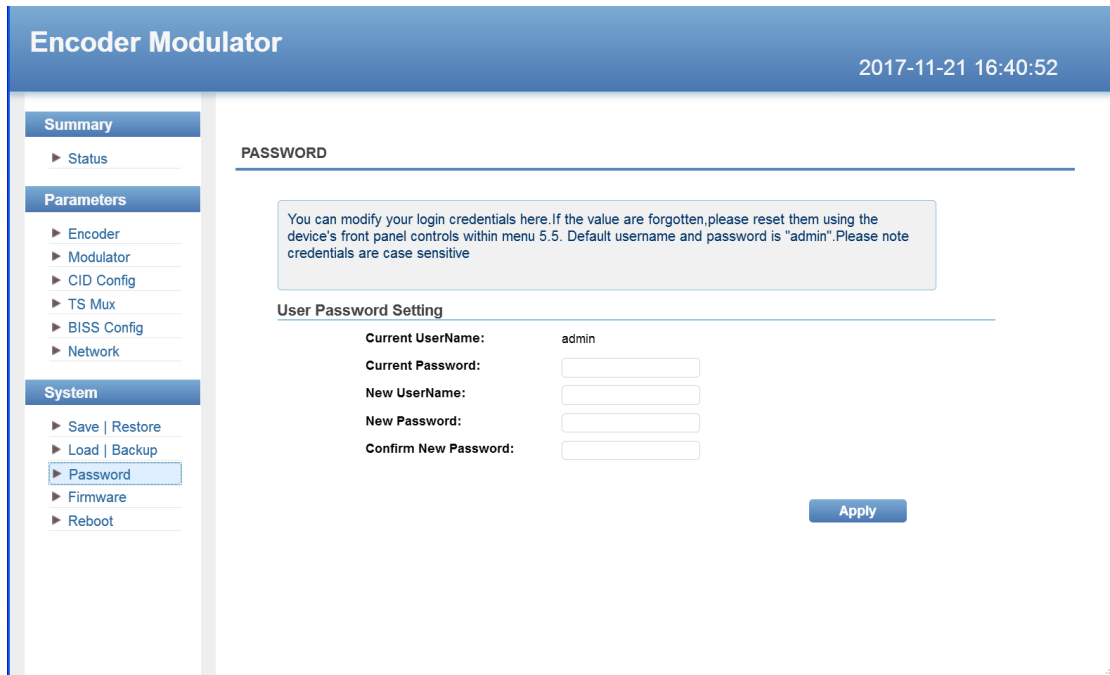After inputting the parameters, click'Apply' to save the configuration.

Figure 16

System→Firmware

Clicking "Firmware" from the menu and it will display the screen as Figure 17.

Here we can update the device by using the update file.

Click 'Browse' to find the path of the device update file for this device then click on 'Update' to update the device.

After updating the device we need to restart the device by using Reboot option.
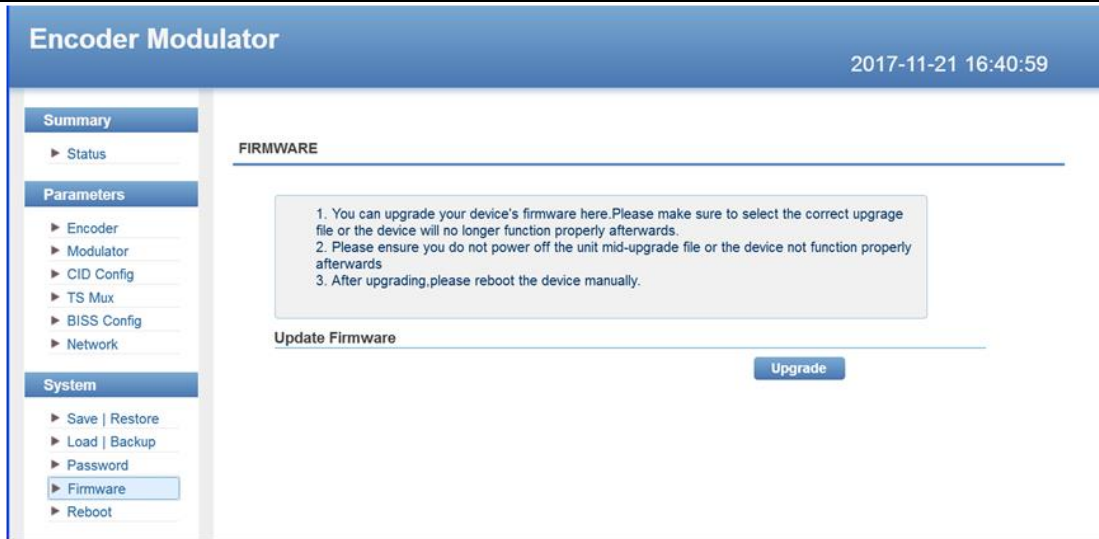
Figure 17

System→ Reboot

Clicking "Reboot" from the menu the screen will display as Figure 18. When users click 'Reboot' button, it will restart the device automatically.
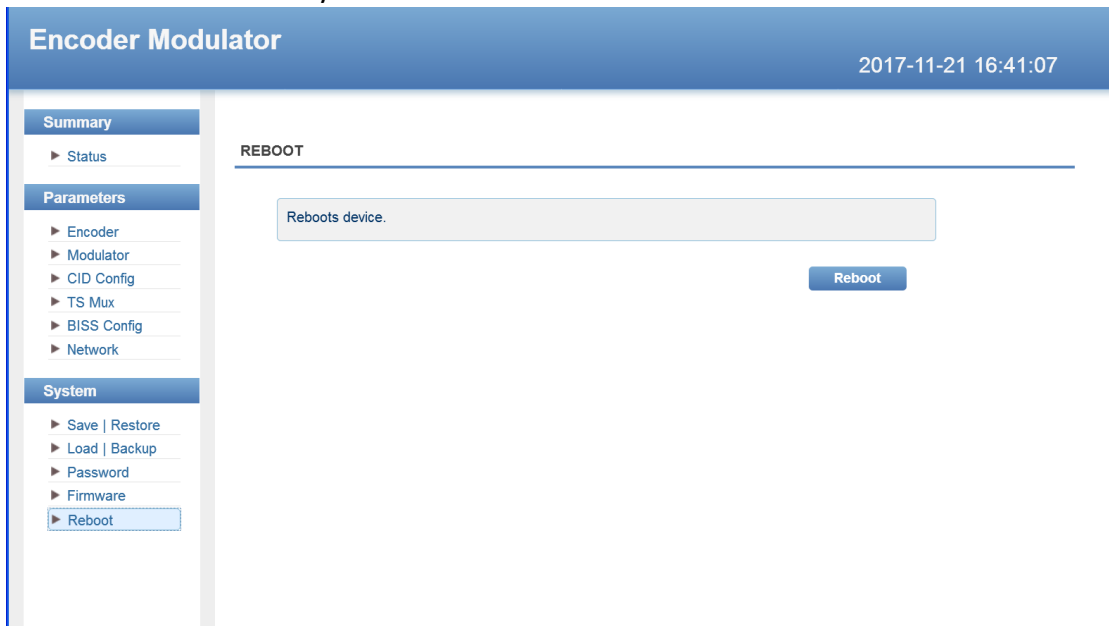

Figure 18

Chapter 5 Troubleshooting

THOR's ISO9001 quality assurance system has been approved by the CQC organization. We guarantee the products' quality, reliability and stability. All THOR products haven passed all testing and manual inspections before they are shipped out. The testing and inspection scheme already covers all the Optical, Electronic and Mechanical criteria which have been published by THOR. To prevent a potential hazard, please strictly follow the operation conditions.

Prevention Measures

➢ Installing the device in a place where the environmental temperature is between 0 to 45 °C
➢ Making sure the unit has plenty of ventilation for the heat-sink on the rear panel; and other heat-sink bores if necessary
➢ Checking the AC input within the power supply and ensure it is working, the connection is correctly installed before switching on device
➢ Checking the RF output levels to stay within a tolerable 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 be greater than 10 seconds.

Conditions needed to unplug power cord

➢ Power cord or socket damage.
➢ Any liquid that got into the device.
➢ Any stuff that could cause a circuit short
➢ Device in damp environment
➢ Device has suffered from physical damage; i.e. it fell off a rack.
➢ Longtime idle.
➢ After switching on and restoring to factory setting, device still won't work properly.
   Maintenance needed on device

Warranty

H-XX-DVBS2X is covered by a **THREE YEAR LIMITED WARRANTY**, which starts from the initial date of your purchase. We provide the owner technical support for the life of the product. If the warranty is expired, repair service charges & parts(if required) can be applied. In the event that a unit must be returned for service, before returning the unit, please be advised that:

1. Warranty mark pasted on the housing of unit must be in good condition.
2. A clear and readable model number, serial number and issues must be identifiable.
3. RMA # and PDF RMA form must be enclosed in the package
4. Please pack the unit in its original container. If the original container is no longer available, please pack the unit in at least 3 inches of shock absorbing material.
5. Returned unit(s) must be prepaid and insured. COD and freight collect are not accepted.

NOTE: We **do not** assume responsibility for damage caused by improper packing of returned unit(s).

The following situations are not covered by warranty:
1. The unit fails to perform because of operators' faults.
2. Warranty mark is modified, damaged and/or removed.
3. Damage caused by force/ user error.
4. The unit has been altered and/or repaired by an unauthorized person(s).

For Further Tech Support

1-800-521-Thor(8467)ext 2

support@thorfiber.com