HTT 100

1 HDMI to DVB-T Encoder Modulator

(MPEG-2 HD/MPEG-4 HD Encoding + DVB-T Modulating)

FAGOR

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1. SPECIFICATIONS

1.1 Product Overview

The HTT-100 is a **MPEG-2 HD**/MPEG-4 HD (H.264) encoder with DVB-T modulation.

It adopts inner drawer-type structural design which greatly facilitates the change of encoding modules (HDMI/CVBS/SDI/YPbPr/…) as needed. To meet customers' various requirements, is also equipped with and 1 UDP IP port.

The signals source could be from satellite receivers, closed-circuit television cameras, Blue-ray players, and antenna etc. Its output signals are to be received by TVs, STB and etc. with corresponding standard.

This product is widely used in public places such as metro, market hall, theatre, hotels, resorts, and etc for advertising, monitoring, training and educating in company, schools, campuses, hospital… It's a good choice to offer HD channels and more.

1.2 Key Features

- Up to 1920*1080@50I/60I supported (MPEG2 HD) ;
  Up to 1920*1080@50P/60P supported (MPEG4 HD)/ (H.264)
- MPEG-2 HD/MPEG-4 HD (H.264) video encoding
- MPEG1 Layer II (MPEG2-AAC, MPEG4-AAC available) audio encoding
- 1* HDMI in (1 port for backup)
- Single RF DVB-T out 30MHz~960MHz
- Excellent modulation quality MER≥42dB
- LCD display, Remote control and firmware
- Updates via web

1.3 Characteristics

Encoding Section

Video

Encoding	MPEG2 HD/MPEG4 HD
Input	HDMI*1 (1 port for backup)
Resolution	1920*1080_60P, 1920*1080_50P, (-for MPEG4/H.264) 1920*1080_60i, 1920*1080_50i, 1280*720_60p, 1280*720_50P 720*480_60i, 720*576_50i

Audio

encoding	MPEG1 Layer II, (MPEG2-AAC, MPEG4-AAC available)
Sample rate	48KHz
Bit rate	64kbps, 96kbps,128kbps, 192kbps, 256kbps, 320kbps

DVB-T Modulator Section

RF out	RF COFDM DVB-T out (EN300744)
FFT mode	2K, 8K
Bandwidth	6M, 7M, 8M
Constellation	QPSK, 16QAM, 64QAM
Guard Interval	1/4, 1/8, 1/16, 1/32
FEC	1/2, 2/3, 3/4, 5/6, 7/8
MER	≥42dB
RF frequency	30~960MHz, 1KHz step
RF output level	-30~ -10dBm (75~97 dBμV), 0.1dB step

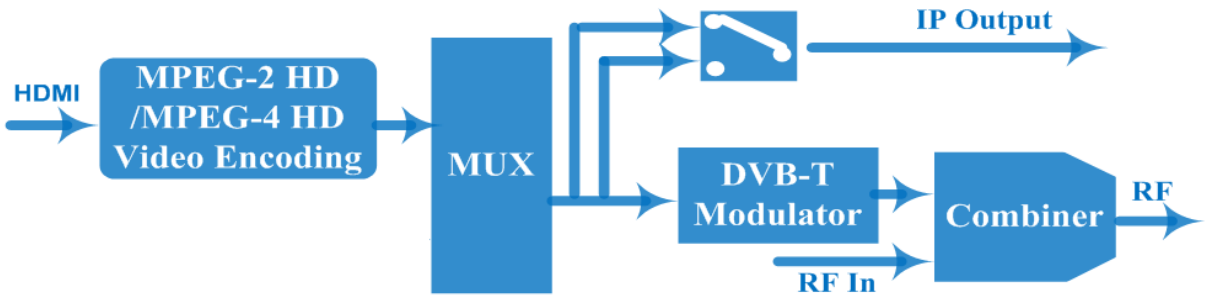
System

Local interface	LCD + control buttons
Remote management	Web NMS
output	IP out (RJ45, 100M)
NMS interface	RJ45, 100M
Language	English

General

Power supply	AC 100V~240V
Dimensions	267*250*44mm
Weight	2.5 kgs
Operation temperature	0~45℃

1.4 System Diagram



1.5 Appearance and Description

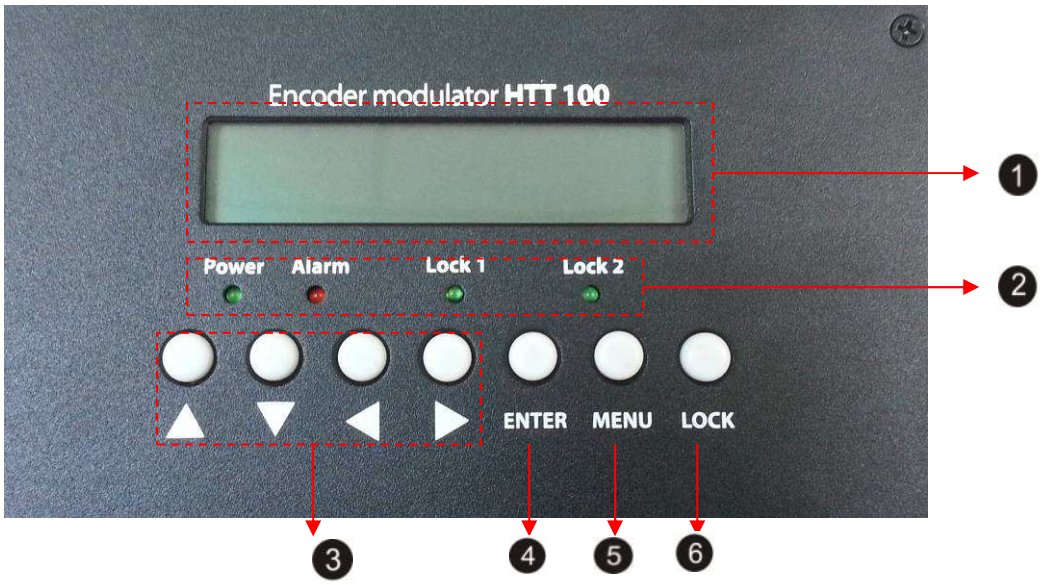
Front Panel Illustration

1. **NMS Port**
2. **Data Port (for IP output)**
3. **RF Input Interface (for combiner)**
4. **RF Output Interface**

Rear Panel Illustration

1. **HDMI Input Interface group (1port for backup)**
2. **Power Switch**
3. **Fuse**
4. **Power supply Slot**
5. **Grounding**

Up Panel Illustration



① LCD window

② Power , Alarm and TS Lock Indicators

③ Up and Down, Left and Right Button

④ Enter Button: for confirm

⑤ Menu Button: for back step

⑥ Lock Button: press to lock set

2. Installation Guide

This section is to explain the cautions the users must know in some cases that possible injure may bring to users when it's used or installed. For this reason, please read all details here and make in mind before installing or using the product.

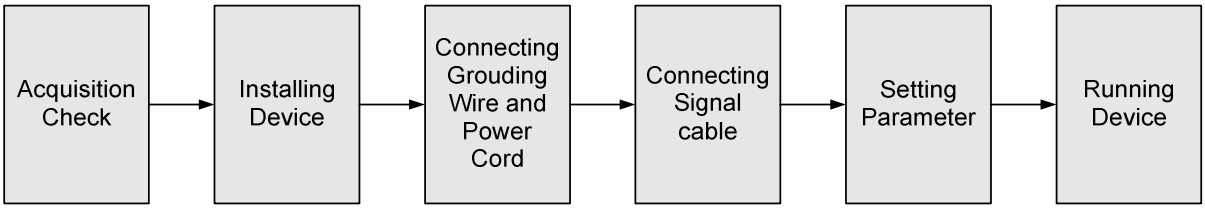
2.1 General Precautions

- ✓ Must be operated and maintained free of dust or dirty.
- ✓ The cover should be securely fastened, do not open the cover of the products when the power is on.
- ✓ After use, securely stow away all loose cables, external antenna, and others.

2.2 Power precautions

- ✓ When you connect the power source, make sure if it may cause overload.
- ✓ Avoid operating on a wet floor in the open. Make sure the extension cable is in good condition
- ✓ Make sure the power switch is off before you start to install the device

2.3 Device's Installation Flow Chart Illustrated as following



2.4 Environment Requirement

Item	Requirement
Machine Hall Space	When user installs machine frame array in one machine hall,

	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 Volume resistivity of ground anti-static material: $1X10^{7}$~$1X10^{10}\Omega$, Grounding current limiting resistance: 1MΩ (Floor bearing should be greater than 450Kg/㎡)
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
Wall	It can be covered with wallpaper, or brightness less paint.
Fire Protection	Fire alarm system and extinguisher
Power	Requiring device power, air-conditioning power and lighting power are independent to each other. Device power requires AC 110V±10%, 50/60Hz or AC 220V±10%, 50/60Hz. Please carefully check before running.

2.5 Grounding Requirement

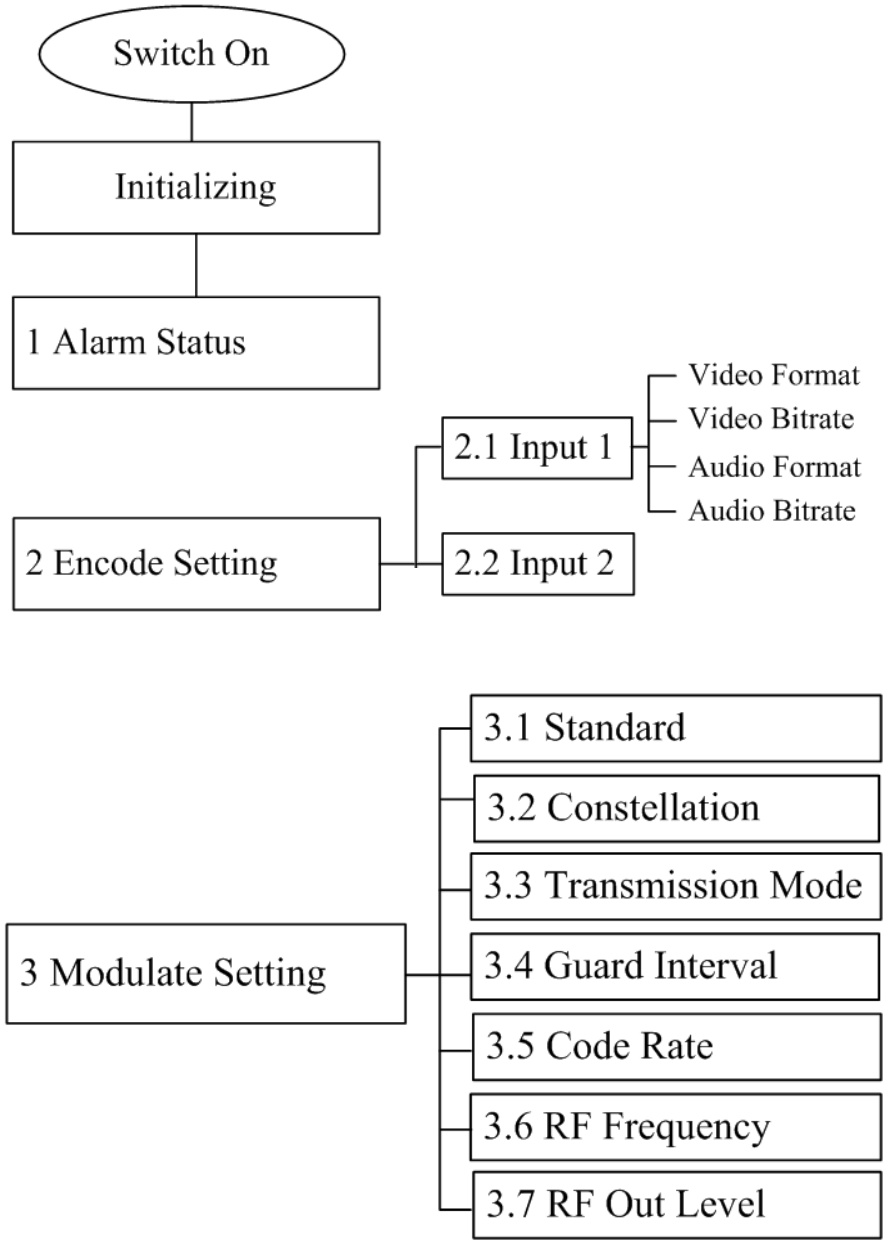
- ✓ All function modules' good grounding is the basis of reliability and stability of devices. Also, they are the most important guarantee of lightning arresting and interference rejection. Therefore, the system must follow this rule.
- ✓ Grounding conductor must adopt copper conductor in order to reduce high frequency impedance, and the grounding wire must be as thick and short as possible.
- ✓ Users should make sure the 2 ends of grounding wire well electric conducted and be antirust.
- ✓ It is prohibited to use any other device as part of grounding electric circuit

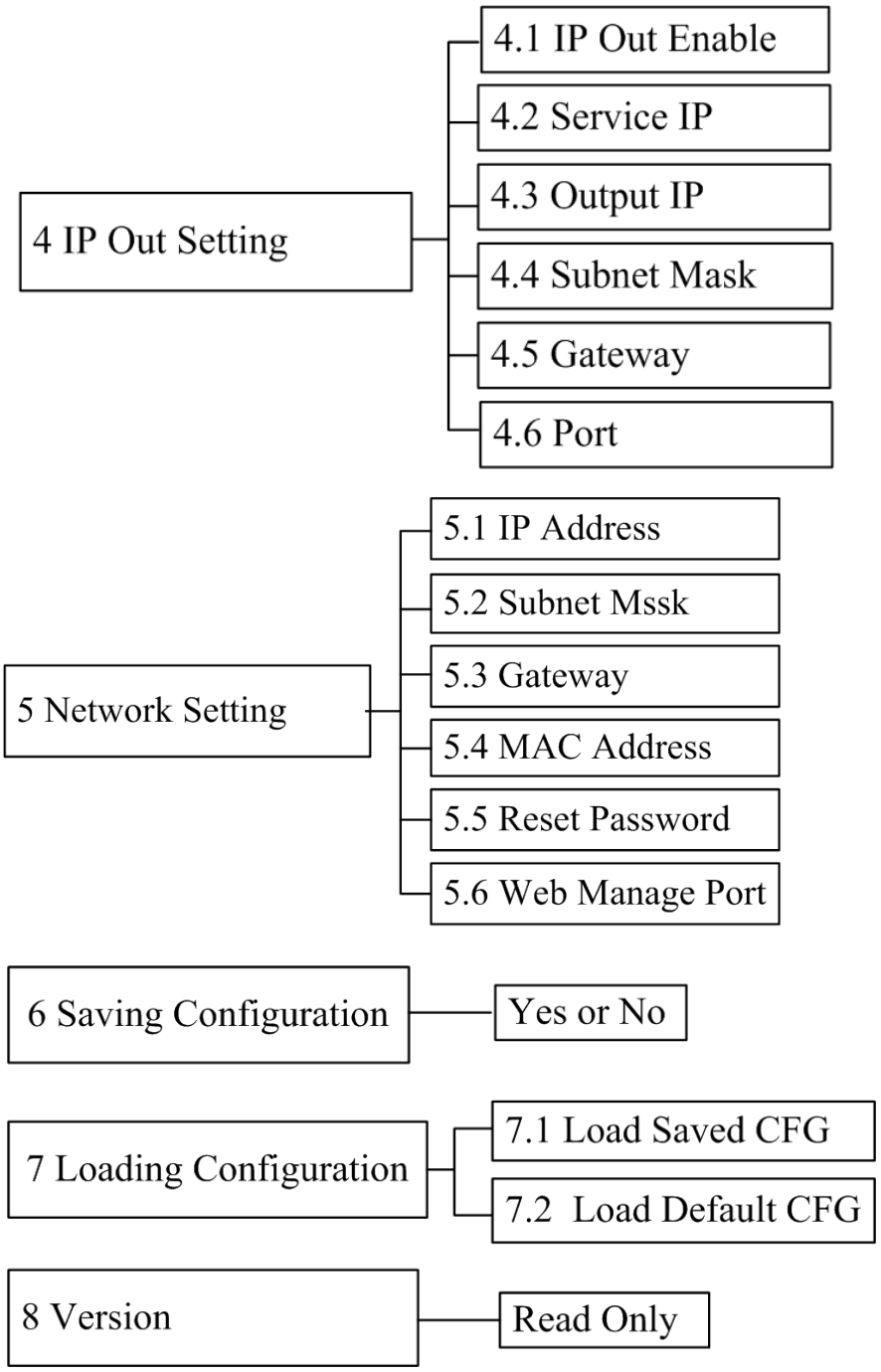
✓ The area of the conduction between grounding wire and device's frame should be no less than 25 mm^2.

3. Operation

3.1 LCD Menus

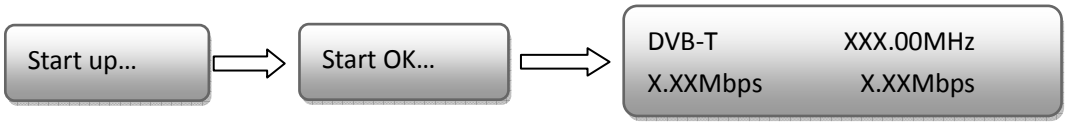
An overview of the LCD menus:





3.2 Initial Status

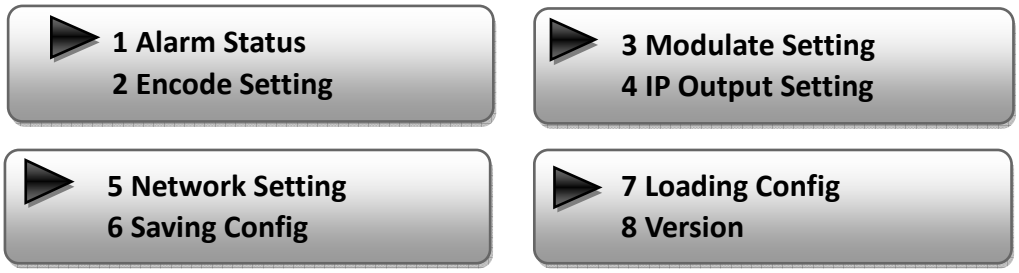
Switch on the device and after a few seconds' initialization, it presents start-up pictures as below:



- DVB-T: indicate the modulation standard of this device
- XXX.XX MHz indicates the current output frequency (range: 30~960MHz)
- X.XX Mbps indicate the encoding bit rate.

3.3 General Settings for Main Menu

Press “Lock” key on the front panel to enter the main menu. The LCD will display the following pages where user can configure the parameters for the device:



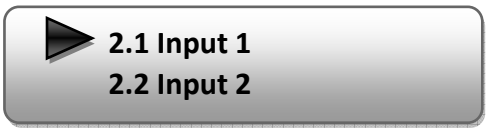
User can press UP/DOWN buttons to specify menu item, and then press ENTER to enter the submenus as below:

1) Alarm Status

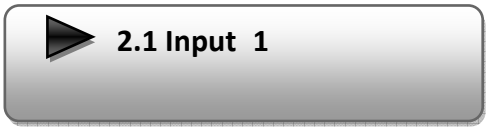
The alarm indicator will turn on if there is no A/V signals inputting or outputting bit rate overflows. User then can enter this menu to check the error type.

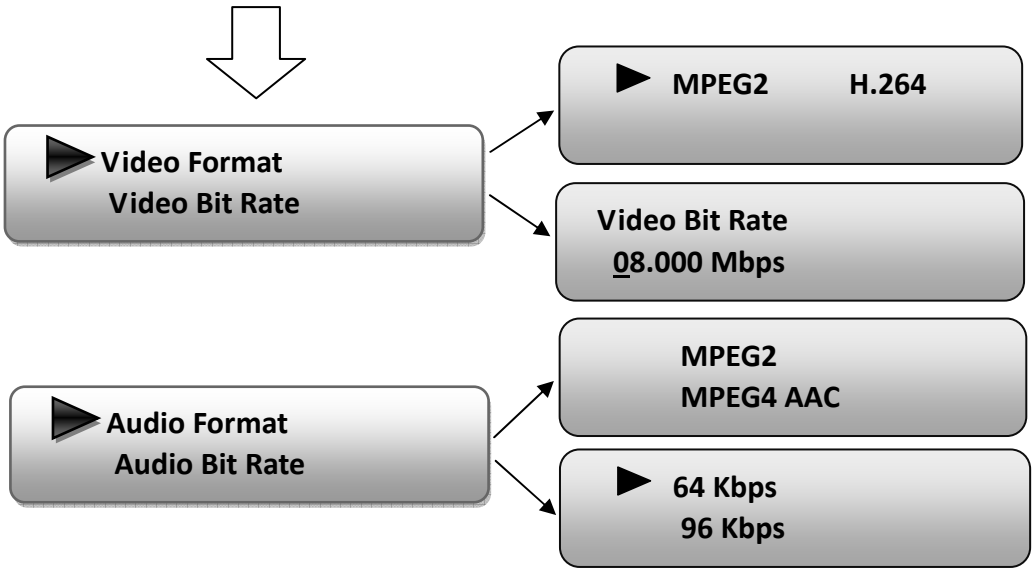
2) Encode Setting

Under this submenu, the LCD will show “2.1 Input 1”, “2.2 Input 2” and “2.3 ASI”.



Under submenus 2.1, user could set the video encoding format and bit rate, and set audio encoding bit rate and also read the audio encoding format of the program from the HDMI input.





"Video Format": the HDMI MPEG2 HD encoding module supports both MPEG2 and H.264 formats. Move the triangle mark with LEFT/RIGHT keys to specify the intended format and press ENTER to confirm.

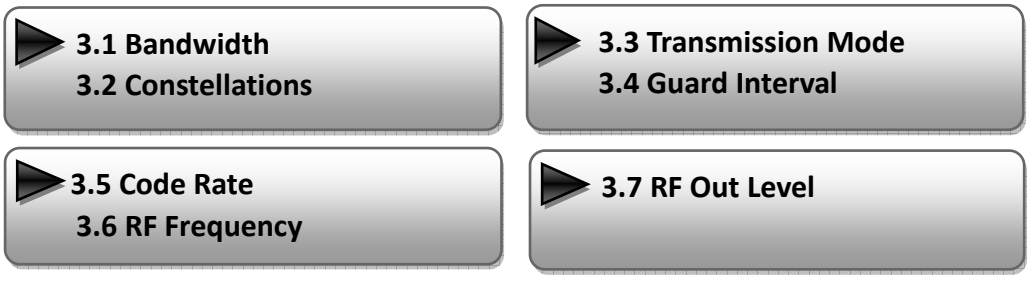
"Video Bit Rate": Move the underline with LEFT/RIGHT keys and modify the value of frequency with UP/DOWN keys, and press ENTER key to save the settings.

"Audio Format": the encoding module supports MPEG2 and MEPG4 AC audio formats. Move the triangle mark with UP/DOWN keys to specify the intended format and press ENTER to confirm

NOTE: Submenu "2.2 Input 2" is not applicable to the HTT 100 encoder modulator. It is equipped with only one input slot, while the LCD menu program is written to be compatible to the 1U model with 2 encoding slots.

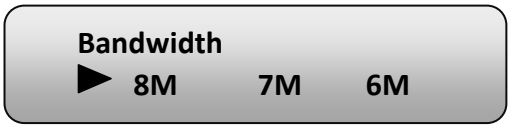
3) Modulator Setting

When entering "Modulator Setting" submenu, user can find below different parameters can be set and the LCD window would show as below:



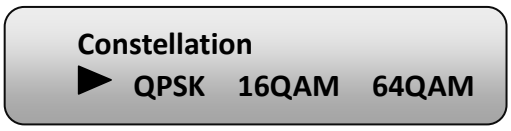
- **Bandwidth**

  There are three possible options provided for selecting bandwidth: 6M, 7M, and 8M. When the display shows them, user just need swift LEFT and RIGHT key to choose and repressing ENTER to confirm.



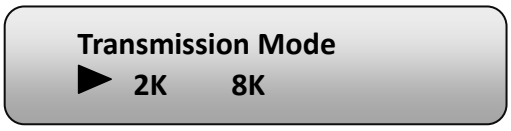
- **Constellation**

  There are three different constellations QPSK, 16QAM and 64QAM shown on the LCD window. When entering Constellation, user can apply the same setting method as mentioned above to select and confirm one mode.



- **Transmission Mode**

  When user enters Transmission Mode, the LCD would show the current working mode. User can move LEFT/RIGHT keys to select and press ENTER key to confirm. 2K and 8K are the options:



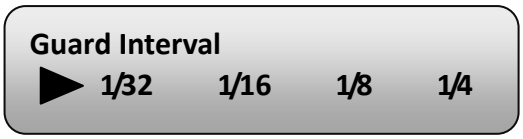
  2K: When the device works as current mode, the number of current carrier is 2048

  8K: When the device works as current mode, the number of current carrier is 8192

- **Guard Interval**

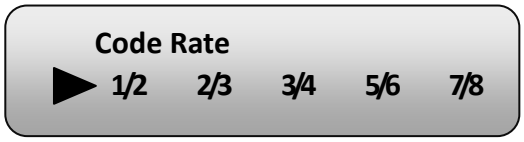
  In communications, guard intervals are used to ensure that distant transmissions do not interfere with each other. These transmissions may belong to different users (as in TDMA) or same user (as in OFDM). The purpose of the guard interval is to introduce immunity to propagation delays, echoes and reflections, to which digital

data is normally very sensitive. There are four possible options provided to be selected. They are 1/4, 1/8, 1/16, 1/32. User can shift the LEFT/RIGHT keys to select and press ENTER to confirm.



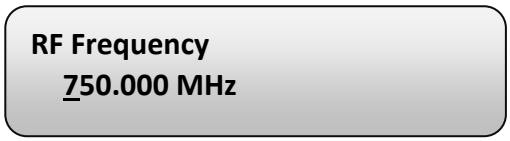
- **Code Rate**

The code rate includes 1/2, 2/3, 3/4, 5/6, and 7/8. After entering this submenu, the LCD display would show them, users just need press LEFT and RIGHT buttons to choose and press ENTER button to confirm.



- **RF Frequency**

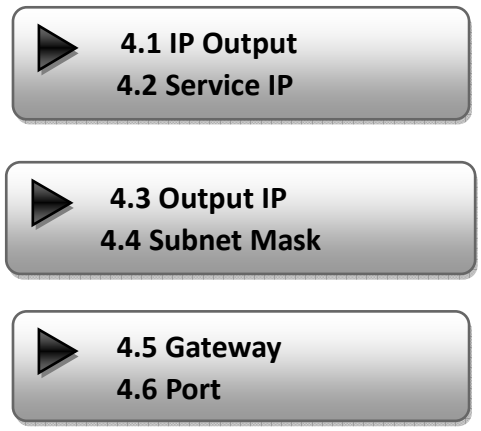
The RF output frequency range is from 30 to 960MHz with 1K stepping. After entering the RF frequency setting submenu, users the can press LEFT, RIGHT, UP, and DOWN buttons to adjust the channel center frequency and confirm by press ENTER button.



- **RF Out Level**

The RF attenuation range is -30~-10dBm (75~97dBμV) with 0.1dB step. After entering this setting submenu, user can shift UP/DOWN/LEFT/RIGHT key to set the output level and press ENTER to confirm.

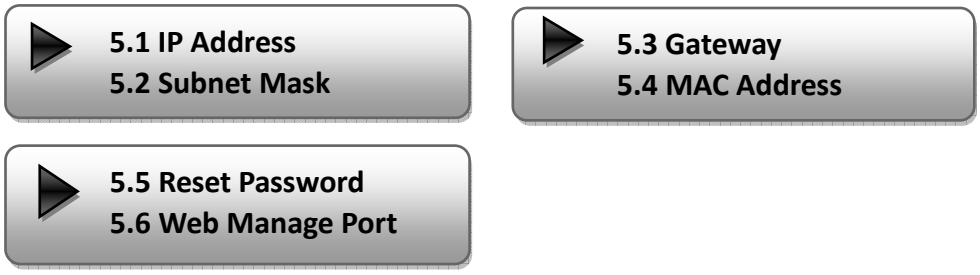
4) IP Output Setting



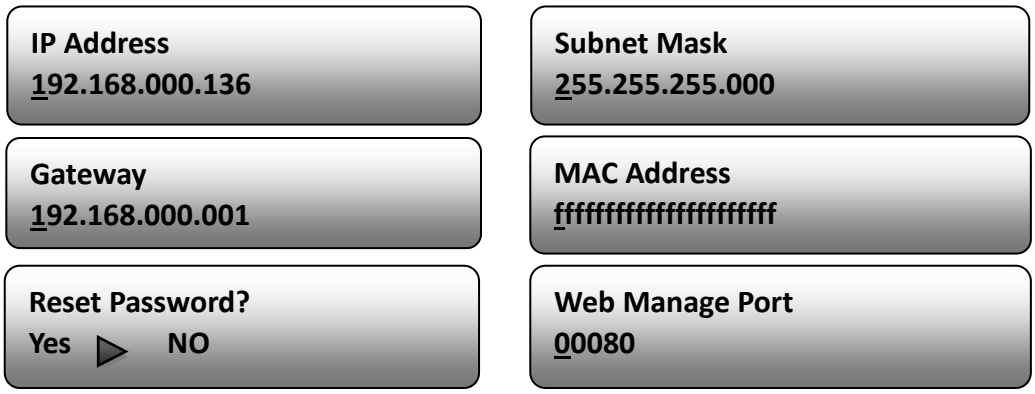
User can enter 4.1. to decide whether to turn the IP port on or off, and enter to the rest menu items to set the corresponding parameters.

5) Network setting

After enter Network Setting, there are three submenus shows as the following LCD displays.



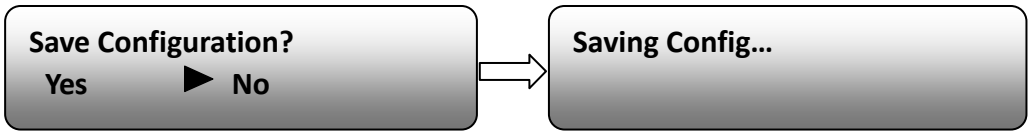
User can press “UP/DOWN” to choose this item and “ENTER” & “LEFT/RIGHT” to set the parameters.



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

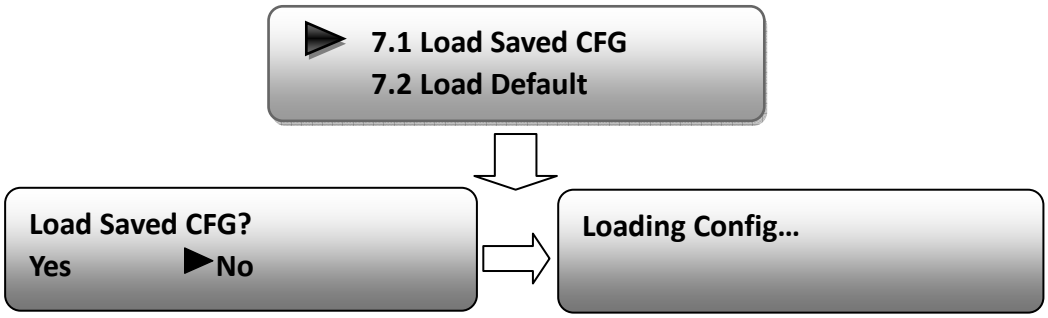
6) Saving Configuration

Users can enter Saving Configuration submenu for saving settings. Choose yes and press ENTER to confirm.



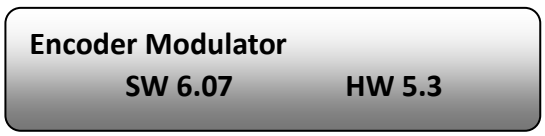
7) Loading Configuration

At this menu, user can press UP/DOWN key to select and repress ENTER to confirm. User can restore the device into the last saved configuration by choosing “7.1” and restore the device into factory configuration by choosing “7.2” the display will show as below:



8) Version

User can check the software version and hardware version of this equipment under this submenu.



4. WEB NMS Operation

User not only can use front buttons to set configuration, but also can control and set the configuration in computer by connecting the device to web NMS Port. User should ensure that the computer's IP address is different from the device's IP address; otherwise, it would cause IP conflict.

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 net cable, and use ping command to confirm they are on the same network segment.

If 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 web browser to connect the device with 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.

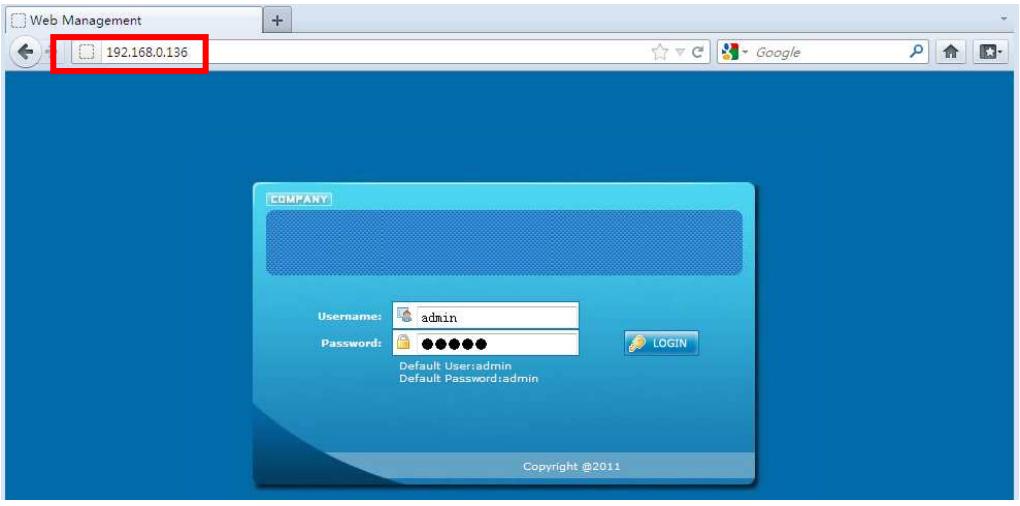


Figure-1

4.2 Operation

When we confirm the login, it displays the WELCOME interface as Figure-2.

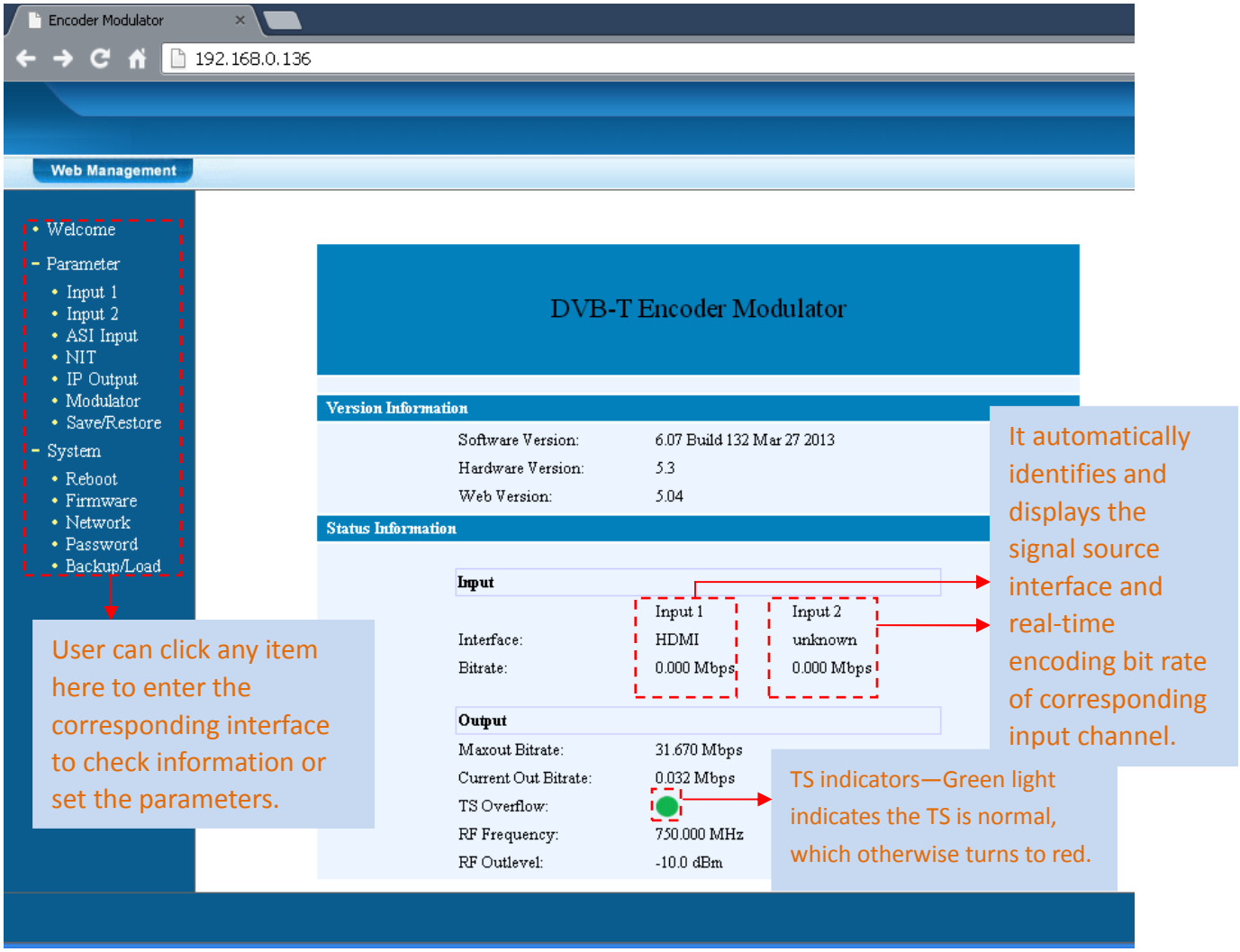


Figure-2

Input 1

From the menu on left side of the webpage, clicking “Input 1”, it displays the information of the program from the 1st HDMI encoding module as Figure-3.

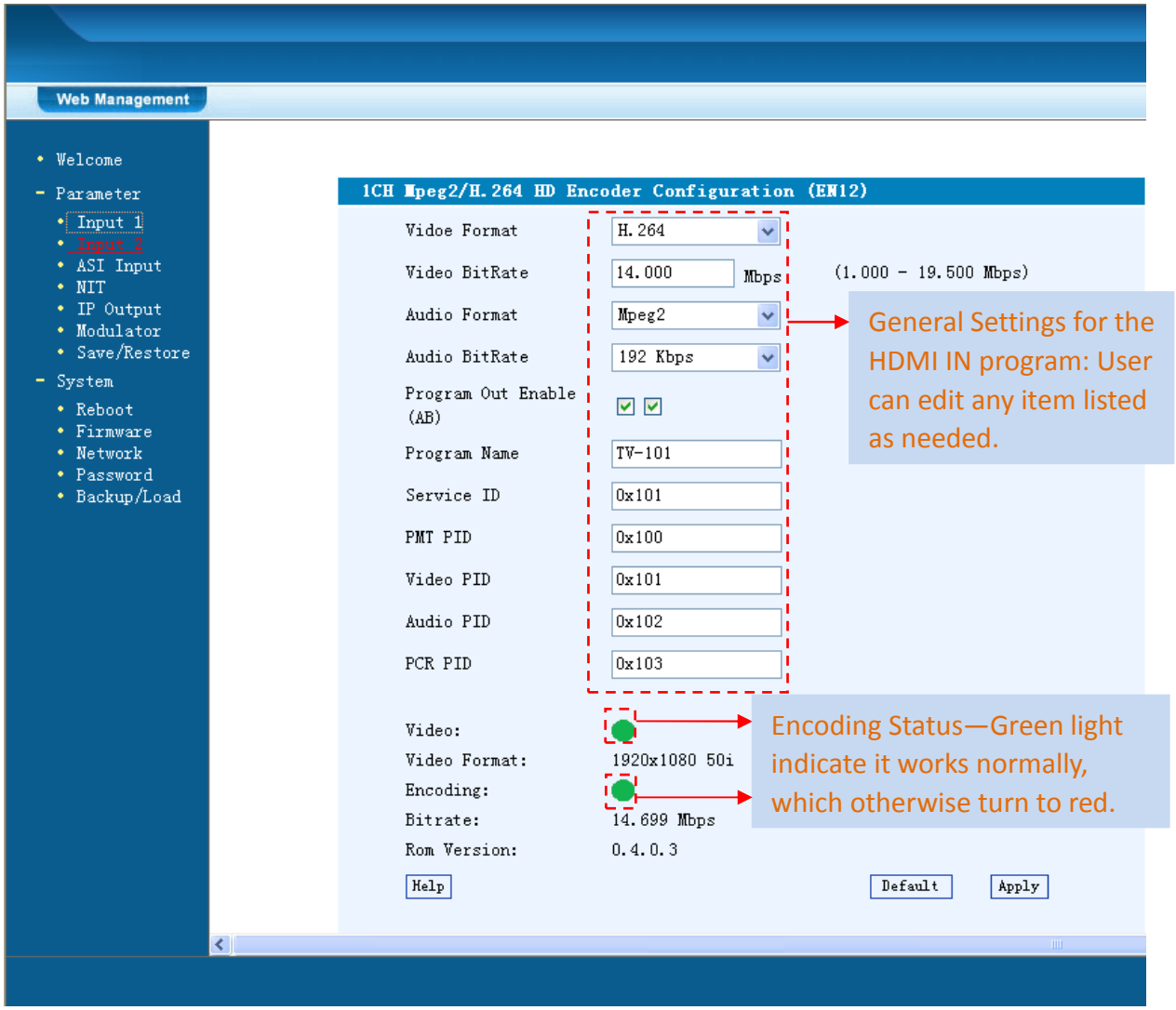


Figure-3

Help For user to turn to refer detailed explanation of terms on this interface

Default Click this button to apply the default setting of Input 1

Apply Click this button to apply the modified parameters.

NIT Table setting

Click “NIT” from the menu to trigger the screen as Figure-4. Then click “Add” from this screen to add the program descriptor in NIT Table.

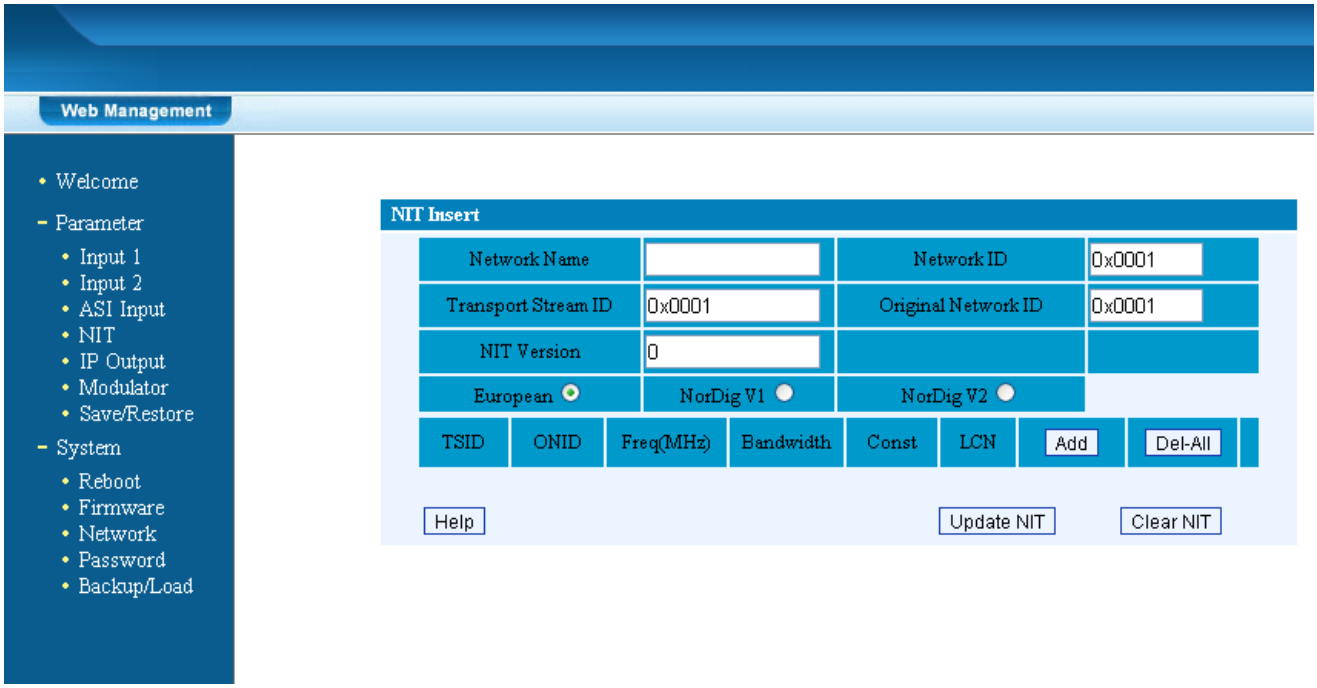


Figure-4

Click “Add” from this page, it will display the screen as Figure-5 where it requires to add Service ID and configure other parameters for the programs.

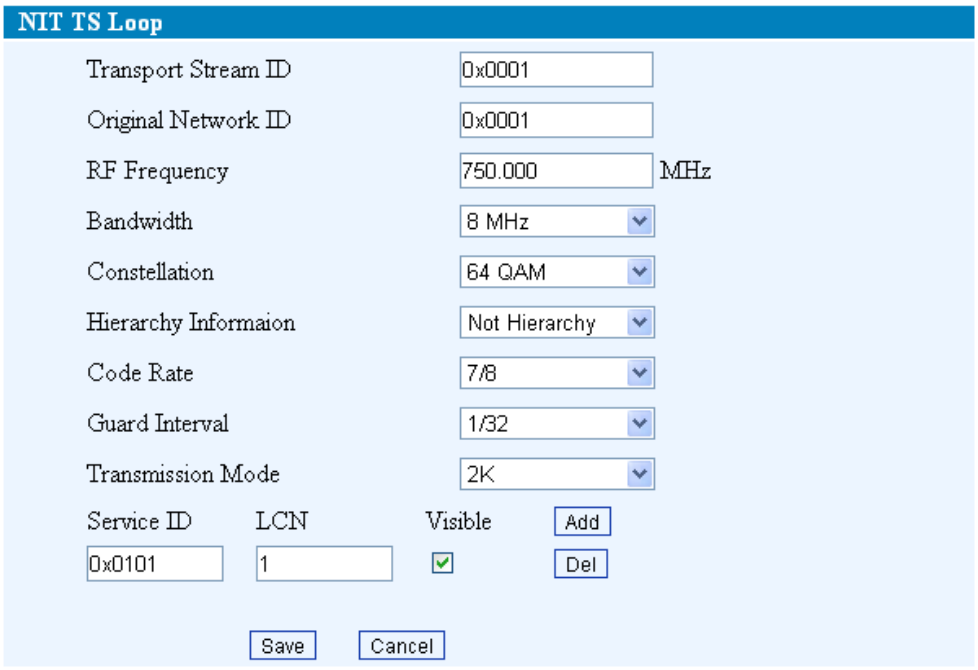
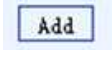


Figure-5



Here by clicking “Add”, users can set the program LCN in its respective field.

After setting all the data, users need to click on “Save” 

to save the setting.

As Figure-6, click “Update NIT”  to update the NIT information.

TSID	ONID	Freq(MHz)	Bandwidth	Const	LCN
0x0001	0x0001	750.000	8 MHz	64 QAM	yes

Figure-6

IP Output

Click “IP Output” from the left menu, it will display the screen as Figure-7 where to set the multicast IP Output address for the device if needed and set the IP output for the programs.

After setting the parameters, click “Apply” to save the setting.

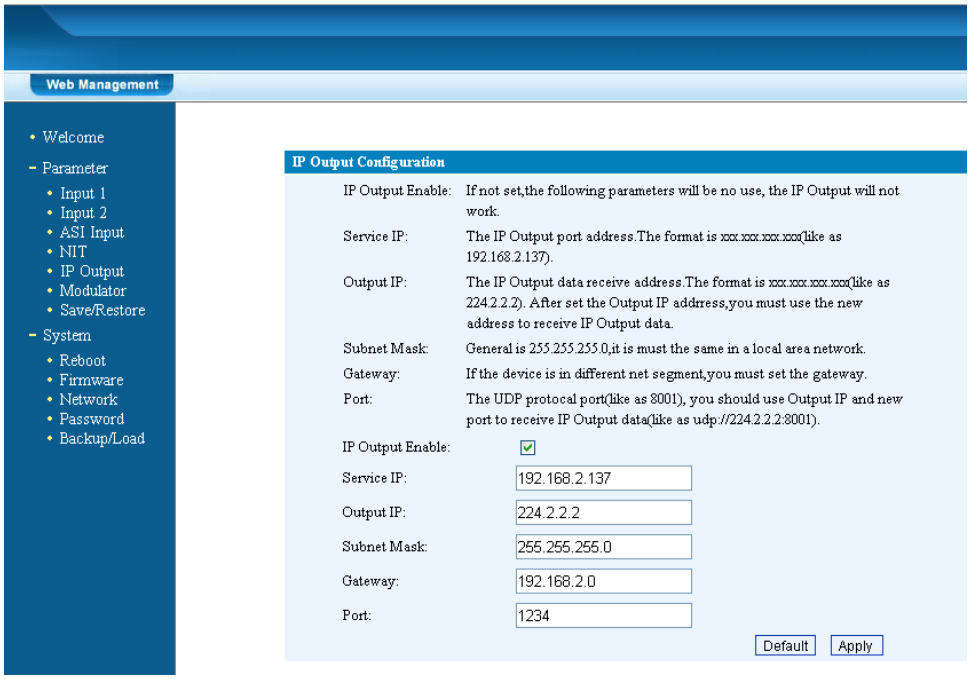


Figure-7

Modulator Setting

Enter in “Modulator” and it will display the Modulator Configuration screen as Figure-8 where can set modulation parameters.

Bandwidth –Bandwidth selecting. (The default bandwidth is 8M)

Constellation –QAM type selecting. (The default constellation is 64QAM)

Transmission Mode –2K, 8K optional

Guard Interval/Code Rate/RF Frequency/RF Out level – the default configuration is

as shown on Figure 8.

After setting all the parameters, click “Apply” Apply to save the Modulator Configuration.

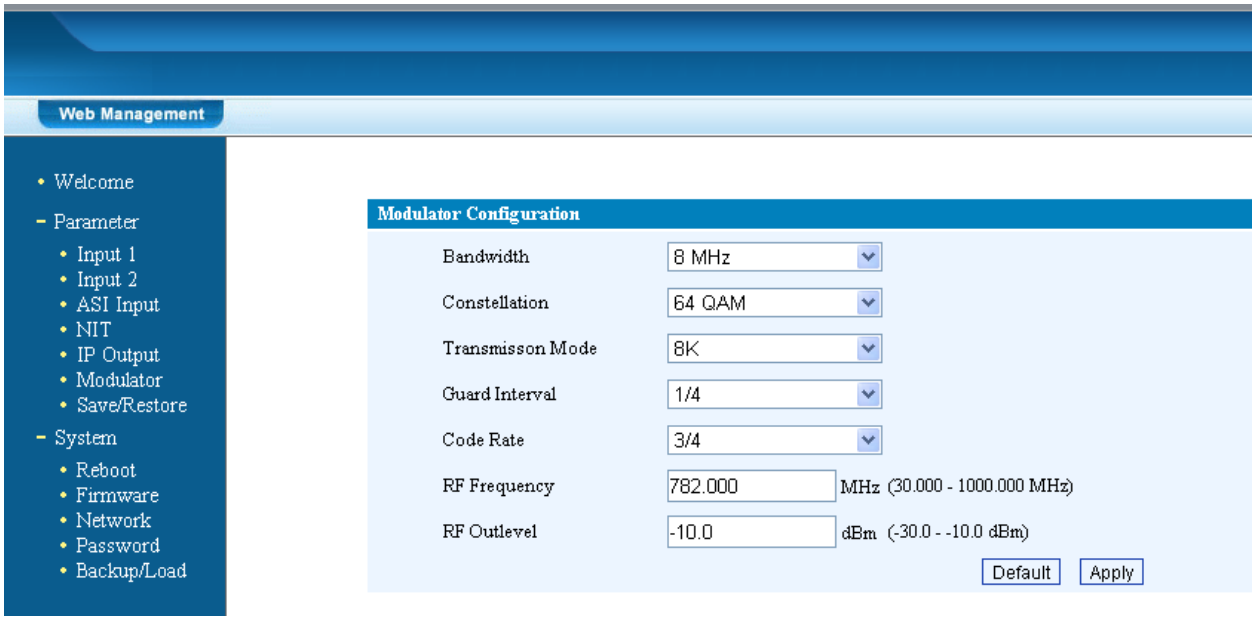


Figure-8

Save/Restore

Clicking “Save/Restore” from the menu, it will display the screen as Figure-9 where can save the configuration permanently to the device. Click “Save Configuration”, for store the data permanently to the device.

By using “Restore Configuration” user can restore the latest saved configuration to the device.

By using “Factory Set” user can import the default factory configuration.

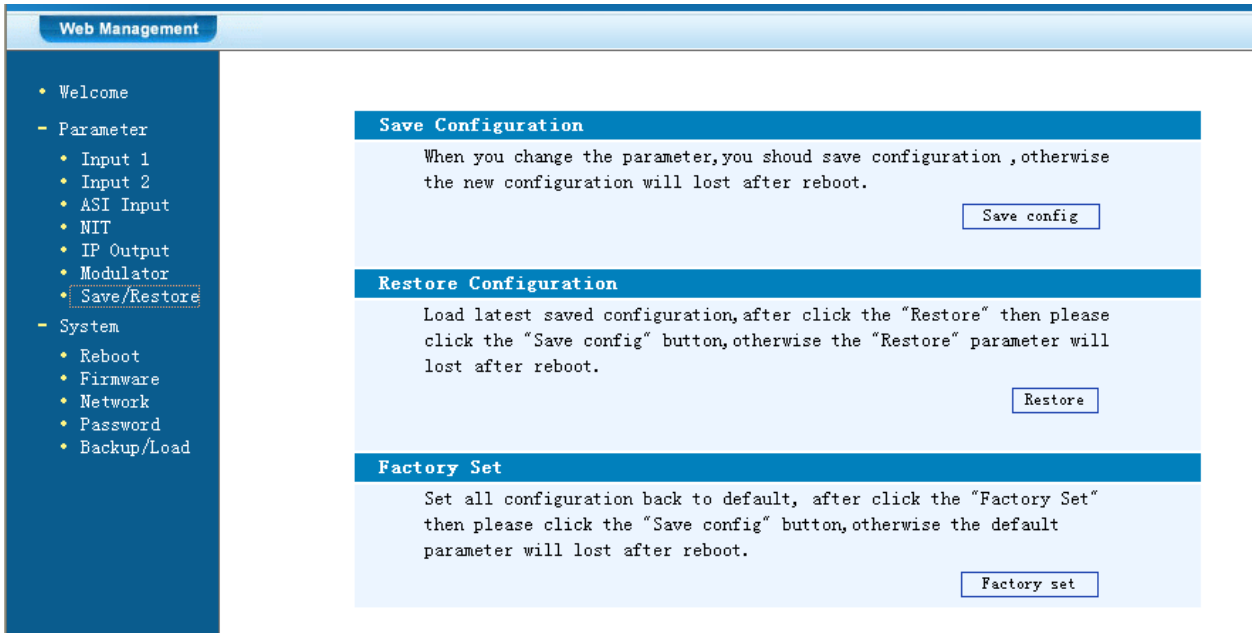


Figure-9

Restart the Device

Click “Reboot” from the menu, the screen will display as Figure-10. Here when clicking “Reboot” box, it will restart the device automatically.

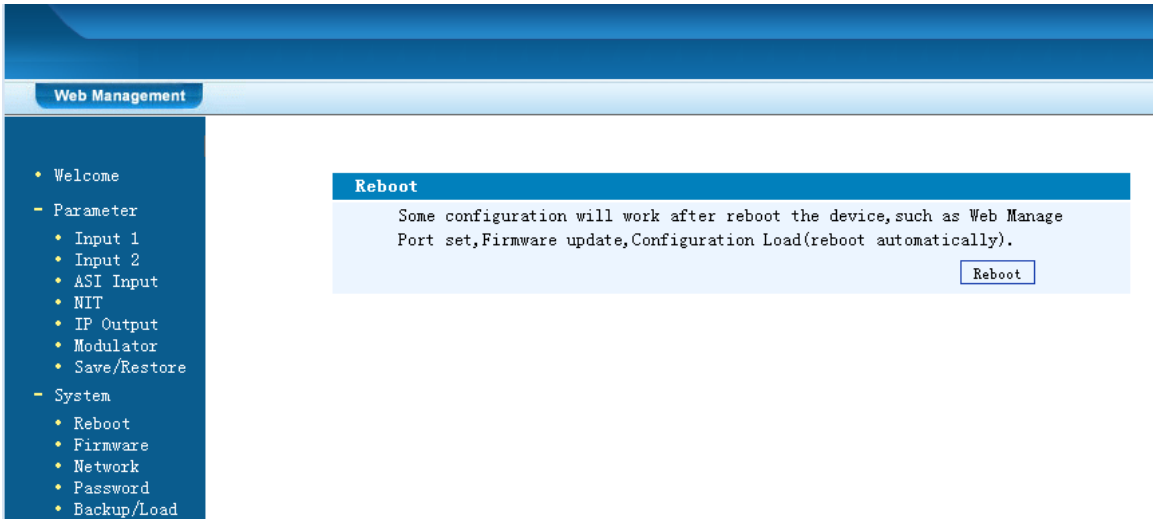


Figure-10

Update the Device

Click “Firmware” from the menu it will display the screen as Figure-11. Here user 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 “Update” to update the device.

After updating the device, user needs to restart the device by using Reboot option.

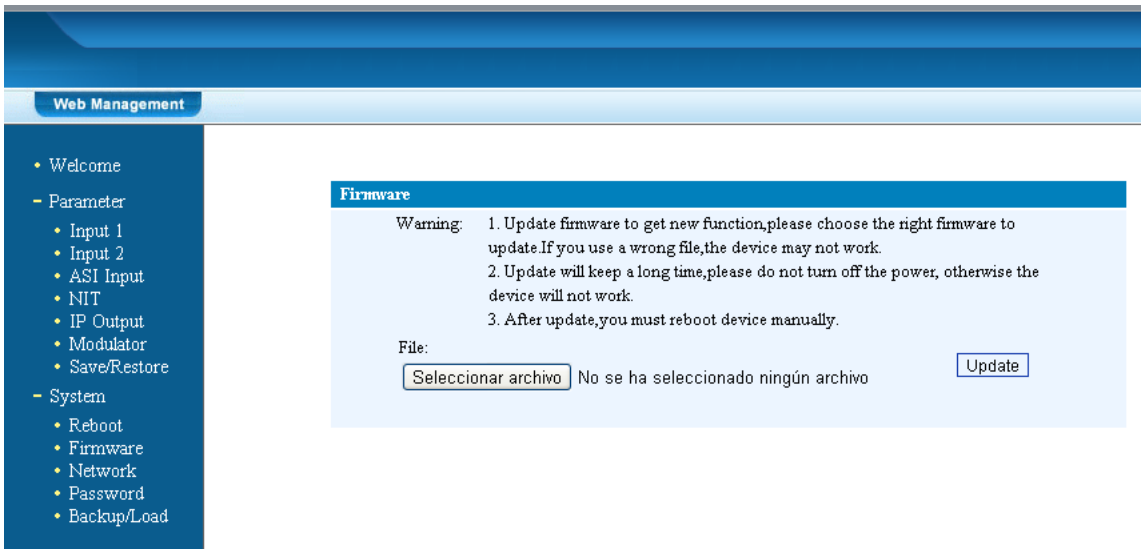


Figure-11

Network

When user clicks “Network”, it will display the screen as Figure-12. It displays the network information of the device. Here user can change the device network configuration as needed.

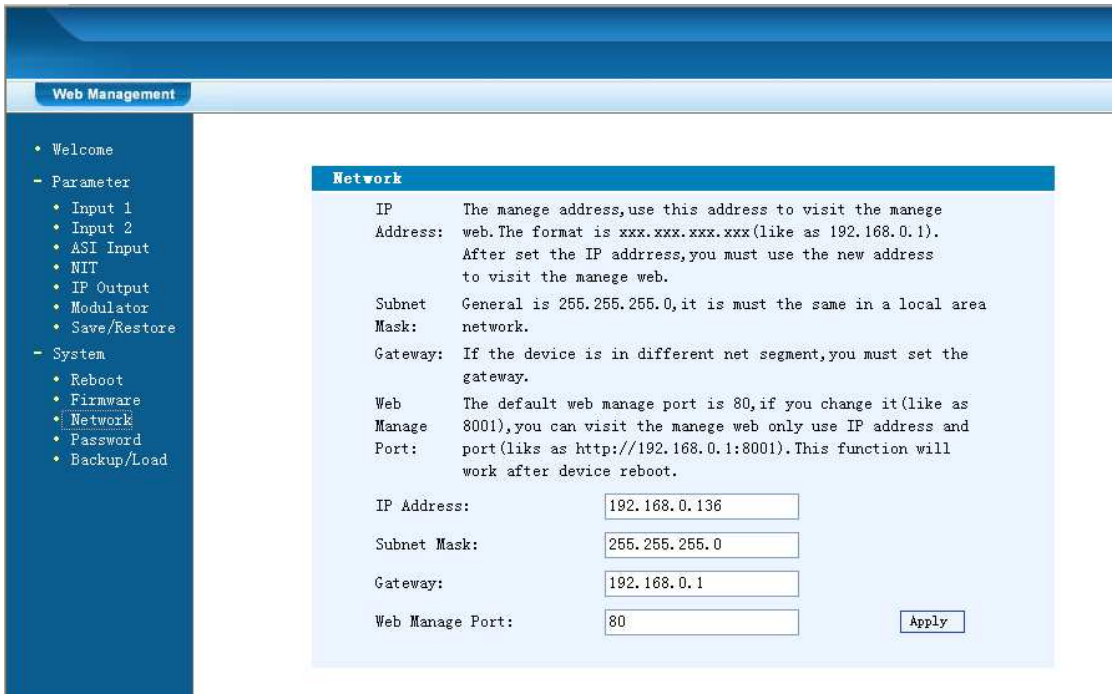


Figure-12

Change Password

When user clicks “Password”, it will display the password screen as Figure-13. Here

user can change the Username and Password for login to the device.

After putting the current and new Username and Password, click Apply" to save the configuration.

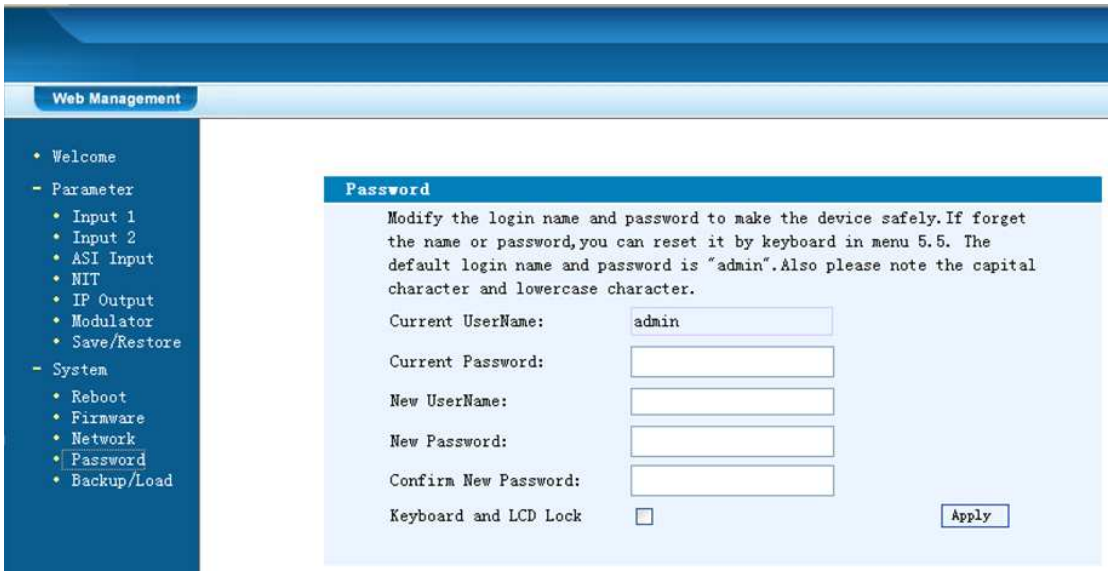
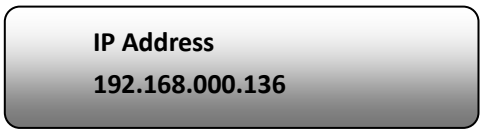


Figure-13

➢ Keyboard and LCD Lock: If it is marked with "√" , the LCD and keyboard will be locked to avoid unrelated users' modifying or view the device information and configurations. User can't operate the keyboard & LCD while only the device IP address can be noted in the LCD window.



Backup/Load

Click "Backup/Load" from the menu, it will display the screen as Figure-14.

Backup Configuration – To back up the device configuration file to a folder

Load Configuration – If user needs to load the old configuration to the device, click "Browse" and find the backup configuration file path. After selecting the file, click "Load File" to load the backup file to the device.

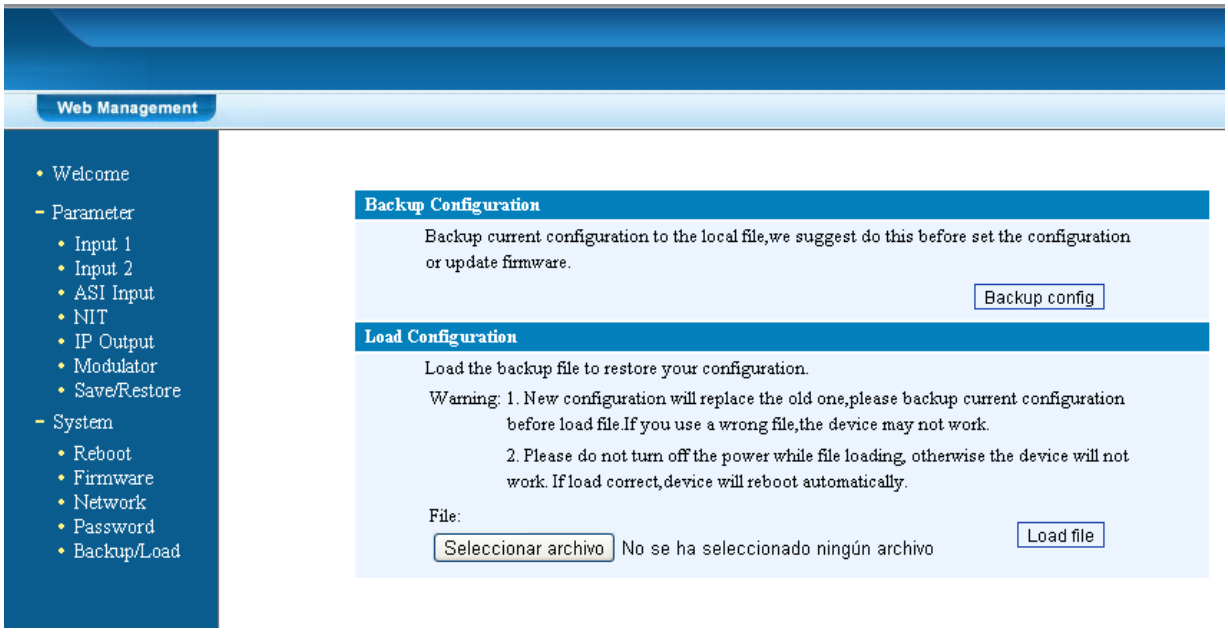


Figure-14

5. Safety Instructions

Prevention Measure

- Install the device in a place in which environment temperature is between 0 to 45 °C
- Make sure there is good ventilation around the equipment.
- Check the input AC is within the power supply working range and the connection is correct before switching on device
- Check the RF output level varies within tolerant range if it is necessary
- Check all signal cables have been properly connected
- Frequently switching on/off device is prohibited; the interval between every switching on/off must greater than 10 seconds.
- Protect against any liquid drops on the device.

6. Packing List

HDMI Encoder Modulator	1PC
User's Manual	1PC
HDMI Cables	1PC
Power Cord	1PC

DECLARACION DE CONFORMIDAD
DECLARATION DE CONFORMITÉ
DECLARATION OF CONFORMITY
DECLARAÇÄO DE CONFORMIDADE

Fabricante/ Fabricant/ Manufacturer/ Fabricante : ***FAGOR ELECTRONICA, S.COOP.***

Dirección/ Adresse/ Address/ Direçao : ***Bº San Andrés s/n - P.O. Box 33***
20500 MONDRAGON
(Guipúzcoa) Spain

NIF / VAT : ***F-20 027975***

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Según los requerimientos de las Directivas del Parlamento Europeo:
Selon les especifications des Directives du Parlament Européen :
According to the specifications of directives of the European Parliament:
Com as especificaçöes da Directivas do Parlamento Europeu:

EMC	**2004/108/EC**
LVD	**2006/95/EC**
RoHS	**2011/65/EC**

Para su evaluación se han aplicado las Normas:
Pour l'évaluation ont étais appliqués les Normes:
For the evaluation, the following Standards were applied:
Para a avaliação, os seguintes Normas foram aplicados :

EN 50083-2 : 2012
EN 55013 :2001 + A1 : 2003 + A2 : 2006
EN 55020 :2007
EN 61000-3-2 : 2006 + A1 :2009
EN 61000-3-2 : 2008

Fecha: ***May 2013***
Date:

Firma: ***J.M. Saiz***
Signature:

Jefe Calidad Tratamiento de Señal
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