EN-206

HIGH DEFINITION ISDB-T/T_B MODULATOR

- 0 MI1990 -

PROMAX

SAFETY NOTES

Read the user's manual before using the equipment, mainly "**SAFETY RULES**" paragraph.

The symbol ⚠ on the equipment means "**SEE USER'S MANUAL**". In this manual may also appear as a Caution or Warning symbol.

WARNING AND CAUTION statements may appear in this manual to avoid injury hazard or damage to this product or other property.

USER'S MANUAL VERSION

Version	Date	Software Version
1.0	September 2013	0.11

SAFETY RULES ⚠

* **The safety could not be assured if the instructions for use are not closely followed**.

* When using some of the following accessories use **only** the **specified** ones to ensure safety.:

  External DC charger
  Power cord

* No use the external DC power cord this is damaged.

* Do not connect the external DC power until all cables are connected properly.

* In el manipulate external DC power supply.

* Observe all **specified ratings** both of supply and measurement.

* Remember that voltages higher than **70 V DC** or **33 V AC rms** are dangerous.

* Use this instrument under the **specified environmental conditions**.

* If the encoder modulator has been kept in cold conditions for a long time, keep it in a warm room minimum 2 hours before plugging into the mains.

* Mount the device in vertical position with the connectors located on the top side.

* **Do not obstruct the ventilation system of the instrument**.

* To prevent fire or shock hazard, do not expose this appliance to rain or moisture.

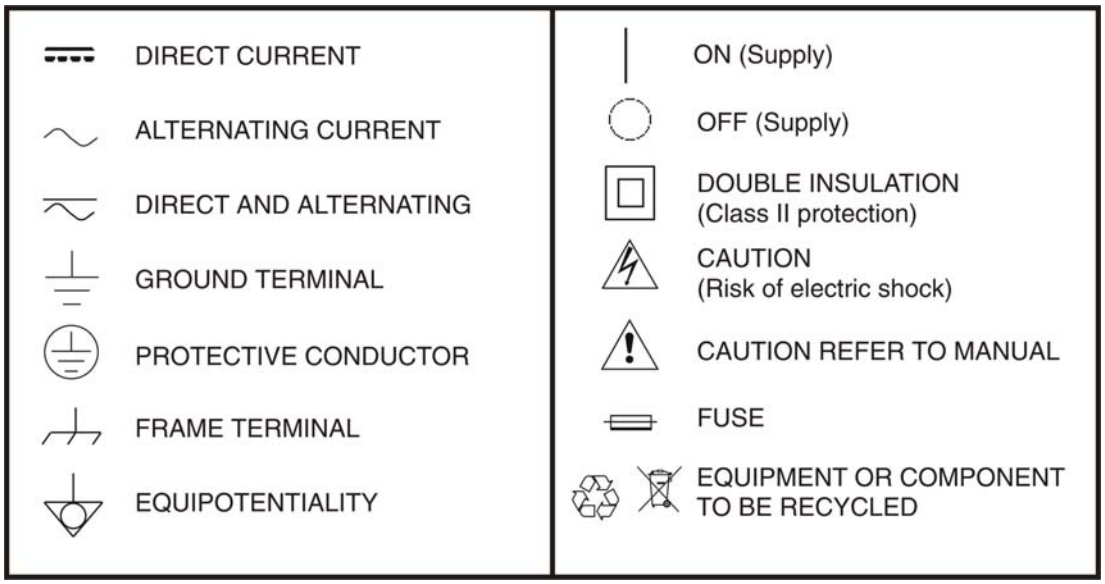
* Use for the signal inputs/outputs, appropriate low radiation cables.

* Follow the cleaning instructions described in the Maintenance paragraph.

* The operator is not allowed to intervene within the team: Any other change on the equipment should be carried out by qualified personnel.

* Mechanical handling / electric unit can cause damage. Do not connect the appliance to the mains before or during assembly.

* Symbols related with safety:



Descriptive Examples of Over-Voltage Categories

Cat I Low voltage installations isolated from the mains.

Cat II Portable domestic installations.

Cat III Fixed domestic installations.

Cat IV Industrial installations.

TABLE OF CONTENTS

1 INTRODUCTION 1
1.1 Description 1
1.2 Equipment Details 2
1.3 Installation 3
1.4 Cascade Installation 5
2 OPERATIONS AND MANAGEMENT 6
3 MENU TREE 8
4 SPECIFICATIONS 14
5 MAINTENANCE 16
5.1 Cleaning Recommendations 16

September 2013

HIGH DEFINITION ISDB-T/T_B MODULATOR
EN-206 I

1 INTRODUCTION

1.1 Description

The **EN-206 I** which allow audio/video signal input in TV distributions with applications in home entertainment, surveillance control, hotel Digital Signage, shops etc. It is an all-in-one device integrating MPEG4 AVC/H.264 encoding and ISDB-T/Tb modulating to convert input signals to ISDB-T/Tb RF out in the frequency range of 30~960MHz. The signals source could be from satellite receivers, closed-circuit television cameras, blu-ray players, and antenna etc. its output signal is to be received by ISDB-T/Tb standard TVs or ISDB-T/Tb STBs etc.

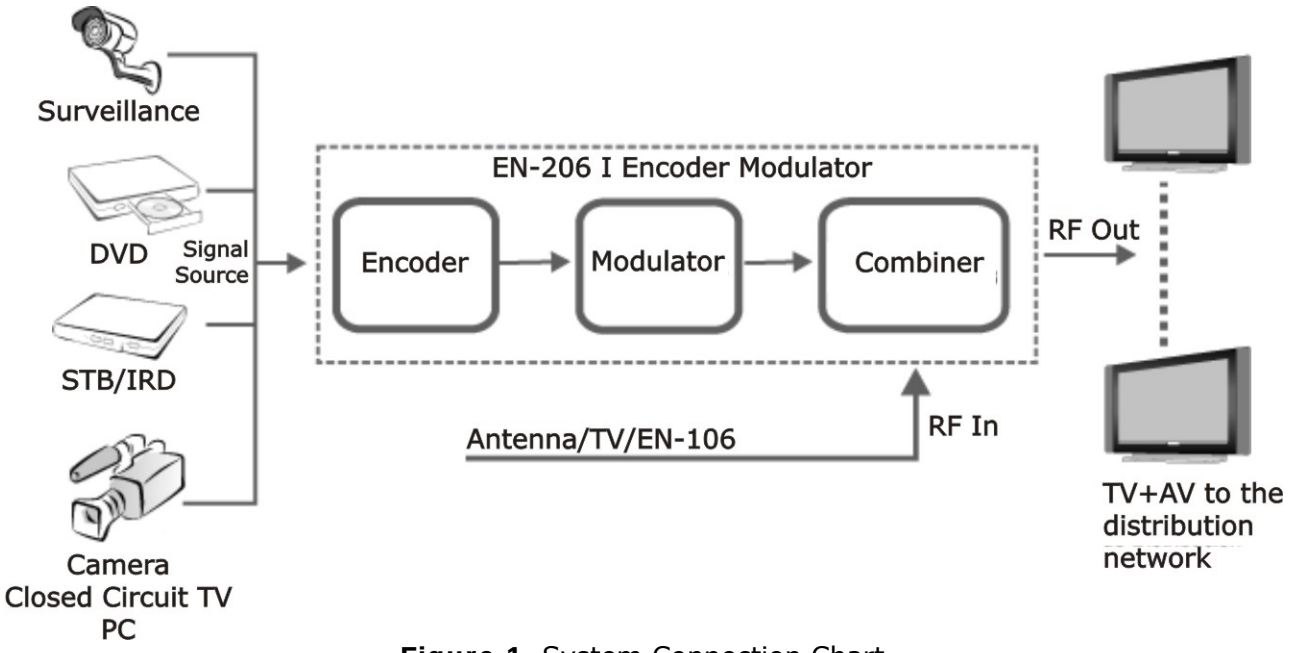


Figure 1. System Connection Chart.

1.2 Equipment Details

Front View

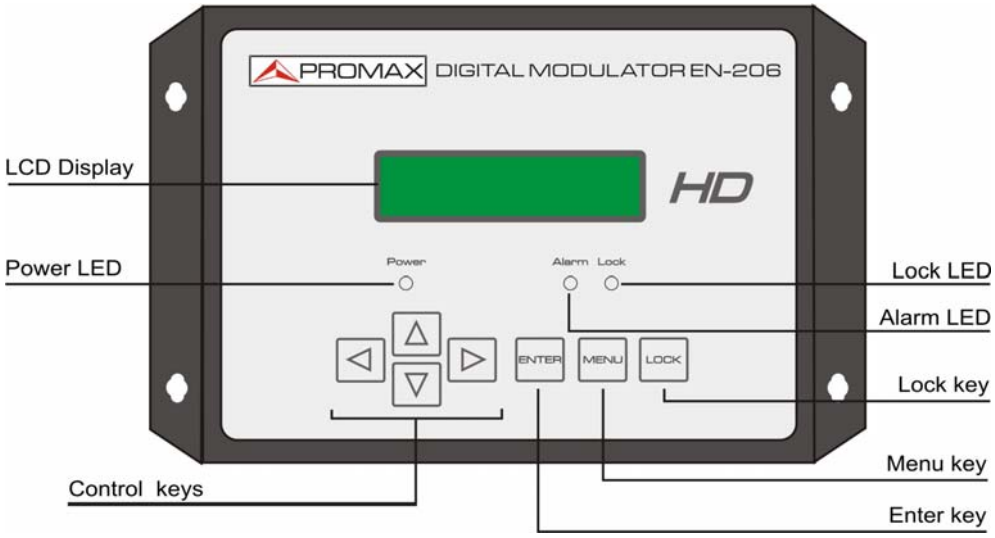


Figure 2.

Up View

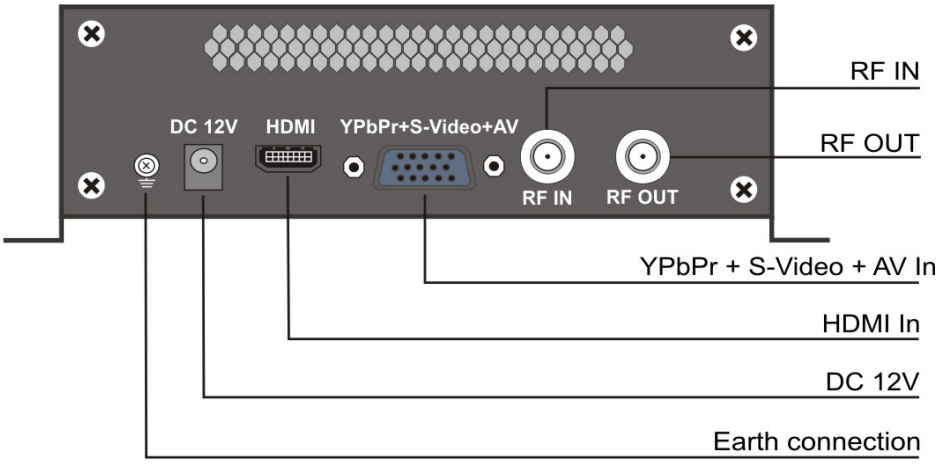


Figure 3.

- **Grounding**: To connect the earth cable.
- **DC 12V**: Power Input.
- **HDMI**: HDMI stream input supporting HD signals.
- **YPbPr + S-Video + AV**: YPbPr + S-Video + AV signal input through a VGA adapter cable.
- **RF in**: RF Loop-through input (10 dB of attenuation).
- **RF Output**: RF output to distribute modulated signal (30 ~ 960 MHz, 71 ~ 91 dbµV).

- **Down View**

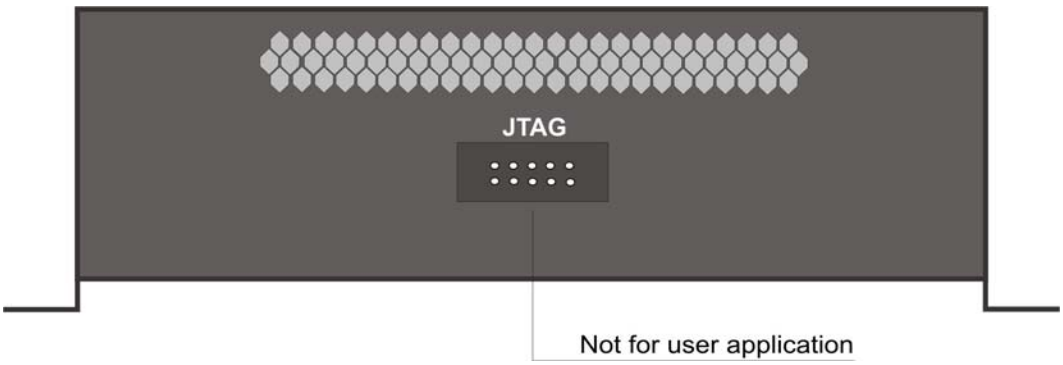


Figure 4.

1.3 Installation

1. Mount and tighten the screws and plugs to secure the unit to the wall. Left 10 cm of free space around from each unit.

2. Connect the signal input in the respective connectors. The signal source can be from a surveillance monitor, DVD, set-top box, CCTV and etc.

3. Optionally, connect the loop-through RF input coaxial cable.

4. Connect cable to RF output to STB/TV.

5. Power supply connection: a) Connect the earth cable; b) Connect the power plug to the unit mains connector; c) Connect the power plug to the mains socket.

Figure 5.

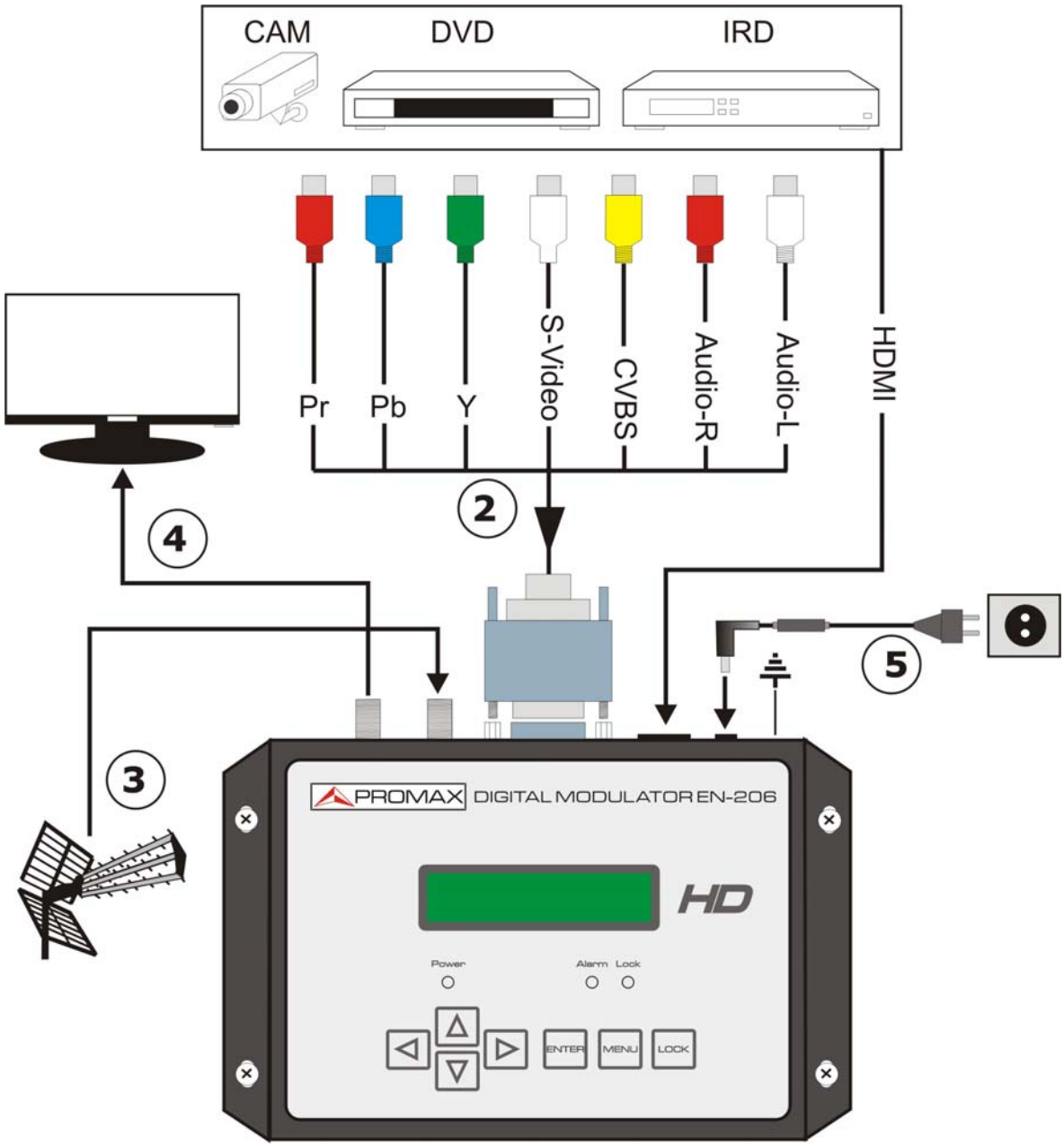

CAM
DVD
IRD
Pr
Pb
Y
S-Video
CVBS
Audio-R
Audio-L
HDMI
2
3
4
5
PROMAX DIGITAL MODULATOR EN-206
HD
Power
Alarm
Lock
ENTER
MENU
LOCK

Figure 6.

1.4 Cascade Installation

EN-206 I unit has 1 TV signal to RF output encoded as ISDB-T/Tb Digital TV signal.

Several **EN-206 I** units can be cascaded in order to increase the capacity. The maximum capacity of a series of N units is 1xN incorporated TV signals. To cascade 2 or more units, connect the RF output of the preceding unit to the TV input (loop-through) of the next unit (see illustration).

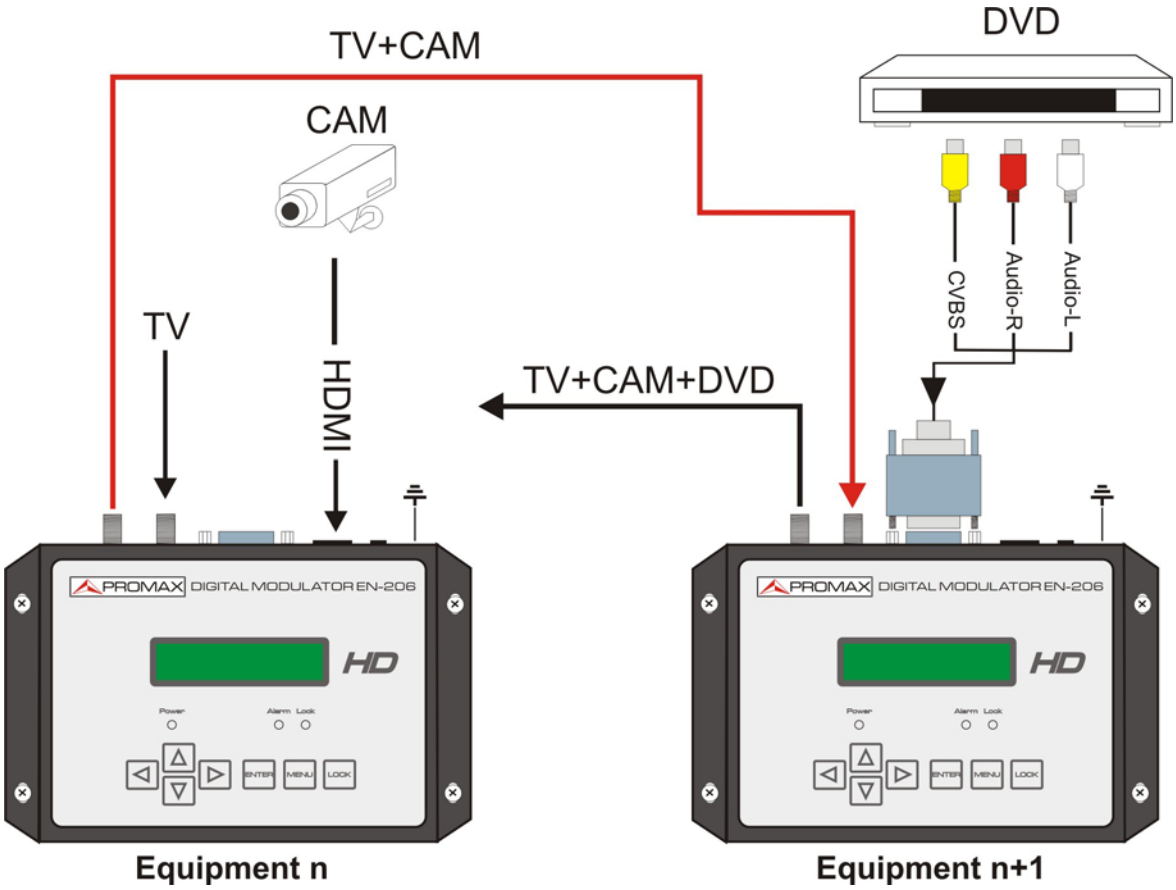


Figure 7.

2 OPERATIONS AND MANAGEMENT

EN-206 I is controlled and managed through the keyboard and LCD display.

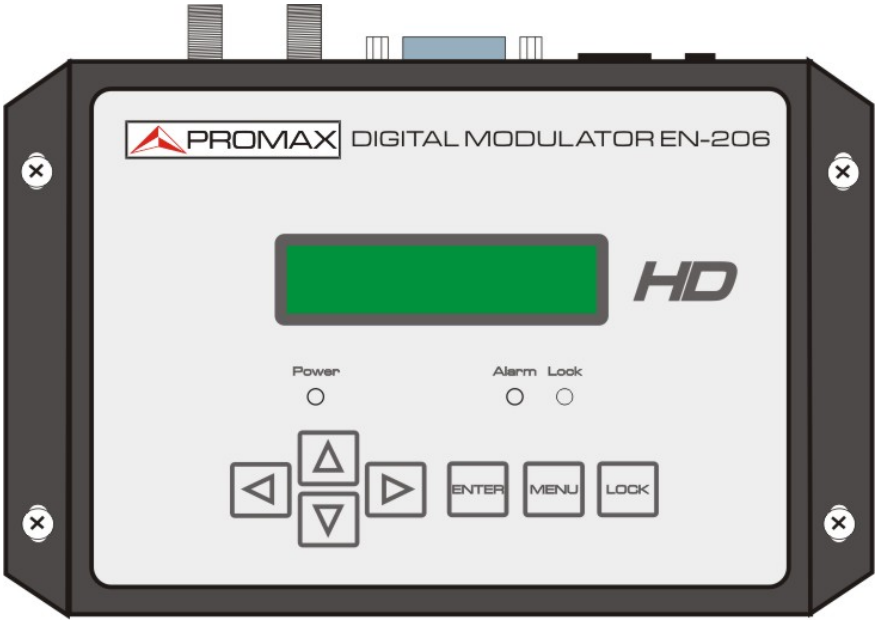


Figure 8.

► **LCD Display**:

It presents the selected menu and the parameter settings. The backlight in the display is on when the power is applied.

► **LED**:

These lights indicate the working status.

- **Power**: It lights on when the power supply is connected.
- **Alarm**: It lights on when the there is error, such as the signal source loss.
- **Lock**: It lights on when the signal source is connected and goes off when the signal is lost.

► **Left / Right / Up / Down buttons**:

Use these buttons to turn the screen pages, shift the target items by moving the triangle, or change the parameter settings in the program mode.

► **Enter**

Use this button to enter a submenu or save a new setting after adjustment; press it to start adjusting the value of certain items when the corresponding underline flash with Up and Down buttons.

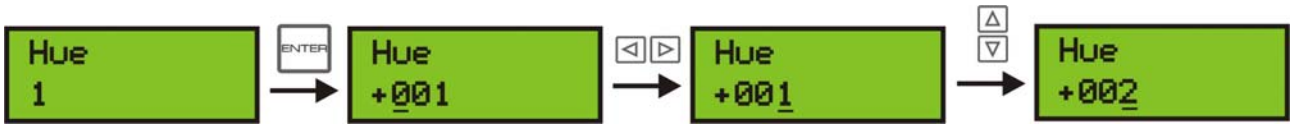


Figure 9.

Press it to activate the hidden selections and change the setting with Up and Down (or Left and Right) buttons.

Figure 10.

► **Menu**:

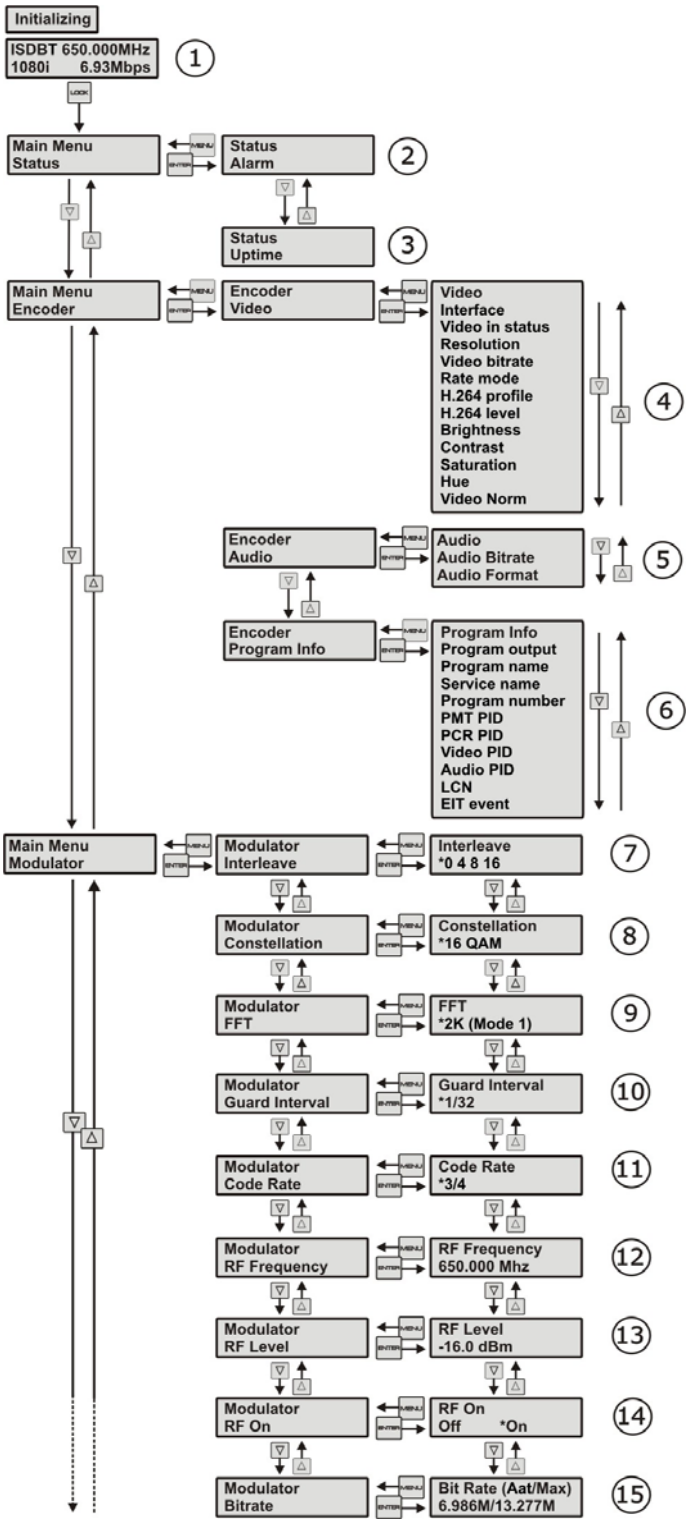
Press this button to step back.

► **Lock**:

Locking the screen / cancelling the lock state, and entering the main menu after the initialization of the device. After pressing lock key, the system will question the users to save present setting or not. If not, the LCD will display the current configuration state.

3 MENU TREE

When the power is connected, the LCD will start to initialize the program. The LCD menu goes as below chart. Numbers on the menu refers to the numbers on the menu tree.



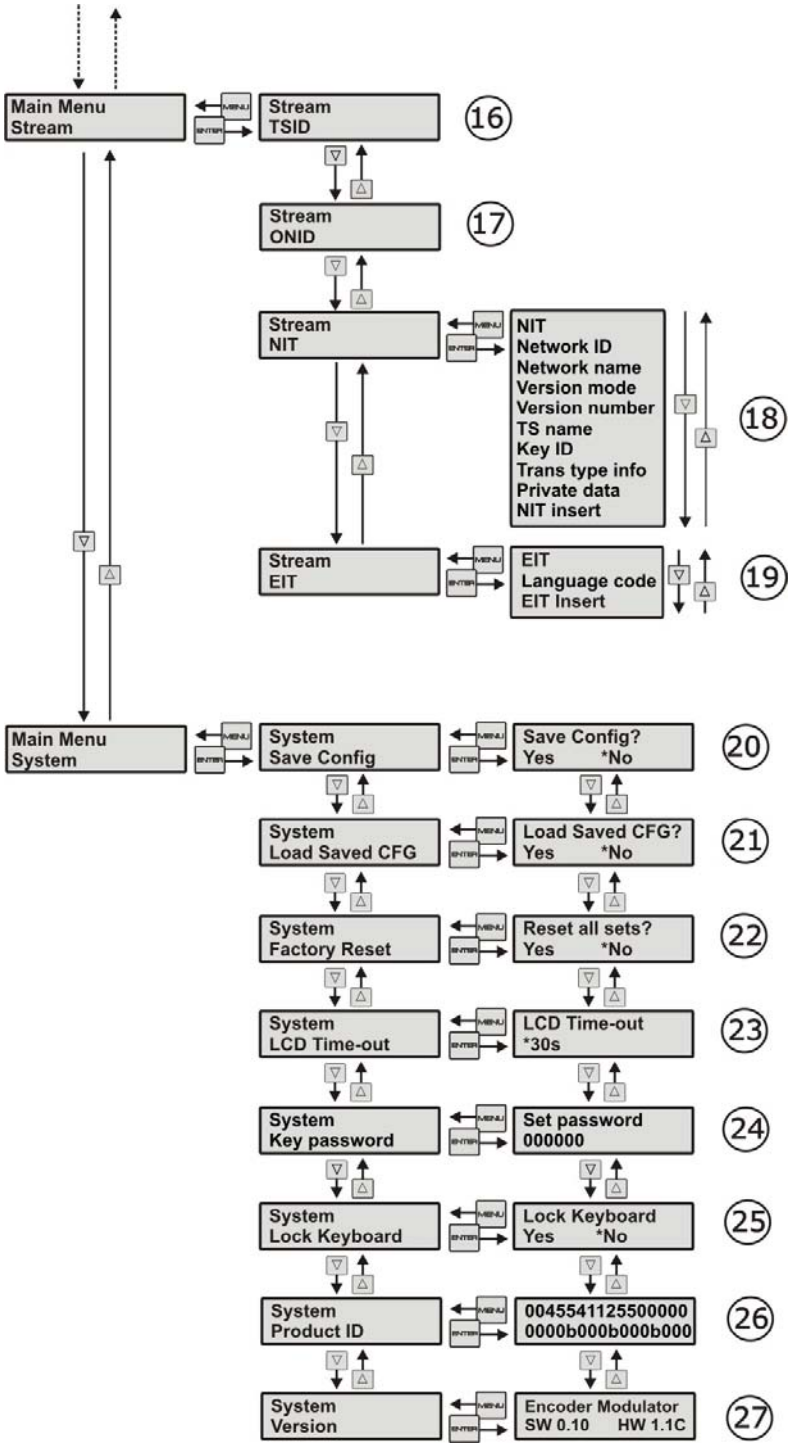


Figure 11. Menu Tree.

1. ISDB-T:

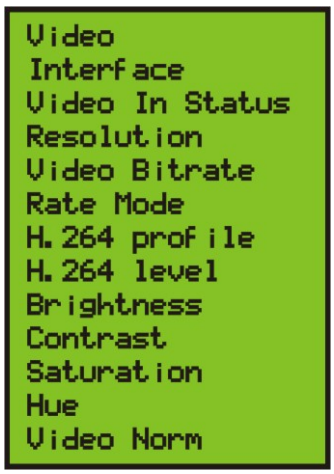
Modulating standard.
XX.XXX MHz: The current output frequency.
1080i: Video resolution of signal source.
X.XX Mbps: The current encoding bit rate

2. Alarm Status:

For example, if the CVBS cable disconnected, it will display Video 1 Not Lock under this menu.

3. Uptime:

It displays the working time duration of the device. It times upon power on.

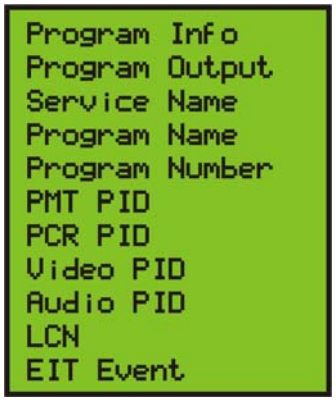


4. Video Parameters:

User can enter the items respectively to view the video status and signal source resolution, and set the input interface. User can also adjust values of rest items (Bit rate: 0.500~19.500 Mbps; Brightness & Contrast & Saturation: 0-255; Hue: -128 - +127).

5. Audio Bit rate:

Select audio bit rate among 64, 96, 128, 192, 256, 320, 384 kbps. Audio Format: Select audio format among MPEG2, LC-AAC and HE-AAC.



6. Program Information:

User can enable or disable the program output under menu Program Output. User can also enter the other items to edit the Service Name, Program Name, Program Number, and PIDs of PMT, PCR, Video and Audio, and edit LCN (Logical channel number).

EIT Event – User can enter this menu to setup EIT (Event Information Table) for the current and next program event. The EIT contains Start Year, Start Time, Duration, and Event Name of the event. All the EIT information can be displayed on the TV screen on condition that the EIT is chosen to insert (see explanation 10.).

7. Interleave:

Choose between 0, 4, 8 and 16.

8. Constellation:

ISDB-T/Tb modulator contains these constellation modes: DQPSK, QPSK, 16QAM and 64QAM.

9. FFT (Transmission Mode):

Select between 2K, 4K and 8K.

10. Guard Interval:

Select among 1/32, 1/16, 1/8 and 1/4.

11. Code Rate:

It refers to FEC-Forward Error Correction rate. It contains 1/2, 2/3, 3/4, 5/6 and 7/8.

NOTE: The different combination of bandwidth, constellation, guard interval and code rate (FEC) will form a different output code rate. Please refer to appendix table 2.

12. RF Frequency:

Adjust it at range of 30 to 960 MHz. Set it according your regional situation or inquire your local services.

13. RF Level:

Adjust it at range of -16~ -36dBm.

14. RF On:

User can choose to turn on or turn off the RF under this menu.

15. Bit Rate:

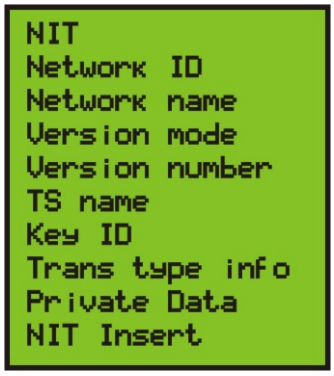
User can read the current modulating bit rate and the maximum bit rate

16. TSID (Transport Stream ID):

User can view or adjust after enter this menu.

17. ONID (Original Network ID):

User can view or adjust after enter this menu.



18. NIT (Network Information Table):

NIT table is a very important table for describing the network and TS. User can enter the submenus displayed and edit the values or select the LCN (Logical channel number) mode, and choose whether to insert the NIT. If user chooses to insert the NIT, information (Network ID, Network Name and other parameters) will be added to the transport stream.

19. EIT:

EIT Insert: As mentioned above, the event information table can be chosen whether to insert into the TS or not under this menu. If yes, the EIT information set above will be displayed on the TV screen.
Language code: To set the EIT language. For example, code of the English language is eng. If you set the code as eng, the EIT displayed will be in English language.

20. Save Config:

Yes/No to save/give up the adjustment of setting.

21. Load Saved CFG:

Yes/No to load/ not to load the saved configuration.

22. Reset all sets:

Yes/No choose/not choose the factory's default configuration.

23. LCD Time out:

A time limit that LCD will light off. Choose among 5s, 10s, 45s, 60s, 90s and 120s (seconds).

24. Set password:

User can set a password to get into the system.

25. Lock Keyboard:

Choose Yes to set a password and lock the keyboard, then the keyboard will be locked and cannot be applicable. It is required to input the password to unlock the keyboard. This operation is one-off. (If forgetting your password, please use the universal code "005599".)

26. Serial Number:

User can view the serial number of this device. It is read-only and unique.

27. Encoder Modulator:

The name of the device;
SW: software version number;
HW: hardware version number.

4 SPECIFICATIONS

HDMI

VIDEO

Encoding	MPEG-4 AVC/H.264
Interface	HDMI
Resolution	1920 x 1080_60 p, 1920 x 1080_50 p; 1920 x 1080_60 i, 1920 x 1080_50 i; 1280 x 720_60 p,1280 x 720_50 p
Bit rate	0.500~19.500 Mbps

AUDIO

Encoding	MPEG1 Layer II
Interface	HDMI
Sample rate	48 KHz
Bit rate	64, 96 ,128, 192, 256, 320, 384 kbps

YPbPr/ CVBS/ S-Vídeo (using an adapter to VGA)

VIDEO

Encoding	MPEG-4 AVC/H.264
Interface	CVBS x 1, YPbPr x 1, S-Vídeo x 1
Resolution	
CVBS & S-Vídeo	720 x 576_50i (PAL); 720 x 480_60i (NTSC)
YpbPr	1920 x 1080_60i, 1920 x 1080_50i; 1280 x 720_60 p, 1280 x 720_50 p
Bit rate	0.500~19.500 Mbps

AUDIO

Encoding	MPEG1 Layer II
Interface	1 x Estéreo/mono
Sample rate	48 kHz
Bit rate	64, 96, 128, 192, 256, 320, 384 kbps

Modulation

Standard	ARID STD-B31
Bandwidth	6 MHz
Constellation	DQPSK, QPSK, 16QAM, 64QAM
Guard Interval	1/32, 1/16, 1/8, 1/4
Transmission Mode	2 K, 4 K, 8 K
MER	≥42 dB
RF frequency	30~960 MHz, 1 kHz step
RF output level	-16 ~ -36 dBm (71~91 dbµV), 0.1dB step

System

Management	Local control: LCD + control buttons
Language	English
LCN Insertion	yes

General

Power supply	DC 12V
Dimensions	153 H. x 110 W. x 50 D. mm
Weight	< 1 kg
Operation temperature	0~45 ºC

INCLUDED ACCESSORIES

1x ABT020120	External DC power supply.
1x CA-004	Cable network bipolar.
	YPbPr+S-Video+CBVS to VGA adapter
	HDMI-HDMI cable
1x DG0123	Quick Reference Guide.

RECOMMENDATIONS ABOUT THE PACKING

It is recommended to keep all the packing material in order to return the equipment, if necessary, to the Technical Service.

5 MAINTENANCE ⚠

5.1 Cleaning Recommendations

CAUTION

To clean the cover, make sure the instrument is disconnected.

CAUTION

Do not use scented hydrocarbons or chlorized solvents. Such products may damage the plastics used in the construction of the cover.

The cover should be cleaned by means of a light solution of detergent and water applied with a soft cloth.

Dry thoroughly before using the system again.

CAUTION

Do not use alcohol or its derivates for the cleaning of the front panel and particularly the viewfinders. These products can damage the mechanical properties of the materials and reduce their useful lifetime.

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