HTT 100



1 HDMI to DVB-T Encoder Modulator

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



TABLE OF CONTENTS

1. SPECIFICATIONS
1.1 PRODUCT OVERVIEW
1.2 Key Features
1.3 Specifications
1.4 System Diagram
1.5 APPEARANCE AND DESCRIPTION
2. INSTALLATION GUIDE
2.1 GENERAL PRECAUTIONS
2.2 POWER PRECAUTIONS
2.3 DEVICE'S INSTALLATION FLOW CHART ILLUSTRATED AS FOLLOWING
2.4 Environment Requirement
2.5 GROUNDING REQUIREMENT
3. OPERATION7
3.1 LCD MENUS
3.2 INITIAL STATUS
3.3 GENERAL SETTINGS FOR MAIN MENU
4. WEB NMS OPERATION
4.1 LOGIN
4.2 OPERATION
5. SAFETY INSTRUCTIONS
6. PACKING LIST



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

Encoding	MPEG2 HD/MPEG4 HD		
Innut	HDMI*1 (1 port for backup)		
input	1920*1080 60P 1920*1080 50P (-for MPEG//H 26/)		
	1920 1080_60P, 1920 1080_50P, (-101 MPEG4/H.264)		
Resolution	1920, 1080_601, 1920, 1080_501,		
	1280*720_60p, 1280*720_50P		
	/20*480_601, /20*576_501		
Audio			
encoding	MPEG1 Layer II, (MPEG2-AAC, MPEG4-AAC available)		
Sample rate	48KHz		
Bit rate	64kbps, 96kbps,128kbps, 192kbps, 256kbps, 320kbps		
VB-T Modulator Section	on		
RF out	RF COFDM DVB-T out (EN300744)		
FFT mode	2К, 8К		
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		
ystem			
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

							E	
		ncoder m	nodulato	HTT 1	00	7		
								1
	Power	Alarm	Lock 1	 	ock 2			2
1	$\overline{\mathbf{x}}$					0		U
			X	ENTER	MENU	LOCK		
		3		4	6	6		

- 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

- \checkmark 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

ltem	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: $1X10^7 \sim 1X10^{10}\Omega$, Grounding current limiting resistance: $1M\Omega$ (Floor bearing should be greater than $450Kg/m^2$)				
Environment Temperature	5~40°C(sustainable), 0~45°C(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.
- \checkmark 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 mm².

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:

3.1 Bandwidth
 3.2 Constellations
 3.5 Code Rate
 3.6 RF Frequency

3.3 Transmission Mode
 3.4 Guard Interval

> 3.7 RF Out Level



> 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:

> Transmission Mode 2K 8K

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^{-10} dBm (75^{-97} dB μ V) 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.

192.168.0.136			☆ ▼ C 🖁 - Goog	le P 🏫
	(COMPANY)			
	Username:	🗟 admin		
	Password:		COGIN	
		Default User:admin Default Password:admin		
		Copyright	@2011	

Figure-1

4.2 Operation

When we confirm the login, it displays the WELCOME interface as 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 1^{st} HDMI encoding module as Figure-3.



Web Management	
• Welcome	
- Parameter	1CH Mpeg2/H.264 HD Encoder Configuration (EN12)
• Input 1	Vidoe Format
• <u>Input 2</u> • ASI Input • NIT	Video BitRate 14.000 Mbps (1.000 - 19.500 Mbps)
• IP Output • Modulator	Audio Format Mpeg2 General Settings for the
• Save/Restore	Audio BitRate 192 Kbps HDMI IN program: User
- System • Reboot • Firmerry	Program Out Enable (AB)
 Firmware Network 	Program Name TV-101 as needed.
 Password Backup/Load 	Service ID 0x101
	PMT PID 0x100
	Video PID Ox101
	Audio PID 0x102
	PCR PID Ox103
	Video: Video Format: Encoding: Bitrate: Video Format: 1920x1080 50i Indicate it works normally, which otherwise turn to red.
	Rom Version: 0.4.0.3
	Help Default Apply

Figure-3



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.

Web Management								
• Welcome								
– Parameter	NIT Insert							
• Input 1	Netw	ork Name			Ne	twork ID		0x0001
ASI Input	Transpo	rt Stream ID	0x0001		Origina	al Network	:ID	0x0001
NIT IP Output	NIT	Version	0					
Modulator Source Restore	Euroj	pean 💿	NorD	ig V1 🔍	Norl	Dig V2 🔘		
- System	TSID	ONID	Freq(MHz)	Bandwidth	Const	LCN	Add	Del-All
Reboot Firmware Network Password Backup/Load	Help					Update	NIT	Clear NIT
- DackapyDoad								



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.

NIT TS Loop	
Transport Stream ID	0x0001
Original Network ID	0x0001
RF Frequency	750.000 MHz
Bandwidth	8 MHz
Constellation	64 QAM
Hierarchy Informaion	Not Hierarchy
Code Rate	7/8
Guard Interval	1/32
Transmission Mode	2K 💌
Service ID LCN Vi	isible Add
0x0101 1	Del
Save	



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" Update MIT 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.

Web Management		
• Welcome		
– Parameter	IP Output Configuration	
Input 1Input 2	IP Output Enable:	If not set, the following parameters will be no use, the IP Output will not work.
ASI Input NIT	Service IP:	The IP Output port address. The format is xxx.xxx.xxx.xxx.xxx(like as 192.168.2.137).
 IP Output Modulator Save/Restore 	Output IP:	The IP Output data receive address. The format is xxx.xxx.xxx.xxx.xxx. 224.2.2.2). After set the Output IP address, you must use the new address to receive IP Output data
- System	Subnet Mask:	General is 255.255.0, it is must the same in a local area network.
 Firmware 	Gateway:	If the device is in different net segment, you must set the gateway.
• Network • Password	Port:	The UDP protocal port(like as 8001), you should use Output IP and new port to receive IP Output data(like as udp://224.2.2.2.8001).
 Backup/Load 	IP Output Enable:	\checkmark
	Service IP:	192.168.2.137
	Output IP:	224.2.2.2
	Subnet Mask:	255.255.255.0
	Gateway:	192.168.2.0
	Port:	1234
		Default Apply



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.

Web Management	
• Welcome	
– Parameter	Modulator Configuration
• Input 1	Bandwidth 8 MHz 💌
Input 2 ASI Input	Constellation 64 QAM
• IP Output	Transmisson Mode 🛛 😽
 Modulator Save/Restore 	Guard Interval 1/4
– System	Code Rate 3/4
• Reboot • Firmware	RF Frequency 782.000 MHz (30.000 - 1000.000 MHz)
 Network Password 	RF Outlevel -10.0 dBm (-30.010.0 dBm)
• Backup/Load	Default Apply



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.

Web Management
Welcome
 Parameter Input 1 Input 2 ASI Input NIT IP Output Modulator Save/Restore
System • Reboot • Firmware • Network • Password • Backup/Load



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.

Veb Management			
Welcome Parameter	Network		
Input 1 Input 2 ASI Input NIT	IP The manege Address: web.The for After set t to visit th	address,use this address to vis mat is xxx.xxx.xxx.xxx(like as he IP addrress,you must use the e manege web.	rit the manege 192.168.0.1). e new address
 IF Output Modulator Save/Restore 	Subnet General is Mask: network.	255.255.255.0,it is must the sa	me in a local area
System • Reboot	Gateway: If the devi gateway.	ce is in different net segment,	you must set the
 Firmware Network Password Backup/Load 	Web The default Manage 8001),you o Port: port(liks a work after	web manage port is 80,if you o an visit the manege web only us s http://192.168.0.1:8001).This device reboot.	change it(like as se IP address and s function will
	IP Address:	192.168.0.136	
	Subnet Mask:	255. 255. 255. 0	
	Gateway:	192.168.0.1	
	Web Manage Port:	80	Apply

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.

Web Management			
• Welcome			
- Parameter	Password		
 Input 1 Input 2 ASI Input NIT IP Output 	Modify the login name and the name or password,you default login name and pa character and lowercase of	d password to make the d can reset it by keyboar assword is "admin".Also y character.	evice safely.If forget d in menu 5.5. The please note the capital
 Modulator Save/Restore 	Current UserName:	admin]
- System	ourrow rabbiord.		
• Reboot	New UserName:		
Network Password	New Password:]
 Backup/Load 	Confirm New Password:		
	Keyboard and LCD Lock		Apply



> Keyboard and LCD Lock: If it is marked with "v", 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.

Web Management	
• Welcome – Parameter	Backup Configuration
Input 1 Input 2 ASI Input	Backup current configuration to the local file,we suggest do this before set the configuration or update firmware. Backup config
• IP Output	Load Configuration
Modulator	Load the backup file to restore your configuration.
 Save/Restore System 	Warning: 1. New configuration will replace the old one,please backup current configuration before load file.If you use a wrong file,the device may not work.
 Reboot Firmware Network Password Backup/Load 	2. Please do not turn off the power while file loading, otherwise the device will not work. If load correct, device will reboot automatically. File: Seleccionar archivo No se ha seleccionado ningún archivo



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



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